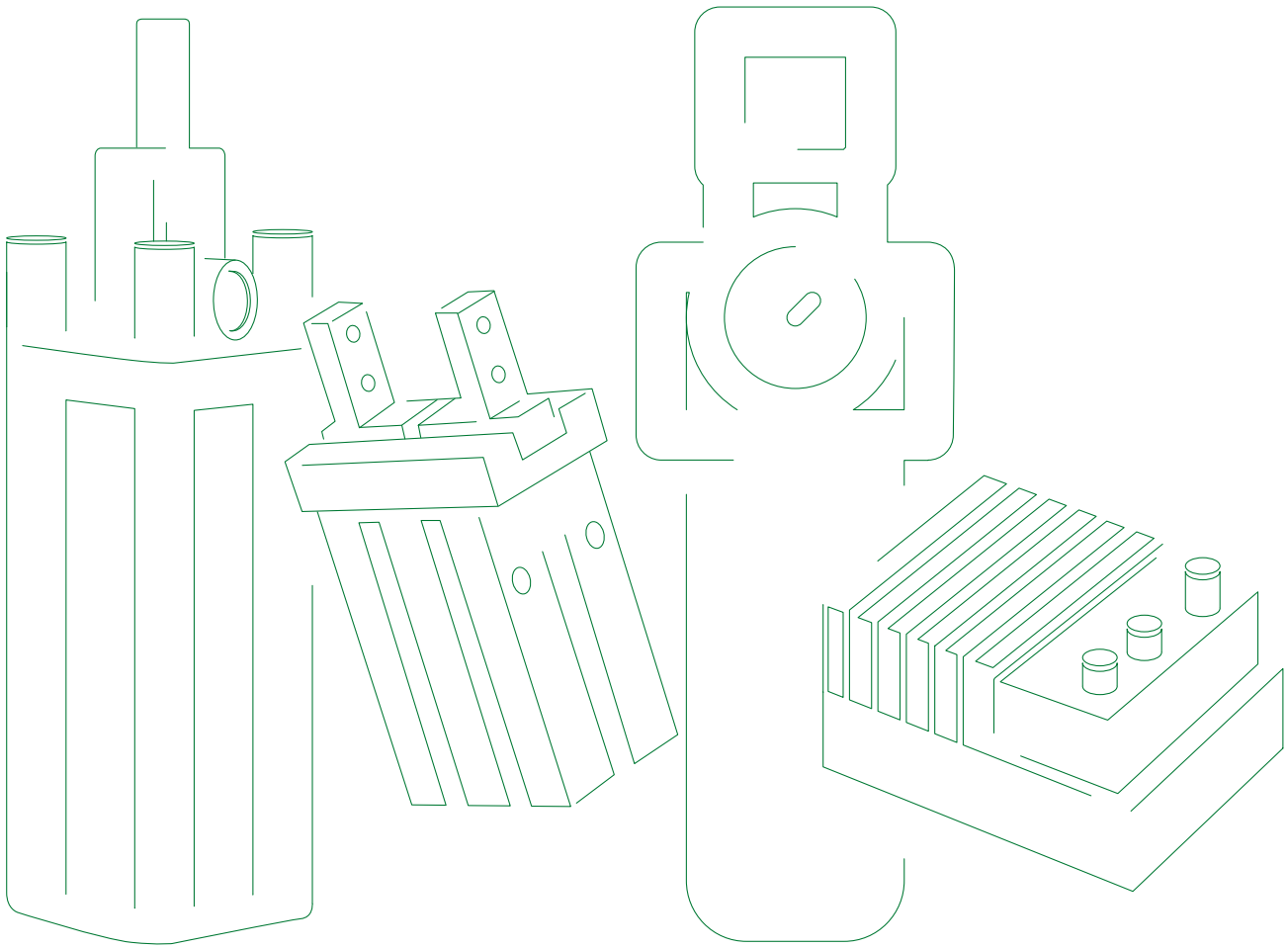
PNEUMAX



GENERAL CATALOGUE 2025

SOLUTIONS FOR PNEUMATIC AUTOMATION

General catalogue

Solutions for pneumatic automation

This catalogue includes the products range manufactured by Pneumax Industrial Automation Business Unit: air service units and pneumatic components for air distribution and motion control.

Visit pneumaxspa.com

Find out the documentation that complete the Industrial Automation offer

VACUUM TECHNOLOGY



PNEUMATIC FITTINGS



ELECTRIC ACTUATION



Discover more on catalogues which include the product range offered by the other Pneumax Business Units: **AUTOMOTIVE** and **PROCESS AUTOMATION**

General index

Solutions for pneumatic automation

Introduction

About Pneumax VIII

Section 01
Air distribution

Valves and solenoid valves



Spool type valves and solenoid valves
Single and manifold versions, mechanical and manual or pneumatic command

Series 104	1.1	Series 800	1.68	Series 2100 Line-Flat-Base	1.124
Series 105	1.12	Series 888	1.77	Series 2400 Line-Flat-VDMA	1.139
Series 200	1.21	Series 400	1.91	Series 2600 Line-Flat-VDMA	1.160
Series T200	1.54	Series T400	1.110		



Direct operated solenoid valves
Pilot valves, high flow rate performance 2/2 ways and 3/2 ways, version miniaturised available as well

Series 300	1.175	Series CNOMO	1.197	UL solenoid coils	1.202
Solenoid coils	1.189	Series S	1.200		
Series M (mechanical)	1.193	300-UL solenoid coils	1.202		



Poppet valves and solenoid valves
3/2 and 2/2 valves and solenoid valves for compressed air and vacuum, with aluminium and technopolymer body

Series 700	1.204
Series PG	1.207
Series T772-773	1.224
Series T771	1.239



“Namur” valves and solenoid valves
NAMUR valves and solenoid valves with technopolymer or aluminium body, also available in versions classified for use in potentially explosive environments (Directive 2014/34/EU)

Series 514/N	1.247	Series 514 High Performance	1.254
Series T514	1.249	Series 515 High Performance	1.260

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



ISO 5599/1 valves and solenoid valves

Valves and solenoid valves according to standard ISO 5599/1 available in 3 sizes with M12 5/2, 5/3 connectors, aluminium and technopolymer body

Series 1000 - Size 1, 2 and 3 **1**.264

Series 1000-M12 - Size 1, 2 and 3 **1**.281

Accessories



Pneumatic circuit accessories

Flow control valves, quick exhaust valves, selectors, silencers, unidirectional valves, manifolds, blocking valves, economizers, gang mounting manifolds, spry valves

Series 600 - M5 - G1” **1**.288



Complementary valves

Pressure switches, impulse generators, timers, two hands safety valve, oscillator valve, signal amplifier, progressive start up valve, high-low pressure device

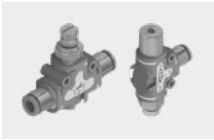
Series 900 **1**.302



Blocking valves

Unidirectional and bidirectional blocking valves, aluminium and technopolymer versions, with G1/8”- G1/4”- G3/8”- G1/2” connections

Series 50-T50 **1**.310



Function fittings

Miniaturised logic function with technopolymer body:
RFU, RP, VB, VSR, VS-or, VS-and, IP, AP, RP+IP, VB+RFU, VB+VSR

Series 55 Tecno-FUN **1**.315



Miniaturised pressure regulators

Brass versions rod G1/8” and with technopolymer body and integrated gauge version

Series 1750 - 1760 **1**.330

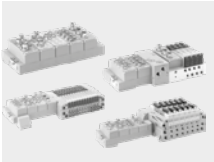


Compact fittings for lubrication

Nichel plated brass compact fittings, with straight male adaptor

Series Mini-RAP **1**.332

Valves and solenoid valve manifolds



Wide range of multipolar and serial system, available with main fieldbus protocols

Series PX **1**.334

Series 3000 EVO **1**.355
Versions 3100 (10 mm) and 3400 (15,5 mm)
Stand alone *1.356*
Manifold *1.372*

Series 2200 Optyma-S EVO **1**.408

Series 2200 Optyma-Sc **1**.429

Series 2500 Optyma-F EVO **1**.438

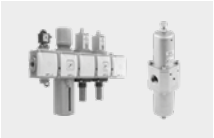
Series 2500 Optyma-T EVO **1**.451

Series 2700 EVO **1**.465

EVO Electronics **1**.486

Series 2300 Enova® **1**.504

Section 02
Air treatment



Air service units
Wide range of components for compressed air treatment, available in aluminium, technopolymer and steel, in several sizes with connections from 1/8" to 1" and flow rates up to 8000 Nl/min.

Air quality **2**.1
Series AIRPLUS **2**.2
Series 1700 **2**.85
Series 1700 Steel line **2**.159



Proportional technology
The proportional pressure regulators range includes 3 product series: 1700 standard, 1700 miniaturised and WPR (Wide Pressure Regulators).

Series 1700 standard **2**.176
Series 1700 miniaturised **2**.192
Series WPR **2**.208



Measuring devices
Digital pressure switches and pressure gauges, panel mounting or manifold versions.

Pressure switches Series DS **2**.215
Pressure gauges Series DS **2**.217



Pressure booster
3 sizes aluminium pressure boosters available or technopolymer with 2:1 compression ratio.

Series 1700 **2**.219
Series P+ **2**.224

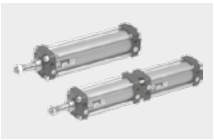
Section 03
Pneumatic actuation

Cylinders with piston rod according to standard



ISO 6432 Microbore cylinders
Versions available: with threaded end covers, rolled end covers, aluminium, stainless steel and technopolymer versions

Series 1200 Threaded end covers cylinders **3**.1
Series 1200 Tecno-MIR **3**.4
Series 1200 Rolled end covers MIR **3**.10
Series 1200 Rolled end covers MIR-INOX **3**.13
Series 1200, Steel line **3**.18



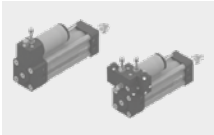
CNOMO-CETOP-ISO cylinders
Cylinders manufactured according to standards CNOMO, CETOP and ISO: standard versions, through rod versions, tandem push with common rod, tandem push with independent rods or opposed tandem with common rod

Series 1303-1308 **3**.30



Cylinders according to standard ISO 15552
Cylinders according to ISO 15552 with bores from Ø32 to Ø200 mm and strokes up to 1250 mm. Available versions: ECOPLUS with aluminium or technopolymer end plates, ECOLIGHT optmized in weight and dimensions, Steel line completely in stainless steel, round tube versions tie rod (Ø250-Ø320 mm)

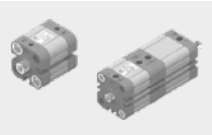
Series 1319-1320-1321 **3**.41
Series 1348-1349-1350 Non rotating cylinders **3**.44
Series Ecoplus - HP 1386-87-88 and 1396-97-98 **3**.47
Series Ecolight 1390-1391-1392 **3**.51
Series Ecolight with protective bellows **3**.58
Series 1315 Round tube cylinders **3**.73
Series Steel line - AISI 316 **3**.77



Hydro-pneumatic speed control cylinders according to standard ISO 15552
ISO 15552 Hydro-pneumatic speed control cylinders with internal hydraulic circuit for movement control

Series 1450 - 1463 -Ø50 - Ø63 **3**.86

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

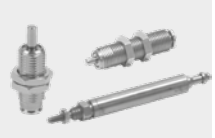


Compact cylinders according to standard ISO 21287

Compact cylinders according to standard ISO with integrated slots suitable for sensors mounting without adaptors. Bores from Ø20 to Ø100 mm. Versions with end stroke adjustable pneumatic cushioning are also available according to ISO 21287

Series 1500 Ecompact **3**.92

Cylinders with piston rod not according to standard



Threaded body microbore cylinders

Special performance microbore cylinders with hexagonal or round body and either completely threaded or threaded with a plain rod ending

Series 1200 **3**.108
Special performance microbore cylinders



Profile tube cylinders, non rotating

Non rotating cylinders twin rod version, available with bores from Ø32 to Ø100 and strokes up to 500 mm

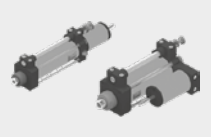
Series 1325-1326-1345-1347 **3**.110
Twin rod cylinders



Flat profile cylinders

ECOFLAT cylinders available with sizes from Ø25 to Ø63 mm and strokes up to 300 mm. Profiled tube has two “T” slots to host sensors 1580._, MRS._, MHS._. without adaptors. Two additional connections are also available on rear cover for cylinder feeding

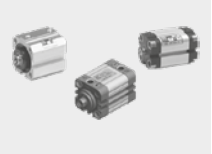
Series ECOFLAT **3**.115



Hydraulic speed control cylinders

Hydraulic speed control cylinders with outward, inward and outward/inward control, with lateral or in-line tank. Available with SKIP valve (accelerating device) and blocking valve (STOP)

Series 1400 - Ø40 - Ø63 **3**.121



Compact cylinders

Short stroke and compact cylinders with bores from Ø20 to Ø100 mm, available in single and double acting versions, tandem and through rod with magnetic piston versions. The Europe version is compliant with the ISO or UNITOP standard (depending on bores), while the Ecompact-S versions have connections and rods according to the ISO 15552 standard

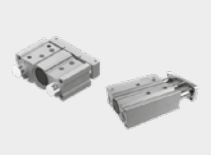
Series 1500 - Short stroke cylinders **3**.132
Series 1500 Europe **3**.139
Series Ecompact-S **3**.147



Multimount cylinders

Multimount cylinders available with bores from Ø10 to Ø25 mm, with strokes up to 50 mm and with magnetic piston versions

Series 6500 **3**.152



Guided compact cylinders

These cylinders are available in sizes Ø12 to Ø80 mm, and comprise a single compact cylinder with integral guide rods, the rod guide is available in two styles: self-lubricating bronze bushes and bearing bushes

Series 6100-6101-6110 **3**.154



Slide cylinders

Slide cylinders manufactured with bores from Ø8 to Ø25 mm, with strokes up to 150 mm. Available with simple and double regulation end stroke and also with front and rear shock absorber

Series 6600 **3**.168

Section 03
Pneumatic actuation / **Cylinders with piston rod not according to standard (following)**



Slide units

Twin-rod linear guide units with bores from Ø10 to Ø32 mm, and with control unit with bronze bush versions, with control unit with bearing bush versions. Are also available the through twin-rod slide units and the compact slide units

Series 6200 **3**.179
Twin-rod slide units

Series 6210 **3**.183
Through twin-rod slide units

Series 6700 **3**.188
Guide cylinders

Rodless cylinders



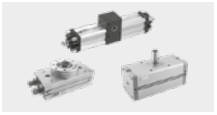
Rodless cylinders - Standard

Rodless cylinders with bore from Ø16 to Ø63 mm, and strokes up to 6000 mm, available also with linear control unit

Series 1605 **3**.195

Series 1605 - Ø16 **3**.206

Rotary actuators



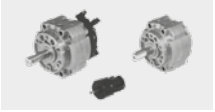
Rack rotary actuators

Double or single rack & pinion rotary actuators

Series 1330 - 1331 - 1332 - 1333, rotary actuators **3**.211

Series 6400 - Double rack actuators with turn table **3**.215

Series 6411 **3**.218



Vane type rotary actuators

Vane type rotary actuators with the shaft that runs into ball bearings, available with sizes from Ø10 to Ø100 mm

Series 6420 **3**.221

Handling



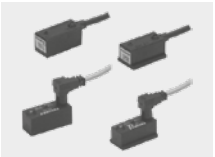
Pneumatic grippers

Pneumatic grippers manufactured with 2 angular fingers (from -10° to +30°), wide opening 180°, or 3 finger parallel style. Swing clamp cylinders has been developed to meet the need to clamp a workpiece by means of a clamping arm.

Series 6300 **3**.231

Series RT **3**.245

Sensors



Magnetic sensors

Magnetic sensors with Reed type or Hall effect

Series SA **3**.250

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



Miniaturised magnetic sensors

Miniaturised magnetic sensors with Reed and Hall style versions, available with rectangular, square, square section UL/CSA approved, and round section versions

Series SR	**3**.262	Series SQ	**3**.267	Series ST	**3**.271
Series SU	**3**.266				

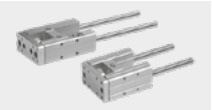
Accessories and fixing devices



Piston rod lock

Piston rod lock for cylinders with bores from da Ø12 to Ø125 mm

Series 1260 - 1320	**3**.279



Linear guiding units

Linear guiding units series 1200 (Ø20-25 mm) and series 1320 (from Ø32 to Ø80 mm)

Series 1260 - 1320	**3**.281



Shock absorbers

Shock absorbers with M8x1-M10x1-M14x1,5-M20x1,5-M27x1,5 threads

Series 6900	**3**.283

Appendix

A

Pneumatic symbols	**A**.1
Air quality	**A**.4
Dimensioning	**A**.5
Measure and conversion units	**A**.14
Alphanumeric index	**A**.18

GLOBAL VISION and ITALIAN HEART

Excellence in automation since 1976
Made in italy

Founded in 1976 in Lurano (BG), Pneumax has represented Italian excellence worldwide: three business unit dedicated to Industrial Automation, Process Automation and Automotive respectively, manufacturing pneumatic components and systems, electric actuators and components for controlling liquid and gaseous fluids, integrating mechanical, electronic and digital skills.

Our presence in over 50 countries around the world is ensured by a network of subsidiaries and authorised distributors. All of our production activity is concentrated in the 10 production units of the Pneumax Group based in Italy. Seven of those units are located in the Pneumax Spa headquarters in Lurano (Bg). In addition to those production plants there are three other companies in the Group: Titan Engineering (San Marino), AutomationWare (Martellago-VE) and Simtech (Lurano-BG).

10 Production sites

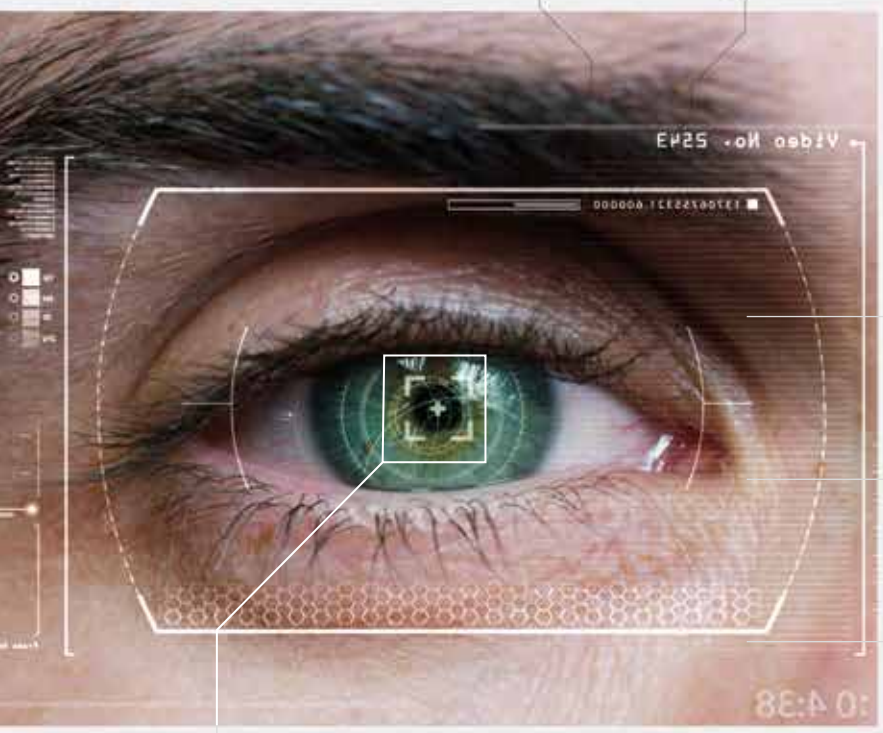
29 Companies in the Group

160.000 m^2 Headquarters





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



Foundation **1976**

Employees **850**

Branches

PNEUMAX

BUSINESS UNITS

- INDUSTRIAL AUTOMATION
- PROCESS AUTOMATION
- AUTOMOTIVE

Italy	Europe	World
Milan	Germany	United States
Turin	Czech Republic	Singapore
Florence	United Kingdom	Brazil
Vicenza	Spain	India
Bari	France	China
Modena	Portugal	
Rimini	Scandinavia	
Parma		



EMPOWERING PEOPLE FOR SUSTAINABLE DEVELOPMENT

Enhancing human resources and the local area, respect for the environment and ethical approach to business

We believe sustainable development means empowering people, through innovation, acting ethically and being respectful of the environment.

Imagining, designing and implementing solutions through the combination of technologies and skills

Our Vision

Efficient organisation, continuous enhancement of skills and technological innovation: is what drives the strategy of Pneumax whose main objective has always been to foster sustainable development and to support its customers as a true technology partner. A result that can only be achieved by providing products and services to meet the different needs of customers.
All this while guaranteeing the highest quality standards and implementing a business model that combines the pursuit of continuous improvement, enhancement of the local area and respect for people and the environment.

The Pneumax Code of Ethics is the document underpinning every company decision to build a business model that values people, relationships and skills.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice









The desire to offer solutions specifically designed for the applications of different sectors has led to structuring the production and sales organisation into three Business Units: Industrial Automation, Process Automation and Automotive.

Pneumax Business Units are capable of producing a wide range of components made from different materials, from technopolymers to brass, as well as steel and aluminum, according to the relevant international regulations concerning both production processes and product characteristics.

PNEUMATIC TECHNOLOGY

ELECTRIC ACTUATION

FLUID CONTROL

PNEUMAX



TOTAL QUALITY MANAGEMENT

Product quality stems from the quality of the processes and the competence of the people who carry them out

Pneumax constantly invest in new product and manufacturing processes. Through research, quality perfection is the target of each company, that operates in compliance with ISO 9001 : 2015, ISO 14001 : 2015, and ISO 45001 : 2018 standards.

Working according to Total Quality means guaranteeing our customers with the highest reliability of our products and services, because the most prestigious certification is the one that comes from the trust of our partners.





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Ongoing Improvement

Measuring, controlling and pursuing perfection

Company
Management & Infrastructure

People
Expertise & Experience

Technology
Products & Production Processes

System and product certifications

- **CSA**
  PRODUCT CERTIFICATION ACCORDING TO CANADIAN STANDARDS
- **IEC 61508**
  SIL CERTIFICATES OF COMPLIANCE WITH IEC 61508 STANDARDS
- **UL**
  PRODUCT CERTIFICATION ACCORDING TO US STANDARDS
- **EAC**
  CERTIFICATION OF CONFORMITY FOR THE FREE MOVEMENT OF PRODUCTS IN THE EURO ASIAN ECONOMIC COMMUNITY
- **ISO 45001:2018**
  OCCUPATIONAL HEALTH AND SAFETY ASSESSMENT SERIES
- **MOCA**
  FOOD CONTACT
- **EN ISO 13849**
  PRODUCTS CERTIFIED AND/OR 'WELL TRIED' AND SUITABLE FOR APPLICATIONS IN SAFETY CIRCUITS
- **ISO 9001**
  REQUIREMENTS FOR A QUALITY MANAGEMENT SYSTEM
- **ATEX 2014/34/EU**
  SYSTEMS FOR POTENTIALLY EXPLOSIVE ATMOSPHERES
- **ISO 14001**
  ENVIRONMENTAL MANAGEMENT STANDARDS
- **2006/42/CE**
  COMPLIANCE WITH REGULATIONS 2006/42/EC FOR MACHINERY
- **NSF**
  FOOD CONTACT

The Pneumax quality department use's the latest measuring technology. Continuously scanning and analyzing components using structured light laser systems that digitize objects to provide dimensional analysis efficiently via dedicated software: 3D High Resolution X-ray Axial Computed Tomography (CT), with which it is possible to scan components, carry out any measurement required, even in areas that are not accessible or not visible with other instruments.
Plastics and elastomers are monitored through the observation of thermograms provided by DSC (differential scanning calorimetry).
All metrological information collected in the company's databases is used for conformity assessments and reprocessed according to statistical control models to allow engineers to work on continuous product improvement.

WORLDWIDE NETWORK

Global vision, local service

Through a network of branches and exclusive distributors, Pneumax operates in over **50 countries** around the world, offering support to it's customers throughout every stage of the supply process, from application to after sales assistance.

Each market and each sector has distinctive characteristics that make them unique. The aim of Pneumax network is to provide services that can enhance these peculiarities by working as a true strategic partner.









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Pneumax
Business Attitude



An operating model that stems from the ability to combine sector, technology and application expertise through customer collaboration with relevant Sales Engineers, sector Business Specialists and Product Specialists focused on products and technologies.
The BUs, industrial automation, process automation and automotive, constantly interface to transfer the excellence and experience of each sector to the others: from the study of the materials needed in Petrochemicals, to the integration of electronics and digital in industrial Automation or meeting the quality standards required in Automotive processes. An organisation that allows all customers to enjoy the most effective mix of sectoral excellence.

PRODUCT SPECIALISTS
Specific knowledge
• Products and Technologies

BUSINESS SPECIALISTS
Dedicated competences
• Sectors and Applications



SALES ENGINEERS
Worldwide Presence
• Relationship management







Section 01

Air distribution

Valves, solenoid valves and devices for compressed air distribution and control

Valves and solenoid valves

Spool type valves and solenoid valves

Single and manifold versions, mechanical and manual or pneumatic command


Series 104 1.1


Series 105 1.12


Series 200 1.21


Series T200 1.54


Series 800 1.68


Series 888 1.77


Series 400 1.91


Series T400 1.110


Series 2100
Line-Flat-Base 1.124


Series 2400
Line-Flat-VDMA 1.139


Series 2600
Line-Flat-VDMA 1.160

Direct operated solenoid valves

Pilot valves, high flow rate performance 2/2 ways and 3/2 ways, miniaturised version available as well


Series 300 1.175


Solenoid coils 1.189


Series M (Mechanical) 1.193


Series CNOMO 1.197


Series S 1.200


300-UL solenoid coils 1.202


UL solenoid coils 1.202

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Poppet valves and solenoid valves

3/2 and 2/2 valves and solenoid valves for compressed air and vacuum, with aluminium and technopolymer body


Series 700 1.204


Series PG 1.207

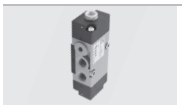

Series T772-773 1.224


Series T771 1.239

"Namur" valves and solenoid valves

NAMUR valves and solenoid valves with technopolymer or aluminium body, also available in versions classified for use in potentially explosive environments (Directive 2014/34/EU)


Series 514/N 1.247


Series T514 1.249


Series 514 High Performance 1.254


Series 515 High Performance 1.260

ISO 5599/1 valves and solenoid valves

Valves and solenoid valves according to standard ISO 5599/1 available in 3 sizes with M12 5/2, 5/3 connectors, aluminium and technopolymer body


Series 1000 - Size 1, 2 and 3 1.264


Series 1000-M12 - Size 1, 2 and 3 1.281

Accessories

Pneumatic circuit accessories

Flow control valves, quick exhaust valves, selectors, silencers, unidirectional valves, manifolds, blocking valves, economizers, gang mounting manifolds, spry valves


Series 600 - M5 - G1" 1.288

Blocking valves

Unidirectional and bidirectional blocking valves, aluminium and technopolymer versions, with G1/8"- G1/4"- G3/8"- G1/2" connections


Series 50-T50 1.310

Complementary valves

Pressure switches, impulse generators, timers, two hands safety valve, oscillator valve, signal amplifier, progressive start up valve, high-low pressure device


Series 900 1.302

Function fittings

Miniaturised logic function with technopolymer body:
RFU, RP, VB, VSR, VS-or, VS-and, IP, AP, RP+IP, VB+RFU, VB+VSR


Series 55 Tecno-FUN 1.315

Accessories (following)

Miniaturised pressure regulators

Brass versions rod G1/8" and with technopolymer body and integrated gauge version


Series 1750 - 1760 1.330

Compact fittings for lubrication

Nichel plated brass compact fittings, with straight male adaptor

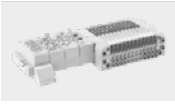

Series Mini-RAP 1.332

Valves and solenoid valve manifolds

Wide range of multipole and serial systems, available with main fieldbus protocols


Series PX 1.334


Series 3000 EVO 1.355
Versions 3100 (10 mm) and 3400 (15,5 mm)
Stand alone *1.356*
Manifold *1.372*


Series 2200 Optyma-S EVO 1.408


Series 2200 Optyma-Sc 1.429


Series 2500 Optyma-F EVO 1.438


Series 2500 Optyma-T EVO 1.451


Series 2700 EVO 1.465


EVO Electronics 1.486


Series 2300 Enova® 1.504

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 104

The micro valves 104 series are a cost effective solution with reduced overall dimensions, easy to install and manage.
Their main characteristic is the possibility to choose between the version with lateral or rear pneumatic connections realized with quick fitting for Ø4mm tube included.
The valves are available with 2 or 3 ways versions, normally closed or open, 5 ways and 5 ways 3 positions open centres and pressured centres.
The 5 ways version is made with two 3 ways valves placed side by side with common inlet.
The operators available for this valve are push button (different versions), selector (key, short and long lever), lever (lever roller or level undirectional) and pneumatic.
It is also possible to combine the 2 and 3 ways valves with electrical switches, normally closed or open.

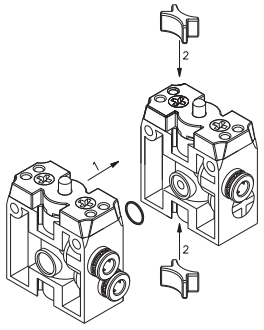
Construction characteristics

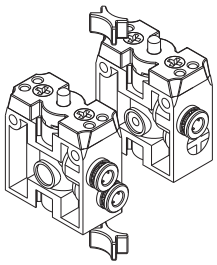
Body and cover	Technopolymer
Spacers	Technopolymer
Seals	NBR
Springs	Spring steel
Operators	Plastic material for buttons and switches
Pistons	Aluminium (for pneumatic command version)
Spools	Steel

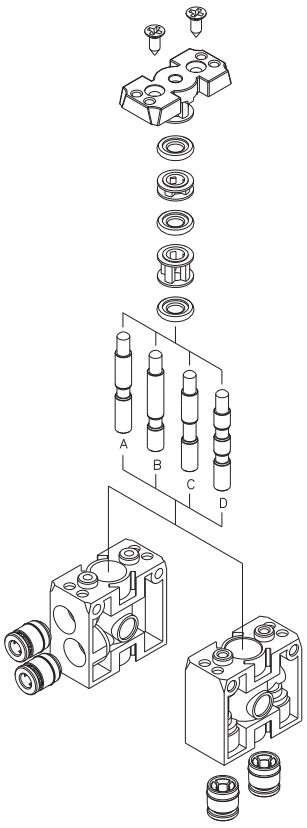
Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.







A : 2/2 N.C.
B : 2/2 N.O.
C : 3/2 N.C.
D : 3/2 N.O.

Tappet - Spring

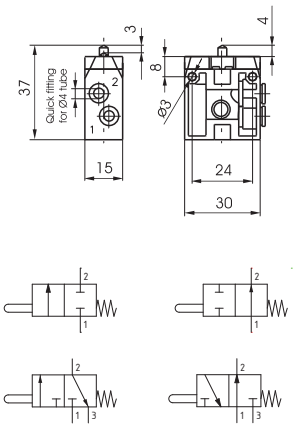
Coding: 104.Ⓣ.0.1.Ⓦ.Ⓕ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

Ⓣ	TYPE	Ⓕ	FUNCTION
	22 = 2 ways, 2 positions		**A** = Normally Open
	32 = 3 ways, 2 positions		**C** = Normally Closed
Ⓦ	CONNECTION TYPE		
	L = Lateral		
	P = Rear		

2/2 - 3/2 - Lateral connections



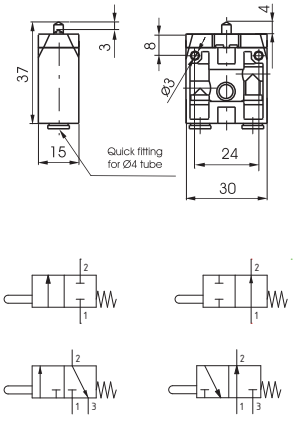


Weight 20 g
Operating force 13 N

104.Ⓣ.0.1.L.Ⓕ

2/2 - 3/2 - Rear connections





Weight 20 g
Operating force 13 N

104.Ⓣ.0.1.P.Ⓕ

Push button - Spring

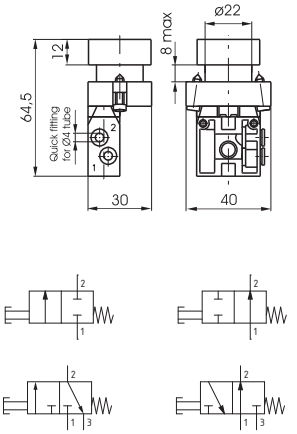
Coding: 104.Ⓣ.6.22/Ⓒ.Ⓦ.Ⓕ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

Ⓣ	TYPE	Ⓦ	CONNECTION TYPE
	22 = 2 ways, 2 positions		**L** = Lateral
	32 = 3 ways, 2 positions		**P** = Rear
	52 = 5 ways, 2 positions	Ⓕ	FUNCTION (only for 2/2 or 3/2 ways)
Ⓒ	BUTTON COLOR		**A** = Normally Open
	1 = Red		**C** = Normally Closed
	2 = Black		
	3 = Green		
	4 = Yellow		

2/2 - 3/2 - Lateral connections



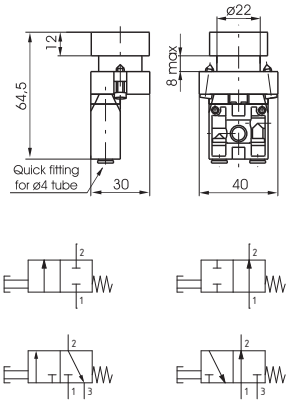


Weight 50 g
Operating force 18 N

104.Ⓣ.6.22/Ⓒ.L.Ⓕ

2/2 - 3/2 - Rear connections



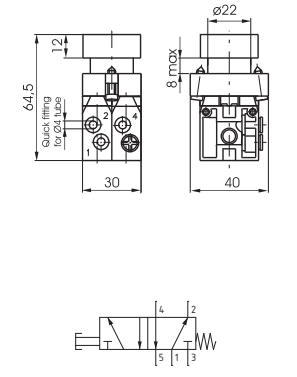


Weight 50 g
Operating force 18 N

104.Ⓣ.6.22/Ⓒ.P.Ⓕ

5/2 - Lateral connections



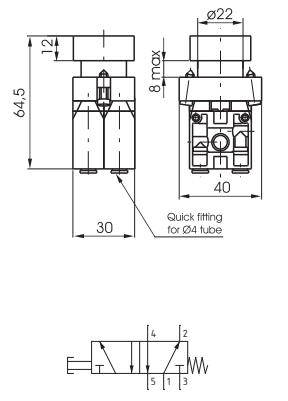


Weight 105 g
Operating force 30 N

104.52.6.22/Ⓒ.L

5/2 - Rear connections





Weight 105 g
Operating force 30 N

104.52.6.22/Ⓒ.P

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Push button 2 positions (step - step)

Coding: 104.Ⓣ.6.31.Ⓦ.Ⓕ

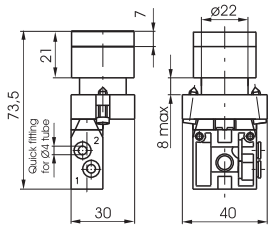
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

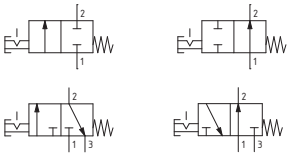
Ⓣ	TYPE
	22 = 2 ways, 2 positions
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓦ	CONNECTION TYPE
	L = Lateral
	P = Rear

Ⓕ	FUNCTION (only for 2/2 and 3/2 ways)
	A = Normally Open
	C = Normally Closed

2/2 - 3/2 - Lateral connections





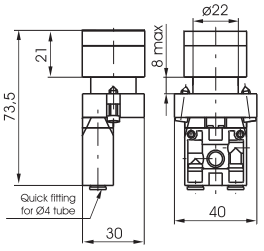


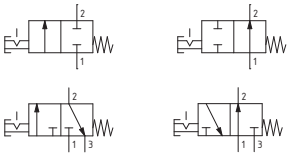
Weight 60 g
Operating force 18 N

104.Ⓣ.6.31.L.Ⓕ

2/2 - 3/2 - Rear connections





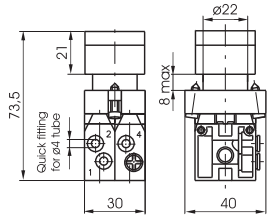


Weight 60 g
Operating force 18 N

104.Ⓣ.6.31.P.Ⓕ

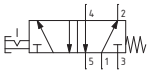
5/2 - Lateral connections





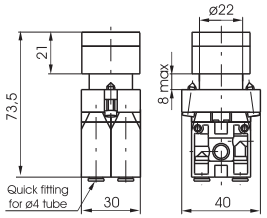
Weight 110 g
Operating force 30 N

104.52.6.31.L



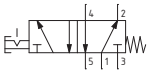
5/2 - Rear connections





Weight 110 g
Operating force 30 N

104.52.6.31.P



Raised Push button - Spring

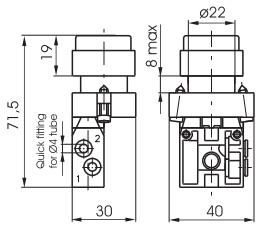
Coding: 104.Ⓣ.6.23/Ⓒ.Ⓦ.Ⓕ

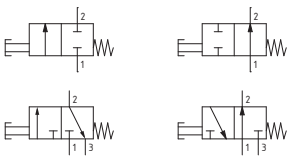
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

Ⓣ	TYPE	Ⓦ	CONNECTION TYPE
	22 = 2 ways, 2 positions		**L** = Lateral
	32 = 3 ways, 2 positions		**P** = Rear
	52 = 5 ways, 2 positions	Ⓕ	FUNCTION (only for 2/2 or 3/2 ways)
Ⓒ	BUTTON COLOR		**A** = Normally Open
	1 = Red		**C** = Normally Closed
	2 = Black		
	3 = Green		
	4 = Yellow		

2/2 - 3/2 - Lateral connections





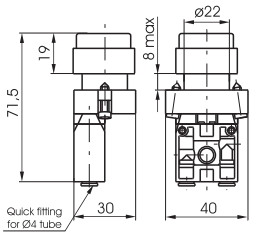


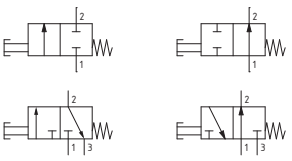
Weight 50 g
Operating force 18 N

104.Ⓣ.6.23/Ⓒ.L.Ⓕ

2/2 - 3/2 - Rear connections





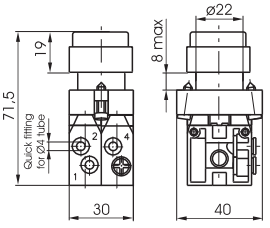


Weight 50 g
Operating force 18 N

104.Ⓣ.6.23/Ⓒ.P.Ⓕ

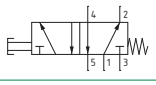
5/2 - Lateral connections





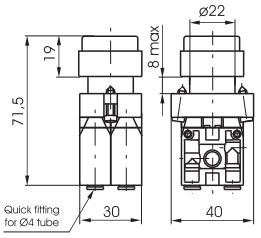
Weight 105 g
Operating force 30 N

104.52.6.23/Ⓒ.L



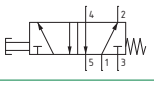
5/2 - Rear connections





Weight 105 g
Operating force 30 N

104.52.6.23/Ⓒ.P



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Palm button 2 position

Coding: 104.Ⓣ.6.25.Ⓦ.Ⓕ

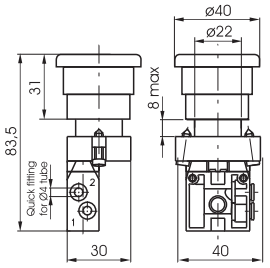
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

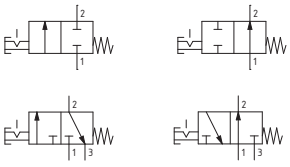
Ⓣ	TYPE
	22 = 2 ways, 2 positions
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓦ	CONNECTION TYPE
	L = Lateral
	P = Rear

Ⓕ	FUNCTION (only for 2/2 and 3/2 ways)
	A = Normally Open
	C = Normally Closed

2/2 - 3/2 - Lateral connections





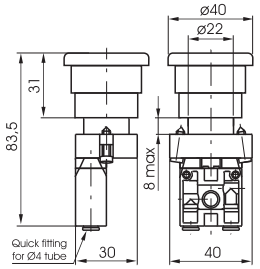


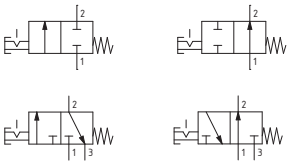
Weight 65 g
Operating force 19 N
Emergency - Rotate to unlock

104.Ⓣ.6.25.L.Ⓕ

2/2 - 3/2 - Rear connections





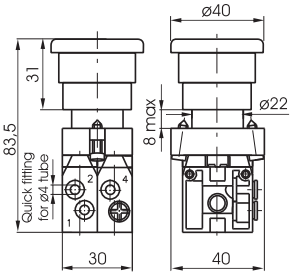


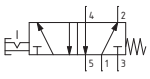
Weight 65 g
Operating force 19 N
Emergency - Rotate to unlock

104.Ⓣ.6.25.P.Ⓕ

5/2 - Lateral connections





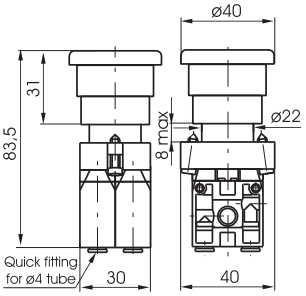


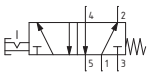
Weight 120 g
Operating force 32 N
Emergency - Rotate to unlock

104.52.6.25.L

5/2 - Rear connections







Weight 120 g
Operating force 32 N
Emergency - Rotate to unlock

104.52.6.25.P

Switch - short lever

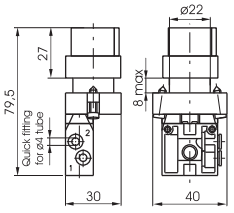
Coding: 104.Ⓣ.Ⓕ¹.6.30.Ⓢ.Ⓦ.Ⓕ²

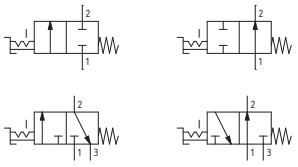
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

Ⓣ	TYPE
	22 = 2 ways, 2 positions
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	53 = 5 ways, 3 positions
Ⓕ¹	FUNCTION 1 (only for 5/3 ways)
	32 = Open centres
	33 = Pressured centres
Ⓢ	SWITCH POSITION (only for 5/3 ways)
	0 = 3 instable positions
	1 = 3 stable positions
Ⓦ	CONNECTION TYPE
	L = Lateral
	P = Rear
Ⓕ²	FUNCTION 2 (only for 2/2 or 3/2 ways)
	A = Normally Open
	C = Normally Closed

2/2 - 3/2 - Lateral connections





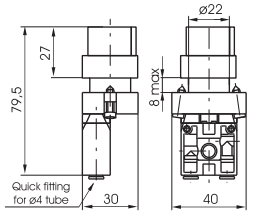


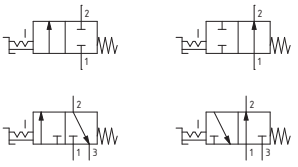
Weight 65 g
Switch 2 positions stable

104.Ⓣ.6.30.L.Ⓕ²

2/2 - 3/2 - Rear connections





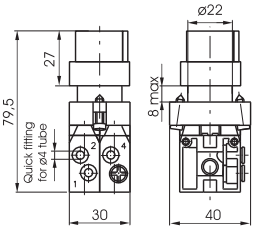


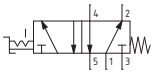
Weight 65 g
Switch 2 positions stable

104.Ⓣ.6.30.P.Ⓕ²

5/2 - Lateral connections





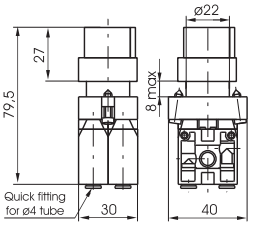


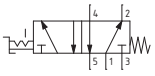
Weight 120 g
Switch 2 positions stable

104.52.6.30.L

5/2 - Rear connections





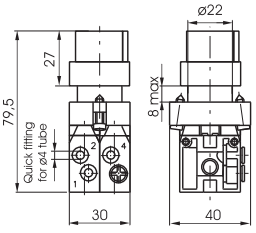


Weight 120 g
Switch 2 positions stable

104.52.6.30.P

5/3 - Lateral connections





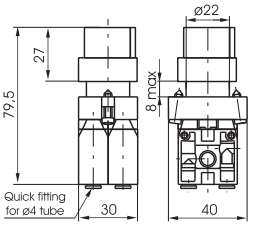
Weight 120 g

104.53.Ⓕ¹.6.30.Ⓢ.L



5/3 - Rear connections





Weight 120 g

104.53.Ⓕ¹.6.30.Ⓢ.P



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Switch - long lever

Coding: 104.Ⓣ.Ⓕ¹.6.27.Ⓢ.Ⓦ.Ⓕ²

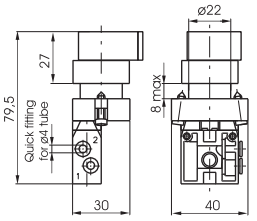
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

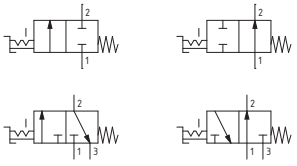
Ⓣ	TYPE
	22 = 2 ways, 2 positions
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	53 = 5 ways, 3 positions
Ⓕ¹	FUNCTION 1 (only for 5/3 ways)
	32 = Open centres
	33 = Pressured centres

Ⓢ	SWITCH POSITION (only for 5/3 ways)
	0 = 3 instable positions
	1 = 3 stable positions
Ⓦ	CONNECTION TYPE
	L = Lateral
	P = Rear
Ⓕ²	FUNCTION 2 (only for 2/2 or 3/2 ways)
	A = Normally Open
	C = Normally Closed

2/2 - 3/2 - Lateral connections





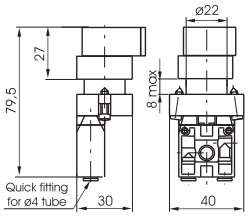


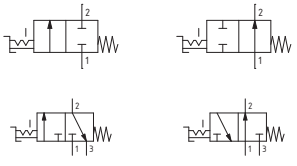
Weight 65 g
Switch 2 positions stable

104.Ⓣ.6.27.L.Ⓕ²

2/2 - 3/2 - Rear connections





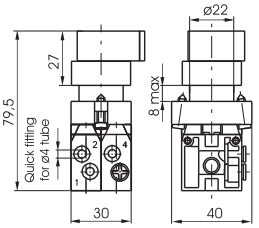


Weight 65 g
Switch 2 positions stable

104.Ⓣ.6.27.P.Ⓕ²

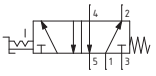
5/2 - Lateral connections





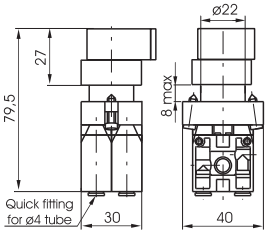
Weight 120 g
Switch 2 positions stable

104.52.6.27.L



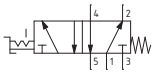
5/2 - Rear connections





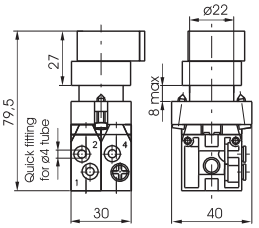
Weight 120 g
Switch 2 positions stable

104.52.6.27.P



5/3 - Lateral connections





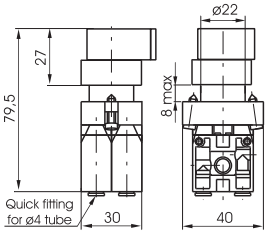
Weight 120 g

104.53.Ⓕ¹.6.27.Ⓢ.L



5/3 - Rear connections





Weight 120 g

104.53.Ⓕ¹.6.27.Ⓢ.P



Key switch

Coding: 104.Ⓣ.Ⓕ¹.6.28.Ⓢ.Ⓦ.Ⓕ²

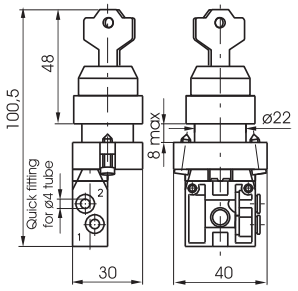
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

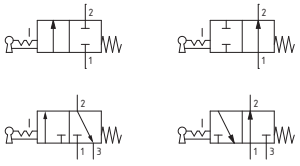
Ⓣ	TYPE
	22 = 2 ways, 2 positions
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	53 = 5 ways, 3 positions
Ⓕ¹	FUNCTION 1 (only for 5/3 ways)
	32 = Open centres
	33 = Pressured centres

Ⓢ	SWITCH POSITION (only for 5/3 ways)
	0 = 3 instable positions
	1 = 3 stable positions
Ⓦ	CONNECTION TYPE
	L = Lateral
	P = Rear
Ⓕ²	FUNCTION 2 (only for 2/2 or 3/2 ways)
	A = Normally Open
	C = Normally Closed

2/2 - 3/2 - Lateral connections





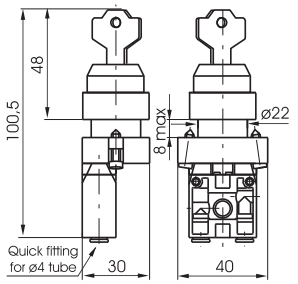


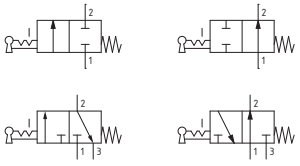
Weight 100 g
Switch 2 positions stable

104.Ⓣ.6.28.L.Ⓕ²

2/2 - 3/2 - Rear connections





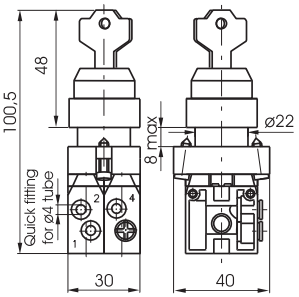


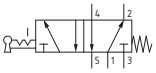
Weight 100 g
Switch 2 positions stable

104.Ⓣ.6.28.P.Ⓕ²

5/2 - Lateral connections





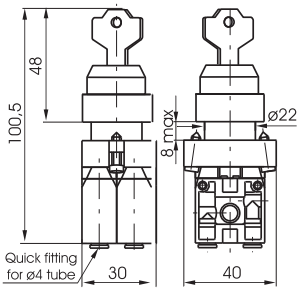


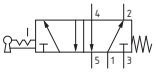
Weight 155 g
Switch 2 positions stable

104.52.6.28.L

5/2 - Rear connections





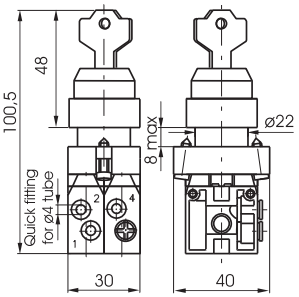


Weight 155 g
Switch 2 positions stable

104.52.6.28.P

5/3 - Lateral connections





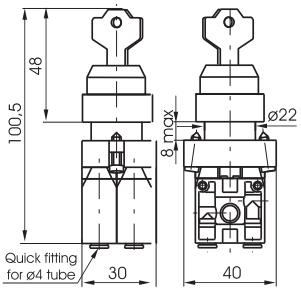


Weight 155 g

104.53.Ⓕ¹.6.28.Ⓢ.L

5/3 - Rear connections







Weight 155 g

104.53.Ⓕ¹.6.28.Ⓢ.P

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

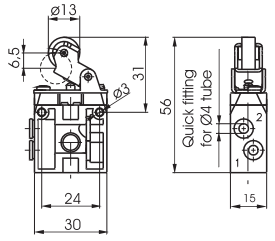
Lever roller - Spring

Coding: 104.Ⓣ.2.1.Ⓦ.Ⓕ

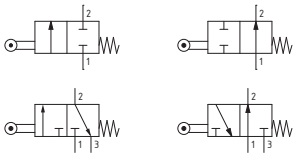
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

Ⓣ	TYPE	Ⓕ	FUNCTION
	22 = 2 ways, 2 positions		**A** = Normally Open
	32 = 3 ways, 2 positions		**C** = Normally Closed
Ⓦ	CONNECTION TYPE		
	L = Lateral		
	P = Rear		

2/2 - 3/2 - Lateral connections



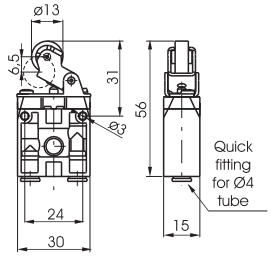




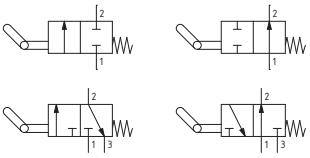
Weight 31 g
Operating force 9 N

104.Ⓣ.2.1.L.Ⓕ

2/2 - 3/2 - Rear connections







Weight 31 g
Operating force 9 N

104.Ⓣ.2.1.P.Ⓕ

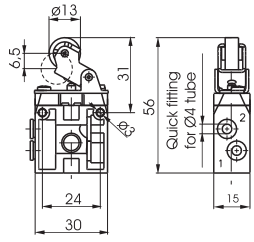
Lever roller ball bearing - Spring

Coding: 104.Ⓣ.2.1/1.Ⓦ.Ⓕ

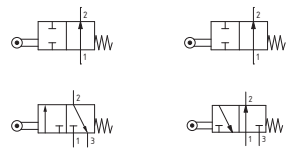
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

Ⓣ	TYPE	Ⓕ	FUNCTION
	22 = 2 ways, 2 positions		**A** = Normally Open
	32 = 3 ways, 2 positions		**C** = Normally Closed
Ⓦ	CONNECTION TYPE		
	L = Lateral		
	P = Rear		

2/2 - 3/2 - Lateral connections



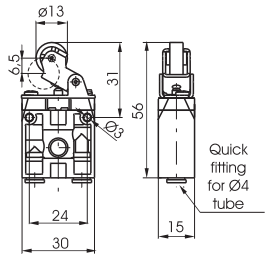




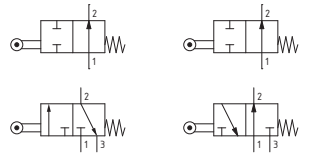
Weight 46 g
Operating force 9 N

104.Ⓣ.2.1/1.L.Ⓕ

2/2 - 3/2 - Rear connections







Weight 46 g
Operating force 9 N

104.Ⓣ.2.1/1.P.Ⓕ

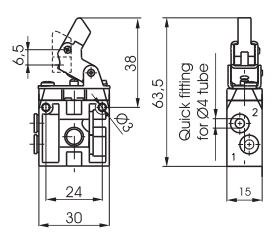
Lever unidirectional - Spring

Coding: 104.Ⓣ.3.1.Ⓦ.Ⓕ

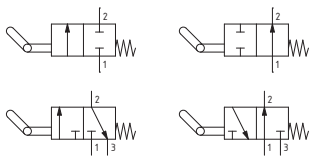
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube

Ⓣ	TYPE	Ⓕ	FUNCTION
	22 = 2 ways, 2 positions		**A** = Normally Open
	32 = 3 ways, 2 positions		**C** = Normally Closed
Ⓦ	CONNECTION TYPE		
	L = Lateral		
	P = Rear		

2/2 - 3/2 - Lateral connections



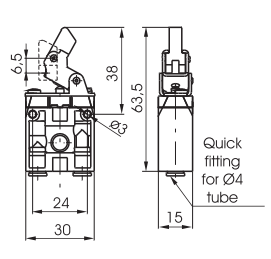




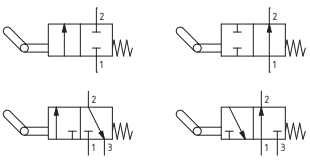
Weight 31 g
Operating force 9 N

104.Ⓣ.3.1.L.Ⓕ

2/2 - 3/2 - Rear connections







Weight 31 g
Operating force 9 N

104.Ⓣ.3.1.P.Ⓕ

Complete lever roller operator

Coding: 104.2.1



Complete lever roller ball bearing operator

Coding: 104.2.1/1



Complete lever unidirectional

Coding: 104.3.1



Fixing plate

Coding: 104.00

Complete with fixing screws



Push button

Coding: 104.6.22/Ⓒ



Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green
	4 = Yellow

Raised Push button

Coding: 104.6.23/Ⓒ



Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green
	4 = Yellow

Push button 2 positions

Coding: 104.6.31

(step - step)



Palm button 2 position

Coding: 104.6.25

Emergency - Rotate to unlock



Switch - short lever

Coding: 104.6.30.Ⓢ



Ⓢ	SWITCH POSITION (only for 3 position)
	0 = 3 instable positions
	1 = 3 stable positions

Switch 2 positions stable
104.6.30
Switch 3 positions
104.6.30.Ⓢ

Switch - long lever

Coding: 104.6.27.Ⓢ



Ⓢ	SWITCH POSITION (only for 3 position)
	0 = 3 instable positions
	1 = 3 stable positions

Switch 2 positions stable
104.6.27
Switch 3 positions
104.6.27.Ⓢ

Key switch

Coding: 104.6.28.Ⓢ



Ⓢ	SWITCH POSITION (only for 3 position)
	0 = 3 instable positions
	1 = 3 stable positions

Switch 2 positions stable
104.6.28
Switch 3 positions
104.6.28.Ⓢ

Joystick selector switch, 3 instable positions

Coding: 104.6.39.0



Contact electric element

Coding: 104.Ⓕ



Ⓕ	FUNCTION
	NO = Normally Open
	NC = Normally Closed

Complete Pneumatic Operator

Coding: 104.11



Push button protection cover

Coding: 104.02



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

Coding: 104.Ⓣ.11.1.Ⓦ.Ⓕ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	90
Orifice size (mm)	2.5
Working ports size	ø4 tube
Pilot ports size	M5

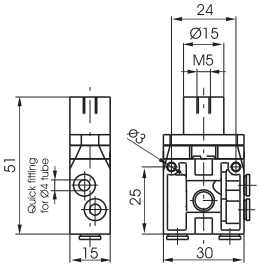
Ⓣ	TYPE
	22 = 2 ways, 2 positions
	32 = 3 ways, 2 positions

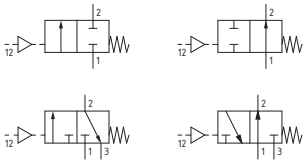
Ⓦ	CONNECTION TYPE
	L = Lateral
	P = Rear

Ⓕ	FUNCTION
	A = Normally Open
	C = Normally Closed

2/2 - 3/2 - Lateral connections





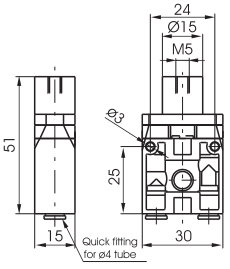


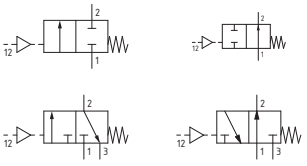
Weight 25 g
Minimum pilot pressure 2,5 bar

104.Ⓣ.11.1.L.Ⓕ

2/2 - 3/2 - Rear connections







Weight 25 g
Minimum pilot pressure 2,5 bar

104.Ⓣ.11.1.P.Ⓕ

Series 105

The series 105 consist of a broad range of miniature valves and valves with various type of actuation.
The connections are M5 for this series
Due to their special construction with a balanced spool, these valves can be used interchangeably as 3 ways or 5 ways.
The 3 ways can be used normally closed or normally open and the 5 ways can be fed through the exhausts 3 and 5 with different pressures according to the need.
The spool, as it is moving, isolates the connections without being affected by the inlet pressure.

Construction characteristics

	M5
Body	Aluminium
Spacers	Technopolymer
Seals	NBR
Springs	Spring steel
Operators	Nickel plated brass Stainless steel for roller levers and button levers; Zinc plated steel for side levers; Plastic material for handles, buttons and switches Aluminium (for pneumatic command version)
Pistons	Aluminium (for pneumatic command version)
Spools	Steel

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
Repair kits including the spool complete with seals are available for overhauling the valves.
However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

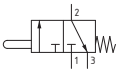
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

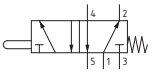
Tappet panel - Spring

Coding: 105.Ⓣ.0.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

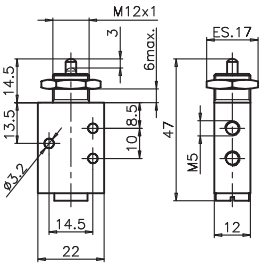
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions


105.32.0.1


105.52.0.1

3/2 ways

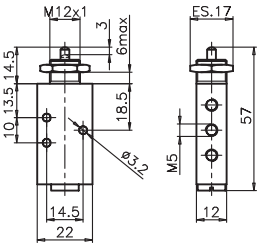




Weight 70 g
Operating force 14 N

5/2 ways





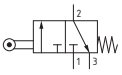
Weight 87 g
Operating force 14 N

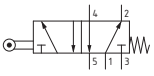
Lever roller - Spring

Coding: 105.Ⓣ.2.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

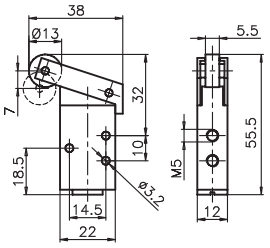
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions


105.32.2.1


105.52.2.1

3/2 ways

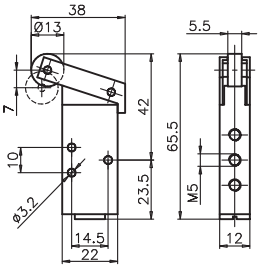




Weight 85 g
Operating force 6 N

5/2 ways





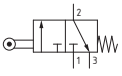
Weight 102 g
Operating force 6 N

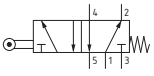
Lever roller ball bearing - Spring

Coding: 105.Ⓣ.2.1/1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

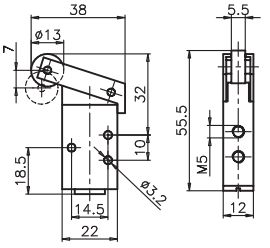
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions


105.32.2.1/1


105.52.2.1/1

3/2 ways

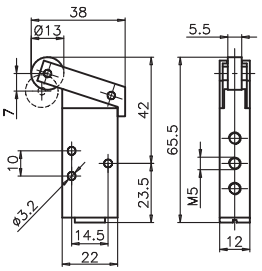




Weight 100 g
Operating force 6 N

5/2 ways





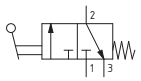
Weight 177 g
Operating force 6 N

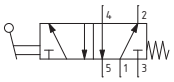
Lever button - Spring

Coding: 105.Ⓣ.2.6/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

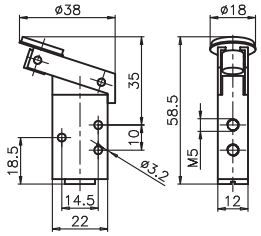
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green


105.32.2.6/Ⓒ


105.52.2.6/Ⓒ

3/2 ways

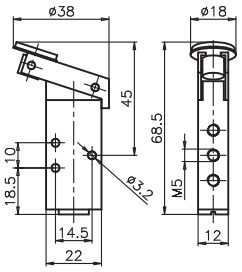




Weight 85 g
Operating force 6 N

5/2 ways





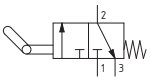
Weight 102 g
Operating force 6 N

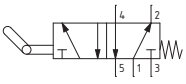
Lever unidirectional - Spring

Coding: 105.Ⓣ.3.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

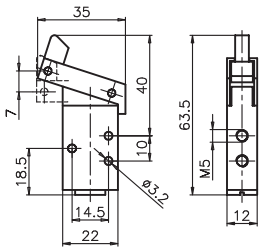
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions


105.32.3.1


105.52.3.1

3/2 ways

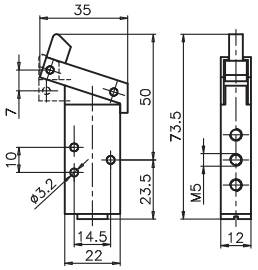




Weight 85 g
Operating force 6 N

5/2 ways





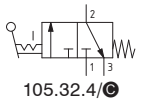
Weight 102 g
Operating force 6 N

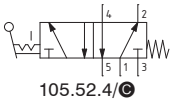
Lever panel Ø22 - 2 positions

Coding: 105.Ⓣ.4/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

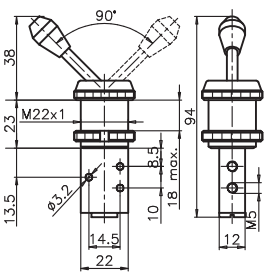
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green


105.32.4/Ⓒ


105.52.4/Ⓒ

3/2 ways

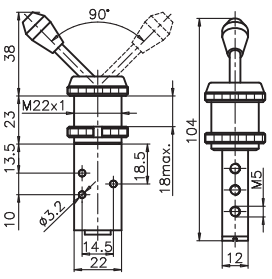




Weight 125 g

5/2 ways





Weight 142 g

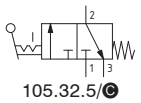
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

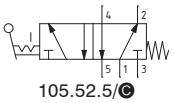
Lever panel Ø30 - 2 positions

Coding: 105.Ⓣ.5/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

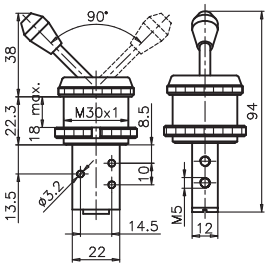
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green


105.32.5/Ⓒ


105.52.5/Ⓒ

3/2 ways

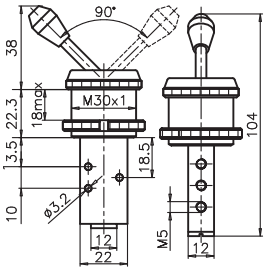




Weight 165 g

5/2 ways





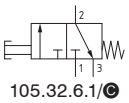
Weight 182 g

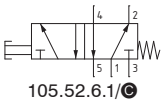
Push button Ø30 - Spring

Coding: 105.Ⓣ.6.1/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

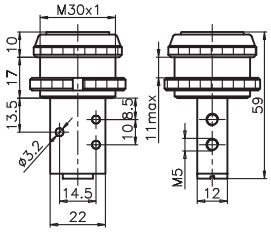
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green


105.32.6.1/Ⓒ


105.52.6.1/Ⓒ

3/2 ways

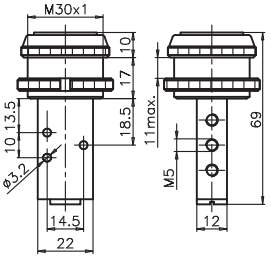




Weight 123 g
Operating force 14 N

5/2 ways





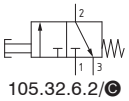
Weight 140 g
Operating force 14 N

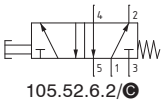
Push button Ø22 - Spring

Coding: 105.Ⓣ.6.2/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

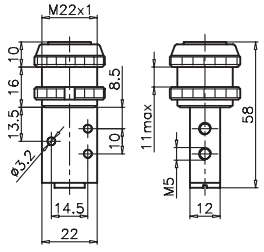
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green


105.32.6.2/Ⓒ


105.52.6.2/Ⓒ

3/2 ways

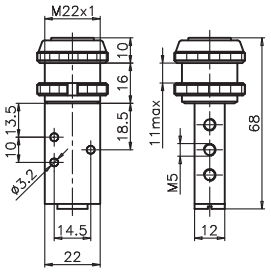




Weight 102 g
Operating force 14 N

5/2 ways





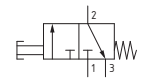
Weight 119 g
Operating force 14 N

Push button - Spring

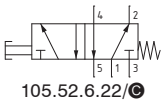
Coding: 105.Ⓣ.6.22/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green
	4 = Yellow



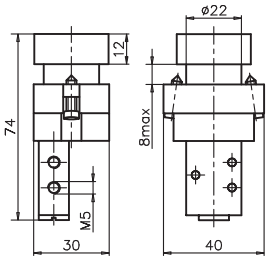
105.32.6.22/Ⓒ



105.52.6.22/Ⓒ

3/2 ways

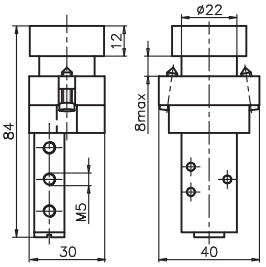




Weight 165 g
Operating force 14 N

5/2 ways





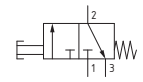
Weight 182 g
Operating force 14 N

Raised Push button - Spring

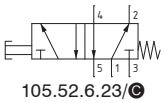
Coding: 105.Ⓣ.6.23/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green
	4 = Yellow



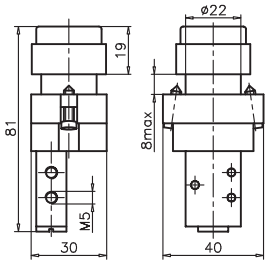
105.32.6.23/Ⓒ



105.52.6.23/Ⓒ

3/2 ways

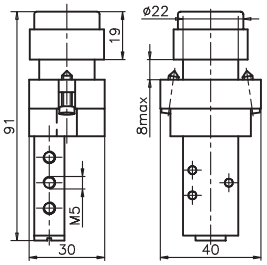




Weight 170 g
Operating force 14 N

5/2 ways





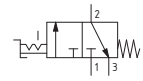
Weight 187 g
Operating force 14 N

Switch 2 positions

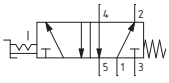
Coding: 105.Ⓣ.6.27

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



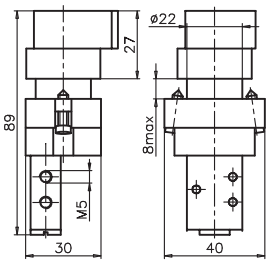
105.32.6.27



105.52.6.27

3/2 ways

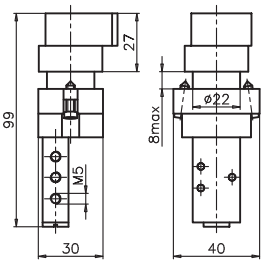




Weight 185 g

5/2 ways





Weight 202 g

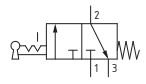
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

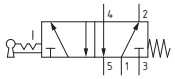
Key switch 2 positions

Coding: 105.Ⓣ.6.28

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

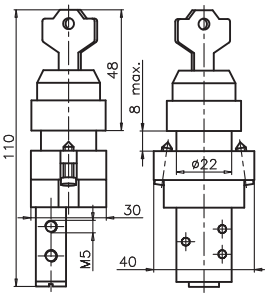
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions


105.32.6.28


105.52.6.28

3/2 ways

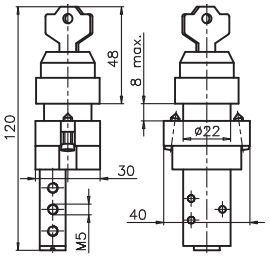




Weight 215 g

5/2 ways





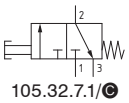
Weight 232 g

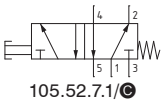
Palm pushbutton Ø30 - Spring

Coding: 105.Ⓣ.7.1/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

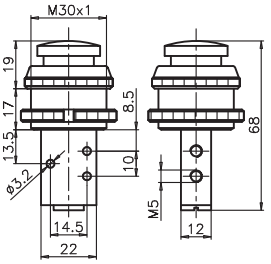
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green


105.32.7.1/Ⓒ


105.52.7.1/Ⓒ

3/2 ways

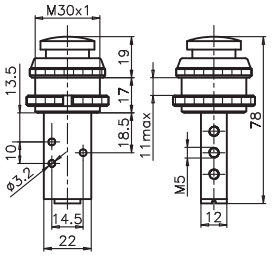




Weight 126 g
Operating force 14 N

5/2 ways





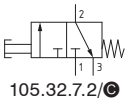
Weight 143 g
Operating force 14 N

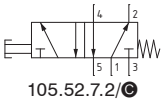
Palm pushbutton Ø22 - Spring

Coding: 105.Ⓣ.7.2/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

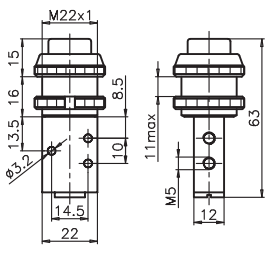
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green


105.32.7.2/Ⓒ


105.52.7.2/Ⓒ

3/2 ways

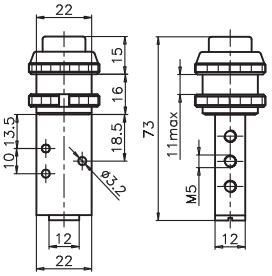




Weight 103 g
Operating force 14 N

5/2 ways





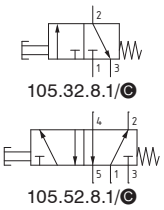
Weight 120 g
Operating force 14 N

Push button

Coding: 105.Ⓣ.8.1/Ⓒ

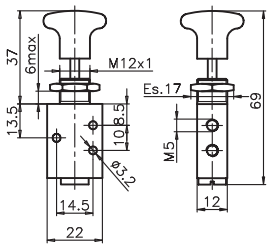
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways

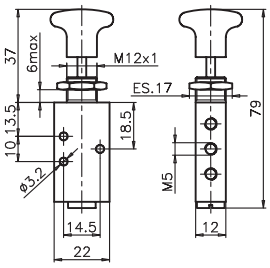




Weight 75 g
Operating force 14 N

5/2 ways





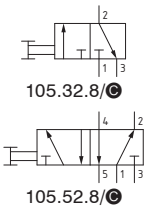
Weight 92 g
Operating force 14 N

Push button 2 positions

Coding: 105.Ⓣ.8/Ⓒ

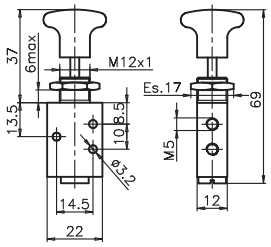
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways

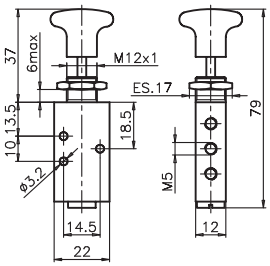




Weight 75 g
Operating force 14 N

5/2 ways





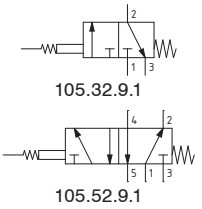
Weight 92 g
Operating force 14 N

Whisker - Spring

Coding: 105.Ⓣ.9.1

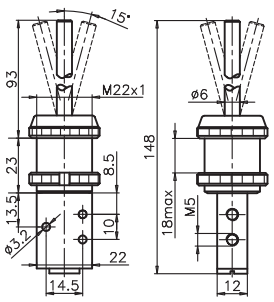
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways

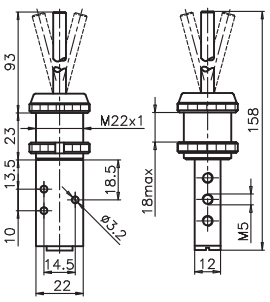




Weight 136 g

5/2 ways





Weight 153 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Handle with valve

Coding: 105.Ⓣ.6.Ⓐ.Ⓕ

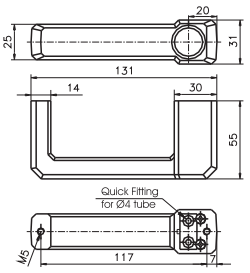
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5 - Quick Fitting for Ø4 tube

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

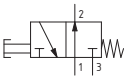
	FEEDING
Ⓐ	**40** = Left feeding
	40D = Right feeding

	FUNCTION (only for 3 ways)
Ⓕ	**A** = Normally Open
	C = Normally Closed

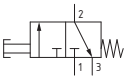




Weight 165 g
Operating force 14 N



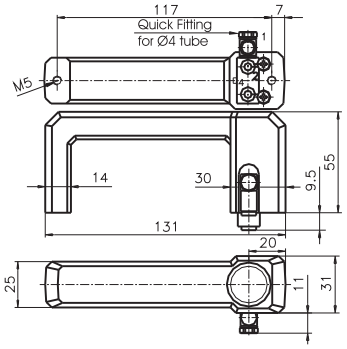
105.32.6.40A



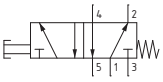
105.32.6.40C

Left feeding





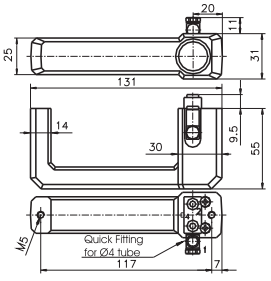
Weight 190 g
Operating force 14 N



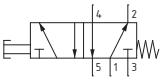
105.52.6.40

Right feeding





Weight 190 g
Operating force 14 N



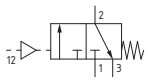
105.52.6.40D

Pneumatic - Spring

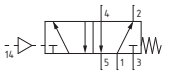
Coding: 105.Ⓣ.11.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



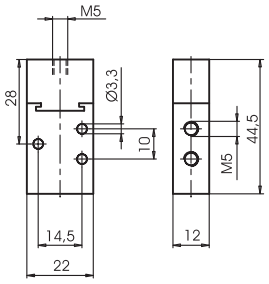
105.32.11.1



105.52.11.1

3/2 ways

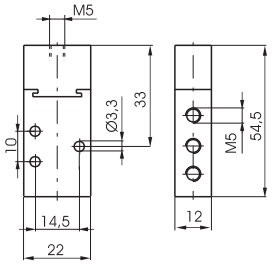




Weight 90 g
Minimum pilot pressure 2,5 bar

5/2 ways





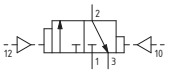
Weight 100 g
Minimum pilot pressure 2,5 bar

Pneumatic - Differential

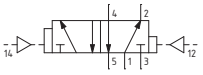
Coding: 105.Ⓣ.11.12

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



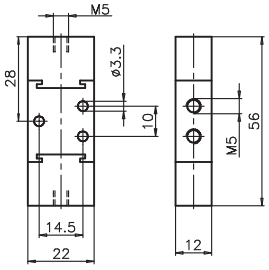
105.32.11.12



105.52.11.12

3/2 ways

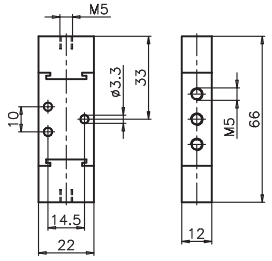




Weight 110 g
Minimum pilot pressure 2,5 bar

5/2 ways





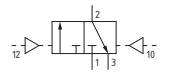
Weight 120 g
Minimum pilot pressure 2,5 bar

Pneumatic-Pneumatic

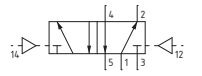
Coding: 105.Ⓣ.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Orifice size (mm)	2.5
Working ports size	M5
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



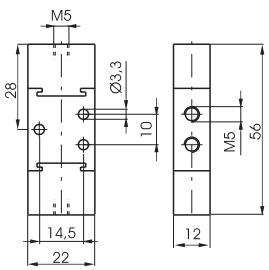
105.32.11.11



105.52.11.11

3/2 ways

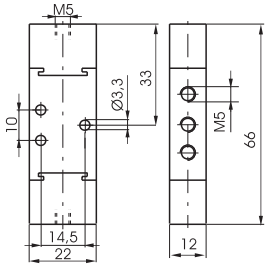




Weight 110 g
Minimum pilot pressure 2,5 bar

5/2 ways





Weight 120 g
Minimum pilot pressure 2,5 bar

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 200

The series 200 consist of a broad range of valves with various type of actuation.
The connections for this series are from G 1/8" to G 1".
Due to their special construction with a balanced spool, these valves can be used interchangeably as 3 ways or 5 ways.
The 3 ways can be used normally closed or normally open and the 5 ways can be fed through the exhausts 3 and 5 with different pressures according to the need.
The spool, as it is moving, isolates the connections without being affected by the inlet pressure.

Construction characteristics

	G 1/8" - G 1/4" - G 1/2" - G 1"
Body	Aluminium
Spacers	Technopolymer Aluminium for G1" (211)
Seals	NBR PUR for 212/2
Springs	Spring steel
Operators	Aluminium Technopolymer
Pistons	Technopolymer, for 228 pneumatic command valves Aluminium, for 224, 212, 212/2 and 211 pneumatic command valves
Spools	Steel Aluminium, for 212/2

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
Repair kits including the spool complete with seals are available for overhauling the valves.
However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Tappet - Spring

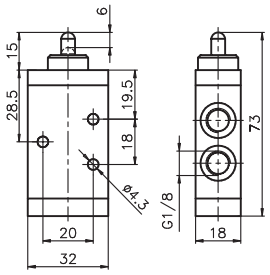
Coding: 228.Ⓣ.0.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

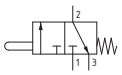
3/2 ways





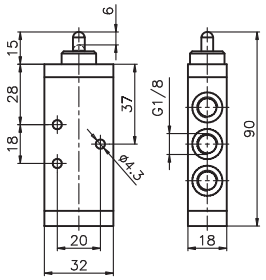
Weight 85 g
Operating force 33 N

228.32.0.1



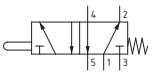
5/2 ways





Weight 105 g
Operating force 33 N

228.52.0.1



Tappet panel - Spring

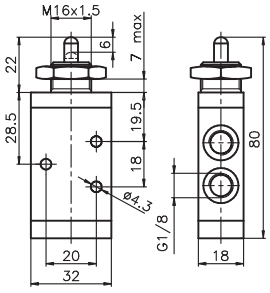
Coding: 228.Ⓣ.1.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

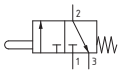
3/2 ways





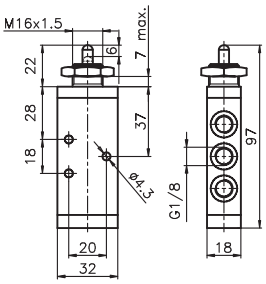
Weight 102 g
Operating force 33 N

228.32.1.1



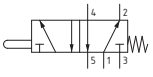
5/2 ways





Weight 122 g
Operating force 33 N

228.52.1.1



Lever roller-Spring

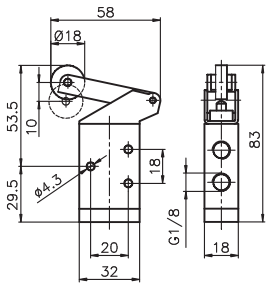
Coding: 228.Ⓣ.2.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VERSION
	1 = Plastic roller
	1/2 = Metal roller

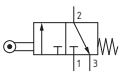
3/2 ways





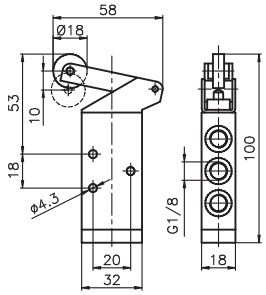
Weight 115 g
Operating force 15 N

228.32.2.Ⓥ



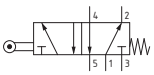
5/2 ways





Weight 135 g
Operating force 15 N

228.52.2.Ⓥ



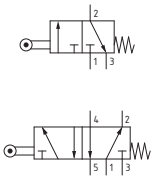
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Lever roller ball bearing - Spring

Coding: 228.Ⓣ.2.1/1

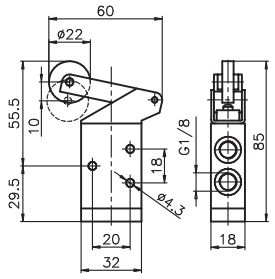
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



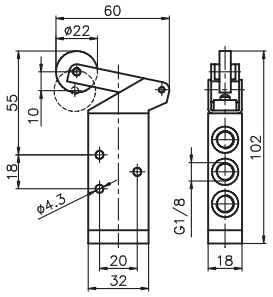


Weight 130 g
Operating force 15 N

228.32.2.1/1

5/2 ways





Weight 150 g
Operating force 15 N

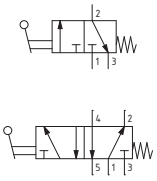
228.52.2.1/1

Lever button - Spring

Coding: 228.Ⓣ.2.6/Ⓒ

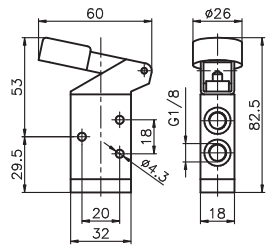
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



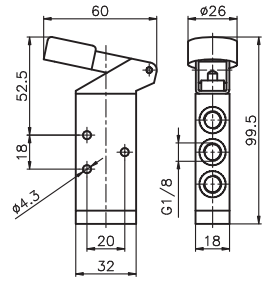


Weight 120 g
Operating force 15 N

228.32.2.6/Ⓒ

5/2 ways





Weight 120 g
Operating force 15 N

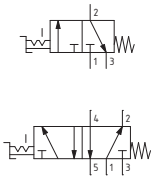
228.52.2.6/Ⓒ

Switch lateral 2 positions

Coding: 228.Ⓣ.27

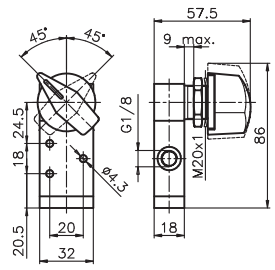
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



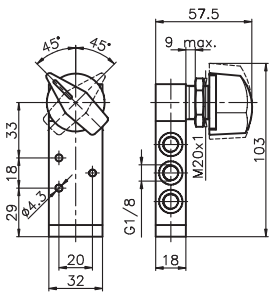


Weight 190 g

228.32.27

5/2 ways





Weight 210 g

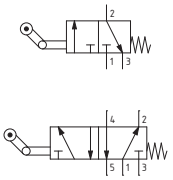
228.52.27

Lever roller unidirectional - Spring

Coding: 228.Ⓣ.3.Ⓥ

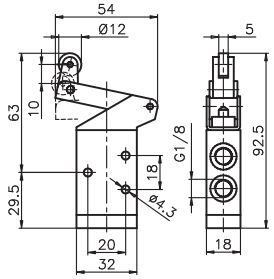
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VERSION
Ⓥ	**1** = Plastic roller
	1/2 = Metal roller



3/2 ways

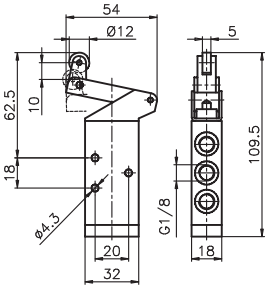




Weight 110 g

228.32.3.Ⓥ





Weight 130 g

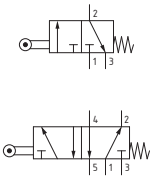
228.52.3.Ⓥ

Lever roller lateral bidirectional - Spring

Coding: 228.Ⓣ.4.1

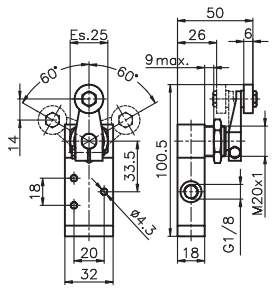
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



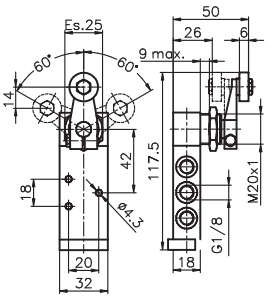


Weight 180 g

228.32.4.1

5/2 ways





Weight 200 g

228.52.4.1

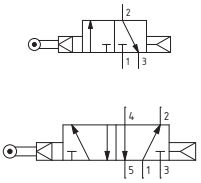
Lever sensitive - differential

Coding: 228.Ⓣ.4.13

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

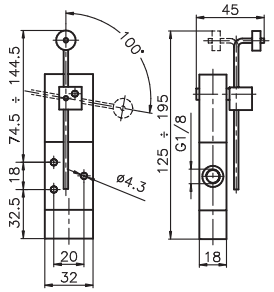
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum rotation angle 11°



3/2 ways



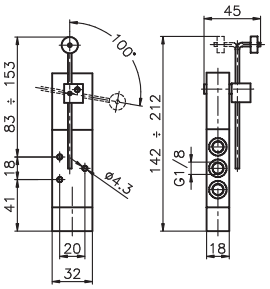


Weight 200 g
Minimum working pressure 2,5 bar

228.32.4.13

5/2 ways





Weight 220 g
Minimum rotation angle 11°
Minimum working pressure 2,5 bar

228.52.4.13

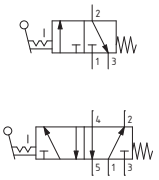
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Lever panel Ø30 - 2 positions

Coding: 228.Ⓣ.5/Ⓒ

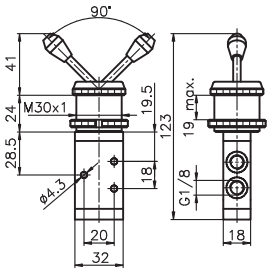
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



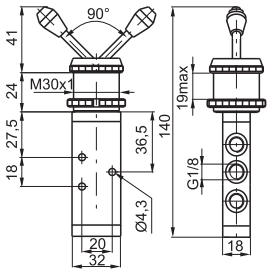


Weight 198 g

228.32.5/Ⓒ

5/2 ways





Weight 218 g

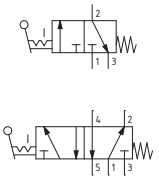
228.52.5/Ⓒ

Frontal lever - 2 positions

Coding: 228.Ⓣ.55/Ⓒ

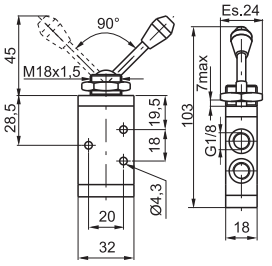
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



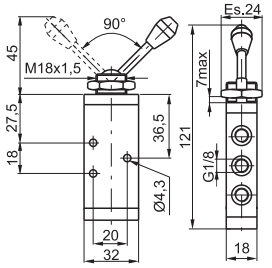


Weight 115 g

228.32.55/Ⓒ

5/2 ways





Weight 135 g

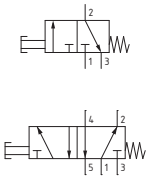
228.52.55/Ⓒ

Push button Ø30 - spring

Coding: 228.Ⓣ.6.1/Ⓒ

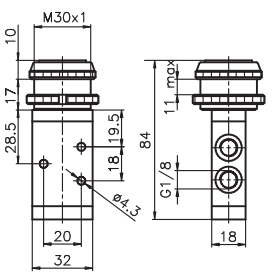
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



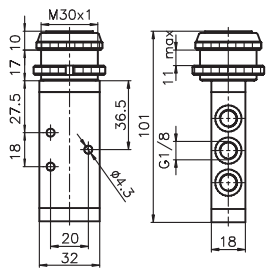


Weight 155 g
Operating force 33 N

228.32.6.1/Ⓒ

5/2 ways





Weight 175 g
Operating force 33 N

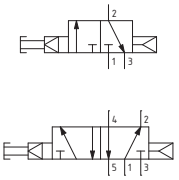
228.52.6.1/Ⓒ

Sensitive push button Ø30 - differential

Coding: 228.Ⓣ.6.13/Ⓒ

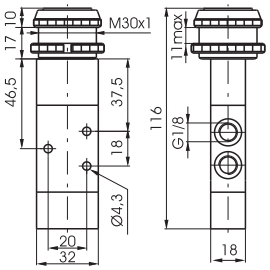
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



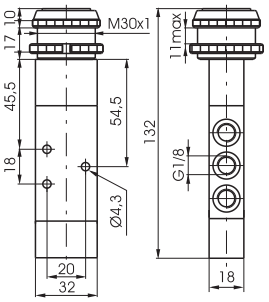


Weight 197 g
Operating force 18,5 N (at 6 bar)

228.32.6.13/Ⓒ

5/2 ways





Weight 217 g
Operating force 18,5 N (at 6 bar)

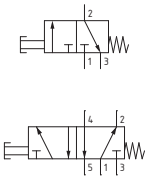
228.52.6.13/Ⓒ

Push button - Spring

Coding: 228.Ⓣ.6.22/Ⓒ

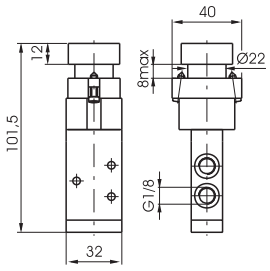
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green
	4 = Yellow



3/2 ways



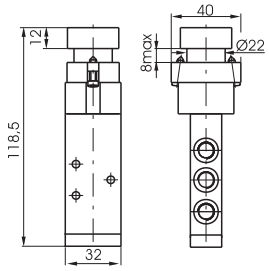


Weight 225 g
Operating force 33 N

228.32.6.22/Ⓒ

5/2 ways





Weight 245 g
Operating force 33 N

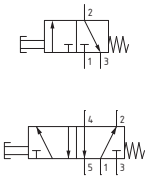
228.52.6.22/Ⓒ

Raised push button Ø22 - Spring

Coding: 228.Ⓣ.6.23/Ⓒ

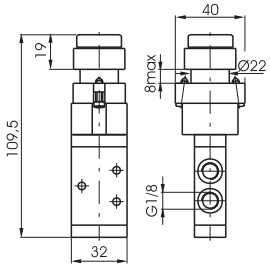
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green
	4 = Yellow



3/2 ways



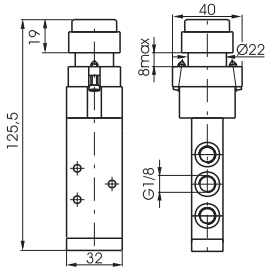


Weight 230 g
Operating force 33 N

228.32.6.23/Ⓒ

5/2 ways





Weight 250 g
Operating force 33 N

228.52.6.23/Ⓒ

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

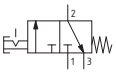
Push button Ø22 - 2 positions

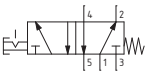
Coding: 228.Ⓣ.6.25

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

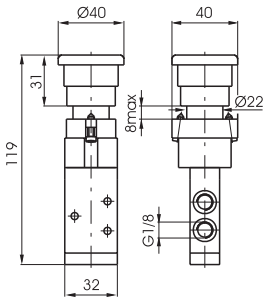
Emergency - Rotate to unlock





3/2 ways



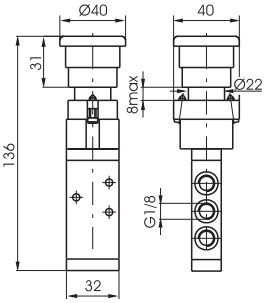


Weight 235 g
Operating force 33 N

228.32.6.25

5/2 ways





Weight 235 g
Operating force 33 N

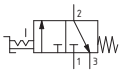
228.52.6.25

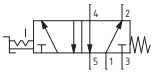
Switch 2 positions

Coding: 228.Ⓣ.6.27

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

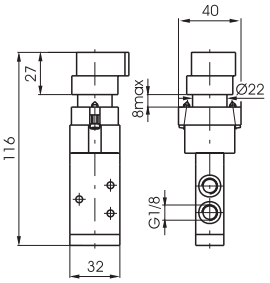
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





3/2 ways



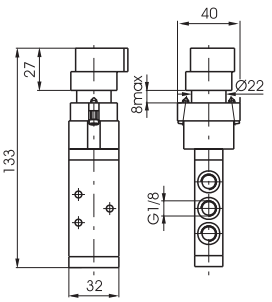


Weight 230 g

228.32.6.27

5/2 ways





Weight 250 g

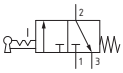
228.52.6.27

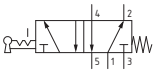
Key switch 2 positions

Coding: 228.Ⓣ.6.28

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

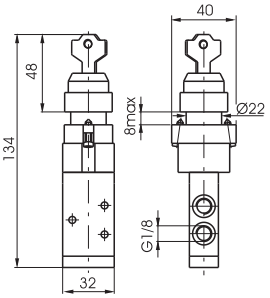
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions





3/2 ways



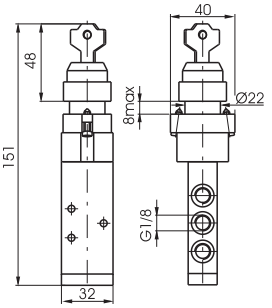


Weight 230 g

228.32.6.28

5/2 ways





Weight 250 g

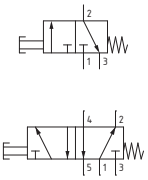
228.52.6.28

Palm push button Ø30 2 positions

Coding: 228.Ⓣ.7.1/Ⓒ

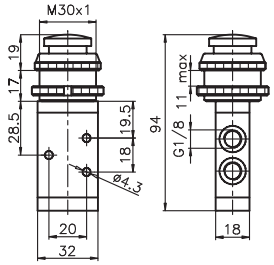
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



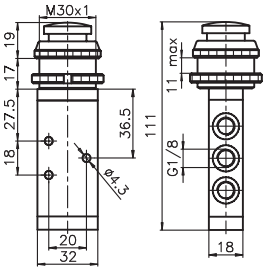


Weight 148 g

228.32.7.1/Ⓒ

5/2 ways





Weight 168 g

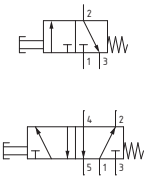
228.52.7.1/Ⓒ

Push button - Spring

Coding: 228.Ⓣ.8.1/Ⓒ

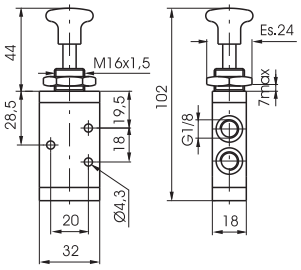
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



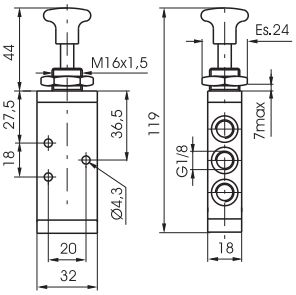


Weight 120 g

228.32.8.1/Ⓒ

5/2 ways





Weight 140 g

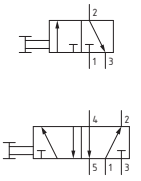
228.52.8.1/Ⓒ

Push button 2 positions

Coding: 228.Ⓣ.8/Ⓒ

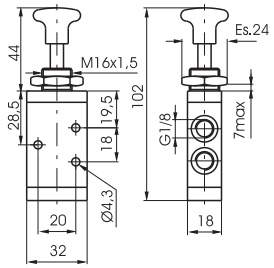
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



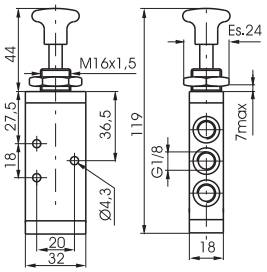


Weight 120 g

228.32.8/Ⓒ

5/2 ways





Weight 140 g

228.52.8/Ⓒ

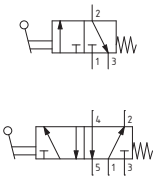
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Lever lateral - Spring

Coding: 228.Ⓣ.9.1/Ⓒ

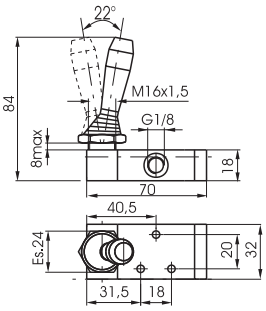
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green



3/2 ways



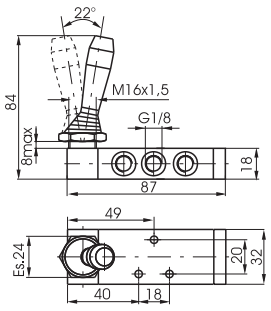


Weight 140 g

228.32.9.1/Ⓒ

5/2 ways





Weight 160 g

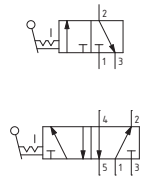
228.52.9.1/Ⓒ

Lever lateral 2 positions

Coding: 228.Ⓣ.9/Ⓒ

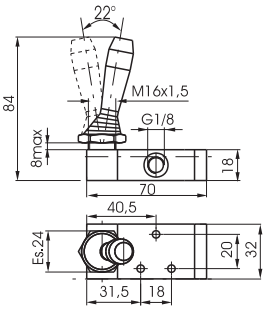
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green



3/2 ways



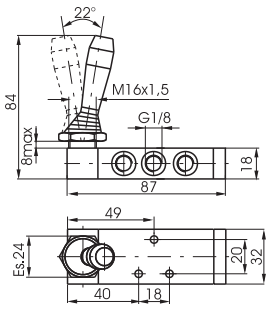


Weight 140 g

228.32.9/Ⓒ

5/2 ways





Weight 160 g

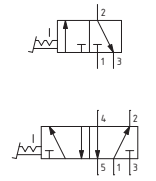
228.52.9/Ⓒ

Pedal aluminium 2 positions

Coding: 228.Ⓣ.10

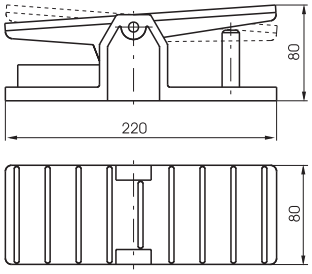
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



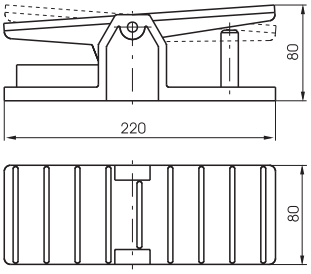


Weight 790 g

228.32.10

5/2 ways





Weight 810 g

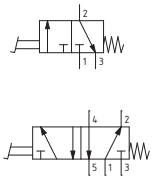
228.52.10

Pedal aluminium - Spring

Coding: 228.Ⓣ.10.1

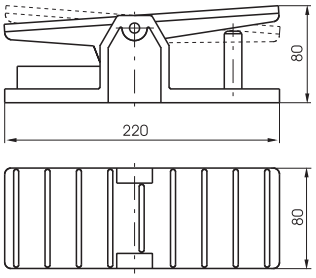
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



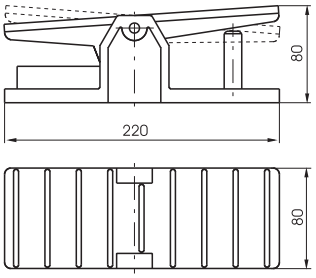


Weight 790 g

228.32.10.1

5/2 ways





Weight 810 g

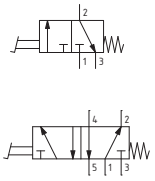
228.52.10.1

Pedal protected - Spring

Coding: 228.Ⓣ.10.Ⓥ

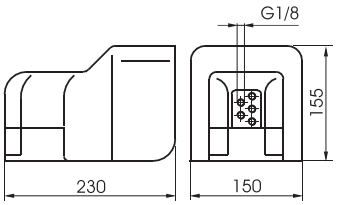
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VERSION
Ⓥ	**1/1** = Standard version
	2/1 = without safety device



3/2 ways



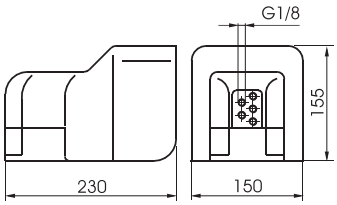


Weight 1120 g

228.32.10.Ⓥ

5/2 ways





Weight 1120 g

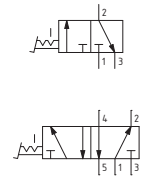
228.52.10.Ⓥ

Pedal protected 2 positions

Coding: 228.Ⓣ.10/1

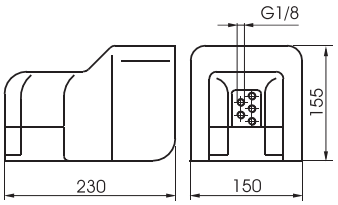
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



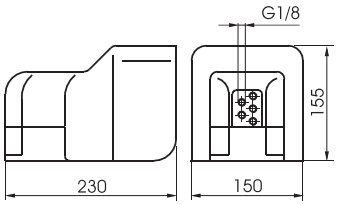


Weight 1120 g

228.32.10/1

5/2 ways





Weight 1120 g

228.52.10/1

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

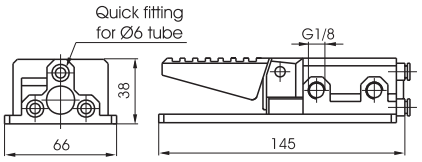
Pedal plastic miniaturized - Spring

Coding: 228.52.10.Ⓕ

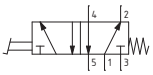
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	FUNCTION
Ⓕ	**1P** = Standard version
	1PX = Stainless steel spool





Weight 230 g



Lever lateral spring centre 3 positions

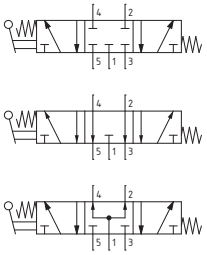
Coding: 228.53.Ⓕ.9.1/Ⓒ

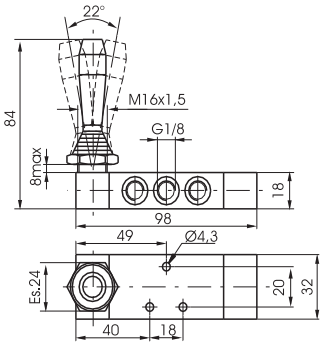
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



Weight 190 g





Lever lateral 3 positions detent

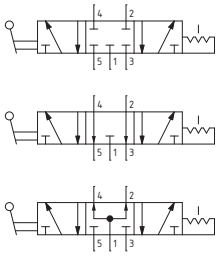
Coding: 228.53.Ⓕ.9/Ⓒ

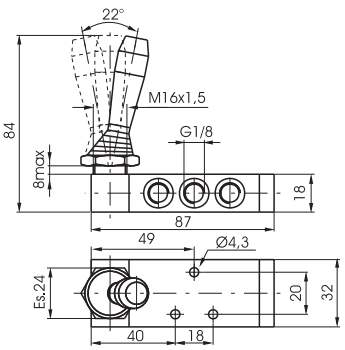
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



Weight 160 g





Lever central (spring 3 pos.) Operator, Levar, Spole in Technopolymer

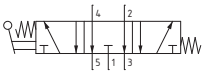
Coding: 228.53.32.99P/©

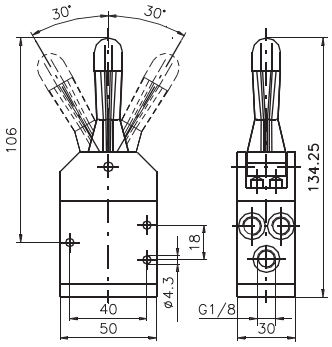
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

©	LEVER COLOR
	1 = Red
	2 = Black



Weight 140 g





Lever central (spring 3 pos.) Levar in Technopolymer

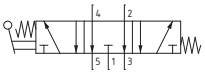
Coding: 228.53.32.99/©

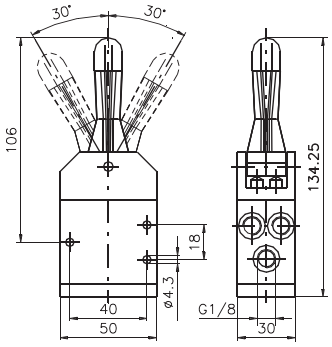
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

©	LEVER COLOR
	1 = Red
	2 = Black



Weight 140 g





Lever central Metal (spring 3 pos.) One position stable

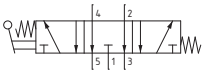
Coding: 228.53.32.99/©.S

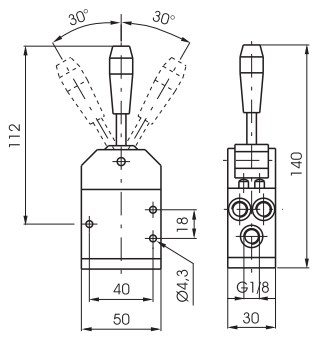
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

©	LEVER COLOR
	1 = Red
	2 = Black



Weight 140 g





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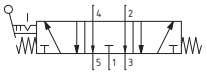
Lever central Metal

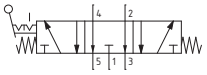
Coding: 228.53.32.99.Ⓕ/Ⓒ

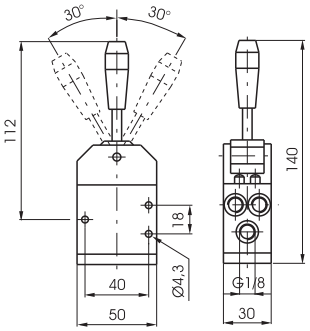
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

Ⓕ	FUNCTION
	2 = 2 stable positions
	3 = 3 stable positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black









Weight 140 g

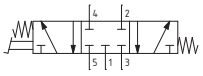
Pedal - Spring 3 positions

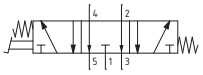
Coding: 228.53.Ⓕ.10.1

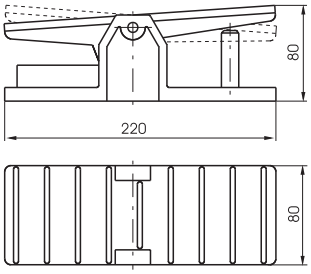
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres









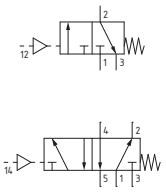
Weight 810 g

Pneumatic - Spring

Coding: 228.Ⓣ.11.1

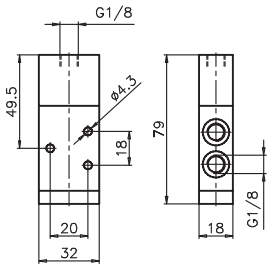
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



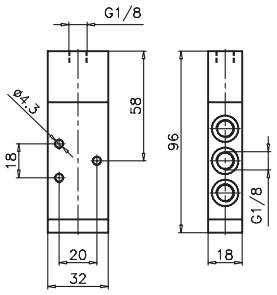


Weight 110 g
Minimum pilot pressure 2,5 bar

228.32.11.1

5/2 ways





Weight 130 g
Minimum pilot pressure 2,5 bar

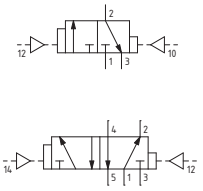
228.52.11.1

Pneumatic - Differential

Coding: 228.Ⓣ.11.12

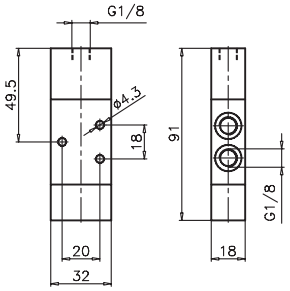
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



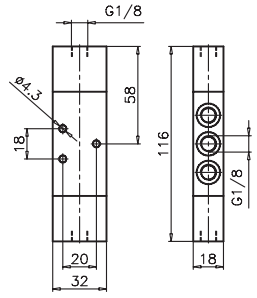


Weight 140 g
Minimum pilot pressure 2,5 bar

228.32.11.12

5/2 ways





Weight 160 g
Minimum pilot pressure 2,5 bar

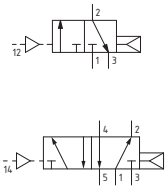
228.52.11.12

Pneumatic-Differential (Self feeding)

Coding: 228.Ⓣ.11.12/1

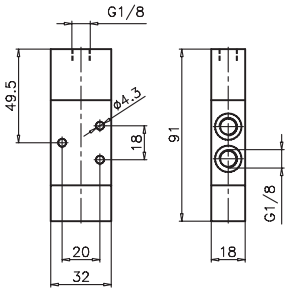
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



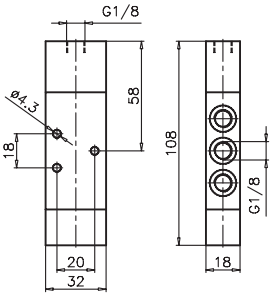


Weight 130 g
Minimum pilot pressure 2,5 bar

228.32.11.12/1

5/2 ways





Weight 150 g
Minimum pilot pressure 2,5 bar

228.52.11.12/1

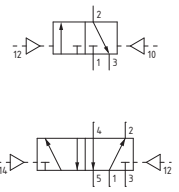
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic-Pneumatic

Coding: 228.Ⓣ.11.11

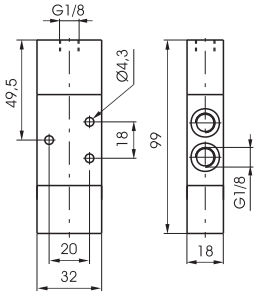
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



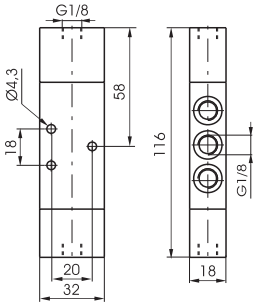


Weight 140 g
Minimum pilot pressure 2 bar

228.32.11.11

5/2 ways





Weight 160 g
Minimum pilot pressure 2 bar

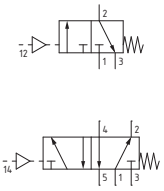
228.52.11.11

Amplified pneumatic - Spring

Coding: 228.Ⓣ.13.1

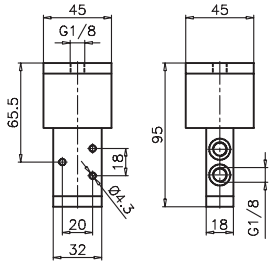
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



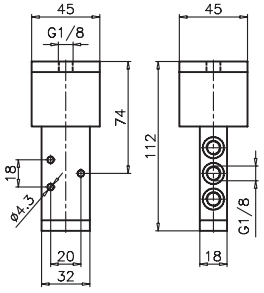


Weight 260 g
Minimum pilot pressure 0,5 bar

228.32.13.1

5/2 ways





Weight 290 g
Minimum pilot pressure 0,5 bar

228.52.13.1

Pneumatic-Pneumatic 5/3

Coding: 228.53.Ⓕ.11.11

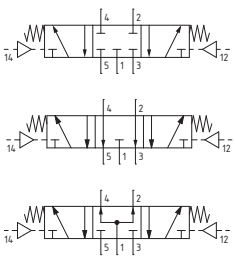
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

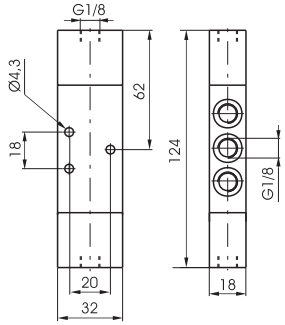
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres



Weight 180 g
Minimum pilot pressure 3 bar

228.53.Ⓕ.11.11



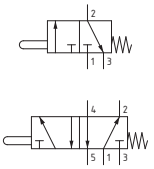


Tappet panel - Spring

Coding: 224.Ⓣ.1.1

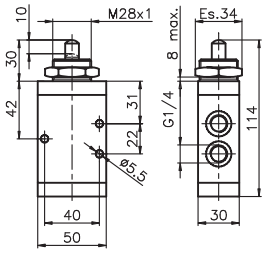
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



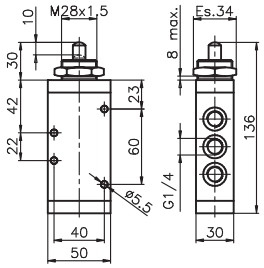


Weight 370 g
Operating force 71,5 N

224.32.1.1

5/2 ways





Weight 455 g
Operating force 71,5 N

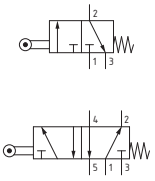
224.52.1.1

Lever roller - Spring

Coding: 224.Ⓣ.2.1

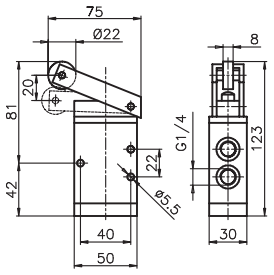
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



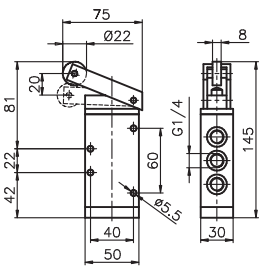


Weight 510 g
Operating force 35 N

224.32.2.1

5/2 ways





Weight 595 g
Operating force 35 N

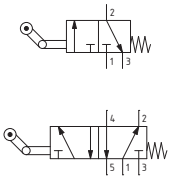
224.52.2.1

Lever roller unidirectional - Spring

Coding: 224.Ⓣ.3.1

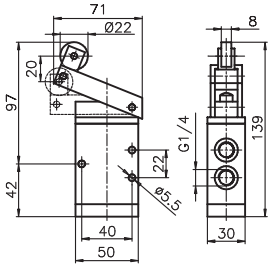
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



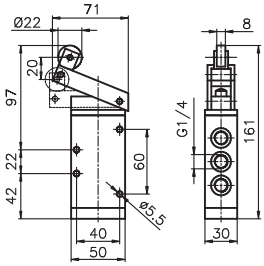


Weight 525 g
Operating force 35 N

224.32.3.1

5/2 ways





Weight 610 g
Operating force 35 N

224.52.3.1

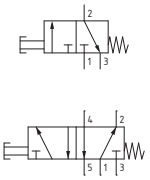
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Push button - Spring

Coding: 224.Ⓣ.8.1

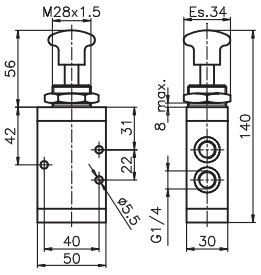
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



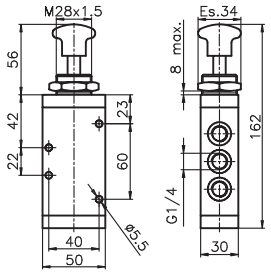


Weight 395 g
Operating force 71,5 N

224.32.8.1

5/2 ways





Weight 480 g
Operating force 71,5 N

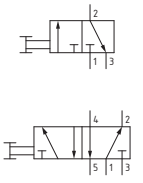
224.52.8.1

Push button 2 positions

Coding: 224.Ⓣ.8

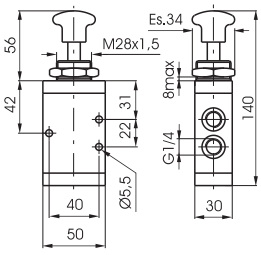
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



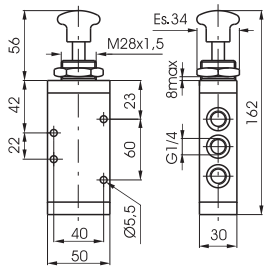


Weight 385 g
Operating force 13 N

224.32.8

5/2 ways





Weight 470 g
Operating force 13 N

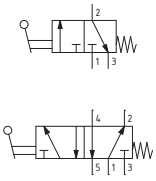
224.52.8

Lever lateral - Spring

Coding: 224.Ⓣ.9.1/Ⓒ

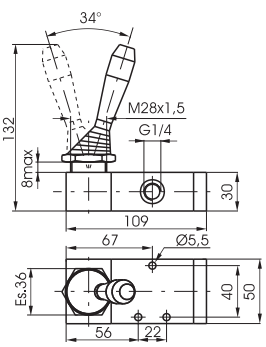
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green



3/2 ways



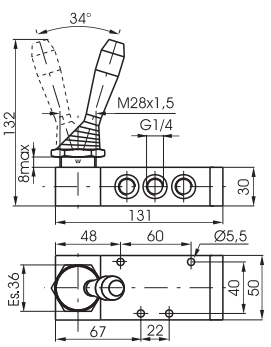


Weight 520 g

224.32.9.1/Ⓒ

5/2 ways





Weight 605 g

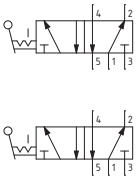
224.52.9.1/Ⓒ

Lever lateral 2 positions

Coding: 224.Ⓣ.9/Ⓒ

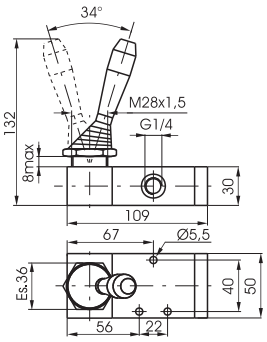
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



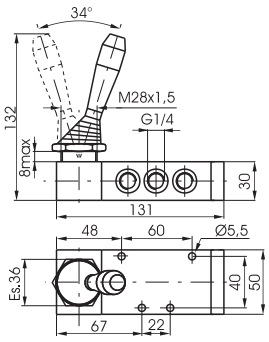


Weight 510 g

224.32.9/Ⓒ

5/2 ways





Weight 595 g

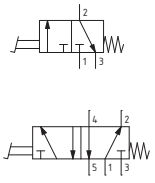
224.52.9/Ⓒ

Pedal aluminium - Spring

Coding: 224.Ⓣ.10.1

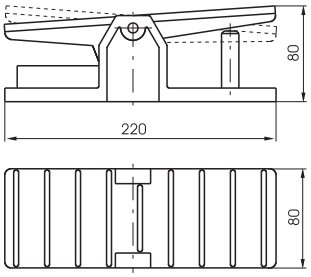
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



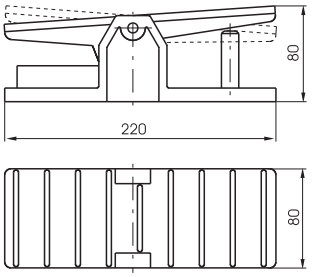


Weight 1070 g

224.32.10.1

5/2 ways





Weight 1155 g

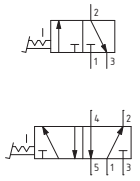
224.52.10.1

Pedal aluminium 2 positions

Coding: 224.Ⓣ.10

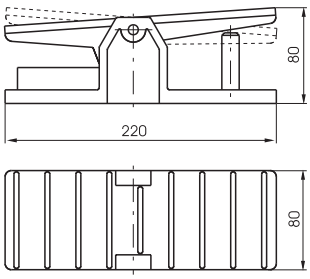
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



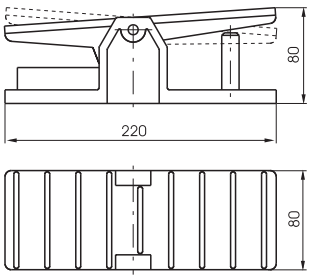


Weight 1060 g

224.32.10

5/2 ways





Weight 1145 g

224.52.10

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Lateral Lever spring - 3 positions

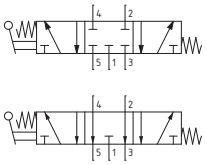
Coding: 224.53.Ⓕ.9.1/Ⓒ

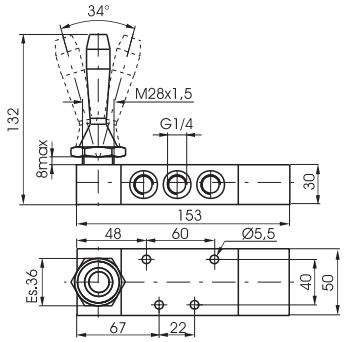
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1280
Orifice size (mm)	8
Working ports size	G1/4"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



Weight 745 g





Lever lateral 3 positions detent

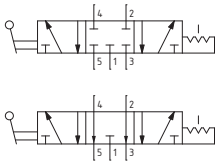
Coding: 224.53.Ⓕ.9/Ⓒ

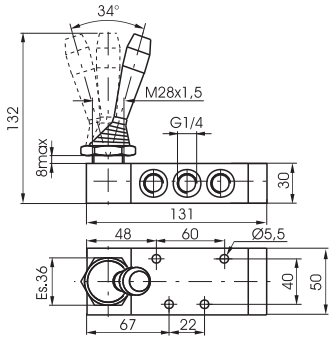
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1280
Orifice size (mm)	8
Working ports size	G1/4"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



Weight 605 g





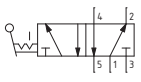
Lever lateral with locking device - 2 positions

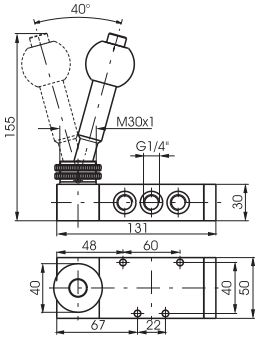
Coding: 224.52.9.2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1020
Orifice size (mm)	8
Working ports size	G1/4"



Weight 825 g





Lever lateral with locking device - Spring 3 positions

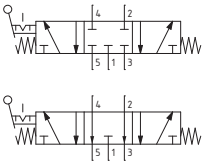
Coding: 224.53.Ⓕ.9.2

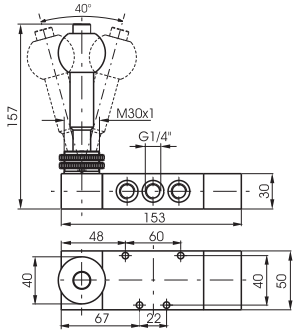
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1020
Orifice size (mm)	8
Working ports size	G1/4"

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres



Weight 965 g





Pedal - Spring 3 positions

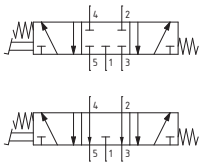
Coding: 224.53.Ⓕ.10.1

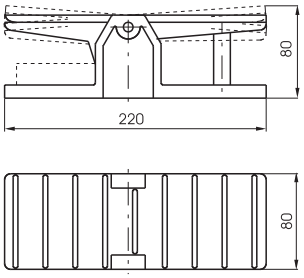
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1280
Orifice size (mm)	8
Working ports size	G1/4"

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres



Weight 1285 g





Pedal 3 positions

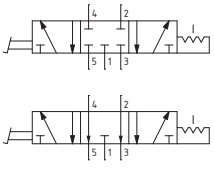
Coding: 224.53.Ⓕ.10

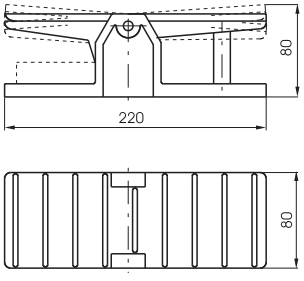
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1280
Orifice size (mm)	8
Working ports size	G1/4"

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres



Weight 1145 g





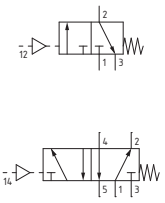
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

Coding: 224.Ⓣ.11.1

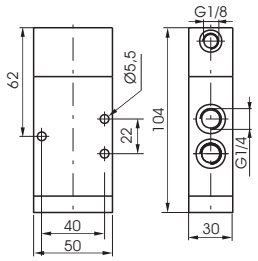
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



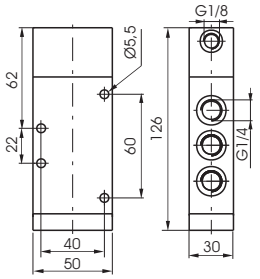


Weight 370 g
Minimum pilot pressure 2,5 bar

224.32.11.1

5/2 ways





Weight 450 g
Minimum pilot pressure 2,5 bar

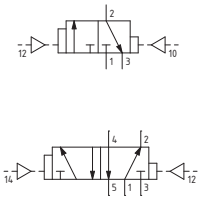
224.52.11.1

Pneumatic - Differential

Coding: 224.Ⓣ.11.12

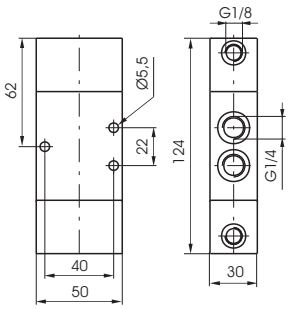
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



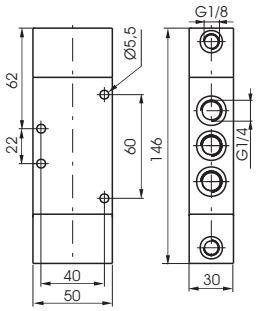


Weight 480 g
Minimum pilot pressure 2,5 bar

224.32.11.12

5/2 ways





Weight 550 g
Minimum pilot pressure 2,5 bar

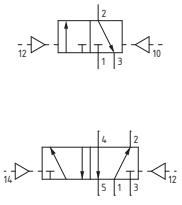
224.52.11.12

Pneumatic-Pneumatic

Coding: 224.Ⓣ.11.11

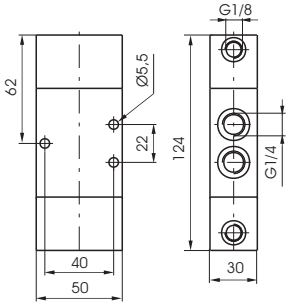
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



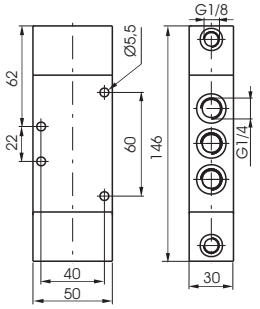


Weight 470 g
Minimum pilot pressure 2 bar

224.32.11.11

5/2 ways





Weight 540 g
Minimum pilot pressure 2 bar

224.52.11.11

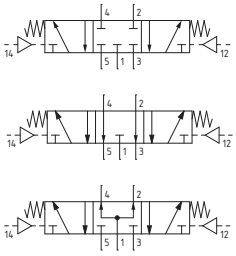
Pneumatic-Pneumatic 5/3

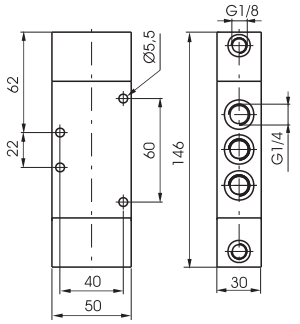
Coding: 224.53.Ⓕ.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1280
Orifice size (mm)	8
Working ports size	G1/4"
Pilot ports size	G1/8"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 550 g
Minimum pilot pressure 3 bar

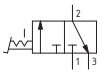
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

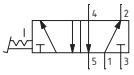
Pedal protected 2 positions

Coding: 214.Ⓣ.10/1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

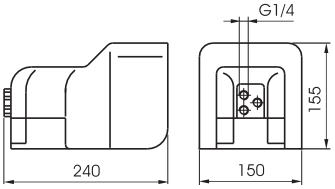
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions





3/2 ways



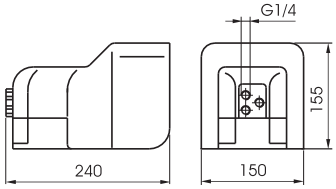


Weight 1730 g

214.32.10/1

5/2 ways





Weight 1730 g

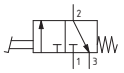
214.52.10/1

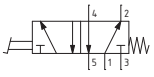
Pedal protected - Spring

Coding: 214.Ⓣ.10.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G1/4"

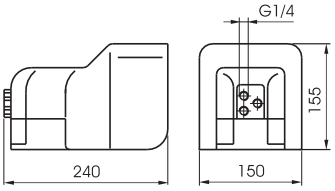
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VERSION
Ⓥ	**1/1** = Standard version
	2/1 = without safety device





3/2 ways



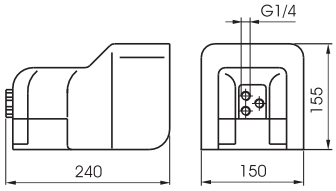


Weight 1730 g

214.32.10.Ⓥ

5/2 ways





Weight 1730 g

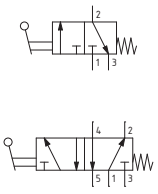
214.52.10.Ⓥ

Lever lateral - Spring

Coding: 212.Ⓣ.9.1

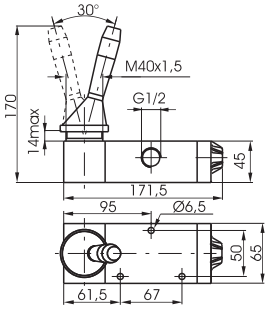
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



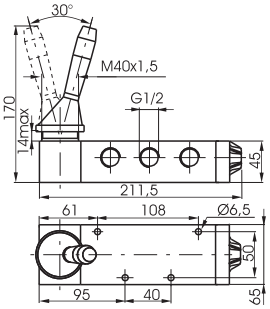


Weight 1480 g

212.32.9.1

5/2 ways





Weight 1765 g

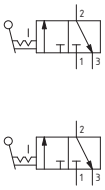
212.52.9.1

Lever lateral 2 positions

Coding: 212.Ⓣ.9

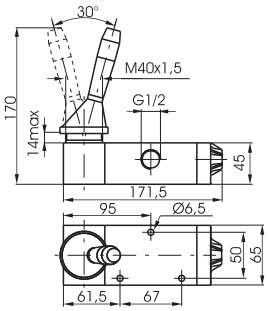
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



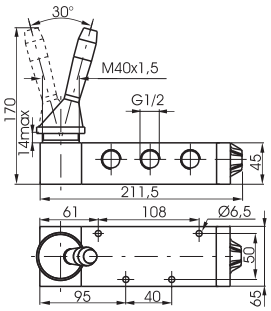


Weight 1460 g

212.32.9

5/2 ways





Weight 1745 g

212.52.9

Lever lateral spring centre 3 positions

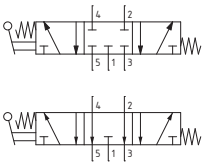
Coding: 212.53.Ⓕ.9.1

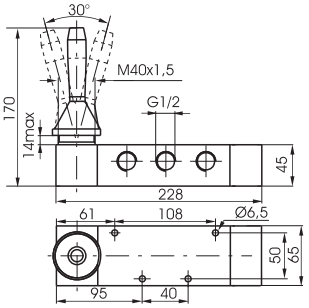
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3000
Orifice size (mm)	15
Working ports size	G1/2"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres



Weight 2100 g





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

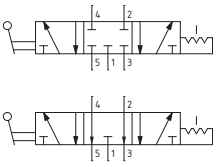
Lever lateral 3 positions detent

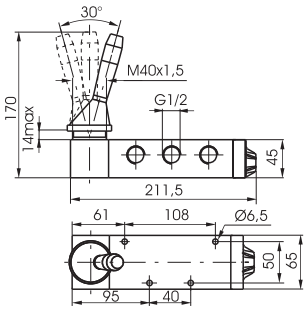
Coding: 212.53.Ⓕ.9

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3000
Orifice size (mm)	15
Working ports size	G1/2"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres







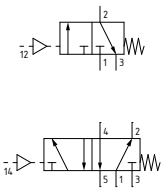
Weight 1765 g

Pneumatic - Spring

Coding: 212.Ⓣ.11.1

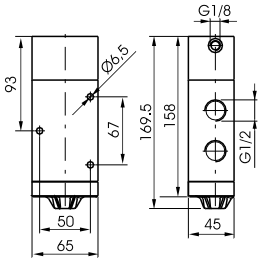
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



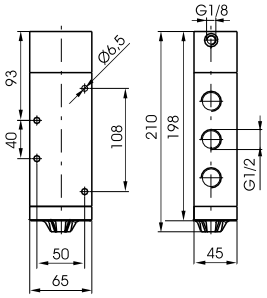


Weight 1110 g
Minimum pilot pressure 2,5 bar

212.32.11.1

5/2 ways





Weight 1390 g
Minimum pilot pressure 2,5 bar

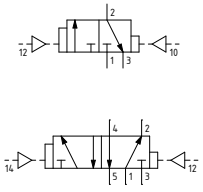
212.52.11.1

Pneumatic - Differential

Coding: 212.Ⓣ.11.12

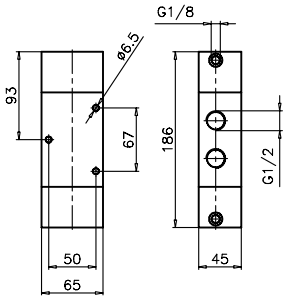
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



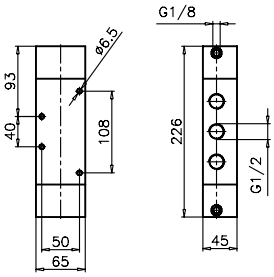


Weight 1380 g
Minimum pilot pressure 2,5 bar

212.32.11.12

5/2 ways





Weight 1660 g
Minimum pilot pressure 2,5 bar

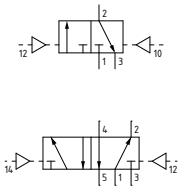
212.52.11.12

Pneumatic-Pneumatic

Coding: 212.Ⓣ.11.11

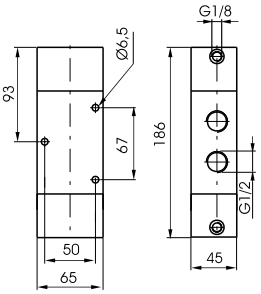
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



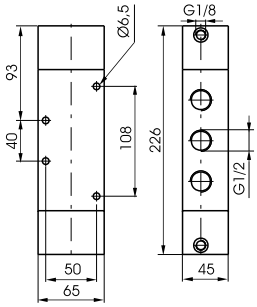


Weight 1350 g
Minimum pilot pressure 2 bar

212.32.11.11

5/2 ways





Weight 1630 g
Minimum pilot pressure 2 bar

212.52.11.11

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

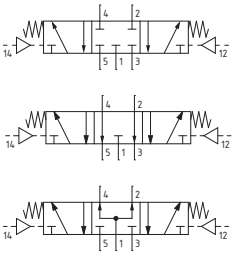
Pneumatic-Pneumatic 5/3

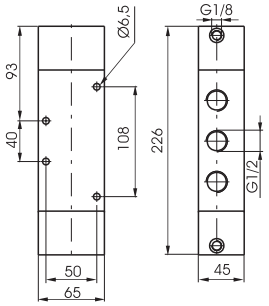
Coding: 212.53.Ⓕ.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3000
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







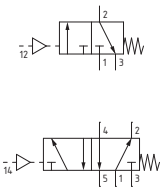
Weight 1650 g
Minimum pilot pressure 3 bar

Pneumatic - Spring

Coding: 212/2.Ⓣ.11.1

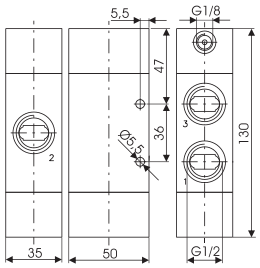
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



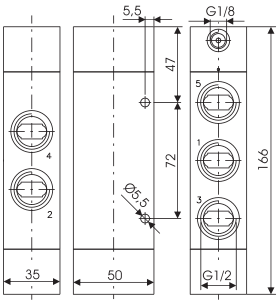


Weight 524 g
Minimum pilot pressure 2,5 bar

212/2.32.11.1

5/2 ways





Weight 644 g
Minimum pilot pressure 2,5 bar

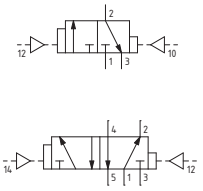
212/2.52.11.1

Pneumatic - Differential

Coding: 212/2.Ⓣ.11.12

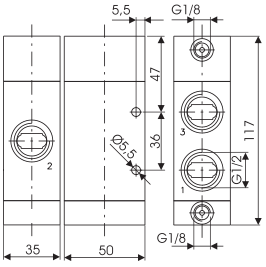
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



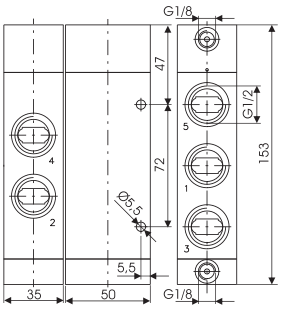


Weight 464 g
Minimum pilot pressure 2,5 bar

212/2.32.11.12

5/2 ways





Weight 586 g
Minimum pilot pressure 2,5 bar

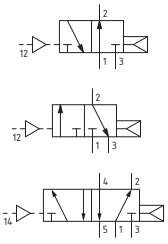
212/2.52.11.12

Pneumatic-Differential (Self feeding)

Coding: 212/2.Ⓣ.11.12/Ⓕ

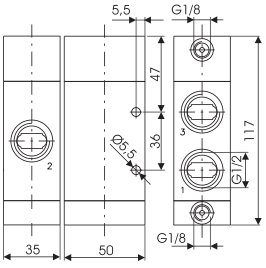
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓕ	FUNCTION
	1.C = Normally closed (only for 3 ways)
	1.A = Normally open (only for 3 ways)
	1 = Self feeding (only for 5 ways)



3/2 ways



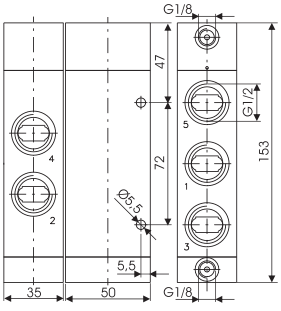


Weight 466 g
Minimum pilot pressure 2,5 bar

212/2.32.11.12/Ⓕ

5/2 ways





Weight 588 g
Minimum pilot pressure 2,5 bar

212/2.52.11.12/1

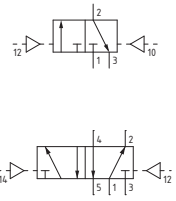
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic-Pneumatic

Coding: 212/2.Ⓣ.11.11

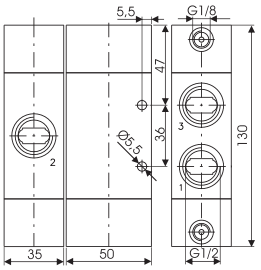
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



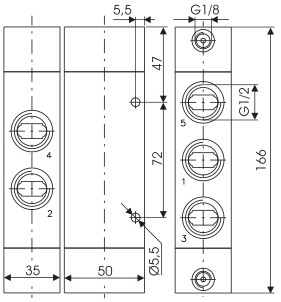


Weight 518 g
Minimum pilot pressure 2,5 bar

212/2.32.11.11

5/2 ways





Weight 640 g
Minimum pilot pressure 2,5 bar

212/2.52.11.11

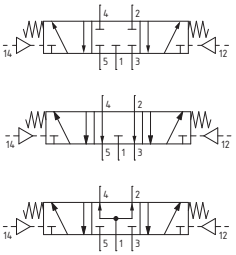
Pneumatic-Pneumatic 5/3

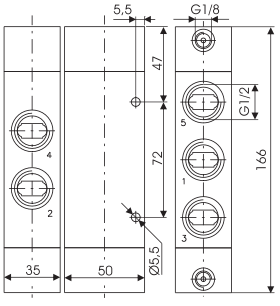
Coding: 212/2.53.Ⓕ.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	3300
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







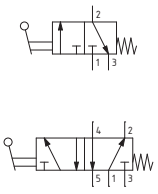
Weight 684 g
Minimum pilot pressure 3 bar

Lever lateral - Spring

Coding: 211.Ⓣ.9.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G1"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

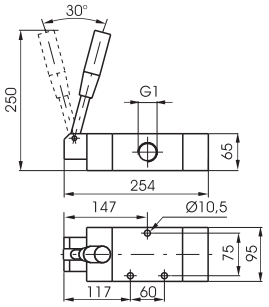


3/2 ways



Weight 4300 g

211.32.9.1

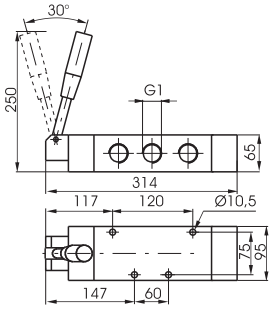


5/2 ways



Weight 4900 g

211.52.9.1

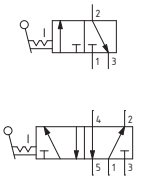


Lever lateral 2 positions

Coding: 211.Ⓣ.9

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G1"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

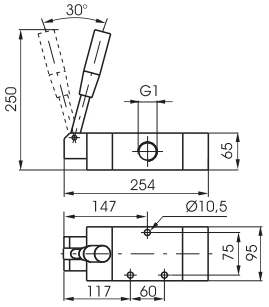


3/2 ways



Weight 4300 g

211.32.9

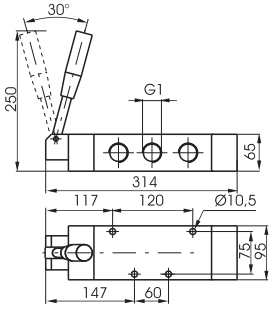


5/2 ways



Weight 4900 g

211.52.9



Lever lateral spring centre 3 positions

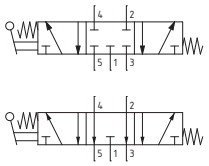
Coding: 211.53.Ⓕ.9.1

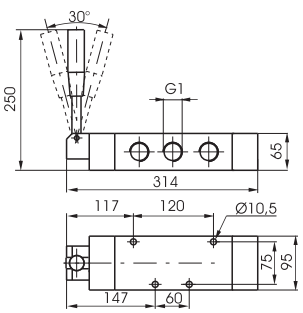
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G1"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres



Weight 5000 g





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

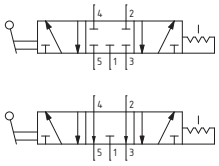
Lever lateral 3 positions detent

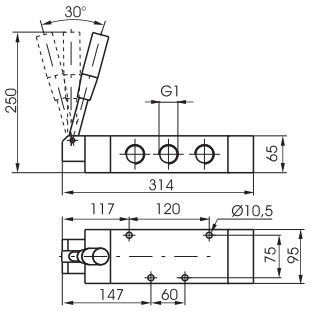
Coding: 211.53.Ⓕ.9

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G1"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres







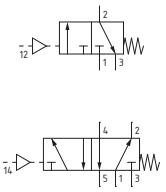
Weight 5000 g

Pneumatic - Spring

Coding: 211.Ⓣ.11.1

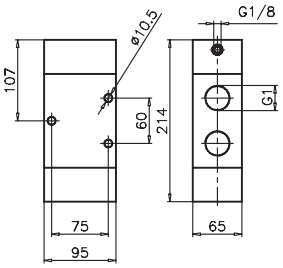
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G1"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



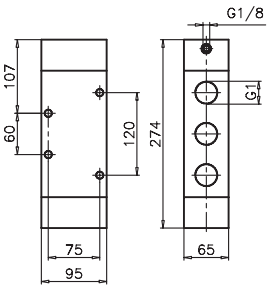


Weight 3330 g
Minimum pilot pressure 2,5 bar

211.32.11.1

5/2 ways





Weight 4200 g
Minimum pilot pressure 2,5 bar

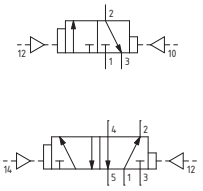
211.52.11.1

Pneumatic - Differential

Coding: 211.Ⓣ.11.12

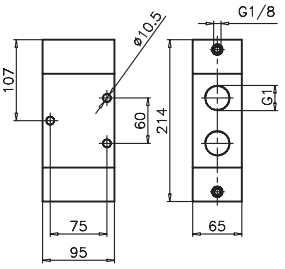
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G1"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



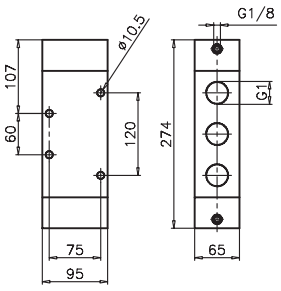


Weight 3330 g
Minimum pilot pressure 2,5 bar

211.32.11.12

5/2 ways





Weight 4200 g
Minimum pilot pressure 2,5 bar

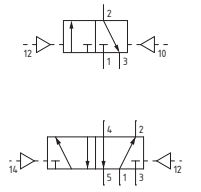
211.52.11.12

Pneumatic-Pneumatic

Coding: 211.Ⓣ.11.11

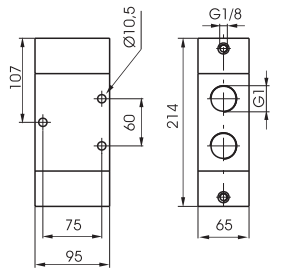
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G1"
Pilot ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



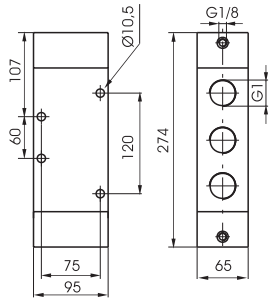


Weight 3330 g
Minimum pilot pressure 2 bar

211.32.11.11

5/2 ways





Weight 4200 g
Minimum pilot pressure 2 bar

211.52.11.11

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

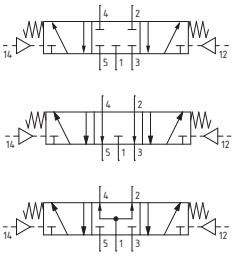
Pneumatic-Pneumatic 5/3

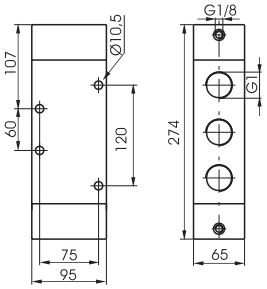
Coding: 211.53.Ⓕ.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G1"
Pilot ports size	G1/8"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 4200 g
Minimum pilot pressure 3 bar

Series T200

The **T200** series, consist of a broad range of valves with various type of actuation. The connections for this series are from G 1/8" to G 1/4". The main components constituting the valves of the Tecno228 series are manufactured with high performance technopolymer.
The use of technopolymer has resulted in a light weight product which can be offered to the market at very interesting prices.
The **T228** valves, are manufactured with G1/8" connections, 3 and 5 ways function, mechanical or pneumatically operated, monostable spring or pneumatic return, bistable and in 5 ways 3 positions version with closed, open and pressured centres.
This series is completely interchangable with the standard 228 series (with alluminium body).
The **T224** valves, are manufactured with G 1/4" connections, 3/2, 5/2 and 5/3 ways function, (monostable or bistable), depending on version and actuation (manual, pneumatic, or electrical), and self aligning (pneumatic, electric or spring).

Maximum fitting torque

Thread	Maximum torque (Nm)
G 1/8"	4
G1/4"	9

Construction characteristics

	G 1/8" (T228) and G 1/4" (T224)
Body	Technopolymer
Operators	Technopolymer
Seals	NBR
Spacers	Technopolymer
Spools	Technopolymer Stainless steel only for the versions Push button-Spring and Lever lateral
Springs	Spring steel
Pistons	Technopolymer

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
Repair kits including the spool complete with seals are available for overhauling the valves.
However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

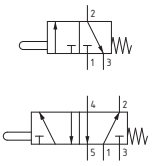
Tappet - Spring

Coding: T228.Ⓣ.0.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

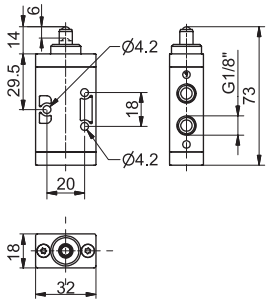
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 33 N



3/2 ways



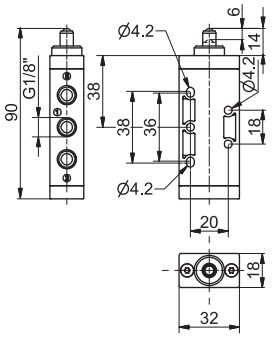


Weight 60 g

T228.32.0.1

5/2 ways





Weight 72 g

T228.52.0.1

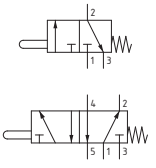
Tappet panel - Spring

Coding: T228.Ⓣ.1.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

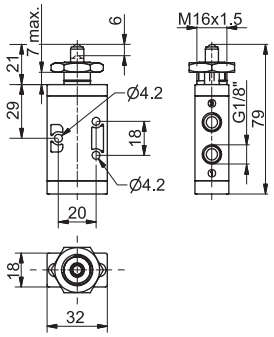
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 33 N



3/2 ways



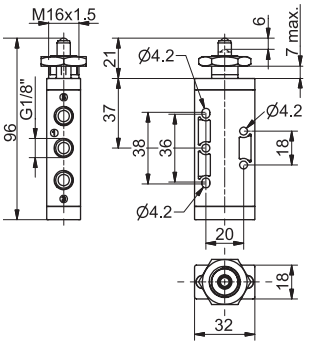


Weight 77 g

T228.32.1.1

5/2 ways





Weight 90 g

T228.52.1.1

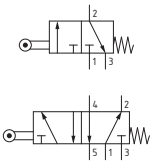
Lever roller-Spring

Coding: T228.Ⓣ.2.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

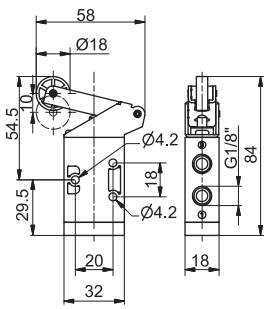
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VERSION
	1 = Plastic roller
	1/1 = ball bearing
	1/2 = Metal roller

Operating force 15 N



3/2 ways



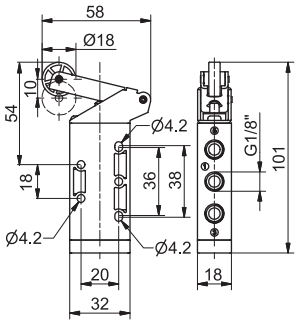


Weight 90 g

T228.32.2.Ⓥ

5/2 ways





Weight 102 g

T228.52.2.Ⓥ

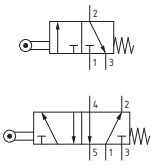
Lever roller ball bearing - Spring

Coding: T228.Ⓣ.2.1/1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

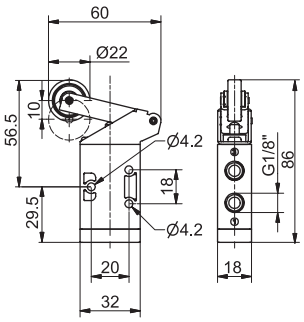
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 15 N



3/2 ways



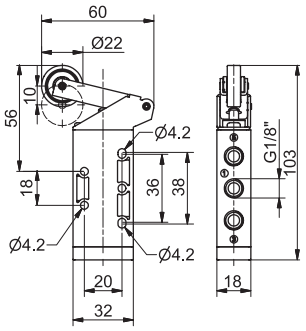


Weight 105 g

T228.32.2.1/1

5/2 ways





Weight 117 g

T228.52.2.1/1

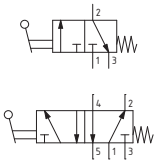
Lever button - Spring

Coding: T228.Ⓣ.2.6/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

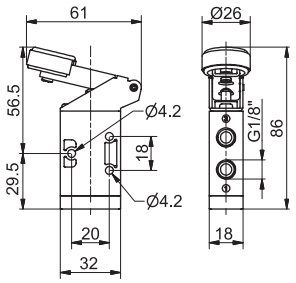
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green

Operating force 15 N



3/2 ways



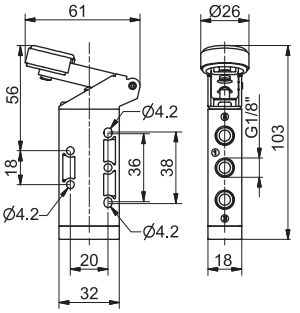


Weight 95 g

T228.32.2.6/Ⓒ

5/2 ways





Weight 87 g

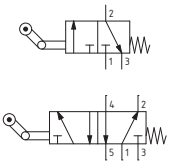
T228.52.2.6/Ⓒ

Lever roller unidirectional - Spring

Coding: T228.Ⓣ.3.Ⓥ

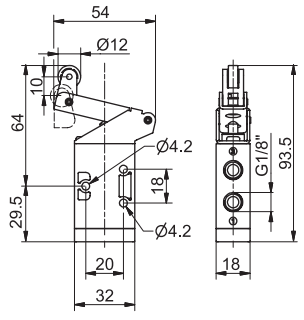
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	VERSION
Ⓥ	**1** = Plastic roller
	1/2 = Metal roller



3/2 ways



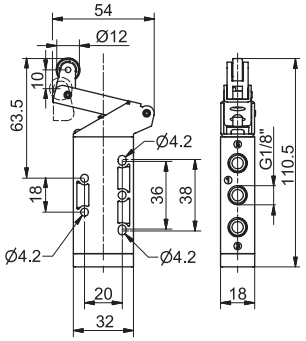


Weight 85 g

T228.32.3.Ⓥ

5/2 ways





Weight 97 g

T228.52.3.Ⓥ

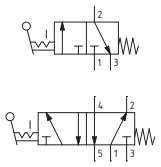
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Lever panel Ø30 - 2 positions

Coding: T228.Ⓣ.5/Ⓒ

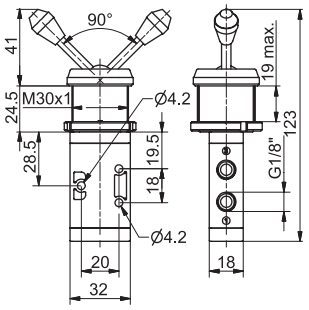
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



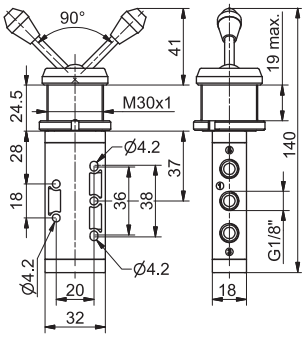


Weight 168 g

T228.32.5/Ⓒ

5/2 ways





Weight 180 g

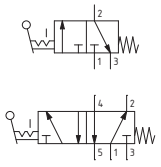
T228.52.5/Ⓒ

Lever lateral 2 positions

Coding: T228.Ⓣ.55/Ⓒ

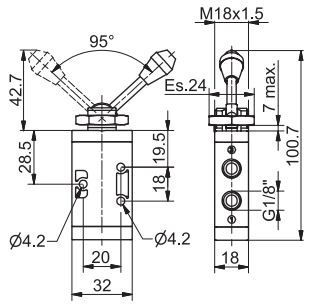
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



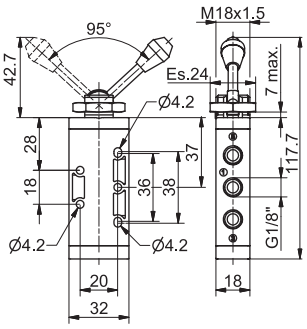


Weight 84 g

T228.32.55/Ⓒ

5/2 ways





Weight 96 g

T228.52.55/Ⓒ

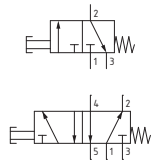
Push button Ø30 - spring

Coding: T228.Ⓣ.6.1/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

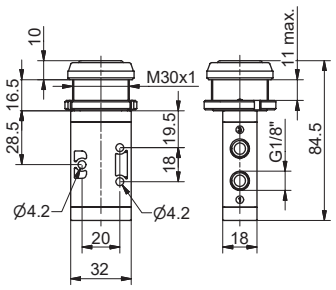
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green

Operating force 33 N



3/2 ways



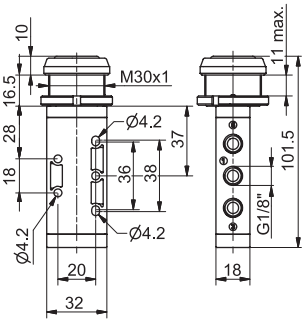


Weight 125 g

T228.32.6.1/Ⓒ

5/2 ways





Weight 137 g

T228.52.6.1/Ⓒ

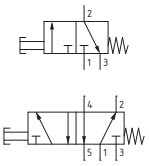
Push button - Spring

Coding: T228.Ⓣ.6.22/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

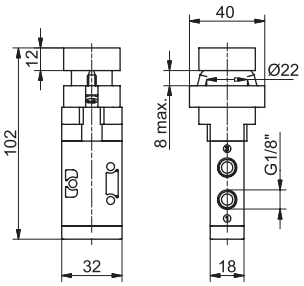
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green
	4 = Yellow

Operating force 33 N



3/2 ways



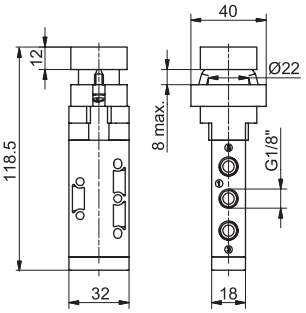


Weight 200 g

T228.32.6.22/Ⓒ

5/2 ways





Weight 212 g

T228.52.6.22/Ⓒ

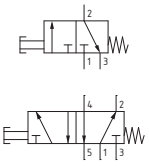
Raised push button Ø22 - Spring

Coding: T228.Ⓣ.6.23/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

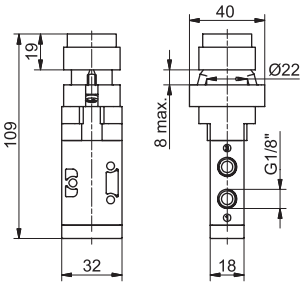
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green
	4 = Yellow

Operating force 33 N



3/2 ways



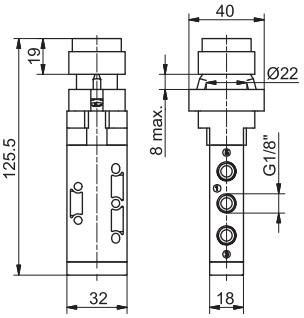


Weight 205 g

T228.32.6.23/Ⓒ

5/2 ways





Weight 217 g

T228.52.6.23/Ⓒ

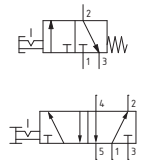
Push button Ø22 - 2 positions

Coding: T228.Ⓣ.6.25

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

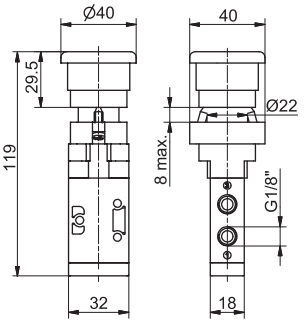
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 33 N



3/2 ways



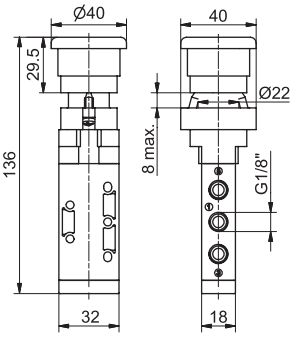


Weight 210 g

T228.32.6.25

5/2 ways





Weight 202 g

T228.52.6.25

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

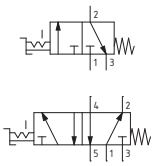
Switch 2 positions

Coding: T228.Ⓣ.6.27

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

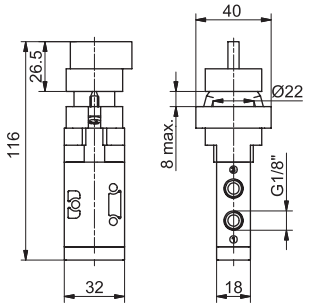
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 33 N



3/2 ways



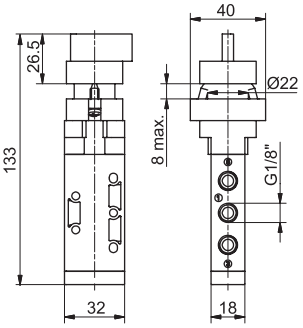


Weight 205 g

T228.32.6.27

5/2 ways





Weight 217 g

T228.52.6.27

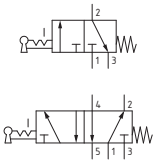
Key switch 2 positions

Coding: T228.Ⓣ.6.28

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

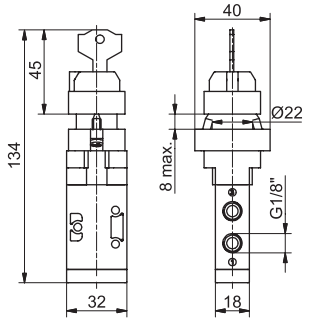
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 33 N



3/2 ways



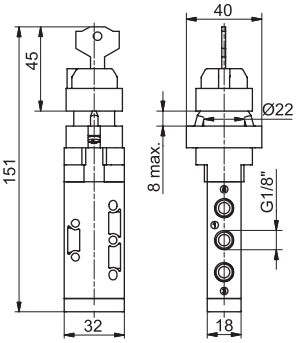


Weight 205 g

T228.32.6.28

5/2 ways





Weight 217 g

T228.52.6.28

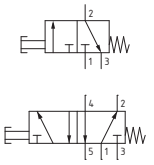
Palm push button Ø30 2 positions

Coding: T228.Ⓣ.7.1/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

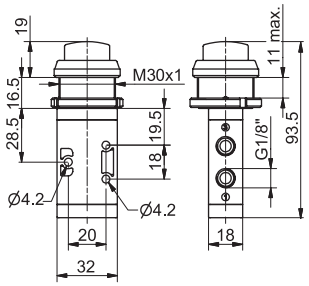
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	BUTTON COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green

Operating force 33 N



3/2 ways



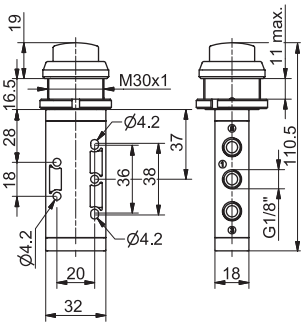


Weight 118 g

T228.32.7.1/Ⓒ

5/2 ways





Weight 130 g

T228.52.7.1/Ⓒ

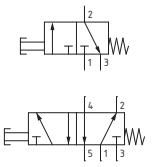
Push button - Spring

Coding: T228.Ⓣ.8.1/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

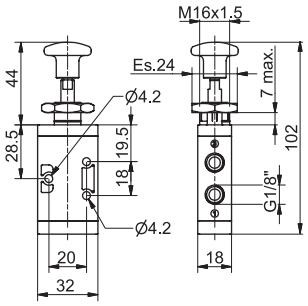
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green

Operating force 33 N



3/2 ways



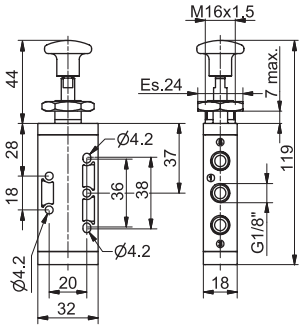


Weight 95 g

T228.32.8.1/Ⓒ

5/2 ways





Weight 107 g

T228.52.8.1/Ⓒ

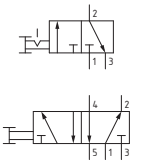
Push button 2 positions

Coding: T228.Ⓣ.8/Ⓒ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

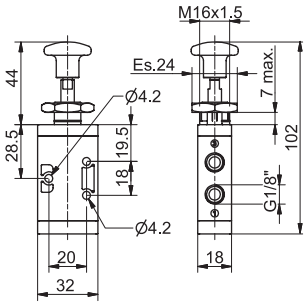
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	BUTTON COLOR
	1 = Red
	2 = Black
	3 = Green

Operating force 10 N



3/2 ways



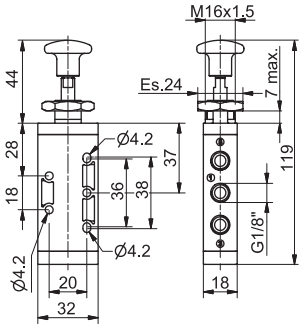


Weight 95 g

T228.32.8/Ⓒ

5/2 ways





Weight 107 g

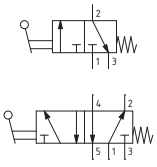
T228.52.8/Ⓒ

Lever lateral - Spring

Coding: T228.Ⓣ.9.1/Ⓒ

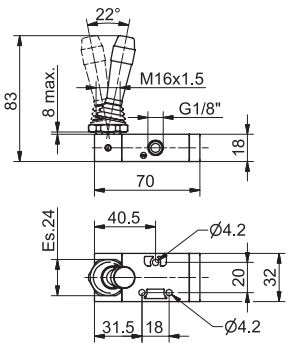
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



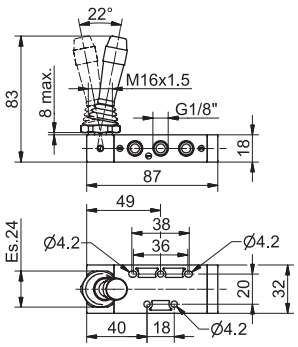


Weight 100 g

T228.32.9.1/Ⓒ

5/2 ways





Weight 110 g

T228.52.9.1/Ⓒ

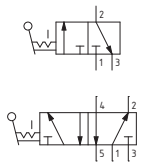
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Lever lateral 2 positions

Coding: T228.Ⓣ.9/Ⓒ

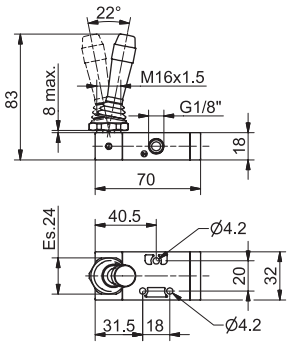
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
	LEVER COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green



3/2 ways



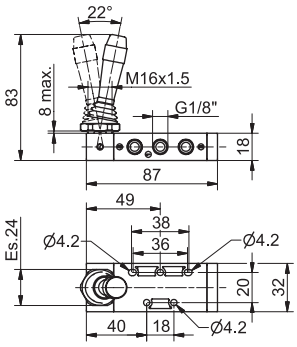


Weight 100 g

T228.32.9/Ⓒ

5/2 ways





Weight 110 g

T228.52.9/Ⓒ

Lever lateral-Spring 3 positions

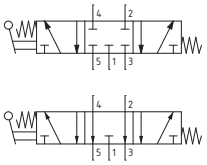
Coding: T228.53.Ⓕ.9.1/Ⓒ

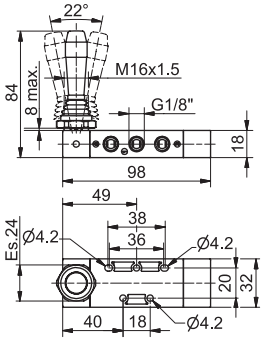
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	LEVER COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green



Weight 140 g





Lateral lever - 3 positions detent

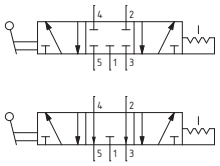
Coding: T228.53.Ⓕ.9/Ⓒ

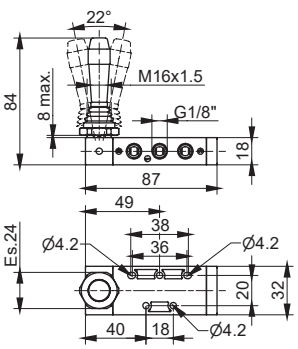
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	LEVER COLOR
Ⓒ	**1** = Red
	2 = Black
	3 = Green



Weight 110 g





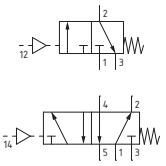
Pneumatic - Spring

Coding: T228.Ⓣ.11.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

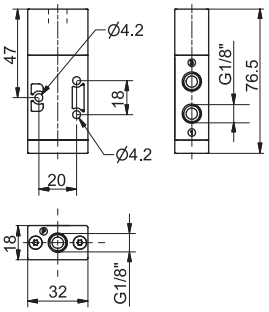
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum pilot pressure 2,5 bar



3/2 ways



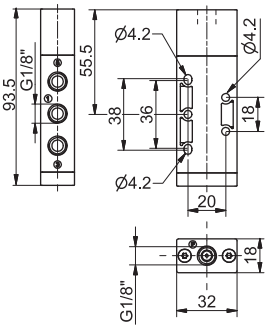


Weight 65 g

T228.32.11.1

5/2 ways





Weight 78 g

T228.52.11.1

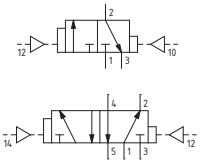
Pneumatic - Differential

Coding: T228.Ⓣ.11.12

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

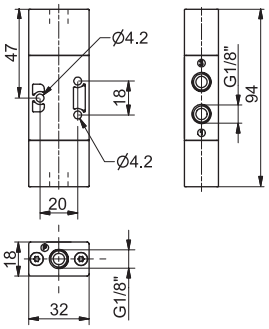
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum pilot pressure 2,5 bar



3/2 ways



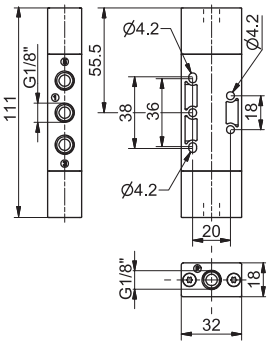


Weight 74 g

T228.32.11.12

5/2 ways





Weight 86 g

T228.52.11.12

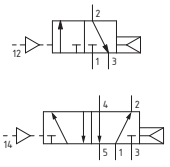
Pneumatic-Differential (Self feeding)

Coding: T228.Ⓣ.11.12/1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

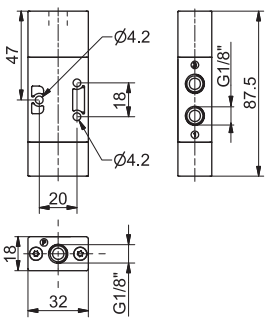
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum pilot pressure 2,5 bar



3/2 ways



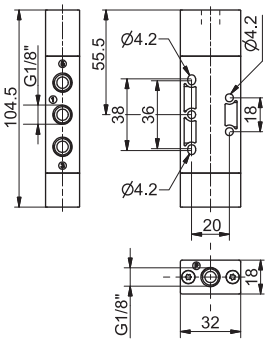


Weight 70 g

T228.32.11.12/1

5/2 ways





Weight 82 g

T228.52.11.12/1

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

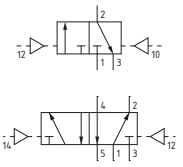
Pneumatic-Pneumatic

Coding: T228.Ⓣ.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

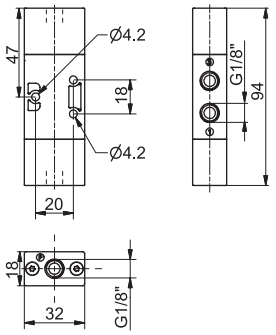
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum pilot pressure 2 bar



3/2 ways



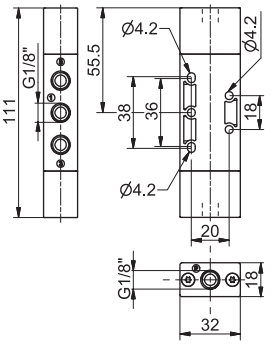


Weight 77 g

T228.32.11.11

5/2 ways





Weight 90 g

T228.52.11.11

Pneumatic - Pneumatic 3 positions

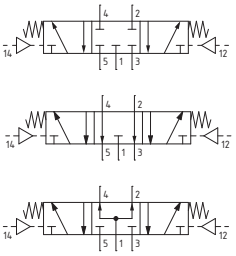
Coding: T228.53.Ⓕ.11.11

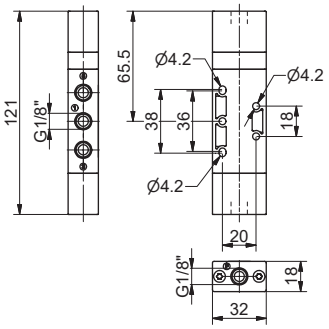
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G1/8"
Pilot ports size	G1/8"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres

Minimum pilot pressure 3 bar







Weight 110 g

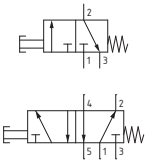
Push button - Spring

Coding: T224.Ⓣ.8.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"

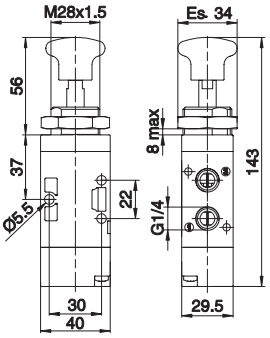
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 50 N



3/2 ways



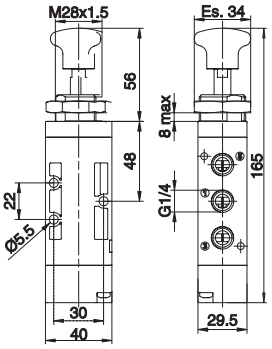


Weight 170 g

T224.32.8.1

5/2 ways





Weight 200 g

T224.52.8.1

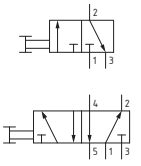
Push button 2 positions

Coding: T224.Ⓣ.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"

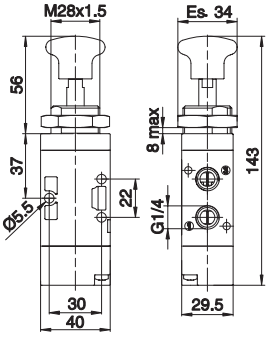
	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operating force 13 N



3/2 ways



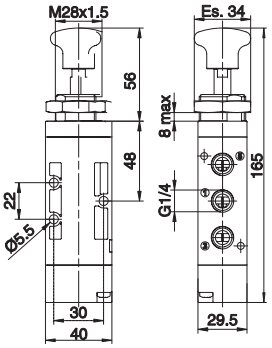


Weight 170 g

T224.32.8

5/2 ways





Weight 200 g

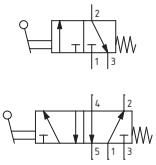
T224.52.8

Lever lateral - Spring

Coding: T224.Ⓣ.9.1/Ⓒ

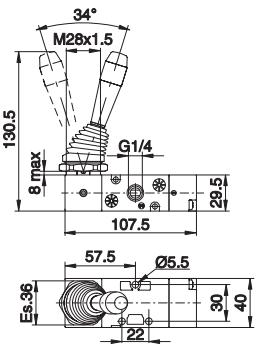
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



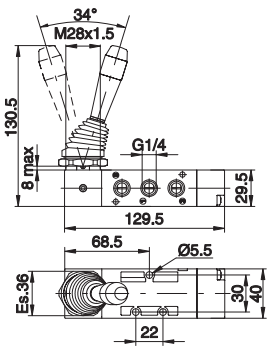


Weight 220 g

T224.32.9.1/Ⓒ

5/2 ways





Weight 250 g

T224.52.9.1/Ⓒ

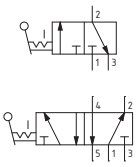
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Lever lateral 2 positions

Coding: T224.Ⓣ.9/Ⓒ

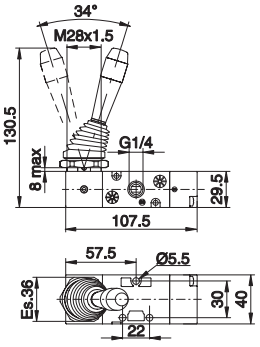
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



3/2 ways



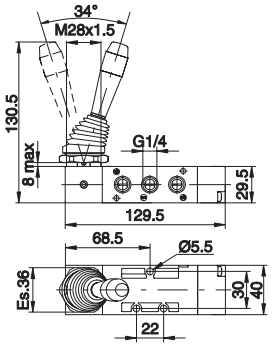


Weight 220 g

T224.32.9/Ⓒ

5/2 ways





Weight 250 g

T224.52.9/Ⓒ

Lever lateral-Spring 3 positions

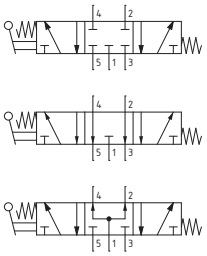
Coding: T224.53.Ⓕ.9.1/Ⓒ

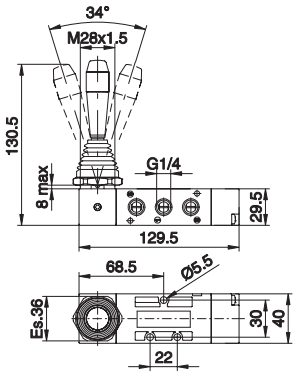
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Orifice size (mm)	8.5
Working ports size	G1/4"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



Weight 270 g





Lateral lever - 3 positions detent

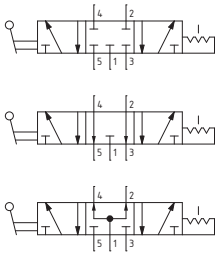
Coding: T224.53.Ⓕ.9/Ⓒ

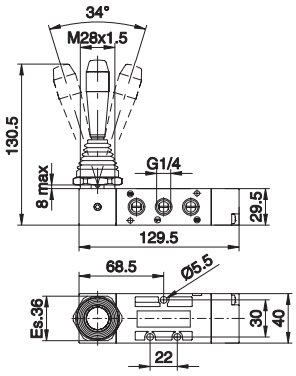
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Orifice size (mm)	8.5
Working ports size	G1/4"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓒ	LEVER COLOR
	1 = Red
	2 = Black
	3 = Green



Weight 270 g





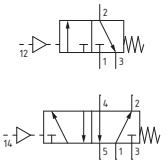
Pneumatic - Spring

Coding: T224.Ⓣ.11.1

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"
Pilot ports size	G1/8"

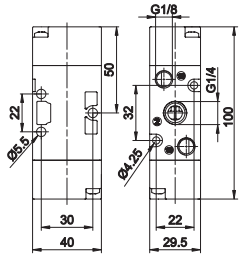
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum pilot pressure 2,5 bar



3/2 ways



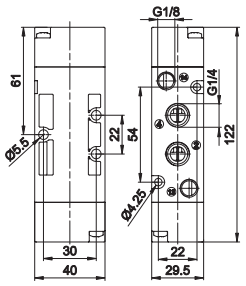


Weight 110 g

T224.32.11.1

5/2 ways





Weight 140 g

T224.52.11.1

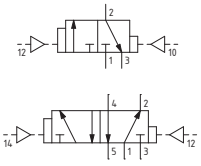
Pneumatic - Differential

Coding: T224.Ⓣ.11.12

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"
Pilot ports size	G1/8"

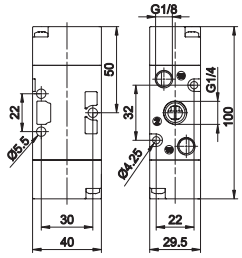
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum pilot pressure 2 bar



3/2 ways



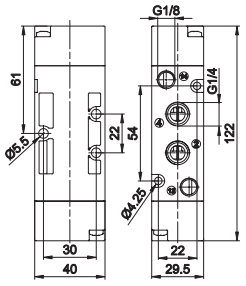


Weight 110 g

T224.32.11.12

5/2 ways





Weight 140 g

T224.52.11.12

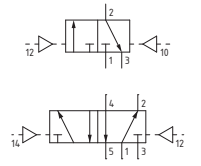
Pneumatic-Pneumatic

Coding: T224.Ⓣ.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G1/4"
Pilot ports size	G1/8"

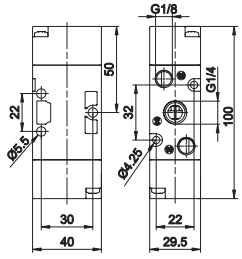
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Minimum pilot pressure 2 bar



3/2 ways



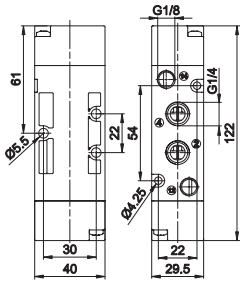


Weight 110 g

T224.32.11.11

5/2 ways





Weight 140 g

T224.52.11.11

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

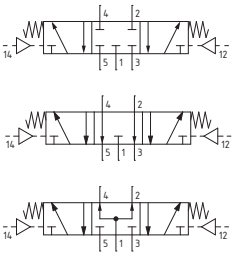
Pneumatic - Pneumatic 3 positions

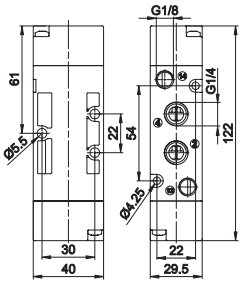
Coding: T224.53.Ⓕ.11.11

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Orifice size (mm)	8.5
Working ports size	G1/4"
Pilot ports size	G1/8"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 160 g
Minimum pilot pressure 3 bar

Series 800

The trend towards the miniaturization of components has been consolidated. The use of new technologies makes it possible to manufacture components with high flow rates but extremely compact sizes.
Electric piloting is by means of low-absorption miniature solenoids which are easily connected to the electronic control systems of machines (PLC).
Another object of study have been manifolds and multiple bases for ganged assembly of valves or solenoid valves with option for having outlets 2 and 4 either on the valve body or on the base through threaded holes or integrated quick connections provided.
Versions 3/2 and 5/2 are fitted with pneumatic and electropneumatic controls with resetting by mechanically or pneumatically operated spring, or by pneumatic or electropneumatic operation on the bistable versions.
The basic difference between this type of distributors and the others we produce, based on the spool system, lies in the fact that the seals rest on the spool and are dynamic, instead of being locked intoo spool the valve body by means of spacers; by this means a compact size is obtained and the distributors can be slotted into bases and manifolds by means of two screws.

Construction characteristics

Body	Aluminium
Seals	HNBR
Springs	Stainless steel
Operators	Aluminium
Pistons	Aluminium
Spools	Aluminium

Use and maintenance

These valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
Repair kits including the spool complete with seals are available for overhauling the valves.
However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

How to order the solenoid valves

Example:
805.52.0.1.01 Solenoid valves with miniature solenoid 12 V D.C.
List of codes for tensions:

01 = miniature solenoid 12 VDC

02 = miniature solenoid 24 VDC

05 = miniature solenoid 24 VAC

06 = miniature solenoid 110 VAC

07 = miniature solenoid 220 VAC

The electropilot utilized is a 15 mm 3/2 N.C. miniature solenoid with faston and 1.1 mm orifice
Miniature solenoid homologated are available c UL us (see series 300)

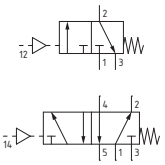
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

Coding: 805.Ⓣ.11.1

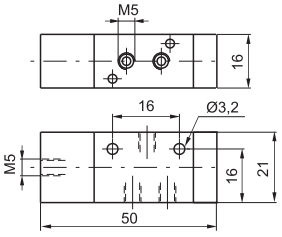
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Orifice size (mm)	2.5
Working ports size	M5
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



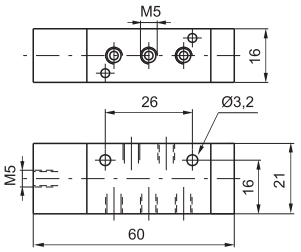


Weight 45 g
Minimum pilot pressure 2 bar

805.32.11.1

5/2 ways





Weight 50 g
Minimum pilot pressure 2 bar

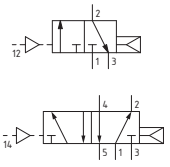
805.52.11.1

Pneumatic - Differential

Coding: 805.Ⓣ.11.12

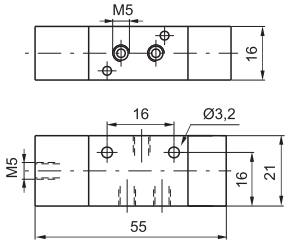
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Orifice size (mm)	2.5
Working ports size	M5
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



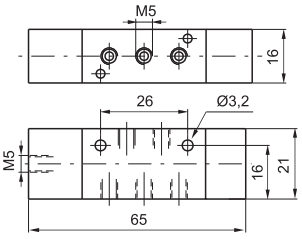


Weight 50 g
Minimum pilot pressure 2 bar

805.32.11.12

5/2 ways





Weight 55 g
Minimum pilot pressure 2 bar

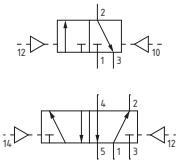
805.52.11.12

Pneumatic-Pneumatic

Coding: 805.Ⓣ.11.11

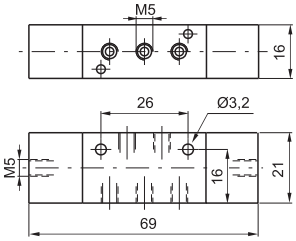
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Orifice size (mm)	2.5
Working ports size	M5
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



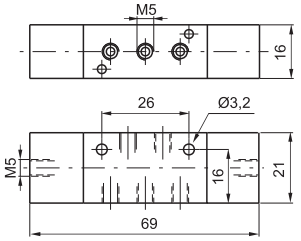


Weight 55 g
Minimum pilot pressure 1,5 bar

805.32.11.11

5/2 ways





Weight 60 g
Minimum pilot pressure 1,5 bar

805.52.11.11

Solenoid - Spring

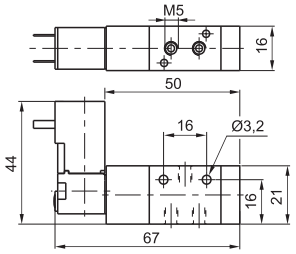
Coding: 805.Ⓣ.0.1.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Orifice size (mm)	2.5
Working ports size	M5

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

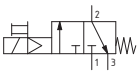
3/2 ways





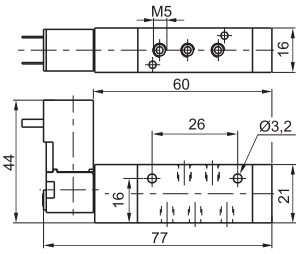
Weight 80 g
Minimum working pressure 2 bar

805.32.0.1.Ⓥ



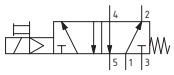
5/2 ways





Weight 85 g
Minimum working pressure 2 bar

805.52.0.1.Ⓥ



Solenoid - Differential

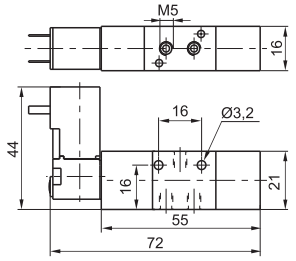
Coding: 805.Ⓣ.0.12.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Orifice size (mm)	2.5
Working ports size	M5

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

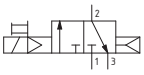
3/2 ways





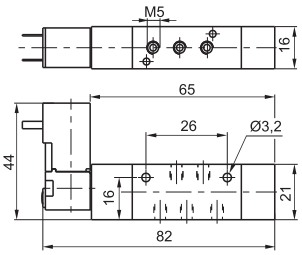
Weight 85 g
Minimum working pressure 2 bar

805.32.0.12.Ⓥ



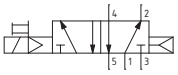
5/2 ways





Weight 90 g
Minimum working pressure 2 bar

805.52.0.12.Ⓥ



Solenoid - Solenoid

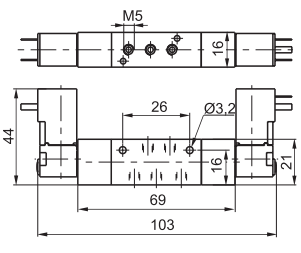
Coding: 805.Ⓣ.0.0.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Orifice size (mm)	2.5
Working ports size	M5

	TYPE
Ⓣ	**32** = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

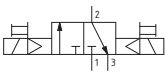
3/2 ways





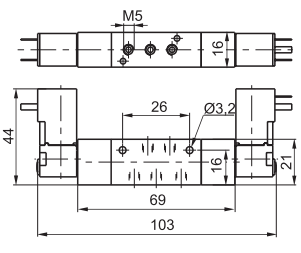
Weight 120 g
Minimum working pressure 1,5 bar

805.32.0.0.Ⓥ



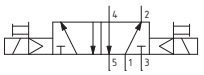
5/2 ways





Weight 125 g
Minimum working pressure 1,5 bar

805.52.0.0.Ⓥ



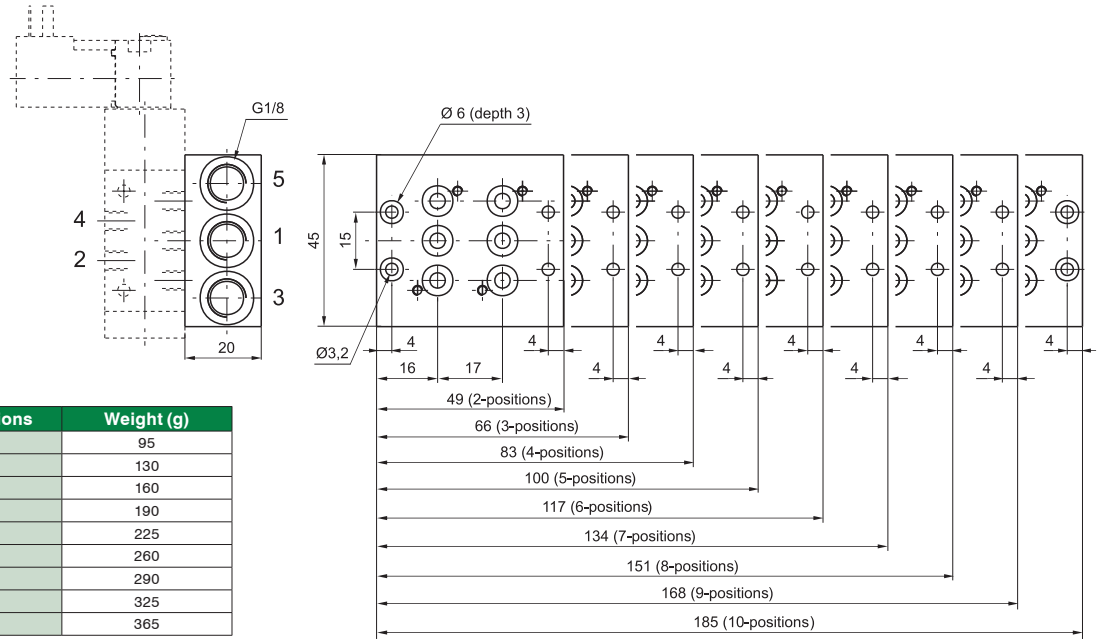
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Collectors



Coding: 805.Ⓝ

Ⓝ	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions

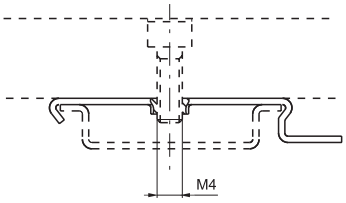


No. positions	Weight (g)
02	95
03	130
04	160
05	190
06	225
07	260
08	290
09	325
10	365

Clip

Coding: 800.00



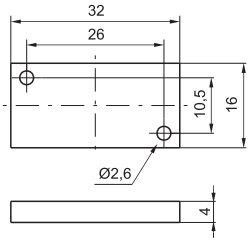


Weight 5 g
(for mounting the distributors groups on guide DIN 46277/3)

Closing plate

Coding: 805.00





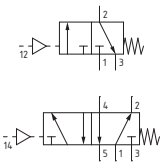
Weight 15 g

Pneumatic - Spring

Coding: 808.Ⓣ.11.1

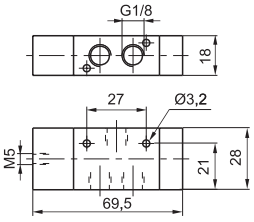
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	520
Orifice size (mm)	4
Working ports size	G1/8"
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



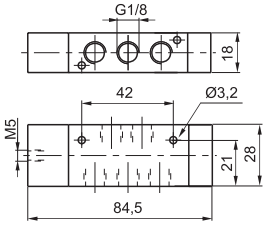


Weight 95 g
Minimum pilot pressure 2 bar

808.32.11.1

5/2 ways





Weight 100 g
Minimum pilot pressure 2 bar

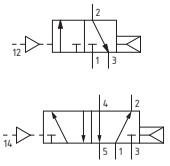
808.52.11.1

Pneumatic - Differential

Coding: 808.Ⓣ.11.12

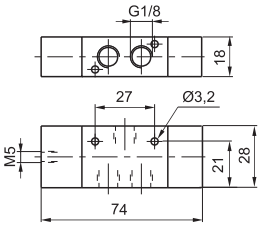
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	520
Orifice size (mm)	4
Working ports size	G1/8"
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



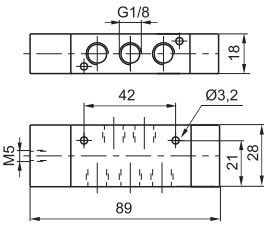


Weight 105 g
Minimum pilot pressure 2 bar

808.32.11.12

5/2 ways





Weight 110 g
Minimum pilot pressure 2 bar

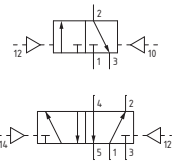
808.52.11.12

Pneumatic-Pneumatic

Coding: 808.Ⓣ.11.11

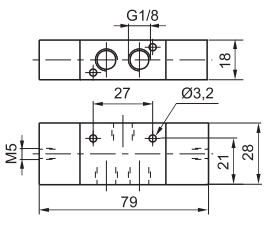
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	520
Orifice size (mm)	4
Working ports size	G1/8"
Pilot ports size	M5

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



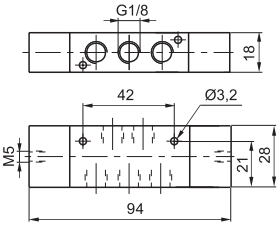


Weight 115 g
Minimum pilot pressure 1,5 bar

808.32.11.11

5/2 ways





Weight 120 g
Minimum pilot pressure 1,5 bar

808.52.11.11

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic-Pneumatic 5/3

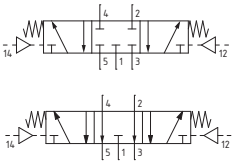
Coding: 808.53.Ⓕ.11.11

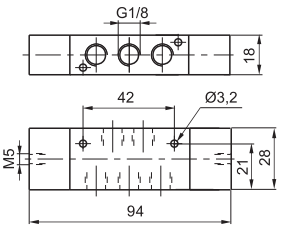
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	520
Orifice size (mm)	4
Working ports size	G 1/8"
Pilot ports size	M5

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres



Weight 125 g
Minimum pilot pressure 3 bar





Solenoid - Spring

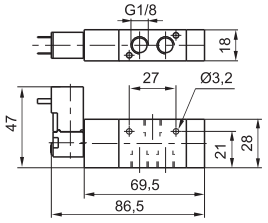
Coding: 808.Ⓣ.0.1.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	520
Orifice size (mm)	4
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

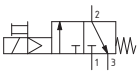
3/2 ways





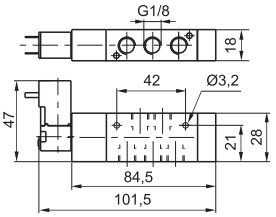
Weight 130 g
Minimum working pressure 2 bar

808.32.0.1.Ⓥ



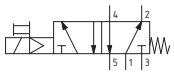
5/2 ways





Weight 135 g
Minimum working pressure 2 bar

808.52.0.1.Ⓥ



Solenoid - Differential

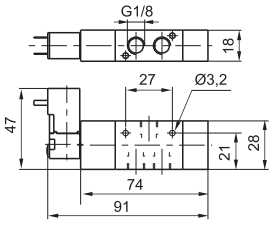
Coding: 808.Ⓣ.0.12.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	520
Orifice size (mm)	4
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

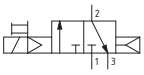
3/2 ways





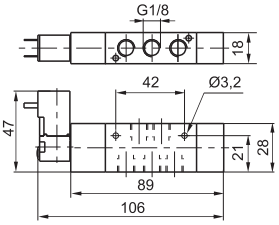
Weight 140 g
Minimum working pressure 2 bar

808.32.0.12.Ⓥ



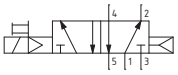
5/2 ways





Weight 145 g
Minimum working pressure 2 bar

808.52.0.12.Ⓥ



Solenoid - Solenoid

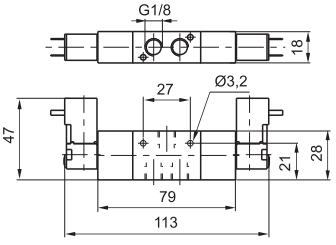
Coding: 808.Ⓣ.0.0.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	520
Orifice size (mm)	4
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.

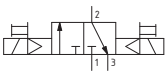
3/2 ways





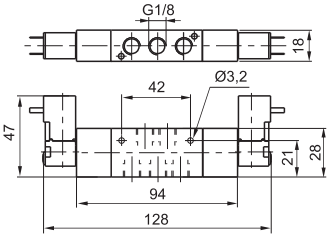
Weight 185 g
Minimum working pressure 1,5 bar

808.32.0.0.Ⓥ



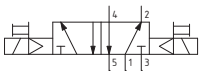
5/2 ways





Weight 190 g
Minimum working pressure 1,5 bar

808.52.0.0.Ⓥ



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid - Solenoid 5/3

Coding: 808.53.Ⓕ.0.0.Ⓥ

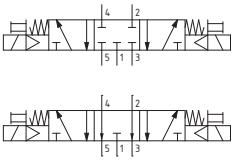
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	520
Orifice size (mm)	4
Working ports size	G 1/8"

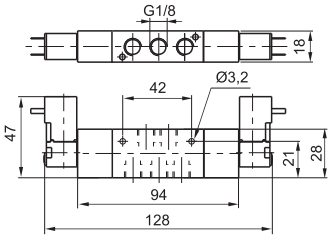
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres

Ⓥ	VOLTAGE
	01 = 12V D.C.
	02 = 24V D.C.
	05 = 24V A.C.
	06 = 110V A.C.
	07 = 230 V A.C.



Weight 190 g
Minimum working pressure 3 bar



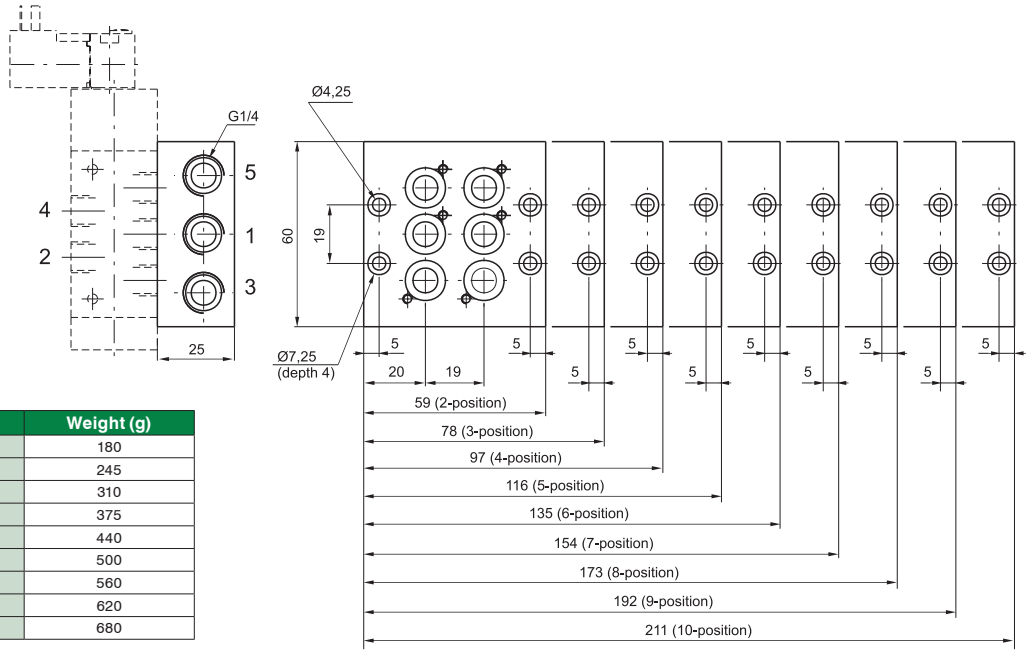


Collectors



Coding: 808.Ⓝ

Ⓝ	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions

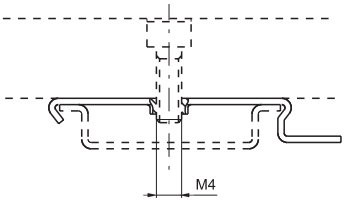


No. positions	Weight (g)
02	180
03	245
04	310
05	375
06	440
07	500
08	560
09	620
10	680

Clip

Coding: 800.00



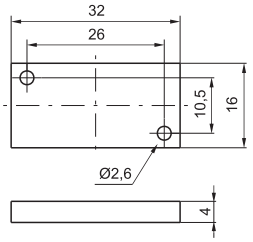


Weight 5 g
(for mounting the distributors groups on guide DIN 46277/3)

Closing plate

Coding: 808.00





Weight 65 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 888

Competitively priced, good performance and versatility combined with a compact design are the main characteristics of this new series of valves.
The aluminium valve body and spool/seal arrangement optimize both the flow rate and the valve switching time.
This series of valves are available with G1/8" and G1/4" ports in 3/2, 5/2 and 5/3 versions.
Monostable or bistable versions are available and include an integrated technopolymer solenoid operator with 9mm stem and built in manual override.
Solenoid valves series 888 are available in point-to-point and serial configurations.
For serial system specifications, see Optyma-F series.
The valves can be supplied with or without the solenoid coil, however, if the solenoid coil is required please refer to the following table:

Voltages		Coil Code	Voltage Code
Direct current DC	12V (3,5W)	MF4	F04
	24V (3,5W)	MF5	F05
Alternating current AC 50 - 60 Hz	24V (3,7W)	MF56	F56
	110V (3,7W)	MF57	F57
	230V (3,7W)	MF58	F58

Connectors Coding		
Voltages		Kit 100 pieces
DC/AC	24V	888.11.01L-K
Alternating current AC 50 - 60 Hz	110V	888.11.02L-K
	230V	888.11.03L-K

Construction characteristics

Body	Aluminium
Seals	NBR
Springs	Spring steel
Operators	Technopolymer Aluminium for spring bottom plates
Pistons	Technopolymer
Spools	Aluminium

Use and maintenance

These valves have an average life of 15 million cycles
depending on the application and air quality, filtered and lubricated air using specified lubricants will dramatically reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust ports 3 and 5 must be protected against the possible ingress of dirt or debris.
Repair kits including the spool complete with seals are available for overhauling the valves; however, although this is a simple operation it should be carried out by a competent person.

Solenoid - Spring - 3/2 (Self feeding)

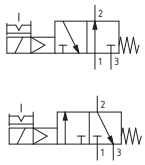
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	790
Orifice size (mm)	5.8
Working ports size	G 1/8"

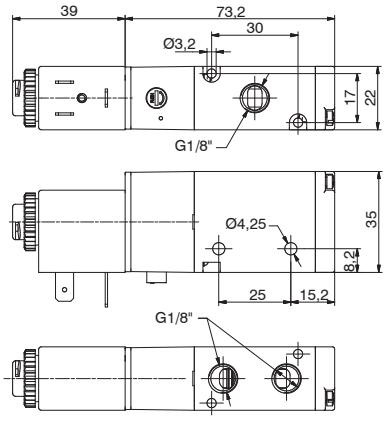
Coding: 8880.32.Ⓕ.39.Ⓥ

Ⓕ	FUNCTION
	A = Normally Open
	C = Normally Closed

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







Weight 210 g
Minimum working pressure 2 bar

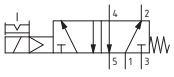
Solenoid - Spring - 5/2 (Self feeding)

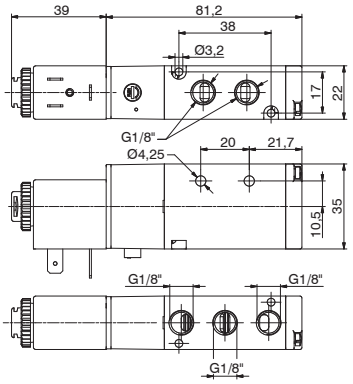
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	790
Orifice size (mm)	5.8
Working ports size	G 1/8"

Coding: 8880.52.00.39.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







Weight 220 g
Minimum working pressure 2 bar

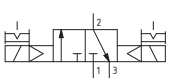
Solenoid - Solenoid - 3/2 (Self feeding)

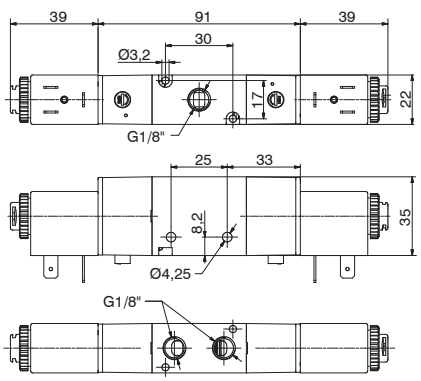
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	790
Orifice size (mm)	5.8
Working ports size	G 1/8"

Coding: 8880.32.00.35.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







Weight 310 g
Minimum working pressure 2 bar

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

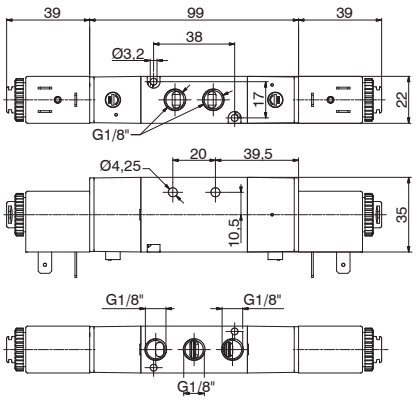
Solenoid - Solenoid - 5/2 (Self feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	790
Orifice size (mm)	5.8
Working ports size	G 1/8"

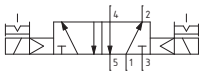
Coding: 8880.52.00.35.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil





Weight 320 g
Minimum working pressure 2 bar



Solenoid - Solenoid - 5/3 (Self feeding)

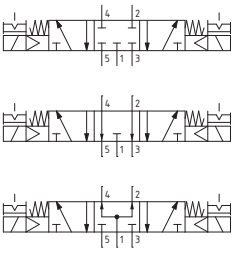
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	440
Orifice size (mm)	5.8
Working ports size	G 1/8"

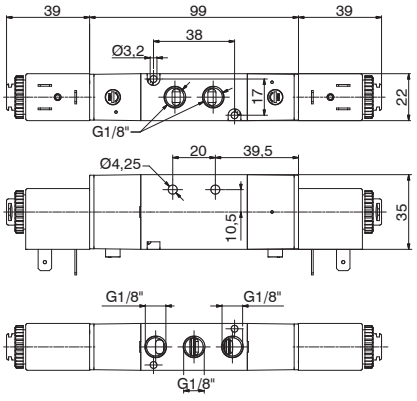
Coding: 8880.53.Ⓕ.35.Ⓥ

Ⓕ	FUNCTION
	31 = Closed Centres
	32 = Open Centres
	33 = Pressured centres

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







Weight 330 g
Minimum working pressure 2,5 bar

Solenoid - Spring - 3/2 (External feeding)

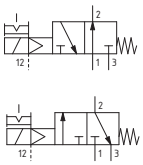
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	790
Orifice size (mm)	5.8
Working ports size	G 1/8"

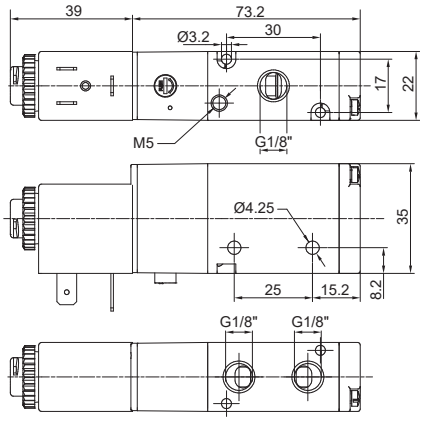
Coding: 8880E.32.Ⓕ.39.Ⓥ

Ⓕ	FUNCTION
	A = Normally open
	C = Normally Closed

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







Weight 210 g
Minimum working pressure 2 bar

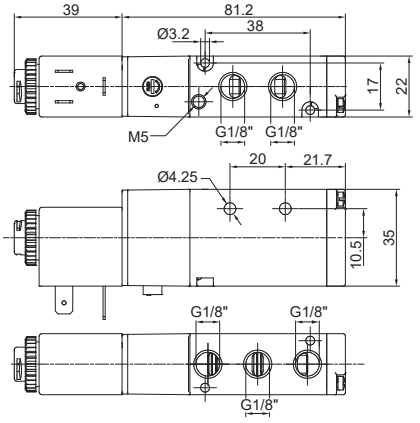
Solenoid - Spring - 5/2 (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	790
Orifice size (mm)	5.8
Working ports size	G 1/8"

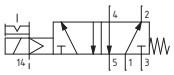
Coding: 8880E.52.00.39.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil





Weight 220 g
Minimum working pressure 2 bar



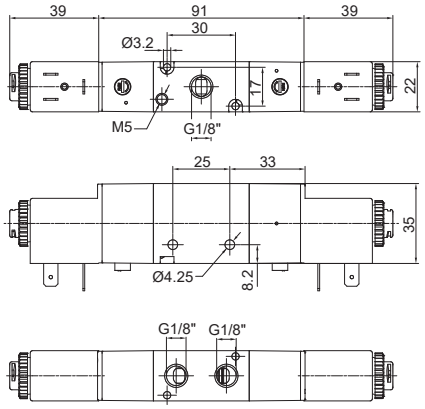
Solenoid - Solenoid - 3/2 (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	790
Orifice size (mm)	5.8
Working ports size	G 1/8"

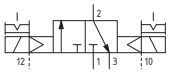
Coding: 8880E.32.00.35.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil





Weight 310 g
Minimum working pressure 2 bar



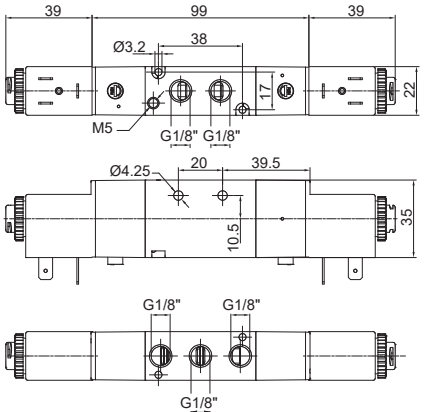
Solenoid - Solenoid - 5/2 (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	790
Orifice size (mm)	5.8
Working ports size	G 1/8"

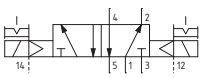
Coding: 8880E.52.00.35.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil





Weight 320 g
Minimum working pressure 2 bar



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid - Solenoid - 5/3 (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	440
Orifice size (mm)	5.8
Working ports size	G 1/8"

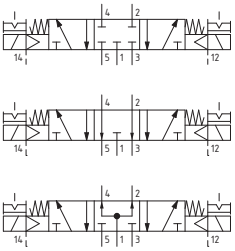
Coding: 8880E.53.Ⓕ.35.Ⓥ

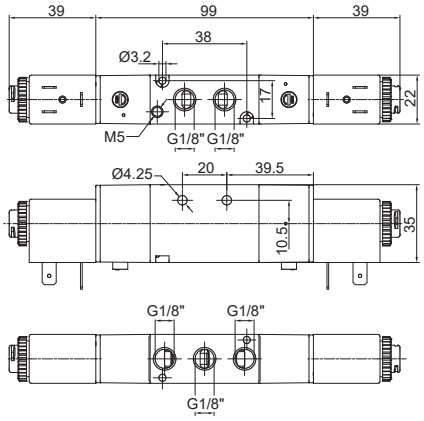
Ⓕ	FUNCTION
	31 = Closed Centres
	32 = Open Centres
	33 = Pressured centres

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil



Weight 330 g
Minimum working pressure 2,5 bar





Solenoid - Spring - 3/2 (Self feeding)

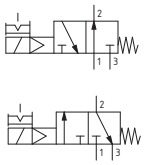
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	890
Orifice size (mm)	6.5
Working ports size	G 1/4"

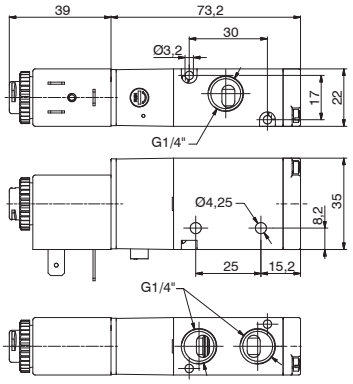
Coding: 8884.32.Ⓕ.39.Ⓥ

Ⓕ	FUNCTION
	A = Normally open
	C = Normally Closed

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







Weight 210 g
Minimum working pressure 2 bar

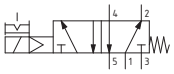
Solenoid - Spring - 5/2 (Self feeding)

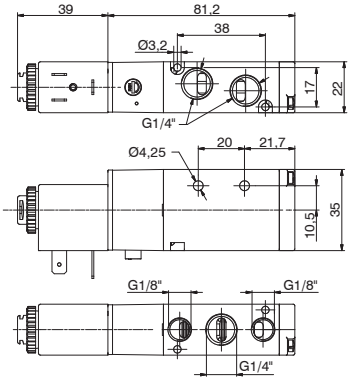
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	890
Orifice size (mm)	6.5
Working ports size	G 1/4"

Coding: 8884.52.00.39.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







Weight 220 g
Minimum working pressure 2 bar

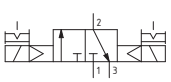
Solenoid - Solenoid - 3/2 (Self feeding)

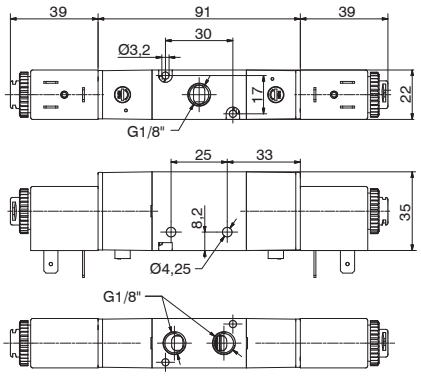
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	890
Orifice size (mm)	6.5
Working ports size	G 1/4"

Coding: 8884.32.00.35.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







Weight 310 g
Minimum working pressure 2 bar

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

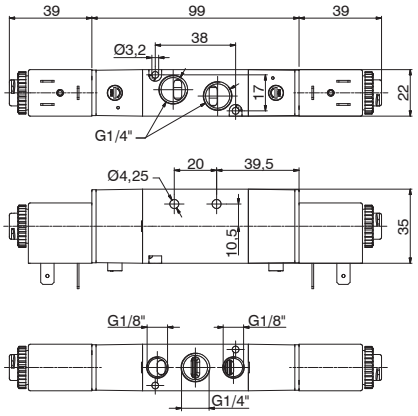
Solenoid - Solenoid - 5/2 (Self feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	890
Orifice size (mm)	6.5
Working ports size	G 1/4"

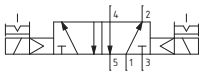
Coding: 8884.52.00.35.Ⓥ

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil





Weight 320 g
Minimum working pressure 2 bar



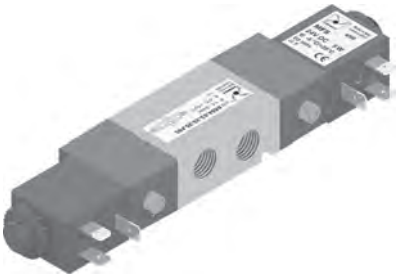
Solenoid - Solenoid - 5/3 (Self feeding)

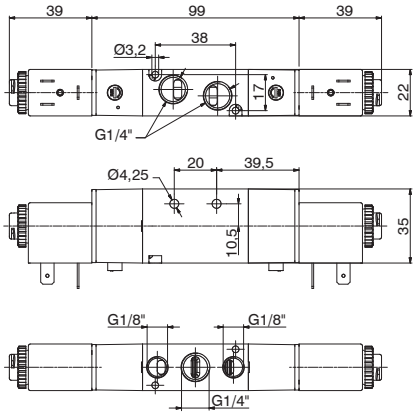
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	8
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6.5
Working ports size	G 1/4"

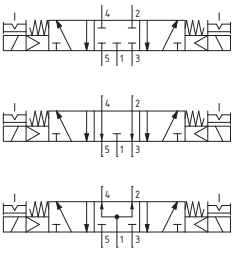
Coding: 8884.53.Ⓕ.35.Ⓥ

Ⓕ	FUNCTION
	31 = Closed Centres
	32 = Open Centres
	33 = Pressured centres

Ⓥ	VOLTAGE
	F04 = 12 V DC
	F05 = 24 V DC
	F56 = 24 V (50-60 Hz)
	F57 = 110 V (50-60 Hz)
	F58 = 230 V (50-60 Hz)
	F00 = Without coil







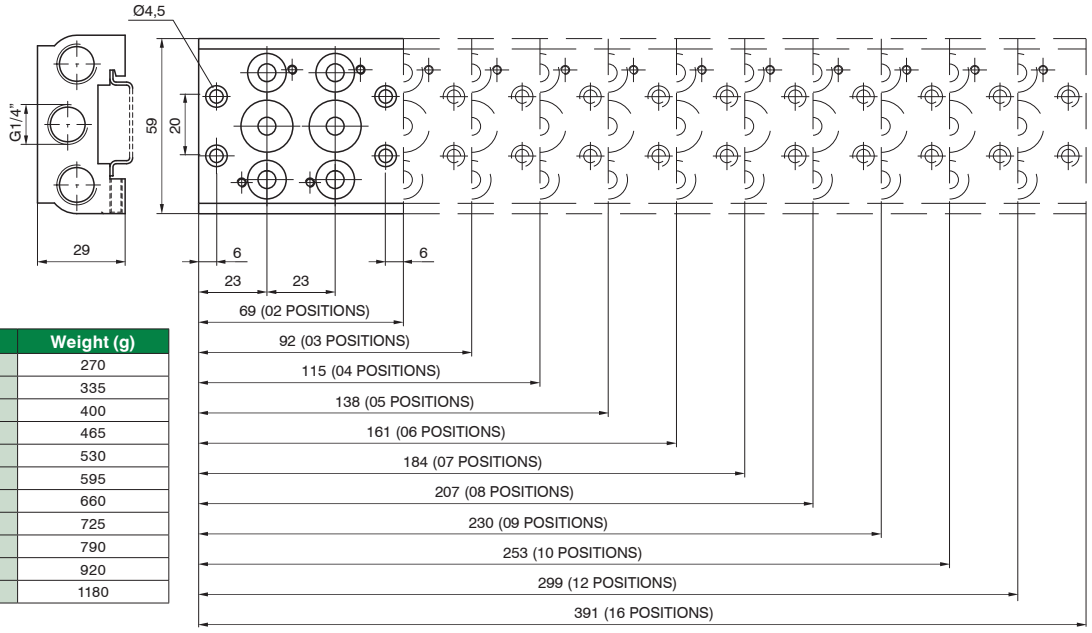
Weight 330 g
Minimum working pressure 2,5 bar

Manifold (Valves 5/2 - 5/3)



Coding: 888.Ⓝ

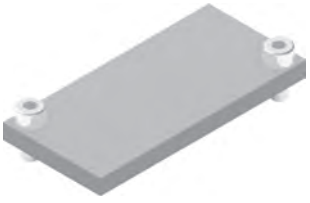
Ⓝ	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions
	12 = 12 positions
	16 = 16 positions

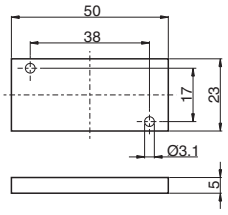


No. positions	Weight (g)
02	270
03	335
04	400
05	465
06	530
07	595
08	660
09	725
10	790
12	920
16	1180

Closing plate

Coding: 888.00





Weight 18 g
Closing plate supplied complete with 2 fixing screws to the manifold and 2 fixing screws to the multi-pin base

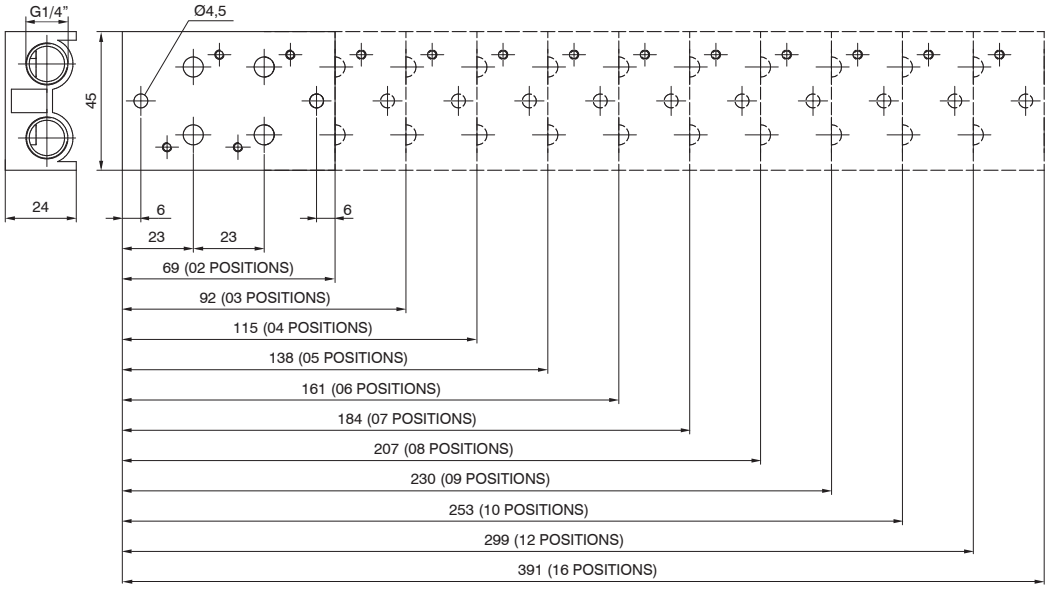
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Manifold (Valves 3/2)



Coding: 8883.Ⓝ

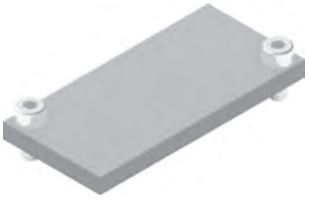
	NO. POSITIONS
Ⓝ	**02** = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions
	12 = 12 positions
	16 = 16 positions

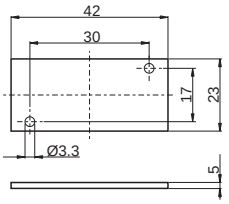


No. positions	Weight (g)
02	270
03	335
04	400
05	465
06	530
07	595
08	660
09	725
10	790
12	920
16	1180

Closing plate (Valves 3/2)

Coding: 8883.00





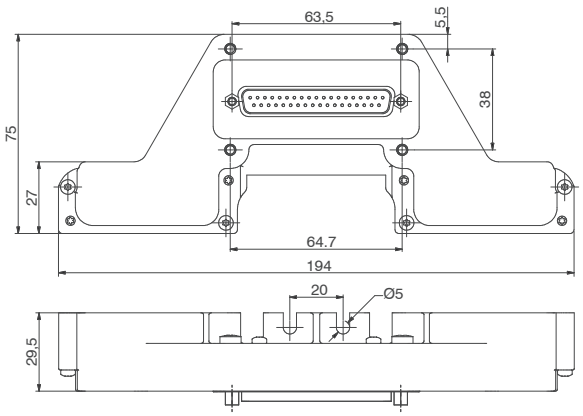
Weight 10 g
Closing plate supplied complete with 2 fixing screws to the manifold

Endplate, 37 Poles IP65

Coding: 888M.37.10



Weight 186 g
The IP65 protection is obtained by IP65 Pneumax cable.
Code complete with assembled endplate and 4 manifold fixing screws, previously mounted on the Manifold.

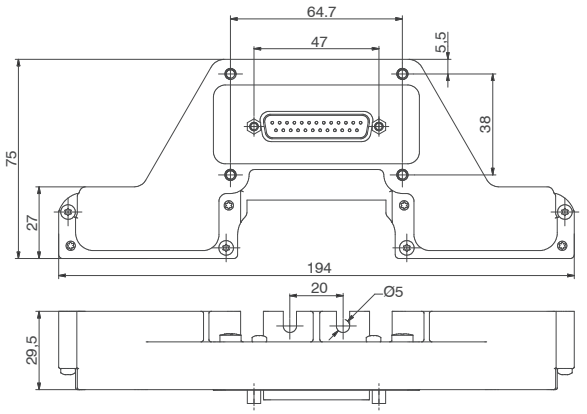


Endplate, 25 Poles IP65

Coding: 888M.25.10



Weight 181 g
The IP65 protection is obtained by IP65 Pneumax cable.
Code complete with assembled endplate and 4 manifold fixing screws, previously mounted on the Manifold.

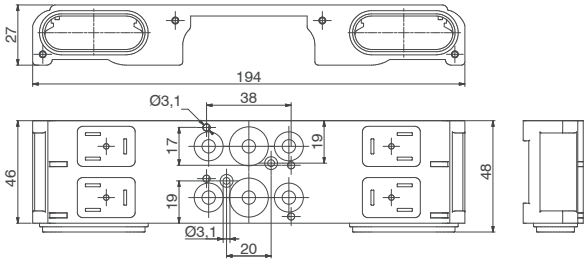


Modular base, 2 positions IP65

Coding: 888M.02.BM



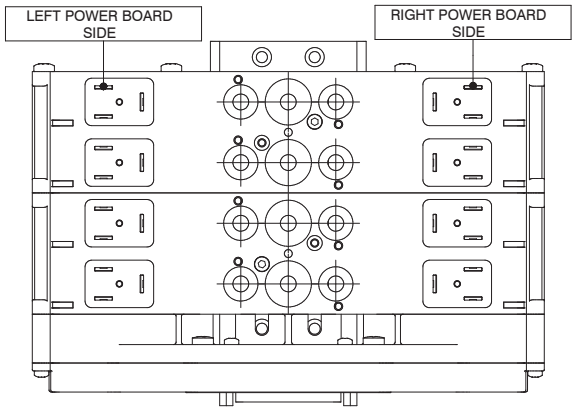
Weight 220 g
Complete with seals and fixing screws
Usable only for 5/2 and 5/3 Distributors



Left and Right Power board PNP 24 VDC

Coding: 888M.Ⓝ.Ⓣ





Ⓝ	NO. POSITIONS
	04 = 4 positions
	08 = 8 positions
	12 = 12 positions
	16 = 16 positions
Ⓣ	TYPE
	00 = Left
	01 = Right

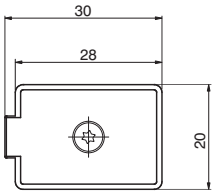
No. positions	Weight (g)
04	11.2
08	22.4
12	33.6
16	44.8

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Closing plate

Coding: 888M.22.PC



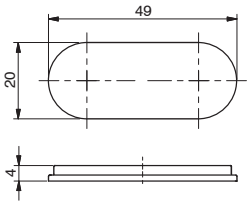


Weight 3 g
Closing plate supplied complete with 1 Seal and fixing screw with O ring
Maximum fixing torque for fittings: 0,35Nm

Multi-pin base plug

Coding: 888M.T



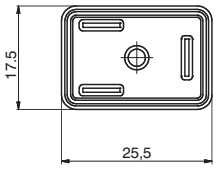


Weight 2,6 g
Complete with: Nr. 1 Plug, Nr. 2 Fixing screws

Seals

Coding: 888M.22.G





Weight 0,52 g

In line cable complete with connector, IP40

Coding: 2400.Ⓒ.Ⓛ.00



Ⓒ	CONNECTOR
	25 = 25 poles
	37 = 37 poles
Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters

Cable complete with connector, 25 Poles, IP65

Coding: 2300.25.Ⓛ.Ⓒ



Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 37 Poles, IP65

Coding: 2400.37.Ⓛ.Ⓒ



Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

Manifold layout Configuration Point to Point

3/2 valves

V22	P (point to point)	–	–	...

Nr. POSITIONS:

A= 02 positions
B= 03 positions
C= 04 positions
D= 05 positions
E= 06 positions
F= 07 positions
G= 08 positions
H= 09 positions
I= 10 positions
M= 12 positions
Q= 16 positions

VOLTAGE:

A= 12 V DC
B= 24 V DC
C= 24 V (50-60 Hz)
D= 110 V (50-60 Hz)
E= 230 V (50-60 Hz)
Z= without coil

SHORT CODE FUNCTION / CONNECTION :

G1= EV 3/2 SOL.-SPRING G1/8" N.O.
G2= EV 3/2 SOL.-SPRING G1/4" N.O.
H1= EV 3/2 SOL.-SPRING G1/8" N.C.
H2= EV 3/2 SOL.-SPRING G1/4" N.C.

L1= EV 3/2 SOL.-SPRING G1/8" N.O. EXT. FEED.
M1= EV 3/2 SOL.-SPRING G1/8" N.C. EXT. FEED.

N1= EV 3/2 SOL.-SOL. G1/8"
N2= EV 3/2 SOL.-SOL. G1/4"
P1= EV 3/2 SOL.-SOL. G1/8" EXT. FEEDING

T4= VALVE SPACE PLUG 3/2

5/2 valves

V22	P (point to point)	–	–	...

Nr. POSITIONS:

A= 02 positions
B= 03 positions
C= 04 positions
D= 05 positions
E= 06 positions
F= 07 positions
G= 08 positions
H= 09 positions
I= 10 positions
M= 12 positions
Q= 16 positions

VOLTAGE:

A= 12 V DC
B= 24 V DC
C= 24 V (50-60 Hz)
D= 110 V (50-60 Hz)
E= 230 V (50-60 Hz)
Z= without coil

SHORT CODE FUNCTION / CONNECTION :

A1= S.V. 5/2 SOL.-SPRING G1/8"
A2= S.V. 5/2 SOL.-SPRING G1/4"
D1= S.V. 5/2 SOL.-SPRING G1/8" EXT. FEED.
B1= S.V. 5/2 SOL.-SOL. G1/8"
B2= S.V. 5/2 SOL.-SOL. G1/4"
E1= S.V. 5/2 SOL.-SOL. G1/8" EXT. FEED.
C1= S.V. 5/3 CC SOL.-SOL. G1/8"
C2= S.V. 5/3 CC SOL.-SOL. G1/4"
F1= S.V. 5/3 CC SOL.-SOL. G1/8" EXT. FEED.
C3= S.V. 5/3 OC SOL.-SOL. G1/8"
C4= S.V. 5/3 OC SOL.-SOL. G1/4"
F3= S.V. 5/3 OC SOL.-SOL. G1/8" EXT. FEED.
C5= S.V. 5/3 PC SOL.-SOL. G1/8"
C6= S.V. 5/3 PC SOL.-SOL. G1/4"
F5= S.V. 5/3 PC SOL.-SOL. G1/8" EXT. FEED.
T3= VALVE SPACE PLUG

Manifold layout Configuration Multi-pin

V22	M (Multi-pin)	– –	–	–	...

LEFT ENDPLATES

P2= 25 poles (max. 11 S.E.)
P3= 37 poles (max. 16 S.E.)

LEFT BOARD SIGNALS

C= 04 positions
G= 08 positions
M= 12 positions
Q= 16 positions

RIGHT BOARD SIGNALS

C= 04 positions
G= 08 positions
M= 12 positions
Q= 16 positions
00= no board

SHORT CODE FUNCTION / CONNECTION :

A1= S.V. 5/2 SOL.-SPRING G1/8"
A2= S.V. 5/2 SOL.-SPRING G1/4"
D1= S.V. 5/2 SOL.-SPRING G1/8" EXT. FEEDING
B1= S.V. 5/2 SOL.-SOL. G1/8"
B2= S.V. 5/2 SOL.-SOL. G1/4"
E1= S.V. 5/2 SOL.-SOL. G1/8" EXT. FEEDING
C1= S.V. 5/3 CC SOL.-SOL. G1/8"
C2= S.V. 5/3 CC SOL.-SOL. G1/4"
F1= S.V. 5/3 CC SOL.-SOL. G1/8" EXT. FEEDING
C3= S.V. 5/3 OC SOL.-SOL. G1/8"
C4= S.V. 5/3 OC SOL.-SOL. G1/4"
F3= S.V. 5/3 OC SOL.-SOL. G1/8" EXT. FEEDING
C5= S.V. 5/3 PC SOL.-SOL. G1/8"
C6= S.V. 5/3 PC SOL.-SOL. G1/4"
F5= S.V. 5/3 PC SOL.-SOL. G1/8" EXT. FEEDING
T1= VALVE SPACE PLUG
+ Nr. 2 ELECTRICAL SPACE PLUGS

Serial manifold layout (for the serial system node, see the Optyma-F Series)

V22	S (Serial)	– –	–	– –	–	–	...

INPUT MODULE

A= None
D1= 8IN DIGITAL MODULE M8
D2= 16IN DIGITAL MODULE D-SUB 25 P
T1= 2IN ANALOG MODULE 0-5V
T2= 2IN ANALOG MODULE 0-10V
C1= 2IN ANALOG MODULE 0-20mA
C1= 2IN ANALOG MODULE 4-20mA

SERIAL NODE

C3= CANopen® 32 OUT
D3= DeviceNet 32 OUT
P3= PROFIBUS DP 32 OUT
A3= EtherCAT® 32 OUT
I3= EtherNet/IP 32 OUT
N3= PROFINET IO RT 32 OUT

LEFT BOARD SIGNALS

C= 04 positions
G= 08 positions
M= 12 positions
Q= 16 positions

RIGHT BOARD SIGNALS

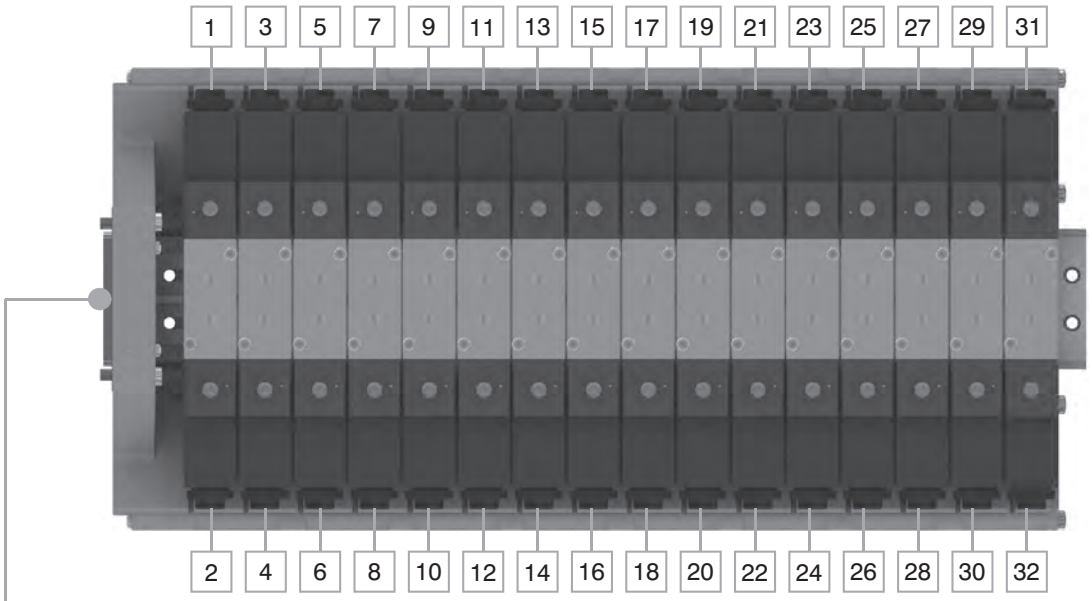
C= 04 positions
G= 08 positions
M= 12 positions
Q= 16 positions
00= no board

SHORT CODE FUNCTION / CONNECTION :

A1= S.V. 5/2 SOL.-SPRING G1/8"
A2= S.V. 5/2 SOL.-SPRING G1/4"
D1= S.V. 5/2 SOL.-SPRING G1/8" EXT. FEED.
B1= S.V. 5/2 SOL.-SOL. G1/8"
B2= S.V. 5/2 SOL.-SOL. G1/4"
E1= S.V. 5/2 SOL.-SOL. G1/8" EXT. FEED.
C1= S.V. 5/3 CC SOL.-SOL. G1/8"
C2= S.V. 5/3 CC SOL.-SOL. G1/4"
F1= S.V. 5/3 CC SOL.-SOL. G1/8" EXT. FEED.
C3= S.V. 5/3 OC SOL.-SOL. G1/8"
C4= S.V. 5/3 OC SOL.-SOL. G1/4"
F3= S.V. 5/3 OC SOL.-SOL. G1/8" EXT. FEED.
C5= S.V. 5/3 PC SOL.-SOL. G1/8"
C6= S.V. 5/3 PC SOL.-SOL. G1/4"
F5= S.V. 5/3 PC SOL.-SOL. G1/8" EXT. FEED.
T1= VALVE SPACE PLUG
+ Nr. 2 ELECTRICAL SPACE PLUGS

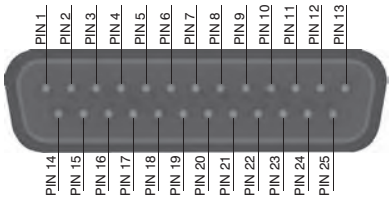
NOTE:
When constructing the configuration, please consider that the maximum number of valves that can be mounted on the manifold is 16, regardless of the valve type.
Any valve position presents two electrical connections: in case of use of monostable valves(A1-A2) it will be necessary to assemble a plug to protect the unused electrical connection.
The correspondence between the electrical signal and its location on the manifold is showed in the following diagrams.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



Connector 25 Poles from 1 to 11
Positions E.V. Bistable / Monostable

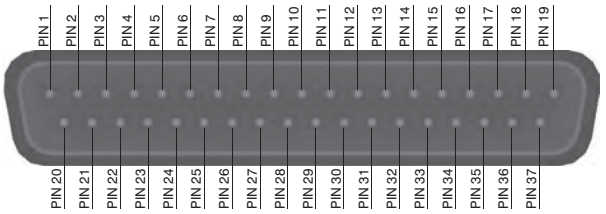




1 - 22 = SIGNALS
23 - 24 = GND
25 = NC

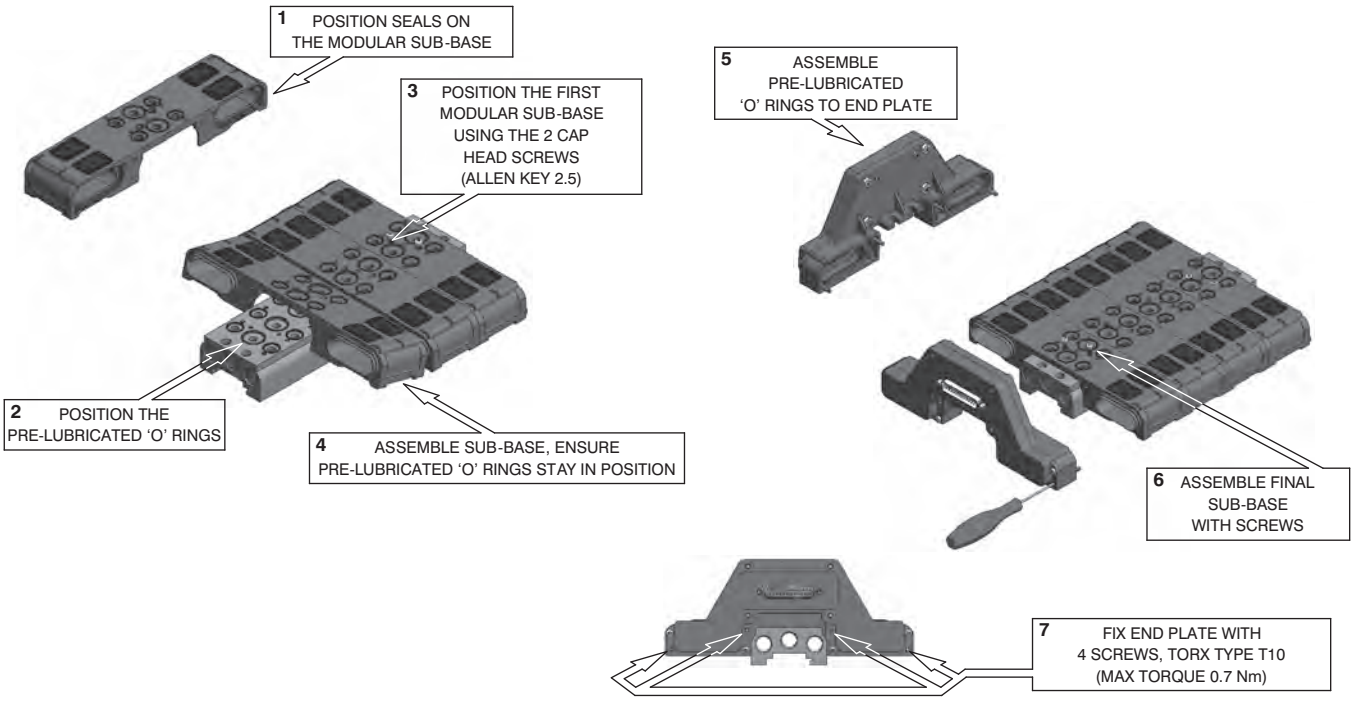
Connector 37 Poles from 1 to 16
Positions E.V. Bistable / Monostable

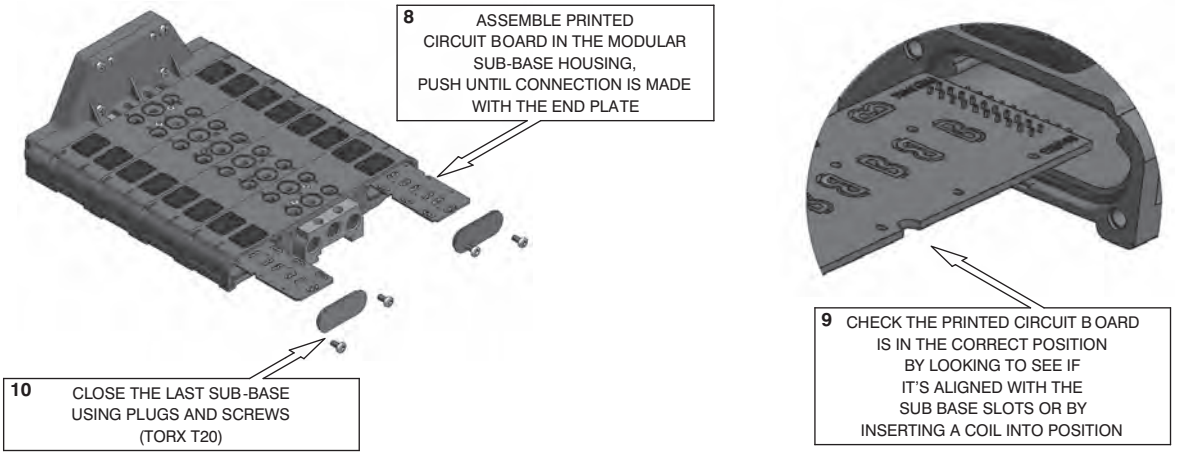


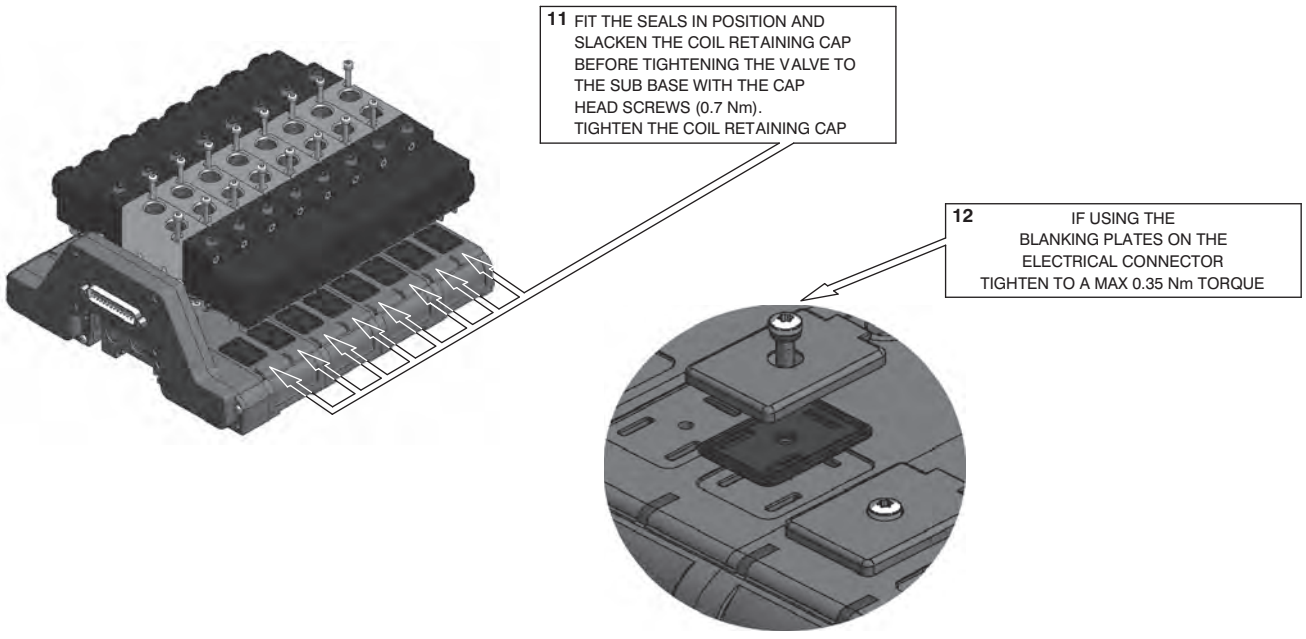


1 - 32 = SIGNALS
33 - 35 = GND
36 - 37 = NC

Assembly sequence







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 400

These are 2 stage valves actuated electro-pneumatically. A serie 300 directly operated solenoid valve actuates pneumatically the principal power distributor.
This integrated system allows configurations of systems requiring very little space.
The pilot air is normally taken from the inlet port (autofeed) and the only actuating signal is electric.
The range of the solenoid valves, as far as dimensions and mechanical construction, is similar to series 200.
We have therefore solenoid valves G 1/8", G 1/4", G 1/2" and G 1" with identical pneumatic characteristics that are, however, actuated electrically.
They have a balanced spool, insentive to presence or absence of pressure. They are constructed in 3 and 5 way with 1 solenoid (monostable) or 2 solenoids (bistable) and also 5 ways 3 positions with closed centres, open centres and pressured centres.
If should be noted that the autofeed of the electric pilot requires always inlet through port 1 and if a 3 ways normally open configuration is desired, it is necessary to switch the operators.
Please note that while the microsolenoid can be mounted in any direction, standard solenoid requires mounting as inticated in the photographs and diagrams.

The order codes pertain only to the solenoid valve with mechanical actuator "M2" or solenoid "S*" already assembled.
M2 coils are not included and have to be ordered separately (see Series 300).
Coils for M2 and solenoids "S" homologated are available (see Series 300).

The solenoid valves **G1/8" (488)**, are supplied complete with coil (see Series 300) so that the tension has to be added to the solenoid valve code:

M9 = coil 24 V D.C. (rating power 2 Watt)
M11 = coil 24 V D.C. (rating power 3.8 watt)
M56 = coil 24 V 50/60 Hz (rating power 9 VA)
M57 = coil 110 V 50/60 Hz (rating power 9 VA)
M58 = coil 230 V 50/60 Hz (rating power 9 VA)

"Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"

Construction characteristics

Body	Aluminium
Spacers	Technopolymer (aluminium for G1")
Seals	NBR Polyurethane compound for oil free applications (G 1/8", G 1/4" and G 1/2")
Springs	Stainless steel or spring steel
Operators	Aluminium Technopolymer for spring botton plate G 1/8", G1/4", G 1/2" and aluminium for G 1"
Spools	Steel

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
Repair kits including the spool complete with seals are available for overhauling the valves.
However, although this is a simple operation it should be carried out by a competent person.

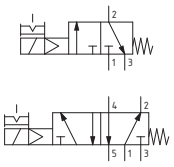
ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Solenoid - Spring

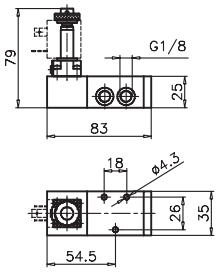
Coding: 468.Ⓣ.0.1.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



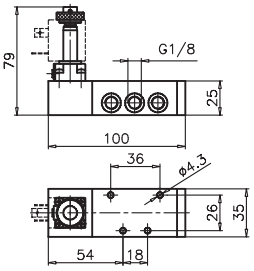




Weight 240 g
Minimum working pressure 2,5 bar

468.32.0.1.M2





Weight 240 g
Minimum working pressure 2,5 bar

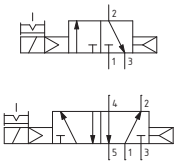
468.52.0.1.M2

Solenoid - Differential

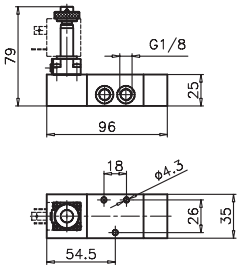
Coding: 468.Ⓣ.0.12.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



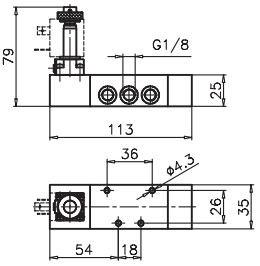




Weight 280 g
Minimum working pressure 2,5 bar

468.32.0.12.M2





Weight 320 g
Minimum working pressure 2,5 bar

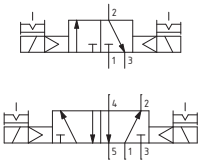
468.52.0.12.M2

Solenoid - Solenoid

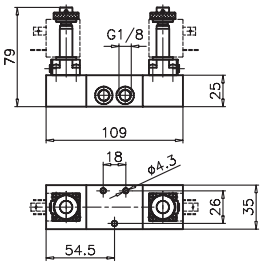
Coding: 468.Ⓣ.0.0.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



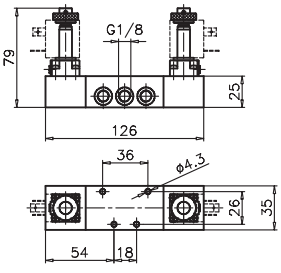




Weight 370 g
Minimum working pressure 2 bar

468.32.0.0.M2





Weight 410 g
Minimum working pressure 2 bar

468.52.0.0.M2

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

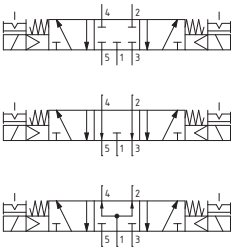
Solenoid - Solenoid - 5/3

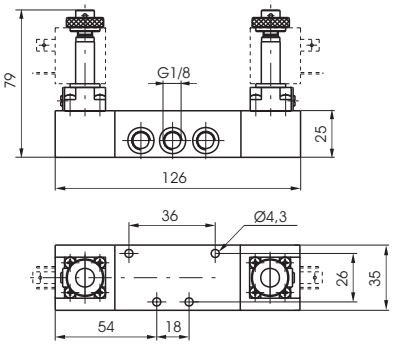
Coding: 468.53.Ⓕ.0.0.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







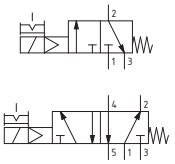
Weight 420 g
Minimum working pressure 3 bar

Solenoid - Spring

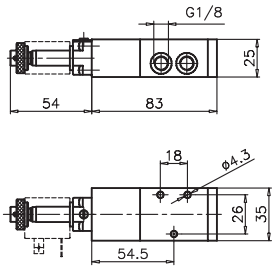
Coding: 468/1.Ⓣ.0.1.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



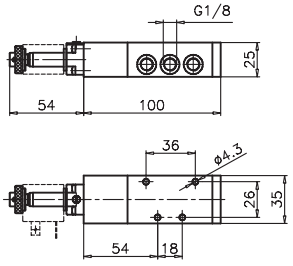




Weight 240 g
Minimum working pressure 2,5 bar

468/1.32.0.1.M2





Weight 280 g
Minimum working pressure 2,5 bar

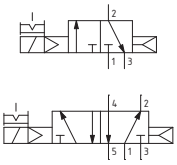
468/1.52.0.1.M2

Solenoid - Differential

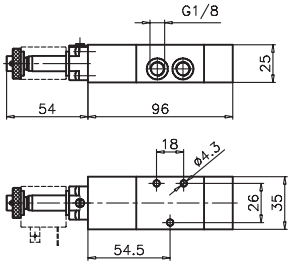
Coding: 468/1.Ⓣ.0.12.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



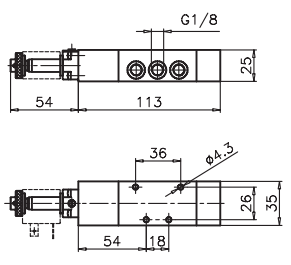




Weight 280 g
Minimum working pressure 2,5 bar

468/1.32.0.12.M2





Weight 320 g
Minimum working pressure 2,5 bar

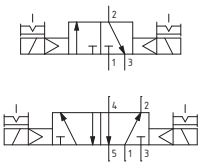
468/1.52.0.12.M2

Solenoid - Solenoid

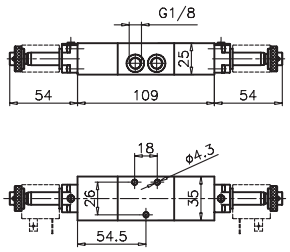
Coding: 468/1.❶.0.0.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G 1/8"

❶	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



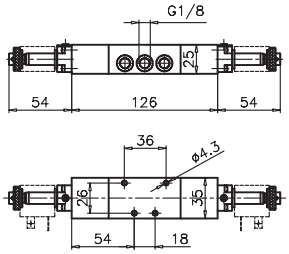




Weight 370 g
Minimum working pressure 2 bar

468/1.32.0.0.M2





Weight 410 g
Minimum working pressure 2 bar

468/1.52.0.0.M2

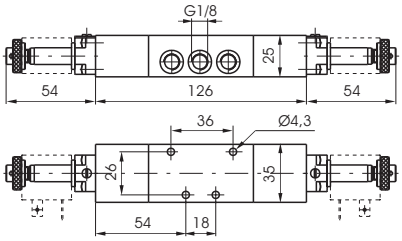
Solenoid - Solenoid - 5/3

Coding: 468/1.53.❶.0.0.M2

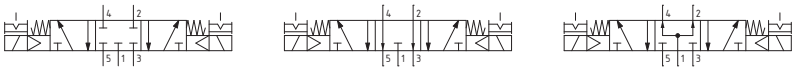
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"

❶	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres





Weight 420 g
Minimum working pressure 3 bar



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid - Spring

Coding: 488.Ⓣ.0.1.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	20,3 (3 ways) 22,5 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	44,5 (3 ways) 47,0 (5 ways)

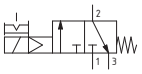
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

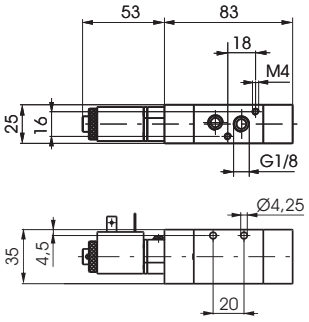
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 220 g
Minimum working pressure 2,5 bar

488.32.0.1.Ⓥ

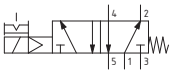


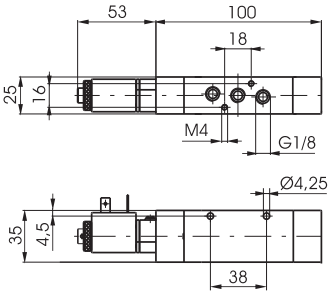




Weight 260 g
Minimum working pressure 2,5 bar

488.52.0.1.Ⓥ





Solenoid - Differential

Coding: 488.Ⓣ.0.12.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	28,0 (3 ways) 28,3 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	34,5 (3 ways) 35,5 (5 ways)

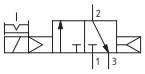
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

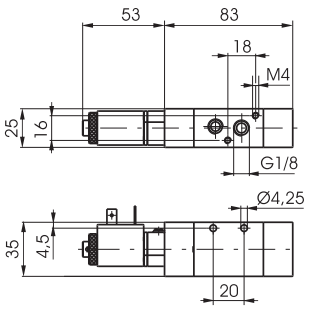
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 220 g
Minimum working pressure 2,5 bar

488.32.0.12.Ⓥ

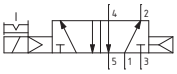


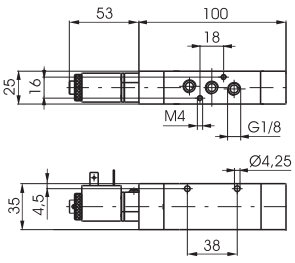




Weight 260 g
Minimum working pressure 2,5 bar

488.52.0.12.Ⓥ





Solenoid - Solenoid

Coding: 488.Ⓣ.0.0.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	19,0 (3 ways) 18,2 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	21,1 (3 ways) 18,5 (5 ways)

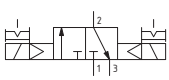
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

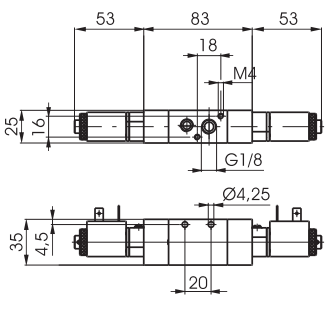
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 320 g
Minimum working pressure 2 bar

488.32.0.0.Ⓥ

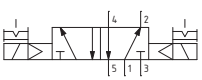


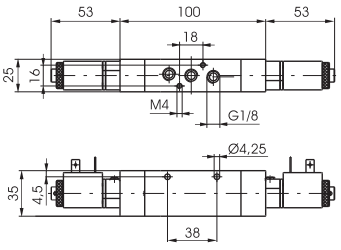




Weight 360 g
Minimum working pressure 2 bar

488.52.0.0.Ⓥ





Solenoid - Solenoid - 5/3

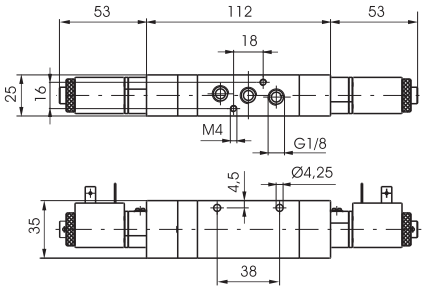
Coding: 488.53.Ⓕ.0.0.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	23,0 (closed centres) 21,5 (open centres) 18,9 (pressured centres)
Response time according to ISO 12238, deactivation time (ms)	41,0 (closed centres) 38,0 (open centres) 40,2 (pressured centres)

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres

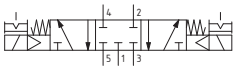
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



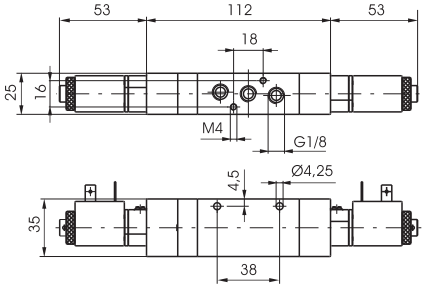


Weight 400 g
Minimum working pressure 3 bar

488.53.31.0.0.Ⓥ

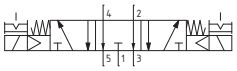




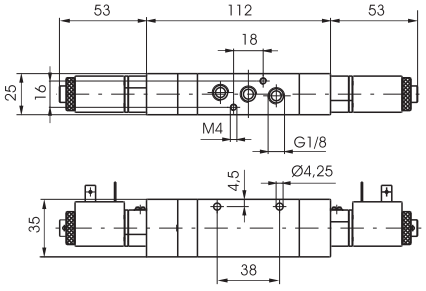


Weight 400 g
Minimum working pressure 3 bar

488.53.32.0.0.Ⓥ

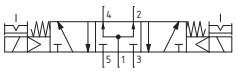






Weight 400 g
Minimum working pressure 3 bar

488.53.33.0.0.Ⓥ



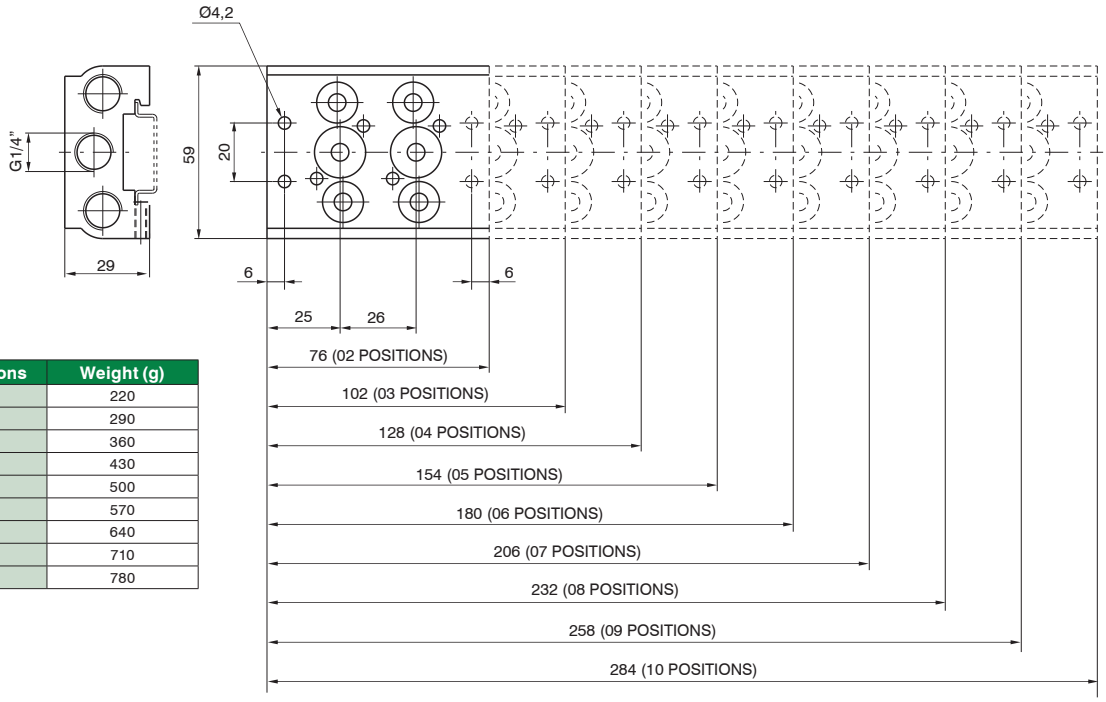
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Collectors



Coding: 488.Ⓝ

Ⓝ	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions

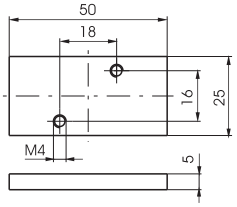


No. positions	Weight (g)
02	220
03	290
04	360
05	430
06	500
07	570
08	640
09	710
10	780

Closing plate

Coding: 488.00





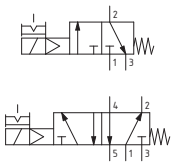
Weight 25 g

Solenoid - Spring

Coding: 464.Ⓣ.0.1.M2

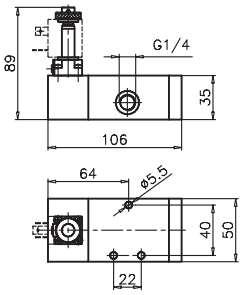
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G 1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



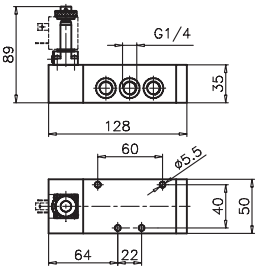


Weight 530 g
Minimum working pressure 2,5 bar

464.32.0.1.M2

5/2 ways





Weight 625 g
Minimum working pressure 2,5 bar

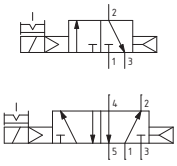
464.52.0.1.M2

Solenoid - Differential

Coding: 464.Ⓣ.0.12.M2

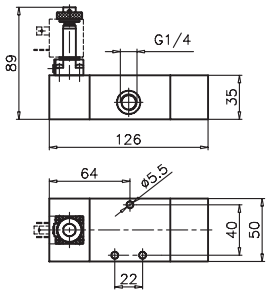
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G 1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



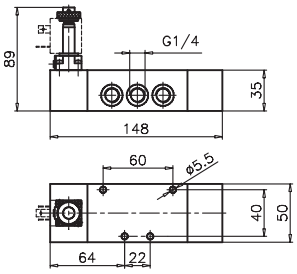


Weight 650 g
Minimum working pressure 2,5 bar

464.32.0.12.M2

5/2 ways





Weight 740 g
Minimum working pressure 2,5 bar

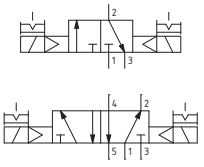
464.52.0.12.M2

Solenoid - Solenoid

Coding: 464.Ⓣ.0.0.M2

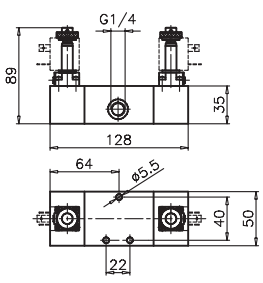
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G 1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



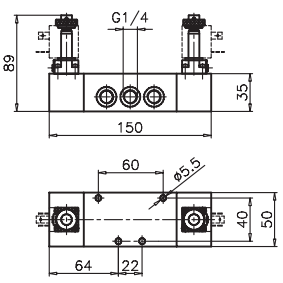


Weight 730 g
Minimum working pressure 2 bar

464.32.0.0.M2

5/2 ways





Weight 820 g
Minimum working pressure 2 bar

464.52.0.0.M2

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

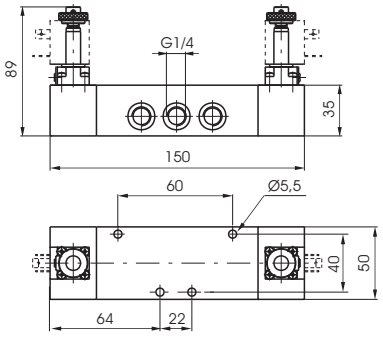
Solenoid - Solenoid - 5/3

Coding: 464.53.Ⓕ.0.0.M2

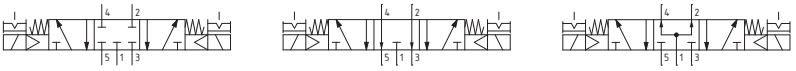
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1280
Orifice size (mm)	8
Working ports size	G 1/4"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres





Weight 820 g
Minimum working pressure 3 bar

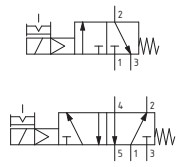


Solenoid - Spring

Coding: 464/1.❶.0.1.M2

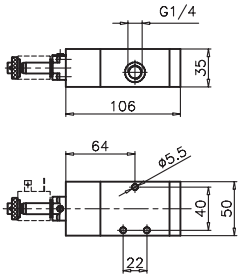
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G 1/4"

❶	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



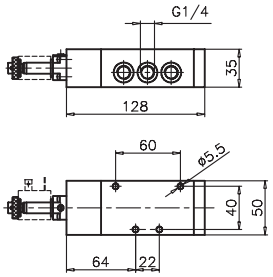


Weight 530 g
Minimum working pressure 2,5 bar

464/1.32.0.1.M2

5/2 ways





Weight 625 g
Minimum working pressure 2,5 bar

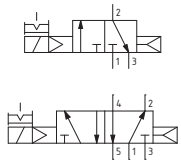
464/1.52.0.1.M2

Solenoid - Differential

Coding: 464/1.❶.0.12.M2

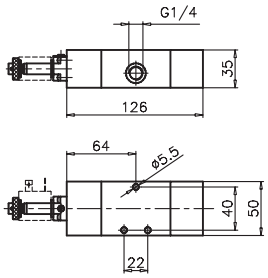
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G 1/4"

❶	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



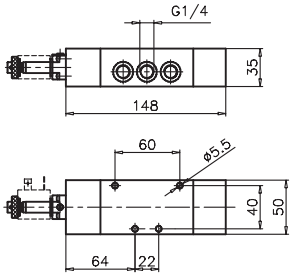


Weight 650 g
Minimum working pressure 2,5 bar

464/1.32.0.12.M2

5/2 ways





Weight 740 g
Minimum working pressure 2,5 bar

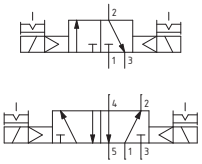
464/1.52.0.12.M2

Solenoid - Solenoid

Coding: 464/1.❶.0.0.M2

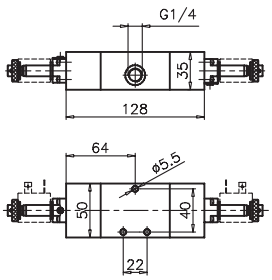
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1360
Orifice size (mm)	8
Working ports size	G 1/4"

❶	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



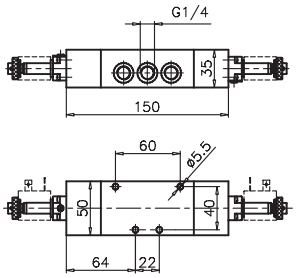


Weight 730 g
Minimum working pressure 2 bar

464/1.32.0.0.M2

5/2 ways





Weight 820 g
Minimum working pressure 2 bar

464/1.52.0.0.M2

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

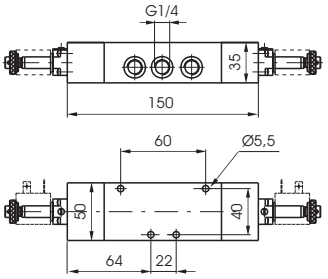
Solenoid - Solenoid - 5/3

Coding: 464/1.53.Ⓕ.0.0.M2

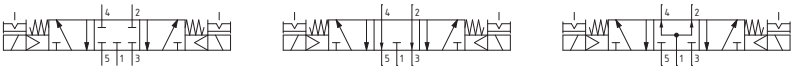
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1280
Orifice size (mm)	8
Working ports size	G 1/4"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres





Weight 820 g
Minimum working pressure 3 bar



Solenoid - Spring

Coding: 452.Ⓣ.0.1.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



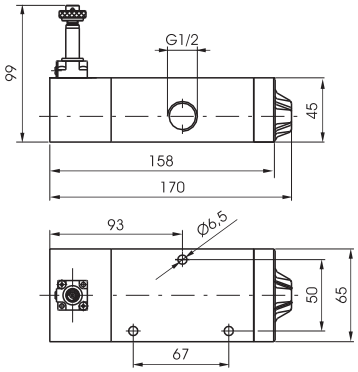
Weight 1152 g
Minimum working pressure 2,5 bar

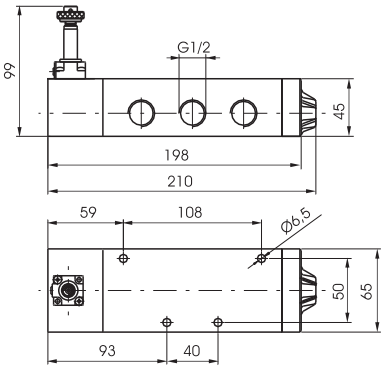
452.32.0.1.M2

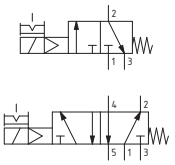


Weight 1422 g
Minimum working pressure 2,5 bar

452.52.0.1.M2







Solenoid - Differential

Coding: 452.Ⓣ.0.12.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



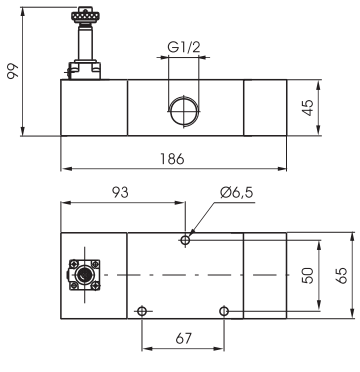
Weight 1422 g
Minimum working pressure 2,5 bar

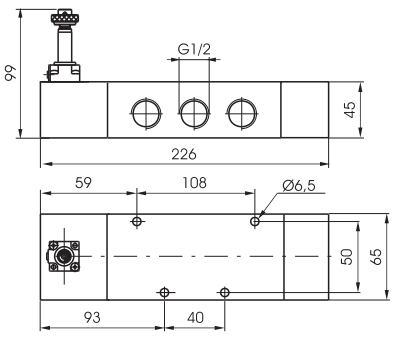
452.32.0.12.M2

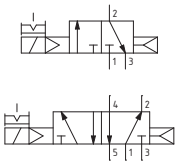


Weight 1692 g
Minimum working pressure 2 bar

452.52.0.12.M2







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid - Solenoid

Coding: 452.Ⓣ.0.0.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



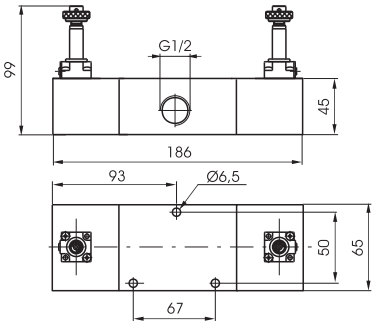
Weight 1474 g
Minimum working pressure 2 bar

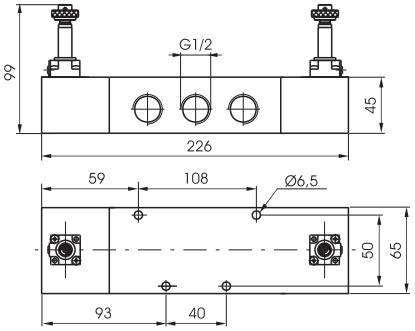
452.32.0.0.M2

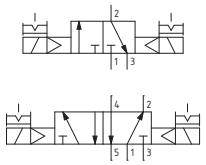


Weight 1744 g
Minimum working pressure 2 bar

452.52.0.0.M2







Solenoid - Solenoid - 5/3

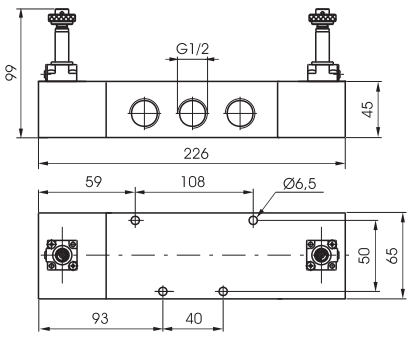
Coding: 452.53.Ⓕ.0.0.M2

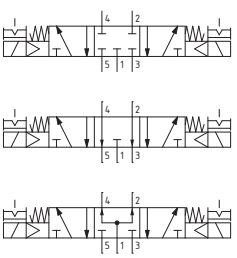
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres



Weight 1744 g
Minimum working pressure 3 bar





Solenoid - Spring

Coding: 452/1.Ⓣ.0.1.M2

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"



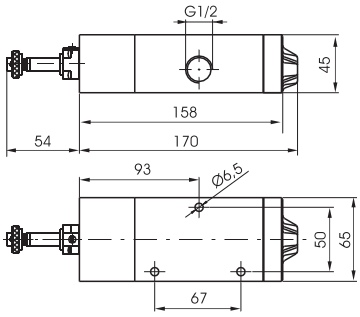
Weight 1330 g
Minimum working pressure 2,5 bar

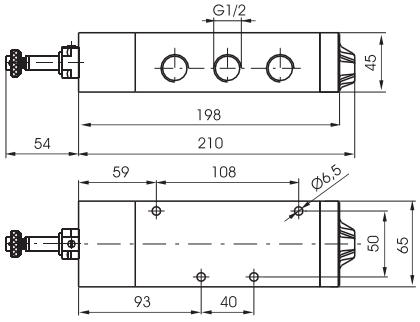
452/1.32.0.1.M2

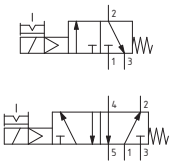


Weight 1600 g
Minimum working pressure 2,5 bar

452/1.52.0.1.M2







Solenoid - Differential

Coding: 452/1.Ⓣ.0.12.M2

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"



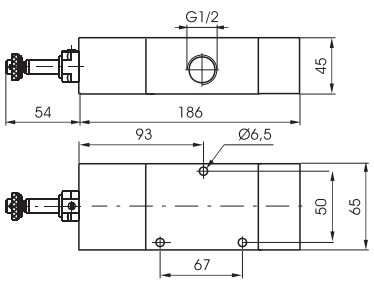
Weight 1600 g
Minimum working pressure 2,5 bar

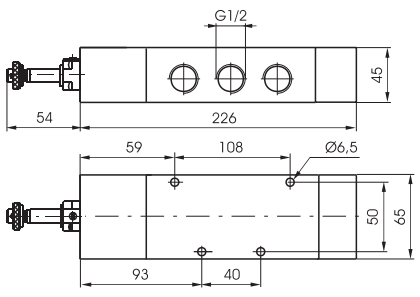
452/1.32.0.12.M2

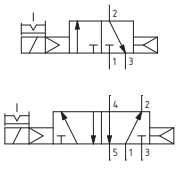


Weight 1870 g
Minimum working pressure 2 bar

452/1.52.0.12.M2







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid - Solenoid

Coding: 452/1.Ⓣ.0.0.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



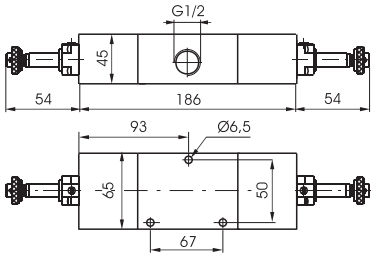
Weight 1830 g
Minimum working pressure 2 bar

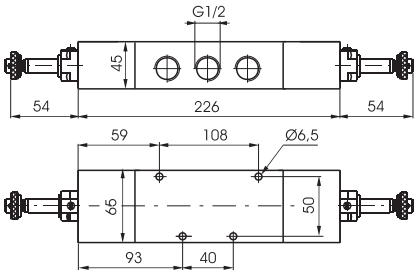
452/1.32.0.0.M2

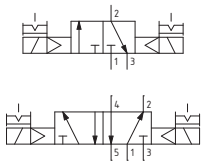


Weight 2100 g
Minimum working pressure 2 bar

452/1.52.0.0.M2







Solenoid - Solenoid - 5/3

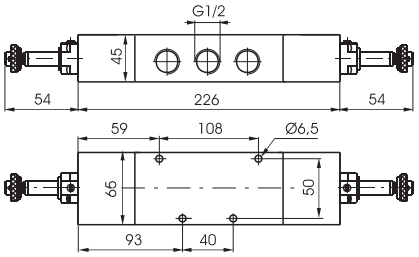
Coding: 452/1.53.Ⓕ.0.0.M2

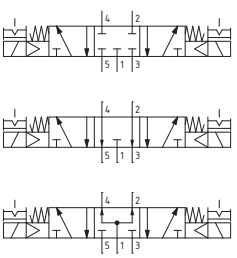
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3500
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres



Weight 2100 g
Minimum working pressure 3 bar





Solenoid - Spring

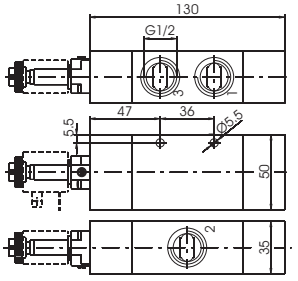
Coding: 412/2.Ⓣ.0.1.Ⓕ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓕ	FUNCTION
	C.M2 = 3/2 ways Normally Closed
	A.M2 = 3/2 ways Normally Open
	M2 = 5/2 ways

3/2 ways







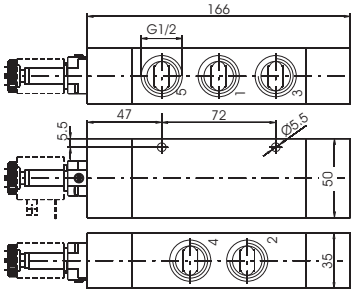
Weight 578 g
Minimum working pressure 2,5 bar

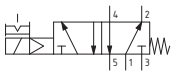
412/2.32.0.1.C.M2

412/2.32.0.1.A.M2

5/2 ways







Weight 700 g
Minimum working pressure 2,5 bar

412/2.52.0.1.M2

Solenoid - Differential

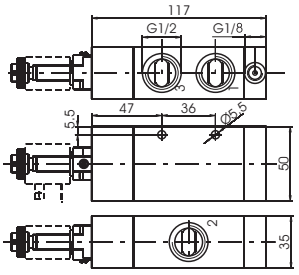
Coding: 412/2.Ⓣ.0.12.Ⓕ

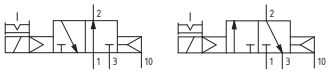
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓕ	FUNCTION
	C.M2 = 3/2 ways Normally Closed
	A.M2 = 3/2 ways Normally Open
	M2 = 5/2 ways

3/2 ways







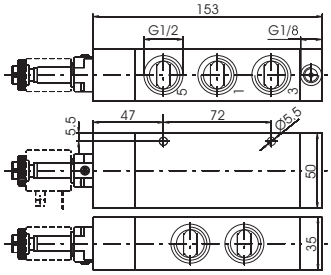
Weight 522 g
Minimum working pressure 2,5 bar

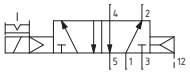
412/2.32.0.12.C.M2

412/2.32.0.12.A.M2

5/2 ways







Weight 644 g
Minimum working pressure 2,5 bar

412/2.52.0.12.M2

Solenoid - Differential (Self feeding)

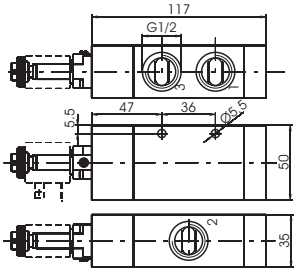
Coding: 412/2.Ⓣ.0.12/1.Ⓕ

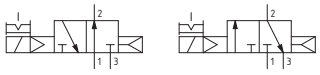
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓕ	FUNCTION
	C.M2 = 3/2 ways Normally Closed
	A.M2 = 3/2 ways Normally Open
	M2 = 5/2 ways

3/2 ways







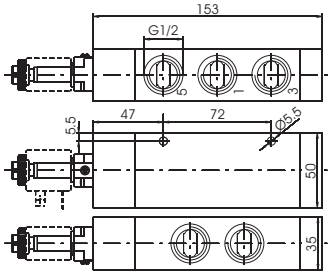
Weight 526 g
Minimum working pressure 2,5 bar

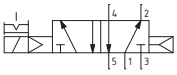
412/2.32.0.12/1.C.M2

412/2.32.0.12/1.A.M2

5/2 ways







Weight 648 g
Minimum working pressure 2,5 bar

412/2.52.0.12/1.M2

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid - Solenoid

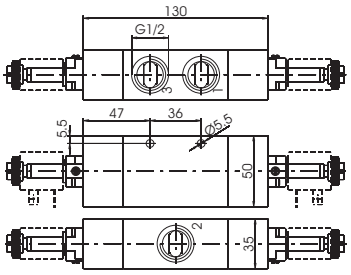
Coding: 412/2.Ⓣ.0.0.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

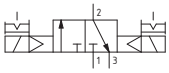
3/2 ways





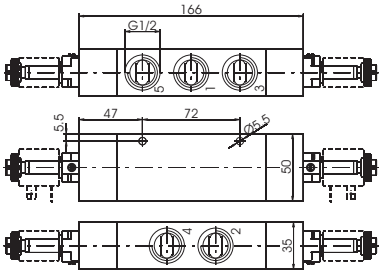
Weight 612 g
Minimum working pressure 2 bar

412/2.32.0.0.M2



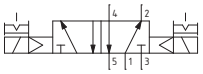
5/2 ways





Weight 732 g
Minimum working pressure 2 bar

412/2.52.0.0.M2



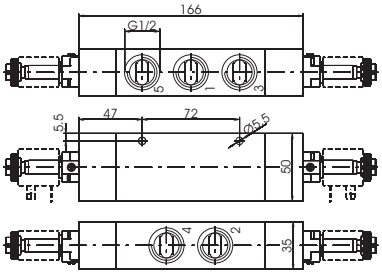
Solenoid - Solenoid - 5/3

Coding: 412/2.53.Ⓕ.0.0.M2

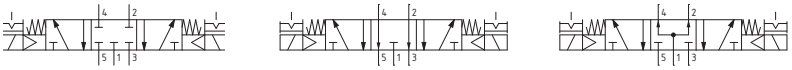
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3300
Orifice size (mm)	15
Working ports size	G 1/2"

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres





Weight 794 g
Minimum working pressure 3 bar



Solenoid - Spring

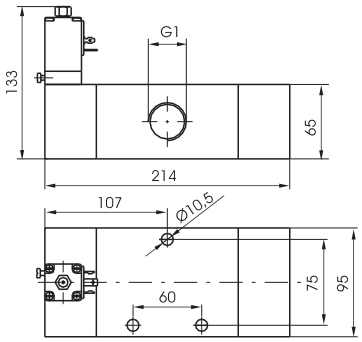
Coding: 411.Ⓣ.0.1.Ⓢ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G 1"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓢ	SOLENOID
	SEE SOLENOID VALVES "S" TYPE, SERIES 300

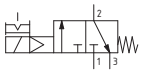
3/2 ways





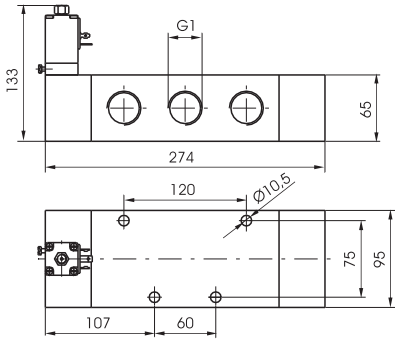
Weight 3400 g
Minimum working pressure 2,5 bar

411.32.0.1.Ⓢ



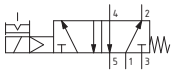
5/2 ways





Weight 4300 g
Minimum working pressure 2,5 bar

411.52.0.1.Ⓢ



Solenoid - Differential

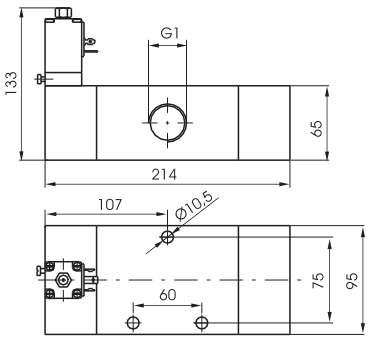
Coding: 411.Ⓣ.0.12.Ⓢ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G 1"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓢ	SOLENOID
	SEE SOLENOID VALVES "S" TYPE, SERIES 300

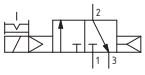
3/2 ways





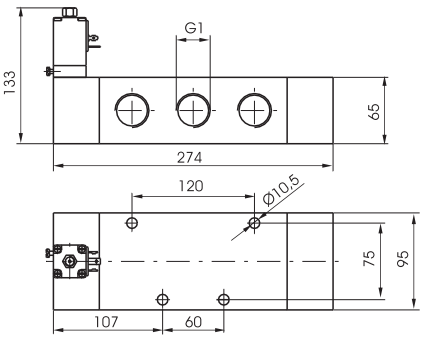
Weight 3400 g
Minimum working pressure 2,5 bar

411.32.0.12.Ⓢ



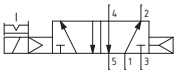
5/2 ways





Weight 4300 g
Minimum working pressure 2,5 bar

411.52.0.12.Ⓢ



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid - Solenoid

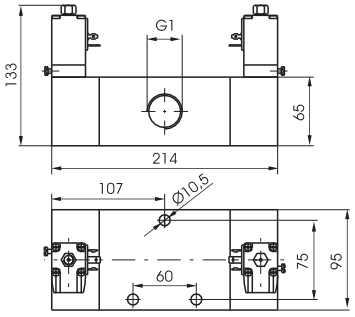
Coding: 411.Ⓣ.0.0.Ⓢ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G 1"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓢ	SOLENOID
	SEE SOLENOID VALVES "S" TYPE, SERIES 300

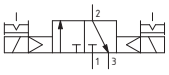
3/2 ways





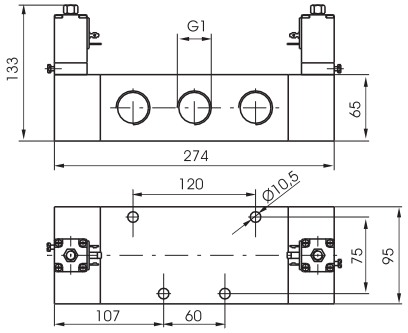
Weight 3700 g
Minimum working pressure 2 bar

411.32.0.0.Ⓢ



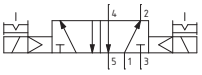
5/2 ways





Weight 4600 g
Minimum working pressure 2 bar

411.52.0.0.Ⓢ



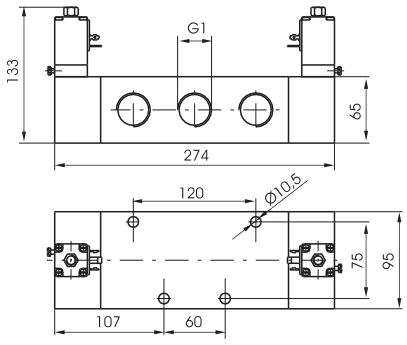
Solenoid - Solenoid - 5/3

Coding: 411.53.Ⓕ.0.0.Ⓢ

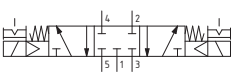
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	6500
Orifice size (mm)	20
Working ports size	G 1"

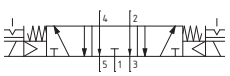
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓢ	SOLENOID
	SEE SOLENOID VALVES "S" TYPE, SERIES 300

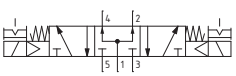




Weight 4700 g
Minimum working pressure 3 bar







Series T400

The Series **T400** involves a wide range of valves and solenoid valves, with several type of acting, with connections from **G1/8" (T488)** and **G1/4" (T424)**, are manufactured with high performance technopolimer.
The use of technopolymer has resulted in a light weight product which can be offered to the market at very interesting prices.
The gang mounted solenoid valves are available with the traditional manifold obtained from bored square bar of series 600 and with the extruded aluminium base allowing a unic inlet port conveying the exhausts. The base is also prearranged to be fixed on DIN 46277/3 guide.

The Valves and Solenoid valves **G1/8" (T488)** are: 5 ways function, pneumatically operated, single solenoid (monostable) mechanical or pneumatic spring return, spring or pneumatic return, with 2 coils (bistable) and in 5 ways 3 positions version with closed, open and pressured centres.
The solenoid valves are supplied complete with coil (see Series 300) so that the tension has to be added to the solenoid valve code:

M9 = coil 24 V D.C. (rating power 2 Watt)
M11 = coil 24 V D.C. (rating power 3.8 watt)
M56 = coil 24 V 50/60 Hz (rating power 9 VA)
M57 = coil 110 V 50/60 Hz (rating power 9 VA)
M58 = coil 230 V 50/60 Hz (rating power 9 VA)

The Solenoid valves **G1/4" (T424)**, are manufactured, depending on version and actuation (manual, pneumatic, or electrical), and self aligning (pneumatic-electric or spring) 3/2, 5/2 and 5/3 ways function, (monostable), (bistable).
The solenoid valves are supplied complete with coil so that the tension has to be added to the solenoid valve code.

B04 = coil 12 V D.C.
B05 = coil 24 V D.C.
B09 = coil 24 V (2W) D.C.
B56 = coil 24 V 50/60 Hz
B57 = coil 110 V 50/60 Hz
B58 = coil 230 V 50/60 Hz

"Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"

Construction characteristics

Body	Technopolymer
Spacers	Technopolymer
Seals	NBR
Pistons seal	NBR
Springs	AISI 302 stainless steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Nickel - plated steel / Technopolymer

Maximum fitting torque

Thread	Maximum torque (Nm)
G 1/8"	4
G1/4"	9

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
Repair kits including the spool complete with seals are available for overhauling the valves.
However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

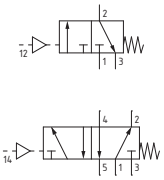
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

Coding: T488.Ⓣ.11.1

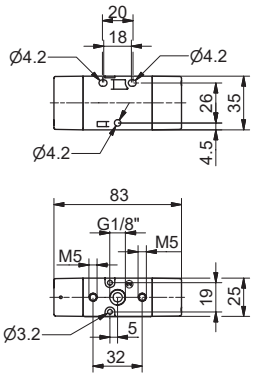
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



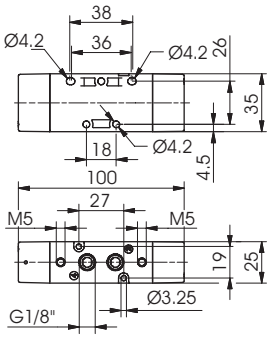


Weight 69 g
Minimum working pressure 2,5 bar

T488.32.11.1

5/2 ways





Weight 83 g
Minimum working pressure 2,5 bar

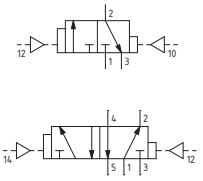
T488.52.11.1

Pneumatic-Differential

Coding: T488.Ⓣ.11.12

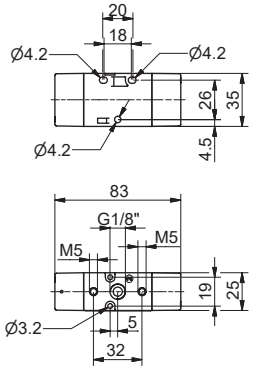
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



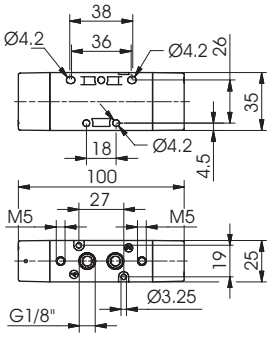


Weight 69 g

T488.32.11.12

5/2 ways





Weight 83 g

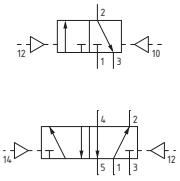
T488.52.11.12

Pneumatic - Pneumatic

Coding: T488.Ⓣ.11.11

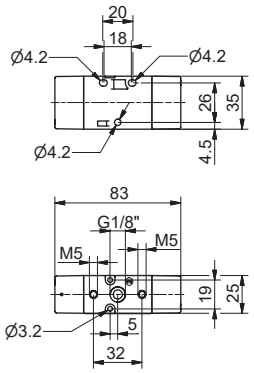
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions



3/2 ways



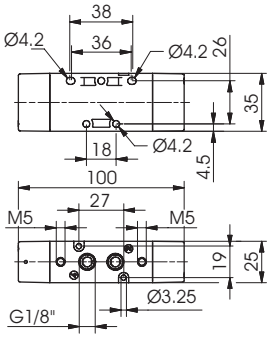


Weight 68 g
Minimum working pressure 2 bar

T488.32.11.11

5/2 ways





Weight 83 g
Minimum working pressure 2 bar

T488.52.11.11

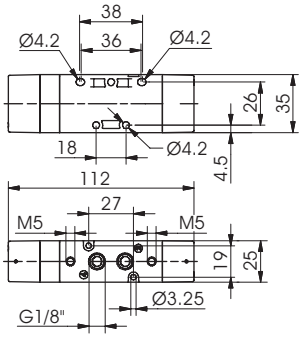
Pneumatic-Pneumatic 5/3

Coding: T488.53.Ⓕ.11.11

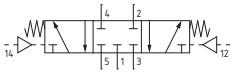
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"

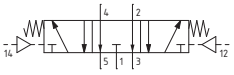
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres

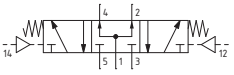




Weight 140 g
Minimum working pressure 3 bar







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring (Self feeding)

Coding: T488.Ⓣ.0.1.Ⓥ

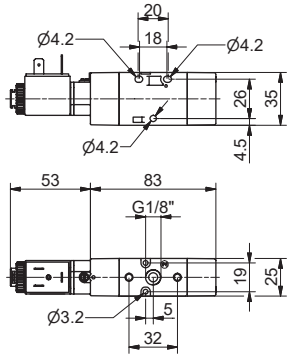
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	23,4 (3 ways) 22,8 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	41,0 (3 ways) 44,5 (5 ways)

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 160 g
Minimum working pressure 2,5 bar

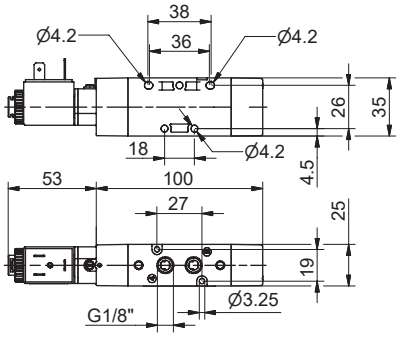
T488.32.0.1.Ⓥ

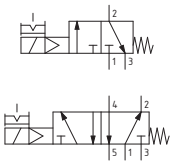




Weight 190 g
Minimum working pressure 2,5 bar

T488.52.0.1.Ⓥ





Solenoid-Spring (External feeding)

Coding: T488.Ⓣ.0.1E.Ⓥ

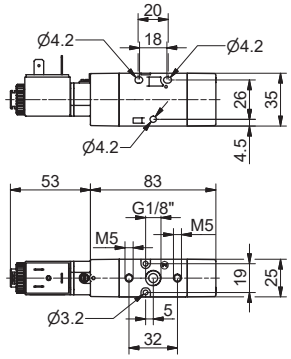
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	23,4 (3 ways) 22,8 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	41,0 (3 ways) 44,5 (5 ways)

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 160 g
Minimum working pressure 2,5 bar

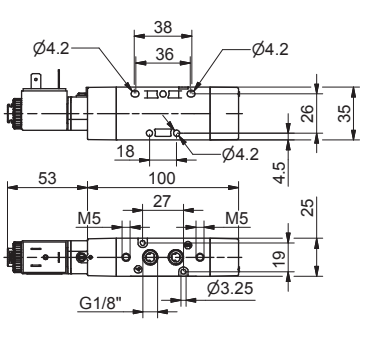
T488.32.0.1E.Ⓥ

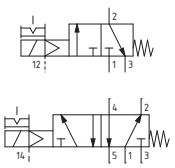




Weight 190 g
Minimum working pressure 2,5 bar

T488.52.0.1E.Ⓥ





Solenoid-Differential (Self feeding)

Coding: T488.Ⓣ.0.12.Ⓥ

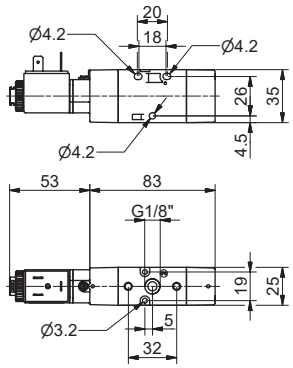
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	31,1 (3 ways) 27,9 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	35,0 (3 ways) 34,5 (5 ways)

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 160 g
Minimum working pressure 2,5 bar

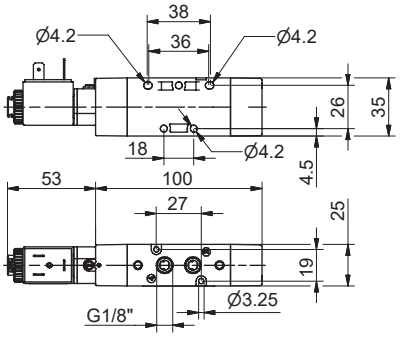
T488.32.0.12.Ⓥ

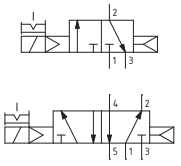




Weight 190 g
Minimum working pressure 2,5 bar

T488.52.0.12.Ⓥ





Solenoid-Differential (External feeding)

Coding: T488.Ⓣ.0.12E.Ⓥ

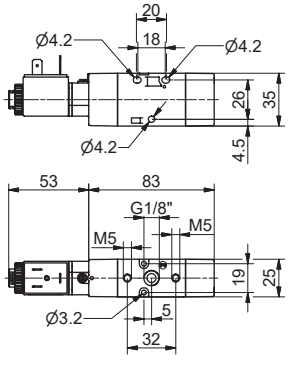
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	31,1 (3 ways) 27,9 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	35,0 (3 ways) 34,5 (5 ways)

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 160 g
Minimum working pressure 2,5 bar

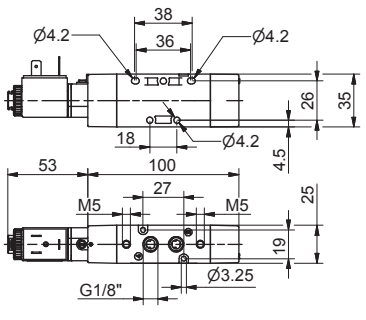
T488.32.0.12E.Ⓥ

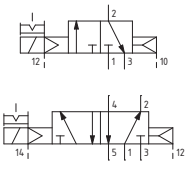




Weight 190 g
Minimum working pressure 2,5 bar

T488.52.0.12E.Ⓥ





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Solenoid (Self feeding)

Coding: T488.Ⓣ.0.0.Ⓥ

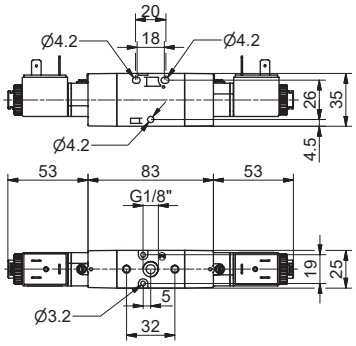
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	18,8 (3 ways) 18,0 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	18,0 (3 ways) 19,1 (5 ways)

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 250 g
Minimum working pressure 2 bar

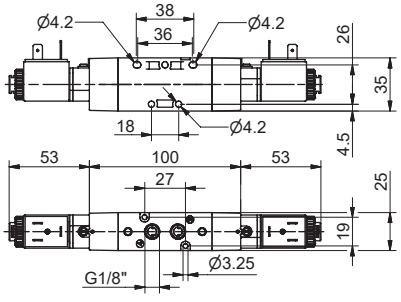
T488.32.0.0.Ⓥ

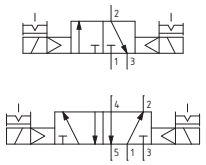




Weight 290 g
Minimum working pressure 2 bar

T488.52.0.0.Ⓥ





Solenoid-Solenoid (External feeding)

Coding: T488.Ⓣ.0.0E.Ⓥ

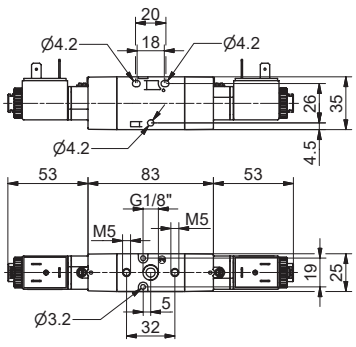
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	620
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	18,8 (3 ways) 18,0 (5 ways)
Response time according to ISO 12238, deactivation time (ms)	18,0 (3 ways) 19,1 (5 ways)

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz



Weight 250 g
Minimum working pressure 2 bar

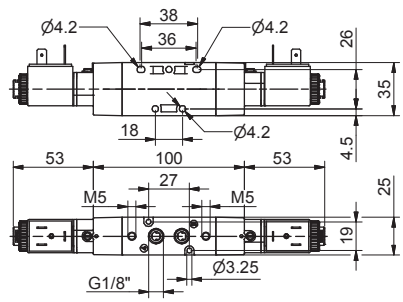
T488.32.0.0E.Ⓥ

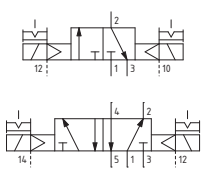




Weight 290 g
Minimum working pressure 2 bar

T488.52.0.0E.Ⓥ





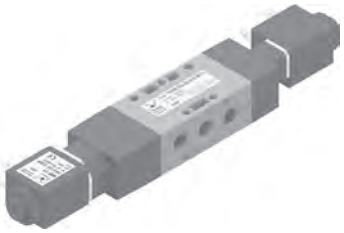
Solenoid-Solenoid 5/3 (Self feeding)

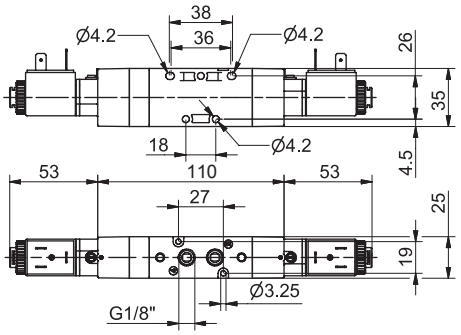
Coding: T488.53.Ⓕ.0.0.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	21,3 (closed centres) 21,5 (open centres) 19,5 (pressured centres)
Response time according to ISO 12238, deactivation time (ms)	37,0 (closed centres) 34,5 (open centres) 37,3 (pressured centres)

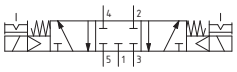
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz

Minimum working pressure 3 bar
Weight 330 g

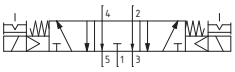




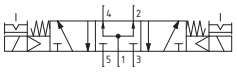
T488.53.31.0.0.Ⓥ



T488.53.32.0.0.Ⓥ



T488.53.33.0.0.Ⓥ



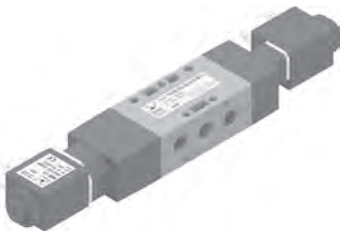
Solenoid-Solenoid 5/3 (External feeding)

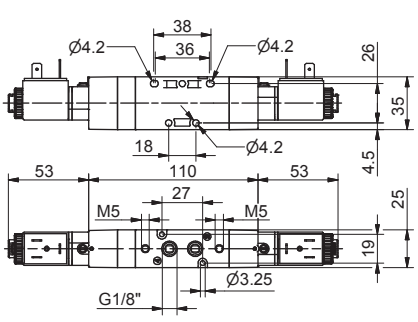
Coding: T488.53.Ⓕ.0.0E.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	410
Orifice size (mm)	6
Working ports size	G 1/8"
Response time according to ISO 12238, activation time (ms)	21,3 (closed centres) 21,5 (open centres) 19,5 (pressured centres)
Response time according to ISO 12238, deactivation time (ms)	37,0 (closed centres) 34,5 (open centres) 37,3 (pressured centres)

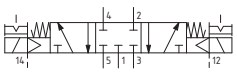
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VOLTAGE
	M9 = 24 V D.C.
	M11 = 24 V D.C.
	M56 = 24 V 50/60 Hz
	M57 = 110 V 50/60 Hz
	M58 = 230 V 50/60 Hz

Minimum working pressure 3 bar
Weight 330 g

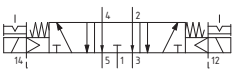




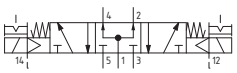
T488.53.31.0.0E.Ⓥ



T488.53.32.0.0E.Ⓥ



T488.53.33.0.0E.Ⓥ



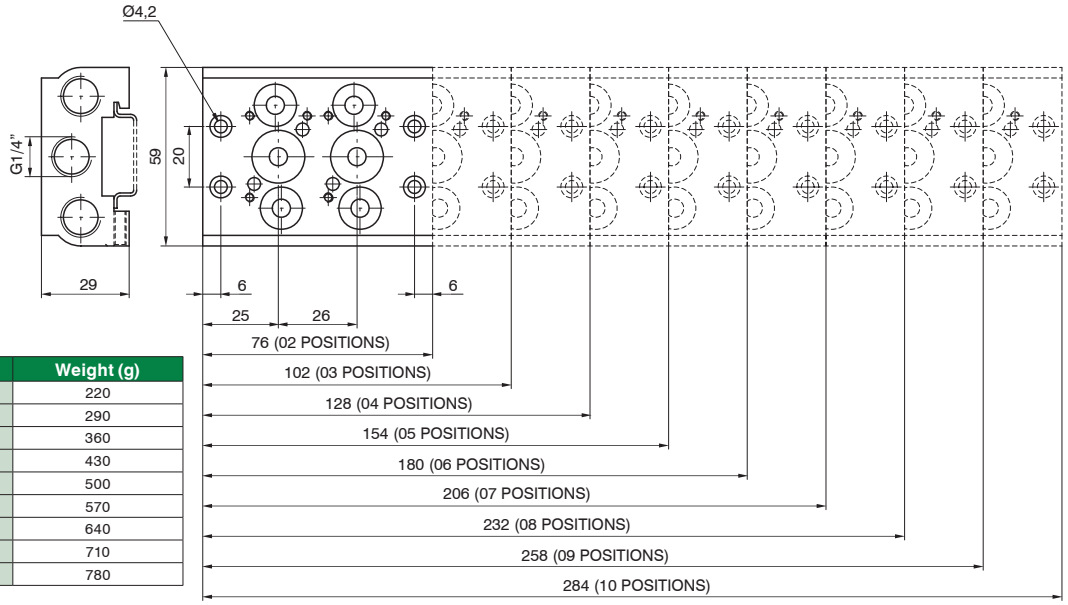
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Collectors



Coding: T488.Ⓝ

Ⓝ	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions



No. positions	Weight (g)
02	220
03	290
04	360
05	430
06	500
07	570
08	640
09	710
10	780

Modular base



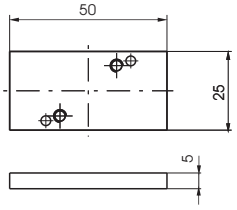
Coding: T488.Ⓣ

Ⓣ	TYPE
	01 = Single complete base
	01K = Complete modular bases (batches of 20 pieces)
	30K = Hollow bush, complete with O-rings (No. 50 pieces)
	31K = Blank bush, complete with O-rings (No. 50 pieces)
	32K = Intermediate air intake with screw (No. 5 pieces)
	33 = Screw to suite solenoid valves (No. 50 pieces)
	34 = Screw for joning bases (No. 50 pieces)
	35 = Washer for screw for joning bases (No. 50 pieces)
	36 = OR (No. 50 pieces)

Closing plate

Coding: T488.00





Weight 25 g

Solenoid-Spring (Self feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"

Coding: T424.Ⓣ.0.1.Ⓥ

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz

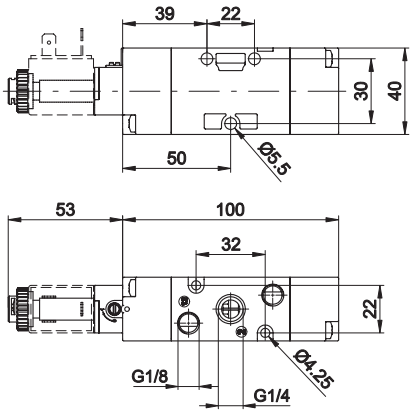


Weight 205 g
Minimum pilot pressure 2,5 bar

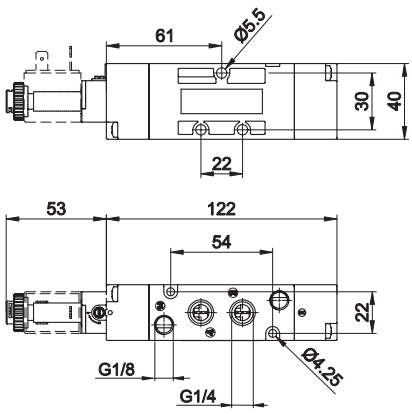


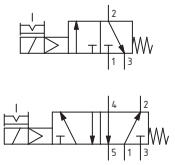
Weight 235 g
Minimum pilot pressure 2,5 bar

T424.32.0.1.Ⓥ



T424.52.0.1.Ⓥ





Solenoid-Spring (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"
Pilot ports size	G 1/8"

Coding: T424.Ⓣ.0.1.E.Ⓥ

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz

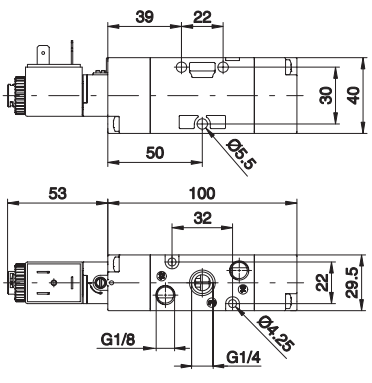


Weight 205 g
Minimum pilot pressure 2,5 bar

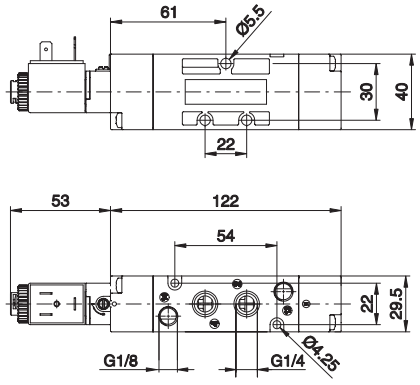


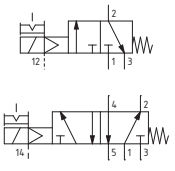
Weight 235 g
Minimum pilot pressure 2,5 bar

T424.32.0.1.E.Ⓥ



T424.52.0.1.E.Ⓥ





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Differential (Self feeding)

Coding: T424.Ⓣ.0.12.Ⓥ

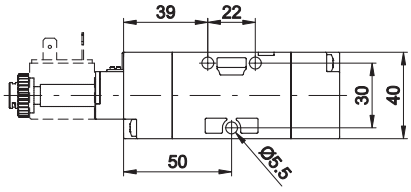
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"

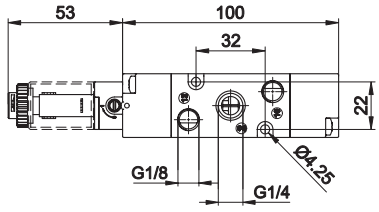
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz



Weight 205 g
Minimum pilot pressure 2 bar

T424.32.0.12.Ⓥ

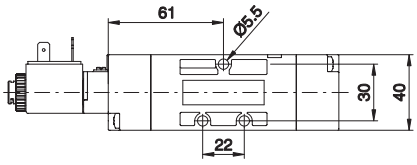


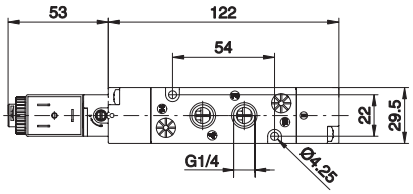


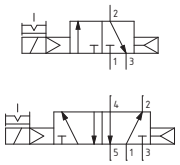


Weight 235 g
Minimum pilot pressure 2 bar

T424.52.0.12.Ⓥ







Solenoid-Differential (External feeding)

Coding: T424.Ⓣ.0.12.E.Ⓥ

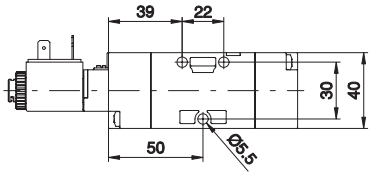
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"
Pilot ports size	G 1/8"

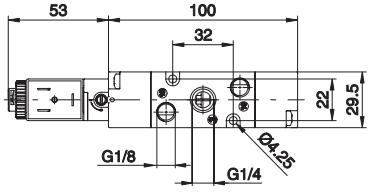
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz



Weight 205 g
Minimum pilot pressure 2 bar

T424.32.0.12.E.Ⓥ

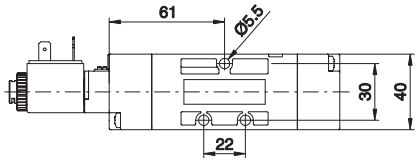


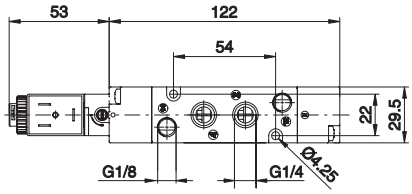


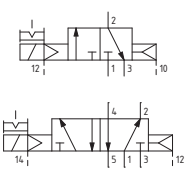


Weight 235 g
Minimum pilot pressure 2 bar

T424.52.0.12.E.Ⓥ







Solenoid-Solenoid (Self feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"

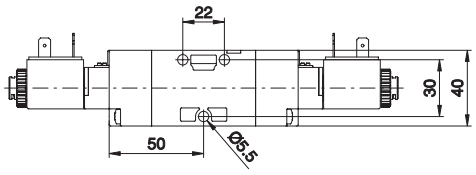
Coding: T424.Ⓣ.0.0.Ⓥ

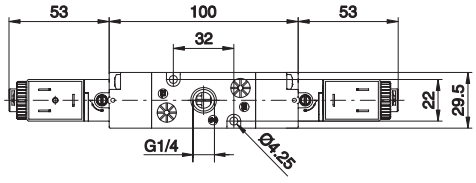
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz



Weight 240 g
Minimum pilot pressure 2 bar

T424.32.0.0.Ⓥ

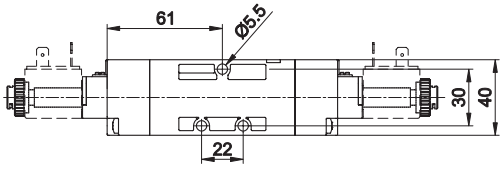


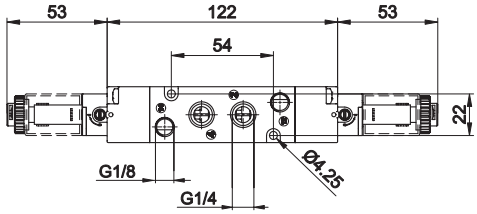


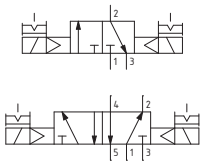


Weight 270 g
Minimum pilot pressure 2 bar

T424.52.0.0.Ⓥ







Solenoid-Solenoid (External feeding)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1050
Orifice size (mm)	8.5
Working ports size	G 1/4"
Pilot ports size	G 1/8"

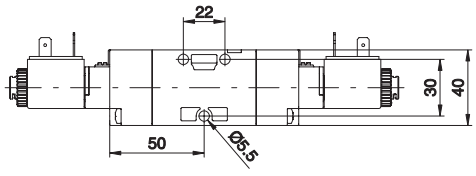
Coding: T424.Ⓣ.0.0.E.Ⓥ

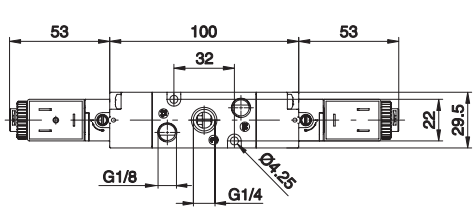
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz



Weight 240 g
Minimum pilot pressure 2 bar

T424.32.0.0.E.Ⓥ

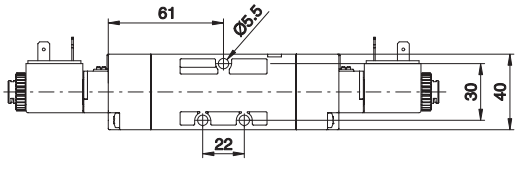


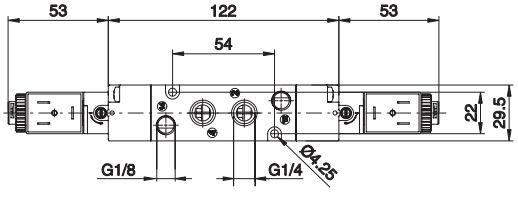


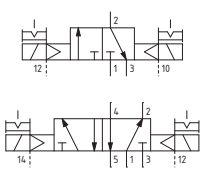


Weight 270 g
Minimum pilot pressure 2 bar

T424.52.0.0.E.Ⓥ







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Solenoid (Self feeding)

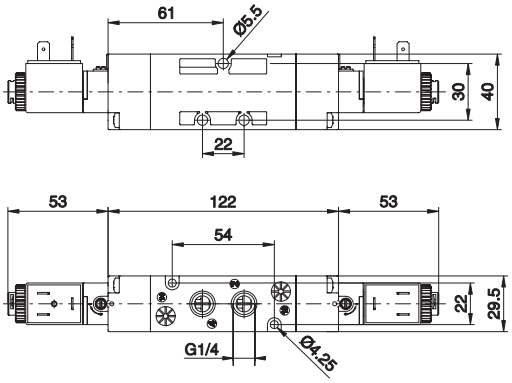
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Orifice size (mm)	8.5
Working ports size	G 1/4"

Coding: T424.53.Ⓕ.0.0.Ⓥ

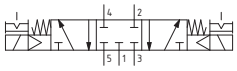
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz

Weight 295 g
Minimum pilot pressure 3 bar

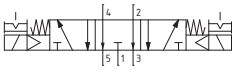




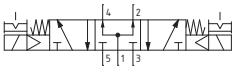
T424.53.31.0.0.Ⓥ



T424.53.32.0.0.Ⓥ



T424.53.33.0.0.Ⓥ



Solenoid-Solenoid (External feeding)

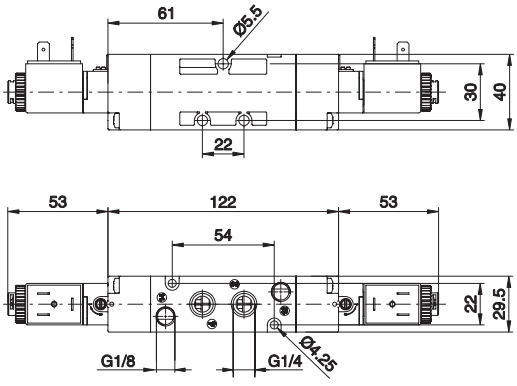
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Orifice size (mm)	8.5
Working ports size	G 1/4"
Pilot ports size	G 1/8"

Coding: T424.53.Ⓕ.0.0.E.Ⓥ

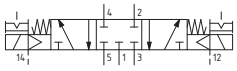
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VOLTAGE
	B04 = 12 V DC
	B05 = 24 V DC
	B09 = 24 V DC (2 W)
	B56 = 24 V 50-60 Hz
	B57 = 110 V 50-60 Hz
	B58 = 230 V 50-60 Hz

Weight 295 g
Minimum pilot pressure 3 bar

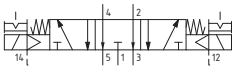




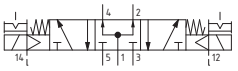
T424.53.31.0.0.E.Ⓥ



T424.53.32.0.0.E.Ⓥ



T424.53.33.0.0.E.Ⓥ

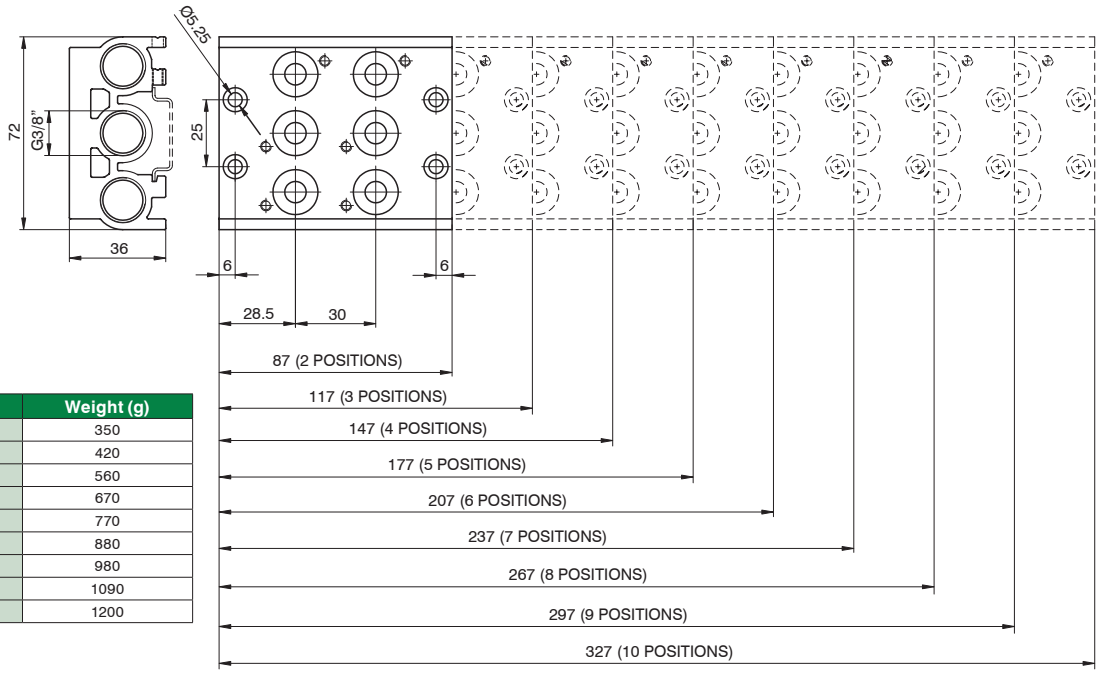


Collectors



Coding: T424.Ⓝ

Ⓝ	NO. POSITIONS
	02 = 2 positions
	03 = 3 positions
	04 = 4 positions
	05 = 5 positions
	06 = 6 positions
	07 = 7 positions
	08 = 8 positions
	09 = 9 positions
	10 = 10 positions



No. positions	Weight (g)
02	350
03	420
04	560
05	670
06	770
07	880
08	980
09	1090
10	1200

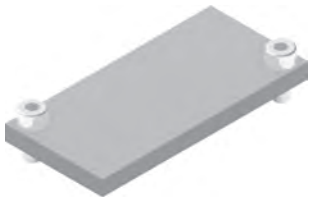
Modular base



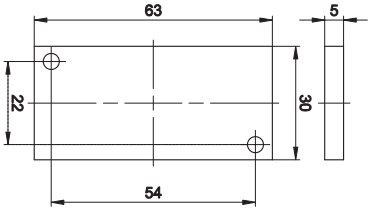
Coding: T424.Ⓣ

Ⓣ	TYPE
	01 = Single complete base
	01K = Complete modular bases (batches of 15 pieces)
	30K = Hollow bush, complete with O-rings (No. 50 pieces)
	31K = Blank bush, complete with O-rings (No. 50 pieces)
	32K = Intermediate air intake with screw (No. 5 pieces)
	33 = Screw to suite solenoid valves (No. 50 pieces)
	34 = Screw for joning bases (No. 50 pieces)
	35 = Washer for screw for joning bases (No. 50 pieces)
	36 = OR (No. 50 pieces)

Closing plate



Coding: T424.00



Weight 25 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 2100 - 2400 - 2600

This solenoid valves series have been developed to meet requirements for electronically controlled pneumatic systems and / or serial control systems already used in all manufacturing sectors.
They have been designed to be easily assembled into groups or manifolds and include integral electrical connection (2100 and 2400), to facilitate simple and speedy integration into a control system.
The series comprises a range of products classified according to type, size and performance.
There are tree main sizes, 10mm., 18 mm. and 26 mm.,
with each size further divided into 3 types " LINE ", " FLAT " and " VDMA " or " BASE".
The 10 mm and 18 mm 24 VDC range of valves includes a range of accessories for the production of manifolded valve assemblies with integral electrical connections.
Modules are available in two or four station variants for flexibility and are supplied to IP40 or alternatively IP65 environmental protection.

Construction characteristics

	Series 2100	Series 2400	Series 2600
Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)
Connection plates	Technopolymer	Zincalloy	Die-cast aluminium
Pistons seal	Oil resistant nitrile rubber-NBR	Oil resistant nitrile rubber-NBR	Oil resistant nitrile rubber-NBR
Spool seals	Oil resistant nitrile rubber-HNBR	Oil resistant nitrile rubber-HNBR	Oil resistant nitrile rubber-HNBR
Springs	AISI 302 stainless steel	AISI 302 stainless steel	AISI 302 stainless steel
Operators	Technopolymer	Technopolymer	Technopolymer
Pistons	Aluminium 2011	Technopolymer	Technopolymer
Spools	Aluminium 2011	Aluminium 2011	Aluminium 2011

Use and maintenance

The average life of the valve exceeds 50.000.000 cycles when used under optimum conditions.
Adequate lubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction.
Ensure the valve is used within our recommended criteria for pressure and temperature.
In dirty or dusty environments, the exhaust ports should be protected.
Seals kits are available for repairs.
Repairs must be made exclusively by specialized personnel.

Series 2100

This solenoid valves series has been developed to meet requirements for electronically controlled pneumatic systems and / or serial control systems already used in all manufacturing sectors.
They have been designed to be easily assembled into groups or manifolds and include integral electrical connection to facilitate simple and speedy integration into a control system.
The 2100 series comprises a range of products classified according to the body size of 10 mm divided into 3 types "LINE", "FLAT" and "BASE".
The 10mm. and 18 mm. 24 VDC range of valves includes a range of accessories for the production of manifolded valve assemblies with integral electrical connections.
Modules are available in two or four station variants for flexibility and are supplied to IP40 or alternatively IP65 environmental protection.

Construction characteristics

Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)
Connection plates	Technopolymer
Spool seals	Oil resistant nitrile rubber-HNBR
Springs	AISI 302 stainless steel
Operators	Technopolymer
Pistons	Aluminium 2011
Spools	Aluminium 2011

Ordering codes for minature solenoid valves

The 10 mm. miniature solenoid valve with 0,7 mm. orifice has been selected for piloting this series of valves (see Series 300).
This results in low response times and reduced power consumption.
The valve can be supplied with the coil upward or downward depending on the application.

Codes are as follows:

Coil upward code

01 = miniature sol. + 12 V DC 90°conn. with LED
21 = miniature sol. + 12 V DC line conn. with LED
02 = miniature sol. + 24 V DC 90°conn. with LED
22 = miniature sol. + 24 V DC line conn. with LED

Coil downward code

11 = miniature sol. + 12 V DC 90°conn. with LED
31 = miniature sol. + 12 V DC line conn. with LED
12 = miniature sol. + 24 V DC 90°conn. with LED
32 = miniature sol. + 24 V DC line conn. with LED
91 = miniature sol. + 12 V DC for integral electrical connections
92 = miniature sol. + 24 V DC for integral electrical connections

Miniature solenoid c UL us homologated are available (see Series 300).

Use and maintenance

The average life of the solenoid valve exceeds 50.000.000 cycles when used under optimum conditions.
Adequate lubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction.
Ensure the valve is used within our recommended criteria for pressure and temperature.
In dirty or dusty environments, the exhaust ports should be protected.
Seals kits are available for repairs.
Repairs must be made exclusively by specialized personnel.

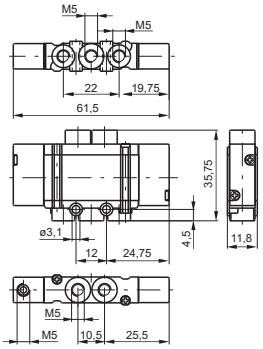
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

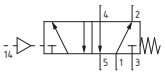
Coding: 2115.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 30 g
Minimum pilot pressure 2 bar

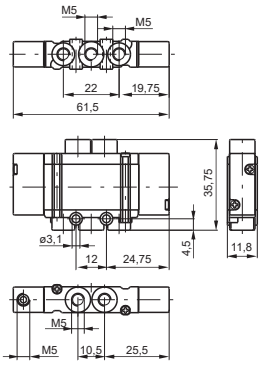


Pneumatic-Differential

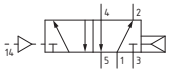
Coding: 2115.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 28 g
Minimum pilot pressure 2 bar

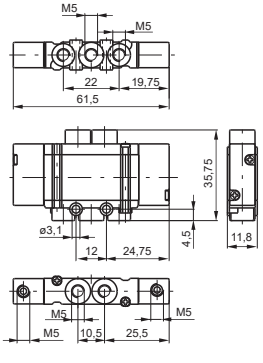


Pneumatic - Pneumatic

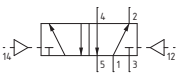
Coding: 2115.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 30 g
Minimum pilot pressure 2 bar



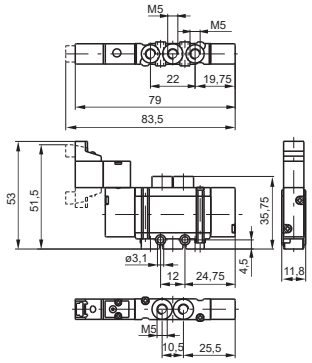
Solenoid - Spring

Coding: 2115.52.00.39.Ⓣ

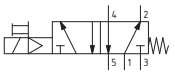
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

	VOLTAGE
Ⓣ	**01** = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward





Weight 42 g
Minimum pilot pressure 2 bar



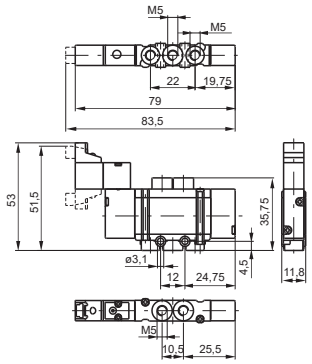
Solenoid - Differential

Coding: 2115.52.00.36.Ⓣ

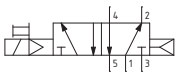
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

	VOLTAGE
Ⓣ	**01** = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward





Weight 42 g
Minimum pilot pressure 2 bar



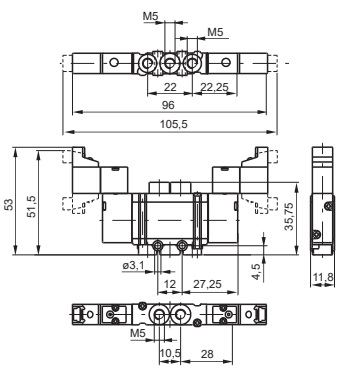
Solenoid - Solenoid

Coding: 2115.52.00.35.Ⓣ

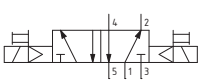
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

	VOLTAGE
Ⓣ	**01** = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward





Weight 52 g
Minimum pilot pressure 2 bar



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

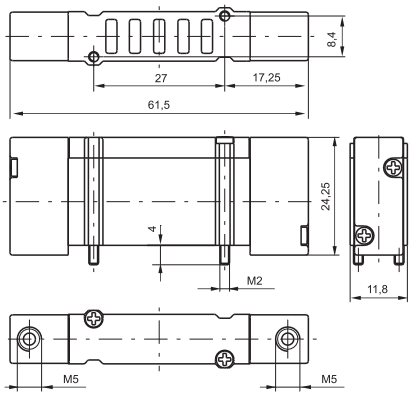
Pneumatic - Pneumatic 5/3

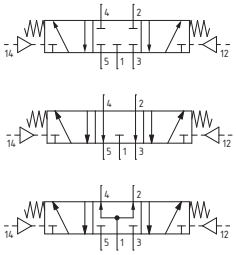
Coding: 2115.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)
Orifice size (mm)	2.5
Working ports size	M5

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 32 g
Minimum pilot pressure 2,5 bar

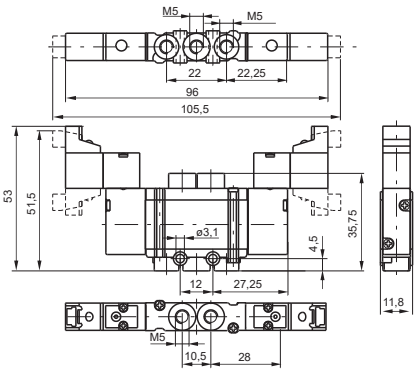
Solenoid - Solenoid 5/3

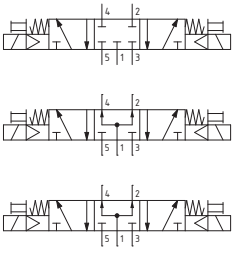
Coding: 2115.53.Ⓕ.35.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)
Orifice size (mm)	2.5
Working ports size	M5

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓣ	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward







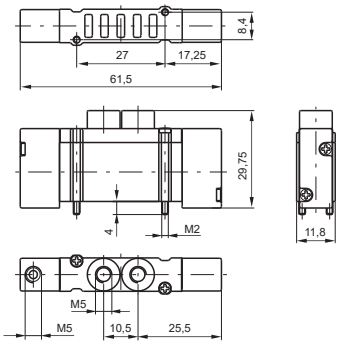
Weight 54 g
Minimum pilot pressure 2,5 bar

Pneumatic - Spring

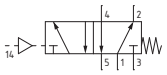
Coding: 2135.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 32 g
Minimum pilot pressure 2 bar

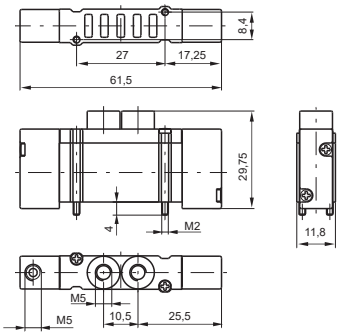


Pneumatic-Differential

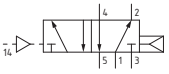
Coding: 2135.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 30 g
Minimum pilot pressure 2 bar

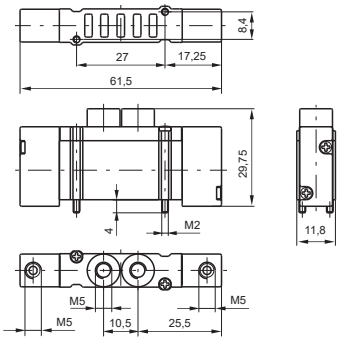


Pneumatic - Pneumatic

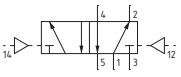
Coding: 2135.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 32 g
Minimum pilot pressure 2 bar



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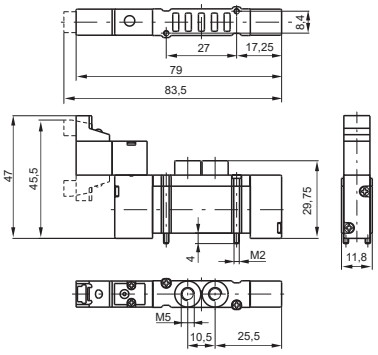
Solenoid - Spring

Coding: 2135.52.00.39.T

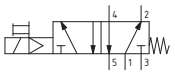
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

	VOLTAGE
T	**01** = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward
	91 = + 12 V DC for integral electrical connections downward
	92 = + 24 V DC for integral electrical connections downward





Weight 38 g
Minimum pilot pressure 2 bar



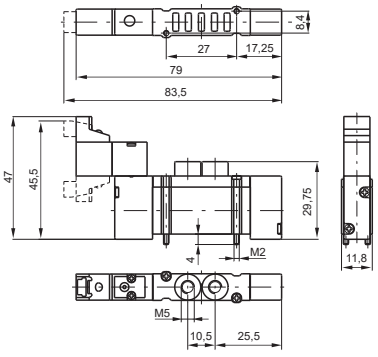
Solenoid - Differential

Coding: 2135.52.00.36.T

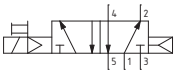
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

	VOLTAGE
T	**01** = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward
	91 = + 12 V DC for integral electrical connections downward
	92 = + 24 V DC for integral electrical connections downward





Weight 38 g
Minimum pilot pressure 2 bar



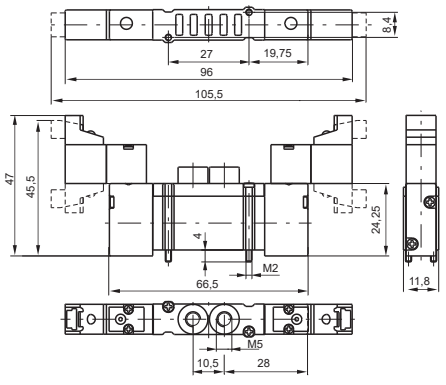
Solenoid - Solenoid

Coding: 2135.52.00.35.T

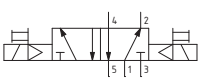
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

	VOLTAGE
T	**01** = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward
	91 = + 12 V DC for integral electrical connections downward
	92 = + 24 V DC for integral electrical connections downward





Weight 50 g
Minimum pilot pressure 1,5 bar



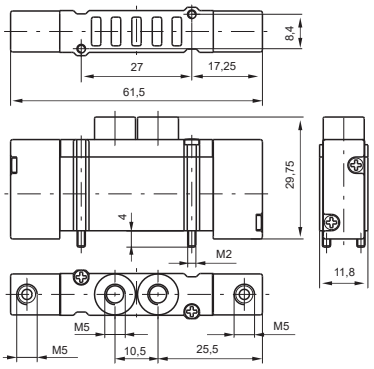
Pneumatic - Pneumatic 5/3

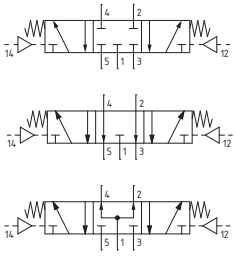
Coding: 2135.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)
Orifice size (mm)	2.5
Working ports size	M5

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 28 g
Minimum pilot pressure 2 bar

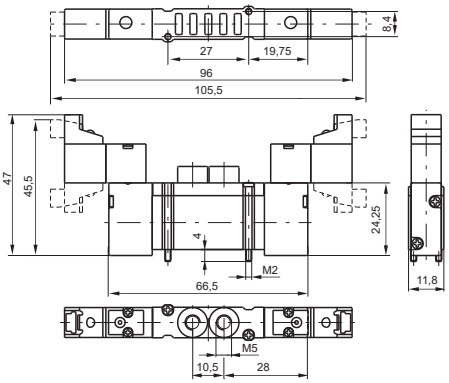
Solenoid - Solenoid 5/3

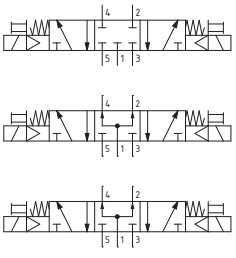
Coding: 2135.53.Ⓕ.35.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)
Orifice size (mm)	2.5
Working ports size	M5

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓣ	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward
	91 = + 12 V DC for integral electrical connections downward
	92 = + 24 V DC for integral electrical connections downward







Weight 52 g
Minimum pilot pressure 2,5 bar

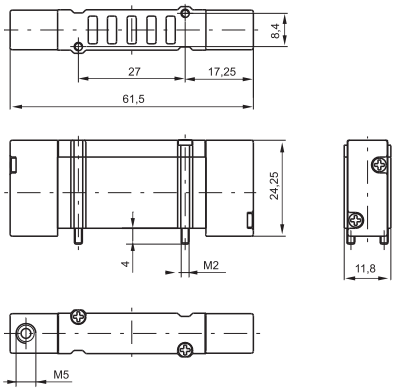
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

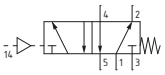
Coding: 2141.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 24 g
Minimum pilot pressure 2 bar

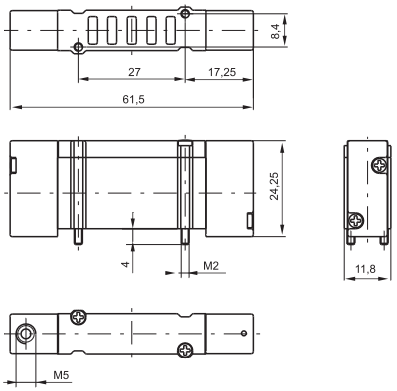


Pneumatic-Differential

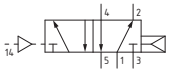
Coding: 2141.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 22 g
Minimum pilot pressure 2 bar

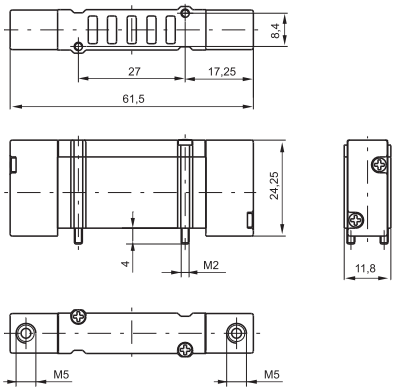


Pneumatic - Pneumatic

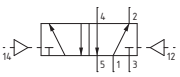
Coding: 2141.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5





Weight 26 g
Minimum pilot pressure 1,5 bar



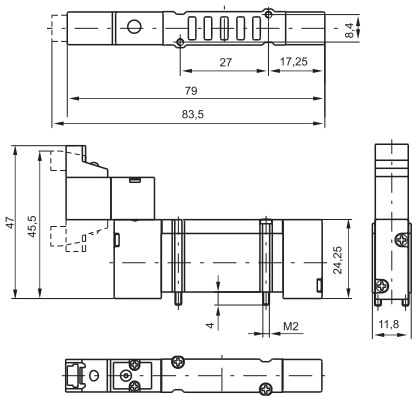
Solenoid - Spring

Coding: 2141.52.00.39.Ⓣ

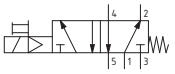
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward
	91 = + 12 V DC for integral electrical connections downward
	92 = + 24 V DC for integral electrical connections downward





Weight 38 g
Minimum pilot pressure 2 bar



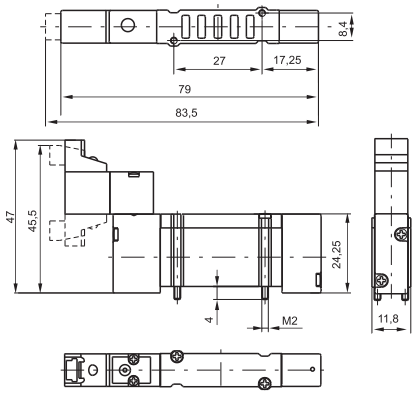
Solenoid - Differential

Coding: 2141.52.00.36.Ⓣ

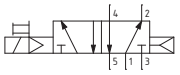
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward
	91 = + 12 V DC for integral electrical connections downward
	92 = + 24 V DC for integral electrical connections downward





Weight 38 g
Minimum pilot pressure 2 bar



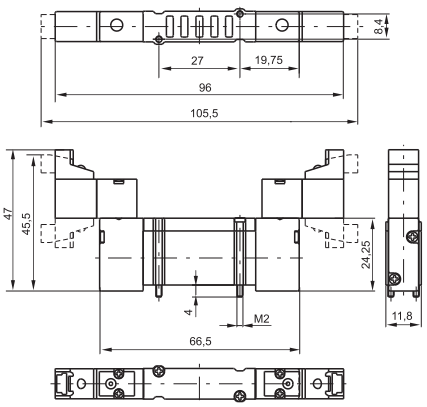
Solenoid - Solenoid

Coding: 2141.52.00.35.Ⓣ

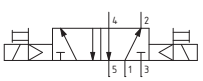
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Orifice size (mm)	2.5
Working ports size	M5

Ⓣ	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward
	91 = + 12 V DC for integral electrical connections downward
	92 = + 24 V DC for integral electrical connections downward





Weight 48 g
Minimum pilot pressure 1,5 bar



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

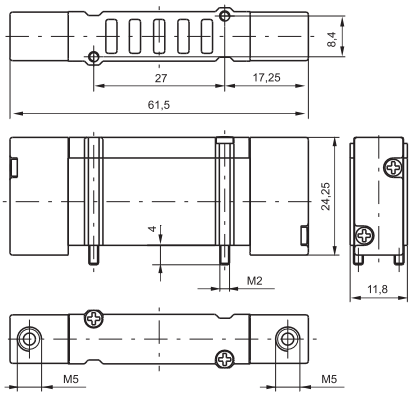
Pneumatic - Pneumatic 5/3

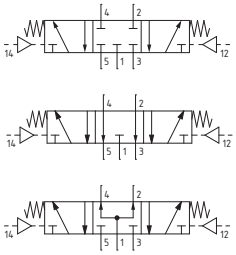
Coding: 2141.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)
Orifice size (mm)	2.5
Working ports size	M5

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 28 g
Minimum pilot pressure 2,5 bar

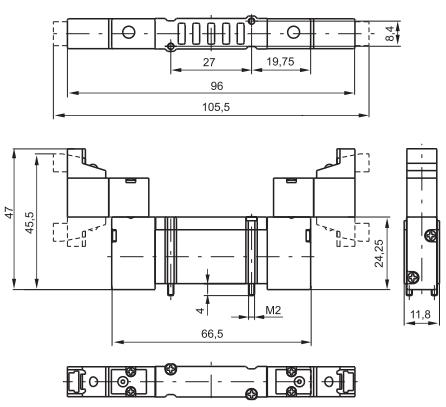
Solenoid - Solenoid 5/3

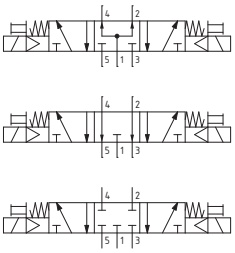
Coding: 2141.53.Ⓕ.35.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	180 (Pressured centres) 130 (Closed centres) 140 (Open centres)
Orifice size (mm)	2.5
Working ports size	M5

	FUNCTION
Ⓕ	**31** = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓣ	VOLTAGE
	01 = + 12 V DC 90° conn. with LED
	21 = + 12 V DC line conn. with LED
	02 = + 24 V DC 90° conn. with LED
	22 = + 24 V DC line conn. with LED
	11 = + 12 V DC 90° conn. with LED downward
	31 = + 12 V DC line conn. with LED downward
	12 = + 24 V DC 90° conn. with LED downward
	32 = + 24 V DC line conn. with LED downward
	91 = + 12 V DC for integral electrical connections downward
	92 = + 24 V DC for integral electrical connections downward







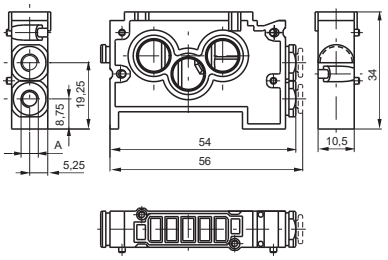
Weight 52 g
Minimum pilot pressure 2,5 bar

Modular base for "BASE" version

Coding: 214Ⓥ.01

Ⓥ	VERSION
	0 = modular BASE without cartridges
	4 = modular base c/w with 4mm tube cartridges
	5 = modular base c/w with M5 cartridges
	7 = modular base c/w with M7x1 cartridges



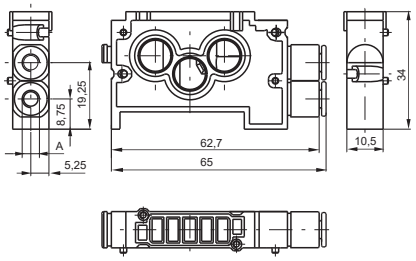


Weight 22 g

Modular BASE c/w with 6mm tube cartridges

Coding: 2146.01



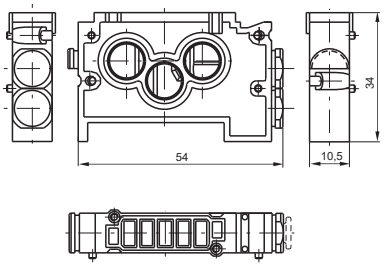


Weight 22 g

Modular base for "FLAT" version

Coding: 2130.01



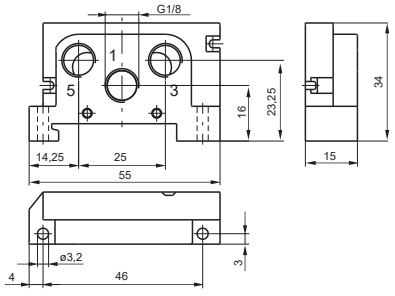


Weight 28 g

Right inlet base

Coding: 2140.02



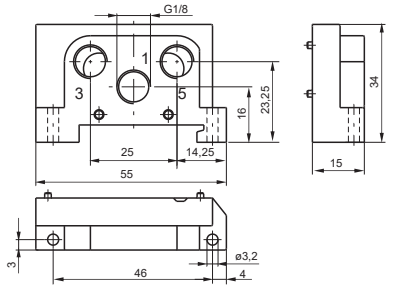


Weight 18 g

Left inlet base

Coding: 2140.03





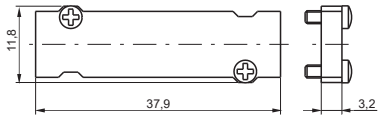
Weight 18 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Closing plate

Coding: 2130.00



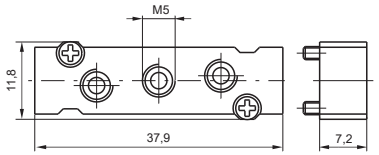


Weight 7 g

Intermediate air intake

Coding: 2130.10



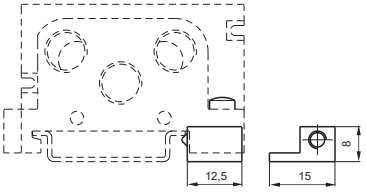


Weight 12 g
to be assembled instead of a valve

DIN rail adapter

Coding: 2130.16





Weight 6 g

Modular base cartridge

Coding: 2100.Ⓥ

Ⓥ	VERSION
	031M = Ø4 tube cartridge
	033M = M5 cartridges
	034M = M7x1 cartridges
	035M = lock cartridge
	036M = Ø4 tube cartridge



Weight 5 g

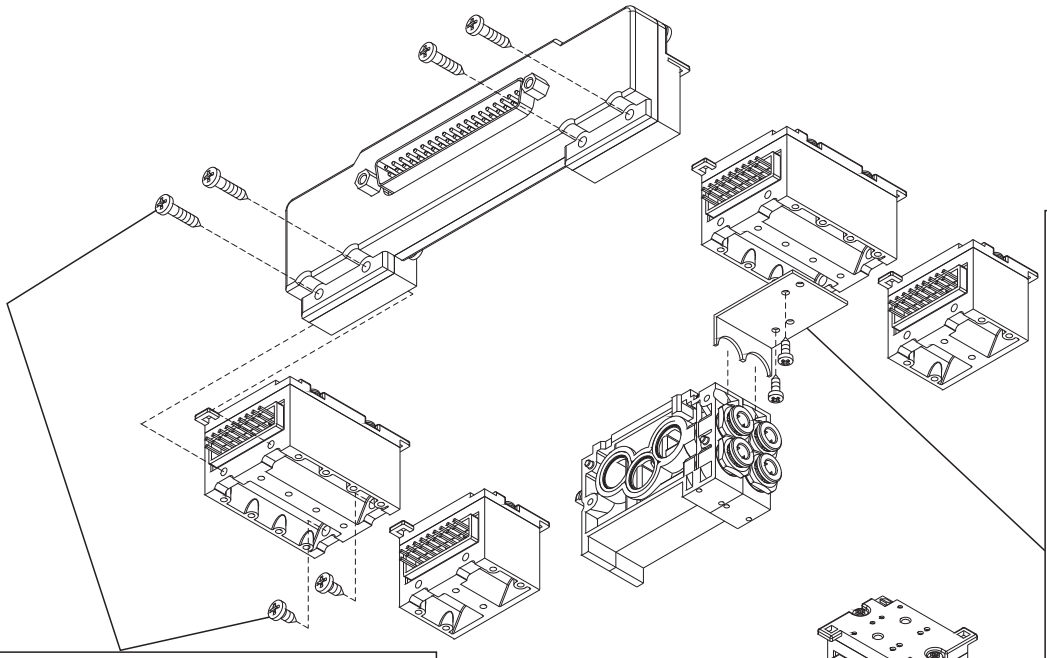
Diaphragm plug

Coding: 2130.17



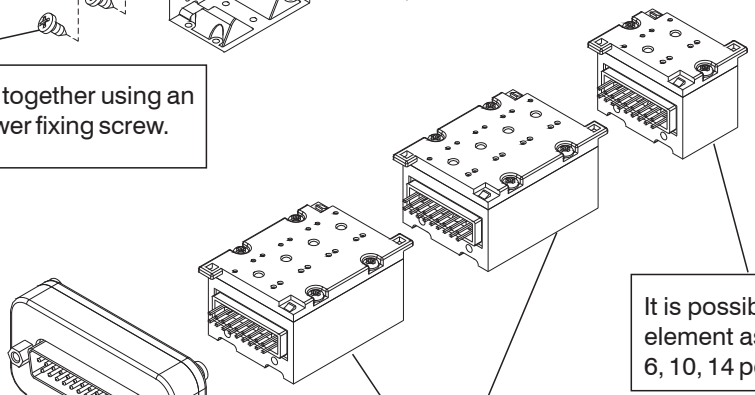
Weight 6 g

The integral electrical design for the series 2100 valve is extremely flexible, allowing the production of pre-wired solenoid valve manifolds, the configuration of which can be determined at the point of assembly. The 24 VDC, 12 VDC (equivalent PNP) modules are available with 2 or 4 positions. The system assembled is designed for an IP40 - IP65 protection.
Coil type 91 or 92 is required for the multipin electrical connection (see valve ordering codes).

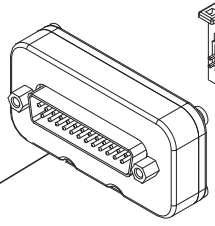


Support plates are supplied to mount the electrical connection elements to the manifold modules. Individual valves can still be removed from the manifold even after assembly is complete. One support plate is required per element.

The elements connect together using an upper coupling and lower fixing screw.

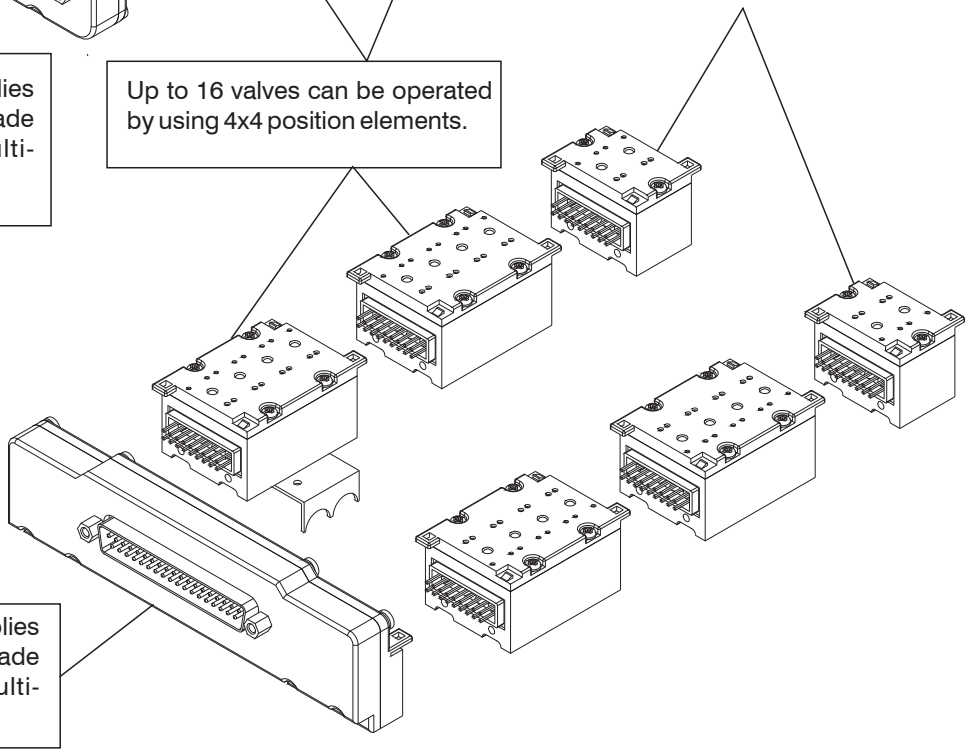


It is possible to use the 2 position element as the first terminal on 2, 6, 10, 14 position assemblies.



On single solenoid assemblies electrical connection is made using an D-SUB 25 multi-connector.

Up to 16 valves can be operated by using 4x4 position elements.



On double solenoid assemblies electrical connection is made usinfg an D-SUB 37 multi-connector.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Module for connections, 2 positions

Coding: 2100.02.Ⓥ



	VERSION
Ⓥ	**00** = Left IP40-PNP
	02 = Left IP40-PNP with protection diode
	10 = Left IP65-PNP
	12 = Left IP65-PNP with protection diode
	01 = Right IP40-PNP
	03 = Right IP40-PNP with protection diode
	11 = Right IP65-PNP
	13 = Right IP65-PNP with protection diode

Weight 35 g
Note: with protection diode only direct current (V DC) is available

Module for connections, 4 positions

Coding: 2100.04.Ⓥ



	VERSION
Ⓥ	**00** = Left IP40-PNP
	02 = Left IP40-PNP with protection diode
	10 = Left IP65-PNP
	12 = Left IP65-PNP with protection diode
	01 = Right IP40-PNP
	03 = Right IP40-PNP with protection diode
	11 = Right IP65-PNP
	13 = Right IP65-PNP with protection diode

Weight 35 g
Note: with protection diode only direct current (V DC) is available

Connectors 25 poles

Coding: 2100.25.10



Weight 40 g
The IP65 protection is obtained by IP65 Pneumax cable

Connectors 37 poles

Coding: 2100.37.10



Weight 120 g
The IP65 protection is obtained by IP65 Pneumax cable

Plug

Coding: 2100.00



Weight 4 g

FLAT support plate

Coding: 2130.50



Weight 5 g

In line cable complete with connector, IP40

Coding: 2400.Ⓒ.Ⓛ.00



	CONNECTOR
Ⓒ	**25** = 25 poles
	37 = 37 poles
	CABLE LENGTH
Ⓛ	**03** = 3 meters
	05 = 5 meters
	10 = 10 meters

Cable complete with connector, 25 Poles, IP65

Coding: 2300.25.Ⓛ.Ⓒ



	CABLE LENGTH
Ⓛ	**03** = 3 meters
	05 = 5 meters
	10 = 10 meters
	CONNECTOR
Ⓒ	**10** = Stand alone
	90 = 90° Angle

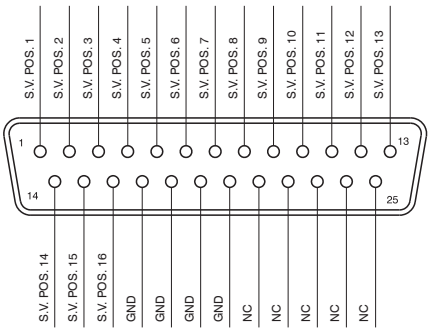
Cable complete with connector, 37 Poles, IP65

Coding: 2400.37.Ⓛ.Ⓒ

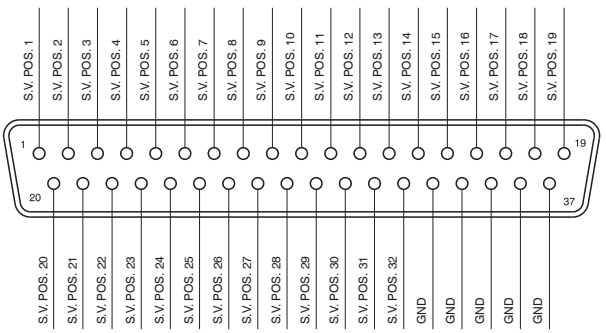


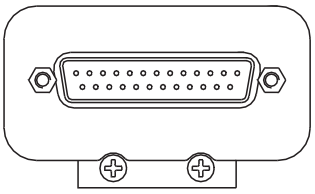
	CABLE LENGTH
Ⓛ	**03** = 3 meters
	05 = 5 meters
	10 = 10 meters
	CONNECTOR
Ⓒ	**10** = Stand alone
	90 = 90° Angle

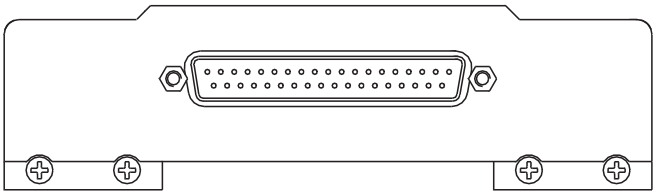
SUB-D 25 POLES CONNECTOR

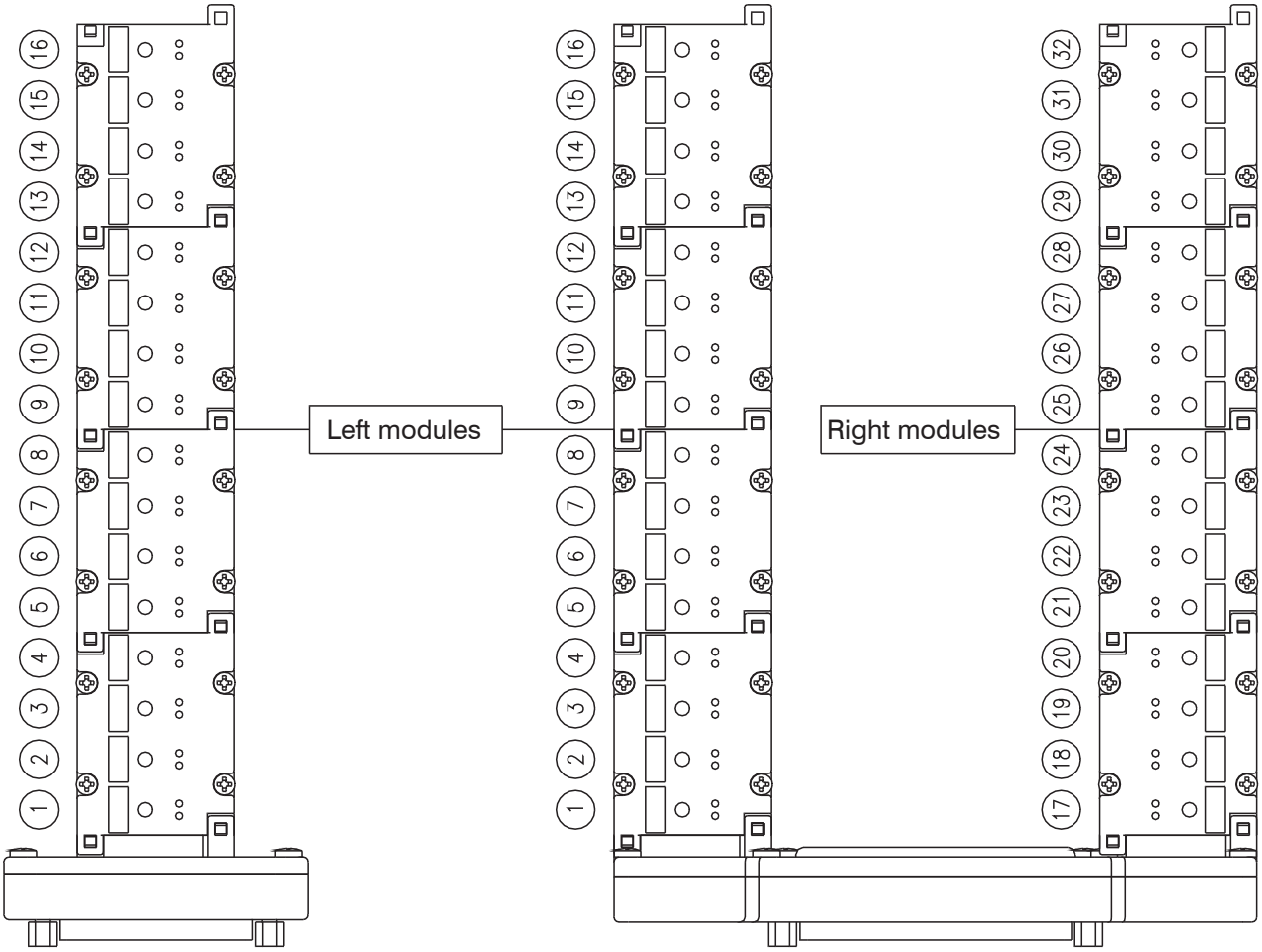


SUB-D 37 POLES CONNECTOR









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Series 2400

This solenoid valves series has been developed to meet requirements for electronically controlled pneumatic systems and / or serial control systems already used in all manufacturing sectors.
They have been designed to be easily assembled into groups or manifolds and include integral electrical connection to facilitate simple and speedy integration into a control system.
The 2400 series comprises a range of products classified according to the body size of 18 mm divided into 3 types "LINE", "FLAT" and "VDMA".
The 10mm. and 18 mm. 24 VDC range of valves includes a range of accessories for the production of manifolded valve assemblies with integral electrical connections.
Modules are available in two or four station variants for flexibility and are supplied to IP40 or alternatively IP65 environmental protection.

Construction characteristics

Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)
Connection plates	Zinc alloy
Spool seals	Oil resistant nitrile rubber-HNBR
Springs	AISI 302 stainless steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Aluminium 2011

Use and maintenance

The average life of the solenoid valve exceeds 50.000.000 cycles when used under optimum conditions.
Adequate lubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction.
Ensure the valve is used within our recommended criteria for pressure and temperature.
In dirty or dusty environments, the exhaust ports should be protected.
Seals kits are available for repairs.
Repairs must be made exclusively by specialized personnel.

Ordering codes for minature solenoid valves

The 15 mm. miniature solenoid valve with 1,1 mm. orifice has been selected for piloting this series of valves (see Series 300).
This results in low response times and reduced power consumption.
The valve can be supplied with the coil upward or downward (multipolar connections) depending on the application.

Codes are as follows:

Coil upward code

01 = miniature sol. + 12 V DC
02 = miniature sol. + 24 V DC
05 = miniature sol. + 24 V AC
06 = miniature sol. 110 V AC
07 = miniature sol. 230 V AC
08 = miniature sol. + 24 V DC 1W
09 = miniature sol. + 24 V DC Earth faston

Coil downward code

11 = miniature sol. + 12 V DC
12 = miniature sol. + 24 V DC
15 = miniature sol. + 24 V AC
16 = miniature sol. 110 V AC
17 = miniature sol. 230 V AC
18 = miniature sol. + 24 V DC 1W
19 = miniature sol. + 24 V DC Earth faston

	Well-tried component	- The product is a well-tried product for a safety-related application according to ISO 13849-1. - The relevant basic and well-tried safety principles according ISO 13849-2 for this product are fulfilled. - The suitability of the product for a precise application must be verified and confirmed by the user.
B_{10d}	50.000.000	

Miniature solenoid homologated are available (see Series 300).

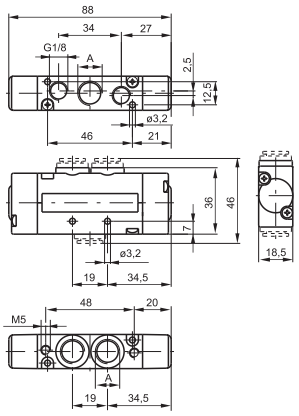
Pneumatic - Spring

Coding: 241Ⓐ.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

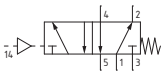
	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





Weight 155 g

For dimension "A" see ordering code



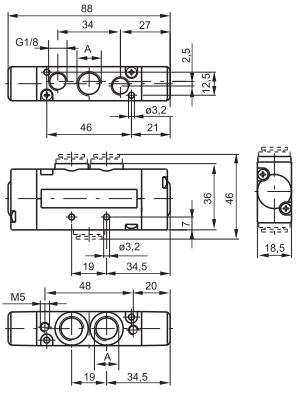
Pneumatic-Differential

Coding: 241Ⓐ.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

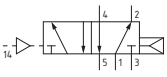
	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





Weight 155 g

For dimension "A" see ordering code



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

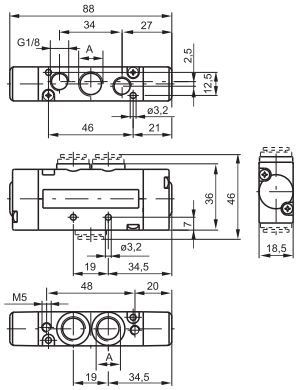
Pneumatic - Differential (External)

Coding: 241Ⓐ.52.00.17

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

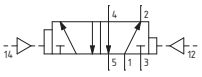
	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





Weight 155 g

For dimension "A" see ordering code



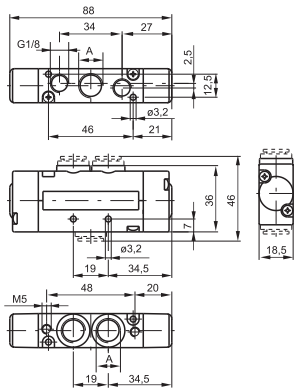
Pneumatic - Pneumatic

Coding: 241Ⓐ.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

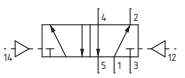
	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





Weight 155 g

For dimension "A" see ordering code



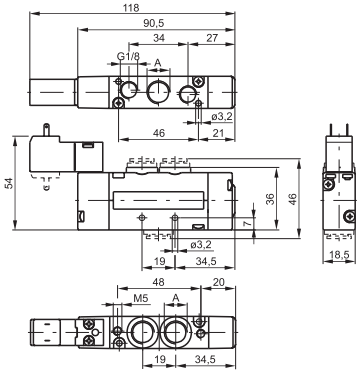
Solenoid-Spring/Differerential

Coding: 241Ⓐ.52.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

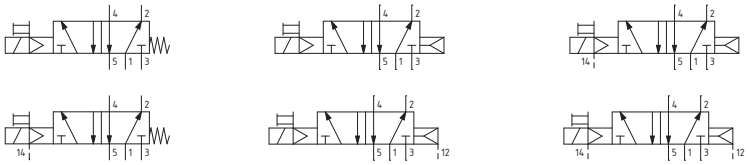
Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓥ	VERSION
	39 = Solenoid-Spring
	29 = Solenoid external-Spring
	36 = Solenoid-Differential
	37 = Solenoid-Differerential external
	26 = Solenoid external-Differerential
	27 = Solenoid external-Differerential external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





For dimension "A" see ordering code

Weight 195 g



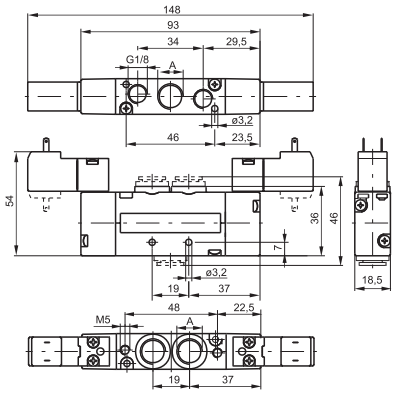
Solenoid - Solenoid

Coding: 241Ⓐ.52.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

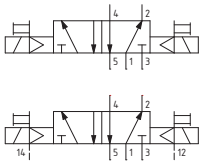
Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓥ	VERSION
	35 = Solenoid-Solenoid
	24 = Solenoid external-Solenoid external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 225 g

For dimension "A" see ordering code



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

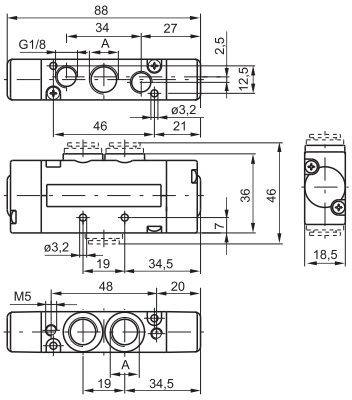
Pneumatic-Pneumatic 5/3

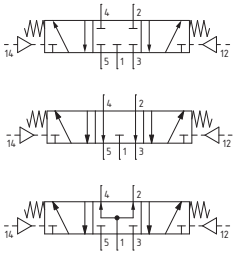
Coding: 241Ⓐ.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	650
Orifice size (mm)	7
Pilot ports size	M5

Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 165 g

For dimension "A" see ordering code

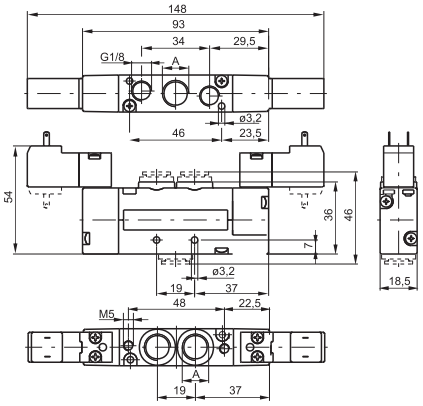
Solenoid - Solenoid 5/3

Coding: 241Ⓐ.53.Ⓕ.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	650
Orifice size (mm)	7
Pilot ports size	M5

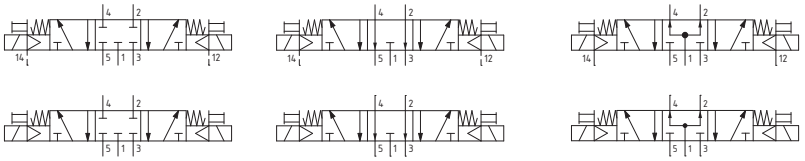
Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VERSION
	24 = Solenoid external-Solenoid external
	35 = Solenoid-Solenoid
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 235 g

For dimension "A" see ordering code



Pneumatic-Pneumatic 2 x 3/2

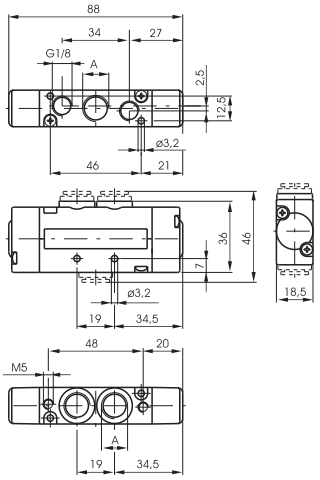
Coding: 241Ⓐ.62.Ⓕ.18

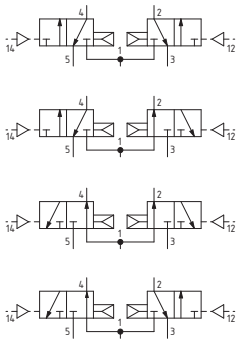
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	450
Orifice size (mm)	7

Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓕ	FUNCTION
	44 = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2 NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2 NC (12)

*"Example: if inlet pressure is set at 5bar then pilot pressure must be at least Pp=1,5+(0.2*5)=2,5bar"*







Weight 170 g

For dimension "A" see ordering code

Solenoid-Solenoid 2 x 3/2

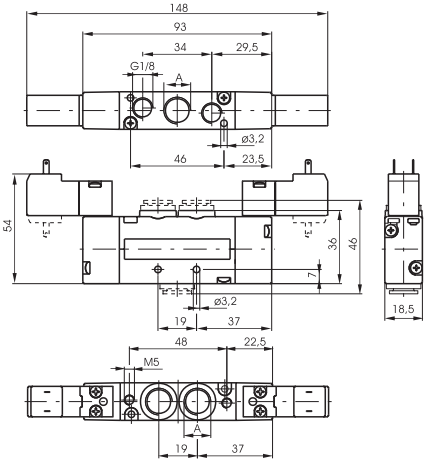
Coding: 241Ⓐ.62.Ⓕ.35.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	450
Orifice size (mm)	7

Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓕ	FUNCTION
	44 = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2 NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2 NC (12)
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward

*"Example: if inlet pressure is set at 5bar then pilot pressure must be at least Pp=1,5+(0.2*5)=2,5bar"*





Weight 250 g

For dimension "A" see ordering code



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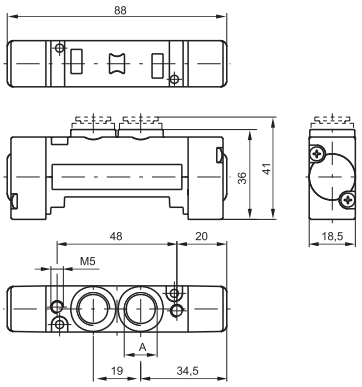
Pneumatic - Spring

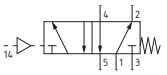
Coding: 243Ⓐ.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8







Weight 105 g

For dimension "A" see ordering code

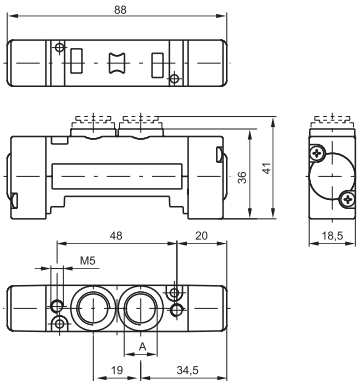
Pneumatic-Differential

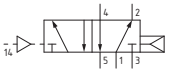
Coding: 243Ⓐ.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8







Weight 105 g

For dimension "A" see ordering code

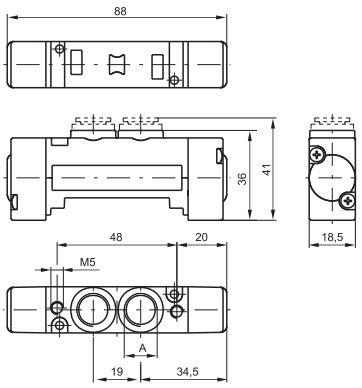
Pneumatic - Differential (External)

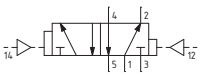
Coding: 243Ⓐ.52.00.17

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8







Weight 105 g

For dimension "A" see ordering code

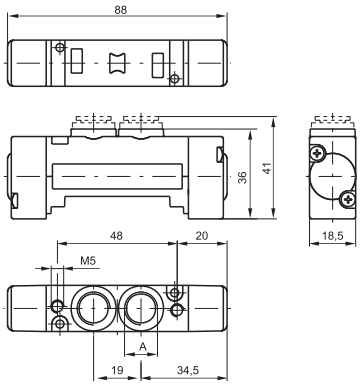
Pneumatic - Pneumatic

Coding: 243Ⓐ.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

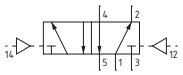
	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8





Weight 105 g

For dimension "A" see ordering code



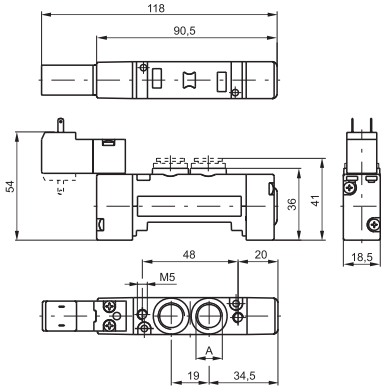
Solenoid-Spring/Differerential

Coding: 243Ⓐ.52.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

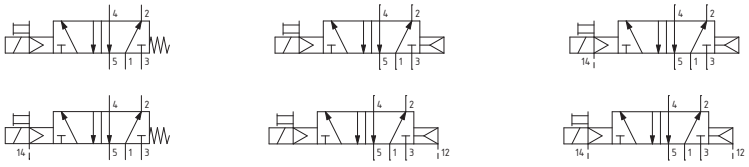
	CONNECTION A
Ⓐ	**1** = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓥ	VERSION
	39 = Solenoid-Spring
	29 = Solenoid external-Spring
	36 = Solenoid-Differential
	37 = Solenoid-Differerential external
	26 = Solenoid external-Differerential
	27 = Solenoid external-Differerential external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 140 g

For dimension "A" see ordering code



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

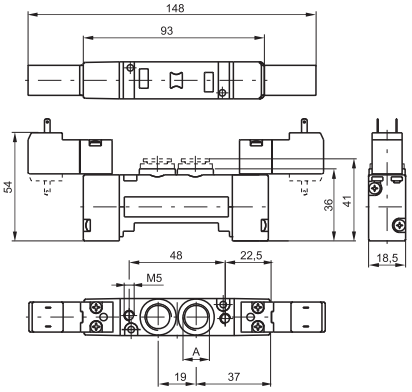
Solenoid - Solenoid

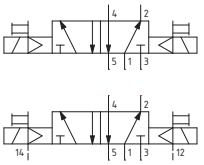
Coding: 243Ⓐ.52.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	800
Orifice size (mm)	7
Pilot ports size	M5

Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓥ	VERSION
	35 = Solenoid-Solenoid
	24 = Solenoid external-Solenoid external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward







Weight 175 g

For dimension "A" see ordering code

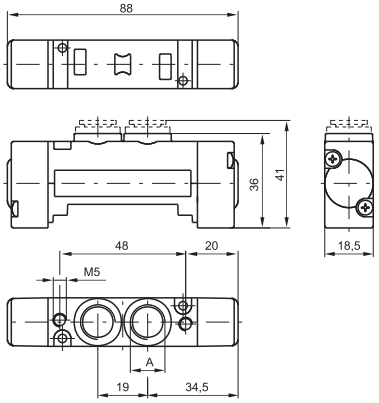
Pneumatic-Pneumatic 5/3

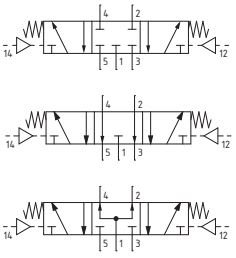
Coding: 243Ⓐ.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	650
Orifice size (mm)	7
Pilot ports size	M5

Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 115 g

For dimension "A" see ordering code

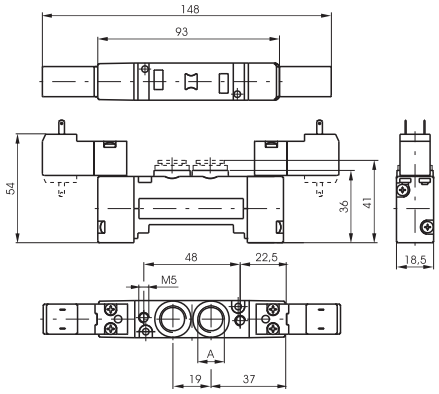
Solenoid - Solenoid 5/3

Coding: 243Ⓐ.53.Ⓕ.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	650
Orifice size (mm)	7
Pilot ports size	M5

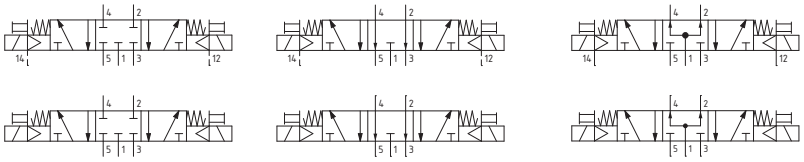
Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VERSION
	24 = Solenoid external-Solenoid external
	35 = Solenoid-Solenoid
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 185 g

For dimension "A" see ordering code



Pneumatic-Pneumatic 2 x 3/2

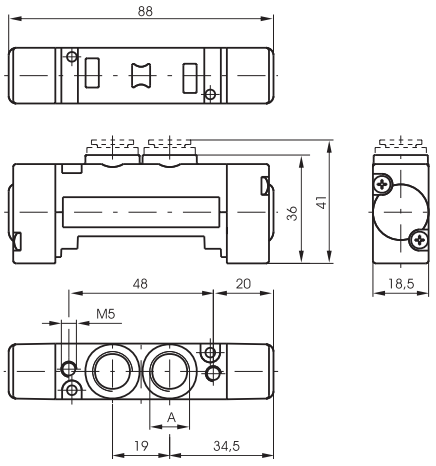
Coding: 243Ⓐ.62.Ⓕ.18

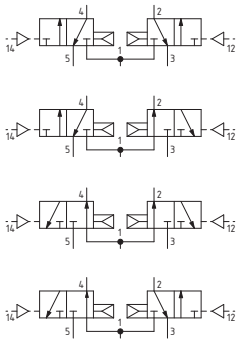
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	450
Orifice size (mm)	7

Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓕ	FUNCTION
	44 = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2 NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2 NC (12)

*"Example: if inlet pressure is set at 5bar then pilot pressure must be at least Pp=1,5+(0.2*5)=2,5bar"*







Weight 110 g

For dimension "A" see ordering code

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Solenoid 2 x 3/2

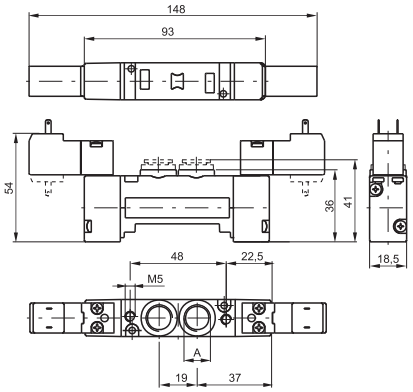
Coding: 243Ⓐ.62.Ⓕ.35.Ⓣ

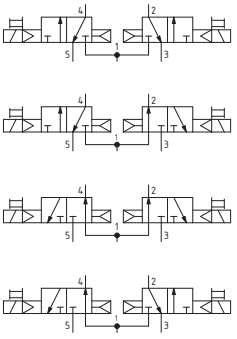
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	450
Orifice size (mm)	7

*"Example: if inlet pressure is set at 5bar then pilot pressure must be at least Pp=1,5+(0.2*5)=2,5bar"*

Ⓐ	CONNECTION A
	1 = G1/4"
	5 = G1/8"
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓕ	FUNCTION
	44 = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2 NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2 NC (12)
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward







Weight 190 g

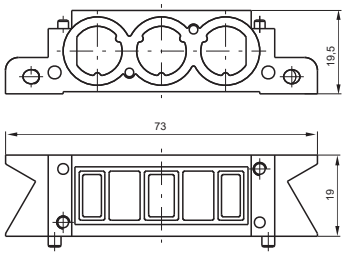
For dimension "A" see ordering code

Modular base

Coding: 2430.Ⓥ

Ⓥ	VERSION
	01 = Modular base
	06 = Supply and exhaust closed
	07 = Supply closed
	08 = Exhaust closed





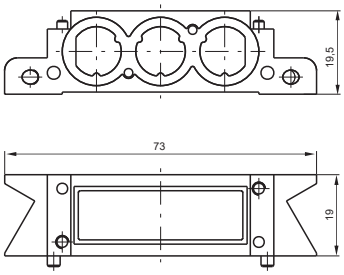
Weight 85 g

2430.Ⓥ

Blanck base

Coding: 2430.05



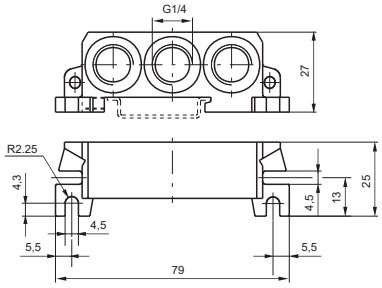


Weight 85 g

Right inlet base

Coding: 2430.02



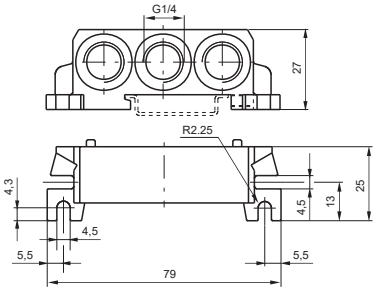


Weight 120 g

Left inlet base

Coding: 2430.03





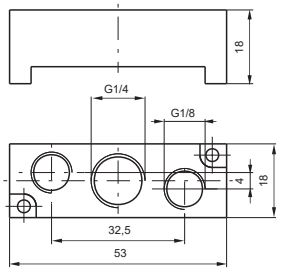
Weight 125 g

Intermediate air intake

Coding: 2430.10



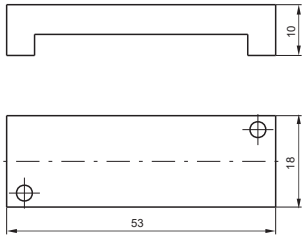
Weight 30 g
to be assembled instead of a valve



Closing plate

Coding: 2430.00





Weight 20 g

Diaphragm plug

Coding: 2430.17



Weight 5 g

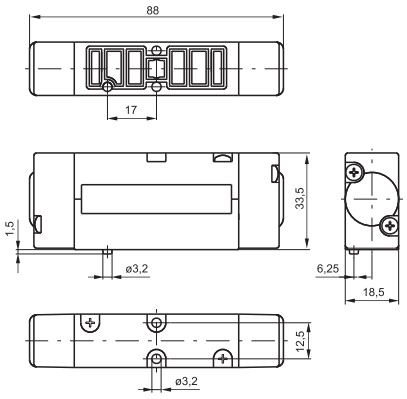
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

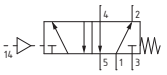
Coding: 2445.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Orifice size (mm)	5





Weight 155 g

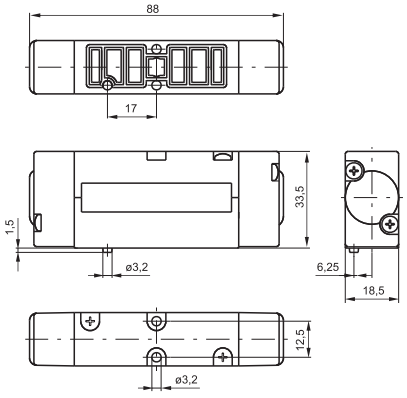


Pneumatic-Differential

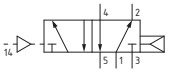
Coding: 2445.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Orifice size (mm)	5





Weight 155 g

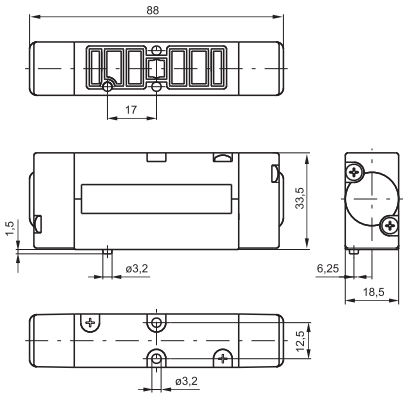


Pneumatic - Differential (External)

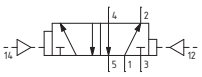
Coding: 2445.52.00.17

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Orifice size (mm)	5





Weight 155 g



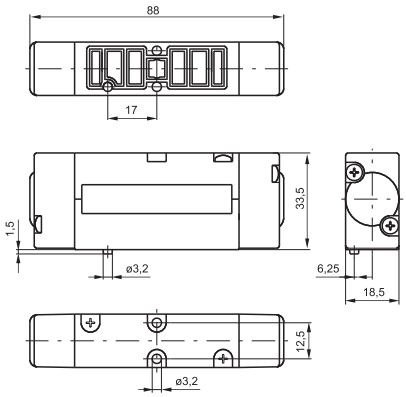
Pneumatic - Pneumatic

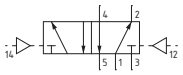
Coding: 2445.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Orifice size (mm)	5



Weight 155 g





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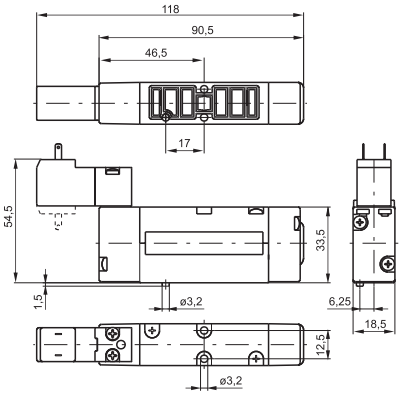
Solenoid-Spring/Differerential

Coding: 244Ⓒ.52.00.Ⓥ.Ⓣ

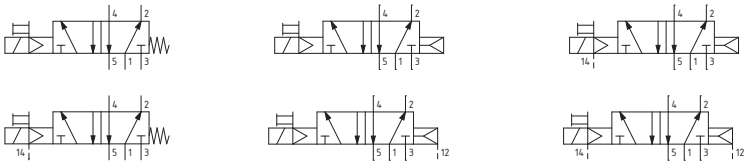
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Orifice size (mm)	5

Ⓒ	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding valves)
	5 = on pilot (for all version)
Ⓥ	VERSION
	39 = Solenoid-Spring
	29 = Solenoid external-Spring
	36 = Solenoid-Differential
	37 = Solenoid-Differerential external
	26 = Solenoid external-Differerential
	27 = Solenoid external-Differerential external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 190 g



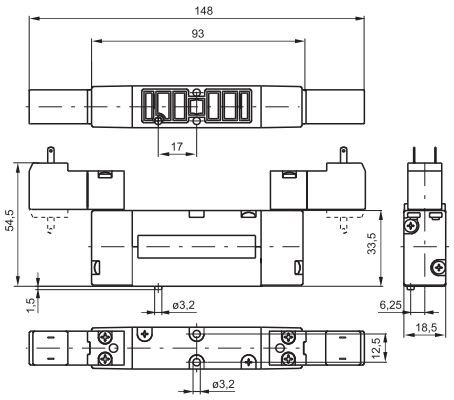
Solenoid - Solenoid

Coding: 244Ⓒ.52.00.Ⓥ.Ⓣ

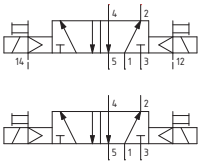
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Orifice size (mm)	5

Ⓒ	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding valves)
	5 = on pilot (for all version)
Ⓥ	VERSION
	24 = Solenoid external-Solenoid external
	35 = Solenoid-Solenoid
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 225 g



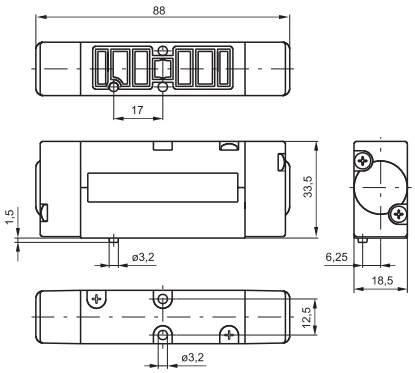
Pneumatic-Pneumatic 5/3

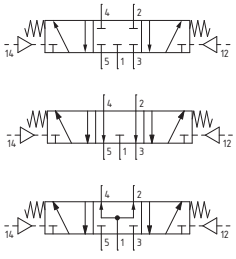
Coding: 244Ⓒ.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Orifice size (mm)	5

Ⓒ	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding valves)
	5 = on pilot (for all version)
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 165 g

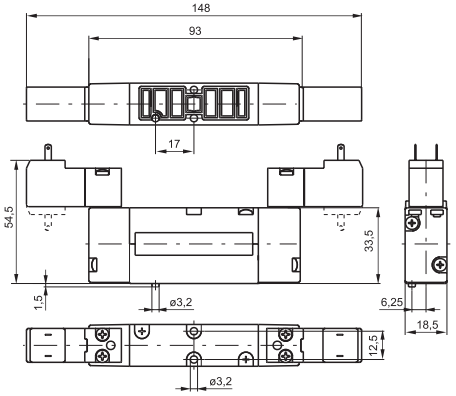
Solenoid - Solenoid 5/3

Coding: 244Ⓒ.53.Ⓕ.Ⓥ.Ⓣ

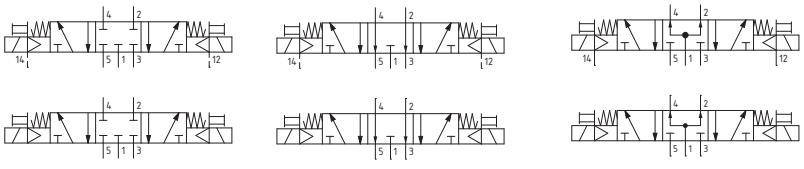
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Orifice size (mm)	5

Ⓒ	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding valves)
	5 = on pilot (for all version)
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VERSION
	24 = Solenoid external-Solenoid external
	35 = Solenoid-Solenoid
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 235 g



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic-Pneumatic 2 x 3/2

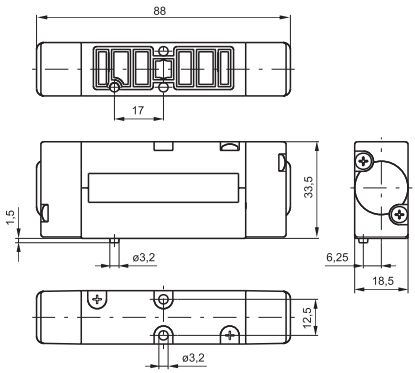
Coding: 2445.62.Ⓕ.18

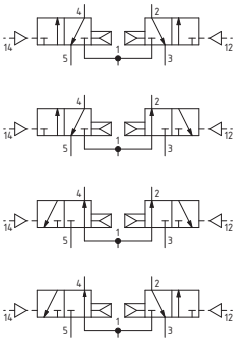
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	450
Orifice size (mm)	5

	FUNCTION
Ⓕ	**44** = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2 NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2 NC (12)

*"Example: if inlet pressure is set at 5bar then pilot pressure must be at least Pp=1,5+(0.2*5)=2,5bar"*







Weight 170 g

Solenoid-Solenoid 2 x 3/2

Coding: 2445.62.Ⓕ.35.Ⓣ

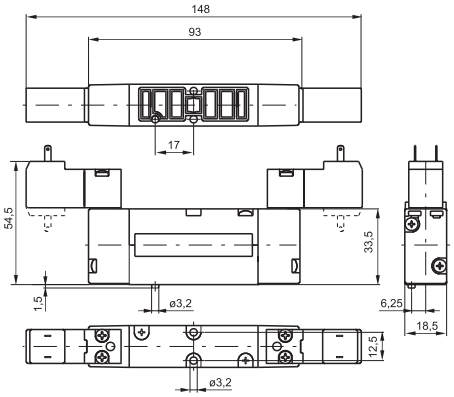
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Pilot pressure (bar)	≥1,5+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	450
Orifice size (mm)	5

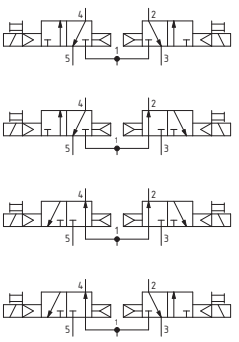
	FUNCTION
Ⓕ	**44** = 2 Coils 3/2 NC
	45 = 1 Coil 3/2 NC (14) + 1 Coil 3/2 NO (12)
	55 = 2 Coils 3/2 NO
	54 = 1 Coil 3/2 NO (14) + 1 Coil 3/2 NC (12)

	VOLTAGE
Ⓣ	**01** = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward

*"Example: if inlet pressure is set at 5bar then pilot pressure must be at least Pp=1,5+(0.2*5)=2,5bar"*



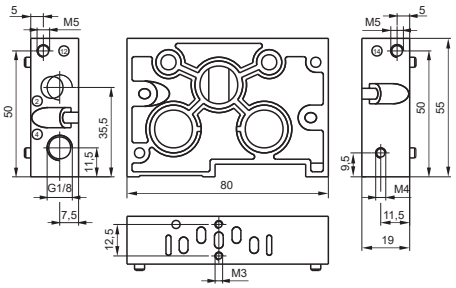




Weight 250 g

Modular base



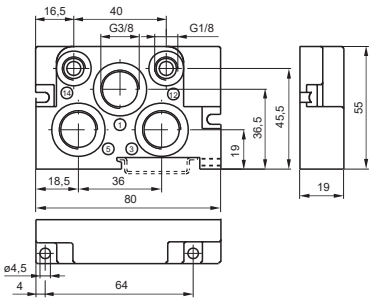


Coding: 2440.Ⓥ

Ⓥ	VERSION
	01 = Modular base
	11 = Base for single separate inlet

Right inlet base



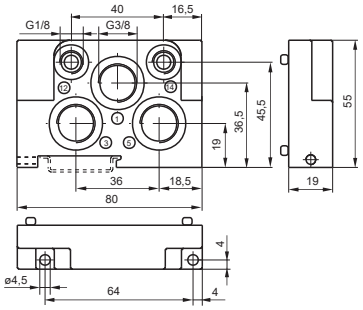


Coding: 2440.02

Weight 110 g

Left inlet base



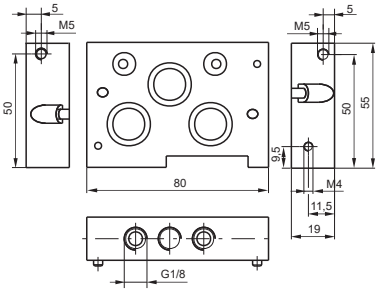


Coding: 2440.03

Weight 110 g

Intermediate air intake



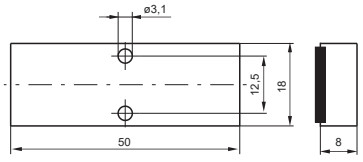


Coding: 2440.10

Weight 185 g

Closing plate





Coding: 2440.00

Weight 25 g

Diaphragm plug

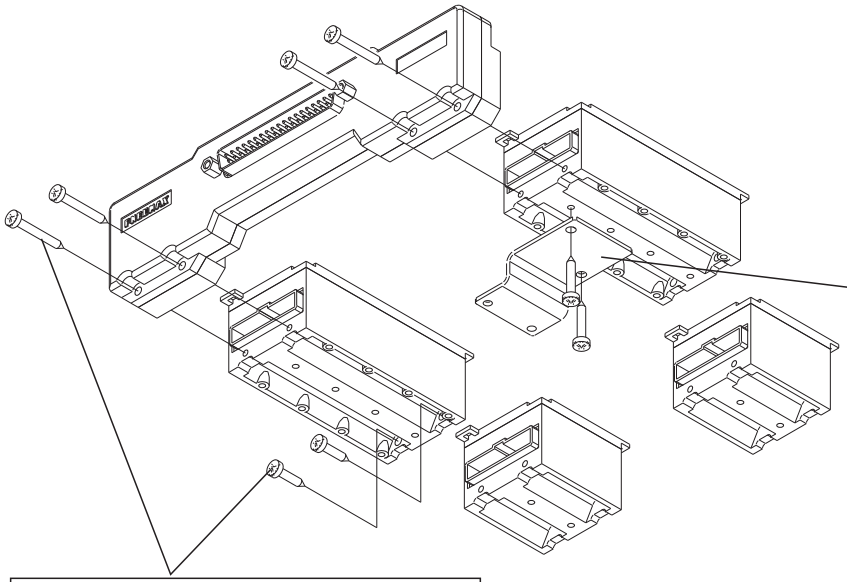


Coding: 2440.17

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

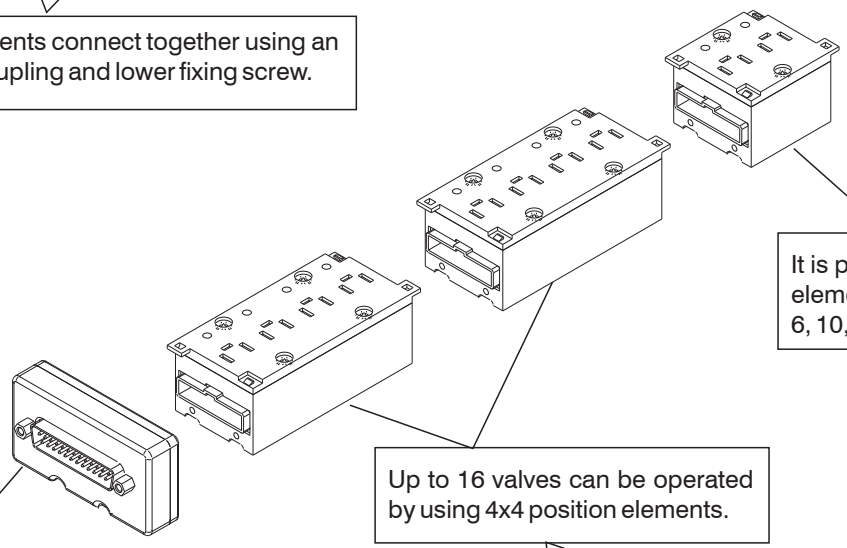
The integral electrical design for the series 2400 valve is extremely flexible, allowing the production of pre-wired solenoid valve manifolds, the configuration of which can be determined at the point of assembly. The 24 VDC, 12 VDC (equivalent PNP) and 24 VAC* modules are available with 2 or 4 positions. The system assembled is designed for an IP40 protection. IP65 is available on request.

* Attention : If the working tension is 24 VAC DO NOT using modules with protection diode



Support plates are supplied to mount the electrical connection elements to the manifold modules. Individual valves can still be removed from the manifold even after assembly is complete. One support plate is required per element.

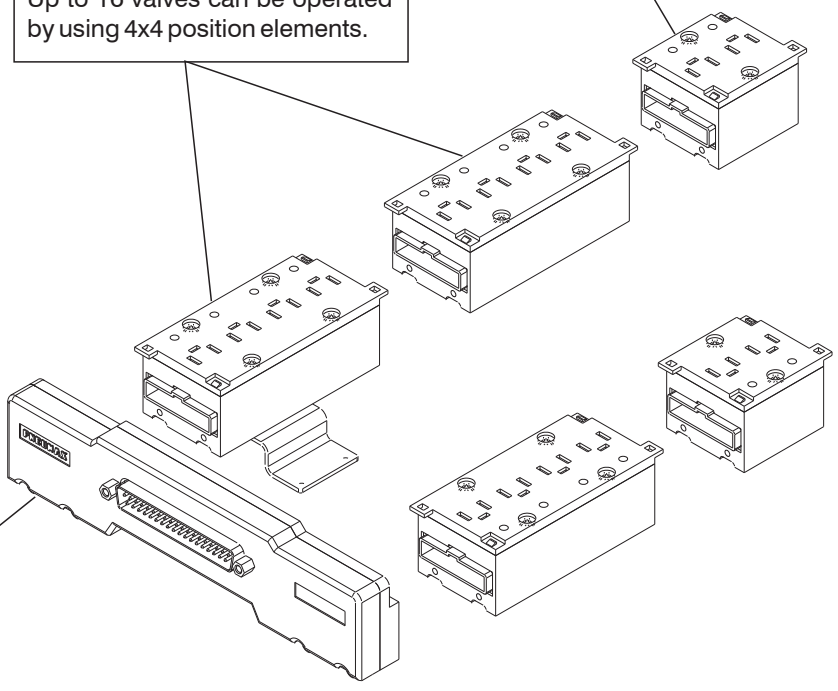
The elements connect together using an upper coupling and lower fixing screw.



It is possible to use the 2 position element as the first terminal on 2, 6, 10, 14 position assemblies..

Up to 16 valves can be operated by using 4x4 position elements.

On single solenoid assemblies electrical connection is made using an D-SUB 25 multi-connector.



On double solenoid assemblies electrical connection is made usinfg an D-SUB 37 multi-connector.

Module for connections, 2 positions



Weight 30 g
Note: with protection diode only direct current (V DC) is available

Coding: 2400.02.Ⓥ

	VERSION
Ⓥ	**00** = Left IP40-PNP
	02 = Left IP40-PNP with protection diode
	10 = Left IP65-PNP
	12 = Left IP65-PNP with protection diode
	01 = Right IP40-PNP
	03 = Right IP40-PNP with protection diode
	11 = Right IP65-PNP
	13 = Right IP65-PNP with protection diode

Module for connections, 4 positions



Weight 50 g
Note: with protection diode only direct current (V DC) is available

Coding: 2400.04.Ⓥ

	VERSION
Ⓥ	**00** = Left IP40-PNP
	02 = Left IP40-PNP with protection diode
	10 = Left IP65-PNP
	12 = Left IP65-PNP with protection diode
	01 = Right IP40-PNP
	03 = Right IP40-PNP with protection diode
	11 = Right IP65-PNP
	13 = Right IP65-PNP with protection diode

Connectors 25 poles



Weight 40 g
The IP65 protection is obtained by IP65 Pneumax cable

Coding: 2400.25.10

Connectors 37 poles



Weight 120 g
The IP65 protection is obtained by IP65 Pneumax cable

Coding: 2400.37.10

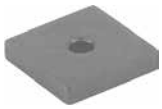
Plug



Weight 5 g

Coding: 2400.00

Closing plate electrical positions



Weight 2 g

Coding: 2400.15.00

VDMA support plate



Weight 20 g

Coding: 2440.50

FLAT support plate



Weight 20 g

Coding: 2430.50

4 positions box with 25 contacts connector



Weight 65 g

Coding: 2400.04.25

15mm male connector with 2 metres cable



Weight 98 g

Coding: 2400.15.02

In line cable complete with connector, IP40



Coding: 2400.Ⓒ.Ⓛ.00

	CONNECTOR
Ⓒ	**25** = 25 pins
	37 = 37 Pins
	CABLE LENGTH
Ⓛ	**03** = 3 meters
	05 = 5 meters
	10 = 10 meters

Cable complete with connector, 25 Poles, IP65



Coding: 2300.25.Ⓛ.Ⓒ

	CABLE LENGTH
Ⓛ	**03** = 3 meters
	05 = 5 meters
	10 = 10 meters
	CONNECTOR
Ⓒ	**10** = Stand alone
	90 = 90° Angle

Cable complete with connector, 37 Poles, IP65

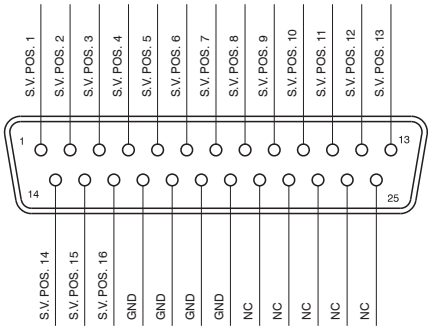


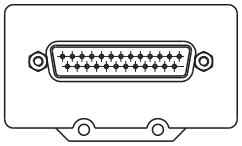
Coding: 2400.37.Ⓛ.Ⓒ

	CABLE LENGTH
Ⓛ	**03** = 3 meters
	05 = 5 meters
	10 = 10 meters
	CONNECTOR
Ⓒ	**10** = Stand alone
	90 = 90° Angle

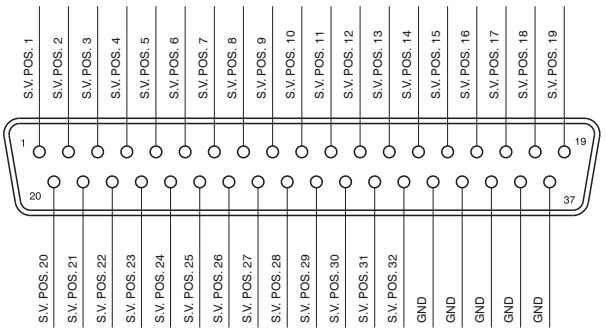
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

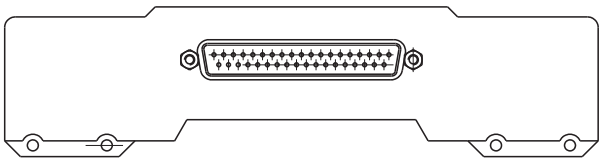
SUB-D 25 POLES CONNECTOR

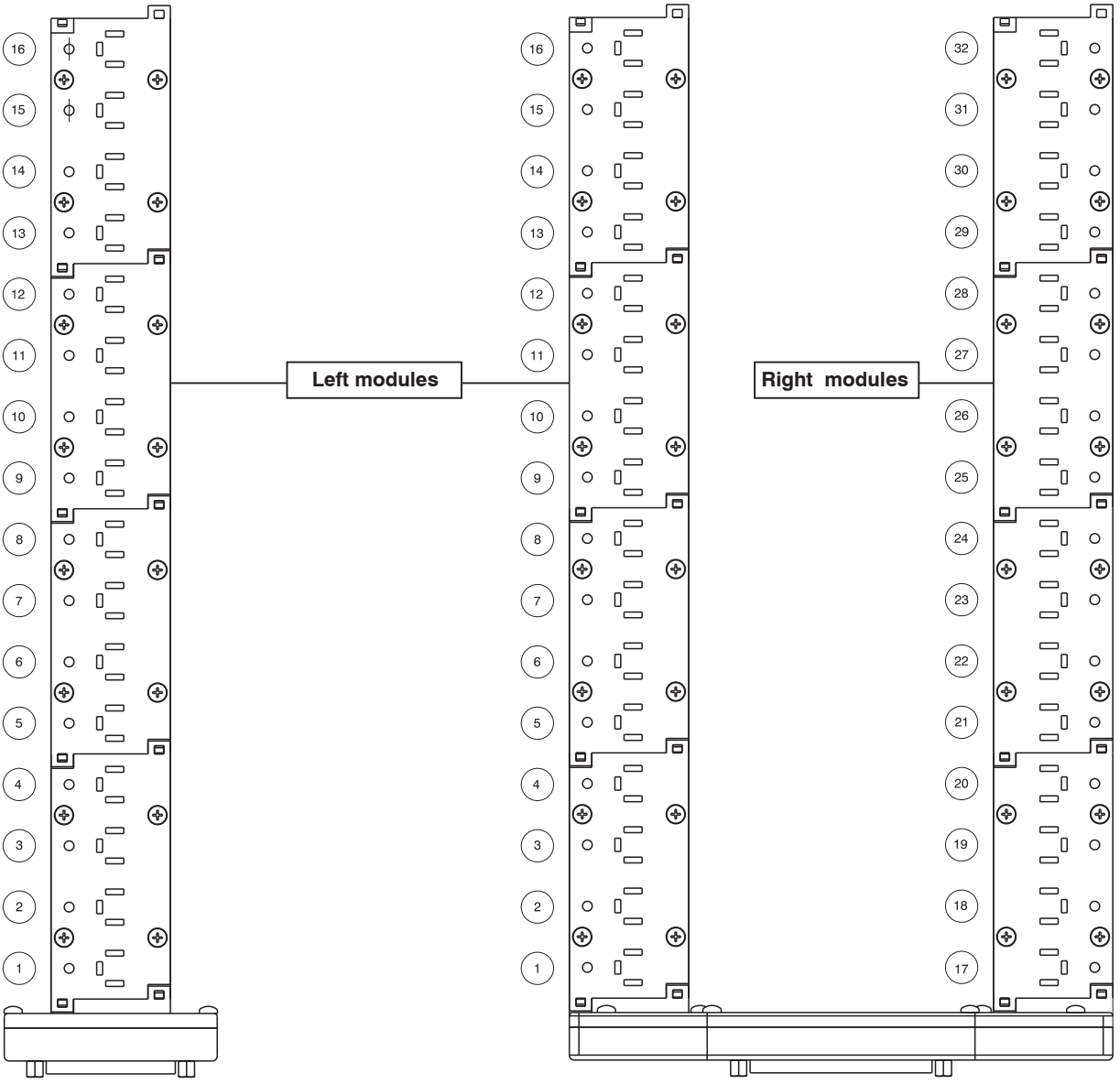




SUB-D 37 POLES CONNECTOR







Series 2600

They have been designed to be easily assembled into groups or manifolds.
The 2600 series comprises a range of products classified according to the body size of 26mm divided into 3 types "LINE", "FLAT" and "VDMA".
Is not included the integral electrical connection

Construction characteristics

Central body	Extruded aluminium bar with chemical nickel treatment and PTFE (polytetrafleurethylene)
Connection plates	Die-cast aluminium
Spool seals	Oil resistant nitrile rubber-HNBR
Springs	AISI 302 stainless steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Aluminium 2011

Ordering codes for minature solenoid valves

The 15 mm. miniature solenoid valve with 1,1 mm. orifice has been selected for piloting this series of valves (see Series 300).
This results in low response times and reduced power consumption.
The valve can be supplied with the coil upward or downward (multipolar connections) depending on the application.
Codes are as follows:

Coil upward code

01 = miniature sol. + 12 V DC
02 = miniature sol. + 24 V DC
05 = miniature sol. + 24 V AC
06 = miniature sol. 110 V AC
07 = miniature sol. 230 V AC
08 = miniature sol. + 24 V DC 1W
09 = miniature sol. + 24 V DC Earth faston

Coil downward code

11 = miniature sol. + 12 V DC
12 = miniature sol. + 24 V DC
15 = miniature sol. + 24 V AC
16 = miniature sol. 110 V AC
17 = miniature sol. 230 V AC
18 = miniature sol. + 24 V DC 1W
19 = miniature sol. + 24 V DC Earth faston

Miniature solenoid c UL us homologated are available (see Series 300).

Use and maintenance

The average life of the solenoid valve exceeds 50.000.000 cycles when used under optimum conditions.
Adequate lubrication reduces seals wear, just as proper filtering of supply air prevents the build-up of dirt that can cause malfunction.
Ensure the valve is used within our recommended criteria for pressure and temperature.
In dirty or dusty environments, the exhaust ports should be protected.
Seals kits are available for repairs.
Repairs must be made exclusively by specialized personnel.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

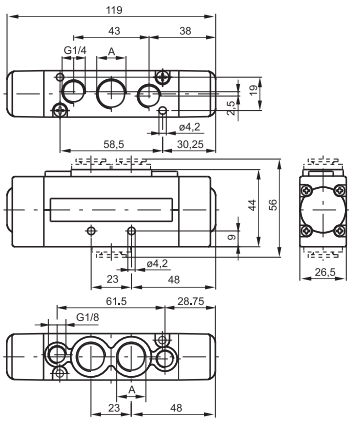
Pneumatic - Spring

Coding: 261Ⓐ.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9
Pilot ports size	G1/8"

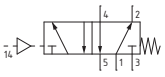
	CONNECTION A
Ⓐ	**1** = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 235 g
Minimum pilot pressure 2 bar

For dimension "A" see ordering code



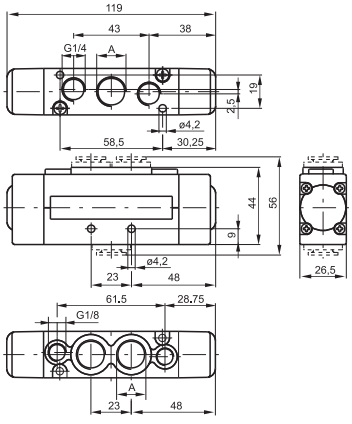
Pneumatic-Differential

Coding: 261Ⓐ.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9
Pilot ports size	G1/8"

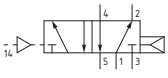
	CONNECTION A
Ⓐ	**1** = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 235 g
Minimum pilot pressure 2 bar

For dimension "A" see ordering code



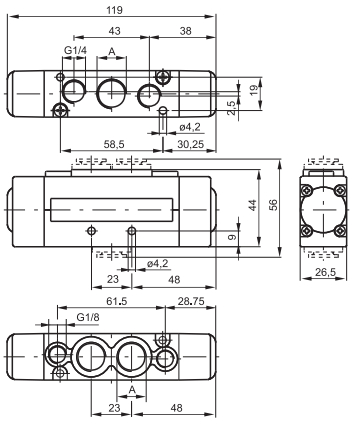
Pneumatic - Differential (External)

Coding: 261Ⓐ.52.00.17

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9
Pilot ports size	G1/8"

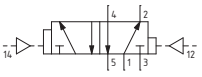
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 235 g
Minimum pilot pressure 2 bar

For dimension "A" see ordering code



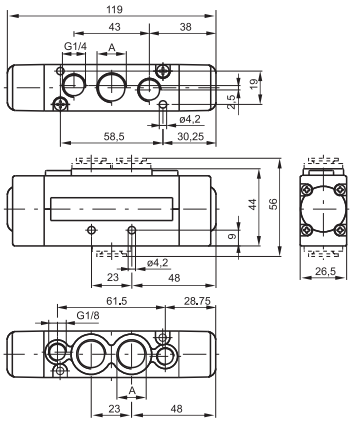
Pneumatic - Pneumatic

Coding: 261Ⓐ.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9
Pilot ports size	G1/8"

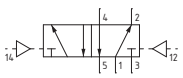
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 235 g
Minimum pilot pressure 1,5 bar

For dimension "A" see ordering code



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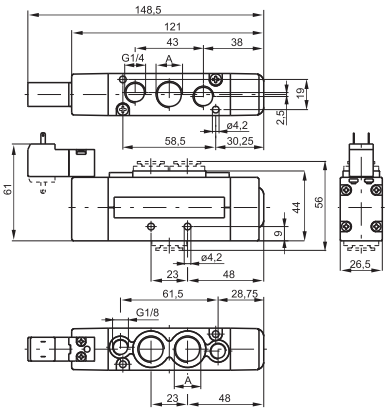
Solenoid-Spring/Differerential

Coding: 261Ⓐ.52.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9

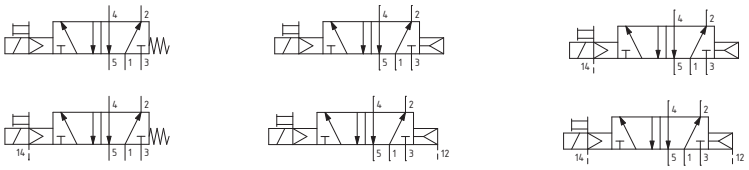
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
Ⓥ	VERSION
	39 = Solenoid-Spring
	29 = Solenoid external-Spring
	36 = Solenoid-Differential
	37 = Solenoid-Differerential external
	26 = Solenoid external-Differerential
	27 = Solenoid external-Differerential external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





For dimension "A" see ordering code

Weight 275 g
Minimum pilot pressure 2 bar



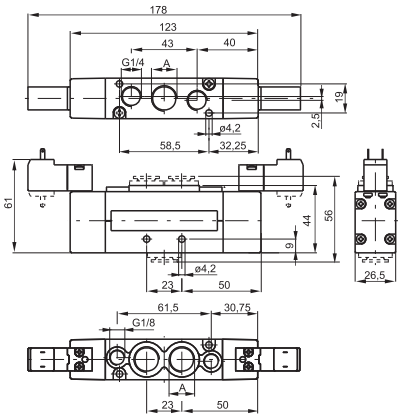
Solenoid - Solenoid

Coding: 261Ⓐ.52.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9

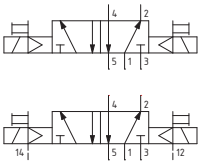
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
Ⓥ	VERSION
	35 = Solenoid-Solenoid
	24 = Solenoid external-Solenoid external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





For dimension "A" see ordering code

Weight 295 g
Minimum pilot pressure 1,5 bar



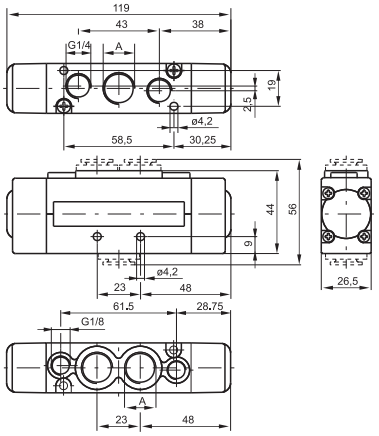
Pneumatic-Pneumatic 5/3

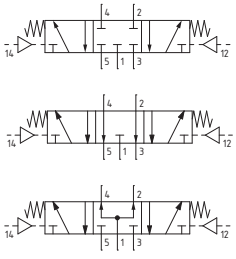
Coding: 261Ⓐ.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1350
Orifice size (mm)	9
Pilot ports size	M5

Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 245 g
Minimum pilot pressure 3 bar

For dimension "A" see ordering code

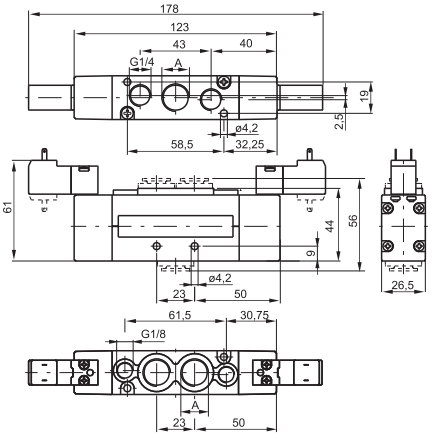
Solenoid - Solenoid 5/3

Coding: 261Ⓐ.53.Ⓕ.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1350
Orifice size (mm)	9

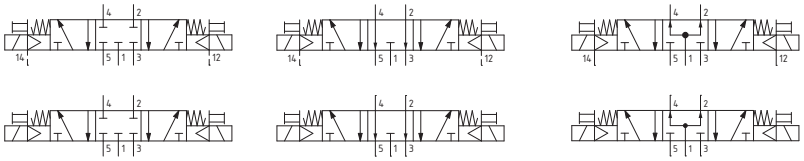
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VERSION
	24 = Solenoid external-Solenoid external
	35 = Solenoid-Solenoid
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 245 g
Minimum pilot pressure 3 bar

For dimension "A" see ordering code



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

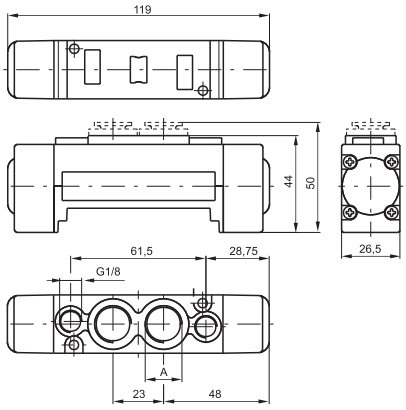
Pneumatic - Spring

Coding: 263Ⓐ.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9
Pilot ports size	M5

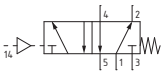
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 185 g
Minimum pilot pressure 2 bar

For dimension "A" see ordering code



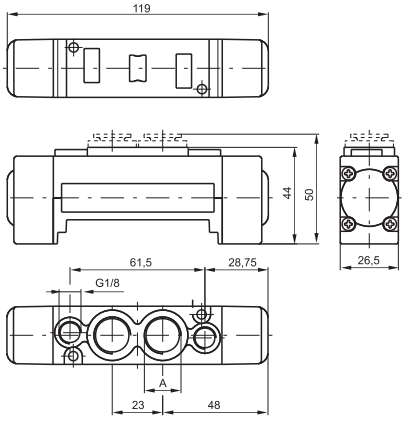
Pneumatic-Differential

Coding: 263Ⓐ.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9
Pilot ports size	M5

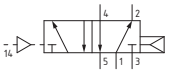
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 185 g
Minimum pilot pressure 2 bar

For dimension "A" see ordering code



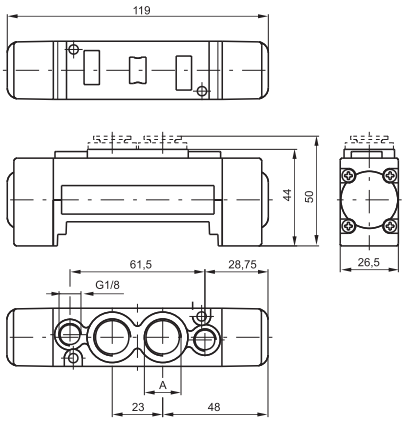
Pneumatic - Differential (External)

Coding: 263Ⓐ.52.00.17

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9
Pilot ports size	M5

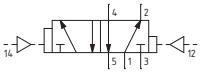
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 185 g
Minimum pilot pressure 2 bar

For dimension "A" see ordering code



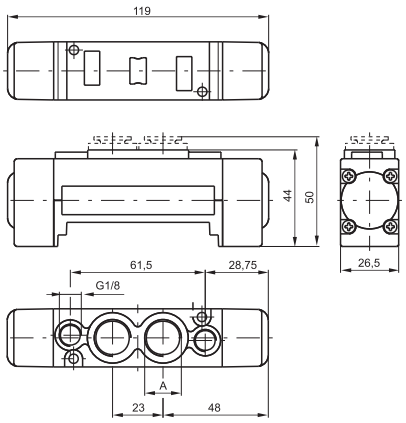
Pneumatic - Pneumatic

Coding: 263Ⓐ.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9
Pilot ports size	M5

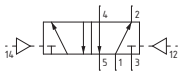
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10





Weight 185 g
Minimum pilot pressure 1,5 bar

For dimension "A" see ordering code



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

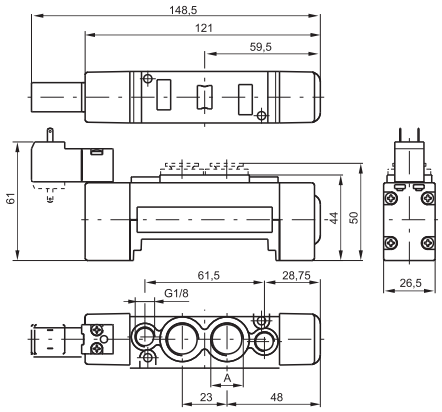
Solenoid-Spring/Differerential

Coding: 263Ⓐ.52.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9

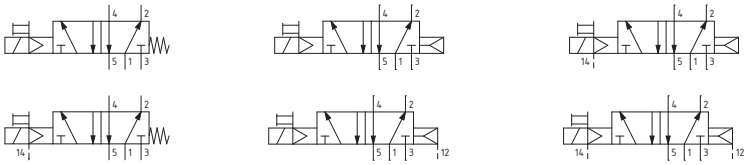
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
Ⓥ	VERSION
	39 = Solenoid-Spring
	29 = Solenoid external-Spring
	36 = Solenoid-Differential
	37 = Solenoid-Differerential external
	26 = Solenoid external-Differerential
	27 = Solenoid external-Differerential external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





For dimension "A" see ordering code

Weight 220 g
Minimum pilot pressure 2 bar



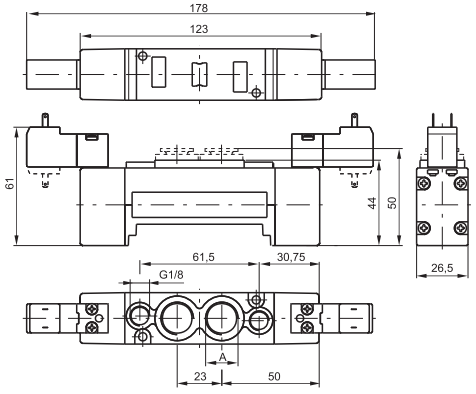
Solenoid - Solenoid

Coding: 263Ⓐ.52.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1500
Orifice size (mm)	9

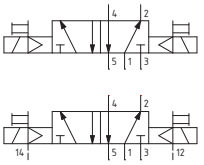
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
Ⓥ	VERSION
	35 = Solenoid-Solenoid
	24 = Solenoid external-Solenoid external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





For dimension "A" see ordering code

Weight 250 g
Minimum pilot pressure 1,5 bar



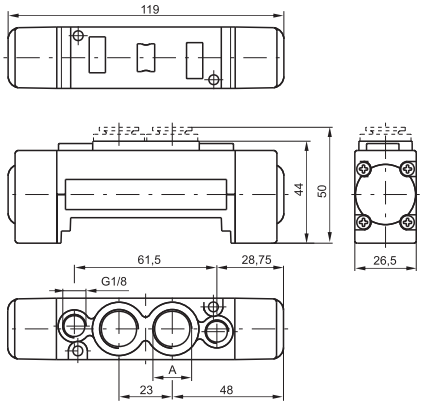
Pneumatic-Pneumatic 5/3

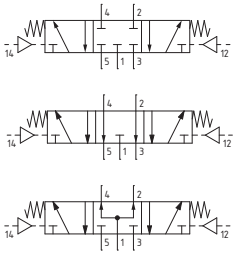
Coding: 263Ⓐ.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1350
Orifice size (mm)	9
Pilot ports size	M5

Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 195 g
Minimum pilot pressure 3 bar

For dimension "A" see ordering code

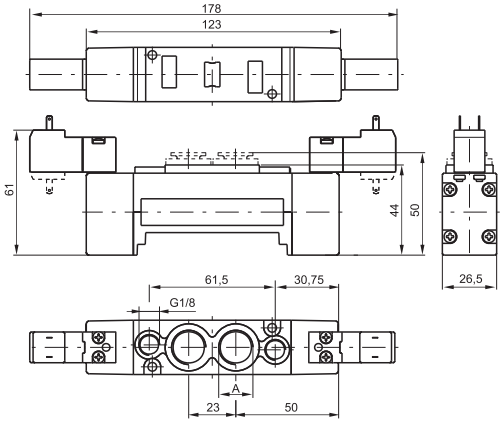
Solenoid - Solenoid 5/3

Coding: 263Ⓐ.53.Ⓕ.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1350
Orifice size (mm)	9

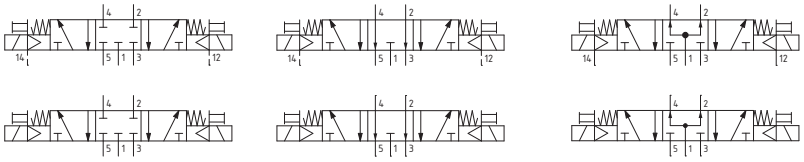
Ⓐ	CONNECTION A
	1 = G3/8"
	5 = G1/4"
	8 = Quick fitting tube Ø10
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VERSION
	24 = Solenoid external-Solenoid external
	35 = Solenoid-Solenoid
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 270 g
Minimum pilot pressure 3 bar

For dimension "A" see ordering code

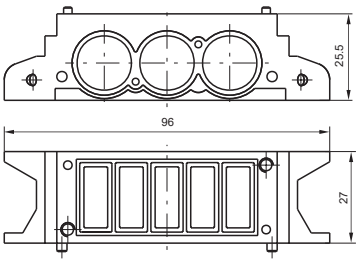


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Modular base

Coding: 2630.01



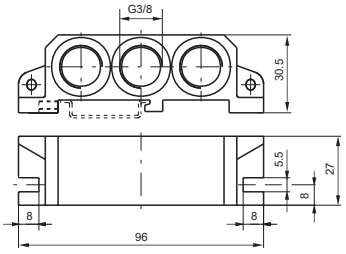


Weight 80 g

Right inlet base

Coding: 2630.02



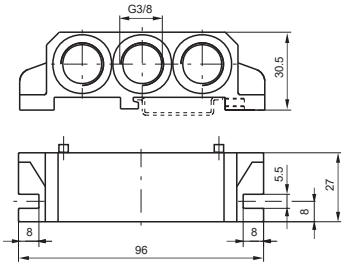


Weight 80 g

Left inlet base

Coding: 2630.03



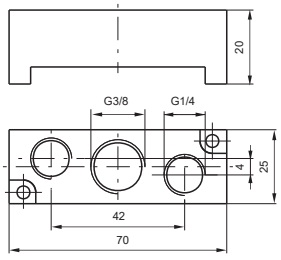


Weight 100 g

Intermediate air intake

Coding: 2630.10



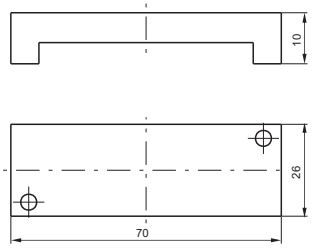


Weight 60 g
to be assembled instead of a valve

Closing plate

Coding: 2630.00





Weight 20 g

Diaphragm plug

Coding: 2630.17



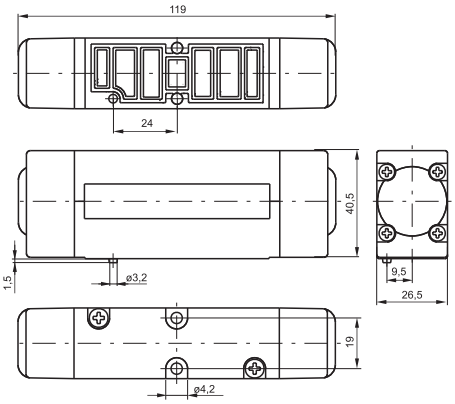
Weight 5 g

Pneumatic - Spring

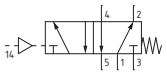
Coding: 2645.52.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	7.5





Weight 235 g
Minimum pilot pressure 2 bar

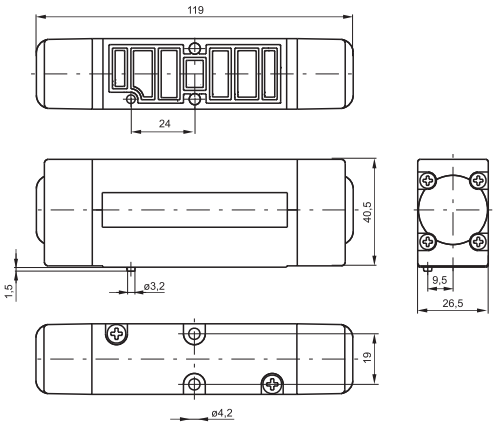


Pneumatic-Differential

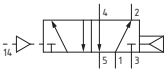
Coding: 2645.52.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	7.5





Weight 235 g
Minimum pilot pressure 2 bar

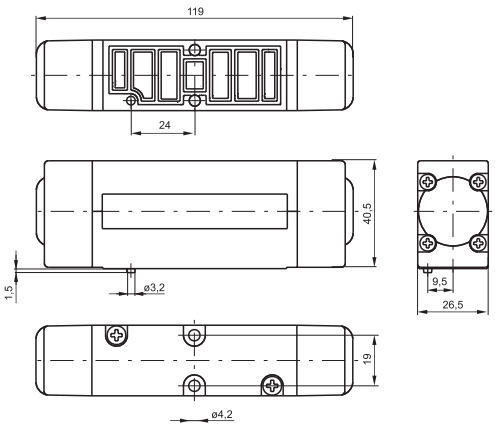


Pneumatic - Differential (External)

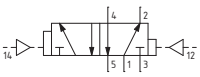
Coding: 2645.52.00.17

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	7.5





Weight 235 g
Minimum pilot pressure 2 bar



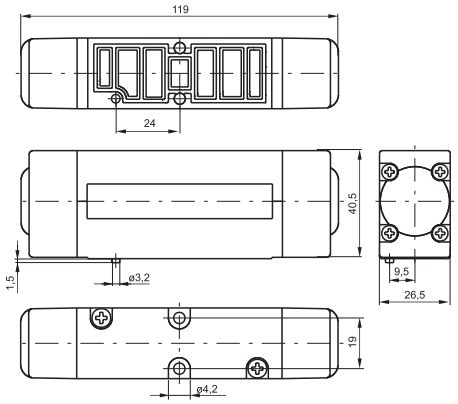
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Pneumatic

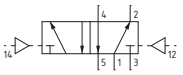
Coding: 2645.52.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	7.5





Weight 255 g
Minimum pilot pressure 1,5 bar



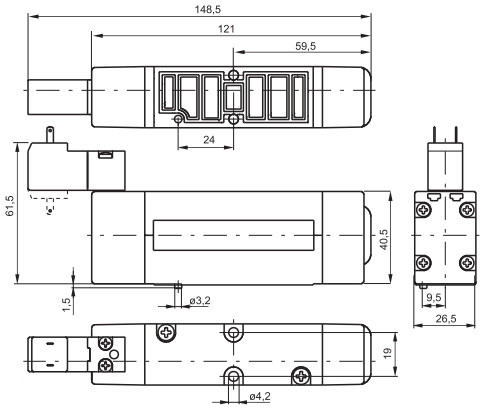
Solenoid-Spring/Differerential

Coding: 264Ⓒ.52.00.Ⓥ.Ⓣ

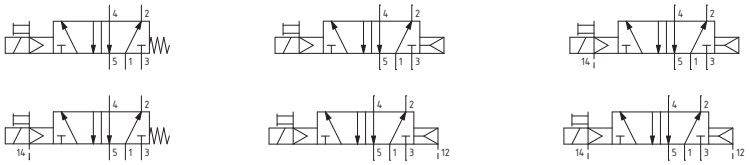
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	7.5

Ⓒ	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding valves)
	5 = on pilot (for all version)
Ⓥ	VERSION
	39 = Solenoid-Spring
	29 = Solenoid external-Spring
	36 = Solenoid-Differential
	37 = Solenoid-Differerential external
	26 = Solenoid external-Differerential
	27 = Solenoid external-Differerential external
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 270 g
Minimum pilot pressure 2 bar



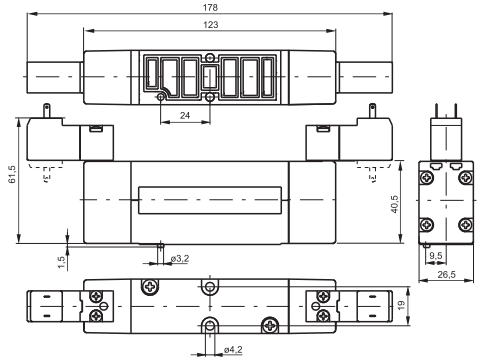
Solenoid - Solenoid

Coding: 264Ⓒ.52.00.Ⓥ.Ⓣ

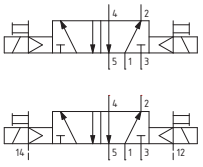
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	7.5

Ⓒ	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding valves)
	5 = on pilot (for all version)
Ⓥ	VERSION
	24 = Solenoid external-Solenoid external
	35 = Solenoid-Solenoid
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward





Weight 305 g
Minimum pilot pressure 1,5 bar



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

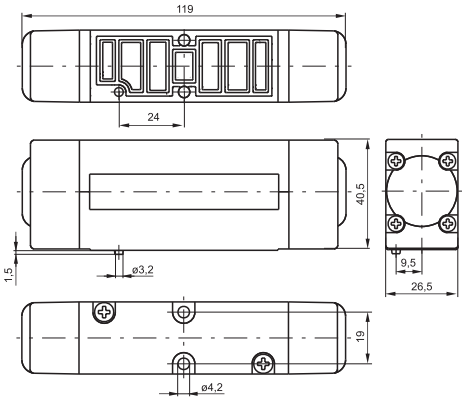
Pneumatic-Pneumatic 5/3

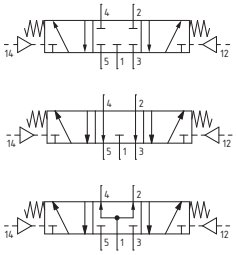
Coding: 264Ⓒ.53.Ⓕ.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Orifice size (mm)	7.5

Ⓒ	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding valves)
	5 = on pilot (for all version)
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 245 g
Minimum pilot pressure 3 bar

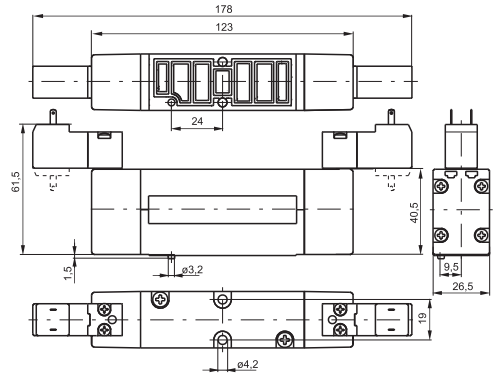
Solenoid - Solenoid 5/3

Coding: 264Ⓒ.53.Ⓕ.Ⓥ.Ⓣ

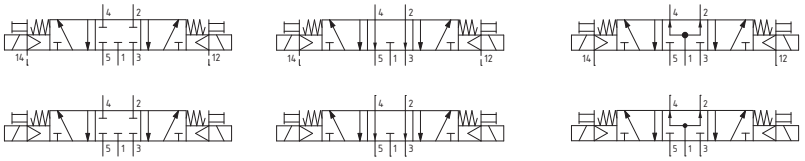
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Orifice size (mm)	5

Ⓒ	TYPE ELECTROPILOT EXHAUST
	1 = on base (only for self feeding valves)
	5 = on pilot (for all version)
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓥ	VERSION
	24 = Solenoid external-Solenoid external
	35 = Solenoid-Solenoid
Ⓣ	VOLTAGE
	01 = + 12 V DC
	02 = + 24 V DC
	05 = + 24 V AC
	06 = 110 V AC
	07 = 230 V AC
	08 = + 24 V DC 1W
	09 = + 24 V DC Earth faston
	11 = + 12 V DC downward
	12 = + 24 V DC downward
	15 = + 24 V AC downward
	16 = 110 V AC downward
	17 = 230 V AC downward
	18 = + 24 V DC 1W downward
	19 = + 24 V DC Earth faston downward



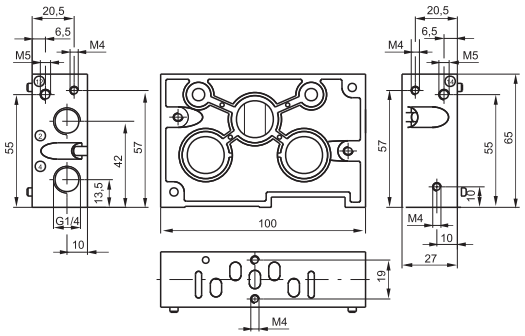


Weight 315 g
Minimum pilot pressure 3 bar



Modular base





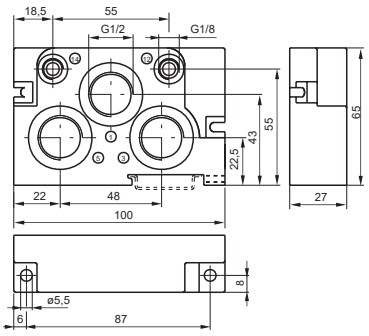
Coding: 2640.Ⓥ

Ⓥ	VERSION
	01 = Modular base
	11 = Base for single separate inlet

Weight 220 g

Right inlet base



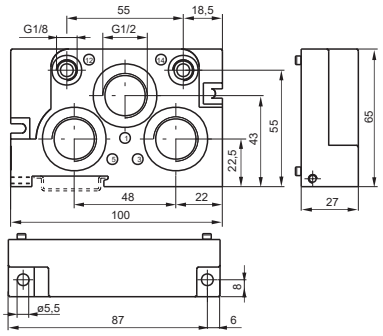


Coding: 2640.02

Weight 200 g

Left inlet base



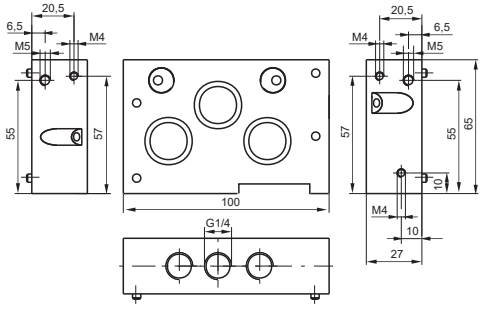


Coding: 2640.03

Weight 200 g

Intermediate air intake



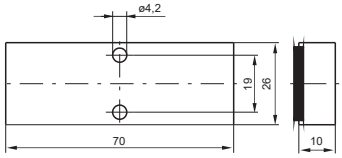


Coding: 2640.10

Weight 380 g

Closing plate





Coding: 2640.00

Weight 50 g

Diaphragm plug



Coding: 2640.17

Weight 10 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 300

The direct operated solenoid valve is the interface between pneumatic and electronic. In fact, it is actuated by an electrical signal and in turn gives a pneumatic signal directly available for small users or for actuating bigger pneumatic distributors.

A wide range of valves are needed for satisfying various applications. For this need we have available miniature components with very low volume and electrical impute as well as solenoid valves with large flow rate and power for heavy duty operations. These solenoid valves are usually 3/2, normally closed or normally open, but there are available the 2/2, closed or open, for vacuum and others.

Note that the direct operated valves can only be used with bases, individual or multiple with M5 or G 1/8" thread or with connections.

Some PNEUMAX solenoid valves are c UL us homologated valid for USA and Canada (file n. VAIU2.E206325, VAIU8.E206325). For more details, refer to the coding, in the following pages.

The 10mm and 15mm solenoid valves are certified by UL in compliance with both Canadian and USA safety requirements as recognized component and included in the **UL file E206325** and bear the “UL Recognized Component” marking.

The 10mm and 15mm solenoid valves, since they are devices for “class 2 circuits”, according with UL standard UL 429/CSA C22.2 N°139, are not considered dangerous for electric shock or fire and thus a
UL certification is not required for cables and connectors.

Some solenoid valves, since they are devices for “class 2 circuits”, according with UL standard UL 429/CSA C22.2 N°139, are not considered dangerous for electric shock or fire and thus a **UL certification is not required for cables and connectors.**

Use and maintenance

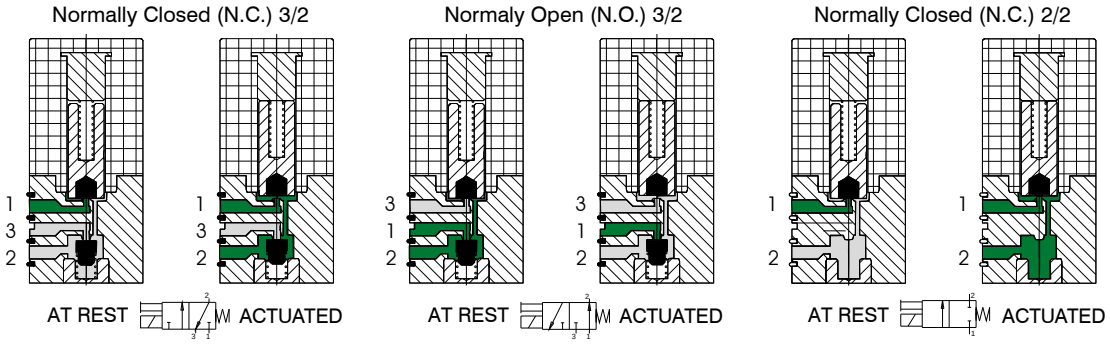
Maintenance is normally not required for these components therefore the spare parts list is not provided.

Their construction complexity and low cost do not make repair economically viable. It's easier and more economic to replace the complete valve in case of malfunction.
For proper lubrication use only hydraulic oil class H such as Castrol type MAGNA GC 32.

This series of directly operated vales is characterized by its reduced dimensions. They are designed to be mounted individually or on manifold. The high operating speed and high flow rate in consideration of the reduced dimensions, in combination with the high compatibility of the material used to manufacture them ensure a high variety of possible application fields.
All valves have manual override as standard and are available in 3/2 configuration N.O. and N.C. as well as 2/2 N.C. both 12 or 24 V DC or AC. Electrical connection can be via co moulded cables or via connector, in this configuration a LED indicates the coil status. Ensure that the fixing screws are tightened with 0.15 Nm maximum.

Functional schematics for standard version

1 = SUPPLY PORT
2 = OUTLET PORT
3 = EXHAUST PORT



Construction characteristics

Electrical part
Miniature solenoid consisting of a coil made of copper wire of different diameters depending on voltage,isolated according to "F" class standard, with injection-moulded nylon-glass application. All parts forming the cladding, the electrical connections and the pole pieces are protected against corrosion.

Mechanical part
Stainless steel 430F armatures FPM poppets body in thermoplastic material and manual override and plug in nickel plated brass. Valves must be mounted on single or multiple manifold to be used.

Technical characteristics

		Standard version
Pneumatic	Working pressure	0 ... 7 bar
	Orifice size	0,7 mm
	Temperature	-5° ... +50°C
	Flow rate at 6 bar with Δp=1 bar	14 Nl/min
	Exhaust flow rate	22 Nl/min
	Life expectancy, number of cycles per minute	50 million
	Compressed air, purity class according to ISO 8573-1:2010	5:4:4
Electric	Voltages	12 ... 24 Volt D.C.
	Power	1,3 Watt
	Voltage tollerance	-5% ... +10%
	Response time when energized *	8 ms
	Response time when de-energized *	10 ms
	Copper wire isolation class	F (155°C)
	Protection degree	IP65 (with cables) IP40 (with connectors) IP00 (with Faston)

(*) "Response time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

10 mm Standard miniature solenoid ordering codes

N3 ___ . ___

- **6** = 2/2 N.C.
- **7** = 3/2 N.C.
- **8** = 3/2 N.O.

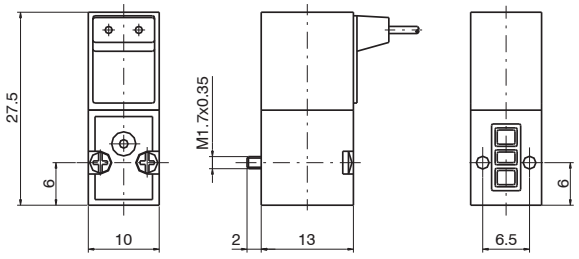
- **1** = 24 V D.C.
- **2** = 12 V D.C.
- **4** = 6 V D.C.*

- **1** = 90° Connector with LED
- **2** = Cable 300 mm. - IP65 (embedded cable)*
- **3** = Line Connector with LED
- **4** = 90° Connector without LED
- **5** = Line Connector without LED

* = The c UL us directive does not apply to these versions

Miniature solenoid valve with cable

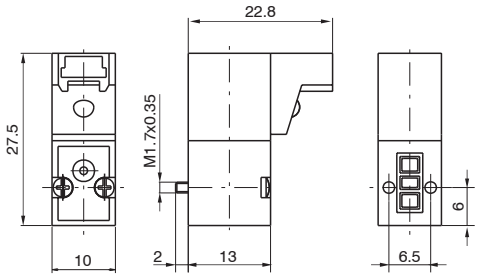




Weight 12 g

Miniature solenoid valve with 90° connector

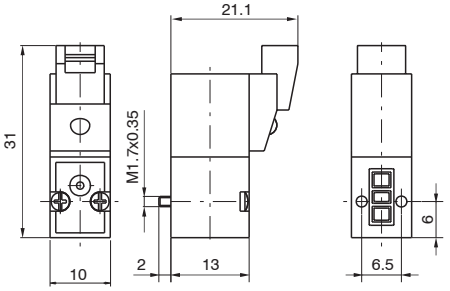




Weight 12 g

Miniature solenoid valve with line connector





Weight 12 g

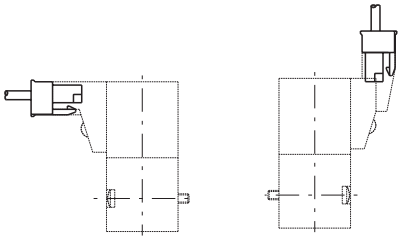
Connector

Ordering codes

371 . ___

- **300 :** Cable L = 300 mm
- **600 :** Cable L = 600 mm
- **1000 :** Cable L = 1000 mm





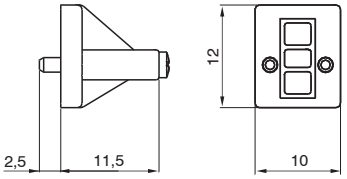
Weight 3 g

Closing plate

Ordering codes

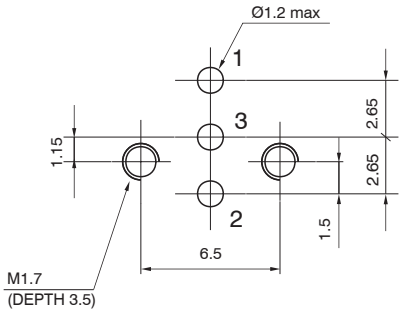
395.00





Weight 5 g

Interfaces dimensions



10 mm - ISO 15218-2003 miniature solenoid ordering codes

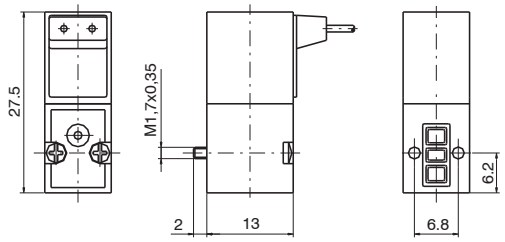
The versions are not contemplated by the c UL us directive

P3 _ _ . _

- **7** = 3/2 N.C.
- **1** = 24 V D.C.
- **2** = 12 V D.C.
- **4** = 6 V D.C.
- **1** = 90° Connector with LED
- **2** = Cable 300 mm. - IP65 (embedded cable)
- **3** = Line Connector with LED
- **4** = 90° Connector without LED
- **5** = Line Connector without LED

Miniature solenoid valve with cable

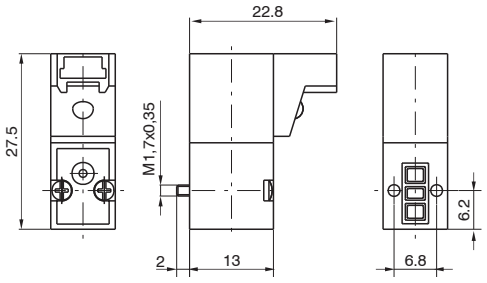




Weight 12 g

Miniature solenoid valve with 90° connector

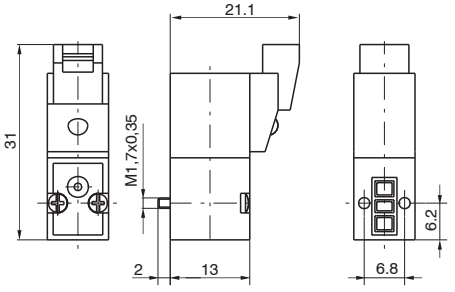




Weight 12 g

Miniature solenoid valve with line connector





Weight 12 g

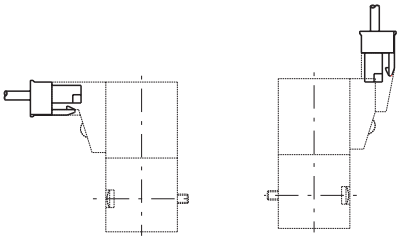
Connector

Ordering codes

371 . _

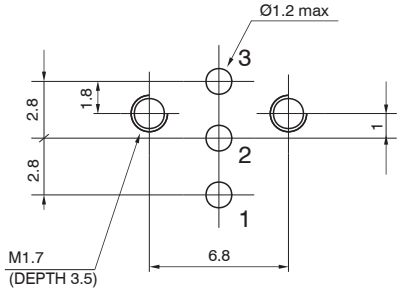
- **300 :** Cable L = 300 mm
- **600 :** Cable L = 600 mm
- **1000 :** Cable L = 1000 mm





Weight 3 g

Interfaces dimensions 10 mm - ISO 15218



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

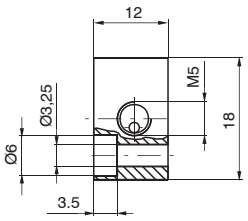
Standard version
Individual base

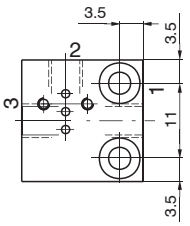
Ordering code

395.01

Weight 10 g







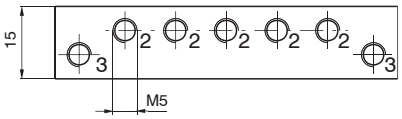
Standard version
multiple bases

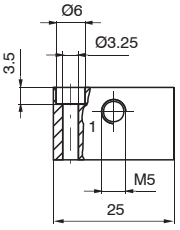
Ordering code

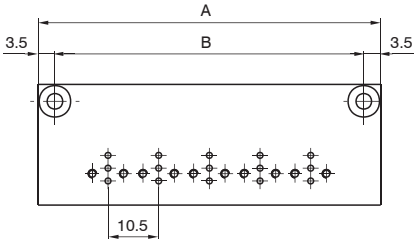
395 . ___

No. Positions









No. Positions	02	03	04	05	06	07	08	09	10
A	39.5	50	60.5	71	81.5	92	102.5	113	123.5
B	32.5	43	53.5	64	74.5	85	95.5	106	116.5
Weight (g)	43	54	65	76	87	98	109	120	131

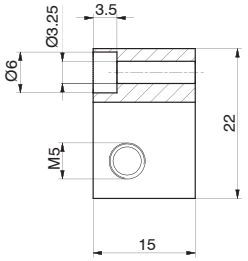
Individual base for
ISO 15218-2003 version

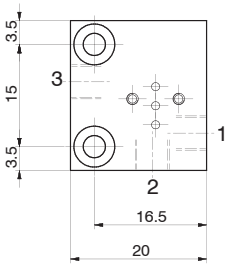
Ordering code

P395.01

Weight 10 g







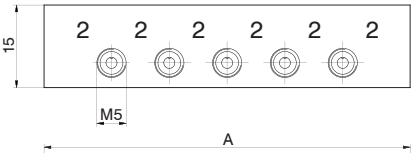
Multiple base for
ISO 15218-2003 version

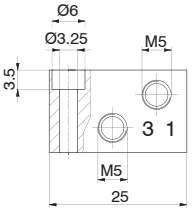
Ordering code

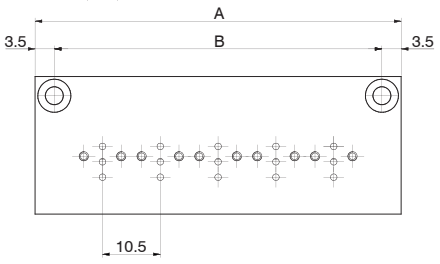
P395 . ___

No. Positions









No. Positions	02	03	04	05	06	07	08	09	10
A	35	45.5	56	66.5	77	87.5	98	108.5	119
B	28	38.5	49	59.5	70	80.5	91	101.5	112
Weight (g)	43	54	65	76	87	98	109	120	131

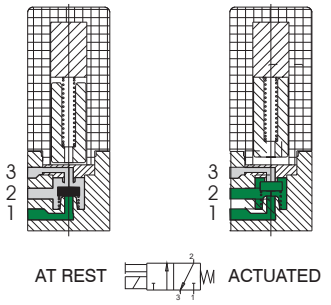
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

This direct operated solenoid valve has minimum overall dimensions (15 mm wide). Its construction method is same as 10 mm valve, of course.
It is suitable to be single or gang mounted or as electro-operator for larger air flow distributors.
Can be utilized with compressed air and other fluids compatible with material used to build the solenoid valve.
The available versions, all equipped with manual overide, are 3 ways, normally closed and normally open with DC and AC 50/60 Hz.
It's possible to install the N.O. valve on N.C. interface by using the registered reverse system included in the valve body.
The electrical connection is made with cables (300 mm.), FASTON or with connector.
This type of miniature solenoid valve is interchangeable with most of the same products available on the market.
Coil be can also positioned at 180° to get the electrical connection located on the opposite side than override.
Make sure that the fastening screews are tightened with maximum torque of 0,75 Nm.

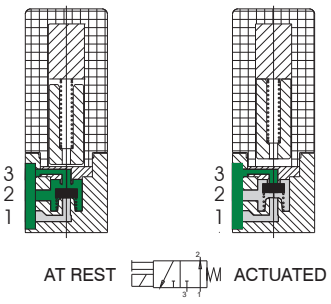
Functional schematics

1 = SUPPLY PORT
2 = OUTLET PORT
3 = EXHAUST PORT

Normally Closed (N.C.) 3/2



Normaly Open (N.O.) 3/2



Construction characteristics

Electrical part
Miniature solenoid consisting of a coil made of copper wire of different diameters depending on voltage,isolated according to "F" class standard, with injection-moulded nylon-glass application. All parts forming the cladding, the electrical connections and the pole pieces are protected against corrosion.
Mechanical part
AISI 430F cores, AISI 302 return springs, FPM poppets, thermoplastic polyester body.

Technical characteristics

Pneumatics			
Orifice size	0,8 mm	1,1 mm	1,5 mm (only D.C.)
Flow rate at 6 bar with Δp=1 bar	20 Nl/min	30 Nl/min	50 Nl/min
Working pressure for N.C.	0 ... 10 bar		0 ... 7 bar
Working pressure for N.O.	/	0 ... 8 bar	0 ... 5 bar
Temperature	-5° ... +50°C		
Max number of cycles per minute	50 million cycles (with standard working conditions)		
Compressed air, purity class according to ISO 8573-1:2010	5:4:4		
Electrical			
Voltage D.C.	24 V DC	12-24 V DC	
Voltage A.C.	/	24-110-230 Volt 50/60 Hz	/
Power consumption D.C.	1 Watt	2,3 Watt	
Power consumption A.C.	/	2,8 VA (at starting) 2,5 VA (at speed)	/
Voltage tollerance	-5% ... +10%		
Response time*	10 ... 12 ms		
Isolating class	F (155°C)		
Protection degree	IP65 (with cables) IP40 (with connectors) IP00 (with faston)		

(*) "Response time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

15 mm miniature solenoid ordering codes

N3 ___ . ___ ___ ___

- **3** = 3/2 N.C.
- **4** = 3/2 N.O. (only Ø1,1 and Ø1,5)

- **1** = 24 V DC
- **2** = 12 V DC
- **5** = 24 V 50-60 Hz
- **6** = 110 V 50-60 Hz
- **7** = 230 V 50-60 Hz
- **8** = 24V D.C. 1 W** (only Ø0,8)
- **9** = Faston ground

- **A** = Ø1,1
- **B** = Ø1,5
- **E** = Ø0,8

- **0** = Faston
- **1** = Faston EN17301-803 (Ex DIN 43650)
- **2** = Cables* (300 mm)**

- = Straight
- **R** = Downward

- = PUSH (Standard Version)
- **2** = Without Manual override
- **8** = Manual override 2 positions

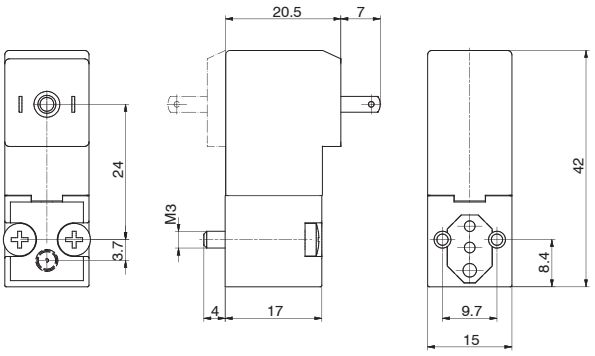
** = The cULus Directive does not apply to these versions

* = On request and for large quantity only *(only 24 V D.C., 2.3 W)*

See previous page for available versions

With Faston

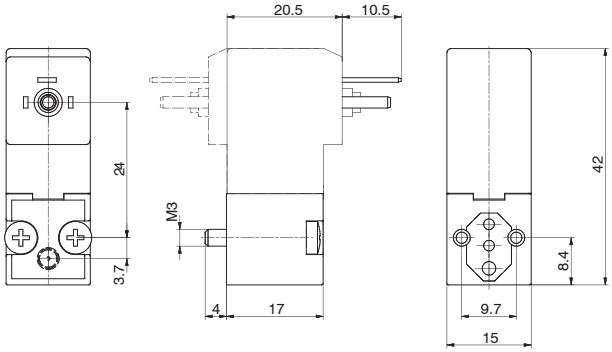




Weight 36 g

With Faston EN17301-803 (Ex DIN 43650)

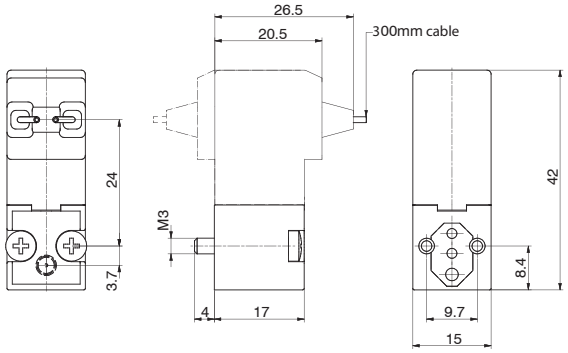




Weight 36 g

With Cables (300 mm)

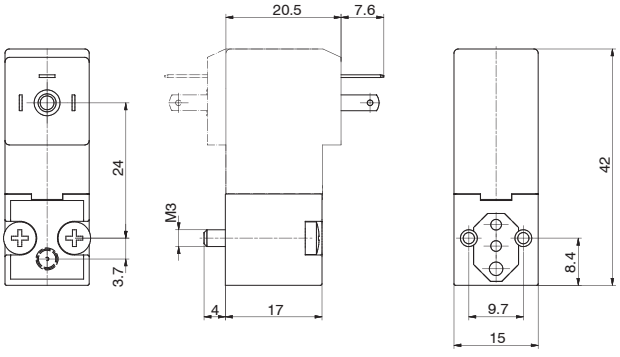




Weight 38 g

With Faston ground





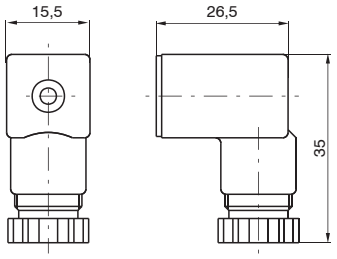
Weight 38 g

Connector

Ordering code	
315.11.00	Standard
315.12.00	for faston EN17301-803 (Ex DIN 43650)
315.11.0_L	Led
	1 = 24 V D.C. / A.C.
	2 = 110 V 50/60 Hz
	3 = 230 V 50/60 Hz
315.12.0_L	for faston EN17301-803 (Ex DIN 43650) with LED
	1 = 24 V D.C. / A.C.
	2 = 110 V 50/60 Hz
	3 = 230 V 50/60 Hz



Weight 13 g

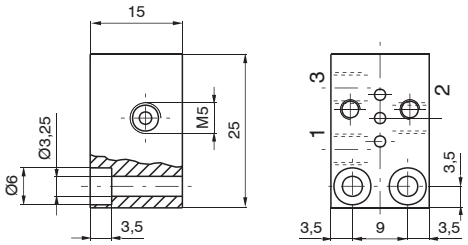


Single use base

Ordering code
355.01



Weight 18 g



Multiple bases

Ordering code

A = Orifice M5

355 . ___

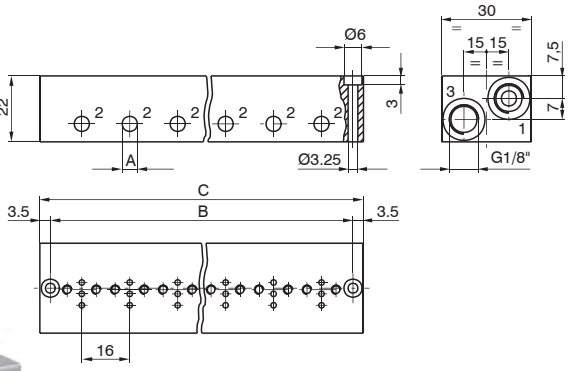
No. Positions

A = Pipe fitting Ø4

354 . ___

No. Positions





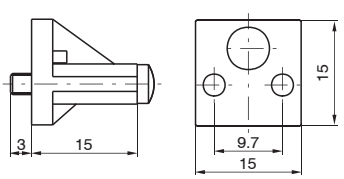
No. Positions	02	03	04	05	06	07	08	09	10
B	37	53	69	85	101	117	133	149	165
C	44	60	76	92	108	124	140	156	172
Weight (g)	66	92	116	141	165	190	216	242	266

Closing plate

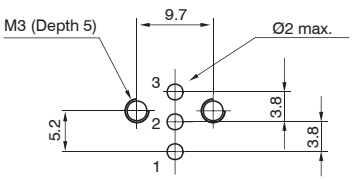
Ordering code
355.00



Weight 6 g



Interface dimensions



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

15mm Solenoid valves Manifold with electric multipoint connection

Also for this 15mm solenoid valves series we have realized the possibility of the assembling on the base with multipoint connection, this for making faster the connection and the harness of them.
Realized from a shaped outline, it results compact because it uses a relevant multipoint connection available only with a 37 poles connector from 10 to 32 solenoid valves (with steps of 2), available in line or at 90° and IP40 protection. On the base it is possible to put some threaded cartridges with push-in fittings for Ø3 – Ø3,17 Ø4 tube or M5 threaded.
The application field of these new configurations is the standard of 3/2 valves, where it is needed to realize groups or Manifolds provided with integrated electric connection to make easier and faster the connection and the harness of them (control of single acting cylinders with small dimensions, pilot system of valves with bigger dimensions etc..).

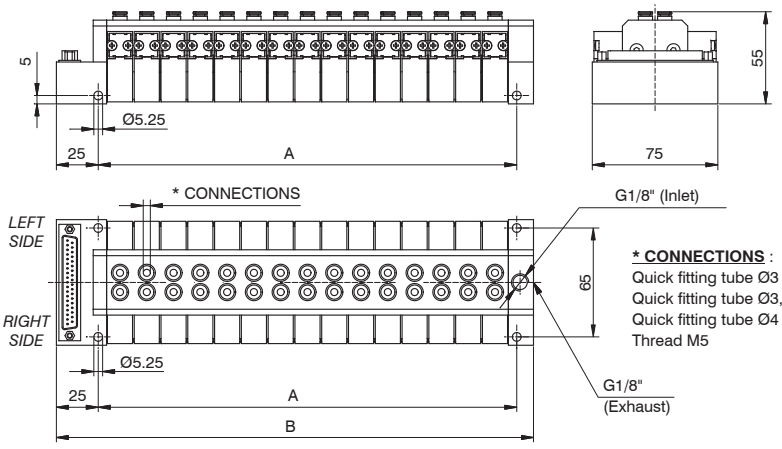
Constructive characteristics:

Constructive principle:

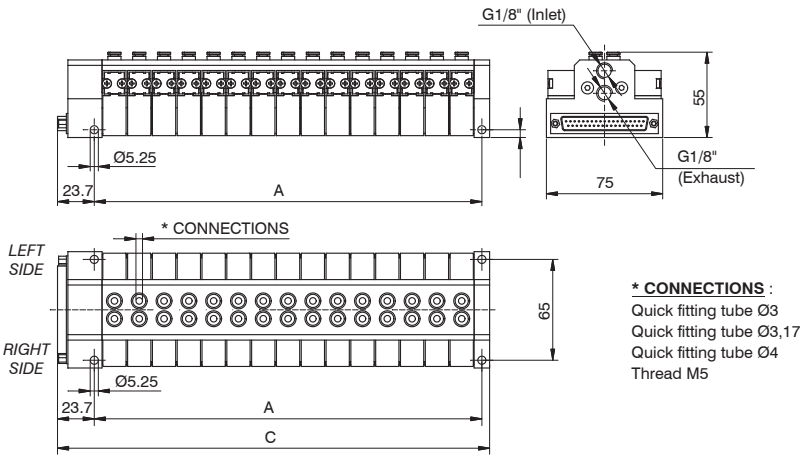
From 10 up to 32 solenoid valves (with steps of 2)
Extremely compact solution
IP40 protection (without visualisation led)
Possibility of having different working connections (Ø3, Ø3,17, Ø4 tubes, M5)
The new coding key requires the use of the same type of solenoid valves (there aren't codes for groups with a mixed configuration).

Overall dimensions



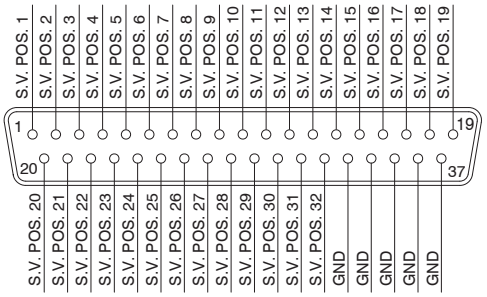






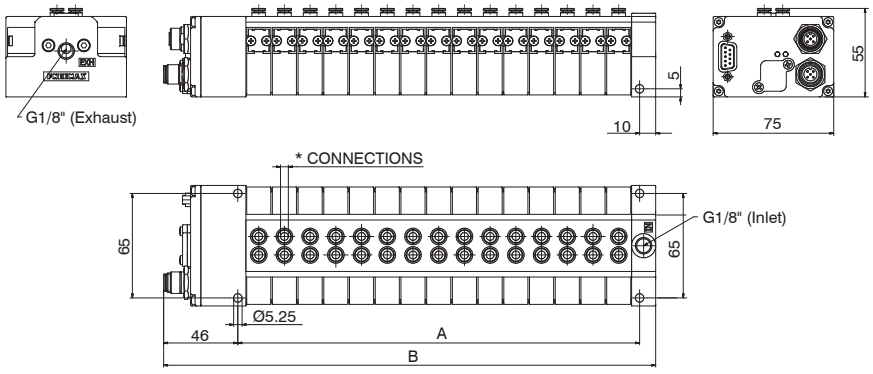
No. Positions	A	B	C
10	90	125	118,7
12	106	141	134,7
14	122	157	150,7
16	138	173	166,7
18	154	189	182,7
20	170	205	198,7
22	186	221	214,7
24	202	237	230,7
26	218	253	246,7
28	234	269	262,7
30	250	285	278,7
32	266	301	294.7

SUB-D 37 POLES CONNECTORS



Overall dimensions
Manifold with CANopen® node





No. positions	A	B
10	90	146
12	106	162
14	122	178
16	138	194
18	154	210
20	170	226
22	186	242
24	202	258
26	218	274
28	234	290
30	250	306
32	266	322

Manifold layout configuration

Connector type
0 = in line connector
9 = 90° connector
C = with CANopen® node

Connections size and type
3 = quick fitting tube Ø3
C = quick fitting tube Ø3.17
4 = quick fitting tube Ø4
A = M5 thread

35M . NW . _ _ . 0 _ . _ _ _

No. positions
A = 10 positions
B = 12 positions
C = 14 positions
D = 16 positions
E = 18 positions
F = 20 positions
G = 22 positions
H = 24 positions
L = 26 positions
M = 28 positions
N = 30 positions
P = 32 positions

No. positions plugged side left
0 = 00 positions
1 = 01 positions
2 = 02 positions
3 = 03 positions
4 = 04 positions
5 = 05 positions
6 = 06 positions
7 = 07 positions
8 = 08 positions
9 = 09 positions
A = 10 positions
B = 11 positions
C = 12 positions
D = 13 positions
E = 14 positions
F = 15 positions
G = 16 positions

No. positions plugged side right
0 = 00 positions
1 = 01 positions
2 = 02 positions
3 = 03 positions
4 = 04 positions
5 = 05 positions
6 = 06 positions
7 = 07 positions
8 = 08 positions
9 = 09 positions
A = 10 positions
B = 11 positions
C = 12 positions
D = 13 positions
E = 14 positions
F = 15 positions
G = 16 positions

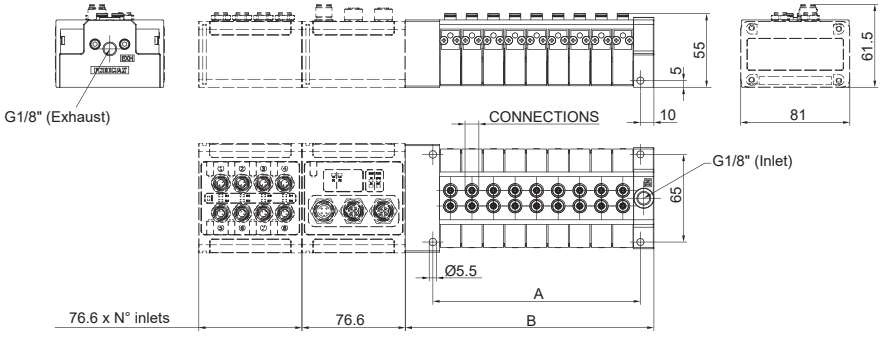
Valve type
A = N331.R0A (S.V. 3/2 NC 24VDC d.1,1)
B = N331.R0B (S.V. 3/2 NC 24VDC d.1,5)
C = N338.R0E (S.V. 3/2 NC 24VDC 1W d.0,8)
D = N341.R0A (S.V. 3/2 NO 24VDC d.1,1)
E = N341.R0B (S.V. 3/2 NO 24VDC d.1,5)
F = N335.R0A (S.V. 3/2 NC 24VAC d.1,1)

NOTE:
The "R" letter indicates that the coil is mounted upside-down (faces down). For prices and technical features of these valves please refer to the correspondent standard version (not R) included in the price list and catalogue.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Overall dimensions
Manifold with Optyma-F serial system (slave + input modules)





No. positions	A	B
10	90	120,50
12	106	136,50
14	122	152,50
16	138	168,50
18	154	184,50
20	170	200,50
22	186	216,50
24	202	232,50
26	218	248,50
28	234	264,50
30	250	280,50
32	266	296,50

Manifold layout configuration with Optyma-F serial system (slave + input modules)

32 OUT VERSION
C3=CANopen® 32OUT
D3=DeviceNet 32OUT
P3=PROFIBUS 32OUT
A3=EtherCAT® 32OUT (Serie 5700)
I3=EtherNet/IP 32OUT
N3=PROFINET IO RT 32OUT

INPUT MODULES
A = No module
D1= 8 M8 digital inputs modules
D3= 16IN digital inputs (SUB-D 25P) module
T1= 2 analogue inputs 0-5V module
T2= 2 analogue inputs 0-10V module
C1= 2 analogue inputs 0-20mA module
C2= 2 analogue inputs 4-20mA module

Connections size and type
3 = quick fitting tube Ø3
C = quick fitting tube Ø3.17
4 = quick fitting tube Ø4
A = M5 thread

35S	.	_	_	.	_	_	.	0	_	.	_	_

No. positions
A = 10 positions
B = 12 positions
C = 14 positions
D = 16 positions
E = 18 positions
F = 20 positions
G = 22 positions
H = 24 positions
L = 26 positions
M = 28 positions
N = 30 positions
P = 32 positions

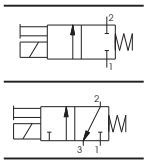
No. positions plugged side left
0 = 00 positions
1 = 01 positions
2 = 02 positions
3 = 03 positions
4 = 04 positions
5 = 05 positions
6 = 06 positions
7 = 07 positions
8 = 08 positions
9 = 09 positions
A = 10 positions
B = 11 positions
C = 12 positions
D = 13 positions
E = 14 positions
F = 15 positions
G = 16 positions

No. positions plugged side right
0 = 00 positions
1 = 01 positions
2 = 02 positions
3 = 03 positions
4 = 04 positions
5 = 05 positions
6 = 06 positions
7 = 07 positions
8 = 08 positions
9 = 09 positions
A = 10 positions
B = 11 positions
C = 12 positions
D = 13 positions
E = 14 positions
F = 15 positions
G = 16 positions

Valve type
A = N331.R0A (S.V. 3/2 NC 24VDC d.1,1)
B = N331.R0B (S.V. 3/2 NC 24VDC d.1,5)
C = N338.R0E (S.V. 3/2 NC 24VDC 1W d.0,8)
D = N341.R0A (S.V. 3/2 NO 24VDC d.1,1)
E = N341.R0B (S.V. 3/2 NO 24VDC d.1,5)
G = N321.R0A (S.V. 2/2 NC 24VDC d.1,1)
H = N321.R0B (S.V. 2/2 NC 24VDC d.1,5)

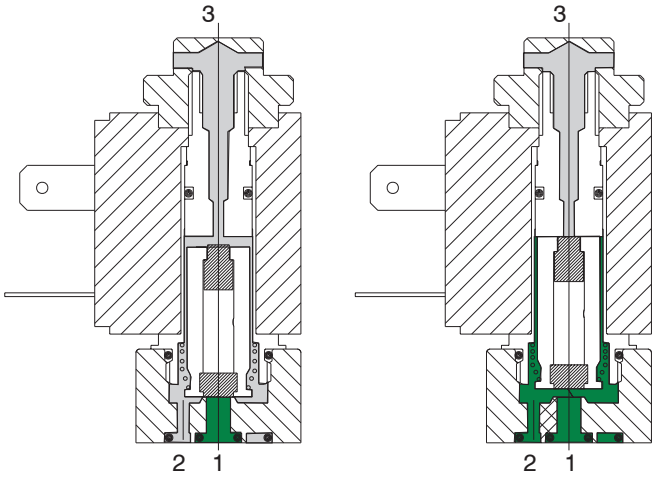
NOTE:
The "R"letter indicates that the coil is mounted upside-down (faces down). For prices and technical features of these valves please refer to the correspondent standard version (not R) included in the price list and catalogue.

Functional schematics

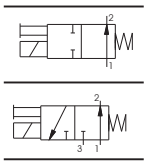


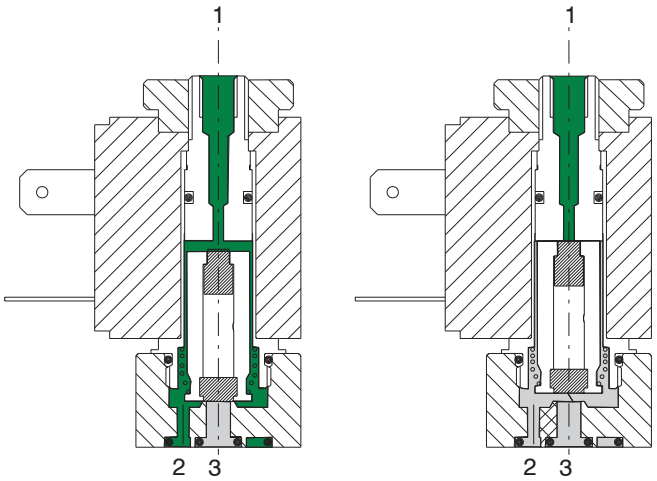
1 = INLET PORT
2 = OUTLET PORT
3 = EXHAUST PORT
(Plugged if 2/2)

Normally Closed (N.C.) 3/2 or 2/2



Normally Open (N.O.) 3/2 or 2/2





Construction characteristics

Electrical parts: Solenoids: the solenoid consist of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compound. All parts are corrosion resistant.

Mechanical parts: Nickel plated brass tube nitrile viton seals stainless steel plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nickeled brass manual override, nickel steel coil lock nut, zinc steel mounting screw. To be usable, the solenoids and microsolenoids have to be attached either to a base or directly to the distributor's operators by means of connectors M5 or G 1/8". These solenoids are available in all voltages and frequences used in the world. The following are the technical characteristics of the solenoid.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Technical characteristics

Pneumatic	Working pressure	0 ... 10 bar	
	Orifice size	1,3 mm	(0,9 mm for 2 W)
	Maximum fluid temperature	50°C	
	Maximum ambient temperature	-40°C ... +50°C	
	Maximum flow rate at 6 bar with Δp 1 bar	53 Nl/min	(20Nl/min. for 2 W)
	Cycles/minute	700	
	Fluids	Air-vacuum-inert gases	
	Lubrication	non required	
	Life	45 to 50 million cycles	
Electrical	Power consumption holding - D.C	5 W	(2.5 W) low consumption
	Power consumption holding - A.C	9 VA	(6 VA) low consumption
	Operating voltage tolerance	±10%	
	Response time opening *	8 ms	
	Response time closing *	6 ms	
	Insulation of the copper wire	H	
	Insulation of the coil	F	
	Connector protection	IP 65	
	Cable protection	DIN 43650 INDUSTRIAL FORM	

(*) "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

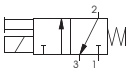
Maintenance and replacement parts

Maintenance practices for these valves are similar to those already detailed for other products-replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve. Special care should be taken that no dirt is accumulated between the working surface of fixed core and the plunger which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the machanical part is not mounted to avoid destruction of the coil. The electrical connections have to be perfect, especially where low currents are used (12-24V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

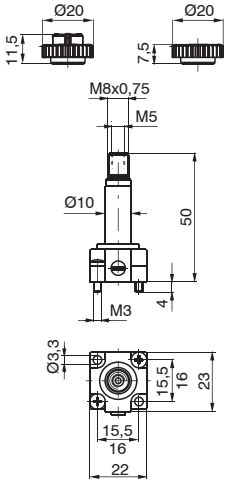
Mechanical actuator for miniature solenoid valve

Ordering code

M 2 Normally Closed (N.C.)
M 2P Normally Closed (N.C.) threaded lock nut
M 2/9 Normally Closed (N.C.) 2 W 24 VDC

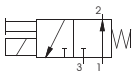




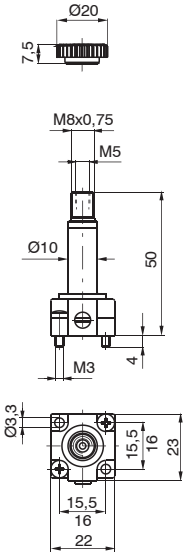


Weight 51 g

M 2/1 Normally Open (N.O.) air feeding through fix flunger



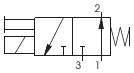




Weight 48 g

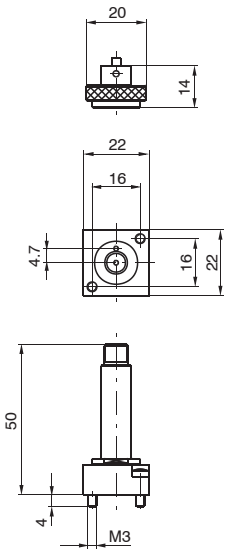
Normally Open (N.O.) air feeding through base

MM 7





Weight 46 g

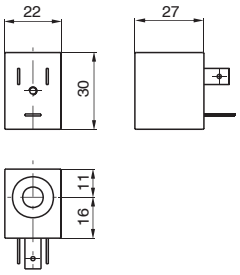


Ordering code N.O.	Available voltages Coil	
MB10/1	24 D.C. (8 Watt)	Direct current
MB17/1 **MB21/1** **MB22/1** **MB24/1**	24/50 48/50 110/50 230/50	Alternating current 50 Hz
MB37/1 **MB39/1** **MB41/1**	24/60 110/60 230/60	Alternating current 60 Hz
MB56/1 **MB57/1** **MB58/1**	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Coil



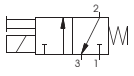


Weight 54 g

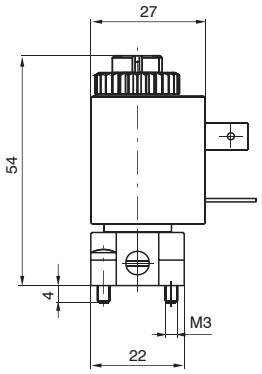
* Use only with M2/9

Ordering code	Available voltages Coils
MB 4 **MB 5** **MB 6**	12 D.C. 24 D.C. 48 D.C. — Direct current
MB 9*	24 D.C. (2 Watt) (Direct current, low consumption)
MB 17 **MB 21** **MB 22** **MB 24**	24/50 48/50 110/50 230/50 — Alternating current 50 Hz
MB 37 **MB 39** **MB 41**	24/60 110/60 230/60 — Alternating current 60 Hz
MB 56 **MB 57** **MB 58**	24/50-60 110/50-60 230/50-60 — Alternating current 50/60 Hz
MB 66 **MB 67** **MB 68**	24/50-60 110/50-60 230/50-60 — Alternating current (low consumption) 50/60 Hz

Miniature solenoid valve Normally Closed (N.C.)



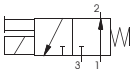




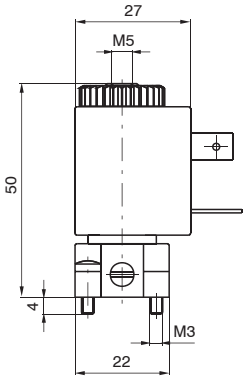
Weight 100 g

Ordering code	Available voltages Miniature solenoid valve N.C.
M 2.4 **M 2.5** **M 2.6** **M 2.9**	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt) — Direct current
M 2.17 **M 2.21** **M 2.22** **M 2.24**	24/50 48/50 110/50 230/50 — Alternating current 50 Hz
M 2.37 **M 2.39** **M 2.41**	24/60 110/60 230/60 — Alternating current 60 Hz
M 2.56 **M 2.57** **M 2.58**	24/50-60 110/50-60 230/50-60 — Alternating current 50/60 Hz
M 2.66 **M 2.67** **M 2.68**	24/50-60 110/50-60 230/50-60 — Alternating current (low consumption) 50/60 Hz

Miniature solenoid valve Normally Open (N.O.)







Weight 103 g

Ordering code	Available voltages Miniature solenoid valve N.O.
M 2/1.4 **M 2/1.5** **M 2/1.6** **M 2/1.9**	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt) — Direct current
M 2/1.17 **M 2/1.21** **M 2/1.22** **M 2/1.24**	24/50 48/50 110/50 230/50 — Alternating current 50 Hz
M 2/1.37 **M 2/1.39** **M 2/1.41**	24/60 110/60 230/60 — Alternating current 60 Hz
M 2/1.56 **M 2/1.57** **M 2/1.58**	24/50-60 110/50-60 230/50-60 — Alternating current 50/60 Hz

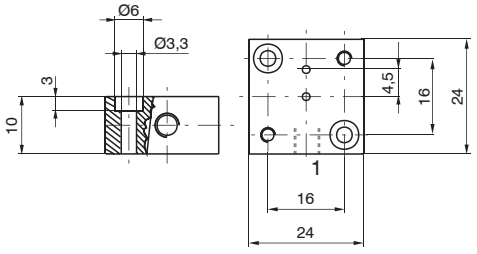
External feeding base

Use with solenoid valves for piloting pressure different from the using pressure

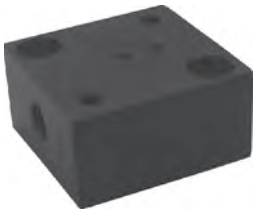
Ordering code
305.10.05

Weight 18 g





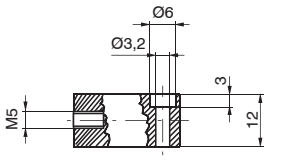
Individual base

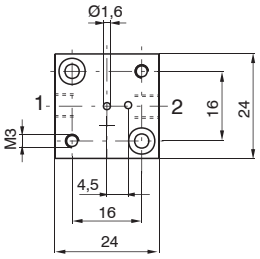


In line ports - thread M5

1 = INLET PORT (N.C.)
2 = OUTLET PORT

With a N.O. miniature solenoid valve
1 = EXHAUST
2 = OUTLET PORT





Ordering code
305.00.00

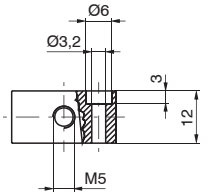
Weight 56 g

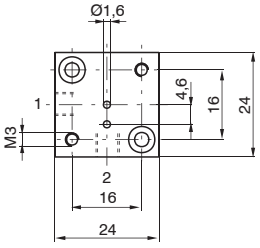


90° Port - thread M5

1 = INLET PORT (N.C.)
2 = OUTLET PORT (N.C)

With a N.O, miniature solenoid valve
1 = EXHAUST
2 = OUTLET PORT





Ordering code
305.90.00

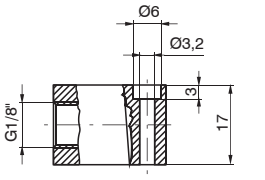
Weight 56 g

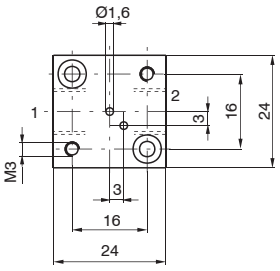


In line ports - thread G 1/8"

1 = INLET PORT (N.C.)
2 = OUTLET PORT (N.C)

With a N.O. miniature solenoid valve
1 = EXHAUST
2 = OUTLET PORT





Ordering code
305.00.18

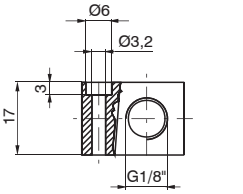
Weight 75 g

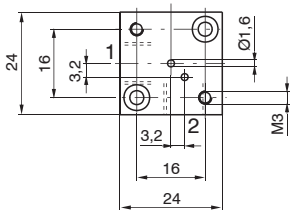


90° Port - thread G 1/8"

1 = INLET PORT (N.C.)
2 = OUTLET PORT (N.C.)

With a N.O. miniature solenoid valve
1 = EXHAUST
2 = OUTLET PORT



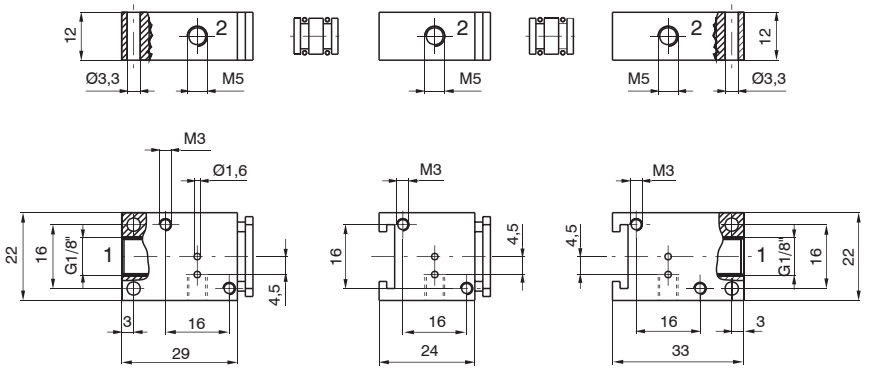


Ordering code
305.90.18

Weight 75 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Modular bases for series mounting



Initial base *Intermediate base* *Last base*

Ordering code

Initial base
305.05.00
Weight 57 g

Intermediate base
305.06.00
Weight 44 g

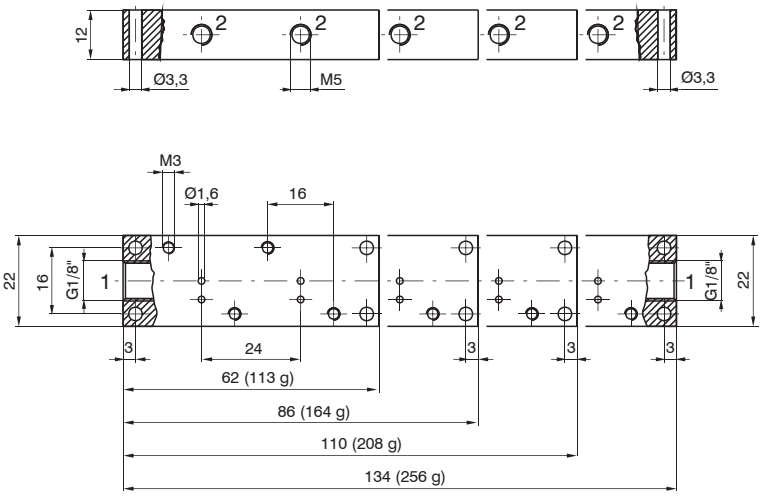
Last base
305.07.00
Weight 53 g

Bored spacer
305.05.01
Weight 3 g

Solid spacer
305.05.02
Weight 4 g



Multiple integral bases for series mounting

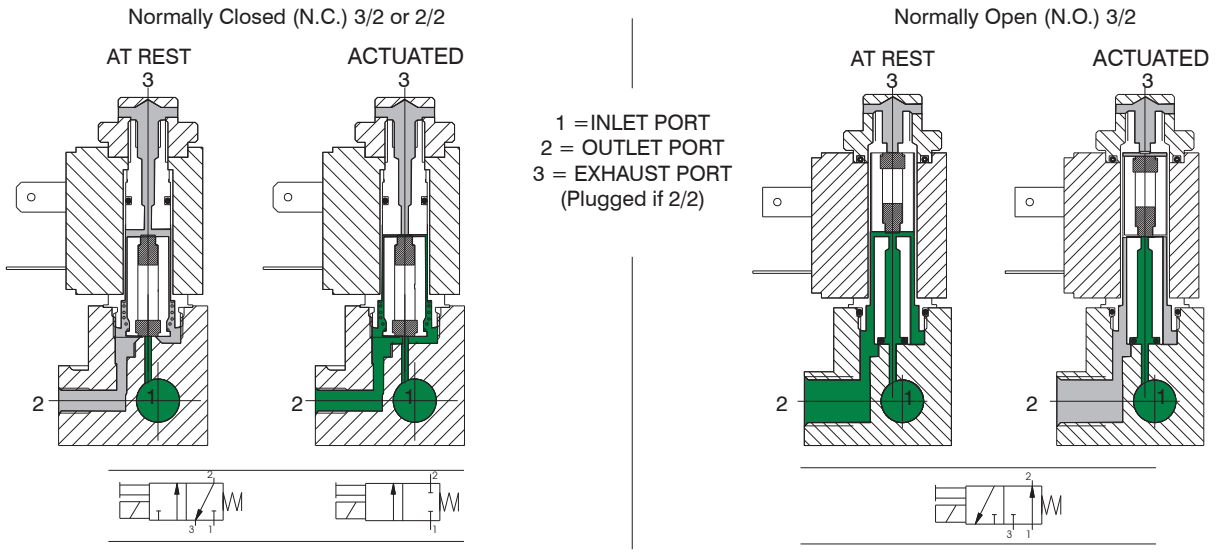


Ordering code

305.08.02 **2** positions
305.08.03 **3** positions
305.08.04 **4** positions
305.08.05 **5** positions



Functional schematic



Construction characteristics

Electrical parts: Solenoids: the solenoid consist of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compound. All parts are corrosion resistant.

Mechanical parts: Nickel plated brass tube nitrile (NBR) stainless steel plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nickeled brass manual override, Technopolymer coil lock nut, zinc steel mounting screws. Electrical connectors are standard.

Technical characteristics

Pneumatic	Working pressure	0 ... 10 bar	
	Orifice size	1,3 mm	(1,1 mm for 2 W)
	Maximum fluid temperature	50°C	
	Maximum ambient temperature	50°C	
	Maximum flow rate at 6 bar with Δp = 1	53 Nl/min	(35 Nl/min. for 2 W)
	Cycles/minute	700	
	Fluids	Air-Vacuum-Inert gases	
	Lubrication	Non needed	
	Life	40 to 50 million cycles	
Electrical	Power consumption holding - D.C	5 W	(2 W) low consumption
	Power consumption holding - A.C	8 VA	(6 VA) low consumption
	Operating voltage tolerance	±10%	
	Response time opening *	8 ms	
	Response time closing *	6 ms	
	Insulation of the copper wire	H	
	Insulation of the coil	F	
	Connector protection	IP 65	
	Cable protection	DIN 43650 INDUSTRIAL FORM	

(*) "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Maintenance and replacement parts

Maintenace practices for these valves are similar to those already detailed for other products - replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve.

Special care should be taken that no dirt is accumulated between the working surface of fixed core and the plunger which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the machanical part is not mounted to avoid destruction of the coil.

The electrical connections have to be perfect, especially where low currents are used (12-24 V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Mechanical actuator for Normally Closed (N.C.)
Miniature solenoid valve

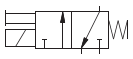
Normally Closed (N.C.)

Ordering code

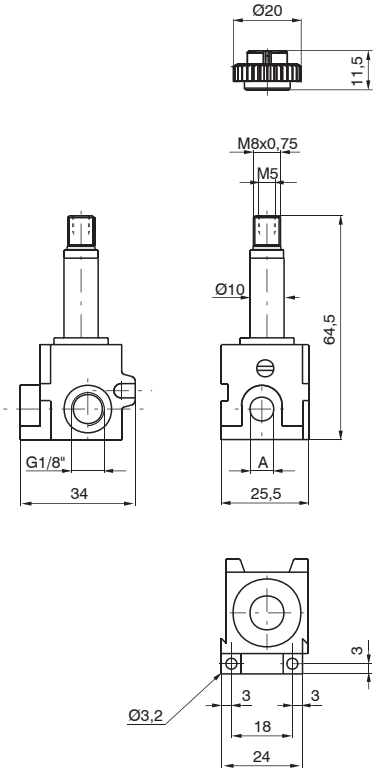
305.M1 **A** = G 1/8"
355.M1 **A** = M5
345.M1 **A** = Push in fitting for 4 mm tube

305.M1/9 **A** = G 1/8"
355.M1/9 **A** = M5
345.M1/9 **A** = Push in fitting for 4 mm tube

2 W
24 DC





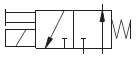


Weight 95 g

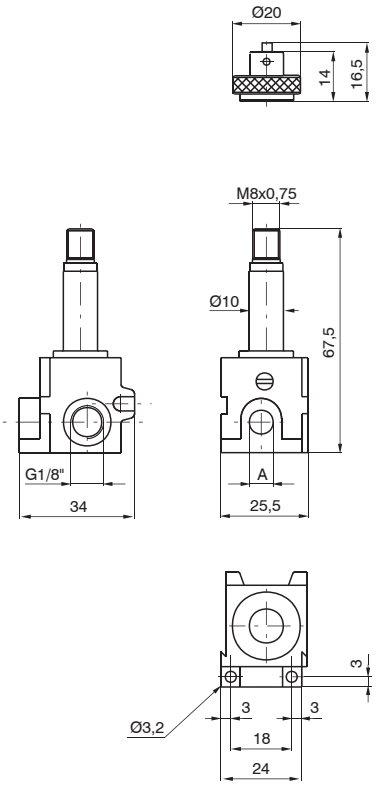
Normally Open (N.O.)

Ordering code

305.M1/1 **A** = G 1/8"
355.M1/1 **A** = M 5
345.M1/1 **A** = Push in fitting for 4 mm tube



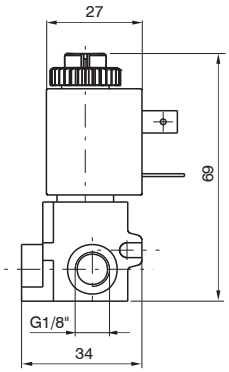




Weight 106 g

Miniature solenoid valve

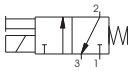




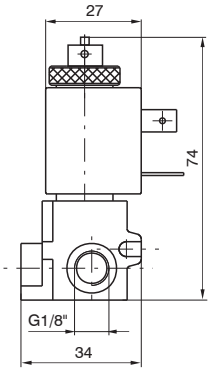
Normally Closed (N.C.)

Ordering code			Available voltage miniature solenoid	
G 1/8"	M5	TUBE Ø4 mm		
305.M4 **305.M5** **305.M6** **305.M9**	**355.M4** **355.M5** **355.M6** **355.M9**	**345.M4** **345.M5** **345.M6** **345.M9**	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt)	Direct current
305.M17 **305.M21** **305.M22** **305.M24**	**355.M17** **355.M21** **355.M22** **355.M24**	**345.M17** **345.M21** **345.M22** **345.M24**	24/50 48/50 110/50 230/50	Alternating current 50 Hz
305.M37 **305.M39** **305.M41**	**355.M37** **355.M39** **355.M41**	**345.M37** **345.M39** **345.M41**	24/60 110/60 230/60	Alternating current 60 Hz
305.M56 **305.M57** **305 M58**	**355.M56** **355.M57** **355.M58**	**345.M56** **345 M57** **345 M58**	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz
305.M66 **305.M67** **305 M68**	**355.M66** **355.M67** **355.M68**	**345.M66** **345 M67** **345 M68**	24/50-60 110/50-60 230/50-60	Alternating current low consumption 50/60 Hz

Weight 149 g



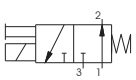




Normally Open (N.O.)

Ordering code			Available voltages miniature solenoid	
G 1/8"	M5	TUBE Ø4 mm		
305.M10/1	**355.M10/1**	**345.M10/1**	24 D.C. (8 Watt)	Direct current
305.M17/1 **305.M21/1** **305.M22/1** **305.M24/1**	**355.M17/1** **355.M21/1** **355.M22/1** **355.M24/1**	**345.M17/1** **345.M21/1** **345.M22/1** **345.M24/1**	24/50 48/50 110/50 230/50	Alternating current 50 Hz
305.M37/1 **305.M39/1** **305.M41/1**	**355.M37/1** **355.M39/1** **355.M41/1**	**345.M37/1** **345.M39/1** **345.M41/1**	24/60 110/60 230/60	Alternating current 60 Hz
305. M56/1 **305. M57/1** **305. M58/1**	**355.M56/1** **355.M57/1** **355.M58/1**	**345.M56/1** **345.M57/1** **345.M58/1**	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz

Weight 165 g

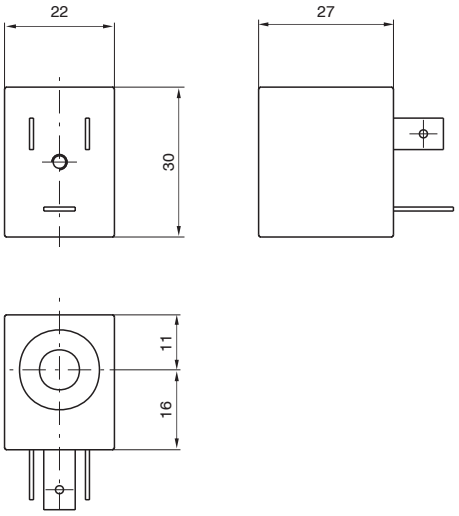


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Coil



Weight 54 g

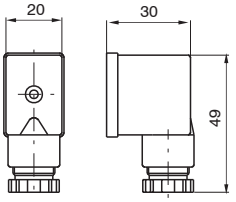


Ordering code		Available voltages Coil	
N.C.	N.O.		
MB4 **MB5** **MB6** **MB9**	 **MB10/1**	12 D.C. 24 D.C. 48 D.C. 24 D.C. (2 Watt) 24 D.C. (8 Watt)	Direct current
MB17 **MB21** **MB22** **MB24**	**MB17/1** **MB21/1** **MB22/1** **MB24/1**	24/50 48/50 110/50 230/50	Alternating current 50 Hz
MB37 **MB39** **MB41**	**MB37/1** **MB39/1** **MB41/1**	24/60 110/60 230/60	Alternating current 60 Hz
MB56 **MB57** **MB58**	**MB56/1** **MB57/1** **MB58/1**	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz
MB66 **MB67** **MB68**	/	24/50-60 110/50-60 230/50-60	Alternating current (low consumption) 50/60 Hz

Electrical connector

Ordering code	
305.11.00	Normal
305.11.0_L	with Led 1 = 24 V D.C. / A.C. 2 = 110 V 50/60 Hz 3 = 230 V 50/60 Hz





Weight 19 g

BISTABLE

The most interesting aspects of this bistable miniature solenoid valve operating with D.C. only, is that it can be commuted with a simple electric impulse and stay commuted till an inverted polarity impulse deactivates it. It means that the valve is not automatically deactivated if current fail as happens with normal solenoid valves.

The applications differ but are all based on above mentioned feature.

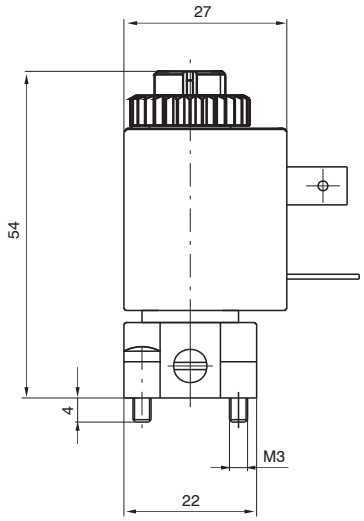
The internal construction is relatively special. The fix plunger is equipped with a permanent magnet that hold or release the mobile plunger according to the magnetic field generated by the coil.

A specific coil is used for this application and it cannot be replaced by the standard ones.

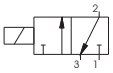
Ordering code is **MBB5**.

Miniature solenoid valve for distributors and bases



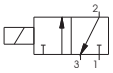


Ordering code
M5/B

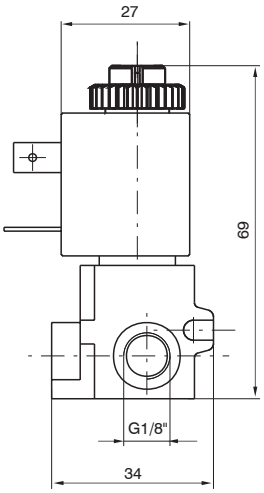


Miniature solenoid valve with inseries mounting base

Ordering code
305.M5/B = G 1/8"
355.M5/B = M5
345.M5/B = Fitting for 4 mm tube







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Electric pilot CNOMO (coil not included)

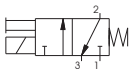
Mechanics with base for solenoid to be used where an electric pilot system is required.
May be used on all sizes and is standardized as an interface on the distributor.
The base is fitted with a manual control which is pulse actuated, without check, or with two stable positions, actuated by means of a screwdriver (pressing down and turning clockwise by 90°). Two different types of solenoids can be mounted on the stem, one in conformity with ISO standard size 30x38 and ISO 4400 (DIN 43650) electrical connection, and a compact one size 22x27, having the same performance but at lower price. The technical characteristics of the latter are described in the catalogue, series 300, and refer to MB solenoids. The base is fitted with screws (M4x30) for fastening to the distributor.

Ordering code

M | | |

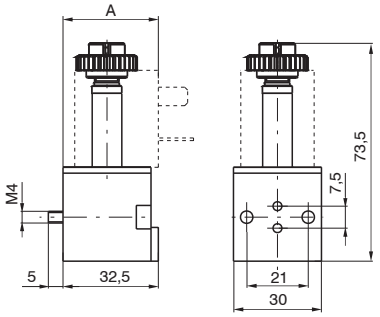
P = Manual 1 position
R = Manual 2 positions

3 = Mechanics CNOMO
4 = 2 W Mechanics CNOMO





Weight 49 g



A = 33 (with MB solenoid)
A = 38 (with MC solenoid)

General characteristics

Structural	Body	Thermoplastic polyester	
	Stem	Nickel-platted brass	
	Cores	AISI 430F stainless steel	
	Springs	AISI 302 stainless steel	
	Shutters	FPM	
	Other seals	NBR	
	Manual control	Nickel-platted brass	
Pneumatic	Fluid	Air, Neutral gases	
	Working pressure	0 ... 10 bar	
	Fluid ambient temperature	-5°C ... +50°C	
	Flow rate at 6 bar with Δp 1 bar	53 Nl/min	(20 Nl/min for 2 W)
	Nominal flow cross section	1,3 mm	(0,9 mm for 2 W)
Electric	Power consumption (inrush) - A.C.	13 VA	
	Power consumption holding - D.C.	4 W	(2 W)
	Power consumption holding - A.C.	8,5 VA	
	Operating voltage tolerance	±10%	
	Response time opening *	13 ms	
	Response time closing *	5 ms	
	Insulation of the copper wire	H	
	Insulation of the coil	F	
	Connector protection	IP 65	
	Cable protection	DIN 43650 “A” FORM	

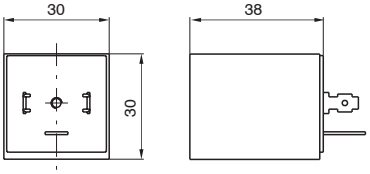
(*) "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Coil

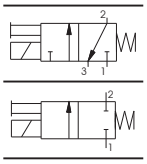
Ordering code	Available voltages
	Coil
MC5 **MC9** **MC56** **MC57** **MC58**	24 D.C. 24 D.C. (2 Watt) 24/50-60 Hz 110/50-60 Hz 230/50-60 Hz



Weight 110 g

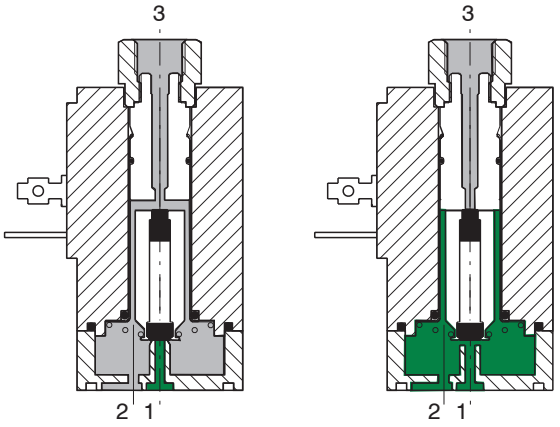


Functional schematic



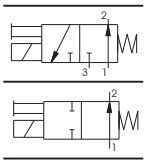
1 = INLET PORT
2 = OUTLET PORT
3 = EXHAUST PORT
(Plugged if 2/2)

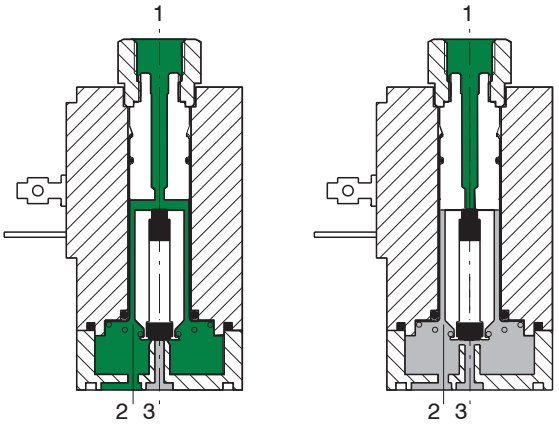
Normally Closed (N.C.) 3/2 or 2/2



AT REST ACTUATED

Normally Open (N.O.) 3/2 or 2/2





AT REST ACTUATED

Construction characteristics

Electrical parts:

Solenoids: the solenoid consists of coils having different diameter copper wire windings insulated according standards "H"; they are encased in a nylon-glass compound. All parts are corrosion resistant.

Mechanical parts:

Stainless steel tube and plunger (AISI 430F), stainless steel adjusted springs, viton poppet seals, tropicalized zinc alloy interface plate, nitrile (NBR) seal nickeled brass manual override, nickel steel coil lock nut, zinc steel mounting screws. To be usable, the solenoids have to be attached either to a base or directly to the distributor's operators by means of connectors G 1/8".Electrical connectors are standard. These solenoid are available in all voltages and frequences used in the world. The following are the technical characteristics of the solenoid.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Technical characteristics

Pneumatic	Working pressure	0 ... 10 bar
	Orifice size	1,8 mm
	Maximum fluid temperature	50°C
	Maximum ambient temperature	50°C
	Maximum flow rate at 6 bar with $\Delta p = 1$	80 Nl/min
	Cycles/minute	700
	Fluids	Air-Vacuum-Inert gases
	Lubrication	Not required
	Life	40 to 50 millions
Electric	Power consumption (inrush) - D.C.	-
	Power consumption (inrush) - A.C.	19,5 VA
	Power consumption holding - D.C.	8,2 W
	Power consumption holding - A.C.	9 VA
	Operating voltage tolerance	±10%
	Response time opening *	15 ms
	Response time closing *	30 ms
	Insulation of the copper wire	H
	Insulation of the coil	F
	Connector protection	IP 65
	Cable protection	DIN 43650 “A” FORM

(*) "Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001, Pneumatic fluid power - Directional control valves - Measurement of shifting time"

Maintenance and replacement parts

Maintenance practices for these valves are similar to those already detailed for other products - replacement of the plunger or poppet is not advisable since the new replacement would not provide the best fit with the rest of the already used valve.

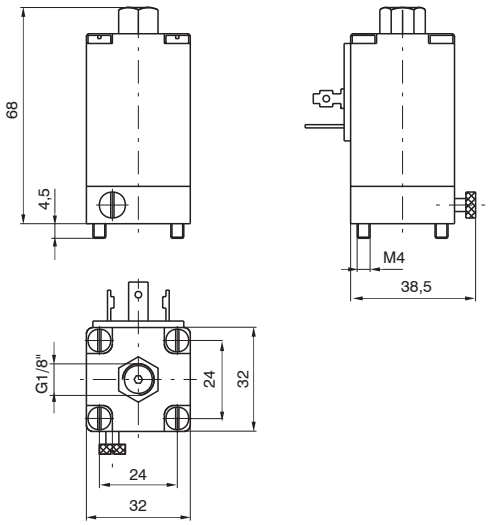
Special care should be taken that no dirt is accumulated between the working surface of fixed cores 3 and the plunger 2 which would result in vibrations and overheating of the solenoid. In the case of microsolenoid it must be assured that the alternate current coil is not charged when the mechanical part is not mounted to avoid destruction of the coil.

The electrical connections have to be perfect, especially where low currents are used (12-24 V). Oxidation of contacts between the connector and the coil can lead to intermittent malfunctions which are difficult to trace. Oxidation of contacts due to humidity or corrosive atmosphere are one of the most common causes of false alarms. Clean the contacts with appropriate spray.

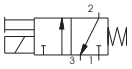
Solenoid valve S and S/1



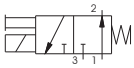
Weight 220 g



Normally Closed
(N.C.) - **S**



Normally Open
(N.O.) - **S/1**



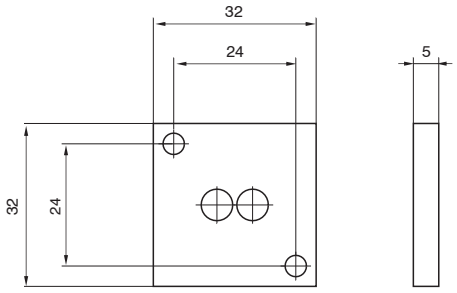
Ordering code		Available voltages Coil	
S 2 **S 4** **S 5** **S 6**	**S 2/1** **S 4/1** **S 5/1** **S 6/1**	6 D.C. 12 D.C. 24 D.C. 48 D.C.	Direct current
S 16 **S 17** **S 19** **S 20** **S 21** **S 22** **S 23** **S 24**	**S 16/1** **S 17/1** **S 19/1** **S 20/1** **S 21/1** **S 22/1** **S 23/1** **S 24/1**	12/50 24/50 32/50 42/50 48/50 110/50 115/50 230/50	Alternating current 50 Hz
S 36 **S 37** **S 38** **S 39** **S 40** **S 41**	**S 36/1** **S 37/1** **S 38/1** **S 39/1** **S 40/1** **S 41/1**	12/60 24/60 48/60 110/60 115/60 230/60	Alternating current 60 Hz
S 56 **S 57** **S 58**	**S 56/1** **S 57/1** **S 58/1**	24/50-60 110/50-60 230/50-60	Alternating current 50/60 Hz

Closing plate

Ordering code
300.12.00



Weight 14 g



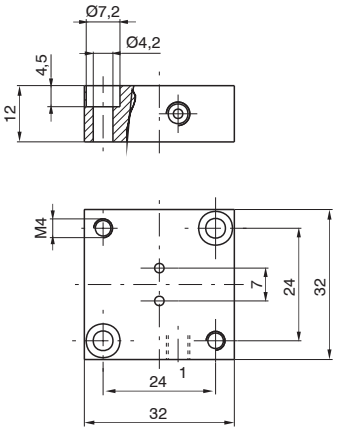
External feeding base

To be used with electrodistributeurs to get a different piloting pressure from the line one.

Ordering code
300.10.05



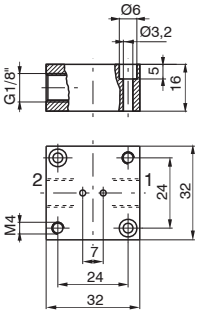
Weight 35 g



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Individual base



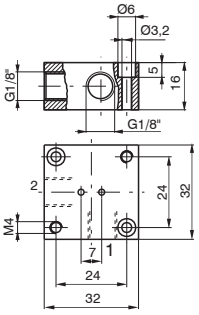


Weight 40 g

In line port - thread G 1/8"
1 = INLET PORT (N.C.)
2 = OUTLET PORT (N.C.)
With solenoid valve N.O.
1 = EXHAUST PORT
2 = OUTLET PORT

Ordering code
300.04.00





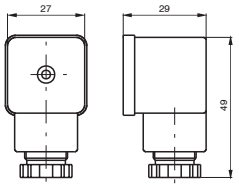
Weight 40 g

90° Port - thread G 1/8"
1= INLET PORT (N.C.)
2 = OUTLET PORT (N.C)
With solenoid valve N.O.
1 = EXHAUST PORT
2 = OUTLET PORT

Ordering code
300.04.90

Electrical connector



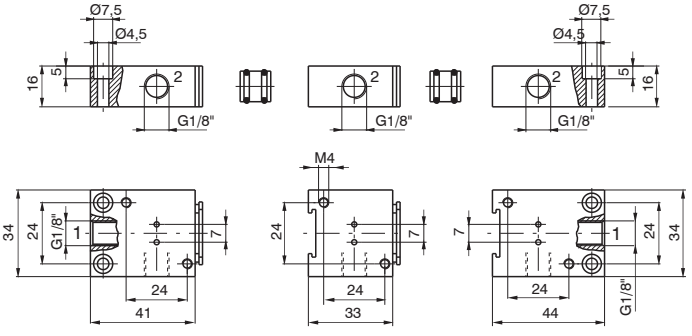


Weight 25 g

Ordering code	
300.11.00	Standard
300.11.0_L	Led
	1 = 24 V D.C. / A.C.
	2 = 110 V 50/60 Hz
	3 = 230 V 50/60 Hz

Modular bases for series mounting

Ordering code
Initial base **300.05.00**
Intermediate base **300.06.00**
Last base **300.07.00**
Bored specer **300.05.01** Weight 5 g
Solid space **300.05.02** Weight 6 g



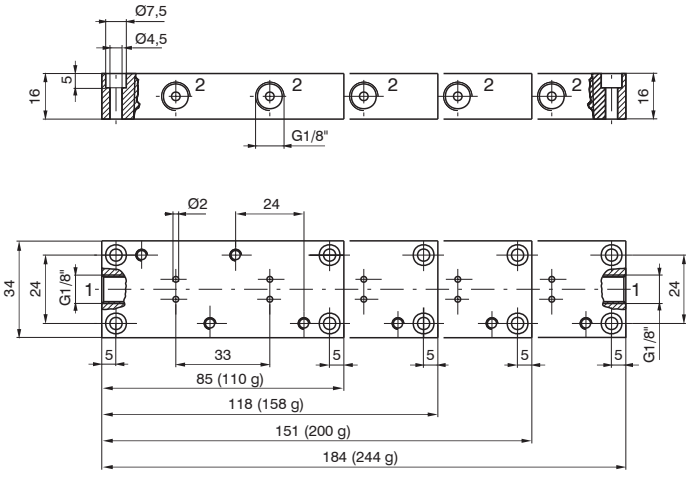
Initial base | Intermediate base | Last base



Weight 52 g | Weight 40 g | Weight 52 g

Multiple integral bases for series mounting





Ordering code	
300.08.02	**2** positions
300.08.03	**3** positions
300.08.04	**4** positions
300.08.05	**5** positions

The series cULus homologated solenoid valves (valid for USA and Canada file n. E206325-VAIU2, VAIU8) are different from the standard ones for microsolenoid made with an injected RYNITE embedded copper wire (they are included in class "F" insulation).

Refer to standard versions as for as other details and accessories to be used with solenoid valves.

Miniature solenoid valve 10 mm

Ordering code

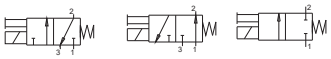
UN3 _ _ . _

- **6** = 2/2 N.C.
- **7** = 3/2 N.C.
- **8** = 3/2 N.O.

- **1** = 24 V D.C.
- **2** = 12 V D.C.

- **1** = 90° connector with LED
- **3** = Line connector with LED
- **4** = 90° connector without LED
- **5** = Line connector without LED



Miniature solenoid valve 15 mm

Ordering code

UN3 _ _ . _ _ _ _

- **3** = 3/2 N.C.
- **4** = 3/2 N.O.

- = PUSH (Standard version)
- **2** = Without manual override
- **8** = Manual override 2 positions

- **A** = Orifice Ø1,1
- **B** = Orifice Ø1,5

- **0** = Faston
- **1** = Faston EN17301-803 (Ex DIN 43650)

- **1** = 24 V D.C.
- **2** = 12 V D.C.
- **5** = 24 V 50/60 Hz
- **6** = 110 ... 120 V 50/60 Hz
- **7** = 230V 50/60 Hz

- = Straight
- **R** = Downward





Miniature solenoid valve 22 mm

Ordering code

Coil	**UMB** _
Miniature solenoid valve N.C.	**UM2** . _
Miniature solenoid valve N.O.	**UM2/1.** _

- **4** = 12V D.C.
- **5** = 24V D.C.
- **56** = 24V 50/60 Hz
- **57** = 110 ...120 V 50/60 Hz
- **58** = 230V 50/60 Hz








Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Miniature solenoid valve 22 mm for series mounting

Ordering code



Coil N.C. **UMB** __
- **4** = 12 V D.C.
- **5** = 24 V D.C.
- **56** = 24 V 50/60 Hz
- **57** = 110 ... 120 V 50/60 Hz
- **58** = 230 V 50/60 Hz



Coil N.O. **UMB** __**/1**
- **10** = 24 V D.C. 8W
- **56** = 24 V 50/60 Hz
- **57** = 110 ... 120 V 50/60 Hz
- **58** = 230 V 50/60 Hz



Solenoid valve N.C. **U3** __ **5.M** __
- **0** = G1/8"
- **5** = M5
- **4** = fitting for 4mm tube

- **4** = 12 V D.C.
- **5** = 24 V D.C.
- **56** = 24 V 50/60 Hz
- **57** = 110 ... 120 V 50/60 Hz
- **58** = 230 V 50/60 Hz





Solenoid valve N.O. **U3** __ **5.M** __ **/1**
- **0** = G1/8"
- **5** = M5
- **4** = fitting for 4mm tube

- **10** = 24 V D.C. 8W
- **56** = 24 V 50/60 Hz
- **57** = 110 ... 120 V 50/60 Hz
- **58** = 230 V 50/60 Hz

Bi-stable miniature solenoid valve 22mm

Ordering code





Coil **UMBB5**

Miniature solenoid valve for distributors and bases (N.C.) **UM5/B**

Miniature solenoid valve with inseries mounting base (N.C.) **U3** __ **5.M5/B**
- **0** = G1/8"
- **5** = M5
- **4** = fitting for 4mm tube



Solenoid valve 30 mm (for mechanics M3 and M4)

Ordering code



UMC5 = 24 V D.C.
UMC56 = 24 V 50/60 Hz
UMC57 = 110 ... 120 V 50/60 Hz
UMC58 = 230 V 50/60 Hz

Solenoid valve 32 mm

Ordering code



Solenoid valve N.C. **US** __

Solenoid valve N.O. **US** __ **/1**
- **4** = 12 V D.C.
- **5** = 24 V D.C.
- **56** = 24 V 50/60 Hz
- **57** = 110 ... 120 V 50/60 Hz
- **58** = 230 V 50/60 Hz





Series 700 - for compressed air and vacuum

The large flow valves and solenoid poppet valves for compressed air and vacuum.
Are manufactured for 3/2 and 2/2 versions only, either normally close and normally open.
For the compressed air oparation, the application is similar to the equivalent spool valves while for the vacuum operation a particular attention should be paid to the valve selected and its connection to the pump.
For the electric pilot it is used a normal miniature solenoid M2 with pneumatic actuator and the special miniature solenoid M2/V with vacuum.
The ordering code are referring to the solenoid valves with mechanics "M2" or "M2/V" assembled.
Coil are not included and have to be ordored separately (see Series 300).
Coil c UL us homologated are available (see 300 Series).

Construction characteristics

	G 3/8"
Body	Aluminium
Actuators rod	Stainless steel
Bottom plates	Aluminium
Piston seals	NBR
Springs	Stainless steel
Poppets	NBR
Pistons	Aluminium

Use and maintenance

These valves have a mean life of 10 to 15 million cycles under normal operating conditions.
Lubrication is not required for good operation but we recommend good filtration to avoid dirty deposit causing malfunction.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
For these products, according to the construction technique and special application, is not required any maintenance with parts replacement.
When necessary it is sufficient to clean the internal parts.
When it is used the solenoid valves with internal pilot, either for air or vacuum, inlet flow rate must be equal or higher that the required consumption flow rate.
Otherwise is better choose the external pilot version.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

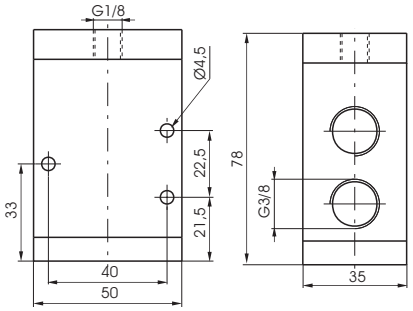
Pneumatic - Spring

Coding: 779.32.11.Ⓕ

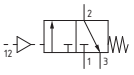
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-10 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1800
Orifice size (mm)	10
Working ports size	G3/8"
Pilot ports size	G1/8"

Ⓕ	FUNCTION
	1C = Normally Closed
	1A = Normally Open

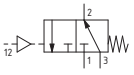




N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



Weight 360 g
Attention: for the Normally open version, connect the inlet port to the exhaust port No "3".

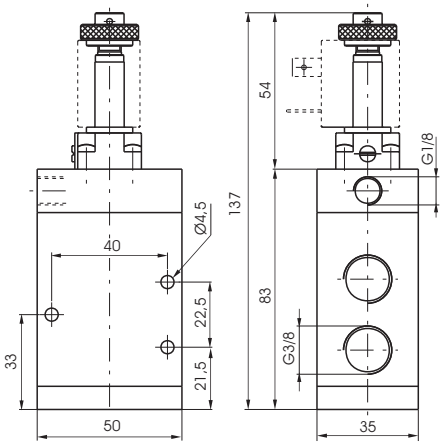
Solenoid-Spring

Coding: 779.32.0.Ⓕ.M2

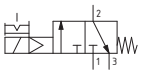
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5 (external feeding version) 3 (self feeding version)
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1800
Orifice size (mm)	10
Working ports size	G3/8"
Pilot ports size	G1/8"

Ⓕ	FUNCTION
	1AC = Self feeding-normally closed
	1C = External feeding-normally closed
	1AA = Self feeding-normally open
	1A = External feeding-normally open

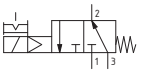




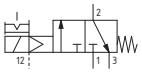
Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



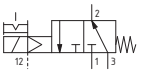
Self feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



External feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



Weight 420 g

Pneumatic - Spring

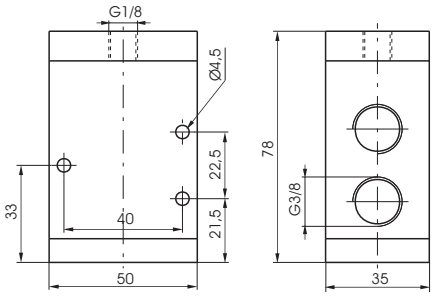
Coding: 779/V.32.11.Ⓕ

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-10 ... +70
Orifice size (mm)	10
Working ports size	G3/8"
Pilot ports size	G1/8"

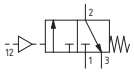
Ⓕ	FUNCTION
	1C = Normally Closed
	1A = Normally Open



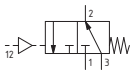
Weight 360 g



N.O.
Exhaust port 1
Outlet port 2
Pump 3



N.C.
Exhaust port 3
Outlet port 2
Pump 1



Solenoid-Spring-Internal pilot

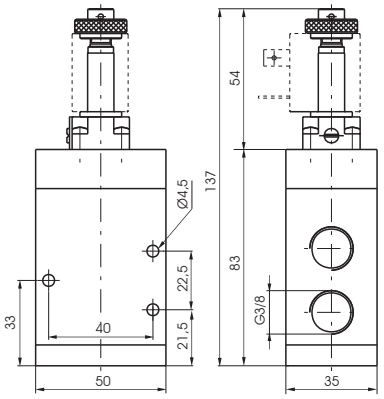
Coding: 779/V.32.0.Ⓕ.M2/V

Operational characteristics	
Fluid	Vacuum
Temperature °C	-10 ... +50
Orifice size (mm)	10
Working ports size	G3/8"
Pilot ports size	G1/8"

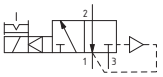
Ⓕ	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed



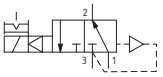
Weight 420 g



N.O.
Exhaust port 3
Outlet port 2
Pump 1



N.C.
Exhaust port 1
Outlet port 2
Pump 3



Solenoid-Spring-External pilot

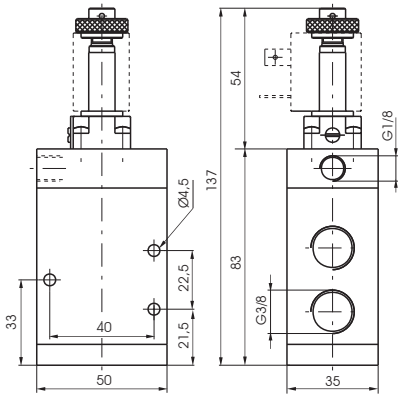
Coding: 779/V.32.0.Ⓕ.M2

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-10 ... +50
Orifice size (mm)	10
Working ports size	G3/8"
Pilot ports size	G1/8"

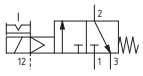
Ⓕ	FUNCTION
	1A = Normally Open
	1C = Normally Closed



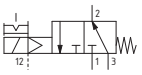
Weight 420 g



N.O.
Exhaust port 1
Outlet port 2
Pump 3



N.C.
Exhaust port 3
Outlet port 2
Pump 1



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series PG - for compressed air and vacuum



The large flow valves and solenoid poppet valves for compressed air and vacuum.
Are manufactured for 3/2 and 2/2 versions only, either normally close and normally open.

Construction characteristics

	G 1/2" - 1/2" NPT	G 3/4" - 3/4" NPT	G 1" - 1" NPT	G 1 1/2" - 1 1/2" NPT
Body, operator and end cover	Aluminium			
Actuators rod	Steel			
Bottom plates	Aluminium			
Seals and poppets	NBR			
Springs	Stainless steel			
Pin guide	Stainless steel			
Pistons	Acetal resin			

Use and maintenance

These valves have a mean life of 10 to 15 million cycles under normal operating conditions.
Lubrication is not required for good operation but we recommend good filtration to avoid dirty deposit causing malfunction.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
For these products, according to the construction technique and special application, is not required any maintenance with parts replacement.
When necessary it is sufficient to clean the internal parts.
When it is used the solenoid valves with internal pilot, either for air or vacuum, inlet flow rate must be equal or higher that the required consumption flow rate.
Otherwise is better choose the external pilot version.

Pneumatic - Spring

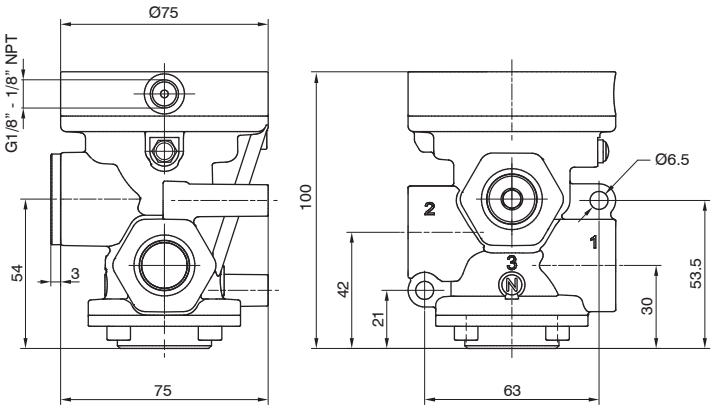
Coding: P©2A®11E℗00000

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	4800
Orifice size (mm)	15
Working ports size	G1/2" - 1/2" NPT
Pilot ports size	G1/8" - 1/8" NPT

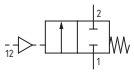
©	CONNECTIONS
	G = Gas thread
	N = NPT thread
®	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
℗	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2





N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)

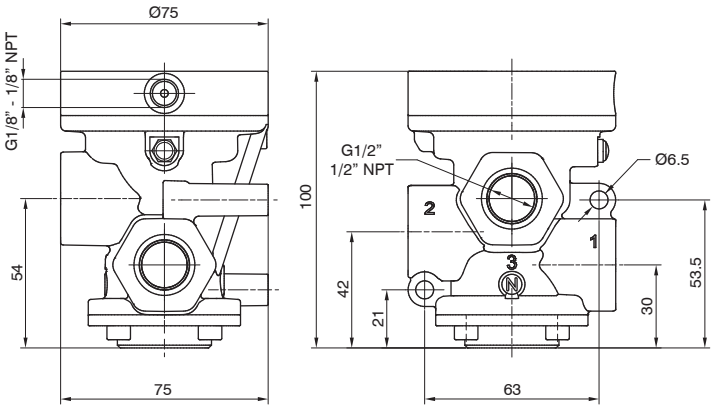


Weight 675 g

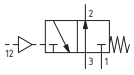
P©2A211E℗00000

3/2

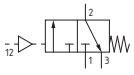




N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



Weight 648,5 g

P©2A311E℗00000

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

Coding: P C 2A N 01 V F T

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	4800
Orifice size (mm)	15
Working ports size	G1/2" - 1/2" NPT
Pilot ports size	G1/8" - 1/8" NPT
Response time according to ISO 12238, activation time (ms)	21 (self feeding version)
Response time according to ISO 12238, deactivation time (ms)	83 (self feeding version)

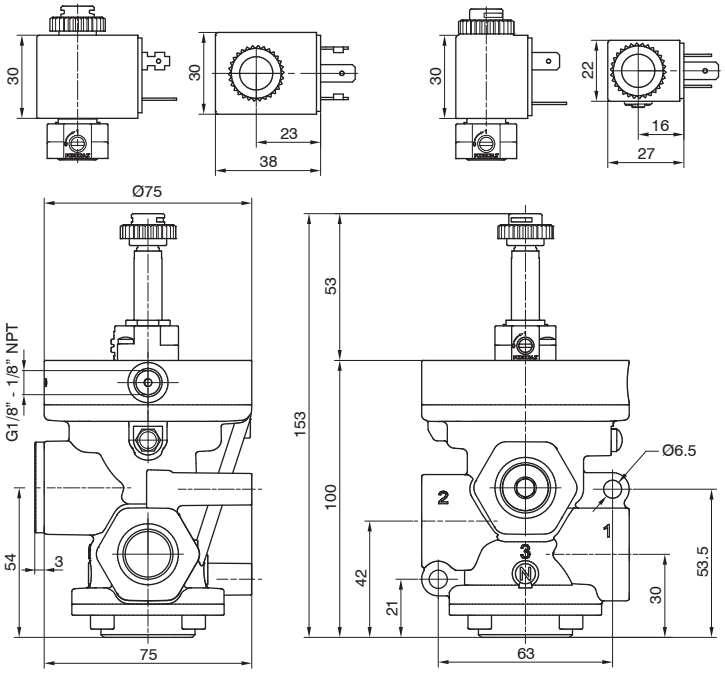
C	CONNECTIONS
	G = Gas thread
	N = NPT thread
N	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
V	VERSION
	A = Self feeding
	E = External feeding
F	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed
T	VOLTAGE (22 MM SOLENOID COIL)
	S40B0 = 12 VDC
	S50B0 = 24 VDC
	S60B0 = 24 V 50/60 Hz
	S70B0 = 110 V 50/60 Hz
	S80B0 = 230 V 50/60 Hz
	10000 = Without solenoid coil
T	VOLTAGE (30 MM SOLENOID COIL)
	S40C0 = 12 VDC
	S50C0 = 24 VDC
	S60C0 = 24 V 50/60 Hz
	S70C0 = 110 V 50/60 Hz
	S80C0 = 230 V 50/60 Hz
	10000 = Without solenoid coil

2/2

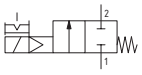


30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE

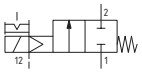
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



Weight 720,5 g

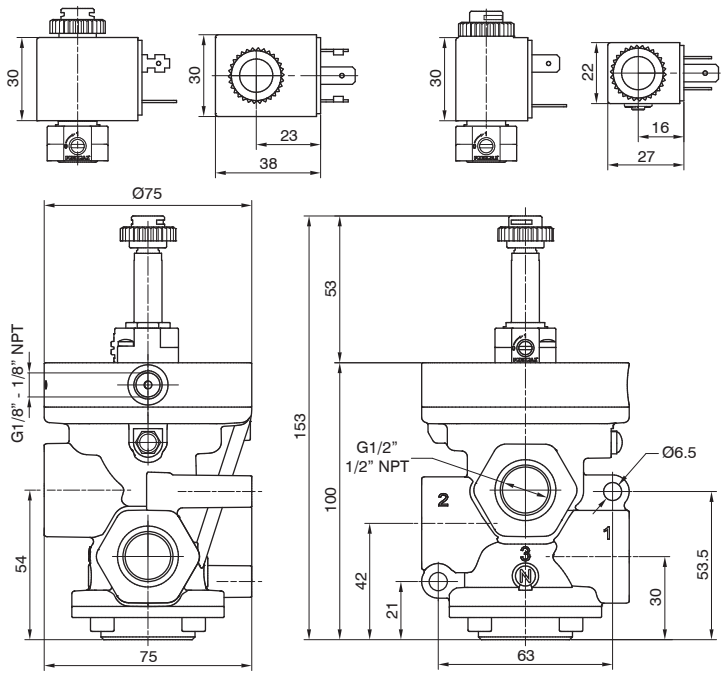
P C 2A 2 01 V F T

3/2

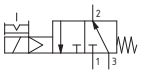


30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE

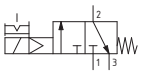
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



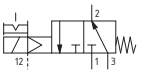
Self feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



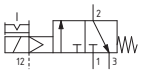
Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



External feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



Weight 693,5 g

P C 2A 3 01 V F T

Pneumatic - Spring

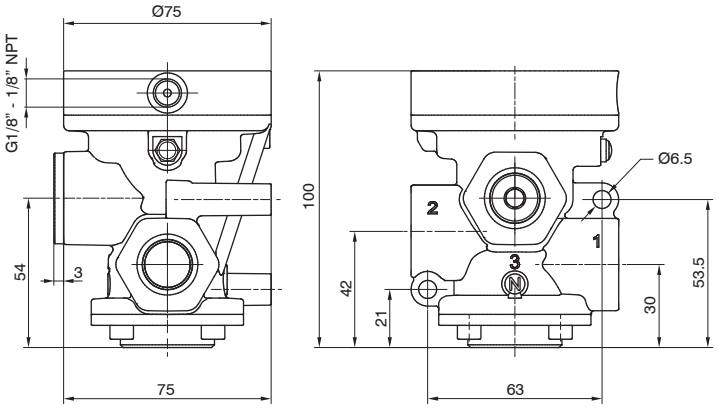
Coding: P©2V®11E℗00000

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +70
Orifice size (mm)	15
Working ports size	G1/2" - 1/2" NPT
Pilot ports size	G1/8" - 1/8" NPT
Max. vacuum (mmHg)	758,5

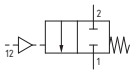
©	CONNECTIONS
	G = Gas thread
	N = NPT thread
®	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
℗	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2





N.C.
Pump 1
Outlet port 2
Exhaust port 3 (closed)

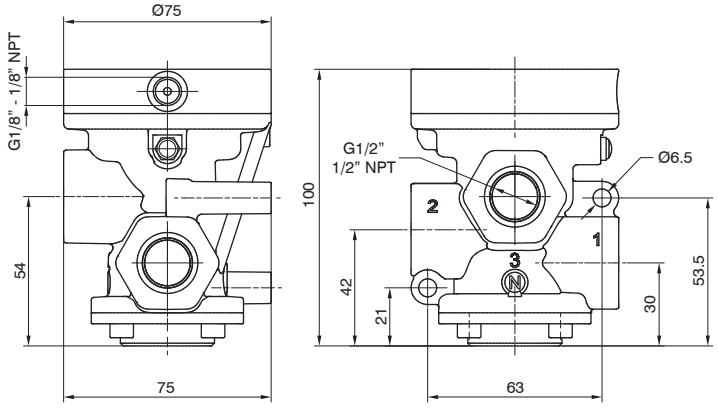


Weight 675,5 g

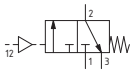
P©2V211E℗00000

3/2

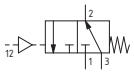




N.O.
Pump 3
Outlet port 2
Exhaust port 1



N.C.
Pump 1
Outlet port 2
Exhaust port 3



Weight 648,5 g

P©2V311E℗00000

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2 (external feeding version)
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G1/2" - 1/2" NPT
Pilot ports size	G1/8" - G1/8" NPT
Max. vacuum (mmHg)	758,5
Minimum operating vacuum (mmHg)	250 (self feeding version)

Coding: P©2V(N)01(V)(F)(T)

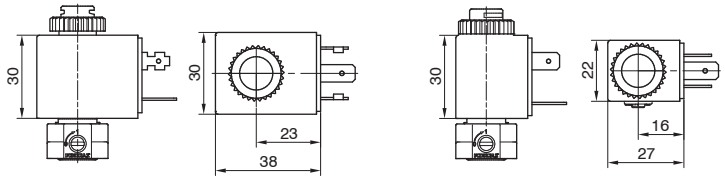
©	CONNECTIONS
	G = Gas thread
	N = NPT thread
(N)	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
(V)	VERSION
	A = Self feeding
	E = External feeding
(F)	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed
(T)	VOLTAGE (22 MM SOLENOID COIL)
	S40B0 = 12 VDC
	S50B0 = 24 VDC
	S60B0 = 24 V 50/60 Hz
	S70B0 = 110 V 50/60 Hz
	S80B0 = 230 V 50/60 Hz
	10000 = Without solenoid coil
(T)	VOLTAGE (30 MM SOLENOID COIL)
	S40C0 = 12 VDC
	S50C0 = 24 VDC
	S60C0 = 24 V 50/60 Hz
	S70C0 = 110 V 50/60 Hz
	S80C0 = 230 V 50/60 Hz
	10000 = Without solenoid coil

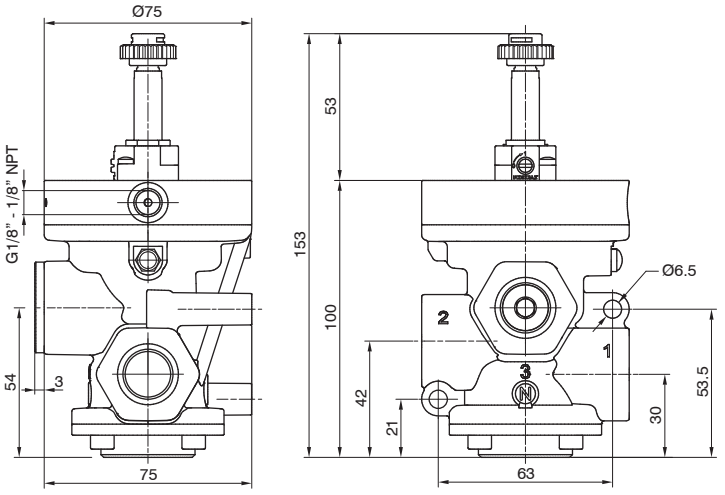
2/2



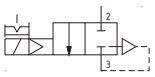
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE

22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE

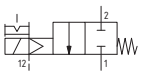




Self feeding - N.C.
Pump 3
Outlet port 2
Exhaust port 1 (closed)



External feeding - N.C.
Pump 1
Outlet port 2
Exhaust port 3 (closed)



Weight 720,5 g

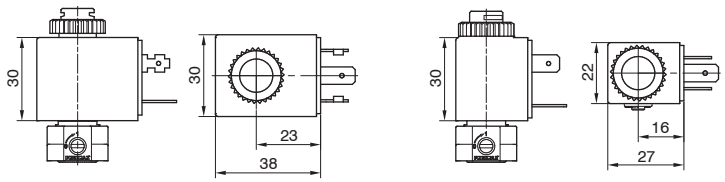
P©2V201(V)(F)(T)

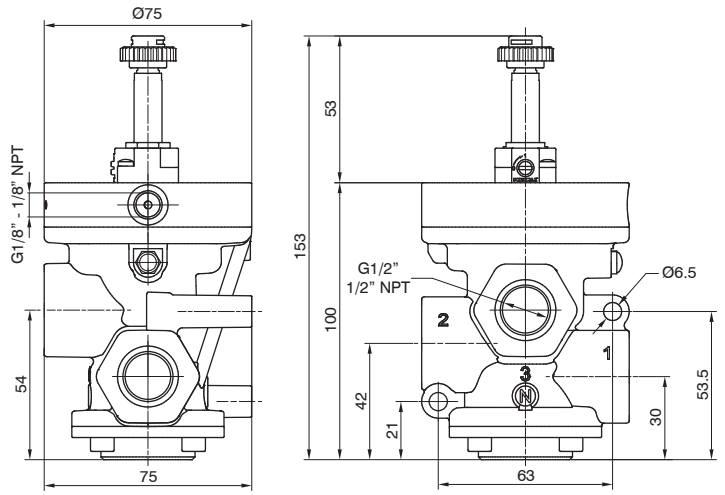
3/2



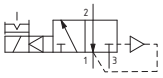
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE

22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE

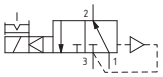




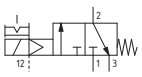
Self feeding - N.O.
Pump 1
Outlet port 2
Exhaust port 3



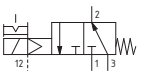
Self feeding - N.C.
Pump 3
Outlet port 2
Exhaust port 1



External feeding - N.O.
Pump 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Pump 1
Outlet port 2
Exhaust port 3



Weight 693,5 g

P©2V301(V)(F)(T)

Pneumatic - Spring

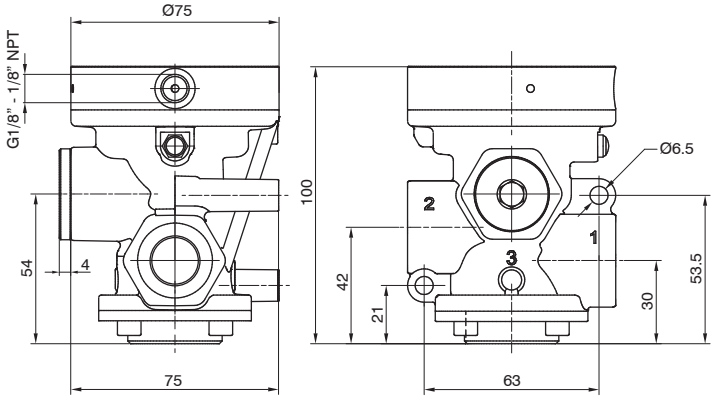
Coding: P©3A®11E℗00000

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	6100
Orifice size (mm)	20
Working ports size	G3/4" - 3/4" NPT
Pilot ports size	G1/8" - 1/8" NPT

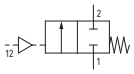
©	CONNECTIONS
	G = Gas thread
	N = NPT thread
®	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
℗	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2





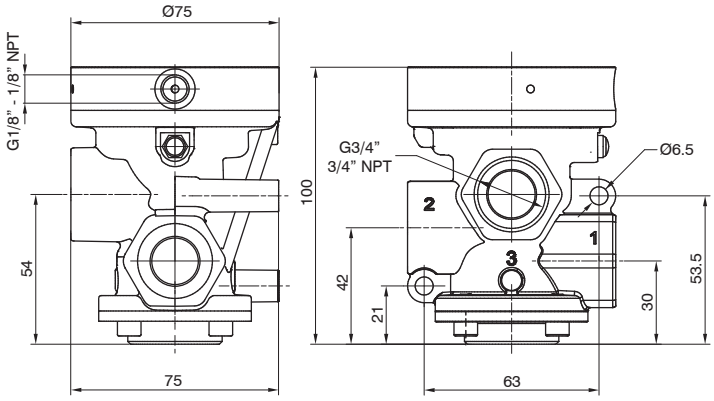
N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



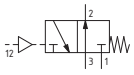
Weight 576,5 g

P©3A211E℗00000

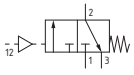




N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



Weight 522,5 g

P©3A311E℗00000

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

Coding: P(C)3A(N)01(V)(F)(T)

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	6100
Orifice size (mm)	20
Working ports size	G3/4" - 3/4" NPT
Pilot ports size	G1/8" - 1/8" NPT
Response time according to ISO 12238, activation time (ms)	22 (self feeding version)
Response time according to ISO 12238, deactivation time (ms)	81 (self feeding version)

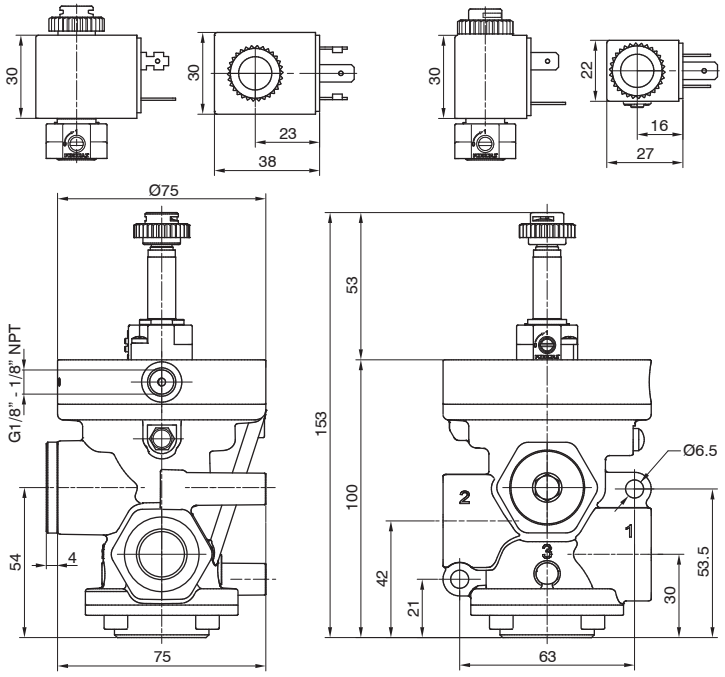
(C)	CONNECTIONS
	G = Gas thread
	N = NPT thread
(N)	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
(V)	VERSION
	A = Self feeding
	E = External feeding
(F)	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed
(T)	VOLTAGE (22 MM SOLENOID COIL)
	S40B0 = 12 VDC
	S50B0 = 24 VDC
	S60B0 = 24 V 50/60 Hz
	S70B0 = 110 V 50/60 Hz
	S80B0 = 230 V 50/60 Hz
	10000 = Without solenoid coil
(T)	VOLTAGE (30 MM SOLENOID COIL)
	S40C0 = 12 VDC
	S50C0 = 24 VDC
	S60C0 = 24 V 50/60 Hz
	S70C0 = 110 V 50/60 Hz
	S80C0 = 230 V 50/60 Hz
	10000 = Without solenoid coil

2/2

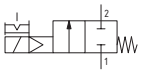


30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE

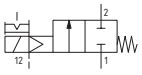
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



Weight 621,5 g

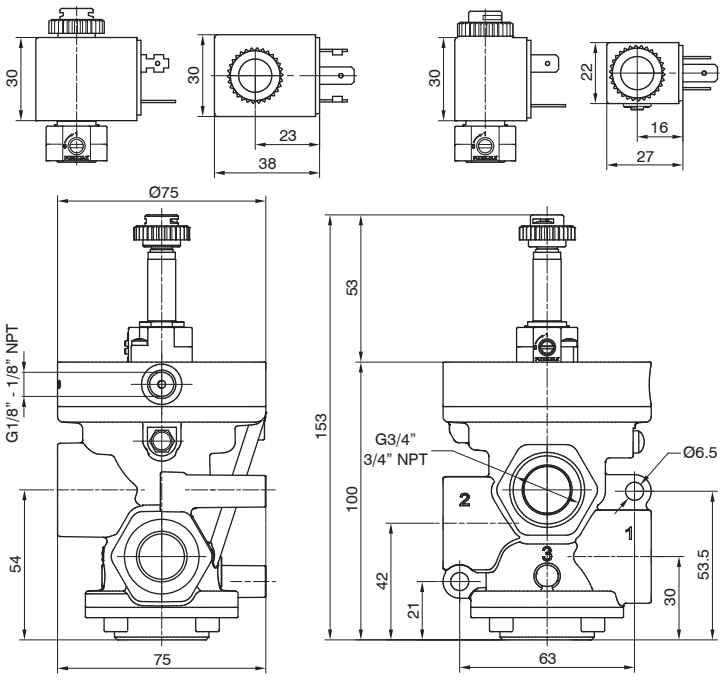
P(C)3A201(V)(F)(T)

3/2

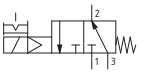


30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE

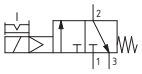
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



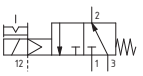
Self feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



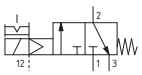
Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



External feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



Weight 567,5 g

P(C)3A301(V)(F)(T)

Pneumatic - Spring

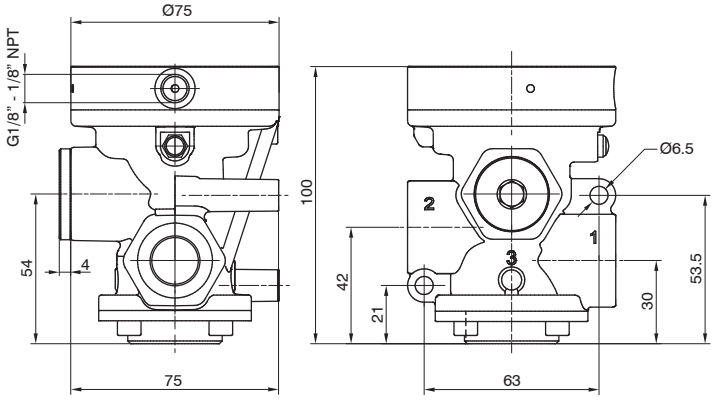
Coding: P©3V®11E©00000

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +70
Orifice size (mm)	20
Working ports size	G3/4" - 3/4" NPT
Pilot ports size	G1/8" - 1/8" NPT
Max. vacuum (mmHg)	758,5

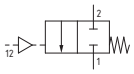
©	CONNECTIONS
	G = Gas thread
	N = NPT thread
®	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
©	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2





N.C.
Pump 1
Outlet port 2
Exhaust port 3 (closed)

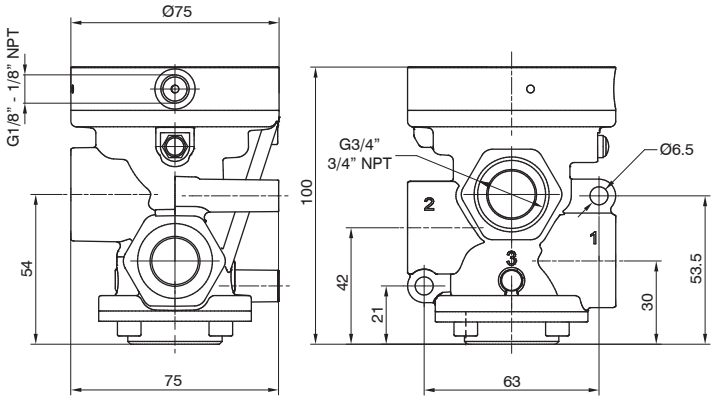


Weight 576,5 g

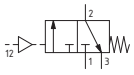
P©3V211E©00000

3/2

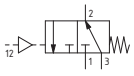




N.O.
Pump 3
Outlet port 2
Exhaust port 1



N.C.
Pump 1
Outlet port 2
Exhaust port 3



Weight 522,5 g

P©3V311E©00000

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

Coding: P©3V(N)01(V)(F)(T)

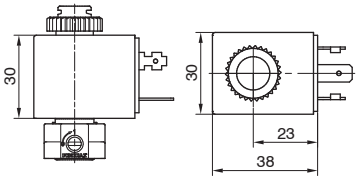
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2 (external feeding version)
Temperature °C	-5 ... +50
Orifice size (mm)	20
Working ports size	G3/4" - 3/4" NPT
Pilot ports size	G1/8" - 1/8" NPT
Max. vacuum (mmHg)	758,5
Minimum operating vacuum (mmHg)	250 (self feeding version)

©	CONNECTIONS
	G = Gas thread
	N = NPT thread
(N)	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
(V)	VERSION
	A = Self feeding
	E = External feeding
(F)	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed
(T)	VOLTAGE (22 MM SOLENOID COIL)
	S40B0 = 12 VDC
	S50B0 = 24 VDC
	S60B0 = 24 V 50/60 Hz
	S70B0 = 110 V 50/60 Hz
	S80B0 = 230 V 50/60 Hz
	10000 = Without solenoid coil
(T)	VOLTAGE (30 MM SOLENOID COIL)
	S40C0 = 12 VDC
	S50C0 = 24 VDC
	S60C0 = 24 V 50/60 Hz
	S70C0 = 110 V 50/60 Hz
	S80C0 = 230 V 50/60 Hz
	10000 = Without solenoid coil

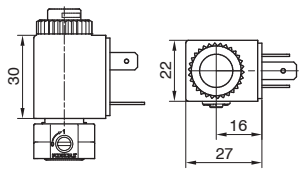
2/2

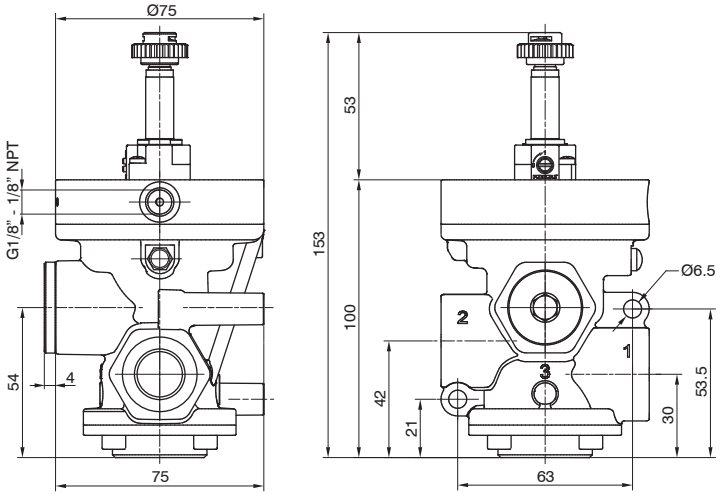


30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE

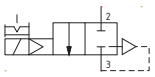


22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE

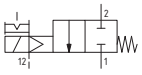




Self feeding - N.C.
Pump 3
Outlet port 2
Exhaust port 1 (closed)



External feeding - N.C.
Pump 1
Outlet port 2
Exhaust port 3 (closed)



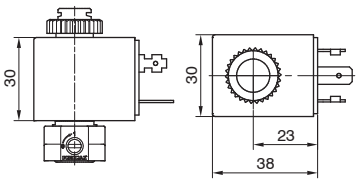
Weight 621,5 g

P©3V201(V)(F)(T)

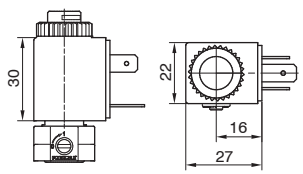
3/2

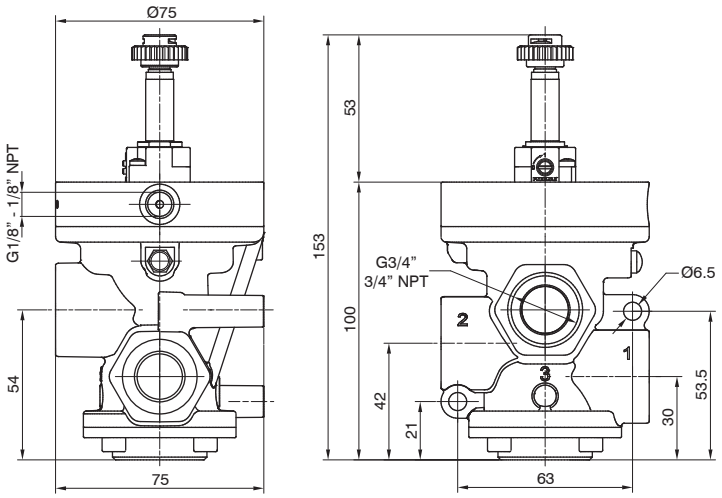


30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE

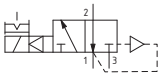


22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE

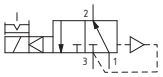




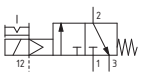
Self feeding - N.O.
Pump 1
Outlet port 2
Exhaust port 3



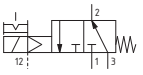
Self feeding - N.C.
Pump 3
Outlet port 2
Exhaust port 1



External feeding - N.O.
Pump 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Pump 1
Outlet port 2
Exhaust port 3



Weight 567,5 g

P©3V301(V)(F)(T)

Pneumatic - Spring

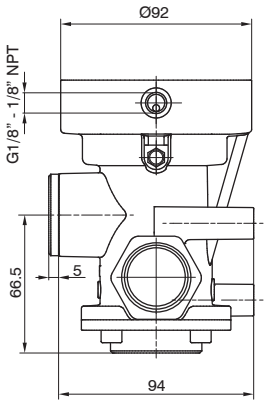
Coding: P©1A©11E©00000

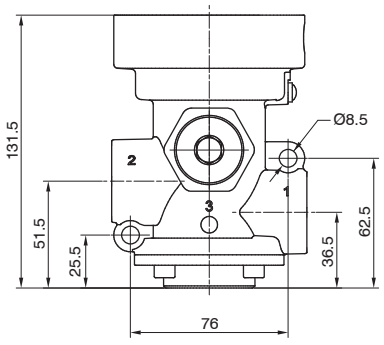
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1" - 1" NPT
Pilot ports size	G1/8" - 1/8" NPT

©	CONNECTIONS
	G = Gas thread
	N = NPT thread
©	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
©	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed

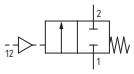
2/2







N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)

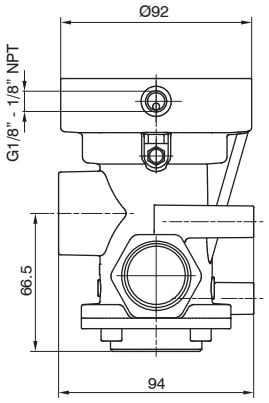


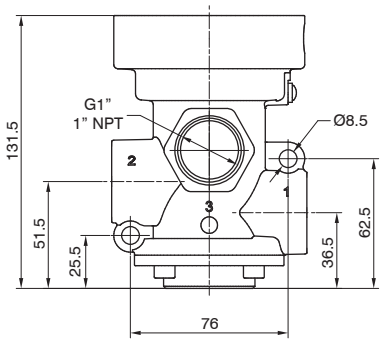
Weight 1231,5 g

P©1A211E©00000

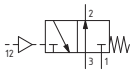
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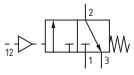




N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



Weight 1139,5 g

P©1A311E©00000

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

Coding: P C 1A N 01 V F T

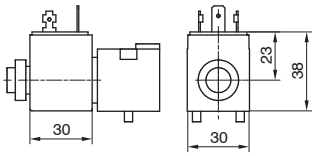
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1" - 1" NPT
Pilot ports size	G1/8" - 1/8" NPT
Response time according to ISO 12238, activation time (ms)	27 (self feeding version)
Response time according to ISO 12238, deactivation time (ms)	88 (self feeding version)

C	CONNECTIONS
	G = Gas thread
	N = NPT thread
N	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
V	VERSION
	A = Self feeding
	E = External feeding
F	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed
T	VOLTAGE (22 MM SOLENOID COIL)
	S40B0 = 12 VDC
	S50B0 = 24 VDC
	S60B0 = 24 V 50/60 Hz
	S70B0 = 110 V 50/60 Hz
	S80B0 = 230 V 50/60 Hz
	10000 = Without solenoid coil
T	VOLTAGE (30 MM SOLENOID COIL)
	S40C0 = 12 VDC
	S50C0 = 24 VDC
	S60C0 = 24 V 50/60 Hz
	S70C0 = 110 V 50/60 Hz
	S80C0 = 230 V 50/60 Hz
	10000 = Without solenoid coil

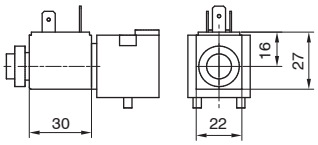
2/2

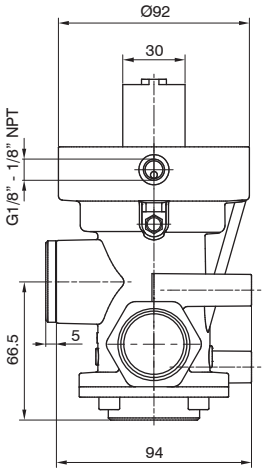


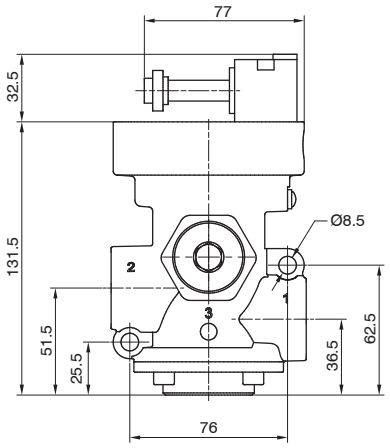
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE



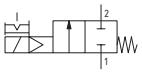
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



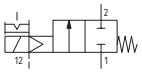




Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



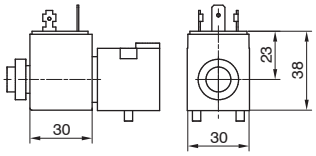
Weight 1290 g

P C 1A 2 01 V F T

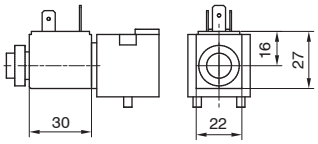
3/2

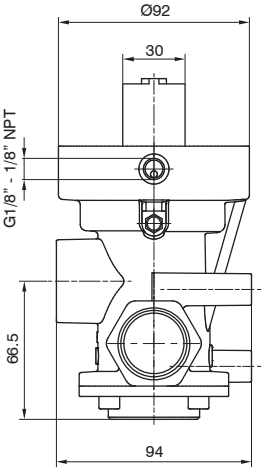


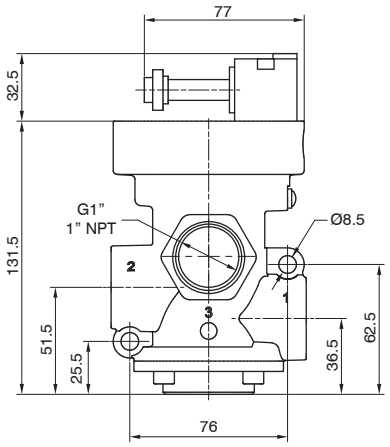
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE



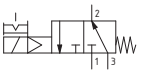
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



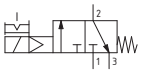




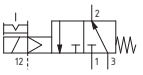
Self feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



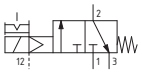
Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



External feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



Weight 1198 g

P C 1A 3 01 V F T

Pneumatic - Spring

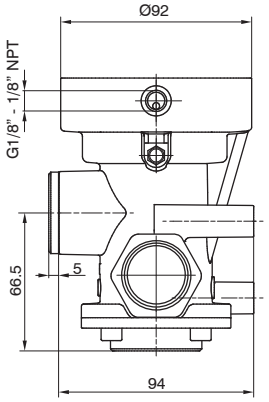
Coding: P©1V®11E℗00000

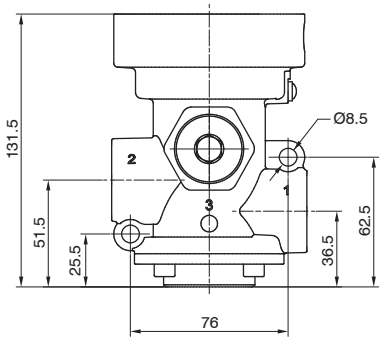
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +70
Orifice size (mm)	25
Working ports size	G1" - 1" NPT
Pilot ports size	G1/8" - 1/8" NPT
Max. vacuum (mmHg)	758,5

©	CONNECTIONS
	G = Gas thread
	N = NPT thread
®	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
℗	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed

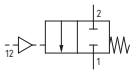
2/2







N.C.
Pump 1
Outlet port 2
Exhaust port 3 (closed)

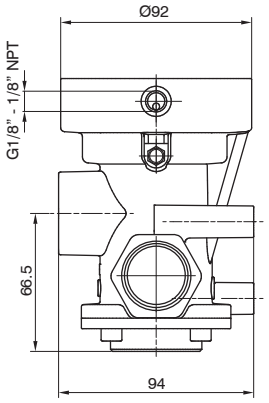


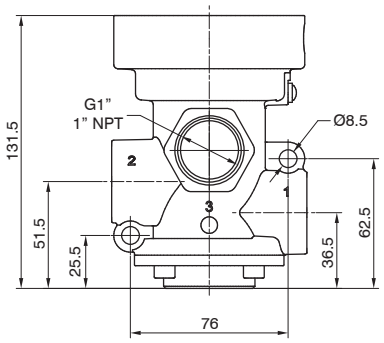
Weight 1231,5 g

P©1V211E℗00000

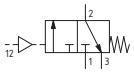
3/2



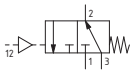




N.O.
Pump 3
Outlet port 2
Exhaust port 1



N.C.
Pump 1
Outlet port 2
Exhaust port 3



Weight 1139,5 g

P©1V311E℗00000

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

Coding: P©1V(N)01(V)(F)(T)

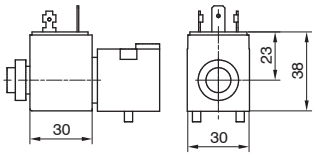
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2 (external feeding version)
Temperature °C	-5 ... +50
Orifice size (mm)	25
Working ports size	G1" - 1" NPT
Pilot ports size	G1/8" - 1/8" NPT
Max. vacuum (mmHg)	758,5
Minimum operating vacuum (mmHg)	250 (self feeding version)

©	CONNECTIONS
	G = Gas thread
	N = NPT thread
(N)	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
(V)	VERSION
	A = Self feeding
	E = External feeding
(F)	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed
(T)	VOLTAGE (22 MM SOLENOID COIL)
	S40B0 = 12 VDC
	S50B0 = 24 VDC
	S60B0 = 24 V 50/60 Hz
	S70B0 = 110 V 50/60 Hz
	S80B0 = 230 V 50/60 Hz
	10000 = Without solenoid coil
(T)	VOLTAGE (30 MM SOLENOID COIL)
	S40C0 = 12 VDC
	S50C0 = 24 VDC
	S60C0 = 24 V 50/60 Hz
	S70C0 = 110 V 50/60 Hz
	S80C0 = 230 V 50/60 Hz
	10000 = Without solenoid coil

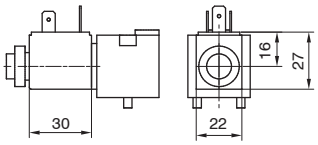
2/2

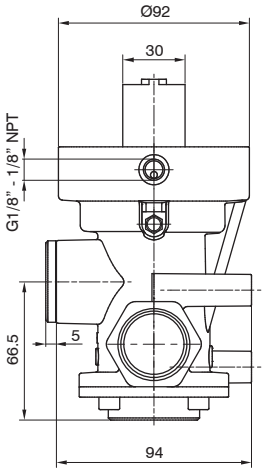


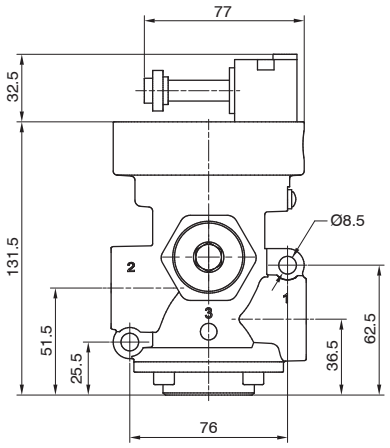
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE



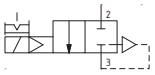
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



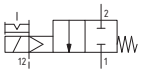




Self feeding - N.C.
Pump 3
Outlet port 2
Exhaust port 1 (closed)



External feeding - N.C.
Pump 1
Outlet port 2
Exhaust port 3 (closed)



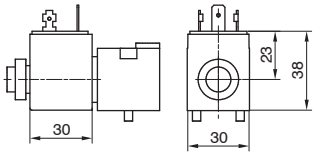
Weight 1290 g

P©1V201(V)(F)(T)

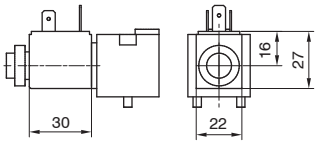
3/2

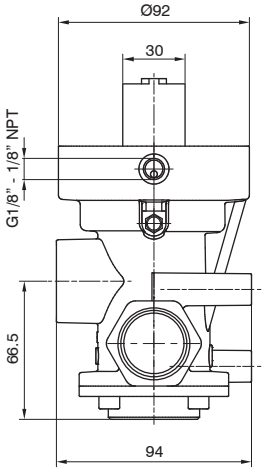


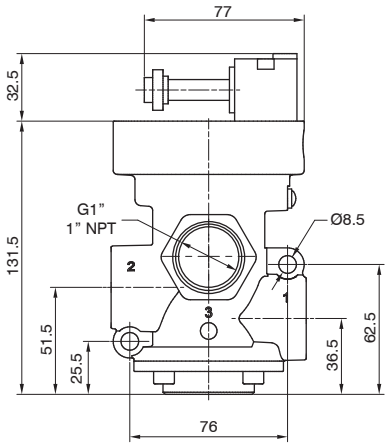
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE



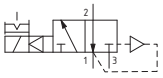
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



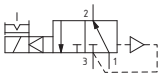




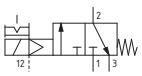
Self feeding - N.O.
Pump 1
Outlet port 2
Exhaust port 3



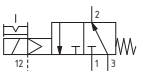
Self feeding - N.C.
Pump 3
Outlet port 2
Exhaust port 1



External feeding - N.O.
Pump 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Pump 1
Outlet port 2
Exhaust port 3



Weight 1198 g

P©1V301(V)(F)(T)

Pneumatic - Spring

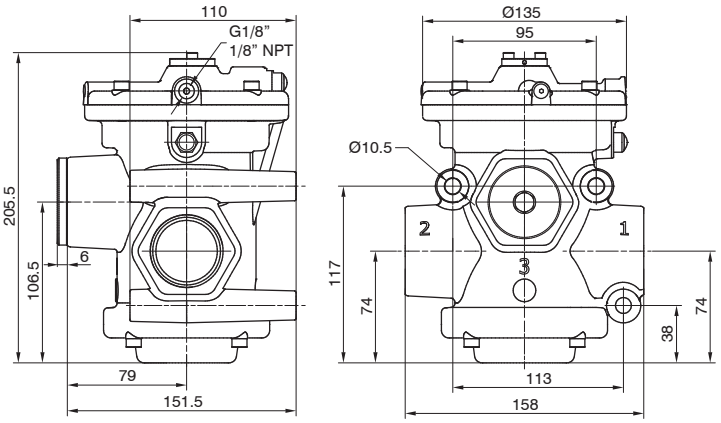
Coding: P C 6A N 11E F 00000

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	33500
Orifice size (mm)	38
Working ports size	G1 1/2" - 1 1/2" NPT
Pilot ports size	G1/8" - 1/8" NPT

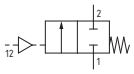
C	CONNECTIONS
	G = Gas thread
	N = NPT thread
N	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
F	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2





N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)

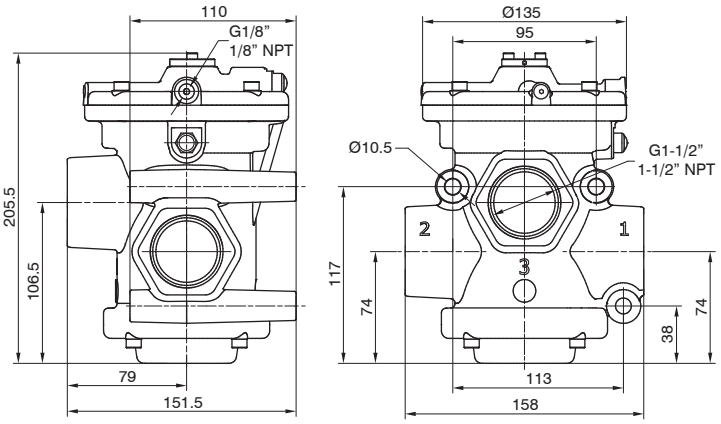


Weight 3417 g

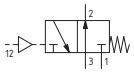
P C 6A 2 11E F 00000

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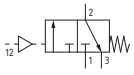




N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



Weight 3168 g

P C 6A 3 11E F 00000

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

Coding: P Ⓒ 6A Ⓝ 01 Ⓥ Ⓕ Ⓣ

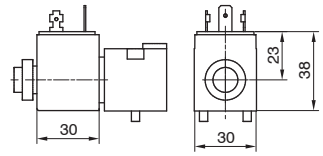
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	33500
Orifice size (mm)	38
Working ports size	G1 1/2" - 1 1/2" NPT
Pilot ports size	G1/8" - 1/8" NPT
Response time according to ISO 12238, activation time (ms)	182 (self feeding version)
Response time according to ISO 12238, deactivation time (ms)	78 (self feeding version)

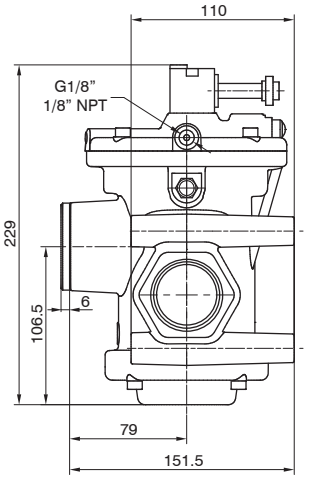
Ⓒ	CONNECTIONS
	G = Gas thread
	N = NPT thread
Ⓝ	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
Ⓥ	VERSION
	A = Self feeding
	E = External feeding
Ⓕ	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed
Ⓣ	VOLTAGE (22 MM SOLENOID COIL)
	S40B0 = 12 VDC
	S50B0 = 24 VDC
	S60B0 = 24 V 50/60 Hz
	S70B0 = 110 V 50/60 Hz
	S80B0 = 230 V 50/60 Hz
	10000 = Without solenoid coil
Ⓣ	VOLTAGE (30 MM SOLENOID COIL)
	S40C0 = 12 VDC
	S50C0 = 24 VDC
	S60C0 = 24 V 50/60 Hz
	S70C0 = 110 V 50/60 Hz
	S80C0 = 230 V 50/60 Hz
	10000 = Without solenoid coil

2/2

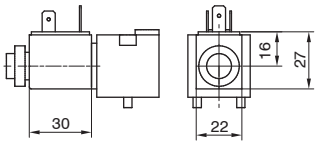


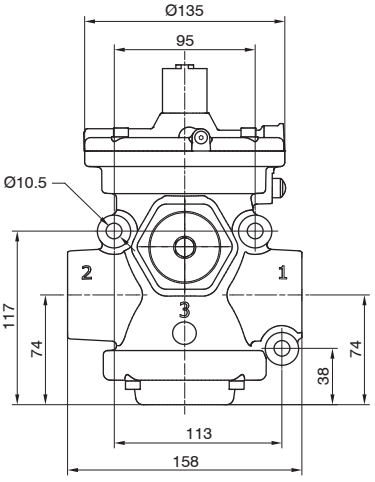
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE



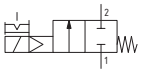


22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE

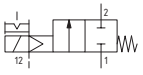




Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3 (closed)



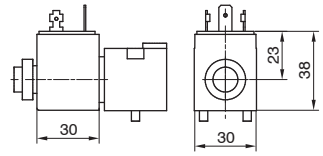
Weight 3491,5 g

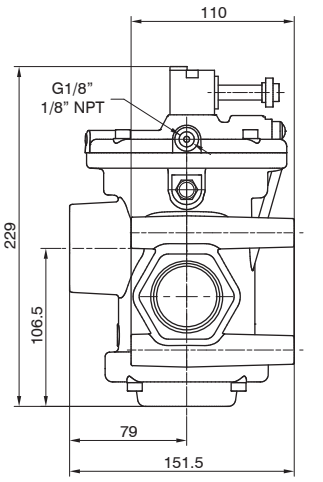
P Ⓒ 6A 201 Ⓥ Ⓕ Ⓣ

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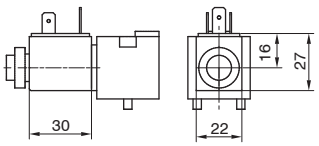


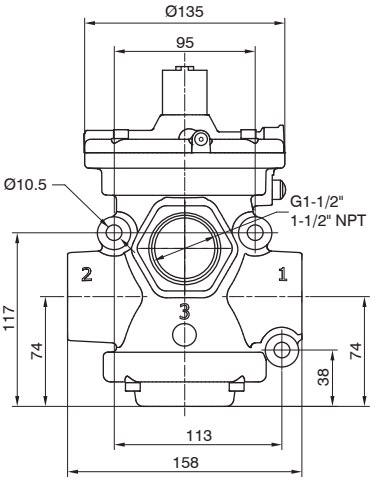
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE



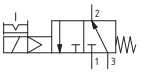


22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE

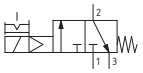




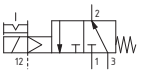
Self feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



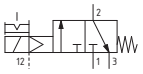
Self feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



External feeding - N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



Weight 3242,5 g

P Ⓒ 6A 301 Ⓥ Ⓕ Ⓣ

Pneumatic - Spring

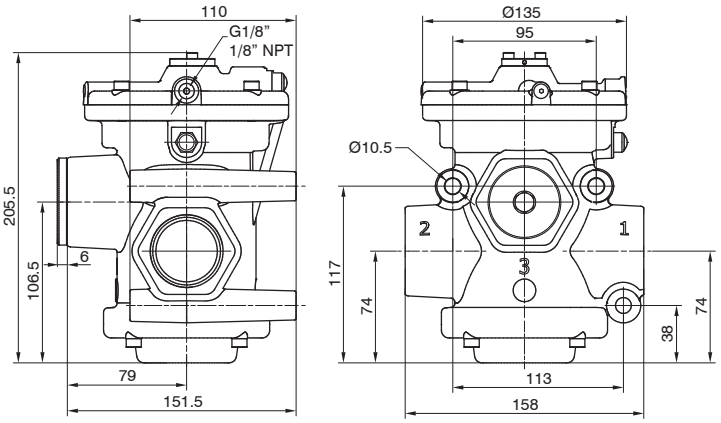
Coding: P©6V©11E©00000

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +70
Orifice size (mm)	38
Working ports size	G1 1/2" - 1 1/2" NPT
Pilot ports size	G1/8" - 1/8" NPT
Max. vacuum (mmHg)	758,5

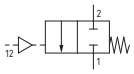
©	CONNECTIONS
	G = Gas thread
	N = NPT thread
©	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
©	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed

2/2





N.C.
Pump 1
Outlet port 2
Exhaust port 3 (closed)

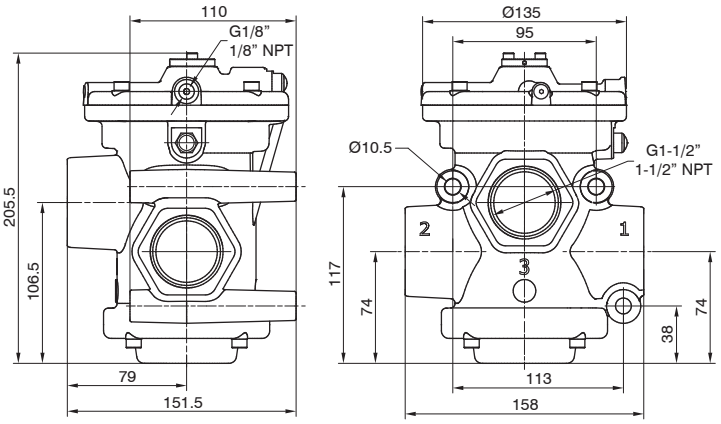


Weight 3417 g

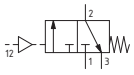
P©6V211E©00000

3/2

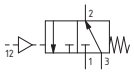




N.O.
Pump 3
Outlet port 2
Exhaust port 1



N.C.
Pump 1
Outlet port 2
Exhaust port 3



Weight 3168 g

P©6V311E©00000

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

Coding: PⒸ6VⓃ01ⓋⒻⓉ

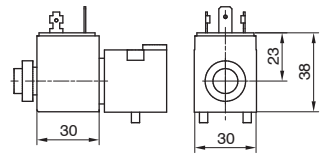
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2 (external feeding version)
Temperature °C	-5 ... +50
Orifice size (mm)	38
Working ports size	G1 1/2" - 1 1/2" NPT
Pilot ports size	G1/8" - 1/8" NPT
Max. vacuum (mmHg)	758,5
Minimum operating vacuum (mmHg)	250 (self feeding version)

Ⓒ	CONNECTIONS
	G = Gas thread
	N = NPT thread
Ⓝ	WAYS NUMBER
	2 = 2 ways, 2 positions
	3 = 3 ways, 2 positions
Ⓥ	VERSION
	A = Self feeding
	E = External feeding
Ⓕ	FUNCTION
	A = Normally Open (only for 3 ways)
	C = Normally Closed
Ⓣ	VOLTAGE (22 MM SOLENOID COIL)
	S40B0 = 12 VDC
	S50B0 = 24 VDC
	S60B0 = 24 V 50/60 Hz
	S70B0 = 110 V 50/60 Hz
	S80B0 = 230 V 50/60 Hz
	10000 = Without solenoid coil
Ⓣ	VOLTAGE (30 MM SOLENOID COIL)
	S40C0 = 12 VDC
	S50C0 = 24 VDC
	S60C0 = 24 V 50/60 Hz
	S70C0 = 110 V 50/60 Hz
	S80C0 = 230 V 50/60 Hz
	10000 = Without solenoid coil

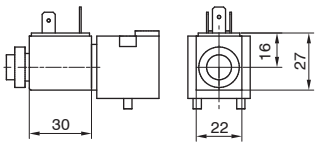
2/2

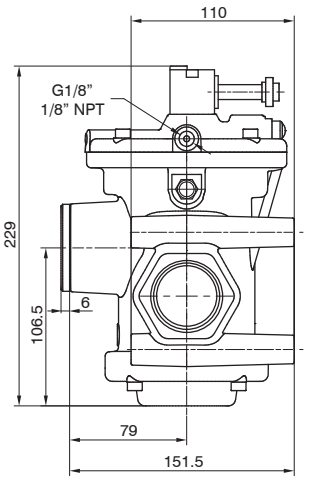


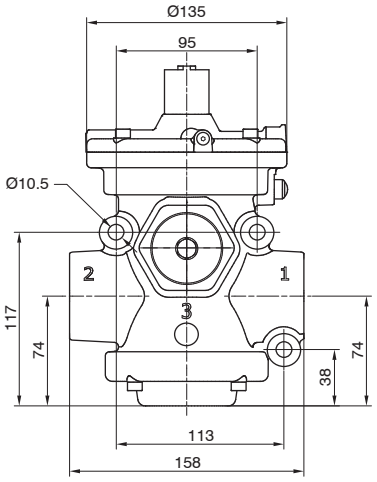
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE



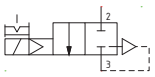
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



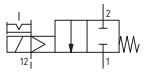




Self feeding - N.C.
Pump 3
Outlet port 2
Exhaust port 1 (closed)



External feeding - N.C.
Pump 1
Outlet port 2
Exhaust port 3 (closed)



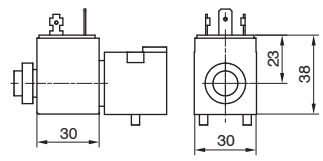
Weight 3491,5 g

PⒸ6V201ⓋⒻⓉ

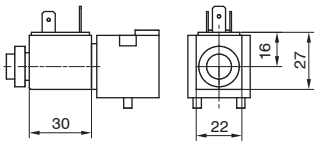
3/2

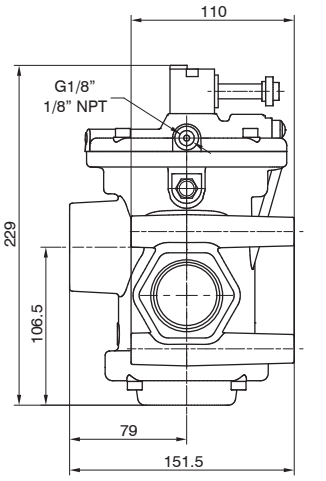


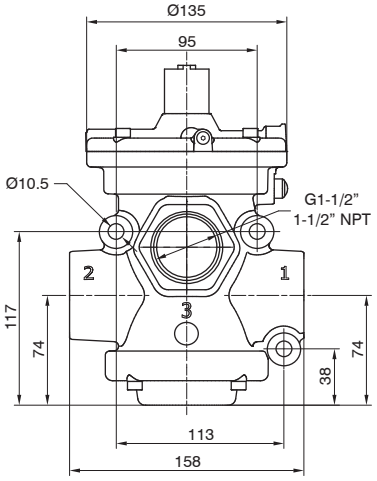
30 mm SOLENOID COIL
Connection: DIN 43650 "A" SHAPE



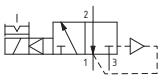
22 mm SOLENOID COIL
Connection: DIN 43650 INDUSTRIAL "B" SHAPE



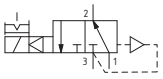




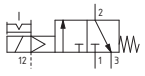
Self feeding - N.O.
Pump 1
Outlet port 2
Exhaust port 3



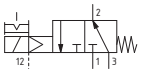
Self feeding - N.C.
Pump 3
Outlet port 2
Exhaust port 1



External feeding - N.O.
Pump 3
Outlet port 2
Exhaust port 1



External feeding - N.C.
Pump 1
Outlet port 2
Exhaust port 3



Weight 3242,5 g

PⒸ6V301ⓋⒻⓉ

Series T772-773 - for compressed air and vacuum in technopolymer - G1/2" and G3/4"

The range of G1/2" and G3/4" pilot and solenoid operated poppet valves are manufactured with high impact resistant thermoplastic.
The use of this materiel results in a versatile, lightweight and economical valve.
The traditional piston lip seal has been replaced with a rolling diaphragm, thereby eliminating frictional wear and tear to this seal.
The valves (with the exception of certain vacuum models) also features a seal, which separates port 3 from the piston head. The inclusion of this seal has enhanced the valve's performance and allows the valve to be used as normally open (a configuration not possible in the Zama series).
Solenoid operated valves (both internal and external pilot versions) are fitted with a quick exhaust unit, which reduces the return stroke operating time by 60%.
The bulk of the valves in this series use the MP type operator, the exception being internally piloted vacuum models, which use the MV operator.
These operators differ from the M2 type in that they have self-tapping mounting screws for use in plastics.
The ordering code are referring to the solenoid valves with mechanics "MP" or "MV" assembled.
Coils are not included and have to be ordered separately (series 300, Section 1, General Catalogue), with the exception of the bistable versions which already include 24V DC Coils (N331.0A).
Coils c UL us homologated are also available. (See series 300).

Construction characteristics

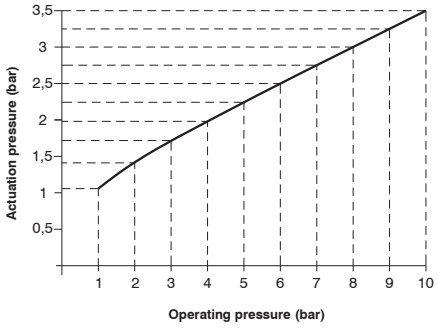
Body, operator and end cover	High impact resistant thermoplastic
Seals and poppets	NBR
Diaphragm	Oil resistant rubber (NBR)
Springs	AISI 302 stainless steel
Piston and shaft	Acetal resin

Use and maintenance

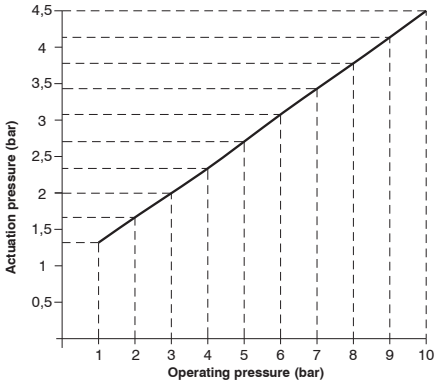
These valves have a mean life of 10 to 15 million cycles under normal operating conditions.
Lubrication is not required for good operation but we recommend good filtration to avoid dirty deposit causing malfunction.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
For these products, according to the construction technique and special application, is not required any maintenance with parts replacement.
When necessary it is sufficient to clean the internal parts.
When it is used the solenoid valves with internal pilot, either for air or vacuum, inlet flow rate must be equal or higher that the required consumption flow rate.
Otherwise is better choose the external pilot version.

MINIMUM PILOTING PRESSURE DIAGRAM (Valves for compressed air)
PNEUMATIC/SPRING AND EXTERNAL SOLENOID PILOT VERSION

Normally closed valve



Normally open valve



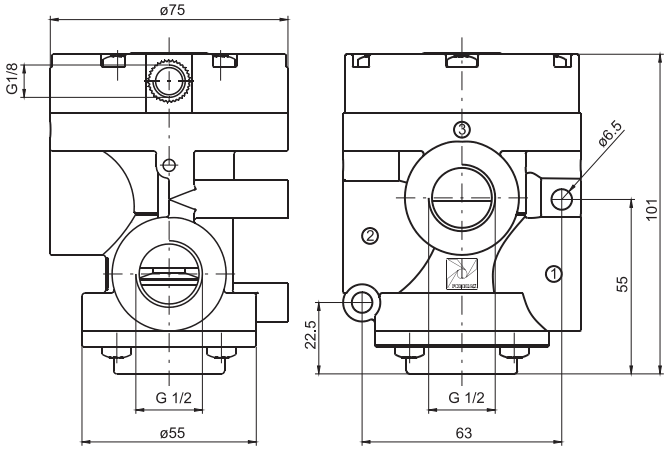
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

Coding: T772.32.11.1

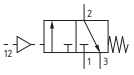
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	4100
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



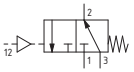


Weight 350 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



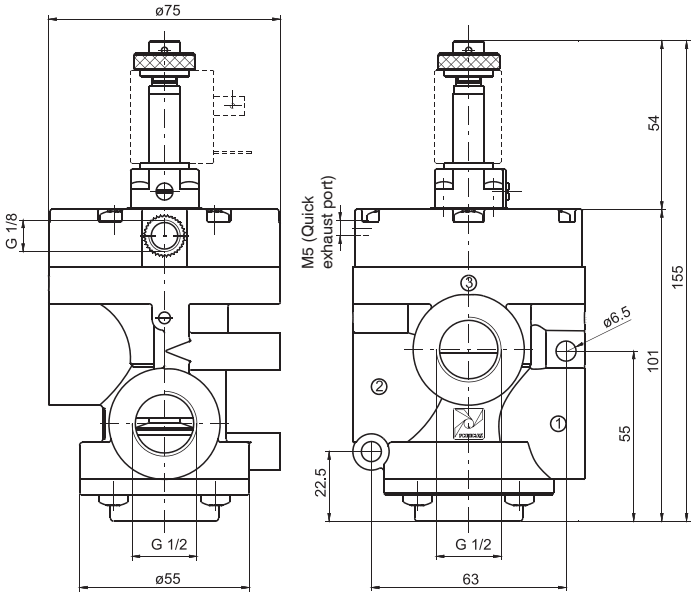
Solenoid-Spring-Internal pilot

Coding: T772.32.0.Ⓕ.MP

Ⓕ	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed

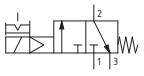
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	4100
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



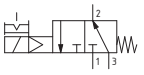


Weight 390 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1

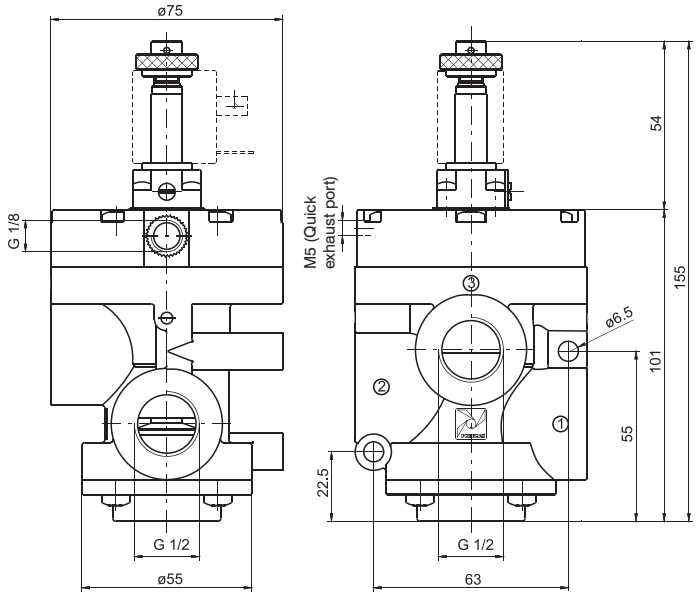


Solenoid-Spring-External pilot

Coding: T772.32.0.1.MP

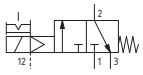
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	4100
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



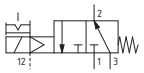


Weight 390 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



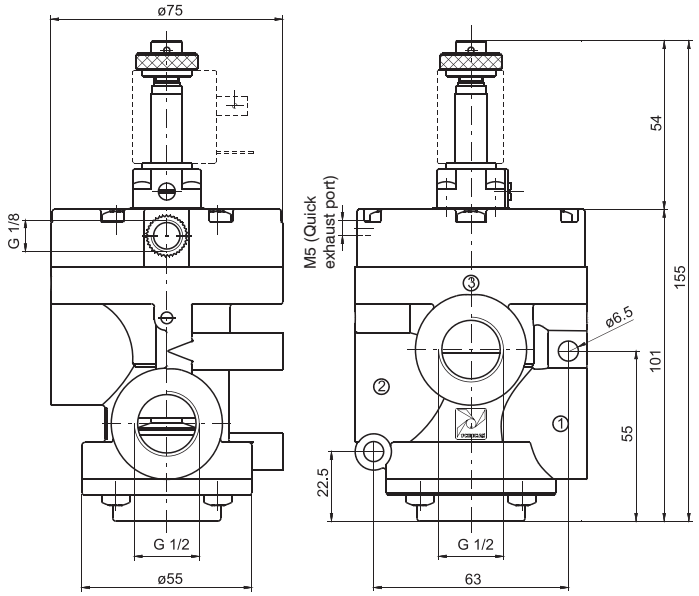
Solenoid-Spring - Internal pilot with quick exhaust

Coding: T772S.32.0.Ⓕ.MP

Ⓕ	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed

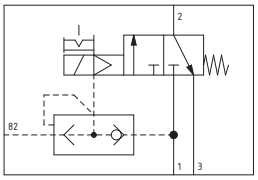
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	4100
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



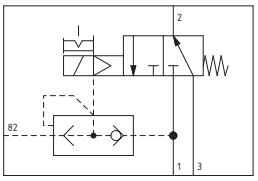


Weight 390 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

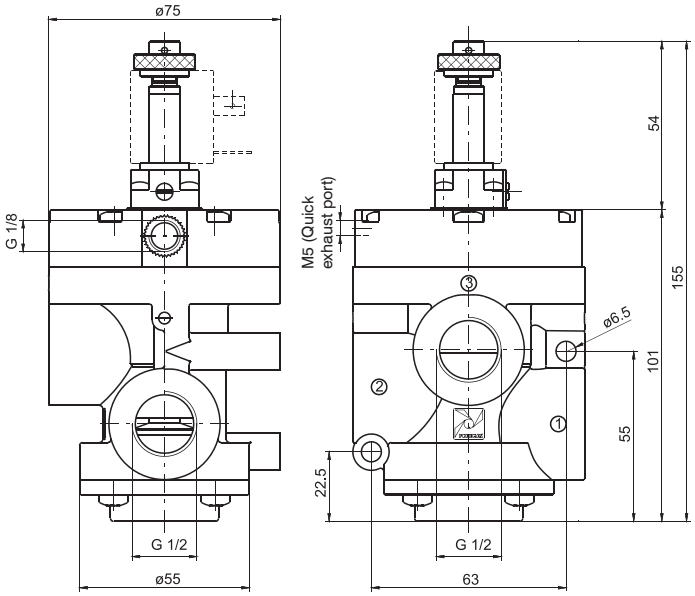
Solenoid-Spring - External pilot with quick exhaust

Coding: T772S.32.0.1.MP

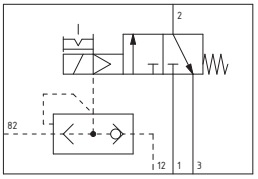
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	4100
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



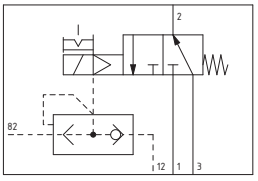
Weight 390 g



N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1

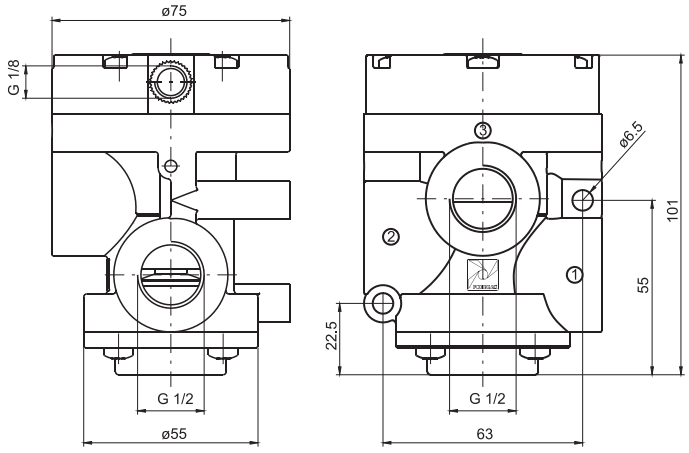


Pneumatic - Spring

Coding: T772/V.32.11.1

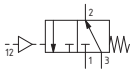
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 50 - N.O. = 27
Response time according to ISO 12238, deactivation time (ms)	N.C. = 150 - N.O. = 195



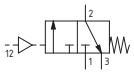


Weight 350 g

N.C.
Exhaust port 3
Outlet port 2
Pump 1



N.O.
Exhaust port 1
Outlet port 2
Pump 3



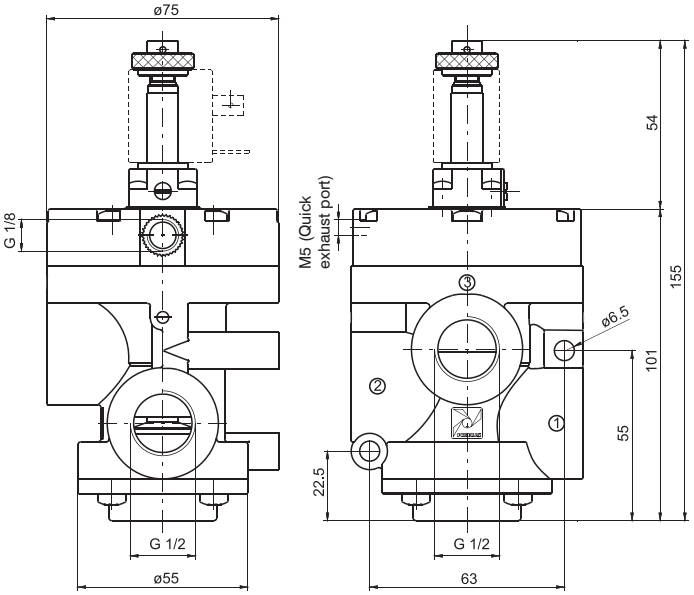
Solenoid-Spring-Internal pilot

Coding: T772/V.32.0.Ⓕ.MV

Ⓕ	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed

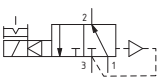
Operational characteristics	
Fluid	Vacuum
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	1AC = 55 - 1AA = 33
Response time according to ISO 12238, deactivation time (ms)	1AC = 30 - 1AA = 38



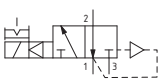


Weight 390 g

N.C.
Exhaust port 1
Outlet port 2
Pump 3



N.O.
Exhaust port 3
Outlet port 2
Pump 1



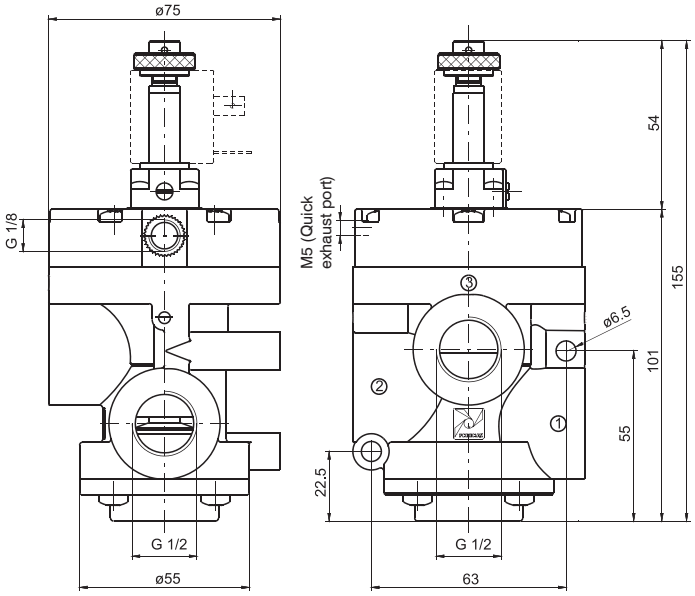
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring-External pilot

Coding: T772/V.32.0.1.MP

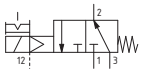
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 42 - N.O. = 22
Response time according to ISO 12238, deactivation time (ms)	N.C. = 135 - N.O. = 175



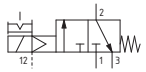


Weight 390 g

N.C.
Exhaust port 3
Outlet port 2
Pump 1



N.O.
Exhaust port 1
Outlet port 2
Pump 3

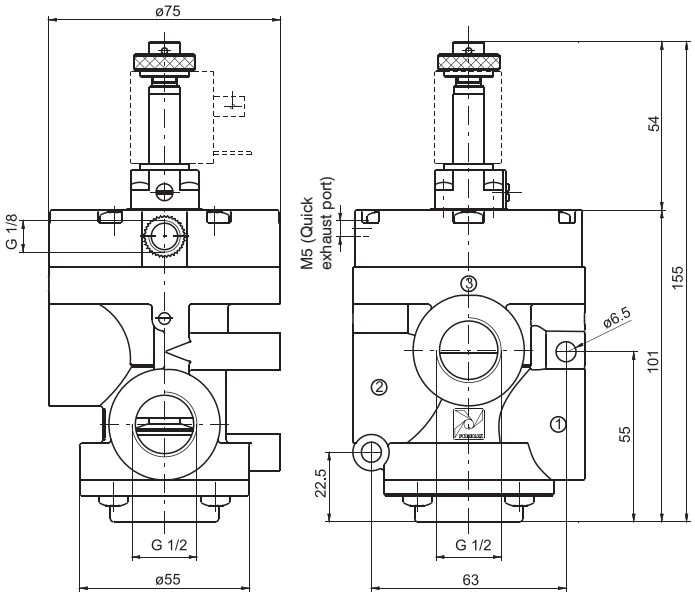


Solenoid-Spring - External pilot with quick exhaust

Coding: T772/VS.32.0.1.MP

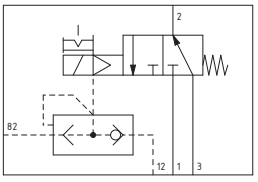
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 43 - N.O. = 25
Response time according to ISO 12238, deactivation time (ms)	N.C. = 37 - N.O. = 42



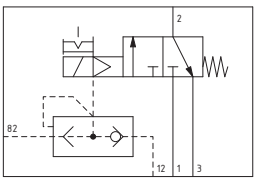


Weight 390 g

N.C.
Exhaust port 3
Outlet port 2
Pump 1



N.O.
Exhaust port 1
Outlet port 2
Pump 3

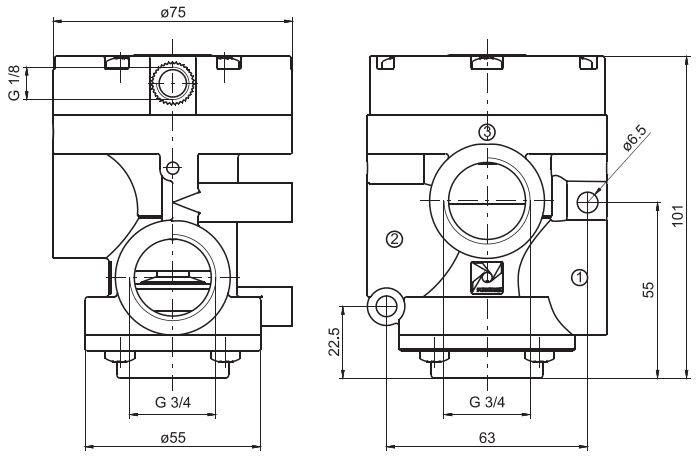


Pneumatic - Spring

Coding: T773.32.11.1

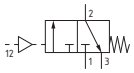
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	7500
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



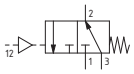


Weight 330 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



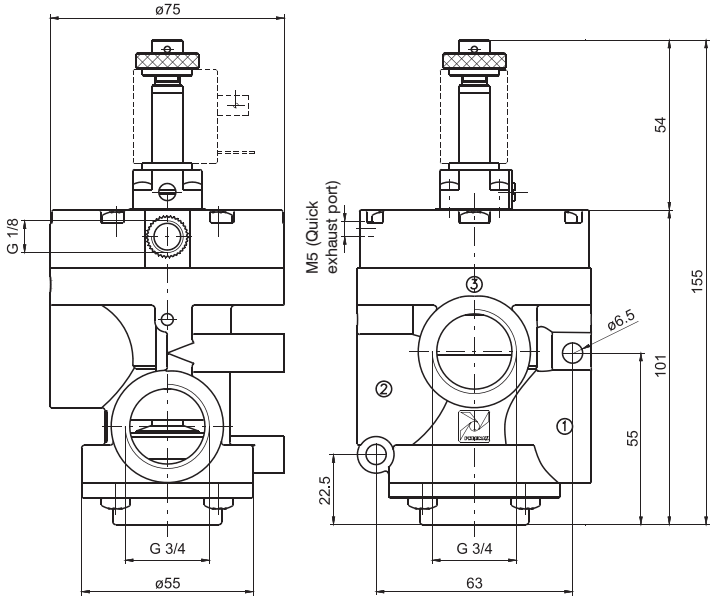
Solenoid-Spring-Internal pilot

Coding: T773.32.0.Ⓕ.MP

Ⓕ	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed

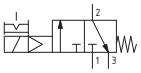
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	7500
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



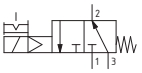


Weight 370 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



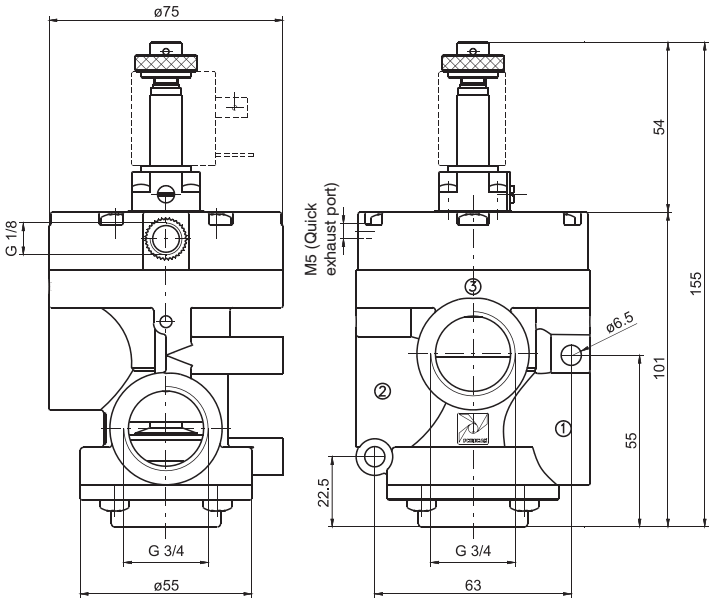
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring-External pilot

Coding: T773.32.0.1.MP

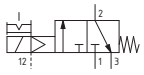
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	7500
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



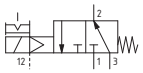


Weight 370 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



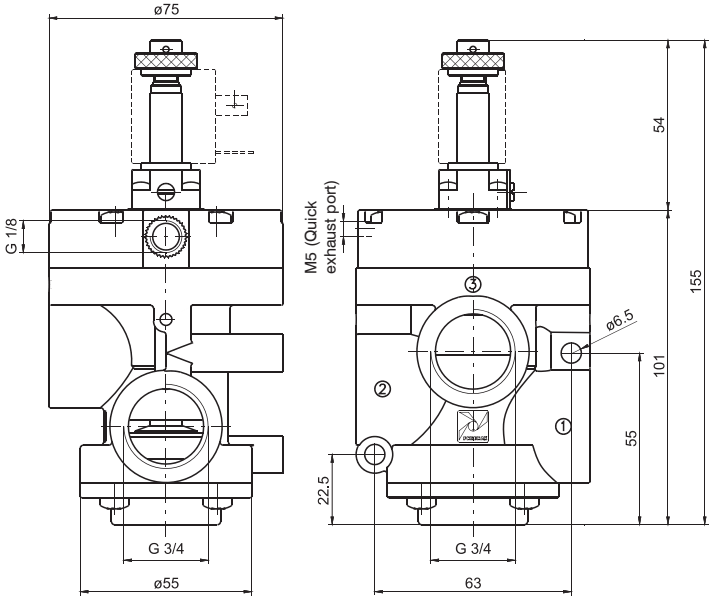
Solenoid-Spring - Internal pilot with quick exhaust

Coding: T773S.32.0.Ⓕ.MP

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	7500
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

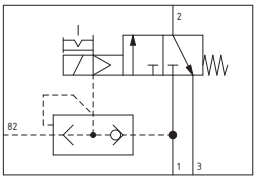
Ⓕ	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed



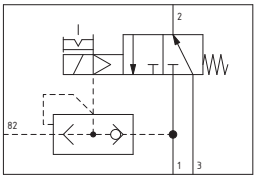


Weight 370 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



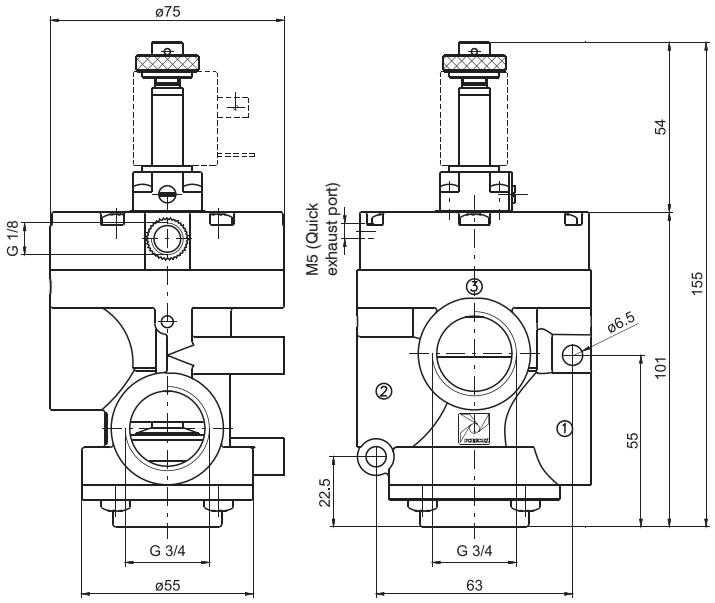
Solenoid-Spring - External pilot with quick exhaust

Coding: T773S.32.0.1.MP

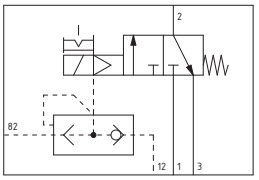
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	7500
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



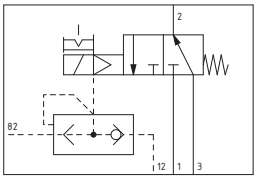
Weight 370 g



N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



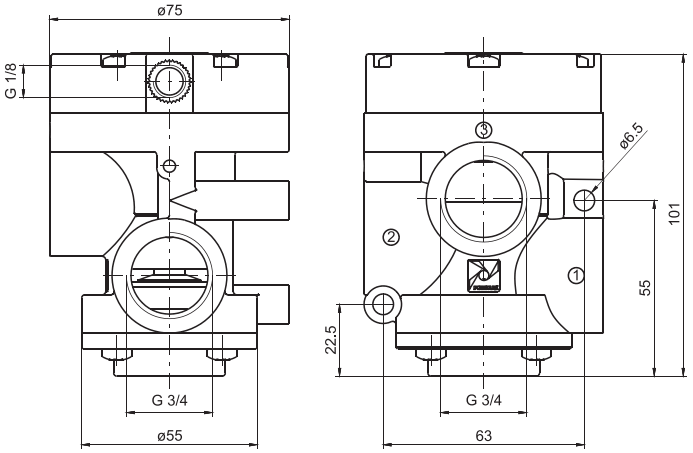
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic - Spring

Coding: T773/V.32.11.1

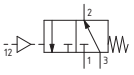
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 28 - N.O. = 50
Response time according to ISO 12238, deactivation time (ms)	N.C. = 190 - N.O. = 150



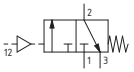


Weight 330 g

N.C.
Exhaust port 3
Outlet port 2
Pump 1



N.O.
Exhaust port 1
Outlet port 2
Pump 3



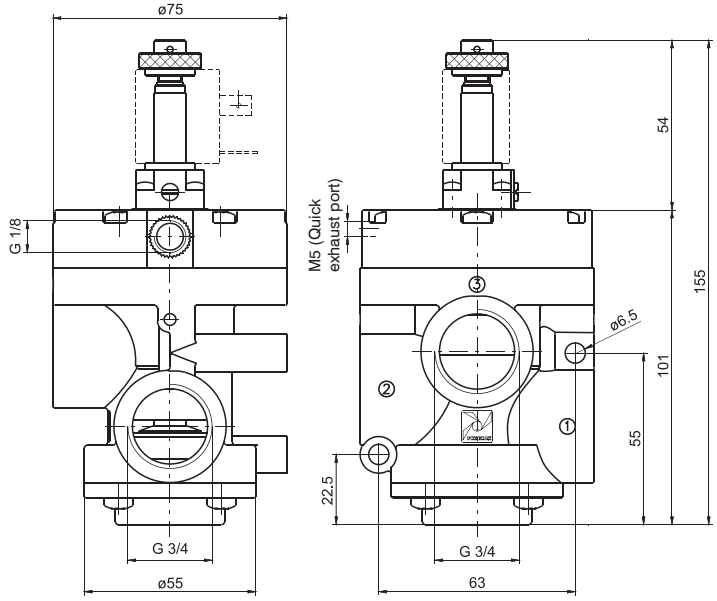
Solenoid-Spring-Internal pilot

Coding: T773/V.32.0.Ⓕ.MV

Ⓕ	FUNCTION
	1AA = Normally Open
	1AC = Normally Closed

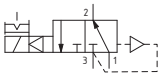
Operational characteristics	
Fluid	Vacuum
Temperature °C	-5 ... +50
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	1AC = 35 - 1AA = 32
Response time according to ISO 12238, deactivation time (ms)	1AC = 30 - 1AA = 80



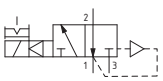


Weight 370 g

N.C.
Exhaust port 1
Outlet port 2
Pump 3



N.O.
Exhaust port 3
Outlet port 2
Pump 1

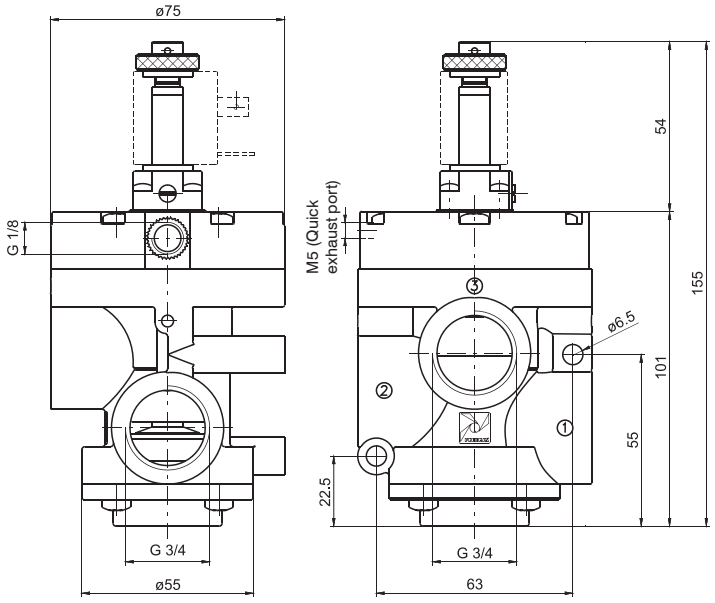


Solenoid-Spring-External pilot

Coding: T773/V.32.0.1.MP

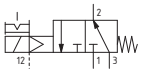
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 25 - N.O. = 40
Response time according to ISO 12238, deactivation time (ms)	N.C. = 175 - N.O. = 145



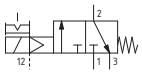


Weight 350 g

N.C.
Exhaust port 3
Outlet port 2
Pump 1



N.O.
Exhaust port 1
Outlet port 2
Pump 3

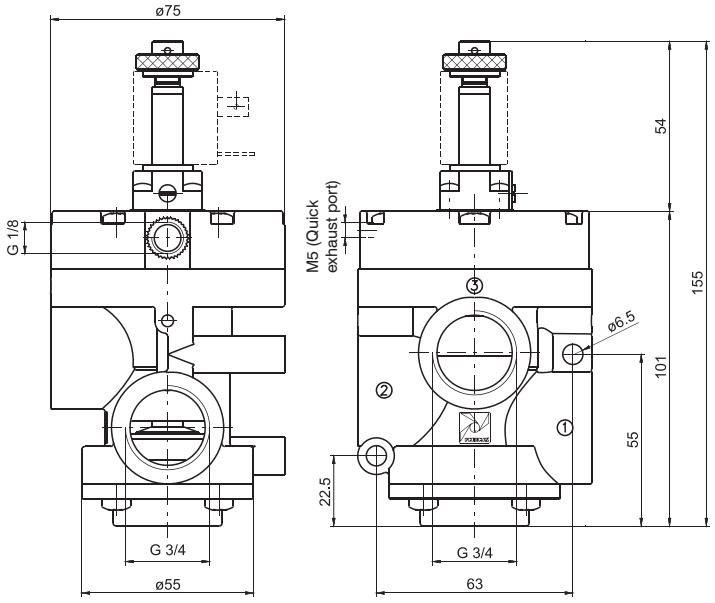


Solenoid-Spring - External pilot with quick exhaust

Coding: T773/VS.32.0.1.MP

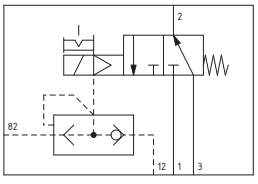
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	20
Working ports size	G3/4"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 25 - N.O. = 42
Response time according to ISO 12238, deactivation time (ms)	N.C. = 40 - N.O. = 38



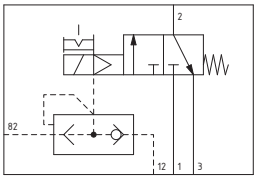


Weight 350 g

N.C.
Exhaust port 3
Outlet port 2
Pump 1



N.O.
Exhaust port 1
Outlet port 2
Pump 3



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

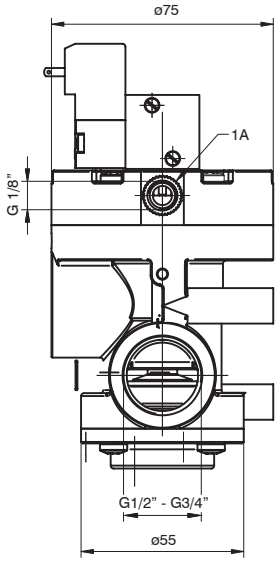
Bistable for compressed air - G1/2"

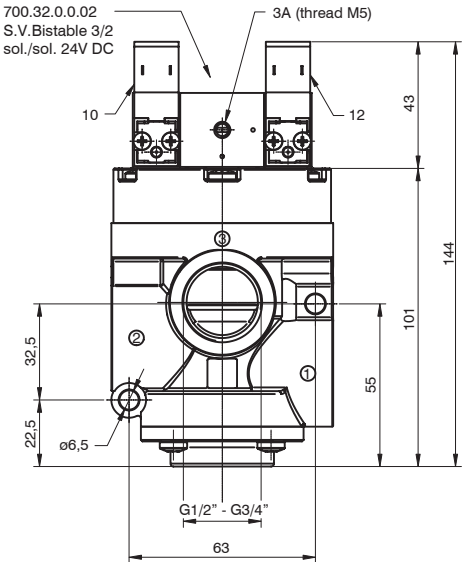
Coding: T772.32.0.1.BP

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	4100
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

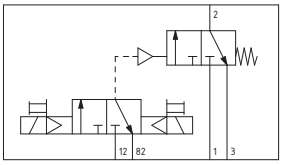


Weight 550 g

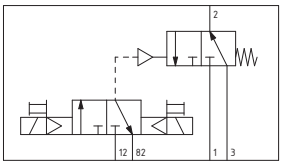




N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



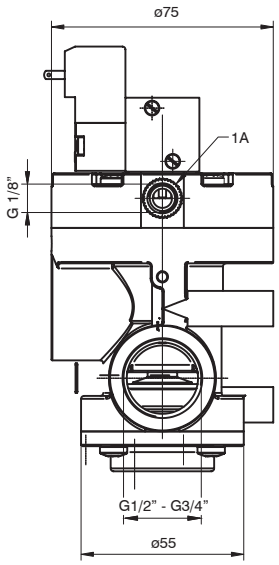
Bistable for compressed air - G3/4"

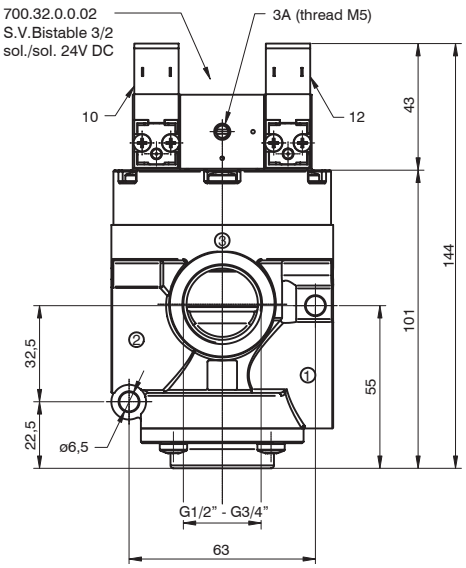
Coding: T773.32.0.1.BP

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	7500
Orifice size (mm)	15
Working ports size	G3/4"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

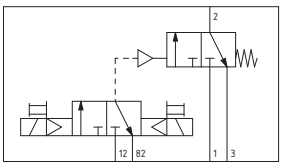


Weight 550 g

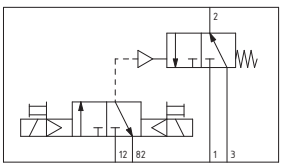




N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1

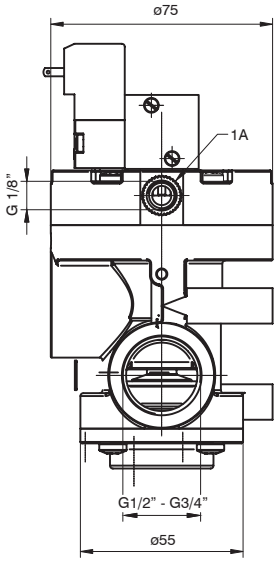


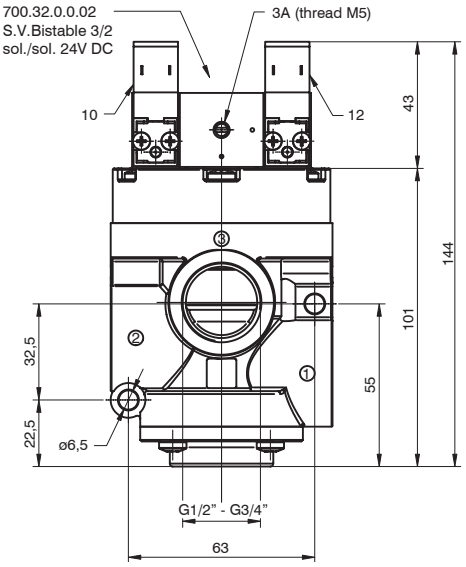
Bistable for compressed air with quick exhaust - G1/2"

Coding: T772S.32.0.1.BP

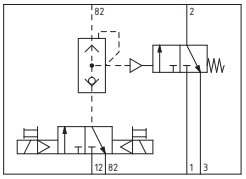
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	4100
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



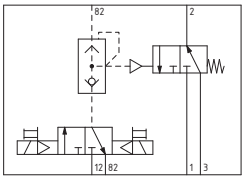




N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



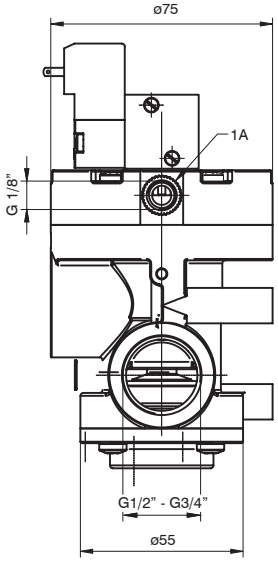
Weight 550 g

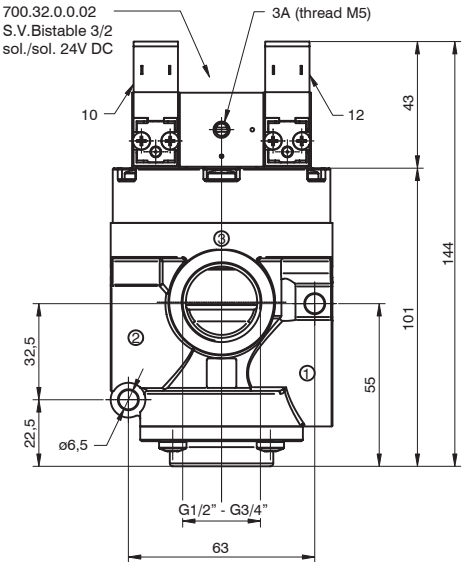
Bistable for compressed air with quick exhaust G3/4"

Coding: T773S.32.0.1.BP

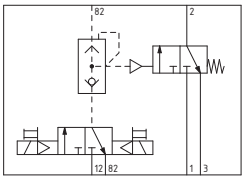
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	7500
Orifice size (mm)	15
Working ports size	G3/4"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



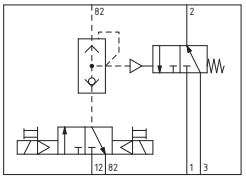




N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



Weight 550 g

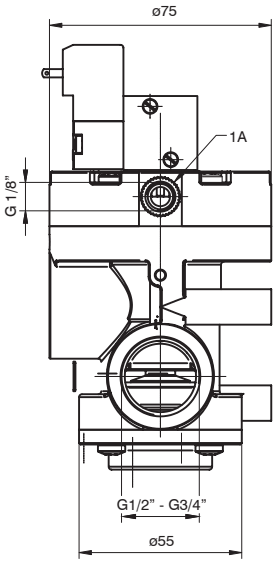
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

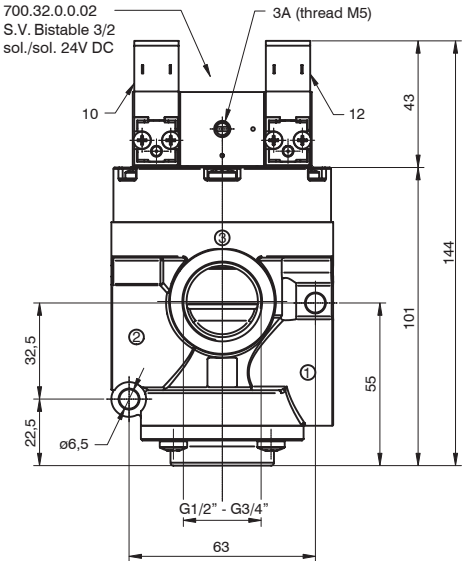
Bistable for vacuum - G1/2"

Coding: T772/V.32.0.1.BP

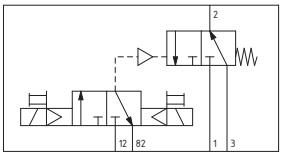
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"



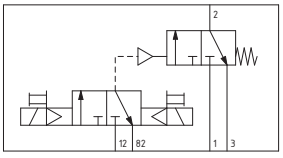




N.C.
Pump 1
Outlet port 2
Exhaust port 3



N.O.
Pump 3
Outlet port 2
Exhaust port 1



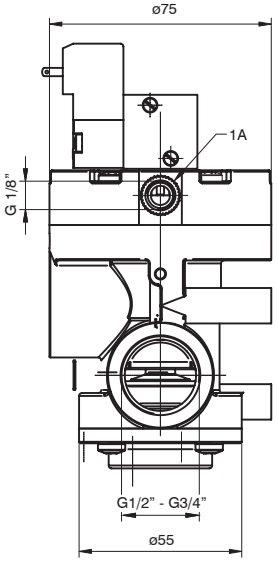
Weight 550 g

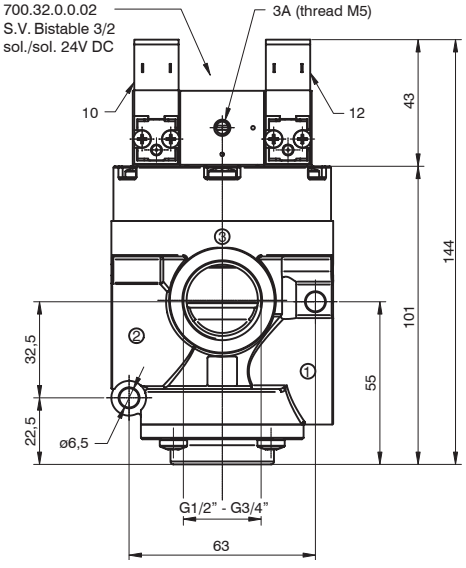
Bistable for vacuum - G3/4"

Coding: T773/V.32.0.1.BP

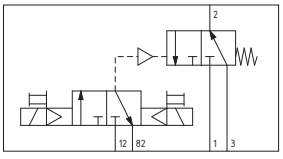
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G3/4"
Pilot ports size	G1/8"



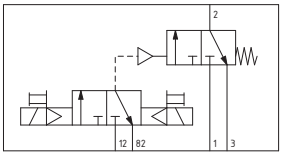




N.C.
Pump 1
Outlet port 2
Exhaust port 3



N.O.
Pump 3
Outlet port 2
Exhaust port 1



Weight 550 g

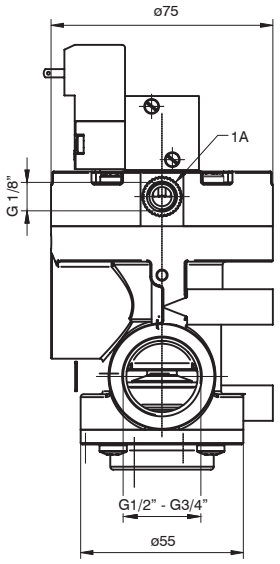
Bistable for vacuum with quick exhaust - G1/2"

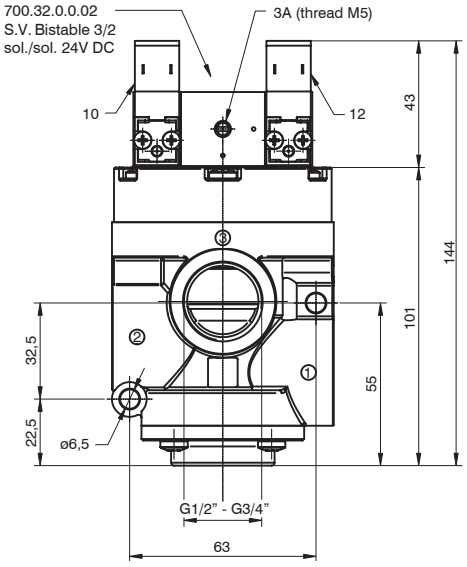
Coding: T772/VS.32.0.1.BP

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G1/2"
Pilot ports size	G1/8"

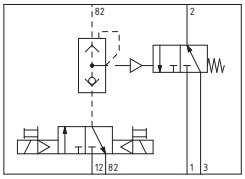


Weight 550 g

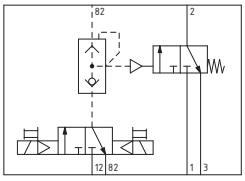




N.C.
Pump 1
Outlet port 2
Exhaust port 3



N.O.
Pump 3
Outlet port 2
Exhaust port 1



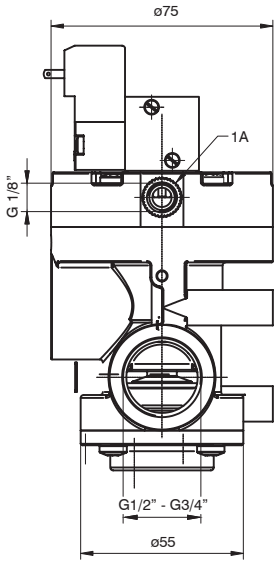
Bistable for vacuum with quick exhaust - G3/4"

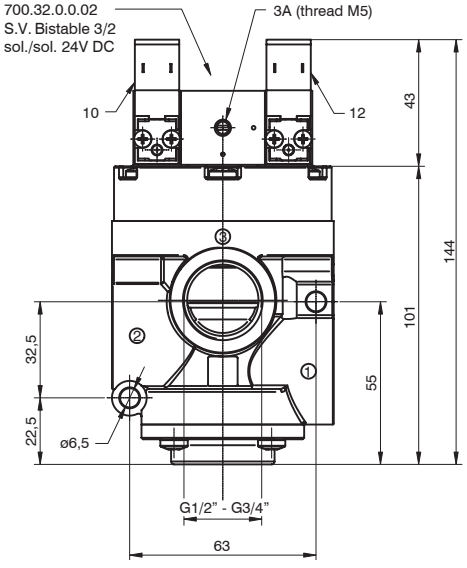
Coding: T773/VS.32.0.1.BP

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	15
Working ports size	G3/4"
Pilot ports size	G1/8"

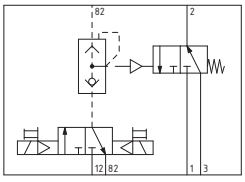


Weight 550 g

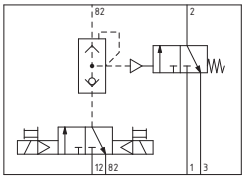




N.C.
Pump 1
Outlet port 2
Exhaust port 3



N.O.
Pump 3
Outlet port 2
Exhaust port 1



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series T771 - for compressed air and vacuum in technopolymer - G1"

The range of G1" pilot and solenoid operated poppet valves represents an evolution of the current popular Zama series and of the Series T772-T773 (G1/2"-3/4").
Also for this series the main feature is the technopolimer material used to mould most of its components.
The use of this materiel results in a versatile, lightweight and economical valve.
This series also has other technical and functional enhancements over the existing range. Firstly, the traditional piston lip seal has been replaced with a rolling diaphragm, thereby eliminating frictional wear and tear to this seal.
This series (with the exception of certain vacuum models) also features a seal, which separates port 3 from the piston head. The inclusion of this seal has enhanced the valve's performance and allows the valve to be used as normally open (a configuration not possible in the Zama series).
Solenoid operated valves (both internal and external pilot versions) are fitted with a quick exhaust unit, which reduces the return stroke operating time by 80%.
The bulk of the valves in this series use the MP type operator, the exception being internally piloted vacuum models, which use the MV operator. These operators differ from the M2 type in that they have self-tapping mounting screws for use in plastics.
Bistable versions are also available, both for air or for vacuum. These valves are fitted with a 3/2 sol-sol valve (instead of the standard pilot valve) fitted with two 15mm 24V Dc microvalves (N331.0A).
The ordering code are referring to the solenoid valves with mechanics "MP" or "MV" assembled.
Coils are not included and have to be ordered separately (series 300, Section 1, General Catalogue), with the exception of the bistable versions which already include 24V Dc Coils (N331.0A).
Coil c UL us homologated are available (see 300 Series).

Construction characteristics

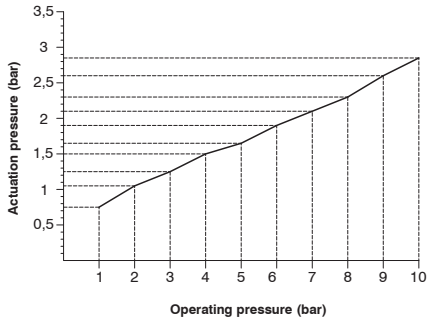
Body, operator and end cover	High impact resistant thermoplastic
Seals and poppets	NBR
Diaphragm	Oil resistant rubber (NBR)
Springs	AISI 302 stainless steel
Piston and shaft	Acetal resin

Use and maintenance

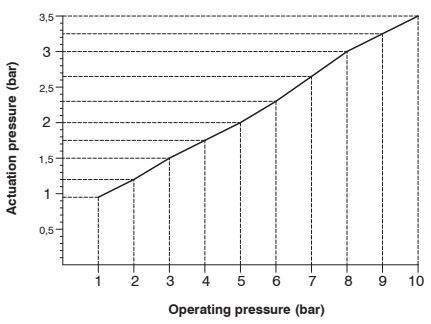
These valves have a mean life of 10 to 15 million cycles under normal operating conditions.
Lubrication is not required for good operation but we recommend good filtration to avoid dirty deposit causing malfunction.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
For these products, according to the construction technique and special application, is not required any maintenance with parts replacement.
When necessary it is sufficient to clean the internal parts.
When it is used the solenoid valves with internal pilot, either for air or vacuum, inlet flow rate must be equal or higher that the required consumption flow rate.
Otherwise is better choose the external pilot version.

MINIMUM PILOTING PRESSURE DIAGRAM (Valves for compressed air)
PNEUMATIC/SPRING AND EXTERNAL SOLENOID PILOT VERSION

Normally closed valve



Normally open valve

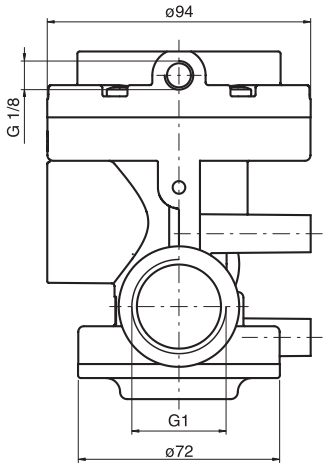


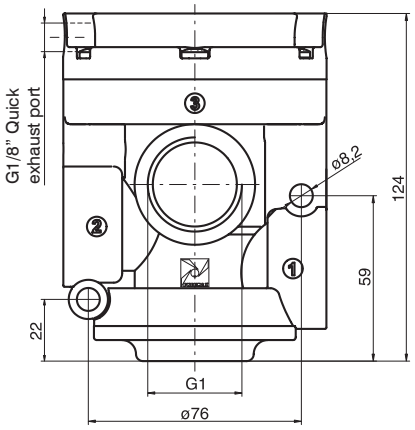
Pneumatic - Spring

Coding: T771.32.11.1

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

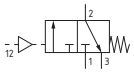




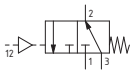


Weight 480 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



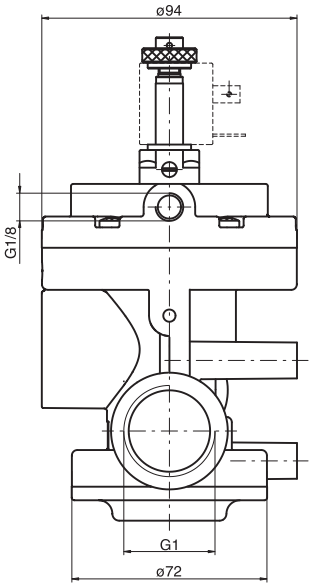
Solenoid-Spring-Internal pilot

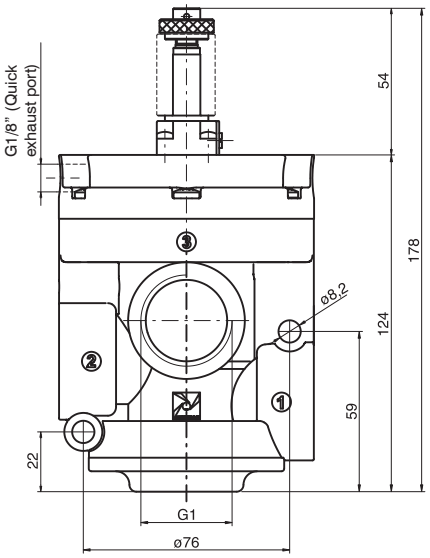
Coding: T771.32.0.Ⓕ.MP

Ⓕ	FUNCTION
	1AC = Normally Closed
	1AA = Normally Open

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

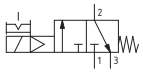




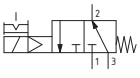


Weight 520 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



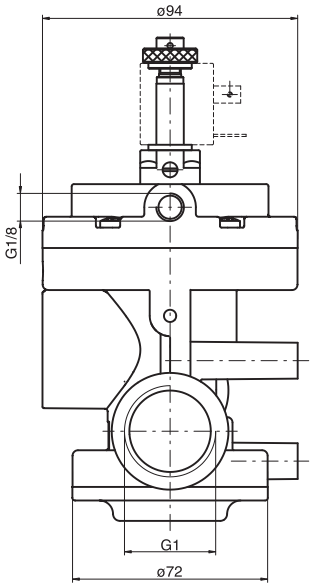
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

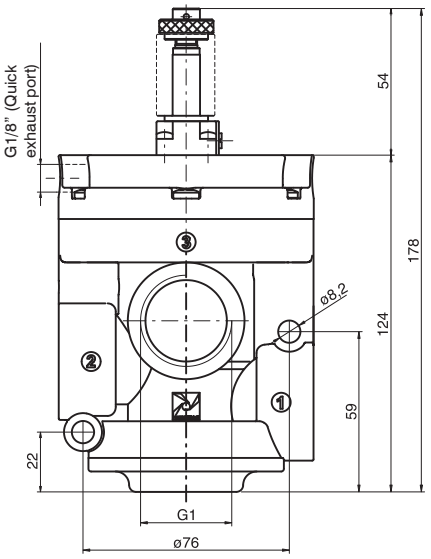
Solenoid-Spring-External pilot

Coding: T771.32.0.1.MP

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

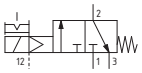




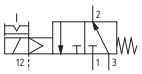


Weight 520 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



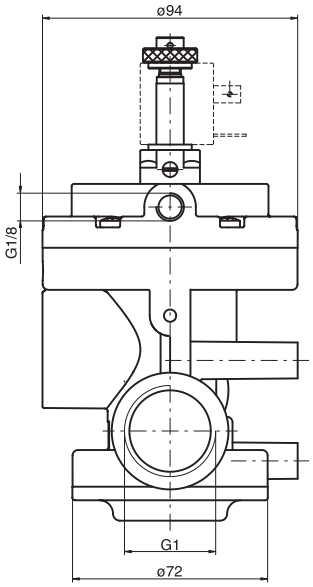
Solenoid-Spring - Internal pilot with quick exhaust

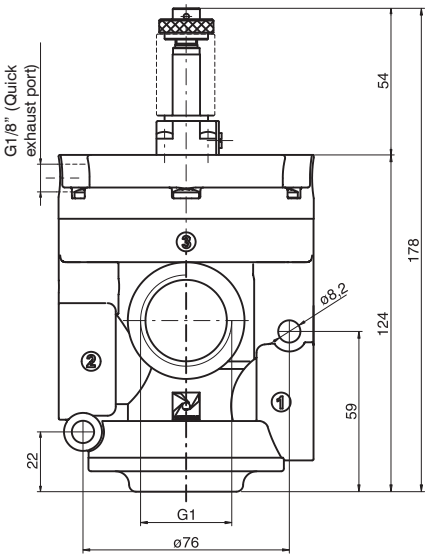
Coding: T771S.32.0.Ⓕ.MP

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

Ⓕ	FUNCTION
	1AC = Normally Closed
	1AA = Normally Open

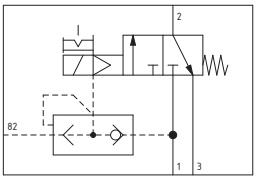




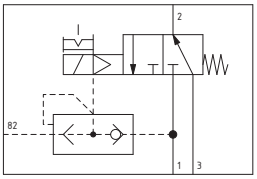


Weight 520 g

N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



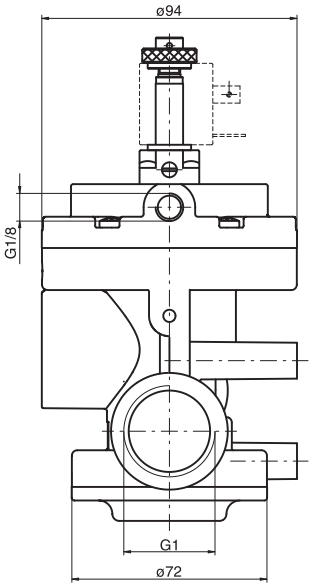
Solenoid-Spring - External pilot with quick exhaust

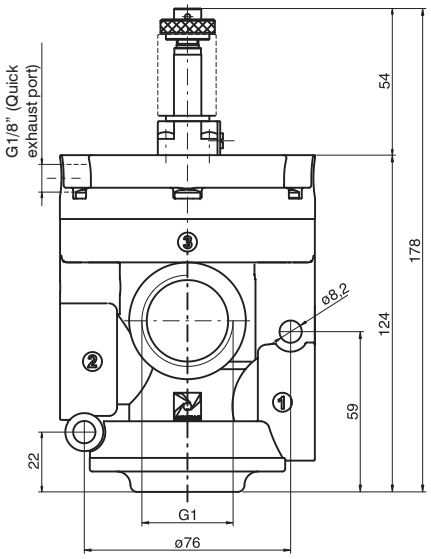
Coding: T771S.32.0.1.MP

Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	See diagram at general page
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4

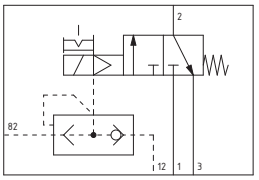


Weight 520 g

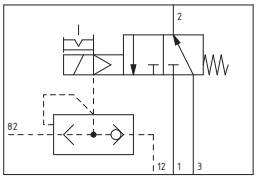




N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



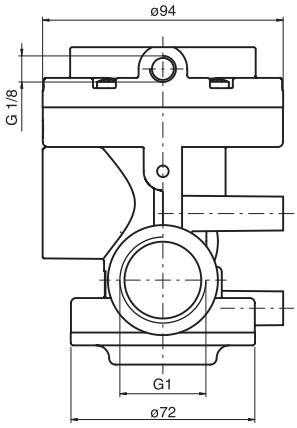
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

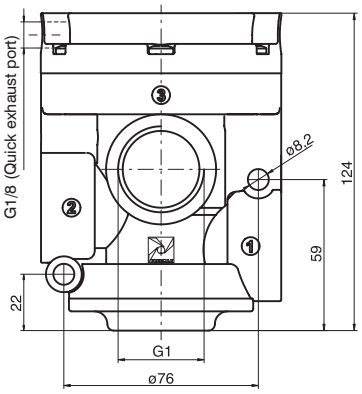
Pneumatic - Spring

Coding: T771/V.32.11.1

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 55 - N.O. = 19
Response time according to ISO 12238, deactivation time (ms)	N.C. = 320 - N.O. = 450

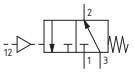




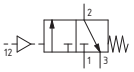


Weight 480 g

N.C.
Exhaust port 3
Outlet port 2
Pump 1



N.O.
Exhaust port 1
Outlet port 2
Pump 3



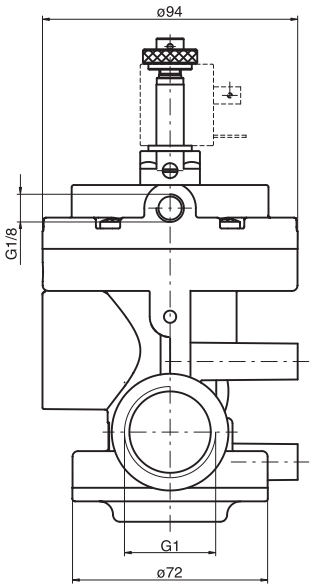
Solenoid-Spring-Internal pilot

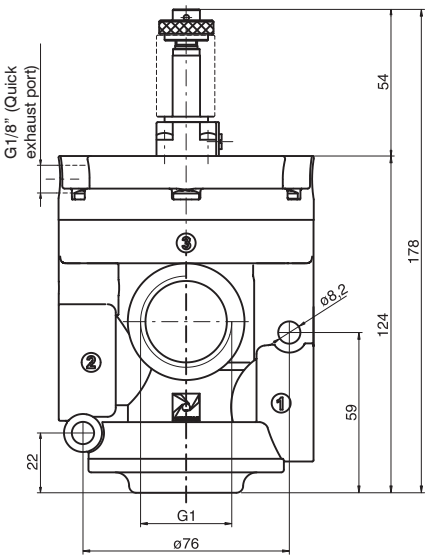
Coding: T771/V.32.0.Ⓕ.MV

Operational characteristics	
Fluid	Vacuum
Temperature °C	-5 ... +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	1AC = 100 - 1AA = 80
Response time according to ISO 12238, deactivation time (ms)	1AC = 60 - 1AA = 60

Ⓕ	FUNCTION
	1AC = Normally Closed
	1AA = Normally Open

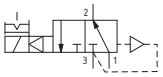




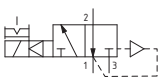


Weight 520 g

N.C.
Exhaust port 1
Outlet port 2
Pump 3



N.O.
Exhaust port 3
Outlet port 2
Pump 1

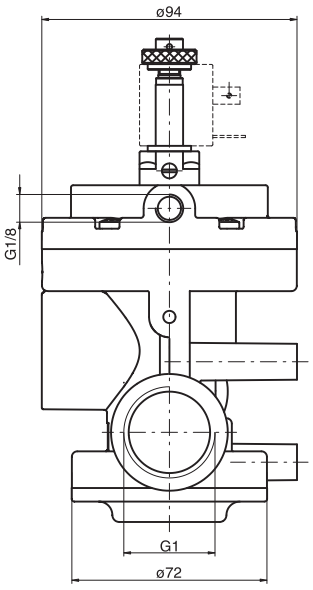


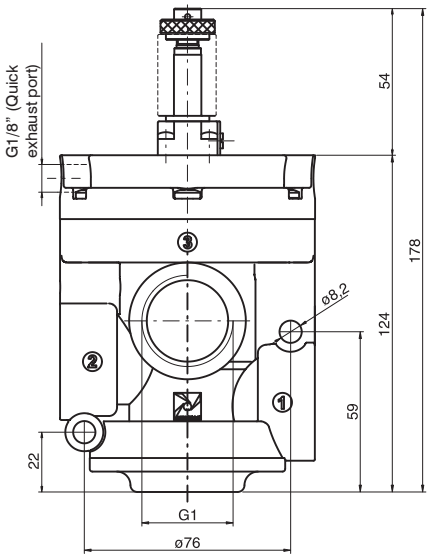
Solenoid-Spring-External pilot

Coding: T771/V.32.0.1.MP

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 50 - N.O. = 19
Response time according to ISO 12238, deactivation time (ms)	N.C. = 315 - N.O. = 450

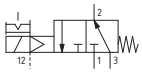




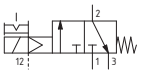


Weight 520 g

N.C.
Pump 1
Outlet port 2
Exhaust port 3



N.O.
Pump 3
Outlet port 2
Exhaust port 1

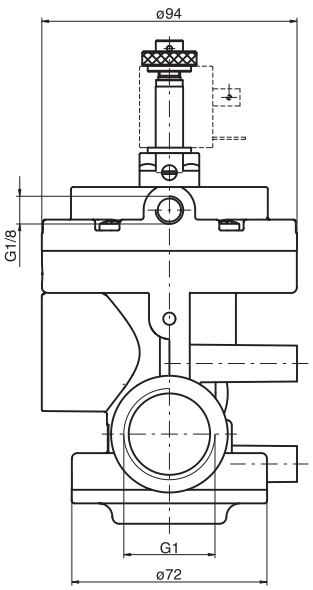


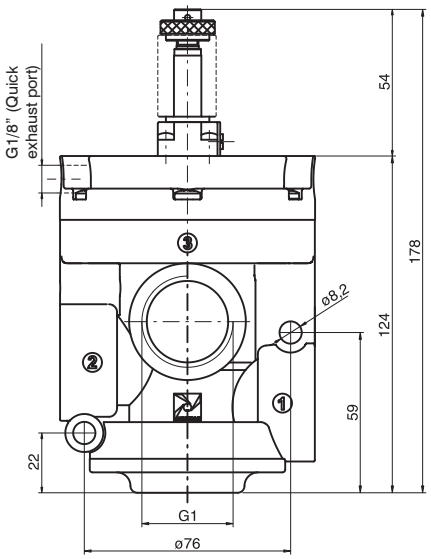
Solenoid-Spring - External pilot with quick exhaust

Coding: T771/VS.32.0.1.MP

Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Response time according to ISO 12238, activation time (ms)	N.C. = 50 - N.O. = 19
Response time according to ISO 12238, deactivation time (ms)	N.C. = 50 - N.O. = 70

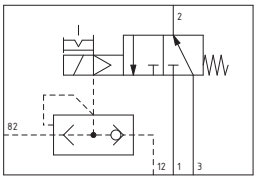




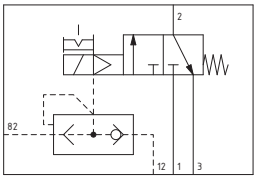


Weight 520 g

N.C.
Pump 1
Outlet port 2
Exhaust port 3



N.O.
Pump 3
Outlet port 2
Exhaust port 1



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

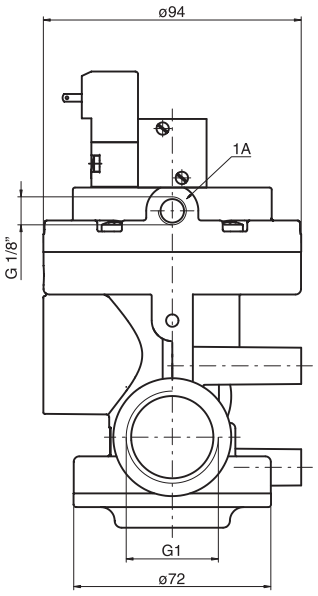
Bistable for compressed air - G1"

Coding: T771.32.0.1.BP

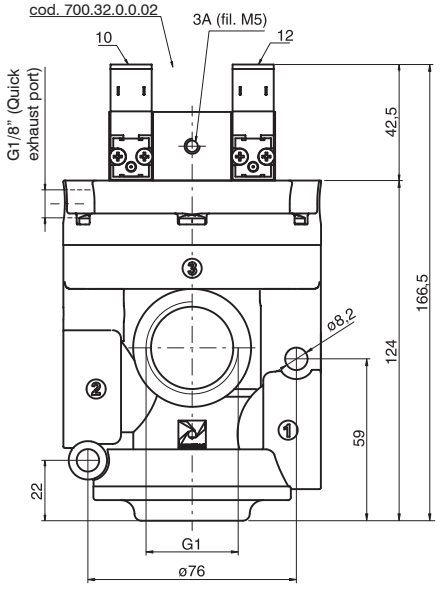
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



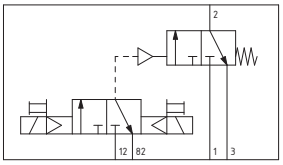
Weight 680 g



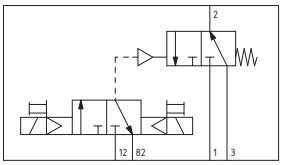
S.V. Bistable 3/2 sol./sol. 24V DC
cod. 700.32.0.0.02



N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



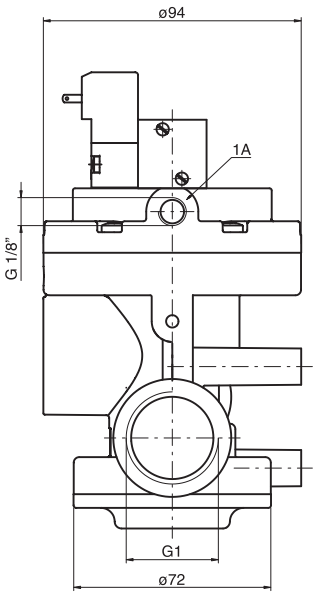
Bistable for compressed air with quick exhaust - G1"

Coding: T771S.32.0.1.BP

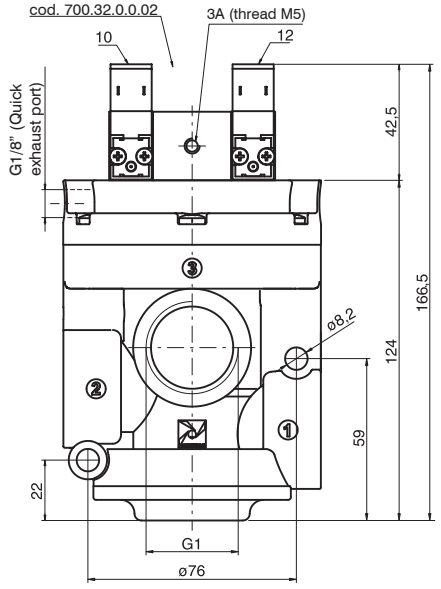
Operational characteristics	
Fluid	filtered and lubricated air or non
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	12500
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"
Compressed air, purity class according to ISO 8573-1:2010	7:4:4



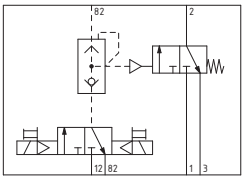
Weight 680 g



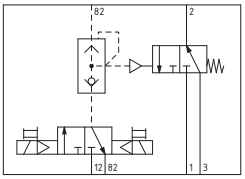
S.V. Bistable 3/2 sol./sol. 24V DC
cod. 700.32.0.0.02



N.C.
Inlet port 1
Outlet port 2
Exhaust port 3



N.O.
Inlet port 3
Outlet port 2
Exhaust port 1



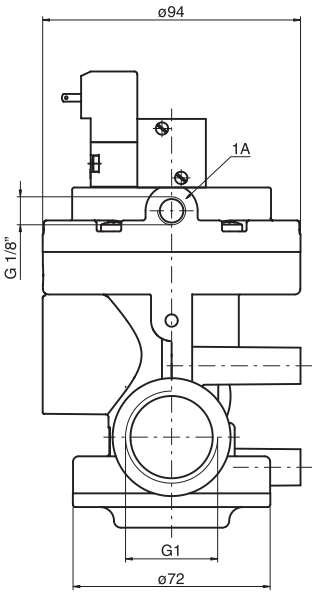
Bistable for vacuum - G1"

Coding: T771/V.32.0.1.BP

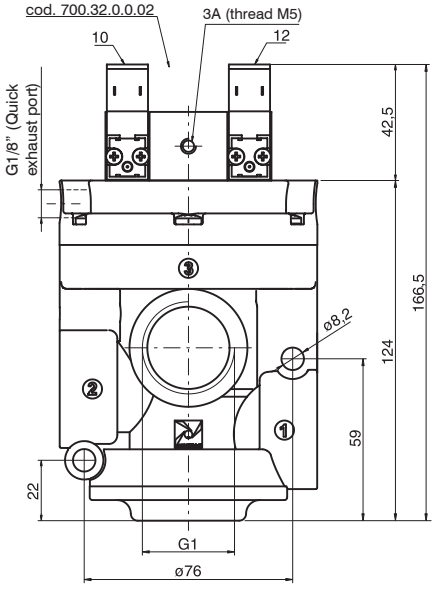
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"



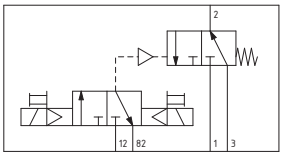
Weight 680 g



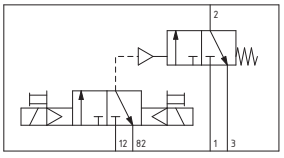
S.V. Bistable 3/2 sol./sol. 24V DC
cod. 700.32.0.0.02



N.C.
Pump 1
Outlet port 2
Exhaust port 3



N.O.
Pump 3
Outlet port 2
Exhaust port 1



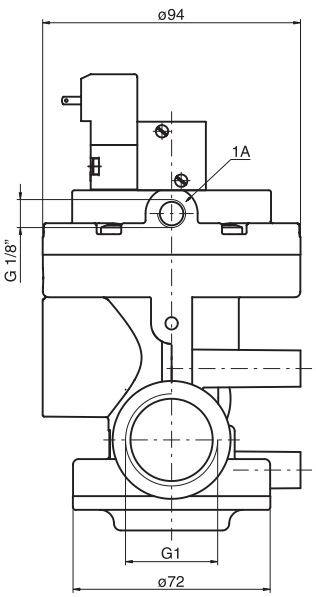
Bistable for vacuum with quick exhaust - G1"

Coding: T771/VS.32.0.1.BP

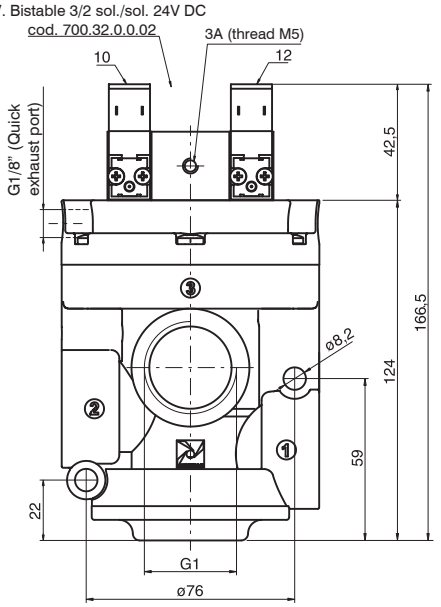
Operational characteristics	
Fluid	Vacuum
Minimum pilot pressure (bar)	2,5
Temperature °C	-5 ... +50
Orifice size (mm)	25
Working ports size	G1"
Pilot ports size	G1/8"



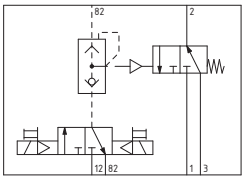
Weight 680 g



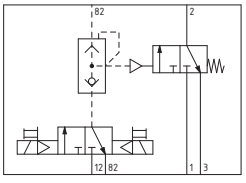
S.V. Bistable 3/2 sol./sol. 24V DC
cod. 700.32.0.0.02



N.C.
Pump 1
Outlet port 2
Exhaust port 3



N.O.
Pump 3
Outlet port 2
Exhaust port 1

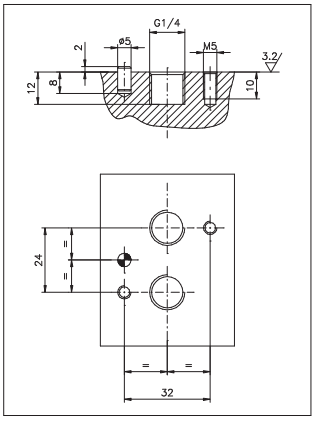


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 514/N

The **514**/**N** Solenoid valves, are 2 stage valves actuated electro-pneumatically. A series 300 directly operated solenoid valve actuates pneumatically the principal power distributor.
Everything is well integrated in a practical configuration that also permits applications where there is limited space. Used primarily to operate rotary actuators and wherever there is a **NAMUR** standard installation plan.
The pilot air is normally taken from the inlet port (autofeed) and the only actuating signal is electric.
The range of the solenoid valves, as far as dimensions and mechanical construction, is similar to series 200. We have therefore solenoid valves G 1/4" with identical pneumatic characteristics that are, however, actuated electrically. They have a balanced spool, insentive to presence or absence of pressure. They are constructed in 3 and 5 way with 1 solenoid (monostable) or 2 solenoids (bistable).

**"NAMUR" interface dimensions:
according to standard (VDI/VDE 3847 July 2003)**



Construction characteristics

Body	Aluminium
Spacers	Technopolymer
Seals	NBR
Springs	Spring steel
Operators	Aluminium
Spools	Nickel plated steel
Screws	Zinc plated steel

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Please ensure that the valve is being used according with the manufacturers specification, such as air pressure and temperature.
The exhaust port of the distributor has to be protected in a dusty and dirty environment.
Repair kits including the spool complete with seals are available for overhauling the valves.
However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Solenoid-Spring

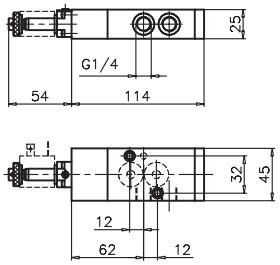
Coding: 514/N.Ⓣ.0.1.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1030
Orifice size (mm)	7
Working ports size	G 1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

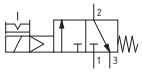
3/2 ways





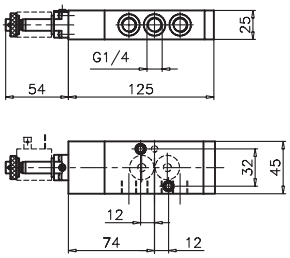
Weight 390 g
Minimum working pressure 2,5 bar

514/N.32.0.1.M2



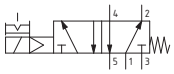
5/2 ways





Weight 450 g
Minimum working pressure 2,5 bar

514/N.52.0.1.M2



Solenoid-Differential

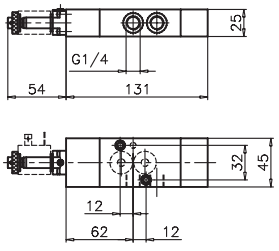
Coding: 514/N.Ⓣ.0.12.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1030
Orifice size (mm)	7
Working ports size	G 1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

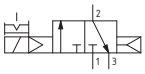
3/2 ways





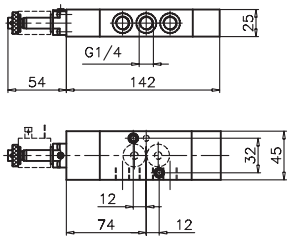
Weight 390 g
Minimum working pressure 2,5 bar

514/N.32.0.12.M2



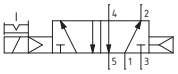
5/2 ways





Weight 450 g
Minimum working pressure 2,5 bar

514/N.52.0.12.M2



Solenoid-Solenoid

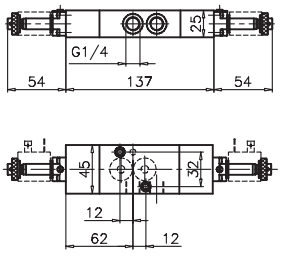
Coding: 514/N.Ⓣ.0.0.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1030
Orifice size (mm)	7
Working ports size	G 1/4"

Ⓣ	TYPE
	32 = 3 ways, 2 positions
	52 = 5 ways, 2 positions

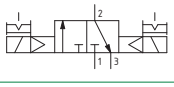
3/2 ways





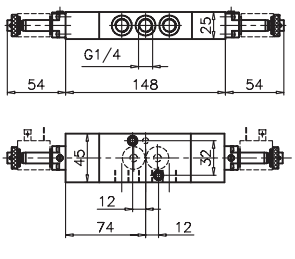
Weight 390 g
Minimum working pressure 2,5 bar

514/N.32.0.0.M2



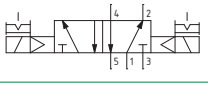
5/2 ways





Weight 450 g
Minimum working pressure 2,5 bar

514/N.52.0.0.M2



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Series T514

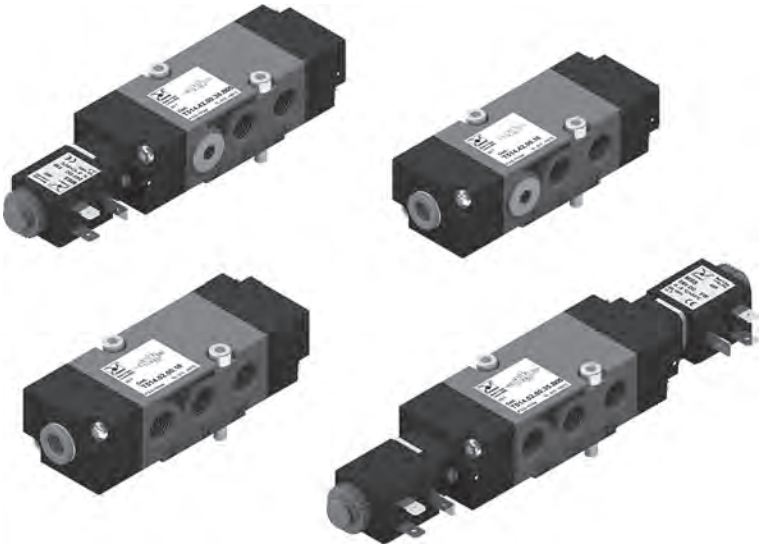
TECNO-NAMUR are 5/2 and 4/2 valves are solenoid valves pneumatically or electrically actuated. They are used in industrial automation applications or whenever a **NAMUR** mounting plane is available.
Is available in 5/2, 4/2 and all-purposes versions. The final user can switch from one version to another by simply changing interface plate and adding/removing a plug.
TECNO-NAMUR valves are produced using the most up to date technical features, granting flexible design and elevated characteristics over standard products. Superior performance is further enhanced by the use of innovative materials of construction.

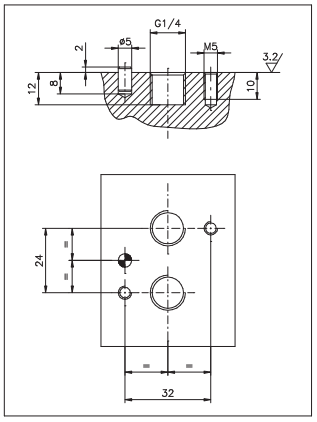
Construction characteristics

Body	Technopolymer
Spacers	Technopolymer
Seals	Nitrile rubber
Springs	Stainless Steel
Operators	Technopolymer
Spools	Nickel plated steel
Screws	Zinc plated steel

Note:
"Although accurately described, the 4/2 valve actually functions as a 3/2 normally closed valve and should be used as such."

"NAMUR" interface dimensions:
according to standard (VDI/VDE 3847 July 2003)





Pneumatic - Differential

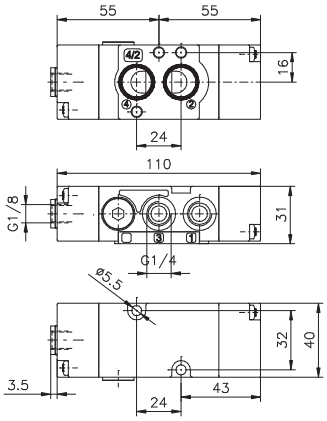
Coding: T514.Ⓣ.00.16

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4"

Ⓣ	TYPE
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions

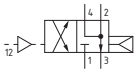
4/2 ways





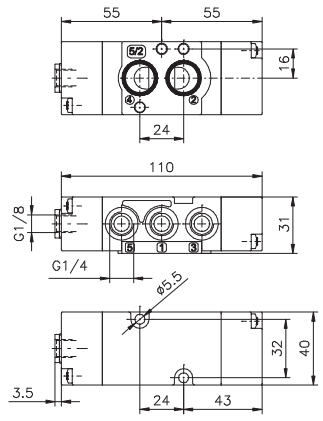
Weight 140 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

T514.42.00.16



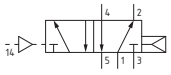
5/2 ways





Weight 140 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

T514.52.00.16



Pneumatic-Pneumatic

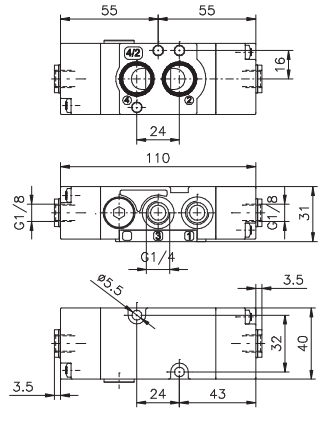
Coding: T514.Ⓣ.00.18

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4"

Ⓣ	TYPE
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions

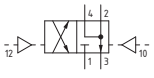
4/2 ways





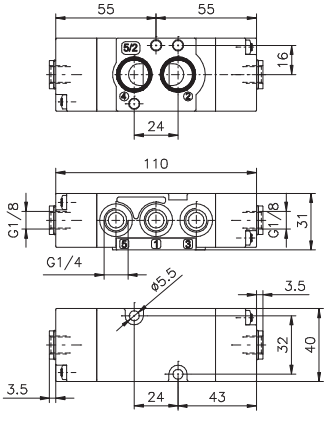
Weight 140 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

T514.42.00.18



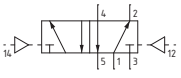
5/2 ways





Weight 140 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

T514.52.00.18



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Pneumatic - Spring

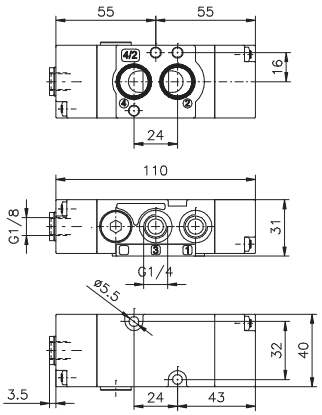
Coding: T514.Ⓣ.00.19

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4"

	TYPE
Ⓣ	**42** = 4 ways, 2 positions
	52 = 5 ways, 2 positions

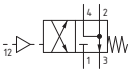
4/2 ways





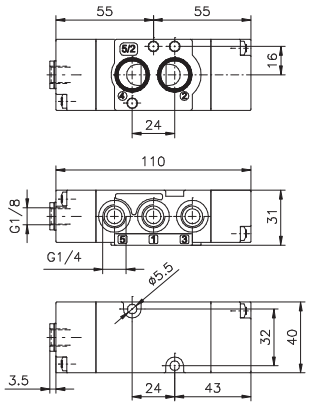
Weight 140 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

T514.42.00.19



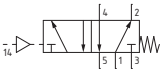
5/2 ways





Weight 140 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

T514.52.00.19



Solenoid-Solenoid

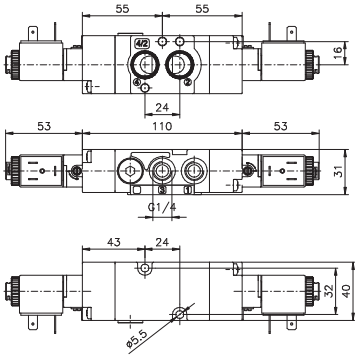
Coding: T514.Ⓣ.00.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4"

	TYPE
Ⓣ	**42** = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 VDC
	B05 = 24 VDC
	B09 = 24 VDC (2W)
	B56 = 24V (50-60 Hz)
	B57 = 110V (50-60 Hz)
	B58 = 230 V (50-60 Hz)

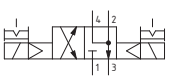
4/2 ways





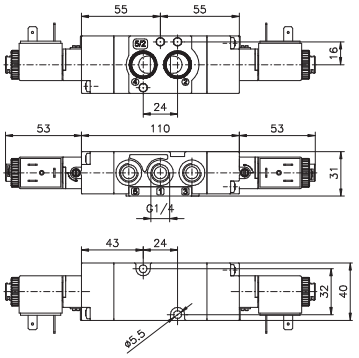
Weight 250 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

T514.42.00.35.Ⓥ



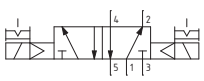
5/2 ways





Weight 250 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

T514.52.00.35.Ⓥ



Solenoid-Differential

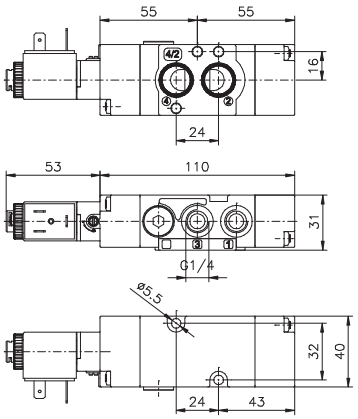
Coding: T514.Ⓣ.00.36.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4"

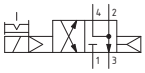
Ⓣ	TYPE
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 VDC
	B05 = 24 VDC
	B09 = 24 VDC (2W)
	B56 = 24V (50-60 Hz)
	B57 = 110V (50-60 Hz)
	B58 = 230 V (50-60 Hz)

4/2 ways





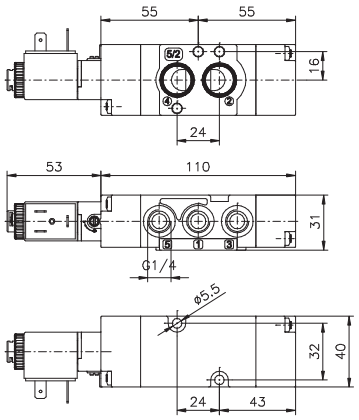
Weight 200 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m



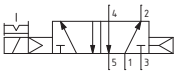
T514.42.00.36.Ⓥ

5/2 ways





Weight 200 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m



T514.52.00.36.Ⓥ

Solenoid-Spring

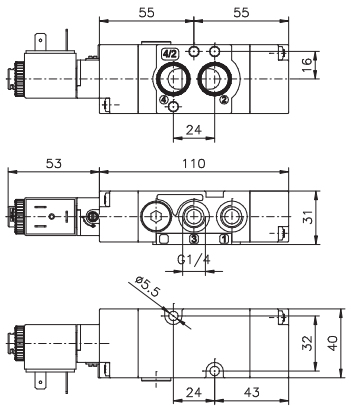
Coding: T514.Ⓣ.00.39.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4"

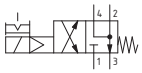
Ⓣ	TYPE
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	B04 = 12 VDC
	B05 = 24 VDC
	B09 = 24 VDC (2W)
	B56 = 24V (50-60 Hz)
	B57 = 110V (50-60 Hz)
	B58 = 230 V (50-60 Hz)

4/2 ways





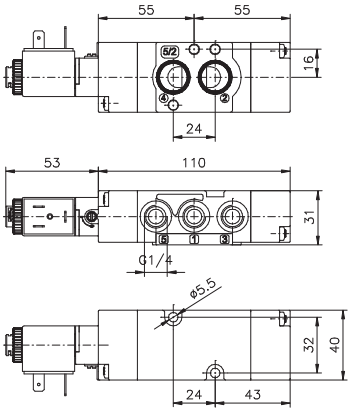
Weight 200 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m



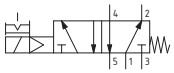
T514.42.00.39.Ⓥ

5/2 ways





Weight 200 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m



T514.52.00.39.Ⓥ

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Universal kit

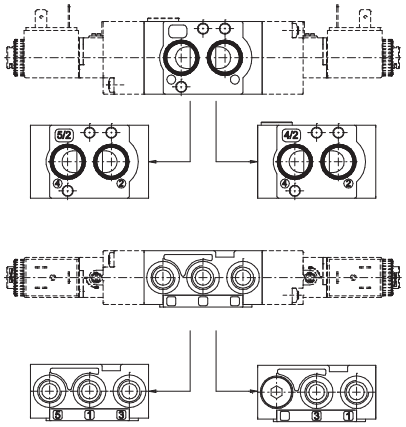
Coding: T514.92.00.Ⓥ.Ⓣ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4"

Ⓥ	VERSION
	16 = Pneumatic-Differential
	18 = Pneumatic - Pneumatic
	19 = Pneumatic - Spring
	35 = Solenoid - Solenoid
	36 = Solenoid - Differential
	39 = Solenoid - Spring

Ⓣ	VOLTAGE
	B04 = 12 VDC
	B05 = 24 VDC
	B09 = 24 VDC (2W)
	B56 = 24V (50-60 Hz)
	B57 = 110V (50-60 Hz)
	B58 = 230 V (50-60 Hz)







Weight 170 g
Minimum working pressure 2,5 bar
Maximum fitting torque 9 N/m

Series 514 High Performance

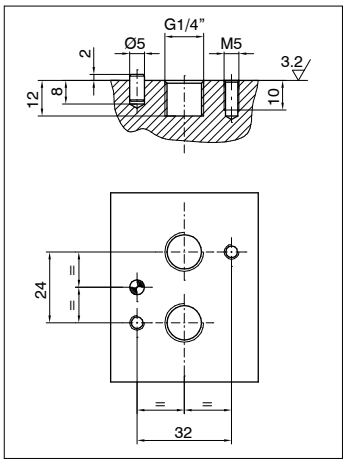
NAMUR valves are 5/2, 4/2 and 3/2 valves and electrovalves, piloted electrically or pneumatically, utilised primarily to operate rotary actuators and wherever there is a NAMUR standard installation plan.
The product is classified for use in potentially explosive atmospheres (Directive 2014/34/EU).
NAMUR valves have been developed using the latest, technical design solutions which guarantee flexibility and an increased flow rate capacity exceeding that of traditional, spool valves.
Innovative materials guarantee high performances also in critical environment conditions.
Available NPT and BSPT connections.
The solenoid valves are available with protection classes for zones 2-22, 1-21 solenoids Ex ec, Ex mb, Ex ia, international approvals IECEx, FM and CSA.



Construction characteristics

Body	Aluminium
Spacers	Technopolymer
Seals	Nitrile rubber
Springs	Stainless Steel
Operators	Technopolymer
Spools	Steel
Screws	Zinc coated Steel / Stainless steel

"NAMUR" interface dimensions: according to standard (VDI/VDE 3847 July 2003)



Certifications available

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Order codes

51 4 . 52 . 00 . 39 . B04

Model
: Standard valve
X : ATEX valve (-20°C ... +40°C) - only with solenoid coils "B##","C##" e "X##" (-30°C ... +50°C) - only with solenoid coils "MHC","MH#"

Connections
4 : G1/4" - supplied with plate
6 : 1/4" NPT - supplied with plate

Type
32: 3 ways, 2 positions
42: 4 ways, 2 positions
52: 5 ways, 2 positions
92: Universal kit version (4/2 and 5/2)
93: Universal kit version (3/2 and 5/2)

Version
16: Pneumatic-Differential
18: Pneumatic-Pneumatic
19: Pneumatic-Spring
35: Solenoid-Solenoid
36: Solenoid-Differential
39: Solenoid-Spring

Voltages	Valve marking with ATEX solenoid coil	Protection method of the ATEX solenoid coil
B00: Ø10 stem without solenoid coil to be used with the following solenoid coils	Ex : CE UKCA Ex II 2G Ex h IIC T5 Gb X CE UKCA Ex II 2D Ex h IIIC T96°C Db X	/
B04: 12 V DC - for all models **B05**: 24 V DC - for all models **B09**: 24 V DC (2W) - only for standard model **B56**: 24 V AC (50-60 Hz) - for all models **B57**: 110 V AC (50-60 Hz) - for all models **B58**: 230 V AC (50-60 Hz) - for all models **C04**: 12 V DC - for all models **C05**: 24 V DC - for all models **C09**: 24 V DC (2W) - only for standard model **C56**: 24 V AC (50-60 Hz) - for all models **C57**: 110 V AC (50-60 Hz) - for all models **C58**: 230 V AC (50-60 Hz) - for all models	Ex : CE UKCA Ex II 3G Ex h IIC T4 Gc X CE UKCA Ex II 3D Ex h IIIC T120°C Dc X IP65	Ex ec Ex tc
F00: Ø9 stem without solenoid coil to be used with the following solenoid coils	Ex : CE UKCA Ex II 2G Ex h IIC T5 Gb X CE UKCA Ex II 2D Ex h IIIC T96°C Db X	/
X05: 24 V DC - only for ATEX model **X56**: 24 V AC (50-60 Hz) - only for ATEX model **X57**: 110 V AC (50-60 Hz) - only for ATEX model **X58**: 230 V AC (50-60 Hz) - only for ATEX model	Ex : CE UKCA Ex II 2G Ex h IIC T4 Gb X CE UKCA Ex II 2D Ex h IIIC T135°C Db X IP65	Ex mb
MHC: 24 V DC T6 - only for ATEX model complete with connector	Ex : CE UKCA Ex II 2G Ex h IIB/IIC T4 Gb X CE UKCA Ex II 2D Ex h IIIC T130°C Db X IP65	Ex ia
MH4: 24 V DC T4 - only for ATEX model **MH6**: 24 V DC T6 - only for ATEX model	Ex : CE UKCA Ex II 2G Ex h IIB/IIC T4 Gb X	Ex ia
Electrical specifications for intrinsically safety Group IIC Ui max= 28 V, Ii max= 115 mA, Pi max= 1,6 W Group IIB Ui max= 32 V, Ii max= 195 mA, Pi max= 1,6 W		

Voltages	Solenoid coil marking
L04: 12 V DC - only for FM APPROVED model **L05**: 24 V DC - only for FM APPROVED model **L39**: 120 V AC - only for FM APPROVED model **L41**: 240 V AC - only for FM APPROVED model	FM C US APPROVED
FM APPROVED valve (-20°C ... +50°C) - only with solenoid coils "L##"	

Temperature options
: Standard valve (-10°C ... +50°C)
LT : Low temperature (-30°C ... +50°C)

Example: 514.52.00.39.B04: Standard valve, G1/4" connections supplied with plate, solenoid-spring 5 ways, 12 VDC solenoid coil

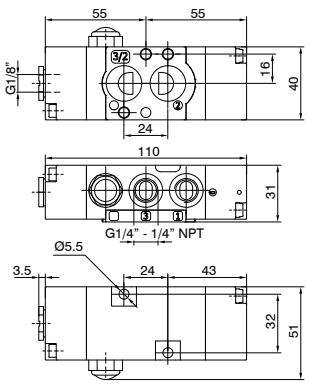
Pneumatic-Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

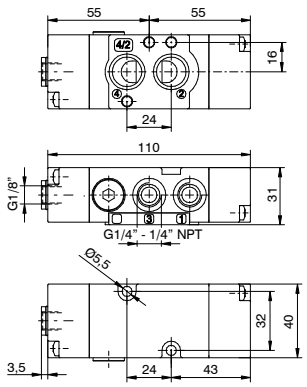
CODING: Ⓜ51Ⓒ.Ⓣ.00.16Ⓞ

Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	4 = G1/4"
	6 = 1/4" NPT
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

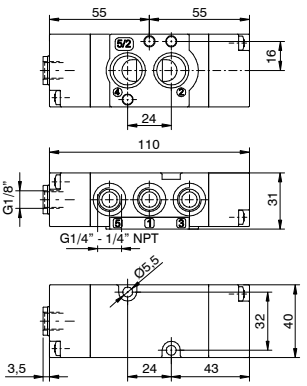
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

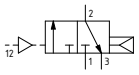
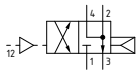
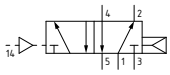
Ⓜ51Ⓒ.32.00.16Ⓞ Weight 240 g

Ⓜ51Ⓒ.42.00.16Ⓞ Weight 240 g

Ⓜ51Ⓒ.52.00.16Ⓞ Weight 235 g

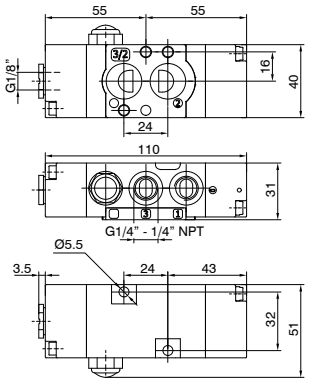
Pneumatic-Pneumatic

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

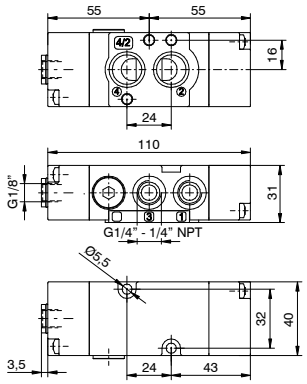
CODING: Ⓜ51Ⓒ.Ⓣ.00.18Ⓞ

Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	4 = G1/4"
	6 = 1/4" NPT
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

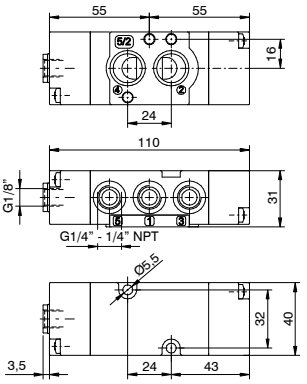
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

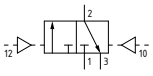
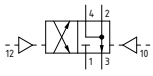
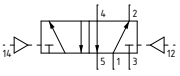
Ⓜ51Ⓒ.32.00.18Ⓞ Weight 240 g

Ⓜ51Ⓒ.42.00.18Ⓞ Weight 240 g

Ⓜ51Ⓒ.52.00.18Ⓞ Weight 235 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

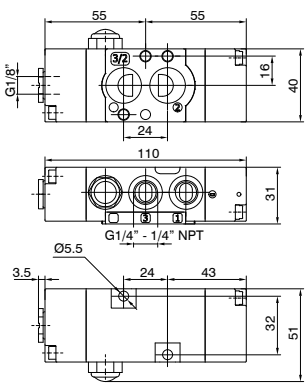
Pneumatic-Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

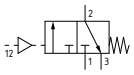
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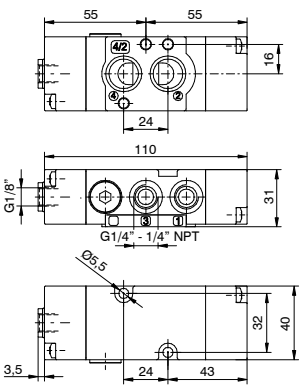
Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	4 = G1/4"
	6 = 1/4" NPT
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

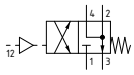



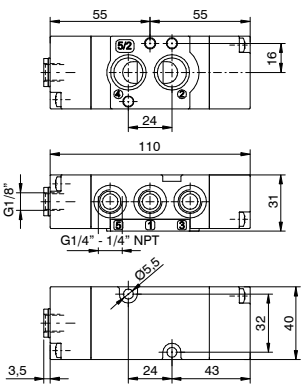
Ⓜ51Ⓒ.32.00.19Ⓞ Weight 240 g



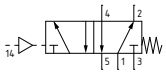



Ⓜ51Ⓒ.42.00.19Ⓞ Weight 240 g



Ⓜ51Ⓒ.52.00.19Ⓞ Weight 235 g



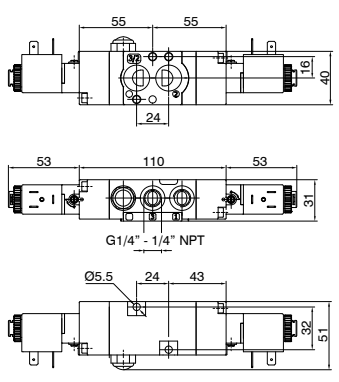
Solenoid-Solenoid

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

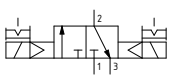
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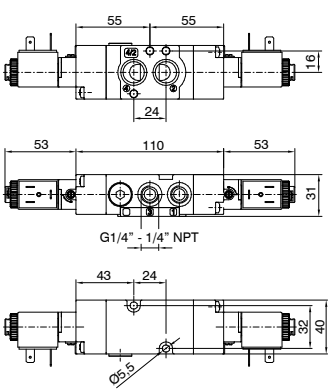
Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	4 = G1/4"
	6 = 1/4" NPT
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	SEE ORDER CODES PAGE
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

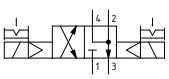



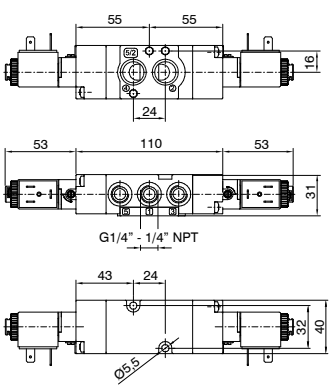
Ⓜ51Ⓒ.32.00.35.ⓋⓄ Weight 410 g



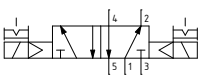



Ⓜ51Ⓒ.42.00.35.ⓋⓄ Weight 410 g



Ⓜ51Ⓒ.52.00.35.ⓋⓄ Weight 405 g



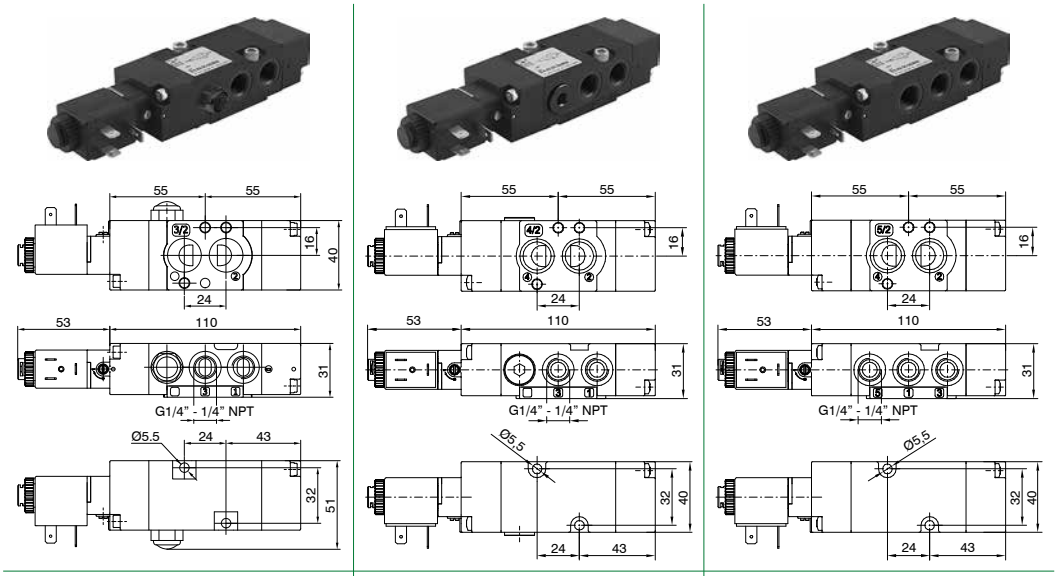
Solenoid-Differential

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

CODING: Ⓜ51Ⓒ.Ⓣ.00.36.ⓋⓄ

Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	4 = G1/4"
	6 = 1/4" NPT
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	SEE ORDER CODES PAGE
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

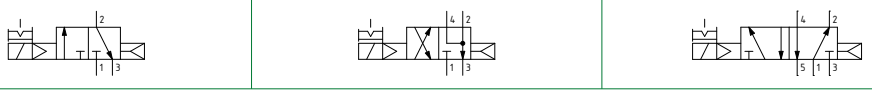
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m



Ⓜ51Ⓒ.32.00.36.ⓋⓄ Weight 330 g

Ⓜ51Ⓒ.42.00.36.ⓋⓄ Weight 330 g

Ⓜ51Ⓒ.52.00.36.ⓋⓄ Weight 325 g



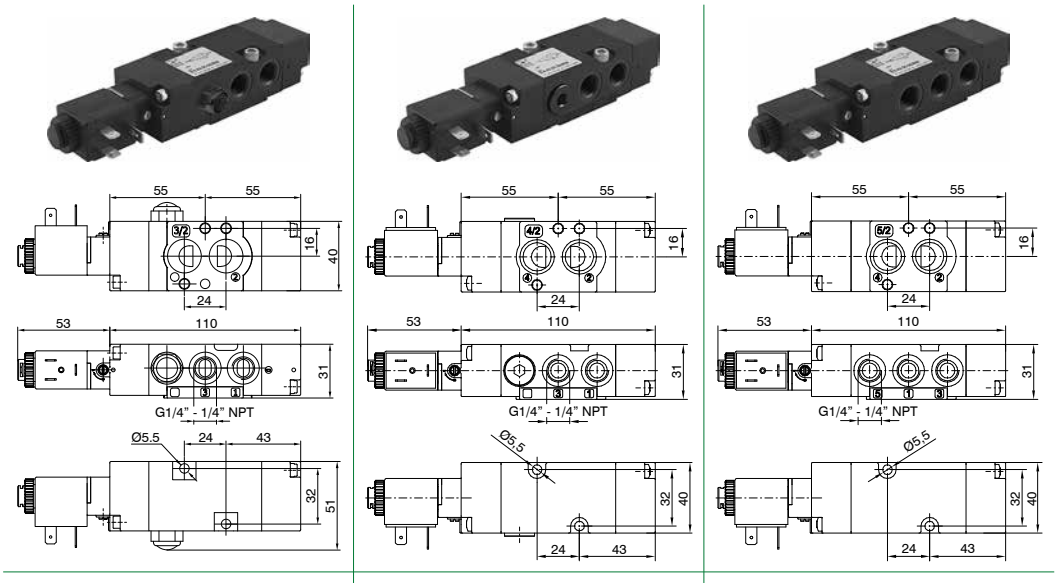
Solenoid-Spring

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

CODING: Ⓜ51Ⓒ.Ⓣ.00.39.ⓋⓄ

Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	4 = G1/4"
	6 = 1/4" NPT
Ⓣ	TYPE
	32 = 3 ways, 2 positions
	42 = 4 ways, 2 positions
	52 = 5 ways, 2 positions
Ⓥ	VOLTAGE
	SEE ORDER CODES PAGE
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

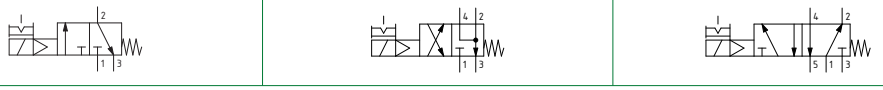
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m



Ⓜ51Ⓒ.32.00.39.ⓋⓄ Weight 330 g

Ⓜ51Ⓒ.42.00.39.ⓋⓄ Weight 330 g

Ⓜ51Ⓒ.52.00.39.ⓋⓄ Weight 325 g



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Universal kit version (4/2 and 5/2)

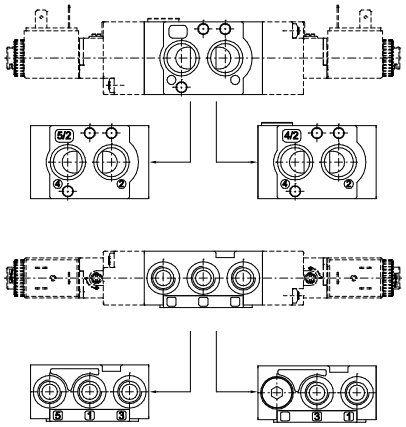
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

CODING: Ⓜ51Ⓒ.92.00.Ⓥ.ⓉⓄ

Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	4 = G1/4"
	6 = 1/4" NPT
Ⓥ	VERSION
	16 = Pneumatic-Differential
	18 = Pneumatic - Pneumatic
	19 = Pneumatic - Spring
	35 = Solenoid - Solenoid
	36 = Solenoid - Differential
	39 = Solenoid - Spring
Ⓣ	VOLTAGE
	SEE ORDER CODES PAGE
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m
To change a 5/2 valve into a 4/2: simply replace the bottom plate with the one included in the universal kit (cod. 51Ⓒ.92...) and by plugging port 5





Ⓜ51Ⓒ.92.00.Ⓥ.ⓉⓄ Weight 405 g





Universal kit version (3/2 and 5/2)

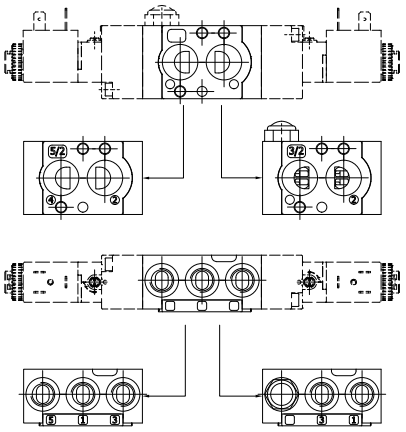
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

CODING: Ⓜ51Ⓒ.93.00.Ⓥ.ⓉⓄ

Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	4 = G1/4"
	6 = 1/4" NPT
Ⓥ	VERSION
	16 = Pneumatic-Differential
	18 = Pneumatic - Pneumatic
	19 = Pneumatic - Spring
	35 = Solenoid - Solenoid
	36 = Solenoid - Differential
	39 = Solenoid - Spring
Ⓣ	VOLTAGE
	SEE ORDER CODES PAGE
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE

Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m
To change a 5/2 valve into a 3/2: simply replace the bottom plate with the one included in the universal kit (cod. 51Ⓒ.93...) and by applying a silencer to connection 5





Ⓜ51Ⓒ.93.00.Ⓥ.ⓉⓄ Weight 405 g





Series 515 High Performance

NAMUR valves are 5/2 valves and electrovalves, piloted electrically or pneumatically, utilised primarily to operate rotary actuators and wherever there is a **NAMUR** standard installation plan.
The product is classified for use in potentially explosive atmospheres (Directive 2014/34/EU).
NAMUR valves have been developed using the latest, technical design solutions which guarantee flexibility and an increased flow rate capacity exceeding that of traditional, spool valves.
In addition, they have been produced with innovative materials which guarantee increased performance.
IMPORTANT:

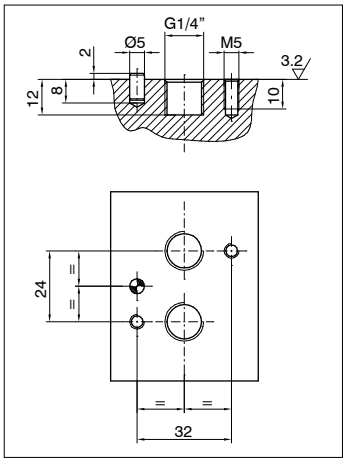
Differs from version 514 because it is supplied without a plate.



Construction characteristics

Body	Aluminium
Spacers	Technopolymer
Seals	Nitrile rubber
Springs	Stainless Steel
Operators	Technopolymer
Spools	Steel
Screws	Zinc coated Steel / Stainless steel

**"NAMUR" interface dimensions:
according to standard (VDI/VDE 3847 July 2003)**



Certifications available

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Order codes

□ 51 5 . 52 . 00 . 39 . B04 □

Model
: Standard valve
X : ATEX valve (-20°C ... +40°C) - only with solenoid coils "B##","C##" e "X##" (-30°C ... +50°C) - only with solenoid coils "MHC","MH#"

Connections
5 : G1/4" - supplied without plate
7 : 1/4" NPT - supplied without plate

Version
16: Pneumatic-Differential
18: Pneumatic-Pneumatic
19: Pneumatic-Spring
35: Solenoid-Solenoid
36: Solenoid-Differential
39: Solenoid-Spring

Voltages	Valve marking with ATEX solenoid coil	Protection method of the ATEX solenoid coil
B00: Ø10 stem without solenoid coil to be used with the following solenoid coils	Ex : CE UKCA II 2G Ex h IIC T5 Gb X CE UKCA II 2D Ex h IIIC T96°C Db X	/
B04: 12 V DC - for all models **B05**: 24 V DC - for all models **B09**: 24 V DC (2W) - only for standard model **B56**: 24 V AC (50-60 Hz) - for all models **B57**: 110 V AC (50-60 Hz) - for all models **B58**: 230 V AC (50-60 Hz) - for all models **C04**: 12 V DC - for all models **C05**: 24 V DC - for all models **C09**: 24 V DC (2W) - only for standard model **C56**: 24 V AC (50-60 Hz) - for all models **C57**: 110 V AC (50-60 Hz) - for all models **C58**: 230 V AC (50-60 Hz) - for all models	Ex : CE UKCA II 3G Ex h IIC T4 Gc X CE UKCA II 3D Ex h IIIC T120°C Dc X IP65	Ex ec Ex tc
F00: Ø9 stem without solenoid coil to be used with the following solenoid coils	Ex : CE UKCA II 2G Ex h IIC T5 Gb X CE UKCA II 2D Ex h IIIC T96°C Db X	/
X05: 24 V DC - only for ATEX model **X56**: 24 V AC (50-60 Hz) - only for ATEX model **X57**: 110 V AC (50-60 Hz) - only for ATEX model **X58**: 230 V AC (50-60 Hz) - only for ATEX model	Ex : CE UKCA II 2G Ex h IIC T4 Gb X CE UKCA II 2D Ex h IIIC T135°C Db X IP65	Ex mb
MHC: 24 V DC T6 - only for ATEX model complete with connector	Ex : CE UKCA II 2G Ex h IIB/IIC T4 Gb X CE UKCA II 2D Ex h IIIC T130°C Db X IP65	Ex ia
MH4: 24 V DC T4 - only for ATEX model **MH6**: 24 V DC T6 - only for ATEX model	Ex : CE UKCA II 2G Ex h IIB/IIC T4 Gb X	Ex ia
Electrical specifications for intrinsically safety Group IIC Ui max= 28 V, Ii max= 115 mA, Pi max= 1,6 W Group IIB Ui max= 32 V, Ii max= 195 mA, Pi max= 1,6 W		

Voltages	Solenoid coil marking
L04: 12 V DC - only for FM APPROVED model **L05**: 24 V DC - only for FM APPROVED model **L39**: 120 V AC - only for FM APPROVED model **L41**: 240 V AC - only for FM APPROVED model	FM C US APPROVED
FM APPROVED valve (-20°C ... +50°C) - only with solenoid coils "L##"	

Temperature options
: Standard valve (-10°C ... +50°C)
LT : Low temperature (-30°C ... +50°C)

Example: 515.52.00.39.B04: Standard valve, G1/4" connections supplied without plate, solenoid-spring 5 ways, 12 VDC solenoid coil

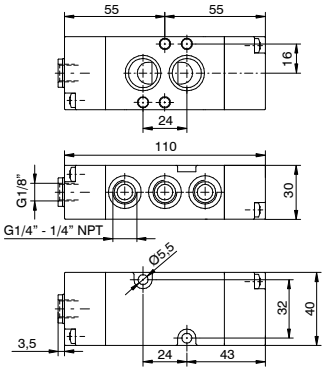
Pneumatic-Differential

CODING: Ⓜ51Ⓒ.52.00.16Ⓞ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

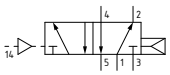
Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	5 = G1/4"
	7 = 1/4" NPT
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE





Weight 245 g
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

Ⓜ51Ⓒ.52.00.16Ⓞ



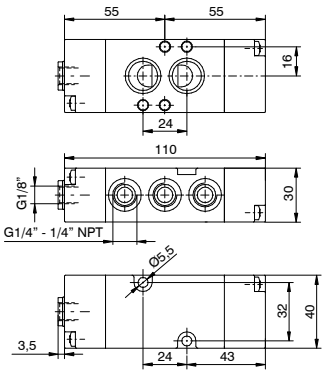
Pneumatic-Pneumatic

CODING: Ⓜ51Ⓒ.52.00.18Ⓞ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

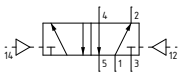
Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	5 = G1/4"
	7 = 1/4" NPT
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE





Weight 245 g
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

Ⓜ51Ⓒ.52.00.18Ⓞ



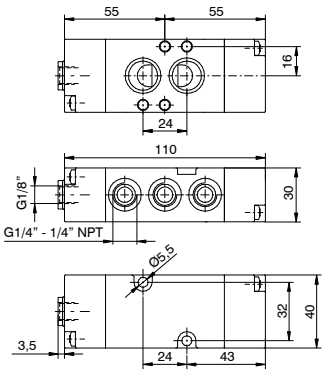
Pneumatic-Spring

CODING: Ⓜ51Ⓒ.52.00.19Ⓞ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

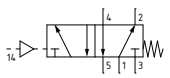
Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	5 = G1/4"
	7 = 1/4" NPT
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE





Weight 245 g
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

Ⓜ51Ⓒ.52.00.19Ⓞ



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

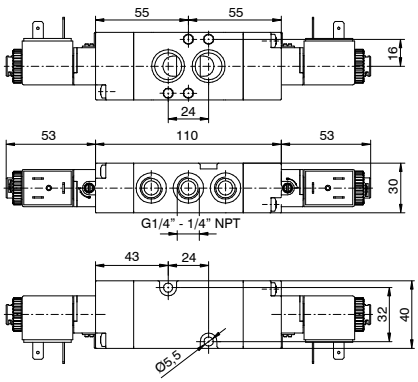
Solenoid-Solenoid

CODING: Ⓜ51Ⓒ.52.00.35.ⓉⓄ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

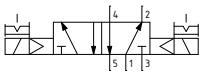
Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	5 = G1/4"
	7 = 1/4" NPT
Ⓣ	VOLTAGE
	SEE ORDER CODES PAGE
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE





Weight 415 g
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

Ⓜ51Ⓒ.52.00.35.ⓉⓄ



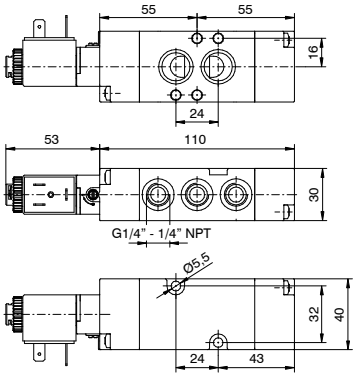
Solenoid-Differential

CODING: Ⓜ51Ⓒ.52.00.36.ⓉⓄ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

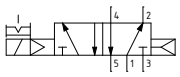
Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	5 = G1/4"
	7 = 1/4" NPT
Ⓣ	VOLTAGE
	SEE ORDER CODES PAGE
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE





Weight 330 g
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

Ⓜ51Ⓒ.52.00.36.ⓉⓄ



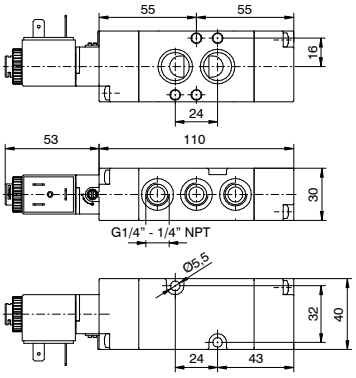
Solenoid-Spring

CODING: Ⓜ51Ⓒ.52.00.39.ⓉⓄ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	See order codes page
Flow rate at 6 bar with Δp=1 (Nl/min)	1100
Orifice size (mm)	8
Working ports size	G 1/4" - 1/4" NPT
Cv	1,11
kv	16,66

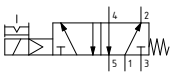
Ⓜ	MODEL
	= Standard valve
	X = ATEX valve
Ⓒ	CONNECTIONS
	5 = G1/4"
	7 = 1/4" NPT
Ⓣ	VOLTAGE
	SEE ORDER CODES PAGE
Ⓞ	TEMPERATURE OPTION
	SEE ORDER CODES PAGE





Weight 330 g
Minimum pilot pressure 2,5 bar
Maximum fitting torque 9 N/m

Ⓜ51Ⓒ.52.00.39.ⓉⓄ



Series 1000 - Size 1, 2 and 3

5 ways 2 or 3 positions distributors and electric distributors can be used mounted on individual or ganged bases.
These standards are ISO 5599/1, according to which certain dimensions are mandatory, namely, the mounting surface, the pitch of the fastening screws, the characteristic of the electric pilot, the flow rate, the pneumatic connections, and so on.
The design is based on the balanced spool principle with pneumatic or electropneumatic actuators and resetting by mechanically or pneumatically operated spring.
The 3 position closed centres, are obtained by spring operation.
The feed to the actuators on the distributors can be provided either by pressure intake from inlet 1(autofeed) or through the base from inlets 12 and 14 (external feed); there are two separate types of these distributors: one is the Series 1000 and the other is the Series 1010.
The Series 1000 includes size 1 and 2 and are built of die-cast aluminium. The selection is made by turning a seal fitted between body and operator by 180°, so to utilize external-feed pilot or with internal feed.
Ordering codes are referring to distributors with "M2" mechanics or solenoid valves "S" mounted.
Coil are not included and have to be ordored separately (see Series 300).
"S" homologated c UL us solenoid coil are available (see Series 300).

Use and maintenance

This valves have an average life of 15 million cycles depending on the application and air quality.
Filtered and lubricated air using specified lubricants will reduce the wear of the seals and ensures long and trouble free operation.
Make sure that the conditions of use comply with the pressure, temperature etc. limits indicated and that the fastening screws are tightened with the following maximum torques on distributors Series 1010.
Size 1 = 4 Nm
Size 2 = 5 Nm
Size 3 = 8 Nm
Repair kits including the spool complete with seals are available for overhauling the valves.
However, although this is a simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Construction characteristics

Series 1000	**Size 1**	**Size 2**
Body	Zinc alloy	Aluminium
Operators	Zinc alloy	Aluminium
Spools	Steel	Steel
Seals	NBR	NBR
Spacers	Technopolymer	Aluminium
Springs	Spring steel	Spring steel
Selectors	NBR	NBR

Series 1010	**Size 1**	**Size 2**	**Size 3**
Body	Technopolymer	Technopolymer	Aluminium
Operators	Technopolymer	Technopolymer	Aluminium
Spools	Steel	Steel	Steel
Seals	NBR	NBR	NBR
Spacers	Technopolymer	Technopolymer	Technopolymer
Pistons	Aluminium	Aluminium	Aluminium
Springs	Spring steel	Spring steel	Spring steel

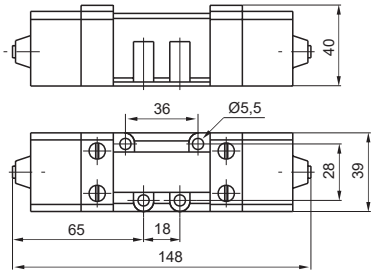
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

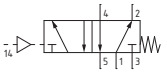
Pneumatic - Spring

Coding: 1001.52.1.9

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	840







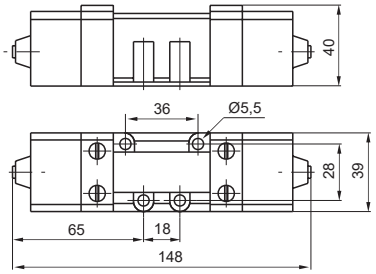
Weight 780 g
Minimum pilot pressure 2,5 bar

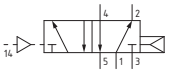
Pneumatic - Differential

Coding: 1001.52.1.6

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	840







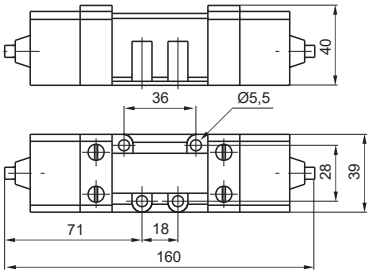
Weight 790 g
Minimum pilot pressure 2 bar

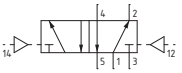
Pneumatic-Pneumatic 5/2

Coding: 1001.52.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	840







Weight 800 g
Minimum pilot pressure 1,5 bar

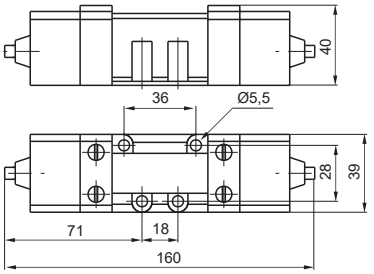
Pneumatic-Pneumatic 5/3

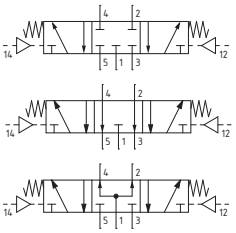
Coding: 1001.53.Ⓕ.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	720

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







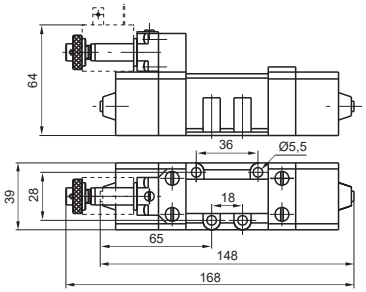
Weight 800 g
Minimum pilot pressure 3 bar

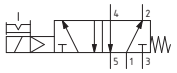
Solenoid-Spring

Coding: 1051.52.3.9.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	840







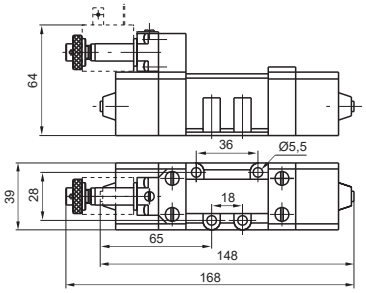
Weight 890 g
Minimum pilot pressure 2,5 bar

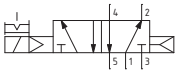
Solenoid-Differential

Coding: 1051.52.3.6.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	840







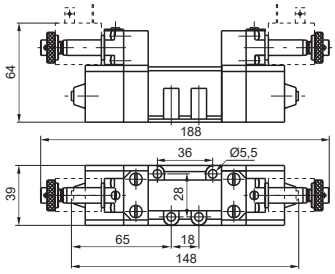
Weight 900 g
Minimum pilot pressure 2 bar

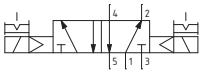
Solenoid-Solenoid 5/2

Coding: 1051.52.3.5.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	840







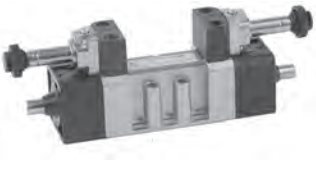
Weight 1040 g
Minimum pilot pressure 1,5 bar

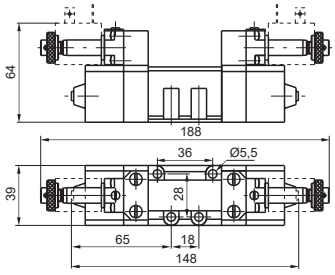
Solenoid-Solenoid 5/3

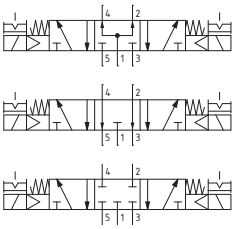
Coding: 1051.53.Ⓕ.3.5.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	720

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 1040 g
Minimum pilot pressure 3 bar

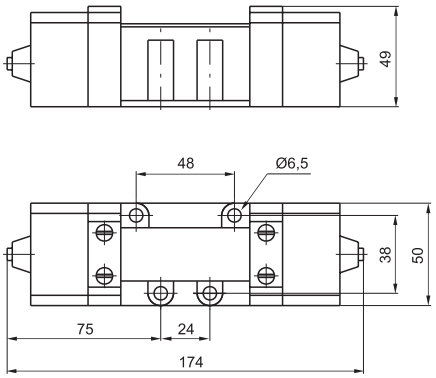
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

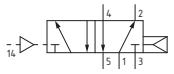
Pneumatic - Differential

Coding: 1002.52.1.6

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1700







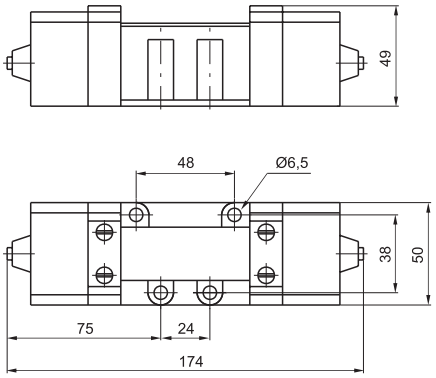
Weight 730 g
Minimum pilot pressure 2 bar

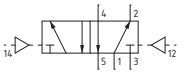
Pneumatic-Pneumatic 5/2

Coding: 1002.52.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1700







Weight 800 g
Minimum pilot pressure 1,5 bar

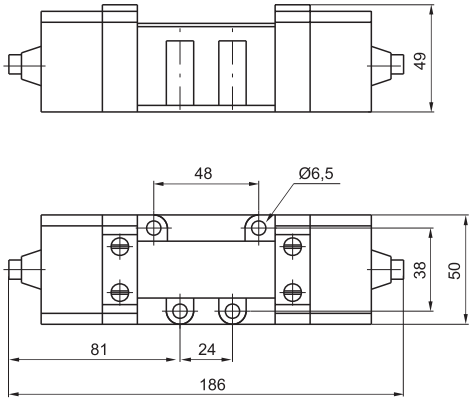
Pneumatic-Pneumatic 5/3

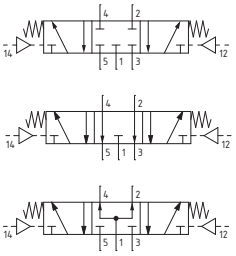
Coding: 1002.53.Ⓕ.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1700

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







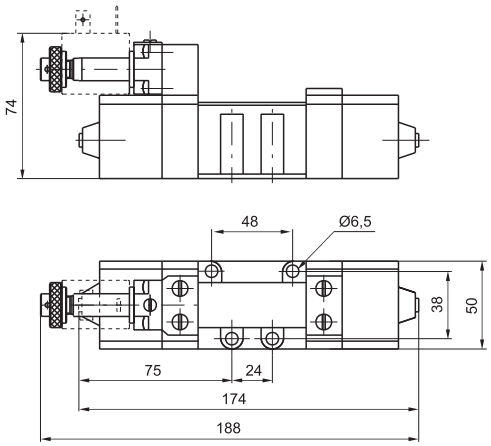
Weight 740 g
Minimum pilot pressure 3 bar

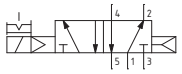
Solenoid-Differential

Coding: 1052.52.3.6.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1700







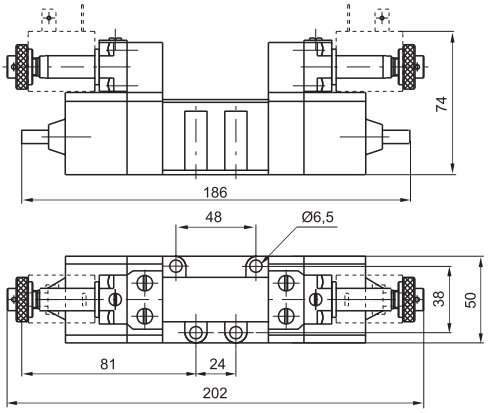
Weight 850 g
Minimum pilot pressure 2 bar

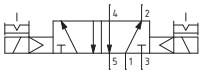
Solenoid-Solenoid 5/2

Coding: 1052.52.3.5.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1700







Weight 980 g
Minimum pilot pressure 1,5 bar

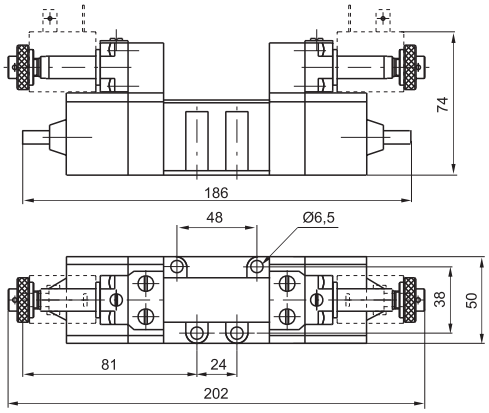
Solenoid-Solenoid 5/3

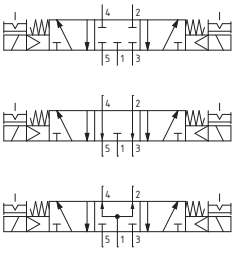
Coding: 1052.53.Ⓕ.3.5.M2

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1700

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







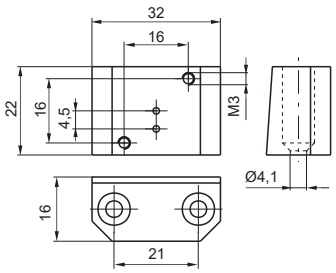
Weight 980 g
Minimum pilot pressure 3 bar

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Base for 32 mm Solenoid valve

Coding: 1001.05

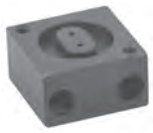


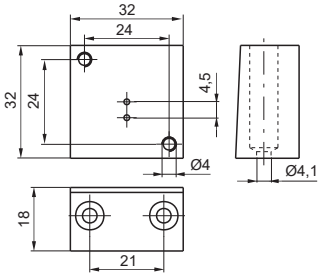


Weight 60 g

Base CNOMO for 32 mm Solenoid valve

Coding: 1001.04



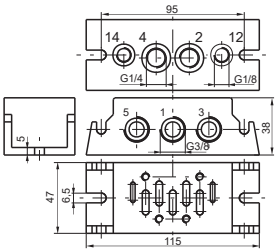


Weight 90 g

Base with bottom connections size 1

Coding: 1001.00



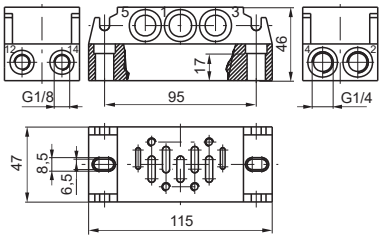


Weight 320 g
1=INLET PORT, 2-4=OUTLET PORTS, 3-5=EXHAUST PORTS, 12-14=PILOT PORTS

Base with side connections size 1

Coding: 1001.01



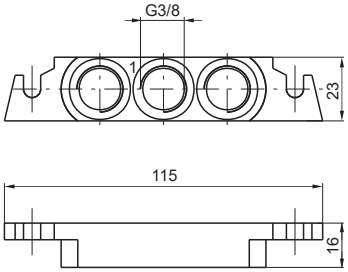


Weight 445 g
1=INLET PORT, 2-4=OUTLET PORTS, 3-5=EXHAUST PORTS, 12-14=PILOT PORTS

Inlet blocks

Coding: 1001.02



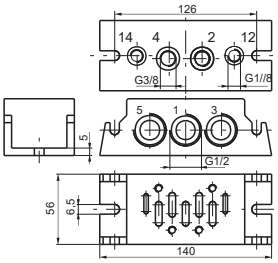


Weight 55 g

Base with bottom connections size 2

Coding: 1002.00





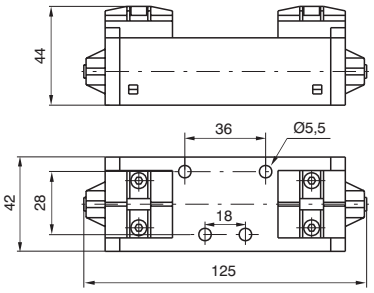
Weight 520 g
1=INLET PORT, 2-4=OUTLET PORTS, 3-5=EXHAUST PORTS, 12-14=PILOT PORTS

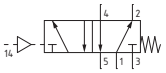
Pneumatic - Spring

Coding: 1011.52.1.9

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900







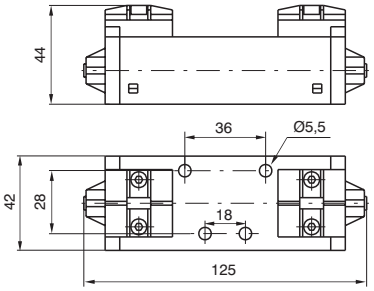
Weight 230 g
Minimum pilot pressure 2,5 bar

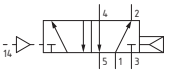
Pneumatic - Differential

Coding: 1011.52.1.6

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900







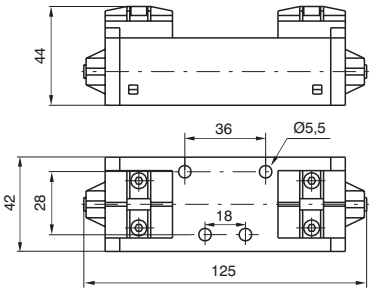
Weight 240 g
Minimum pilot pressure 2 bar

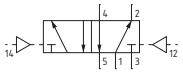
Pneumatic-Pneumatic 5/2

Coding: 1011.52.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900







Weight 240 g
Minimum pilot pressure 1,5 bar

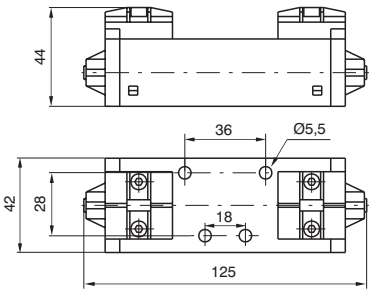
Pneumatic-Pneumatic 5/3

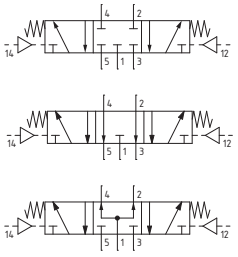
Coding: 1011.53.Ⓕ1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 240 g
Minimum pilot pressure 3 bar

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

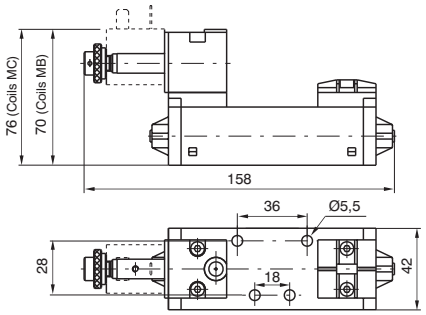
Solenoid-Spring

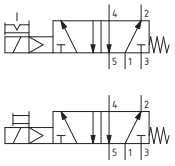
Coding: 1011.52.3.9.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 290 g
Minimum pilot pressure 2,5 bar

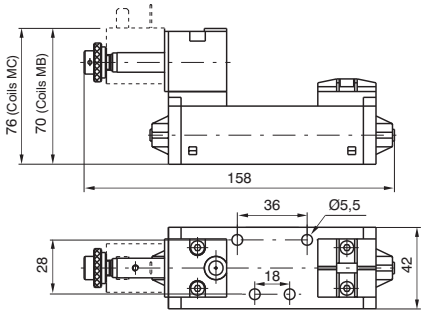
Solenoid-Differential

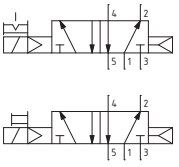
Coding: 1011.52.3.6.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 290 g
Minimum pilot pressure 2 bar

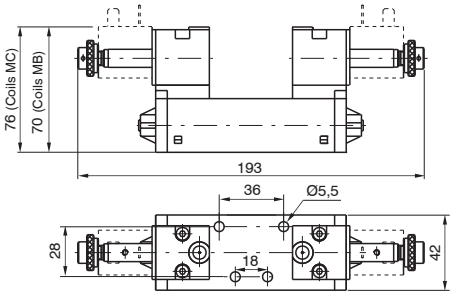
Solenoid-Solenoid 5/2

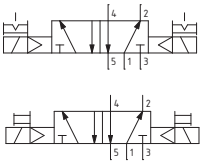
Coding: 1011.52.3.5.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 350 g
Minimum pilot pressure 1,5 bar

Solenoid-Solenoid 5/3

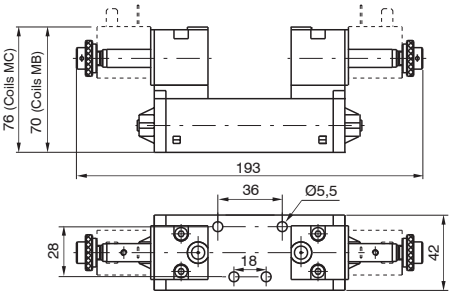
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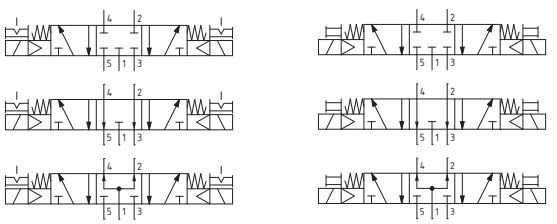
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO

Weight 350 g
Minimum pilot pressure 3 bar





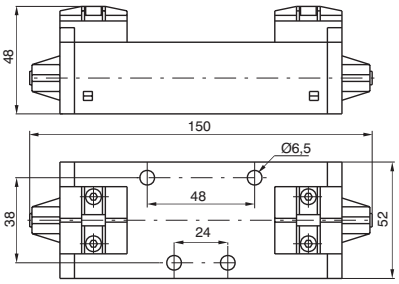


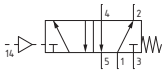
Pneumatic - Spring

Coding: 1012.52.1.9

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600







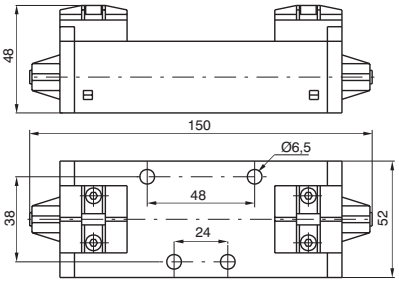
Weight 300 g
Minimum pilot pressure 2,5 bar

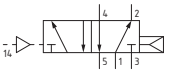
Pneumatic - Differential

Coding: 1012.52.1.6

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600







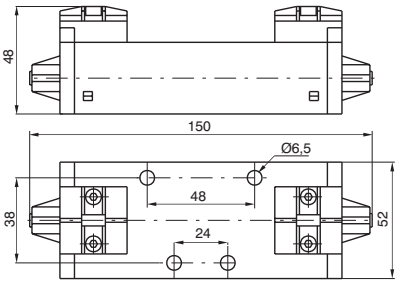
Weight 310 g
Minimum pilot pressure 2 bar

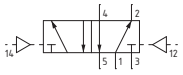
Pneumatic-Pneumatic 5/2

Coding: 1012.52.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600







Weight 310 g
Minimum pilot pressure 1,5 bar

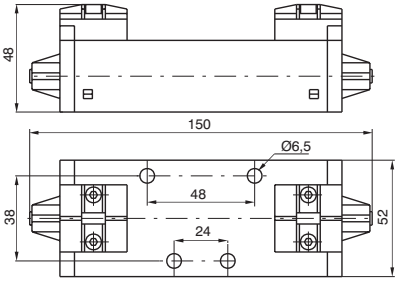
Pneumatic-Pneumatic 5/3

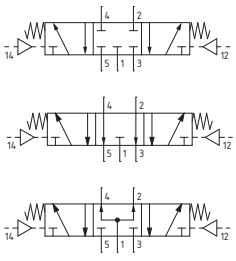
Coding: 1012.53.Ⓕ.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 310 g
Minimum pilot pressure 3 bar

1012.53.Ⓕ.1.8

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

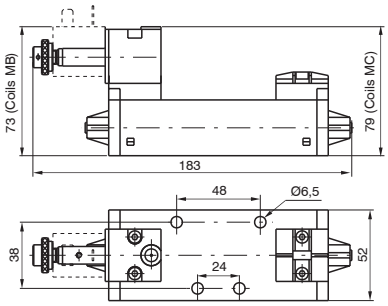
Solenoid-Spring

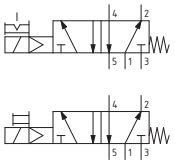
Coding: 1012.52.3.9.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 360 g
Minimum pilot pressure 2,5 bar

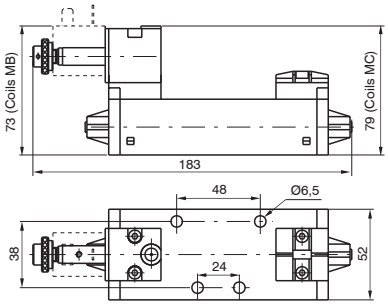
Solenoid-Differential

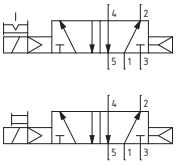
Coding: 1012.52.3.6.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 360 g
Minimum pilot pressure 2 bar

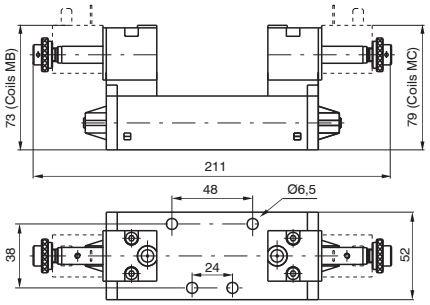
Solenoid-Solenoid 5/2

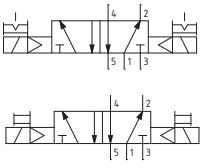
Coding: 1012.52.3.5.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 420 g
Minimum pilot pressure 1,5 bar

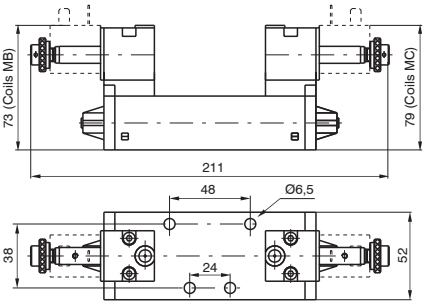
Solenoid-Solenoid 5/3

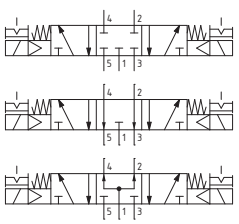
Coding: 1012.53.Ⓕ.3.5.Ⓜ

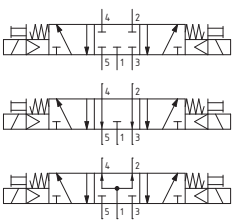
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







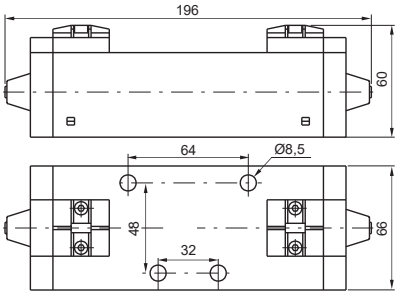


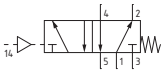
Pneumatic - Spring

Coding: 1013.52.1.9

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600







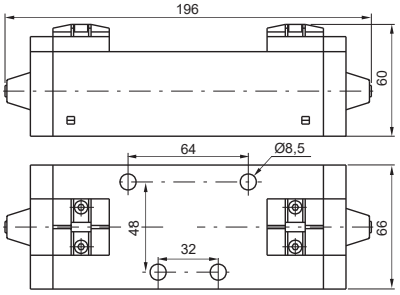
Weight 1000 g
Minimum pilot pressure 2,5 bar

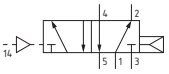
Pneumatic - Differential

Coding: 1013.52.1.6

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600







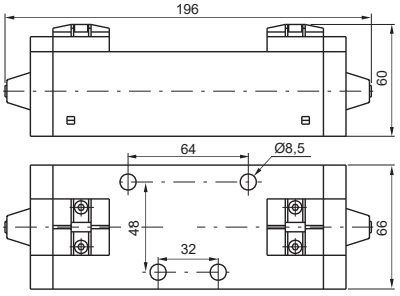
Weight 1020 g
Minimum pilot pressure 2 bar

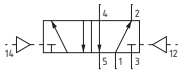
Pneumatic-Pneumatic 5/2

Coding: 1013.52.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600







Weight 1050 g
Minimum pilot pressure 1,5 bar

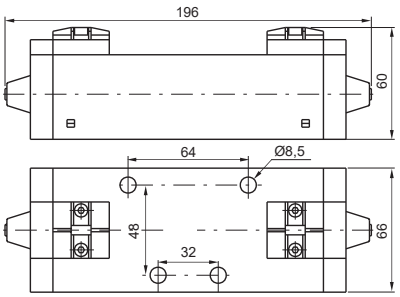
Pneumatic-Pneumatic 5/3

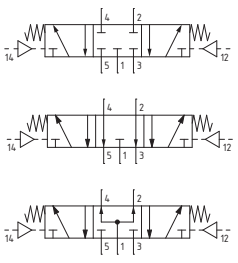
Coding: 1013.53.Ⓕ.1.8

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3000

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres







Weight 1050 g
Minimum pilot pressure 3 bar

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

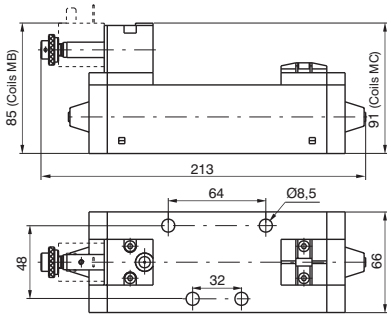
Solenoid-Spring

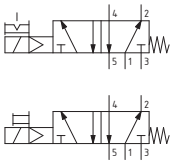
Coding: 1013.52.3.9.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 1060 g
Minimum pilot pressure 2,5 bar

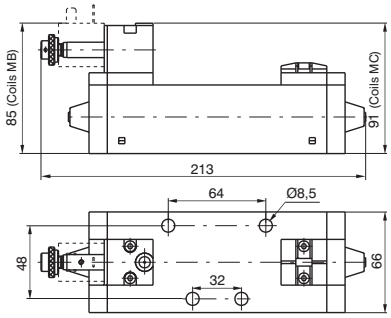
Solenoid-Differential

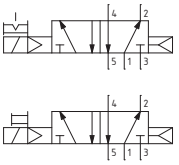
Coding: 1013.52.3.6.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 1080 g
Minimum pilot pressure 2 bar

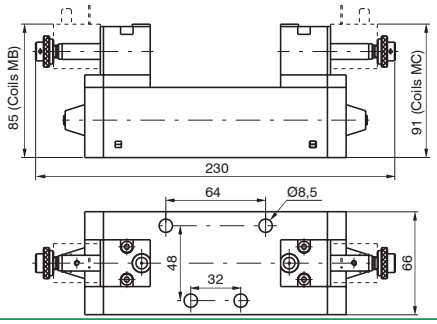
Solenoid-Solenoid 5/2

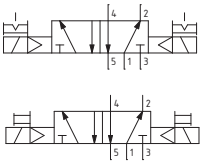
Coding: 1013.52.3.5.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600

Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Weight 1170 g
Minimum pilot pressure 1,5 bar

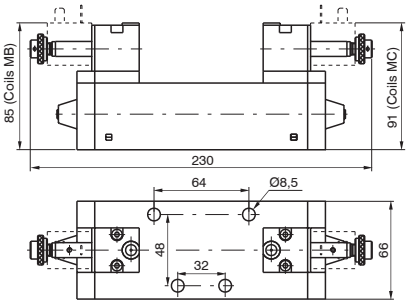
Solenoid-Solenoid 5/3

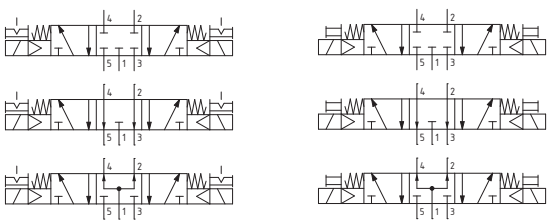
Coding: 1013.53.Ⓕ.3.5.Ⓜ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3000

Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓜ	MECHANIC
	SEE VALVES SERIES 300 CNOMO







Series 1100 - Modular bases with side and bottom connections

These bases are manufactured with the outlet and pilot ports on both the sides and the bottom faces giving the option for use with any application.
Unused ports must be blanked off using threaded plugs which are not included in the part number or price.
To isolate bases from each other for use with different supply pressures ports 1, 3 & 5 should be plugged underneath the seal.
The codes are:
1101.17 (size 1)-1102.17 (size 2)-1103.17 (size 3)

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Modular bases

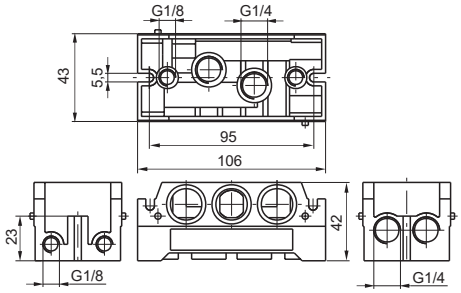
Coding: 110Ⓣ.00

Ⓣ	SIZE
	1 = Size 1
	2 = Size 2
	3 = Size 3



Weight 240 g

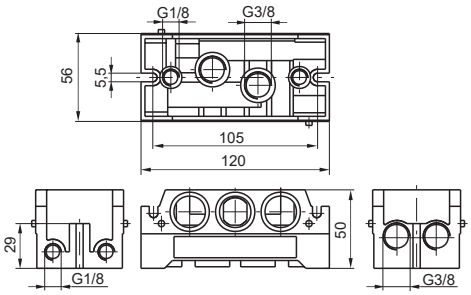
1101.00





Weight 340 g

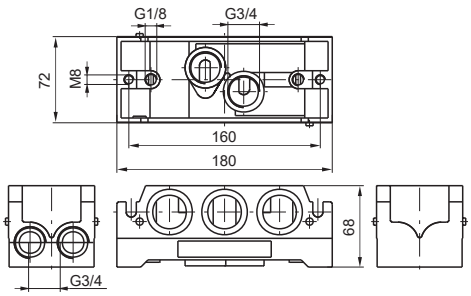
1102.00





Weight 950 g

1103.00

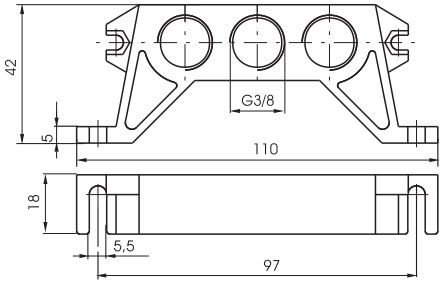


Inlet blocks, Size 1

Coding: 1101.09



Weight 100 g

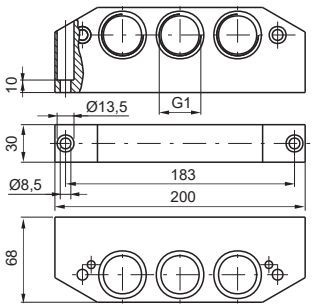


Inlet blocks, Size 3

Coding: 1103.11



Weight 840 g



Inlet blocks

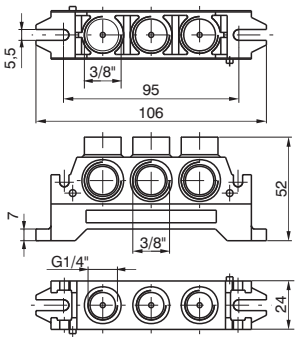
Coding: 110Ⓣ.Ⓝ

Ⓣ	SIZE
	1 = Size 1
	2 = Size 2
Ⓝ	CONNECTIONS
	10 = Universal
	11 = Stand alone
	12 = Top connections
	13 = Bottom connections



Weight 160 g

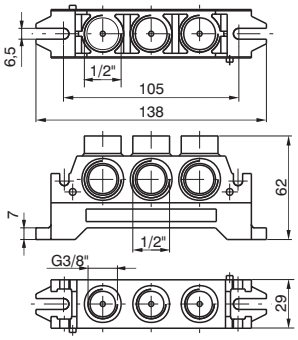
1101.Ⓝ





Weight 230 g

1102.Ⓝ



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Single use bases

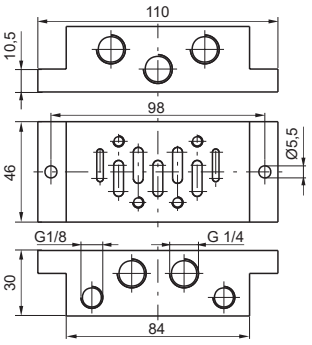
Coding: 110Ⓣ.Ⓕ

Ⓣ	SIZE
	1 = Size 1
	2 = Size 2
	3 = Size 3
Ⓕ	SHAPE
	14 = Shape A
	15 = Shape B (only for sizes 1 & 2)



Weight 160 g

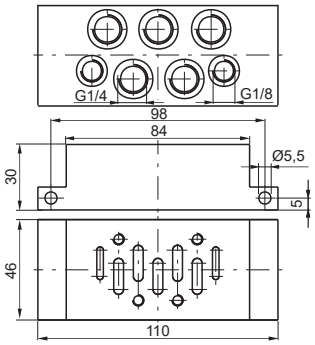
1101.14





Weight 190 g

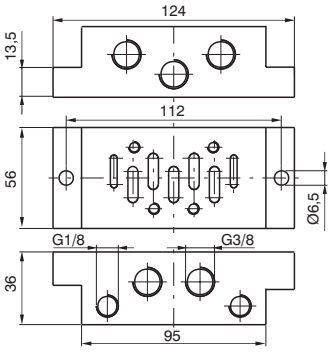
1101.15





Weight 190 g

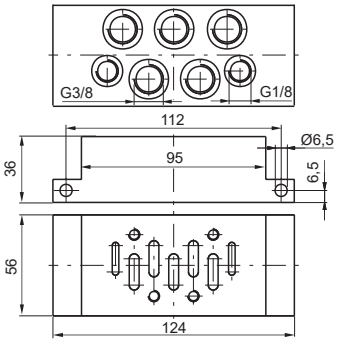
1102.14

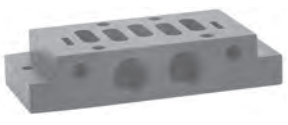




Weight 220 g

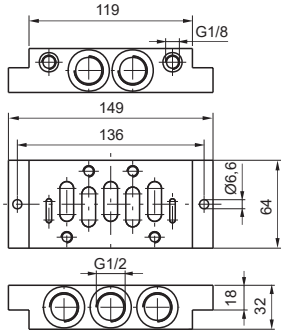
1102.15





Weight 600 g

1103.14



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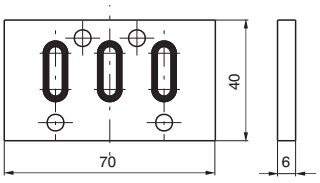
Closing plate

Coding: 110Ⓣ.16

Ⓣ	SIZE
	1 = Size 1
	2 = Size 2
	3 = Size 3

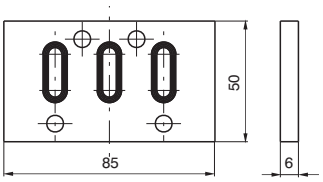


1101.16



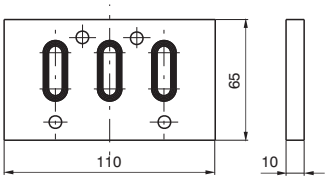


1102.16





1103.16



Base adaptor

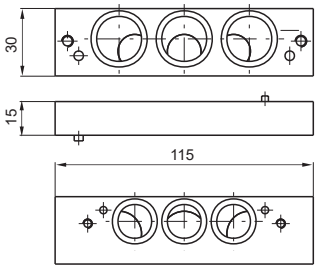
Coding: 1100.Ⓣ

Ⓣ	SIZE
	2-1 = Sizes 1 and 2
	3-2 = Sizes 2 and 3



Weight 110 g

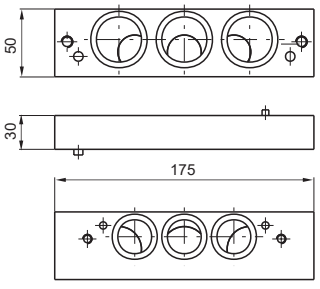
1100.2-1





Weight 590 g

1100.3-2



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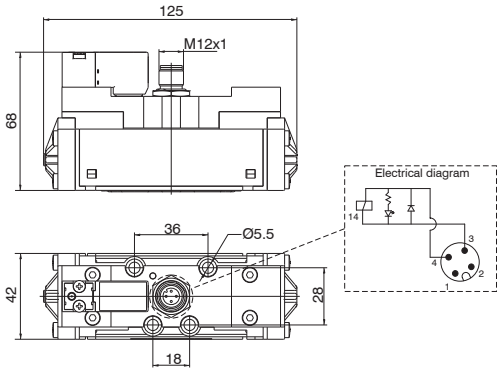
Series 1000 M12 - Size 1, 2 and 3

The ISO 5599/1 Solenoid valves Series 1000 M12 are available in three sizes with flow rates from 900 Nl/min for size 1 up to the 3600 Nl/min for size 3.
The standard features of the ISO valves are still included, however, they are now combined with a M12 electrical connector located in the middle of the valve to manage the electrical signals.
Versions are available to suit valves with both single and double 24VDC solenoids complete with IP65 protection.
All version are supplied with LED indicators
"Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"

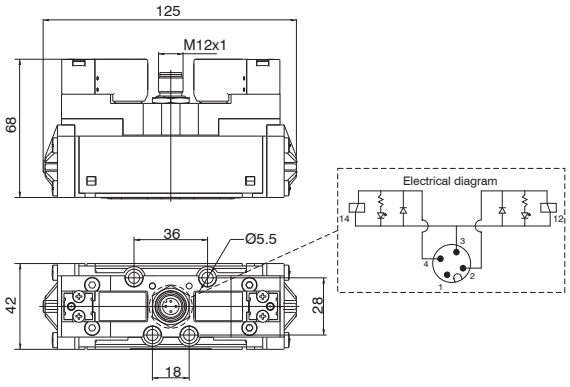
Electrical characteristics

Electrical connector M12x1
Protection degree IP65
Input voltage 24VDC
Nominal power 2,3W
LED indentification

Monostable version



Bistable version



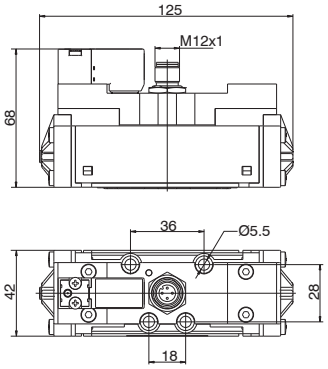
Solenoid-Spring

Coding: 1111.52.3.9.Ⓣ

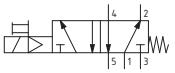
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Response time according to ISO 12238, activation time (ms)	16
Response time according to ISO 12238, deactivation time (ms)	122

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 350 g



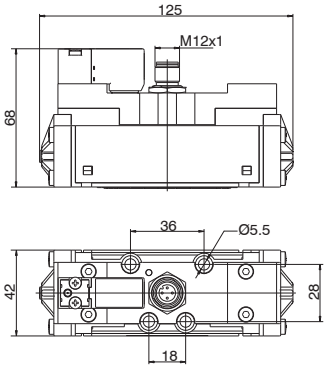
Solenoid-Differential

Coding: 1111.52.3.6.Ⓣ

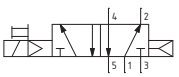
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Response time according to ISO 12238, activation time (ms)	32
Response time according to ISO 12238, deactivation time (ms)	51

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 356 g



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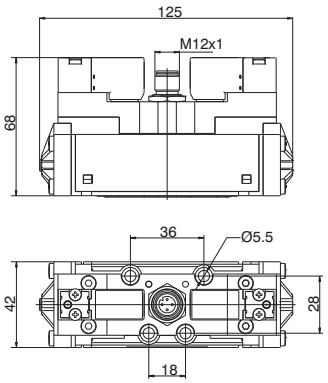
Solenoid-Solenoid 5/2

Coding: 1111.52.3.5.Ⓣ

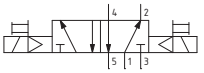
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Response time according to ISO 12238, activation time (ms)	13
Response time according to ISO 12238, deactivation time (ms)	14

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 390 g



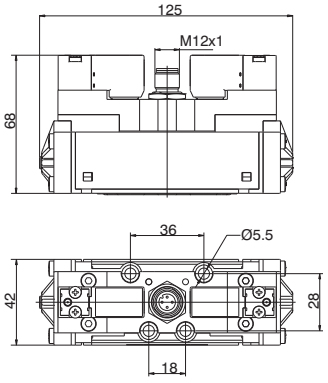
Solenoid-Solenoid 5/3

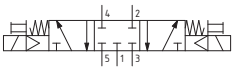
Coding: 1111.53.Ⓕ.3.5.Ⓣ

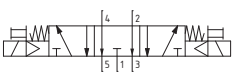
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	900
Response time according to ISO 12238, activation time (ms)	18 (Closed centres) 18 (Open centres) 19 (Pressured centres)
Response time according to ISO 12238, deactivation time (ms)	19 (Closed centres) 20 (Open centres) 18 (Pressured centres)

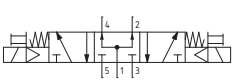
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓣ	VOLTAGE
	12P = 24VDC











Weight 392 g

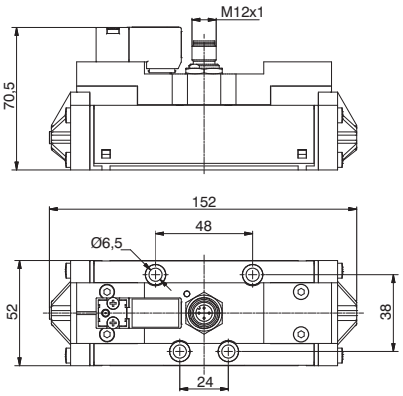
Solenoid-Spring

Coding: 1112.52.3.9.Ⓣ

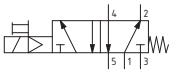
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600
Response time according to ISO 12238, activation time (ms)	24
Response time according to ISO 12238, deactivation time (ms)	124

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 510 g



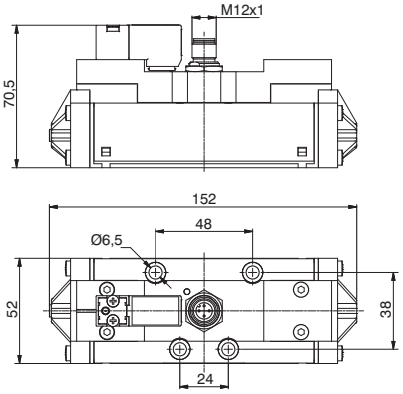
Solenoid-Differential

Coding: 1112.52.3.6.Ⓣ

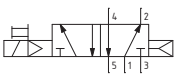
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600
Response time according to ISO 12238, activation time (ms)	37
Response time according to ISO 12238, deactivation time (ms)	90

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 515 g



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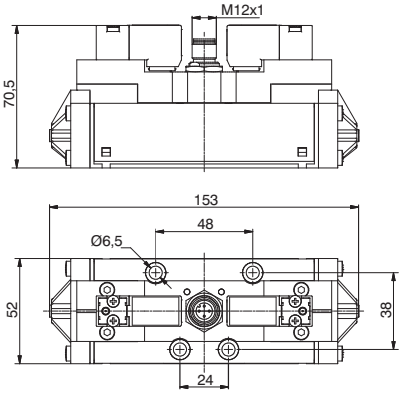
Solenoid-Solenoid 5/2

Coding: 1112.52.3.5.Ⓣ

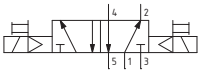
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600
Response time according to ISO 12238, activation time (ms)	17
Response time according to ISO 12238, deactivation time (ms)	20

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 550 g



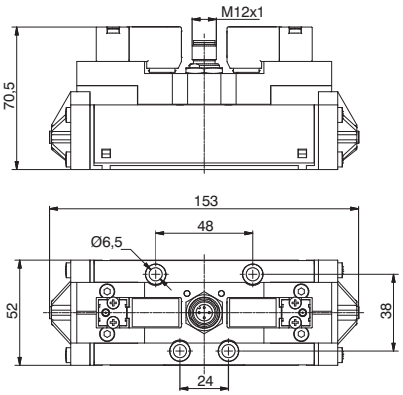
Solenoid-Solenoid 5/3

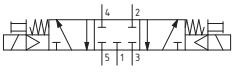
Coding: 1112.53.Ⓕ.3.5.Ⓣ

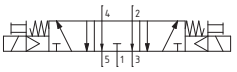
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1600
Response time according to ISO 12238, activation time (ms)	18 (Closed centres) 18 (Open centres) 20 (Pressured centres)
Response time according to ISO 12238, deactivation time (ms)	112 (Closed centres) 106 (Open centres) 118 (Pressured centres)

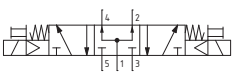
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓣ	VOLTAGE
	12P = 24VDC











Weight 560 g

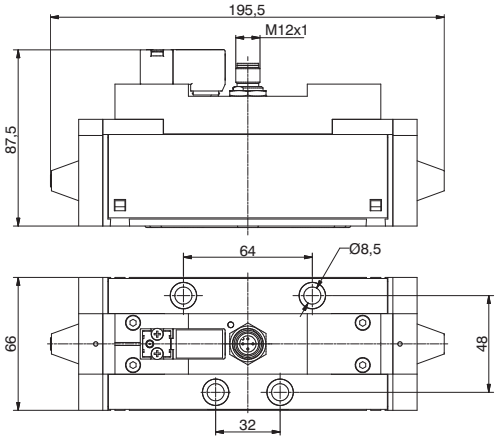
Solenoid-Spring

Coding: 1113.52.3.9.Ⓣ

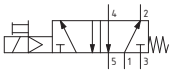
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Response time according to ISO 12238, activation time (ms)	46
Response time according to ISO 12238, deactivation time (ms)	254

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 1360 g



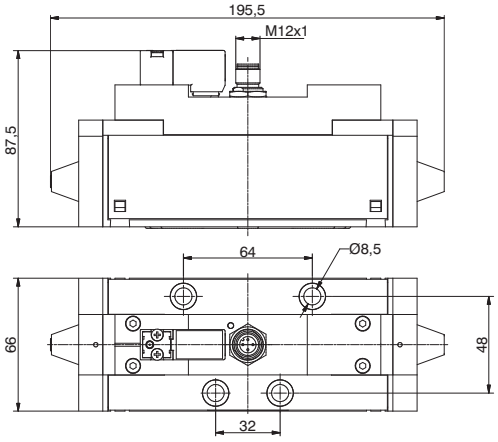
Solenoid-Differential

Coding: 1113.52.3.6.Ⓣ

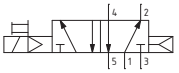
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	2
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Response time according to ISO 12238, activation time (ms)	78
Response time according to ISO 12238, deactivation time (ms)	180

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 1360 g



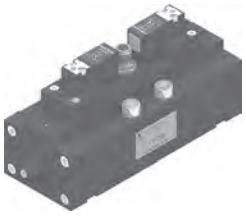
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

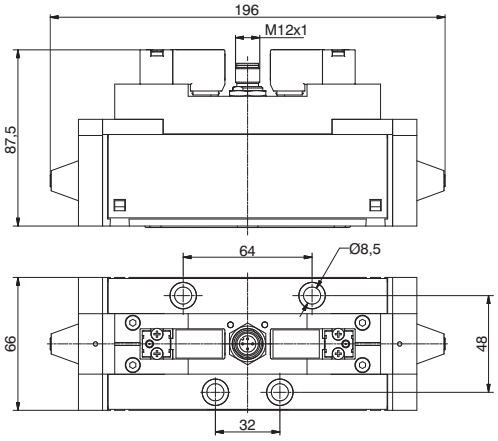
Solenoid-Solenoid 5/2

Coding: 1113.52.3.5.Ⓣ

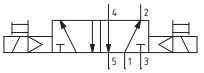
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	1.5
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Response time according to ISO 12238, activation time (ms)	32
Response time according to ISO 12238, deactivation time (ms)	37

Ⓣ	VOLTAGE
	12P = 24VDC





Weight 1370 g

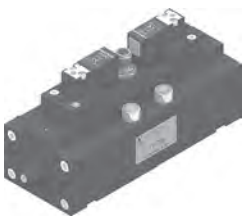


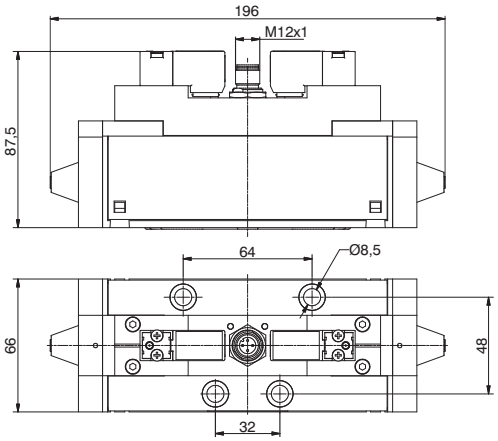
Solenoid-Solenoid 5/3

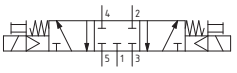
Coding: 1113.53.Ⓕ.3.5.Ⓣ

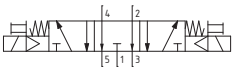
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	3
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	3600
Response time according to ISO 12238, activation time (ms)	30 (Closed centres) 30 (Open centres) 32 (Pressured centres)
Response time according to ISO 12238, deactivation time (ms)	305 (Closed centres) 230 (Open centres) 270 (Pressured centres)

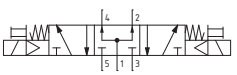
Ⓕ	FUNCTION
	31 = Closed centres
	32 = Open centres
	33 = Pressured centres
Ⓣ	VOLTAGE
	12P = 24VDC











Weight 1380 g

Series 600 - M5 - G1"

These accessories are a range of devices for completing a pneumatic circuit. These valves, with their special functions, are inserted between two valves, between a valve and a cylinder, or following a cylinder.
One of the particular characteristic of these accessories is that they are automatically actuated without the need for external commands. Usually, operation and idle are controlled by the presence or absence of pressure as, for example, in the case of quick exhaust valves which pilots itself as a selector, changing the flow direction as the signal goes off and on.
On the other hand, other components are inert. That is, they do not have any internal variable function which is sensitive to pressure. Among these components are silencers, manifolds and flow regulators.
There are also the flow regulators, which like electronic components, can be defined as variable resistences. They are fundamental in regulating the flow rate, provide precise timings and regulate the cylinders' speed.
The selector valves, with "AND" and "OR" functions, are logic functions components which often are an essential element. Furthermore, they are built to allow high flow rate which cannot be obtained by classic pneumatic logic.
The block valves lock the cylinder in a position, avoiding unexpected depressurization of the cylinder's chamber due to lack of compressed air at the inlet port. Practically, it is a piloted unidirectional valve that blocks the exhaust port when there is no air in the pilot circuit.
Finally the economizer valves are in fact a pressure reducer valves installed between valve and cylinder for reducing the air consumption. For example this is applicable on the cylinder return stroke without penalizing the exhaust as happens with FRL pressure regulator.

Construction characteristics

We have not listed all different materials used for the construction of these components because the list would be too the long. We use corrosion proof material, brass or anodized aluminium and the most appropriate specific mixture for seals.
If more information is required please contact our technical department.

Use and maintenance

In operation pay attention to the minimum and maximum criteria for temperature and pressure, and ensure good quality compressed air. In a dirty environment, protect the exhaust ports.
In this case, maintenance is minimal and is necessary only if the air is particularly dirty.
The components most subject to damage by the accumulation of dirt are flow regulators with fine regulation and silencers. As for regulators, follow the normal procedure for disassembling, washing with non-chemical cleaning agents and remounting. The silencers need only to be rinsed in petrol or solvent and blown dry with compressed air.
The number of requests for spare seals for flow regulators and shuttle valves are statistically irrelevant. More often, it is necessary to replace the lining of the quick exhaust because of the wear it undergoes due to the particular conditions of operating.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

MIniature flow control valve M5-Ø3 tube

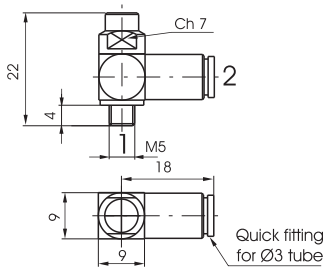
Coding: 6.01.305.F

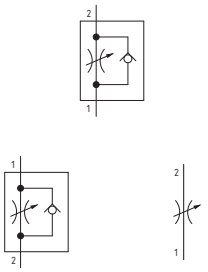
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	1.5

F	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)

Weight 14 g







MIniature flow control valve M5-Ø3 tube, with adjustement knob

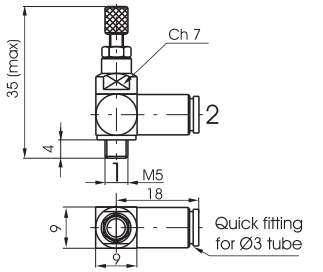
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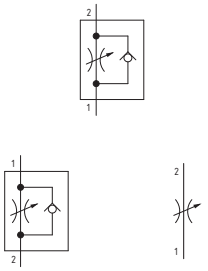
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	1.5

F	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)

Weight 16 g







MIniature flow control valve M5-Ø3,17 tube

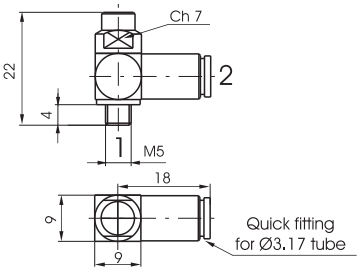
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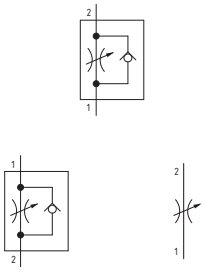
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	1.5

F	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)

Weight 14 g







MIniature flow control valve M5-Ø3,17 tube, with adjustement knob

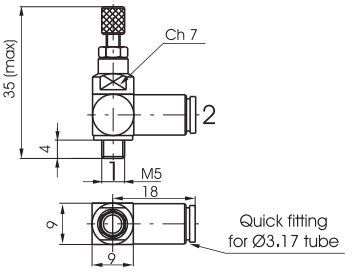
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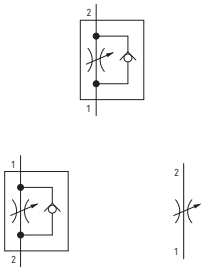
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	1.5

F	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)

Weight 16 g







MIniature flow control valve M5-Ø4 tube

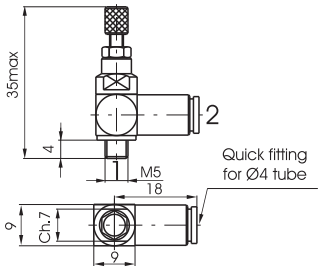
Coding: 6.01.45.F

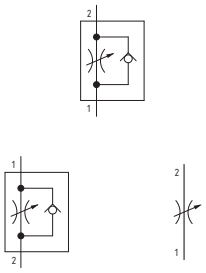
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	1.5

F	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)

Weight 14 g







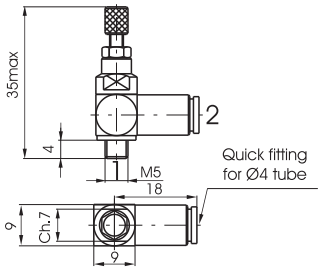
MIniature flow control valve M5-Ø4 tube, with adjustement knob

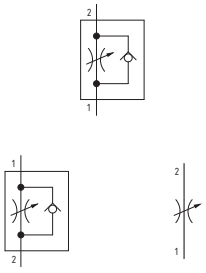
Coding: 6.01.45.FP

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	1.5

F	FUNCTION
	1.2 = Unidirectional (from 1 to 2)
	2.1 = Unidirectional (from 2 to 1)
	1.1 = Bidirectional (on both sides)







Flow control valve M5-in line ports

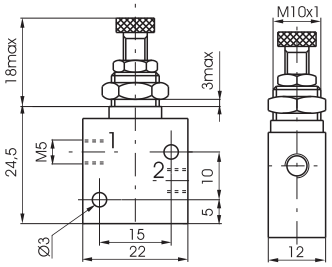
Coding: 6.01.F

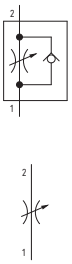
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	2

F	FUNCTION
	05 = Unidirectional
	05/2 = Bidirectional

Weight 48 g







Flow control valve M5-port at 90°

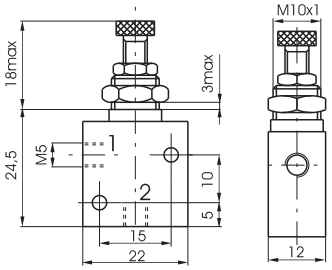
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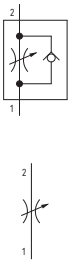
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	2

F	FUNCTION
	90 = Unidirectional
	90/2 = Bidirectional

Weight 48 g







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Flow control valve M5-with a through bolt

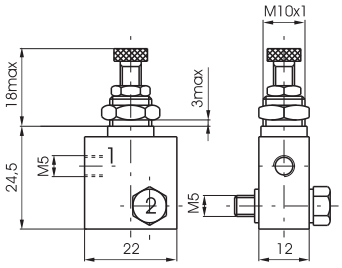
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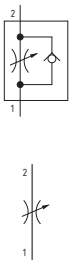
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	2

F	FUNCTION
	180 = Unidirectional
	180/2 = Bidirectional

Weight 52 g







Flow control valve G1/8"-ultrasensitive

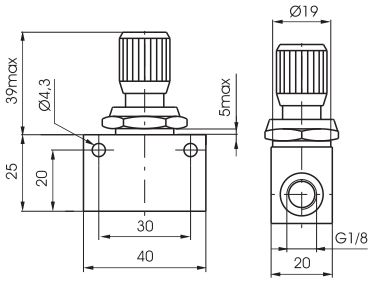
Coding: 6.01.18/F

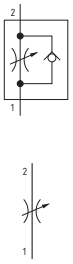
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	3

F	FUNCTION
	4 = Unidirectional
	5 = Bidirectional

Weight 100 g







Flow control valve G1/8"-ultrasensitive with lock nut

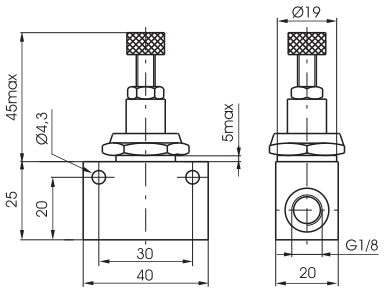
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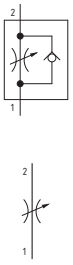
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	3

F	FUNCTION
	6 = Unidirectional
	7 = Bidirectional

Weight 105 g







Flow control valve G1/8"

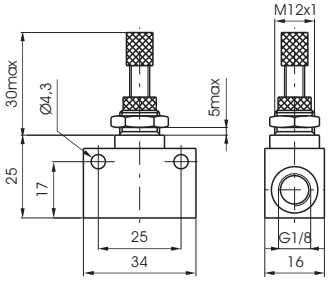
Coding: 6.01.F

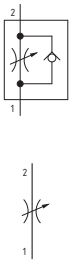
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	4

F	FUNCTION
	18N = Unidirectional
	18NE = Unidirectional ECO
	18/1N = Bidirectional
	18/1NE = Bidirectional ECO

Weight 50 g







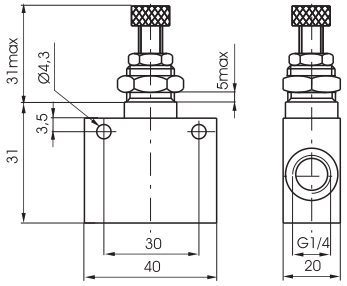
Flow control valve G1/4"- compact type-unidirectional

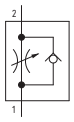
Coding: 6.01.14/1

Weight 100 g

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	5.5







Flow control valve G1/4"

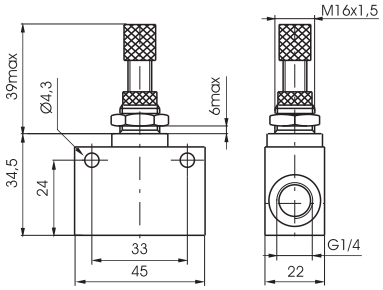
Coding: 6.01.Ⓕ

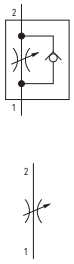
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	7

Ⓕ	FUNCTION
	14N = Unidirectional
	14/1N = Bidirectional

Weight 105 g







Flow control valve G1/2"

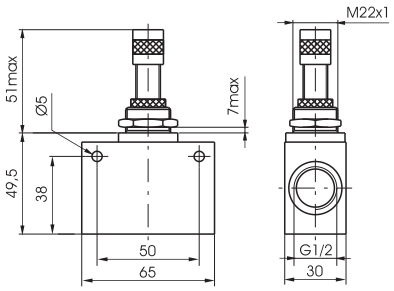
Coding: 6.01.Ⓕ

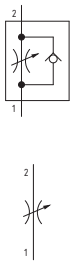
Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	12

Ⓕ	FUNCTION
	12N = Unidirectional
	12/1N = Bidirectional

Weight 290 g







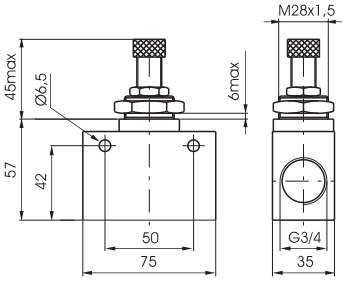
Flow control valve G3/4"-unidirectional

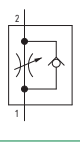
Coding: 6.01.34

Weight 500 g

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Orifice size (mm)	12







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Quick exhaust valve

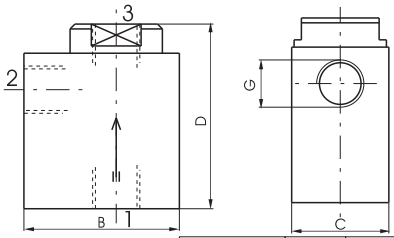
Coding: 6.02.❶

Operational characteristics	
Fluid	Filtered air
Working pressure (bar)	0.5 ... 10
Temperature °C	-5 ... +70

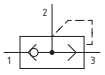
	CONNECTION (IN)
❶	**05** = M5
	18 = G1/8"
	14 = G1/4"
	12 = G1/2"

Weight "see table"





G	M5	1/8"	1/4"	1/2"
B	22	32	35	52
C	12	20	25	37
D	28	38	50	62
Weight g	50	62	112	310
Flow rate Nl/min at 6 bar with Δ p = 1 from 1 to 2	120	480	960	3300
Flow rate Nl/min at 6 bar on free exhaust from 2 to 3	220	1100	1930	6500



Quick exhaust in line valve

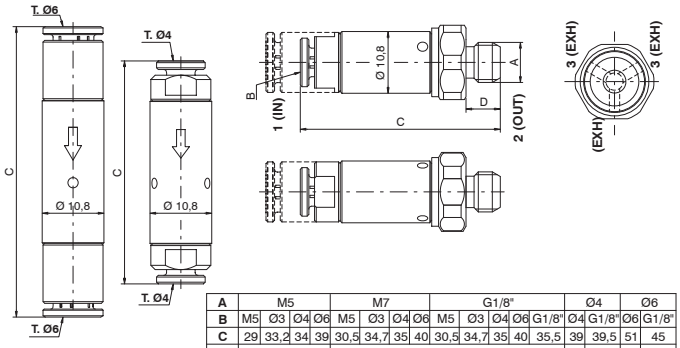
Coding: 6.02.❶.Ⓒ.L

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70

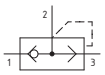
	CONNECTION (IN)
❶	**M5** = M5
	03 = tube Ø3
	04 = tube Ø4
	06 = tube Ø6
Ⓒ	WORKING PORTS SIZE
	M5 = M5
	M7 = M7
	18 = G1/8"
	04 = tube Ø4
	06 = tube Ø6

Weight "see table"





A	M5				M7				G1/8"					Ø4		Ø6	
B	M5	Ø3	Ø4	Ø6	M5	Ø3	Ø4	Ø6	M5	Ø3	Ø4	Ø6	G1/8"	Ø4	G1/8"	Ø6	G1/8"
C	29	33,2	34	39	30,5	34,7	35	40	30,5	34,7	35	40	35,5	39	39,5	51	45
D	4,5				6									-	5,5	-	5,5
Weight (g)	17				18									17		20	18
Flow rate Nl/min at 6 bar with Δp=1 (from 1 to 2)	90				110									90		110	
Flow rate Nl/min at 6 bar on free exhaust (from 2 to 3)	240				350									240		350	



Exhaust flow control

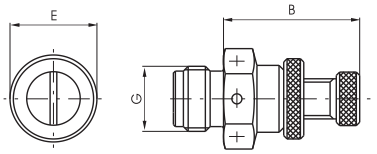
Coding: 6.03.❶

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70

	CONNECTION (IN)
❶	**05** = M5
	18 = G1/8"
	14 = G1/4"
	12 = G1/2"

Weight "see table"





G	M5	1/8"	1/4"	1/2"
B	21	18	22	39
E	9	13	16	25
Weight g	10	18	32	155



Shuttle valve "OR"

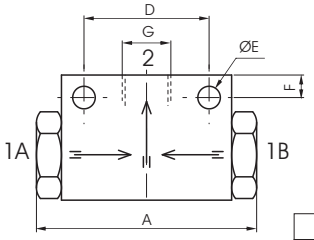
Coding: 6.04.❶

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70

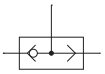
❶	CONNECTION (IN)
	05 = M5
	18 = G1/8"
	14 = G1/4"

Weight "see table"





G	M5	1/8"	1/4"
A	27	44	62
B	12	16	22
C	17	25	30
D	15	25	35
E	3,5	4,5	5,5
F	3,5	4,5	5,5
Weight g	33	50	110
Flow rate at 6 bar with Δp = 1	Nl/min.	110	700	2200



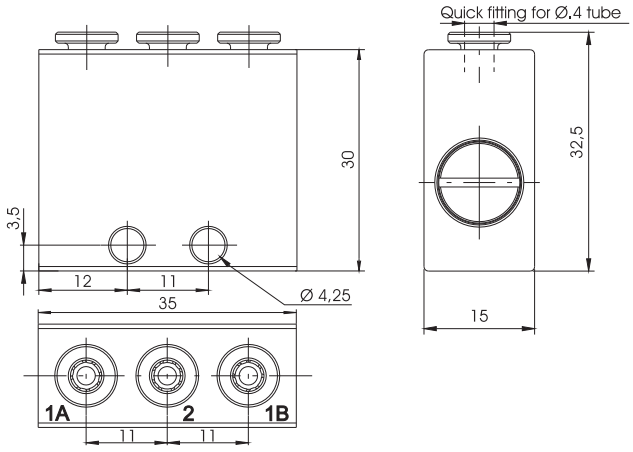
Shuttle valve "OR"-T=4

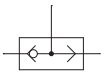
Coding: 6.04.04

Weight 50 g

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	105
Orifice size (mm)	2.5
Working ports size	Fitting T=4







Shuttle valve "AND"-M5 - G1/8"

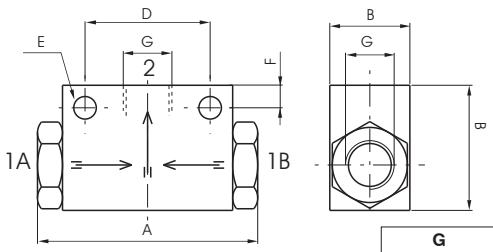
Coding: 6.04.❶/1

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70

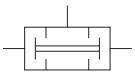
❶	CONNECTION (IN)
	05 = M5
	18 = G1/8"

Weight "see table"





G	M5	1/8"
A	36	44
B	12	16
C	22	45
D	20	25
E	3,2	4,5
F	3,5	4,5
Weight g	30	50
Flow rate at 6 bar with Δp = 1	Nl/min.	100	480



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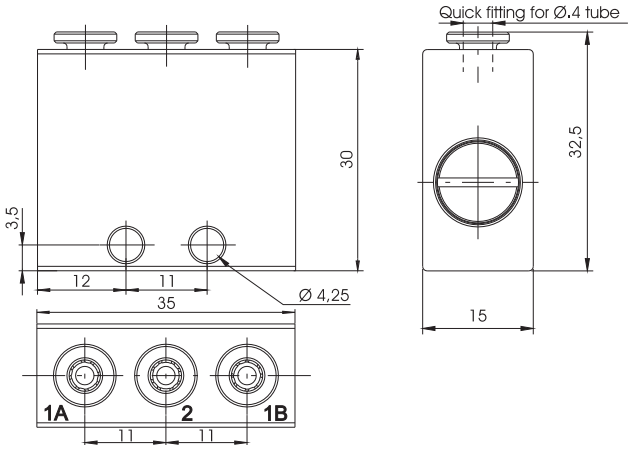
Shuttle valve "AND"-T=4

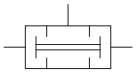
Coding: 6.04.04/1

Weight 50 g

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	105
Orifice size (mm)	2.5
Working ports size	Fitting T=4







Silencers steel wool

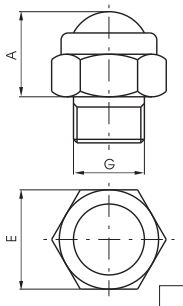
Coding: 6.05.❶

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70

❶	CONNECTION (IN)
	18 = G1/8"
	14 = G1/4"
	38 = G3/8"
	12 = G1/2"

Weight "see table"





G	1/8"	1/4"	3/8"	1/2"
A	12	13	15	17
E	14	17	22	27
Weight g	8	16	32	44



Silencers brass

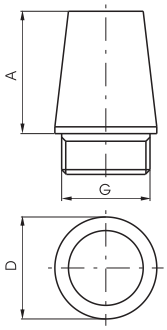
Coding: 6.06.❶

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70

❶	CONNECTION (IN)
	05 = M5
	18 = G1/8"
	14 = G1/4"
	38 = G3/8"
	12 = G1/2"
	34 = G3/4"
	01 = G1"

Weight "see table"





G	M5	1/8"	1/4"	3/8"	1/2"	3/4"	1"
A	17	15	18	28	32	40	50
D	8	12	15	19	23	29	38
Weight g	4	8	15	35	50	92	182



G 1/8" compact check valves

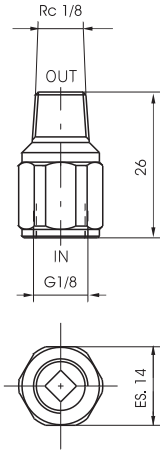
Coding: 6.07.18.Ⓖ

Operational characteristics	
Fluid	Filtered air
Working pressure (bar)	2,5 ... 10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	100

Ⓖ	SEALS
	R = NBR
	VR = FPM

Weight 50 g







Non return valve

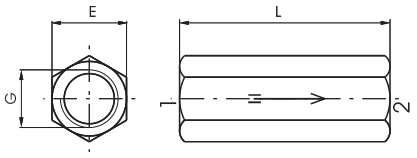
Coding: 6.07.Ⓣ

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70 (+150°C FPM)

Ⓣ	POPPET
	05 = NBR-M5
	18 = NBR-G1/8"
	14 = NBR-G1/4"
	38 = NBR-G3/8"
	12 = NBR-G1/2"
	18V = FPM-G1/8"
	14V = FPM-G1/4"
	38V = FPM-G3/8"
	12V = FPM-G1/2"

Weight "see table"





G	M5	1/8"	1/4"	3/8"	1/2"
E	10	14	17	21	25
L	21	37	48	50	60
Weight g	14	35	60	85	136
Flow rate at 6 bar with Δp = 1	Nl/min.	160	650	1150	2600	3500



Manifold 4 ports

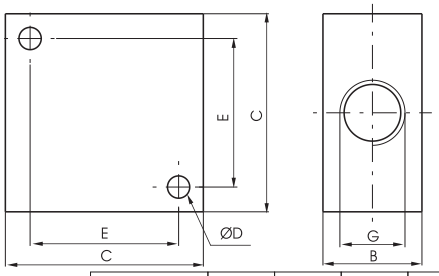
Coding: 6.08.Ⓒ/4

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	20
Temperature °C	-5 ... +70

Ⓒ	WORKING PORTS SIZE
	05 = M5
	18 = G1/8"
	14 = G1/4"
	38 = G3/8"
	12 = G1/2"

Weight "see table"





G	M5	1/8"	1/4"	3/8"	1/2"
B	10	16	20	20	30
C	20	32	40	40	50
D	3,3	4,5	4,5	5,5	6,5
E	14	22	30	30	38
Weight g	28	38	68	54	135



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Manifold 10 ports

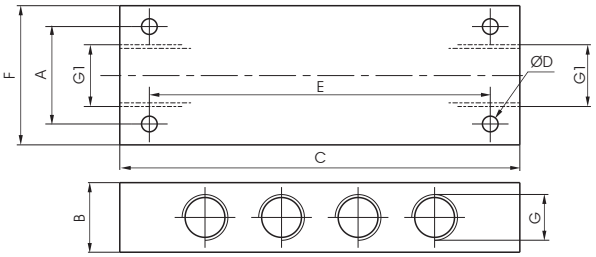
Coding: 6.08.Ⓒ/8

Operational characteristics	
Fluid	Filtered air
Max. working pressure (bar)	20
Temperature °C	-5 ... +70

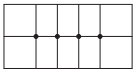
Ⓒ	WORKING PORTS SIZE
	05 = M5
	18 = G1/8"
	14 = G1/4"
	38 = G3/8"
	12 = G1/2"

Weight "see table"





G	M5	1/8"	1/4"	3/8"	1/2"
G1	G1/8"	1/8"	1/4"	3/8"	1/2"
A	16	20	28	28	36
B	12	18	20	20	30
C	60	90	115	130	170
ØD	3,3	4,5	4,5	5,5	5,5
E	50	75	98	112	150
F	22	32	40	40	50
Weight g	92	110	185	165	460



Block valve G1/4"

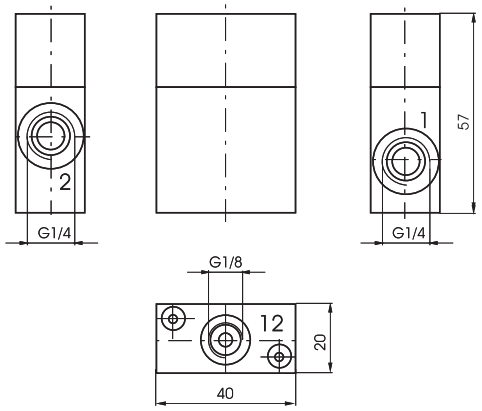
Coding: 6.09.14.Ⓕ

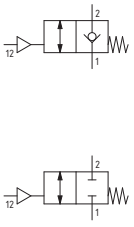
Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	4
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Orifice size (mm)	7

Ⓕ	FUNCTION
	UN = Unidirectional
	BN = Bidirectional

Weight 122 g







Block valve G1/2"

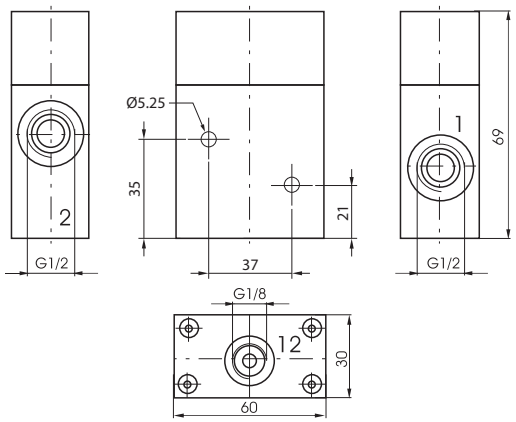
Coding: 6.09.12.Ⓕ

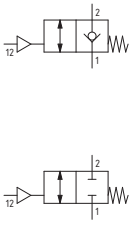
Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Minimum pilot pressure (bar)	4
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	2000
Orifice size (mm)	12

Ⓕ	FUNCTION
	UN = Unidirectional
	BN = Bidirectional

Weight 305 g







Economizer

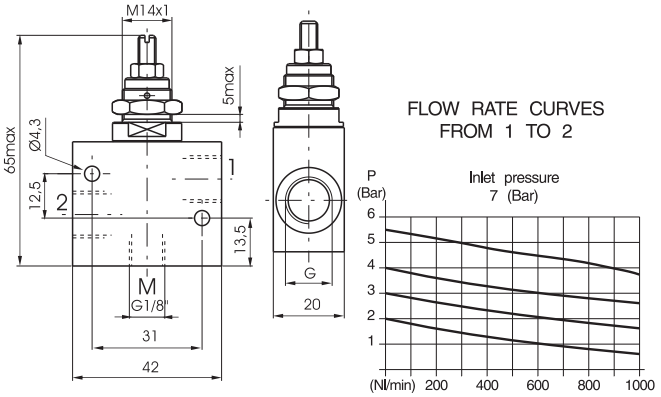
Coding: 6.11.C

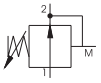
Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Pressure range (bar)	0 ... 5,5
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	860
Orifice size (mm)	6

C	WORKING PORTS SIZE
	18 = G1/8"
	14 = G1/4"

Weight 85 g







Pneumatic panel-mounted indicator G1/4"

Coding: 6.14.14.C

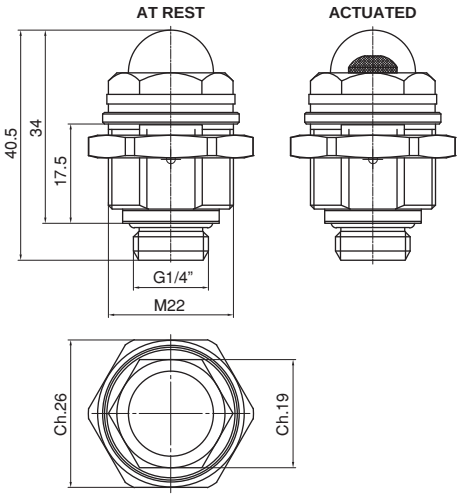
Operational characteristics	
Fluid	Filtered air
Working pressure (bar)	2 ... 10
Temperature °C	-5 ... +60

C	INDICATOR COLOUR
	00 = Green
	01 = Red
	02 = Blue
	03 = Yellow

Weight 56 g

It's recommended using the device with non-pulsating pressure





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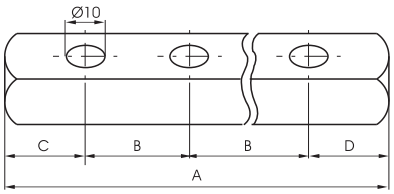
Gang mounting manifold for valves and solenoid valves G1/8"

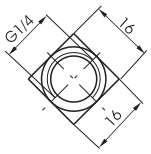
Coding: 6.10.18.Ⓢ/Ⓟ

Ⓢ	VALVE SIZE
	18 = 18 mm
	25 = 25 mm
	26 = 26 mm
	30 = 30 mm
	32 = 32 mm
	35 = 35 mm
Ⓟ	NO. POSITIONS
	2 = No. 2 positions
	3 = No. 3 positions
	4 = No. 4 positions
	5 = No. 5 positions
	6 = No. 6 positions
	7 = No. 7 positions
	8 = No. 8 positions
	9 = No. 9 positions
	10 = No. 10 positions

Weight "see table"







6.10.18.18/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	58	76	94	112	130	148	166	184	202
B	18	18	18	18	18	18	18	18	18
C	20	20	20	20	20	20	20	20	20
D	20	20	20	20	20	20	20	20	20
Weight g	55	80	105	130	155	180	205	230	255

6.10.18.25/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	70	95	120	145	170	195	220	245	270
B	25	25	25	25	25	25	25	25	25
C	20	20	20	20	20	20	20	20	20
D	25	25	25	25	25	25	25	25	25
Weight g	80	115	150	185	220	255	290	325	360

6.10.18.26/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	66	92	118	144	170	196	222	248	274
B	26	26	26	26	26	26	26	26	26
C	20	20	20	20	20	20	20	20	20
D	20	20	20	20	20	20	20	20	20
Weight g	70	110	145	185	220	260	300	340	375

6.10.18.30/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	80	110	140	170	200	230	260	290	320
B	30	30	30	30	30	30	30	30	30
C	25	25	25	25	25	25	25	25	25
D	25	25	25	25	25	25	25	25	25
Weight g	100	140	180	220	260	300	340	380	420

6.10.18.32/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	82	114	146	178	210	242	274	306	338
B	32	32	32	32	32	32	32	32	32
C	25	25	25	25	25	25	25	25	25
D	25	25	25	25	25	25	25	25	25
Weight g	100	145	190	235	280	325	370	415	460

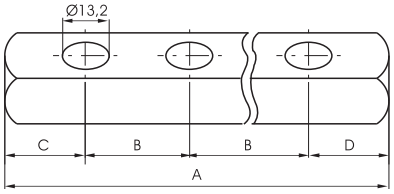
6.10.18.35/Ⓟ

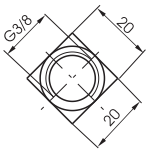
	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	89	124	159	194	229	264	299	334	369
B	35	35	35	35	35	35	35	35	35
C	27	27	27	27	27	27	27	27	27
D	27	27	27	27	27	27	27	27	27
Weight g	110	160	210	260	310	360	410	460	510

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Gang mounting manifold for valves and solenoid valves G1/4"







Coding: 6.10.14.Ⓢ/Ⓟ

Ⓢ	VALVE SIZE
	20 = 20 mm
	25 = 25 mm
	30 = 30 mm
	35 = 35 mm
	45 = 45 mm
Ⓟ	NO. POSITIONS
	2 = No. 2 positions
	3 = No. 3 positions
	4 = No. 4 positions
	5 = No. 5 positions
	6 = No. 6 positions
	7 = No. 7 positions
	8 = No. 8 positions
	9 = No. 9 positions
	10 = No. 10 positions

Weight "see table"

6.10.14.20/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	65	85	105	125	145	165	185	205	225
B	20	20	20	20	20	20	20	20	20
C	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5
D	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5	22,5
Weight g	130	150	190	190	210	230	250	270	290

6.10.14.25/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	75	100	125	150	175	200	225	250	275
B	25	25	25	25	25	25	25	25	25
C	25	25	25	25	25	25	25	25	25
D	25	25	25	25	25	25	25	25	25
Weight g	140	170	200	230	260	290	320	350	380

6.10.14.30/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	80	110	140	170	200	230	260	290	320
B	30	30	30	30	30	30	30	30	30
C	25	25	25	25	25	25	25	25	25
D	25	25	25	25	25	25	25	25	25
Weight g	150	190	230	270	310	350	390	430	470

6.10.14.35/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	85	120	155	190	225	260	295	335	365
B	35	35	35	35	35	35	35	35	35
C	30	30	30	30	30	30	30	30	30
D	20	20	20	20	20	20	20	20	20
Weight g	160	210	260	310	360	410	460	510	560

6.10.14.45/Ⓟ

	NO. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	115	160	205	250	295	340	385	430	475
B	45	45	45	45	45	45	45	45	45
C	35	35	35	35	35	35	35	35	35
D	35	35	35	35	35	35	35	35	35
Weight g	200	275	350	425	500	575	650	725	800

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Spry valves

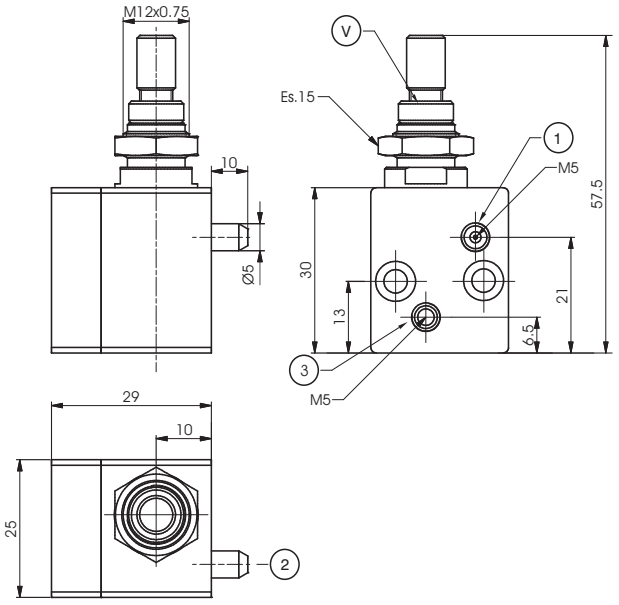
Coding: 6.13.00

Construction characteristics

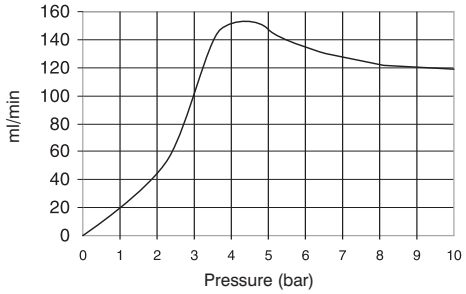
- This valve, is based on the Venturi principle, and it is used to spray and nebulize a liquid.
- Useful in all applications where is needed a continuous lubrication and / or refrigeration.
- Incoming air (connection 1) sucks the liquid through the venturi principle (connection 3) to obtain a continuous spray output (connection 2).

Technical characteristics	
Fluid	filtered and lubricated air
Liquid	Water and oil (Liquid viscosity 3°E* ... 5°E*) *E = Engler Degrees
Working pressure (bar)	3 ... 10
Temperature °C	-5 ... +70
Weight (g)	85



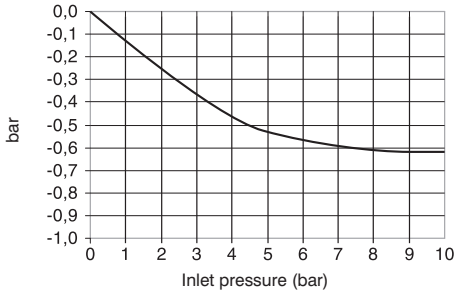


Liquid consumption diagram

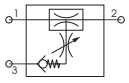


Volume of aspirated fluid in function of pressure power with the adjuster screw "V" totally open

Vacuum diagram



Volume of vacuum generated in function of supply pressure



Supply air : Connection 1
Output (air and nebulized liquid) : Connection 2
Supply liquid : Connection 3

Series 900

The 900 series consist of the following components:

- Pressure switch, which transforms a pneumatic signal into an electric one.
- Impulse generator, which transforms a permanent pneumatic signal into an adjustable impulse from 0 to 10 seconds.
- Pneumatic timer (N.C. or N.O.), which cuts or releases a pneumatic signal within an adjustable time.
- Two hands safety valve, which allows a safety use of two hands pneumatic controls (for example two push-button 3/2 N.C. to a certain distance) excluding false signals in case of push-button or valve malfunction.
- Flip-Flop: 5/2 ways valve, single signal actuated, commutes the outlet from 2 to 4 and vice versa at each puls.
- For a correct functioning it's important that inlet pressure be the same or lower than pilot pressure.
- Oscillator valve, 5/2 - G 1/8" with two logic functions "NOT" mounted on board, switches when the pressure in the connected cylinder exhaust chamber is reaching the threshold of "NOT".
- Signal amplifier, 3/2 - G 1/8" N.C. valve actuated by weak signals but higher than 0.05 bar.
- Progressive start-up valve, which is a device that is fitted in between valve or solenoid valve and cylinder allows a gradual filling of the chamber providing a low power cylinder movement. The progressive start-up valve is made of a flow control valve and a 2/2 N.C. valve with 6 mm nominal orifice. The valve is totally open when the pressure in the cylinder reaches 50% of inlet pressure.
- High-low pressure devices, located in the pneumatic circuit between valve and cylinder, allow the function of the cylinder with two different pressures. Example: in case of a locking action, it is possible to approach the required position at a low pressure, then increase to its maximum value in the circuit with the use of an electric signal. They are practically made of a piloted pressure regulator without relieving.

Construction characteristics

We use corrosion proof material, brass or anodized aluminium and the most appropriate specific mixture for seals.
If more information is required please contact our technical department.

Use and maintenance

In use pay attention to the minimum and maximum criteria for temperature and pressure, checking and ensure good quality compressed air. In a dirty environment, protect the exhaust ports. In this case, maintenance is minimal and is necessary only if the air is particularly dirty.
This simple operation it should be carried out by a competent person.

ATTENTION: use hydraulic oil class H for lubrication such as CASTROL MAGNA SW32.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pressure switch G1/8" - screw connections

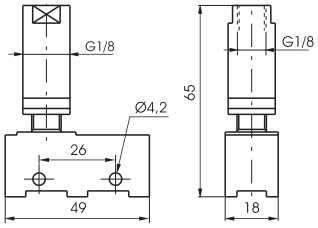
Coding: 900.18.1-Ⓟ

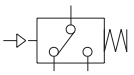
Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate microswitch	13 (3) A to 220V~
Pilot ports size	G1/8"

Ⓟ	PRESSURE
	1 = Min. switch pressure 1 bar
	4 = Min. switch pressure 4 bar

Weight 75 g







Pressure switch G1/8" - spade connections

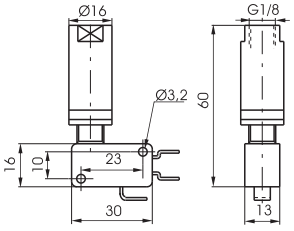
Coding: 900.18.1/Ⓟ

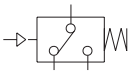
Operational characteristics	
Fluid	filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate microswitch	16 (5) A to 220V~
Pilot ports size	G1/8"

Ⓟ	PRESSURE
	1-1 = Min. switch pressure 1 bar
	1-4 = Min. switch pressure 4 bar

Weight 60 g





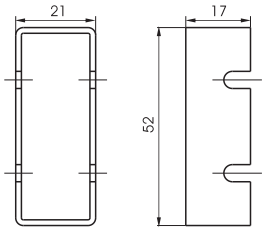


Switch protection

Coding: 900.18.0

Weight 6 g



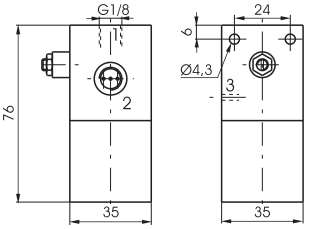


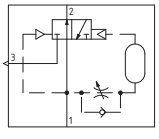
Impulse generator

Coding: 900.18.2N

Weight 325 g







Pneumatic timer N.C. - G 1/8"

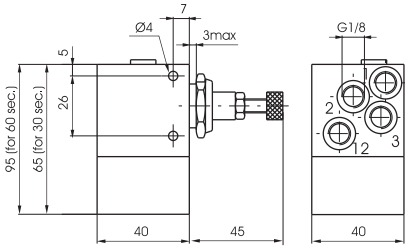
Coding: 900.18.T

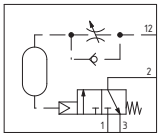
Operational characteristics	
Fluid	Filtered and lubricated air
Working pressure (bar)	3 ... 10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	130
Orifice size (mm)	2.5

T	TIME
	3 = 0 ... 30 sec.
	3.60 = 0 ... 60 sec.

Weight 290 g (30 sec.)
Weight 350 g (60 sec.)







Pneumatic timer N.O. - G 1/8"

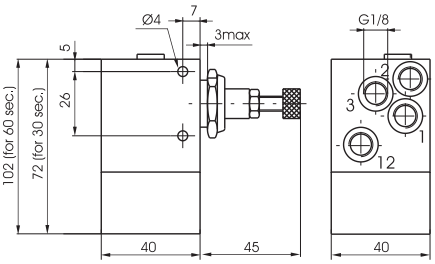
Coding: 900.18.T

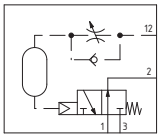
Operational characteristics	
Fluid	Filtered and lubricated air
Working pressure (bar)	4 ... 10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	130
Orifice size (mm)	2.5

T	TIME
	4 = 0 ... 30 sec.
	4.60 = 0 ... 60 sec.

Weight 320 g (30 sec.)
Weight 380 g (60 sec.)







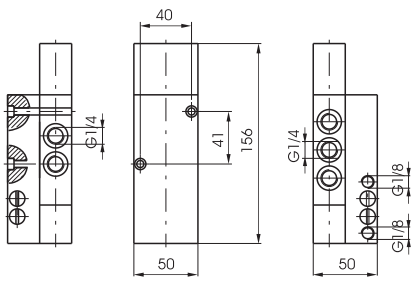
Two hands safety valve G 1/4"

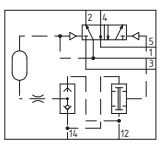
Coding: 900.52.1.1

Weight 780 g

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	1030
Orifice size (mm)	7
Working ports size	G1/4"
Pilot ports size	G1/8"







Attention : This version is not certified to any safety standard

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

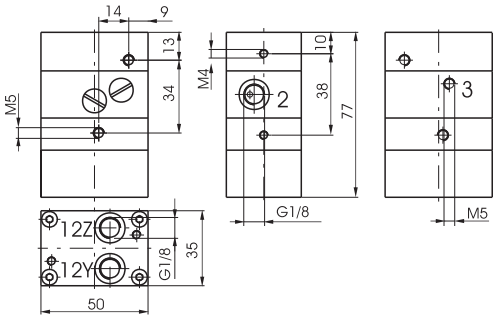
Two hands safety valve ISO 13851: TYPE IIIA

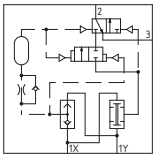
Coding: 900.18.9

Weight 340 g

Operational characteristics	
Fluid	Filtered and lubricated air
Working pressure (bar)	3 ... 8
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	40
Orifice size (mm)	2.5
Working ports size	G1/8"
Pilot ports size	G1/8"







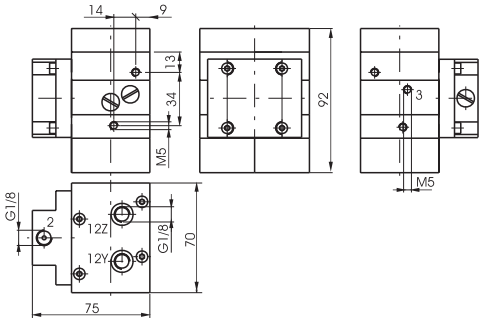
Two hands safety valve ISO 13851: TYPE IIIB

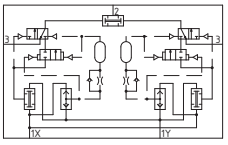
Coding: 900.18.10

Weight 980 g

Operational characteristics	
Fluid	Filtered and lubricated air
Working pressure (bar)	3 ... 8
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	40
Orifice size (mm)	2.5
Working ports size	G1/8"
Pilot ports size	G1/8"





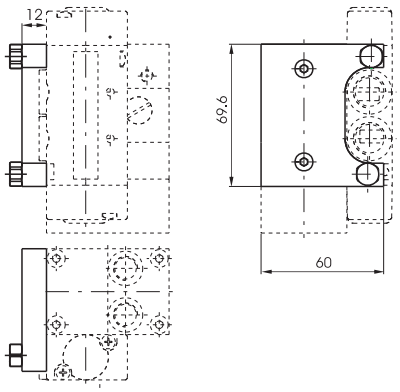


Power valve adaptor (Series 2400)

Coding: 900.18.11

Weight 75 g





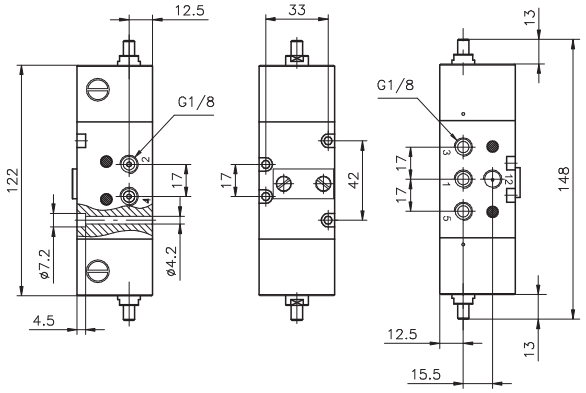
Flip-flop valve G 1/8"-Pneumatic command

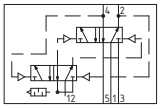
Coding: 900.52.1.3

Weight 550 g

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"







Attention : Pressure of signal "12" must be the same or higher than device inlet pressure. The maximum distance between the pilot valve and the device must not exceed 1Mtr. (see pneumatic scheme). Should be necessary to work at a greater distance it is advisable to use a pneumatic-spring shut-off valve positioned at the recommended distance.

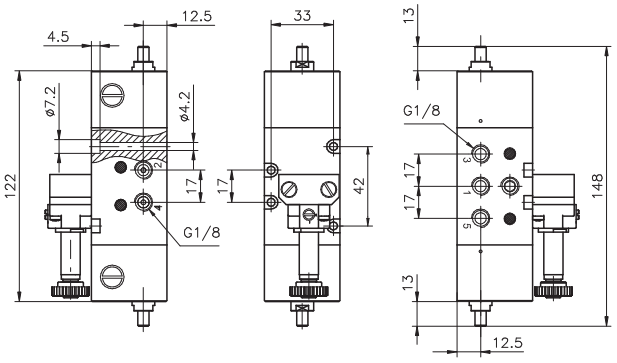
Flip-flop valve-Electric command with M2 mechanic

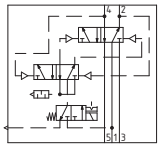
Coding: 900.52.1.4

Weight 660 g

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"







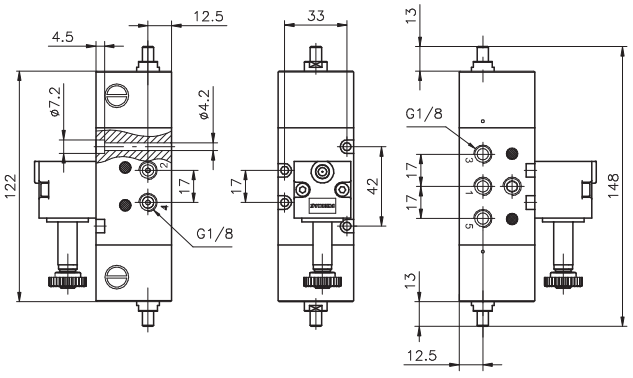
Flip-flop valve-Electric command with M3P CNOMO

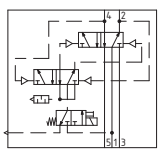
Coding: 900.52.1.5

Weight 600 g

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Oscillator valve G 1/8"

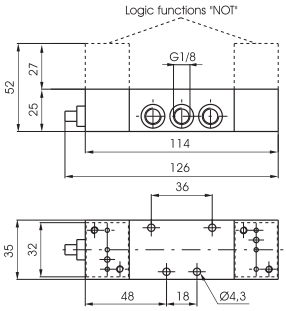
Coding: 900.52.Ⓕ

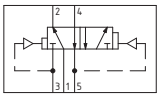
Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	8
Min. working pressure (bar)	2
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	540
Orifice size (mm)	6
Working ports size	G1/8"

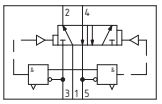
Ⓕ	FUNCTION
	5 = without logic functions NOT
	5C = with logic functions NOT

Weight 600 g









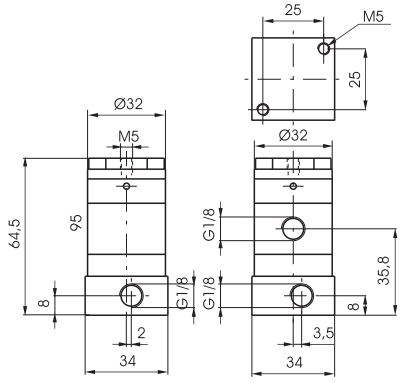
Signal amplifier G 1/8"

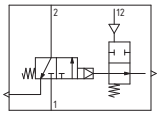
Coding: 900.32.6

Weight 170 g

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Min. working pressure (bar)	0.05
Temperature °C	-5 ... +70
Flow rate at 6 bar with Δp=1 (Nl/min)	130
Orifice size (mm)	3
Working ports size	G1/8"







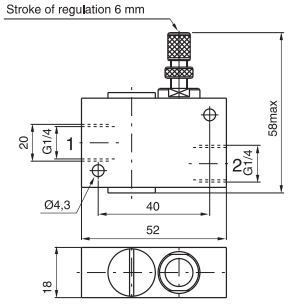
Progressive start-up valve G 1/4"

Coding: 900.14.7

Weight 100 g
Flow rate needle fully open from port 1 to 2 (Nl/min.) = 200

Operational characteristics	
Fluid	Filtered and lubricated air
Working pressure (bar)	2,5 ... 10
Temperature °C	-10 ... +70
Flow rate from 1 to 2 (Nl/min)	760
Flow rate from 2 to 1 (Nl/min)	900
Orifice size (mm)	6







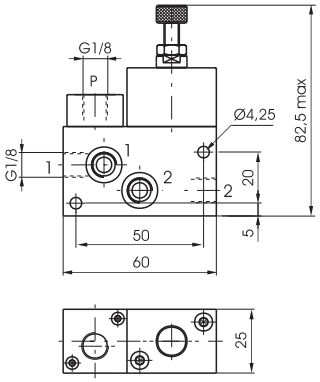
High-low pressure device

Coding: 900.18.8.P

Weight 240 g
with pneumatic pilot

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Pressure range (bar)	1 ... 4
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	650
Working ports size	G1/8"







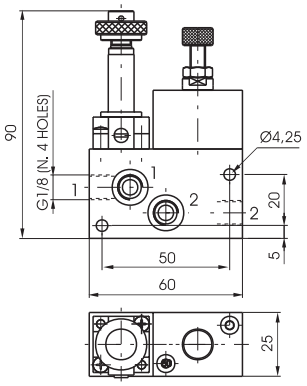
High-low pressure device

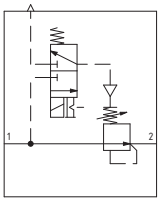
Coding: 900.18.8.E

Weight 280 g
with M2 mechanic

Operational characteristics	
Fluid	Filtered and lubricated air
Max. working pressure (bar)	10
Pressure range (bar)	1 ... 4
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	650
Working ports size	G1/8"





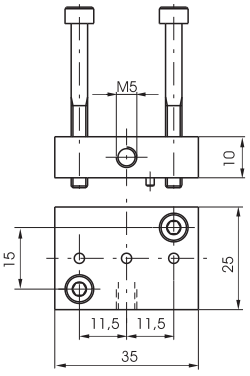


External feeding base "NOT" logical element

Coding: 900.005

Weight 35 g



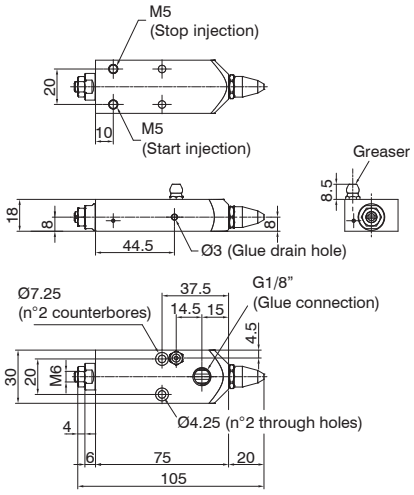


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pneumatic glue injector

Coding: 900.19.01





Construction characteristics

- External components: nickel-plated brass / stainless steel
- Piloting connections: M5
- Glue connection: G1/8"
- Glue Seal: special PTFE
- Pneumatic seals: NBR
- Grease nipple: Stainless steel
- Spray intensity adjustment screw: Stainless steel

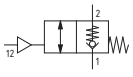
Technical characteristics	
Injection fluid	Vinyl glue
Pressure Glue (bar)	7
Pneumatic fluid piloting	Filtered air. No lubrication needed, if applied it shall be continuous
Opening pilot (bar)	3 ... 6
Closing pilot (bar)	3 ... 6 (or spring)
Temperature °C	-5 ... +70
Weight (g)	285

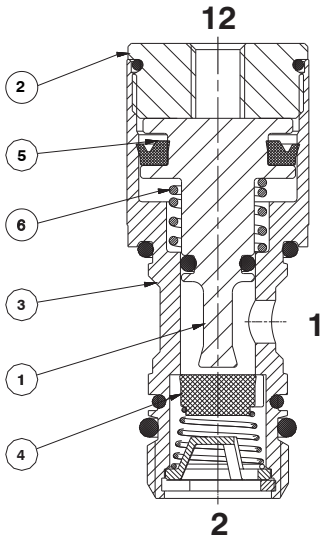
Series 50-T50

The blocking valves are used to maintain pressure in the downstream part of the pneumatic circuit even when the pressure supply is shut down.
Blocking valves are normally assembled directly on cylinders ports in order to maintain the position even in cases of accidental loss of the pilot pressure by preventing a sudden loss of pressure in the cylinder chambers.
Unidirectional and bidirectional version are both available.
The unidirectional version allows free air to flow in one direction while requires a pneumatic signal to allow air flow in the opposite direction.
The bidirectional version requires a pressure signal to allow air flow in both of the two directions.
The blocking valve cannot be used as safety device.

Constructive features

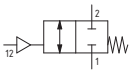
UNIDIRECTIONAL VERSION

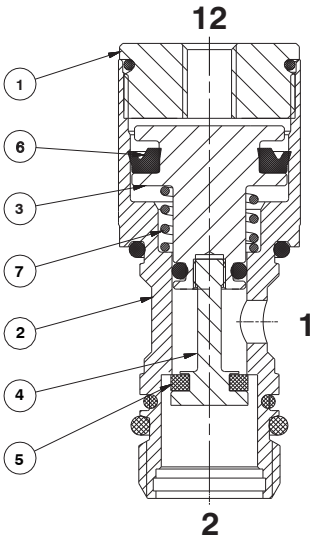




1 - Aluminium piston
2 - Brass plug
3 - Brass body
4 - FPM poppet (1/8" and 1/4" version) PUR poppet
5 - NBR seal
6 - Steel spring

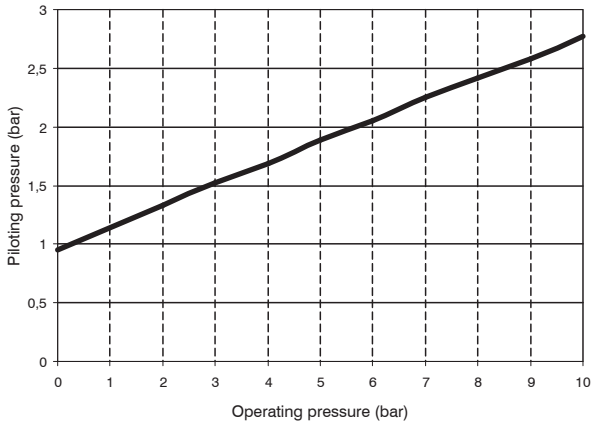
BIDIRECTIONAL VERSION





1 - Brass plug
2 - Brass body
3 - Aluminium piston
4 - Steel piston extension
5 - PUR poppet
6 - NBR seal
7 - Steel spring

Working curves



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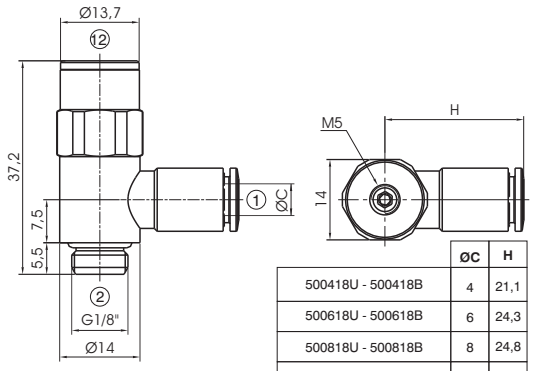
Blocking valves metal type-Size 1/8"

Coding: 50Ⓣ18Ⓥ

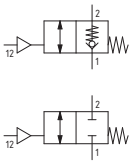
Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 ... 10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	285
Flow rate with free exhaust (Nl/min)	450

Ⓣ	TYPE
	A = Banjo only
	04 = Banjo Ø4
	06 = Banjo Ø6
	08 = Banjo Ø8
	18 = Banjo G1/8"
Ⓥ	VERSION
	U = Unidirectional
	B = Bidirectional





	ØC	H
500418U - 500418B	4	21,1
500618U - 500618B	6	24,3
500818U - 500818B	8	24,8
501818U - 501818B	G1/8"	20



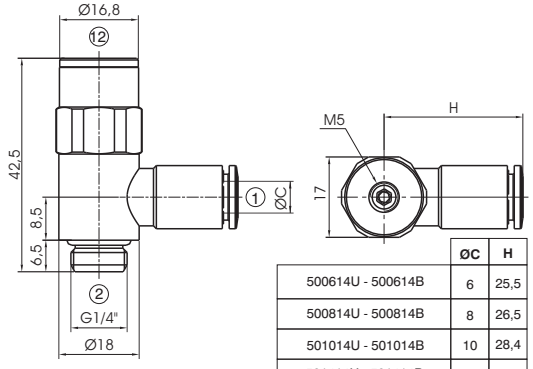
Blocking valves metal type-Size 1/4"

Coding: 50Ⓣ14Ⓥ

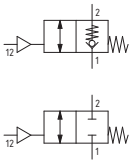
Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 ... 10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	530
Flow rate with free exhaust (Nl/min)	800

Ⓣ	TYPE
	A = Banjo only
	06 = Banjo Ø6
	08 = Banjo Ø8
	10 = Banjo Ø10
	14 = Banjo G1/4"
Ⓥ	VERSION
	U = Unidirectional
	B = Bidirectional





	ØC	H
500614U - 500614B	6	25,5
500814U - 500814B	8	26,5
501014U - 501014B	10	28,4
501414U - 501414B	G1/4"	24



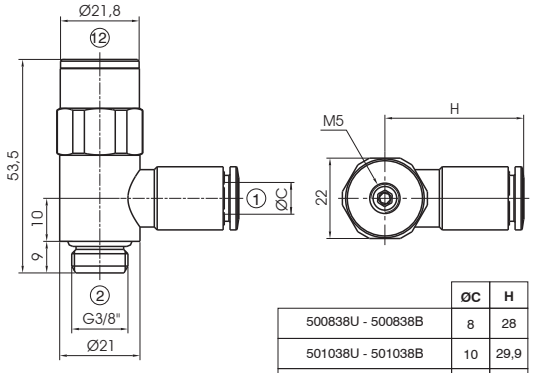
Blocking valves metal type-Size3/8"

Coding: 50Ⓣ38Ⓥ

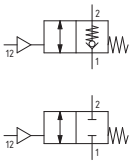
Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 ... 10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Flow rate with free exhaust (Nl/min)	1600

Ⓣ	TYPE
	A = Banjo only
	08 = Banjo Ø8
	10 = Banjo Ø10
	12 = Banjo Ø12
	38 = Banjo G3/8"
Ⓥ	VERSION
	U = Unidirectional
	B = Bidirectional





	ØC	H
500838U - 500838B	8	28
501038U - 501038B	10	29,9
501238U - 501238B	12	31,4
503838U - 503838B	G3/8"	28,5



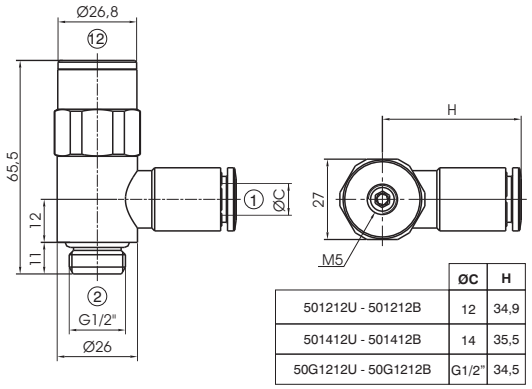
Blocking valves metal type-Size1/2"

Coding: 50 Ⓣ 12 Ⓥ

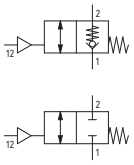
Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 ... 10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1300
Flow rate with free exhaust (Nl/min)	2600

Ⓣ	TYPE
	A = Banjo only
	12 = Banjo Ø12
	G12 = Banjo G1/2"
Ⓥ	VERSION
	U = Unidirectional
	B = Bidirectional





	ØC	H
501212U - 501212B	12	34,9
501412U - 501412B	14	35,5
50G1212U - 50G1212B	G1/2"	34,5



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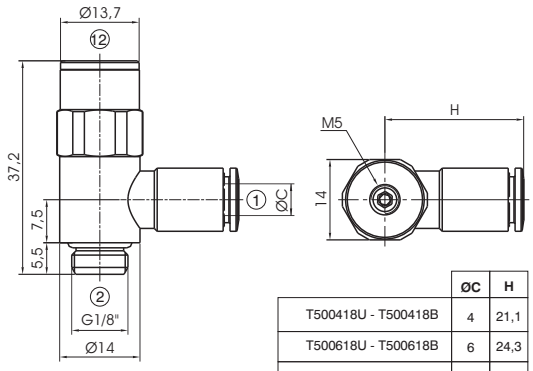
Blocking valves technopolymer type-Size 1/8"

Coding: T50❶18❷

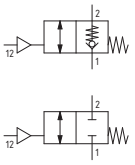
Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 ... 10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	285
Flow rate with free exhaust (Nl/min)	450

❶	TYPE
	A = Banjo only
	04 = Banjo Ø4
	06 = Banjo Ø6
	08 = Banjo Ø8
❷	VERSION
	U = Unidirectional
	B = Bidirectional





	ØC	H
T500418U - T500418B	4	21,1
T500618U - T500618B	6	24,3
T500818U - T500818B	8	24,8



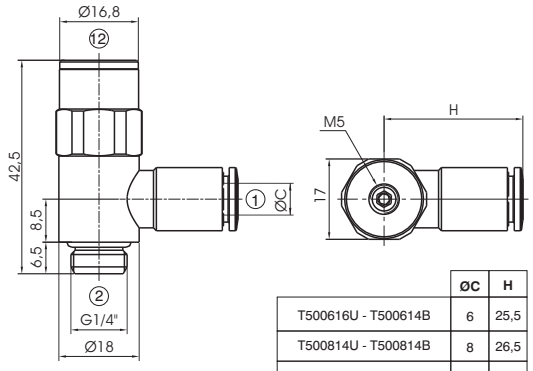
Blocking valves technopolymer type-Size 1/4"

Coding: T50❶14❷

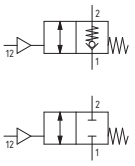
Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 ... 10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	530
Flow rate with free exhaust (Nl/min)	800

❶	TYPE
	A = Banjo only
	06 = Banjo Ø6
	08 = Banjo Ø8
	10 = Banjo Ø10
❷	VERSION
	U = Unidirectional
	B = Bidirectional





	ØC	H
T500616U - T500614B	6	25,5
T500814U - T500814B	8	26,5
T501014U - T501014B	10	28,4



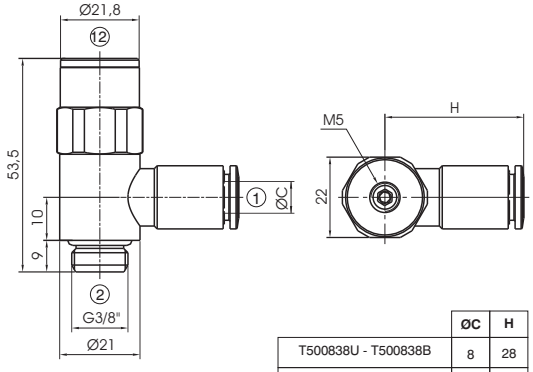
Blocking valves technopolymer type-Size 3/8"

Coding: T50❶38❷

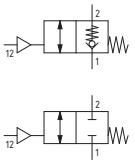
Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 ... 10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Flow rate with free exhaust (Nl/min)	1600

❶	TYPE
	A = Banjo only
	08 = Banjo Ø8
	10 = Banjo Ø10
	12 = Banjo Ø12
❷	VERSION
	U = Unidirectional
	B = Bidirectional





	ØC	H
T500838U - T500838B	8	28
T501038U - T501038B	10	29,9
T501238U - T501238B	12	31,4



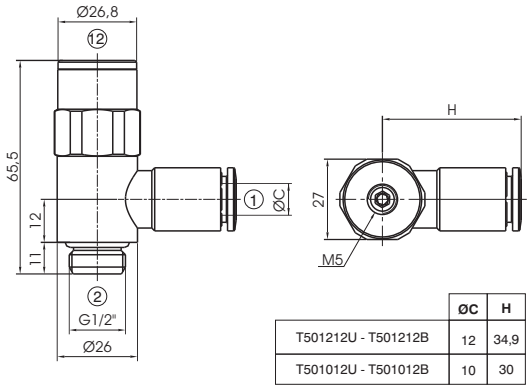
Blocking valves technopolymer type-Size 1/2"

Coding: T50Ⓣ12Ⓥ

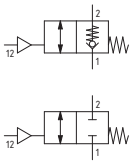
Operational characteristics	
Fluid	filtered and lubricated air or non
Working pressure (bar)	0,5 ... 10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1300
Flow rate with free exhaust (Nl/min)	2600

Ⓣ	TYPE
	A = Banjo only
	10 = Banjo Ø10
	12 = Banjo Ø12
Ⓥ	VERSION
	U = Unidirectional
	B = Bidirectional





	ØC	H
T501212U - T501212B	12	34,9
T501012U - T501012B	10	30



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 55 Tecno-FUN

This line of different logic functions that can be used in any place of the secondary pneumatic circuit, developed to be installed directly onto the main pneumatic components (distributors or cylinders).
Thanks to the modular design it is possible to easily join together multiple logic functions without the need of using pipes to connect them; it is also possible to choose the type and style of each connection. The connections available are the following: straight cartridge; Banjo PL cartridge; male cartridge threaded 1/8" or 1/4" and female cartridge threaded 1/8".
Function fittings can also be assembled side by side in order to be assembled on the DIN EN 50022 rail (using the relevant kit).



Other characteristics:

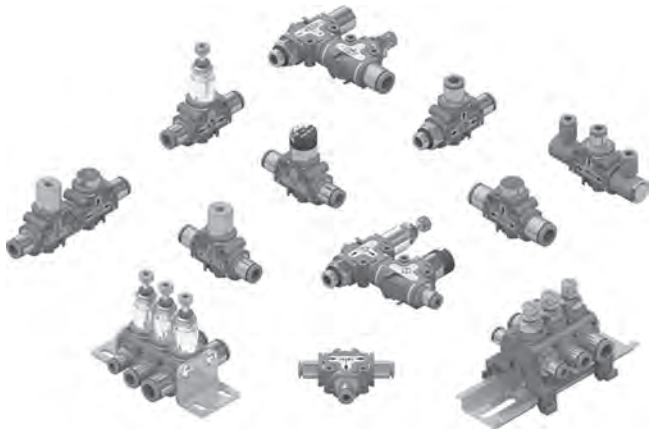
Technopolymer body version
Input/output connection directly integrated into the body
In line or 90° connection
Possibility to build a manifold -parallel mounting-
Different connection options:
Tube Ø4 Ø6 Ø8 (elbow version as well)
G1/8" G1/4" male straight cartridge
G1/8" female cartridge, in line or 90°

Different mounting options:

- Wall fixing through the holes in the body
- By means of the fixing bracket
- Panel mounting (for those function that include such possibility)
- On DIN rail EN 50022 (using the DIN rail adapter kit)

Available functions

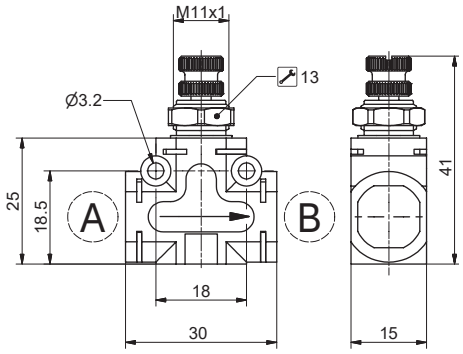
- Flow control valve
- Pressure regulator
- Block valve
- Quick exhaust valve
- OR gate
- AND gate
- Pressure gauge
- Progressive start-up valve
- Pressure regulator + pressure gauge
- Block valve + Flow control valve
- Block valve + quick exhaust valve



Flow regulator

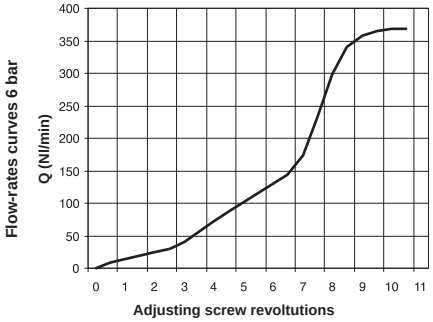
Coding: 551.11Ⓣ.Ⓐ.Ⓑ.XX

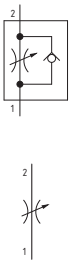




Ⓣ	TYPE
	1 = Unidirectional
	2 = Bidirectional
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.111.D6.D6.XX
Flow control valve unidirectional, CONNECTIONS "A" and "B" Tube Ø6
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"





Technical characteristics

- The flow control valve is normally used to regulate the air flow and, as a consequence, for example, the speed of a cylinder. Two types of flow control valves are available: unidirectional and bidirectional.
- In the unidirectional valve the flow is regulated only in one direction while is free to move in the opposite direction; in the bidirectional valve the flow is regulated in both directions.
- Panel mounting using the lock nut supplied as standard
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

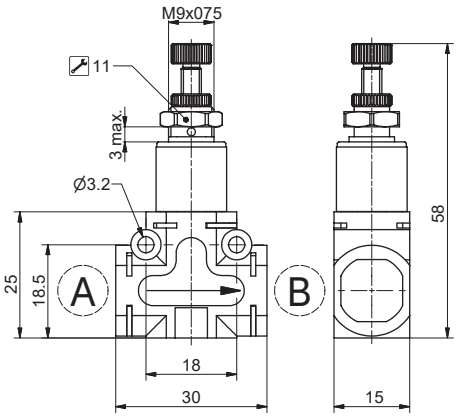
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	10
Orifice size (mm)	Ø3
Free exhaust flow rate in the opposite side of the regulation	800 (for unidirectional version)
Temperature °C	-5 ... +50
Weight (g)	26

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

In line pressure regulator

Coding: 551.12Ⓣ.Ⓐ.Ⓑ.XX





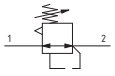
Ⓣ	TYPE
	2 = 0-2 bar
	4 = 0-4 bar
	8 = 0-8 bar
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.128.D8.D8.XX
In line pressure regulator, pressure range (bar) 0-8 bar. Connections "A" and "B" Tube Ø6
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

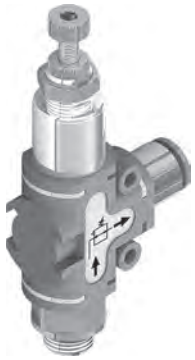
- The pressure regulator is a device which is used to reduce, regulate and stabilize the air pressure in a conduit in order to adapt it to the needs of the equipments to be supplied. The pressure regulator incorporates the relieving function.
- Panel mounting using the lock nut supplied as standard
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

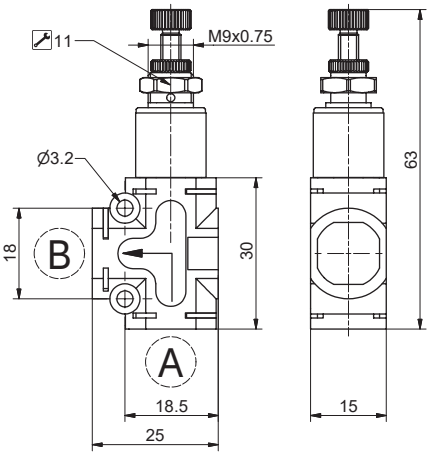
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	10
Flow rate at 6 bar with Δp=1 (Nl/min)	180
Pressure range (bar)	0...2 / 0...4 / 0...8
Temperature °C	-5 ... +50
Weight (g)	31



90° pressure regulator

Coding: 551.22Ⓣ.Ⓐ.Ⓑ.XX





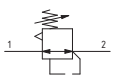
Ⓣ	TYPE
	2 = 0-4 bar
	4 = 0-2 bar
	8 = 0-8 bar
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.224.M1.D6.XX
90° pressure regulator, pressure range (bar) 0-4 bar. Connections "A" Male G1/8 and "B" Tube Ø6
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

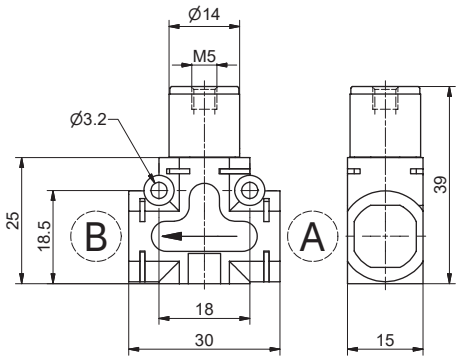
- The pressure regulator is a device which is used to reduce, regulate and stabilize the air pressure in a conduit in order to adapt it to the needs of the equipments to be supplied. The pressure regulator incorporates the relieving function.
- Panel mounting using the lock nut supplied as standard
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	10
Flow rate at 6 bar with Δp=1 (Nl/min)	180
Pressure range (bar)	0...2 / 0...4 / 0...8
Temperature °C	-5 ... +50
Weight (g)	31



Blocking valve

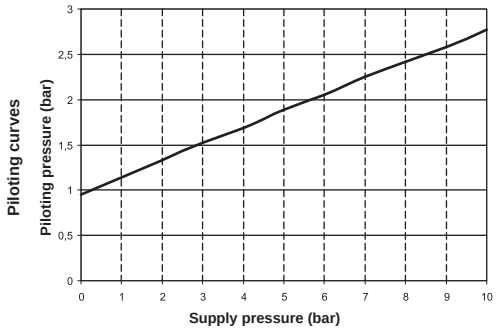


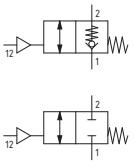


Coding: 551.13Ⓣ.Ⓐ.Ⓑ.XX

Ⓣ	TYPE
	1 = Unidirectional
	2 = Bidirectional
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.131.D4.D4.XX
In line blocking valve, unidirectional. Connections "A" and "B" Tube Ø4
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"





Technical characteristics

- The blocking valve function is to maintain the circuit downstream pressure in the event of loss of supply pressure. It is normally fitted directly onto the cylinder connections ports in order to ensure that, in case of accidental loss of the supply pressure, the units positions is maintained. This is achieved as the blocking valve preserves the pressure inside the pressurised chamber. Blocking valves can be unidirectional or bidirectional.
- In the unidirectional version the air flow is free in one direction while in order to allow the flow in the opposite direction is necessary to send a pneumatic signal to the unit connection 12.
- The bidirectional version requires a pneumatic signal on connection 12 to allow the flow in any of the two directions.
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

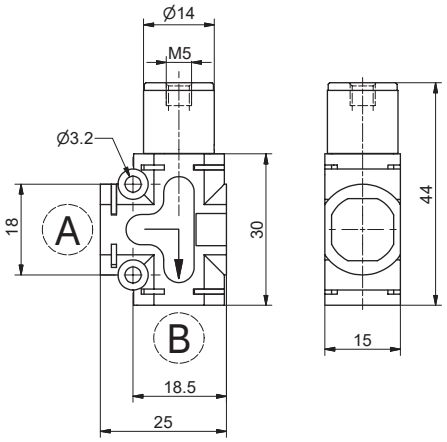
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Working pressure (bar)	0,5 ... 10
Flow rate at 6 bar with Δp=1 (Nl/min)	285
Flow rate at 6 bar with free exhaust (Nl/min)	450
Temperature °C	-5 ... +50
Weight (g)	26

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

90° blocking valve

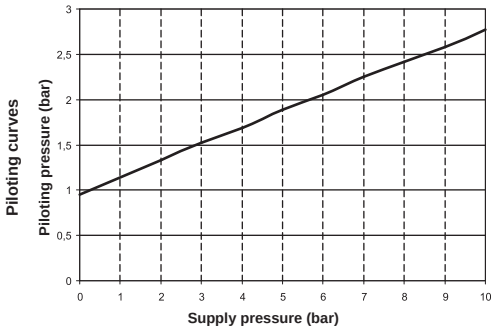
Coding: 551.23Ⓣ.Ⓐ.Ⓑ.XX

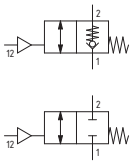




Ⓣ	TYPE
	1 = Unidirectional
	2 = Bidirectional
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.231.D6.M1.XX
90° blocking valve. Connections "A" Male G1/8 and "B" Tube Ø6
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"





Technical characteristics

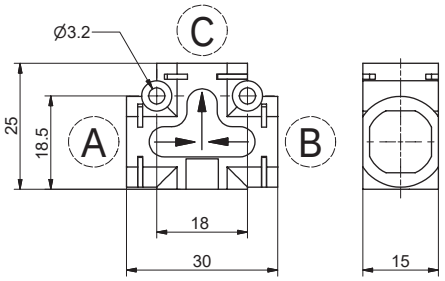
- The blocking valve function is to maintain the circuit downstream pressure in the event of loss of supply pressure. It is normally fitted directly onto the cylinder connections ports in order to ensure that, in case of accidental loss of the supply pressure, the units positions is maintained. This is achieved as the blocking valve preserves the pressure inside the pressurised chamber.
- Unidirectional and bidirectional version are both available.
- In the unidirectional version the air flow is free in one direction while in order to allow the flow in the opposite direction is necessary to send a pneumatic signal to the unit connection 12.
- The bidirectional version requires a pneumatic signal on connection 12 to allow the flow in any of the two directions.
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Working pressure (bar)	0,5 ... 10
Flow rate at 6 bar with Δp=1 (Nl/min)	285
Flow rate at 6 bar with free exhaust (Nl/min)	450
Temperature °C	-5 ... +50
Weight (g)	26

Circuit selector valve-OR

Coding: 551.141.Ⓐ.Ⓑ.Ⓒ





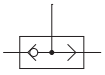
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
Ⓒ	CONNECTION C
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.141.D8.D8.D8
Circuit selector valve-OR. Connections "A", "B" and "C" Tube Ø8
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

- These valves have two inlets and one output connection and are normally called high pressure selector valves as, when receiving two separate pressure supply, only allow the passage of the highest pressure. The most common application is to operate a component from two separate positions.
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

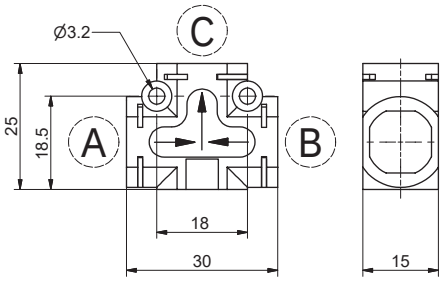
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	10
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Temperature °C	-5 ... +50
Weight (g)	10



Circuit selector valve-AND

Coding: 551.151.Ⓐ.Ⓑ.Ⓒ





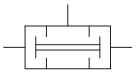
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
Ⓒ	CONNECTION C
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.151.D6.D6.D6
Circuit selector valve AND. Connections "A", "B" and "C" Tube Ø6
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

- These valves have two inlets and one output connection and are normally called low pressure selector valves as, when receiving two separate pressure supply, only allow the passage of the lowest pressure. The most common application is to operate a component from two separate positions.
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

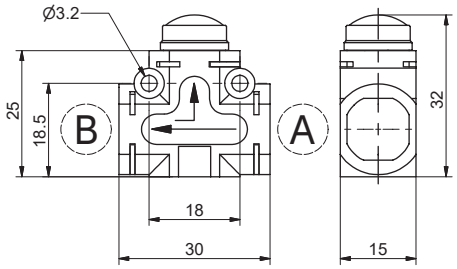
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	10
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Temperature °C	-5 ... +50
Weight (g)	10



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Quick exhaust valve





Coding: 551.161.Ⓐ.Ⓑ.XX

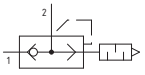
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.161.D8.D8.XX
Quick exhaust valve. Connections "A" and "B" Tube Ø6
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

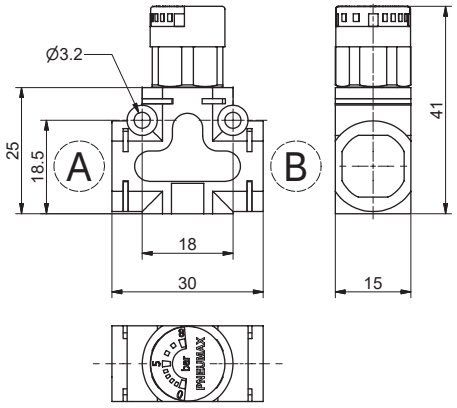
- These are 3 ways, two positions valves which can be directly mounted onto the actuator or between the actuator and the control valve. Their function is to discharge the air directly into the atmosphere without going through the pneumatic circuit enabling the actuator to reach the maximum speed.
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	10
Flow rate at 6 bar with Δp=1 (Nl/min)	250
Flow rate at 6 bar with free exhaust (Nl/min)	500
Temperature °C	-5 ... +50
Weight (g)	15



Pressure indicator





Coding: 551.178.Ⓐ.Ⓑ.XX

Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.178.D6.D4.XX
Pressure indicator. Connections "A" Tube Ø6, "B" Tube Ø4
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

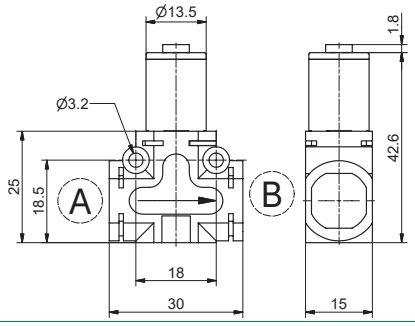
- The pressure visual indicator is a device which measures the pressure inside a pneumatic circuit. The 0 to 8 bar visual indicator makes very easy to monitor the pressure state inside the circuit. It can be use on its own or can be coupled with another device.
- It can be use on its own or can be coupled with another device.
- on DIN rail using the relevant adaptor kit (see accessories)
- With 90° bracket (see accessories)
- directly on the support plate thanks to two through holes on the body

Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	8
Visualization scale (bar)	0 ... 8
Temperature °C	-5 ... +50
Weight (g)	20.5



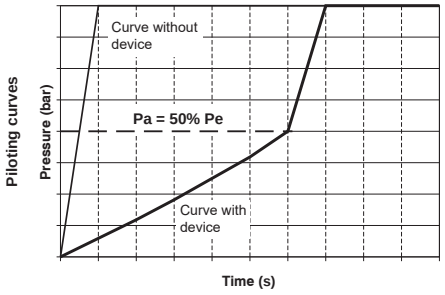
In line progressive start-up valve

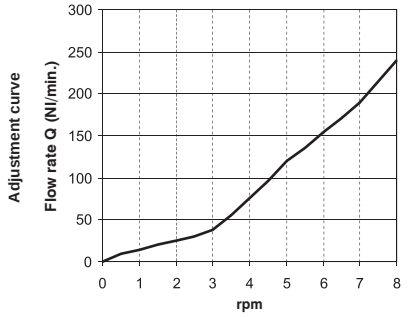




Coding: 551.181.Ⓐ.Ⓑ.XX

Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female







Example: 551.181.D6.D4.XX = In line progressive start-up valve. Connections "A" Tube Ø6, "B" Tube Ø4
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

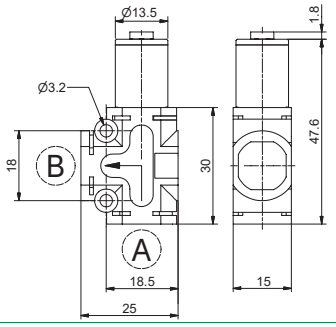
Technical characteristics

- The soft start valve is a device designed to gradually pressurise the downstream circuit until 50% of the upstream pressure value is reached.
- Once the 50% of the upstream pressure value is reached in the down stream circuit the valve fully opens allowing full air passage.
- The filling time can be adjusted thanks to the built in flow regulator.
- This device is used in order to ensure that during the pneumatic circuit start up the cylinders will return to theirs home position slowly avoiding collisions or sudden movements.

Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Opening pressure (Pa)	50% of the inlet pressure (Pi)
Flow rate at 6 bar with free exhaust (Nl/min) from 1 to 2 with opening ciruit	350
Flow rate at 6 bar with Δp=1 from 1 to 2 with opening ciruit	600
Flow rate at 6 bar with Δp=1 from 2 to 1 with opening pin	650
Temperature °C	-5 ... +50
Weight (g)	31

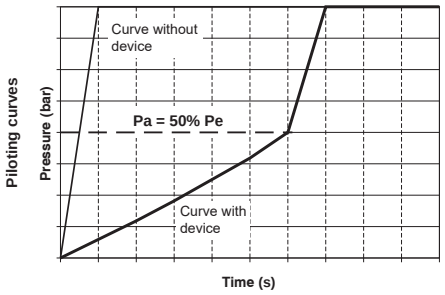
90° progressive start-up valve

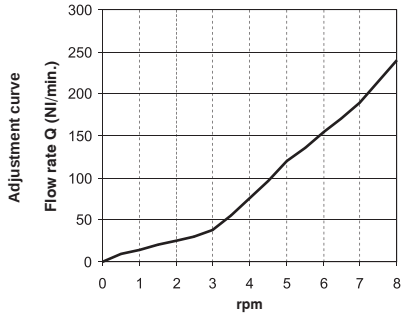




Coding: 551.281.Ⓐ.Ⓑ.XX

Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female







Example: 551.281.M1.D4.XX = 90° progressive start-up valve. connections "A" Male G1/8", "B" Tube Ø4
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

- The soft start valve is a device designed to gradually pressurise the downstream circuit until 50% of the upstream pressure value is reached.
- Once the 50% of the upstream pressure value is reached in the down stream circuit the valve fully opens allowing full air passage.
- The filling time can be adjusted thanks to the built in flow regulator.
- This device is used in order to ensure that during the pneumatic circuit start up the cylinders will return to theirs home position slowly avoiding collisions or sudden movements.

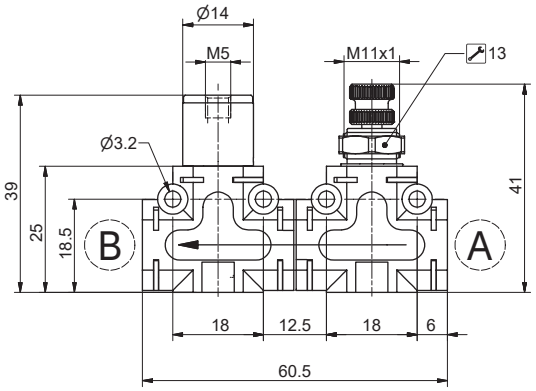
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Opening pressure (Pa)	50% of the inlet pressure (Pi)
Flow rate at 6 bar with free exhaust (Nl/min) from 1 to 2 with opening ciruit	350
Flow rate at 6 bar with Δp=1 from 1 to 2 with opening ciruit	600
Flow rate at 6 bar with Δp=1 from 2 to 1 with opening pin	650
Temperature °C	-5 ... +50
Weight (g)	31

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

In line blocking valve with flow control valve

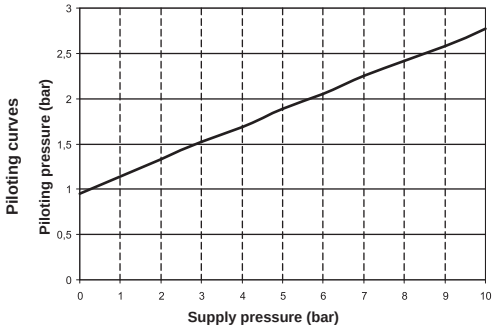
Coding: 551.1F❶.Ⓐ.Ⓑ.XX

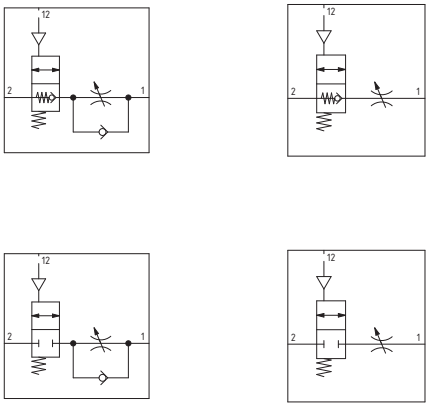




❶	TYPE
	1 = Unidirectional blocking valve + unidirectional flow control valve
	2 = Bidirectional blocking valve + bidirectional flow control valve
	3 = Unidirectional blocking valve + bidirectional flow control valve
	4 = Bidirectional blocking valve + unidirectional flow control valve
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.1F1.00.00.XX
In line blocking valve + flow control valve. Without connections "A" and "B"
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"





Technical characteristics

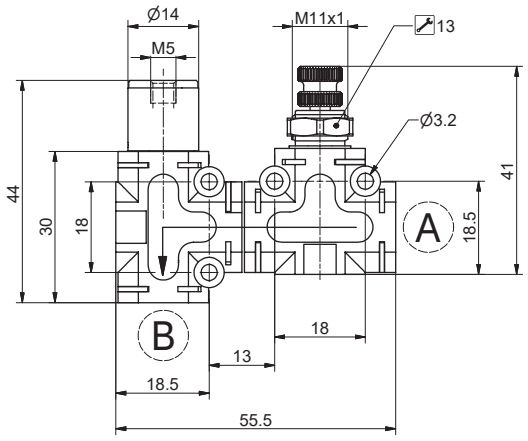
- The combination of this two functions ensures that the downstream pressure is maintained in case of accidental loss of supply pressure and at the same time grants the possibility to regulate the circuit flow rate. A typical application of this combination is close to or directly assembled onto the actuator connection ports. This allows to keep pressurised the cylinder chamber in case of accidental loss of supply pressure and to regulate the exhaust flow rate when the blocking valve is actuated.
- The possible combinations are the following:
- Unidirectional blocking valve + unidirectional flow control valve
- Bidirectional blocking valve + bidirectional flow control valve
- Bidirectional blocking valve + unidirectional flow control valve
- Unidirectional blocking valve + bidirectional flow control valve

Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Working pressure (bar)	0,5 ... 10
Flow rate at 6 bar with Δp=1 (Nl/min)	285
Orifice size (mm)	Ø3
Temperature °C	-5 ... +50
Weight (g)	62

90° blocking valve + flow control valve

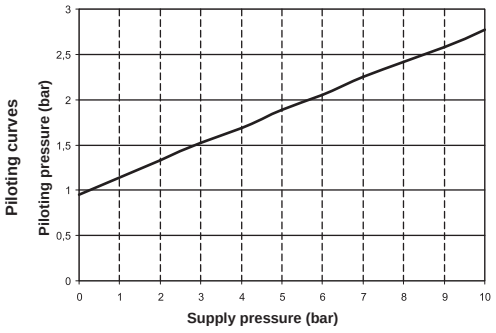
Coding: 551.2F(T).(A).(B).XX

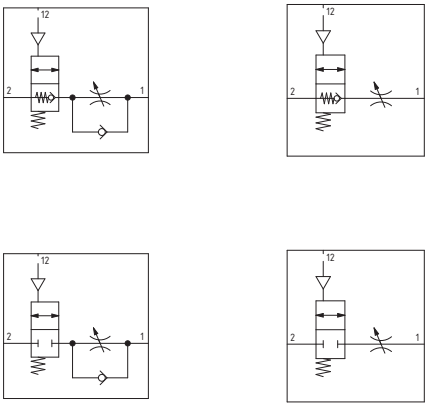




(T)	TYPE
	1 = 90° unidirectional blocking valve + unidirectional flow control valve
	2 = 90° bidirectional blocking valve + bidirectional flow control valve
	3 = 90° unidirectional blocking valve + bidirectional flow control valve
	4 = 90° bidirectional blocking valve + unidirectional flow control valve
(A)	CONNECTION A
	SEE CONNECTIONS LIST
(B)	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 5512F1.00.00.XX
90° blocking valve + flow control valve. Without connections "A" and "B"
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"





Technical characteristics

- The combination of this two functions ensures that the downstream pressure is maintained in case of accidental loss of supply pressure and at the same time grants the possibility to regulate the circuit flow rate. A typical application of this combination is close to or directly assembled onto the actuator connection ports. This allows to keep pressurised the cylinder chamber in case of accidental loss of supply pressure and to regulate the exhaust flow rate when the blocking valve is actuated.
- The possible combinations are the following:
- 90° unidirectional blocking valve + unidirectional flow control valve
- 90° bidirectional blocking valve + bidirectional flow control valve
- 90° bidirectional blocking valve + unidirectional flow control valve
- 90° unidirectional blocking valve + bidirectional flow control valve

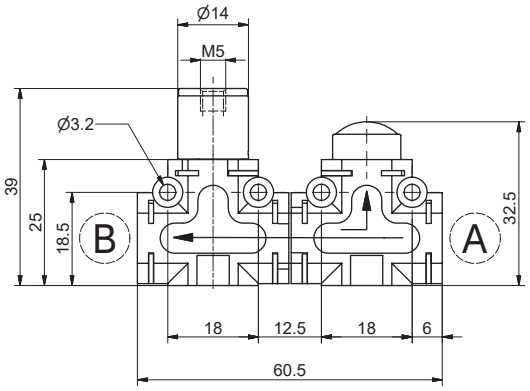
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Working pressure (bar)	0,5 ... 10
Flow rate at 6 bar with Δp=1 (Nl/min)	285
Orifice size (mm)	Ø3
Temperature °C	-5 ... +50
Weight (g)	62

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

In line blocking valve + quick exhaust valve

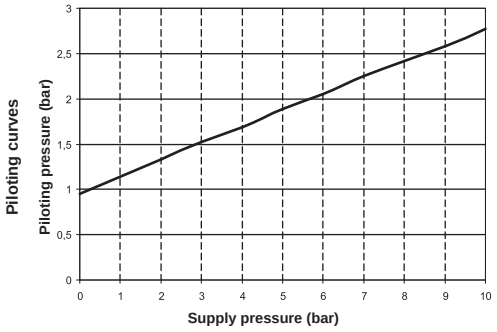
Coding: 551.1G❶.Ⓐ.Ⓑ.XX

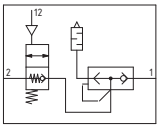


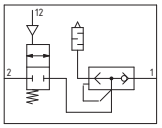


❶	TYPE
	1 = Unidirectional blocking valve + quick exhaust valve
	2 = Bidirectional blocking valve + quick exhaust valve
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 5511G1.00.00.XX
In line blocking valve + quick exhaust valve. Without connections "A" and "B"
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"







Technical characteristics

- The combination of this two functions ensures that the downstream pressure is maintained in case of accidental loss of supply pressure and at the same time allows for the air to be directly discharged into the atmosphere without going through the pneumatic circuit. A typical application of this combination is close to or directly assembled onto the actuator connection ports. This allows to keep pressurised the cylinder chamber in case of accidental loss of supply pressure and to quickly discharge the same chamber when the blocking valve is actuated.
- The possible combinations are the following:
- Unidirectional blocking valve + quick exhaust valve
- Bidirectional blocking valve + quick exhaust valve

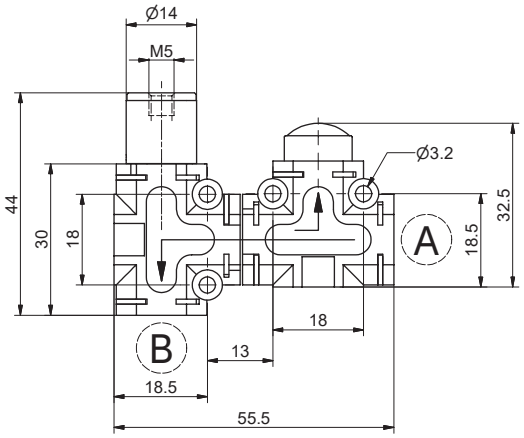
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Working pressure (bar)	0.5 ... 10
Flow rate at 6 bar with Δp=1 (Nl/min)	285
Temperature °C	-5 ... +50
Weight (g)	51

90° blocking valve + quick exhaust valve

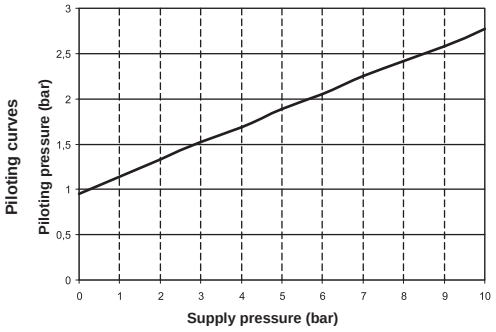
Coding: 551.2GⓉ.Ⓐ.Ⓑ.XX

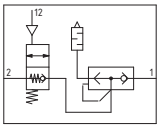
Ⓣ	TYPE
	1 = 90° unidirectional blocking valve + quick exhaust valve
	2 = 90° bidirectional blocking valve + quick exhaust valve
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

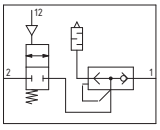




Example: 551.2G1.00.00.XX
90° bidirectional blocking valve + quick exhaust valve. Without connections "A" and "B"
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"







Technical characteristics

- The combination of this two functions ensures that the downstream pressure is maintained in case of accidental loss of supply pressure and at the same time allows for the air to be directly discharged into the atmosphere without going through the pneumatic circuit. A typical application of this combination is close to or directly assembled onto the actuator connection ports. This allows to keep pressurised the cylinder chamber in case of accidental loss of supply pressure and to quickly discharge the same chamber when the blocking valve is actuated.
- The possible combinations are the following:
- 90° unidirectional blocking valve + quick exhaust valve
- 90° bidirectional blocking valve + quick exhaust valve

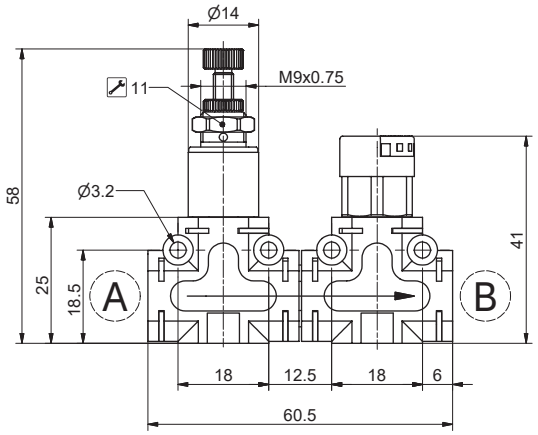
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Working pressure (bar)	0,5 ... 10
Flow rate at 6 bar with Δp=1 (Nl/min)	285
Temperature °C	-5 ... +50
Weight (g)	51

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

In line pressure regulator + pressure indicator

Coding: 551.1HⓉ.Ⓐ.Ⓑ.XX





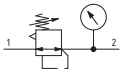
Ⓣ	TYPE
	2 = 0-2 bar
	4 = 0-4 bar
	8 = 0-8 bar
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.1H2.M1.D4.XX
In line pressure regulator, adjusting range 0-2 bar + pressure indicator. Connections "A" Male G 1/8 and "B" Tube Ø4
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

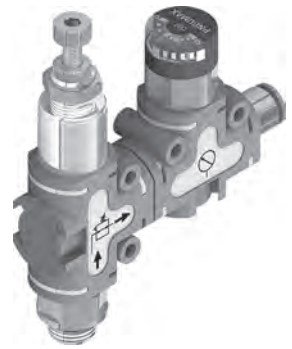
- The combination of this two functions ensures the possibility to regulate the downstream pressure while directly visualising the adjusted pressure value.
- The possible combinations are the following:
- 0 to 2 bar pressure regulator + pressure visual indicator
- 0 to 4 bar pressure regulator + pressure visual indicator
- 0 to 8 bar pressure regulator + pressure visual indicator
- The visual indicator Pressure range (bar) is always 0 to 8 bar

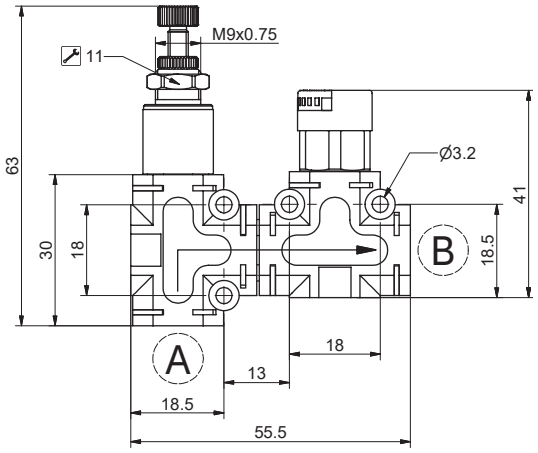
Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	8
Visualization scale (bar)	0 ... 8
Pressure range (bar)	0 ... 2 0 ... 4 0 ... 8
Temperature °C	-5 ... +50
Weight (g)	62



90° pressure regulator + pressure indicator

Coding: 551.2HⓉ.Ⓐ.Ⓑ.XX





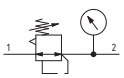
Ⓣ	TYPE
	2 = 0-2 bar
	4 = 0-4 bar
	8 = 0-8 bar
Ⓐ	CONNECTION A
	SEE CONNECTIONS LIST
Ⓑ	CONNECTION B
	SEE CONNECTIONS LIST
	CONNECTIONS LIST
	00 = None
	D4 = Straight Ø4
	D6 = Straight Ø6
	D8 = Straight Ø8
	L1 = Female banjo G1/8"
	G4 = Rotating banjo Ø4
	G6 = Rotating banjo Ø6
	G8 = Rotating banjo Ø8
	M1 = G1/8" male
	M2 = G1/4" male
	F1 = G1/8" female

Example: 551.2H2.M1.D4.XX
90° pressure regulator, adjusting range 0-2 bar + pressure indicator. Connections "A" Male G 1/8 and "B" Tube Ø4
NOTE : For the dimension including cartridges see page "Accessories-Function fittings"

Technical characteristics

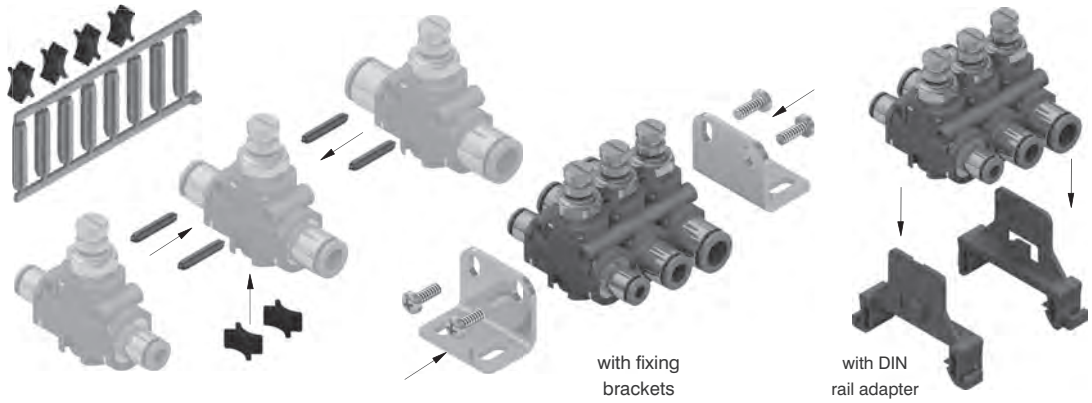
- The combination of this two functions ensures the possibility to regulate the downstream pressure while directly visualising the adjusted pressure value.
- The possible combinations are the following:
- 0 to 2 bar pressure regulator + pressure visual indicator
- 0 to 4 bar pressure regulator + pressure visual indicator
- 0 to 8 bar pressure regulator + pressure visual indicator
- The visual indicator Pressure range (bar) is always 0 to 8 bar

Technical characteristics	
Fluid	filtered and lubricated air or non
Working ports size	See CONNECTIONS LIST
Max working pressure (bar)	8
Visualization scale (bar)	0 ... 8
Pressure range (bar)	0 ... 2 0 ... 4 0 ... 8
Temperature °C	-5 ... +50
Weight (g)	62



Coupling kit (pins and forks)

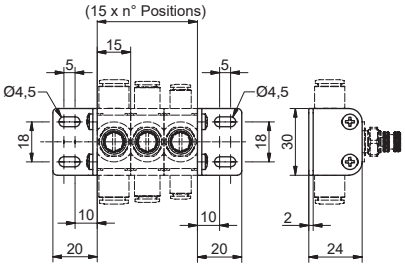
Coding: 55160



- Weight 2,5 g
- The kit, which includes a series of pins and forks, enables to join together in a fast and safe way the function fittings. The pins, once inserted in the front holes, ensure resistance against forces applied perpendicularly and sideway (for example the insertion of the tube in the cartridges).
- The forks, once located in the profiled housing ensures that the parts are held together tightly.
- The kit allows for 5 function fittings to be mounted together.

Fixing brackets



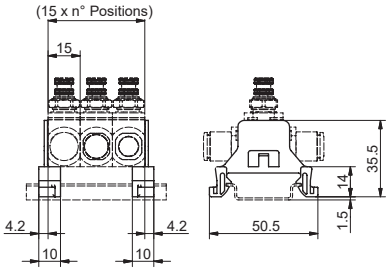


Coding: 55150

Weight 18 g
The kit comprises two fixing brackets and the screws

DIN rail adapter





Coding: 55116

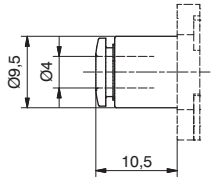
Weight 4 g
The kit comprises two adapters

Ø4, Ø6 & Ø8 straight cartridge

Coding: 551KD©

©	CONNECTIONS
	4 = tube Ø4
	6 = tube Ø6
	8 = tube Ø8

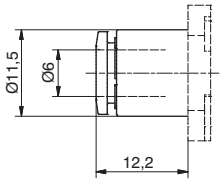




Weight 7,5 g

551KD4

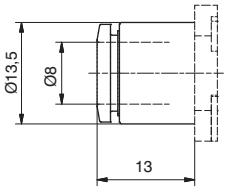




Weight 7,3 g

551KD6





Weight 7 g

551KD8

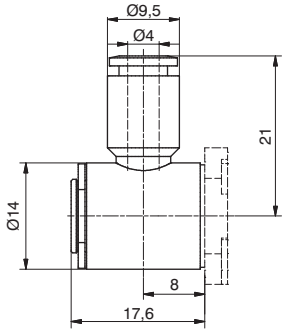
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Ø4, Ø6 & Ø8 banjo PL cartridge

Coding: 551KG©

©	CONNECTIONS
	4 = tube Ø4
	6 = tube Ø6
	8 = tube Ø8

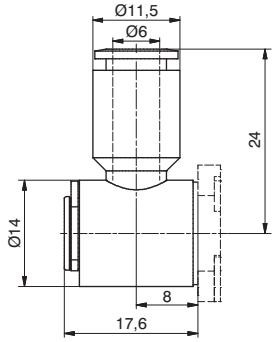




Weight 13,6 g

551KG4

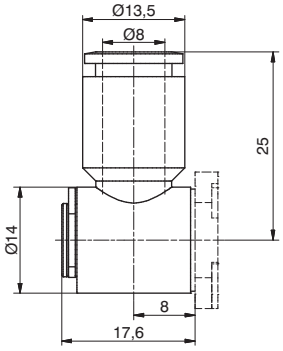




Weight 14 g

551KG6





Weight 14,3 g

551KG8

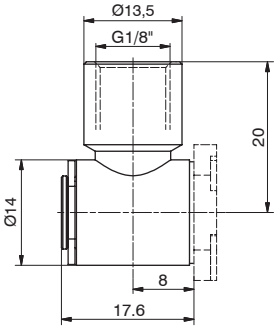
G1/8" banjo artridge

Coding: 551KL©

©	CONNECTIONS
	1 = G1/8"



Weight 30 g



551KL1

Connection for multiple function



Coding: 551KUU

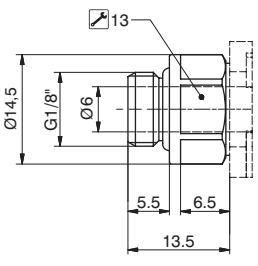
Weight 14 g

Cartridge

Coding: 551K©

©	CONNECTIONS
	M1 = G1/8" male straight cartridge
	M2 = G1/4" male straight cartridge
	F1 = G1/8" female straight cartridge

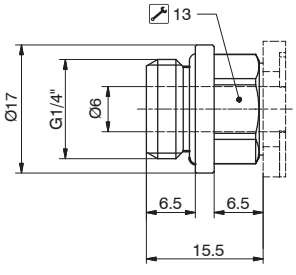




Weight 14 g
G1/8" male straight cartridge

551KM1

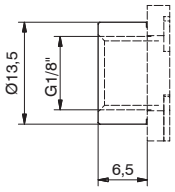




Weight 20 g
G1/4" male straight cartridge

551KM2





Weight 9 g
G1/8" female straight cartridge

551KF1

Series 1750-1760

This type of miniaturised pressure regulators are mostly indicated for the use on the secondary level of the pneumatic circuits.
Thanks to the contained dimensions are particularly indicated to be used very closely or directly mounted onto the consumption.
Three versions are available.



Version rod G1/8" swivel ring with female thread G 1/8" and G 1/4" or push-in fitting for tube Ø4, Ø6 and Ø8



Model with body in technopolymer integrated gauge and quick coupling fittings for tube Ø4 and Ø6

G/1/8" model to be directly mounted onto the valve

Compact design to be directly mounted onto the valves uses standard swivel rings with G1/8" female thread (ref 41218) or quick coupling fittings for tube sizes. It is also possible to supply the regulating shaft without the swivel ring.

Model with body in technopolymer and integrated gauge

is the more complete solution, comprises a movable gauge which enables to check the regulated pressure.

Is manufactured using the same regulating unit as the base model fitted into a technopolymer body on which are inserted two quick coupling cartridges, 4mm or 6mm tube for inlet and outlet connections; two side plates lock the cartridges and gauge in position.

It is possible to join together more than one regulator by means of a dedicated adaptor made of technopolymer which must be inserted in the appropriate slot. (the air must be supplied independently to each regulator.)

Several mounting solutions are available: wall mounting via two mounting holes, on DIN rail using the specific accessories or on panels.

Mounting solutions

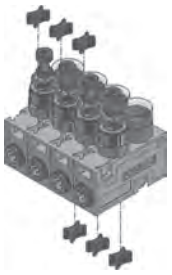
G/1/8" model to be directly mounted into the valve: directly mounted into the valves threaded connections (consumptions)



Model with body in technopolymer and integrated gauge: panel mounting via the locking nut



Model with body in technopolymer and integrated gauge: wall mounting via the mounting holes on the body



Model with body in technopolymer and integrated gauge: on DIN rail using the specific accessories



Model with body in technopolymer and integrated gauge: panel mounting via the locking nut



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Miniaturised pressure regulators-with technopolymer body

Coding: 17522A**C**.**G**

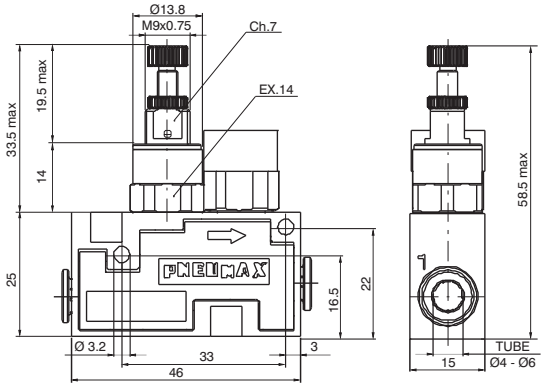
Construction characteristics

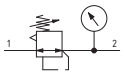
- Regulating cartridge = Nickel-plated brass
- Regulator body = Technopolymer
- Seals = Oil resistant nitrilic rubber (NBR)
- Plunger spring = AISI 302
- Regulating spring = Spring suitable steel
- Plunger = Oil resistant nitrilic rubber (NBR)
- Other parts = Brass

Operational characteristics	
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Working ports size	Ø4-Ø6
Inlet connections sizes	Ø4-Ø6
Assembly positions	Any

C	CONNECTIONS
	4 = Tube Ø4
	6 = Tube Ø6
G	PRESSURE RANGE
	C = 0...8 bar
	B = 0...4 bar
	A = 0...2 bar







Miniaturised pressure regulators, rod G1/8"

Coding: 17602A**A**.**G**

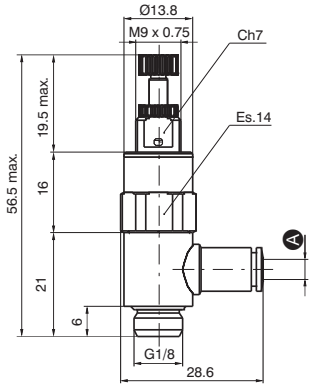
Construction characteristics

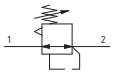
- Regulating cartridge = Nickel-plated brass
- Regulator body = Nickel-plated brass
- Seals = Oil resistant nitrilic rubber (NBR)
- Plunger spring = AISI 302
- Regulating spring = Spring suitable steel
- Plunger = Oil resistant nitrilic rubber (NBR)
- Other parts = Brass

Operational characteristics	
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Working ports size	G1/8"
Inlet connections sizes	G1/8"-Ø4-Ø6-Ø8
Assembly positions	Any

A	SWIVEL RING
	0 = None
	1 = Swivel ring G1/8" female
	4 = Tube Ø4
	6 = Tube Ø6
	8 = Tube Ø8
G	PRESSURE RANGE
	C = 0...8 bar
	B = 0...4 bar
	A = 0...2 bar







Miniaturised pressure regulators, rod G1/4"

Coding: 17602B**A**.**G**

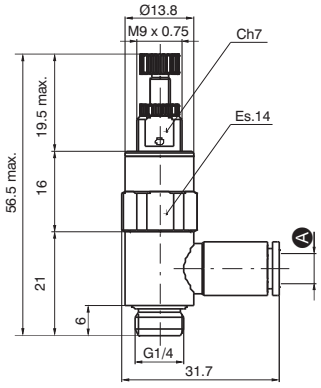
Construction characteristics

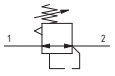
- Regulating cartridge = Nickel-plated brass
- Regulator body = Nickel-plated brass
- Seals = Oil resistant nitrilic rubber (NBR)
- Plunger spring = AISI 302
- Regulating spring = Spring suitable steel
- Plunger = Oil resistant nitrilic rubber (NBR)
- Other parts = Brass

Operational characteristics	
Max. working pressure (bar)	10
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	120
Working ports size	G1/4"
Inlet connections sizes	G1/4"-Ø4-Ø6-Ø8
Assembly positions	Any

A	SWIVEL RING
	0 = None
	1 = Swivel ring G1/4" female
	6 = Tube Ø6
	8 = Tube Ø8
G	PRESSURE RANGE
	C = 0...8 bar
	B = 0...4 bar
	A = 0...2 bar







Series Mini-RAP

Technical data

Working temperature: -20°C +70°C
Maximum working pressure: 10 bar
Fluid: Compressed air (others fluids on requests)
Nichel-plated brass body, Brass grip, Silicone free NBR gaskets
Thread: Cylindrical with O-Ring
Maximum fixing torque for fittings
Thread: M3: 0,4 Nm
Thread: M6 and M6x0,75: 1,3 Nm

Main characteristics

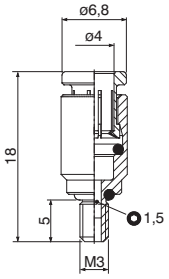
1. Can be inserted and extracted with one hand
2. Suitable for tube Rilsan, Polyurethane, Nylon, Polyethylene
3. Supercompact
4. Extremely lightweight yet sturdy
5. O-Ring provided with his own seat to ensure seal with polished surface
6. Suitable for vacuum applicatio

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

RDR Straight male adaptor (parallel)

Coding: RDR3.40-MH05



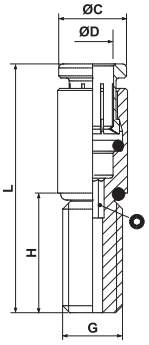


RDR Straight male adaptor (parallel)

Coding: RDR6.40-Ⓥ

Ⓥ	VERSION
	MH12 = M6, H=12mm
	FH12 = M6x0,75, H=12mm



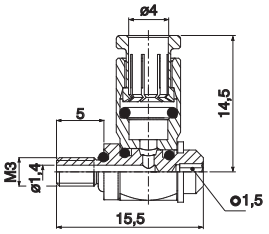


CODE	ØD	G	ØC	H	L	O
RDR6.40-MH12	4	M6	6,8	12	25	2
RDR6.40-FH12	4	M6x0,75	6,8	12	25	2

RGR Complete single banjo with stem

Coding: RGR3.40-MH05



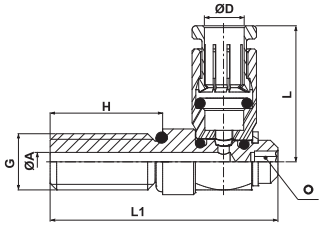


RGR Complete single banjo with stem

Coding: RGR6.40-Ⓥ

Ⓥ	VERSION
	MH12 = M6, H=12mm
	FH12 = M6x0,75, H=12mm





CODE	ØD	G	ØA	H	L1	L	O
RGR6.40-MH12	4	M6	2	12	24,3	14,5	2
RGR6.40-FH12	4	M6x0,75	2	12	24,3	14,5	2

Series PX



SERIES PX MODULAR ELECTRONIC SYSTEM

- **Maximum flexibility**
- **Digital and analogue I/O modules**
- **Stand alone solution**
- **Manufactured in technopolymer**
- **Wide range of communication protocols**

CANopen · PROFIBUS · PROFINET · EtherCAT · EtherNet/IP · IO-Link · CC-Link IE Field Basic

FLEXIBILITY IN A COMPACT SPACE

Series PX modular electronic system has been designed to offer control and acquisition hardware for pneumatic and electric devices; it supports the most diffused communication protocols and can be configured with I/O modules, both digital and analog.
Series PX in stand alone version can be connected to every solenoid valves battery by using SUB-D connector, on the other hand Series PX can be directly connected to the following Pneumax solenoid valves series:

- Optyma S
- Optyma F
- Optyma T
- 2700
- 3000

Technopolymer bodies and sub-base and compact design has been studied to optimise room taken by the whole system, they make Series PX extremely light and guarantee maximum flexibility.
The ability to quickly and easily configure the system, the range of modules and accessories available meet at the best the specific application needs of many industrial sectors.

Configurable on Cadenas platform

CADENAS

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Configurator

PX 3 P - - - - ...

Version	
3	For 3000 EVO, Optyma S-F-T EVO and 2700 EVO

Type	
P	Technopolymer

Endplates accessories	
	Without DIN rail adapter
G	With DIN rail adapter

Electric connection	
C3	CANopen® node 64 IN - 64 OUT (32 fixed)
C4	CANopen® node 64 IN - 64 OUT (48 fixed)
P3	PROFIBUS DP node 64 IN - 64 OUT (32 fixed)
P4	PROFIBUS DP node 64 IN - 64 OUT (48 fixed)
I4	EtherNet/IP node 128 IN - 128 OUT (48 fixed)
A4	EtherCAT® node 128 IN - 128 OUT (48 fixed)
N4	PROFINET IO RT node 128 IN - 128 OUT (48 fixed)
G4	CC-Link IE Field Basic node 128 IN - 128 OUT (48 fixed)
K3	IO-Link protocol interface 64 IN - 64 OUT (32 fixed)
K4	IO-Link protocol interface 64 IN - 64 OUT (48 fixed)

Electric connection accessories	
	Without DIN rail adapter
G	With DIN rail adapter

Number of repetitions per module	
	Indicate the number of repetitions of the same module (no value for a single module)

Inputs module - Analogue / Digital	
D8	8 M8 digital inputs module
D12	8 M12 digital inputs module
D3	32 digital inputs SUB-D 37 poles
T1	2 analogue inputs 0-5V module (voltage signal)
T2	2 analogue inputs 0-10V module (voltage signal)
T3	4 analogue inputs 0-5V module (voltage signal)
T4	4 analogue inputs 0-10V module (voltage signal)
C1	2 analogue inputs 0-20mA module (current signal)
C2	2 analogue inputs 4-20mA module (current signal)
C3	4 analogue inputs 0-20mA module (current signal)
C4	4 analogue inputs 4-20mA module (current signal)
P1	2 Pt100 2 wires inputs module
P2	2 Pt100 3 wires inputs module
P3	2 Pt100 4 wires inputs module
P4	4 Pt100 2 wires inputs module
P5	4 Pt100 3 wires inputs module
P6	4 Pt100 4 wires inputs module
Outputs module - Analogue / Digital	
M8	8 M8 digital outputs module
M12	8 M12 digital outputs module
M3	32 digital outputs SUB-D 37 poles
V1	2 analogue outputs 0-5V module (voltage signal)
V2	2 analogue outputs 0-10V module (voltage signal)
V3	4 analogue outputs 0-5V module (voltage signal)
V4	4 analogue outputs 0-10V module (voltage signal)
L1	2 analogue outputs 0-20mA module (current signal)
L2	2 analogue outputs 4-20mA module (current signal)
L3	4 analogue outputs 0-20mA module (current signal)
L4	4 analogue outputs 4-20mA module (current signal)

Additional modules (Optional)	
P12	M12 additional power supply module

Module accessories	
	Without DIN rail adapter
G	With DIN rail adapter

SINGLE MODULE CONFIGURATION

Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Configuration examples

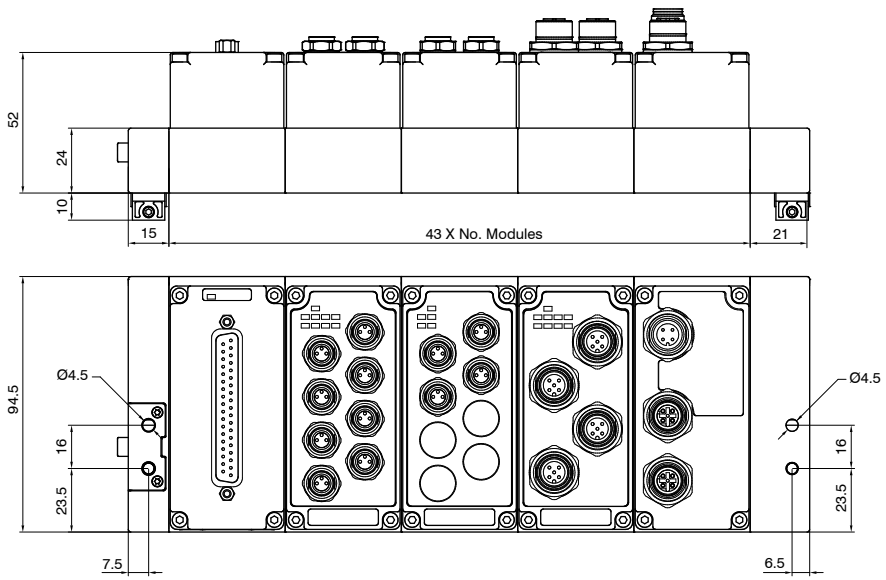


Example shown: PX3-P-N4-D8-V4-M3-D12
Multiprotocol module with PROFINET IO RT protocol node, M8 digital input module, M8 analogue output module, 37 pin (SUB-D) digital output module and M12 digital input module.



Example shown: PX3-P-G-A4-3D8-2M12
Multiprotocol module with EtherCAT® protocol node, 3 M8 digital input modules and 2 M12 digital output modules; also includes DIN rail adaptors.

Overall dimensions

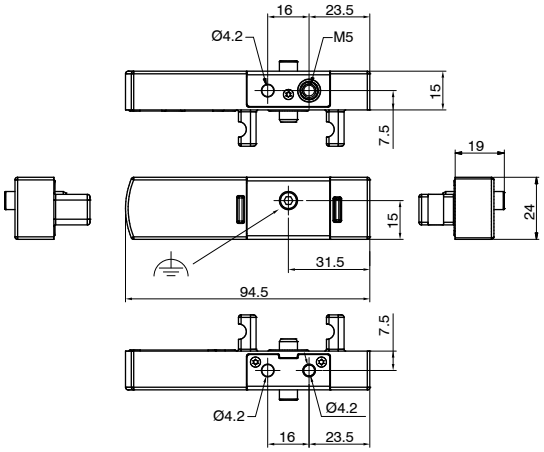


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Left endplate kit

Coding: 3100.KT.00



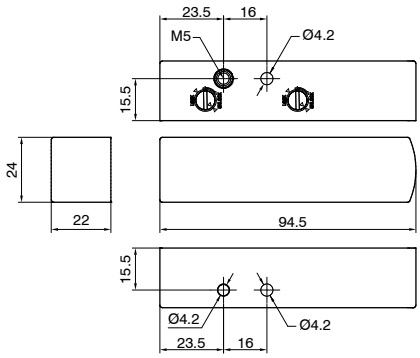


Weight 52 g

Right endplate kit

Coding: 3100.KT.03



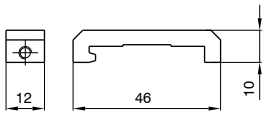


Weight 51 g

DIN rail adapter

Coding: 3100.16





Weight 12 g

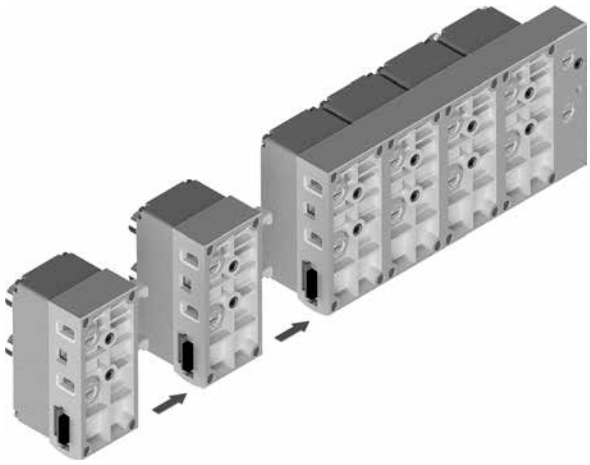
Cable complete with connector, male 37 poles, IP65

Coding: 2400.37.M.Ⓛ.Ⓒ

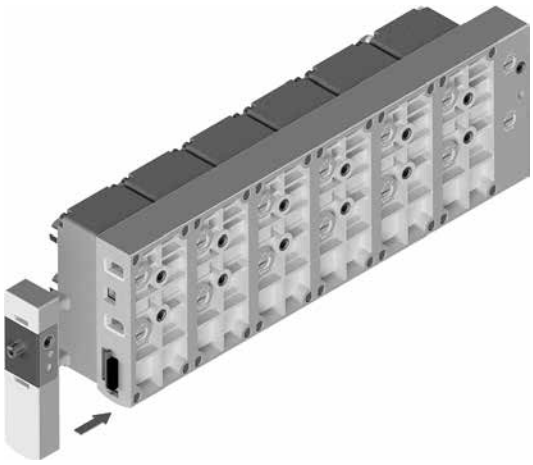


Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

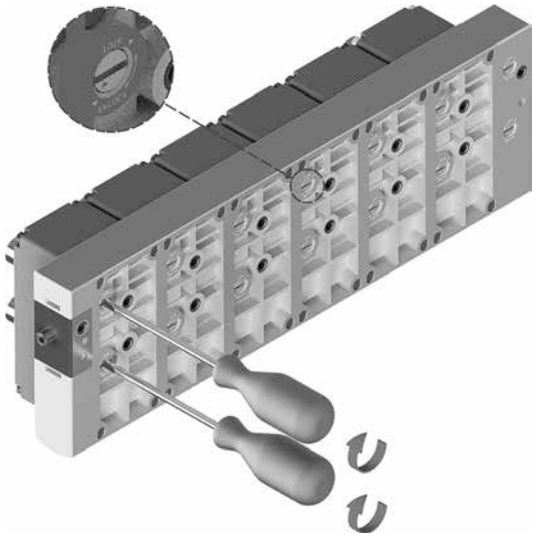
1. Assemble the required modules starting with 3100.KT.03 right endplate kit.



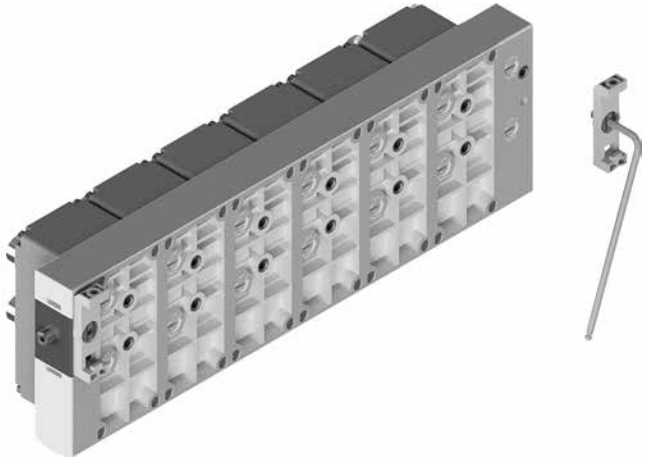
2. Complete the assembly with the 3100.KT.00 left endplate kit.



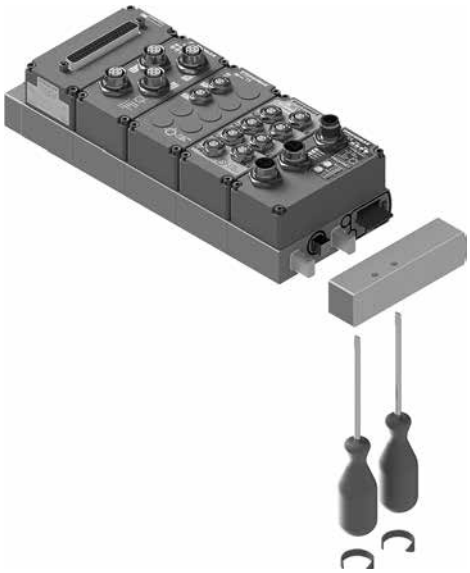
3. To lock: rotate anticlockwise (in the direction of the LOCK print on the case).
To unlock: rotate clockwise (in the direction of the UNLOCK print on the case).
The same procedure shall be used to add or remove any module.



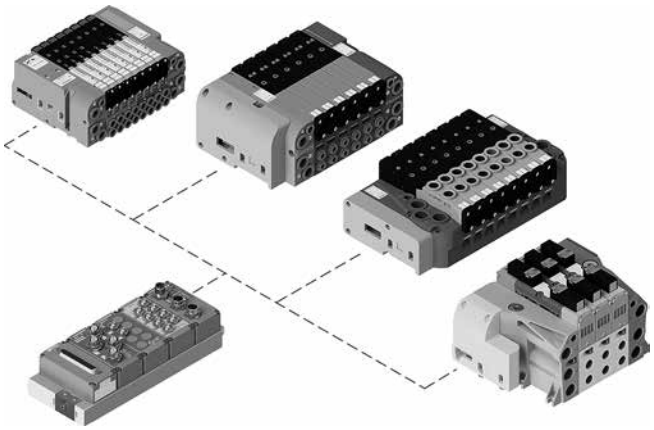
4. If required, assemble the DIN rail adapter using an 3 mm allen key.



A. For integration with a manifold it is necessary to remove the 3100.KT.03 right endplate kit.



B. Series PX modular electronic system can be integrated with the following valve manifold series:
- Optyma-S EVO
- Optyma-F EVO
- Optyma-T EVO
- 2700 EVO



The Series 3000 EVO manifolds already integrates with the PX Series modules with dedicated fixing options.
Please refer to www.pneumaxspa.com for more details.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

CANopen® protocol node kit

CANopen® node manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Connection to CANopen® fieldbus is made via two M12, male and female, 5 pins, type A circular connectors, in parallel between them; connectors pinout is compliant to CiA 106 (V.1.1.0 : July 11th 2023).
Transmission speed and address, as well as termination resistor activation are set via DIP-switches.
CANopen® node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5530.64.ⓋCO

Ⓥ	VERSION
	32 = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).
To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\, i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

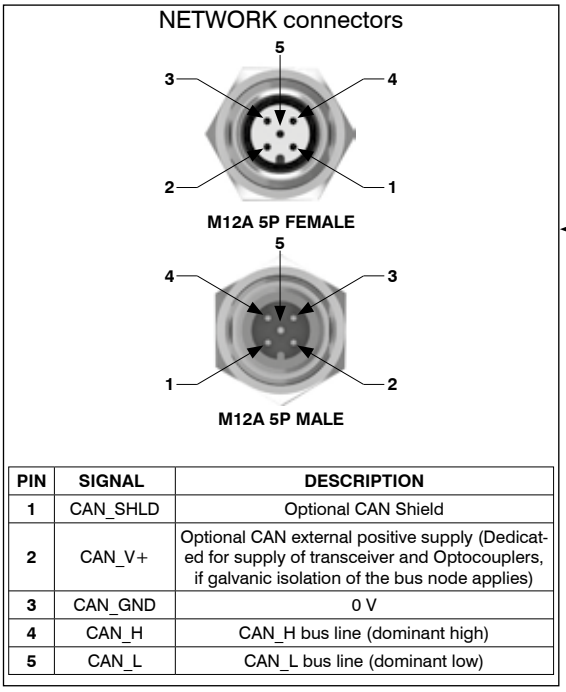
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

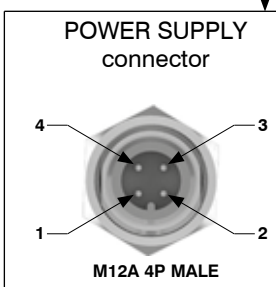
n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

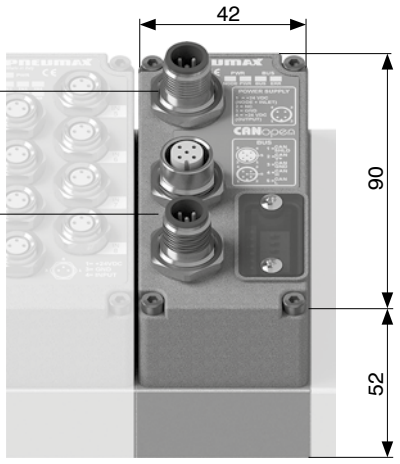
Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	CAN_SHLD	Optional CAN Shield
2	CAN_V+	Optional CAN external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (dominant high)
5	CAN_L	CAN_L bus line (dominant low)



PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A



Technical characteristics		
Specifications		CiA 106 (V.1.1.0 : July 11th 2023)
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	40 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type A
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

PROFIBUS DP protocol node kit

PROFIBUS DP node manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Connection to PROFIBUS DP fieldbus is made via two M12, male and female, 5 pins, type B circular connectors, in parallel between them; connectors pinout is PROFIBUS Interconnection Technology specifications compliant (Version 1.1, August 2001).
Address as well as termination resistor activation are set via DIP-switches.
PROFIBUS DP node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5330.64.Ⓥ PB

Ⓥ	VERSION
	32 = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).
To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

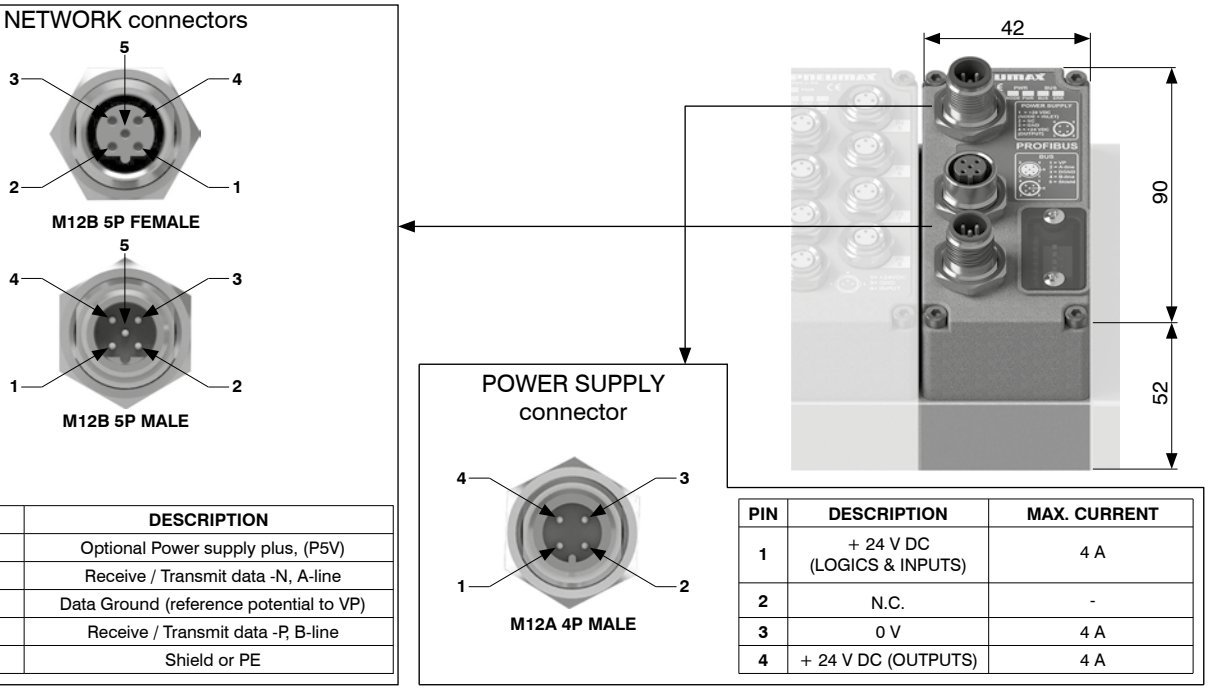
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	VP	Optional Power supply plus, (P5V)
2	A-line	Receive / Transmit data -N, A-line
3	DGND	Data Ground (reference potential to VP)
4	B-line	Receive / Transmit data -P, B-line
5	SHIELD	Shield or PE

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Specifications		PROFIBUS DP
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	70 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type B
	Baud rate	9,6 - 19,2 - 93,75 - 187,5 - 500 - 1500 - 3000 - 6000 - 12000 Kbit/s
	Addresses possible numbers	From 1 to 99
	Maximum nodes number in network	100 (slave + master)
	Bus maximum recommended length	100 m at 12 Mbit/s - 1200 m at 9,6 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

EtherNet/IP protocol node kit

EtherNet/IP node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48EI provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EI



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

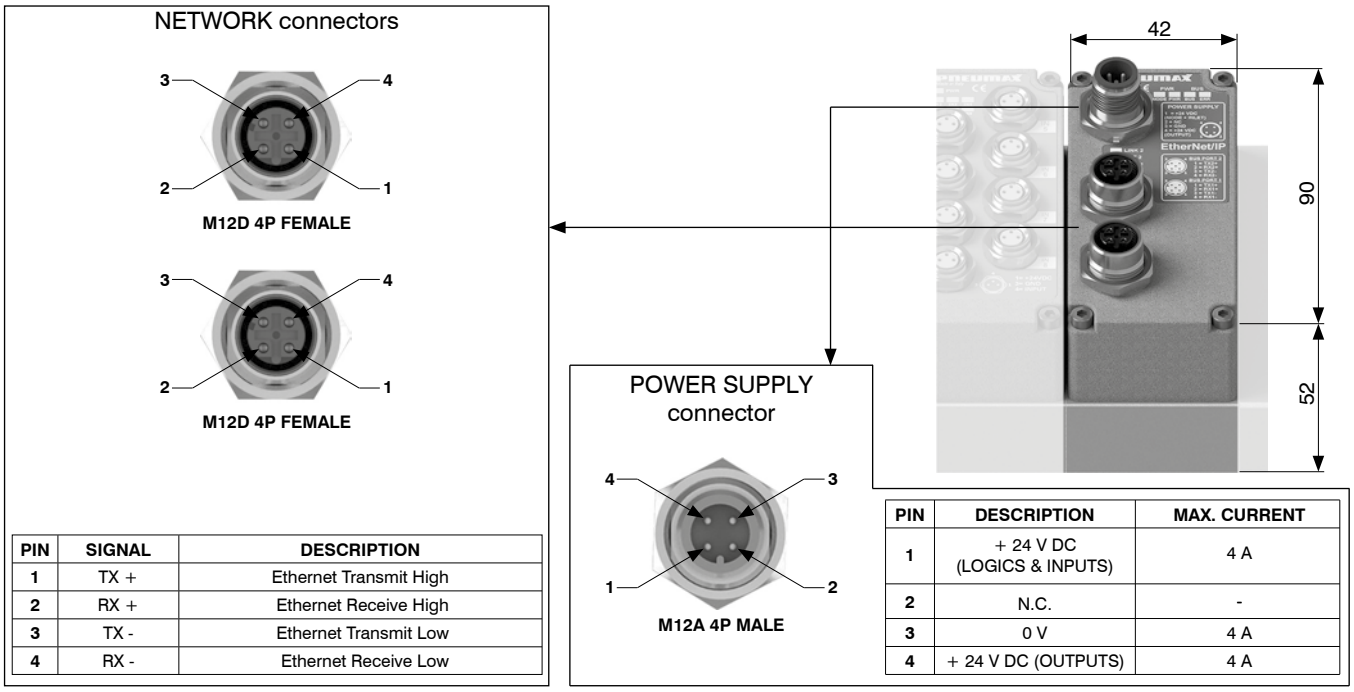
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

EtherCAT® protocol node kit

EtherCAT® node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48EC provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EC



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\, i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

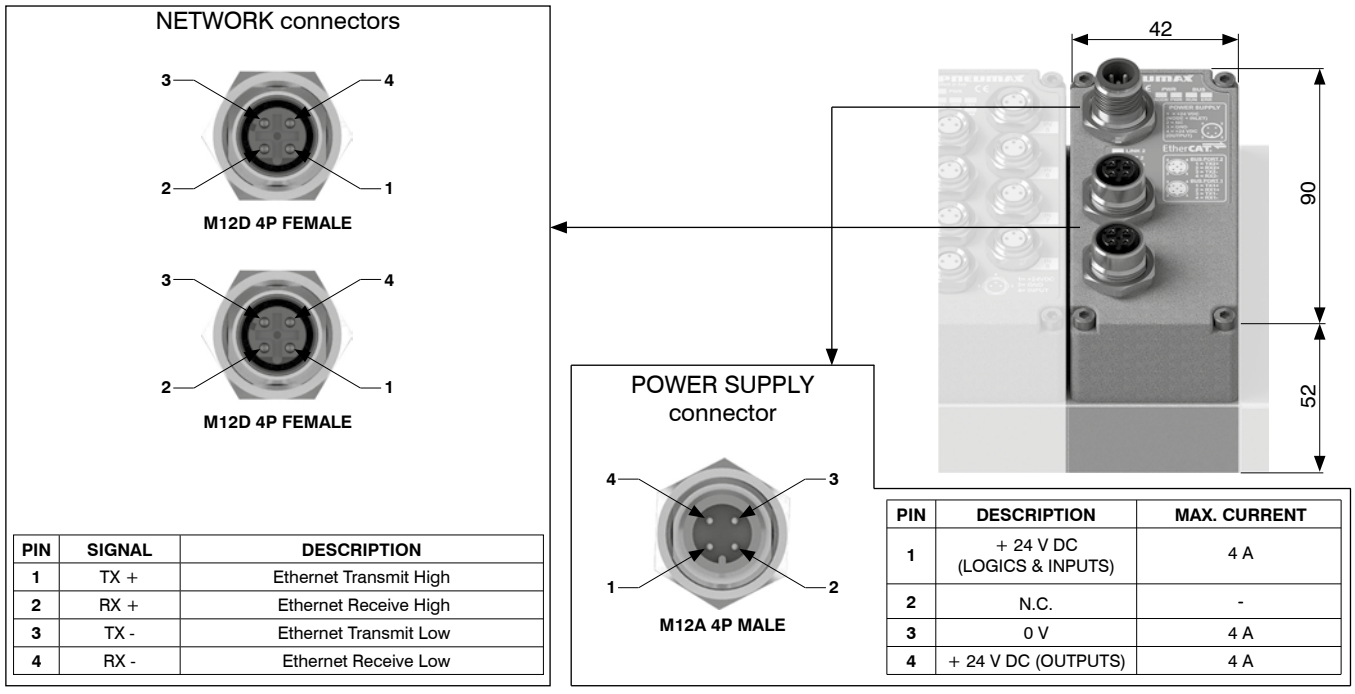
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

PROFINET IO RT protocol node kit

PROFINET IO RT node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48PN provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48PN



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\, i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

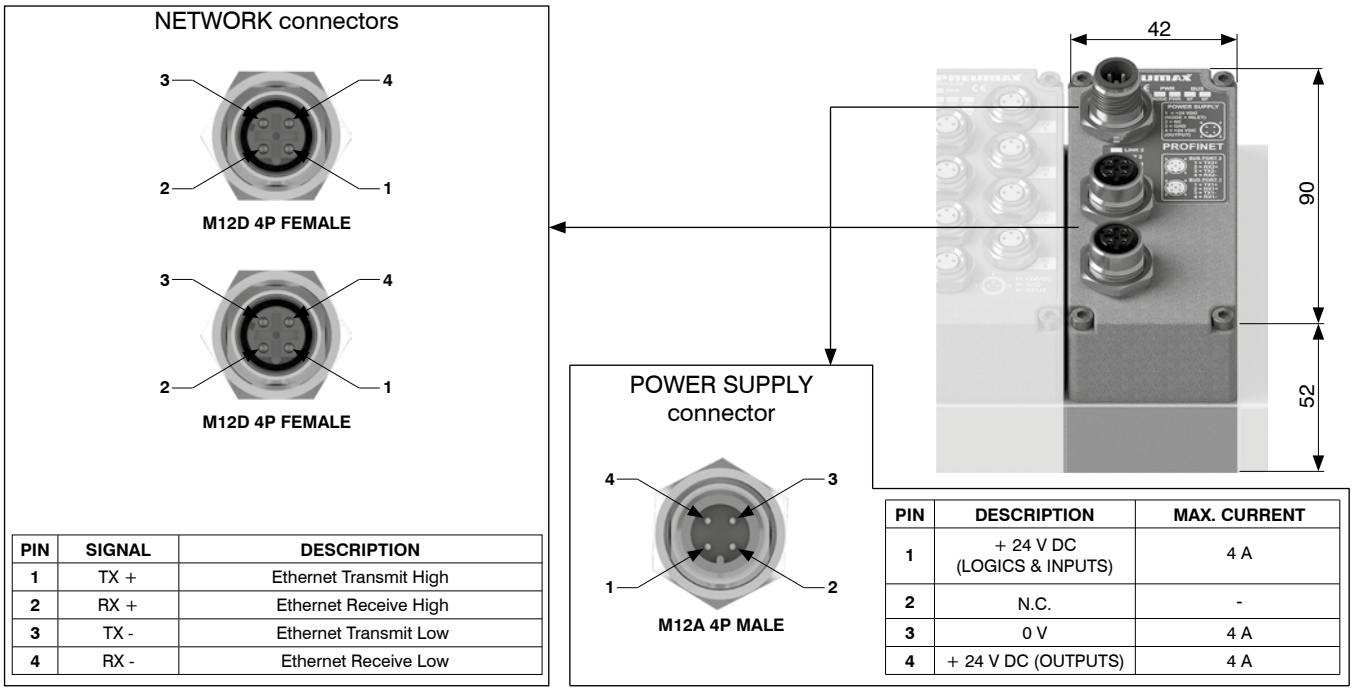
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

CC-Link IE Field Basic protocol node kit

CC-Link IE Field Basic node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48CL provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48CL



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\, i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

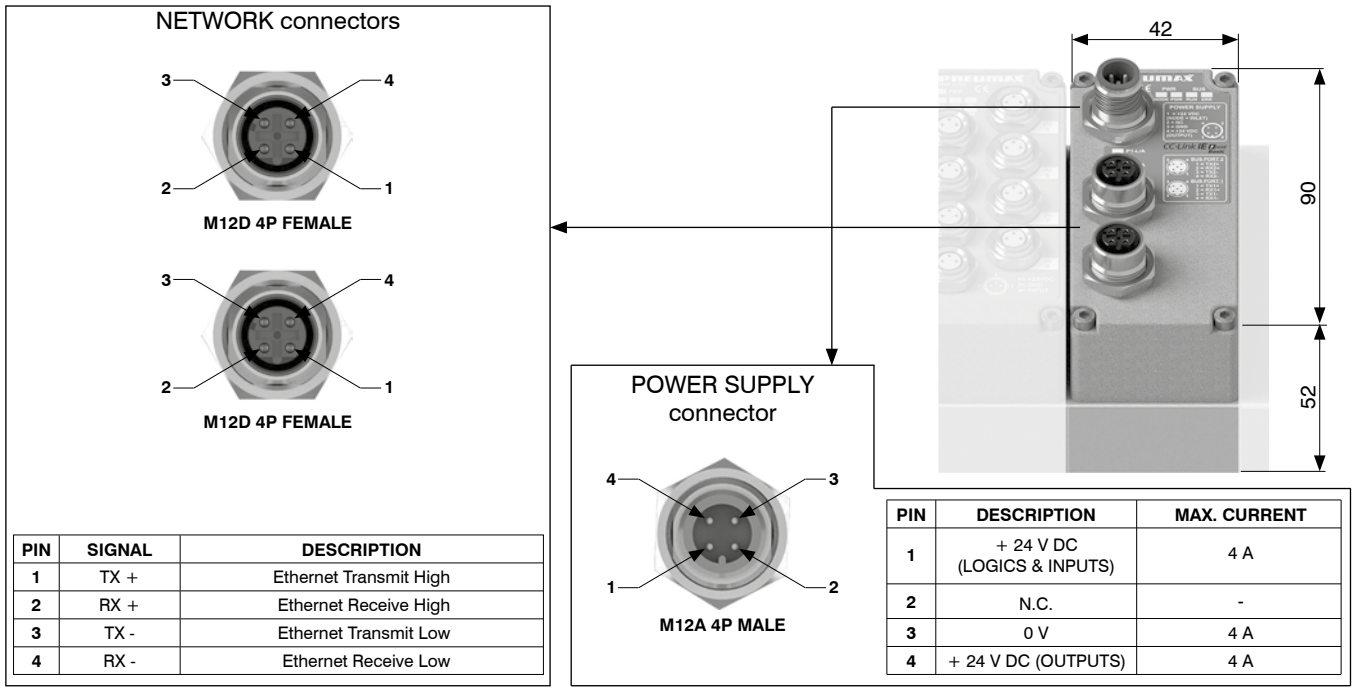
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	1 Green LED and 1 red status LED + 2 link and activity LEDs'
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

IO-Link protocol interface kit

IO-Link interface manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Electric power supply and IO-Link connection to the Master are made via M12, male, 5 pins, type A, circular connector, "CLASS B", according to IO-Link specifications.
Electric rails L+/L- supply interface only, while P24/N24 rails supply additional modules and solenoid valves.
Either power supplies are galvanically isolated in the IO-Link interfaces.
IO-Link interface is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the interface.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5830.64.Ⓥ IK

Ⓥ	VERSION
	32 = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by pin 2 and pin 5 (P24 / N24).

To compute the maximum current on the P24 / N24 supply, please use the following formula::

$$I_{24V\,DC\,P24/N24} = \sum_{i=1}^{n} I_{acc,i} + m\ i_{EV}$$

n = number of installed modules

$I_{acc,i}$ = maximum total current absorbed by each i-th accessory module, given by the sum of the absorbed currents on + 24 V DC OUTPUTS and + 24 V DC INPUTS

m = number of installed solenoid pilots

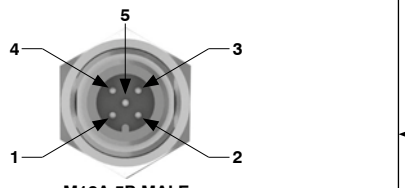
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

maximum current on P24/N24 supply rail must be **less than 4A**.

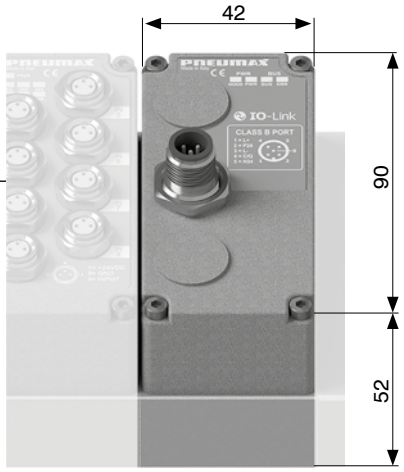
In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



M12A 5P MALE

PIN	SIGNAL
1	L+
2	P24 (+ 24 V DC)
3	L-
4	C/Q
5	N24 (0 V)



Technical characteristics		
Specifications		IO-Link Specification v1.1
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC +/- 10%
	Interface current consumption on + 24 V DC (L+ / L-)	25 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	"Class B" port
	Communication speed	38.4 kbaud/s
	Maximum distance from Master	20 m
	Bus diagnosis	Green / red status LED
	Vendor ID / Device ID	1257 (hex 0x04E9) / 3000 (hex 0x0BB8)
Configurations file IODD		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

8 digital inputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

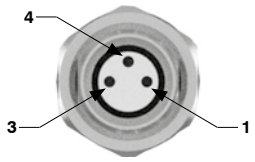
Coding: K5230.08.M8



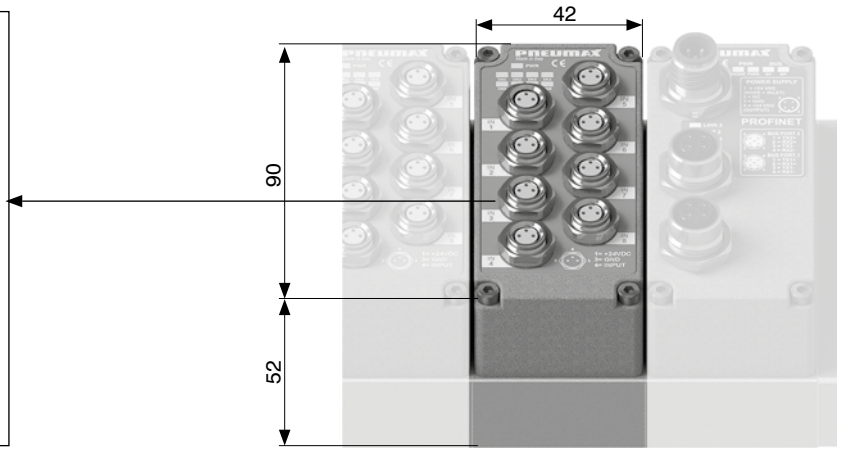
Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA

Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
3	0 V
4	INPUT



8 digital inputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
Every connector takes two input channels.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

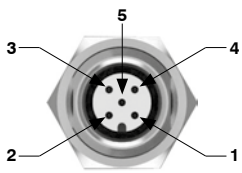
Coding: K5230.08.M12



Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA

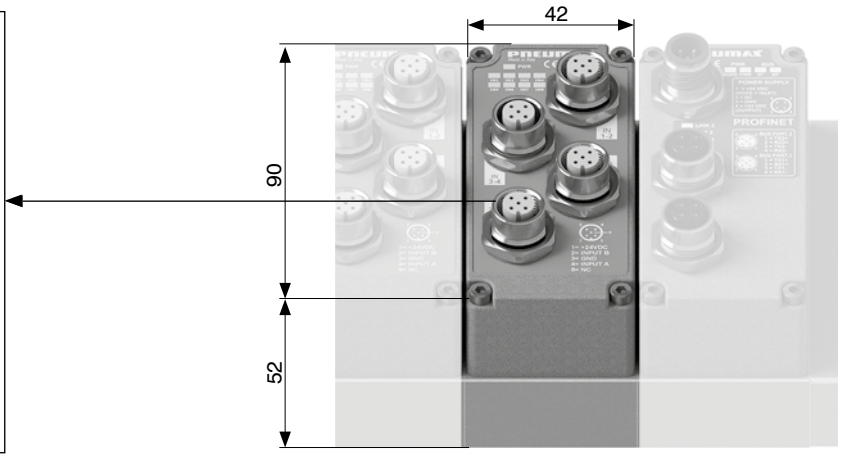
Scheme / Overall dimensions and I/O layout

M12 5P female connector



M12A 5P FEMALE

PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
2	INPUT B
3	0 V
4	INPUT A
5	N.C.



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

8 digital outputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR" green LED light-on.
Each output has a LED indicator associated which lights up when output's signal status is high.

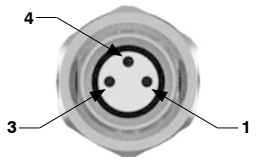
Coding: K5130.08.M8



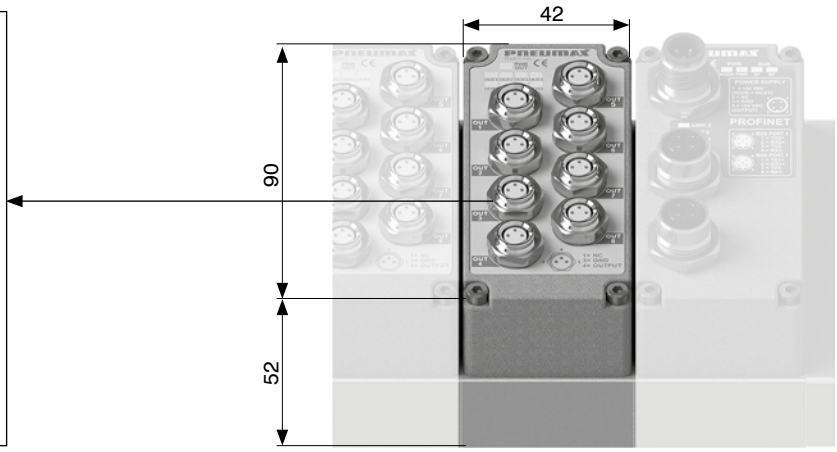
Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	N.C.
3	0 V
4	OUTPUT



8 digital outputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR" green LED light-on.
Each output has a LED indicator associated which lights up when output's signal status is high.

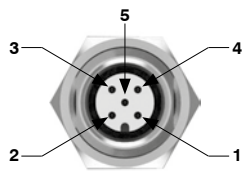
Coding: K5130.08.M12



Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

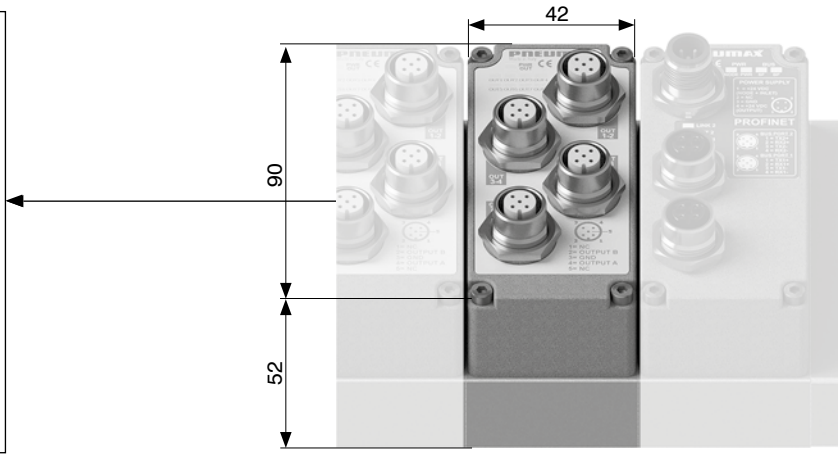
Scheme / Overall dimensions and I/O layout

M12 5P female connector



M12A 5P FEMALE

PIN	DESCRIPTION
1	N.C.
2	OUTPUT B
3	0 V
4	OUTPUT A
5	N.C.



32 digital inputs module kit (37 pins SUB-D connector)

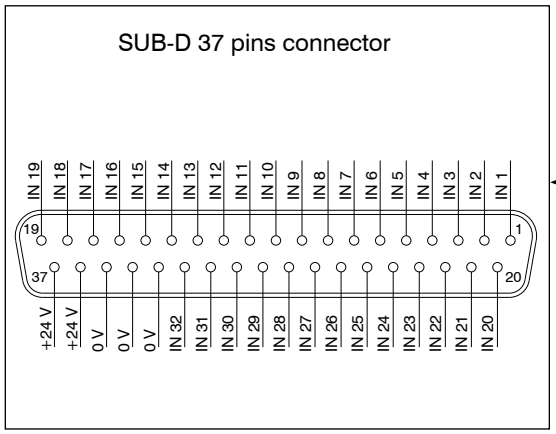
The module provides a SUB-D 37 pins female connector.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

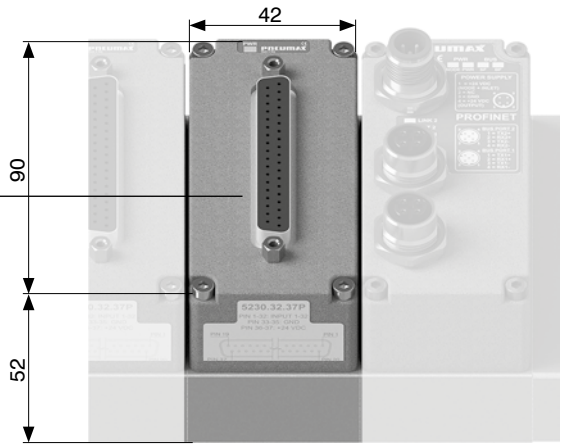
Coding: K5230.32.37P



Technical characteristics	
Maximum current per module	1 A
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	32 bit
INPUTS + 24 V DC current consumption of the module only	10 mA

Scheme / Overall dimensions and I/O layout





32 digital outputs module kit (37 pins SUB-D connector)

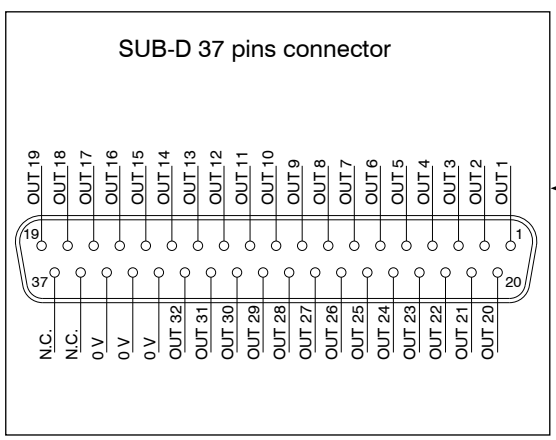
The module provides a SUB-D 37 pins female connector.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by “PWR” green LED light-on.

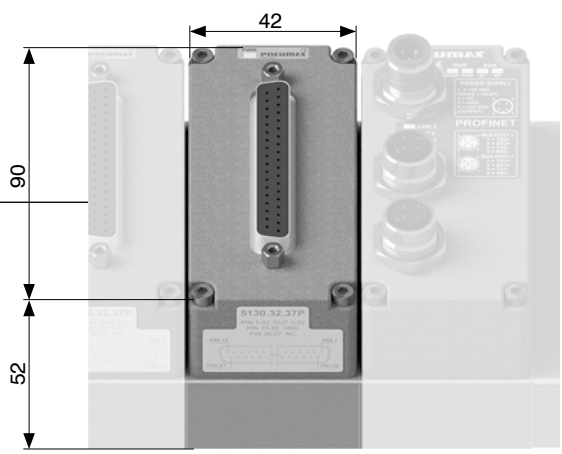
Coding: K5130.32.37P



Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	32 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Analogue inputs module kit M8

M8 analogue inputs module converts analogue signals into digital signals and transfers acquired data to field bus, via network node.
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

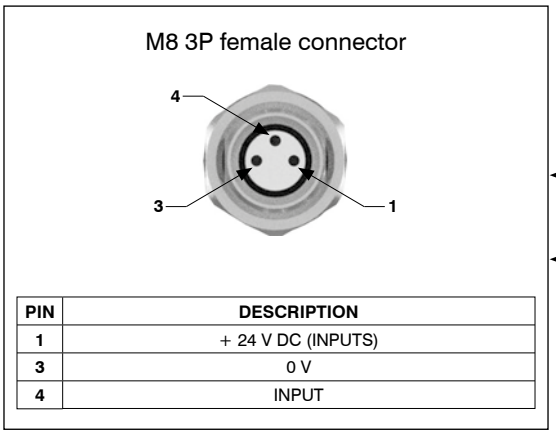
Coding: K5230.Ⓒ Ⓢ

Ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
Ⓢ	SIGNAL
	T.00 = Voltage (0-10 V)
	T.01 = Voltage (0-5 V)
	C.00 = Current (4-20 mA)
	C.01 = Current (0-20 mA)

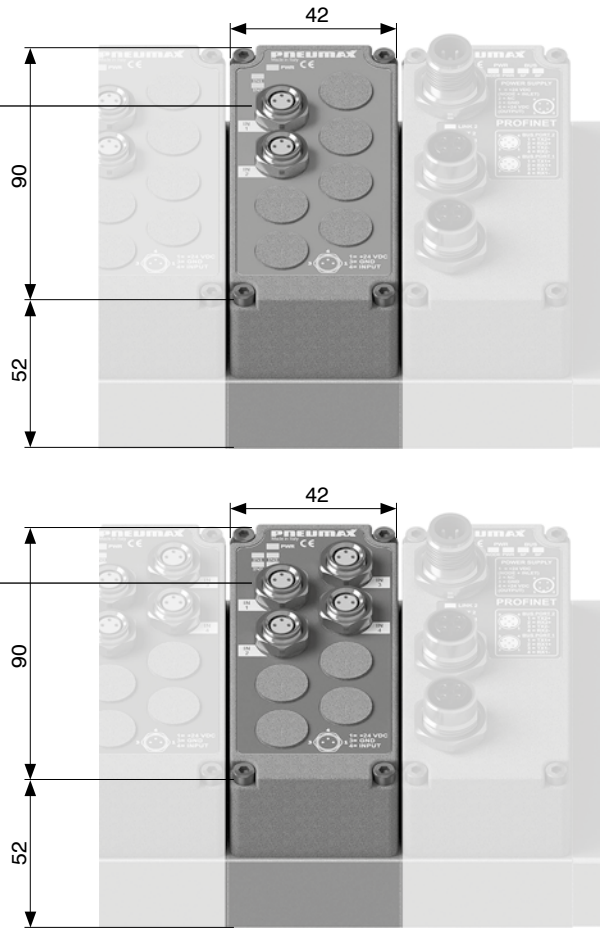
Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Input impedance (voltage inputs)	33 kΩ
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Input signal overcurrent or overvoltage
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	300 mA
Overall maximum current 4 channels (pin 1)	750 mA (375 mA for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA



Scheme / Overall dimensions and I/O layout



PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
3	0 V
4	INPUT



Analogue outputs module kit M8

M8 analogue outputs module converts output data, received from field bus via network node, into analogue signal.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

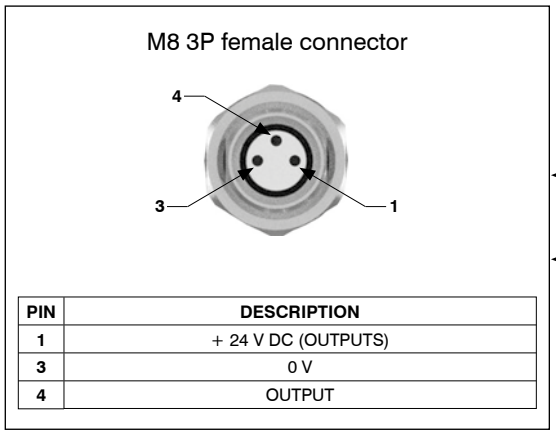
Coding: K5130.Ⓒ Ⓢ

Ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
Ⓢ	SIGNAL
	T.00 = Voltage (0-10 V)
	T.01 = Voltage (0-5 V)
	C.00 = Current (4-20 mA)
	C.01 = Current (0-20 mA)

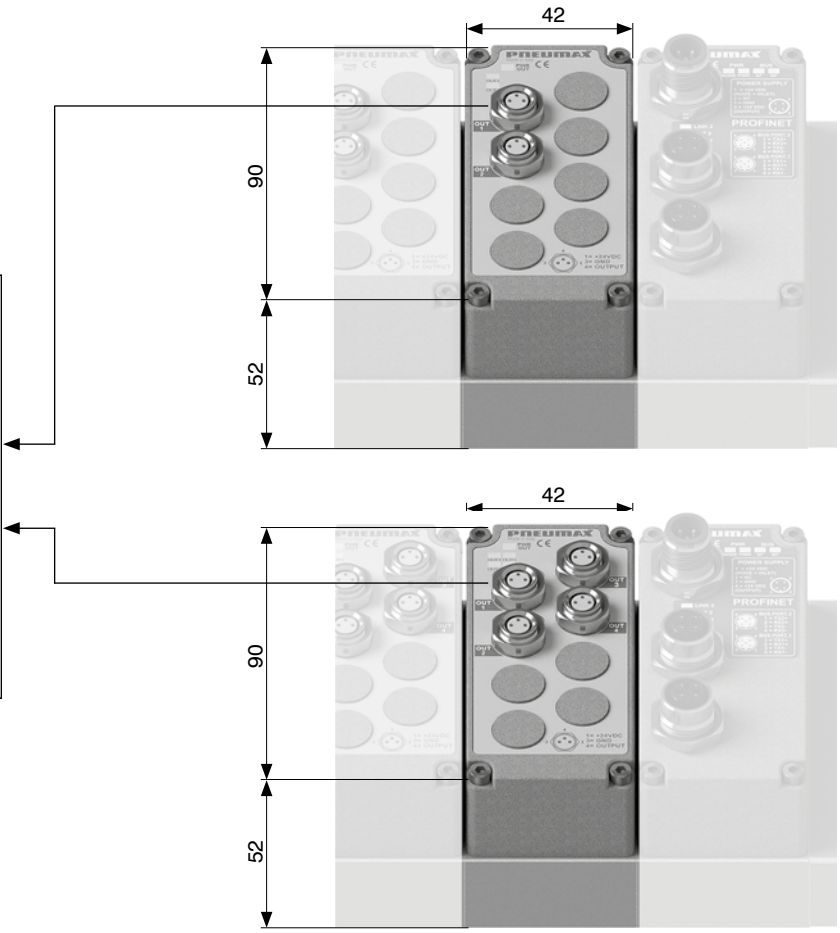
Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Protection (pin 4)	Overcurrent (auto-resettable fuse)
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Output data allocation	16 bit per channel
Diagnostic LED	Output signal overcurrent
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	1 A
Overall maximum current 4 channels (pin 1)	2 A (1 A for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA
OUTPUTS + 24 V DC current consumption of the module only (2 channels)	35 mA
OUTPUTS + 24 V DC current consumption of the module only (4 channels)	70 mA



Scheme / Overall dimensions and I/O layout



PIN	DESCRIPTION
1	+ 24 V DC (OUTPUTS)
3	0 V
4	OUTPUT



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pt100 inputs module kit

Pt100 inputs module digitizes signals from Pt100 probes and transfers acquired data to field bus, via network node.
It is possible to connect two, three or four wires probes.
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.Ⓒ P.0Ⓣ

Ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
Ⓣ	TYPE
	0 = Pt100 2 wires
	1 = Pt100 3 wires
	2 = Pt100 4 wires

Technical characteristics	
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Probe presence Temperature out of range
Accuracy	±0,2°C
Probe temperature range	-100°C ... +300°C
INPUTS + 24 V DC current consumption of the module with probes (2 channels)	25 mA
INPUTS + 24 V DC current consumption of the module with probes (4 channels)	35 mA

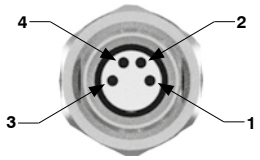
Conversion formula (°C)

$$\text{Temperature (°C)} = \left(\frac{\text{Points}}{4095} \times 400\right) - 100$$



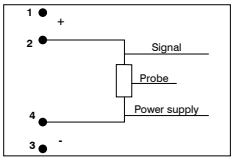
Scheme / Overall dimensions and I/O layout

M8 4P female connector



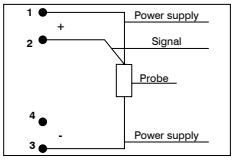
Connection scheme 2 wires probe

PIN	DESCRIPTION
1	N.C.
2	SENSOR +
3	POWER SUPPLY -
4	N.C.



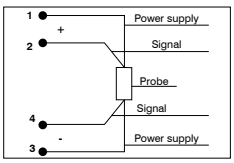
Connection scheme 3 wires probe

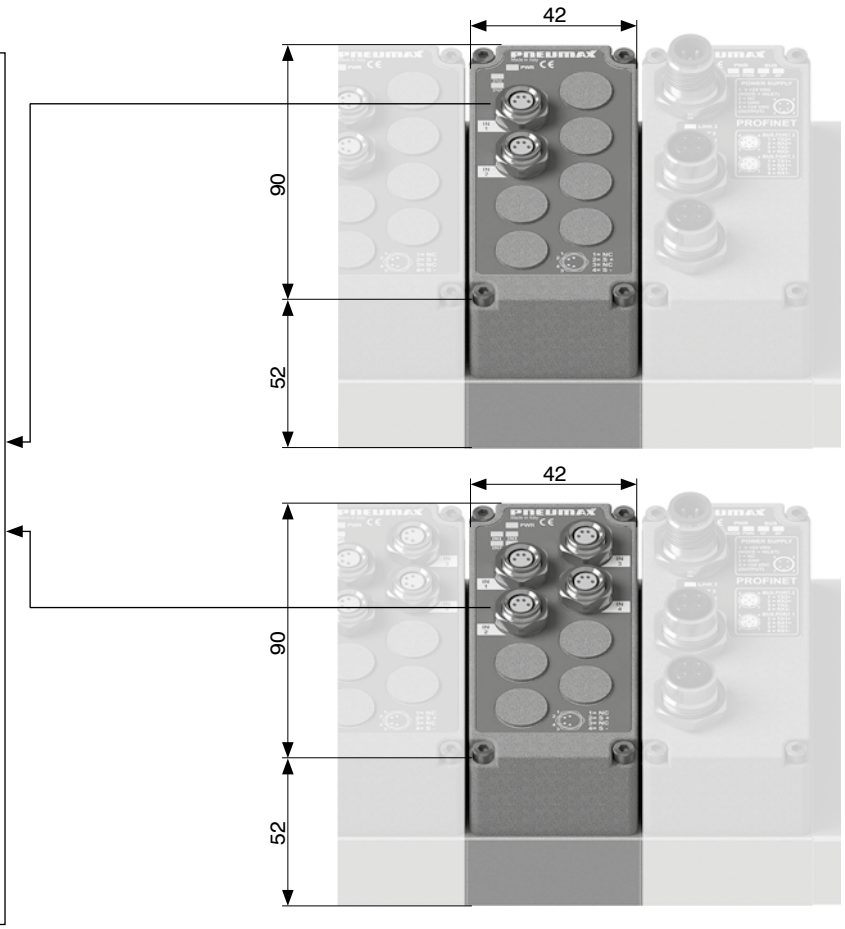
PIN	DESCRIPTION
1	POWER SUPPLY +
2	SENSOR +
3	POWER SUPPLY -
4	N.C.



Connection scheme 4 wires probe

PIN	DESCRIPTION
1	POWER SUPPLY +
2	SENSOR +
3	POWER SUPPLY -
4	SENSOR -





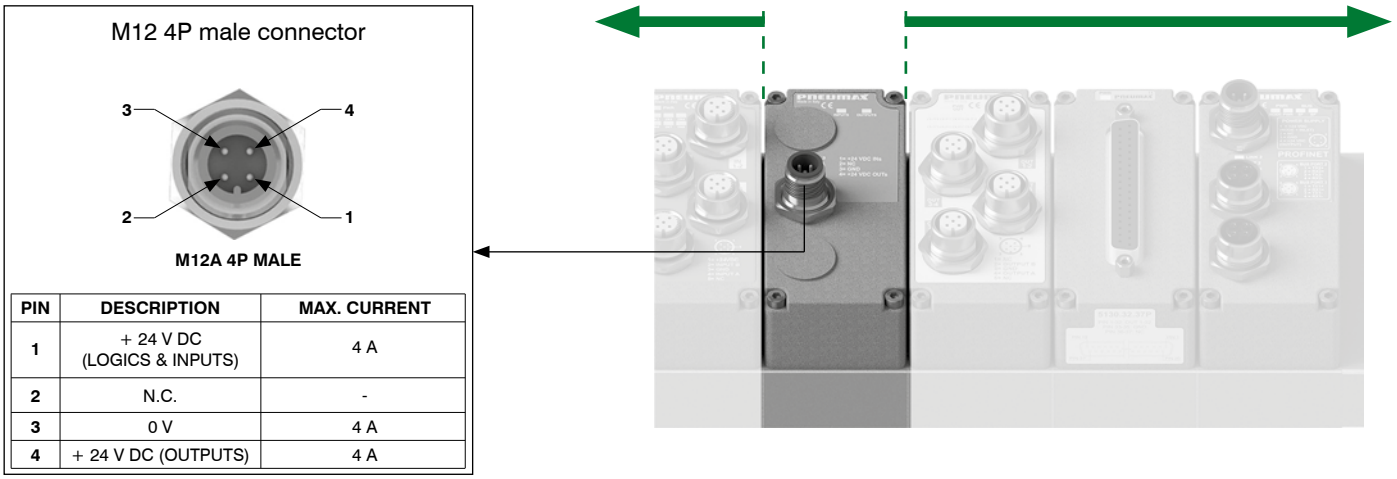
Additional power supply module kit

Additional power supply module supplies additional electric power for downstream optional modules, where “downstream” means farther from serial node, **resetting the current limits of the network node** / **IO-Link interface**.
Electric connection of the module to external power supply unit occurs via an M12 4 pins type A male connector.
M12 connector has two different pins to power up logics and inputs (Pin 1) and outputs (Pin 4).
Presence of each power supply rail is indicated by corresponding green LED.
When using IO-Link interface, the additional power supply module is useful for separating the module power supplies of input from the output modules placed downstream.

Coding: K5030.M12



Scheme / Overall dimensions and I/O layout

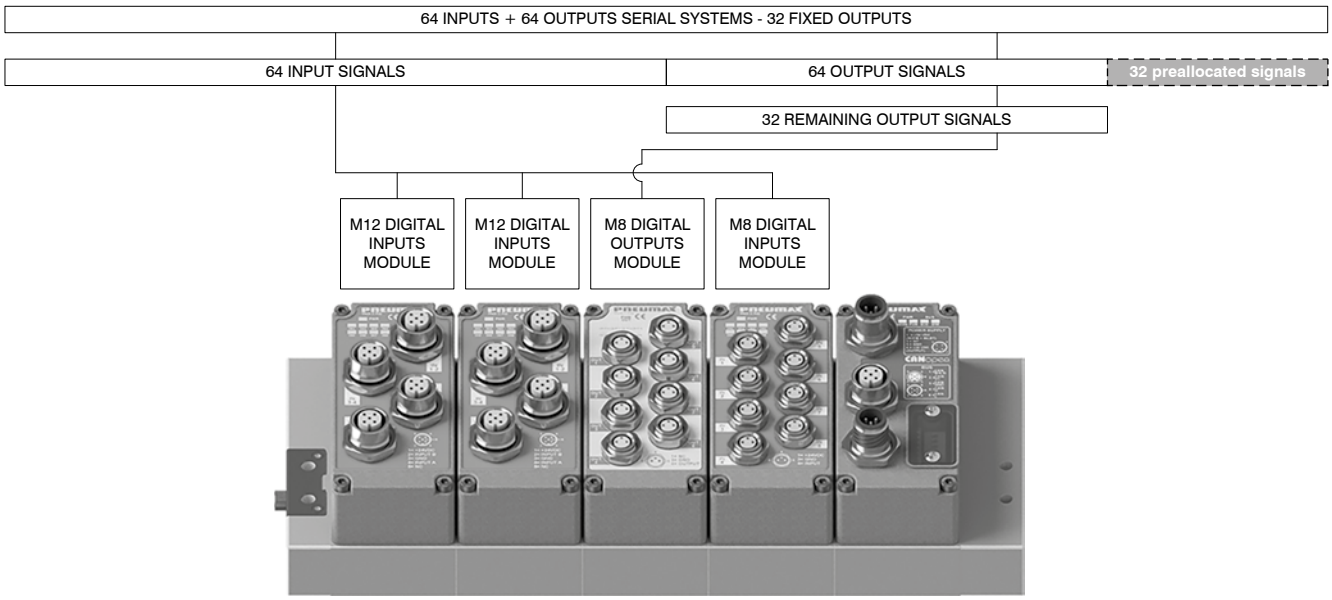


PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

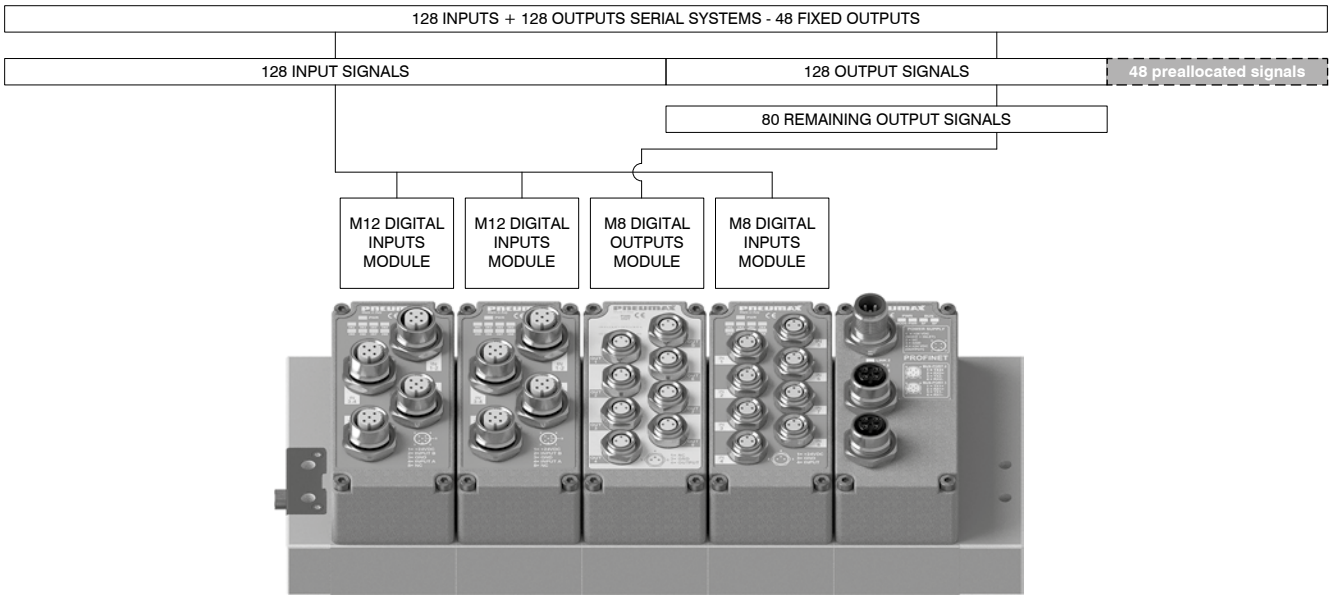
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Signal management

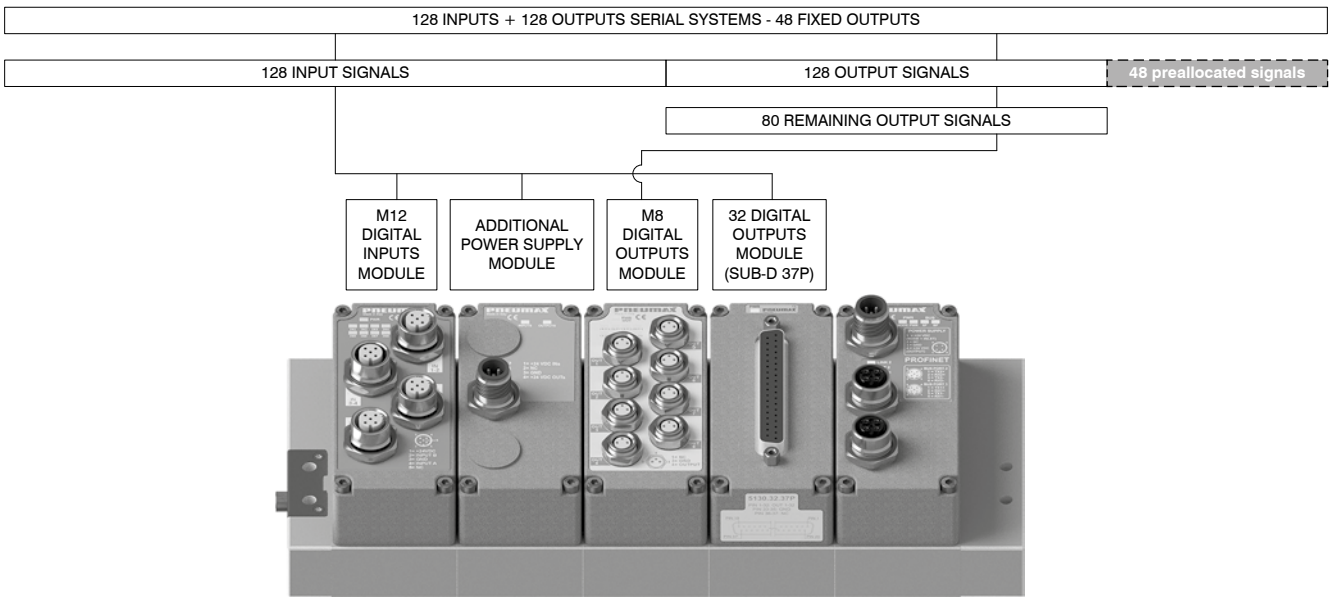
64 INPUT + 64 OUTPUT serial systems - 32 fixed OUTPUT (Ex. PROFIBUS DP and CANopen®)



128 INPUT + 128 OUTPUT serial systems - 48 fixed OUTPUT (Ex. EtherNet/IP - EtherCAT® - PROFINET IO RT)



128 INPUT + 128 OUTPUT serial systems - 48 fixed OUTPUT (Ex. EtherNet/IP - EtherCAT® - PROFINET IO RT)

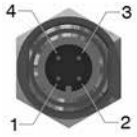


POWER SUPPLY connectors

Straight connector M12A 4P female

Coding: 5312A.F04.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

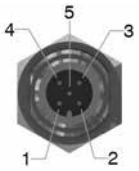
Power supply socket

NETWORK connectors

Straight connector M12A 5P female

Coding: 5312A.F05.00





Upper view slave connector

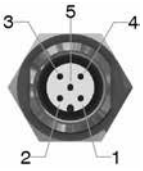
PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Socket for bus CANopen® and IO-Link

Straight connector M12A 5P male

Coding: 5312A.M05.00





Upper view slave connector

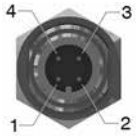
PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Plug for bus CANopen®

Straight connector M12D 4P male

Coding: 5312D.M04.00





Upper view slave connector

PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

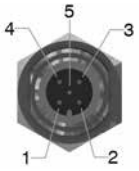
Plug for bus EtherCAT®, PROFINET IO RT and EtherNet/IP

Trademarks: EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Straight connector M12B 5P female

Coding: 5312B.F05.00





Upper view slave connector

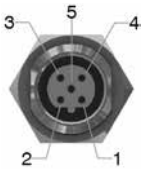
PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

Socket for bus PROFIBUS DP

Straight connector M12B 5P male

Coding: 5312B.M05.00





Upper view slave connector

PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

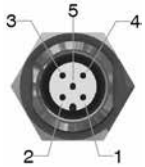
Socket for bus PROFIBUS DP

INPUTS connectors

Straight connector M12A 5P male

Coding: 5312A.M05.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
2	INPUT B
3	0 V
4	INPUT A
5	N.C.

Plug for inputs modules

Straight connector M8 3P male

Coding: 5308A.M03.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V

Plug for inputs modules

Plugs

M12 plug

Coding: 5300.T12



M8 plug

Coding: 5300.T08



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 3000 EVO



- **Version 3100 (10 mm) and 3400 (15,5 mm)**
- **Nominal flow rate up to 200 Nl/min (Version 3100)**
- **Nominal flow rate up to 600 Nl/min (Version 3400)**
- **Stand alone or manifold mounted versions**
- **Valve replacement without disconnecting the tubes**
- **Available with a wide range of serial system protocols**
- **Wide range of accessories**
- **Available sub-base mounted or with M5 threaded ports (Version 3100) and G1/8" (Version 3400)**
- **Possibility to use different pressures along the manifold (including vacuum)**
- **Certified**

Pneumax valves and solenoid valves are designed to guarantee versatility and maximum reliability in the control of integrated pneumatic circuits.
The Pneumax 3000 EVO series of solenoid valves is a very flexible solution that can be easily configured to optimize the efficiency of the whole system through a constant interface and communication with the machine.
The Pneumax 3000 EVO series is available in stand alone and manifold mounted versions.

Both versions include a wide range of functions, capable of working with positive pressures up to 10 bar or vacuum.
The valves have aluminum bodies with integrated electrical connections, manual override and a LED that indicates when the valve is actuated.
3000 EVO series is another addition to the extensive range of solenoid valve systems designed for applications in very demanding industrial sectors such as assembly and robotics, packaging or automotive.

Construction characteristics

Body	Aluminium
Seals	NBR
Piston seals	NBR
Springs	AISI 302 stainless steel
Operators	Technopolymer
Pistons	Aluminium / Technopolymer
Spools	Aluminium

Operational characteristics

Supply voltage	+ 24 V DC ±10%
Pilot consumption	1,3W nominal in energy saving mode 0,25W
Pilot working pressure [12-14]	from 2,5 to 7 bar max.
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from -5°C to +50°C
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

CANopen PROFIBUS PROFINET EtherCAT EtherNet/IP IO-Link CC-Link IE Field Basic

Series 3000 EVO - STAND ALONE



The range of series 3000 EVO solenoid valves version 3100 (10mm) and 3400 (15,5mm), are available in STAND ALONE self feeding or external feeding versions and realised with M8 point to point and 90° H connection with an integrated snap-on fitting.

Main characteristics

10 and 15,5 mm size.
Multi-position sub-bases in different lengths.

Functions

S.V. 5/2 Monostable Solenoid-Spring
S.V. 5/2 Monostable Solenoid-Differential (only self feeding)
S.V. 5/2 Bistable Solenoid-Solenoid
S.V. 5/3 C.C. Solenoid-Solenoid
S.V. 2x3/2 N.C.-N.C. (= 5/3 O.C.) Solenoid-Solenoid
S.V. 2x3/2 N.O.-N.O. (= 5/3 P.C.) Solenoid-Solenoid
S.V. 2x3/2 N.C.-N.O. Solenoid-Solenoid
S.V. 2x3/2 N.O.-N.C. Solenoid-Solenoid

Solenoid valve ordering code

3 | 1 | 15. | 52.00 | . | 39 | . | 82

Size	
1	Version 3100 (10mm)
4	Version 3400 (15,5mm)

Function	
52.00	S.V. 5/2
53.31	S.V. 5/3
62.44	2x3/2 N.C.-N.C.
62.55	2x3/2 N.O.-N.O.
62.45	2x3/2 N.C.-N.O.
62.54	2x3/2 N.O.-N.C.

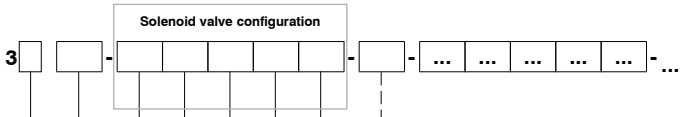
Valves type	
36	Solenoid-Differential self feeding
39	Solenoid-Spring self feeding
35	Solenoid-Solenoid self feeding
29	Solenoid-Spring external feeding
25	Solenoid-Solenoid external feeding

Connection	
02	H 90° SPEED-UP connector
82	M8 SPEED-UP connector

Example in the table: 3115.52.00.39.82: Solenoid valve size 10mm 5/2 solenoid-spring self feeding with M8 SPEED-UP connector

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Configurator



Size	
1	Version 3100 (10mm)
4	Version 3400 (15,5mm)

Number of collector positions	
02	2 positions collector
03	3 positions collector
04	4 positions collector
05	5 positions collector
06	6 positions collector
07	7 positions collector
08	8 positions collector
09	9 positions collector
10	10 positions collector

Valve type	
A	S.V. 5/2 Solenoid-Spring
B	S.V. 5/2 Solenoid-Differential (only self feeding)
C	S.V. 5/2 Solenoid-Solenoid
E	S.V. 5/3 C.C. Solenoid-Solenoid
F	S.V. 2x3/2 N.C.-N.C. (=5/3 O.C.) Solenoid-Solenoid
G	S.V. 2x3/2 N.O.-N.O. (=5/3 P.C.) Solenoid-Solenoid
H	S.V. 2x3/2 N.C.-N.O. Solenoid-Solenoid
I	S.V. 2x3/2 N.O.-N.C. Solenoid-Solenoid

Power supply	
2	External feeding
3	Self feeding

Connector type	
H	H 90° SPEED-UP connector
M	M8 SPEED-UP connector

Voltage	
1	+ 24 V DC

Connections	
5	M5 - only for version 3100 (10 mm)
8	G1/8" - only for version 3400 (15,5 mm)

Accessories (optional)	
T	Free valve space plug

Accessories (optional)	no valve position occupied on the manifold
0X0	Diaphragm plug on conduit 1
00Y	Diaphragm plug on conduit 3
Z00	Diaphragm plug on conduit 5
0XY	Diaphragm plugs on conduits 1 and 3
ZX0	Diaphragm plugs on conduits 5 and 1
Z0Y	Diaphragm plugs on conduits 5 and 3
ZXY	Diaphragm plugs on conduits 5, 1 and 3

Example in the table : 3104-C2M15-T-0X0-A3M15-F3M15
Four position manifold Version 3100 (10mm) composed of:
- Solenoid valve 5/2 solenoid-solenoid external feeding, + 24 V DC
- Free valve space plug
- Diaphragm plug on pipe 1
- Solenoid valve 5/2 solenoid-spring self feeding, + 24 V DC
- Solenoid valve 2x3/2 N.C.-N.C. (=5/3 O.C.) solenoid-solenoid, + 24 V DC

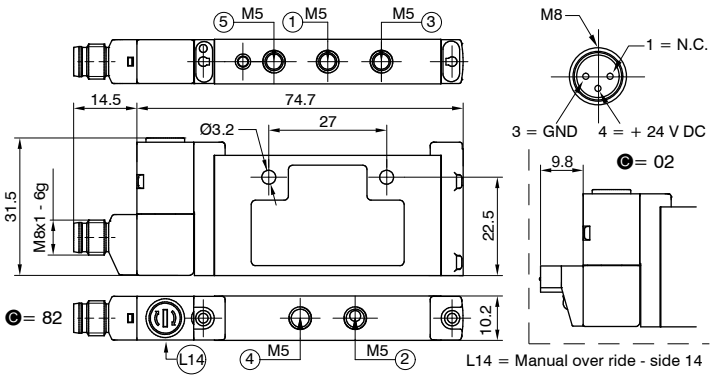
Solenoid-Spring (Self feeding)

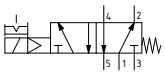
Coding: 3115.52.00.39.Ⓒ

Ⓒ	ELECTRICAL CONNECTION
	02 = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 49 g
SHORT FUNCTION CODE "A"







Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

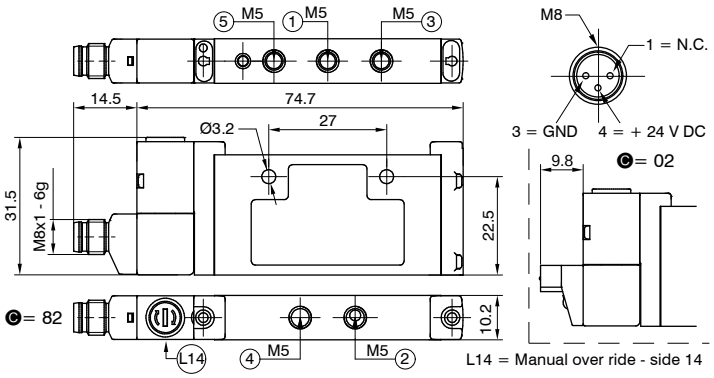
Solenoid-Differential (Self feeding)

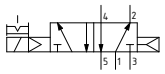
Coding: 3115.52.00.36.Ⓒ

Ⓒ	ELECTRICAL CONNECTION
	02 = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 49 g
SHORT FUNCTION CODE "B"







Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	15
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

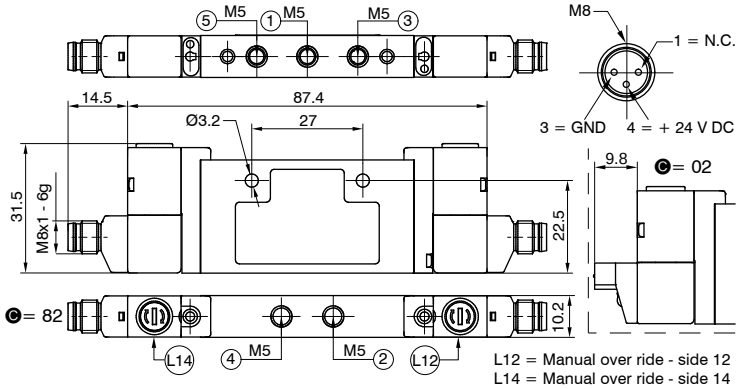
Solenoid-Solenoid (Self feeding)

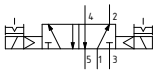
Coding: 3115.52.00.35.Ⓒ

Ⓒ	ELECTRICAL CONNECTION
	02 = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 59 g
SHORT FUNCTION CODE "C"







Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

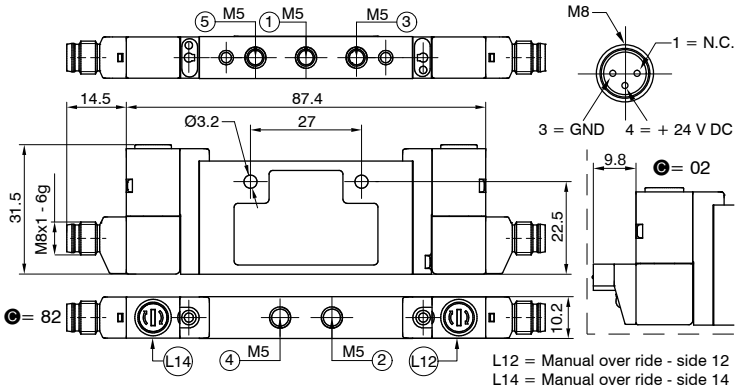
Solenoid-Solenoid 5/3 (Closed centres) (Self feeding)

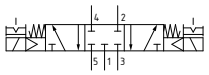
Coding: 3115.53.31.35.Ⓒ

	ELECTRICAL CONNECTION
Ⓒ	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 59 g
SHORT FUNCTION CODE "E"







Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

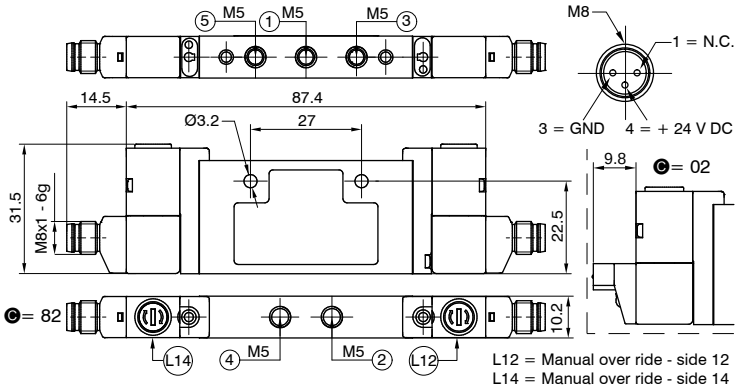
Solenoid-Solenoid 2x3/2 (Self feeding)

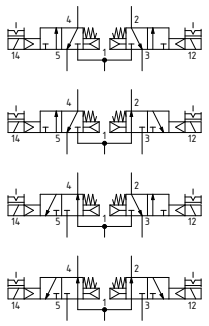
Coding: 3115.62.Ⓕ.35.Ⓒ

	FUNCTION
Ⓕ	**44** = N.C.-N.C. (5/3 Open centres)
	45 = N.C.-N.O.
	54 = N.O.-N.C.
	55 = N.O.-N.O. (5/3 Pressured centres)
	ELECTRICAL CONNECTION
Ⓒ	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 59,4 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres)= "F"
N.O.-N.O. (5/3 Pressured centres)= "G"
N.C.-N.O.= "H"
N.O.-N.C.= "I"





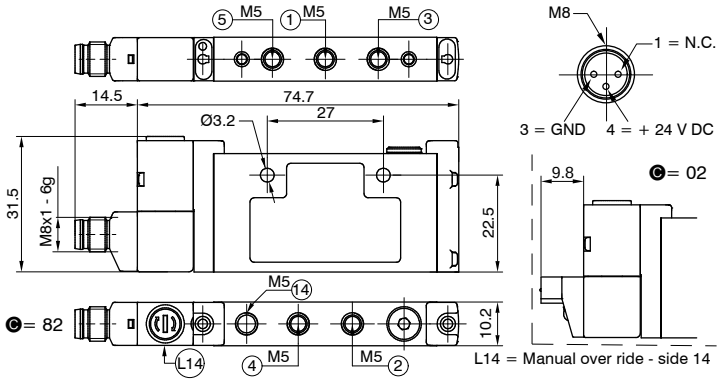


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	15
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Spring (External feeding)

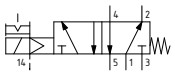
Coding: 3115.52.00.29.C





	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 49 g
SHORT FUNCTION CODE "A"

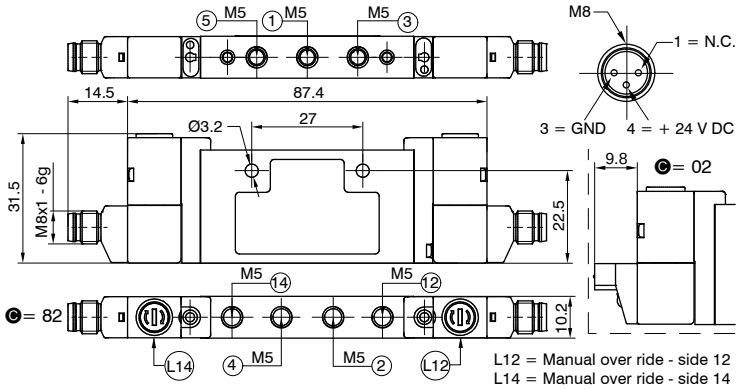


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid (External feeding)

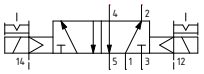
Coding: 3115.52.00.25.C





	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 59 g
SHORT FUNCTION CODE "C"

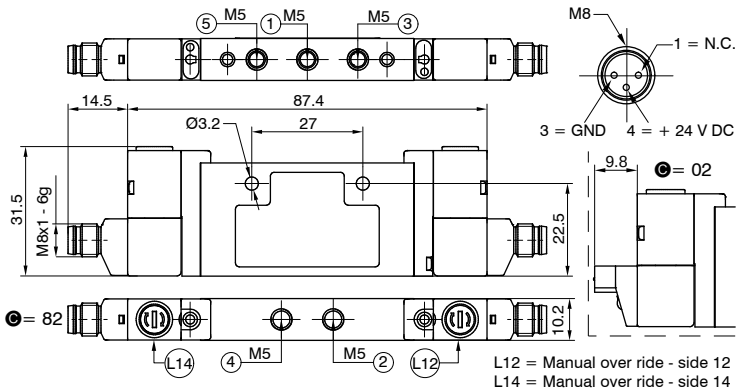


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	160
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	10
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid 5/3 (Closed centres) (External feeding)

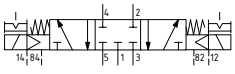
Coding: 3115.53.31.25.C





	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 59 g
SHORT FUNCTION CODE "E"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

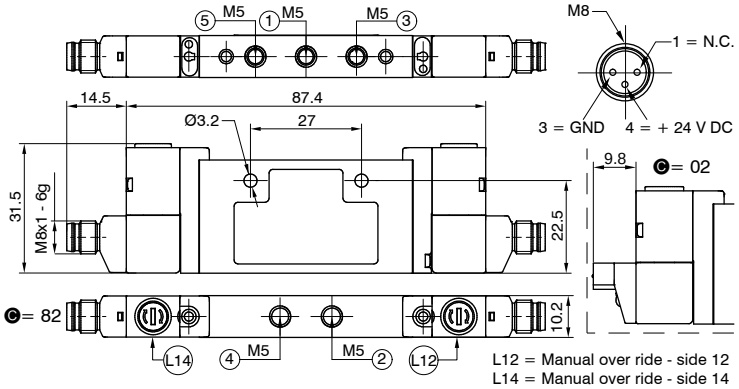
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Solenoid 2x3/2 (External feeding)

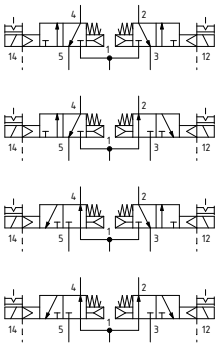
Coding: 3115.62.Ⓕ.25.Ⓒ

Ⓕ	FUNCTION
	44 = N.C.-N.C. (5/3 Open centres)
	45 = N.C.-N.O.
	54 = N.O.-N.C.
	55 = N.O.-N.O. (5/3 Pressured centres)
Ⓒ	ELECTRICAL CONNECTION
	02 = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC





Weight 59,4 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres)= "F"
N.O.-N.O. (5/3 Pressured centres)= "G"
N.C.-N.O.= "H"
N.O.-N.C.= "I"

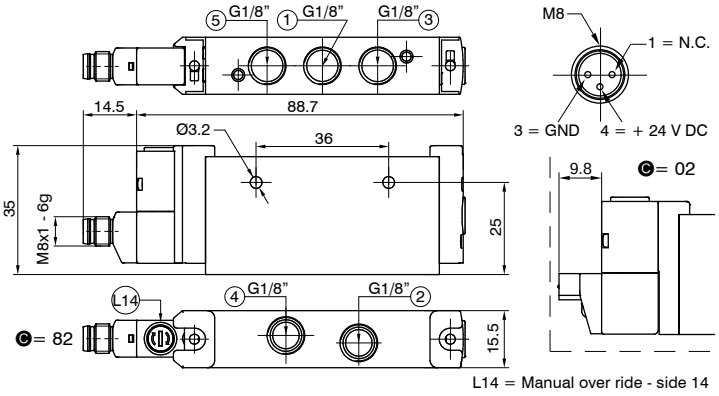


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	150
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	15
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50

Solenoid-Spring (Self feeding)

Coding: 3415.52.00.39.C

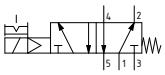




L14 = Manual over ride - side 14

	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 90 g
SHORT FUNCTION CODE "A"

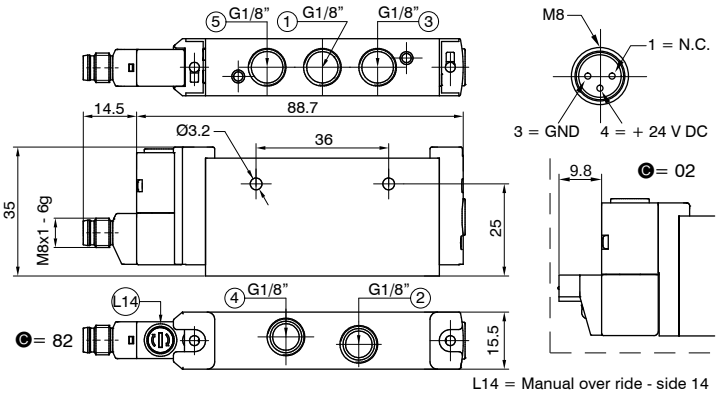


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Differential (Self feeding)

Coding: 3415.52.00.36.C

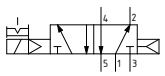




L14 = Manual over ride - side 14

	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 90 g
SHORT FUNCTION CODE "B"

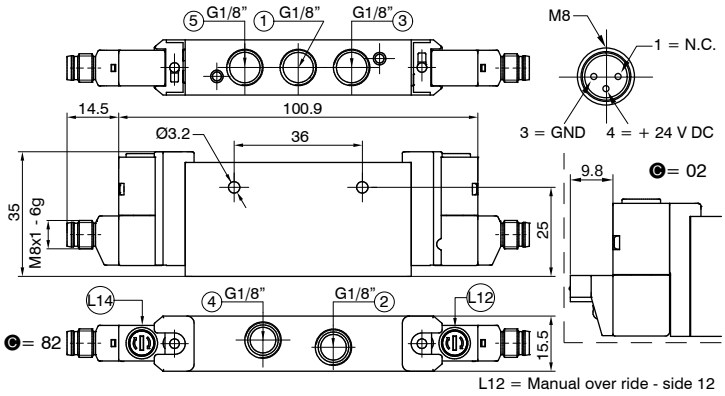


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	15
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid (Self feeding)

Coding: 3415.52.00.35.C

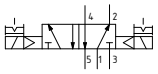




L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 100 g
SHORT FUNCTION CODE "C"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	10
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

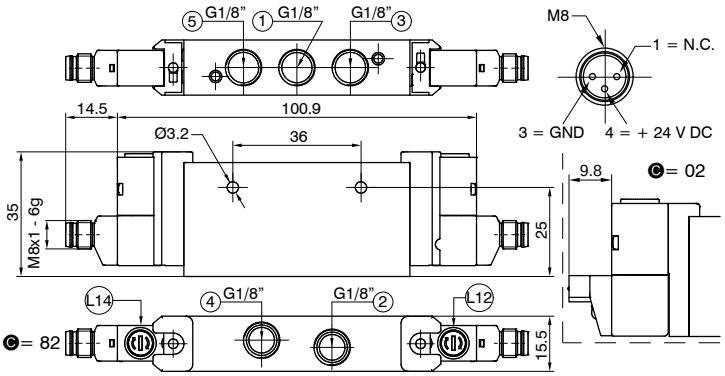
Solenoid-Solenoid 5/3 (Closed centres) (Self feeding)

Coding: 3415.53.31.35.Ⓒ

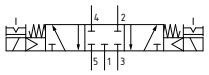
	ELECTRICAL CONNECTION
Ⓒ	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 100 g
SHORT FUNCTION CODE "E"





L12 = Manual over ride - side 12
L14 = Manual over ride - side 14



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	500
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

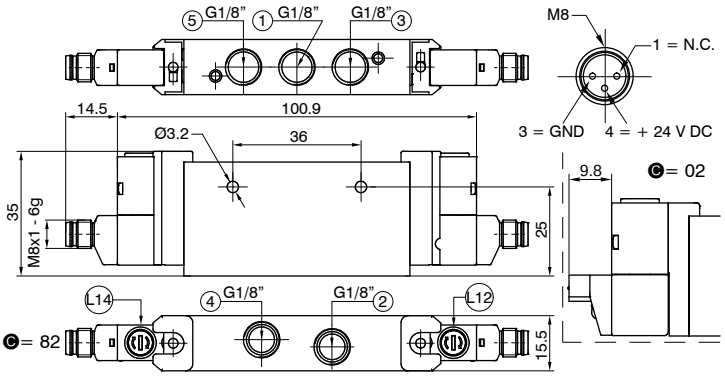
Solenoid-Solenoid 2x3/2 (Self feeding)

Coding: 3415.62.Ⓕ.35.Ⓒ

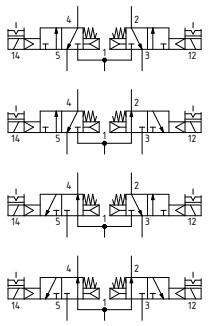
	FUNCTION
Ⓕ	**44** = N.C.-N.C. (5/3 Open centres)
	45 = N.C.-N.O.
	54 = N.O.-N.C.
	55 = N.O.-N.O. (5/3 Pressured centres)
	ELECTRICAL CONNECTION
Ⓒ	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 100 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres)= "F"
N.O.-N.O. (5/3 Pressured centres)= "G"
N.C.-N.O.= "H"
N.O.-N.C.= "I"





L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

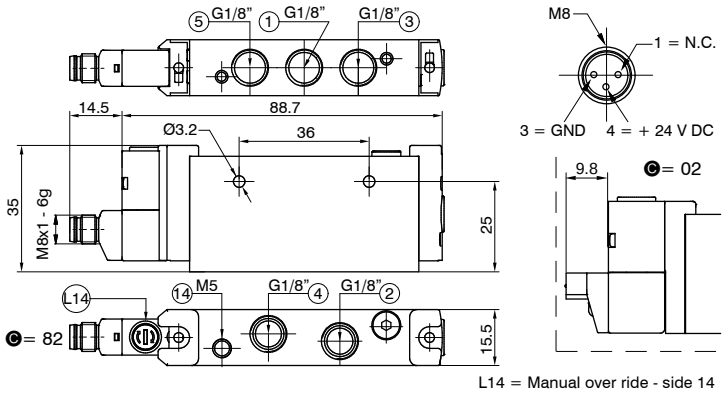


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	500
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	15
Working pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Spring (External feeding)

Coding: 3415.52.00.29.C

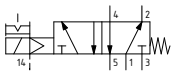




L14 = Manual over ride - side 14

	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 90 g
SHORT FUNCTION CODE "A"

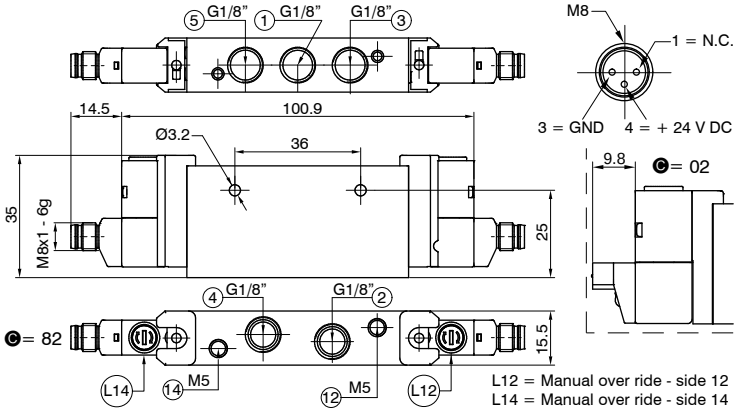


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid (External feeding)

Coding: 3415.52.00.25.C

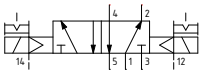




L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 100 g
SHORT FUNCTION CODE "C"

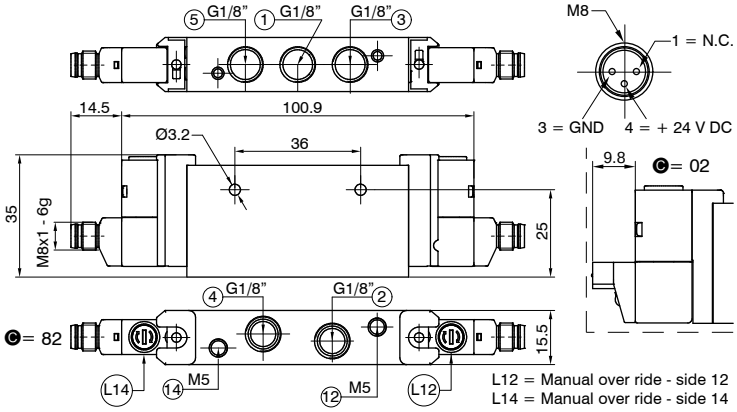


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	10
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid 5/3 (Closed centres) (External feeding)

Coding: 3415.53.31.25.C

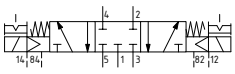




L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

	ELECTRICAL CONNECTION
C	**02** = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC

Weight 100 g
SHORT FUNCTION CODE "E"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	500
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

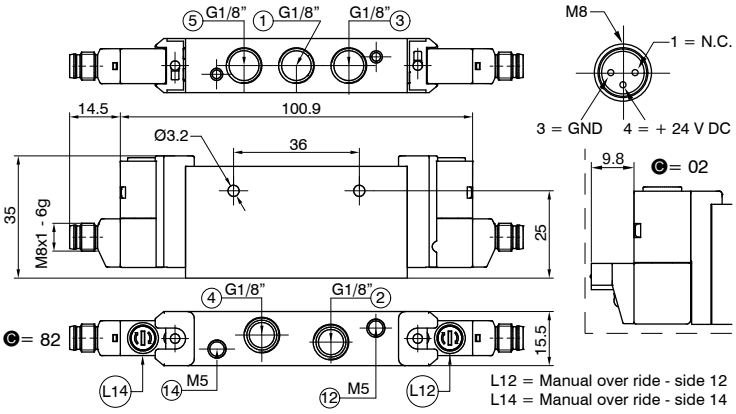
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Solenoid 2x3/2 (External feeding)

Coding: 3415.62.Ⓕ.25.Ⓒ

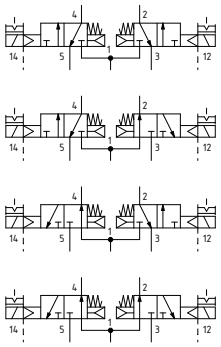
Ⓕ	FUNCTION
	44 = N.C.-N.C. (5/3 Open centres)
	45 = N.C.-N.O.
	54 = N.O.-N.C.
	55 = N.O.-N.O. (5/3 Pressured centres)
Ⓒ	ELECTRICAL CONNECTION
	02 = H 90° SPEED-UP connector + 24 V DC
	82 = M8 SPEED-UP connector + 24 V DC





L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

Weight 100 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres)= "F"
N.O.-N.O. (5/3 Pressured centres)= "G"
N.C.-N.O.= "H"
N.O.-N.C.= "I"



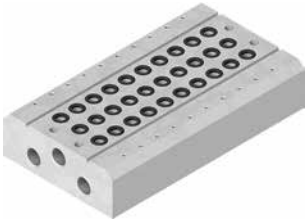
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	500
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	15
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50

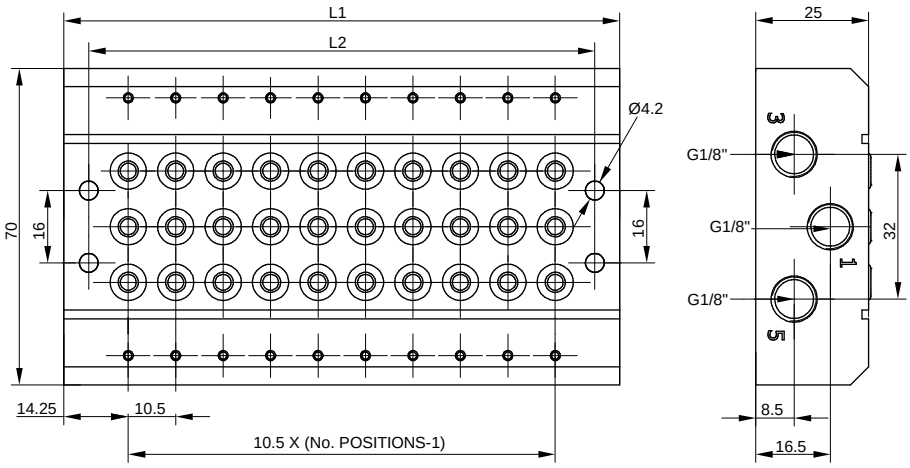
Manifold - Version 3100 (10 mm)

Coding: 3115.Ⓝ

Ⓝ	NO. POSITIONS
	02 = No. 2 positions
	03 = No. 3 positions
	04 = No. 4 positions
	05 = No. 5 positions
	06 = No. 6 positions
	07 = No. 7 positions
	08 = No. 8 positions
	09 = No. 9 positions
	10 = No. 10 positions

Weight "see table"





	No. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
L1	39	49,5	60	70,5	81	91,5	102	112,5	123
L2	29	39,5	50	60,5	71	81,5	92	102,5	113
Weight (g)	150	200	250	300	350	400	450	500	550

Assembling kit - Version 3100 (10 mm)

Coding: 3115.KV

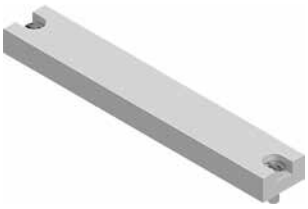
Weight 2 g

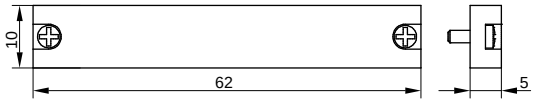


Closing plate - Version 3100 (10 mm)

Coding: 3115.00

Weight 10 g





Diaphragm plug - Version 3100 (10 mm)

Coding: 3130.17

Weight 1,5 g



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

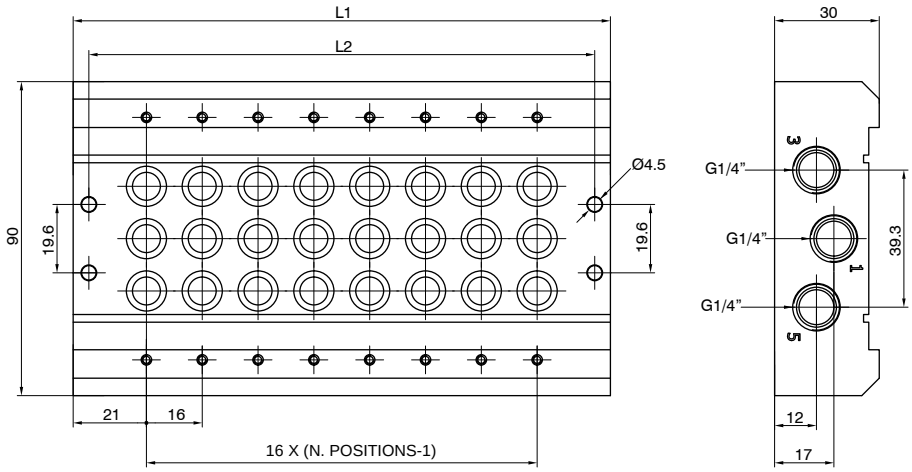
Manifold - Version 3400 (15,5 mm)



Coding: 3415.Ⓝ

Ⓝ	NO. POSITIONS
	02 = No. 2 positions
	03 = No. 3 positions
	04 = No. 4 positions
	05 = No. 5 positions
	06 = No. 6 positions
	07 = No. 7 positions
	08 = No. 8 positions
	09 = No. 9 positions
	10 = No. 10 positions

Weight "see table"



	N. POSITIONS								
	2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
L1	58	74	90	106	122	138	154	170	186
L2	49	65	81	97	113	129	145	161	177
Weight (g)	350	440	530	620	710	800	890	980	1070

Assembling kit - Version 3400 (15,5 mm)



Coding: 3415.KV

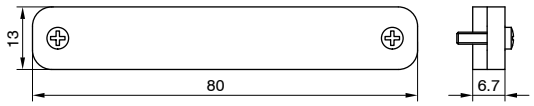
Weight 3 g

Closing plate - Version 3400 (15,5 mm)



Coding: 3415.00

Weight 25 g



Diaphragm plug - Version 3400 (15,5 mm)



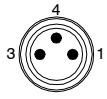
Coding: 3430.17

Weight 3 g

M8 connector with 3 wires cable



Connection 3 wires 3 PIN



1 Brown (+)
4 Black (signal)
3 Blue (-)

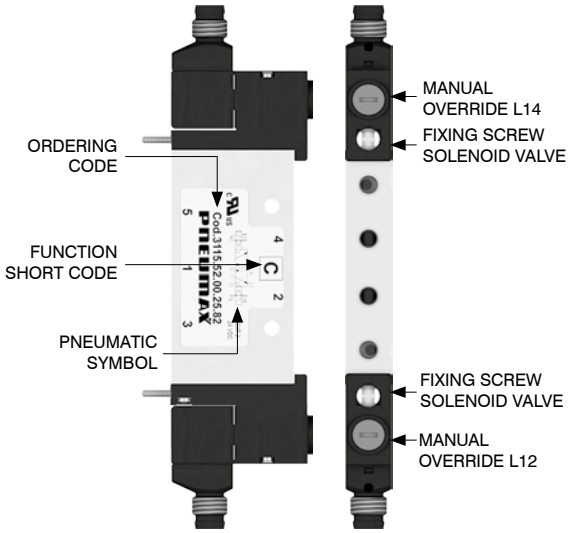
Coding: MCHⓁ

Ⓛ	CABLE LENGTH
	1 = 2,5 meters
	2 = 5 meters
	3 = 10 meters

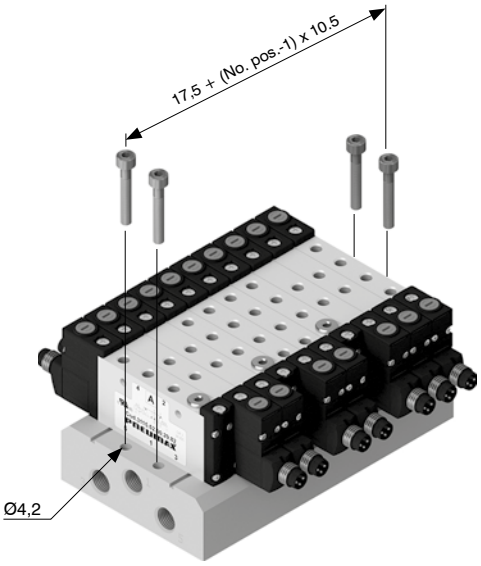
PUR Ø2,6 mm 3x0,15 mm²

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

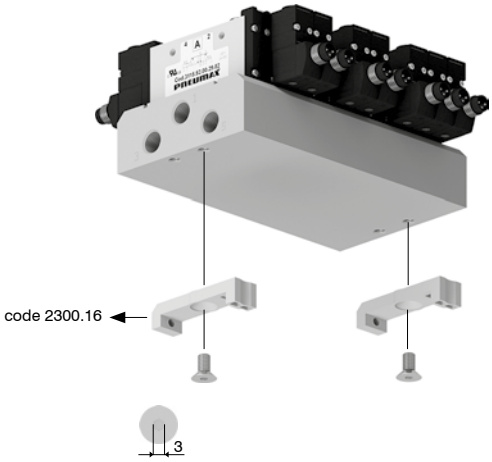
Solenoid valve description

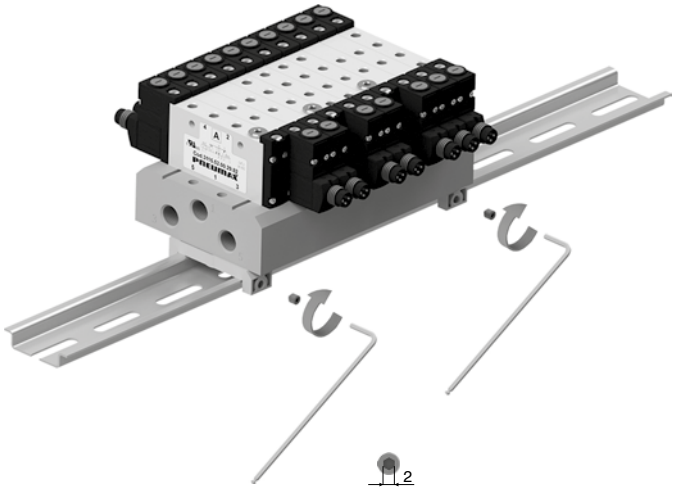


From the top

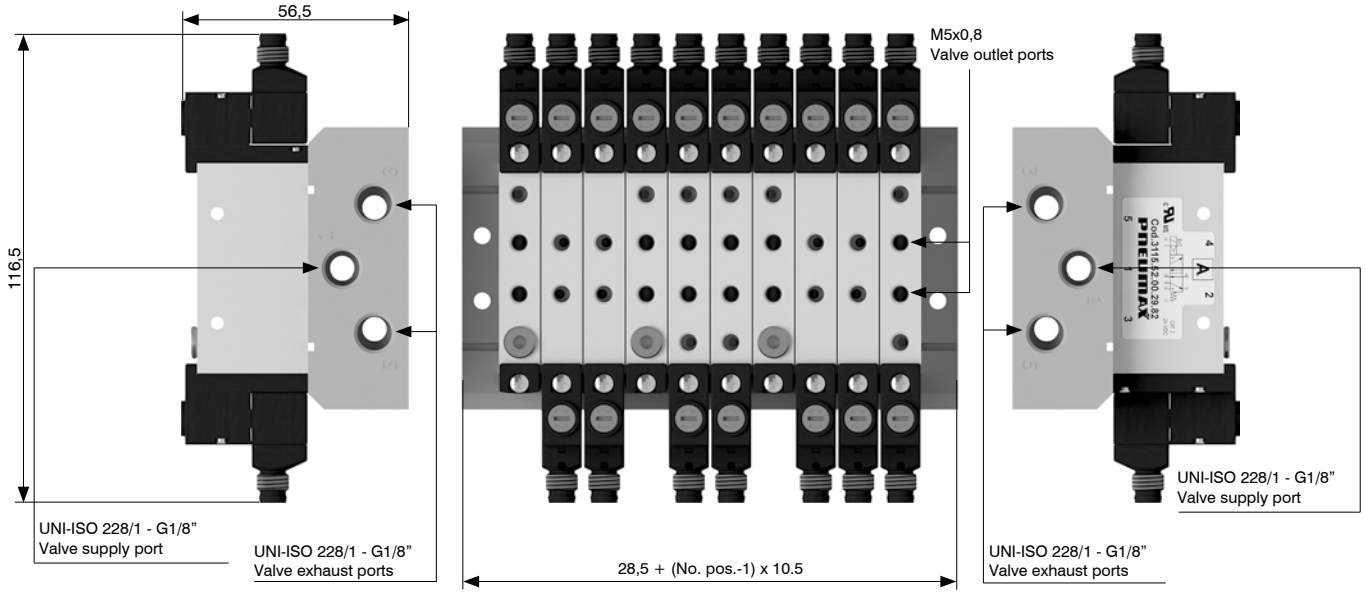


DIN rail fixing



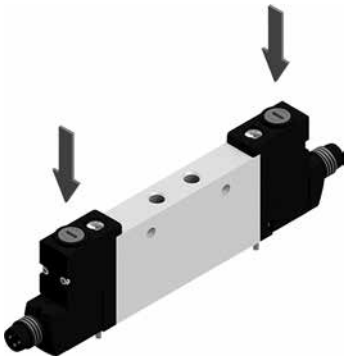


Supply ports and maximum possible size according to valves used

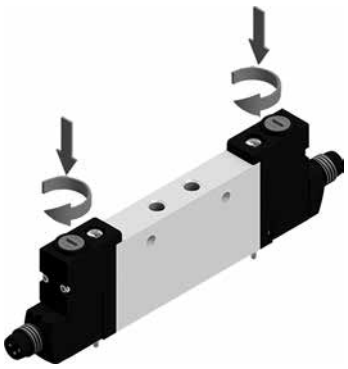


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Manual override actuation



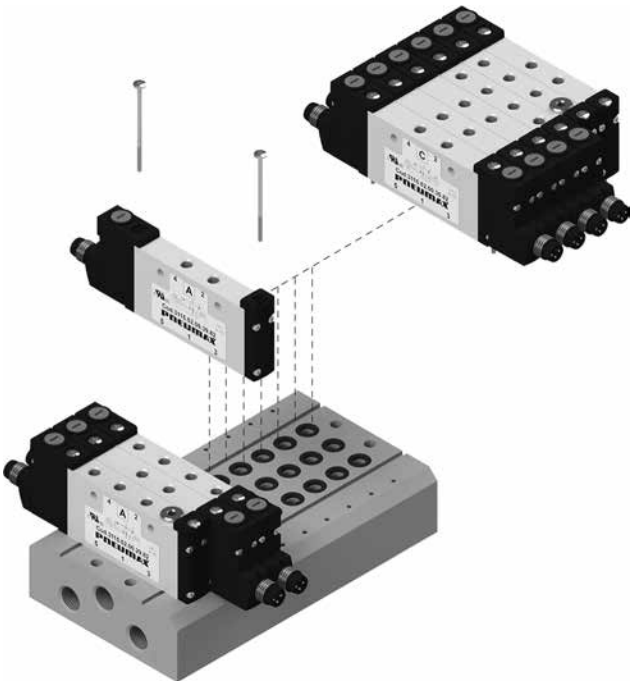
Instable function:
Push to actuate
(when released it moves back to the original position)



Bistable function:
Push and turn to get the bistable function

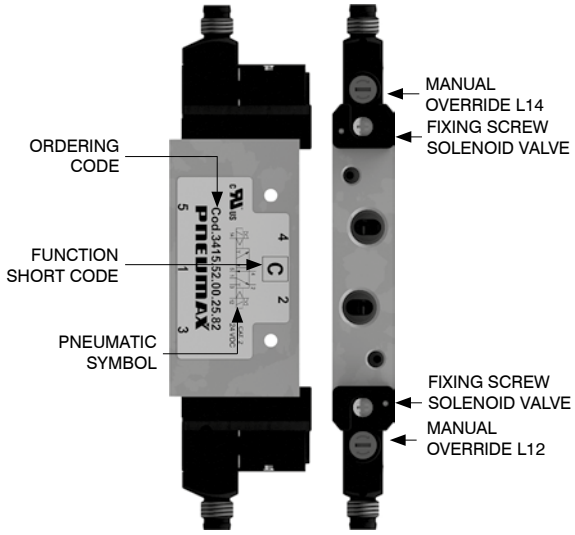
Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

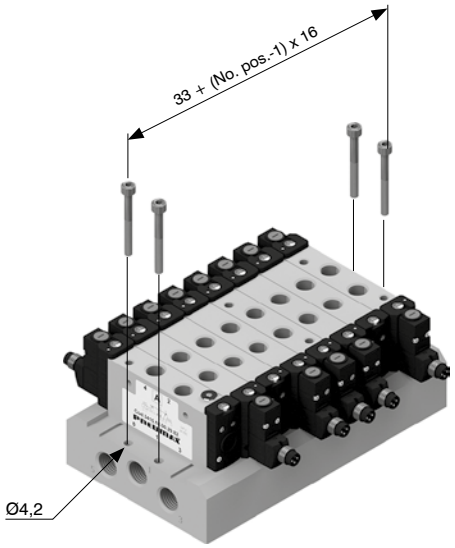


Maximum fixing torque for fittings: 0,2 Nm

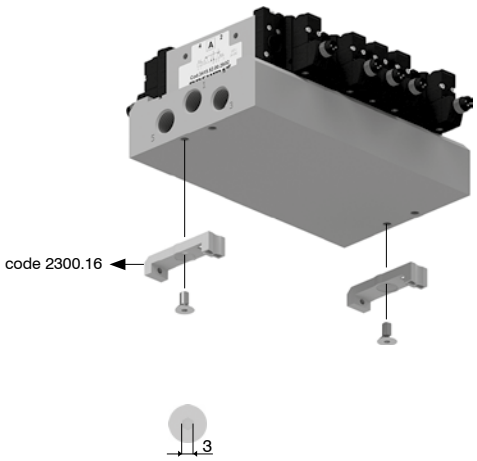
Solenoid valve description

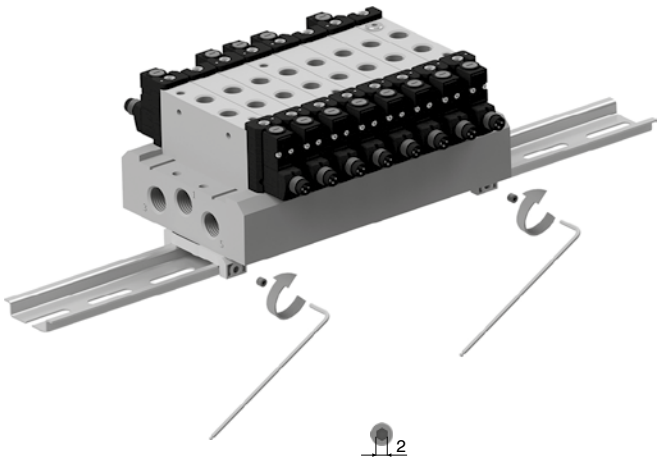


From the top

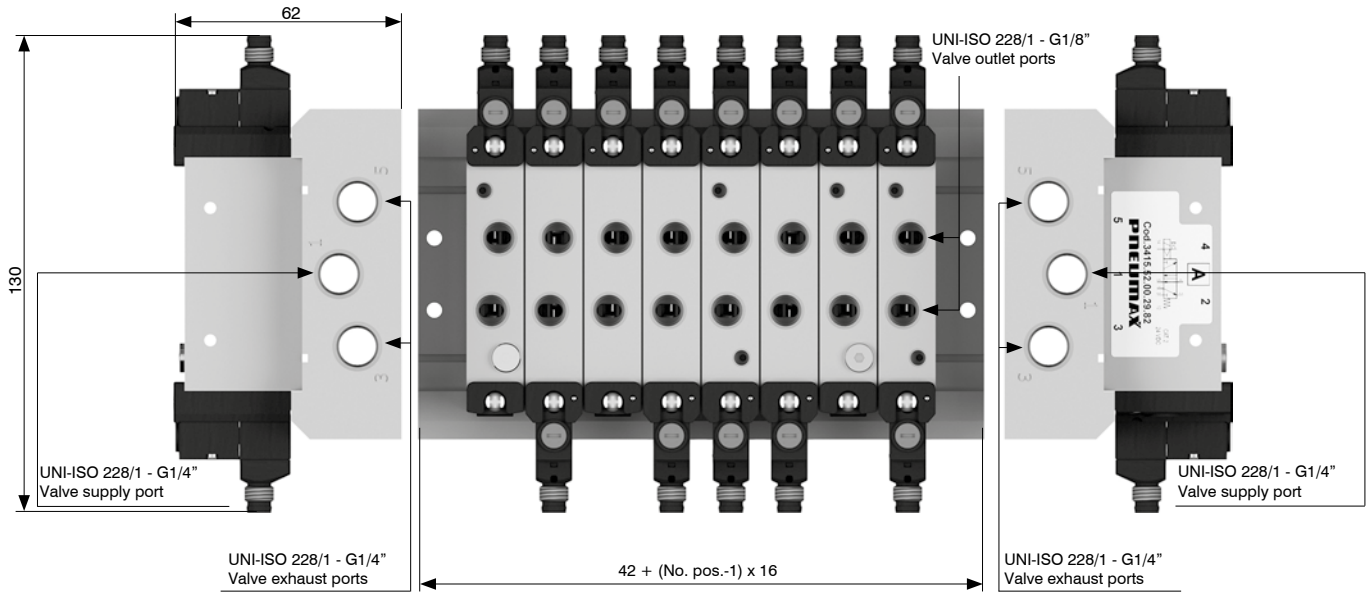


DIN rail fixing



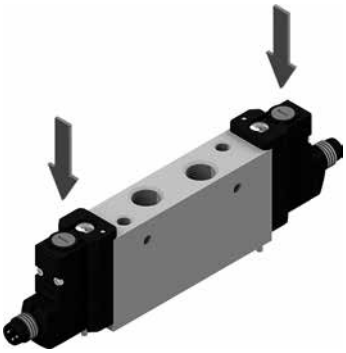


Supply ports and maximum possible size according to valves used

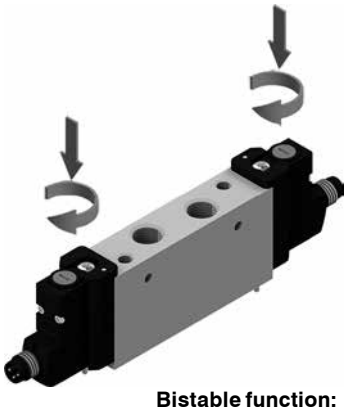


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Manual override actuation



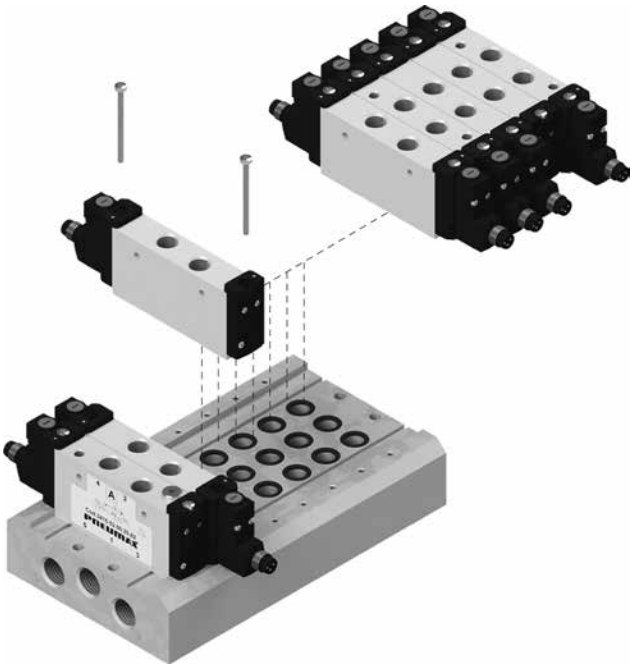
Instable function:
Push to actuate
(when released it moves back to the original position)



Bistable function:
Push and turn to get the bistable function

Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation



Maximum fixing torque for fittings: 0,2 Nm

Series 3000 EVO - MANIFOLD



The range of solenoid valves to be assembled in pre-configured manifold, is available in multi-pin and serial versions, with a vast choice of connectors and analogue and digital input and output accessories.
The compact and clean design of both the valve body and the manifold, each one produced in aluminum, allows their use in applications requiring space optimization and weight reduction without sacrificing reliability and the prerogatives of aluminum.
The multi-pin connection version is available in three different types of connections:

- SUB-D 25 poles equipped with 24 outputs and configurable in different lengths up to 12 bistable valve positions on the manifold
- SUB-D 37 poles equipped with 32 outputs and configurable in different lengths up to 16 bistable valve positions on the manifold
- SUB-D 44 poles HD equipped with 40 outputs and configurable in different lengths up 20 bistable valve positions on the manifold

Every one of these options covers the wide range of application requirements and provides electronic management by default capable of energy saving on individual coils and managing PNP and NPN connections automatically without any difference in installation for the end user.
Precisely in order to guarantee maximum integration versatility in different machines and applications, the 3000 EVO series valves in the serial version are designed to interface with all main communication protocols: CANopen®, PROFIBUS DP, EtherNet/IP, EtherCAT®, PROFINET IO RT, CC-Link IE Field Basic and IO-Link.
Each implemented protocol has been provided to guarantee the best expandibility and inputs/outputs management.
In particular it has been provided protocols to manage up to 64 inputs and 64 outputs (PROFIBUS DP, CANopen® and IO-Link) and other protocols to manage up to 128 inputs and 128 outputs (EtherCAT®, EtherNet/IP, CC-Link IE Field Basic and PROFINET IO RT).
Taking advantage of the output signals it is possible to connect components to manage, for example, proportional pressure regulator or to control other solenoid valves.
The 3000 EVO series allows the use of modules dedicated to managing input signals up to the maximum number of inputs manageable by the specific serial node used.
Input modules with different interfaces and different technologies have been provided: modules with eight digital inputs with M8 or M12 connection, analogue or voltage input modules with M8 connection interface and others.
One of the strengths of this system is the possibility to freely configure the series of input and output modules, giving the advantage of installation flexibility.

Main characteristics

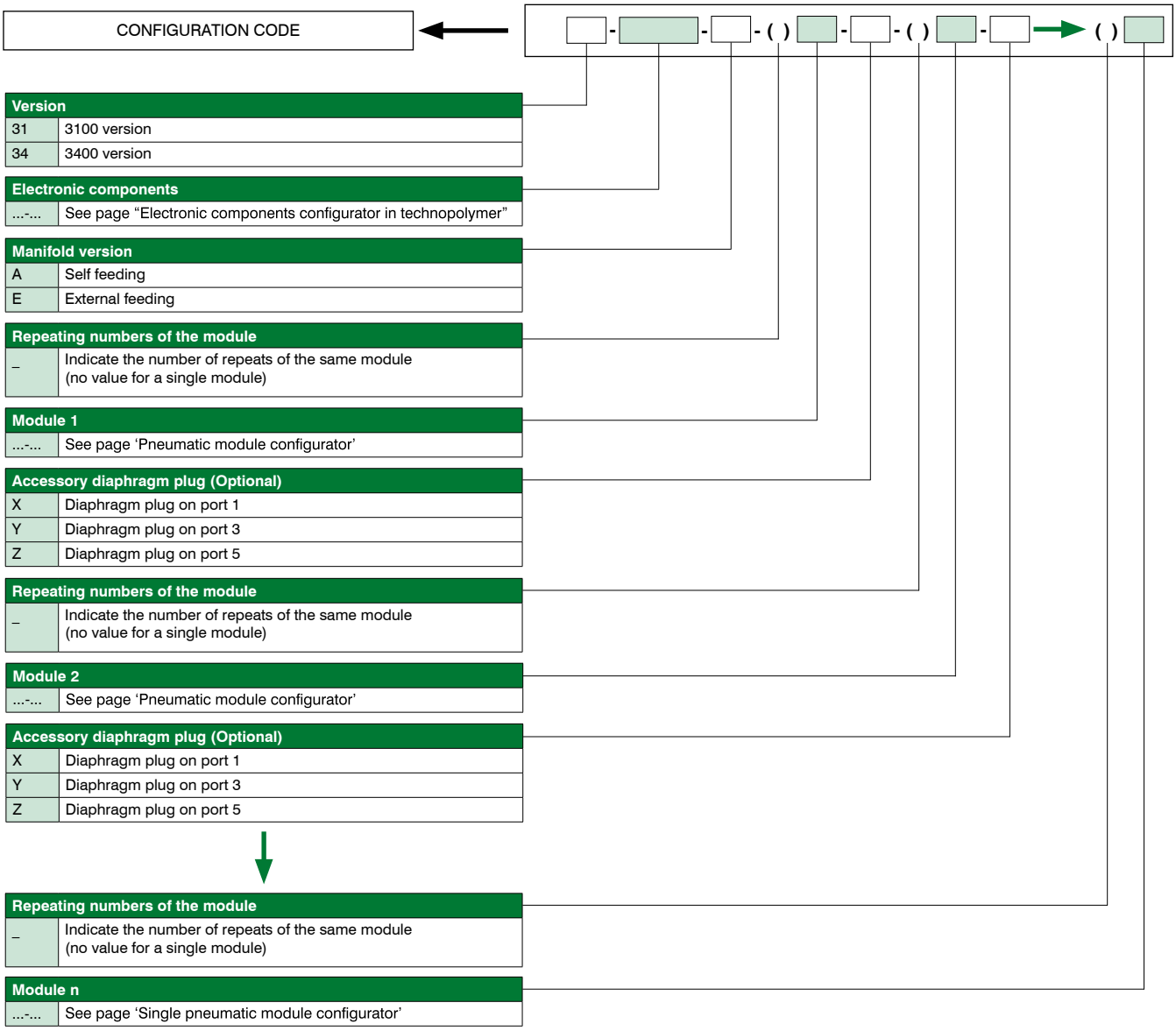
10 and 15,5 mm size.
Multi-position sub-bases in different lengths.
Integrated and optimized electrical connection system.

Functions

S.V. 5/2 Monostable Solenoid-Spring
S.V. 5/2 Monostable Solenoid-Differential
S.V. 5/2 Bistable Solenoid-Solenoid
S.V. 5/3 C.C. Solenoid-Solenoid
S.V. 2x3/2 N.C.-N.C. (= 5/3 O.C.) Solenoid-Solenoid
S.V. 2x3/2 N.O.-N.O. (= 5/3 P.C.) Solenoid-Solenoid
S.V. 2x3/2 N.C.-N.O. Solenoid-Solenoid
S.V. 2x3/2 N.O.-N.C. Solenoid-Solenoid

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rules and configuration scheme



Version	
31	3100 version
34	3400 version

Electronic components	
...-...	See page “Electronic components configurator in technopolymer”

Manifold version	
A	Self feeding
E	External feeding

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module 1	
...-...	See page ‘Pneumatic module configurator’

Accessory diaphragm plug (Optional)	
X	Diaphragm plug on port 1
Y	Diaphragm plug on port 3
Z	Diaphragm plug on port 5

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module 2	
...-...	See page ‘Pneumatic module configurator’

Accessory diaphragm plug (Optional)	
X	Diaphragm plug on port 1
Y	Diaphragm plug on port 3
Z	Diaphragm plug on port 5

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module n	
...-...	See page ‘Single pneumatic module configurator’

Check the number of available solenoid valve positions

Number of available solenoid valve positions (standard)							
4	6	8	10	12	16	20	24

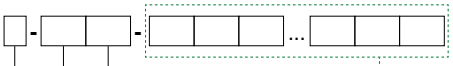
Configurable on Cadenas platform

CADENAS

Note:
When composing the configuration, always bear in mind that the maximum number of electrical signals available is:
- 48 if a serial node or IO-Link interface is used.
- 40 if a 44-pole multi-pin is used.
- 32 if a 37-pole multi-pin module is used.
- 24 if a 25-pole multi-pin module is used.

Each position on the manifold occupies two electrical signals; if a monostable valve is used, an electrical signal is lost.
However, this makes it possible to replace the monostable valve with a bistable valve in the same position.
Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.
If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence (e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).
If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

Electronic components configurator in technopolymer



Type	
P	Technopolymer

Multi-pin electrical connection		
MP	2	Multi-pin, PNP 24 V DC 25 poles
	3	Multi-pin, PNP 24 V DC 37 poles
	4	Multi-pin, PNP 24 V DC 44 poles

Electrical connection	
C3	CANopen® node 64 IN - 64 OUT (32 fixed)
C4	CANopen® node 64 IN - 64 OUT (48 fixed)
P3	PROFIBUS DP node 64 IN - 64 OUT (32 fixed)
P4	PROFIBUS DP node 64 IN - 64 OUT (48 fixed)
I4	EtherNet/IP node 128 IN - 128 OUT (48 fixed)
A4	EtherCAT® node 128 IN - 128 OUT (48 fixed)
N4	PROFINET IO RT node 128 IN - 128 OUT (48 fixed)
G4	CC-Link IE Field Basic node 128 IN - 128 OUT (48 fixed)
K3	IO-Link interface 64 IN - 64 OUT (32 fixed)
K4	IO-Link interface 64 IN - 64 OUT (48 fixed)

Manifold accessories (2 pieces)	
	Without DIN rail fixing
G	With DIN rail fixing

Repeating numbers of the module	
	Indicate the number of repeats of the same module (no value for a single module)

SINGLE ELECTRIC MODULE CONFIGURATION

Inputs module - Analog / Digital (EXCLUDED WITH MP)	
D8	8 M8 digital inputs module
D12	8 M12 digital inputs module
D3	32 digital inputs SUB-D 37 poles
T1	2 analogue inputs 0-5V module (voltage signal)
T2	2 analogue inputs 0-10V module (voltage signal)
T3	4 analogue inputs 0-5V module (voltage signal)
T4	4 analogue inputs 0-10V module (voltage signal)
C1	2 analogue inputs 0-20mA module (current signal)
C2	2 analogue inputs 4-20mA module (current signal)
C3	4 analogue inputs 0-20mA module (current signal)
C4	4 analogue inputs 4-20mA module (current signal)
P1	2 Pt100 2 wires inputs module
P2	2 Pt100 3 wires inputs module
P3	2 Pt100 4 wires inputs module
P4	4 Pt100 2 wires inputs module
P5	4 Pt100 3 wires inputs module
P6	4 Pt100 4 wires inputs module
Outputs module - Analog / Digital	
M8	8 M8 digital outputs module
M12	8 M12 digital outputs module
M3	32 digital outputs SUB-D 37 poles
V1	2 analogue outputs 0-5V module (voltage signal)
V2	2 analogue outputs 0-10V module (voltage signal)
V3	4 analogue outputs 0-5V module (voltage signal)
V4	4 analogue outputs 0-10V module (voltage signal)
L1	2 analogue outputs 0-20mA module (current signal)
L2	2 analogue outputs 4-20mA module (current signal)
L3	4 analogue outputs 0-20mA module (current signal)
L4	4 analogue outputs 4-20mA module (current signal)
Additional modules (Optional)	
P12	M12 additional power supply module

Module accessories	
	Without DIN rail fixing
G	With DIN rail fixing

Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Modules configuration

Module configurator

S.V.

—

Valve type	
A	S.V. 5/2 SOLENOID-SPRING
B	S.V. 5/2 SOLENOID-DIFFERENTIAL
C	S.V. 5/2 SOLENOID-SOLENOID
E	S.V. 5/3 CC SOLENOID-SOLENOID
F	S.V. 2x3/2 NC-NC (5/3 O.C.) SOLENOID-SOLENOID
G	S.V. 2x3/2 NO-NO (5/3 P.C.) SOLENOID-SOLENOID
H	S.V. 2x3/2 NC-NO SOLENOID-SOLENOID
I	S.V. 2x3/2 NO-NC SOLENOID-SOLENOID
T	Plug

Module configurator

Accessories

—

Module type	
W	Intermediate Inlet/Exhaust module

N°2 valve seats occupied in the 3100 version

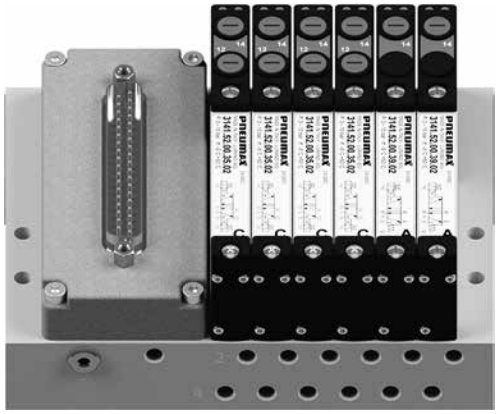
Configuration example of complete group:

- Version 3400 (34)
- Technopolymer PX3 serial system (P-N4-D8-M8)
- Manifold in external supply version (E)
- Solenoid valves 5/2 Solenoid-Spring (A)
- Solenoid valves 5/2 Solenoid-Solenoid (C)
- Solenoid valves 2X3/2 NC-NC Solenoid-Solenoid (F)
- Solenoid valves 2X3/2 NC-NC Solenoid-Solenoid (F)

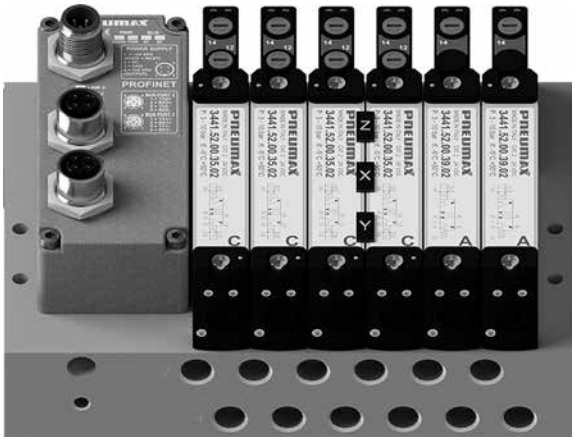


34-P-N4-D8-M8-E-A-C-(2)F

Configuration examples



Example shown: **31-P-MP3-E-(4)C-(2)A**
Manifold with external feeding, multi-pin 37 poles connection and solenoid valves.



Example shown: **34-P-N4-E-(3)C-XYZ-C-(2)A**
Manifold with external feeding, serial node, solenoid valves and diaphragm plugs.



Example shown: **31-P-C4-D8-M12-E-C-B-T-XYZ-A-I-W-(2)C-XYZ-(6)C-T**
Manifold with external feeding, serial node, M8 input module, M12 output module; solenoid valves, multi-position diaphragm plugs, additional power supply module.

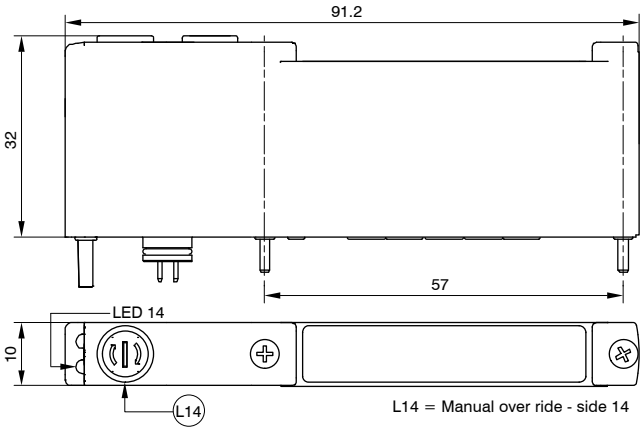


Example shown: **31-P-C4-(2)D8-M12-A-C-B-(2)I-(2)T**
Self feeding manifold with serial node, M8 input module, M12 output module, solenoid valves.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring



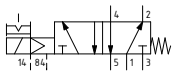


L14 = Manual over ride - side 14

Coding: 3141.52.00.39.Ⓒ

Ⓒ	ELECTRICAL CONNECTION
	02 = + 24 V DC

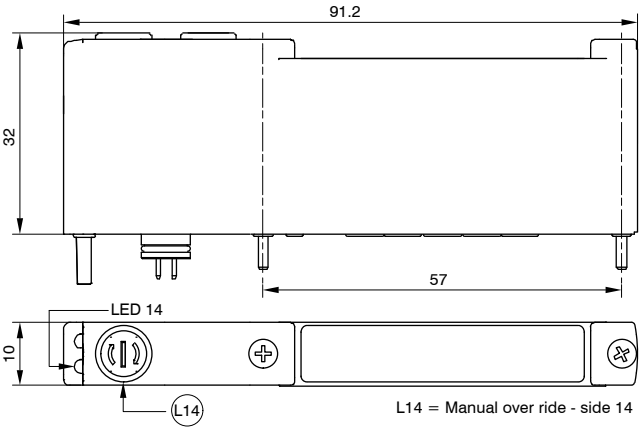
Weight 55,7 g
SHORT FUNCTION CODE "A"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	200
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Differential



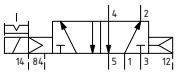


L14 = Manual over ride - side 14

Coding: 3141.52.00.36.Ⓒ

Ⓒ	ELECTRICAL CONNECTION
	02 = + 24 V DC

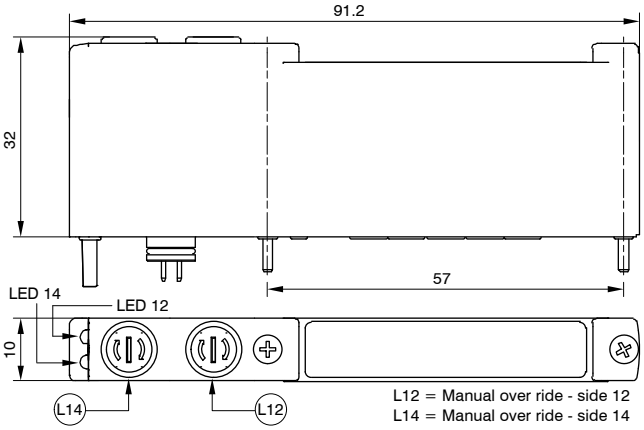
Weight 55,7 g
SHORT FUNCTION CODE "B"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	200
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid



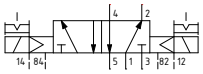


L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

Coding: 3141.52.00.35.Ⓒ

Ⓒ	ELECTRICAL CONNECTION
	02 = + 24 V DC

Weight 55,7 g
SHORT FUNCTION CODE "C"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	200
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	10
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

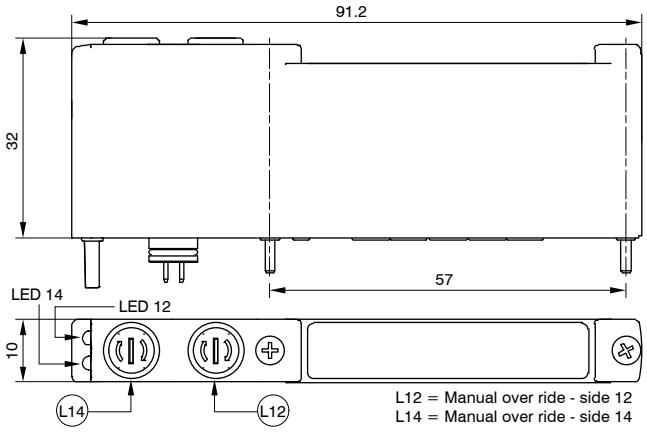
Solenoid-Solenoid 5/3 (Closed centres)

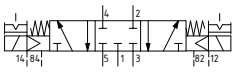
Coding: 3141.53.31.35.Ⓒ

Ⓒ	ELECTRICAL CONNECTION
	02 = + 24 V DC

Weight 60,3 g
SHORT FUNCTION CODE "E"







Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	170
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

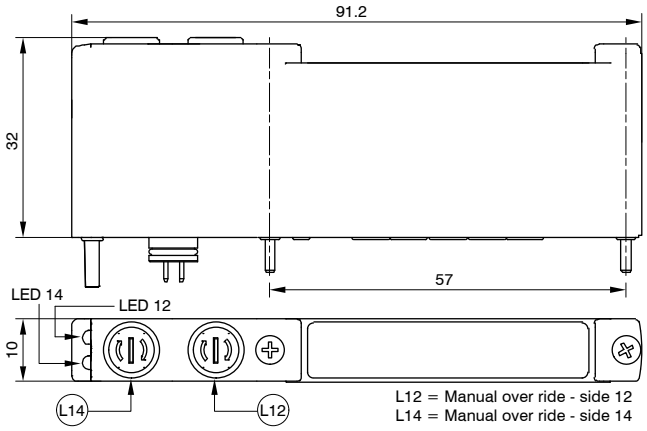
Solenoid-Solenoid 2x3/2

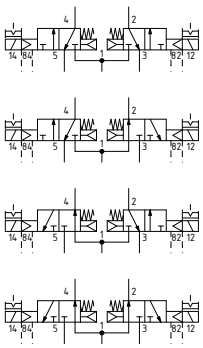
Coding: 3141.62.Ⓕ.35.Ⓒ

Ⓕ	FUNCTION
	44 = N.C.-N.C. (5/3 Open centres)
	45 = N.C.-N.O.
	54 = N.O.-N.C.
	55 = N.O.-N.O. (5/3 Pressured centres)
Ⓒ	ELECTRICAL CONNECTION
	02 = + 24 V DC

Weight 60,7 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres) = "F"
N.O.-N.O. (5/3 Pressured centres) = "G"
N.C.-N.O. = "H"
N.O.-N.C. = "I"



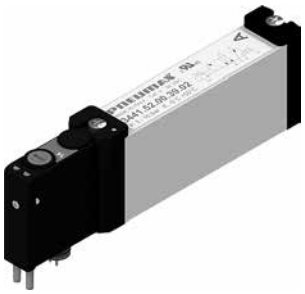


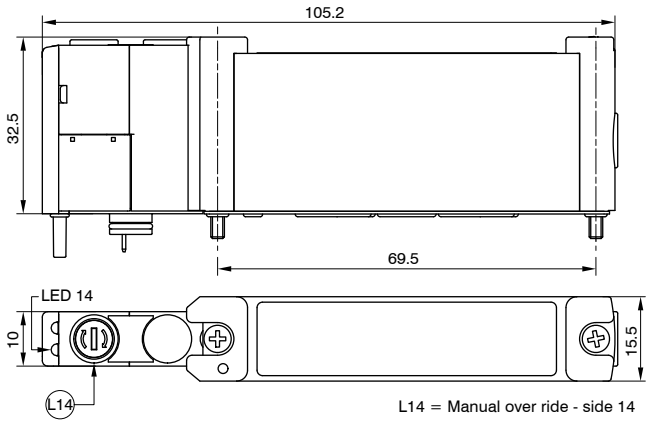


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	170
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	15
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring



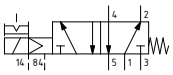


L14 = Manual over ride - side 14

Coding: 3441.52.00.39.C

C	ELECTRICAL CONNECTION
	02 = + 24 V DC

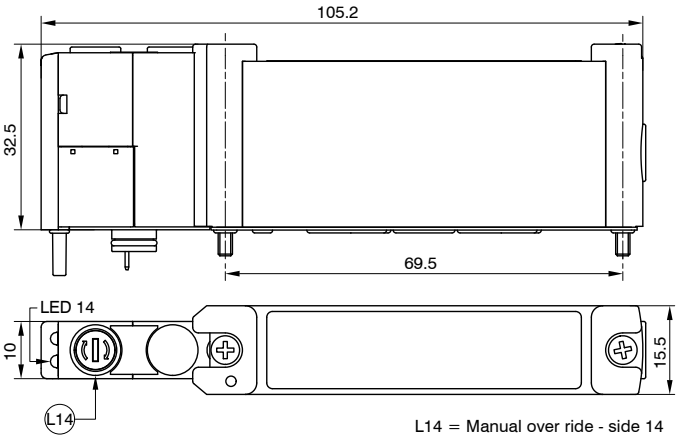
Weight 92 g
SHORT FUNCTION CODE "A"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Differential



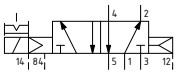


L14 = Manual over ride - side 14

Coding: 3441.52.00.36.C

C	ELECTRICAL CONNECTION
	02 = + 24 V DC

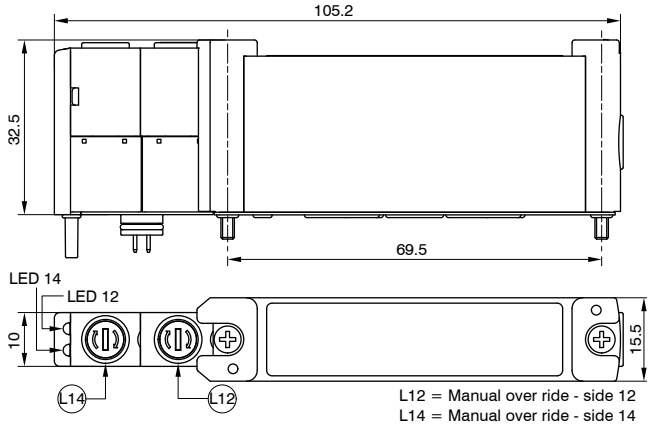
Weight 92 g
SHORT FUNCTION CODE "B"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid



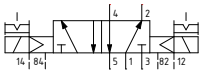


L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

Coding: 3441.52.00.35.C

C	ELECTRICAL CONNECTION
	02 = + 24 V DC

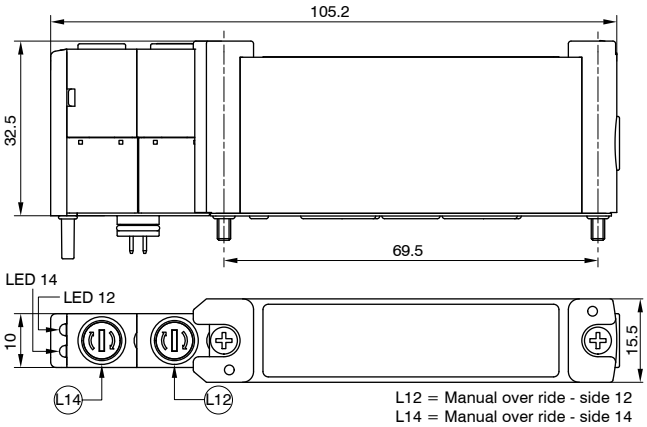
Weight 99 g
SHORT FUNCTION CODE "C"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	10
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid 5/3 (Closed centres)



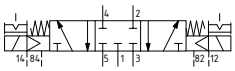


L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

Coding: 3441.53.31.35.Ⓒ

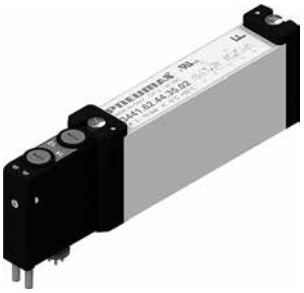
Ⓒ	ELECTRICAL CONNECTION
	02 = + 24 V DC

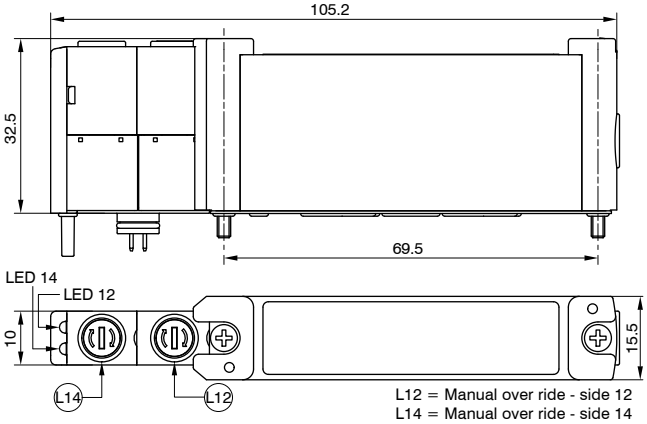
Weight 99 g
SHORT FUNCTION CODE "E"



Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	500
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Solenoid-Solenoid 2x3/2



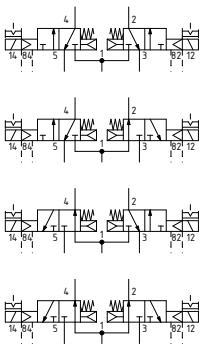


L12 = Manual over ride - side 12
L14 = Manual over ride - side 14

Coding: 3441.62.Ⓕ.35.Ⓒ

Ⓕ	FUNCTION
	44 = N.C.-N.C. (5/3 Open centres)
	45 = N.C.-N.O.
	54 = N.O.-N.C.
	55 = N.O.-N.O. (5/3 Pressured centres)
Ⓒ	ELECTRICAL CONNECTION
	02 = + 24 V DC

Weight 99 g
SHORT FUNCTION CODE:
N.C.-N.C. (5/3 Open centres) = "F"
N.O.-N.O. (5/3 Pressured centres) = "G"
N.C.-N.O. = "H"
N.O.-N.C. = "I"

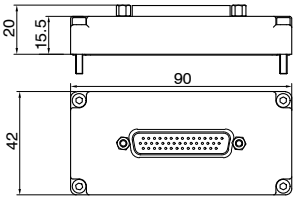


Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Flow rate at 6 bar with Δp=1 (Nl/min)	500
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	20
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Multi-pin module



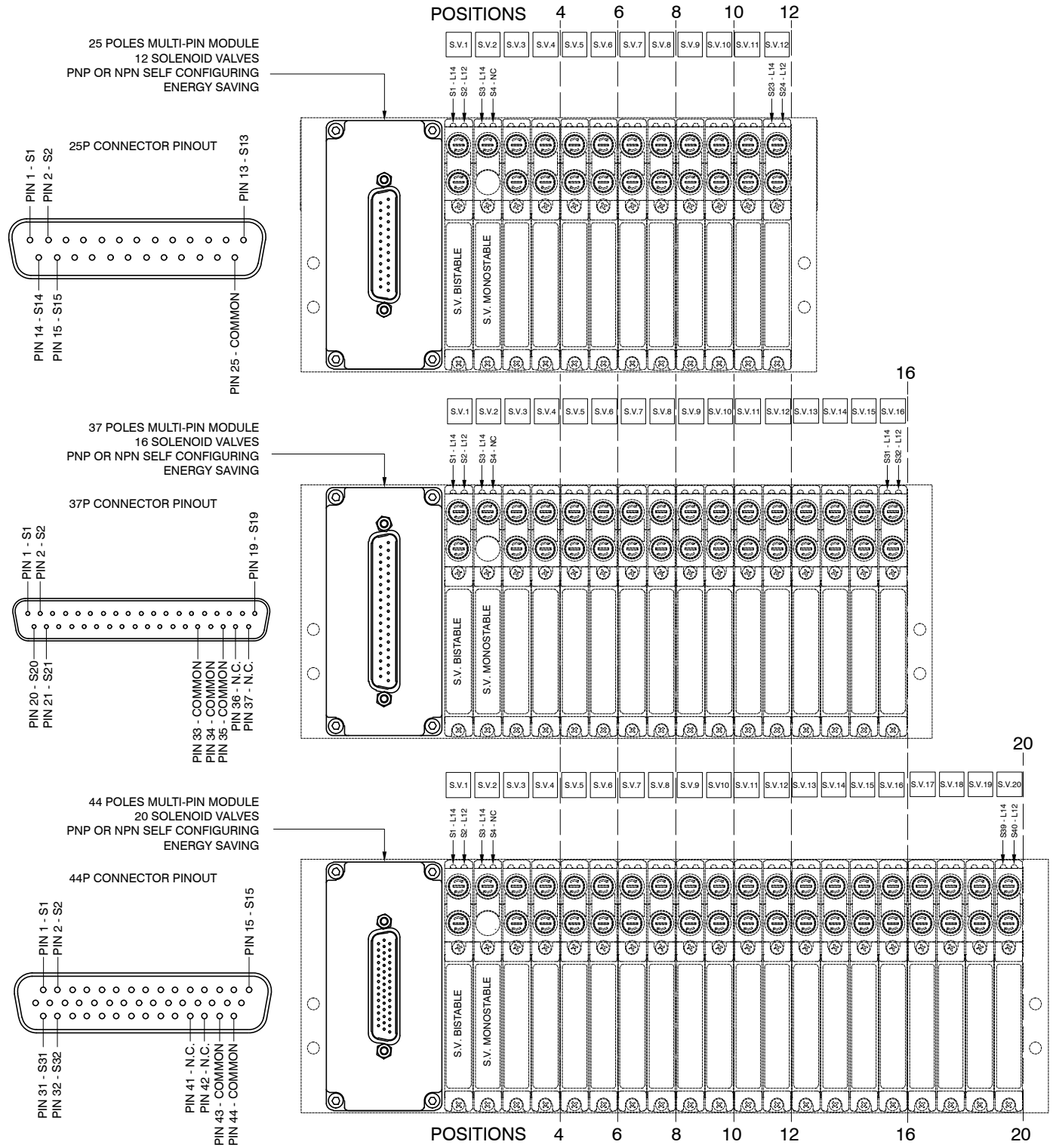


Coding: 3140.00.Ⓒ

Ⓒ	ELECTRICAL CONNECTION
	25P = Connectors 25 poles
	37P = Connector 37 poles
	44P = Connector 44 poles

Technical characteristics		
Control voltage	PNP	+ 24 V DC ±10%
	NPN	
Protection	PNP	Reverse polarity
	NPN	
Maximum altitude	PNP	2000 m a.s.l.
	NPN	
Temperature °C		-5 ... +50

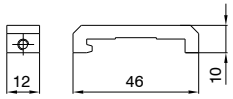
Multi-pin connections linking scheme



DIN rail adapter - Version 3100 (10 mm)

Coding: 3100.16



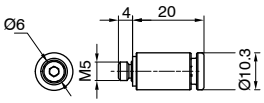


Weight 12 g

Fitting M5 Ø6

Coding: RDR560



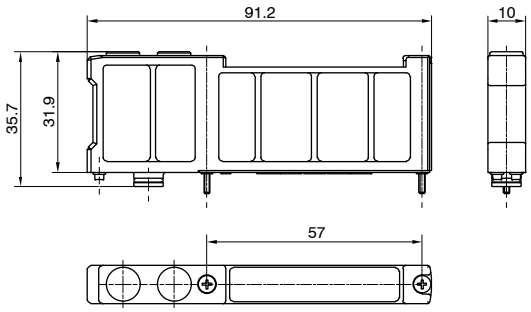


Weight 7 g

Free valve space plug - Version 3100 (10 mm)

Coding: 3140.00



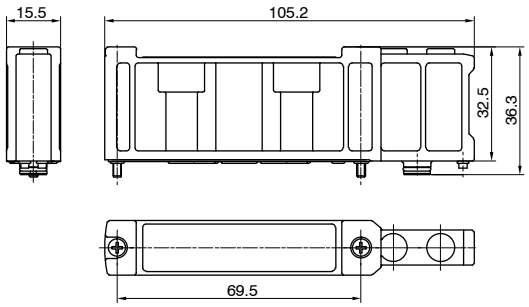


Weight 21 g

Free valve space plug - Version 3400 (15,5 mm)

Coding: 3440.00





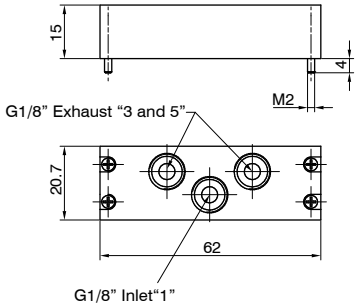
Weight 38 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Inlet/Exhaust module - Version 3100 (10 mm)

Coding: 3140.10



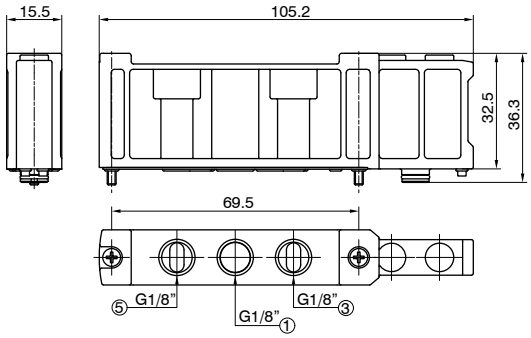


Weight 50 g

Inlet/Exhaust module - Version 3400 (15,5 mm)

Coding: 3440.10





Weight 37 g

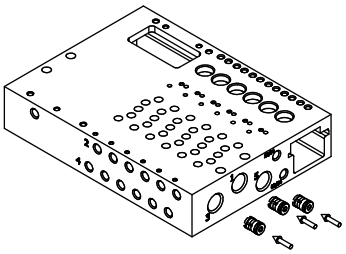
Diaphragm plug - Version 3100 (10 mm)

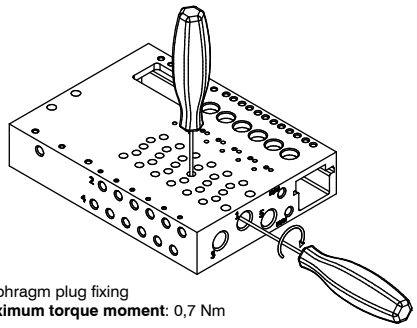
Coding: 3130.17



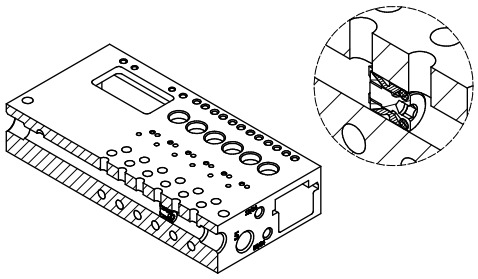
Weight 1,5 g

Diaphragm plug instalation





Diaphragm plug fixing
Maximum torque moment: 0,7 Nm



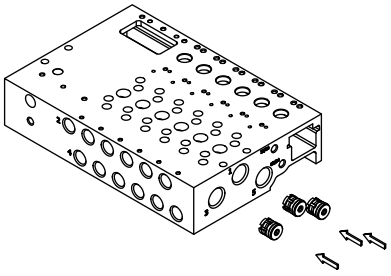
Diaphragm plug - Version 3400 (15,5 mm)

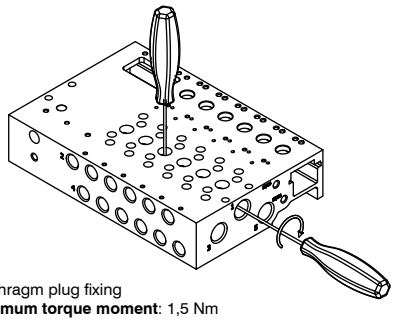
Coding: 3430.17



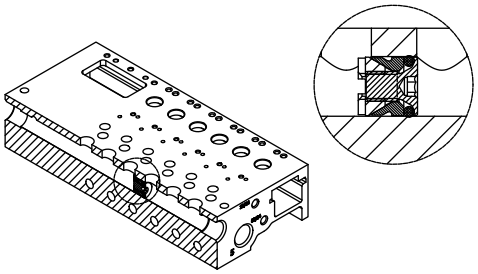
Weight 3 g

Diaphragm plug instalation





Diaphragm plug fixing
Maximum torque moment: 1,5 Nm



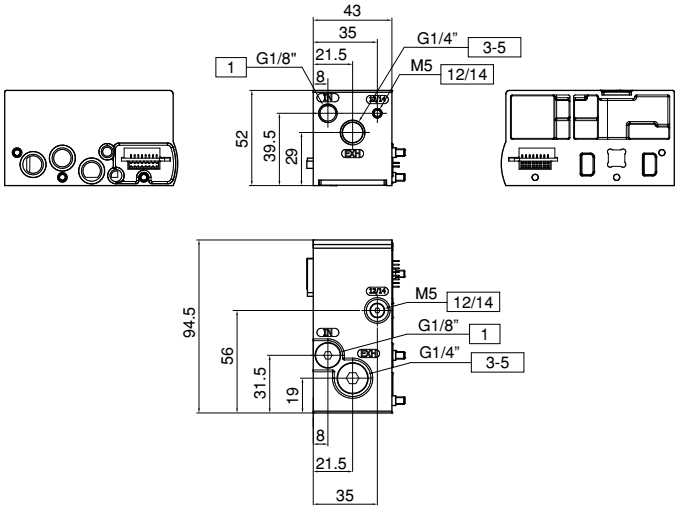
Module adapter kit - Version 3100 (10 mm)

Coding: 3100.KA.Ⓥ

Ⓥ	VERSION
	02 = External feeding
	12 = Self feeding

Weight 354 g





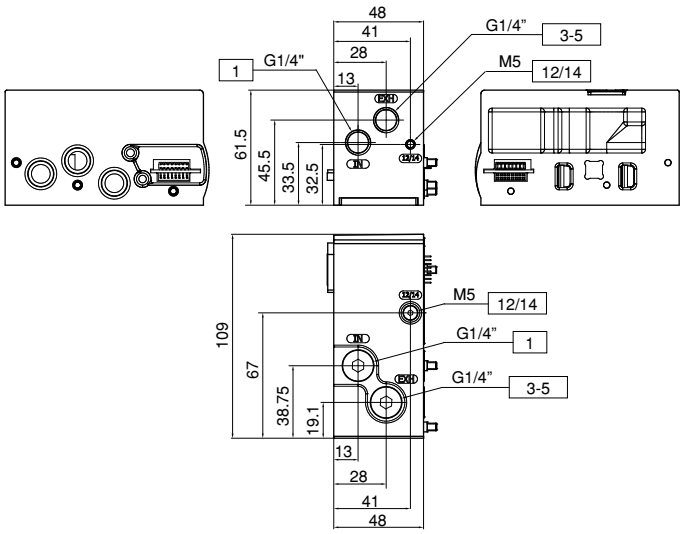
Module adapter kit - Version 3400 (15,5 mm)

Coding: 3400.KA.Ⓥ

Ⓥ	VERSION
	02 = External feeding
	12 = Self feeding

Weight 566 g



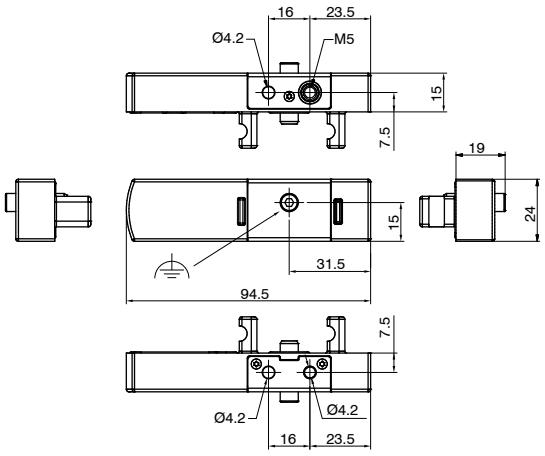


Left endplate kit

Coding: 3100.KT.00

Weight 52 g



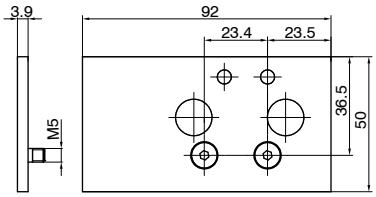


Offset compensation plate - Version 3400 (15,5 mm)

Coding: 3400.P0

Weight 46 g



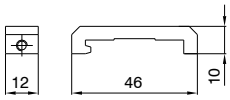


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

DIN rail adapter - Version 3400 (15,5 mm)

Coding: 3400.16



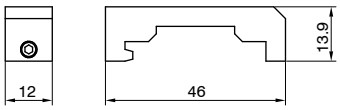


Weight 12 g

DIN rail extension adapter - Version 3400 (15,5 mm)

Coding: 3400.16P





Weight 15 g

Note: For use if an additional DIN rail mount is required, assembled on a single I/O module.

Cable complete with connector, 25 Poles, IP65

Coding: 2300.25.Ⓛ.Ⓒ



Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 37 Poles, IP65

Coding: 2400.37.Ⓛ.Ⓒ



Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

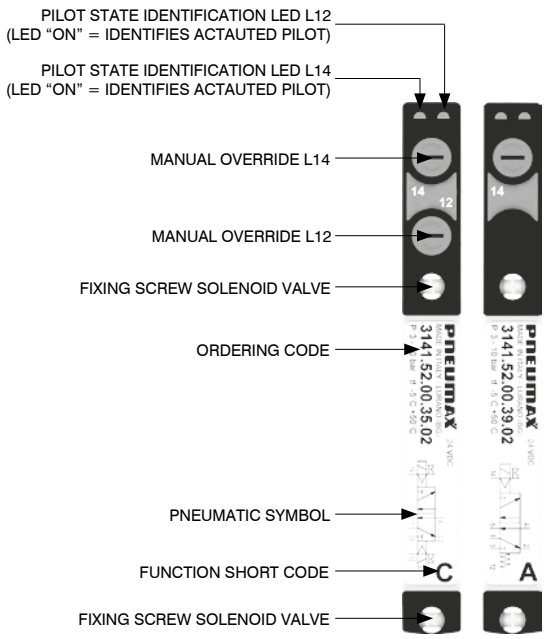
Cable complete with connector, 44 Poles, IP65

Coding: 2300.44.Ⓛ.Ⓒ

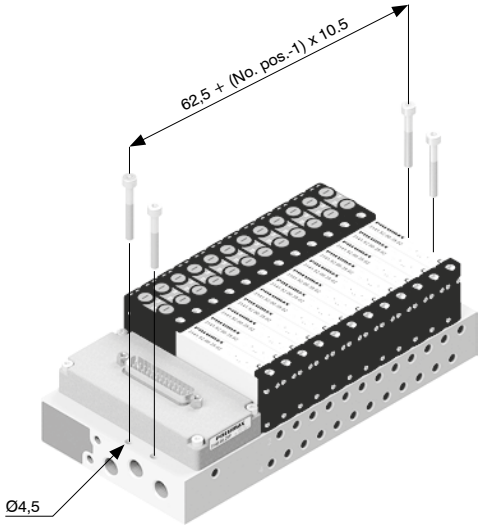


Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

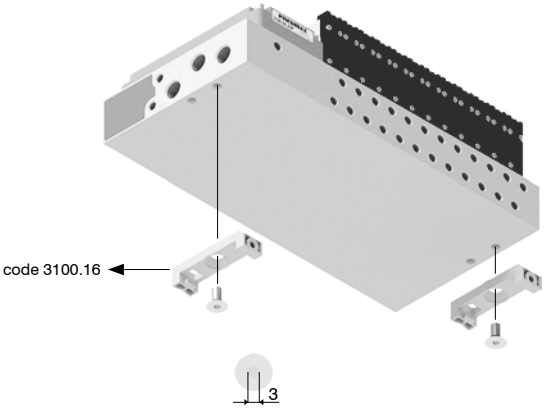
Solenoid valve description

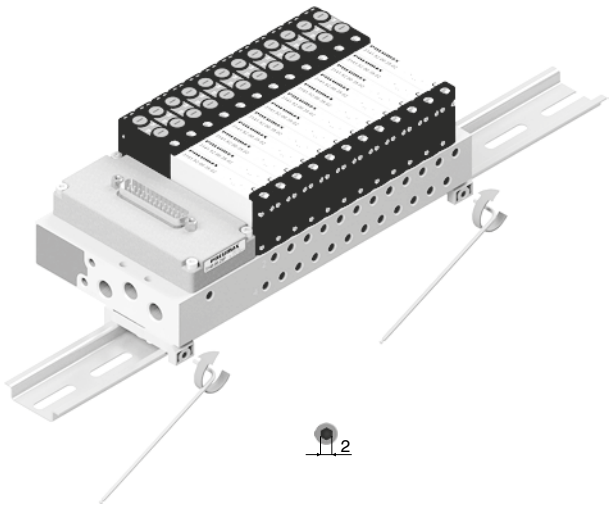


From the top

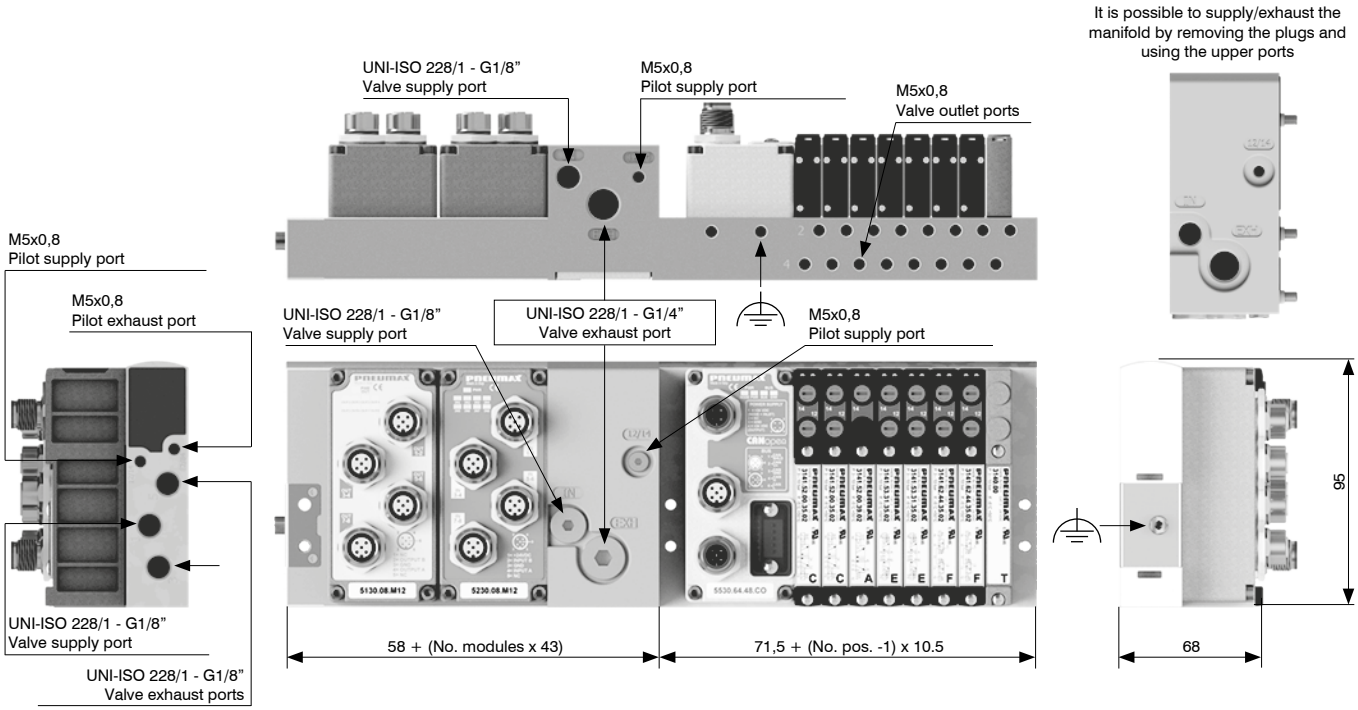


DIN rail fixing





Supply ports and maximum possible size according to valves used



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Manual override actuation



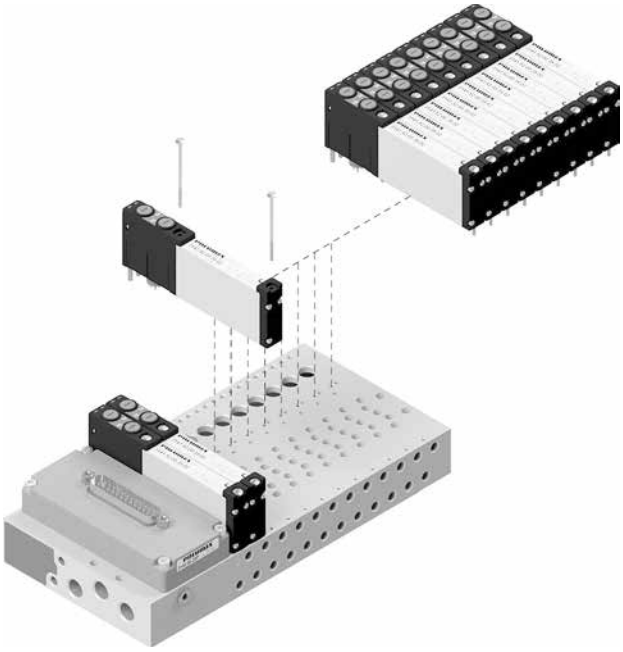
Instable function:
Push to actuate
(when released it moves back to the original position)



Bistable function:
Push and turn to get the bistable function

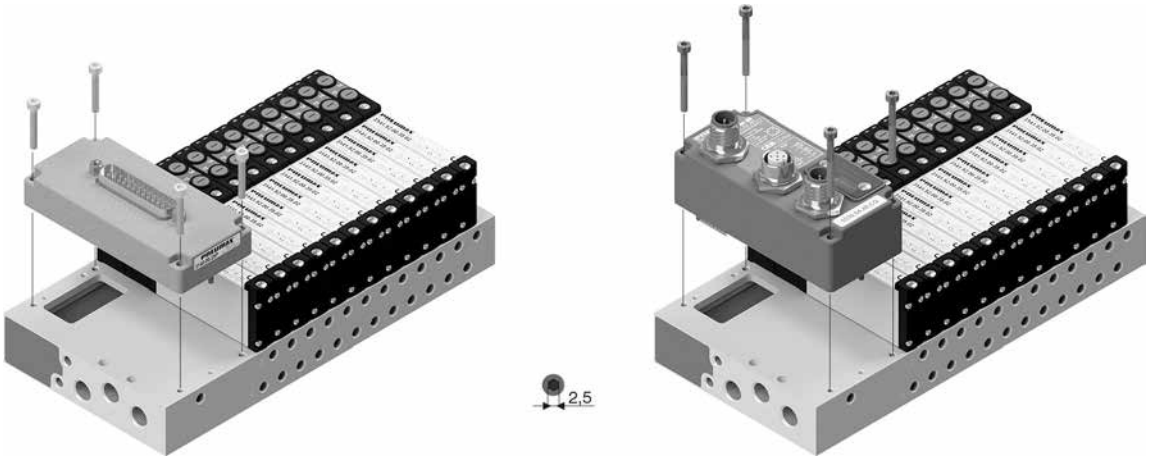
Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

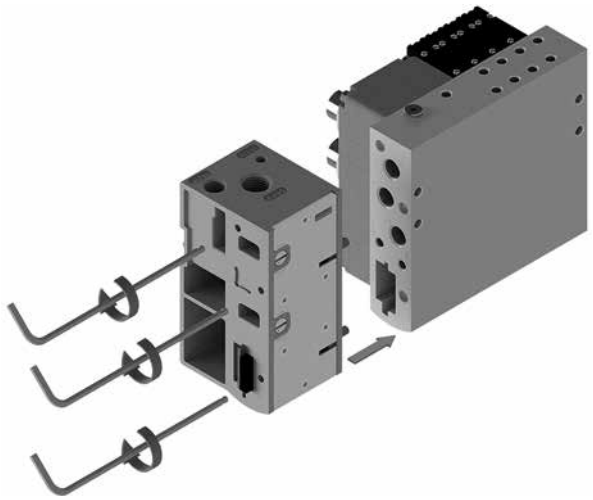


Maximum fixing torque for fittings: 0,2 Nm

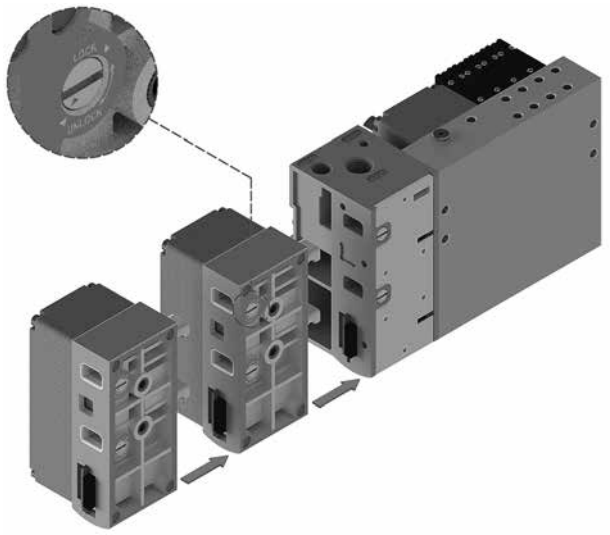
Serial systems and multi-pin modules installation



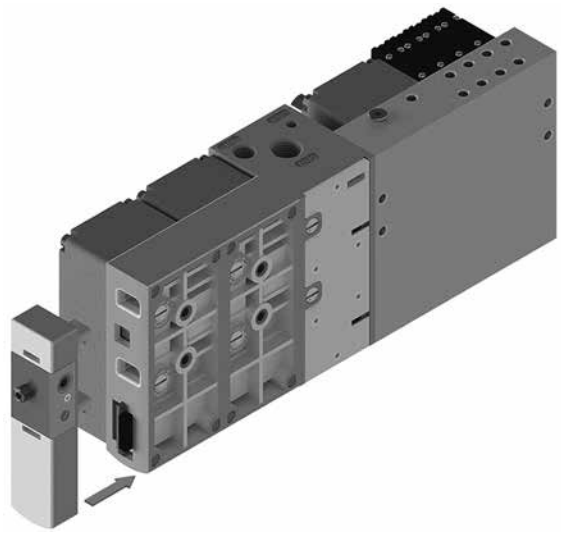
1. Fix the dedicated adapter (code 3100.KA.Ⓥ) to the manifold.



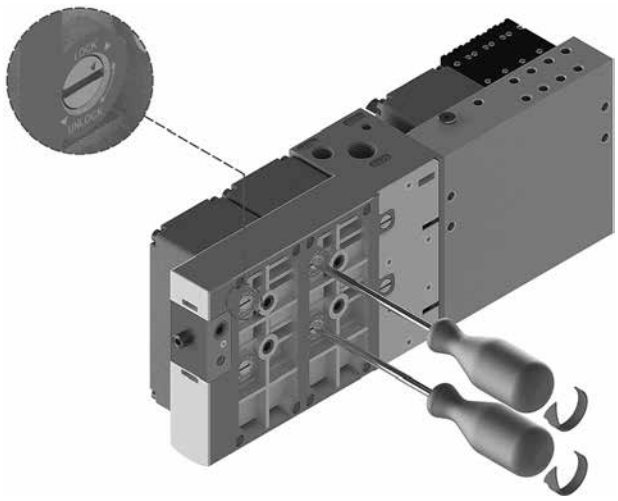
2. Assemble the required modules.



3. Complete the assembly with the 3100.KT.00 left endplate kit.

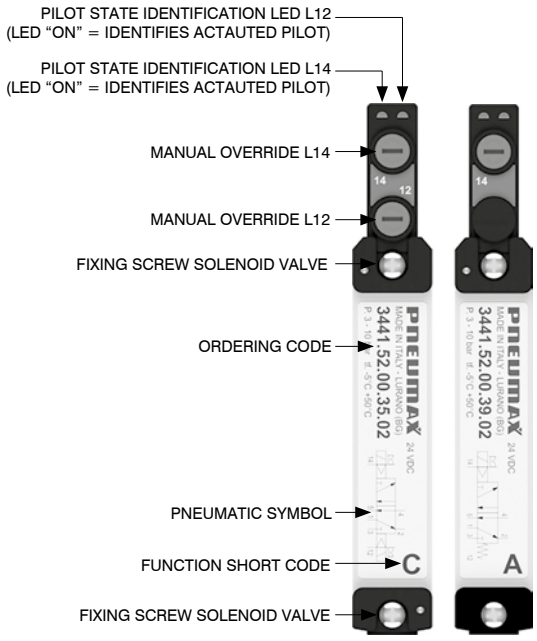


4. To lock: rotate anticlockwise (in the direction of the LOCK print on the case).
To unlock: rotate clockwise (in the direction of the UNLOCK print on the case).
The same procedure shall be used to add or remove any module.

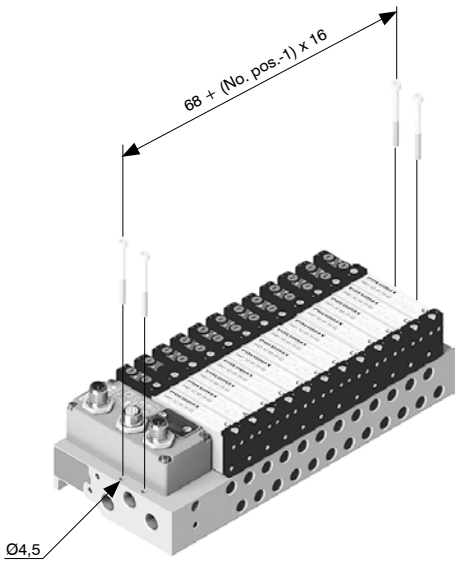


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

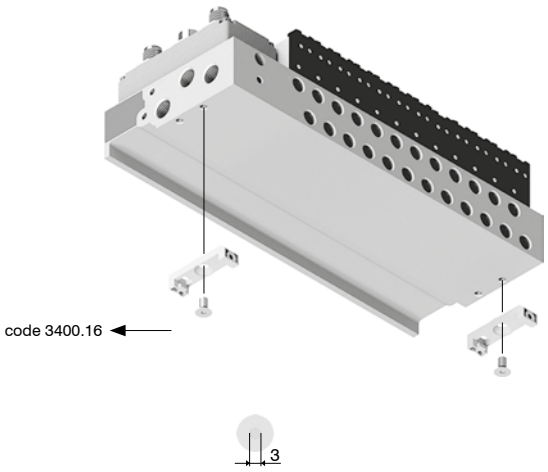
Solenoid valve description

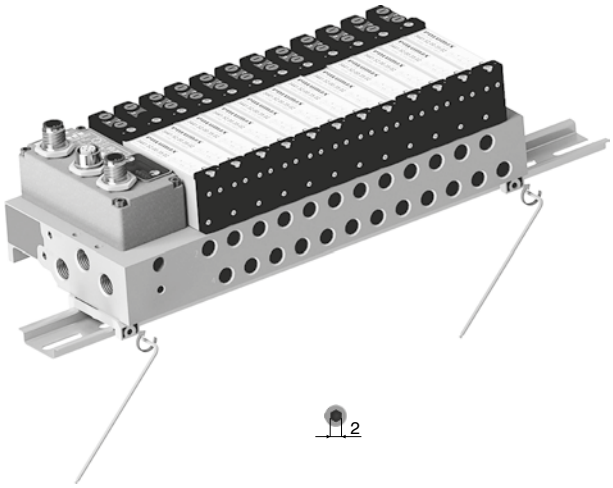


From the top

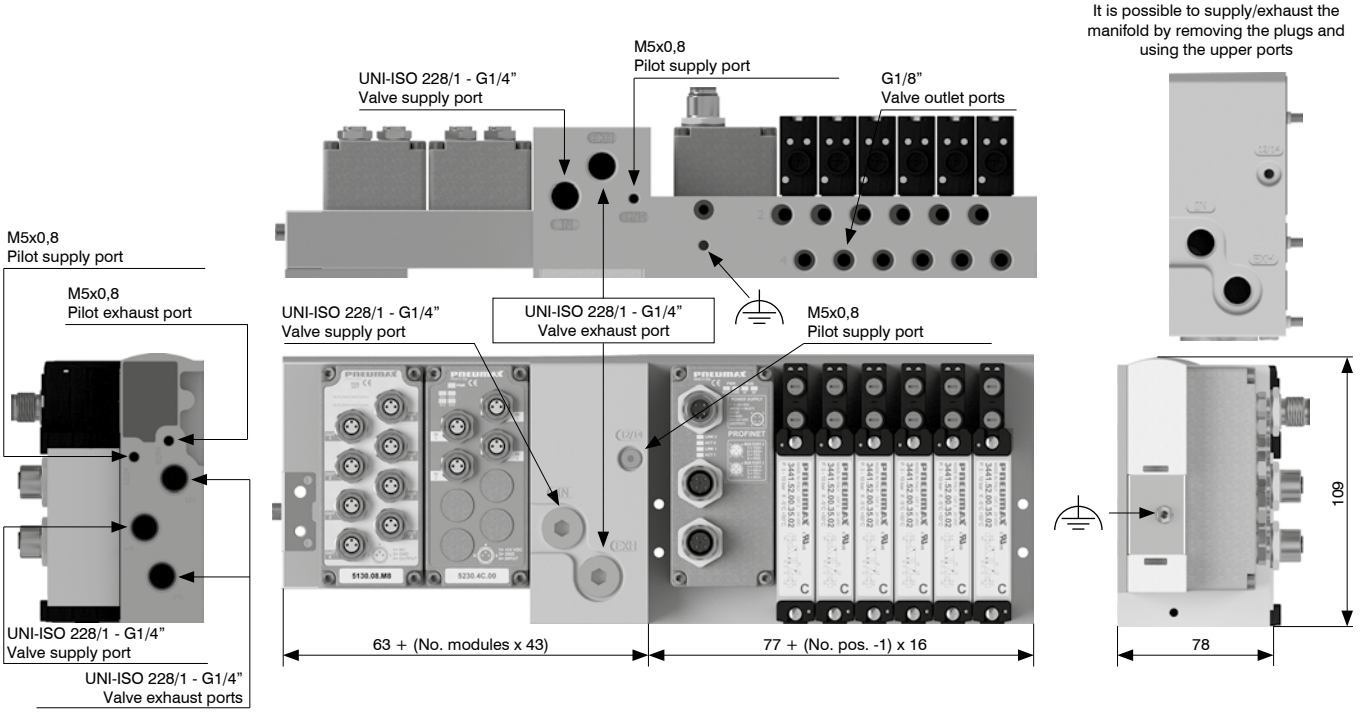


DIN rail fixing

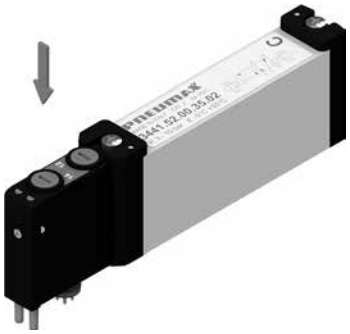




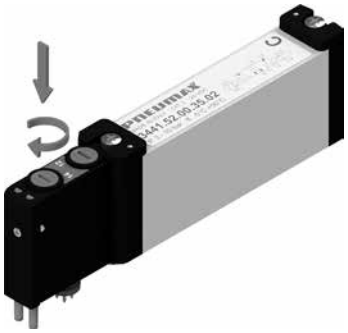
Supply ports and maximum possible size according to valves used



Manual override actuation



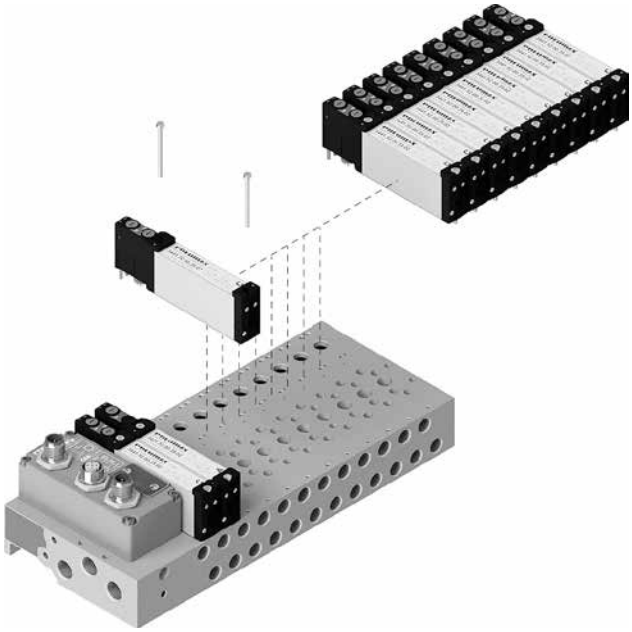
Instable function:
Push to actuate
(when released it moves back to the original position)



Bistable function:
Push and turn to get the bistable function

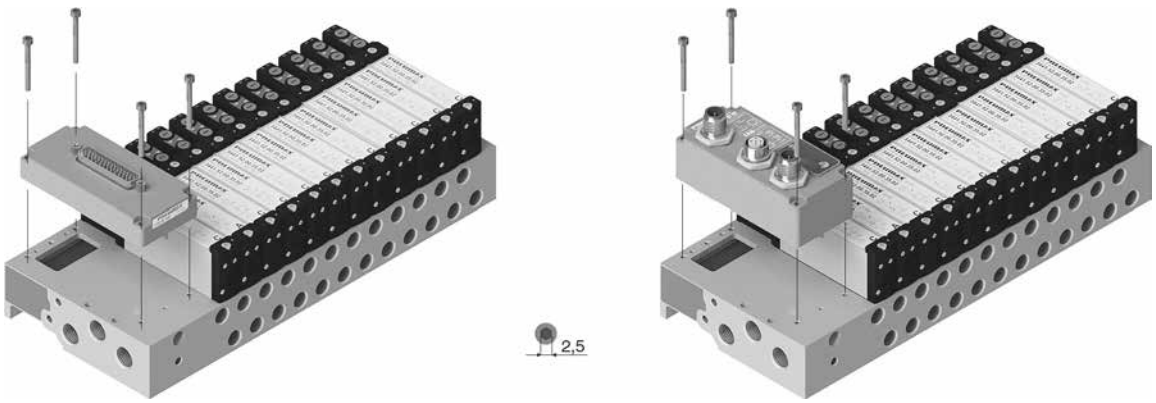
Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation



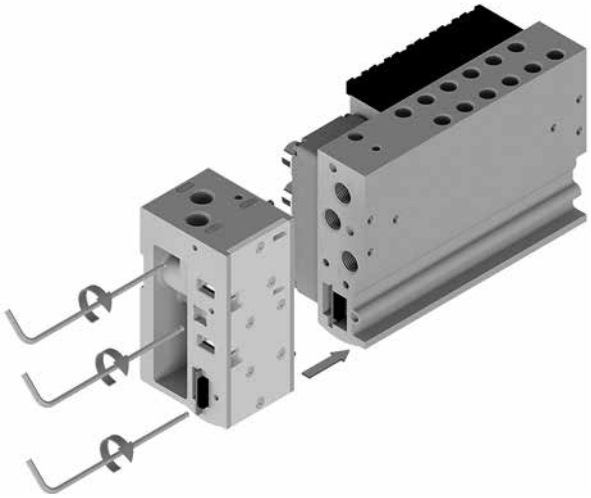
Maximum fixing torque for fittings: 0,2 Nm

Serial systems and multi-pin modules installation

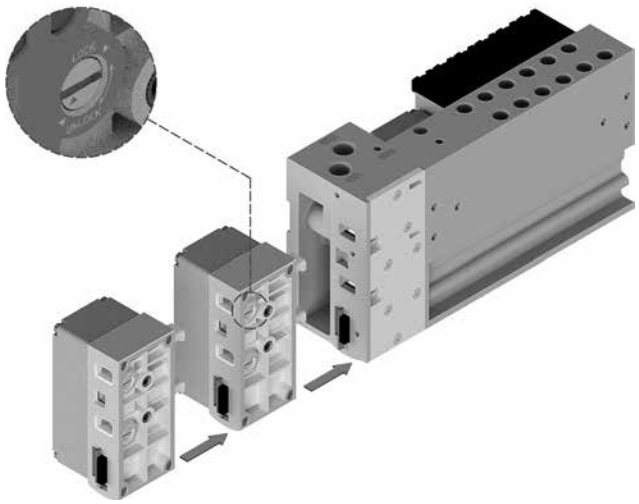


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

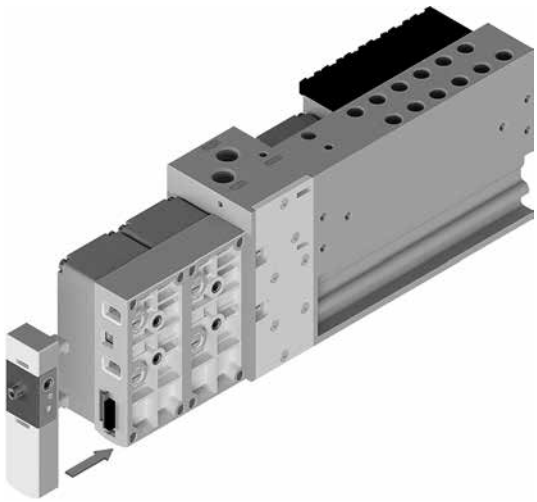
1. Fix the dedicated adapter (code 3400.KA.Ⓥ) to the manifold.



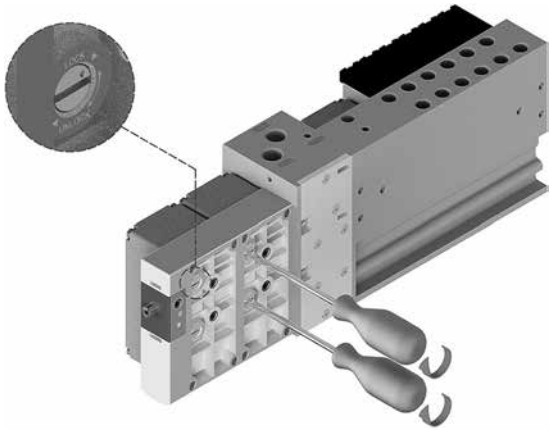
2. Assemble the required modules.



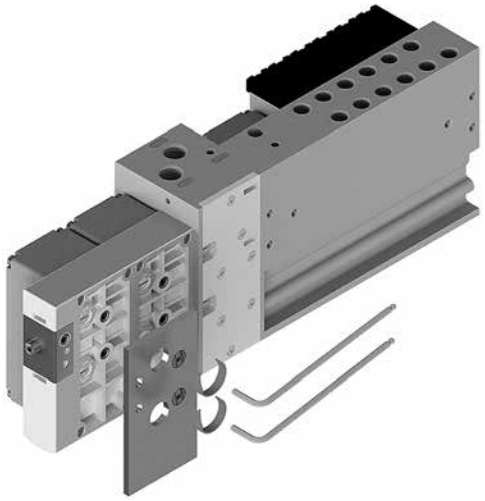
3. Complete the assembly with the 3100.KT.00 left endplate kit.



4. To lock: rotate anticlockwise (in the direction of the LOCK print on the case).
To unlock: rotate clockwise (in the direction of the UNLOCK print on the case).
The same procedure shall be used to add or remove any module.



5. Fix the offset compensation plate 3400.P0 to the last single module.



CANopen® protocol node

CANopen® node manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Connection to CANopen® fieldbus is made via two M12, male and female, 5 pins, type A circular connectors, in parallel between them; connectors pinout is compliant to CiA 106 (V.1.1.0 : July 11th 2023).
Transmission speed and address, as well as termination resistor activation are set via DIP-switches.
CANopen® node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: 5530.64.ⓋCO

Ⓥ	VERSION
	32 = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).
To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\ V\ DC\ out} = \sum_{i=1}^{n} I_{out,i} + m\ i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$$

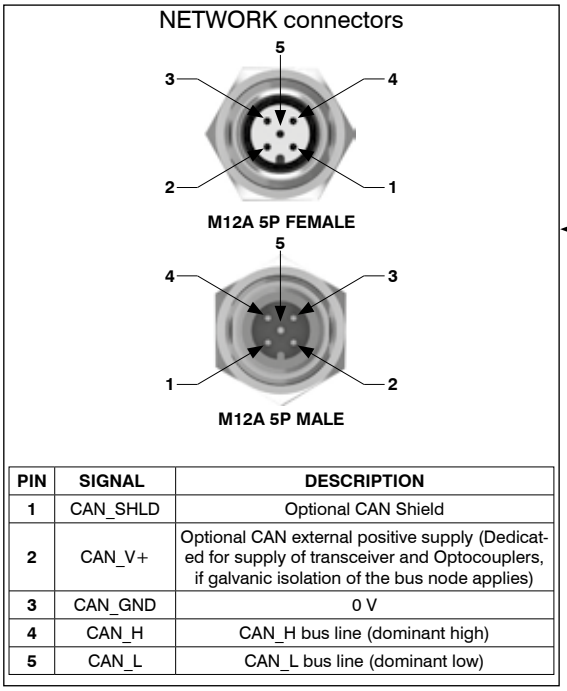
Where:

$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

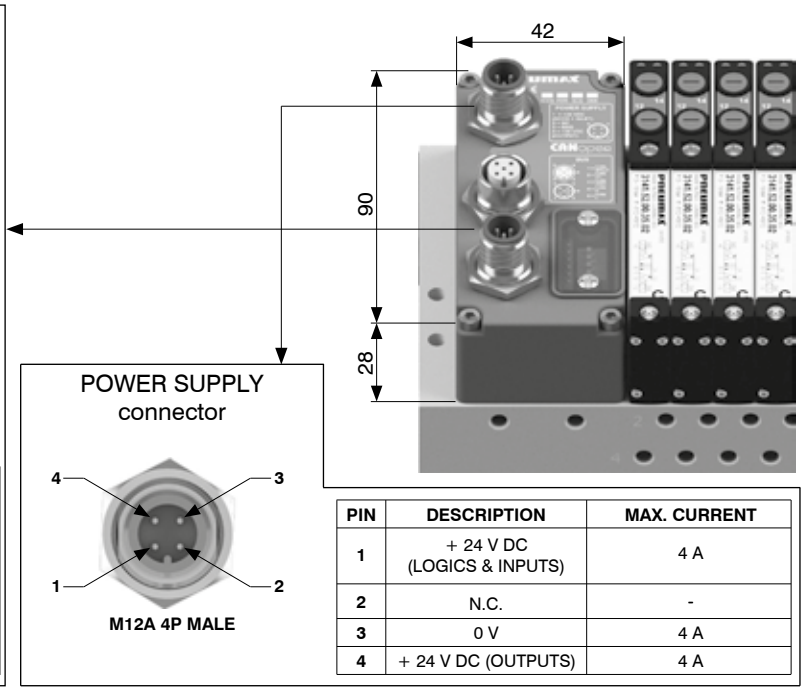
n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	CAN_SHLD	Optional CAN Shield
2	CAN_V+	Optional CAN external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (dominant high)
5	CAN_L	CAN_L bus line (dominant low)



PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Specifications		CiA 106 (V.1.1.0 : July 11th 2023)
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	40 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type A
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

PROFIBUS DP protocol node

PROFIBUS DP node manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Connection to PROFIBUS DP fieldbus is made via two M12, male and female, 5 pins, type B circular connectors, in parallel between them; connectors pinout is PROFIBUS Interconnection Technology specifications compliant (Version 1.1, August 2001).
Address as well as termination resistor activation are set via DIP-switches.
PROFIBUS DP node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: 5330.64.Ⓥ PB

	VERSION
Ⓥ	**32** = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).
To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

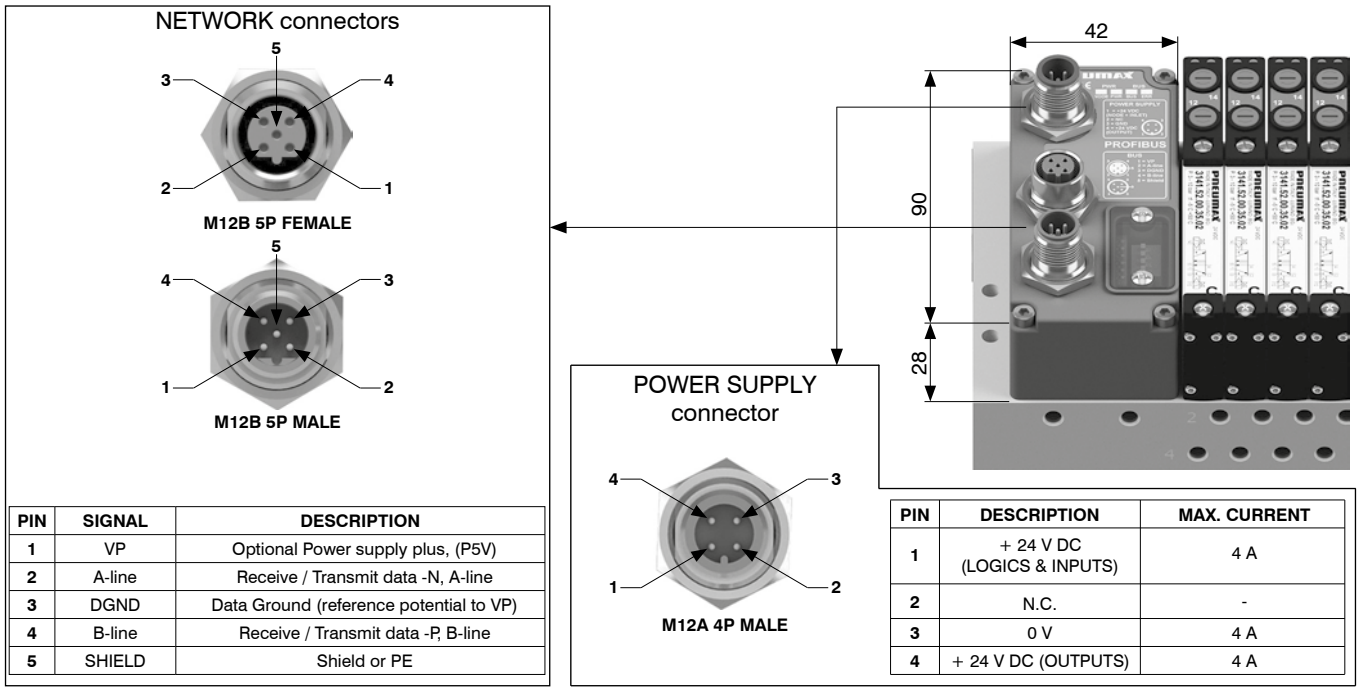
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	VP	Optional Power supply plus, (P5V)
2	A-line	Receive / Transmit data -N, A-line
3	DGND	Data Ground (reference potential to VP)
4	B-line	Receive / Transmit data -P, B-line
5	SHIELD	Shield or PE

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Specifications		PROFIBUS DP
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	70 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type B
	Baud rate	9,6 - 19,2 - 93,75 - 187,5 - 500 - 1500 - 3000 - 6000 - 12000 Kbit/s
	Addresses possible numbers	From 1 to 99
	Maximum nodes number in network	100 (slave + master)
	Bus maximum recommended length	100 m at 12 Mbit/s - 1200 m at 9,6 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

EtherNet/IP protocol node

EtherNet/IP node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code 5730.128.48EI provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: 5730.128.48EI



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

Where:

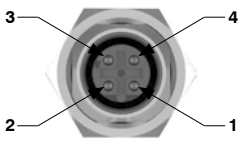
$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

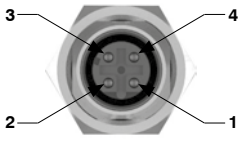
In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout

NETWORK connectors

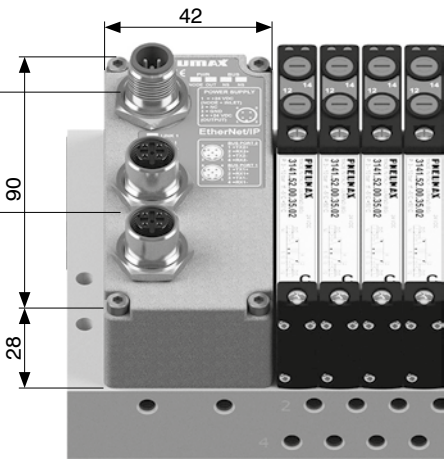


M12D 4P FEMALE

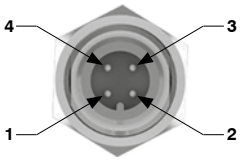


M12D 4P FEMALE

PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low



POWER SUPPLY connector



M12A 4P MALE

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

EtherCAT® protocol node

EtherCAT® node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code 5730.128.48EC provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: 5730.128.48EC



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

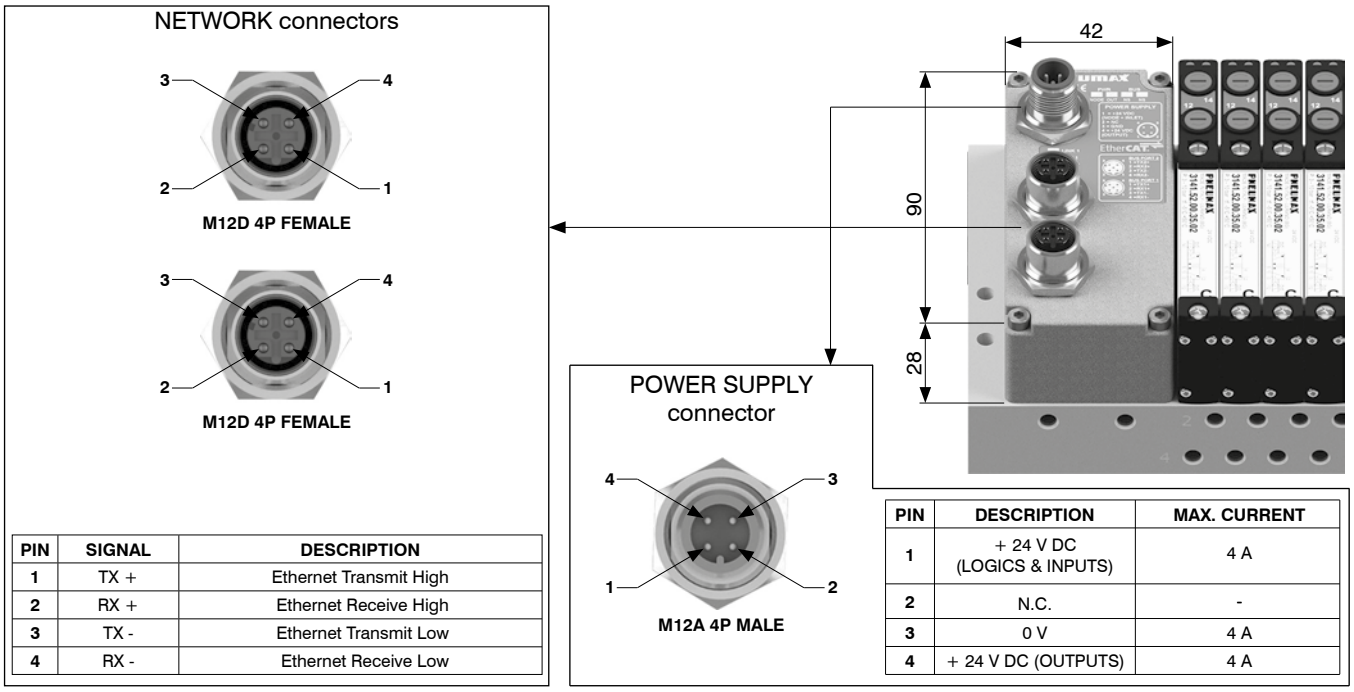
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

PROFINET IO RT protocol node

PROFINET IO RT node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code 5730.128.48PN provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: 5730.128.48PN



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\ V\ DC\ out} = \sum_{i=1}^{n} I_{out,i} + m\ i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\ V\ DC\ out} + I_{24\ V\ DC\ in} < 4A$$

Where:

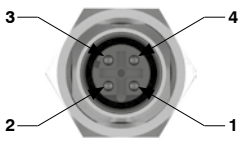
$$I_{24\ V\ DC\ in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

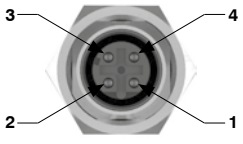
In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout

NETWORK connectors

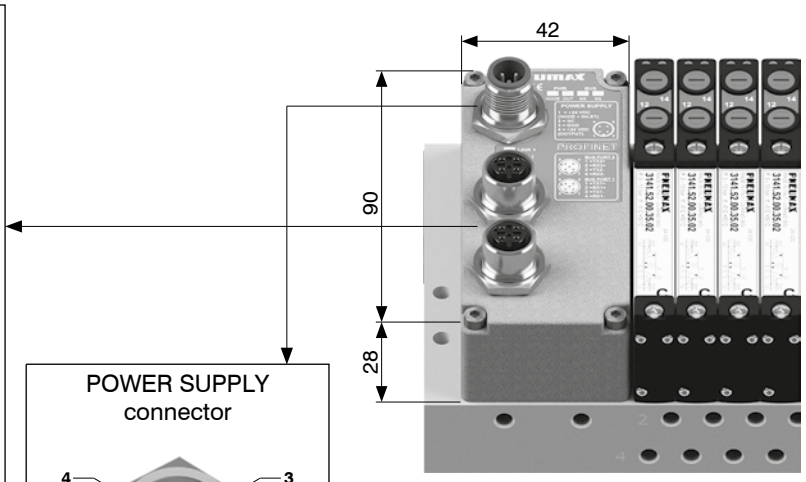


M12D 4P FEMALE

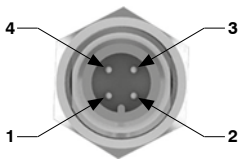


M12D 4P FEMALE

PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low



POWER SUPPLY connector



M12A 4P MALE

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

CC-Link IE Field Basic protocol node

CC-Link IE Field Basic node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code 5730.128.48CL provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: 5730.128.48CL



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

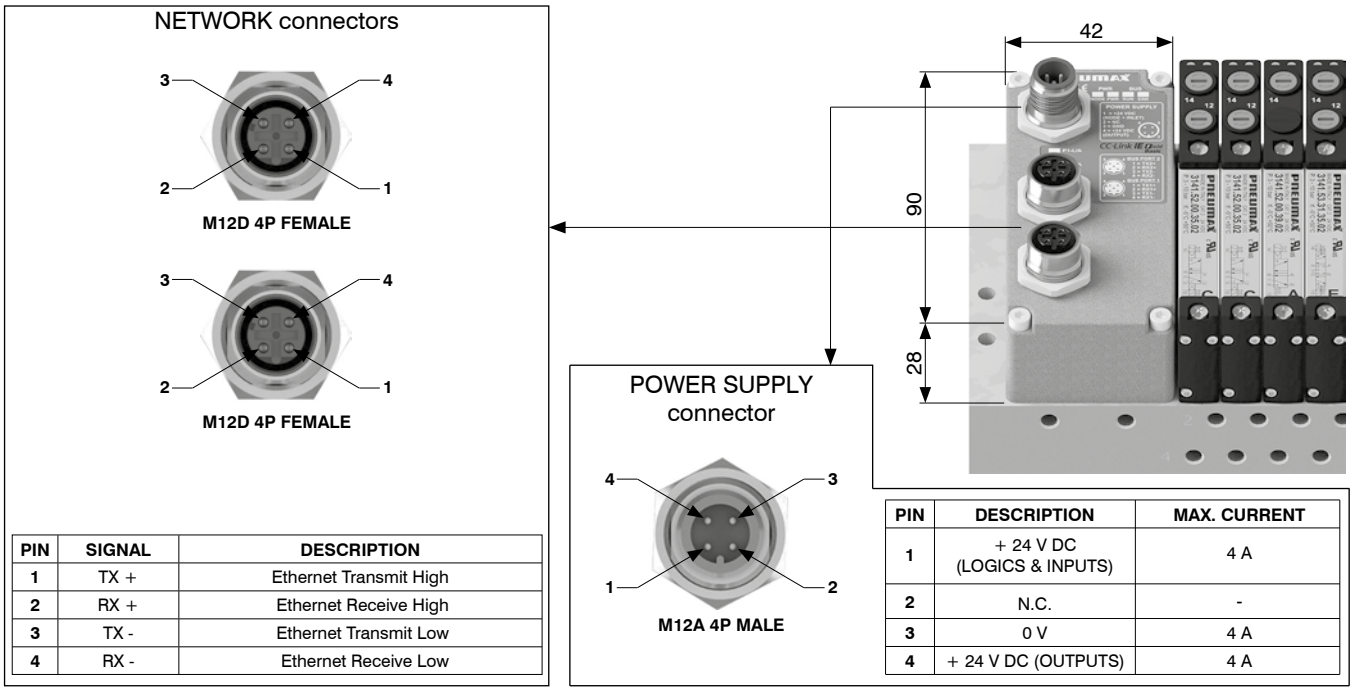
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	1 Green LED and 1 red status LED + 2 link and activity LEDs'
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

IO-Link protocol interface

IO-Link interface manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Electric power supply and IO-Link connection to the Master are made via M12, male, 5 pins, type A, circular connector, "CLASS B", according to IO-Link specifications.
Electric rails L+/L- supply interface only, while P24/N24 rails supply additional modules and solenoid valves.
Either power supplies are galvanically isolated in the IO-Link interfaces.
IO-Link interface is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the interface.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: 5830.64.ⓋIK

	VERSION
Ⓥ	**32** = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by pin 2 and pin 5 (P24 / N24).

To compute the maximum current on the P24 / N24 supply, please use the following formula::

$$I_{24V\ DC\ P24/N24} = \sum_{i=1}^{n} I_{acc,i} + m\ i_{EV}$$

n = number of installed modules

$I_{acc,i}$ = maximum total current absorbed by each i-th accessory module, given by the sum of the absorbed currents on + 24 V DC OUTPUTS and + 24 V DC INPUTS

m = number of installed solenoid pilots

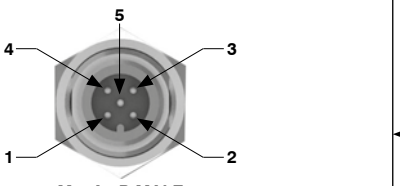
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
3000	36 mA

maximum current on P24/N24 supply rail must be **less than 4A**.

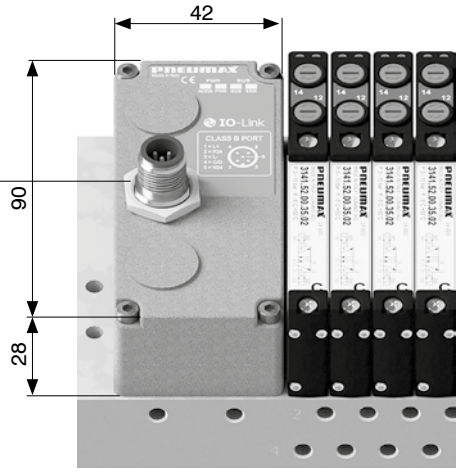
In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



M12A 5P MALE

PIN	SIGNAL
1	L+
2	P24 (+ 24 V DC)
3	L-
4	C/Q
5	N24 (0 V)



Technical characteristics		
Specifications		IO-Link Specification v1.1
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC +/- 10%
	Interface current consumption on + 24 V DC (L+ / L-)	25 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	"Class B" port
	Communication speed	38.4 kbaud/s
	Maximum distance from Master	20 m
	Bus diagnosis	Green / red status LED
	Vendor ID / Device ID	1257 (hex 0x04E9) / 3000 (hex 0x0BB8)
Configurations file IODD		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

8 digital inputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

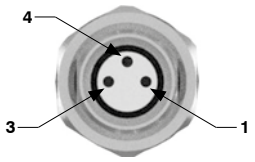
Coding: K5230.08.M8



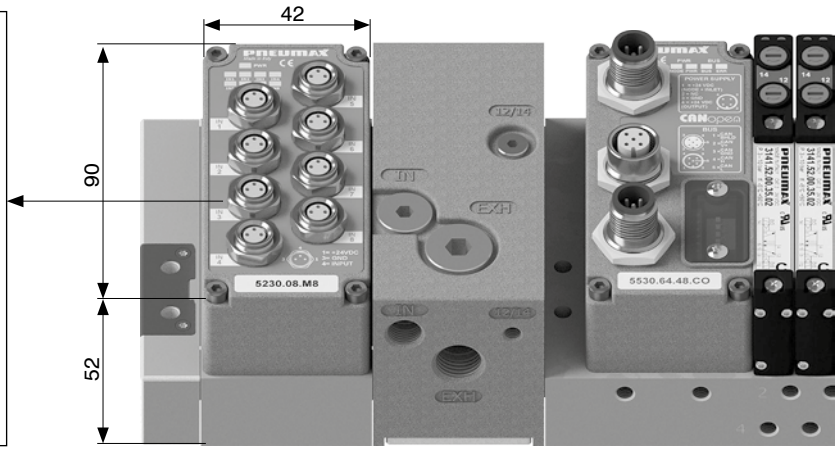
Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA

Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
3	0 V
4	INPUT



8 digital inputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
Every connector takes two input channels.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

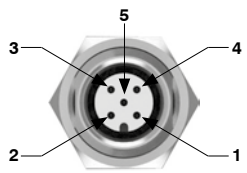
Coding: K5230.08.M12



Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA

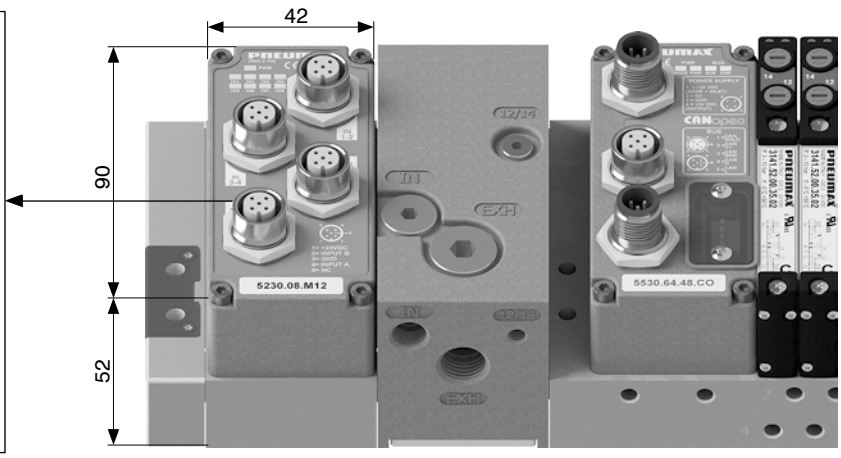
Scheme / Overall dimensions and I/O layout

M12 5P female connector



M12A 5P FEMALE

PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
2	INPUT B
3	0 V
4	INPUT A
5	N.C.



8 digital outputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR" green LED light-on.
Each output has a LED indicator associated which lights up when output's signal status is high.

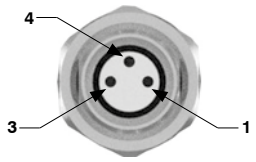
Coding: K5130.08.M8



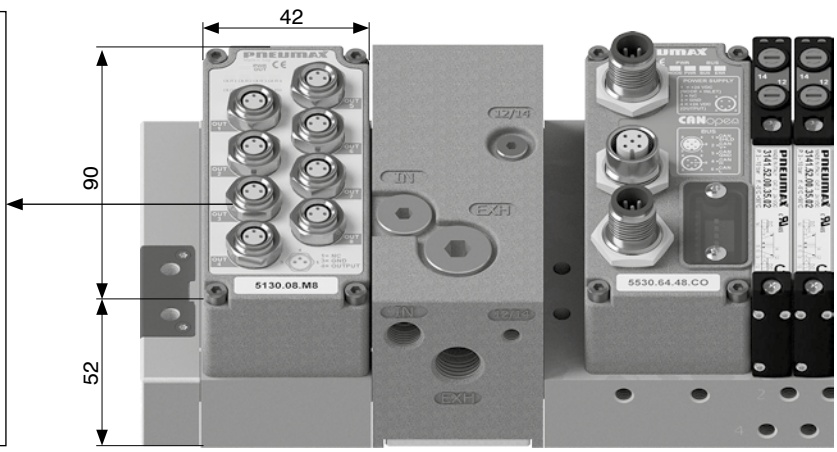
Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout

M8 3P female connector



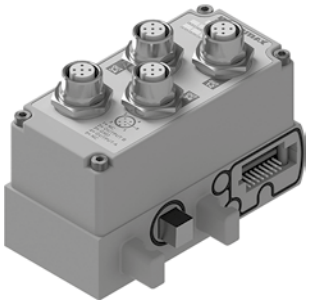
PIN	DESCRIPTION
1	N.C.
3	0 V
4	OUTPUT



8 digital outputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR" green LED light-on.
Each output has a LED indicator associated which lights up when output's signal status is high.

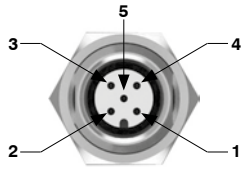
Coding: K5130.08.M12



Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

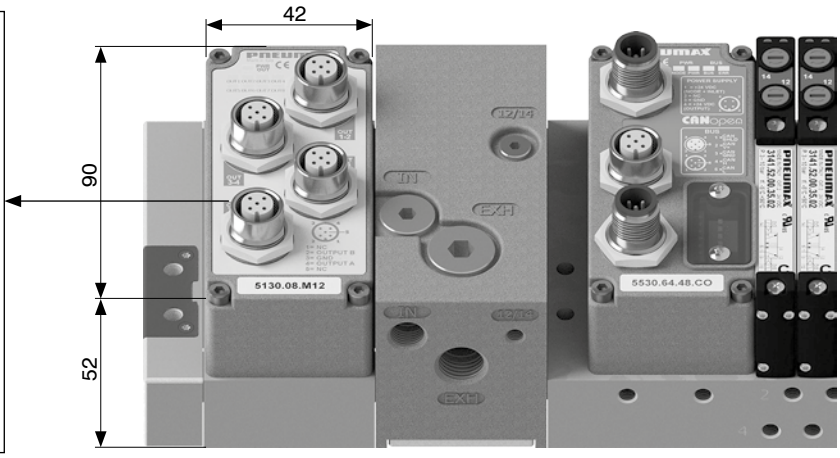
Scheme / Overall dimensions and I/O layout

M12 5P female connector



M12A 5P FEMALE

PIN	DESCRIPTION
1	N.C.
2	OUTPUT B
3	0 V
4	OUTPUT A
5	N.C.



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

32 digital inputs module kit (37 pins SUB-D connector)

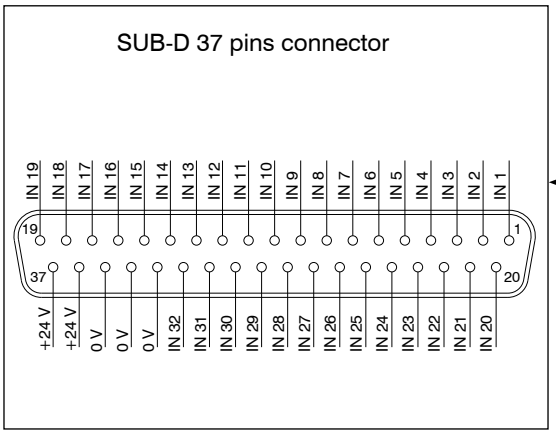
The module provides a SUB-D 37 pins female connector.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

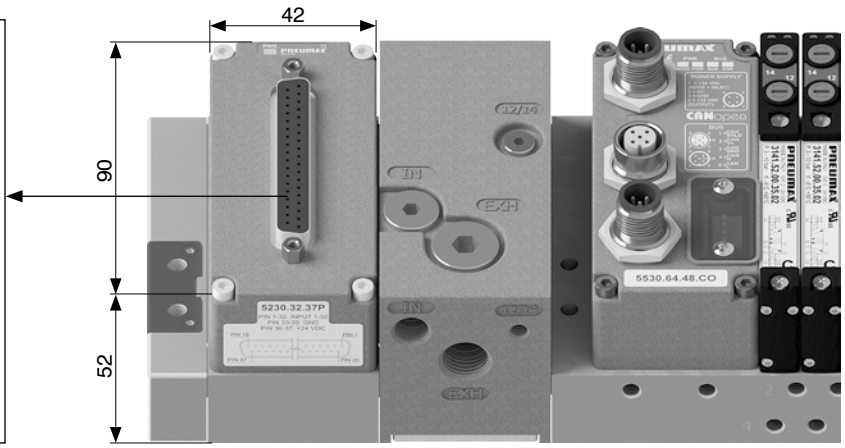
Coding: K5230.32.37P



Technical characteristics	
Maximum current per module	1 A
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	32 bit
INPUTS + 24 V DC current consumption of the module only	10 mA

Scheme / Overall dimensions and I/O layout





32 digital outputs module kit (37 pins SUB-D connector)

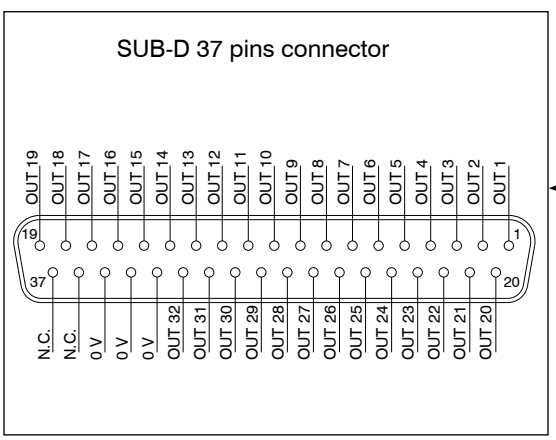
The module provides a SUB-D 37 pins female connector.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by “PWR” green LED light-on.

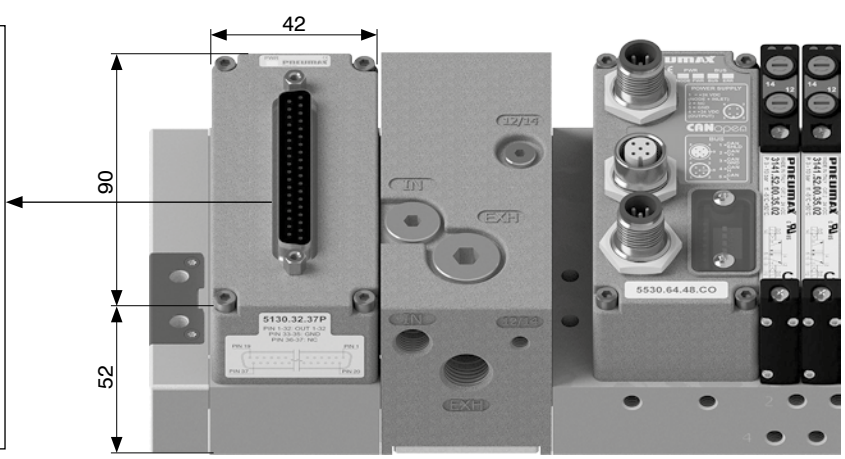
Coding: K5130.32.37P



Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	32 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout





Analogue inputs module kit M8

M8 analogue inputs module converts analogue signals into digital signals and transfers acquired data to field bus, via network node.
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.ⓒⓢ

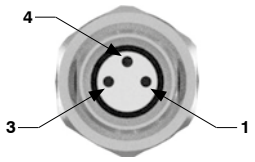
ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
ⓢ	SIGNAL
	T.00 = Voltage (0-10 V)
	T.01 = Voltage (0-5 V)
	C.00 = Current (4-20 mA)
	C.01 = Current (0-20 mA)

Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Input impedance (voltage inputs)	33 kΩ
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Input signal overcurrent or overvoltage
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	300 mA
Overall maximum current 4 channels (pin 1)	750 mA (375 mA for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA

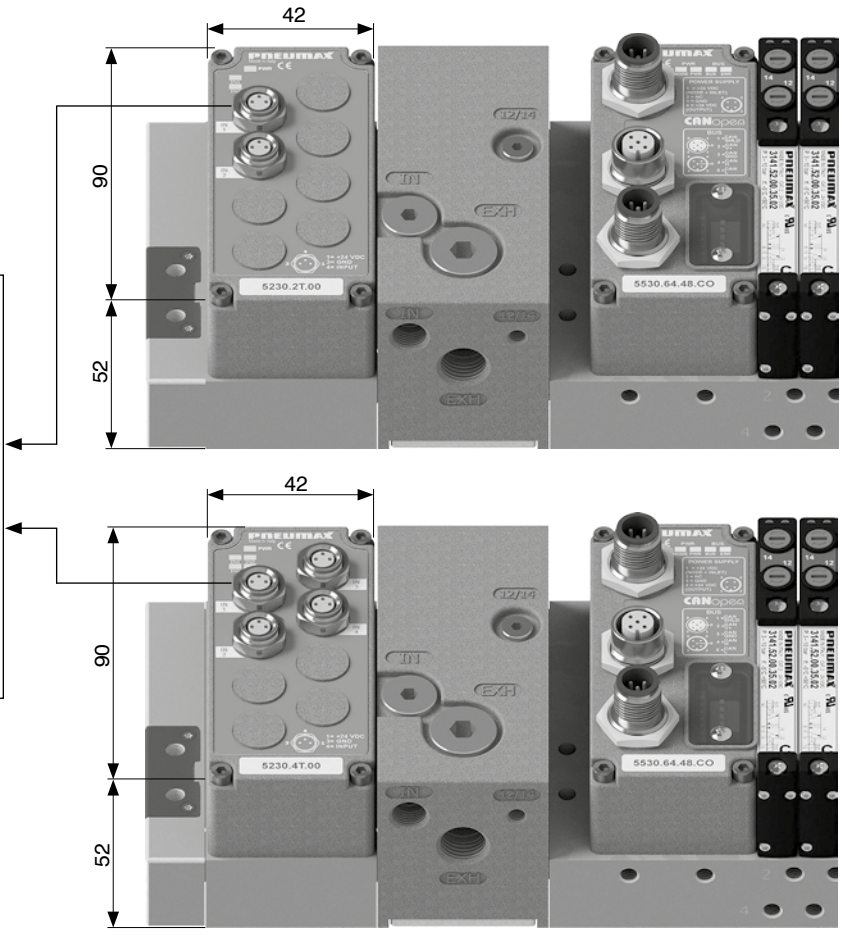


Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
3	0 V
4	INPUT



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Analogue outputs module kit M8

M8 analogue outputs module converts output data, received from field bus via network node, into analogue signal.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Coding: K5130.Ⓒ Ⓢ

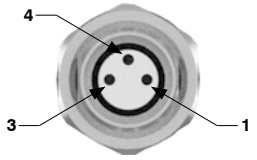
Ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
Ⓢ	SIGNAL
	T.00 = Voltage (0-10 V)
	T.01 = Voltage (0-5 V)
	C.00 = Current (4-20 mA)
	C.01 = Current (0-20 mA)

Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Protection (pin 4)	Overcurrent (auto-resettable fuse)
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Output data allocation	16 bit per channel
Diagnostic LED	Output signal overcurrent
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	1 A
Overall maximum current 4 channels (pin 1)	2 A (1 A for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA
OUTPUTS + 24 V DC current consumption of the module only (2 channels)	35 mA
OUTPUTS + 24 V DC current consumption of the module only (4 channels)	70 mA

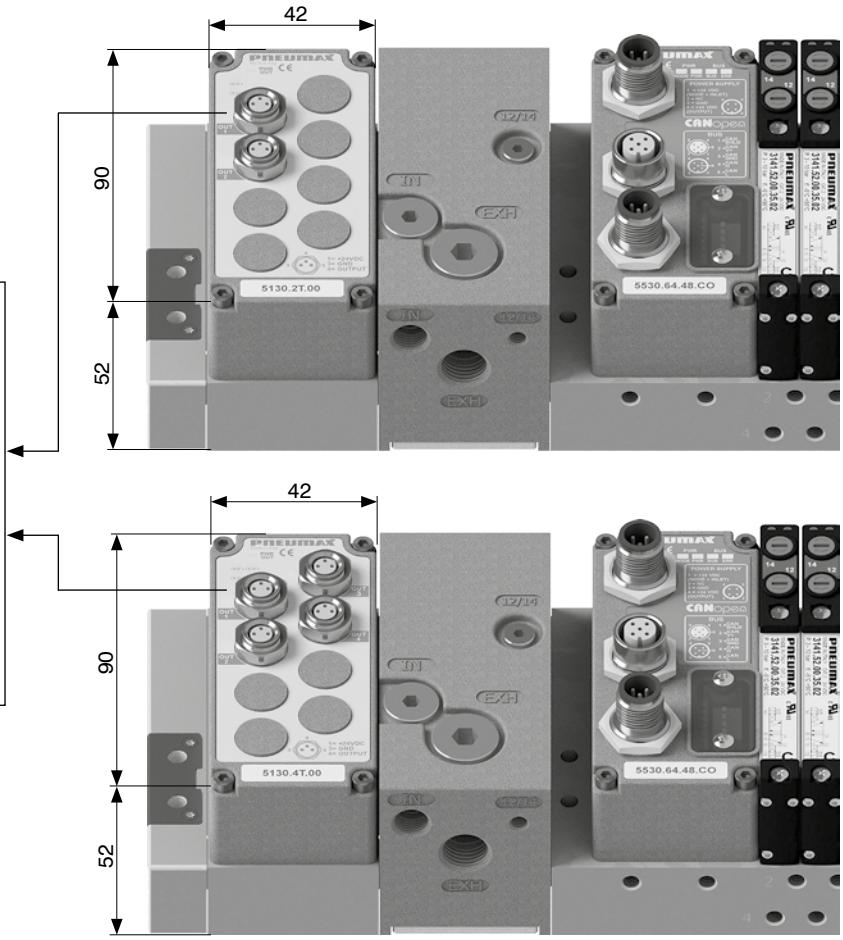


Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	+ 24 V DC (OUTPUTS)
3	0 V
4	OUTPUT



Pt100 inputs module kit

Pt100 inputs module digitizes signals from Pt100 probes and transfers acquired data to field bus, via network node.
It is possible to connect two, three or four wires probes.
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.ⓒP.0ⓣ

ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
ⓣ	TYPE
	0 = Pt100 2 wires
	1 = Pt100 3 wires
	2 = Pt100 4 wires

Technical characteristics	
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Probe presence Temperature out of range
Accuracy	±0,2°C
Probe temperature range	-100°C ... +300°C
INPUTS + 24 V DC current consumption of the module with probes (2 channels)	25 mA
INPUTS + 24 V DC current consumption of the module with probes (4 channels)	35 mA

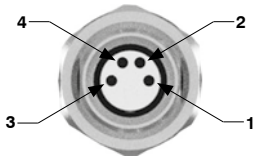


Conversion formula (°C)

$$\text{Temperature (°C)} = \left(\frac{\text{Points}}{4095} \times 400\right) - 100$$

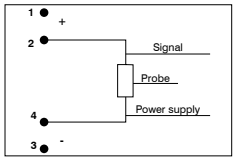
Scheme / Overall dimensions and I/O layout

M8 4P female connector



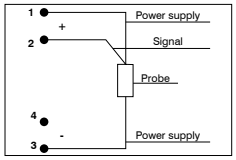
Connection scheme 2 wires probe

PIN	DESCRIPTION
1	N.C.
2	SENSOR +
3	POWER SUPPLY -
4	N.C.



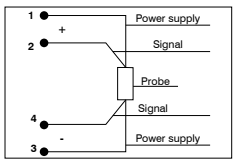
Connection scheme 3 wires probe

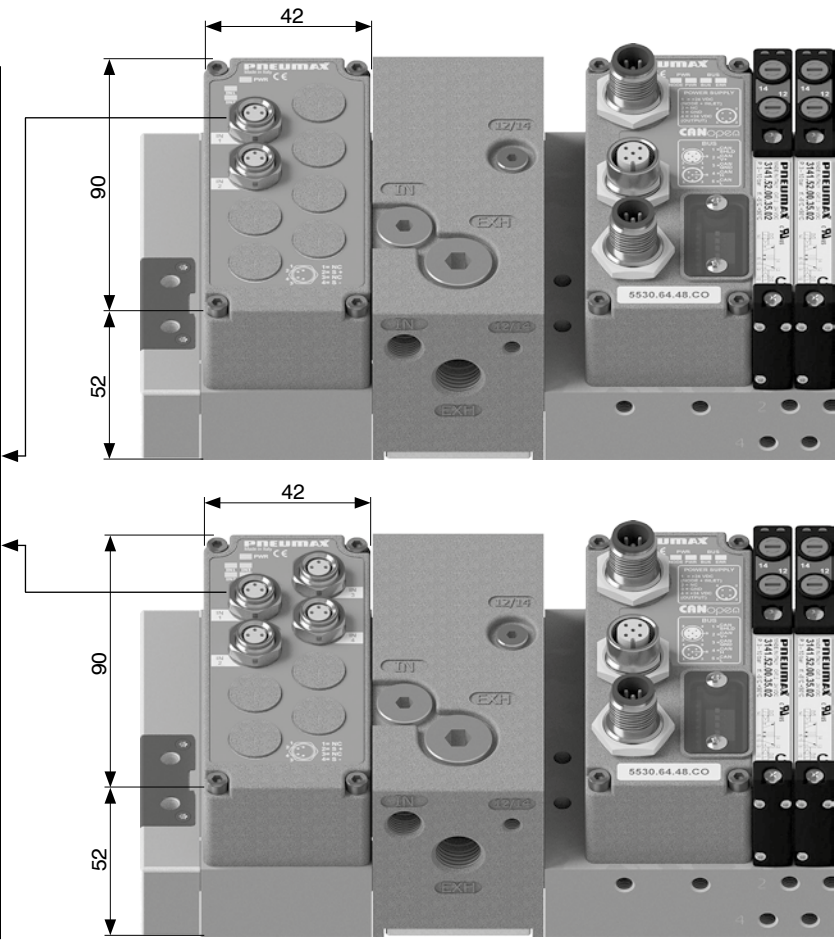
PIN	DESCRIPTION
1	POWER SUPPLY +
2	SENSOR +
3	POWER SUPPLY -
4	N.C.



Connection scheme 4 wires probe

PIN	DESCRIPTION
1	POWER SUPPLY +
2	SENSOR +
3	POWER SUPPLY -
4	SENSOR -





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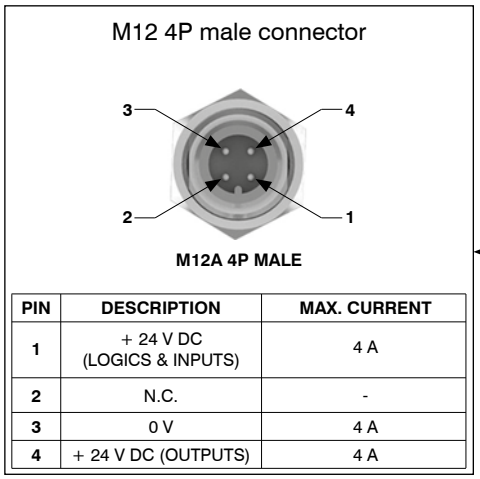
Additional power supply module kit

Additional power supply module supplies additional electric power for downstream optional modules, where “downstream” means farther from serial node, **resetting the current limits of the network node / IO-Link interface**.
Electric connection of the module to external power supply unit occurs via an M12 4 pins type A male connector.
M12 connector has two different pins to power up logics and inputs (Pin 1) and outputs (Pin 4).
Presence of each power supply rail is indicated by corresponding green LED.
When using IO-Link interface, the additional power supply module is useful for separating the module power supplies of input from the output modules placed downstream.

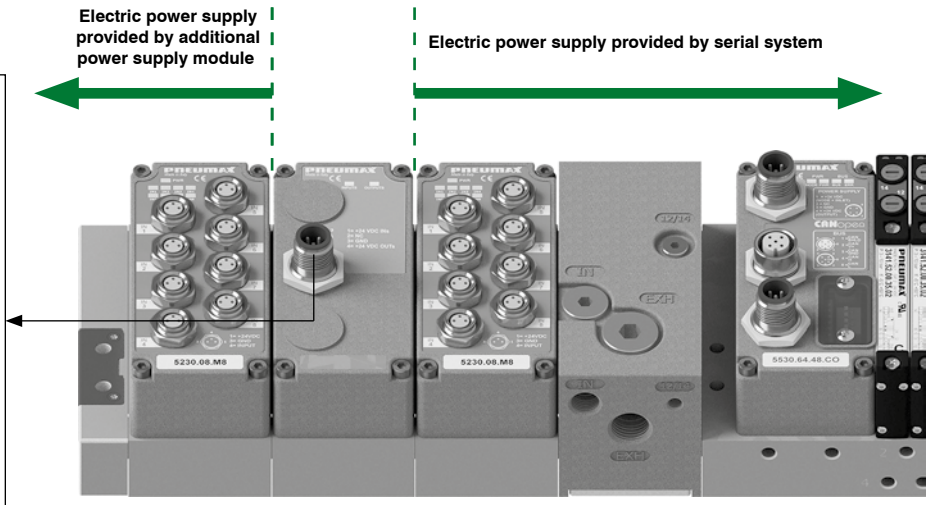
Coding: K5030.M12



Scheme / Overall dimensions and I/O layout

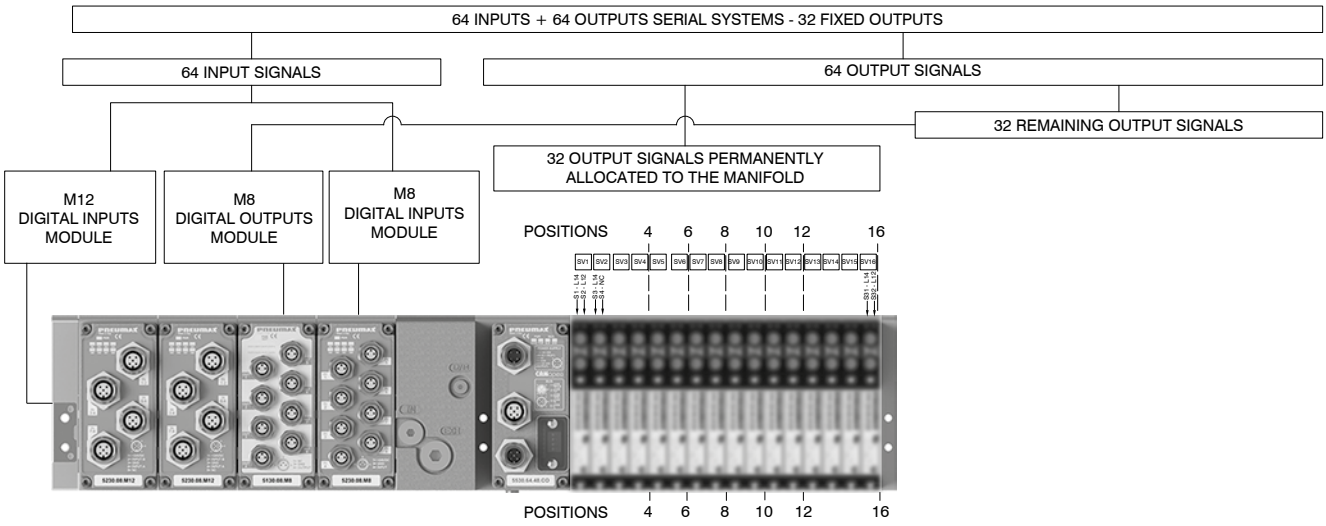


PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

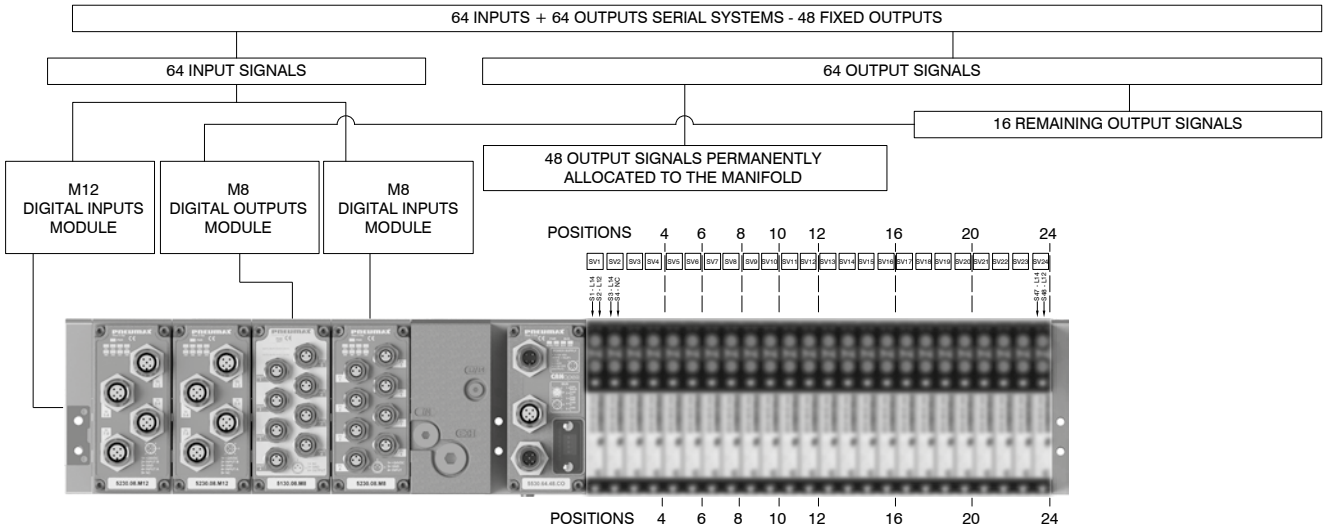


Signal management

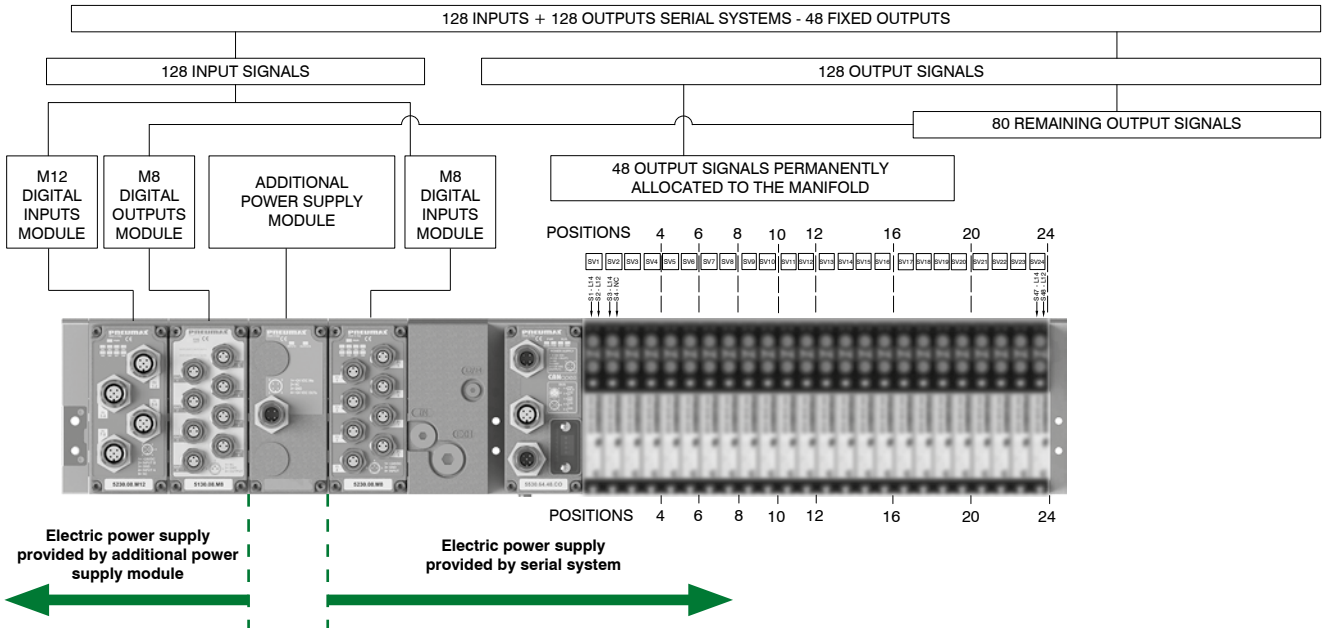
64 INPUT + 64 OUTPUT serial systems - 32 fixed OUTPUT (Ex. PROFIBUS DP and CANopen®)



64 INPUT + 64 OUTPUT serial systems - 48 fixed OUTPUT (Ex. PROFIBUS DP and CANopen®)



128 INPUT + 128 OUTPUT serial systems - 48 fixed OUTPUT (Ex. EtherNet/IP - EtherCAT® - PROFINET IO RT)



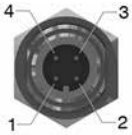
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

POWER SUPPLY connectors

Straight connector M12A 4P female

Coding: 5312A.F04.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

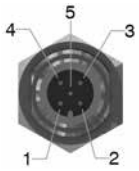
Power supply socket

NETWORK connectors

Straight connector M12A 5P female

Coding: 5312A.F05.00





Upper view slave connector

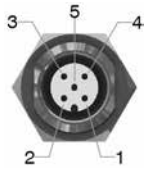
PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Socket for bus CANopen® and IO-Link

Straight connector M12A 5P male

Coding: 5312A.M05.00





Upper view slave connector

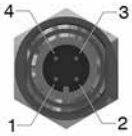
PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Plug for bus CANopen®

Straight connector M12D 4P male

Coding: 5312D.M04.00





Upper view slave connector

PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

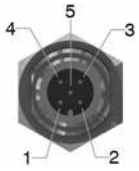
Plug for bus EtherCAT®, PROFINET IO RT and EtherNet/IP

Trademarks: EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Straight connector M12B 5P female

Coding: 5312B.F05.00





Upper view slave connector

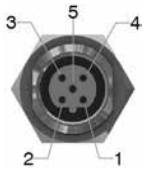
PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

Socket for bus PROFIBUS DP

Straight connector M12B 5P male

Coding: 5312B.M05.00





Upper view slave connector

PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

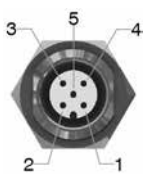
Socket for bus PROFIBUS DP

INPUTS connectors

Straight connector M12A 5P male

Coding: 5312A.M05.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
2	INPUT B
3	0 V
4	INPUT A
5	N.C.

Plug for inputs modules

Straight connector M8 3P male

Coding: 5308A.M03.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V

Plug for inputs modules

Plugs

M12 plug

Coding: 5300.T12



M8 plug

Coding: 5300.T08



Series 2200 Optyma-S EVO



2200 SERIES Optyma-S EVO SOLENOID VALVES MANIFOLD

- **Increased flexibility**
- **Digital and analogue I/O modules**
- **Manufactured in technopolymer**
- **Wide range of communication protocols**

WE SPEAK EVO

The Optyma-S series becomes EVO and interfaces with the new PX series modular electronic system while still retaining all of its technical advantages. This is enriched with new features that further extend the flexibility of the product:

- Controls up to 48 electrical signals
- Manifold mounted proportional regulators
- Electro-pneumatic shut-off module

Construction characteristics

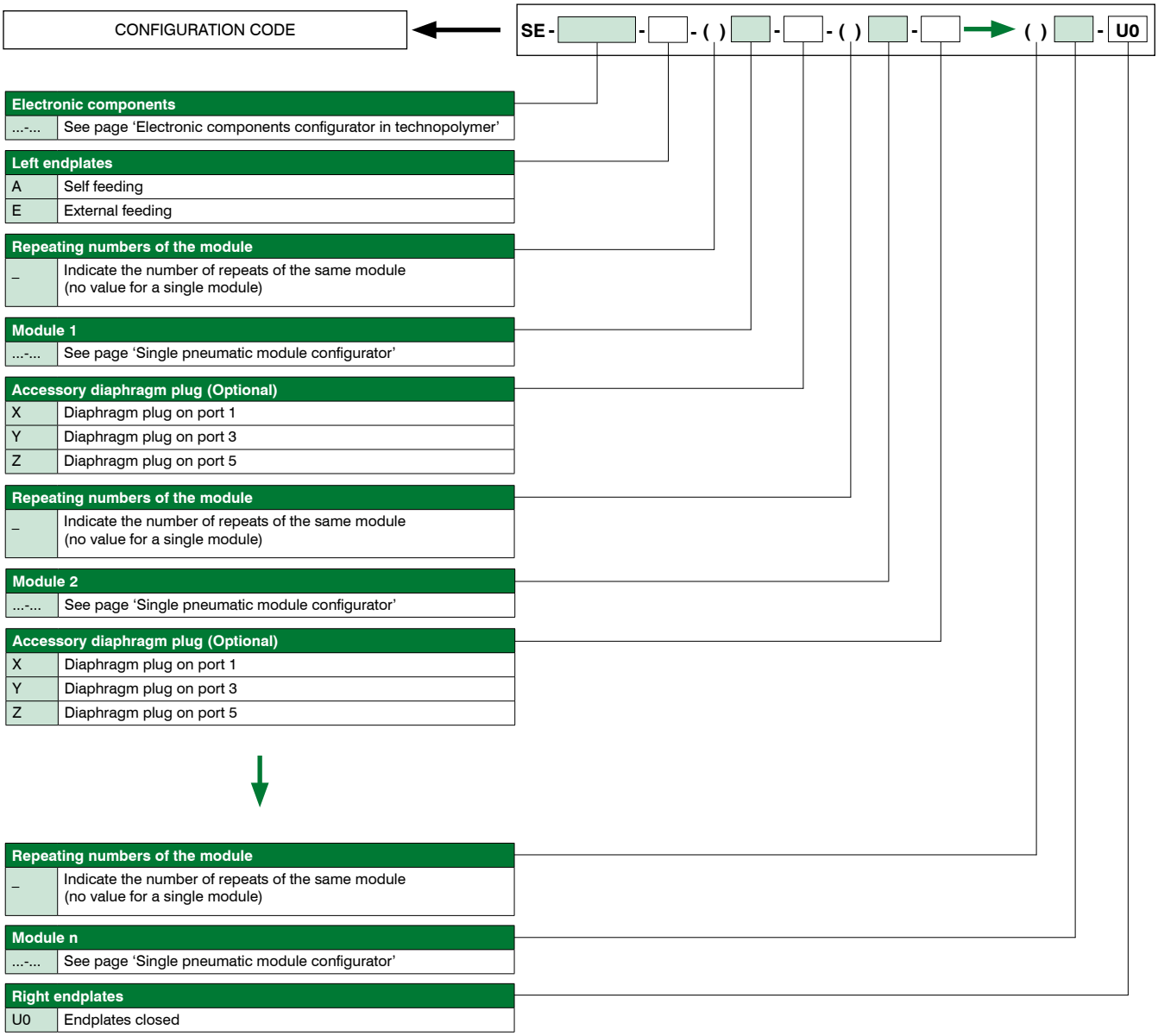
Body	Technopolymer
Seals	NBR
Piston seals	NBR
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Stainless Steel

Operational characteristics

Supply voltage	+ 24 V DC ±10%
Pilot consumption	1,3W nominal, in energy saving mode 0,25W
Pilot working pressure [12-14]	from 2,5 to 7 bar max.
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from -5°C to +50°C
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rules and configuration scheme



Configurable on Cadenas platform

CADENAS

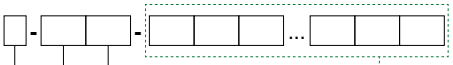
Note:

When composing the configuration, always bear in mind that the maximum number of electrical signals available is:

- 48 if a serial node or IO-Link interface is used.
- 40 if a 44-pole multi-pin is used.
- 32 if a 37-pole multi-pin module is used.
- 24 if a 25-pole multi-pin module is used.

If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost.
However, this makes it possible to replace the monostable valve with a bistable valve in the same position.
Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.
If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence (e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).
If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

Electronic components configurator in technopolymer



Type	
P	Technopolymer

Multi-pin electrical connection		
MP	2	Multi-pin, PNP 24 V DC 25 poles
	3	Multi-pin, PNP 24 V DC 37 poles
	4	Multi-pin, PNP 24 V DC 44 poles
MN	2	Multi-pin, NPN 24 V DC 25 poles
	3	Multi-pin, NPN 24 V DC 37 poles
	4	Multi-pin, NPN 24 V DC 44 poles
MA	2	Multi-pin, 24 V AC 25 poles
	3	Multi-pin, 24 V AC 37 poles
	4	Multi-pin, 24 V AC 44 poles

Electrical connection	
C3	CANopen® node 64 IN - 64 OUT (32 fixed)
C4	CANopen® node 64 IN - 64 OUT (48 fixed)
P3	PROFIBUS DP node 64 IN - 64 OUT (32 fixed)
P4	PROFIBUS DP node 64 IN - 64 OUT (48 fixed)
I4	EtherNet/IP node 128 IN - 128 OUT (48 fixed)
A4	EtherCAT® node 128 IN - 128 OUT (48 fixed)
N4	PROFINET IO RT node 128 IN - 128 OUT (48 fixed)
G4	CC-Link IE Field Basic node 128 IN - 128 OUT (48 fixed)
K3	IO-Link interface 64 IN - 64 OUT (32 fixed)
K4	IO-Link interface 64 IN - 64 OUT (48 fixed)

Electrical connection accessories	
	Without DIN rail fixing
G	With DIN rail fixing

Repeating numbers of the module	
	Indicate the number of repeats of the same module (no value for a single module)

SINGLE ELECTRIC MODULE CONFIGURATION

Inputs module - Analog / Digital (EXCLUDED WITH MP)	
D8	8 M8 digital inputs module
D12	8 M12 digital inputs module
D3	32 digital inputs SUB-D 37 poles
T1	2 analogue inputs 0-5V module (voltage signal)
T2	2 analogue inputs 0-10V module (voltage signal)
T3	4 analogue inputs 0-5V module (voltage signal)
T4	4 analogue inputs 0-10V module (voltage signal)
C1	2 analogue inputs 0-20mA module (current signal)
C2	2 analogue inputs 4-20mA module (current signal)
C3	4 analogue inputs 0-20mA module (current signal)
C4	4 analogue inputs 4-20mA module (current signal)
P1	2 Pt100 2 wires inputs module
P2	2 Pt100 3 wires inputs module
P3	2 Pt100 4 wires inputs module
P4	4 Pt100 2 wires inputs module
P5	4 Pt100 3 wires inputs module
P6	4 Pt100 4 wires inputs module

Outputs module - Analog / Digital	
M8	8 M8 digital outputs module
M12	8 M12 digital outputs module
M3	32 digital outputs SUB-D 37 poles
V1	2 analogue outputs 0-5V module (voltage signal)
V2	2 analogue outputs 0-10V module (voltage signal)
V3	4 analogue outputs 0-5V module (voltage signal)
V4	4 analogue outputs 0-10V module (voltage signal)
L1	2 analogue outputs 0-20mA module (current signal)
L2	2 analogue outputs 4-20mA module (current signal)
L3	4 analogue outputs 0-20mA module (current signal)
L4	4 analogue outputs 4-20mA module (current signal)

Additional modules (Optional)	
P12	M12 additional power supply module

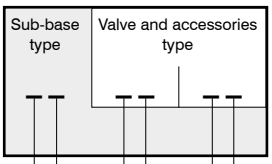
Module accessories	
	Without DIN rail fixing
G	With DIN rail fixing

Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

2 positions base module configurator

Module configurator



Base	
1	Ø10 Monostable base
2	Ø10 Bistable base
3	Ø4 Monostable base
4	Ø4 Bistable base
5	Ø6 Monostable base
6	Ø6 Bistable base
7	Ø8 Monostable base
8	Ø8 Bistable base

Base version (optional)	
	5-1-3 free (standard sub-base)
3	Intermediate Diaphragm plug on ports 1 and 5
4	Intermediate Diaphragm plug on ports 1 and 3
5	Intermediate Diaphragm plug on port 5
6	Intermediate Diaphragm plug on ports 1, 3, 5
7	Intermediate Diaphragm plug on port 1
8	Intermediate Diaphragm plug on ports 3 and 5
9	Intermediate Diaphragm plug on port 3

Note: version not available with Ø10 base

Solenoid valve position 1	
A	S.V. 5/2 SOLENOID-SPRING
B	S.V. 5/2 SOLENOID-DIFFERENTIAL
C	S.V. 5/2 SOLENOID-SOLENOID
E	S.V. 5/3 CC SOLENOID-SOLENOID
F	S.V. 2x3/2 NC-NC
G	S.V. 2x3/2 NO-NO
H	S.V. 2x3/2 NC-NO
I	S.V. 2x3/2 NO-NC
T	Plug

S.V. 1 Accessory (optional)	
5	Separated exhausts
6	Separated air supply

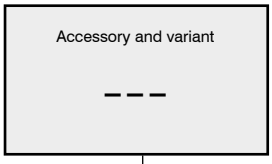
S.V. 2 Accessory (optional)	
5	Separated exhausts
6	Separated air supply

Solenoid valve position 2	
A	S.V. 5/2 SOL.-SPRING
B	S.V. 5/2 SOL.-DIF.
C	S.V. 5/2 SOL.-SOL.
E	S.V. 5/3 CC SOL.-SOL.
F	S.V. 2x3/2 NC-NC
G	S.V. 2x3/2 NO-NO
H	S.V. 2x3/2 NC-NO
I	S.V. 2x3/2 NO-NC
T	Plug

Note: with base Ø10 the solenoid valve must be the same as the one chosen as position 1

Accessory module configurator

Module configurator



Intermediate Inlet/Exhaust module with separate piloting		
K	A C	12/14 through 12/14 closed downstream

Intermediate electropneumatic shut-off module with separate piloting						
K	A C	12/14 through 12/14 closed downstream	2 4 6 8	2 positions 4 positions 6 positions 8 positions	M8 M12	M8 Connector M12 Connector

Proportional regulator module (base + proportional)												
R	0 1	Exhaust closed Ø10 Conveyed discharges	D	Standard proportional regulator	C T	Current signal Voltage signal	/		1 5 9	0-1 bar pressure 0-5 bar pressure 0-9 bar pressure	-	Standard version
			N	Standard proportional regulator M12			F G H	Analogue voltage output Analogue current output Digital output				
			SC	CANopen protocol	/		/		9	0-9 bar pressure	A	Discharge circuit without power supply
			MC	CANopen M12 protocol								
			IB	IO-Link protocol								
			EC	EtherCAT protocol								
			PN	Profinet protocol								

Configuration example of single pneumatic module:

Ø6 Bistable base, intermediate diaphragm on ports 1,3 and 5, 2x3/2 NC-NC Solenoid valve with individual exhaust accessory, 5/2 Solenoid-Solenoid valve

6 6 F 5 C

Base	
1	Ø10 Monostable base
2	Ø10 Bistable base
3	Ø4 Monostable base
4	Ø4 Bistable base
5	Ø6 Monostable base
(6)	Ø6 Bistable base
7	Ø8 Monostable base
8	Ø8 Bistable base

S.V. position 2	
A	S.V. 5/2 SOLENOID-SPRING
B	S.V. 5/2 SOLENOID-DIFFERENTIAL
(C)	S.V. 5/2 SOLENOID-SOLENOID
E	S.V. 5/3 CC SOLENOID-SOLENOID
F	S.V. 2x3/2 NC-NC
G	S.V. 2x3/2 NO-NO
H	S.V. 2x3/2 NC-NO
I	S.V. 2x3/2 NO-NC

S.V. 1 Accessory (optional)	
(5)	Separated exhausts
6	Separated air supply

Base version (optional)	
	5-1-3 free (standard sub-base)
3	Intermediate Diaphragm plug on ports 1 and 5
4	Intermediate Diaphragm plug on ports 1 and 3
5	Intermediate Diaphragm plug on port 5
(6)	Intermediate Diaphragm plug on ports 1, 3, 5
7	Intermediate Diaphragm plug on port 1
8	Intermediate Diaphragm plug on ports 3 and 5
9	Intermediate Diaphragm plug on port 3

Solenoid valve position 1	
A	Solenoid valve 5/2 SOLENOID-SPRING
B	Solenoid valve 5/2 SOLENOID-DIFFERENTIAL
C	Solenoid valve 5/2 SOLENOID-SOLENOID
E	Solenoid valve 5/3 CC SOLENOID-SOLENOID
(F)	Solenoid valve 2x3/2 NC-NC
G	Solenoid valve 2x3/2 NO-NO
H	Solenoid valve 2x3/2 NC-NO
I	Solenoid valve 2x3/2 NO-NC

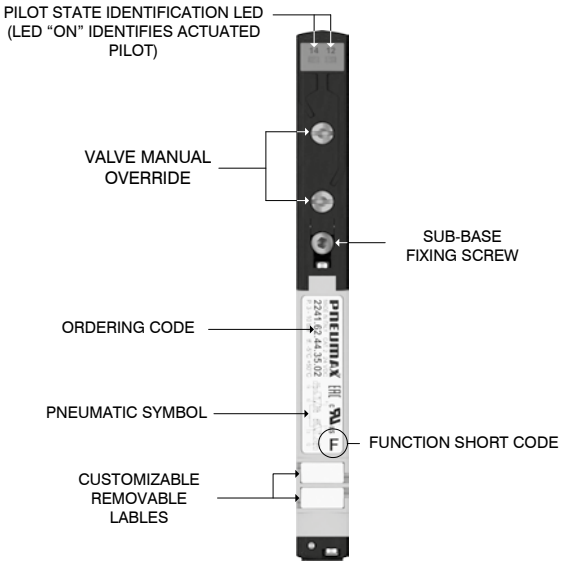
Configuration example of complete group:

- Technopolymer PX3 serial system (P-I4-D12-M12-D8G)
- Left endplates - External feeding (E)
- Ø6 Bistable base with (6HF) Solenoid valve
- Ø6 Bistable base with (6IE) Solenoid valve
- Ø4 Monostable base with (3AA) Solenoid valve
- Ø4 Monostable base with (3BB) Solenoid valve
- Ø8 Bistable base with (8FI) Solenoid valve
- Ø8 Bistable base with (8HE) Solenoid valve
- Right endplate closed (U0)

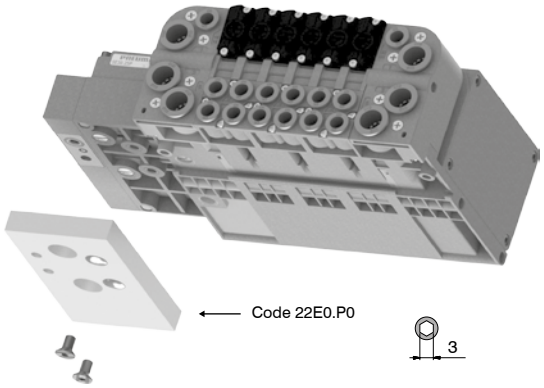


SE-P-I4-D12-M12-D8G-E-6HF-6IE-3AA-3BB-8FI-8HE-U0

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

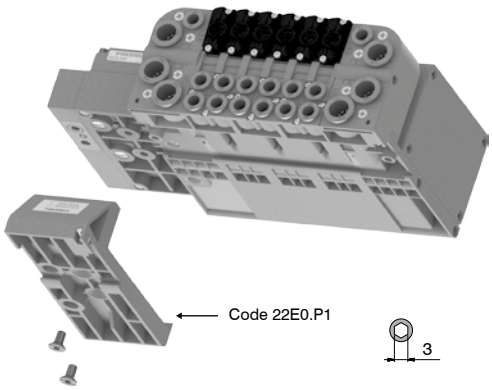


Offset compensation plate



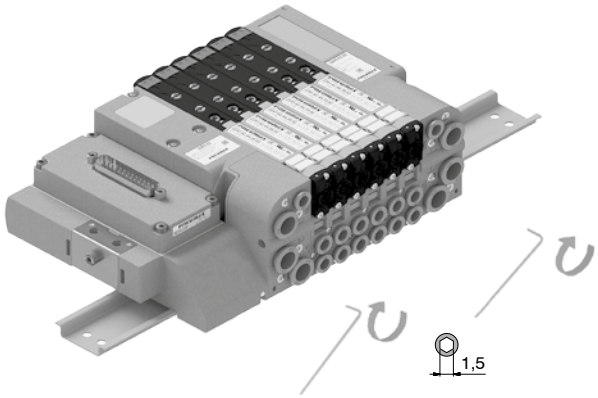
Attention: This accessory is supplied on the manifold unless otherwise stated. This is not compatible for DIN rail mounting.

DIN rail mounting support plate



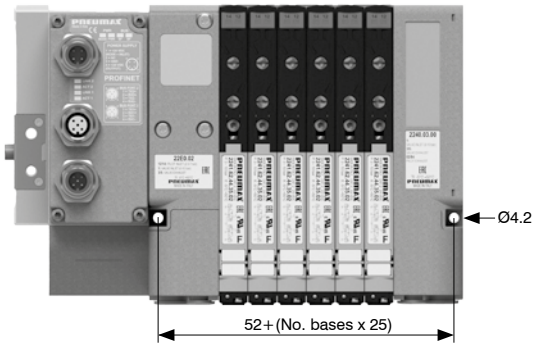
Attention: This must be included when creating the manifold configuration; exclude the offset compensation plate.

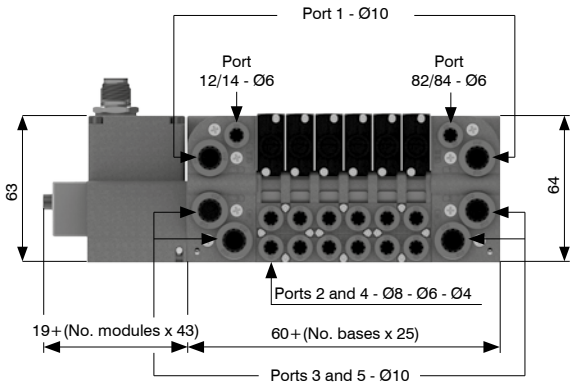
DIN rail fixing



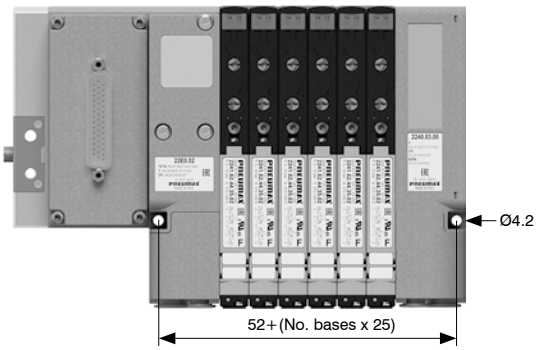
Supply ports and maximum possible size according to valves used

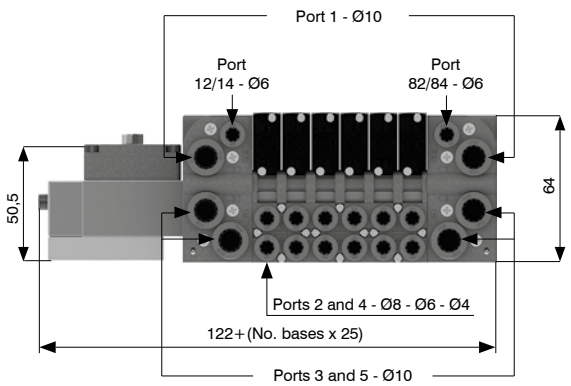
Serial system node version





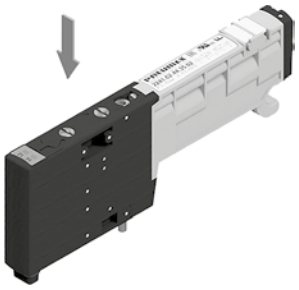
Multi-pin version



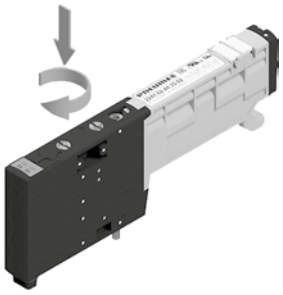


Manual override actuation

Instable function:
Push to actuate
(when released it moves back to the original position)

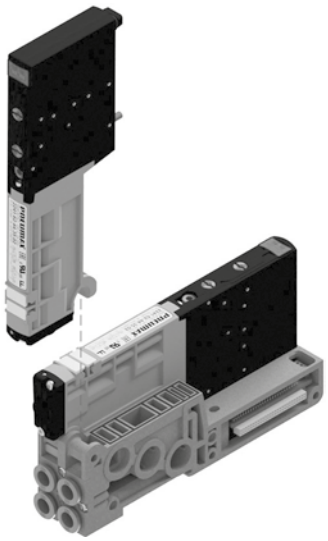


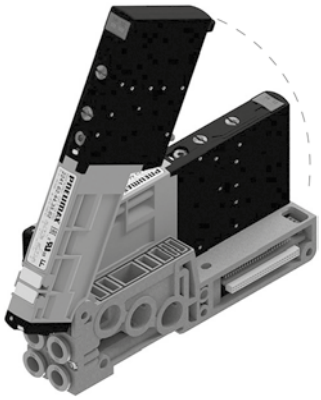
Bistable function:
Push and turn to get the bistable function

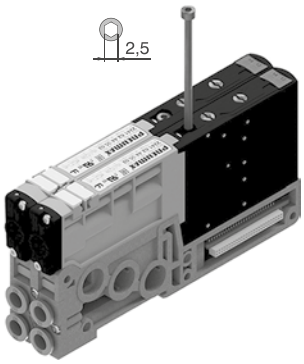


Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

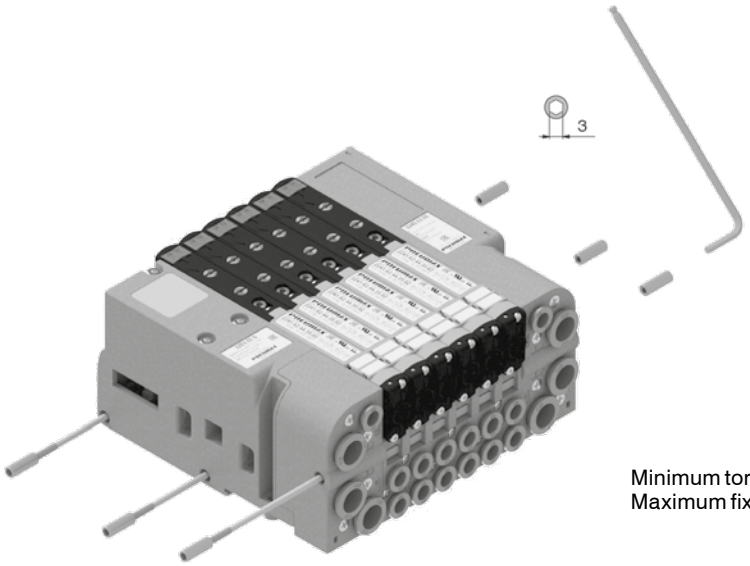






Note: Torque moment 0,8 Nm

Sub-base assembly



Minimum torque moment: 2 Nm
Maximum fixing torque for fittings: 2,5 Nm

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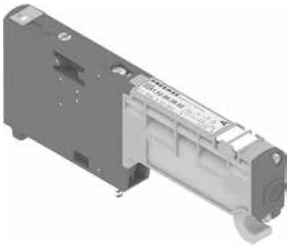
Solenoid-Spring

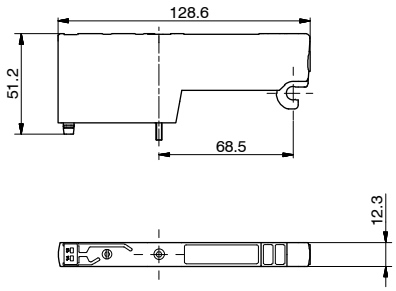
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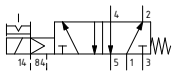
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	400
	with modular base, tube ø8	550
	with high flow rate modular base (2 places) ø10	900
Response time according to ISO 12238, activation time (ms)		15
Response time according to ISO 12238, deactivation time (ms)		20

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "A"
Weight 67 g







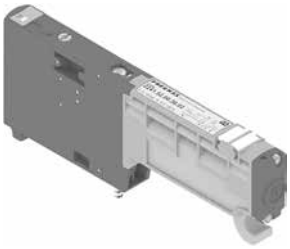
Solenoid-Differential

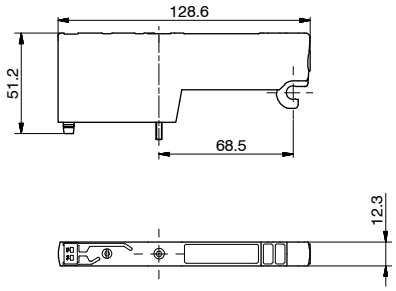
Coding: 2241.52.00.36.Ⓥ

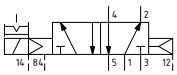
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	400
	with modular base, tube ø8	550
	with high flow rate modular base (2 places) ø10	850
Response time according to ISO 12238, activation time (ms)		20
Response time according to ISO 12238, deactivation time (ms)		25

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "B"
Weight 67 g







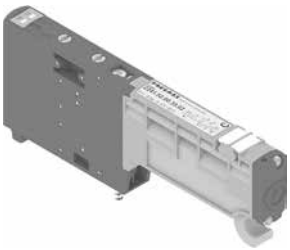
Solenoid-Solenoid

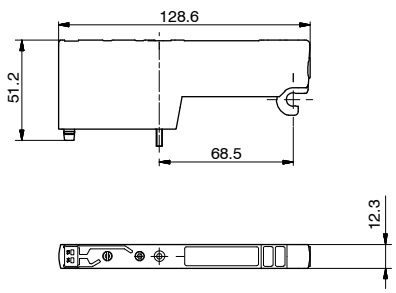
Coding: 2241.52.00.35.Ⓥ

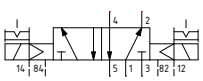
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	400
	with modular base, tube ø8	550
	with high flow rate modular base (2 places) ø10	900
Response time according to ISO 12238, activation time (ms)		10
Response time according to ISO 12238, deactivation time (ms)		10

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "C"
Weight 67 g







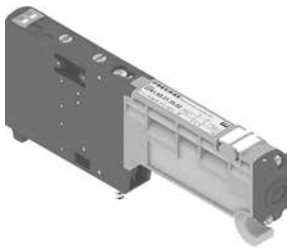
Solenoid-Solenoid 5/3 (Closed centres)

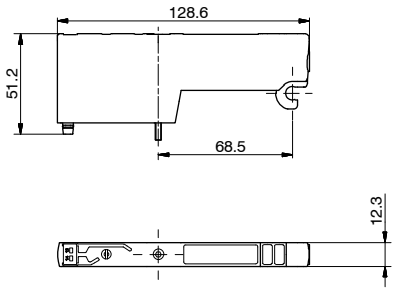
Coding: 2241.53.31.35.Ⓥ

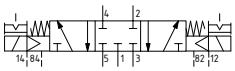
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	300
	with modular base, tube ø8	400
	with high flow rate modular base (2 places) ø10	600
Response time according to ISO 12238, activation time (ms)		15
Response time according to ISO 12238, deactivation time (ms)		20

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "E"
Weight 83 g







Solenoid-Solenoid 2x3/2

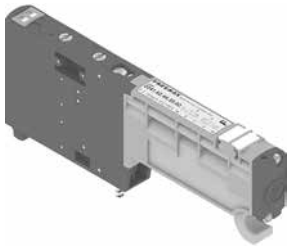
Coding: 2241.62.Ⓕ.35.Ⓥ

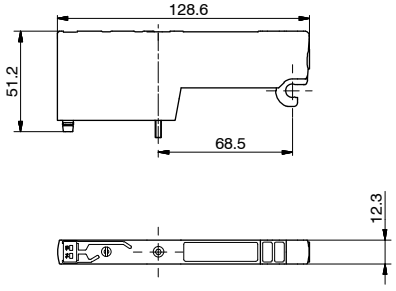
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		≥3+(0,2 x Inlet pressure)
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	360
	with modular base, tube ø8	420
	with high flow rate modular base (2 places) ø10	650
Response time according to ISO 12238, activation time (ms)		15
Response time according to ISO 12238, deactivation time (ms)		25

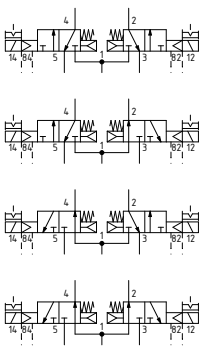
Ⓕ	FUNCTION
	44 = NC-NC (5/3 Open centres)
	45 = NC-NO (normally closed-normally open)
	54 = NO-NC (normally open-normally closed)
	55 = NO-NO (5/3 Pressured centres)
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE:
NC-NC (5/3 Open centres)="F"
N.O. - N.O. (5/3 Pressured centres)="G"
N.C.-N.O.="H"
N.O.-N.C.="I"
Weight 75 g

Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=3+(0,2*5)=4 bar







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

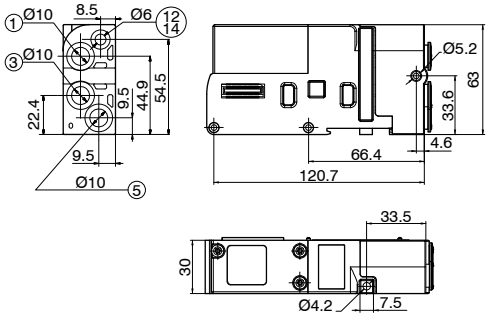
Left Endplate

Coding: 22E0.Ⓥ.S

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 (external pilot base) 2,5 ... 7 (self-feeding base)
Pilot pressure (bar)	2,5 ... 7 (external pilot base)
Temperature °C	-5 ... +50

Ⓥ	VERSION
	02 = External feeding
	12 = Self-feeding

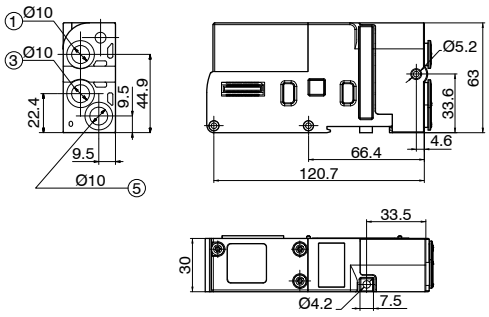




12/14 SEPARATED FROM PORT 1
Weight 199 g

22E0.02.S





12/14 CONNECTED TO PORT 1
Weight 199 g

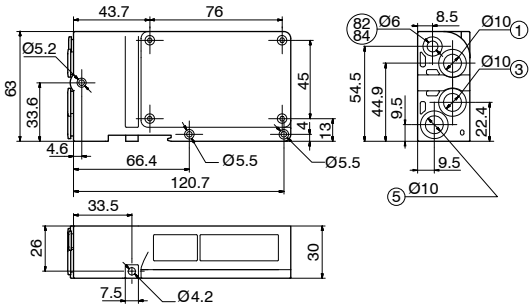
22E0.12.S

Right Endplate

Coding: 2240.03.00

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50





PORT 82/84= DO NOT PRESSURIZE, SOLENOID PILOTS EXHAUST
Weight 148 g

2240.03.00

Modular base (2 places)

Coding: 22E©.Ⓕ.Ⓥ

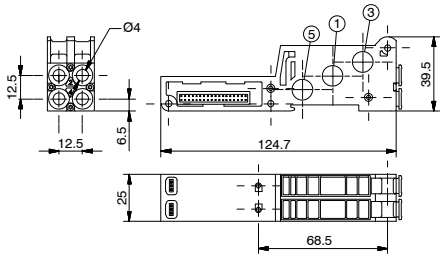
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50

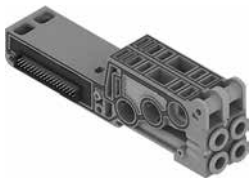
©	TUBE DIAMETER
	4 = Ø4
	6 = Ø6
	8 = Ø8
Ⓕ	FUNCTION
	01 = Opened ports
	03 = Ports 1-5 separated
	04 = Ports 1-3 separated
	05 = Port 5 separated
	06 = Separated ports
	07 = Port 1 separated
	08 = Ports 3-5 separated
	09 = Port 3 separated
Ⓥ	VERSION
	M = for monostable S.V.
	B = for bistable S.V.



Weight 75 g

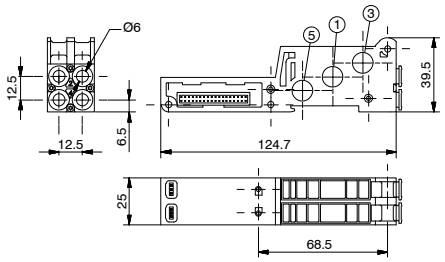
22E4.ⒻⓋ





Weight 75 g

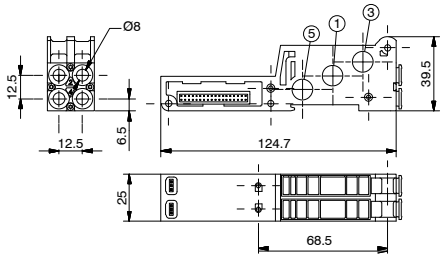
22E6.ⒻⓋ





Weight 75 g

22E8.ⒻⓋ



High flow rate modular base (2 places)

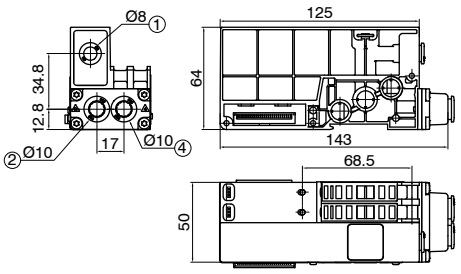
Coding: 22E1.01Ⓥ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50

Ⓥ	VERSION
	M = for monostable S.V.
	B = for bistable S.V.

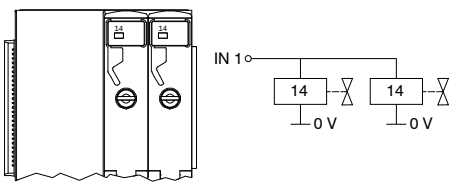


Weight 200 g



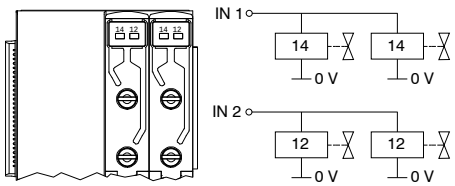
the two solenoid valves mounted on the high-flow base are pneumatically and electrically in parallel.
Attention: the mounted solenoid valves must always be two and of the same type.
Attention: the additional supply is necessary to guarantee the declared flow values, the port (1), if not supplied, it must be plugged.

Monostable configuration



the monostable base consumes only one electrical signal and can only mount monostable solenoid valves.

Bistable configuration



the bistable base consumes two electrical signals and can mount both bistable and monostable solenoid valves; in the latter case one electrical signal will be lost.

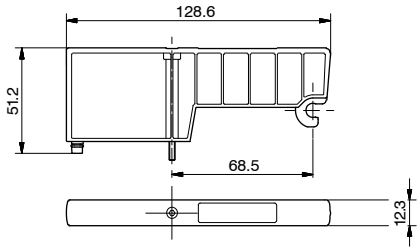
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Closing plate

Coding: 2240.00

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50





SHORT FUNCTION CODE "T"
Weight 30 g

Individual supply or exhaust module

Coding: 22E0.Ⓥ.06

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 3 ... 7 (piloting 12/14)
Temperature °C	-5 ... +50

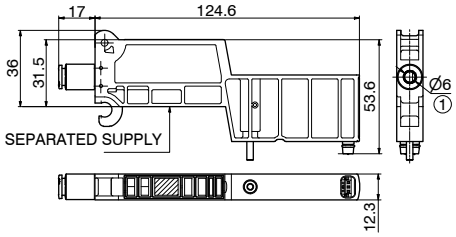
Ⓥ	VERSION
	01 = Port 1 separated
	35 = Ports 3-5 separated

The flow rate of the solenoid valve will be reduced compared to that shown in the general catalogue



Weight 44 g

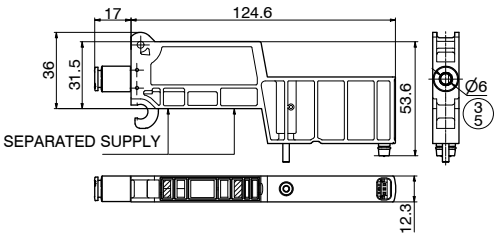
22E0.01.06





Weight 44 g

22E0.35.06



Proportional regulator base

Coding: 22E0.Ⓒ.RP

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50

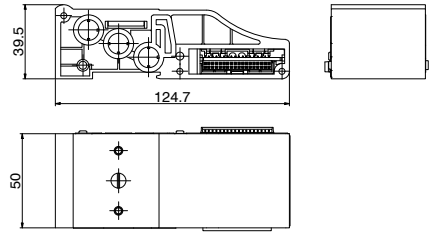
Ⓒ	CONNECTION
	00 = Closed
	10 = Ø10

3D PRINTING



Weight 120 g

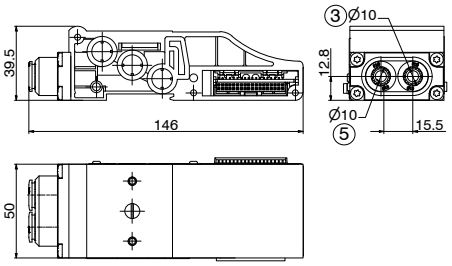
22E0.00.RP





Weight 120 g
3/5 = Exhaust connections

22E0.10.RP



Proportional regulator installation on its base



Proportional pressure regulators can be integrated into an Optyma-S EVO solenoid valve manifold, allowing the assembly to be fully or partially supplied. The regulator electronic control is independent of the node.

Technical characteristics

Pneumatic characteristics	
Fluid	Air filtered at 5 micron and dehumidified
Minimum inlet pressure	Desired outlet pressure + 1 bar
Maximum inlet pressure	10 bar
Outlet pressure	0 ... 9 bar
Nominal flow rate from 1 to 2 (6 bar ΔP 1 bar)	1100 Nl/min
Discharge flow rate (6 bar with 1 bar overpressure)	1300 Nl/min
Air consumption	< 1 Nl/min
Supply connection	G 1/4"
Operating connection	G 1/4"
Exhaust connection	G 1/8"
Maximum fitting tightening	15 Nm

Electrical characteristics		
Supply voltage		24VDC ± 10% (stabilized with ripple<1%)
Standby current consumption		70mA
Current consumption with solenoid valves on		400mA
**Reference Signal	Voltage	*0 ... 10 V *0 ... 5 V *1 ... 5 V
	Current	*4 ... 20 mA *0 ... 20 mA
**Input Impedance	Voltage	10 kΩ
	Current	250 Ω
**Digital inputs		+ 24 V DC ± 10%
**Digital output		24 VDC PNP (max current 50 mA)

Functional characteristics	
Linearity	± Insensitivity
Hysteresis	± Insensitivity
Repeatability	± Insensitivity
Sensitivity	0,01 bar
Assembly position	Indifferent
Protection grade	IP65 (with casing fitted)
Ambient temperature	-5°... 50° / 23°F ... 122°F

Construction characteristics	
Body	Anodized aluminum
Shutters	Brass with vulcanized NBR
Diaphragm	Cloth-covered rubber
Seals	NBR
Cover for electrical part	Technopolymer
Springs	AISI 302
Weight	360 g

* Selectable by keyboard or by RS-232
** Valid only for devices with analog input

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Installation/Operation

PNEUMATIC CONNECTION

The compressed air is connected by G 1/4" threaded holes on the body. Before making the connections, eliminate any impurities in the connecting pipes to prevent chippings or dust entering the unit. Do not supply the circuit with more than 10 bar pressure and make sure that the compressed air is dried (excessive condensate could cause the appliance to malfunction) and filtered at 5 micron. The supply pressure to the regulator must always be at least 1 bar greater than the desired outlet pressure. If a silencer is applied to the discharge path the unit response time may change; periodically check that the silencer is not blocked and replace it if necessary.

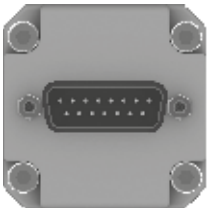
ELECTRICAL CONNECTION

For the electrical connection a SUB-D 15-pole female or a M12 connector is used (accordingly to the model, to be ordered separately). Wire in accordance with the wiring diagram shown below. **Warning: INCORRECT CONNECTIONS MAY DAMAGE THE DEVICE**

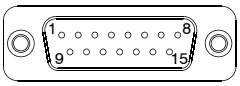
NOTES ON OPERATION

If the electric supply is interrupted, the outlet pressure is maintained at the set value. However, maintaining the exact value cannot be ensured as it is impossible to operate the solenoid valves. In order to discharge the circuit downstream, zero the reference, make sure that the display shows a pressure value equal to zero and then disconnect the electric power supply. A version of the device is available that exhausts the downstream circuit when the power supply is removed (Option "A" at the end of the ordering code). If the compressed-air supply is suspended and the electric power supply is maintained a whirring will be heard that is due to the solenoid valves; an operating parameter can be activated (P18) that triggers the regulator protection whenever the requested pressure is not reached within 4 seconds of the reference signal being sent. In this case the system will intervene to interrupt the control of the solenoid valves. Every twenty seconds, the unit will start the reset procedure until standard operating conditions have been restored.

Proportional regulator, standard version with D-SUB connector



TOP VIEW OF THE REGULATOR CONNECTOR

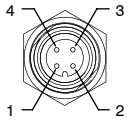


CONNECTOR PINOUT:
1 = DIGITAL INPUT 1
2 = DIGITAL INPUT 2
3 = DIGITAL INPUT 3
4 = DIGITAL INPUT 4
5 = DIGITAL INPUT 5
6 = DIGITAL INPUT 6
7 = DIGITAL INPUT 7
8 = ANALOG INPUT / DIGITAL INPUT 8

9 = SUPPLY (24 VDC)
10 = DIGITAL OUTPUT (24 VDC PNP)
11 = ANALOG OUTPUT (CURRENT)
12 =ANALOG OUTPUT (VOLTAGE)
13 = Rx RS-232
14 = Tx RS-232
15 = GND

Proportional regulator, M12 standard version





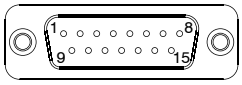
M12 4P
MALE

M12 Standard version
CONNECTOR PINOUT:
1 = POWER SUPPLY (24 VDC)
2 = ANALOG OUTPUT (depending on the model)
3 = GND
4 = ANALOG INPUT

Proportional regulator, CANopen® version with D-SUB connector



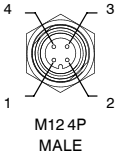
TOP VIEW OF THE REGULATOR CONNECTOR



CONNECTOR PINOUT:
1 = CAN_SHIELD
2 = CAN_V+
3 = CAN_GND
4 = CAN_H
5 = CAN_L
6 = NC
7 = NC
8 = NC
9 = SUPPLY (+24 VDC)
10 = CAN_SHIELD
11 = CAN_V+
12 = CAN_GND
13 = CAN_H
14 = CAN_L
15 = GND

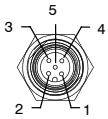
Proportional regulator, CANopen® version with M12 connector





M12 4P
MALE

PIN	DESCRIPTION
1	+24 VDC (NODE AND INPUTS)
2	NC
3	GND
4	+24 VDC (OUTPUTS)

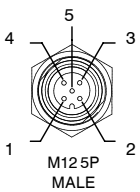


M12 5P
FEMALE

PIN	SIGNAL	DESCRIPTION
1	CAN_SHIELD	Optional Can Shield
2	CAN_V+	Optional Can external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (Dominant high)
5	CAN_L	CAN_L bus line (Dominant low)

Proportional regulator, IO-Link version



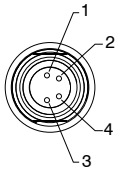


M12 5P
MALE

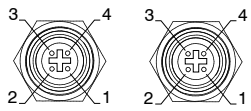
CONNECTOR PINOUT:
1 = L+
2 = +24 VDC (P24)
3 = L-
4 = C/Q
5 = GND (N24)

Proportional regulator, EtherCAT®, PROFINET IO RT and EtherNet/IP version





M8 4P
MALE



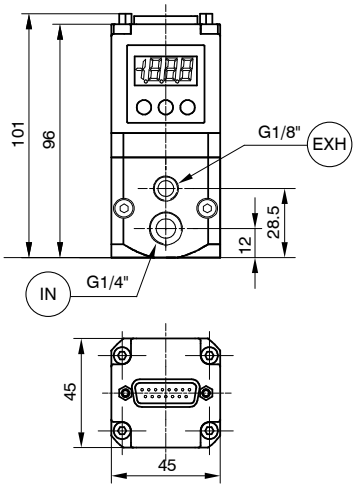
M12D 4P
FEMALE

CONNECTOR PINOUT:
1 = Device logic power supply
2 = NC
3 = GND
4 = Solenoid valves power supply

CONNECTOR PINOUT:
1 = TX Signal + (Ethernet Transmit High)
2 = RX Signal + (Ethernet Receive High)
3 = TX Signal - (Ethernet Transmit Low)
4 = RX Signal - (Ethernet Receive Low)

Proportional regulator, standard version with D-SUB connector





Coding: 221E2N.Ⓣ.D.Ⓟ.Ⓥ

Ⓣ	TYPE
	C = Current signal (4-20 mA / 0-20 mA)
	T = Voltage signal (0-10 V / 0-5 V / 1-5 V)
Ⓟ	PRESSURE RANGE
	0001 = from 0 to 1 bar
	0005 = from 0 to 5 bar
	0009 = from 0 to 9 bar
Ⓥ	VARIANT
	= Standard version
	A = Exhaust downstream pressure when power supply is removed

Accessories

Model with SUB-D 15 poles connector



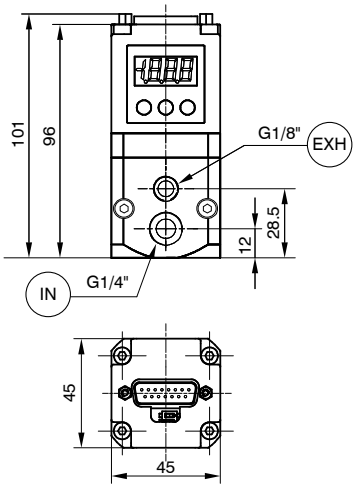
Coding: 5300.F15.Ⓒ.Ⓥ

Ⓒ	CONNECTOR
	00 = straight connector
	90 = 90° connector
Ⓥ	VARIANT
	00 = casing IP65*
	03 = cable 3 meters
	05 = cable 5 meters

*without cable

Proportional regulator, CANopen® version with D-SUB connector





Coding: 221E2N.S.C.Ⓟ.Ⓥ

Ⓟ	PRESSURE RANGE
	0001 = from 0 to 1 bar
	0005 = from 0 to 5 bar
	0009 = froma 0 to 9 bar
Ⓥ	VARIANT
	= Standard version
	A = Exhaust downstream pressure when power supply is removed

Accessories

Model with SUB-D 15 poles connector



Coding: 5300.F15.Ⓒ.Ⓥ

Ⓒ	CONNECTOR
	00 = straight connector
	90 = 90° connector
Ⓥ	VARIANT
	00 = casing IP65*
	03 = cable 3 meters
	05 = cable 5 meters

*without cable

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

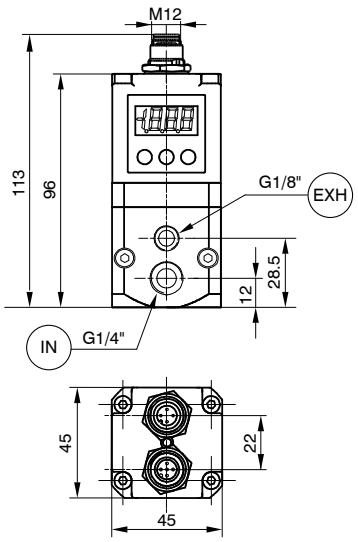
Proportional regulator, CANopen® version with M12 connector

Coding: 221E2N.M.C.Ⓟ.Ⓥ

Ⓟ	PRESSURE RANGE
	0001 = from 0 to 1 bar
	0005 = from 0 to 5 bar
	0009 = from 0 to 9 bar
Ⓥ	VARIANT
	= Standard Version
	A = Exhaust downstream pressure when power supply is removed

Note: This model doesn't include the terminating resistor





Accessories

Power supply connector

Female straight connector M12A 4P

Coding: 5312A.F04.00



Network connector

Male straight connector M12A 5P

Coding: 5312A.M05.00

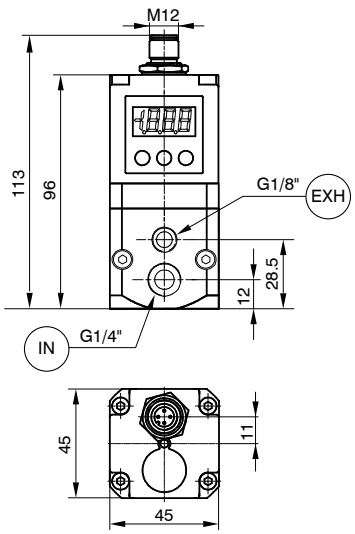


Proportional regulator, M12 standard version

Coding: 221E2N.Ⓣ.Ⓤ.Ⓟ.Ⓥ

Ⓣ	TYPE
	C = Current signal (4-20 mA)
	T = Voltage signal (0-10 V)
Ⓤ	OUTPUT
	F = Voltage analogue output
	G = Current analogue output
	H = Digital output
Ⓟ	PRESSURE RANGE
	0001 = from 0 to 1 bar
	0005 = from 0 to 5 bar
	0009 = from 0 to 9 bar
Ⓥ	VARIANT
	= Standard Version
	A = Exhaust downstream pressure when power supply is removed





Accessories

Power supply connector

Female straight connector M12A 4P

Coding: 5312A.F04.00

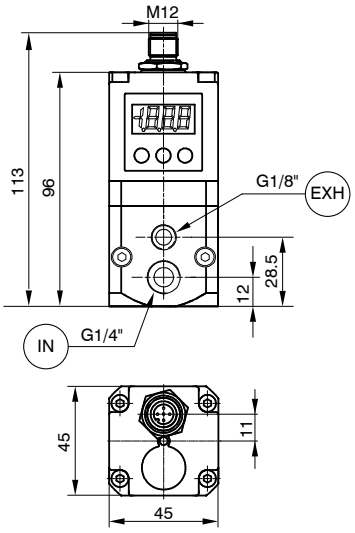


Proportional regulator, IO-Link version

Coding: 221E2N.I.B.0009.Ⓥ

Ⓥ	VARIANT
	= Standard Version
	A = Exhaust downstream pressure when power supply is removed





Accessories

Power supply connector

Female straight connector M12A 4P

Coding: 5312A.F05.00

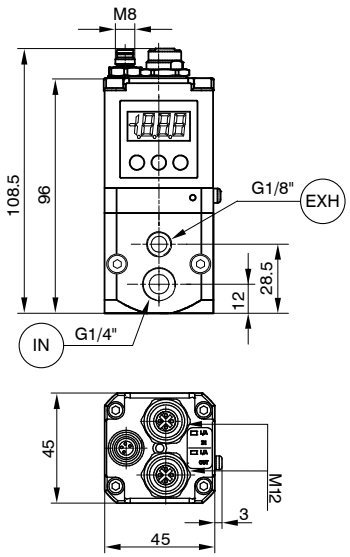


Proportional regulator, EtherCAT®, PROFINET IO RT and EtherNet/IP version

Coding: 221E2N.Ⓣ.0009.Ⓥ

Ⓣ	TYPE
	EC = EtherCAT®
	PN = PROFINET IO RT
	EI = EtherNet/IP
Ⓥ	VARIANT
	= Standard Version
	A = Exhaust downstream pressure when power supply is removed





Accessories

Power supply connector

Male straight connector M12D 4P

Coding: 5312D.M04.00



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Intermediate electro-pneumatic shut-off module 2/4/6/8 positions

Coding: 22E0.Ⓜ.Ⓣ.Ⓒ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 3 ... 7 (piloting 12/14)
Temperature °C	-5 ... +50
Feeding	+ 24 V DC ±10%
Protection	Inverted polarity protection
Maximum load	100 mA
Indicators	+ 24 V DC presence LED
Series modules maximum number	3

Ⓜ	MODULE
	10 = 12-14 open
	11 = 12-14 closed
Ⓣ	SHUT-OFF
	2A = 2 Signals
	4A = 4 Signals
	6A = 6 Signals
	8A = 8 Signals
Ⓒ	CONNECTION
	M8 = M8
	M12 = M12



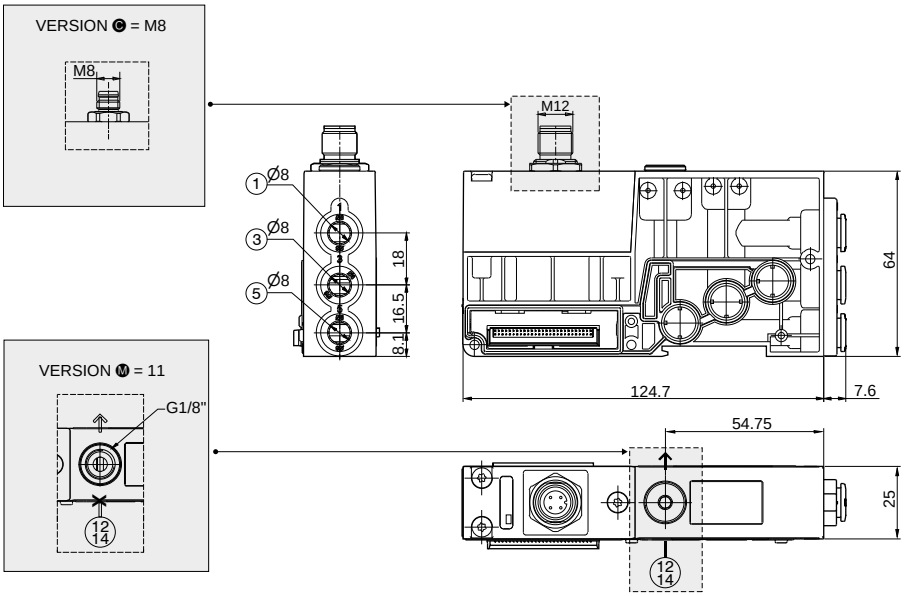
Weight 120 g

22E0.Ⓜ.Ⓣ.M12



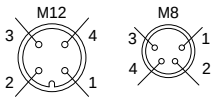
Weight 120 g

22E0.Ⓜ.Ⓣ.M8

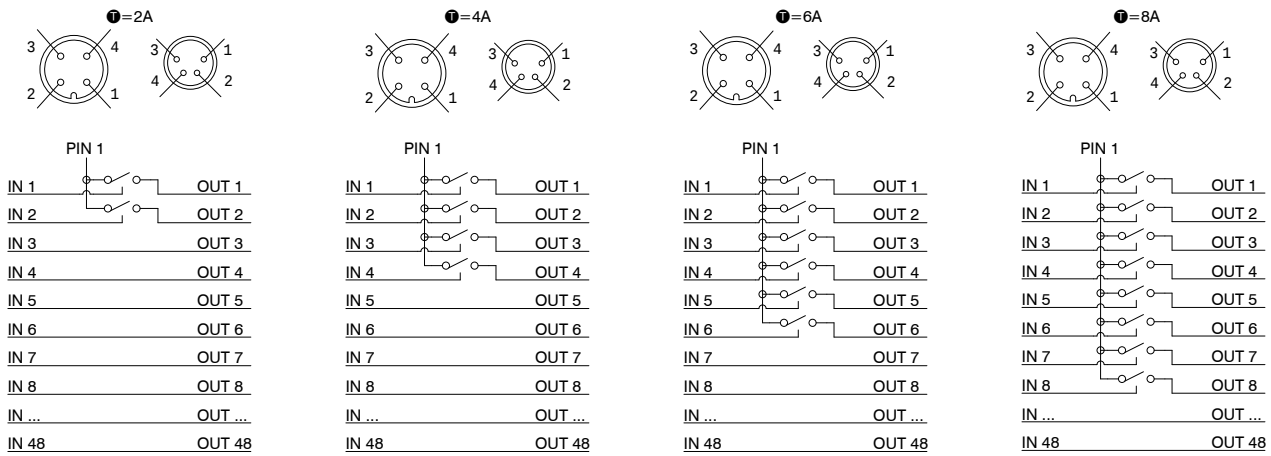


WORKING PRINCIPLE / SIMPLIFIED FUNCTIONAL DIAGRAM

Intermediate electro-pneumatic shut-off module allows you to interrupt at the same time the first 2, 4, 6 or 8 available command signals for the valves after the module itself.
When the shut-off module is present, the controlled output logic signal values are equal to the input logic signal values which came from the serial node or the multi-pin module.
If the supply input signal is absent, the controlled output logic signal values are all equal to zero.
This module is particularly useful when control signals are used to block the valves; it is also effective both with serial management and multi-pin connection of the manifolds.
It is possible to use more modules to interrupt every command signals simply by inserting them before the signals to be interrupted.

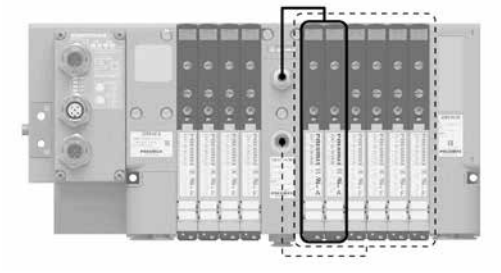


PIN	DESCRIPTION
1	+ 24 V DC
2	NOT CONNECTED
3	GND
4	NOT CONNECTED

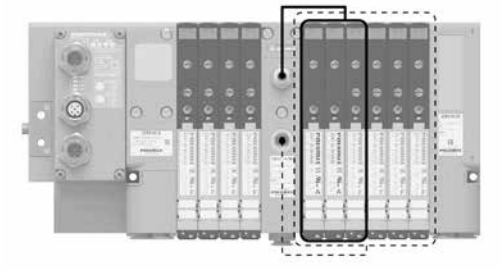


Usage examples

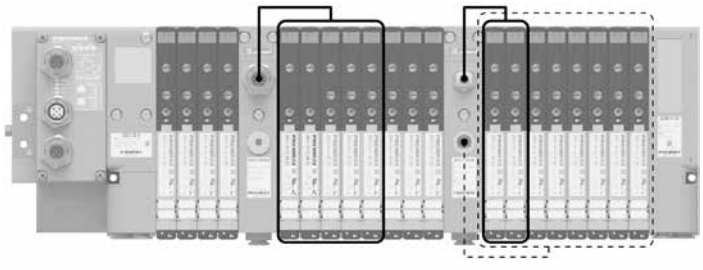
EXAMPLE 1
Manifold of 10 solenoid valves on which you want to interrupt signals 9 and 10.
Assembly:
- 4 bistable solenoid valves (not interruptible because before the module)
- 1 intermediate electro-pneumatic shut-off module, 2 signals M8 with conduit 12/14 closed
- 2 monostable solenoid valves (interruptible)
- 4 bistable solenoid valves (managed directly by the corresponding command signal)



EXAMPLE 2
Manifold of 10 solenoid valves on which you want to interrupt signals from 9 to 12.
Assembly:
- 4 bistable solenoid valves (not interruptible because before the module)
- 1 intermediate electro-pneumatic shut-off module, 4 signals M8 with conduit 12/14 closed
- 2 monostable solenoid valves (interruptible)
- 4 bistable solenoid valves (the first one is interruptible, the others are managed directly by the corresponding command signal)



EXAMPLE 3
Manifold of 20 solenoid valves on which you want to interrupt signals from 9 to 16 and 23 to 26.
Assembly:
- 4 bistable solenoid valves (not interruptible because before the module)
- 1 intermediate electro-pneumatic shut-off module, 8 signals M12 with conduit 12/14 open
- 2 monostable solenoid valves (interruptible)
- 6 bistable solenoid valves (the first three are interruptible, the others are managed directly by the corresponding command signal)
- 1 intermediate electro-pneumatic shut-off module, 4 signals M8 with conduit 12/14 closed
- 8 bistable solenoid valves (the first two are interruptible, the others are managed directly by the corresponding command signal)



Key

——— S.V. electrically managed by the shut-off module
- - - - - - - - S.V. pneumatically managed (12/14) by the shut-off module

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

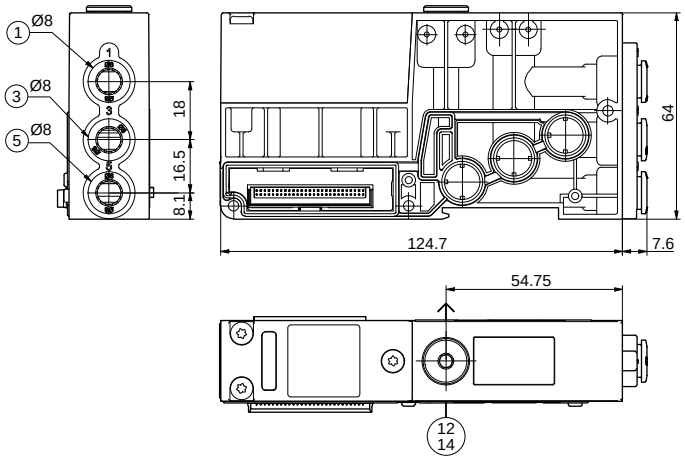
Intermediate inlet/Exhaust module with external pilot

Coding: 22E0.Ⓜ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 3 ... 7 (piloting 12/14)
Temperature °C	-5 ... +50

Ⓜ	MODULE
	10 = 12-14 open
	11 = 12-14 closed

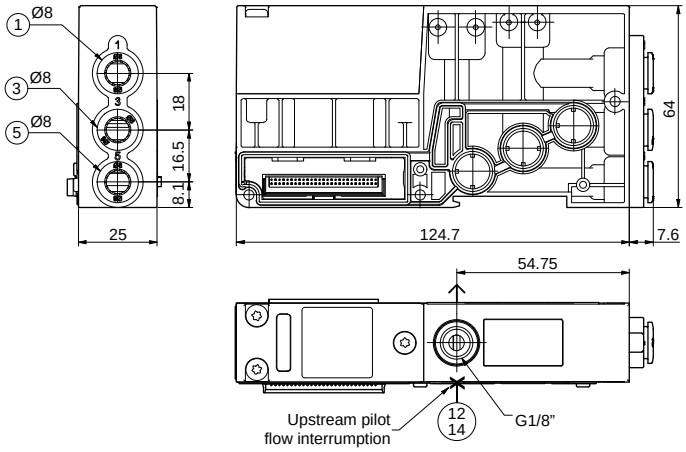




Weight 111 g

22E0.10





Weight 111 g

22E0.11

Polyethylene Silencer Series SPL-R

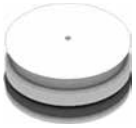
Coding: SPLR.Ⓓ

Ⓓ	TUBE DIAMETER
	6 = 6 mm
	10 = 10 mm



Diaphragm plug

Coding: 2230.17



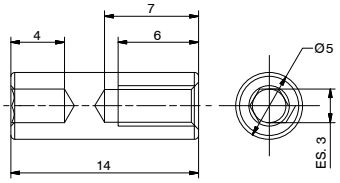
Weight 1,3 g

M3 nuts kit

Coding: 2240.KD.00



The Kit includes 6 pieces



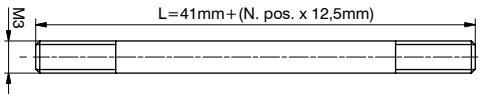
Tie-rod M3

Coding: 2240.KT.Ⓟ

Ⓟ	NO. POSITIONS
	02 = Nr. 2 Positions
	04 = Nr. 4 Positions
	06 = Nr. 6 Positions
	08 = Nr. 8 Positions
	10 = Nr. 10 Positions
	12 = Nr. 12 Positions
	14 = Nr. 14 Positions
	16 = Nr. 16 Positions
	18 = Nr. 18 Positions
	20 = Nr. 20 Positions
	22 = Nr. 22 Positions
	24 = Nr. 24 Positions
	26 = Nr. 26 Positions
	28 = Nr. 28 Positions
	...
	48 = Nr. 48 Positions



The Kit includes 3 pieces

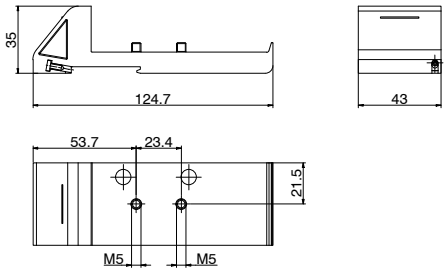


DIN rail adapter

Coding: 22E0.P1



Weight 55 g

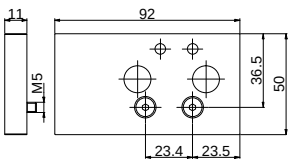


Offset compensation plate

Coding: 22E0.P0

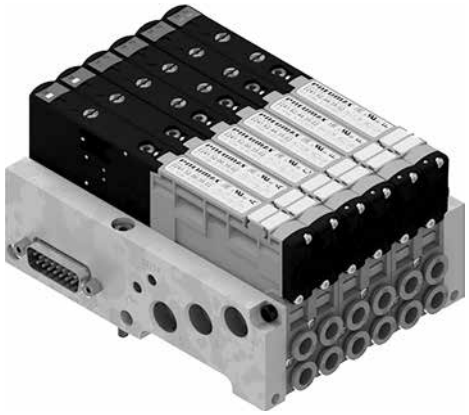


Weight 116 g



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 2200 "Optyma-Sc"



Optyma solenoid valves series comes completed by "Compact" version, useful when a limited number of solenoid valves is needed without managing input and output signals.
Standard base blocks provide 4 or 6 solenoid valves positions. Standard base blocks can be individually sold even without solenoid valves to allow maximum configuration flexibility. Solenoid valves can be chosen from whole Opytma-S range.
Manifolds made in this way allow great room and weight saving against corrispondent pneumatic group from Optyma-S series.

- Flow rate: up to 550[Nl/min], using the modular base with Ø8 quick fitting tube.
- Modular base available with Ø4, Ø6, Ø8 quick fitting tube.
- The solenoid pilots are low consumption and fitted on the same side of the valve.
- Mono and bistable valves have the same dimension.
- Easy and fast assembly on the sub base thanks to the “one screw” mounting solution.
- Possibility to replace a valve without the need of disconnecting the pneumatic pipes.
- Electrical and pneumatic connections positioned on the same side.
- Possibility to operate with different pressures and vacuum.
- 4 or 6 electric signals management (two signals per position, indipendently of the mounted solenoid valve).
- The electrical connection is achieved thanks to a 9 or 15 poles connector.
- The protection grade is IP65 directly integrated in the manifold components.

“Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001”

Construction characteristics

Body	Technopolymer
Seals	NBR
Piston seals	NBR
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Stainless Steel

Operational characteristics

Supply voltage	24V DC ±10%
Pilot consumption	1,3W nominal, in energy saving mode 0,25W
Pilot working pressure [12-14]	from 2,5 to 7 bar max.
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from -5°C to +50°C
Protection degree	IP40
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

Rules and configuration scheme

CONFIGURATION CODE ← C - [ ] - E - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Electrical connection		
MP	9	Multi-pin 9 poles PNP connector
	1	Multi-pin 15 poles PNP connector
MN	9	Multi-pin 9 poles NPN connector
	1	Multi-pin 15 poles NPN connector
MA	9	Multi-pin 9 poles AC connector
	1	Multi-pin 15 poles AC connector

Left endplates	
E	External feeding

Module 1	
...-...	See “single pneumatic module configurator”

Accessory diaphragm plug (Optional)	
X	Diaphragm plug on port 1
Y	Diaphragm plug on port 3
Z	Diaphragm plug on port 5

Module 2	
...-...	See “single pneumatic module configurator”

Accessory diaphragm plug (Optional) only for 15 poles connector	
X	Diaphragm plug on port 1
Y	Diaphragm plug on port 3
Z	Diaphragm plug on port 5

Module 3 only for 15 poles connector	
...-...	See “single pneumatic module configurator”

Right endplates	
P0	Endplate closed
P1	Endplate with connection ports

Single pneumatic module configurator

Module configurator - [ ] [ ] [ ] [ ] [ ] [ ] -

Base type	
4	Bistable two-position base Ø4
6	Bistable two-position base Ø6
8	Bistable two-position base Ø8

Base version	
	5-1-3 free (standard sub-base)
3	Intermediate diaphragm plug on ports 1 and 5
4	Intermediate diaphragm plug on ports 1 and 3
5	Intermediate diaphragm plug on port 5
6	Intermediate diaphragm plug on ports 1, 3, 5
7	Intermediate diaphragm plug on port 1
8	Intermediate diaphragm plug on ports 3 and 5
9	Intermediate diaphragm plug on port 3

Solenoid valve version	
A	S.V. 5/2 solenoid-spring
B	S.V. 5/2 solenoid-differential
C	S.V. 5/2 solenoid-solenoid
E	S.V. 5/3 solenoid-solenoid
F	S.V. 2x3/2 NC-NC
G	S.V. 2x3/2 NO-NO
H	S.V. 2x3/2 NO-NC
I	S.V. 2x3/2 NC-NO
T	Plug

Only bases manifold version	
V	No valve

S.V. accessories (optional)	
5	Separed exhaust
6	Separed air supply

Accessories not available for only bases manifold

**It’s possible to order an only base manifold by select the field V as described.
This selection MUST be done for every place into the manifold.
It’s NOT possible to configure manifolds with positions both filled with S.V. and free.**

Configurable on Cadenas platform

CADENAS

Note:

When composing the configuration, always bear in mind that the maximum number of electrical signals available is:

- 8 for multi-pin 9 poles connector (MP9)
- 12 for multi-pin 15 poles connector (MP1)

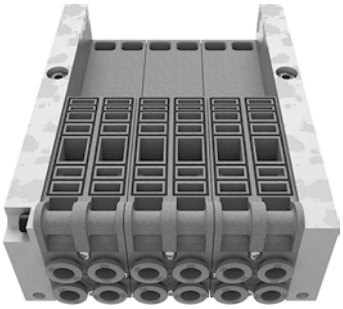
Consider that every base uses 4 signals and the number of avaliable signals depends on the electrical connection type, so the number of bases you can use is related to the electrical connection you chose. You can order a “bases only” manifold by selecting “V” option in the solenoid valves dedicated field.
If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost.
However, this makes it possible to replace the monostable valve with a bistable valve in the same position.
Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.
If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence (e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Only base configuration example: C-MP1-E-6VV-6VV-6VV-P0

- 15 poles multi-pin connection
- Standard left endplate
- Bistable standard base Ø6 without solenoid valves (6VV)
- Bistable standard base Ø6 without solenoid valves (6VV)
- Bistable standard base Ø6 without solenoid valves (6VV)
- Right Endplates closed

Attention: Complete with solenoid valves before use.

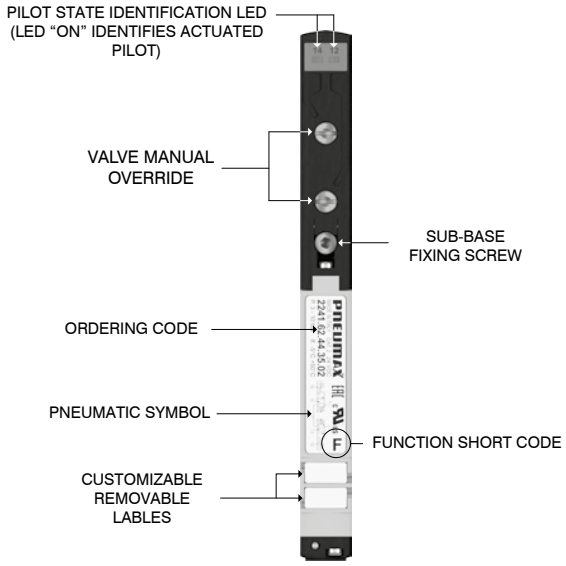


Standard configuration example: C-MP1-E-6AA-6CF-6FF-P1

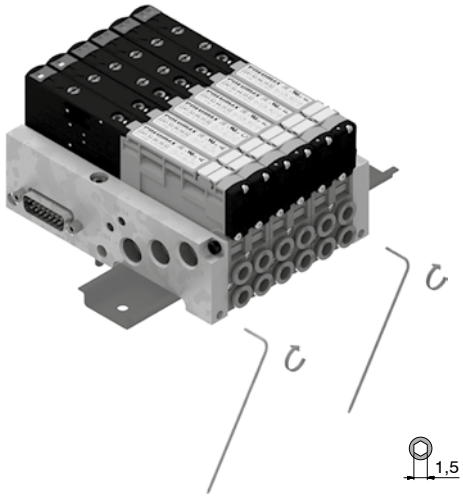
- 15 poles multi-pin connection
- Standard left endplate
- Bistable standard base Ø6 with AA type solenoid valves (6AA)
- Bistable standard base Ø6 with CF type solenoid valves (6CF)
- Bistable standard base Ø6 with FF type solenoid valves (6FF)
- Right endplate with supply and exhaust ports

Attention: The signal allocation is 2 signals for every positions, regardless of solenoid valve type.

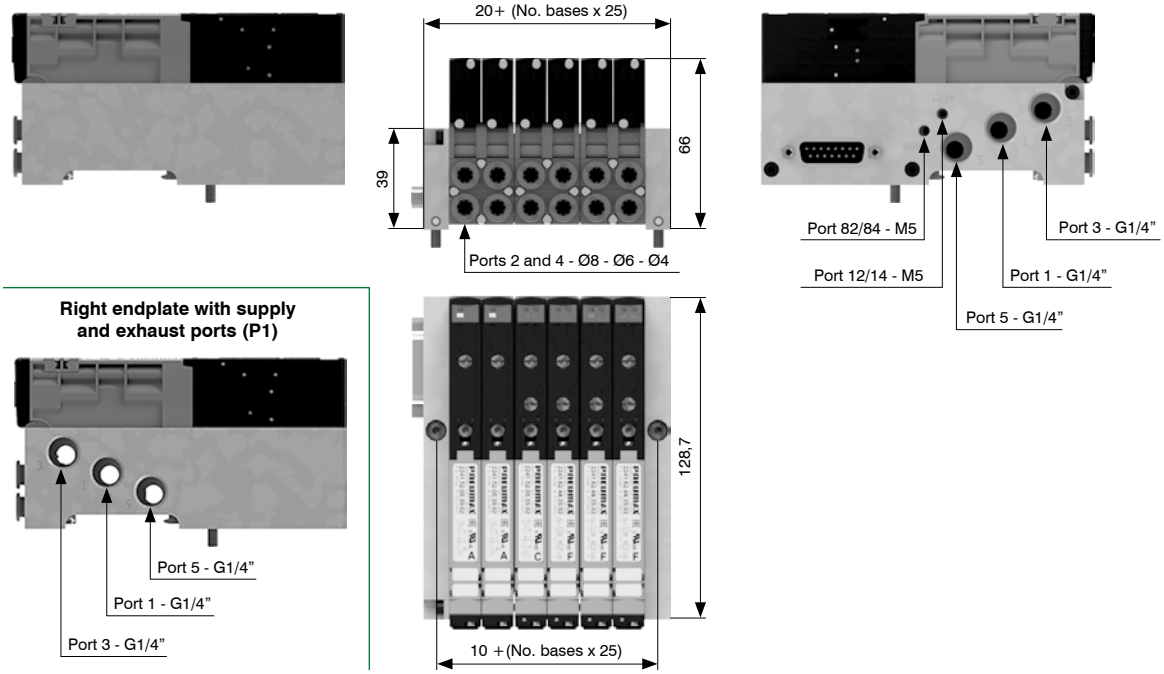




DIN rail fixing

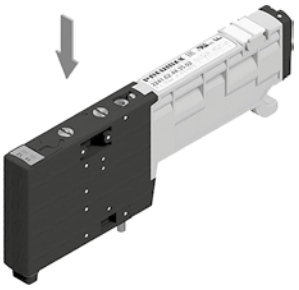


Supply ports and maximum possible size according to valves used

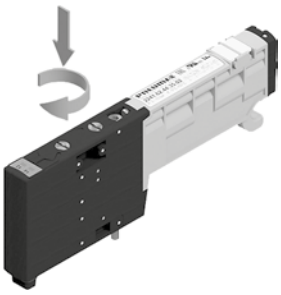


Manual override actuation

Instable function:
Push to actuate
(when released it moves back to the original position)

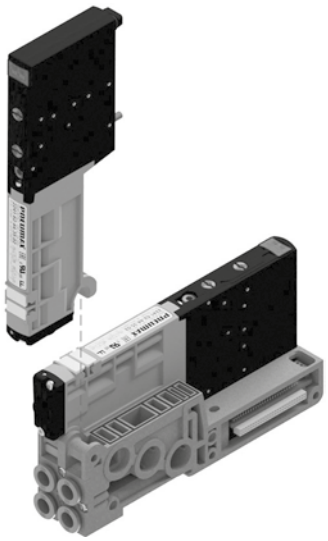


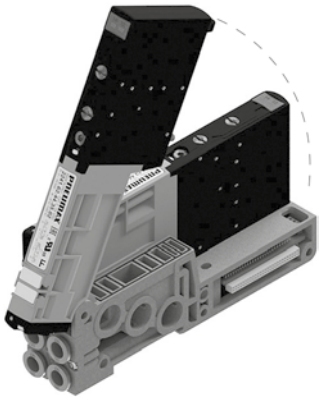
Bistable function:
Push and turn to get the bistable function

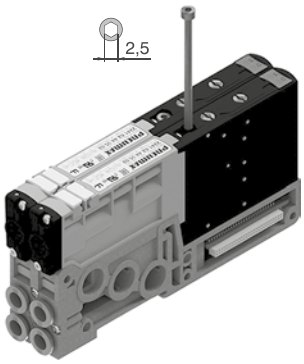


Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

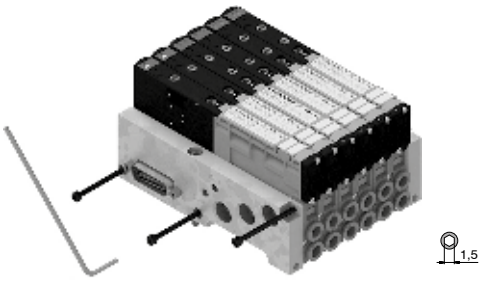






Note: Torque moment 0,8 Nm

Sub-base assembly



Minimum torque moment: 2 Nm
Maximum fixing torque for fittings: 2,5 Nm

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

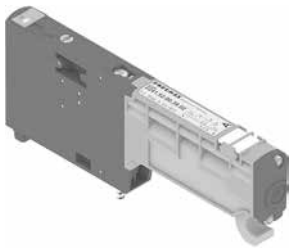
Solenoid-Spring

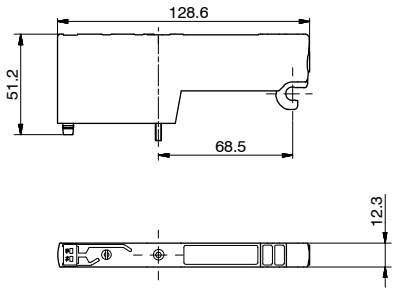
Coding: 2241.52.00.39.Ⓥ

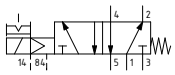
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	300
	with modular base, tube ø8	400
Response time according to ISO 12238, activation time (ms)		15
Response time according to ISO 12238, deactivation time (ms)		20

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "A"







Weight 67 g

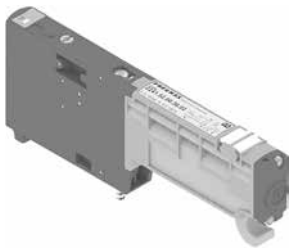
Solenoid-Differential

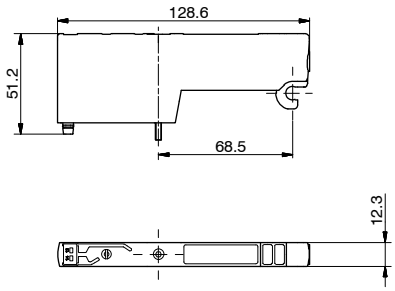
Coding: 2241.52.00.36.Ⓥ

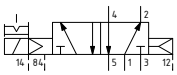
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	400
	with modular base, tube ø8	550
Response time according to ISO 12238, activation time (ms)		20
Response time according to ISO 12238, deactivation time (ms)		25

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "B"







Weight 67 g

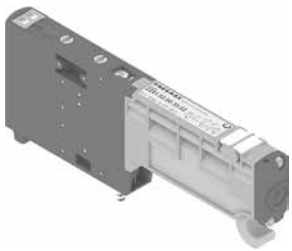
Solenoid-Solenoid

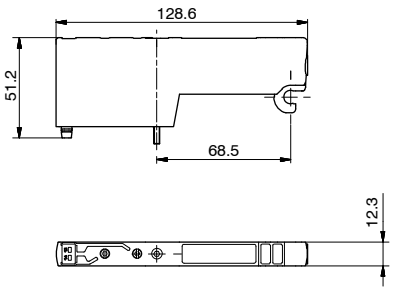
Coding: 2241.52.00.35.Ⓥ

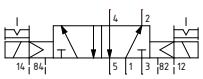
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	400
	with modular base, tube ø8	550
Response time according to ISO 12238, activation time (ms)		10
Response time according to ISO 12238, deactivation time (ms)		10

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "C"







Weight 67 g

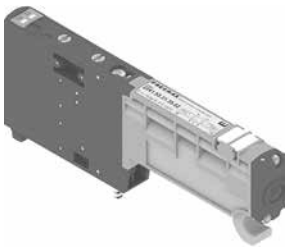
Solenoid-Solenoid 5/3 (Closed centres)

Coding: 2241.53.31.35.Ⓥ

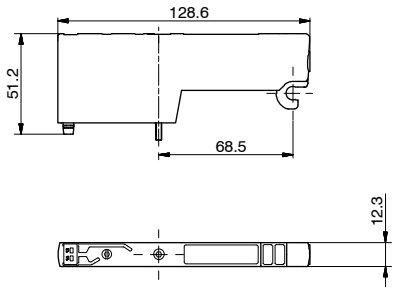
Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	300
	with modular base, tube ø8	400
Response time according to ISO 12238, activation time (ms)		15
Response time according to ISO 12238, deactivation time (ms)		20

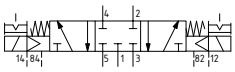
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "E"



Weight 83 g





Solenoid-Solenoid 2x3/2

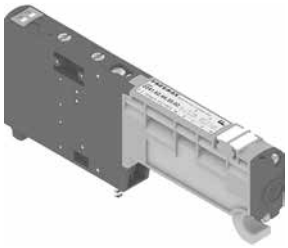
Coding: 2241.62.Ⓕ.35.Ⓥ

Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		≥3+(0,2 x Inlet pressure)
Temperature °C		-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	with modular base, tube ø4	140
	with modular base, tube ø6	360
	with modular base, tube ø8	420
Response time according to ISO 12238, activation time (ms)		15
Response time according to ISO 12238, deactivation time (ms)		25

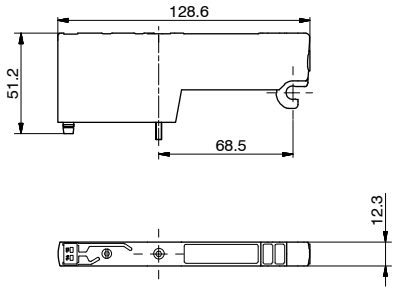
Ⓕ	FUNCTION
	44 = NC-NC (5/3 Open centres)
	45 = NC-NO (normally closed-normally open)
	54 = NO-NC (normally open-normally closed)
	55 = NO-NO (5/3 Pressured centres)
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

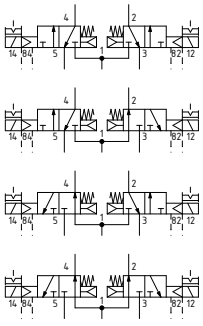
SHORT FUNCTION CODE:
NC-NC (5/3 Open centres)="F"
N.O. - N.O. (5/3 Pressured centres)="G"
N.C.-N.O.="H"
N.O.-N.C.="I"

Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=3+(0,2*5)=4 bar



Weight 75 g





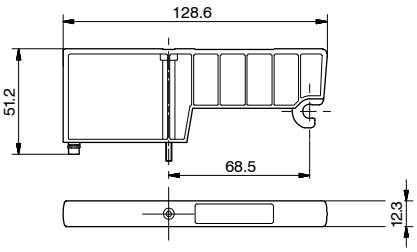
Closing plate

Coding: 2240.00

Technical characteristics		
Fluid		Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)		From vacuum to 10
Pilot pressure (bar)		2,5 ... 7
Temperature °C		-5 ... +50



Weight 30 g



SHORT FUNCTION CODE "T"

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

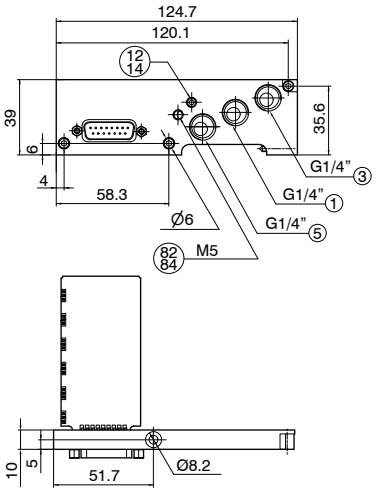
Left Endplate

Coding: 22C0.Ⓥ.S

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Ⓥ	VERSION
	15 = Multi-pin 15 poles PNP connector
	09 = Multi-pin 9 poles PNP connector
	15N = Multi-pin 15 poles NPN connector
	09N = Multi-pin 9 poles NPN connector
	15A = Multi-pin 15 poles AC connector
	09A = Multi-pin 9 poles AC connector



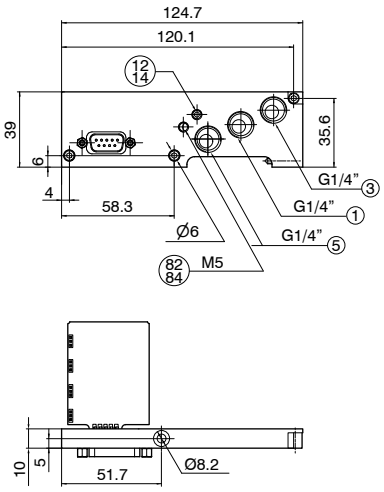


PIN 1	PILOT 14 S.V. POS. 1
PIN 2	PILOT 12 S.V. POS. 1
PIN 3	PILOT 14 S.V. POS. 2
PIN 4	PILOT 12 S.V. POS. 2
PIN 5	PILOT 14 S.V. POS. 3
PIN 6	PILOT 12 S.V. POS. 3
PIN 7	PILOT 14 S.V. POS. 4
PIN 8	PILOT 12 S.V. POS. 4
PIN 9	PILOT 14 S.V. POS. 5
PIN 10	PILOT 12 S.V. POS. 5
PIN 11	PILOT 14 S.V. POS. 6
PIN 12	PILOT 12 S.V. POS. 6
PIN 13	0 V
PIN 14	0 V
PIN 15	0 V

PORT 12/14 SEPARED FROM PORT 1.
DO NOT PRESSURIZE PORT 82/84.
PILOTS EXHAUST.
Weight 199 g

22C0.15.S





PIN 1	PILOT 14 S.V. POS. 1
PIN 2	PILOT 12 S.V. POS. 1
PIN 3	PILOT 14 S.V. POS. 2
PIN 4	PILOT 12 S.V. POS. 2
PIN 5	PILOT 14 S.V. POS. 3
PIN 6	PILOT 12 S.V. POS. 3
PIN 7	PILOT 14 S.V. POS. 4
PIN 8	PILOT 12 S.V. POS. 4
PIN 9	0 V

PORT 12/14 SEPARED FROM PORT 1.
DO NOT PRESSURIZE PORT 82/84.
PILOTS EXHAUST.
Weight 199 g

22C0.09.S

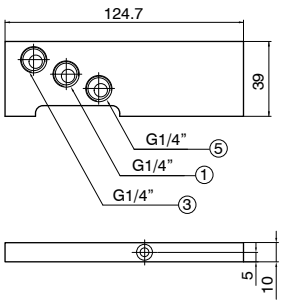
Right Endplate

Coding: 22C0.Ⓥ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

Ⓥ	VERSION
	00 = Blind plate
	03 = With alimentation/exhaust ports

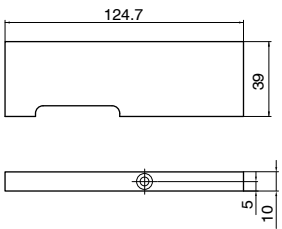




PORT 12/14 SEPARED FROM PORT 1.
DO NOT PRESSURIZE PORT 82/84.
PILOTS EXHAUST.
Weight 148g

22C0.03





Weight 148g

22C0.00

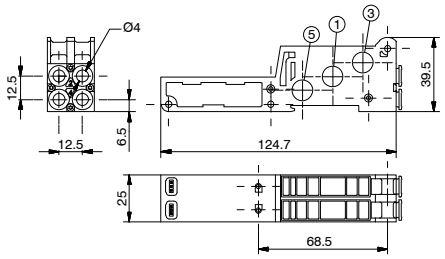
Modular base (2 places)

Coding: 224Ⓒ.ⒻC

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50

Ⓒ	TUBE DIAMETER
	4 = Ø4
	6 = Ø6
	8 = Ø8
Ⓕ	FUNCTION
	01 = Opened ports
	03 = Ports 1-5 separated
	04 = Ports 1-3 separated
	05 = Port 5 separated
	06 = Separated ports
	07 = Port 1 separated
	08 = Ports 3-5 separated
	09 = Port 3 separated

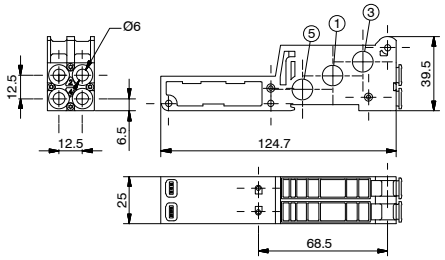




Weight 75 g

2244.ⒻC

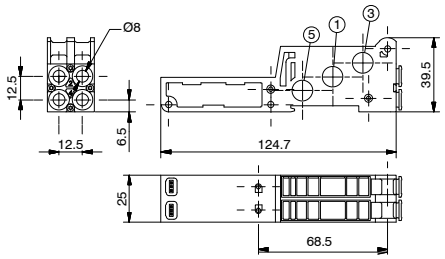




Weight 75 g

2246.ⒻC





Weight 75 g

2248.ⒻC

Individual supply or exhaust module

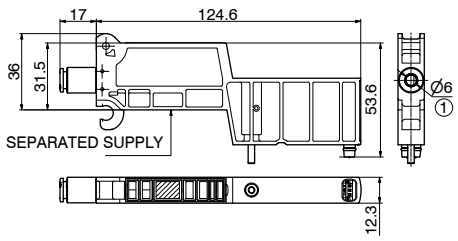
Coding: 22E0.Ⓥ.06

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 3 ... 7 (piloting 12/14)
Temperature °C	-5 ... +50

Ⓥ	VERSION
	01 = Port 1 separated
	35 = Ports 3-5 separated

The flow rate of the solenoid valve will be reduced compared to that shown in the general catalogue

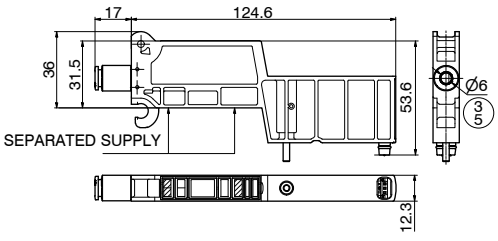




Weight 44 g

22E0.01.06





Weight 44 g

22E0.35.06

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

SEP type silencer

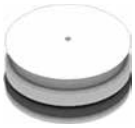
Coding: SEP14



Weight 2 g

Diaphragm plug

Coding: 2230.17



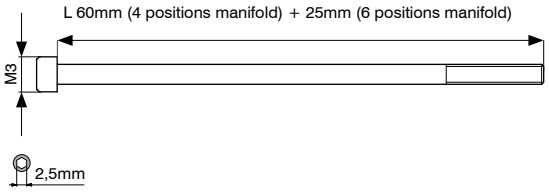
Weight 1,3 g

TCEI M3 screw kit

Coding: 22C0.KV.Ⓥ

Ⓥ	VERSION
	04 = L 60mm (4 positions manifold)
	06 = L 60mm (6 positions manifold)





The Kit includes 3 pieces

Cable complete with connector, 9 Poles, IP40

Coding: 2400.09.Ⓛ.00

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters



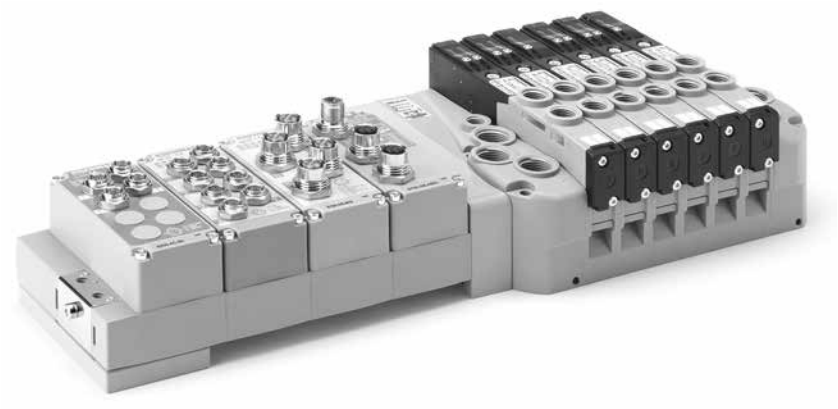
Cable complete with connector, 15 Poles, IP40

Coding: 2400.15.Ⓛ.00

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters



Series 2500 Optyma-F EVO



2500 SERIES Optyma-F EVO SOLENOID VALVES MANIFOLD

- **Increased flexibility**
- **Digital and analogue I/O modules**
- **Manufactured in technopolymer**
- **Wide range of communication protocols**

WE SPEAK EVO

The Optyma-F series becomes EVO and interfaces with the new PX series modular electronic system while still retaining all of its technical advantages. This is enriched with new features that further extend the flexibility of the product:

- Flow rate of 1000 Nl/min
- Quick assembly using rotating pins
- Operating using different pressures and vacuum

Construction characteristics

Body	Technopolymer
Seals	NBR
Piston seals	NBR
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Technopolymer

Operational characteristics

Supply voltage	+ 24 V DC ±10%
Pilot consumption	1,3W
Pilot working pressure [12-14]	from 3 up to 7 bar max.
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from -5°C to +50°C
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rules and configuration scheme

CONFIGURATION CODE

FE - [ ] - [ ] - ( ) [ ] - [ ] - ( ) [ ] - [ ] ( ) [ ] - U0

Electronic components	
...-...	See page 'Electronic components configurator in technopolymer'

Left endplates	
A	Self feeding
E	External feeding

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module 1	
...-...	See 'Pneumatic module configurator' page

Accessory diaphragm plug (Optional)	
X	Diaphragm plug on port 1
Y	Diaphragm plug on port 3
Z	Diaphragm plug on port 5

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module 2	
...-...	See 'Pneumatic module configurator' page

Accessory diaphragm plug (Optional)	
X	Diaphragm plug on port 1
Y	Diaphragm plug on port 3
Z	Diaphragm plug on port 5

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module n	
...-...	See page 'Single pneumatic module configurator'

Right endplates	
U0	Endplates closed

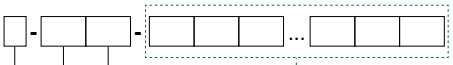
Configurable on Cadenas platform

CADENAS

Note:
When composing the configuration, always bear in mind that the maximum number of electrical signals available is:
- 32 if a 37-pole multi-pin module, a serial node or IO-Link interface are used.
- 24 if a 25-pole multi-pin module is used.

If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost.
However, this makes it possible to replace the monostable valve with a bistable valve in the same position.
Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.
If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence (e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).
If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

Electronic components configurator in technopolymer



Type	
P	Technopolymer

Multi-pin electrical connection		
MP	2	Multi-pin, PNP 24 V DC 25 poles
	3	Multi-pin, PNP 24 V DC 37 poles
MN	2	Multi-pin, NPN 24 V DC 25 poles
	3	Multi-pin, NPN 24 V DC 37 poles
MA	2	Multi-pin, 24 V AC 25 poles
	3	Multi-pin, 24 V AC 37 poles

Electrical connection	
C3	CANopen® node 64 IN - 64 OUT (32 fixed)
P3	PROFIBUS DP node 64 IN - 64 OUT (32 fixed)
I4	EtherNet/IP node 128 IN - 128 OUT (48 fixed)
A4	EtherCAT® node 128 IN - 128 OUT (48 fixed)
N4	PROFINET IO RT node 128 IN - 128 OUT (48 fixed)
G4	CC-Link IE Field Basic node 128 IN - 128 OUT (48 fixed)
K3	IO-Link interface 64 IN - 64 OUT (32 fixed)

Electrical connection accessories	
	Without DIN rail fixing
G	With DIN rail fixing

SINGLE ELECTRIC MODULE CONFIGURATION



Repeating numbers of the module	
	Indicate the number of repeats of the same module (no value for a single module)

Inputs module - Analog / Digital (EXCLUDED WITH MP)	
D8	8 M8 digital inputs module
D12	8 M12 digital inputs module
D3	32 digital inputs SUB-D 37 poles
T1	2 analogue inputs 0-5V module (voltage signal)
T2	2 analogue inputs 0-10V module (voltage signal)
T3	4 analogue inputs 0-5V module (voltage signal)
T4	4 analogue inputs 0-10V module (voltage signal)
C1	2 analogue inputs 0-20mA module (current signal)
C2	2 analogue inputs 4-20mA module (current signal)
C3	4 analogue inputs 0-20mA module (current signal)
C4	4 analogue inputs 4-20mA module (current signal)
P1	2 Pt100 2 wires inputs module
P2	2 Pt100 3 wires inputs module
P3	2 Pt100 4 wires inputs module
P4	4 Pt100 2 wires inputs module
P5	4 Pt100 3 wires inputs module
P6	4 Pt100 4 wires inputs module
Outputs module - Analog / Digital	
M8	8 M8 digital outputs module
M12	8 M12 digital outputs module
M3	32 digital outputs SUB-D 37 poles
V1	2 analogue outputs 0-5V module (voltage signal)
V2	2 analogue outputs 0-10V module (voltage signal)
V3	4 analogue outputs 0-5V module (voltage signal)
V4	4 analogue outputs 0-10V module (voltage signal)
L1	2 analogue outputs 0-20mA module (current signal)
L2	2 analogue outputs 4-20mA module (current signal)
L3	4 analogue outputs 0-20mA module (current signal)
L4	4 analogue outputs 4-20mA module (current signal)
Additional modules (Optional)	
P12	M12 additional power supply module

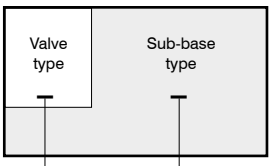
Module accessories	
	Without DIN rail fixing
G	With DIN rail fixing

Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Modules configurator

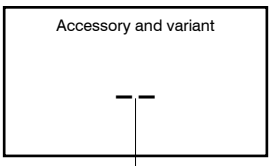
Base module configurator with Solenoid valve



Solenoid valve position	
A	S.V. 5/2 SOL.-SPRING
B	S.V. 5/2 SOL.-DIF.
C	S.V. 5/2 SOL.-SOL.
E	S.V. 5/3 CC SOL.-SOL.
F	S.V. 2x3/2 NC-NC
G	S.V. 2x3/2 NO-NO
H	S.V. 2x3/2 NC-NO
I	S.V. 2x3/2 NO-NC
T	PLUG

Base	
1	Monostable base
2	Bistable base

Accessory module configurator

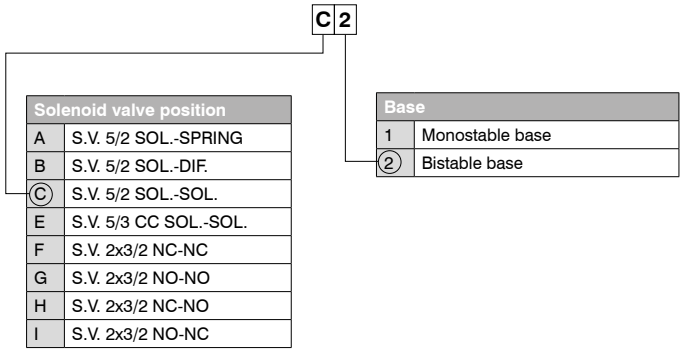


Intermediate inlet/Exhaust module	
W	Separated air supply and exhaust

Intermediate electropneumatic shut-off module			
U	Separated supply (air/electric) and exhaust	2	2 positions
		4	4 positions
		6	6 positions
		8	8 positions
K	Separated supply (air/electric), exhaust and 12/14 piloting	2	2 positions
		4	4 positions
		6	6 positions
		8	8 positions

Configuration example of single module:

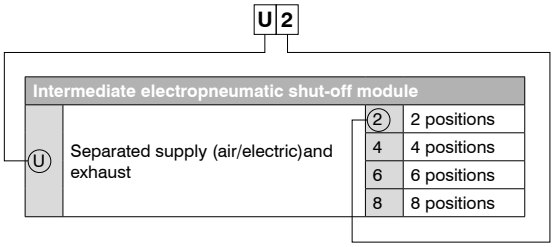
Bistable base, 5/2 Solenoid-Solenoid valve



Solenoid valve position	
A	S.V. 5/2 SOL.-SPRING
B	S.V. 5/2 SOL.-DIF.
C	S.V. 5/2 SOL.-SOL.
E	S.V. 5/3 CC SOL.-SOL.
F	S.V. 2x3/2 NC-NC
G	S.V. 2x3/2 NO-NO
H	S.V. 2x3/2 NC-NO
I	S.V. 2x3/2 NO-NC

Base	
1	Monostable base
2	Bistable base

Intermediate electropneumatic shut-off module 2 positions



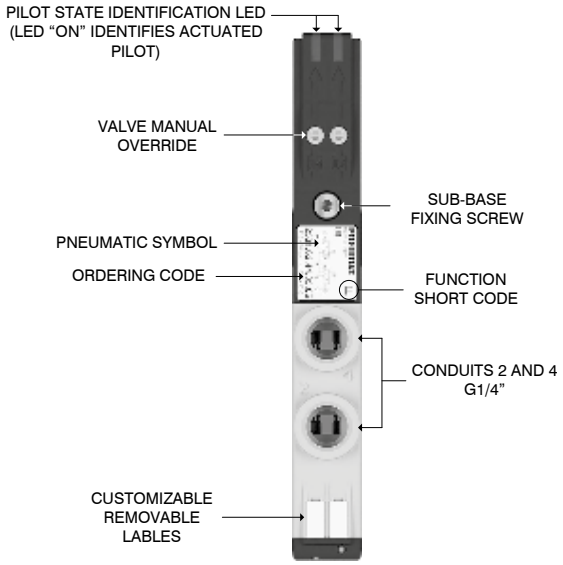
Intermediate electropneumatic shut-off module			
U	Separated supply (air/electric)and exhaust	2	2 positions
		4	4 positions
		6	6 positions
		8	8 positions

Configuration example of complete group:

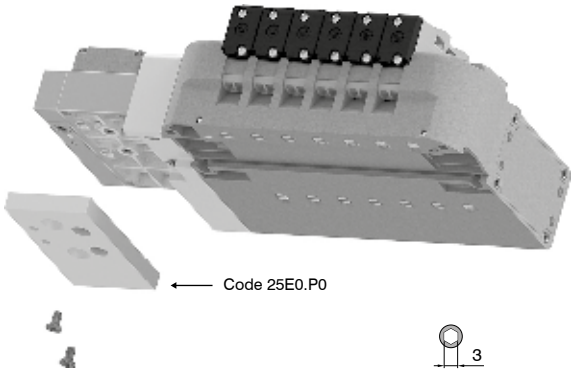
- Technopolymer PX3 serial system (P-A4-M12-M8-P4)
- Left endplates - External feeding (E)
- Bistable base with (F2) Solenoid valve
- Bistable base with (C2) Solenoid valve
- Monostable base with (A1) Solenoid valve
- Bistable base with (E2) Solenoid valve
- Bistable base with (C2) Solenoid valve
- Monostable base with (B1) Solenoid valve
- Right endplates closed (U0)



FE-P-A4-M12-M8-P4-E-F2-C2-A1-E2-C2-B1-U0

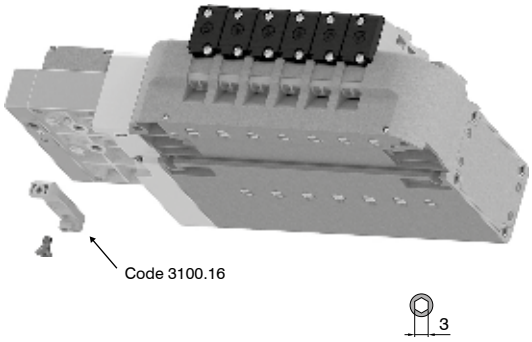


Offset compensation plate



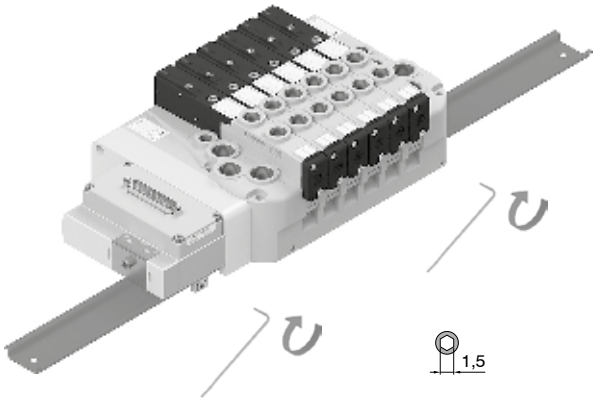
Attention: This accessory is supplied on the manifold unless otherwise stated. This is not compatible for DIN rail mounting.

DIN rail mounting support plate



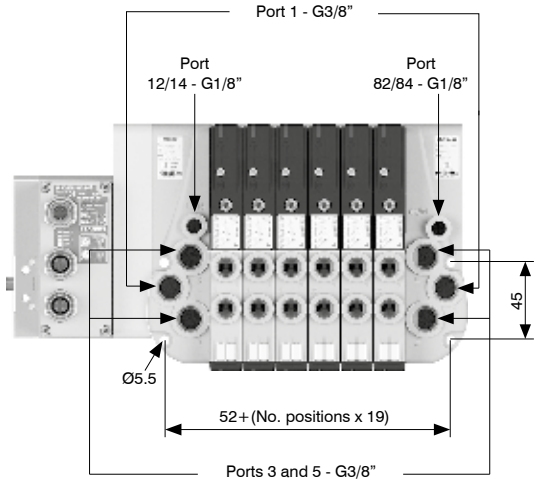
Attention: This must be included when creating the manifold configuration; exclude the offset compensation plate.

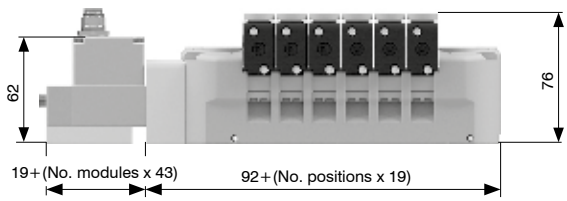
DIN rail fixing



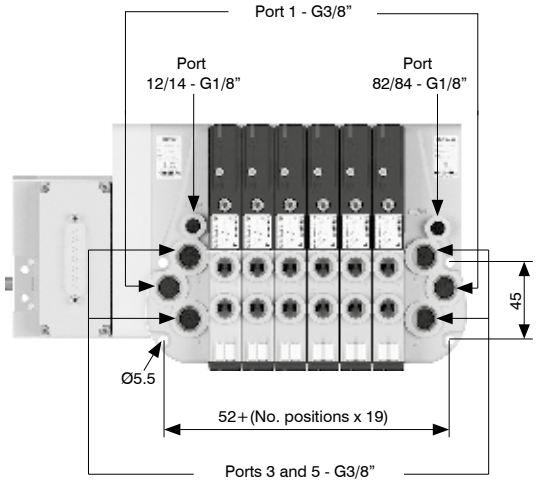
Supply ports and maximum possible size according to valves used

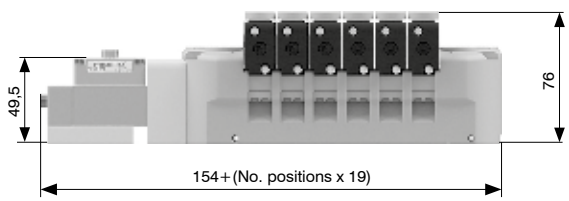
Serial system node version





Multi-pin version





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Manual override actuation

Instable function:
Push to actuate
(when released it moves back to the original position)

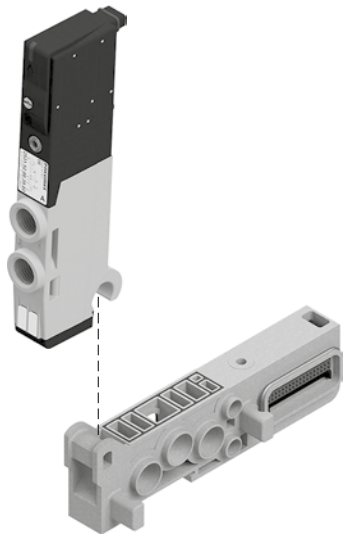


Bistable function:
Push and turn to get the bistable function

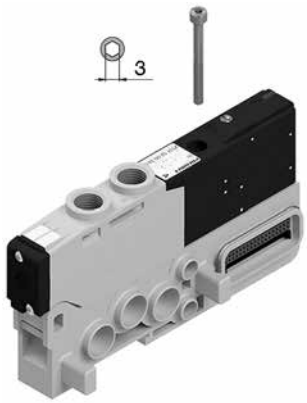


Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

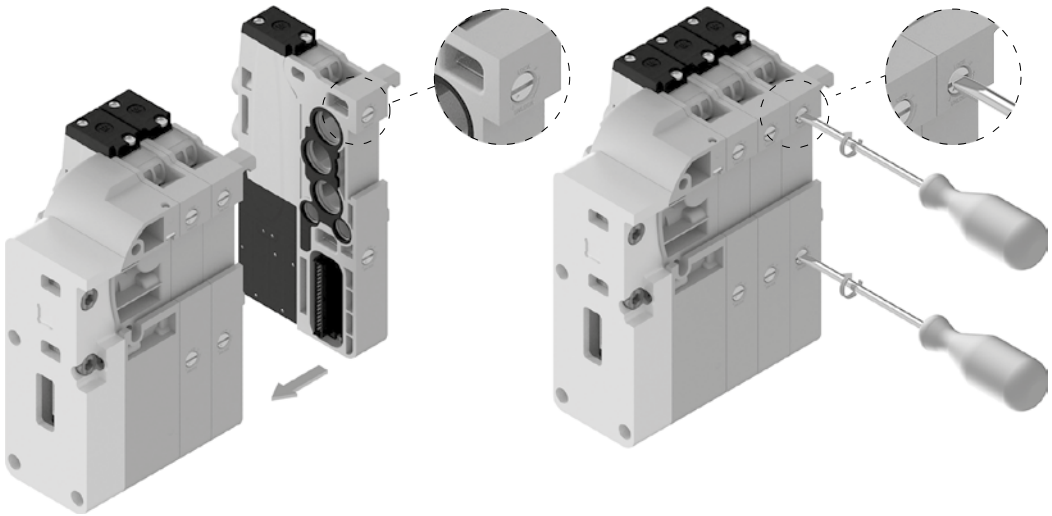






Note: Torque moment 1 Nm

Sub-base assembly



Solenoid-Spring

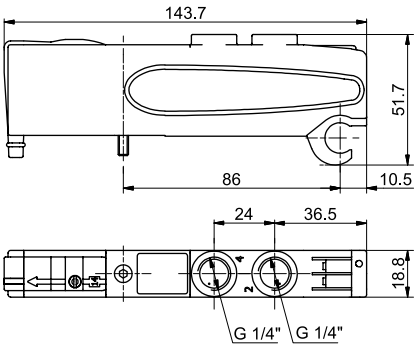
Coding: 2531.52.00.39.Ⓥ

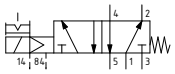
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	3 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Response time according to ISO 12238, activation time (ms)	14
Response time according to ISO 12238, deactivation time (ms)	40

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "A"
Weight 123 g







Solenoid-Differential

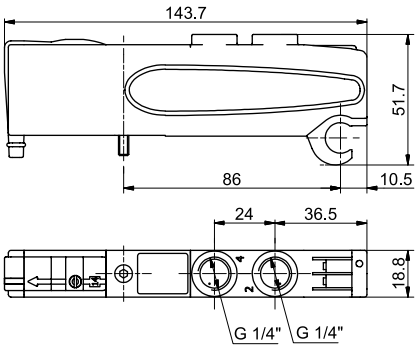
Coding: 2531.52.00.36.Ⓥ

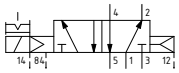
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	3 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Response time according to ISO 12238, activation time (ms)	20
Response time according to ISO 12238, deactivation time (ms)	29

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "B"
Weight 120 g







Solenoid-Solenoid

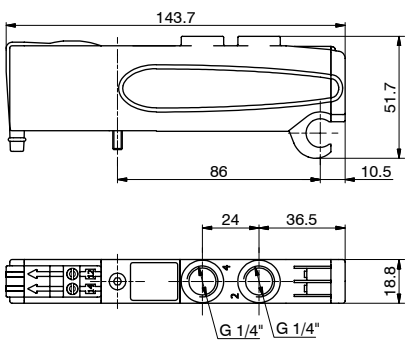
Coding: 2531.52.00.35.Ⓥ

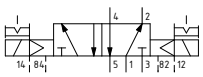
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	3 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	14

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "C"
Weight 128 g







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Solenoid 5/3

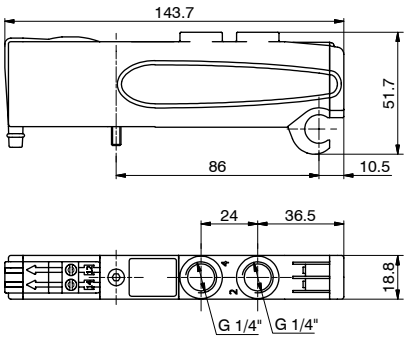
Coding: 2531.53.31.35.Ⓥ

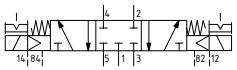
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	15
Response time according to ISO 12238, deactivation time (ms)	20

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "E"
Weight 126 g







Solenoid-Solenoid 2x3/2

Coding: 2531.62.Ⓕ.35.Ⓥ

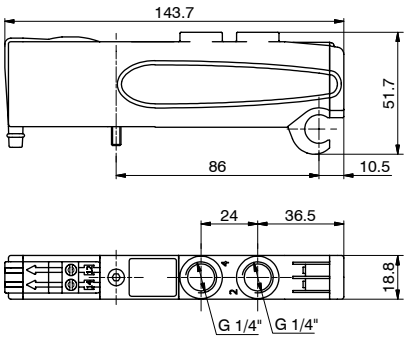
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	15
Response time according to ISO 12238, deactivation time (ms)	25

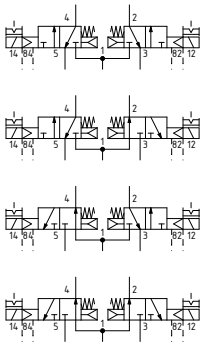
Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 bar

Ⓕ	FUNCTION
	44 = NC-NC (5/3 Open centres)
	45 = NC-NO (normally closed-normally open)
	54 = NO-NC (normally open-normally closed)
	55 = NO-NO (5/3 Pressured centres)
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE:
NC-NC (5/3 Open centres)="F"
N.O.-N.O. (5/3 Pressured centres)="G"
N.C.-N.O.="H"
N.O.-N.C.="I"
Weight 115,5 g







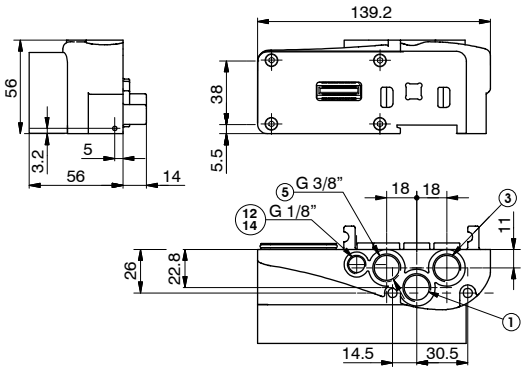
Left Endplate

Coding: 25E0.Ⓥ.F

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 (external pilot base) 3 ... 7 (self-feeding base)
Pilot pressure (bar)	3 ... 7 (external pilot base)
Temperature °C	-5 ... +50

Ⓥ	VERSION
	02 = External feeding
	12 = Self-feeding

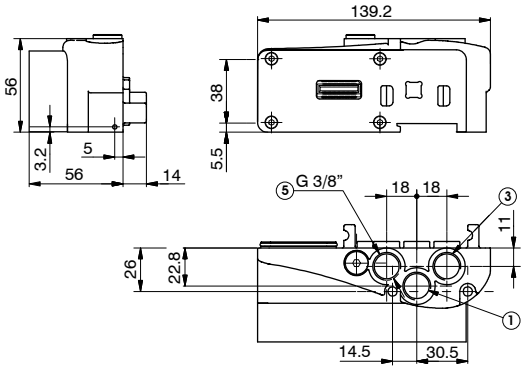




12/14 SEPARATED FROM PORT 1
Weight 206 g

25E0.02.F





12/14 CONNECTED TO PORT 1
Weight 206 g

25E0.12.F

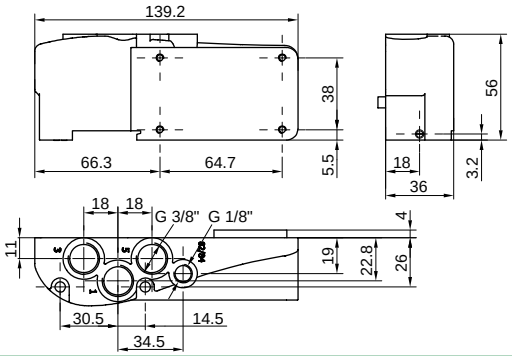
Right Endplate

Coding: 2530.03.Ⓒ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50

Ⓒ	ELECTRICAL CONNECTION
	00 = Electrical connection





PORT 82/84= DO NOT PRESSURIZE, SOLENOID PILOTS EXHAUST
Weight 181,5 g

2530.03.00

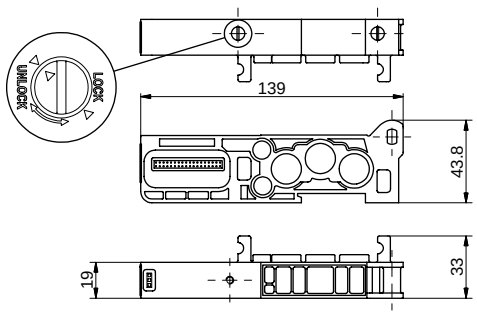
Modular base

Coding: 2530.01Ⓥ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50

Ⓥ	VERSION
	M = for monostable S.V.
	B = for bistable S.V.





SHORT CODE "1" (for monostable S.V.)
SHORT CODE "2" (for bistable S.V.)
Weight 91,5 g

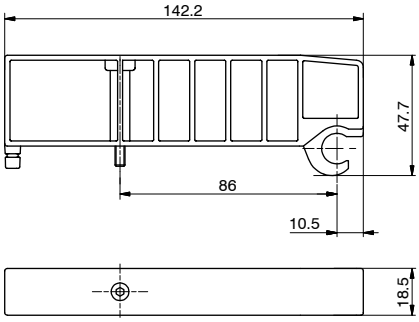
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Closing plate

Coding: 2530.00

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50





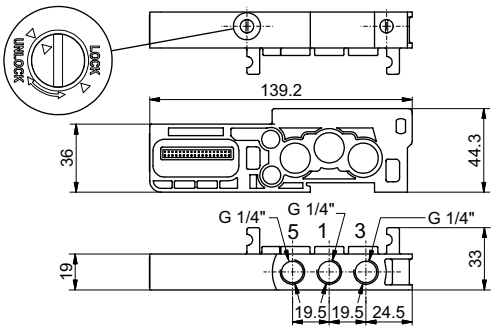
SHORT FUNCTION CODE "T"
Weight 53.5 g

Intermediate Inlet/Exhaust module

Coding: 2530.10

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50





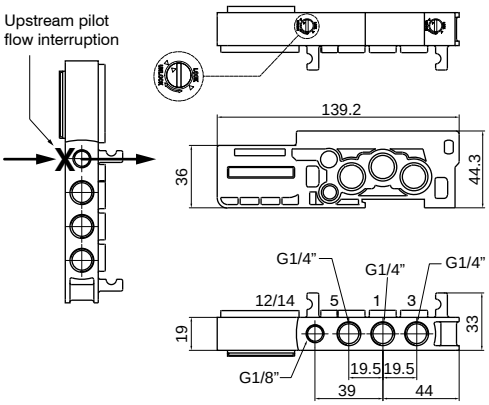
SHORT FUNCTION CODE "W"
Weight 110 g

Intermediate inlet/Exhaust module with external pilot

Coding: 2530.11

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	3 ... 7
Temperature °C	-5 ... +50





SHORT CODE "K"
Weight 162 g

1

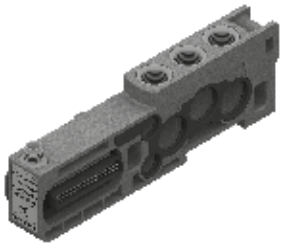
AIR DISTRIBUTION

Intermediate electro-pneumatic shut-off module 2/4/6/8 positions

Coding: 2530.Ⓜ.Ⓣ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 3 ... 7 (piloting 12/14)
Temperature °C	-5 ... +50
Feeding	+ 24 V DC ±10%
Maximum load	100 mA
Series modules maximum number	3

Ⓜ	MODULE
	10 = Supply and exhaust
	11 = Supply and exhaust with separate pilot
Ⓣ	SHUT-OFF
	2A = 2 Signals
	4A = 4 Signals
	6A = 6 Signals
	8A = 8 Signals



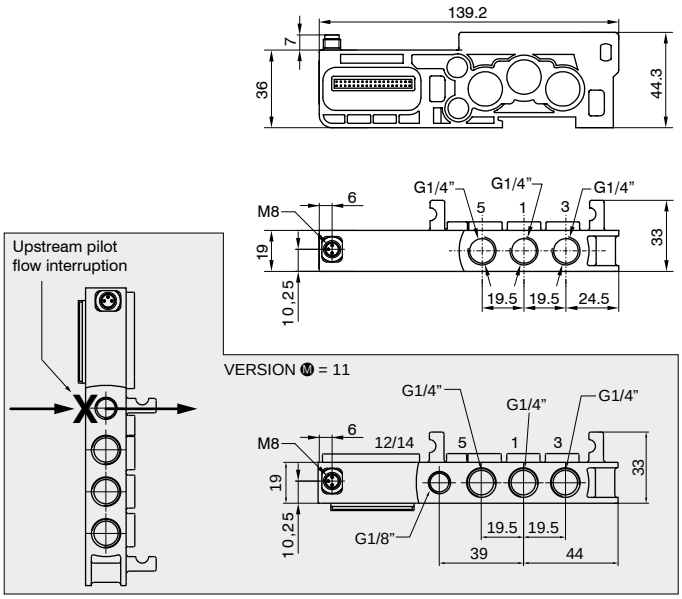
Weight 157 g

2530.10.Ⓣ



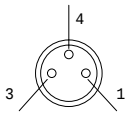
Weight 163 g

2530.11.Ⓣ

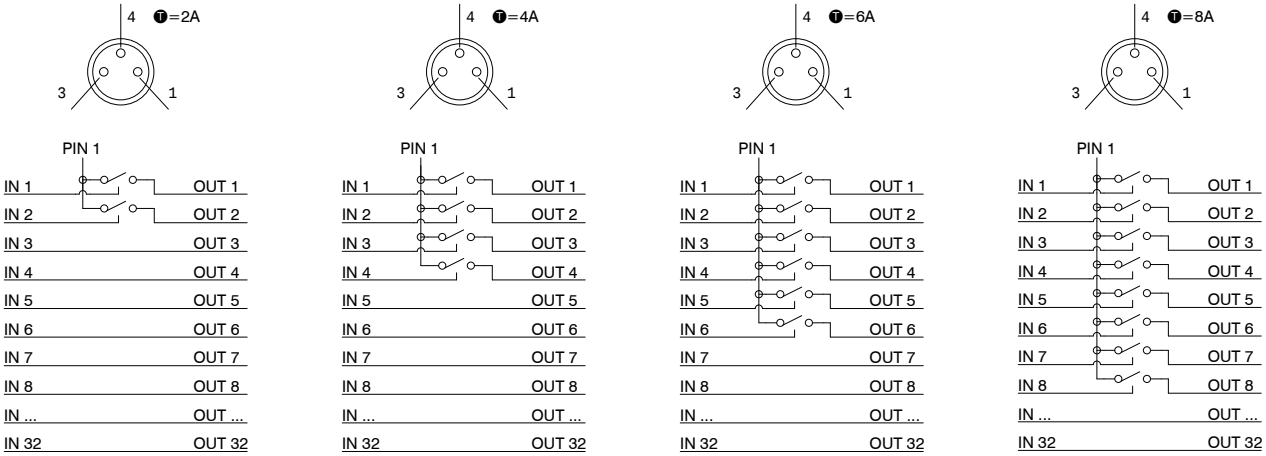


WORKING PRINCIPLE / SIMPLIFIED FUNCTIONAL DIAGRAM

Intermediate electro-pneumatic shut-off module allows you to interrupt at the same time the first 2, 4, 6 or 8 available command signals for the valves after the module itself.
When the shut-off module is present, the controlled output logic signal values are equal to the input logic signal values which came from the serial node or the multi-pin module.
If the supply input signal is absent, the controlled output logic signal values are all equal to zero.
This module is particularly useful when control signals are used to block the valves; it is also effective both with serial management and multi-pin connection of the manifolds.
It is possible to use more modules to interrupt every command signals simply by inserting them before the signals to be interrupted.



PIN	DESCRIPTION
1	+ 24 V DC
4	NOT CONNECTED
3	GND

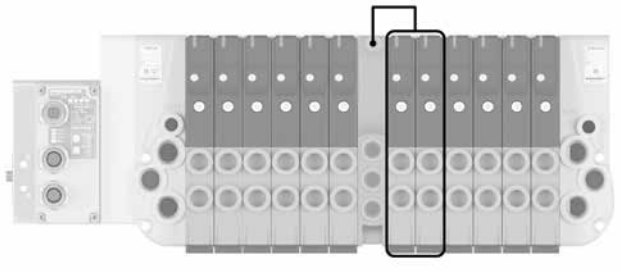


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

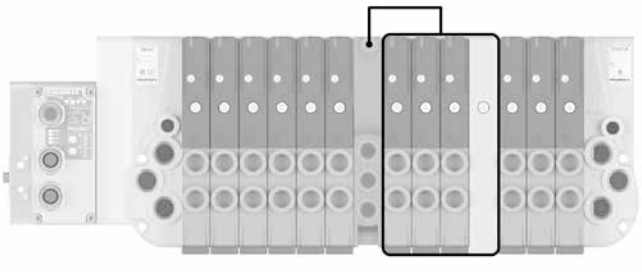
Usage examples

EXAMPLE 1
Manifold of 12 monostable solenoid valves on which you want to interrupt signals 7-8.
Assembly:
- 6 monostable solenoid valves (not interruptible because before the module)
- 1 additional power supply module
- 6 monostable solenoid valves

Note: the first 2 of these 6 monostable solenoid valves are interruptible by the module, while the following 4 will work correctly managed directly by the corresponding command signals.



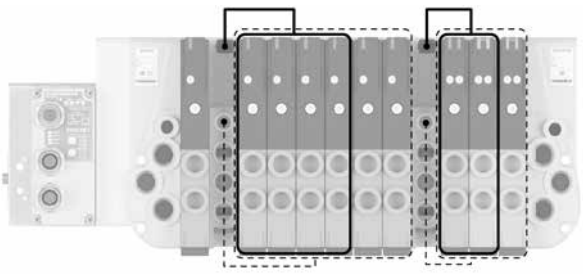
EXAMPLE 2
Manifold of 12 monostable solenoid valves on which you want to interrupt signals 7-8-9.
Assembly:
- 6 monostable solenoid valves (not interruptible because before the module)
- 1 additional power supply module
- 3 monostable solenoid valves (interruptible)
- 1 closing plate mounted on a monostable base
- 3 monostable solenoid valves (work correctly managed directly by the corresponding command signals)



EXAMPLE 3
Manifold of 7 monostable and 3 bistable solenoid valves in which you want to interrupt signals 2-3-4-5 and 8-9-10-11.
Assembly:
- 1 monostable solenoid valve (not interruptible because before the module)
- 1 additional electro-pneumatic shut-off module
- 6 monostable solenoid valves

Note: the first 4 of these 6 monostable solenoid valves are interruptible by the module, while the following 2 will work correctly managed directly by the corresponding command signals.
Note no. 2: The pilots of the 6 solenoid valves downstream of the intermediate electro-pneumatic shut-off module are pneumatically powered by the module itself.
- 1 additional electro-pneumatic shut-off module
- 3 bistable solenoid valves

Note no. 3: the first 2 of these 3 bistable solenoid valves are interruptible by the module, while the following will work correctly and are managed directly by the corresponding command signals.
Note no. 4: The pilots of the 3 solenoid valves downstream of the intermediate electro-pneumatic shut-off module are pneumatically powered by the module itself.



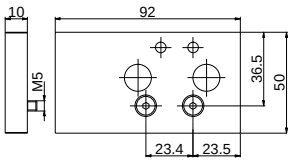
Key

——— S.V. electrically managed by the shut-off module
- - - - - - - - S.V. pneumatically managed (12/14) by the shut-off module

Offset compensation plate

Coding: 25E0.P0



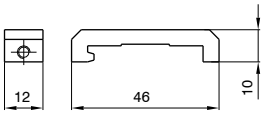


Weight 116 g

DIN rail adapter

Coding: 3100.16





Weight 12 g

Polyethylene Silencer Series SPL-P

Coding: SPLP.Ⓓ

Ⓓ	TUBE DIAMETER
	18 = 1/8"
	14 = 1/4"
	38 = 3/8"



Diaphragm plug

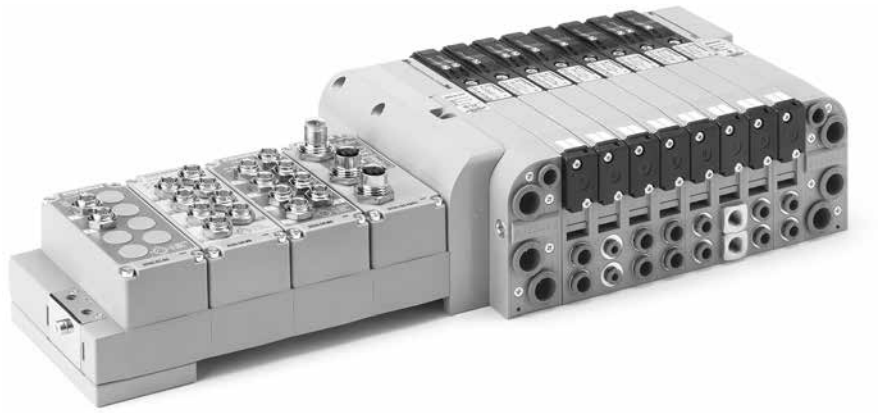
Coding: 2530.17



Weight 2,3 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 2500 Optyma-T EVO



2500 SERIES Optyma-T EVO SOLENOID VALVES MANIFOLD

- **Increased flexibility**
- **Digital and analogue I/O modules**
- **Manufactured in technopolymer**
- **Wide range of communication protocols**

WE SPEAK EVO

The Optyma-T series becomes EVO and interfaces with the new PX series modular electronic system while still retaining all of its technical advantages. This is enriched with new features that further extend the flexibility of the product:

- Flow rate of 750 Nl/min
- Assembly with tie rods kit
- Operating using different pressures and vacuum
- Electro-pneumatic shut-off module

Construction characteristics

Body	Technopolymer
Seals	NBR
Piston seals	NBR
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Technopolymer

Operational characteristics

Supply voltage	+ 24 V DC ±10%
Pilot consumption	1,3W
Pilot working pressure [12-14]	from 3 up to 7 bar max.
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from -5°C to +50°C
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

Rules and configuration scheme

CONFIGURATION CODE

TE - [ ] - [ ] - ( ) [ ] - [ ] - ( ) [ ] - [ ] ( ) [ ] - U0

Electronic components	
...-...	See page 'Electronic components configurator in technopolymer'

Left endplates	
A	Self feeding
E	External feeding

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module 1	
...-...	See page 'Pneumatic module configurator'

Accessory diaphragm plug (Optional)	
X	Diaphragm plug on port 1
Y	Diaphragm plug on port 3
Z	Diaphragm plug on port 5

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module 2	
...-...	See page 'Pneumatic module configurator'

Accessory diaphragm plug (Optional)	
X	Diaphragm plug on port 1
Y	Diaphragm plug on port 3
Z	Diaphragm plug on port 5

Repeating numbers of the module	
_	Indicate the number of repeats of the same module (no value for a single module)

Module n	
...-...	See page 'Single pneumatic module configurator'

Right endplates	
U0	Endplates closed

Configurable on Cadenas platform

CADENAS

Note:
When composing the configuration, always bear in mind that the maximum number of electrical signals available is:
- 32 if a 37-pole multi-pin module, a serial node or IO-Link interface are used.
- 24 if a 25-pole multi-pin module is used.

If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost.
However, this makes it possible to replace the monostable valve with a bistable valve in the same position.
Diaphragm plugs are used to interrupt ports 1, 3 and 5 of the sub-base.
If it is necessary to interrupt more than one port at the same time, put the letters that identify their position in sequence (e.g.: if it is necessary to intercept the ports 3 and 5 you must put the letters YZ).
If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Electronic components configurator in technopolymer



Type	
P	Technopolymer

Multi-pin electrical connection		
MP	2	Multi-pin, PNP 24 V DC 25 poles
	3	Multi-pin, PNP 24 V DC 37 poles
MN	2	Multi-pin, NPN 24 V DC 25 poles
	3	Multi-pin, NPN 24 V DC 37 poles
MA	2	Multi-pin, 24 V AC 25 poles
	3	Multi-pin, 24 V AC 37 poles

Electrical connection	
C3	CANopen® node 64 IN - 64 OUT (32 fixed)
P3	PROFIBUS DP node 64 IN - 64 OUT (32 fixed)
I4	EtherNet/IP node 128 IN - 128 OUT (48 fixed)
A4	EtherCAT® node 128 IN - 128 OUT (48 fixed)
N4	PROFINET IO RT node 128 IN - 128 OUT (48 fixed)
G4	CC-Link IE Field Basic node 128 IN - 128 OUT (48 fixed)
K3	IO-Link interface 64 IN - 64 OUT (32 fixed)

Electrical connection accessories	
	Without DIN rail fixing
G	With DIN rail fixing

SINGLE ELECTRIC MODULE CONFIGURATION

Repeating numbers of the module	
	Indicate the number of repeats of the same module (no value for a single module)

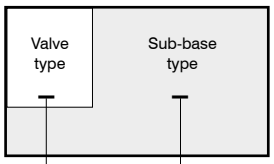
Inputs module - Analog / Digital	
D8	8 M8 digital inputs module
D12	8 M12 digital inputs module
D3	32 digital inputs SUB-D 37 poles
T1	2 analogue inputs 0-5V module (voltage signal)
T2	2 analogue inputs 0-10V module (voltage signal)
T3	4 analogue inputs 0-5V module (voltage signal)
T4	4 analogue inputs 0-10V module (voltage signal)
C1	2 analogue inputs 0-20mA module (current signal)
C2	2 analogue inputs 4-20mA module (current signal)
C3	4 analogue inputs 0-20mA module (current signal)
C4	4 analogue inputs 4-20mA module (current signal)
P1	2 Pt100 2 wires inputs module
P2	2 Pt100 3 wires inputs module
P3	2 Pt100 4 wires inputs module
P4	4 Pt100 2 wires inputs module
P5	4 Pt100 3 wires inputs module
P6	4 Pt100 4 wires inputs module
Outputs module - Analog / Digital	
M8	8 M8 digital outputs module
M12	8 M12 digital outputs module
M3	32 digital outputs SUB-D 37 poles
V1	2 analogue outputs 0-5V module (voltage signal)
V2	2 analogue outputs 0-10V module (voltage signal)
V3	4 analogue outputs 0-5V module (voltage signal)
V4	4 analogue outputs 0-10V module (voltage signal)
L1	2 analogue outputs 0-20mA module (current signal)
L2	2 analogue outputs 4-20mA module (current signal)
L3	4 analogue outputs 0-20mA module (current signal)
L4	4 analogue outputs 4-20mA module (current signal)
Additional modules (Optional)	
P12	M12 additional power supply module

Module accessories	
	Without DIN rail fixing
G	With DIN rail fixing

Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Modules configurator

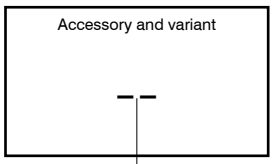
Base module configurator with Solenoid valve



Solenoid valve position	
A	S.V. 5/2 SOL.-SPRING
B	S.V. 5/2 SOL.-DIF.
C	S.V. 5/2 SOL.-SOL.
E	S.V. 5/3 CC SOL.-SOL.
F	S.V. 2x3/2 NC-NC
G	S.V. 2x3/2 NO-NO
H	S.V. 2x3/2 NC-NO
I	S.V. 2x3/2 NO-NC
T	Plug

Base	
1	Monostable base G1/8 GAS
2	Bistable base G1/8 GAS
3	Monostable base Ø4
4	Bistable base Ø4
5	Monostable base Ø6
6	Bistable base Ø6
7	Monostable base Ø8
8	Bistable base Ø8

Accessory module configurator

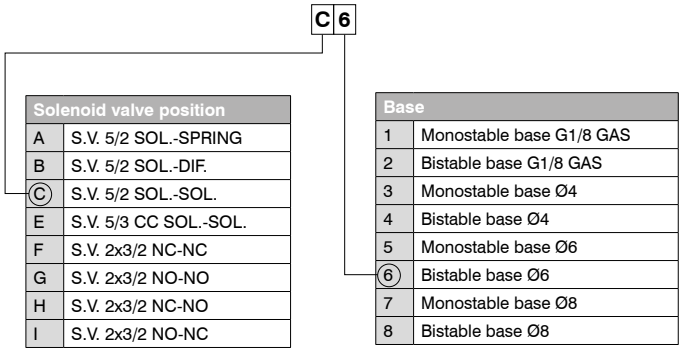


Intermediate inlet/Exhaust module	
W	Separated air supply and exhaust

Intermediate electropneumatic shut-off module			
U	Separated supply (air/electric) and exhaust	2	2 positions
		4	4 positions
		6	6 positions
		8	8 positions
K	Separated supply (air/electric), exhaust and 12/14 piloting	2	2 positions
		4	4 positions
		6	6 positions
		8	8 positions

Configuration example of single module:

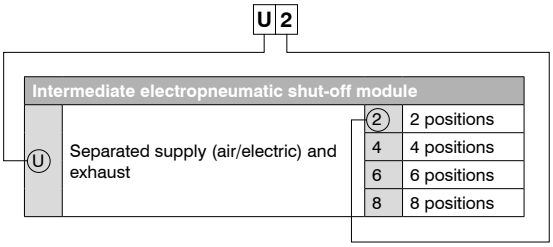
Bistable base, 5/2 Solenoid-Solenoid valve



Solenoid valve position	
A	S.V. 5/2 SOL.-SPRING
B	S.V. 5/2 SOL.-DIF.
C	S.V. 5/2 SOL.-SOL.
E	S.V. 5/3 CC SOL.-SOL.
F	S.V. 2x3/2 NC-NC
G	S.V. 2x3/2 NO-NO
H	S.V. 2x3/2 NC-NO
I	S.V. 2x3/2 NO-NC

Base	
1	Monostable base G1/8 GAS
2	Bistable base G1/8 GAS
3	Monostable base Ø4
4	Bistable base Ø4
5	Monostable base Ø6
6	Bistable base Ø6
7	Monostable base Ø8
8	Bistable base Ø8

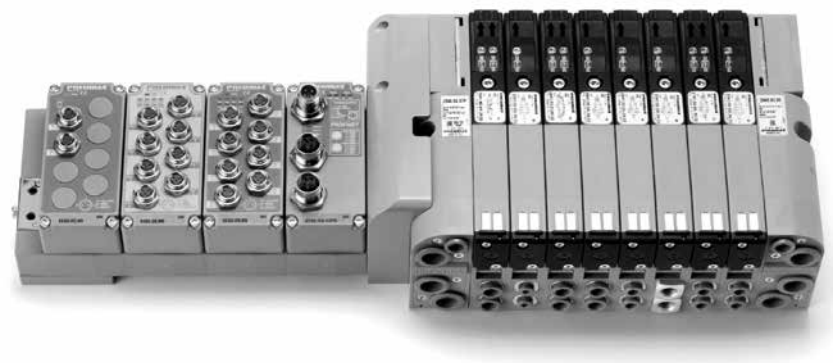
Intermediate electropneumatic shut-off module 2 positions



Intermediate electropneumatic shut-off module			
U	Separated supply (air/electric) and exhaust	2	2 positions
		4	4 positions
		6	6 positions
		8	8 positions

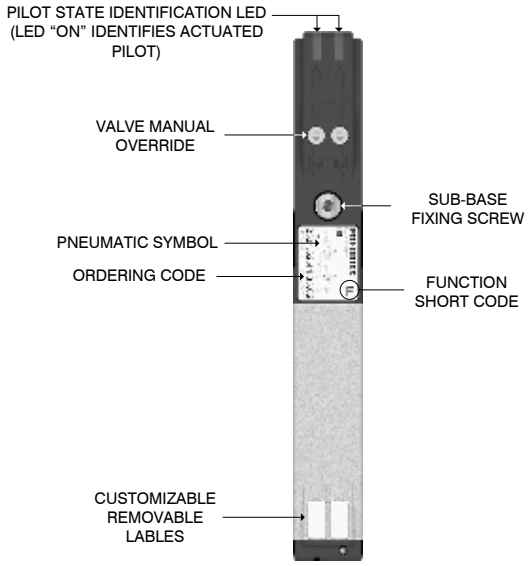
Configuration example of complete group:

- Technopolymer PX3 serial system (P-N4-D8-M8-C1)
- Left endplates - External feeding (E)
- Bistable base with (F6) Solenoid valve
- Monostable base with (B3) Solenoid valve
- Bistable base with (E6) Solenoid valve
- Monostable base with (A5) Solenoid valve
- Monostable base with (A3) Solenoid valve
- Monostable base with (B1) Solenoid valve
- Bistable base with (C4) Solenoid valve
- Monostable base with (B3) Solenoid valve
- Right endplates closed (U0)

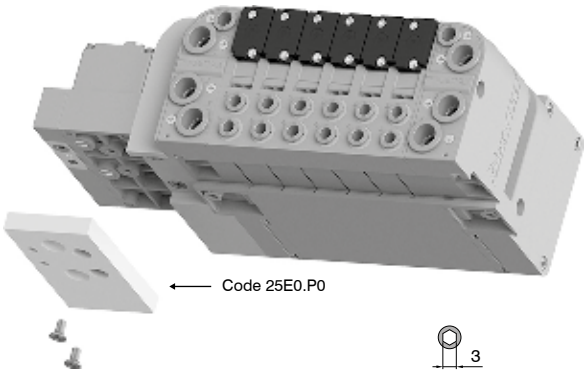


TE-P-N4-D8-M8-C1-E-F6-B3-E6-A5-A3-B1-C4-B3-U0

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

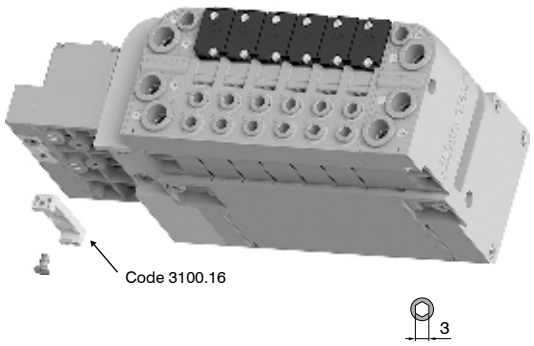


Offset compensation plate



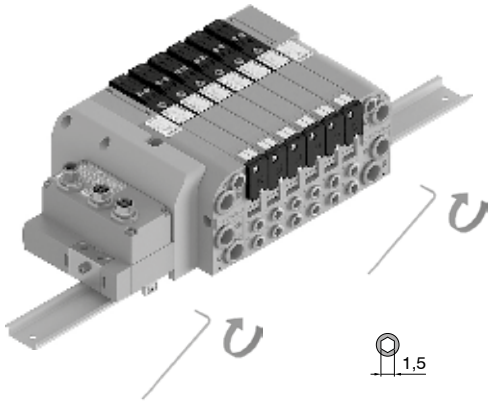
Attention: This accessory is supplied on the manifold unless otherwise stated. This is not compatible for DIN rail mounting.

DIN rail mounting support plate



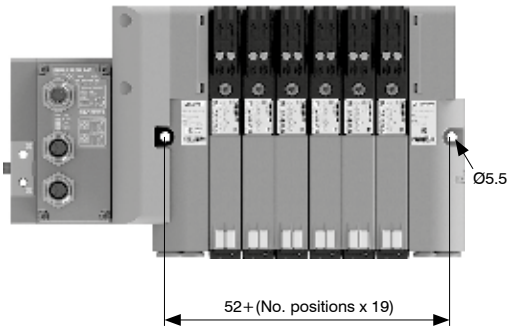
Attention: This must be included when creating the manifold configuration; exclude the offset compensation plate.

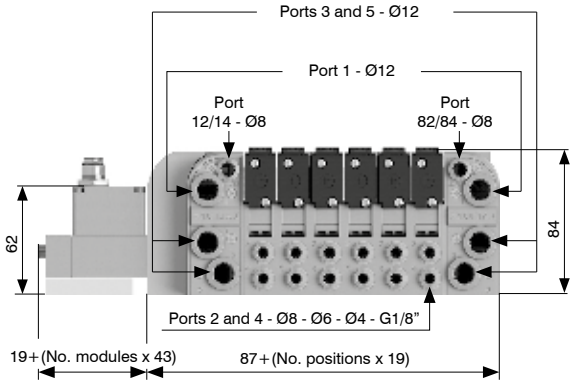
DIN rail fixing



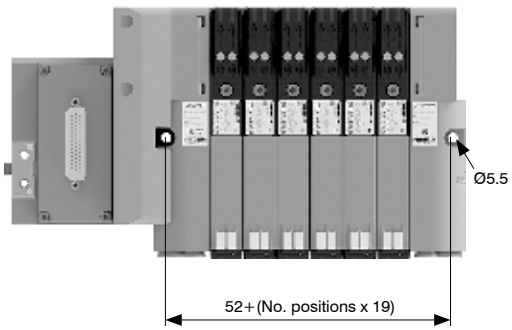
Supply ports and maximum possible size according to valves used

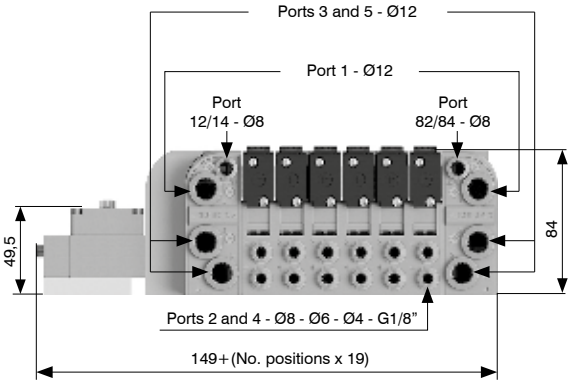
Serial system node version





Multi-pin version





Manual override actuation

Instable function:
Push to actuate
(when released it moves back to the original position)

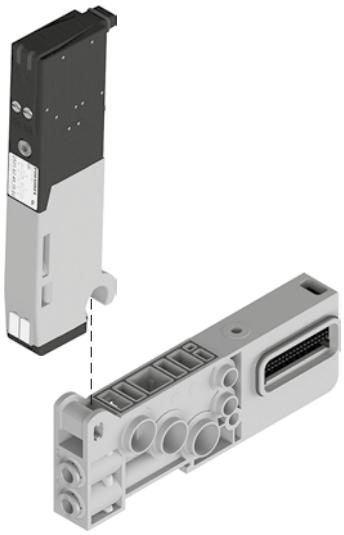


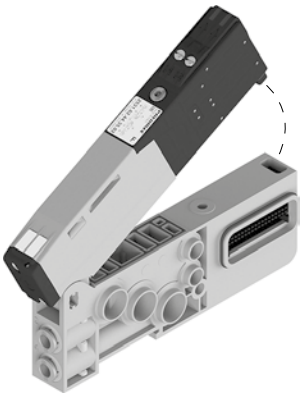
Bistable function:
Push and turn to get the bistable function

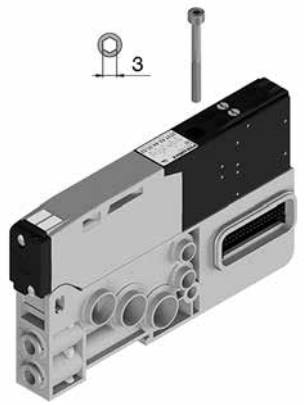


Note: we recommend the manual override is returned to it's original position when not in use

Solenoid valves installation

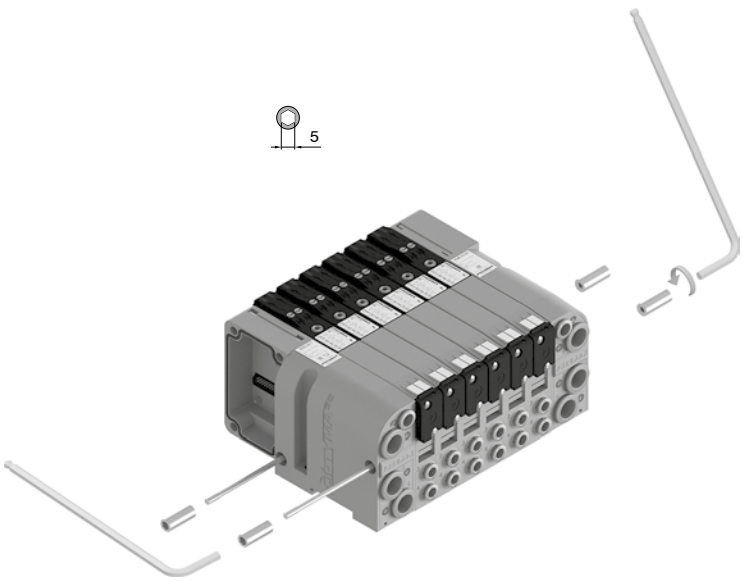






Note: Torque moment 1 Nm

Sub-base assembly



Minimum torque moment: 2,5 Nm
Maximum fixing torque for fittings: 3 Nm

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring

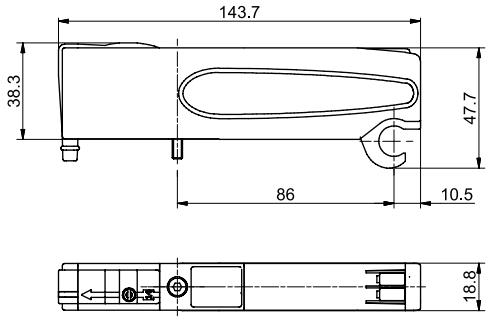
Coding: 2541.52.00.39.Ⓥ

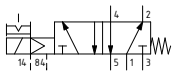
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	3 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	750
Response time according to ISO 12238, activation time (ms)	14
Response time according to ISO 12238, deactivation time (ms)	40

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "A"
Weight 129 g







Solenoid-Differential

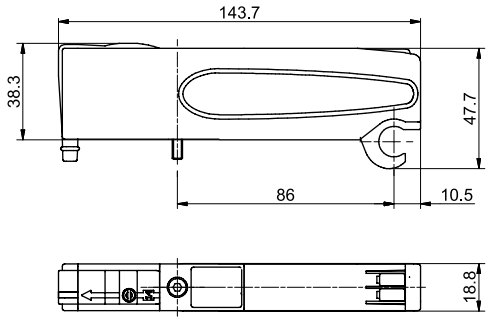
Coding: 2541.52.00.36.Ⓥ

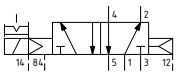
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	3 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	750
Response time according to ISO 12238, activation time (ms)	20
Response time according to ISO 12238, deactivation time (ms)	29

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "B"
Weight 126 g







Solenoid-Solenoid

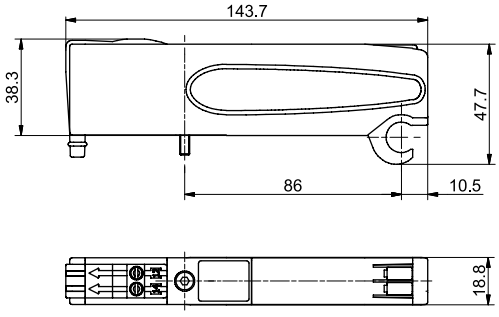
Coding: 2541.52.00.35.Ⓥ

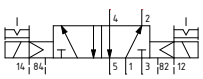
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	3 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	750
Response time according to ISO 12238, activation time (ms)	10
Response time according to ISO 12238, deactivation time (ms)	14

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "C"
Weight 134 g







Solenoid-Solenoid 5/3

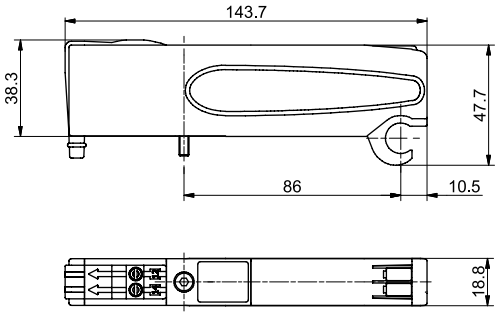
Coding: 2541.53.31.35.Ⓥ

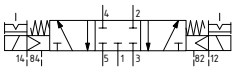
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	600
Response time according to ISO 12238, activation time (ms)	15
Response time according to ISO 12238, deactivation time (ms)	20

Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

SHORT FUNCTION CODE "E"
Weight 132 g







Solenoid-Solenoid 2x3/2

Coding: 2541.62.Ⓕ.35.Ⓥ

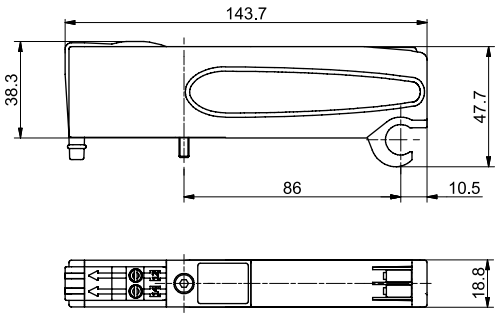
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	≥3+(0,2 x Inlet pressure)
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	15
Response time according to ISO 12238, deactivation time (ms)	25

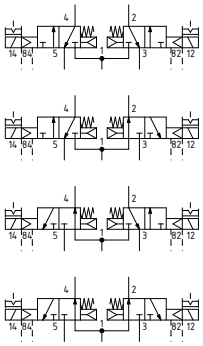
Example: If inlet pressure is set at 5 bar then pilot pressure must be at least Pp=2,5+(0,2*5)=3,5 bar

Ⓕ	FUNCTION
	44 = NC-NC (5/3 Open centres)
	45 = NC-NO (normally closed-normally open)
	54 = NO-NC (normally open-normally closed)
	55 = NO-NO (5/3 Pressured centres)
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN
	05 = 24 VAC

Weight 122 g







Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

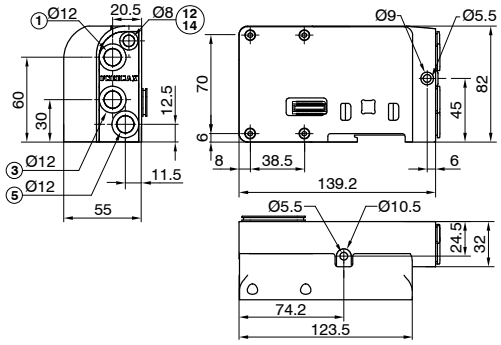
Left Endplate

Coding: 25E0.Ⓥ.T

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 (external pilot base) 3 ... 7 (self-feeding base)
Pilot pressure (bar)	3 ... 7 (external pilot base)
Temperature °C	-5 ... +50

Ⓥ	VERSION
	02 = External feeding
	12 = Self-feeding

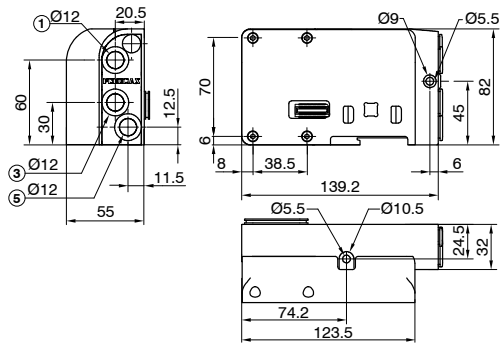




12/14 SEPARATED FROM PORT 1
Weight 300 g

25E0.02.T





12/14 CONNECTED TO PORT 1
Weight 300 g

25E0.12.T

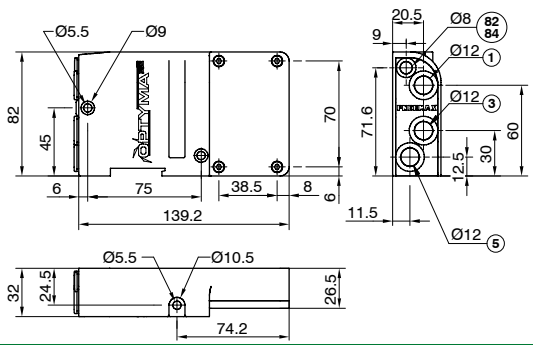
Right Endplate

Coding: 2540.03.Ⓒ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50

Ⓒ	ELECTRICAL CONNECTION
	00 = Electrical connection





PORT 82/84 = DO NOT PRESSURIZE, SOLENOID PILOTS EXHAUST
Weight 274 g

2540.03.Ⓒ

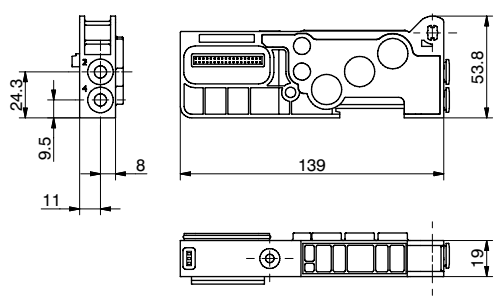
Modular base

Coding: 254Ⓒ.01Ⓥ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50

Ⓒ	WORKING PORTS SIZE
	1 = G1/8" female straight cartridge
	4 = Cartridge Ø4
	6 = Quick fitting tube Ø6
	8 = Quick fitting tube Ø8
Ⓥ	VERSION
	M = for monostable S.V.
	B = for bistable S.V.





Weight 96,5 g

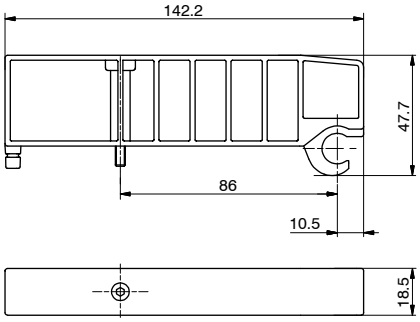
Closing plate

Coding: 2530.00

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50



SHORT FUNCTION CODE "T"
Weight 53.5 g



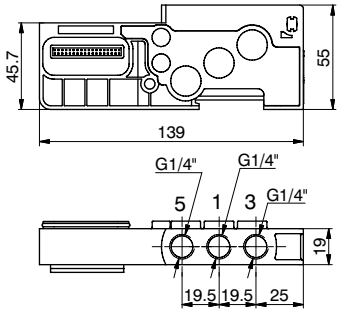
Intermediate Inlet/Exhaust module

Coding: 2540.10

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Temperature °C	-5 ... +50



SHORT FUNCTION CODE "W"
Weight 115 g



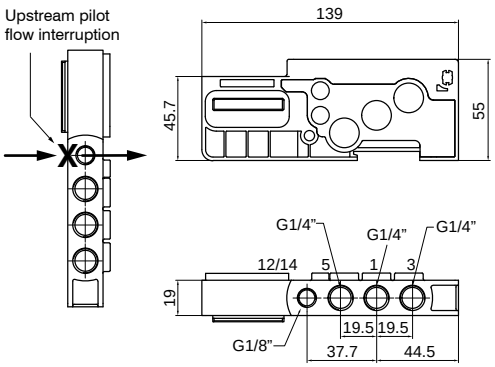
Intermediate inlet/Exhaust module with external pilot

Coding: 2540.11

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	3 ... 7
Temperature °C	-5 ... +50



SHORT CODE "K"
Weight 173 g



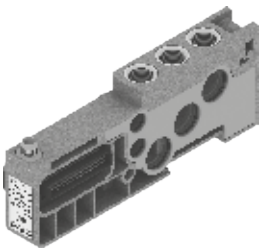
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Intermediate electro-pneumatic shut-off module 2/4/6/8 positions

Coding: 2540.Ⓜ.Ⓣ

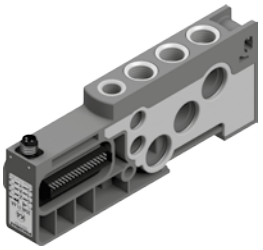
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10 3 ... 7 (piloting 12/14)
Temperature °C	-5 ... +50
Feeding	+ 24 V DC ±10%
Maximum load	100 mA
Series modules maximum number	3

Ⓜ	MODULE
	10 = Supply and exhaust
	11 = Supply and exhaust with separate pilot
Ⓣ	SHUT-OFF
	2A = 2 Signals
	4A = 4 Signals
	6A = 6 Signals
	8A = 8 Signals



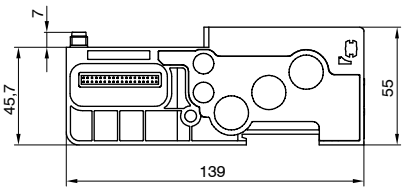
Weight 168 g

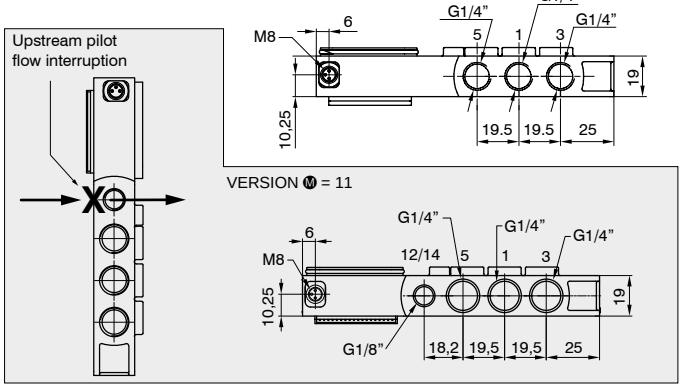
2540.10.Ⓜ



Weight 174 g

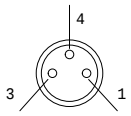
2540.11.Ⓜ



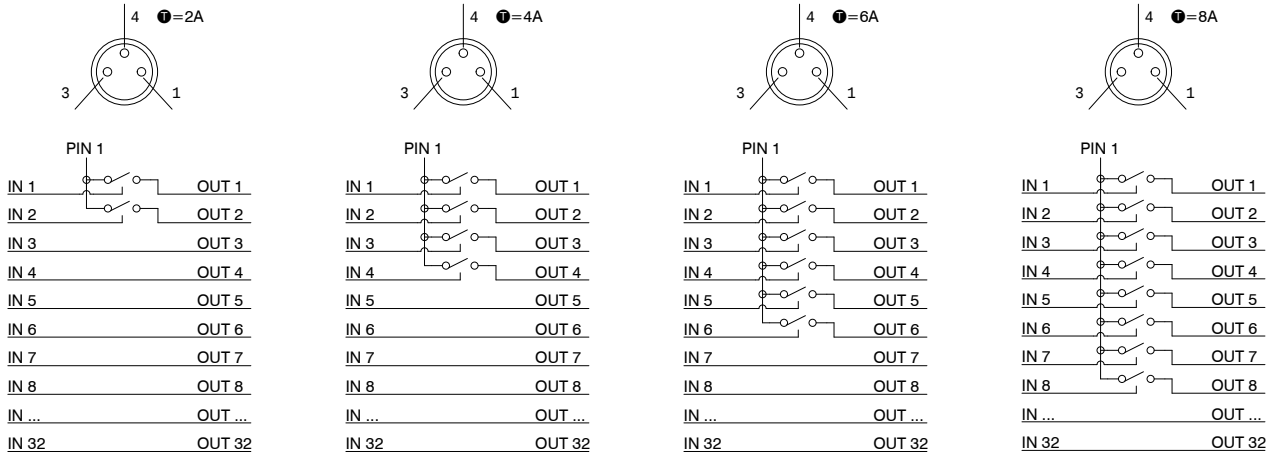


WORKING PRINCIPLE / SIMPLIFIED FUNCTIONAL DIAGRAM

Intermediate electro-pneumatic shut-off module allows you to interrupt at the same time the first 2, 4, 6 or 8 available command signals for the valves after the module itself.
When the shut-off module is present, the controlled output logic signal values are equal to the input logic signal values which came from the serial node or the multi-pin module.
If the supply input signal is absent, the controlled output logic signal values are all equal to zero.
This module is particularly useful when control signals are used to block the valves; it is also effective both with serial management and multi-pin connection of the manifolds.
It is possible to use more modules to interrupt every command signals simply by inserting them before the signals to be interrupted.



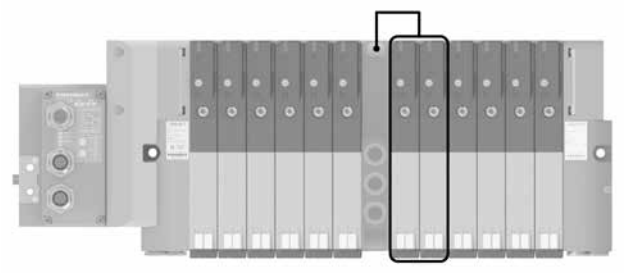
PIN	DESCRIPTION
1	+ 24 V DC
4	NOT CONNECTED
3	GND



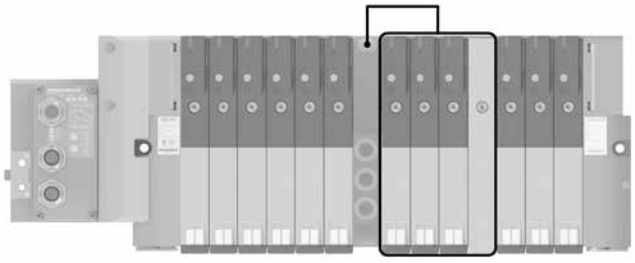
Usage examples

EXAMPLE 1
Manifold of 12 monostable solenoid valves on which you want to interrupt signals 7-8.
Assembly:
- 6 monostable solenoid valves (not interruptible because before the module)
- 1 additional power supply module
- 6 monostable solenoid valves

Note: the first 2 of these 6 monostable solenoid valves are interruptible by the module, while the following 4 will work correctly managed directly by the corresponding command signals.



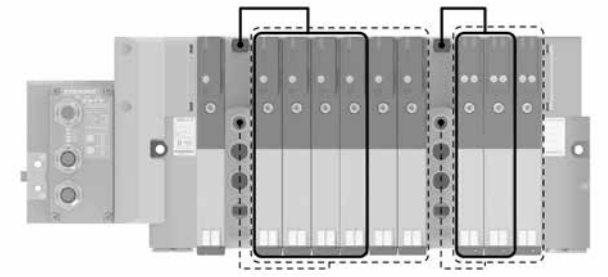
EXAMPLE 2
Manifold of 12 monostable solenoid valves on which you want to interrupt signals 7-8-9.
Assembly:
- 6 monostable solenoid valves (not interruptible because before the module)
- 1 additional power supply module
- 3 monostable solenoid valves (interruptible)
- 1 closing plate mounted on a monostable base
- 3 monostable solenoid valves (work correctly managed directly by the corresponding command signals)



EXAMPLE 3
Manifold of 7 monostable and 3 bistable solenoid valves in which you want to interrupt signals 2-3-4-5 and 8-9-10-11.
Assembly:
- 1 monostable solenoid valve (not interruptible because before the module)
- 1 additional electro-pneumatic shut-off module
- 6 monostable solenoid valves

Note: the first 4 of these 6 monostable solenoid valves are interruptible by the module, while the following 2 will work correctly managed directly by the corresponding command signals.
Note no. 2: The pilots of the 6 solenoid valves downstream of the intermediate electro-pneumatic shut-off module are pneumatically powered by the module itself.
- 1 additional electro-pneumatic shut-off module
- 3 bistable solenoid valves

Note no. 3: the first 2 of these 3 bistable solenoid valves are interruptible by the module, while the following will work correctly and are managed directly by the corresponding command signals.
Note no. 4: The pilots of the 3 solenoid valves downstream of the intermediate electro-pneumatic shut-off module are pneumatically powered by the module itself.



Key

——— S.V. electrically managed by the shut-off module
- - - - - - - - S.V. pneumatically managed (12/14) by the shut-off module

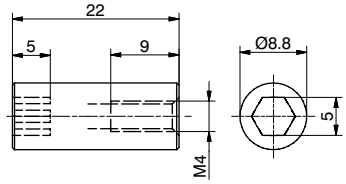
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Nut

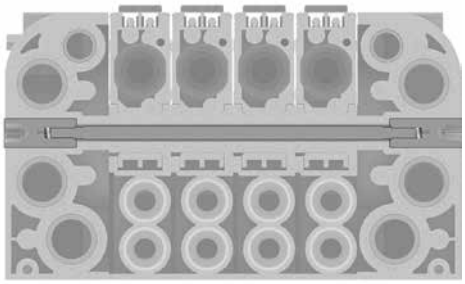
Coding: 2540.KD.00

The Kit includes 4 pieces
Weight 10 g







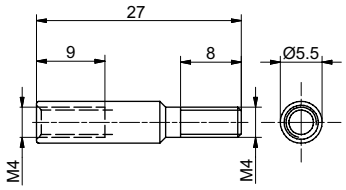


Extension (1 Position)

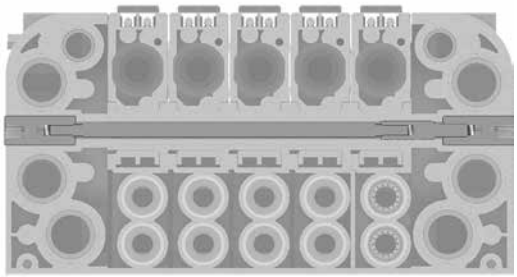
Coding: 2540.KP.01

The Kit includes 2 pieces
Weight 3,5 g





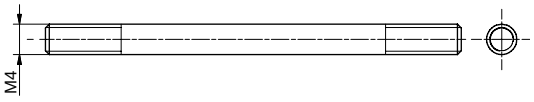




Tie-rod M4

Coding: 2540.KT.Ⓟ



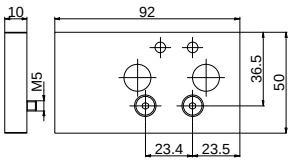


Ⓟ	NO. POSITIONS
	01 = Nr. 1 Position
	02 = Nr. 2 Positions
	03 = Nr. 3 positions
	04 = Nr. 4 Positions
	05 = Nr. 5 positions
	06 = Nr. 6 Positions
	07 = Nr. 7 positions
	08 = Nr. 8 Positions
	09 = Nr. 9 positions
	10 = Nr. 10 Positions
	11 = Nr. 11 positions
	12 = Nr. 12 Positions
	13 = Nr. 13 positions
	14 = Nr. 14 Positions
	...
	32 = Nr. 32 Positions

Offset compensation plate

Coding: 25E0.P0



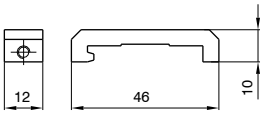


Weight 116 g

DIN rail adapter

Coding: 3100.16





Weight 12 g

Polyethylene Silencer Series SPL-R

Coding: SPLR.Ⓓ

Ⓓ	TUBE DIAMETER
	8 = 8 mm
	12 = 12 mm



Diaphragm plug

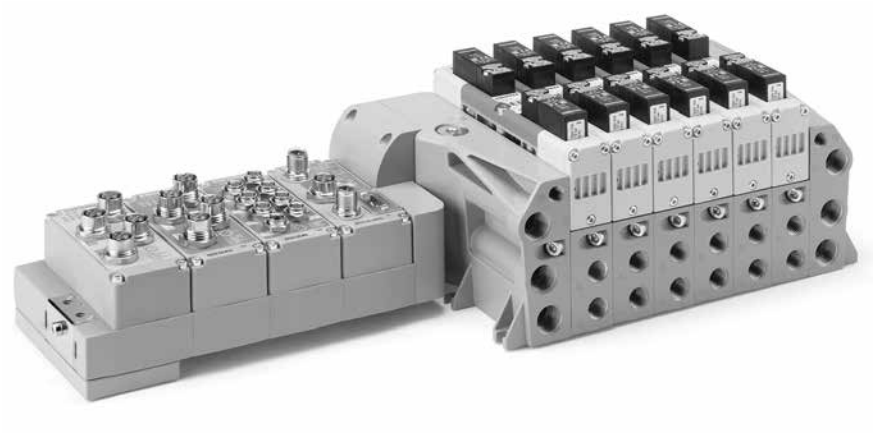
Coding: 2530.17



Weight 2,3 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 2700 EVO



2700 SERIES EVO SOLENOID VALVES MANIFOLD

- **Increased flexibility**
- **Digital and analogue I/O modules**
- **Manufactured according to ISO 15407-2**
- **Wide range of communication protocols**

WE SPEAK EVO

The 2700 series becomes EVO and interfaces with the new PX series modular electronic system while still retaining all of its technical advantages. This is enriched with new features that further extend the flexibility of the product:

- Size 26 mm with nominal flow rate up to 1000 Nl/min
- Compliant to directive 2014/30/UE
- Monitored solenoid valves
- Vertical configuration

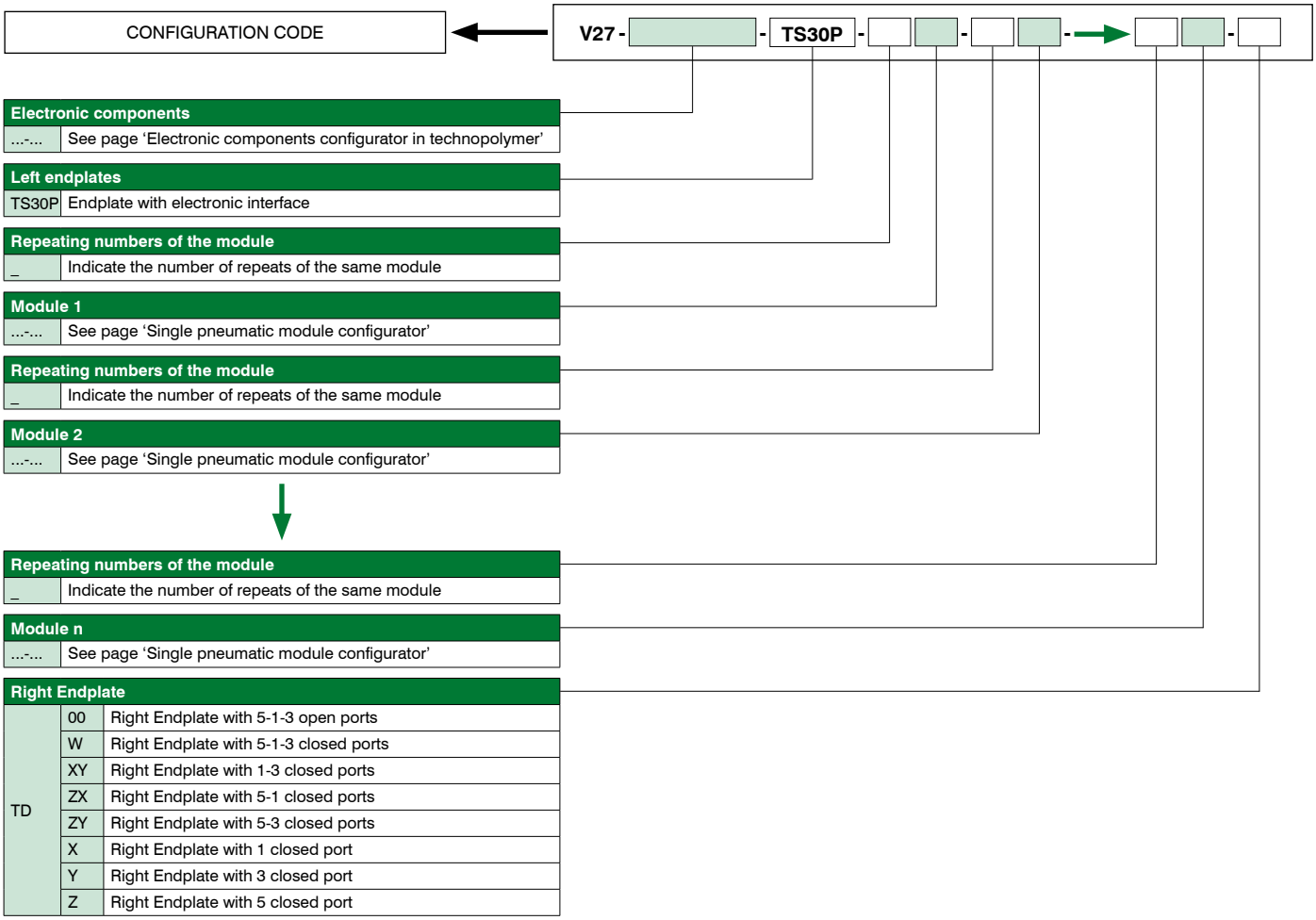
Construction characteristics

Body	Die-cast aluminium
Springs	Stainless Steel
Operators	Technopolymer
Pistons	Technopolymer
Spools	Aluminium

Operational characteristics

Supply voltage	+ 24 V DC ±10% PNP
Pilot consumption	1W - 2.3W
Valve working pressure [1]	from vacuum to 10 bar max.
Operating temperature	from -5°C to +50°C (serial system node version) from -10°C to +50°C (multi-pin version)
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010

Rules and configuration scheme



Electronic components	
...-...	See page 'Electronic components configurator in technopolymer'

Left endplates	
TS30P	Endplate with electronic interface

Repeating numbers of the module	
_	Indicate the number of repeats of the same module

Module 1	
...-...	See page 'Single pneumatic module configurator'

Repeating numbers of the module	
_	Indicate the number of repeats of the same module

Module 2	
...-...	See page 'Single pneumatic module configurator'

Repeating numbers of the module	
_	Indicate the number of repeats of the same module

Module n	
...-...	See page 'Single pneumatic module configurator'

Right Endplate		
TD	00	Right Endplate with 5-1-3 open ports
	W	Right Endplate with 5-1-3 closed ports
	XY	Right Endplate with 1-3 closed ports
	ZX	Right Endplate with 5-1 closed ports
	ZY	Right Endplate with 5-3 closed ports
	X	Right Endplate with 1 closed port
	Y	Right Endplate with 3 closed port
	Z	Right Endplate with 5 closed port

Configurable on Cadenas platform

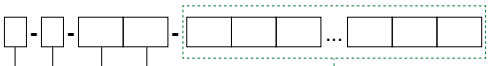
CADENAS

Note:
When composing the configuration, always bear in mind that the maximum number of electrical signals available is:
- 32 if a 37-pole multi-pin module is used, if a node or IO-Link interface is used.
- 24 if a 25-pole multi-pin module is used.

If a monostable valve is used on a bistable type base (2 electrical signals occupied), an electrical signal is lost.
However, this makes it possible to replace the monostable valve with a bistable valve in the same position.
Use bases with dedicated closed ports to interrupt ducts 1, 3 and 5.
If one or more ports must be interrupted more than once, the addition of the intermediate supply/discharge module is necessary.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Electronic components configurator in technopolymer



Type	
P	Technopolymer

Left endplate accessory	
	Offset compensation plate
G	DIN rail fixing accessory

Multi-pin electrical connection	
MP2	Module 25 poles + 24 V DC
MP3	Module 37 poles + 24 V DC

Electrical connection	
C3	CANopen® node 64 IN - 64 OUT (32 fixed)
P3	PROFIBUS DP node 64 IN - 64 OUT (32 fixed)
I4	EtherNet/IP node 128 IN - 128 OUT (48 fixed)
A4	EtherCAT® node 128 IN - 128 OUT (48 fixed)
N4	PROFINET IO RT node 128 IN - 128 OUT (48 fixed)
G4	CC-Link IE Field Basic node 128 IN - 128 OUT (48 fixed)
K3	IO-Link interface 64 IN - 64 OUT (32 fixed)

Electrical connection accessories	
	Without DIN rail fixing
G	With DIN rail fixing

Repeating numbers of the module	
	Indicate the number of repeats of the same module (no value for a single module)

SINGLE ELECTRIC MODULE CONFIGURATION

Inputs module - Analogue / Digital (EXCLUDED WITH MP)	
D8	8 M8 digital inputs module
D12	8 M12 digital inputs module
D3	32 digital inputs SUB-D 37 poles
T1	2 analogue inputs 0-5V module (voltage signal)
T2	2 analogue inputs 0-10V module (voltage signal)
T3	4 analogue inputs 0-5V module (voltage signal)
T4	4 analogue inputs 0-10V module (voltage signal)
C1	2 analogue inputs 0-20mA module (current signal)
C2	2 analogue inputs 4-20mA module (current signal)
C3	4 analogue inputs 0-20mA module (current signal)
C4	4 analogue inputs 4-20mA module (current signal)
P1	2 Pt100 2 wires inputs module
P2	2 Pt100 3 wires inputs module
P3	2 Pt100 4 wires inputs module
P4	4 Pt100 2 wires inputs module
P5	4 Pt100 3 wires inputs module
P6	4 Pt100 4 wires inputs module
Outputs module - Analogue / Digital	
M8	8 M8 digital outputs module
M12	8 M12 digital outputs module
M3	32 digital outputs SUB-D 37 poles
V1	2 analogue outputs 0-5V module (voltage signal)
V2	2 analogue outputs 0-10V module (voltage signal)
V3	4 analogue outputs 0-5V module (voltage signal)
V4	4 analogue outputs 0-10V module (voltage signal)
L1	2 analogue outputs 0-20mA module (current signal)
L2	2 analogue outputs 4-20mA module (current signal)
L3	4 analogue outputs 0-20mA module (current signal)
L4	4 analogue outputs 4-20mA module (current signal)
Additional module (Optional)	
P12	M12 additional power supply module

Module accessories	
	Without DIN rail fixing
G	With DIN rail fixing

Refer to the current limits indicated in the pages relating to the nodes / IO-Link interface

Modules configurator:

1) Complete module configurator

Intermediate Inlet/Exhaust module

W	U	5-3 Common	_	5-1-3 open	_	14-12 open
	S	5-3 Separated	W	5-1-3 closed	2	12 closed
			XY	1-3 closed	4	14 closed
			ZX	5-1 closed		
			ZY	5-3 closed		
			X	1 closed		
			Y	3 closed		
			Z	5 closed		

Monitored 3/2 Sol-Spring pilot 14 control solenoid valve

P	A	Internal Supply	M8	Proximity M8x1	02	24 V DC
	E	External Supply	M12	Proximity M12x1	08	24 V DC 1W

Monitored redundant 5/2 Sol-Spring solenoid valve

V2S	A	Internal Supply	M8	Proximity M8x1	02	24 V DC
	E	External Supply	M12	Proximity M12x1	08	24 V DC 1W

Solenoid valve for progressive start

EP	M8	Proximity M8x1	01	12 V DC	W	5-1-3 closed	4	14 closed	-	Standard
	M12	Proximity M12x1	02	24 V DC					M	Machinery directive
			08	24 V DC 1W						

2) Modular module configurator

Base

B	M	Monostable	_	5-1-3 open	_	14-12 open
	B	Bistable	W	5-1-3 closed	2	12 closed
	P	Pass-through	XY	1-3 closed	4	14 closed
			ZX	5-1 closed		
			ZY	5-3 closed		
			X	1 closed		
			Y	3 closed		
			Z	5 closed		

External supply valve

AS	11	External Supply
	14	External Supply with piloting 14

Shut-off valve

VL	141	1-14 Exhaust	_	Not lockable
			K	Lockable

Flow regulator

RF	35	Exhaust flow regulator

Solenoid valves

A	S.V. 5/2 SOL-SPRING	A	Self Supply	12	24 V DC
B	S.V. 5/2 SOL-DIFFERENTIAL	E	External Supply	18	24 V DC 1W
C	S.V. 5/2 SOL-SOL				
E	S.V. 5/3 CC SOL-SOL				
F	S.V. 2x3/2 NC-NC				
G	S.V. 2x3/2 NO-NO				
H	S.V. 2x3/2 NC-NO				
I	S.V. 2x3/2 NO-NC				
T00	Free valve space plug				

Monitored 5/2 Sol-Spring solenoid valve

VS	A	Self Supply	M8	Proximity M8x1	02	24 V DC
	E	External Supply	M12	Proximity M12x1	08	24 V DC 1W

5/3 Solenoid valve with self-retention

D	1	Closed centres	A	Self Supply	12	24 V DC
	2	Open centres	E	External Supply	18	24 V DC 1W
	3	Pressured centres				

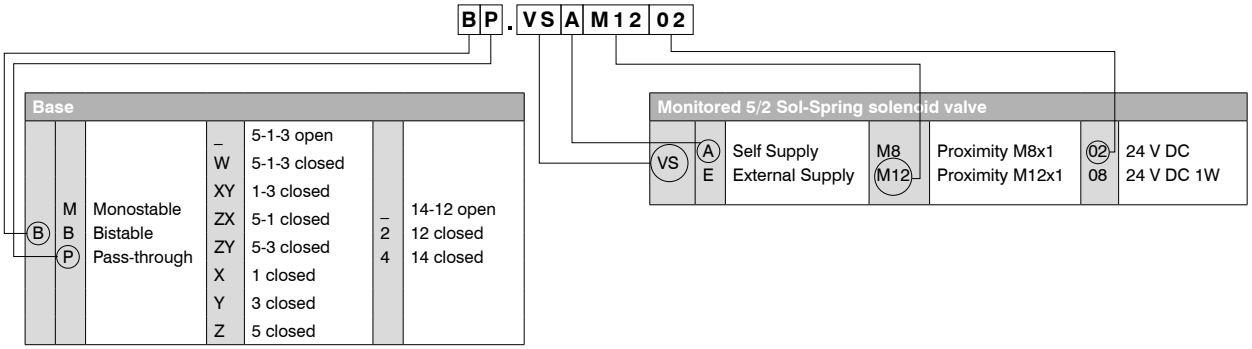
Pressure regulator

R	C	Compact	D	Downstream	2	Single L12	A	0-2 Bar	A	With relieving	V	RAL6032 green	_	Adjustable gauge
	P	Extended	U	Upstream	4	Single L14	B	0-4 Bar			G	RAL7004 gray	M	Fixed gauge
					24	Double L12-L14	C	0-8 Bar						

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Configuration example of single module:

Signal pass-through base, ports 5-1-3 open, ports 14-12 open with monitored S.V. internal supply, M12 connector, 24 V DC is identified as:



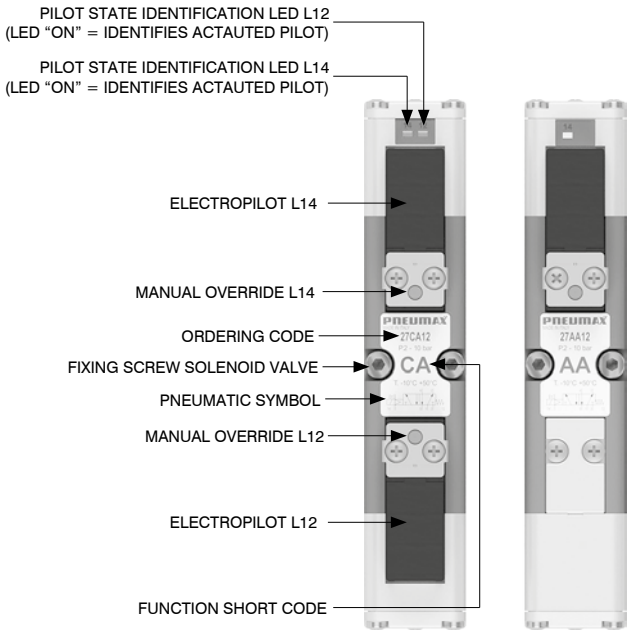
Configuration example of complete group:

- Technopolymer PX3 serial system (P-C3-2M8-D12)
- Left endplate with interface (TS30P)
- Bistable base with S.V. 5/3 CC Sol-Sol (BB.EE12)
- Bistable base with S.V. 2X3/2 NC-NC (BB.FE12)
- Bistable base with S.V. 5/2 Sol-Sol (BB.CE12)
- Bistable base with S.V. 2X3/2 NC-NC (BB.FE12)
- N°2 bistable bases with S.V. 5/2 Sol-Sol (2BB.CE12)
- Right endplate with open ports 1 - 3 - 5 (TD00)

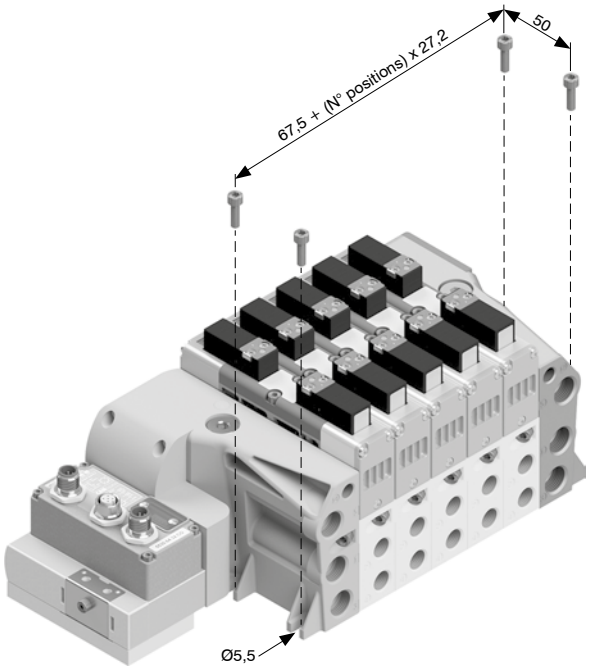


V27-P-C3-2M8-D12-TS30P-BB.EE12-BB.FE12-BB.CE12-BB.FE12-2BB.CE12-TD00

Solenoid valve description

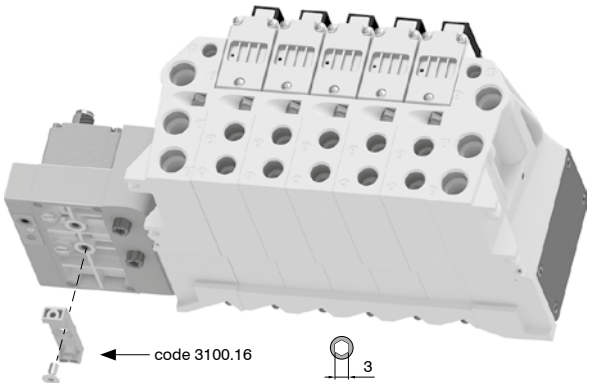


From the top



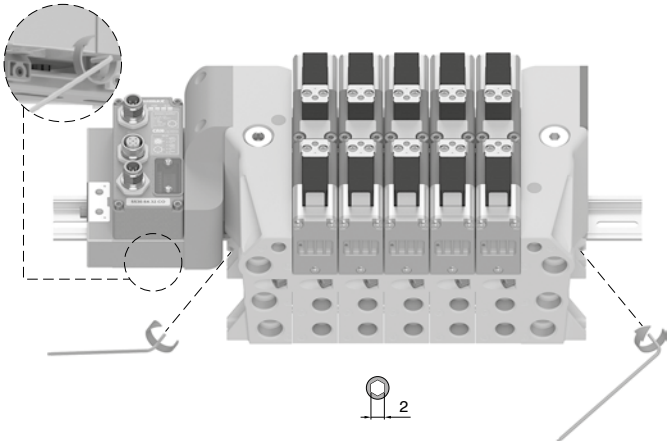
Attention: The overall dimensions shown refer to the modular (valve) sub-bases, and may differ when manifold accessories are included.

DIN rail mounting support plate

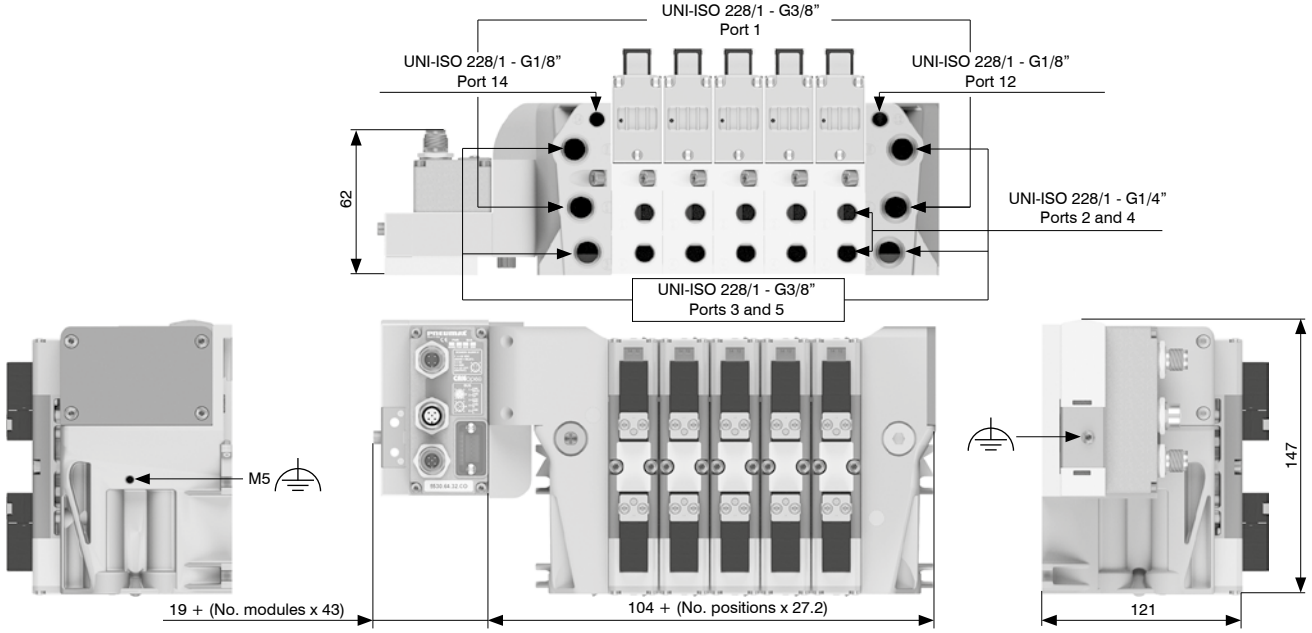


Attention: This must be included when creating the manifold configuration; exclude the offset compensation plate.

DIN rail fixing



Supply ports and maximum possible size according to valves used

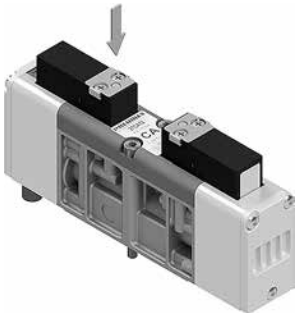


Attention: The overall dimensions shown refer to the modular (valve) sub-bases, and may differ when manifold accessories are included.

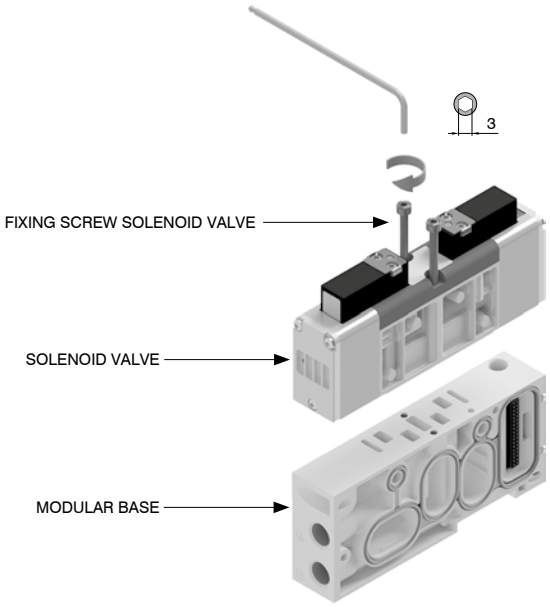
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Manual override actuation

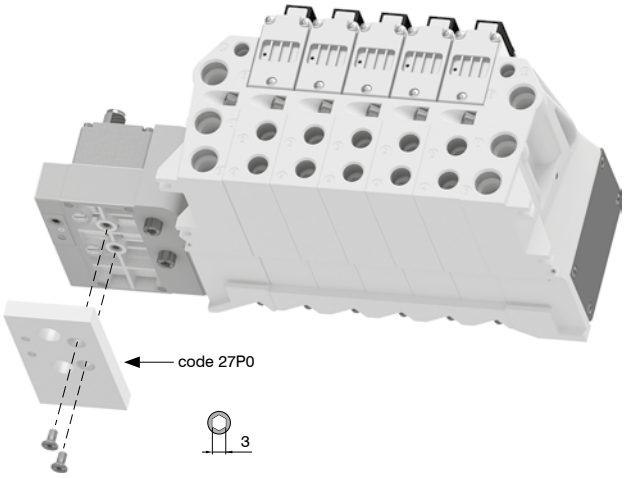
Instable function:
Push to actuate
(when released it moves back to the original position)



Solenoid valves installation

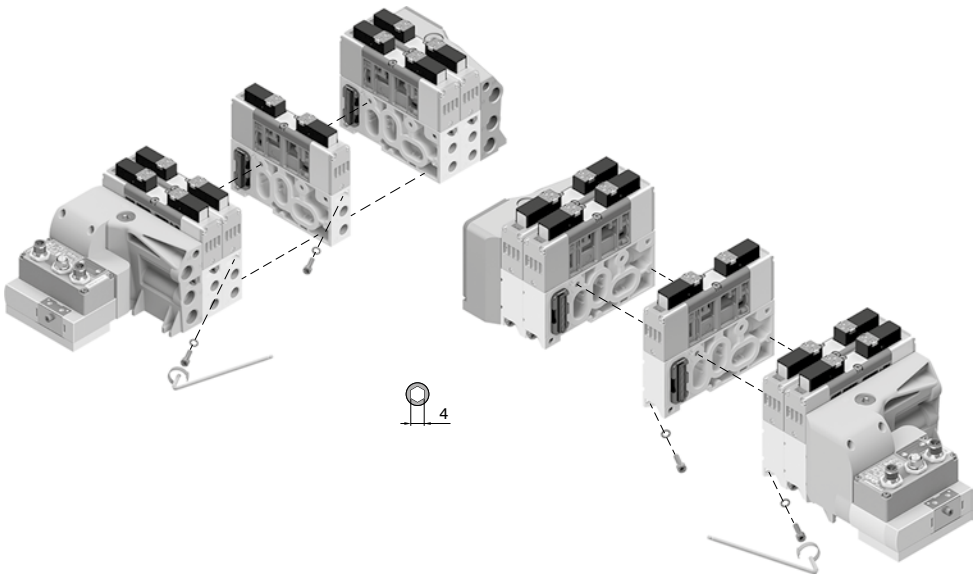


Offset compensation plate



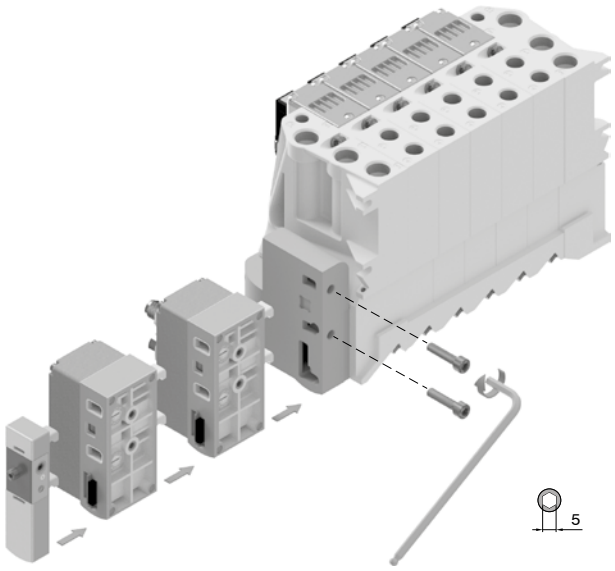
Attention: This accessory is supplied on the manifold unless otherwise stated. This is not compatible for DIN rail mounting.

Sub-base assembly

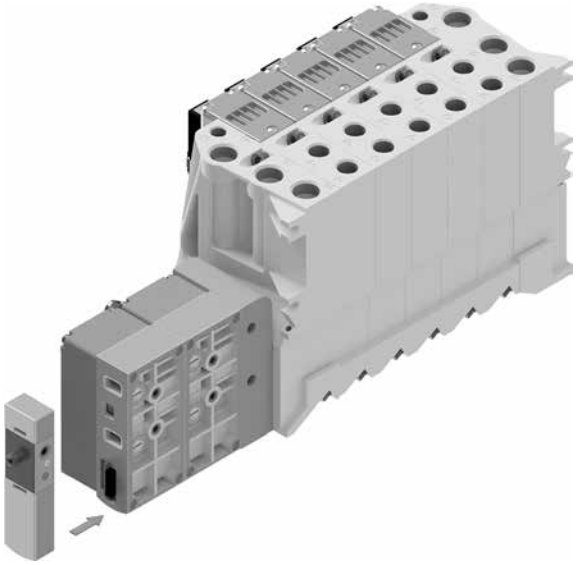


Note: Torque moment 4 Nm
Attention: Ensure the washer is mounted on the screw before tightening

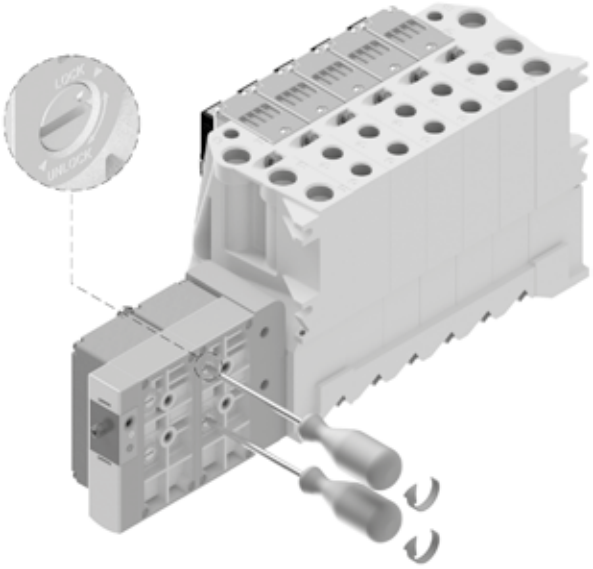
1. Assemble the desired modules and tighten the fixing screws as shown in the figure below.



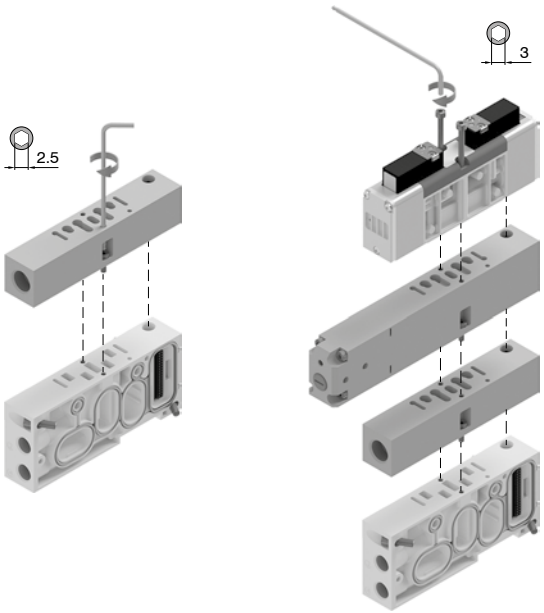
2. Complete the assembly with the 3100.KT.00 left endplate kit.



3. To lock: rotate anticlockwise (in the direction of the LOCK print on the case).
To unlock: rotate clockwise (in the direction of the UNLOCK print on the case).
The same procedure shall be used to add or remove any module.



Modules assembled for vertical configuration



Modules for vertical configuration are as follows:
- Single external supply module
- Flow regulator module
- Shut-off and exhaust module
- Pressure regulator

Attention: The flow rate of the solenoid valve will be reduced compared to that shown in the general catalogue

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring 5/2

Coding: 27A(P)(T)

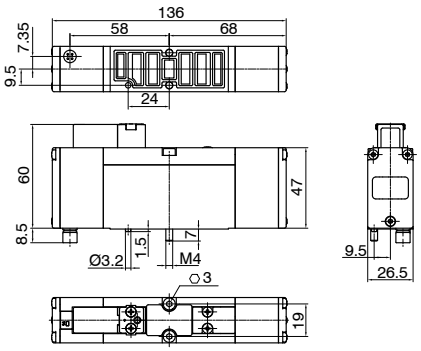
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 ... 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Response time according to ISO 12238, activation time (ms)	20
Response time according to ISO 12238, deactivation time (ms)	38

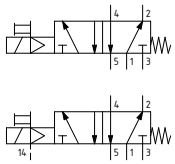
(P)	PILOTING
	A = Self-feeding
	E = External feeding
(T)	VOLTAGE
	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g



The "Activations time" values, are valid only for the 24 V DC 2,3W versions





Solenoid-Differential 5/2

Coding: 27B(P)(T)

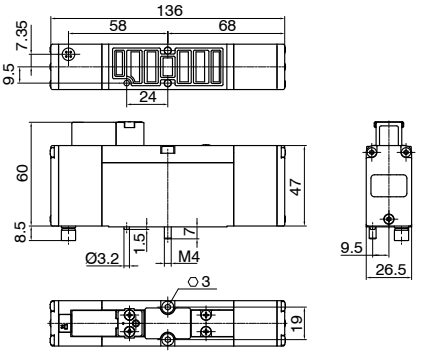
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 ... 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Response time according to ISO 12238, activation time (ms)	20
Response time according to ISO 12238, deactivation time (ms)	38

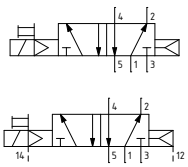
(P)	PILOTING
	A = Self-feeding
	E = External feeding
(T)	VOLTAGE
	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 274 g



The "Activations time" values, are valid only for the 24 V DC 2,3W versions





Solenoid-Solenoid 5/2

Coding: 27C(P)(T)

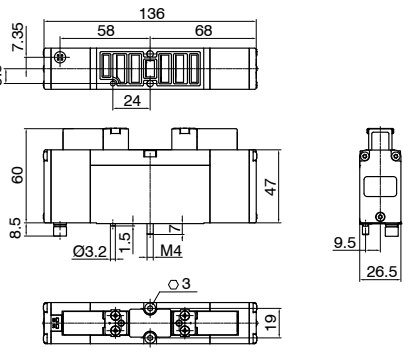
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 ... 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	1000
Response time according to ISO 12238, activation time (ms)	12
Response time according to ISO 12238, deactivation time (ms)	14

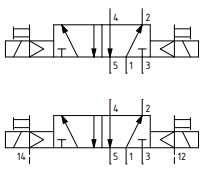
(P)	PILOTING
	A = Self-feeding
	E = External feeding
(T)	VOLTAGE
	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g



The "Activations time" values, are valid only for the 24 V DC 2,3W versions





Solenoid-Solenoid 5/3

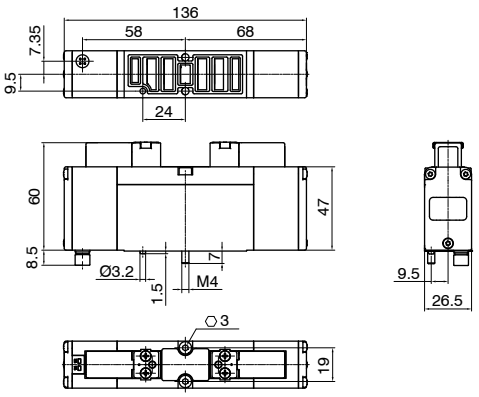
Coding: 27E(P)(T)

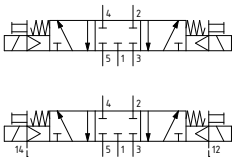
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 3 ... 10 (self-feeding base)
Minimum pilot pressure (bar)	3
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	660
Response time according to ISO 12238, activation time (ms)	12
Response time according to ISO 12238, deactivation time (ms)	60

(P)	PILOTING
	A = Self-feeding
	E = External feeding
(T)	VOLTAGE
	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g







The "Activations time" values, are valid only for the 24 V DC 2,3W versions

Solenoid-Solenoid 5/3 with auto-retaining function

Coding: 27D(F)(P)(T)

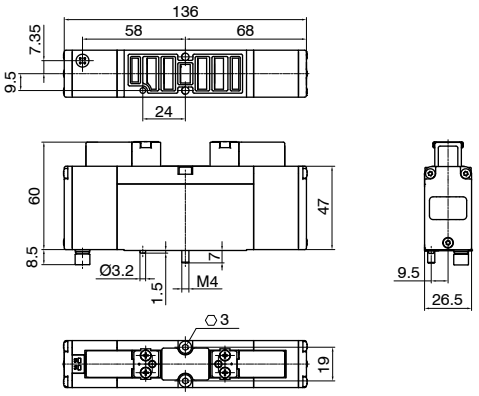
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 3 ... 10 (self-feeding base)
Minimum pilot pressure (bar)	3
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	15
Response time according to ISO 12238, deactivation time (ms)	80

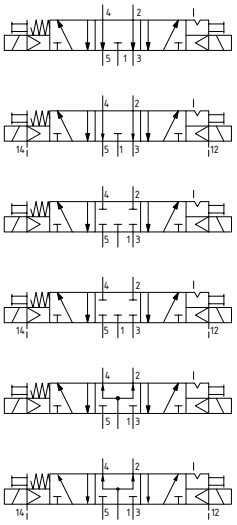
(F)	FUNCTION
	1 = S.V. 5/3 C.C.
	2 = S.V. 5/3 O.C.
	3 = S.V. 5/3 P.C.
(P)	PILOTING
	A = Self-feeding
	E = External feeding
(T)	VOLTAGE
	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g

- Maintains the valve state without an electric or pneumatic signal after the activation of L14 (self-retention).
- Valve state changes by activating L12.
- Mechanical spring return.







The "Activations time" values, are valid only for the 24 V DC 2,3W versions

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring 2x3/2

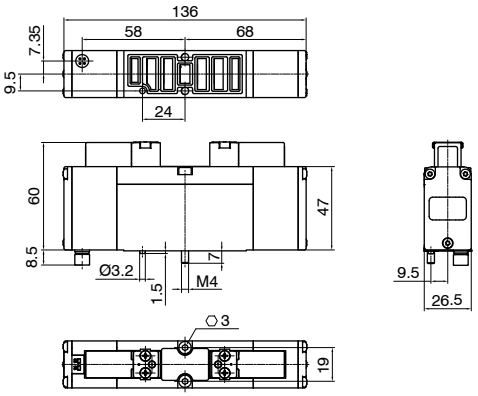
Coding: 27ⒻⓅⓉ

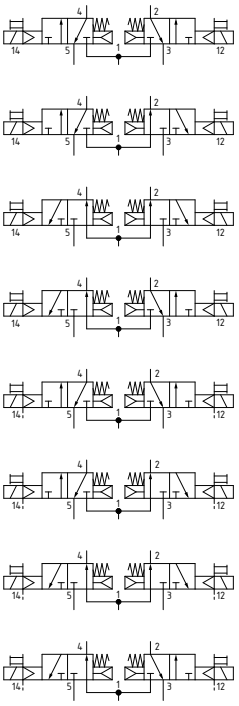
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Working pressure (bar)	From vacuum to 10 (external pilot base) 3,5 ... 10 (self-feeding base)
Pilot pressure (bar)	≥2+(0.3 x Inlet pressure)
Temperature °C	-10 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Response time according to ISO 12238, activation time (ms)	12 (external pilot base) 15 (self-feeding base)
Response time according to ISO 12238, deactivation time (ms)	60 (external pilot base) 15 (self-feeding base)

Ⓕ	FUNCTION
	F = NC-NC (5/3 Open centres)
	G = NO-NO (5/3 Pressured centres)
	H = NC-NO
	I = NO-NC
Ⓟ	PILOTING
	A = Self-feeding
	E = External feeding
Ⓣ	VOLTAGE
	12 = 24 V DC
	18 = 24 V DC 1 W

Weight 309 g







The "Activations time" values, are valid only for the 24 V DC 2,3W versions
Example: If inlet pressure is set at 5 bar then pilot pressure must be at least
Pp=2+(0,3*5)=3,5 bar

Solenoid-Spring monitored (VS)

Coding: 27VSⓅⓈⓉ

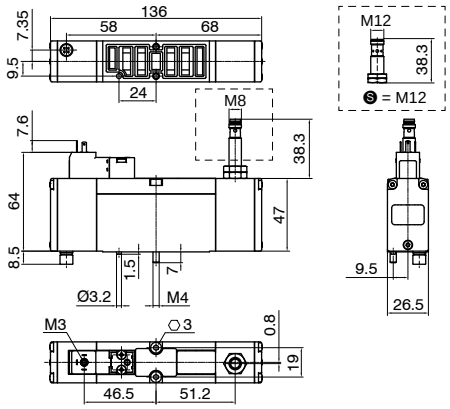
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Response time according to ISO 12238, deactivation time (ms)	70
Response time according to ISO 12238, activation time (ms)	15
Flow rate from 1 to 2 at 6 bar with Δp=1 (Nl/min)	1000
Flow rate from 1 to 4 at 6 bar with Δp=1 (Nl/min)	1000
Flow rate from 2 to 3 at 6 bar with Δp=1 (Nl/min)	1000
Flow rate from 4 to 5 at 6 bar with Δp=1 (Nl/min)	1000
Flow rate from 2 to 3 at 6 bar with free exhaust (Nl/min)	1700
Flow rate from 4 to 5 at 6 bar with free exhaust (Nl/min)	1700
Temperature °C	-10 ... +50
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 ... 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Function	5/2 N.C. Monostable
Noise level (dB)	75

Ⓟ	PILOTING
	A = Self-feeding
	E = External feeding
Ⓢ	SENSOR
	M8 = M8x1 Proximity Sensor
	M12 = M12x1 Proximity Sensor
Ⓣ	VOLTAGE
	02 = 24 V DC
	08 = 24 V DC 1 W

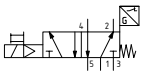
Weight 312 g

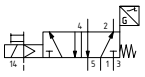
-Monostable with mechanical spring return and proximity sensor
-Safety component according to annex V of 2006/42/EC directive
-Diagnostic system that monitors the state of the valve:
Sensor ON: Valve at rest
Sensor OFF: Valve activated

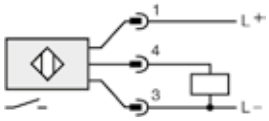




The "Activations time" values, are valid only for the 24 V DC 2,3W versions
Note: Overall noise level depends on the final application of the device
Note: The noise level indicated on the table is obtained without using silencers





Sensor	Out	Pin-out	Wiring diagram
M8 Male 3P type A	N.O.		
M12 Male 3P type A	N.O.		

Pin 1= Brown - Pin 4= Black - Pin 3= Blue

Electrical characteristics: Electropilot	
Electropilot	Series 300 Size 15 mm
Electrical connection	Earth Faston / Series 300 connectors
Solenoid coils features	24 V DC 2.3 W 24 V DC 1 W
Supply voltage allowance	-5% ... 10%
Manual override Integrated	Yes
Protection degree	IP65 (with mounted connector)

Note: Refer to the Pneumax general catalogue for detailed information regarding the electropilot

Electrical characteristics: Proximity sensor		
Type	Single channel	Single channel
Thread	M8X1	M12X1
Electrical design	PNP	PNP
Output function	N.O.	N.O.
Operating voltage	10 ... 30 VDC	10 ... 30 VDC
Current consumption (mA)	< 20	< 20
Isolating class	III	III
Display	Switching status 4x90° Yellow LEDs	Switching status 4x90° Yellow LEDs
Protection degree	IP65 (with mounted connector)	IP65 (with mounted connector)

Note: Manufacturer and model of proximity sensors could be changed at the discretion of Pneumax S.p.A.

Safety characteristics		
Standards compliancies	EN ISO 13849-1:2015	
	EN ISO 13849-2:2012	
Performed Safety Function	Interruption of supply and discharge of a pneumatic circuit connected to port 4	
Sensor feedback	Valve at REST	ON
	Valve ACTIVATED	OFF
MTTFd Sensor	Single Channel M8	1088 years
	Single Channel M12	932 years
Performance Level (PL)	Up to PL=d	
Category	Up to 2	
B10d	630.000 cycles	

Note B10d:
General Procedures for assessing pneumatic component reliability by testing performed in accordance with ISO 19973-1, Pneumatic fluid power - Assessment of component reliability by testing - Part 1: General Procedures.
Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

Activities regarding the identification of the safety function, the estimation of the required reliability level (e.g. estimation of the PLr according to EN ISO 13849-1), the design and the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.
The choice of the category and the satisfaction of its requirements according to EN ISO 13849-1 is in charge of the end-user who integrates the device in its final application while considering the final configuration of the safety circuit.
The diagnostic coverage value guaranteed by the sensor must be calculated by the end-user in function of the final configuration of the safety circuit (e.g. in function of the PLC for safety design which controls the solenoid valve and acquires the state of the sensor).
The estimation of the diagnostic coverage must satisfy the requirements of EN ISO 13849-1.
According to EN ISO 13849-1, T10D value must be calculated by the enduser in function of the annual operation number in which the device will be subjected to; in any case, the device must be substituted every 20 years.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Spring monitored redundant (V2S)

Coding: 27V2S(P)(S)(T)

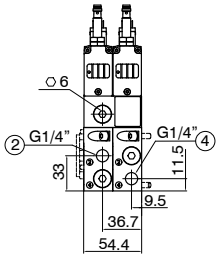
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Response time according to ISO 12238, deactivation time (ms)	70
Response time according to ISO 12238, activation time (ms)	25
Flow rate from 1 to 2 at 6 bar with Δp=1 (Nl/min)	1000
Flow rate from 1 to 4 at 6 bar with Δp=1 (Nl/min)	500
Flow rate from 2 to 3 at 6 bar with Δp=1 (Nl/min)	500
Flow rate from 4 to 5 at 6 bar with Δp=1 (Nl/min)	1000
Flow rate from 2 to 3 at 6 bar with free exhaust (Nl/min)	900
Flow rate from 4 to 5 at 6 bar with free exhaust (Nl/min)	1700
Temperature °C	-10 ... +50
Working pressure (bar)	From vacuum to 10 (external pilot base) 2 ... 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Function	5/2 N.C. Monostable
Noise level (dB)	75

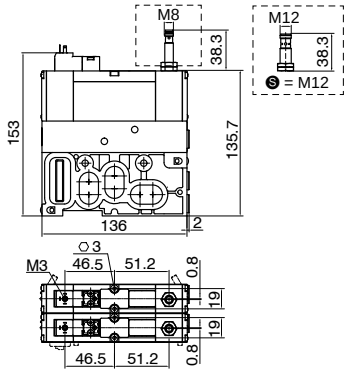
(P)	PILOTING
	A = Self-feeding
	E = External feeding
(S)	SENSOR
	M8 = M8x1 Proximity Sensor
	M12 = M12x1 Proximity Sensor
(T)	VOLTAGE
	02 = 24 V DC
	08 = 24 V DC 1 W

Weight 1786 g

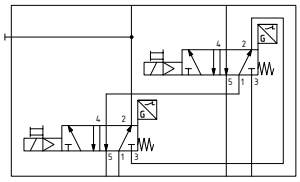
-Double monostable with mechanical spring return and proximity sensor
-Double redundant channel which guarantees that a pneumatic circuit is safely exhausted in case of failure of one of the valves
-Safety component according to annex V of 2006/42/EC directive
-Diagnostic system that monitors the state of the valve:
Sensor ON: Valve at rest
Sensor OFF: Valve activated

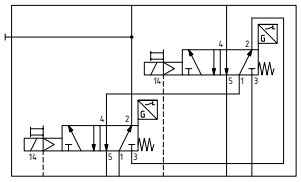


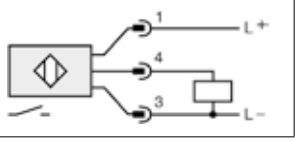
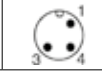




The "Activations time" values, are valid only for the 24 V DC 2,3W versions
Note: Overall noise level depends on the final application of the device
Note: The noise level indicated on the table is obtained without using silencers





Sensor	Out	Pin-out	Wiring diagram
M8 Male 3P type A	N.O.		
M12 Male 3P type A	N.O.		

Pin 1= Brown - Pin 4= Black - Pin 3= Blue

Electrical characteristics: Electropilot	
Electropilot	Series 300 Size 15 mm
Electrical connection	Earth Faston / Series 300 connectors
Solenoid coils features	24 V DC 2.3 W 24 V DC 1 W
Supply voltage allowance	-5% ... 10%
Manual override Integrated	Yes
Protection degree	IP65 (with mounted connector)

Note: Refer to the Pneumax general catalogue for detailed information regarding the electropilot

Electrical characteristics: Proximity sensor		
Type	Single channel	Single channel
Thread	M8X1	M12X1
Electrical design	PNP	PNP
Output function	N.O.	N.O.
Operating voltage	10 ... 30 VDC	10 ... 30 VDC
Current consumption (mA)	< 20	< 20
Isolating class	III	III
Display	Switching status 4x90° Yellow LEDs	Switching status 4x90° Yellow LEDs
Protection degree	IP65 (with mounted connector)	IP65 (with mounted connector)

Note: Manufacturer and model of proximity sensors could be changed at the discretion of Pneumax S.p.A.

Safety characteristics		
Standards compliancies	EN ISO 13849-1:2015	
	EN ISO 13849-2:2012	
Performed Safety Function	Interruption of supply and discharge of a pneumatic circuit connected to port 4	
Sensor feedback	Valve at REST	ON
	Valve ACTIVATED	OFF
MTTFd Sensor	Single Channel M8	1088 years
	Single Channel M12	932 years
Performance Level (PL)	Up to PL=e	
Category	Up to 4	
B10d	630.000 cycles (referred to a single valve)	

Note B10d:
General Procedures for assessing pneumatic component reliability by testing performed in accordance with ISO 19973-1, Pneumatic fluid power - Assessment of component reliability by testing - Part 1: General Procedures.
Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

Activities regarding the identification of the safety function, the estimation of the required reliability level (e.g. estimation of the PLr according to EN ISO 13849-1), the design and the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.
The choice of the category and the satisfaction of its requirements according to EN ISO 13849-1 is in charge of the end-user who integrates the device in its final application while considering the final configuration of the safety circuit.
The diagnostic coverage value guaranteed by the sensor must be calculated by the end-user in function of the final configuration of the safety circuit (e.g. in function of the PLC for safety design which controls the solenoid valve and acquires the state of the sensor).
The estimation of the diagnostic coverage must satisfy the requirements of EN ISO 13849-1.
According to EN ISO 13849-1, T10D value must be calculated by the enduser in function of the annual operation number in which the device will be subjected to; in any case, the device must be substituted every 20 years.

Solenoid-Spring monitored for pilot control 14 (P)

Coding: 27PⓅⓈⓉ

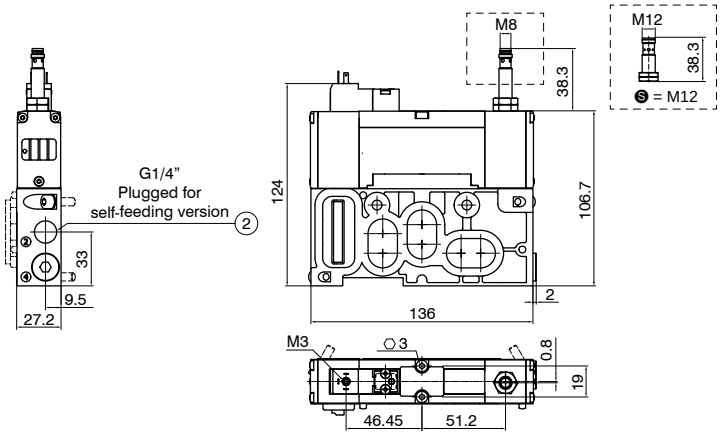
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Response time according to ISO 12238, deactivation time (ms)	70
Response time according to ISO 12238, activation time (ms)	15
Flow rate from 1 to 2(14) at 6 bar with Δp=1 (Nl/min)	250
Flow rate from 2(14) to 3(5) at 6 bar with Δp=1 (Nl/min)	250
Flow rate from 2(14) to 3(5) at 6 bar with free exhaust (Nl/min)	500
Temperature °C	-10 ... +50
Working pressure (bar)	2 ... 10 (external pilot base) 2 ... 10 (self-feeding base)
Minimum pilot pressure (bar)	2
Function	3/2 N.C. Monostable

Ⓟ	PILOTING
	A = Self-feeding
	E = External feeding
Ⓢ	SENSOR
	M8 = M8x1 Proximity Sensor
	M12 = M12x1 Proximity Sensor
Ⓣ	VOLTAGE
	02 = 24 V DC
	08 = 24 V DC 1 W

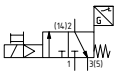
Weight 615 g

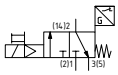
-Monostable with mechanical spring return and proximity sensor
-Control of downstream pressure in pilot channel 14
-Safety component according to annex V of 2006/42/EC directive
-Diagnostic system that monitors the state of the valve:
Sensor ON: Valve at rest
Sensor OFF: Valve activated

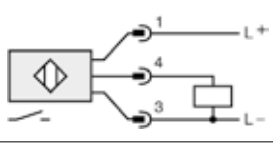




The "Activations time" values, are valid only for the 24 V DC 2,3W versions
Note: Overall noise level depends on the final application of the device





Sensor	Out	Pin-out	Wiring diagram
M8 Male 3P type A	N.O.		
M12 Male 3P type A	N.O.		

Pin 1= Brown - Pin 4= Black - Pin 3= Blue

Electrical characteristics: Electropilot	
Electropilot	Series 300 Size 15 mm
Electrical connection	Earth Faston / Series 300 connectors
Solenoid coils features	24 V DC 2.3 W 24 V DC 1 W
Supply voltage allowance	-5% ... 10%
Manual override Integrated	Yes
Protection degree	IP65 (with mounted connector)

Note: Refer to the Pneumax general catalogue for detailed information regarding the electropilot

Electrical characteristics: Proximity sensor		
Type	Single channel	Single channel
Thread	M8X1	M12X1
Electrical design	PNP	PNP
Output function	N.O.	N.O.
Operating voltage	10 ... 30 VDC	10 ... 30 VDC
Current consumption (mA)	< 20	< 20
Isolating class	III	III
Display	Switching status 4x90° Yellow LEDs	Switching status 4x90° Yellow LEDs
Protection degree	IP65 (with mounted connector)	IP65 (with mounted connector)

Note: Manufacturer and model of proximity sensors could be changed at the discretion of Pneumax S.p.A.

Safety characteristics		
Standards compliancies	EN ISO 13849-1:2015	
	EN ISO 13849-2:2012	
Performed Safety Function	Interruption of supply and exhaust of a pneumatic channel to port 2 (14)	
Sensor feedback	Valve at REST	ON
	Valve ACTIVATED	OFF
MTTFd Sensor	Single Channel M8	1088 years
	Single Channel M12	932 years
Performance Level (PL)	Up to PL=d	
Category	Up to 2	
B10d	1.100.000 cycles	

Note B10d:
General Procedures for assessing pneumatic component reliability by testing performed in accordance with ISO 19973-1, Pneumatic fluid power - Assessment of component reliability by testing - Part 1: General Procedures.
Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

Activities regarding the identification of the safety function, the estimation of the required reliability level (e.g. estimation of the PLr according to EN ISO 13849-1), the design and the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.
The choice of the category and the satisfaction of its requirements according to EN ISO 13849-1 is in charge of the end-user who integrates the device in its final application while considering the final configuration of the safety circuit.
The diagnostic coverage value guaranteed by the sensor must be calculated by the end-user in function of the final configuration of the safety circuit (e.g. in function of the PLC for safety design which controls the solenoid valve and acquires the state of the sensor).
The estimation of the diagnostic coverage must satisfy the requirements of EN ISO 13849-1.
According to EN ISO 13849-1, T10D value must be calculated by the enduser in function of the annual operation number in which the device will be subjected to; in any case, the device must be substituted every 20 years.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid valve for progressive start (EP)

Coding: 27EP Ⓢ Ⓣ Ⓒ Ⓟ Ⓥ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Response time according to ISO 12238, deactivation time (ms)	70
Response time according to ISO 12238, activation time (ms)	15
Flow rate from 1 to 2(1) at 6 bar with Δp=1 (Nl/min)	2200
Flow rate from 2(1) to 3 at 6 bar with Δp=1 (Nl/min)	2000
Flow rate from 2(1) to 3 at 6 bar with free exhaust (Nl/min)	4000
Temperature °C	-10 ... +50
Preset switchover pressure (bar)	~ 4
Working pressure (bar)	2 ... 10
Function	5/2 N.C. Monostable
Noise level (dB)	75

Ⓢ	SENSOR
	M8 = M8x1 Proximity Sensor
	M12 = M12x1 Proximity Sensor
Ⓣ	VOLTAGE
	02 = 24 V DC
	08 = 24 V DC 1 W
Ⓒ	SUPPLY AND EXHAUST PORTS
	W = Ports 5, 1 and 3 closed
Ⓟ	PILOT PORTS
	4 = Port 14 closed
Ⓥ	VERSION
	= Standard
	M = Machinery directive

-It allow slow and gradual increase in pressure to the supply port and rapid exhaust
-Available version as a safety component according to annex V of 2006/42/EC directive
-Pressure zone exhaust ports 3 and 5 available
-Diagnostic system that monitors the state of the valve:
Sensor ON: Valve activated
Sensor OFF: Valve at rest



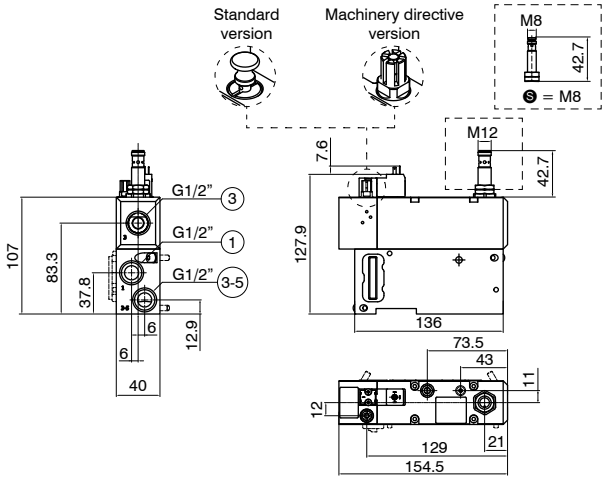
Weight 1360 g

27EP Ⓢ Ⓣ Ⓒ Ⓟ

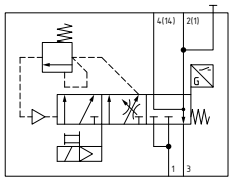


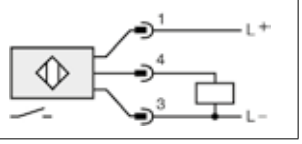
Weight 1360 g

27EP Ⓢ Ⓣ Ⓒ Ⓟ M



The "Activations time" values, are valid only for the 24 V DC 2,3W versions
Note: Overall noise level depends on the final application of the device
Note: The noise level indicated on the table is obtained without using silencers



Sensor	Out	Pin-out	Wiring diagram
M8 Male 3P type A	N.O.		
M12 Male 3P type A	N.O.		

Pin 1= Brown - Pin 4= Black - Pin 3= Blue

Electrical characteristics: Electropilot	
Electropilot	Series 300 Size 15 mm
Electrical connection	Earth Faston / Series 300 connectors
Solenoid coils features	24 V DC 2.3 W 24 V DC 1 W
Supply voltage allowance	-5% ... 10%
Manual override Integrated	No (separated from the electropilot)
Protection degree	IP65 (with mounted connector)

Note: Refer to the Pneumax general catalogue for detailed information regarding the electropilot

Electrical characteristics: Proximity sensor		
Type	Single channel	Single channel
Thread	M8X1	M12X1
Electrical design	PNP	PNP
Output function	N.O.	N.O.
Operating voltage	10 ... 30 VDC	10 ... 30 VDC
Current consumption (mA)	< 20	< 20
Isolating class	III	III
Display	Switching status 4x90° Yellow LEDs	Switching status 4x90° Yellow LEDs
Protection degree	IP65 (with mounted connector)	IP65 (with mounted connector)

Note: Manufacturer and model of proximity sensors could be changed at the discretion of Pneumax S.p.A.

Safety characteristics		
Standards compliancies	EN ISO 13849-1:2015	
	EN ISO 13849-2:2012	
Performed Safety Function	Interruption of supply and exhaust of pneumatic channels connected to port 2 (1) and port 4 (14)	
Sensor feedback	Valve at REST	OFF
	Valve ACTIVATED	ON
MTTFd Sensor	Single Channel M8	1088 years
	Single Channel M12	932 years
Performance Level (PL)	Up to PL=d	
Category	Up to 2	
B10d	2.000.000 cycles	

Note B10d:
General Procedures for assessing pneumatic component reliability by testing performed in accordance with ISO 19973-1, Pneumatic fluid power - Assessment of component reliability by testing - Part 1: General Procedures.
Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

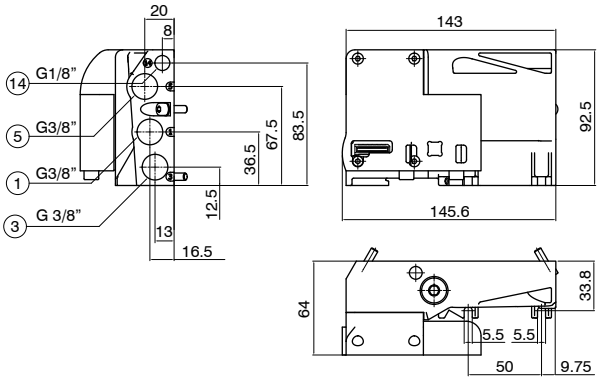
Activities regarding the identification of the safety function, the estimation of the required reliability level (e.g. estimation of the PLr according to EN ISO 13849-1), the design and the production of the related safety circuit, its verification and validation are responsibilities of the operator who uses the device in its final application.
The choice of the category and the satisfaction of its requirements according to EN ISO 13849-1 is in charge of the end-user who integrates the device in its final application while considering the final configuration of the safety circuit.
The diagnostic coverage value guaranteed by the sensor must be calculated by the end-user in function of the final configuration of the safety circuit (e.g. in function of the PLC for safety design which controls the solenoid valve and acquires the state of the sensor).
The estimation of the diagnostic coverage must satisfy the requirements of EN ISO 13849-1.
According to EN ISO 13849-1, T10D value must be calculated by the enduser in function of the annual operation number in which the device will be subjected to; in any case, the device must be substituted every 20 years.

Left Endplate

Coding: 27TS30P

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50
Working pressure (bar)	From vacuum to 10
Pilot pressure port 14 (bar)	3 ... 7





Weight 815 g

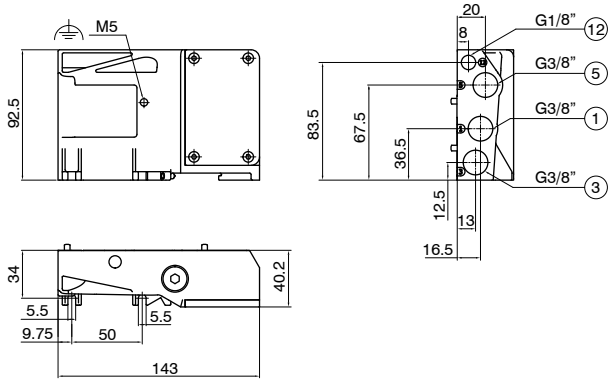
Right Endplate

Coding: 27TDⓒ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50
Working pressure (bar)	From vacuum to 10
Pilot pressure port 12 (bar)	3 ... 7

ⓒ	SUPPLY AND EXHAUST PORTS
	00 = Ports 5, 1 and 3 open
	W = Ports 5, 1 and 3 closed
	XY = Ports 1-3 closed
	ZX = Ports 5-1 closed
	ZY = Ports 5-3 closed
	X = Port 1 closed
	Y = Port 3 closed
	Z = Port 5 closed





Weight 560 g

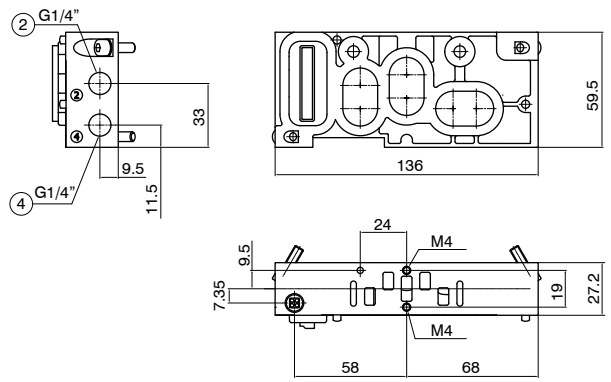
Modular base

Coding: 27BⓋⓒⓅ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50
Working pressure (bar)	3 ... 10

Ⓥ	VERSION
	M = Monostable
	B = Bistable
	P = Pass-through signal
ⓒ	SUPPLY AND EXHAUST PORTS
	= Ports 5, 1 and 3 open
	W = Ports 5, 1 and 3 closed
	XY = Ports 1-3 closed
	ZX = Ports 5-1 closed
	ZY = Ports 5-3 closed
	X = Port 1 closed
	Y = Port 3 closed
	Z = Port 5 closed
Ⓟ	PILOT PORTS
	= Ports 14-12 open
	4 = Port 14 closed
	2 = Port 12 closed





Weight 298 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

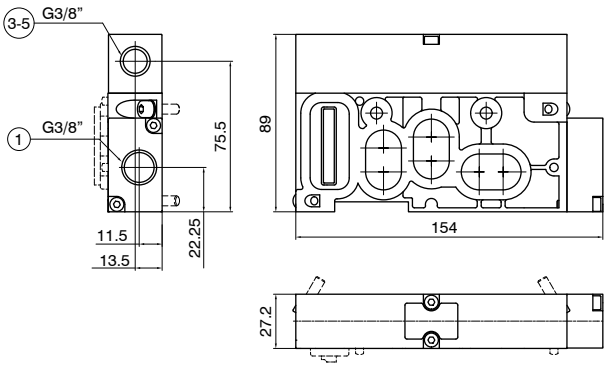
Intermediate Inlet/Exhaust module

Coding: 27WⓋⒸⓅ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50
Working pressure (bar)	From vacuum to 10

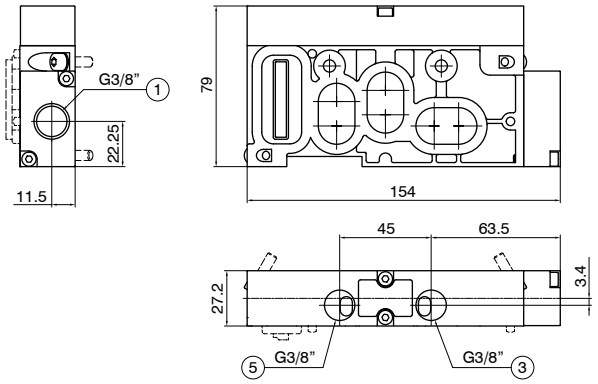
Ⓥ	VERSION
	U = Conveyed exhausts
	S = Separated exhausts
Ⓒ	SUPPLY AND EXHAUST PORTS
	= Ports 5, 1 and 3 open
	W = Ports 5, 1 and 3 closed
	XY = Ports 1-3 closed
	ZX = Ports 5-1 closed
	ZY = Ports 5-3 closed
	X = Port 1 closed
	Y = Port 3 closed
	Z = Port 5 closed
Ⓟ	PILOT PORTS
	= Ports 14-12 open
	4 = Port 14 closed
	2 = Port 12 closed





Weight 606 g





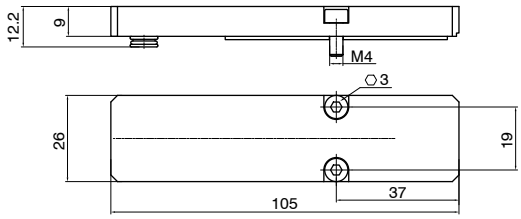
Weight 524 g

Free valve space plug

Coding: 27T00

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50
Working pressure (bar)	From vacuum to 10
Pilot pressure port 14 (bar)	3 ... 7





Weight 70 g

Single external power supply module

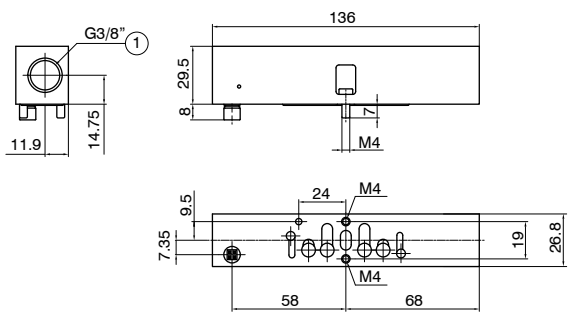
Coding: 27ASⓋ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50
Working pressure (bar)	2 ... 10 (version 14) From vacuum to 10 (version 11)

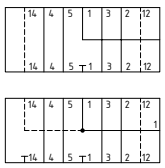
Ⓥ	VERSION
	11 = External supply of port 1
	14 = External supply of ports 1 and 14

Weight 246 g





-Suitable module for vertical configuration
-It allows to externally supply a single valve with pressure different from the manifold.



Flow regulator module

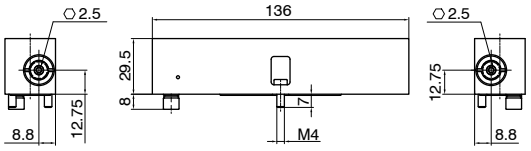
Coding: 27RF(V)

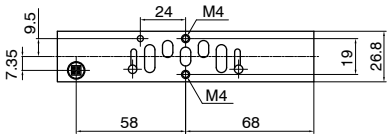
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50

(V)	VERSION
	35 = Exhaust flow regulator

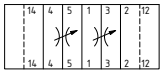
Weight 283 g







-Suitable module for vertical configuration
-It allows the flow regulation of ports 3 and 5
-Regualtion through two needles independent of each other
-It is designed to control the speed of an actuator



Shut-off and exhaust module

Coding: 27VL(V)(T)

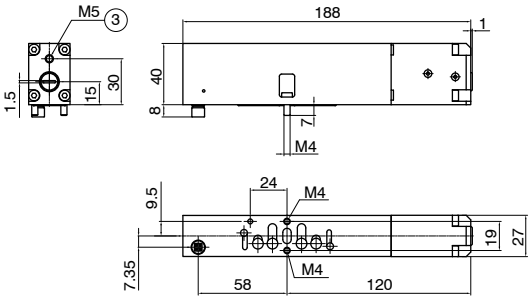
Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50

(V)	VERSION
	141 = Shut-off and exhaust of ports 1-14
(T)	TYPE
	= Non lockable
	K = Lockable



Weight 504 g

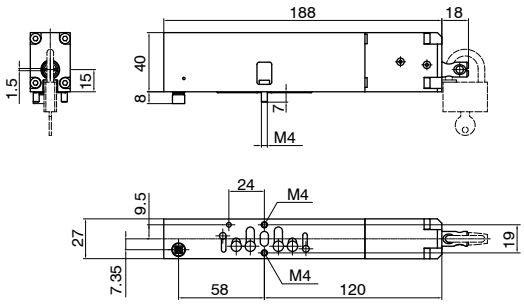
27VL(V)



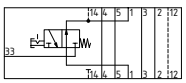


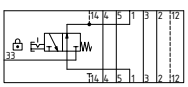
Weight 550 g

27VL(V)K



-Suitable module for vertical configuration
-It allows you to shut-off and exhaust the supply port 1 and pilot port 14 or other modules mounted on it





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pressure regulator (compact version)

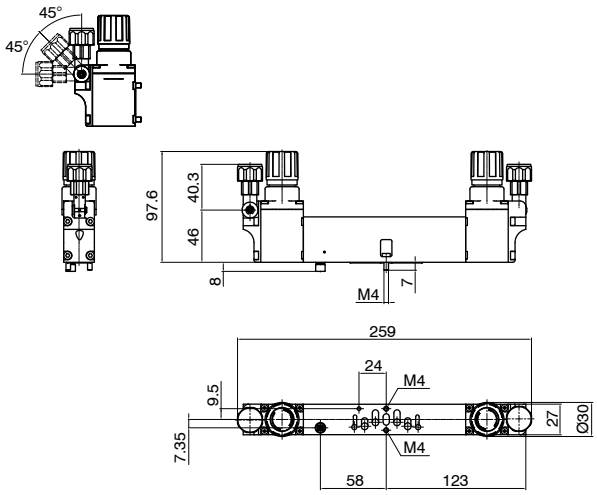
Coding: 27RC Ⓡ Ⓛ Ⓖ Ⓞ Ⓒ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50
Working pressure (bar)	0,5 ... 10

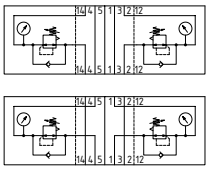
Ⓡ	REGULATION TYPE
	D = Downstream
	U = Upstream
Ⓛ	REGULATION SIDE
	2 = Single L12
	4 = Single L14
	24 = Double L12-L14
Ⓖ	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
Ⓞ	RELIEVING OPTIONS
	A = With reliving
Ⓒ	KNOB COLOUR
	V = Green (RAL 6032)
	G = Grey (RAL 7004)

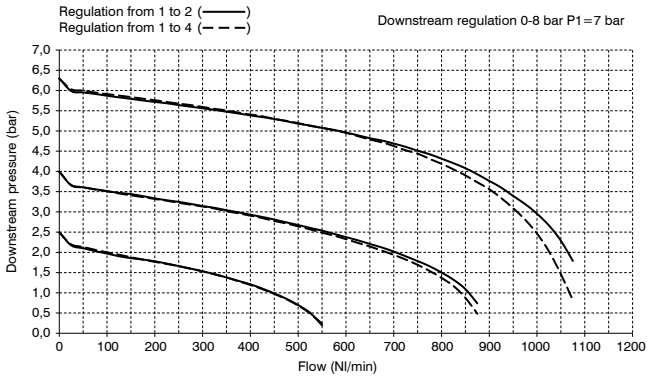
Weight 600 g



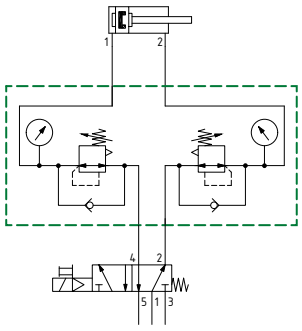


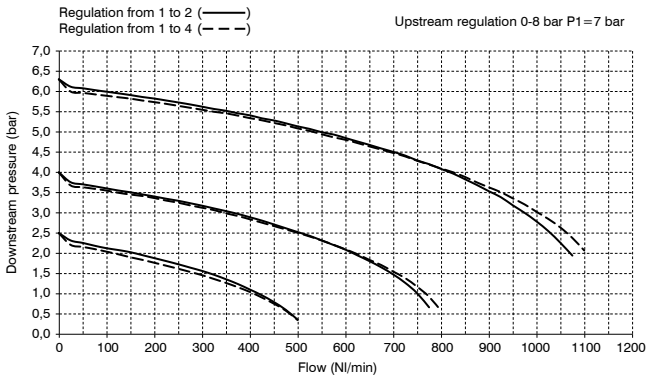
-Suitable module for vertical configuration
-It allows the regulation of output pressure to actuators
-Actuator pressure regulation:
 -with regulator upstream of the solenoid valve (faster exhaust phase of the actuator)
 -with regulator downstream of the solenoid valve
-Possible installation of pressure regulators in succession (available on request)
-Pressure gauges adjustable in 3 positions



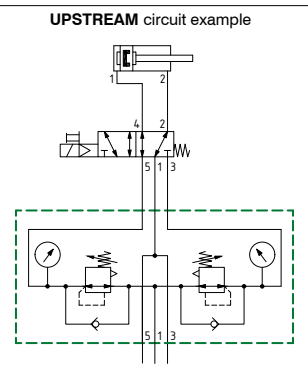


DOWNSTREAM circuit example





UPSTREAM circuit example



Note:
Pressure must be set upwards.
For greater accuracy and sensitivity, it is recommended using a regulator with a pressure rating as close as possible to the desired pressure.

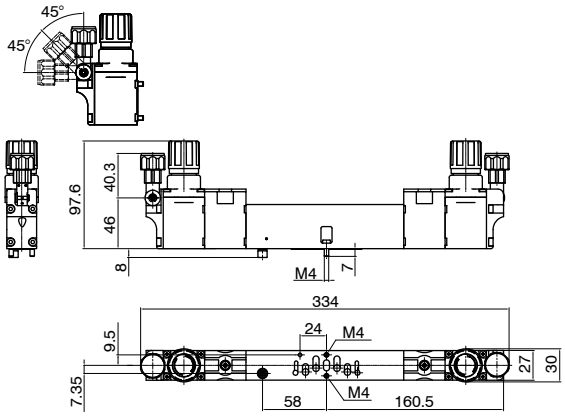
Pressure regulator (extended version)

Coding: 27RP Ⓡ Ⓛ Ⓖ Ⓞ Ⓒ Ⓥ

Technical characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Recommended purity class [5:4:4] according to ISO 8573-1:2010
Temperature °C	-10 ... +50
Working pressure (bar)	0,5 ... 10

Ⓡ	REGULATION TYPE
	D = Downstream
	U = Upstream
Ⓛ	REGULATION SIDE
	2 = Single L12
	4 = Single L14
	24 = Double L12-L14
Ⓖ	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
Ⓞ	RELIEVING OPTIONS
	A = With reliving
Ⓒ	KNOB COLOUR
	V = Green (RAL 6032)
	G = Grey (RAL 7004)
Ⓥ	VERSION
	= Adjustable pressure gauge
	M = Fixed pressure gauge

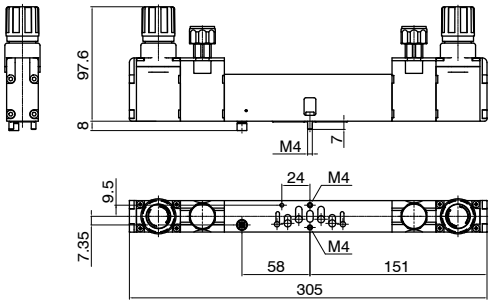




Weight 760 g

27RP Ⓡ Ⓛ Ⓖ Ⓞ Ⓒ

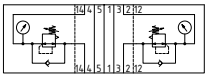


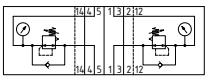


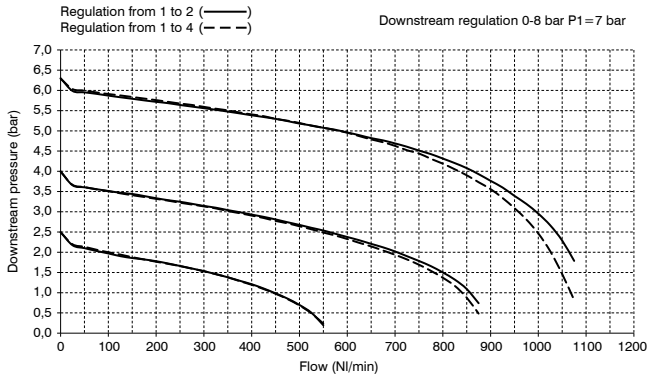
Weight 760 g

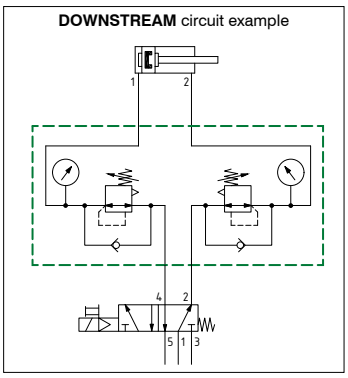
27RP Ⓡ Ⓛ Ⓖ Ⓞ Ⓒ M

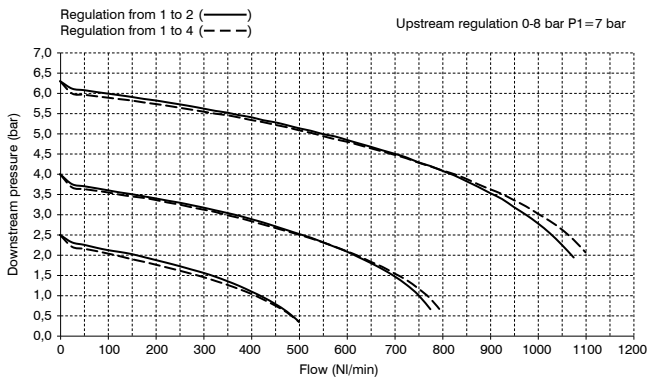
-Suitable module for vertical configuration
-It allows the regulation of output pressure to actuators
-Actuator pressure regulation:
 -with regulator upstream of the solenoid valve (faster exhaust phase of the actuator)
 -with regulator downstream of the solenoid valve
-Possible installation of pressure regulators in succession (available on request)
-Pressure gauges adjustable in 3 positions or fixed

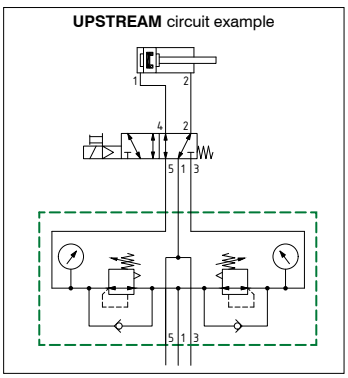












Note:
Pressure must be set upwards.
For greater accuracy and sensitivity, it is recommended using a regulator with a pressure rating as close as possible to the desired pressure.

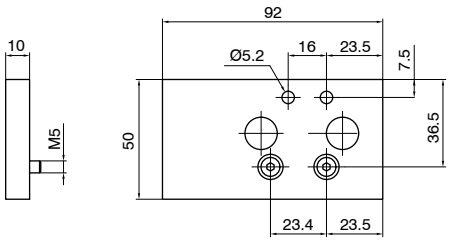
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Offset compensation plate

Coding: 27P0



Weight 118 g

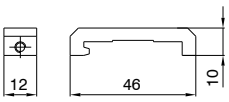


DIN rail adapter

Coding: 3100.16



Weight 12 g



EVO Electronics



A UNIQUE CONTROL SYSTEM, A WIDE RANGE OF SOLUTIONS

The PX Series multiserial module can be integrated into all Optyma S-F-T and 2700 series solenoid valves manifolds in EVO versions. The solenoid valves manifolds can be configured by implementing all major communication protocols on the same electronics, ensuring maximum flexibility and reliability in any application context.

MULTI-PIN MODULE				
	Optyma-S	Optyma-F	Optyma-T	Series 2700
25 pins	•	•	•	•
37 pins	•	•	•	•
44 pins	•			
SERIAL SYSTEMS				
	Optyma-S	Optyma-F	Optyma-T	Series 2700
CANopen® 32 bit protocol node kit	•	•	•	•
CANopen® 48 bit protocol node kit	•			
PROFIBUS DP 32 bit protocol node kit	•	•	•	•
PROFIBUS DP 48 bit protocol node kit	•			
EtherNet/IP protocol node kit	•	•	•	•
EtherCAT® protocol node kit	•	•	•	•
PROFINET IO RT protocol node kit	•	•	•	•
CC-Link IE Field Basic protocol node kit	•	•	•	•
IO-Link 32 bit protocol interface kit	•	•	•	•
IO-Link 48 bit protocol interface kit	•			
INPUTS AND OUTPUTS MODULES				
	Optyma-S	Optyma-F	Optyma-T	Series 2700
8 M8 & M12 digital inputs module kits	•	•	•	•
8 M8 & M12 digital outputs module kits	•	•	•	•
32 digital inputs & outputs module kits (37 pin SUB-D connector)	•	•	•	•
Analogue inputs module kit M8	•	•	•	•
Analogue outputs module kit M8	•	•	•	•
Pt100 inputs module kit	•	•	•	•
ADDITIONAL MODULES				
	Optyma-S	Optyma-F	Optyma-T	Series 2700
Additional power supply module kit	•	•	•	•

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

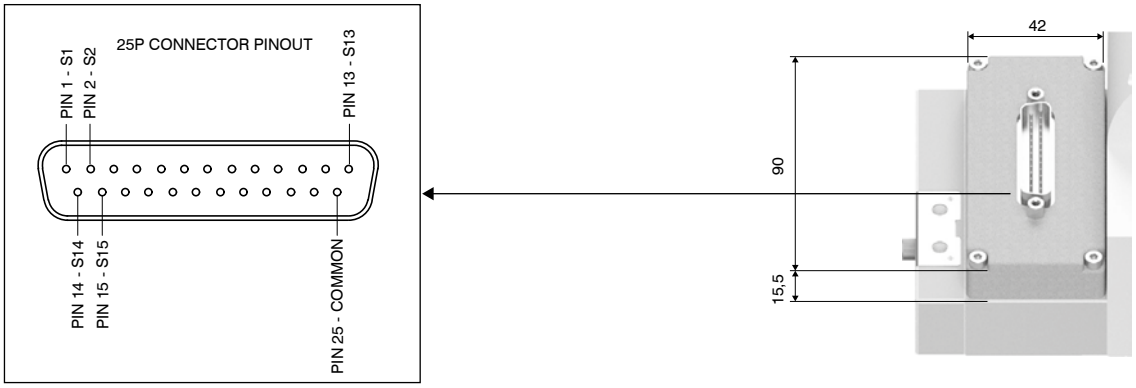
Multi-pin module

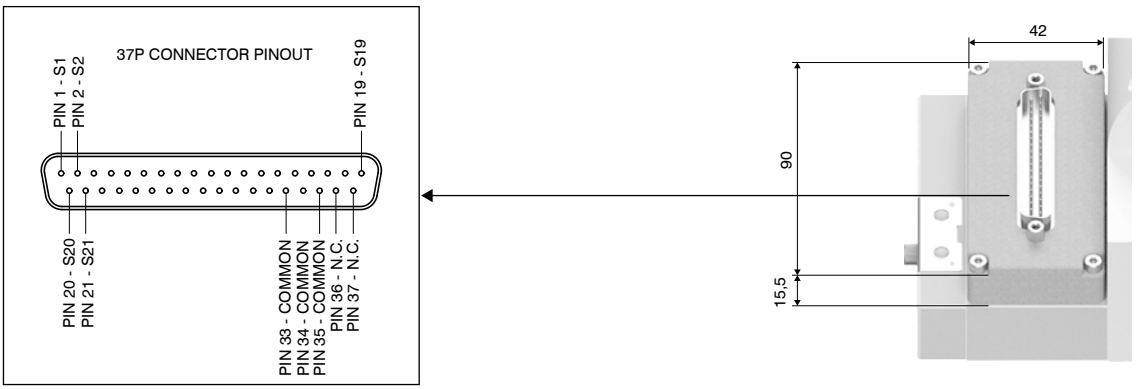
Coding: 5E30.Ⓒ

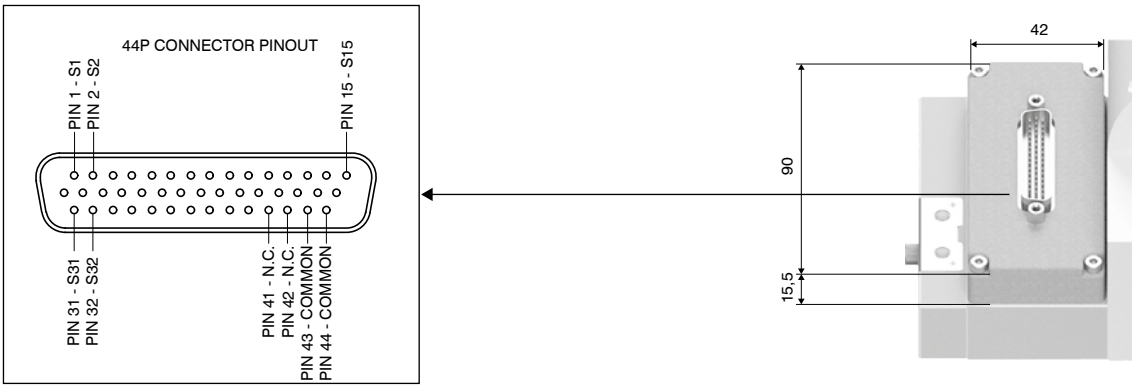
Technical characteristics		
Control voltage	PNP	+ 24 V DC ±10%
	NPN	
	AC	+ 24 V AC
Protection	PNP	Reverse polarity
	NPN	
	AC	/
Maximum altitude	PNP	2000 m a.s.l.
	NPN	
	AC	
Maximum number of handled signals	25 pins	24
	37 pins	32
	44 pins	40

Ⓒ	ELECTRICAL CONNECTION
	25P = Connector 25 pins PNP
	37P = Connector 37 pins PNP
	44P = Connector 44 pins PNP
	25N = Connector 25 pins NPN
	37N = Connector 37 pins NPN
	44N = Connector 44 pins NPN
	25A = Connector 25 pins AC
	37A = Connector 37 pins AC
	44A = Connector 44 pins AC

Scheme / Overall dimensions and I/O layout







CANopen® protocol node kit

CANopen® node manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Connection to CANopen® fieldbus is made via two M12, male and female, 5 pins, type A circular connectors, in parallel between them; connectors pinout is compliant to CiA 106 (V.1.1.0 : July 11th 2023).
Transmission speed and address, as well as termination resistor activation are set via DIP-switches.
CANopen® node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5530.64.ⓋCO

Ⓥ	VERSION
	32 = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).
To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\, i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

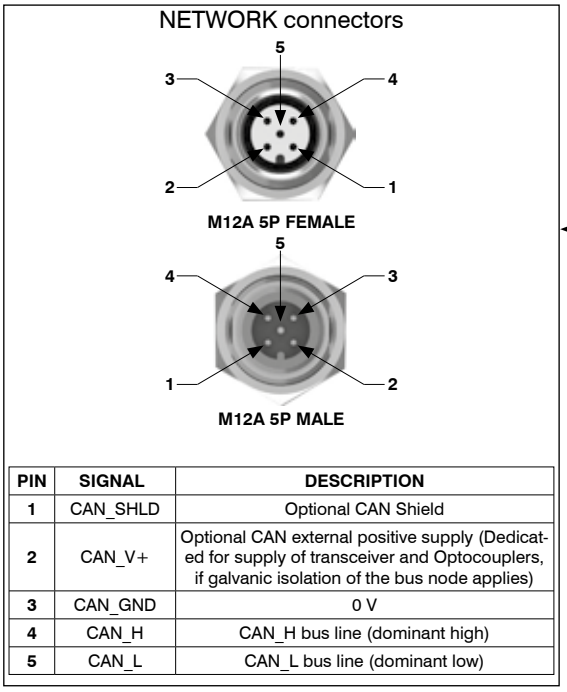
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

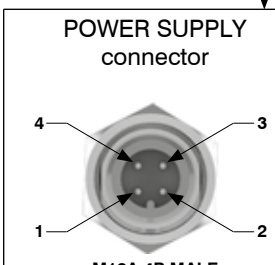
n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

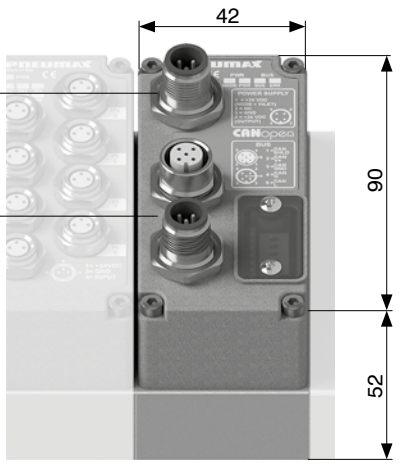
Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	CAN_SHLD	Optional CAN Shield
2	CAN_V+	Optional CAN external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (dominant high)
5	CAN_L	CAN_L bus line (dominant low)



PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A



Technical characteristics		
Specifications		CiA 106 (V.1.1.0 : July 11th 2023)
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	40 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type A
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

PROFIBUS DP protocol node kit

PROFIBUS DP node manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Connection to PROFIBUS DP fieldbus is made via two M12, male and female, 5 pins, type B circular connectors, in parallel between them; connectors pinout is PROFIBUS Interconnection Technology specifications compliant (Version 1.1, August 2001).
Address as well as termination resistor activation are set via DIP-switches.
PROFIBUS DP node is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the node.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5330.64.Ⓥ PB

Ⓥ	VERSION
	32 = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).
To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\, i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

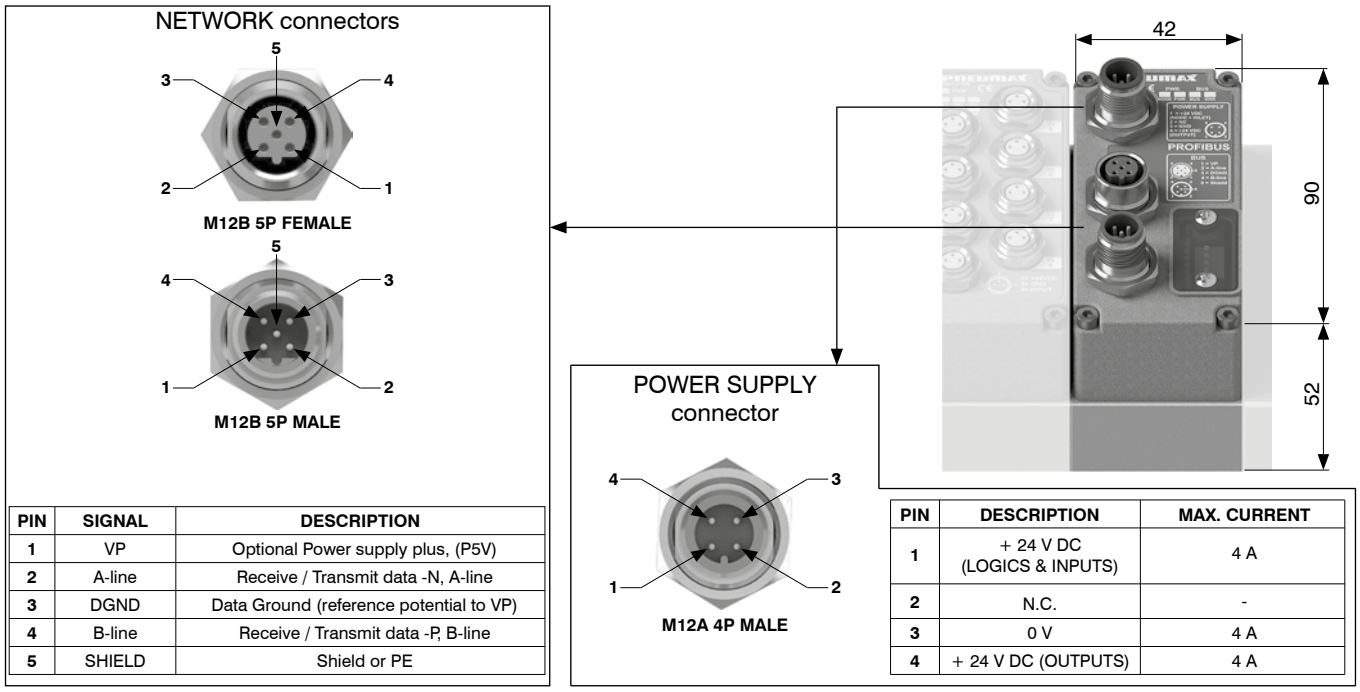
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	VP	Optional Power supply plus, (P5V)
2	A-line	Receive / Transmit data -N, A-line
3	DGND	Data Ground (reference potential to VP)
4	B-line	Receive / Transmit data -P, B-line
5	SHIELD	Shield or PE

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Specifications		PROFIBUS DP
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	70 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 5 pins male-female connectors type B
	Baud rate	9,6 - 19,2 - 93,75 - 187,5 - 500 - 1500 - 3000 - 6000 - 12000 Kbit/s
	Addresses possible numbers	From 1 to 99
	Maximum nodes number in network	100 (slave + master)
	Bus maximum recommended length	100 m at 12 Mbit/s - 1200 m at 9,6 Kbit/s
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

EtherNet/IP protocol node kit

EtherNet/IP node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48EI provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EI



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

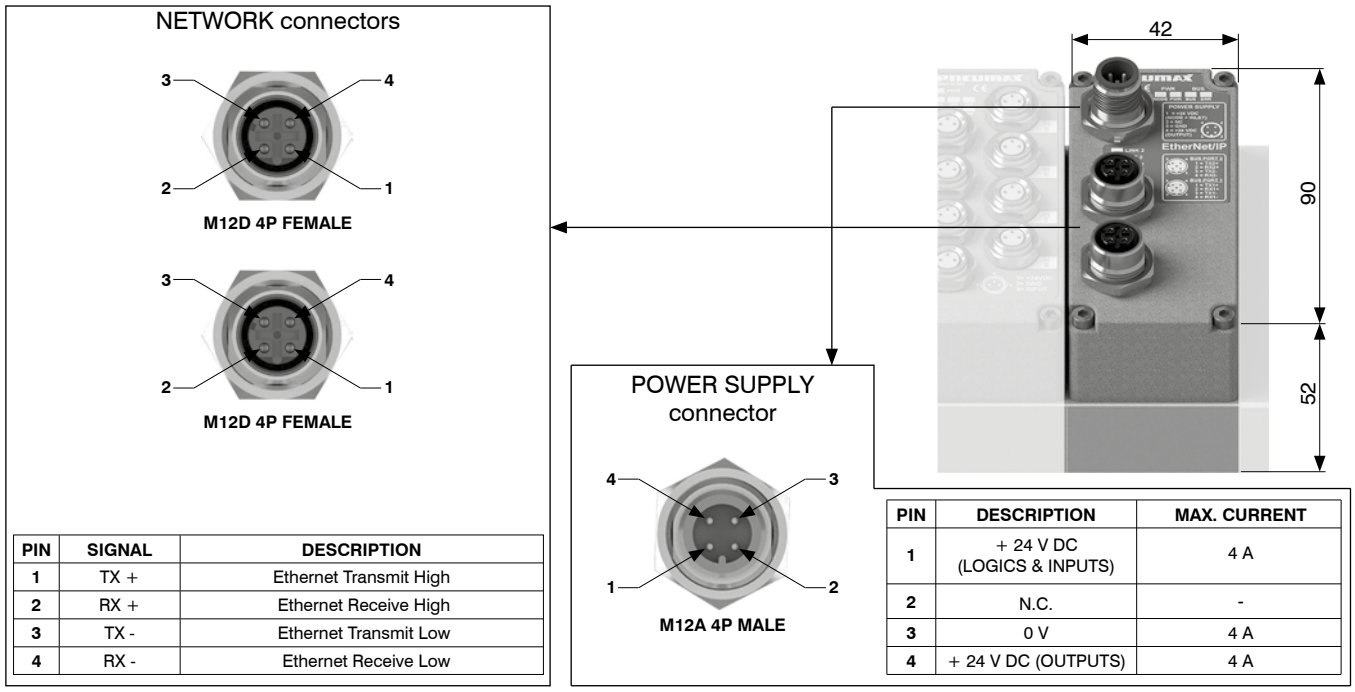
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

EtherCAT® protocol node kit

EtherCAT® node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48EC provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48EC



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

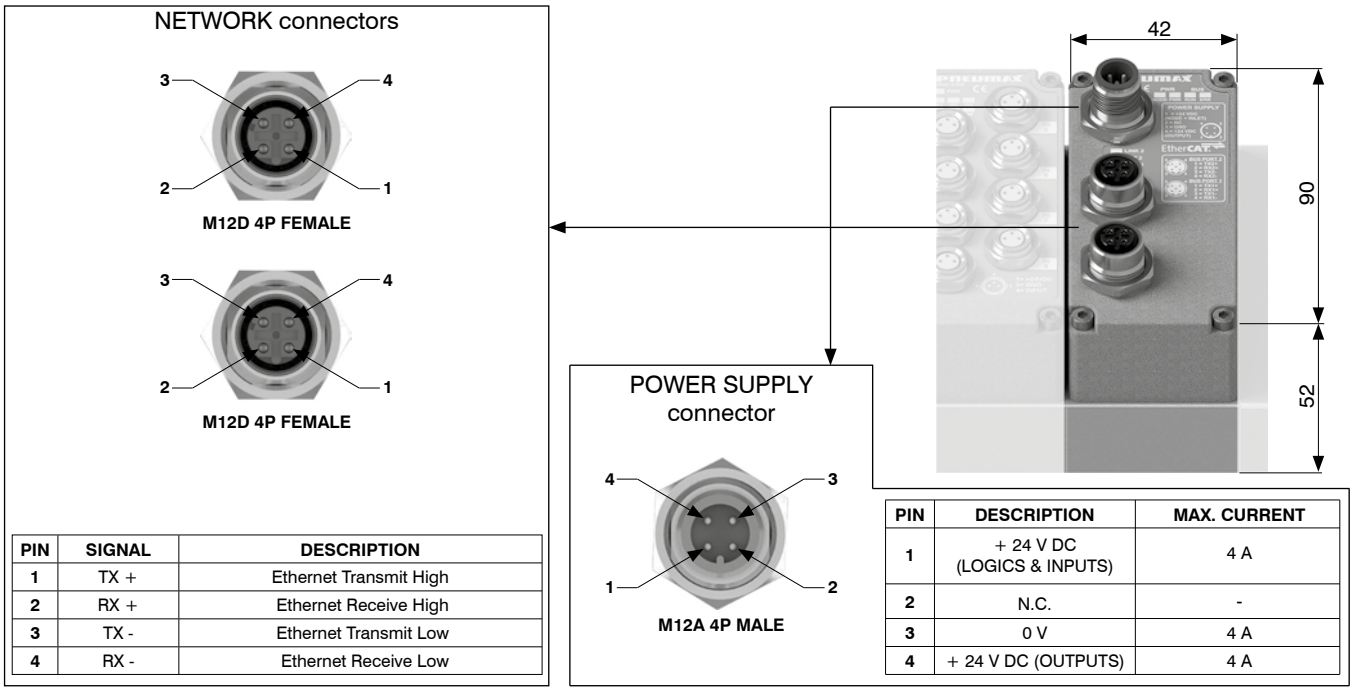
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

PROFINET IO RT protocol node kit

PROFINET IO RT node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48PN provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48PN



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\, i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

Where:

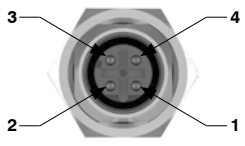
$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

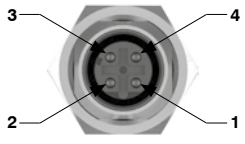
In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout

NETWORK connectors

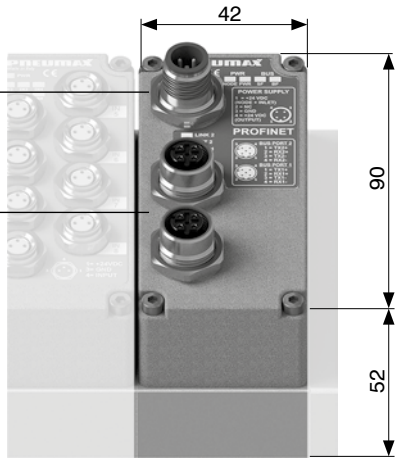


M12D 4P FEMALE

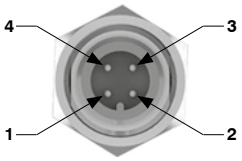


M12D 4P FEMALE

PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low



POWER SUPPLY connector



M12A 4P MALE

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	Green / red status LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

CC-Link IE Field Basic protocol node kit

CC-Link IE Field Basic node manages 128 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Network connection is made via 2 M12 female, type D, 4 pins, circular connectors.
Code K5730.128.48CL provides first 48 outputs, corresponding to least significant 6 bytes, are allocated to the solenoid valve positions, regardless how many they are and how many valves are installed on the manifold directly connected to the node.
Remaining 80 outputs can be used to manage output modules; bytes allocation to additional modules is fully automatic.

Coding: K5730.128.48CL



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by OUTPUTS + 24 V DC (pin 4).

To compute the maximum current on the OUTPUTS + 24 V DC, please use the following formula:

$$I_{24\,V\,DC\,out} = \sum_{i=1}^{n} I_{out,i} + m\,i_{EV}$$

n = number of installed modules
$I_{out,i}$ = maximum total current absorbed by the i-th module on the OUTPUTS + 24 V DC supply rail (please see specifications of the single module)
m = number of installed solenoid pilots
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

For each fieldbus node, maximum deliverable current by OUTPUTS + 24 V DC supply is 4 A, moreover the sum of the currents on OUTPUTS + 24 V DC and INPUTS + 24 V DC must not exceed 4 A.

$$I_{24\,V\,DC\,out} + I_{24\,V\,DC\,in} < 4A$$

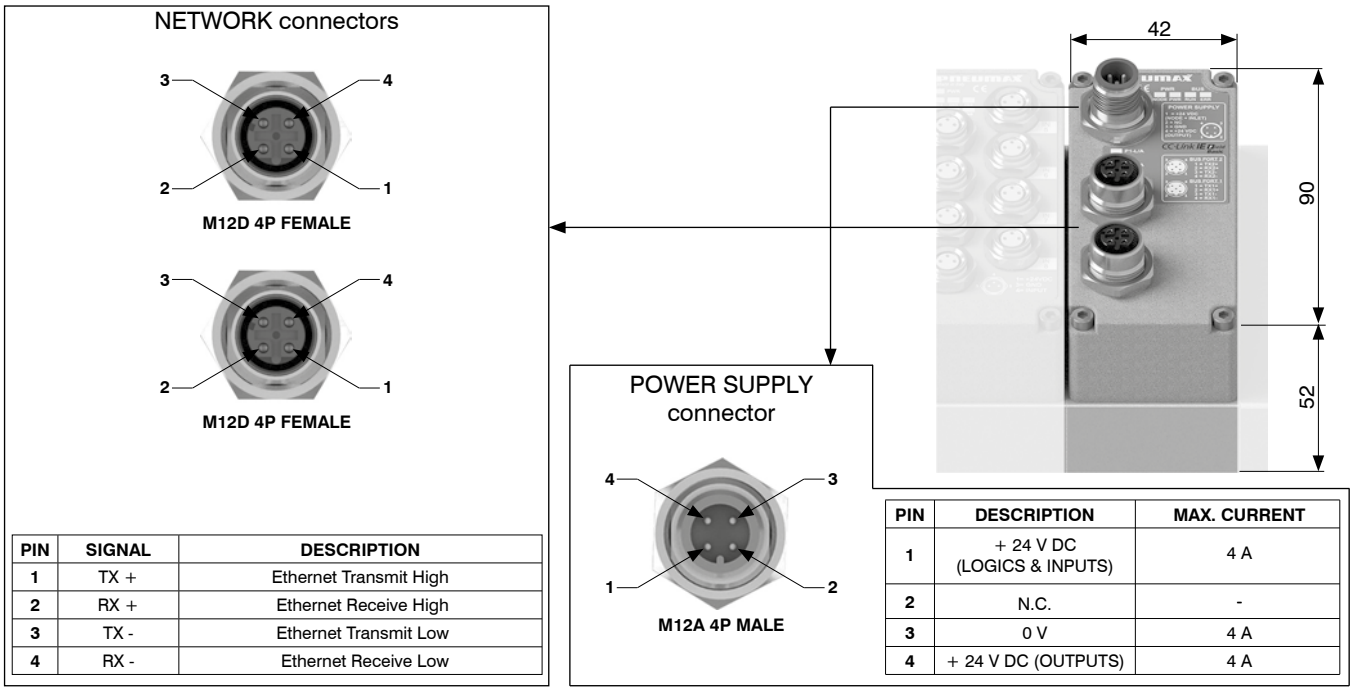
Where:

$$I_{24\,V\,DC\,in} = \sum_{i=1}^{n} I_{in,i}$$

n = number of installed modules
$I_{in,i}$ = maximum total current absorbed by the i-th module on the INPUTS + 24 V DC supply rail (please see specifications of the single module)

In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



PIN	SIGNAL	DESCRIPTION
1	TX +	Ethernet Transmit High
2	RX +	Ethernet Receive High
3	TX -	Ethernet Transmit Low
4	RX -	Ethernet Receive Low

PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

Technical characteristics		
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC ± 10%
	Node only current consumption on + 24 V DC inputs	65 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	2 M12 4 pins male-female connectors type D (IEC 61076-2-101)
	Baud rate	100 Mbit/s
	Maximum distance between 2 nodes	100 m
	Bus diagnosis	1 Green LED and 1 red status LED + 2 link and activity LEDs'
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

IO-Link protocol interface kit

IO-Link interface manages 64 inputs and outputs.
Accessory modules can be connected in whatever order and configuration.
Electric power supply and IO-Link connection to the Master are made via M12, male, 5 pins, type A, circular connector, "CLASS B", according to IO-Link specifications.
Electric rails L+/L- supply interface only, while P24/N24 rails supply additional modules and solenoid valves.
Either power supplies are galvanically isolated in the IO-Link interfaces.
IO-Link interface is available in two versions with 32 or 48 outputs allocated to solenoid valves on the manifold directly connected to the interface.
Such outputs correspond to least significant bytes and their allocation is independent of how many solenoid valves are installed.
Remaining outputs can be used to control the modules.
Byte allocation to additional modules is fully automatic.

Coding: K5830.64.Ⓥ IK

	VERSION
Ⓥ	**32** = 32 output bits available for valve connections
	48 = 48 output bits available for valve connections



Current limitations

Both stand alone and integrated components must operate within the current limits of the fieldbus node; please note: the solenoid valves are supplied by pin 2 and pin 5 (P24 / N24).

To compute the maximum current on the P24 / N24 supply, please use the following formula::

$$I_{24V\,DC\,P24/N24} = \sum_{i=1}^{n} I_{acc,i} + m \cdot i_{EV}$$

n = number of installed modules

$I_{acc,i}$ = maximum total current absorbed by each i-th accessory module, given by the sum of the absorbed currents on + 24 V DC OUTPUTS and + 24 V DC INPUTS

m = number of installed solenoid pilots

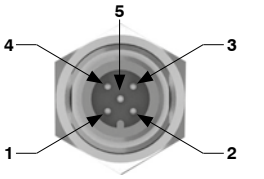
i_{EV} = mean absorbed current per solenoid pilot (please see table below)

Series	i_EV
2200 "Optyma S"	36 mA
2500 "Optyma F"	54 mA
2500 "Optyma T"	54 mA
Series 2700	24 mA (1 W version) / 100 mA (2,3 W version)

maximum current on P24/N24 supply rail must be **less than 4A**.

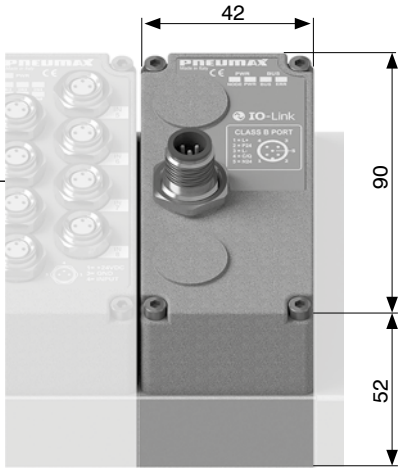
⚠ In case total current is more than 4 A, it is mandatory to supply modules exceeding current limit with power supply module K5030.M12.

Scheme / Overall dimensions and I/O layout



M12A 5P MALE

PIN	SIGNAL
1	L+
2	P24 (+ 24 V DC)
3	L-
4	C/Q
5	N24 (0 V)



Technical characteristics		
Specifications		IO-Link Specification v1.1
Case		Reinforced technopolymer
Power supply	Voltage	+ 24 V DC +/- 10%
	Interface current consumption on + 24 V DC (L+ / L-)	25 mA
	Power supply diagnosis	Green LED PWR NODE / Green LED PWR OUT
Communication	Connection	"Class B" port
	Communication speed	38.4 kbaud/s
	Maximum distance from Master	20 m
	Bus diagnosis	Green / red status LED
	Vendor ID / Device ID	1257 (hex 0x04E9) / 3000 (hex 0x0BB8)
Configurations file IODD		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature °C		-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

8 digital inputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

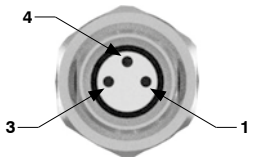
Coding: K5230.08.M8



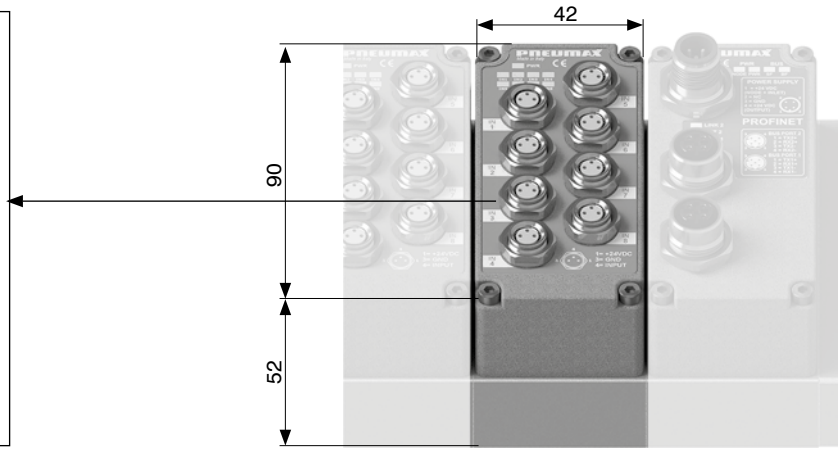
Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA

Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
3	0 V
4	INPUT



8 digital inputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
Every connector takes two input channels.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

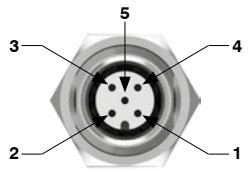
Coding: K5230.08.M12



Technical characteristics	
Maximum current per module	300 mA
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3kΩ
Maximum cable length	< 30 m
Input data allocation	8 bit
INPUTS + 24 V DC current consumption of the module only	5 mA

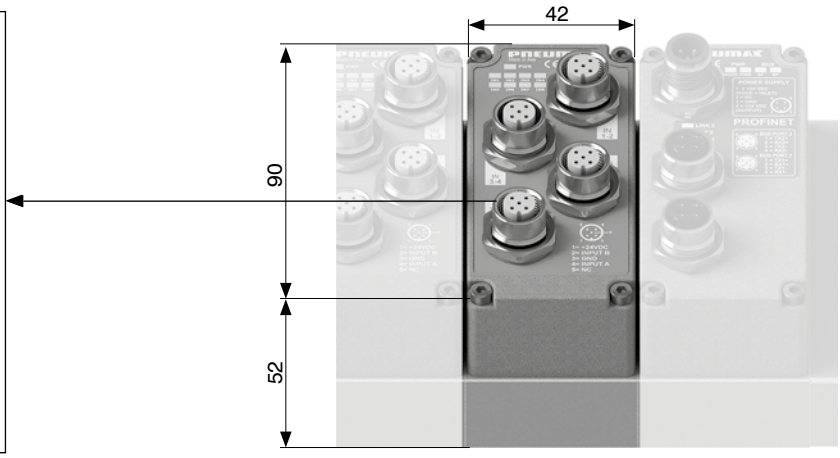
Scheme / Overall dimensions and I/O layout

M12 5P female connector



M12A 5P FEMALE

PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
2	INPUT B
3	0 V
4	INPUT A
5	N.C.



8 digital outputs module kit M8

M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR" green LED light-on.
Each output has a LED indicator associated which lights up when output's signal status is high.

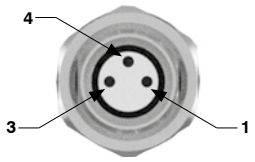
Coding: K5130.08.M8



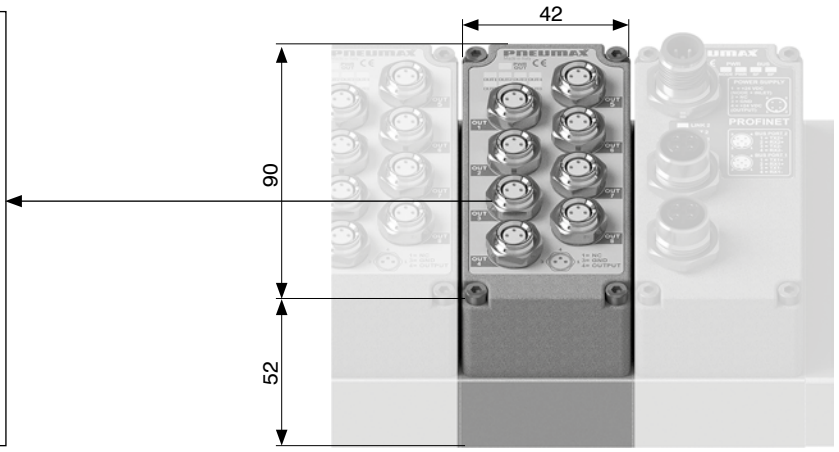
Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	N.C.
3	0 V
4	OUTPUT



8 digital outputs module kit M12

M12 digital inputs module provides 4 M12, 5 pins, female connectors.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by "PWR" green LED light-on.
Each output has a LED indicator associated which lights up when output's signal status is high.

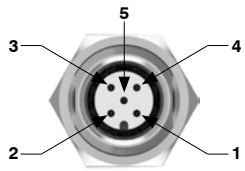
Coding: K5130.08.M12



Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	8 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

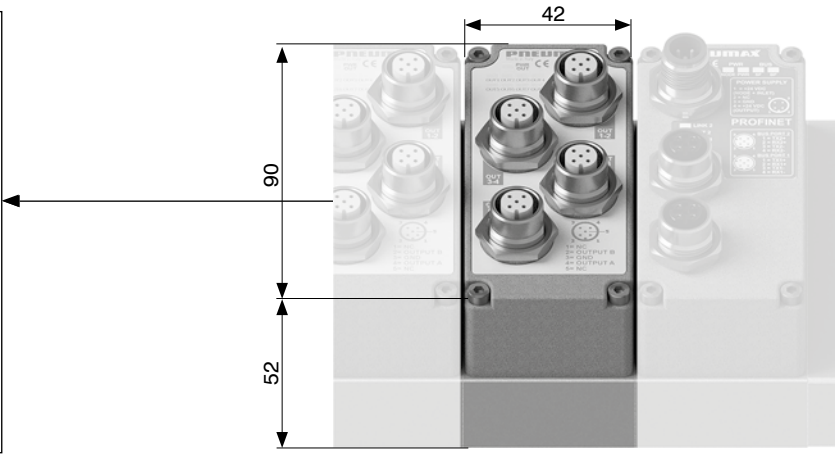
Scheme / Overall dimensions and I/O layout

M12 5P female connector



M12A 5P FEMALE

PIN	DESCRIPTION
1	N.C.
2	OUTPUT B
3	0 V
4	OUTPUT A
5	N.C.



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

32 digital inputs module kit (37 pins SUB-D connector)

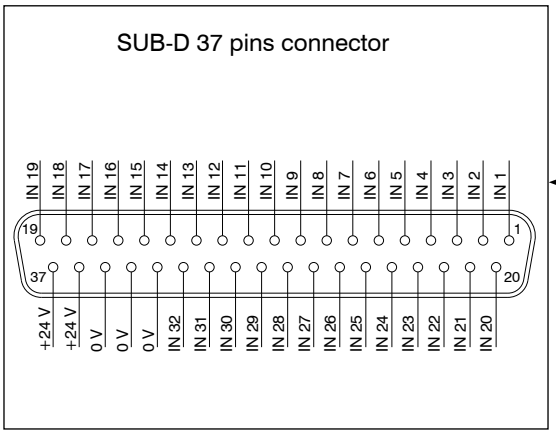
The module provides a SUB-D 37 pins female connector.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

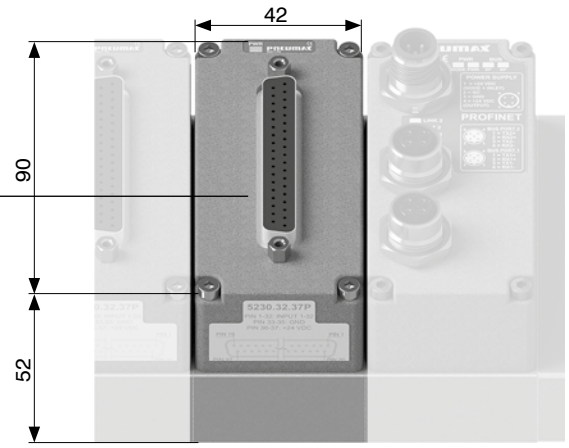
Coding: K5230.32.37P



Technical characteristics	
Maximum current per module	1 A
Protection	Overcurrent (auto-resettable fuse) Reverse polarity
Input impedence	3 kΩ
Maximum cable length	< 30 m
Input data allocation	32 bit
INPUTS + 24 V DC current consumption of the module only	10 mA

Scheme / Overall dimensions and I/O layout





32 digital outputs module kit (37 pins SUB-D connector)

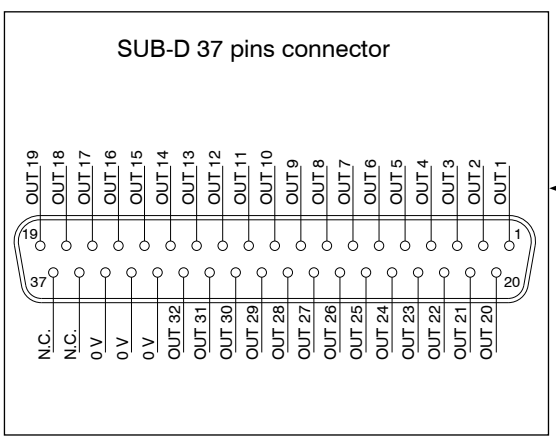
The module provides a SUB-D 37 pins female connector.
Outputs have PNP logic, + 24 V DC ± 10%.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.
Power supply presence is displayed by “PWR” green LED light-on.

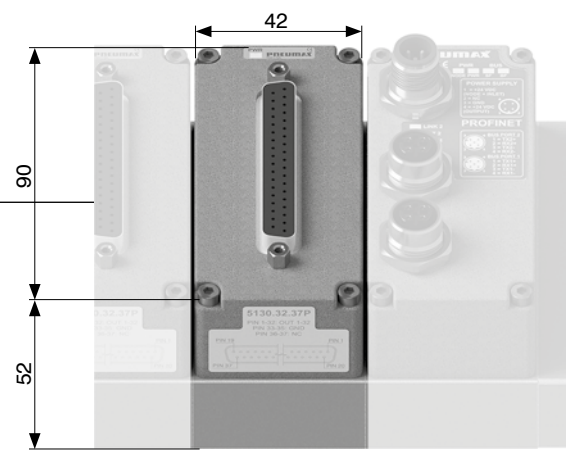
Coding: K5130.32.37P



Technical characteristics	
Maximum current per output	100 mA
Protection	Short circuit (electronic), trigger at 2.8A
Maximum cable length	< 30 m
Output data allocation	32 bit
OUTPUTS + 24 V DC current consumption of the module only	15 mA

Scheme / Overall dimensions and I/O layout





Analogue inputs module kit M8

M8 analogue inputs module converts analogue signals into digital signals and transfers acquired data to field bus, via network node.
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

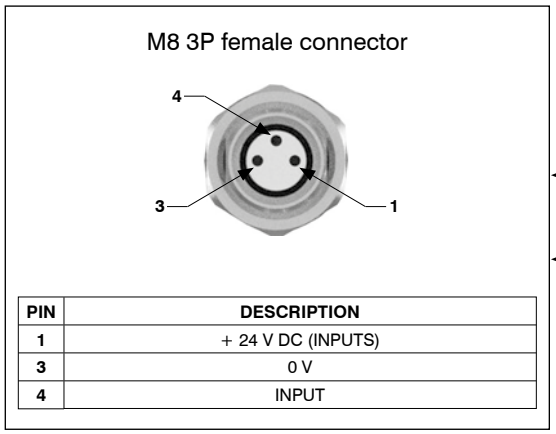
Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Input impedance (voltage inputs)	33 kΩ
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Input signal overcurrent or overvoltage
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	300 mA
Overall maximum current 4 channels (pin 1)	750 mA (375 mA for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA

Coding: K5230.ⓒⓢ

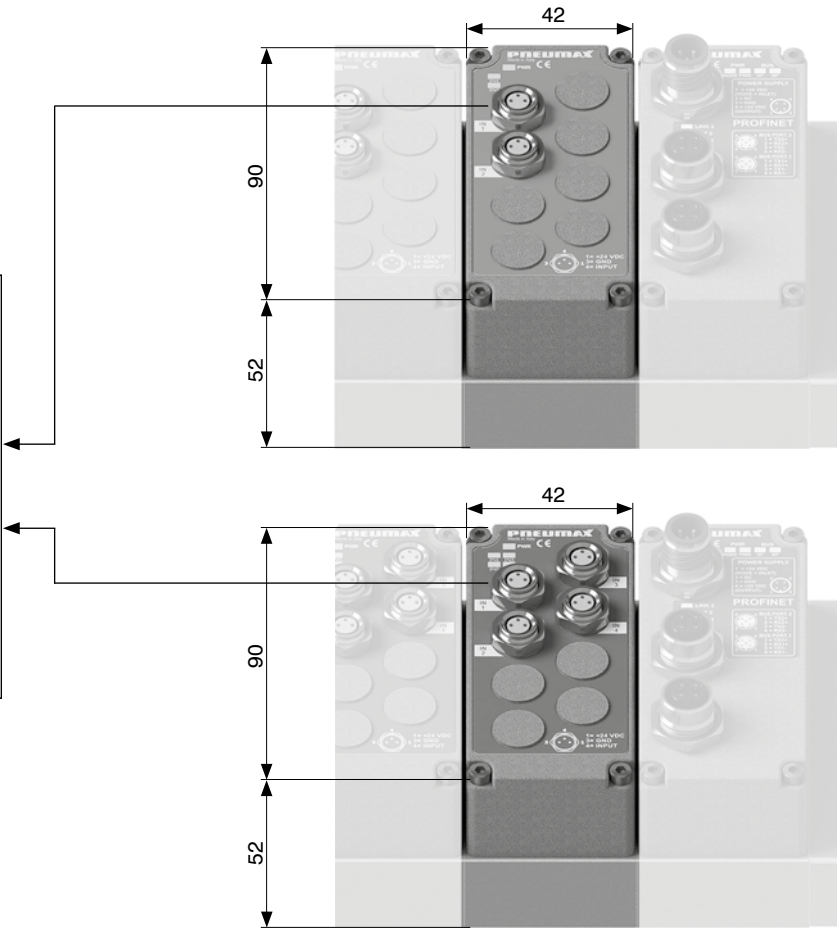
ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
ⓢ	SIGNAL
	T.00 = Voltage (0-10 V)
	T.01 = Voltage (0-5 V)
	C.00 = Current (4-20 mA)
	C.01 = Current (0-20 mA)



Scheme / Overall dimensions and I/O layout



PIN	DESCRIPTION
1	+ 24 V DC (INPUTS)
3	0 V
4	INPUT



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Analogue outputs module kit M8

M8 analogue outputs module converts output data, received from field bus via network node, into analogue signal.
Outputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pins M12 power connector, pin 4) or by K5030.M12 additional power supply module, in case it were installed upstream of the outputs module.

Coding: K5130.ⓒⓢ

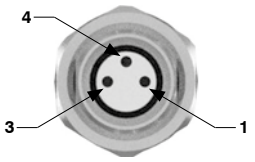
ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
ⓢ	SIGNAL
	T.00 = Voltage (0-10 V)
	T.01 = Voltage (0-5 V)
	C.00 = Current (4-20 mA)
	C.01 = Current (0-20 mA)

Technical characteristics	
Protection (pin 1)	Overcurrent (auto-resettable fuse)
Protection (pin 4)	Overcurrent (auto-resettable fuse)
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Output data allocation	16 bit per channel
Diagnostic LED	Output signal overcurrent
Accuracy	0,3% F.S.
Overall maximum current 2 channels (pin 1)	1 A
Overall maximum current 4 channels (pin 1)	2 A (1 A for each pair of channels)
INPUTS + 24 V DC current consumption of the module only	15 mA
OUTPUTS + 24 V DC current consumption of the module only (2 channels)	35 mA
OUTPUTS + 24 V DC current consumption of the module only (4 channels)	70 mA

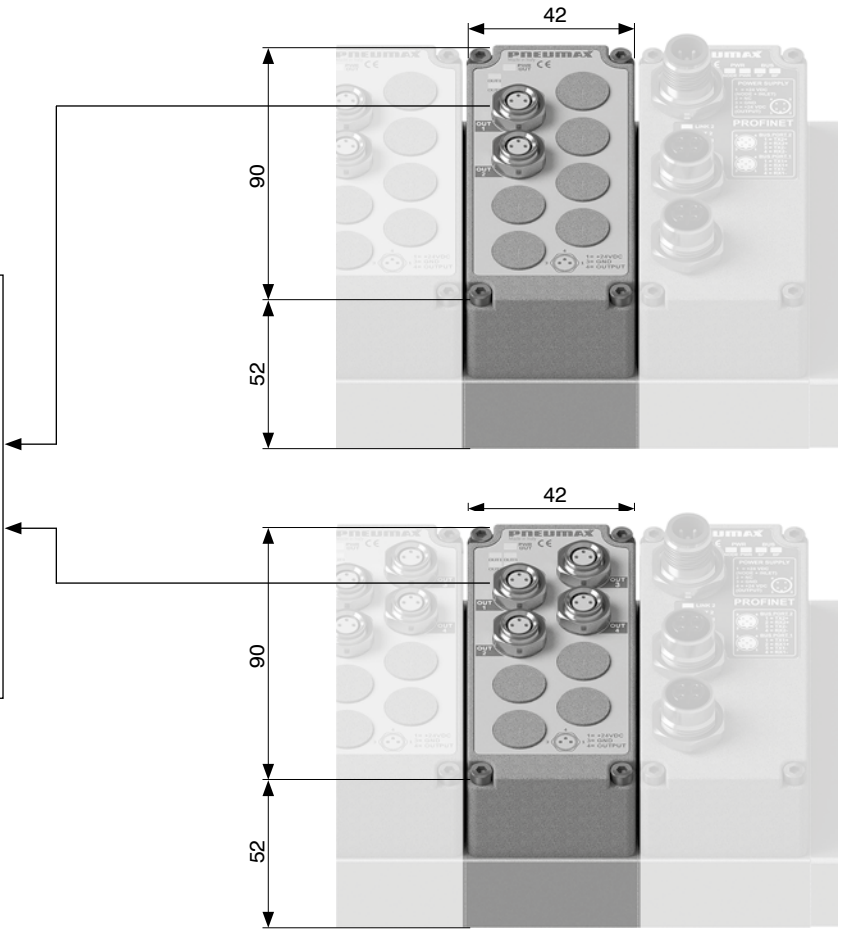


Scheme / Overall dimensions and I/O layout

M8 3P female connector



PIN	DESCRIPTION
1	+ 24 V DC (OUTPUTS)
3	0 V
4	OUTPUT



Pt100 inputs module kit

Pt100 inputs module digitizes signals from Pt100 probes and transfers acquired data to field bus, via network node.
It is possible to connect two, three or four wires probes.
Inputs module power supply is provided by + 24 V DC power input on the serial system (type A, 4 pin M12 power connector, pin 1) or by K5030.M12 additional power supply module, in case it were installed upstream of the inputs module.

Coding: K5230.ⓒP.0Ⓣ

ⓒ	CHANNELS
	2 = 2 channels
	4 = 4 channels
Ⓣ	TYPE
	0 = Pt100 2 wires
	1 = Pt100 3 wires
	2 = Pt100 4 wires

Technical characteristics	
Digital conversion resolution	12 bit
Maximum cable length	< 30 m
Input data allocation	16 bit per channel
Diagnostic LED	Probe presence Temperature out of range
Accuracy	±0,2°C
Probe temperature range	-100°C ... +300°C
INPUTS + 24 V DC current consumption of the module with probes (2 channels)	25 mA
INPUTS + 24 V DC current consumption of the module with probes (4 channels)	35 mA

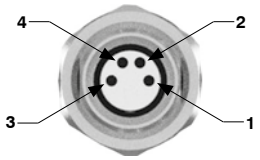
Conversion formula (°C)

$$\text{Temperature (°C)} = \left(\frac{\text{Points}}{4095} \times 400\right) - 100$$



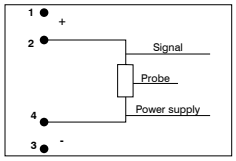
Scheme / Overall dimensions and I/O layout

M8 4P female connector



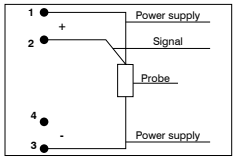
Connection scheme 2 wires probe

PIN	DESCRIPTION
1	N.C.
2	SENSOR +
3	POWER SUPPLY -
4	N.C.



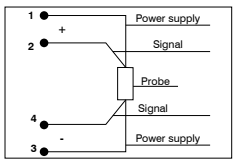
Connection scheme 3 wires probe

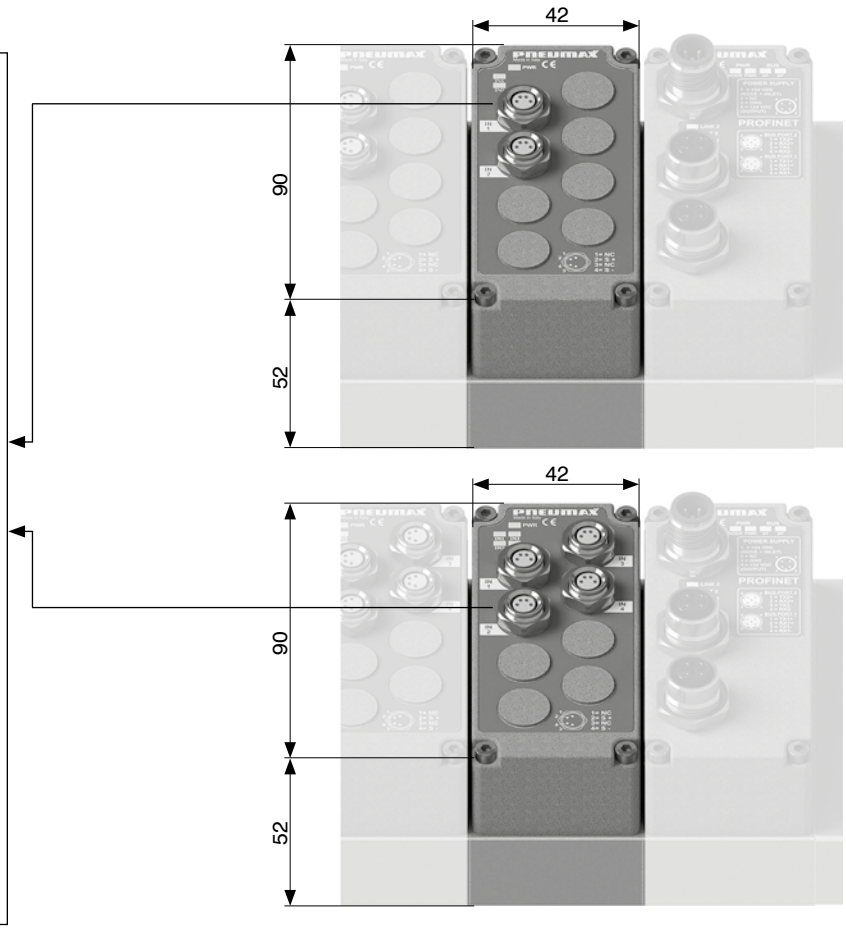
PIN	DESCRIPTION
1	POWER SUPPLY +
2	SENSOR +
3	POWER SUPPLY -
4	N.C.



Connection scheme 4 wires probe

PIN	DESCRIPTION
1	POWER SUPPLY +
2	SENSOR +
3	POWER SUPPLY -
4	SENSOR -





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

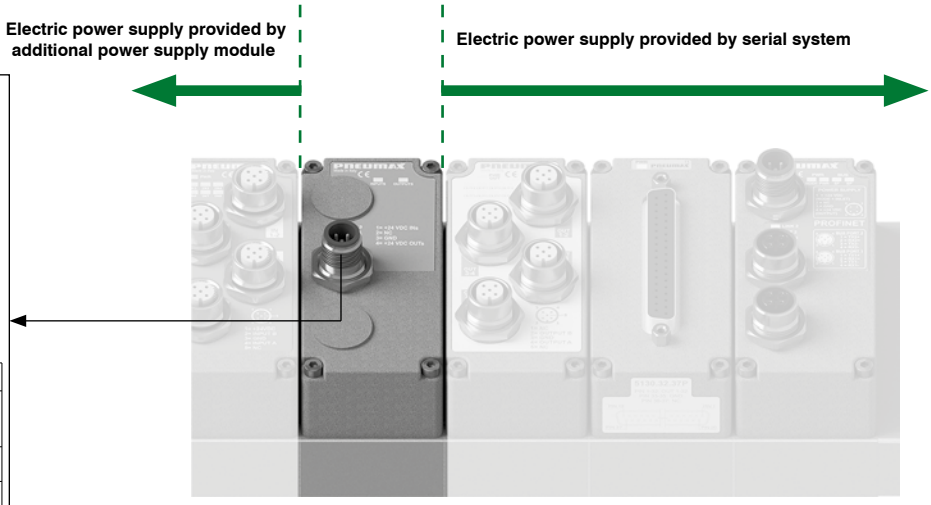
Additional power supply module kit

Additional power supply module supplies additional electric power for downstream optional modules, where “downstream” means farther from serial node, **resetting the current limits of the network node / IO-Link interface**.
Electric connection of the module to external power supply unit occurs via an M12 4 pins type A male connector.
M12 connector has two different pins to power up logics and inputs (Pin 1) and outputs (Pin 4).
Presence of each power supply rail is indicated by corresponding green LED.
When using IO-Link interface, the additional power supply module is useful for separating the module power supplies of input from the output modules placed downstream.

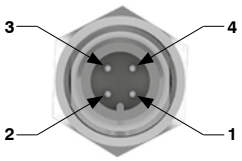
Coding: K5030.M12



Scheme / Overall dimensions and I/O layout



M12 4P male connector



M12A 4P MALE

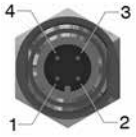
PIN	DESCRIPTION	MAX. CURRENT
1	+ 24 V DC (LOGICS & INPUTS)	4 A
2	N.C.	-
3	0 V	4 A
4	+ 24 V DC (OUTPUTS)	4 A

POWER SUPPLY connectors

Straight connector M12A 4P female

Coding: 5312A.F04.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

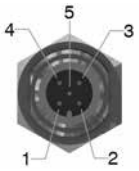
Power supply socket

NETWORK connectors

Straight connector M12A 5P female

Coding: 5312A.F05.00





Upper view slave connector

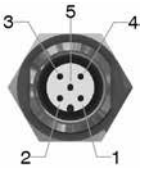
PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Socket for bus CANopen® and IO-Link

Straight connector M12A 5P male

Coding: 5312A.M05.00





Upper view slave connector

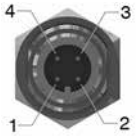
PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Plug for bus CANopen®

Straight connector M12D 4P male

Coding: 5312D.M04.00





Upper view slave connector

PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

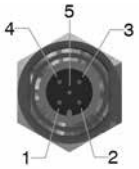
Plug for bus EtherCAT®, PROFINET IO RT and EtherNet/IP

Trademarks: EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Straight connector M12B 5P female

Coding: 5312B.F05.00





Upper view slave connector

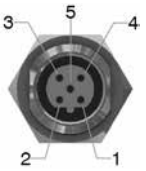
PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

Socket for bus PROFIBUS DP

Straight connector M12B 5P male

Coding: 5312B.M05.00





Upper view slave connector

PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

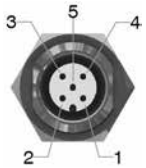
Socket for bus PROFIBUS DP

INPUTS connectors

Straight connector M12A 5P male

Coding: 5312A.M05.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
2	INPUT B
3	0 V
4	INPUT A
5	N.C.

Plug for inputs modules

Straight connector M8 3P male

Coding: 5308A.M03.00





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V

Plug for inputs modules

Plugs

M12 plug

Coding: 5300.T12



M8 plug

Coding: 5300.T08



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Cable complete with connector, 25 Poles, IP65



Coding: 2300.25.Ⓛ.Ⓒ

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 37 Poles, IP65



Coding: 2400.37.Ⓛ.Ⓒ

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 44 Poles, IP65



Coding: 2300.44.Ⓛ.Ⓒ

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

Cable complete with connector, 25 Poles, IP65



Coding: 2400.25.Ⓛ.25

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters

Cable complete with connector, 37 Poles, IP65



Coding: 2400.37.Ⓛ.37

Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters

Series 2300 ENOVA®

Technical innovation, rational design, high performance and extremely compact size: these are the main features the ENOVA® series bring to the market.
Each valve comprises all the necessary pneumatic and electrical functions needed to produce a solenoid valve assembly.
There are no limits to the configuration of the solenoid valve island, as full priority has been given to the end user's needs; the addition or removal of modules is a simple operation that can be swiftly and easily achieved.
The management of the electrical signals through the valves is optimized through a patented dedicated connector in each valve.
Electrical connections are made via a twenty-five pin connector, which is capable of controlling up to twenty-two solenoids.
Electrical and pneumatic connections are located on the same module at one end of the assembly.
Serial bus nodes compatible with most common protocols are easily integrated.
Most widely used and known communication protocols, such as PROFIBUS DP, CANopen®, DeviceNet, AS-Interface can be directly integrated with the valve manifold by simply plugging the necessary module onto the electrical connection, maintaining IP65 environmental protection.
The management of inputs has also been foreseen, and can be achieved by adding one or more expansion modules directly to the serial module.

"Shifting time of pneumatic directional control valves or moving parts, logic devices were measured in accordance to ISO 12238:2001"

Main characteristics

- Clean profile prevents accumulation of dirt
- Compact size: modules of 12.5 mm
- Connections available: 4 , 6 , 8 mm
- IP65 protection grade
- Optimized electrical connection system
- Electrical and pneumatic line connections on one side
- Quick coupling connection system with visual indicator: locked/unlocked
- Freedom of configuration

Functions

- 5/2 monostable
- 5/2 bistable
- 5/3 closed centres
- 2x3/2 N.C. - N.C. (5/3 open centres)
- 2x3/2 N.O. - N.O. (5/3 pressured centres)
- 2x3/2 N.C. - N.O.
- 2x2/2 N.C. - N.C.
- 2x2/2 N.O. - N.O.
- 2x2/2 N.C. - N.O.

Construction characteristics

Central body	Reinforced technopolymer
External casing	Reinforced technopolymer
Spool seals	PUR
Springs	Spring steel with protective coating
Operators	Reinforced technopolymer
Spools	Aluminium 2011

Operational characteristics

Supply voltage	24 VDC ± 10% PNP (NPN on request)
Pilot consumption	0,9 Watt
Valve working pressure [1-11]	from vacuum to 10 bar max.
Pilot working pressure [12-14]	from 2,5 to 7 bar max.
Operating temperature	-5°C ... +50°C
Protection degree	IP65
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous

Attention: dry air must be used for applications below 0°C"

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Differential (Monostable)

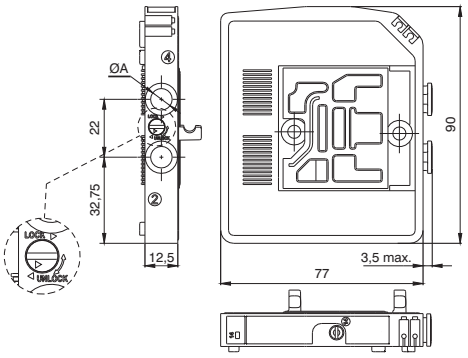
Coding: 23ⒺⒸ.52.00.36.Ⓥ

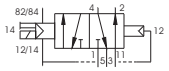
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	12
Response time according to ISO 12238, deactivation time (ms)	15

Ⓔ	ELECTRICAL CONTACT
	0 = Standard (only one electric signal)
	1 = CEB (Bistable Electrical contacts)-(two electrical signals)
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE B4
SHORT CODE B6
SHORT CODE B8
SHORT CODE R4 (CEB)
SHORT CODE R6 (CEB)
SHORT CODE R8 (CEB)







Weight 115 g

Solenoid-Spring (Monostable)

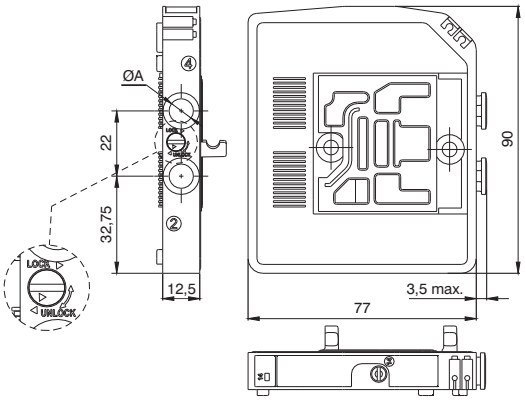
Coding: 23ⒺⒸ.52.00.39.Ⓥ

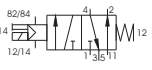
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	9
Response time according to ISO 12238, deactivation time (ms)	30

Ⓔ	ELECTRICAL CONTACT
	0 = Standard (only one electric signal)
	1 = CEB (Bistable Electrical contacts)-(two electrical signals)
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE A4
SHORT CODE A6
SHORT CODE A8
SHORT CODE P4 (CEB)
SHORT CODE P6 (CEB)
SHORT CODE P8 (CEB)







Weight 115 g

Solenoid-Solenoid (Bistable)

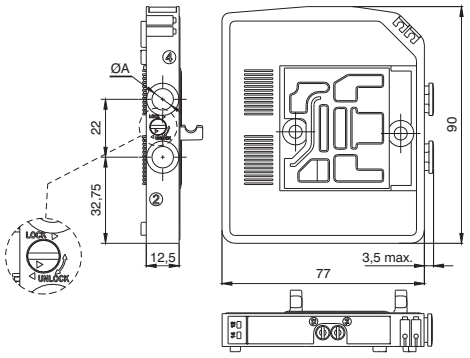
Coding: 230Ⓒ.52.00.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	7
Response time according to ISO 12238, deactivation time (ms)	7

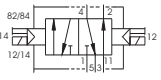
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE C4
SHORT CODE C6
SHORT CODE C8





Weight 115 g



Solenoid-Solenoid (Bistable-Closed centres)

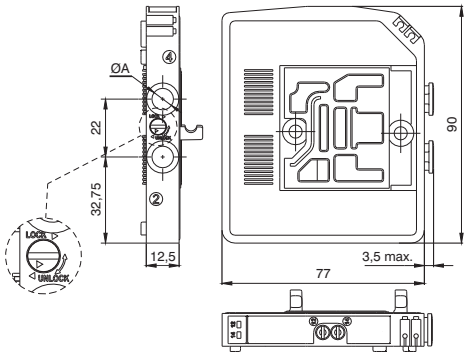
Coding: 230Ⓒ.53.31.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	550
Response time according to ISO 12238, activation time (ms)	15
Response time according to ISO 12238, deactivation time (ms)	15

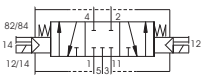
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE E4
SHORT CODE E6
SHORT CODE E8





Weight 130 g



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Solenoid-Solenoid 2x3/2 Bistable-N.C. - N.C. (=5/3 Open centres)

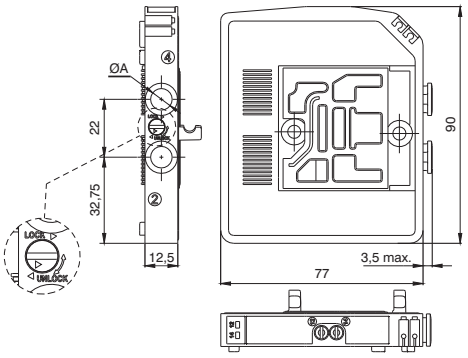
Coding: 230Ⓒ.62.44.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	9
Response time according to ISO 12238, deactivation time (ms)	30

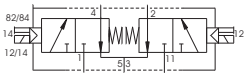
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE F4
SHORT CODE F6
SHORT CODE F8





Weight 130 g
5/3 Open Centres: Use the Solenoid valves with 2x3/2 N.C. - N.C. function
5/3 Pressured Centres: Use the Solenoid valves with 2x3/2 N.O. - N.O. function



Solenoid-Solenoid 2x3/2 Bistable-N.C. - N.O.

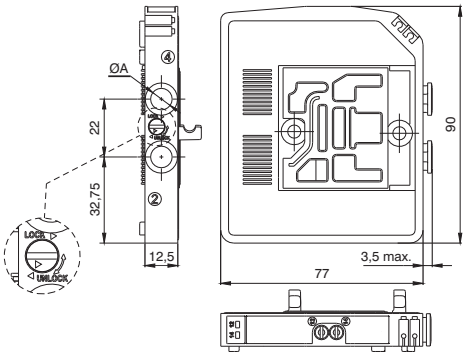
Coding: 230Ⓒ.62.45.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	9
Response time according to ISO 12238, deactivation time (ms)	30

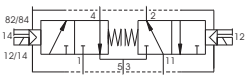
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE H4
SHORT CODE H6
SHORT CODE H8





Weight 130 g
5/3 Open Centres: Use the Solenoid valves with 2x3/2 N.C. - N.C. function
5/3 Pressured Centres: Use the Solenoid valves with 2x3/2 N.O. - N.O. function



Solenoid-Solenoid 2x3/2 Bistable-N.O. - N.O. (=5/3 Pressured centres)

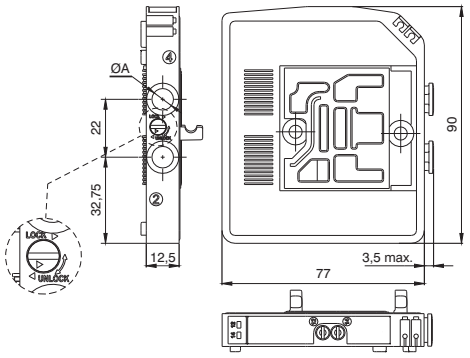
Coding: 230Ⓒ.62.55.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	9
Response time according to ISO 12238, deactivation time (ms)	30

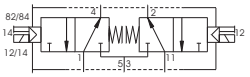
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE G4
SHORT CODE G6
SHORT CODE G8





Weight 130 g
5/3 Open Centres: Use the Solenoid valves with 2x3/2 N.C. - N.C. function
5/3 Pressured Centres: Use the Solenoid valves with 2x3/2 N.O. - N.O. function



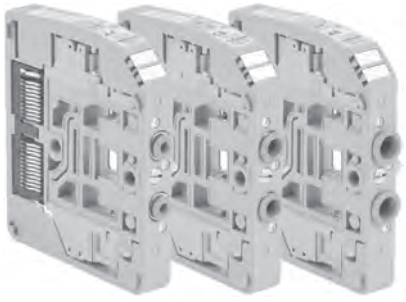
Solenoid-Solenoid 2x2/2 Bistable-N.C. - N.C.

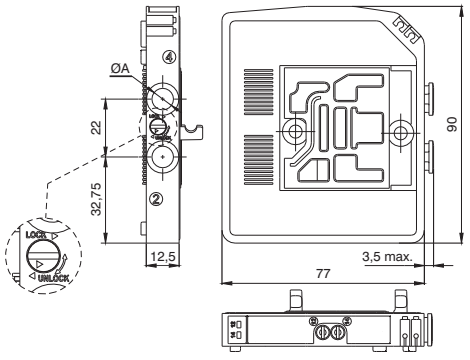
Coding: 230Ⓒ.42.44.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	9
Response time according to ISO 12238, deactivation time (ms)	30

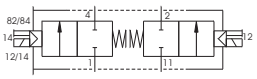
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE L4
SHORT CODE L6
SHORT CODE L8





Weight 130 g



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

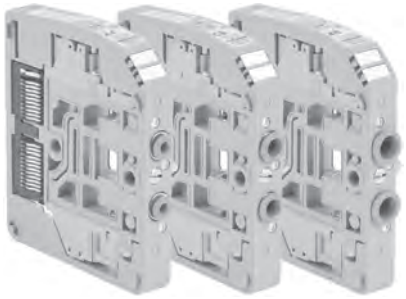
Solenoid-Solenoid 2x2/2 Bistable-N.C. - N.O.

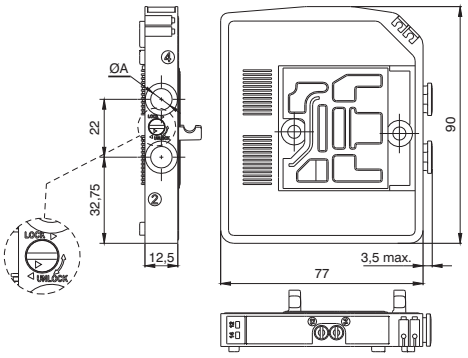
Coding: 230Ⓒ.42.45.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	9
Response time according to ISO 12238, deactivation time (ms)	30

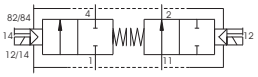
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE N4
SHORT CODE N6
SHORT CODE N8





Weight 130 g



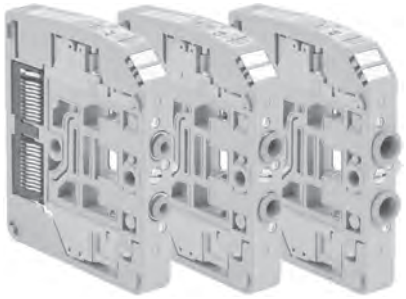
Solenoid-Solenoid 2x2/2 Bistable-N.O. - N.O.

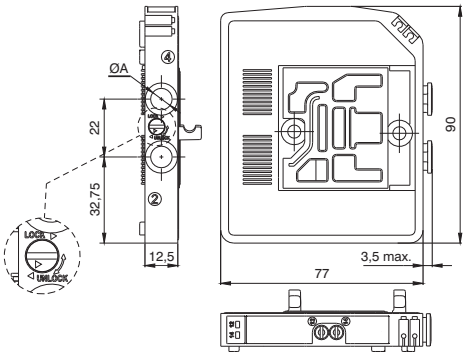
Coding: 230Ⓒ.42.55.35.Ⓥ

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50
Flow rate at 6 bar with Δp=1 (Nl/min)	700
Response time according to ISO 12238, activation time (ms)	9
Response time according to ISO 12238, deactivation time (ms)	30

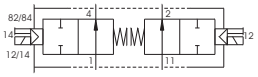
Ⓒ	CONNECTION ØA
	4 = Quick connection for tube Ø4
	6 = Quick connection for tube Ø6
	8 = Quick connection for tube Ø8
Ⓥ	VOLTAGE
	02 = 24 VDC PNP
	12 = 24 VDC NPN

SHORT CODE M4
SHORT CODE M6
SHORT CODE M8





Weight 130 g



Left Endplate

Coding: 2311.BC

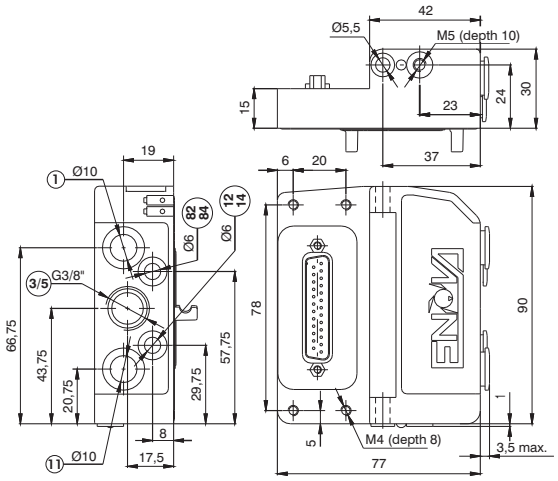
Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working pressure (bar)	From vacuum to 10
Pilot pressure (bar)	2,5 ... 7
Temperature °C	-5 ... +50

B	PORTS
	05 = 5 ports
	03 = 3 ports
C	CONNECTIONS
	P = Electrical connection PNP
	N = Electrical connection NPN



Weight 190 g
1/11 Conduit (tube ø10): Main Solenoid valve feeding (pressure from vacuum to 10 bar maximum)
3/5 Conduit (G 3/8"): Main Solenoid valve exhaust
12/14 Conduit (tube ø6): Pilot feeding (pressure from 2,5 to 7 bar)
82/84 Conduit (tube ø6): Pilot exhaust

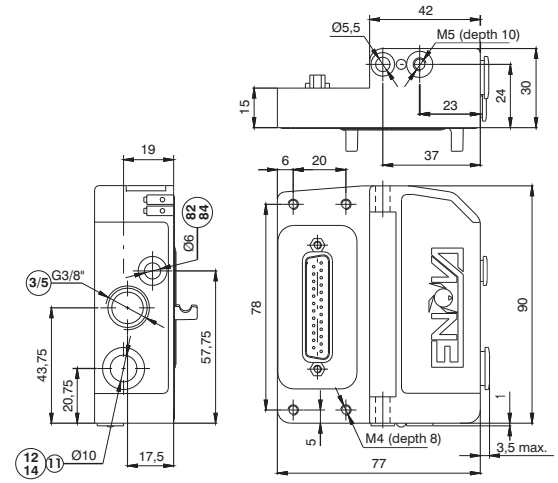
2311.05C





Weight 185 g
1/11-12/14 Conduit (tube ø10): Main Solenoid valve and pilot feeding (pressure from 2,5bar to 7 bar)
3/5 Conduit (G 3/8"): Main Solenoid valve exhaust
82/84 Conduit (tube ø6): Pilot exhaust

2311.03C

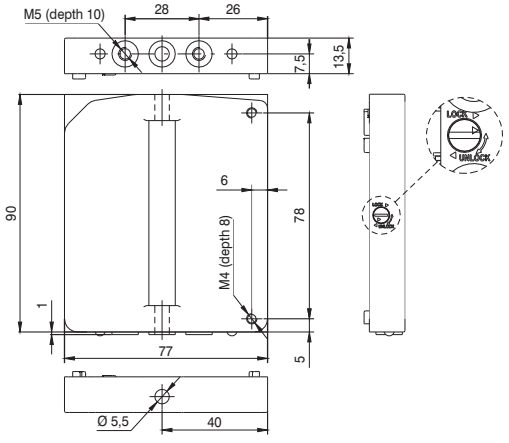


Right Endplates closed

Coding: 2312.00



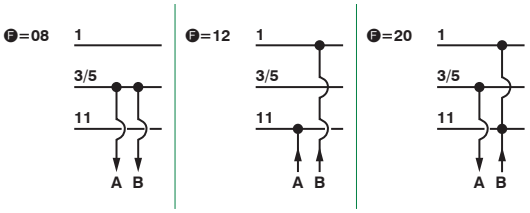
Weight 100 g

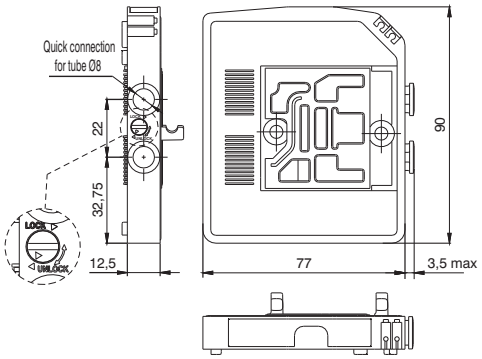


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Intermediate Inlet/Exhaust module







Coding: 2308.Ⓕ

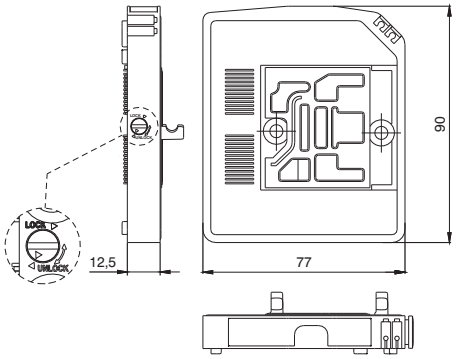
Ⓕ	FUNCTION
	08 = Exhaust module
	12 = Inlet module
	20 = Inlet-Exhaust module

SHORT CODE J
SHORT CODE K
SHORT CODE W

Weight 5 g

Through module





Coding: 2300.Ⓕ

Ⓕ	FUNCTION
	01 = 1 electric signal module
	02 = 2 electric signals module

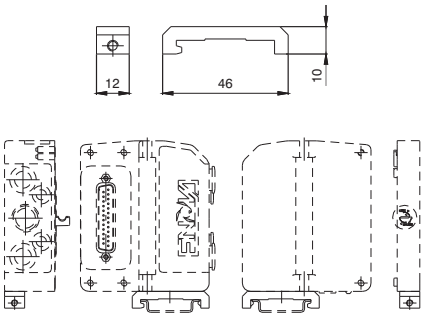
SHORT CODE T1
SHORT CODE T2

Weight 90 g

DIN rail adapter

Coding: 2300.16



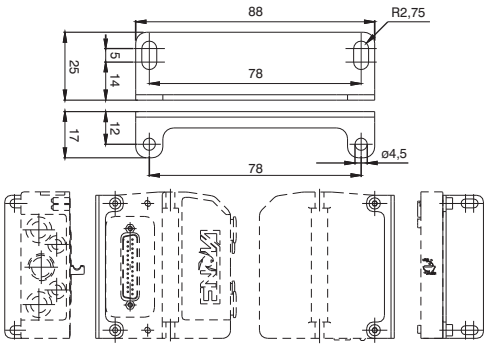


Weight 12 g

Fixing brackets

Coding: 2300.50





Weight 45 g
for fixing dimensions see the Left endplates 3 and 5 ports

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Exhaust Diaphragm

Coding: 2317.08



Weight 5 g
SHORT CODE Y

Inlet/Exhaust Diaphragm

Coding: 2317.20



Weight 5 g
SHORT CODE Z

Inlet Diaphragm

Coding: 2317.12



Weight 5 g
SHORT CODE X

Cable complete with connector, 25 Poles, IP65

Coding: 2300.25.Ⓛ.Ⓒ

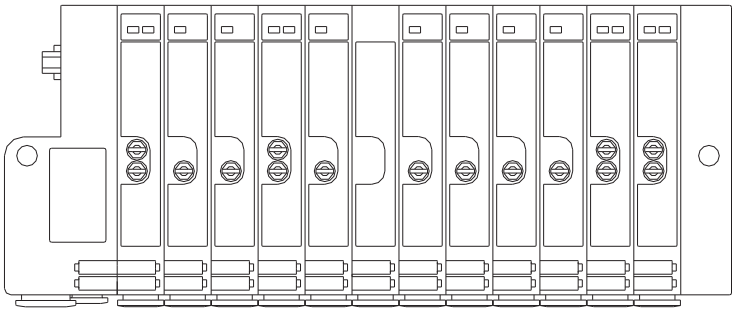
Ⓛ	CABLE LENGTH
	03 = 3 meters
	05 = 5 meters
	10 = 10 meters
Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle

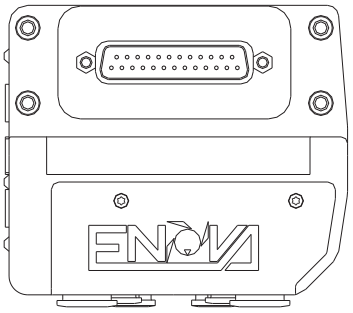


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

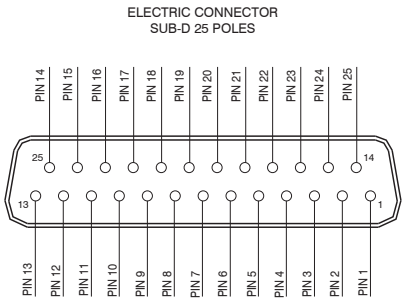
The electrical connection is achieved via a 25 pin connector and can manage up to 22 solenoid pilots.
The management and distribution of the electrical signals between each valve is obtained thanks to a patented electrical connector which receives the signals from the previous module, uses one, two or none depending on the type, and carries forward to the next module the remaining.
Bistable valves, 5/3, 2X3/2 and 2X2/2 valves which have two solenoid pilots built in, use two signals.
The first is directed to the pilot side 14 the second to the pilot side 12.
Monostable valves can be fitted with two type of electrical connector; one that uses only one signal (connected to the pilot side 14) and carries forward the remaining.
The second one called CEB (Electrical contact for bistable) which uses two signals, one is needed for the valve the other is not used.
This second solution (CEB) allows the modification of the manifold (replacement of monostable valves with bistable for example) without the need of reconfiguring the PLC outputs layout.
On the other hand this solution limits the maximum number of valves to 11 (two signals for each position).
Intermediate supply / exhaust modules are fitted with a dedicated electrical connector which carries forward all electric signals without using any.
This allows the use of intermediate modules in any position of the manifold.

Example of manifold samples with the corresponding pin layout.



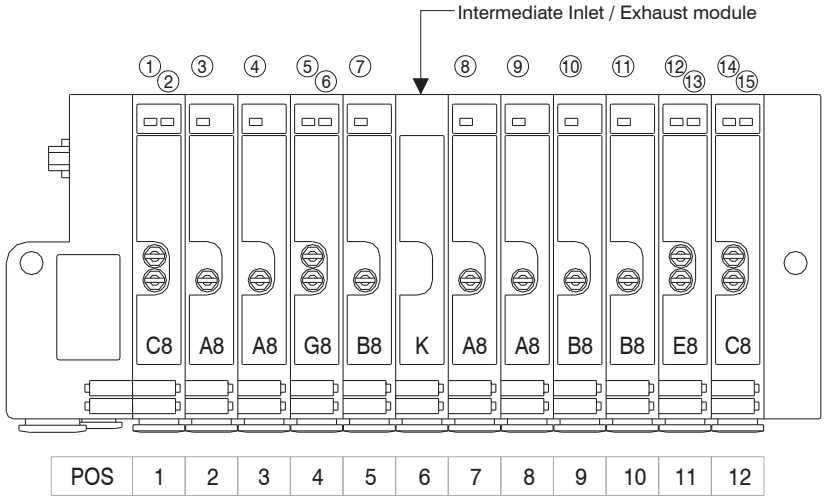


ELECTRICAL INPUT CONNECTIONS



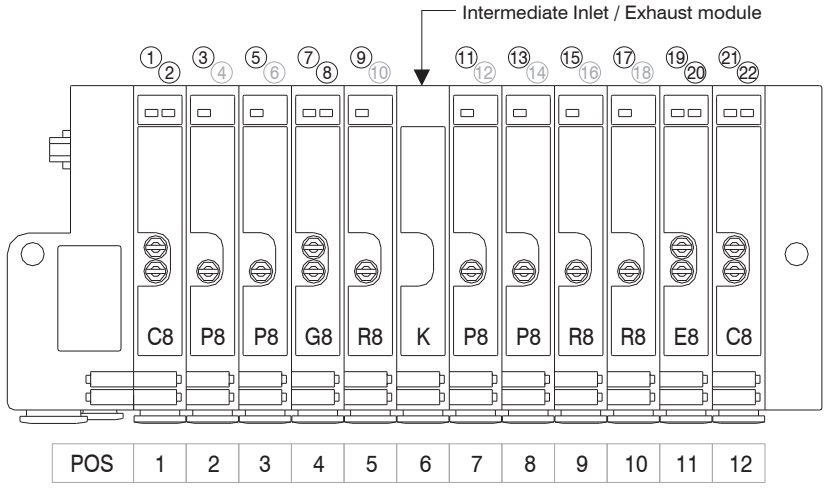
1 - 22 = SIGNALS
23 - 24 - 25 = COMMON

25 PIN connector correspondence for bistable, 2x3/2, 5/3 and standard monostable valves manifold



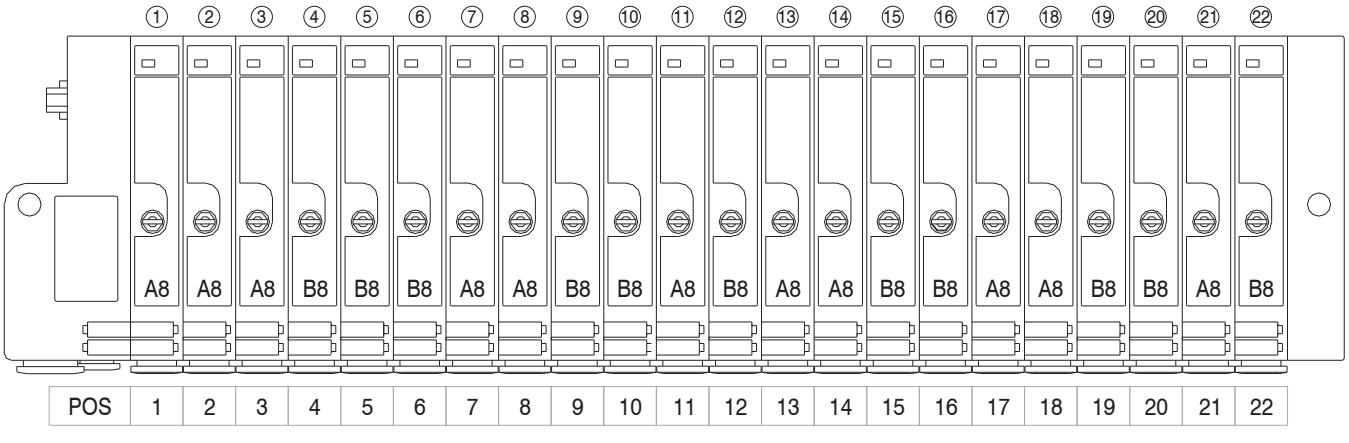
PIN 1 = PILOT 14 S.V. POS.1
PIN 2 = PILOT 14 S.V. POS.1
PIN 3 = PILOT 14 S.V. POS.2
PIN 4 = PILOT 14 S.V. POS.3
PIN 5 = PILOT 14 S.V. POS.4
PIN 6 = PILOT 14 S.V. POS.5
PIN 7 = PILOT 14 S.V. POS.6
PIN 8 = PILOT 14 S.V. POS.7
PIN 9 = PILOT 14 S.V. POS.8
PIN 10 = PILOT 14 S.V. POS.9
PIN 11 = PILOT 14 S.V. POS.10
PIN 12 = PILOT 14 S.V. POS.11
PIN 13 = PILOT 14 S.V. POS.11
PIN 14 = PILOT 14 S.V. POS.12
PIN 15 = PILOT 14 S.V. POS.12

25 PIN connector correspondence for bistable, 2x3/2, 5/3 manifold and CEB monostable valves (electrical contact for bistable)



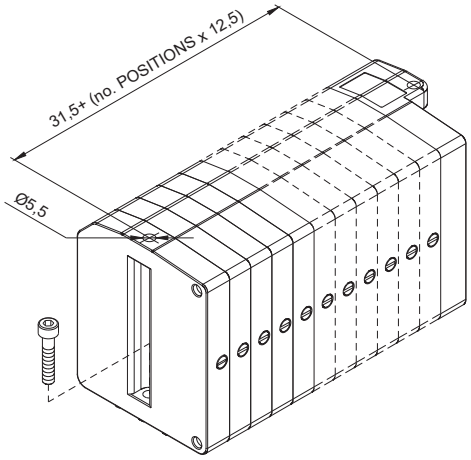
PIN 1 = PILOT 14 S.V. POS.1
PIN 2 = PILOT 12 S.V. POS.1
PIN 3 = PILOT 14 S.V. POS.2
PIN 4 = NOT CONNECTED
PIN 5 = PILOT 14 S.V. POS.3
PIN 6 = NOT CONNECTED
PIN 7 = PILOT 14 S.V. POS.4
PIN 8 = PILOT 12 S.V. POS.4
PIN 9 = PILOT 14 S.V. POS.5
PIN 10 = NOT CONNECTED
PIN 11 = PILOT 14 S.V. POS.7
PIN 12 = NOT CONNECTED
PIN 13 = PILOT 14 S.V. POS.8
PIN 14 = NOT CONNECTED
PIN 15 = PILOT 14 S.V. POS.9
PIN 16 = NOT CONNECTED
PIN 17 = PILOT 14 S.V. POS.10
PIN 18 = NOT CONNECTED
PIN 19 = PILOT 14 S.V. POS.11
PIN 20 = PILOT 12 S.V. POS.11
PIN 21 = PILOT 14 S.V. POS.12
PIN 22 = PILOT 12 S.V. POS.12

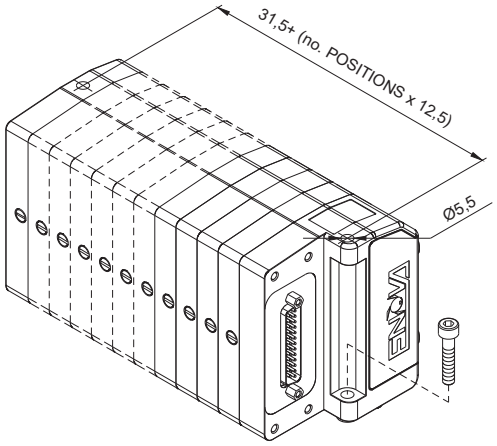
25 PIN connector correspondence for manifold for 22 position manifold with standard monostable valves



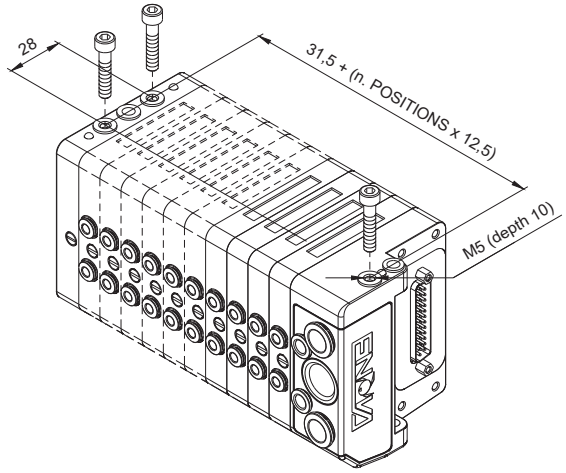
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

From the top

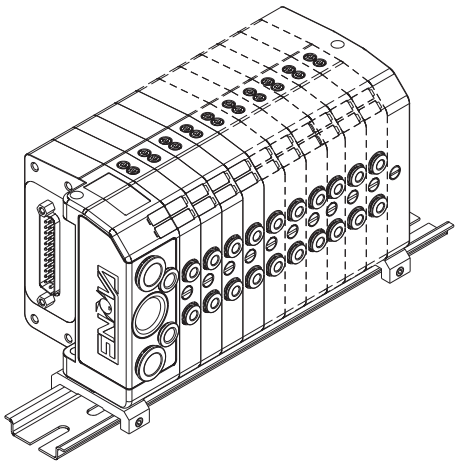




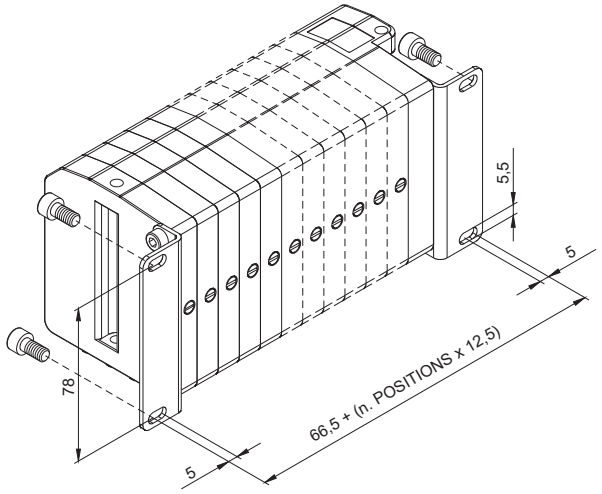
From the bottom



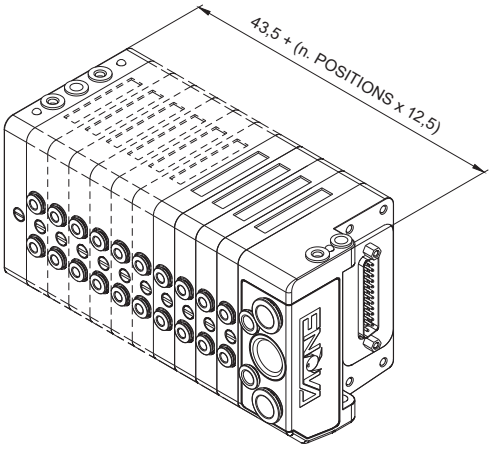
DIN rail fixing

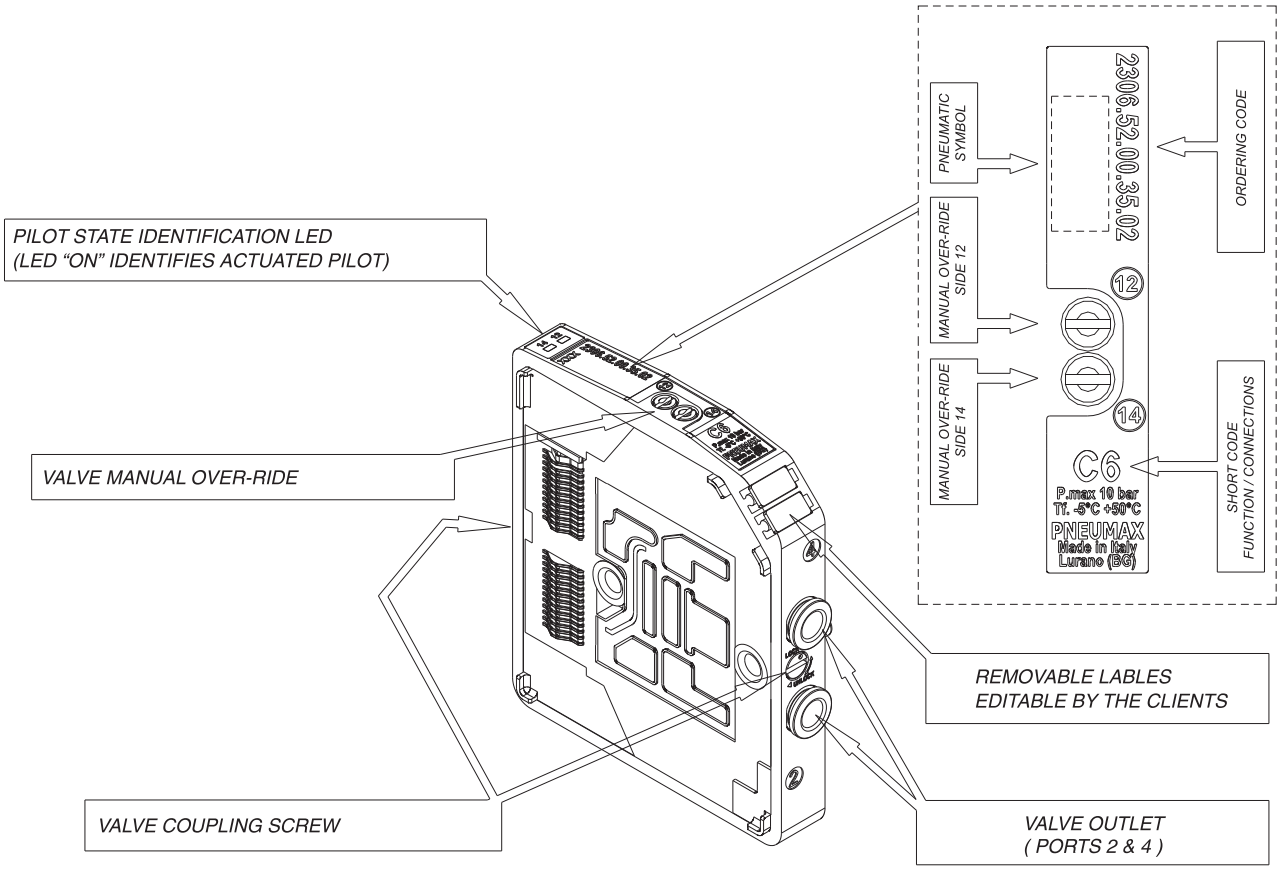


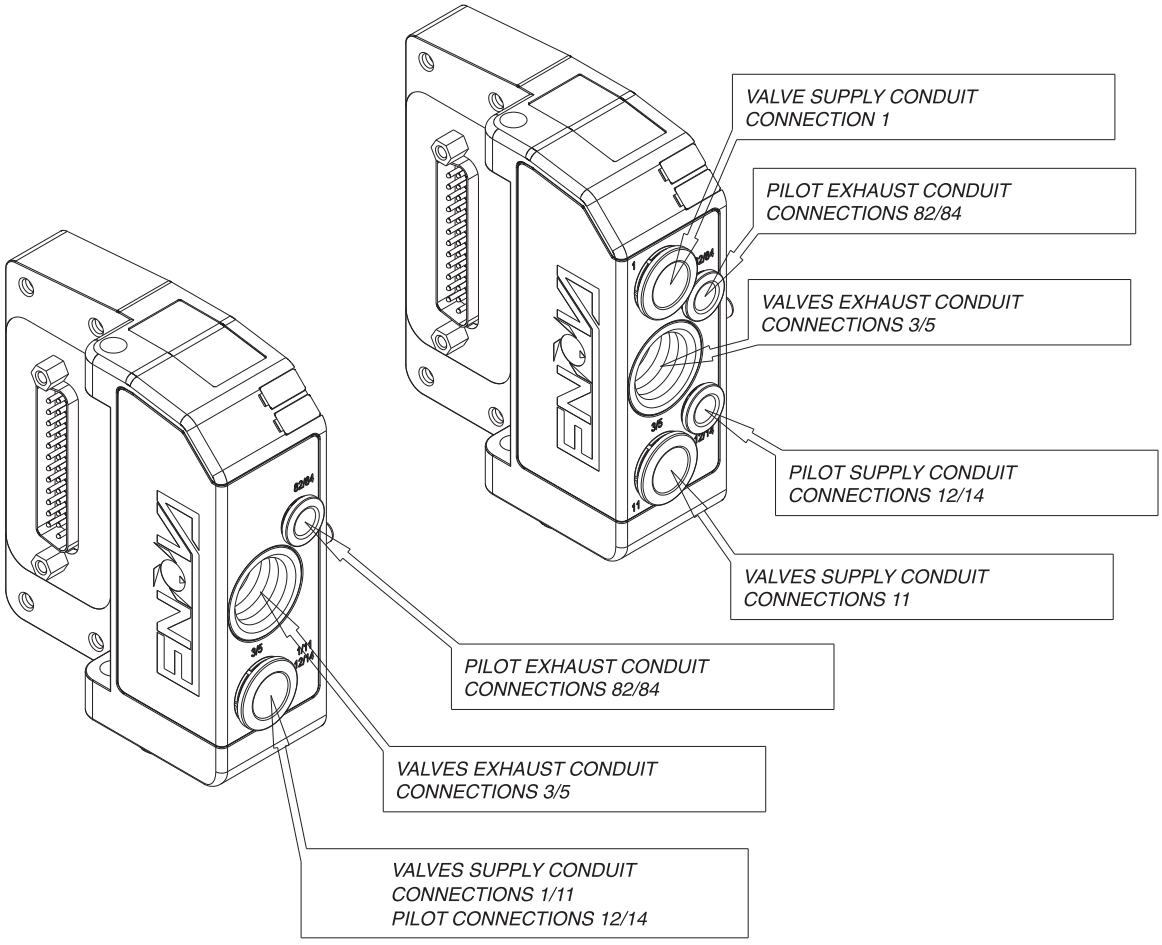
Fixing with 90° bracket



Maximum possible size according to valves used

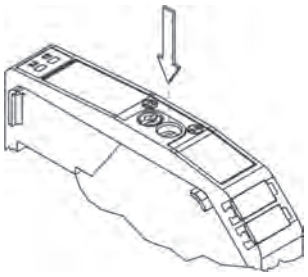




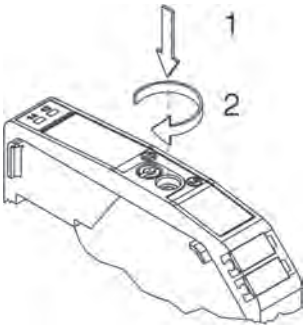


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Manual override actuation



Instable function:
Push to actuate
(when released it moves back to the original position)

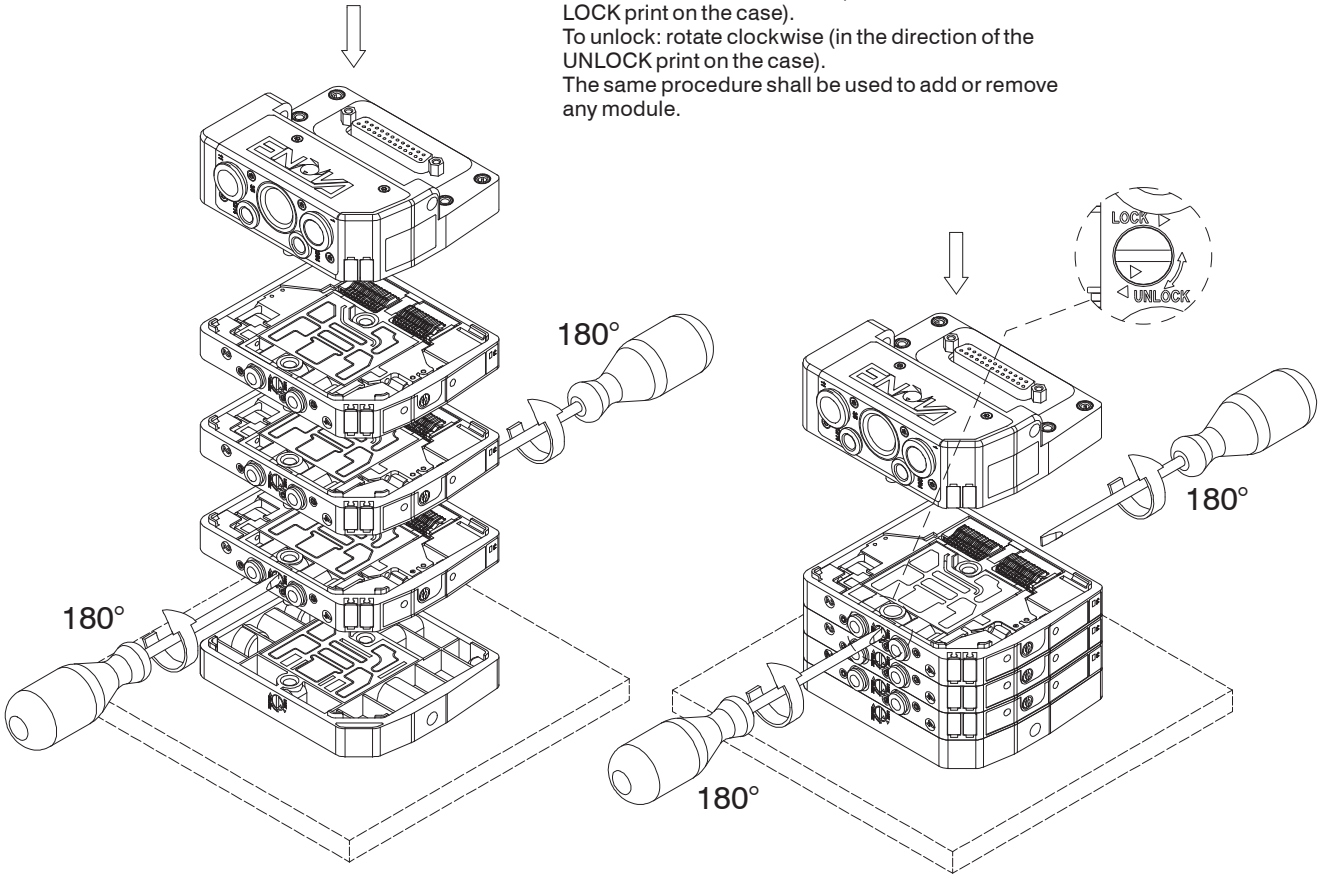


Bistable function:
Push and turn to get the bistable function

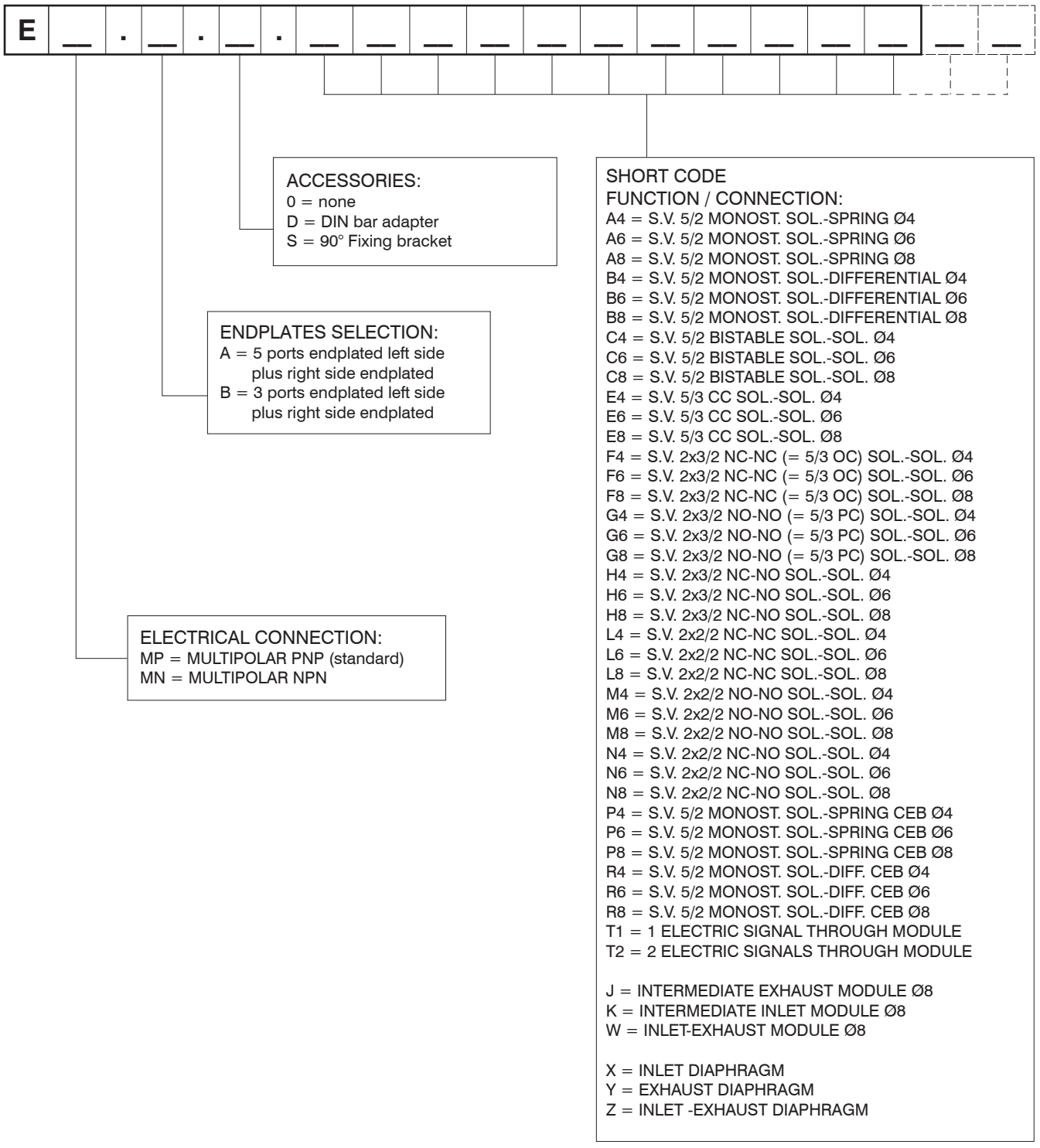
Note: we recommend the manual override is returned to it's original position when not in use

Manifold assembly
The assembly procedure should start from the end-plate which should be positioned on a flat surface.
Add the requested modules by simply rotating by 180° the fastening pins by means of a 1x5.5 flat screw driver.
The last module to be assembles shall be the inlet module.

Fastening pins rotation direction:
To lock: rotate anticlockwise (in the direction of the LOCK print on the case).
To unlock: rotate clockwise (in the direction of the UNLOCK print on the case).
The same procedure shall be used to add or remove any module.



Manifold layout Configuration



Note:
While configuring the manifold always bear in mind that the maximum number of electrical signals available is 22.
N.B. CEB = Electrical connector for bistable valves (uses two electric signals).
Intermediate supply / exhaust modules require the same space as a valve but do not use any electric signals (as the electric connector carries forward all signals received from the module immediately before).
The separation diaphragms are positioned between two modules and replace the standard seal therefore do not increase the dimension of the assembly.
When using a separation diaphragm of any type, it is necessary to add, in any position between diaphragm and the manifold and plate, an extra air supply / exhaust module depending on the type of diaphragm used.

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CANopen® protocol node

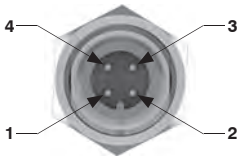
CANopen® node is directly integrated on Enova® solenoid valves manifold via a 25 poles connector, normally used for multi-pin cable connection.
Enova® solenoid valves connected to node must be PNP equivalent (final 02 in ordering code).
The node can be easily installed also on solenoid valves manifold already mounted on equipment.
Node can manage up to 22 solenoid valves, and, in the same time, a max number of 3 Input modules 5200.08.
CANopen® node recognizes automatically the presence of the Input modules on power on.
Regardless of the number of Input modules connected, the managable solenoid valves are 22.
Node power supply is made by a M12 4P male circular connector.
The separation between node 24 V DC Power supply and outputs 24 V DC allows to switch off the outputs maintaning powered the node and inputs, if present.
Connection to Bus CANopen® is possible via 2 M12 5P male - female circular connectors; these two are connected in parallel and according to CiA 106 (V.1.1.0 : July 11th 2023).
Transmission speed can be set by 3 dip-switches.
The node address can be set by 6 dip-switches using BCD numeration.
The node includes an internal terminating resistance that can be activated by a dip-switch.

Coding: 5523.22



Scheme / Overall dimensions and I/O layout

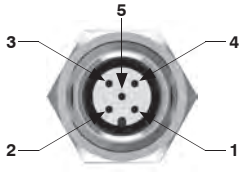
POWER SUPPLY connector



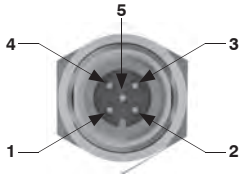
M12A 4P MALE

PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

NETWORK connectors

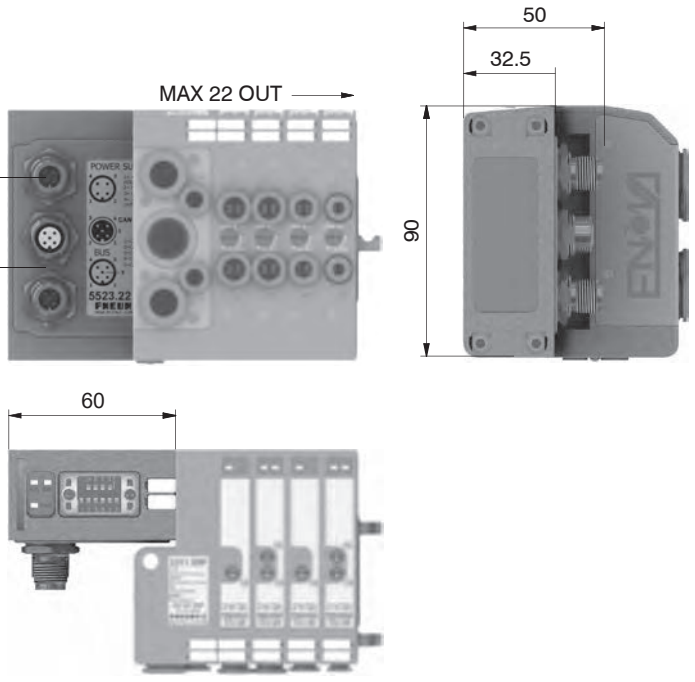


M12A 5P FEMALE



M12A 5P MALE

PIN	SIGNAL	DESCRIPTION
1	CAN_SHLD	Optional CAN Shield
2	CAN_V+	Optional CAN external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (dominant high)
5	CAN_L	CAN_L bus line (dominant low)



Technical characteristics		
Model		5523.22
Specifications		CiA 106 (V.1.1.0 : July 11th 2023)
Case		Reinforced technopolymer
Power supply	Power supply connection	M12 4P male connector
	Power supply voltage	+24 VDC +/- 10%
	Node consumption (without inputs)	25 mA
	Power supply diagnosis	Green LED PWR
Outputs	PNP equivalent outputs	+24 VDC +/- 10%
	Max. current for output	100 mA
	Maximum output number	22
	Max. output simultaneously actuated	22
Network	Network connectors	2 M12 5P connectors male-female
	Baud rate	10 - 20 - 50 - 125 - 250 - 500 - 800 - 1000 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green LED + red LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature range		From 0 °C to +50 °C

DeviceNet protocol node

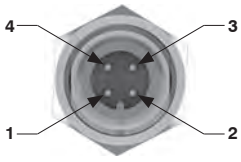
DeviceNet node is directly integrated on Enova® solenoid valves manifold via a 25 poles connector, normally used for multi-pin cable connection.
Enova® solenoid valves connected to node must be PNP equivalent (final 02 in ordering code).
The node can be easily installed also on solenoid valves manifold already mounted on equipment.
Node can manage up to 22 solenoid valves, and, in the same time, a max number of 3 Input modules 5200.08.
DeviceNet node recognizes automatically the presence of the Input modules on power on.
Regardless of the number of Input modules connected, the managable solenoid valves are 22.
Node power supply is made by a M12 4P male circular connector.
The separation between node 24 V DC Power supply and outputs 24 V DC allows to switch off the outputs maintaning powered the node and inputs, if present.
Connection to Bus DeviceNet is possible via 2 M12 5P male - female circular connectors; these two are connected in parallel and according to DeviceNet Specifications Volume I, release 2.0.
Transmission speed can be set by 3 dip-switches.
The node address can be set by 6 dip-switches using BCD numeration.
The node includes an internal terminating resistance that can be activated by a dip-switch.

Coding: 5423.22



Scheme / Overall dimensions and I/O layout

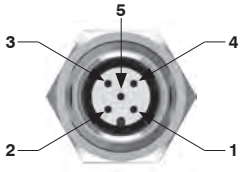
POWER SUPPLY connector



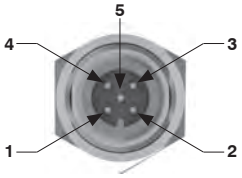
M12A 4P MALE

PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

NETWORK connectors

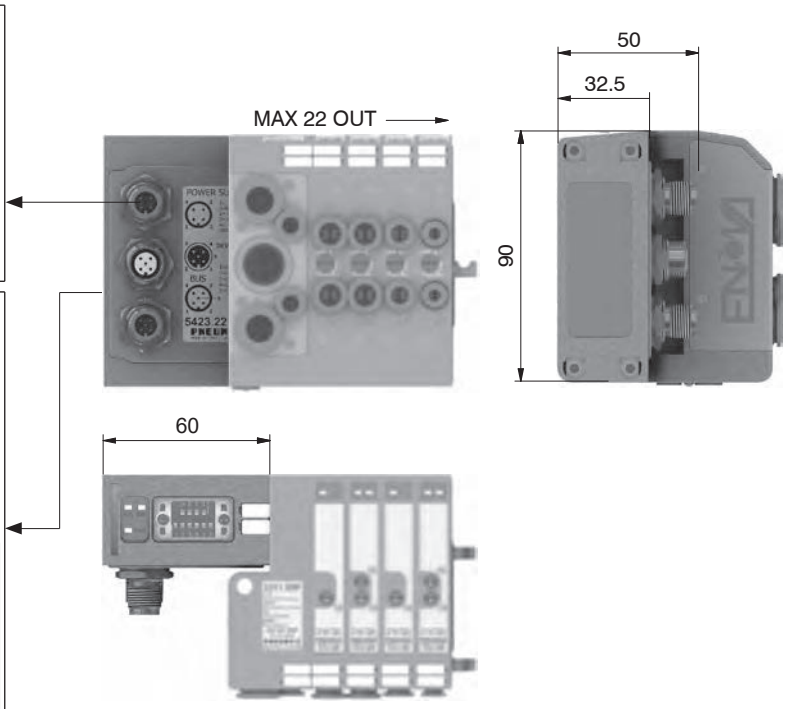


M12A 5P FEMALE



M12A 5P MALE

PIN	SIGNAL	DESCRIPTION
1	CAN_SHLD	Optional CAN Shield
2	CAN_V+	Optional CAN external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (dominant high)
5	CAN_L	CAN_L bus line (dominant low)



Technical characteristics		
Model		5423.22
Specifications		DeviceNet Specifications Volume I, release 2.0.
Case		Reinforced technopolymer
Power supply	Power supply connection	M12 4P male connector
	Power supply voltage	+24 VDC +/- 10%
	Node consumption (without inputs)	25 mA
	Power supply diagnosis	Green LED PWR
Outputs	PNP equivalent outputs	+24 VDC +/- 10%
	Max. current for output	100 mA
	Maximum output number	22
	Max. output simultaneously actuated	22
Network	Network connectors	2 M12 5P connectors male-female
	Baud rate	125 - 250 - 500 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green LED + red LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature range		From 0 °C to +50 °C

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

PROFIBUS DP protocol node

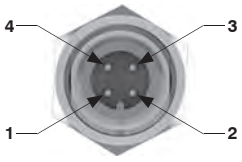
PROFIBUS DP node is directly integrated on Enova® solenoid valves manifold via a 25 poles connector, normally used for multi-pin cable connection.
Enova® solenoid valves connected to node must be PNP equivalent (final 02 in ordering code).
The node can be easily installed also on solenoid valves manifold already mounted on equipment.
Node can manage up to 22 solenoid valves, when is connected 0 or 1 INPUT modules, or 16 if node is fitted with 2 INPUT modules. The max number of INPUT modules 5200.08, is 2.
PROFIBUS DP node recognizes automatically the presence of the Input modules on power on.
Node power supply is made by a M12 4P male circular connector.
The separation between node 24 V DC Power supply and outputs 24 V DC allows to switch off the outputs maintaning powered the node and inputs, if present.
Connection to Bus PROFIBUS DP is possible via 2 M12 type B 5P male - female circular connectors; these two are connected in parallel and according to PROFIBUS Interconnection Technology (Version 1.1 : August 2001).
The node address can be set using BCD numeration: 4 dip-switches for the units and 4 dip-switches for the tens.
The node includes an internal terminating resistance that can be activated by a dip-switch.

Coding: 5323.22



Scheme / Overall dimensions and I/O layout

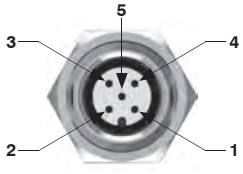
POWER SUPPLY connector



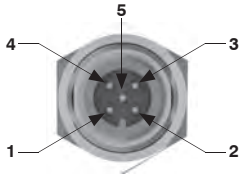
M12A 4P MALE

PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

NETWORK connectors

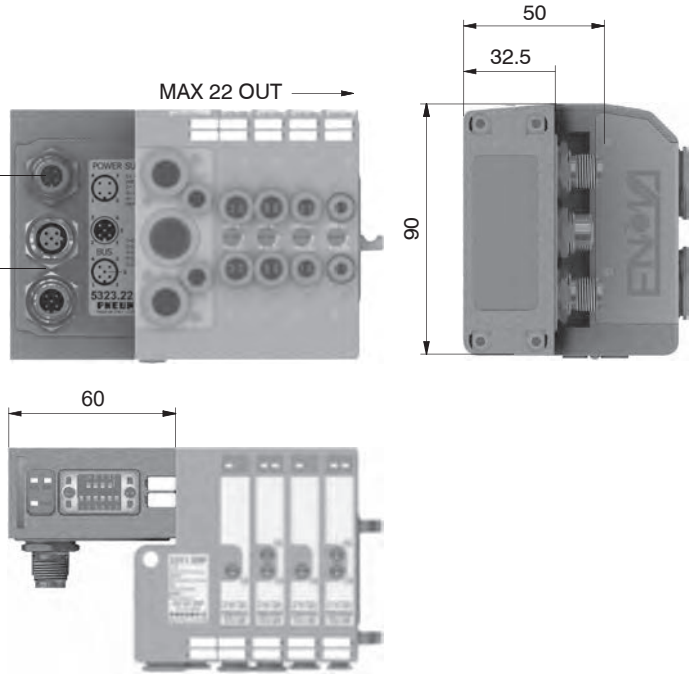


M12A 5P FEMALE



M12A 5P MALE

PIN	SIGNAL	DESCRIPTION
1	VP	Power supply plus, (P5V)
2	A-line	Receive / Transmit data -N, A-line
3	DGND	Data Ground (reference potential to VP)
4	B-line	Receive / Transmit data -plus, B-line
5	SHIELD	Shield or PE



Technical characteristics		
Model		5323.22
Specifications		PROFIBUS DP
Case		Reinforced technopolymer
Power supply	Power supply connection	M12 4P male connector
	Power supply voltage	+24 VDC +/- 10%
	Node consumption (without inputs)	50 mA
	Power supply diagnosis	Green LED PWR
Outputs	PNP equivalent outputs	+24 VDC +/- 10%
	Max. current for output	100 mA
	Maximum output number	22 or 16 if node is fitted with 2 input modules
	Max. output simultaneously actuated	22
Network	Network connectors	2 M12 5P connectors male-female
	Baud rate	125 - 250 - 500 Kbit/s
	Addresses possible numbers	From 1 to 63
	Maximum nodes number in network	64 (slave + master)
	Bus maximum recommended length	100 m at 500 Kbit/s
	Bus diagnosis	Green LED + red LED
Configuration file		Available from our web site http://www.pneumaxspa.com
Protection degree		IP65 when assembled
Temperature range		From 0 °C to +50 °C

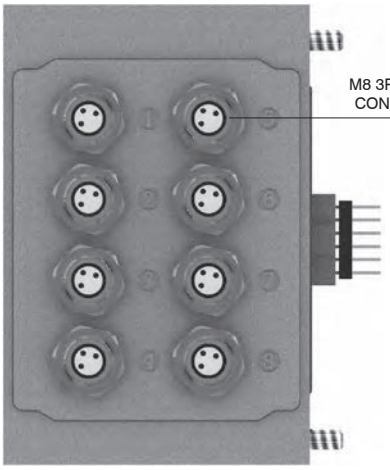
8 input module

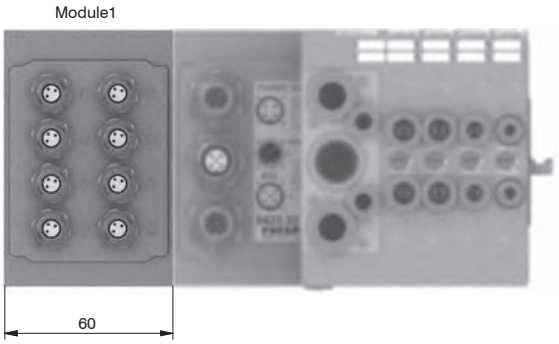
M8 digital inputs module provides 8 M8, 3 pins, female connectors.
Inputs have PNP logic, + 24 V DC ± 10%.
It is possible to connect 2 wires devices (e.g. switches, magnetic limit switches, pressure switches, etc.) as well as 3 wires devices (e.g. proximity sensors, photocells, electronic magnetic limit switches, etc.).
The maximum current available for all 8 onputs is 200 mA.
Each module includes a 200 mA resettable fuse. If a short circuit or a overcharge (overall current >200 mA) occur the safety device acts cutting the 24 VDC power supply to all M8 connectors on the module and switching off the green LED PWR.
Any other input module connected to the node will remain powered and will function correctly.
Once the cause of the fault disappears the green led PWR light up indicating the ON state and the node will re-start to operate.
The maximum number of Input modules supported is 3 for CANopen® and DeviceNet, 2 for PROFIBUS DP.

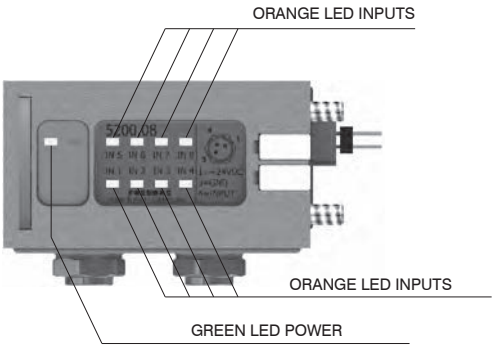
Coding: 5200.08

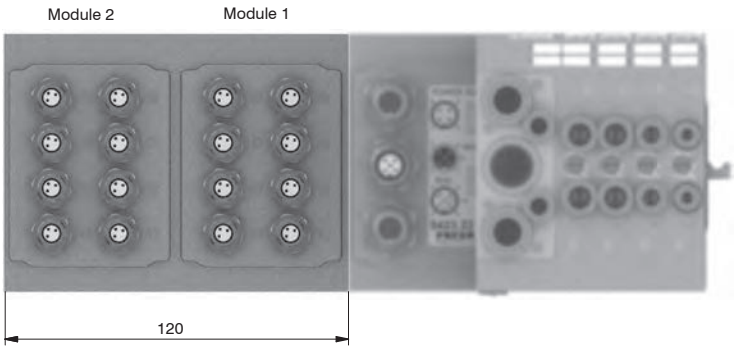


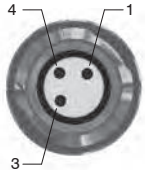
Scheme / Overall dimensions and I/O layout



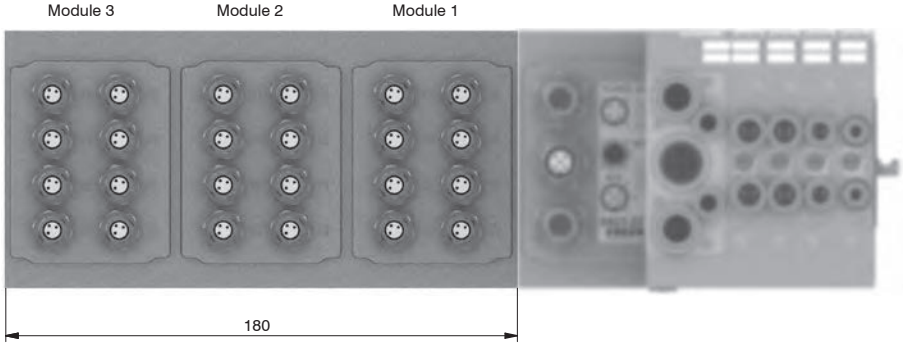








PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

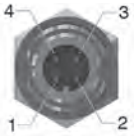
POWER SUPPLY connectors

Straight connector M12A 4P female

Coding: 5312A.F04.00

Power supply socket





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

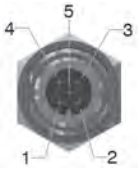
NETWORK connectors

Straight connector M12A 5P female

Coding: 5312A.F05.00

Socket for bus CANopen® and DeviceNet





Upper view slave connector

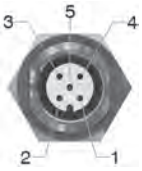
PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Straight connector M12A 5P male

Coding: 5312A.M05.00

Plug for bus CANopen® and DeviceNet





Upper view slave connector

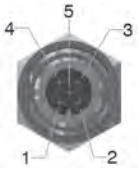
PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Straight connector M12B 5P female

Coding: 5312B.F05.00

Socket for bus PROFIBUS DP





Upper view slave connector

PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

Straight connector M12B 5P male

Coding: 5312B.M05.00

Socket for bus PROFIBUS DP





Upper view slave connector

PIN	DESCRIPTION
1	Power Supply
2	A-Line
3	DGND
4	B-Line
5	SHIELD

INPUTS connectors

Straight connector M8 3P male

Coding: 5308A.M03.00

Plug for inputs modules





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC
4	INPUT
3	0 V

Plugs

M12 plug

Coding: 5300.T12



M8 plug

Coding: 5300.T08



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Manifold layout configuration complete with serial systems

E __ . __ . __ . __ __ __ __ __ __ __ __ __ __ __ __ __

ACCESSORIES :
0= none
D= DIN bar adapter
S= 90° Fixing bracket

ENDPLATES SELECTION :
A= 5 ports endplated left side
plus right side endplated
B= 3 ports endplated left side
plus right side endplated

BUS CONFIGURATION :
CA= CANopen® 22 OUT
CB= CANopen® 22 OUT + 8 INPUTS
CC= CANopen® 22 OUT + 16 INPUTS
CD= CANopen® 22 OUT + 24 INPUTS
DA= DeviceNet 22 OUT
DB= DeviceNet 22 OUT + 8 INPUTS
DC= DeviceNet 22 OUT + 16 INPUTS
DD= DeviceNet 22 OUT + 24 INPUTS
PA= PROFIBUS 22 OUT
PB= PROFIBUS 22 OUT + 8 INPUTS
PC= PROFIBUS 16 OUT + 16 INPUTS

SHORT CODE
FUNCTION / CONNECTION:
A4 = S.V. 5/2 MONOST. SOL.-SPRING Ø4
A6 = S.V. 5/2 MONOST. SOL.-SPRING Ø6
A8 = S.V. 5/2 MONOST. SOL.-SPRING Ø8
B4 = S.V. 5/2 MONOST. SOL.-DIFFERENTIAL Ø4
B6 = S.V. 5/2 MONOST. SOL.-DIFFERENTIAL Ø6
B8 = S.V. 5/2 MONOST. SOL.-DIFFERENTIAL Ø8
C4 = S.V. 5/2 BISTABLE SOL.-SOL. Ø4
C6 = S.V. 5/2 BISTABLE SOL.-SOL. Ø6
C8 = S.V. 5/2 BISTABLE SOL.-SOL. Ø8
E4 = S.V. 5/3 CC SOL.-SOL. Ø4
E6 = S.V. 5/3 CC SOL.-SOL. Ø6
E8 = S.V. 5/3 CC SOL.-SOL. Ø8
F4 = S.V. 2x3/2 NC-NC (= 5/3 CA) SOL.-SOL. Ø4
F6 = S.V. 2x3/2 NC-NC (= 5/3 CA) SOL.-SOL. Ø6
F8 = S.V. 2x3/2 NC-NC (= 5/3 CA) SOL.-SOL. Ø8
G4 = S.V. 2x3/2 NO-NO (= 5/3 CP) SOL.-SOL. Ø4
G6 = S.V. 2x3/2 NO-NO (= 5/3 CP) SOL.-SOL. Ø6
G8 = S.V. 2x3/2 NO-NO (= 5/3 CP) SOL.-SOL. Ø8
H4 = S.V. 2x3/2 NC-NO SOL.-SOL. Ø4
H6 = S.V. 2x3/2 NC-NO SOL.-SOL. Ø6
H8 = S.V. 2x3/2 NC-NO SOL.-SOL. Ø8
L4 = S.V. 2x2/2 NC-NC SOL.-SOL. Ø4
L6 = S.V. 2x2/2 NC-NC SOL.-SOL. Ø6
L8 = S.V. 2x2/2 NC-NC SOL.-SOL. Ø8
M4 = S.V. 2x2/2 NO-NO SOL.-SOL. Ø4
M6 = S.V. 2x2/2 NO-NO SOL.-SOL. Ø6
M8 = S.V. 2x2/2 NO-NO SOL.-SOL. Ø8
N4 = S.V. 2x2/2 NC-NO SOL.-SOL. Ø4
N6 = S.V. 2x2/2 NC-NO SOL.-SOL. Ø6
N8 = S.V. 2x2/2 NC-NO SOL.-SOL. Ø8
P4 = S.V. 5/2 MONOST. SOL.-SPRING CEB Ø4
P6 = S.V. 5/2 MONOST. SOL.-SPRING CEB Ø6
P8 = S.V. 5/2 MONOST. SOL.-SPRING CEB Ø8
R4 = S.V. 5/2 MONOST. SOL.-DIFF. CEB Ø4
R6 = S.V. 5/2 MONOST. SOL.-DIFF. CEB Ø6
R8 = S.V. 5/2 MONOST. SOL.-DIFF. CEB Ø8

T1 = 1 ELECTRIC SIGNAL THROUGH MODULE
T2 = 2 ELECTRIC SIGNALS THROUGH MODULE

J= INTERMEDIATE EXHAUST MODULE Ø8
K= INTERMEDIATE INLET MODULE Ø8
W = INLET-EXHAUST MODULE Ø8

X= INLET DIAPHRAGM
Y= EXHAUST DIAPHRAGM
Z= INLET -EXHAUST DIAPHRAGM

Note:
While configuring the manifold always bear in mind that the maximum number of electrical signals available is 22.
N.B. CEB = Electrical connector for bistable valves (uses two electric signals).
Intermediate supply / exhaust modules require the same space as a valve but do not use any electric signals (as the electric connector carries forward all signals received from the module immediately before).
The separation diaphragms are positioned between two modules and replace the standard seal therefore do not increase the dimension of the assembly.
When using a separation diaphragm of any type, it is necessary to add, in any position between diaphragm and the manifold and plate, an extra air supply / exhaust module depending on the type of diaphragm used.

Section 02

Air treatment

Components for compressed air treatment

Air service units

Wide range of components for compressed air treatment, are available in aluminium, technopolymer and steel, in several sizes with connections from 1/8" to 1" and fl ow rates up to 8000 Nl/min.

Air quality 2.1

Series AIRPLUS 2.2

Product overview	2.4	Pressure regulators for manifold	2.40	Safeline valves	2.65
Filter	2.6	Manifold pressure regulators	2.44	Manifold unit	2.72
Coalescing filter	2.10	Accessories	2.46	Accessories	2.77
Oil removal filters	2.14	Lubricators	2.48	Panel mounted pressure regulators	2.78
Carbon filters	2.18	Shut off valves	2.52	Panel mounted pressure regulator with pressure gauge built into the adjusting knob	2.81
Filter regulators	2.22	Progressive start-up valve	2.55		
Accessories	2.29	Air intake	2.57	Accessories	2.84
Regulators	2.30	Pressure switch	2.59		
Piloted pressure regulators	2.35	Air intake with pressure gauge or digital pressure switch integrated	2.61		

Series 1700 2.85

Product overview	2.86	Lubricators	2.118	Panel mounting pressure regulator including pressure gauge	2.146
Filter	2.87	Shut-off valve	2.122	High sensitive air pressure regulators with high flow rate relieving	2.148
Coalescing filter	2.91	Electric shut-off valve	2.124	High sensitive pressure regulator with pneumatic pilot	2.151
Dynamic drier	2.95	Pneumatic shut-off valve	2.126	High sensitive pressure regulator for manipulation applications	2.153
Filter regulators	2.97	Progressive start-up valve	1.128	Accessories	2.156
Regulators	2.101	Air Intake	2.130		
Regulators with integrated pressure gauge	2.106	Air Intake - "H" profile	2.132		
Piloted pressure regulators	2.109	Pressure switch complete with adapter	2.134		
Pressure regulators for manifold	2.113	Filter pressure regulator + Lubricator	2.136		
Manifold pressure regulators	2.115	Filter + Pressure regulator + Lubricator	2.140		
		Panel mounting pressure regulator	2.144		

Series 1700 Steel line 2.159

Filter	2.161	Filter regulators	2.169
Regulators	2.165	Accessories	2.174

Proportional technology

The proportional pressure regulators range includes 3 product series: 1700 standard, 1700 miniaturised and WPR (Wide Pressure Regulators).

Series 1700 standard 2.176

Series 1700 miniaturised 2.192

Series WPR 2. 208

Measuring devices

Digital pressure switches and pressure gauges, panel mounting or manifold versions.

Pressure switches Series DS 2.215

Pressure gauges Series DS 2.217

Pressure booster

3 sizes aluminium pressure boosters available or technopolymer with 2:1 compression ratio.

Series 1700 2.219

Series P+ 2.224

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Air quality

Compressed air is a fundamental element for the operation of various modern industrial machines.
Different compressed air purity classes are required depending on its application and the industrial sector in which it is used.
Generally, it must be free of pollutants (dusts, water and oil) in order to maintain the characteristics of the final product and guarantee safety.
Standard ISO 8573-1:2010 specifies the permissible level of pollution for every cubic meter of compressed air.
The pollutants that have been analysed are grouped in three macro-families:

- Dusts / Solid particles

Each cubic meter of compressed air could contain a maximum quantity of particles in function of its dimension.

- Water

It could be present in liquid or gaseous state.

- Oil

Each cubic meter of compressed air can contain a maximum oil quantity in any of its form: liquid, aerosol, or vapour.

To uniquely determine the purity of compressed air, it is necessary to identify a numeric value for each of the three groups of pollutants illustrated above.
In general, industrial machines require compressed air with purity class of ISO 8573-1:2010 [1:4:1] of which:

- the first number (1) refers to solid particles with maximum concentration in proportion to their size but still less than 0.1 mg/m³
- the second number (4) refers to dried air with dew point temperature less than +3°C
- The third number (1) refers to residual oil content less than 0.01 mg/m³

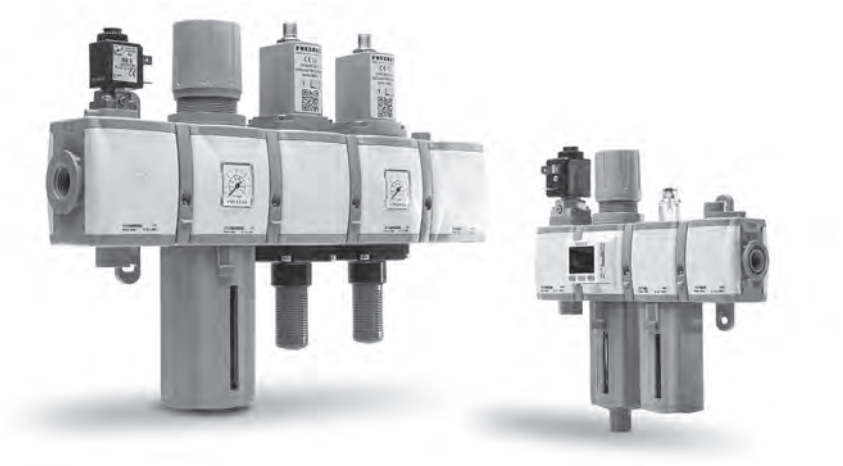
For a correct operation of our devices, we require compressed air with purity class of ISO 8573-1:2010 [7:4:4] unless otherwise indicated.
For example, our proportional regulators require compressed air with a purity class of ISO 8573-1:2010 [1:4:1].
According to standard ISO 8573-1:2010 pollutant levels could be summarized in the following table:

Compressed air purity classes according to ISO 8573-1:2010

Class	Particles				Humidity and Liquid Water		Oil
	Maximum number of particles per cubic meter as a function of particle size d[b]			Mass Concentration[b] C_p [mg/m³]	Pressure dew point [°C]	Concentration of liquid water[b] C_w [g/m³]	Concentration of total oil[b] (liquid, aereosol and vapour) [mg/m³]
	0,1 µm < d ≤ 0,5 µm	0,5 µm < d ≤ 1,0 µm	1,0 µm < d ≤ 5,0 µm				
0	As specified by the equipement user or supplier and more stringent than class 1						
1	≤ 20000	≤ 400	≤ 10	/	≤ -70	/	≤ 0,01
2	≤ 400000	≤ 6000	≤ 100	/	≤ -40	/	≤ 0,1
3	/	≤ 90000	≤ 1000	/	≤ -20	/	≤ 1
4	/	/	≤ 10000	/	≤ +3	/	≤ 5
5	/	/	≤ 100000	/	≤ 100000	/	/
6	/			$0 < C_p \leq 5$	≤ +10	/	/
7	/			$5 < C_p \leq 10$	/	$C_w \leq 0,5$	/
8	/			/	/	$0,5 < C_w \leq 5$	/
9	/			/	/	$5 < C_w \leq 10$	/
X	/			$C_p > 10$	/	$C_w > 10$	>5

[b] At reference condition:
- air temperature 20°C
- absolute air pressure 100 kPa = [1 bar] (a)
- relative water vapour pressure 0

Series Airplus



- **Modular system**
- **Compact and linear design**
- **Maximum flexibility and reliability**
- **Plug-n-play connection thru couplig flanges**
- **Integral safety elements in assembled group**
- **Available in 4 sizes with connections from 1/8" to 1"**
- **ATEX certification (II 2GD or II 3GD)**

Construction and working characteristics

Pneumax AIRPLUS air treatment units have been designed and developed to increase reliability, modularity and user-friendly operation and installation. Thanks to a wide range of modules with different functions and characteristics, together with a wide choice of materials selection, make the Pneumax AIRPLUS air treatment units a robust, reliable and extremely flexible modular system, adaptable to many applications.
AIRPLUS units correctly assembled are modular with unlimited configurations and solutions, capable of fulfilling all functions of compressed air treatment such as filtration, regulation, lubrication, interception and distribution.
Filters, including coalescing and active carbon elements as well as oil separators provide adequate media filtration. Precise and reliable pressureregulation is provided by the regulators or filter-regulators which are also available with a built in pressure gauge or integral digital pressure switch. The lubricators provide oil mist lubrication in proportion to air being consumed whilst the shut-off valves, which can be operated pneumatic, electro-pneumatic or manually will effectively manage the supply and exhaust of the compressed air system. The range is completed by a series of complementary modules, such as pneumatic connection by-pass, pressure switch and progressive start-up. The complete assembly is built up using the individual modules connected together via quick coupling flanges which provide a 'plug & play' assembly. This provides quick and easy installation or replacement. Pneumax Airplus air treatment units can be integrated with safety elements that comply with EN-ISO 13849-1 and CE marking according to EU Machinery Directive, Annex V.
AIRPLUS air treatment units are available in 4 different sizes, with connections from 1/8 "to 1" and flow rates performances up to 8000Nl/min.

Instructions for installation and use

The FRL unit should be installed as close as possible to the 'point of use'. The air flow direction should follow the direction indicated on the individual modules, following threaded connections (IN and OUT). Units fitted with a with bowl should be mounted vertically with the bowl facing down. All units should be operated in accordance to the specified pressure and temperature ranges and should never exceed 0.2 Hz max frequency whether pulsing inlet pressure occur.
Fittings shall be mounted according to the maximum torque specified.

Maintenance

To carry out maintenance which involves the removal of the caps or supports above the body and where the retaining screws are present, it is necessary to remove the cover plates beforehand. If you attempt to dis-assemble the caps or supports without removing the cover plates and retaining screws, the integrity and function of the device could be compromised.
Bowls, plugs and supports are assembled with a bayonet type mechanism. In order to remove them, rotate anti-clockwise until the mechanical stop is reached and then remove from the body (for the bowls firstly press down the green safety button). Bowls and transparent parts can be cleaned with water and neutral soap. Do not use solvents or alcohol. Filtering elements (present in filters and filter regulators) made of HDPE can be regenerated by washing and blowing them. In order to remove them it is necessary to remove the bowl unscrew the filter element and replace it with a new one or clean it. Lubricator oil recharge might be performed during normal operation (apart size 1) depressurizing the bowl thru dedicated plug. Pneumax suggest refilling oil directly into the bowl. No others maintenance operation shall be carried out by client itself, due to complexity of the assembly and Pneumax dedicated post-maintenance testing activities.

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FILTRATION



Filter pore sizes from 50 μm to 5 μm

Coalescing filter with retention efficiency of 99,97% particle removal down to 0,01 μm

Coalescing/oil removal filter with oil residual up to 0,01 ppm

Carbon filter with oil residual up to < 0,003 ppm

REGULATION

Regulators and filter regulators

Pressure regulation range up to 12 bar

Available with integrated pressure gauge, pressure switch or G1/8" connection



LUBRICATION



Manual adjustment of oil quantity complete with visual indicator

Oil refilled with pressurized circuit

Oil mist lubrication

SHUT OFF

Manual, pneumatic or electropneumatic operation availability

Manual version lockable up to 3 padlock



COMPLEMENTARY MODULES



Pressure switch

Air intake

Progressive start-up valve

SAFETY

Integrated diagnostic system

Single version CAT.2 in accordance with ISO EN 13849 up to PL=C

Double version CAT.4 in accordance with ISO EN 13849 up to PL=E

In accordance with EU Machynery directive, annex V



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Product overview

PRODUCT	VERSION	SIZE				MAX. PRESSURE		AMBIENT TEMPERATURE			ATEX
		1	2	3	4	Technopolymer body or bowl	Metal body and bowl	Technopolymer body or bowl	Metal body and bowl	Automatic drain	
FILTER (F)	T : Technopolymer body and thread	●	●	●		13 bar - 10 bar (automatic drain)	/	-5 °C ... +50 °C	/	-5 °C ... +50 °C	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●		20 bar - 16 bar (automatic drain)		-30 °C ... +80 °C		
	L : Aluminum body, low temperature		●	●	●				-40 °C ... +80 °C		
COALESCING FILTER (DA)	T : Technopolymer body and thread	●	●	●		13 bar - 10 bar (automatic drain)	/	-5 °C ... +50 °C	/	-5 °C ... +50 °C	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●		20 bar - 16 bar (automatic drain)		-30 °C ... +80 °C		
	L : Aluminum body, low temperature		●	●	●				-40 °C ... +80 °C		
OIL REMOVAL FILTER (DBV) (DCV) (DAV)	T : Technopolymer body and thread			●		10 bar		-5 °C ... +50 °C			●
	N : Technopolymer body and metal inserts			●							
	P : Aluminum body			●	●						
	L : Aluminum body, low temperature					/		/			
CARBON FILTER (DD)	T : Technopolymer body and thread			●		13 bar	/	-5 °C ... +50 °C	/	-5 °C ... +50 °C	●
	N : Technopolymer body and metal inserts			●							
	P : Aluminum body			●	●		20 bar		-30 °C ... +80 °C		
	L : Aluminum body, low temperature			●	●				-40 °C ... +80 °C		
REGULATOR (R) (RM) (RW)	T : Technopolymer body and thread	●	●	●		13 bar	20 bar	-5 °C ... +50 °C	/	/	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●				-30 °C ... +80 °C		
	L : Aluminum body, low temperature		●	●	●				-40 °C ... +80 °C		
PANEL REGULATOR (RPB) (RPBM)	T : Technopolymer body and thread					13 bar	/	-10 °C ... +50 °C	/	/	●
	N : Technopolymer body and metal inserts										
	P : Aluminum body	●									
	L : Aluminum body, low temperature										
PRESSURE REGULATORS FOR MANIFOLD (B) (M)	T : Technopolymer body and thread	●				13 bar	/	-5 °C ... +50 °C	/	/	●
	N : Technopolymer body and metal inserts	●									
	P : Aluminum body							/			
	L : Aluminum body, low temperature					/		/			
PRESSURE REGULATORS FOR MANIFOLD WITH DIGITAL PRESSURE SWITCH (P)	T : Technopolymer body and thread	●				13 bar	/	0 °C ... +50 °C	/	/	
	N : Technopolymer body and metal inserts	●									
	P : Aluminum body							/			
	L : Aluminum body, low temperature					/		/			
PILOTED PRESSURE REGULATORS (RP) (RMP) (RPP)	T : Technopolymer body and thread					/	/	/	/	/	●
	N : Technopolymer body and metal inserts										
	P : Aluminum body				●	/	20 bar	/	-30 °C ... +80 °C		
	L : Aluminum body, low temperature					/		/			
PILOTED PRESSURE REGULATORS WITH DIGITAL PRESSURE SWITCH (RPP) (RPZ)	T : Technopolymer body and thread					/	/	/	/	/	
	N : Technopolymer body and metal inserts										
	P : Aluminum body				●	/	20 bar	/	0 °C ... +50 °C		
	L : Aluminum body, low temperature					/		/			
FILTER REGULATOR (E) (EM) (EW)	T : Technopolymer body and thread	●	●	●		13 bar - 10 bar (automatic drain)	20 bar - 16 bar (automatic drain)	-5 °C ... +50 °C	/	-5 °C ... +50 °C	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●				-30 °C ... +80 °C		
	L : Aluminum body, low temperature		●	●	●				-40 °C ... +80 °C		
REGULATOR WITH DIGITAL PRESSURE SWITCH (RP) (RZ)	T : Technopolymer body and thread	●	●	●		13 bar	20 bar	0 °C ... +50 °C		/	
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●						
	L : Aluminum body, low temperature		●	●	●						

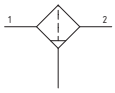
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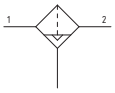
PRODUCT	VERSION	SIZE				MAX. PRESSURE		AMBIENT TEMPERATURE			ATEX
		1	2	3	4	Technopolymer body or bowl	Metal body and bowl	Technopolymer body or bowl	Metal body and bowl	Automatic drain	
FILTER REGULATOR WITH DIGITAL PRESSURE SWITCH (E) (EP) (EZ)	T : Technopolymer body and thread	●	●	●		13 bar - 10 bar (automatic drain)	20 bar - 16 bar (automatic drain)	0 °C ... +50 °C		-5 °C ... +50 °C	
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●						
	L : Aluminum body, low temperature		●	●	●						
LUBRICATOR (L)	T : Technopolymer body and thread	●	●	●		13 bar		-5 °C ... +50 °C		/	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●						
	L : Aluminum body, low temperature					/		/			
LUBRICATOR WITH ELECTRICAL MINIMUM LEVEL SENSOR (LA) (LC)	T : Technopolymer body and thread	●	●	●		13 bar		-5 °C ... +50 °C		/	
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●						
	L : Aluminum body, low temperature					/		/			
SHUT OFF VALVE (VL)	T : Technopolymer body and thread	●	●	●		13 bar - 10 bar (for size 4)		-5 °C ... +50 °C	/	/	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●				-30 °C ... +80 °C		
	L : Aluminum body, low temperature		●	●	●				-40 °C ... +80 °C		
PNEUMATIC SHUT OFF VALVE (VP)	T : Technopolymer body and thread	●	●	●		13 bar	20 bar	-5 °C ... +50 °C	/	/	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●				-30 °C ... +80 °C		
	L : Aluminum body, low temperature		●	●	●				-40 °C ... +80 °C		
ELECTRIC SHUT OFF VALVE (VE)	T : Technopolymer body and thread	●	●	●		10 bar		-5 °C ... +50 °C		/	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●						
	L : Aluminum body, low temperature					/		/			
PROGRESSIVE START-UP VALVE (AP)	T : Technopolymer body and thread	●	●	●		13 bar - 10 bar (for size 4)		-5 °C ... +50 °C		/	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●						
	L : Aluminum body, low temperature		●	●	●						
AIR INTAKE (PA)	T : Technopolymer body and thread	●	●	●		13 bar	20 bar	0 °C ... +50 °C	/	/	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●				-30 °C ... +80 °C		
	L : Aluminum body, low temperature					/		/			
PRESSURE SWITCH (PP)	T : Technopolymer body and thread	●	●	●		13 bar	20 bar	-5 °C ... +50 °C		/	
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●						
	L : Aluminum body, low temperature					/		/			
AIR INTAKE WITH INTEGRATED PRESSURE GAUGE (PM-PW)	T : Technopolymer body and thread	●	●	●		13 bar		0 °C ... +50 °C	/	/	●
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●				-30 °C ... +80 °C		
	L : Aluminum body, low temperature					/		/			
AIR INTAKE WITH INTEGRATED DIGITAL PRESSURE SWITCH (PP-PZ)	T : Technopolymer body and thread	●	●	●		13 bar		0 °C ... +50 °C		/	
	N : Technopolymer body and metal inserts	●	●	●							
	P : Aluminum body		●	●	●						
	L : Aluminum body, low temperature					/		/			

Filters (F)



- Double filter action: air flow centrifugation and filter element
- Available in 4 sizes with flow rates up to 14000 Nl/min and connections from 1/8" to 1"
- Filtering cartridge made of HDPE available in three different filtration grades (5μm, 20μm, 50μm)
- Filter cartridge can be regenerated by washing / blowing it or replaced
- Bowl assembly via bayonet type quick coupling mechanism with safety button
- Semi-automatic or automatic drain
- Atex certification (II 2GD or II 3GD)
- Inlet pressures up to 20 bar





Note

In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting and tube.

Technical characteristics						
Size		Size 1	Size 2	Size 3	Size 4	
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)			/	
		Technopolymer body, metal connections (N version)				
		/	Aluminium body, integrated aluminium connections (P - L versions)			
Protection and bowl type		Technopolymer protection - PA bowl				
		Technopolymer protection - PC bowl				
		/	Metal protection - PA bowl			
			Metal protection - PC bowl			
			Metal bowl (blind metal bowl)			
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available	
	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT		
	P and L versions	not available	G3/8" - 1/4 NPT	G1/2" - 1/2 NPT	G1" - 1 NPT	
Assembly configuration		Stand alone				
		/			Panel mounted	
Assembly positions		Vertical ±5°				
Filter pore size		5 μm				
		20 μm				
		50 μm				
Bowl capacity		18 cm^3	34 cm^3	68 cm^3	90 cm^3	
Condensation drain		Semi-automatic				
		Automatic				
Max. fittings torque IN / OUT connections	G1" metal	/		/	35Nm	
	G1/2" metal			30Nm	/	
	G1/4" metal	20Nm		/		
	G1/8" metal	15Nm	/			
	G3/8" metal	/	25Nm			
	G1/2" technopolymer		/	22Nm		
	G1/4" technopolymer	9Nm		/		
	G3/8" technopolymer	/	16Nm			

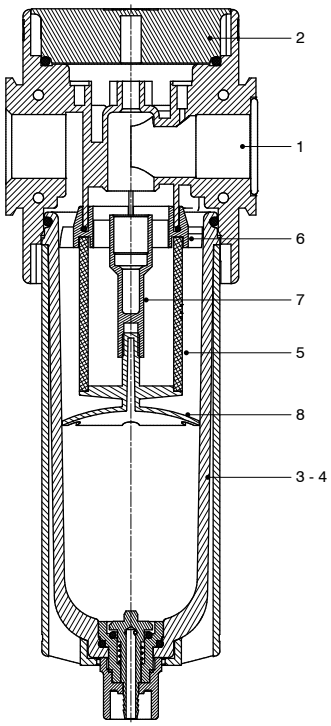
Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain	Semi-automatic				Automatic			
Maximum working pressure	13 bar				10 bar			
	/	20 bar (only with body and metal bowl)				16 bar (only with body and metal bowl)		
Minimum working pressure	0,5 bar							
Working temperature	-5°C...+50°C				-5°C...+50°C			
	/	-30 °C ... +80 °C (only for P version and metal bowl) -40 °C ... +80 °C (only for L version and metal bowl)						

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Fully technopolymer version	129 g	226 g	355 g	/
Technopolymer body version, aluminium bowl protection and technopolymer bowl	/	257 g	393 g	/
Technopolymer body version, aluminium bowl	/	301 g	465 g	/
Aluminium body version, technopolymer protection and bowl	/	314 g	477 g	1163 g
Aluminium body version, aluminium bowl protection and technopolymer bow	/	344 g	514 g	1306 g
Aluminium body version and aluminium bowl	/	389 g	587 g	1330 g

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Materials

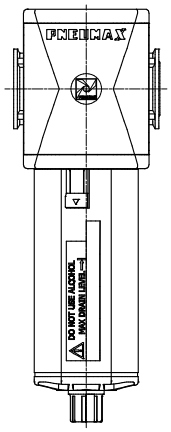
Exploded sectioned



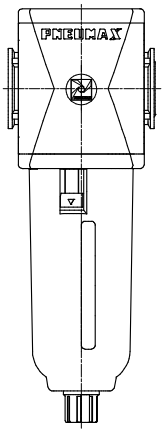
Filter		
1	Body	Polyamide Die-cast aluminium
2	Plug	Polyamide
3	Technopolymer bowl	Polycarbonate Polyamide
4	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium
5	Filtering element	Polyethylene
6	Baffle	Acetal resin
7	Spool support	Acetal resin
8	Filtering element support	Acetal resin

Design

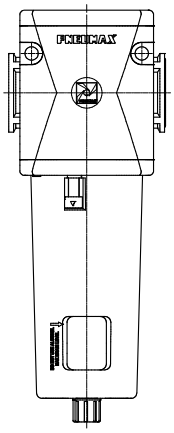
Size 1 - Size 2 - Size 3
Technopolymer protection



Size 1 - Size 2 - Size 3
Protection / Metal bowl



Size 4
All versions



Coding: ⓥ17ⓉFⓈⒸⓄ

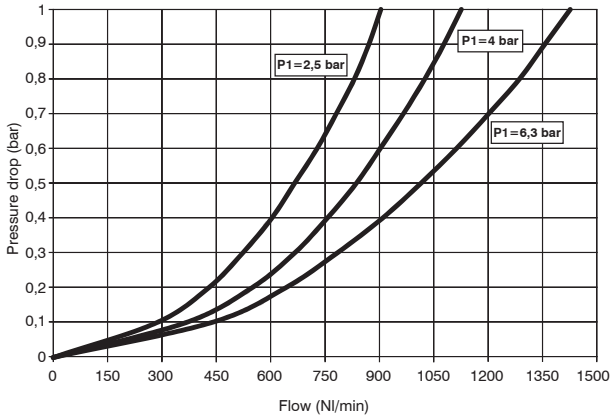
ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
	L = Aluminum body, low temperature (not available for size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version - 1/4" NPT only for P - L versions
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N - P - L versions
	4B = Size 4 - G1" only for P - L versions
	4C = Size 4 - 1" NPT only for P - L versions

Ⓢ	FILTER PORE SIZE
	A = 5 μm
	B = 20 μm
	C = 50 μm
Ⓒ	CONDENSATION DRAIN
	= Semi-automatic drain
	S = Automatic drain
Ⓞ	BOWL OPTIONS
	= Technopolymer protection - PC bowl (not available for L version)
	N = Technopolymer protection - PA bowl (not available for L version)
	P = Metal protection - PC bowl (not available for size 1 and L version)
	R = Metal protection - PA bowl (not available for size 1 and L version)
	T = Metal bowl (not available for size 1)

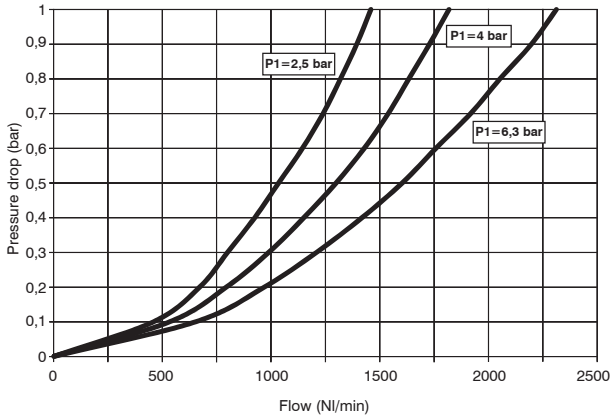
Example: **T173BFBST**: Size 3 filter G1/2" 20 μm, automatic drain and metal bowl

Characteristic curves

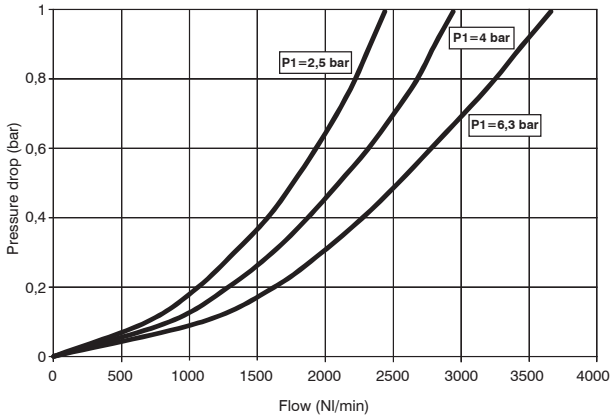
Flow rate curves, Size 1



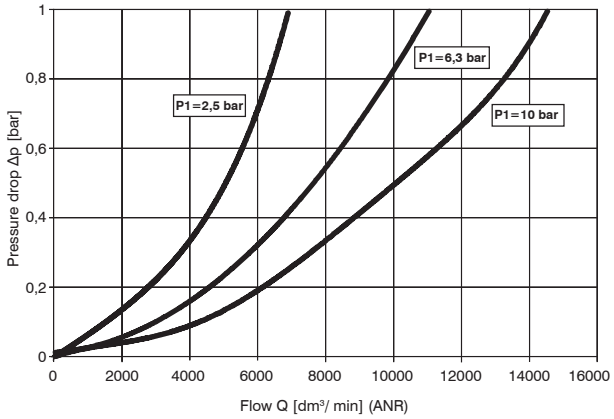
Flow rate curves, Size 2



Flow rate curves, Size 3

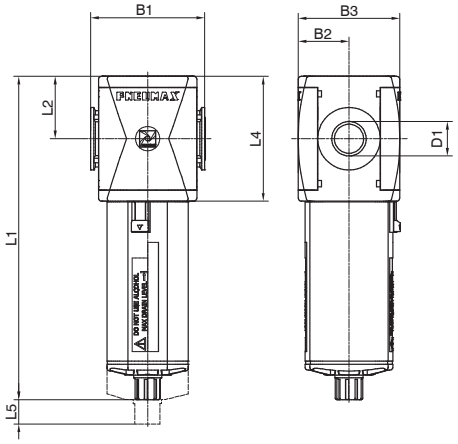


Flow rate curves, Size 4

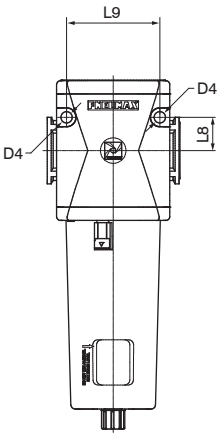


Dimensions

Semi-automatic drain version



Fixing holes dimension detail
(only for size 4)

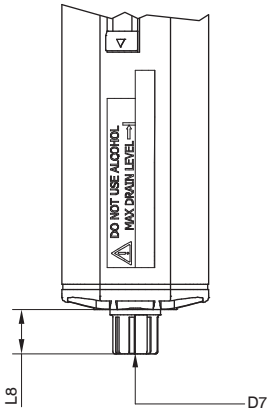


Model	B1	B2	B3	D1	D4	L1 - Bowl material		L2	L4	L5	L8	L9
						Technopolymer	Metal					
#171..	48	21	42	G1/8" G1/4" 1/4 NPT	/	148	/	27,5	55	40	/	/
#172..	62	28.5	57	G1/4" G3/8" 1/4 NPT 3/8 NPT	/	169.1	171.5	34	68	50	/	/
#173..	73	32.5	65	G3/8" G1/2" 1/2 NPT	/	207.2	209.5	40	80	65	/	/
#174..	99	44	88	G1" 1 NPT	8.5	262	264.5	52.5	105	103	25	70

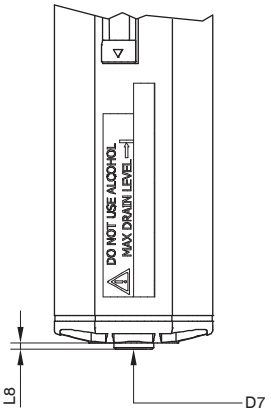
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Variable dimensions

Semi-automatic drain version



Automatic drain version

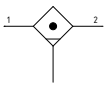


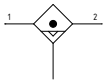
Model	L8 - Bowl material		D7
	Technopolymer	Metal	
Semi-automatic drain	15,7	18	Plastic hose connector Ø6
Automatic drain	2	4,5	G1/8"

Coalescing filters (DA)



- Coalescing filter
- Available in 4 sizes with flow rates up to 8000 Nl/min and connections from 1/8" to 1"
- Available with a filtration grade of either 0.01 µm or 1 µm
- Filtering performance ranges from 95% to 99,97% (depending on the filtration grade)
- Bowl assembly via bayonet type quick coupling mechanism with safety button
- Semi-automatic or automatic drain
- Atex certification (II 2GD or II 3GD)
- Inlet pressures up to 20 bar





Note

In order to ensure the high level of filtration, it is recommended that a 5µ filter is installed before the coalescing filter. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting and tube

Technical characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)			/
		Technopolymer body, metal connections (N version)			
		/	Aluminium body, integrated aluminium connections (P - L versions)		
Protection and bowl type		Technopolymer protection - PA bowl			
		Technopolymer protection - PC bowl			
		/	Metal protection - PA bowl		
			Metal protection - PC bowl		
			Metal bowl (blind metal bowl)		
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	
	P and L versions	not available	G3/8"	G1/2"	G1"
Assembly configuration		Stand alone			
		/			Panel mounted
Assembly positions		Vertical ±5°			
Bowl capacity		18 cm³	34 cm³	68 cm³	90 cm³
Condensation drain		Semi-automatic			
		Automatic			
Max. fittings torque IN / OUT connections	G1" metal	/		/	35 Nm
	G1/2" metal			30 Nm	/
	G1/4" metal	20 Nm		/	
	G1/8" metal	15 Nm	/		
	G3/8" metal	/	25 Nm		
	G1/2" technopolymer		/	22 Nm	
	G1/4" technopolymer	9 Nm		/	
	G3/8" technopolymer	/	16 Nm		

Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain	Semi-automatic				Automatic			
Maximum working pressure	13 bar				10 bar			
	/	20 bar (only with body and metal bowl)			/	16 bar (only with body and metal bowl)		
Minimum working pressure	0,5 bar							
Working temperature	-5°C...+50°C				-5°C...+50°C			
	/	-30 °C ... +80 °C (only for P version and metal bowl) -40 °C ... +80 °C (only for L version and metal bowl)						

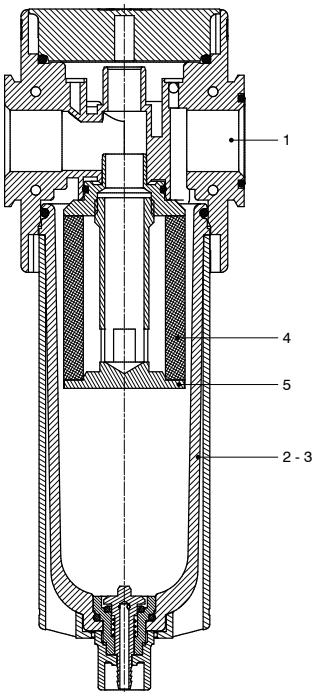
Filter pore size						
		Filtering performances (µm)	Residual oil (ppm)	ISO class for oil	Retained particles (µm)	ISO class for solid particles
Cartridge	0,01 µm	99,97%	0.01	1	0.01	< 1
	1 µm	95%	0.8	< 3	1	2

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Fully technopolymer version	130 g	224 g	366 g	/
Technopolymer body version, aluminium bowl protection and technopolymer bowl	/	251 g	402 g	/
Technopolymer body version, aluminium bowl	/	293 g	475 g	/
Aluminium body version, technopolymer protection and bowl	/	309 g	493 g	1197 g
Aluminium body version, aluminium bowl protection and technopolymer bow	/	337 g	529 g	1340 g
Aluminium body version and aluminium bowl	/	378 g	603 g	1365 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Materials

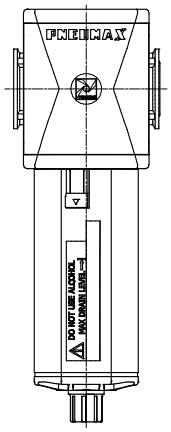
Exploded sectioned



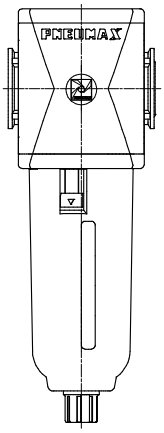
Coalescing filter		
1	Body	Polyamide Die-cast aluminium
2	Technopolymer bowl	Polycarbonate Polyamide
3	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium
4	Filtering element	Borosilicate glass fiber
5	Filtering element support	Aluminium

Design

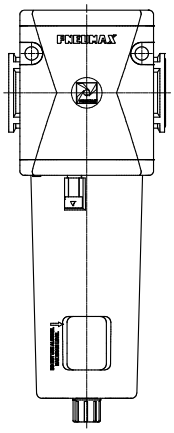
Size 1 - Size 2 - Size 3
Technopolymer protection



Size 1 - Size 2 - Size 3
Protection / Metal bowl



Size 4
All versions



Coding: ⓥ17ⓣDAⓢⓒⓞ

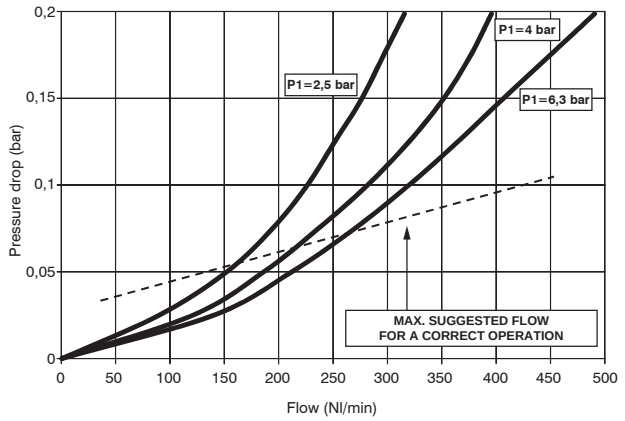
ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
	L = Aluminum body, low temperature (not available for size 1)
ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P - L versions

ⓢ	FILTER PORE SIZE
	= 0,01 μm
	A = 1 μm
ⓒ	CONDENSATION DRAIN
	= Semi-automatic drain
	S = Automatic drain
ⓞ	BOWL OPTIONS
	= Technopolymer protection - PC bowl (not available for L version)
	N = Technopolymer protection - PA bowl (not available for L version)
	P = Metal protection - PC bowl (not available for size 1 and L version)
	R = Metal protection - PA bowl (not available for size 1 and L version)
	T = Metal bowl (not available for size 1)

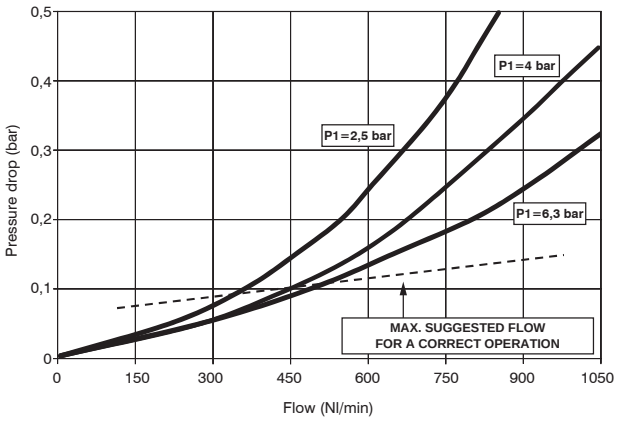
Example: **T173BDAST**: Size 3 coalescing filter G1/2" 0,01 μm, automatic drain and metal bowl

Characteristic curves

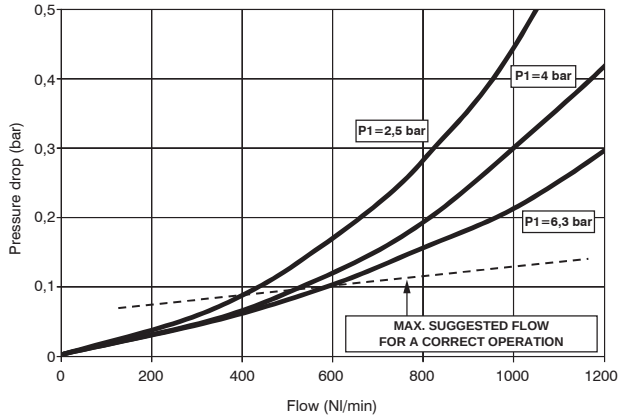
Flow rate curves, Size 1



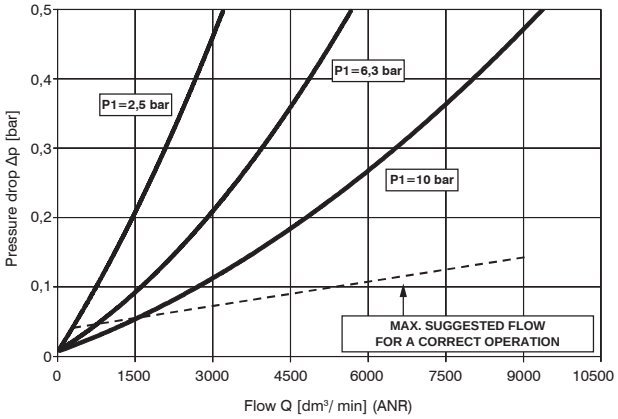
Flow rate curves, Size 2



Flow rate curves, Size 3

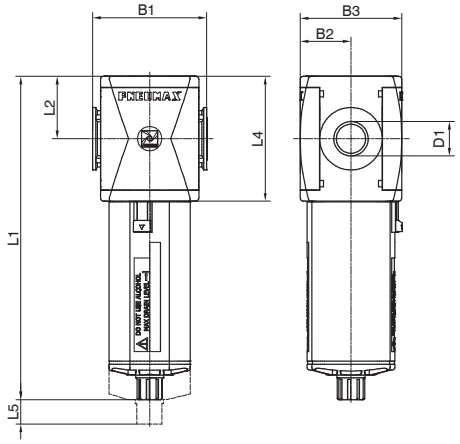


Flow rate curves, Size 4

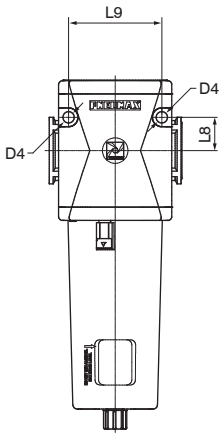


Dimensions

Semi-automatic drain version



Fixing holes dimension detail
(only for size 4)

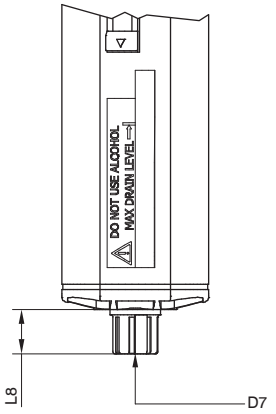


Model	B1	B2	B3	D1	D4	L1 - Bowl material		L2	L4	L5	L8	L9
						Technopolymer	Metal					
#171..	48	21	42	G1/8" G1/4" 1/4 NPT	/	148	/	27,5	55	40	/	/
#172..	62	28.5	57	G1/4" G3/8" 1/4 NPT 3/8 NPT	/	169.1	171.5	34	68	50	/	/
#173..	73	32.5	65	G3/8" G1/2" 1/2 NPT	/	207.2	209.5	40	80	65	/	/
#174..	99	44	88	G1" 1 NPT	8.5	262	264.5	52.5	105	103	25	70

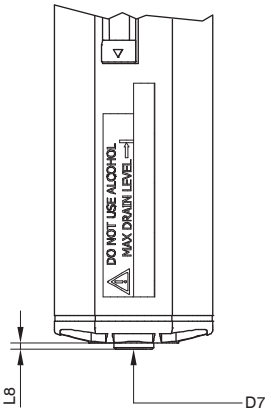
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Variable dimensions

Semi-automatic drain version



Automatic drain version

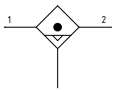


Model	L8 - Bowl material		D7
	Technopolymer	Metal	
Semi-automatic drain	15,7	18	Plastic hose connector Ø6
Automatic drain	2	4,5	G1/8"

Oil removal filters (DBV - DCV - DAV)



- Oil removal filter with coalescing filter element
- Available in 2 sizes with connections from 3/8" to 1"
- Particle removal of 0,01 μm or 1 μm
- Residual oil 0,01 ppm or 0,8 ppm
- Cartridge clogging level display:
  - green color - ok
  - red color - warning (Δp>0,5 bar)
- Bowl assembly via bayonet type quick coupling mechanism with safety button
- Automatic drain mounted as standard
- Atex certification (II 2GD or II 3GD)



Note

In order to ensure the high level of filtration, it is recommended that a 5μ filter is installed before the coalescing filter. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting and tube

Technical characteristics			
Size		Size 3	Size 4
Body and connections type		Aluminium body, integrated aluminium connections (P version)	
		Technopolymer body, integrated technopolymer connections (T version)	/
		Technopolymer body, metal connections (N version)	
Protection and bowl type		Technopolymer protection - PA bowl	
		Technopolymer protection - PC bowl	
		Metal protection - PA bowl	
		Metal protection - PC bowl	
		Metal bowl (blind metal bowl)	
IN / OUT connections	T version	G1/2"	not available
	N version	G3/8" - G1/2" - 1/2 NPT	
	P version	G1/2"	G1"
Assembly configuration		Stand alone	
		/	Panel mounted
Assembly positions		Vertical ±5°	
Bowl capacity		30 cm³	90 cm³
Condensation drain		Automatic	
Max. fittings torque IN / OUT connections	G1" metal	/	35Nm
	G1/2" metal	30Nm	/
	G3/8" metal	25Nm	
	G1/2" technopolymer	22Nm	

Operational characteristics		
Size	Size 3	Size 4
Condensation drain	Automatic	
Maximum working pressure	10 bar	
Minimum working pressure	0,5 bar	
Working temperature	-5 °C ... +50 °C	

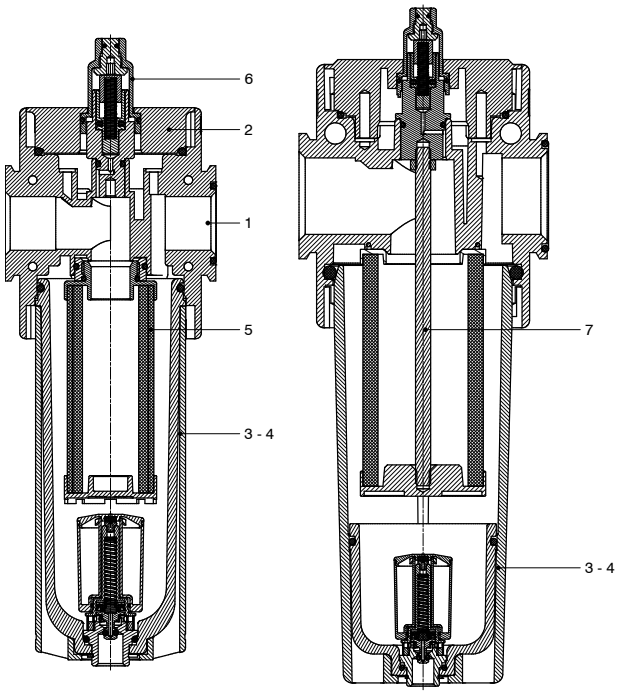
Filter pore size						
		Filtering performances (μm)	Residual oil (ppm)	ISO class for oil	Retained particles (μm)	ISO class for solid particles
Cartridge	0,01 μm	99,97%	0.01	1	0.01	< 1
	1 μm	95%	0.8	< 3	1	2

Weights			
Size	Size 3 Standard cartridge	Size 3 Oversize cartridge	Size 4
Fully technopolymer version	416 g	634 g	/
Technopolymer body version, aluminium bowl protection and technopolymer bowl	453 g	671 g	/
Technopolymer body version, aluminium bowl	526 g	742 g	/
Aluminium body version, technopolymer protection and bowl	538 g	661 g	1230 g
Aluminium body version, aluminium bowl protection and technopolymer bow	575 g	698 g	1374 g
Aluminium body version and aluminium bowl	647 g	769 g	1398 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Materials

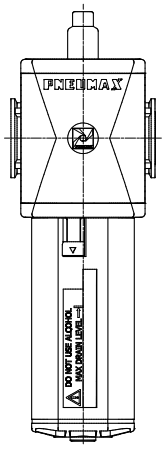
Exploded sectioned



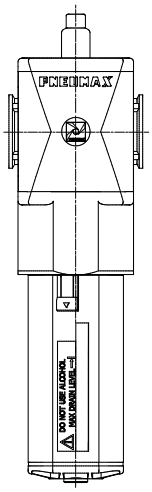
Oil removal filter		
1	Body	Polyamide Die-cast aluminium
2	Upper plug	Polyamide
3	Technopolymer bowl	Polycarbonate Polyamide
4	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium
5	Filtering element	/
6	Visual indicator	Polycarbonate
7	Tie rod	Steel (only for size 4)
8	Automatic drain	/

Design

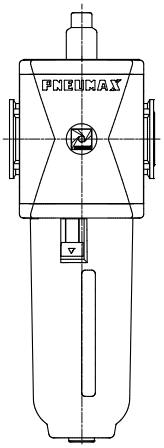
Size 3
Technopolymer protection



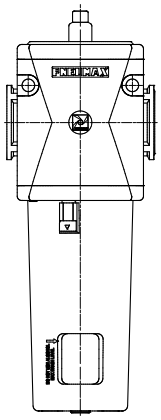
Size 3 - Oversize cartridge
Technopolymer protection



Size 3
Protection / Metal bowl



Size 4
All versions



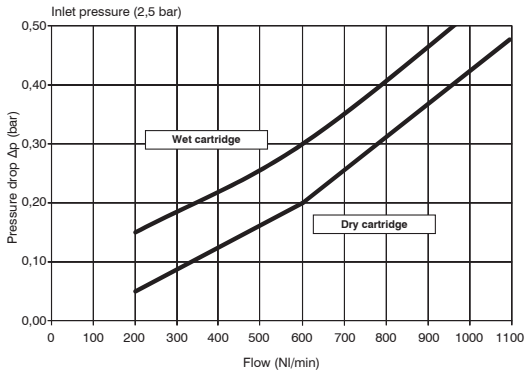
Coding: ⓥ17ⓉⓄ

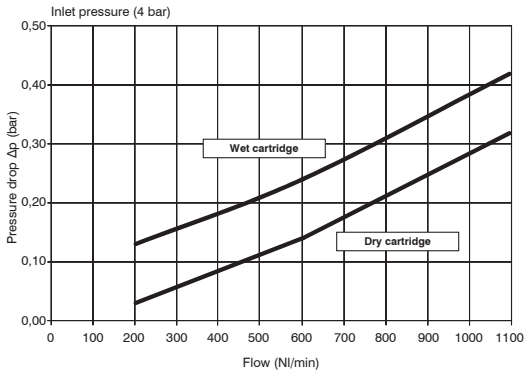
ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminium body version
Ⓣ	SIZE AND CONNECTIONS
	3ADBV = Size 3 - G3/8" standard cartridge only for N version
	3BDBV = Size 3 - G1/2" standard cartridge for all versions
	3CDBV = Size 3 - 1/2" NPT standard cartridge only for N version
	3BDCV = Size 3 - G1/2" oversize cartridge only for P version
	4BDAV = Size 4 - G1" standard 0,01 μm cartridge only for P version
	4BDBV = Size 4 - G1" standard 1 μm cartridge only for P version
Ⓞ	BOWL OPTIONS
	= Technopolymer protection - PC bowl
	N = Technopolymer protection - PA bowl
	P = Metal protection - PC bowl
	R = Metal protection - PA bowl
	T = Metal bowl

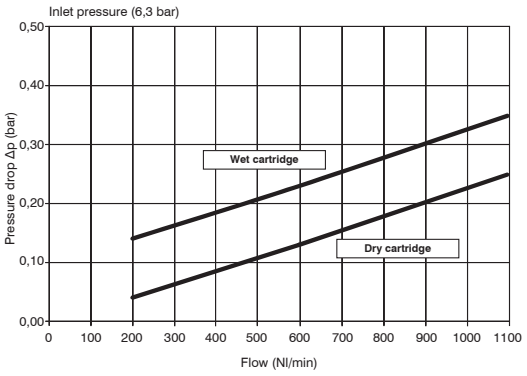
Example: **T173BDBVT**: Size 3 oil removal filter G1/2", standard cartridge, metal bowl

Characteristic curves

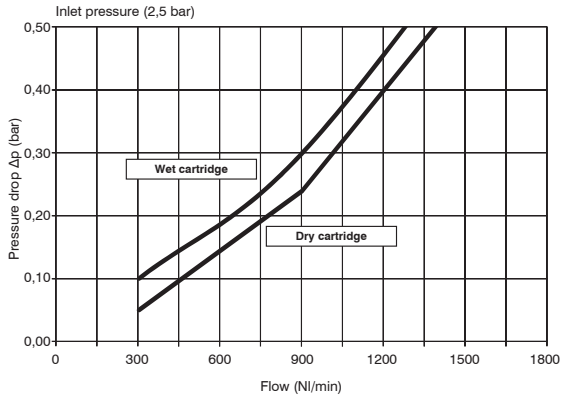
Size 3 - Standard cartridge

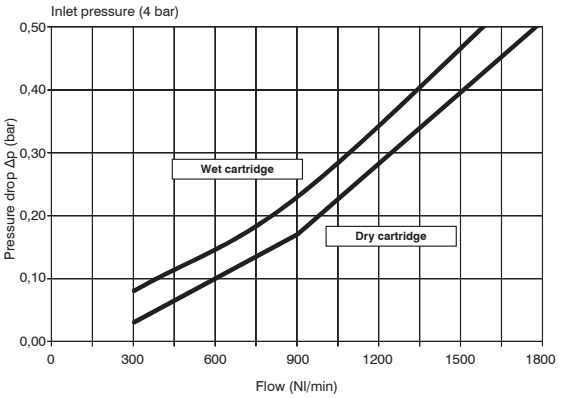


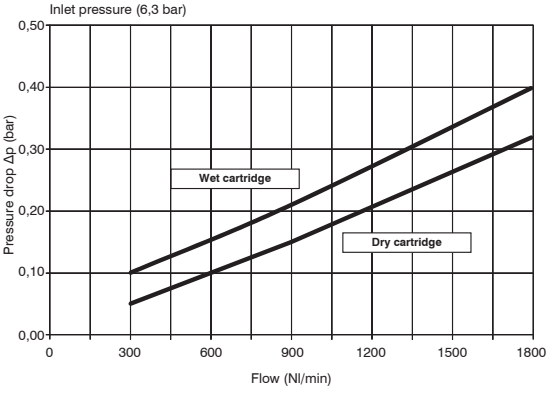




Size 3 - Oversize cartridge

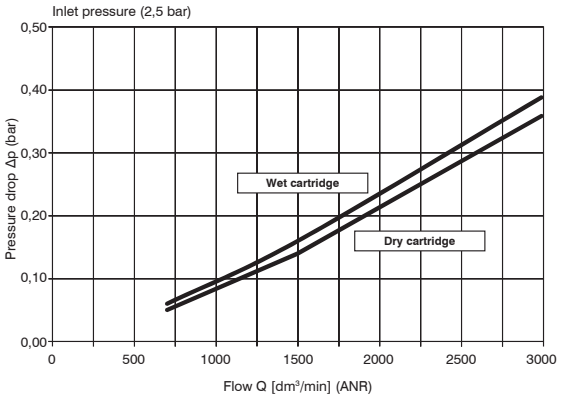


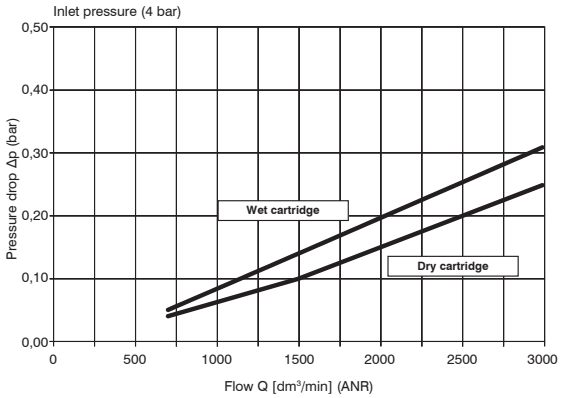


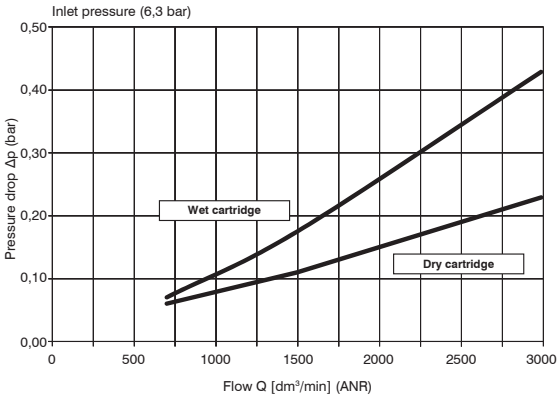


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

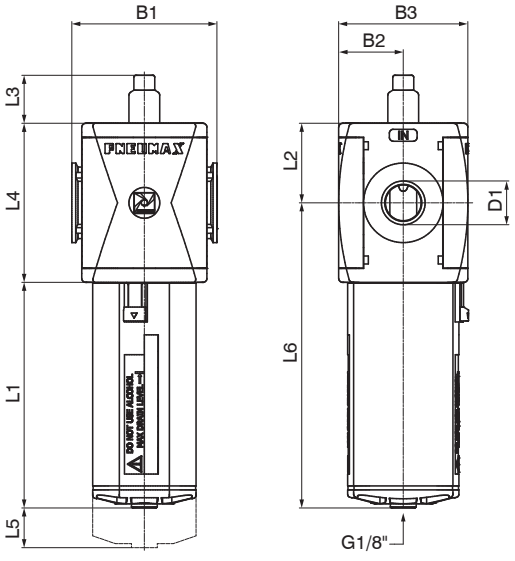
Size 4 - Standard cartridge



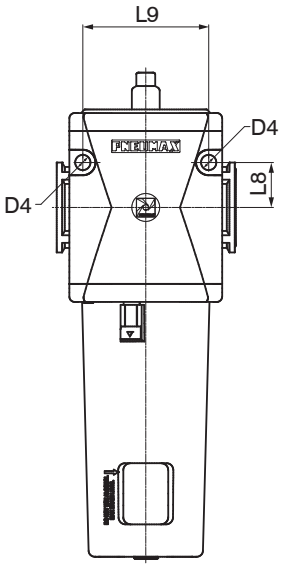




Dimensions



Fixing holes dimension detail
(only for size 4)

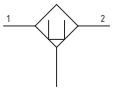


Model	B1	B2	B3	D1		L1 - Bowl material		L3	L4		L5	L8	L9
				Standard cartridge	Oversize cartridge	Technopolymer	Metal		Standard cartridge	Oversize cartridge			
#173..	73	32.5	65	G3/8" G1/2" 1/2 NPT	G1/2"	113.5	116	24.1	80	118	65	/	/
#174..	99	44	88	G1"	/	143	145.5	22.5	105	/	103	25	70

Carbon filters (DD)



- Carbon filter
- Available in 2 sizes with connections from 3/8" to 1"
- Active carbon cartridge with built in particulate filter
- Used to remove oil vapours, hydrocarbons, odours and particles
- Oil residue up to <0,003 ppm (max imput aereosol 0.01 ppm)
- High absorption capacity, with low differential pressure
- Filtering performances 99.97% (particles up to 0.01 μm)
- Bowl assembly via bayonet type quick coupling mechanism with safety button
- Semi-automatic drain
- Atex certification (II 2GD or II 3GD)
- Inlet pressures up to 20 bar



Note

A 5μ filter, coalescing filter and oil removing filter must be installed prior to the carbon filter, this is to ensure that the carbon filter operates correctly and safe guard the life of the active carbon element. It may also be necessary to replace the carbon element at fixed intervals.

Technical characteristics			
Size		Size 3	Size 4
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)	/
		Technopolymer body, metal connections (N version)	
		Aluminium body, integrated aluminium connections (P - L versions)	
Protection and bowl type		Technopolymer protection - PA bowl	
		Technopolymer protection - PC bowl	
		Metal protection - PA bowl	
		Metal protection - PC bowl	
		Metal bowl (blind metal bowl)	
IN / OUT connections	T version	G1/2"	not available
	N version	G3/8" - G1/2" - 1/2 NPT	
	P and L versions	G1/2"	G1"
Assembly configuration		Stand alone	Panel mounted
Assembly positions		Vertical ±5°	
Oil residue		< 0,003 ppm (max imput aereosol 0.01 ppm)	
Bowl capacity		68 cm³	90 cm³
Condensation drain		Semi-automatic	
Max. fittings torque IN / OUT connections	G1" metal	/	35Nm
	G1/2" metal	30Nm	/
	G3/8" metal	25Nm	
	G1/2" technopolymer	22Nm	

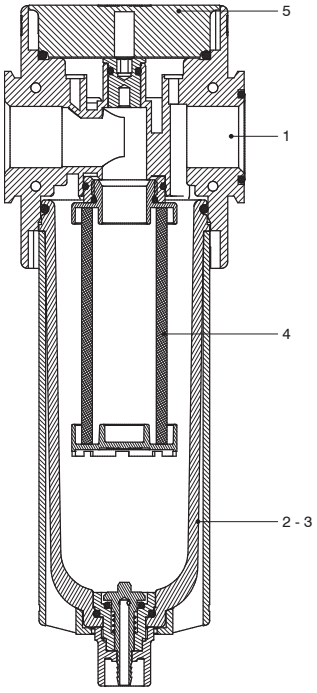
Operational characteristics	
Size	Size 3 / Size 4
Condensation drain	Semi-automatic
Maximum working pressure	13 bar
	20 bar (only with body and metal bowl)
Minimum working pressure	0,5 bar
Working temperature	-5°C...+50°C
	-40°C...+80°C (only for L version and metal bowl)
	-30 °C ... +80 °C (only for P version and metal bowl)
Cartridge life	2000 hours

Weights		
Size	Size 3	Size 4
Fully technopolymer version	395 g	/
Technopolymer body version, aluminium bowl protection and technopolymer bowl	432 g	/
Technopolymer body version, aluminium bowl	505 g	/
Aluminium body version, technopolymer protection and bowl	518 g	1201 g
Aluminium body version, aluminium bowl protection and technopolymer bow	554 g	1344 g
Aluminium body version and aluminium bowl	628 g	1368 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Materials

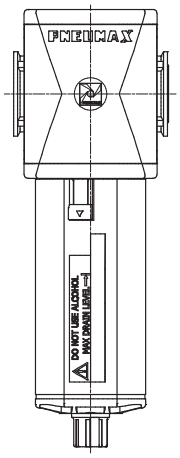
Exploded sectioned



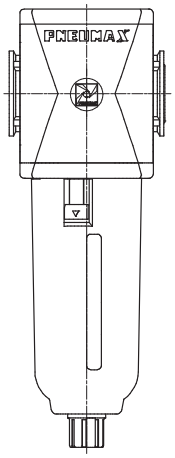
Carbon filter		
1	Body	Polyamide Die-cast aluminium
2	Technopolymer bowl	Polycarbonate Polyamide
3	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium
4	Filtering element	Activated carbon
5	Plug	Polyamide Die-cast aluminium

Design

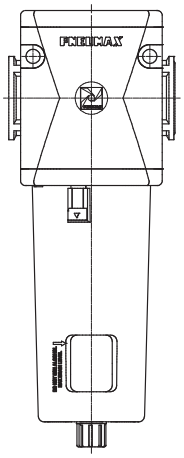
Size 3
Technopolymer protection



Size 3
Protection / Metal bowl



Size 4
All versions



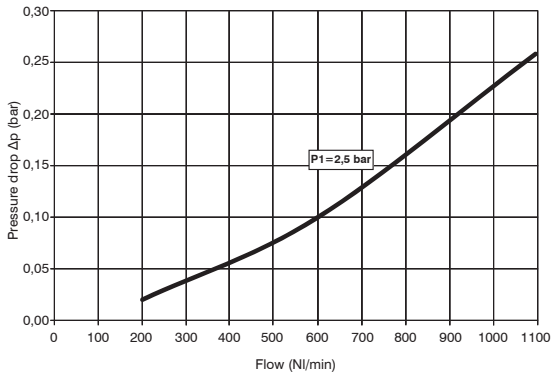
Coding: ⓥ17ⓉDDⓄ

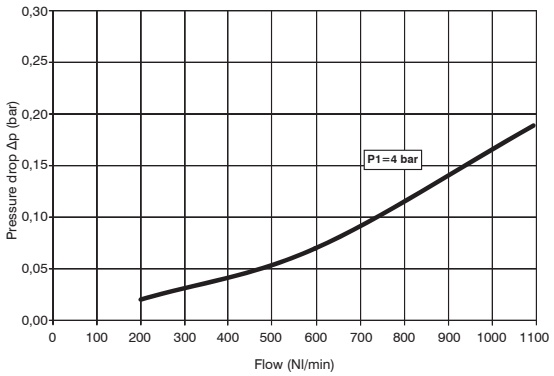
ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminium body version
	L = Aluminium body, low temperature
Ⓣ	SIZE AND CONNECTIONS
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P - L versions
Ⓞ	BOWL OPTIONS
	= Technopolymer protection - PC bowl
	N = Technopolymer protection - PA bowl
	P = Metal protection - PC bowl
	R = Metal protection - PA bowl
	T = Metal bowl

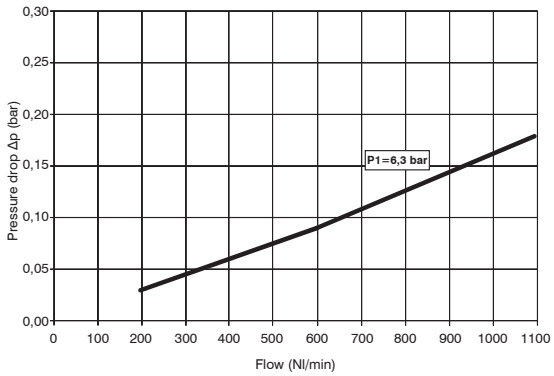
Example: **T173BDDT**: Size 3 carbon filter G1/2" metal bowl

Characteristic curves

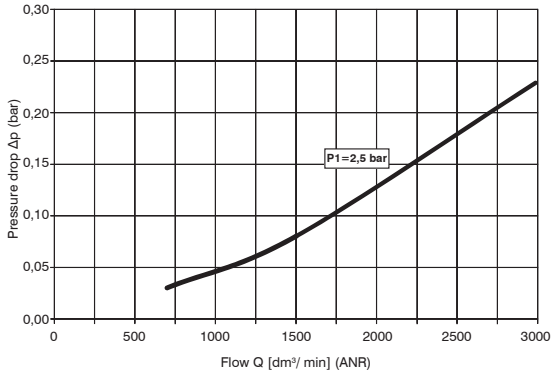
Efficiency curves - Size 3

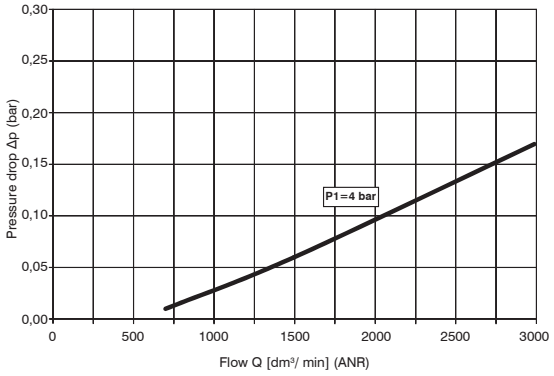


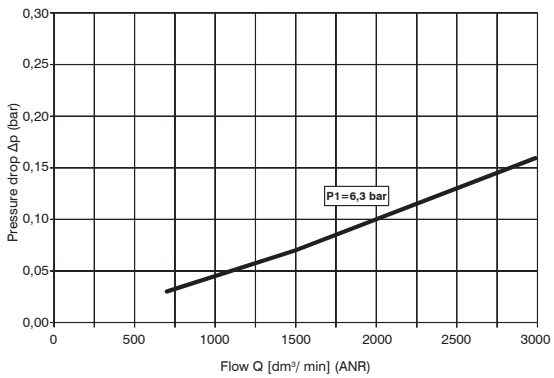




Efficiency curves - Size 4



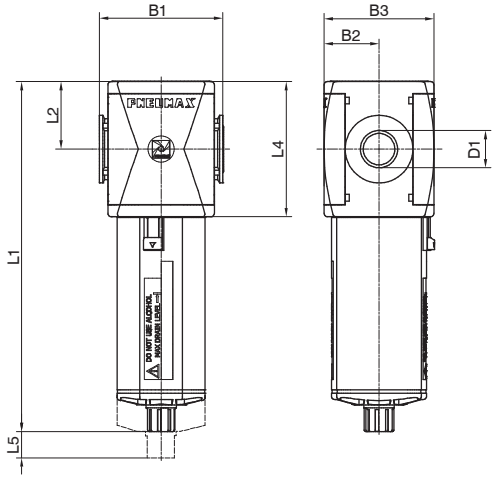




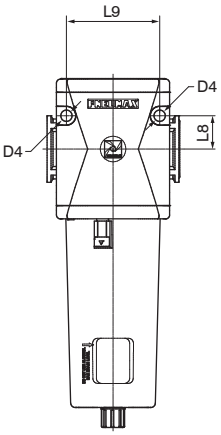
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Dimensions

Semi-automatic drain version



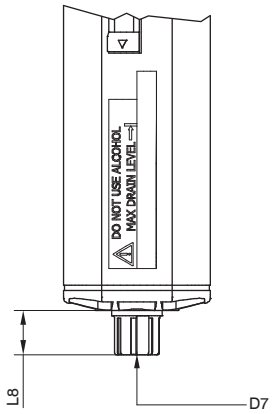
Fixing holes dimension detail
(only for size 4)



Model	B1	B2	B3	D1	D4	L1 - Bowl material		L2	L4	L5	L8	L9
						Technopolymer	Metal					
#173..	73	32,5	65	G3/8" G1/2" 1/2 NPT	/	207,2	209,5	40	80	65	/	/
#174..	99	44	88	G1" 1 NPT	8,5	262	264,5	52,5	105	103	25	70

Variable dimensions

Semi-automatic drain version

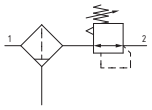


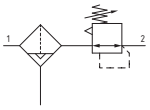
Model	L8 - Bowl material		D7
	Technopolymer	Metal	
Semi-automatic drain	15,7	18	Plastic hose connector Ø6

Filter regulators (E - EM - EW - EP - EZ)



- Filter - diaphragm pressure regulator with relieving
- Available in 4 sizes with flow rates up to 8000 Nl/min and connections from 1/8" to 1"
- Low histeresis rolling diaphragm and balanced spool
- Filtering element made of HDPE available in 3 different filtration grades (5μm, 20μm and 50μm)
- Bowl assembly via bayonet type quick coupling mechanism with safety button
- Semi-automatic or automatic drain
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Available with pressure gauge or digital pressure switch integrated
- Atex certification (II 2GD or II 3GD)
- Inlet pressures up to 20 bar





Note

For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting and tube.

Technical characteristics

Size		Size 1	Size 2	Size 3	Size 4
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)			/
		Technopolymer body, metal connections (N version)			
		/	Aluminium body, integrated aluminium connections (P - L versions)		
Protection and bowl type		Technopolymer protection - PA bowl			
		Technopolymer protection - PC bowl			
		/	Metal protection - PA bowl		
			Metal protection - PC bowl		
			Metal bowl (blind metal bowl)		
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	
	P and L versions	not available	G3/8" - 1/4 NPT	G1/2" - 1/2 NPT	G1" - 1 NPT
Assembly configuration		Stand alone			
		Panel mounted			
		With fixing bracket			
		/			Panel mounted
Assembly positions		Vertical ±5°			
Filter pore size		5 μm			
		20 μm			
		50 μm			
Bowl capacity		18 cm^3	34 cm^3	68 cm^3	90 cm^3
Condensation drain		Semi-automatic			
		Automatic			
Pressure range		0-2 bar			
		0-4 bar			
		0-8 bar			
		0-12 bar (P2 max 10 Bar in case of digital pressure switch selection)			
Regulation		Manul push and lock with pressure			
		Manual lockable with accessories			
Pressure measurement		G1/8" - 1/8" NPT pressure gauge connection port (only for versions with IN / OUT NPT connections)			
		Integrated pressure gauge (optional)			
		Digital pressure switch (optional)			
Max. fittings torque IN / OUT connections	G1" metal	/		/	35Nm
	G1/2" metal			30Nm	/
	G1/4" metal	20Nm		/	
	G1/8" metal	15Nm	/		
	G3/8" metal	/	25Nm		
	G1/2" technopolymer		/	22Nm	
	G1/4" technopolymer	9Nm		/	
	G3/8" technopolymer	/	16Nm		
Max.fitting torque pressure gauge connection port		G1/8" metal: 15Nm			
		G1/8" technopolymer: 4Nm			

Operational characteristics

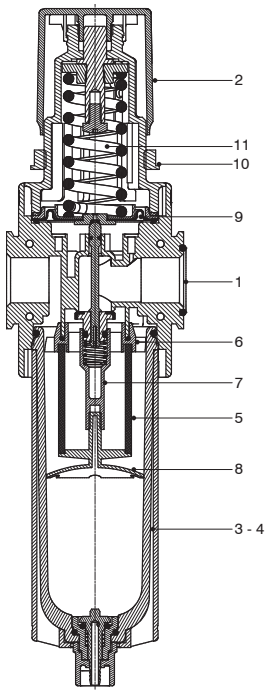
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain	Semi-automatic				Automatic			
Maximum working pressure	13 bar				10 bar			
	/	20 bar (only with body and metal bowl)			/	16 bar (only with body and metal bowl)		
Minimum working pressure	0,5 bar				0,5 bar			
Working temperature	-5 °C ... +50 °C				-5 °C ... +50 °C			
	/	-30°C ... +80°C (only for P version and metal bowl)						
		-40°C ... +80°C (only for L version and metal bowl)						
Working temperature with digital pressure switch	0 °C ... +50 °C							

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Fully technopolymer version	210 g	410 g	500 g	/
Technopolymer body version, aluminium bowl protection and technopolymer bowl	/	440 g	600 g	/
Technopolymer body version, aluminium bowl	/	460 g	660 g	/
Aluminium body version, technopolymer protection and bowl	/	480 g	710 g	1460 g
Aluminium body version, aluminium bowl protection and technopolymer bow	/	510 g	730 g	1600 g
Aluminium body version and aluminium bowl	/	560 g	790 g	1620 g

Materials

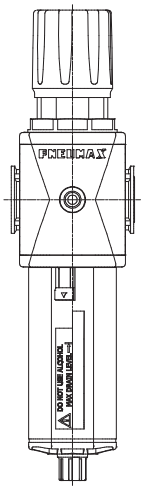
Exploded sectioned



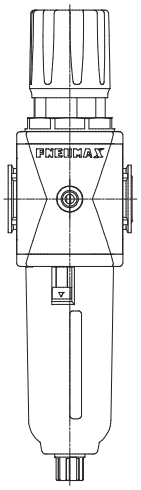
Filter regulator		
1	Body	Polyamide Die-cast aluminium
2	Adjusting knob	Polyamide
3	Technopolymer bowl	Polycarbonate Polyamide
4	Metal bowl Bowl protection	Die-cast aluminium Polyamide - Die-cast aluminium
5	Filtering element	Polyethylene
6	Baffle	Acetal resin
7	Spool support	Acetal resin
8	Filtering element support	Acetal resin
9	Diaphragm	NBR
10	Panel mounting locking ring	Polyamide
11	Adjusting spring	Steel

Design

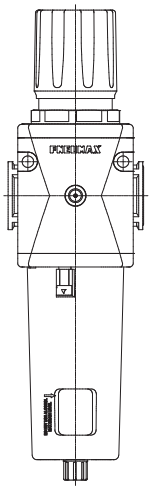
Size 1 - Size 2 - Size 3
Technopolymer protection



Size 1 - Size 2 - Size 3
Protection / Metal bowl



Size 4
All versions



Coding: ⓋⓉⒺⓄ[1]ⓈⓇⒸⓄ[2]Ⓞ[3]Ⓞ[4]Ⓞ[5]

Ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
	L = Aluminum body, low temperature (not available for size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version - 1/4" NPT only for P - L versions
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N - P - L versions
	4B = Size 4 - G1" only for P - L versions
	4C = Size 4 - 1" NPT only for P - L versions
Ⓞ[1]	PRESSURE MEASUREMENT OPTIONS
	= G1/8" - 1/8" NPT thread (Only for P - L versions with metal body and NPT thread)
	M = Integrated pressure gauge (not available on NPT, size 2 and size 3 aluminum body)
	W = Integrated pressure gauge Right - Left (not available on NPT, size 2 and size 3 aluminum body)
	P = Digital pressure switch (not available on NPT, size 2 and size 3 aluminum body)
	Z = Digital pressure switch Right - Left (not available on NPT, size 2 and size 3 aluminum body)
Ⓢ	FILTER PORE SIZE
	A = 5 μm
	B = 20 μm
	C = 50 μm
Ⓡ	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
Ⓒ	CONDENSATION DRAIN
	= Semi-automatic drain
	S = Automatic drain
Ⓞ[2]	RELIEVING OPTIONS
	= With reliving
	L = Without relieving
Ⓞ[3]	KNOB OPTIONS
	= Non-lockable version
	K = Lockable version
	U = Lockable version with universal key
Ⓞ[4]	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN
Ⓞ[5]	BOWL OPTIONS
	= Technopolymer protection - PC bowl (not available for L version)
	N = Technopolymer protection - PA bowl (not available for L version)
	P = Metal protection - PC bowl (not available for size 1 and L version)
	R = Metal protection - PA bowl (not available for size 1 and L version)
	T = Metal bowl (not available for size 1)

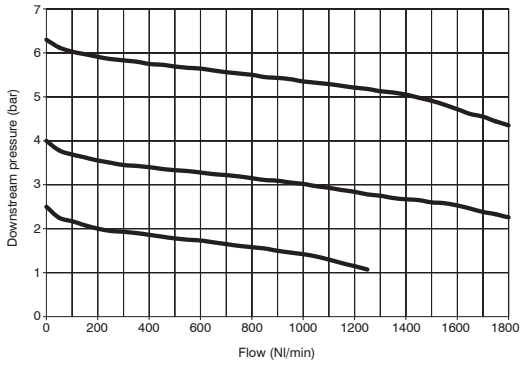
Example: **T173BEMBDST**: Size 3 filter regulator G1/2" 20 μm 0 - 12 bar, automatic drain and metal bowl

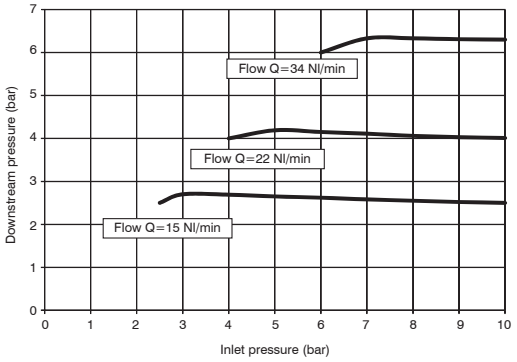
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Characteristic curves

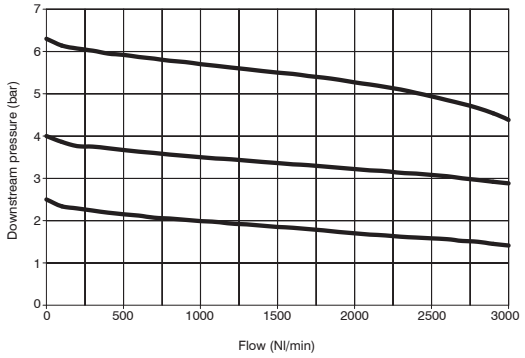
Flow rate curves	Adjustment characteristic

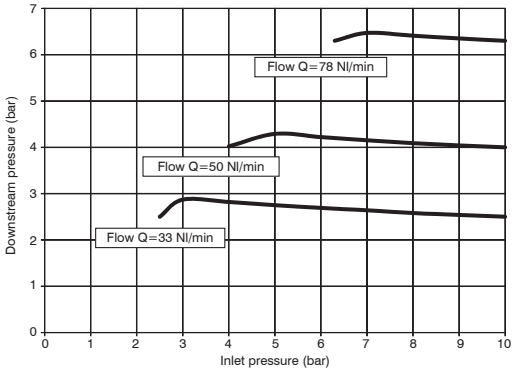
Size 1 - G1/4", 0-8 bar, P1=7 bar



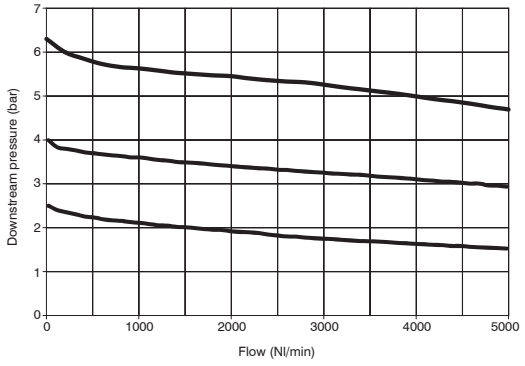


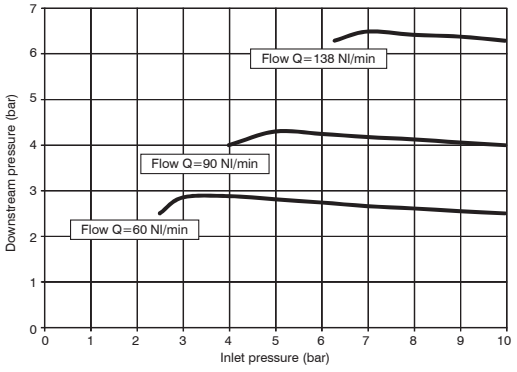
Size 2 - G3/8", 0-8 bar, P1=7 bar



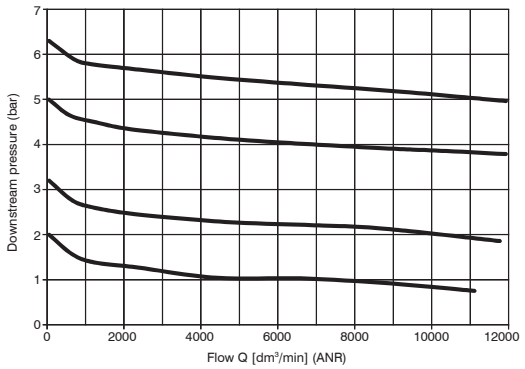


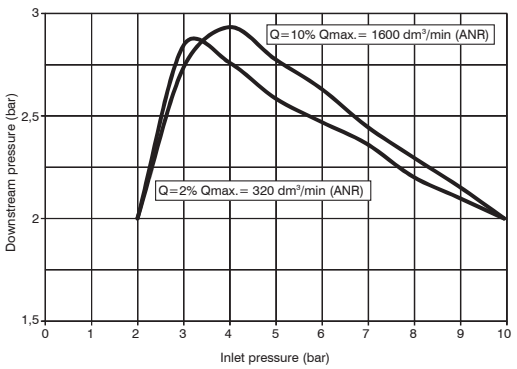
Size 3 - G1/2", 0-8 bar, P1=7 bar





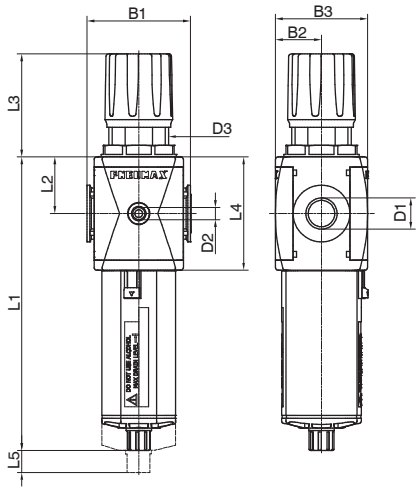
Size 4 - G1", 0-8 bar, P1=10 bar



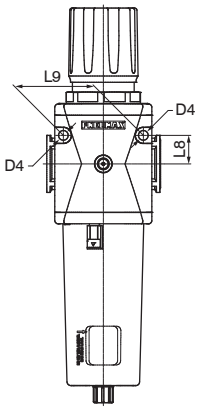


Dimensions

Pressure gauge connection port and semi-automatic drain version



Fixing holes dimension detail (only for size 4)

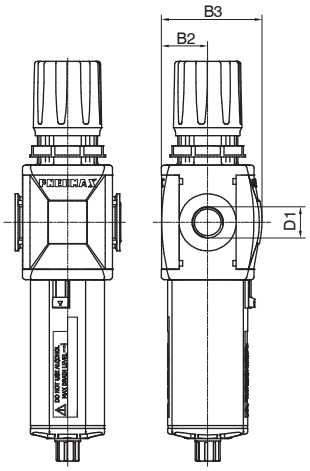


Model	B1	B2	B3	D1	D2	D3	D4	L1 - Bowl material		L2	L3	L4	L5	L8	L9
								Technopolymer	Metal						
#171...	48	21	42	G1/8" G1/4" 1/4" NPT	G1/8" 1/8" NPT*	M30x1,5	/	148	/	27,5	54	55	40	/	/
#172...	62	28,5	57	G1/4" G3/8" 1/4" NPT 3/8" NPT	G1/8" 1/8" NPT*	M42x1,5	/	169.1	171,5	34	71,8	68	50	/	/
#173...	73	32,5	65	G3/8" G1/2" 1/2" NPT	G1/8" 1/8" NPT*	M42x1,5	/	207,2	209,5	40	72,8	80	65	/	/
#174...	99	44	88	G1" 1" NPT	G1/8" 1/8" NPT*	M54x1,5	8,5	262	264,5	52,5	87,5	105	103	25	70

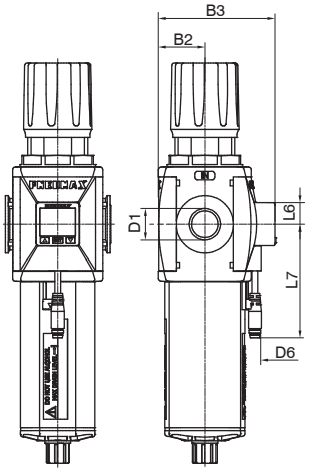
*(only for P - L versions and NPT connections)

Variable dimensions

Integrated pressure gauge version



Integrated digital pressure switch version

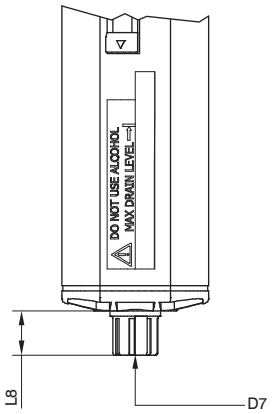


Model	B2	B3		D1	D6 - Type of digital pressure switch		L6	L7 - Type of digital pressure switch	
		With pressure gauge	With digital pressure switch		A - B	C - D		A - B	C - D
#171..	21	48,5	60	G1/8" G1/4" 1/4" NPT	M8 - 3 PIN	3 x 0,129 mm, Ø 4 mm	15	150	2000
#172..	28,5	62,5	73,5	G1/4" G3/8" 1/4" NPT 3/8" NPT					
#173..	32,5	70,5	81,5	G3/8" G1/2" 1/2" NPT					
#174..	44	90,5	101,5	G1" 1" NPT					

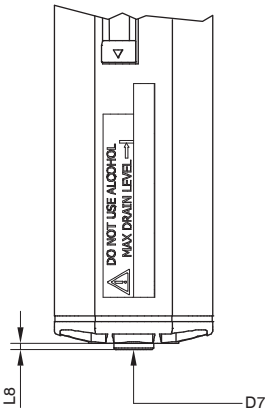
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Variable dimensions

Semi-automatic drain version



Automatic drain version



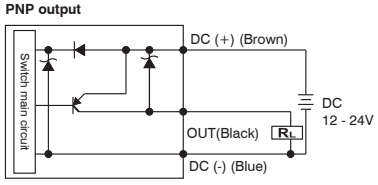
Model	L8 - Bowl material		D7
	Technopolymer	Metal	
Semi-automatic drain	15,7	18	Plastic hose connector Ø6
Automatic drain	2	4,5	G1/8"

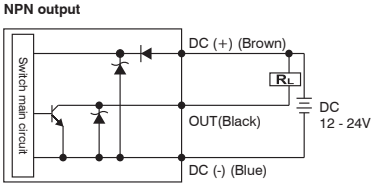
Digital pressure switch



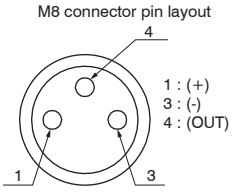
- 3 color digital LCD display, easy readout
- 4 units of measurement for pressure indication
- Optional PNP or NPN digital output
- N.O. and N.C. output contact selection directly on the digital pressure switch
- Available with M8-3PIN connector or 3 wire cable length 2 m

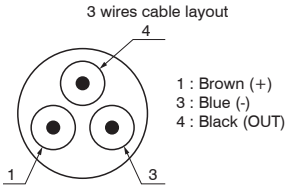
Output circuit wiring diagrams





Digital pressure switch layout





Cable ordering code

MCH1: cable 3 wires l=2,5m with M8 connector
MCH2: cable 3 wires l=5m with M8 connector
MCH3: cable 3 wires l=10m with M8 connector



Technical characteristics	
Pressure range and display	0 ... 10 bar
Max. inlet pressure	15 bar
Fluid	40μm filtered and dehumidified air
Display unit of measurement	MPa - kgf/cm^2 - bar - psi
Supply voltage	12 ... 24 VDC
Current consumption	≤40mA (without load)
Digital output type	PNP - NPN
Type of contact output	Normally Open - Normally Closed
Max. load current	125 mA
Digital output activation mode	single threshold with fixed hysteresis - window with fixed hysteresis - window without hysteresis
Digital output activation time	0.05s - 0.25s - 0.5s - 1s - 2s - 3s (selections for chattering-proof options)
Display characteristics	Double 3 1/2 digit display Digital output status indication Three-pushbuttons touchpad
Indicator accuracy	≤±2% full scale value ± 1 digit
Protection degree	IP40
Working temperature	0 °C ... 50 °C
Cable section	3 x 0,129 mm^2, Ø4 mm, PVC

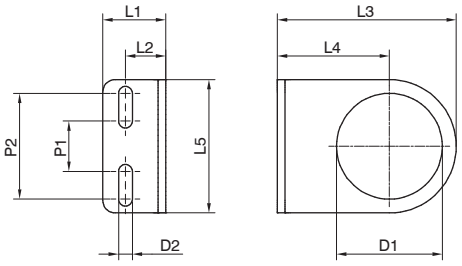
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Fixing bracket

Coding: Ⓣ50

Ⓣ	SIZE
	171 = Size 1
	T172 = Size 2 - Size 3





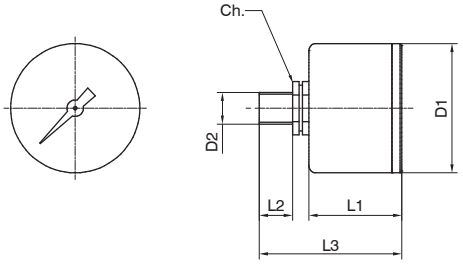
Model	D1	D2	L1	L2	L3	L4	L5	P1	P2
17150	30	5.5	20	13	50	30	40	20	30
T17250	42	5.5	25	16	71	44.5	53	20	42

Pressure gauge

Coding: 17070ⓋⓈ

Ⓥ	VERSION
	A = Dial Ø40
	B = Dial Ø50
Ⓢ	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
	C = 0 - 12 bar



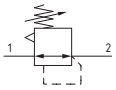


Model	D1	D2	L1	L2	L3	Ch
17070A...	41	Gc - 1/8"	26	10	44	14
17070B...	49	Gc - 1/8"	27	10	45	14

Regulators (R - RM - RW - RP - RZ)



- Diaphragm pressure regulator with relieving
- Available in 4 sizes with flow rates up to 8000 Nl/min and connections from 1/8" to 1"
- Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Available with pressure gauge or digital pressure switch integrated
- Atex certification (II 2GD or II 3GD)
- Inlet pressures up to 20 bar



Note

For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)			/
		Technopolymer body, metal connections (N version)			
		/	Aluminium body, integrated aluminium connections (P - L versions)		
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	
	P and L versions	not available	G3/8" - 1/4 NPT	G1/2" - 1/2 NPT	G1" - 1 NPT
Assembly configuration		Stand alone			
		Panel mounted			
		With fixing bracket			Panel mounted
Assembly positions		Indifferent			
Pressure range		0-2 bar			
		0-4 bar			
		0-8 bar			
		0-12 bar (P2 max 10 Bar in case of digital pressure switch selection)			
Regulation		Manul push and lock with pressure			
		Manual lockable with accessories			
Pressure measurement		G1/8" - 1/8" NPT pressure gauge connection port (only for versions with IN / OUT NPT connections)			
		Integrated pressure gauge (optional)			
		Digital pressure switch (optional)			
Max. fittings torque IN / OUT connections	G1" metal	/		/	35Nm
	G1/2" metal			30Nm	/
	G1/4" metal	20Nm		/	
	G1/8" metal	15Nm	/		
	G3/8" metal	/	25Nm		
	G1/2" technopolymer		/	22Nm	
	G1/4" technopolymer	9Nm		/	
	G3/8" technopolymer	/	16Nm		
Max.fitting torque pressure gauge connection port		15Nm			
		4Nm			

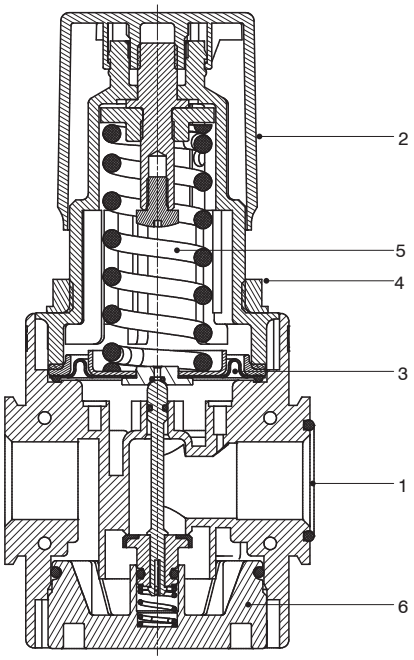
Operational characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Maximum working pressure		13 bar			
		/	20 bar (only for P - L versions)		
Minimum working pressure		0,5 bar			
Working temperature		-5°C...+50°C			
		/	-30°C ... +80°C (only for P version)		
		/	-40°C ... +80°C (only for L version)		
Working temperature with digital pressure switch		0°C...+50°C			

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Technopolymer body version	150 g	310 g	390 g	/
Aluminium body version	/	400 g	560 g	1260 g

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Materials

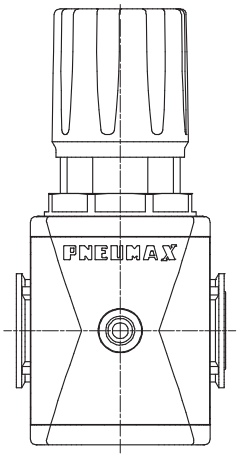
Exploded sectioned



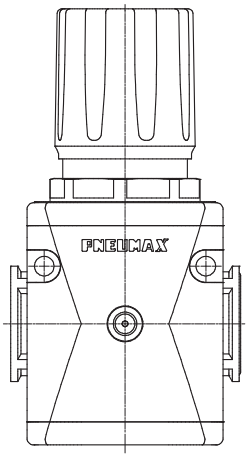
Regulator		
1	Body	Polyamide Die-cast aluminium
2	Adjusting knob	Polyamide
3	Diaphragm	NBR
4	Panel mounting locking ring	Polyamide
5	Adjusting spring	Steel
6	Rear end cap	Polyamide Die-cast aluminium

Design

Size 1 - Size 2 - Size 3



All versions
Size 4



Coding: ⓋⓋ17ⓉⓇⓄ¹ⓇⓄ²Ⓞ³Ⓞ⁴

Ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
	L = Aluminum body, low temperature (not available for size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version - 1/4" NPT only for P - L versions
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N - P - L versions
	4B = Size 4 - G1" only for P - L versions
	4C = Size 4 - 1" NPT only for P - L versions
Ⓞ¹	PRESSURE MEASUREMENT OPTIONS
	= G1/8" - 1/8" NPT thread (Only for P - L versions with metal body and NPT thread)
	M = Integrated pressure gauge (not available on NPT, size 2 and size 3 aluminum body)
	W = Integrated pressure gauge Right - Left (not available on NPT, size 2 and size 3 aluminum body)
	P = Digital pressure switch (not available on NPT, size 2 and size 3 aluminum body)
	Z = Digital pressure switch Right - Left (not available on NPT, size 2 and size 3 aluminum body)

Ⓡ	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
Ⓞ²	RELIEVING OPTIONS
	= With reliving
	F = Controlled refiel and improved relieving (not available for size 4)
	L = Without relieving
	R = Improved relieving
Ⓞ³	KNOB OPTIONS
	= Non-lockable version
	K = Lockable version
	U = Lockable version with universal key
Ⓞ⁴	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN

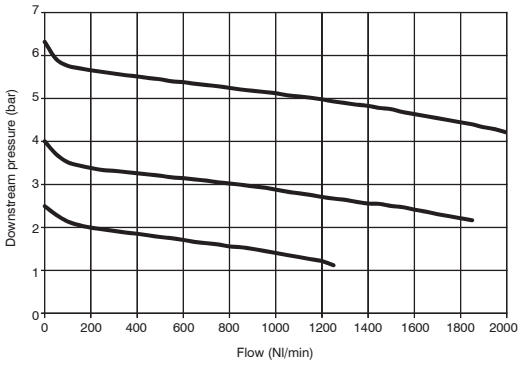
Example: **T173BRMD**: Size 3 regulator G1/2" 0 - 12 bar

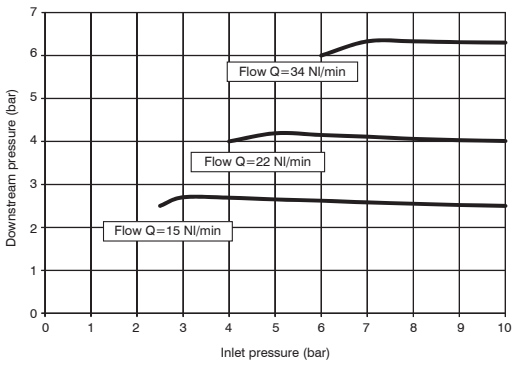
Characteristic curves

Flow rate curves

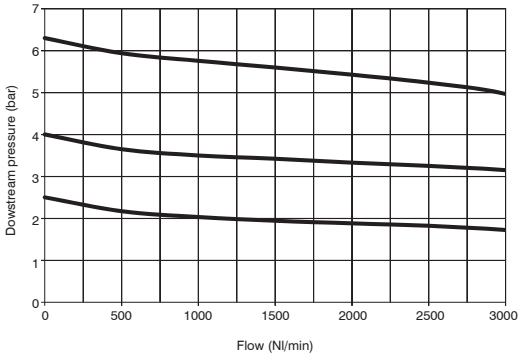
Adjustment characteristic

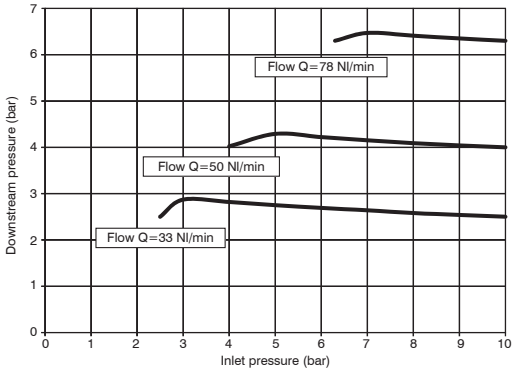
Size 1 - G1/4", 0-8 bar, P1=7 bar



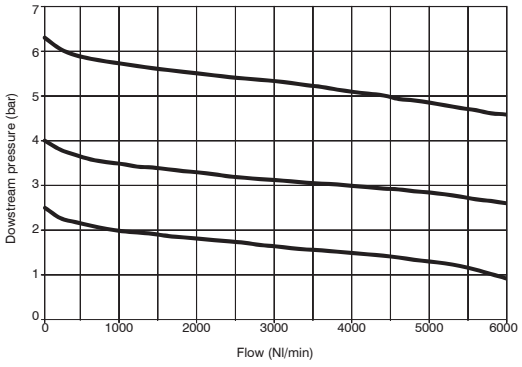


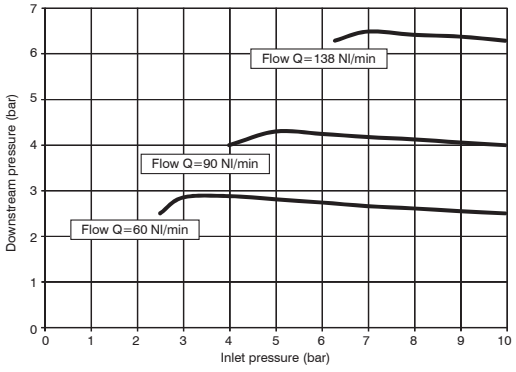
Size 2 - G3/8", 0-8 bar, P1=7 bar



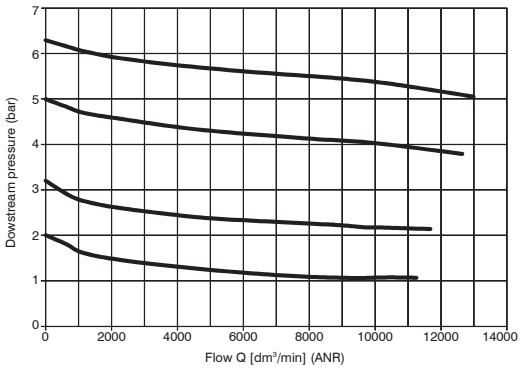


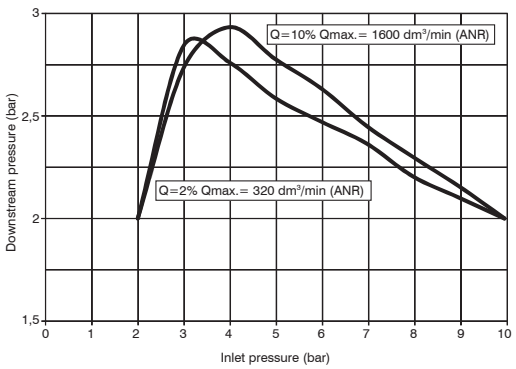
Size 3 - G1/2", 0-8 bar, P1=7 bar





Size 4 - G1", 0-8 bar, P1=10 bar

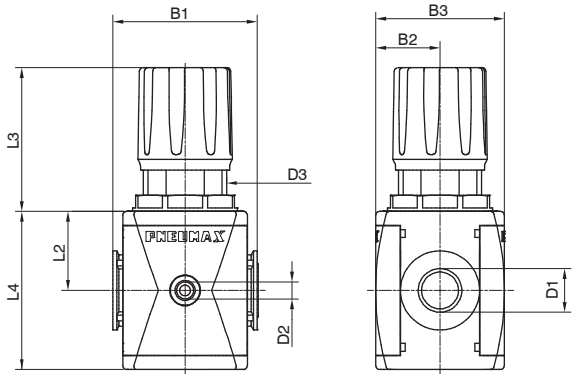




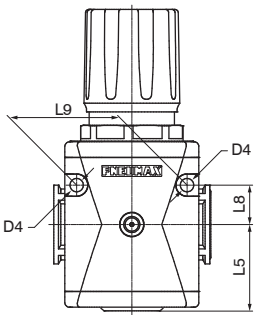
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Dimensions

Pressure gauge connection port version



Fixing holes dimension detail
(only for size 4)

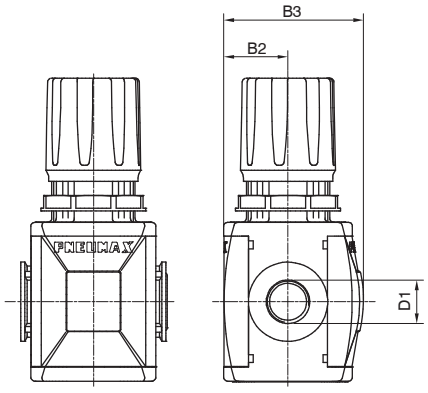


Model	B1	B2	B3	D1	D2	D3	D4	L2	L3	L4	L5	L8	L9
#171..	48	21	42	G1/8" G1/4" 1/4 NPT	G1/8" 1/8 NPT *	M30x1,5	/	27,5	54	55	/	/	/
#172..	62	28.5	57	G1/4" G3/8" 1/4 NPT 3/8 NPT	G1/8" 1/8 NPT *	M42x1,5	/	34	71.8	68	/	/	/
#173..	73	32.5	65	G3/8" G1/2" 1/2 NPT	G1/8" 1/8 NPT *	M42x1,5	/	40	72.8	80	/	/	/
#174..	99	44	88	G1" 1 NPT	G1/8" 1/8 NPT *	M54x1,5	8.5	52.5	87.5	105	54.5	25	70

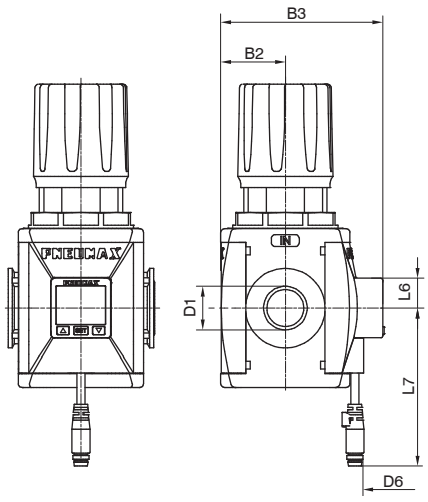
*(only for P - L versions and NPT connections)

Variable dimensions

Integrated pressure gauge version



Integrated digital pressure switch version



Model	B2	B3		D1	D6 - Type of digital pressure switch		L6	L7 - Type of digital pressure switch	
		With pressure gauge	With digital pressure switch		A - B	C - D		A - B	C - D
#171..	21	48,5	60	G1/8" G1/4" 1/4" NPT	M8 - 3 PIN	3 x 0,129 mm, Ø 4 mm	15	150	2000
#172..	28,5	62,5	73,5	G1/4" G3/8" 1/4" NPT 3/8" NPT					
#173..	32,5	70,5	81,5	G3/8" G1/2" 1/2" NPT					
#174..	44	90,5	101,5	G1" 1" NPT					

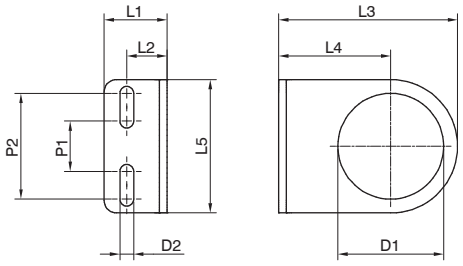
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Fixing bracket

Coding: Ⓣ50

Ⓣ	SIZE
	171 = Size 1
	T172 = Size 2 - Size 3





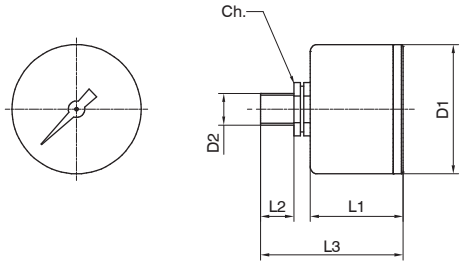
Model	D1	D2	L1	L2	L3	L4	L5	P1	P2
17150	30	5.5	20	13	50	30	40	20	30
T17250	42	5.5	25	16	71	44.5	53	20	42

Pressure gauge

Coding: 17070ⓋⓈ

Ⓥ	VERSION
	A = Dial Ø40
	B = Dial Ø50
Ⓢ	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
	C = 0 - 12 bar





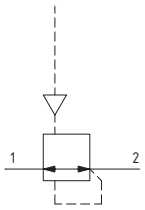
Model	D1	D2	L1	L2	L3	Ch
17070A...	41	Gc - 1/8"	26	10	44	14
17070B...	49	Gc - 1/8"	27	10	45	14

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Piloted pressure regulators (RP - RMP - RPP)



- Piston piloted pressure regulator
- Available with pressure gauge or digital pressure switch integrated
- Atex certification (II 2GD or II 3GD)
- Inlet pressures up to 20 bar



Note
Always regulate the rising pressure.

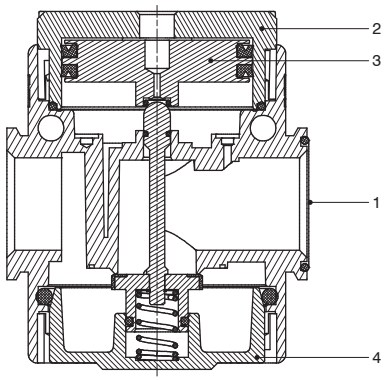
Technical characteristics	
Size	Size 4
Body and connections type	Aluminium body, integrated aluminium connections
IN / OUT connections	G1" - 1 NPT
Assembly configuration	Stand alone
	Panel mounted
Assembly positions	Indifferent
Pressure range	0,5...10 bar
Regulation	Pneumatic piloting
Pressure measurement	G1/8" - 1/8" NPT pressure gauge connection port (only for versions with IN / OUT NPT connections)
	Integrated pressure gauge (optional)
	Digital pressure switch (optional)
Max. fittings torque IN / OUT connections	G1"metal: 35Nm
Max.fitting torque pressure gauge connection port	G1/8" metal: 15Nm

Operational characteristics	
Size	Size 4
Maximum working pressure	20 bar
Minimum working pressure	0,5 bar
Pilot pressure range	0,5...10 bar
Working temperature	-30°C...+80°C
Working temperature with digital pressure switch	0°C...+50°C

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Pneumatic pilot aluminum body version	/	/	/	1190 g

Materials

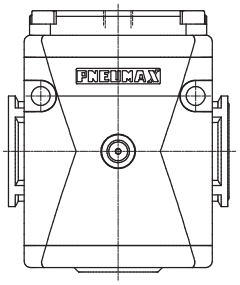
Exploded sectioned



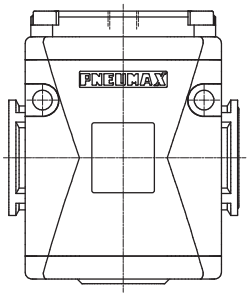
Piloted pressure regulator		
1	Body	Die-cast aluminium
2	Piloting operator	Aluminium
3	Piston	Aluminium
4	Rear end cap	Die-cast aluminium

Design

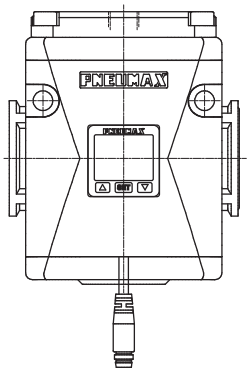
Version with
G1/8" pressure gauge



Version with
Integrated digital pressure switch



Version with
Integrated pressure gauge



Coding: ⓥ17ⓉRⓄ¹Ⓞ²P

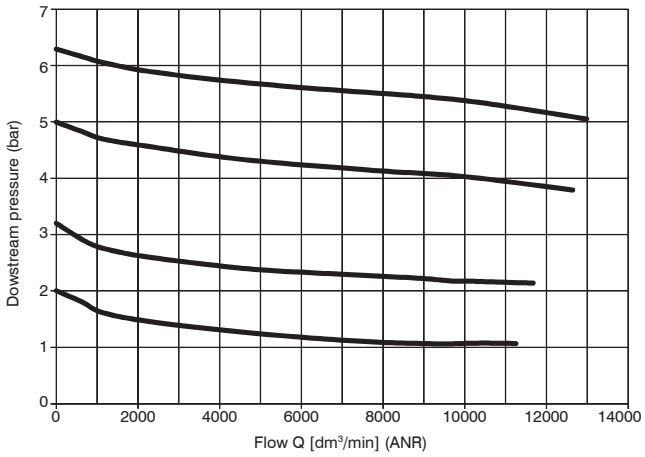
ⓥ	VERSION
	P = Aluminium body version
Ⓣ	SIZE AND CONNECTIONS
	4B = Size 4 - G1”
	4C = Size 4 - 1 NPT
Ⓞ¹	PRESSURE MEASUREMENT OPTIONS
	= G1/8” - 1/8 NPT thread (Only for version with NPT thread)
	M = Integrated pressure gauge
	W = Integrated pressure gauge Right - Left
	P = Digital pressure switch
	Z = Digital pressure switch Right - Left
Ⓞ²	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN

Example: **P174BRMP**: Size 4 piloted pressure regulator G1”, integrated pressure gauge

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

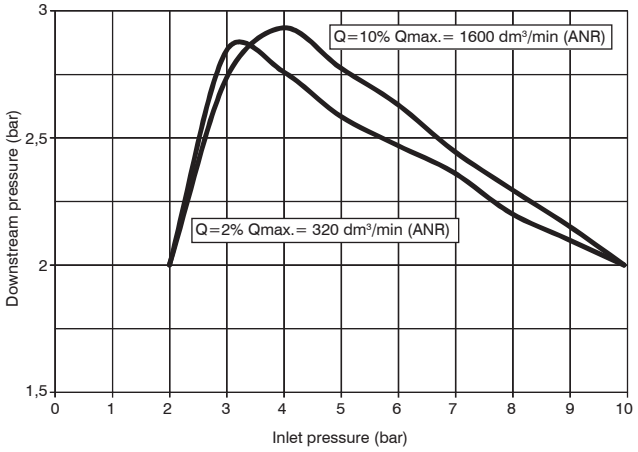
Characteristic curves

Flow rate curves

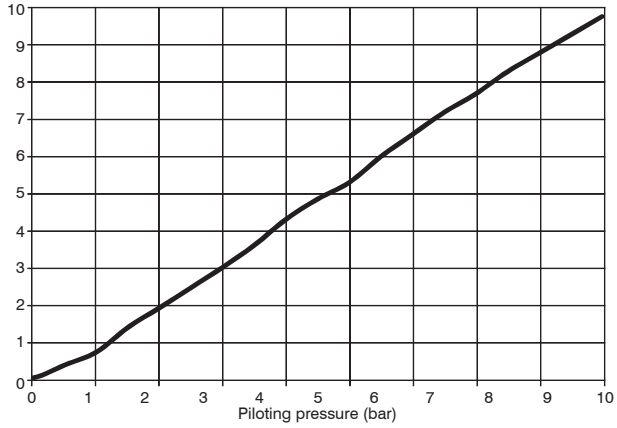


Adjustment characteristic

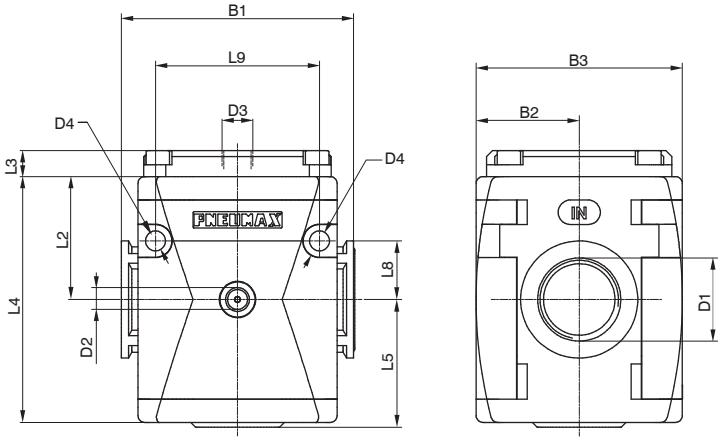
Size 4 - G1", P1=10 bar



Piloting curves



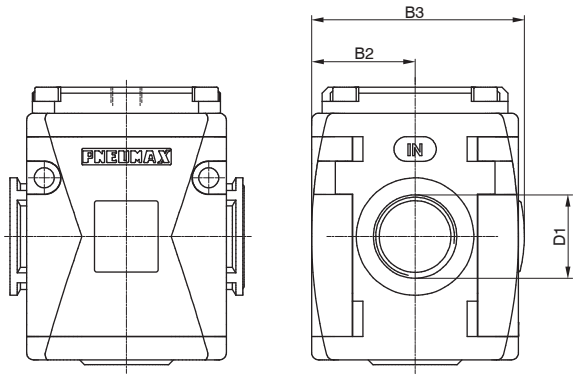
Dimensions



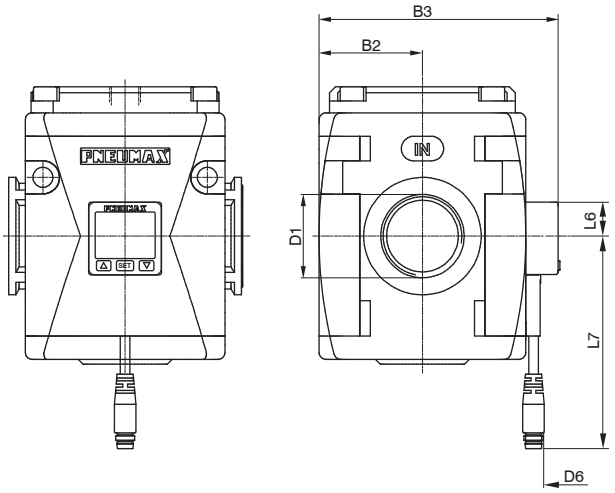
Model	B1	B2	B3	D1	D2	D3	D4	L2	L3	L4	L5	L8	L9
#174..	99	44	90	G1" 1 NPT	G1/8" 1/8 NPT	G1/4"	8.5	52.5	11	105	54.5	25	70

Variable dimensions

Integrated pressure gauge version



Integrated digital pressure switch version



Model	B2	B3		D1	D6 - Type of digital pressure switch		L6	L7 - Type of digital pressure switch	
		With pressure gauge	With digital pressure switch		A-B	C-D		A-B	C-D
#174..	44	90	101,5	G1" 1 NPT	M8 - 3 PIN	3 x 0,129 mm, Ø4 mm	15	150	2000

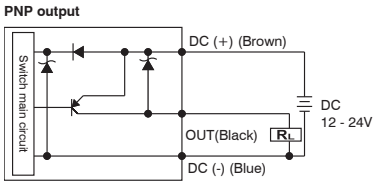
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

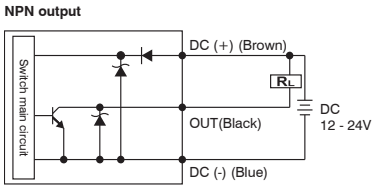
Digital pressure switch



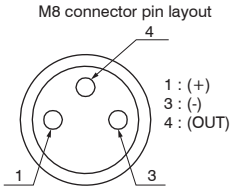
- 3 color digital LCD display, easy readout
- 4 units of measurement for pressure indication
- Optional PNP or NPN digital output
- N.O. and N.C. output contact selection directly on the digital pressure switch
- Available with M8-3PIN connector or 3 wire cable length 2 m

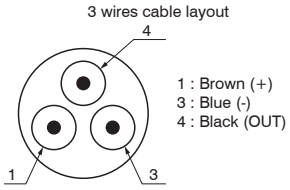
Output circuit wiring diagrams





Digital pressure switch layout





Cable ordering code

MCH1: cable 3 wires l=2,5m with M8 connector
MCH2: cable 3 wires l=5m with M8 connector
MCH3: cable 3 wires l=10m with M8 connector

Connector

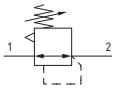


Technical characteristics	
Pressure range and display	0 ... 10 bar
Max. inlet pressure	15 bar
Fluid	40μm filtered and dehumidified air
Display unit of measurement	MPa - kgf/cm^2 - bar - psi
Supply voltage	12 ... 24 VDC
Current consumption	≤40mA (without load)
Digital output type	PNP - NPN
Type of contact output	Normally Open - Normally Closed
Max. load current	125 mA
Digital output activation mode	single threshold with fixed hysteresis - window with fixed hysteresis - window without hysteresis
Digital output activation time	0.05s - 0.25s - 0.5s - 1s - 2s - 3s (selections for chattering-proof options)
Display characteristics	Double 3 1/2 digit display Digital output status indication Three-pushbuttons touchpad
Indicator accuracy	≤±2% full scale value ± 1 digit
Protection degree	IP40
Working temperature	0 °C ... 50 °C
Cable section	3 x 0,129 mm^2, Ø4 mm, PVC

Pressure regulators for manifold (B - M - P)



- Diaphragm pressure regulator with relieving
- Available with 2 front outputs connections G1/8 " or with 1 front output and integrated pressure gauge on the opposite side
- Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Available with integrated pressure gauge or digital pressure switch
- Air supply can be applied by both directions (Right or Left)
- Max. 6 off pressure regulators in manifold configuration
- Atex certification (II 3GD)



Note

For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics		
Size		Size 1
Body and connections type		Technopolymer body, integrated technopolymer connections (T version) Technopolymer body, metal connections (N version)
IN connections	T version	G1/4"
	N version	G1/8" - G1/4" - 1/4" NPT
OUT connections		G1/8"
Assembly configuration		Stand alone
		Panel mounted
		With fixing bracket
Assembly positions		Indifferent
Pressure range		0-2 bar
		0-4 bar
		0-8 bar
		0-12 bar
Regulation		Manul push and lock with pressure
		Manual lockable with accessories
Pressure measurement		G1/8" pressure gauge connection port
		Integrated pressure gauge (optional)
		Digital pressure switch (optional)
Max. fittings torque IN / OUT connections		G1/8" metal: 15Nm G1/4" metal: 20Nm G1/4" technopolymer: 9Nm
Max.fitting torque pressure gauge connection port		G1/8" technopolymer: 4 Nm G1/8" metal: 15Nm

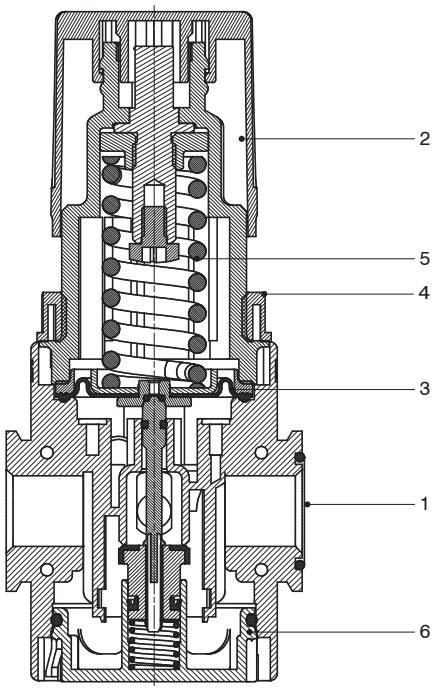
Operational characteristics	
Size	Size 1
Maximum working pressure	13 bar
Minimum working pressure	0,5 bar
Working temperature	-5°C...+50°C
Working temperature with digital pressure switch	0°C...+50°C

Weights	
Size	Size 1
Technopolymer body version	140 g

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Materials

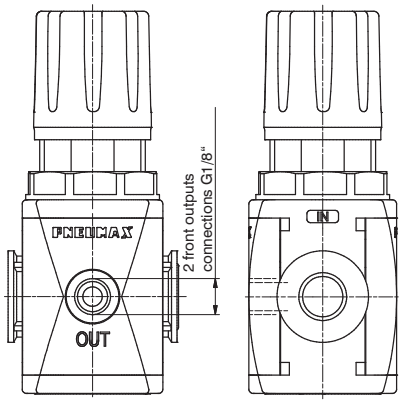
Exploded sectioned



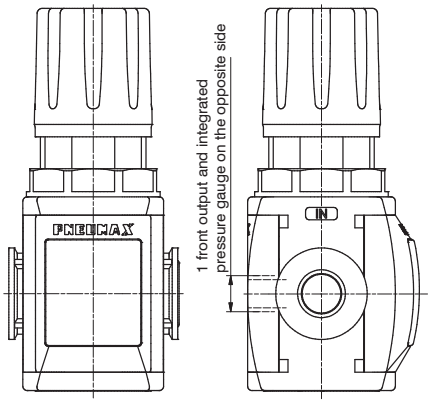
Pressure regulator for manifold		
1	Body	Polyamide Die-cast aluminium
2	Adjusting knob	Polyamide
3	Diaphragm	NBR
4	Panel mounting locking ring	Polyamide
5	Adjusting spring	Steel
6	Rear end cap	Polyamide Die-cast aluminium

Design

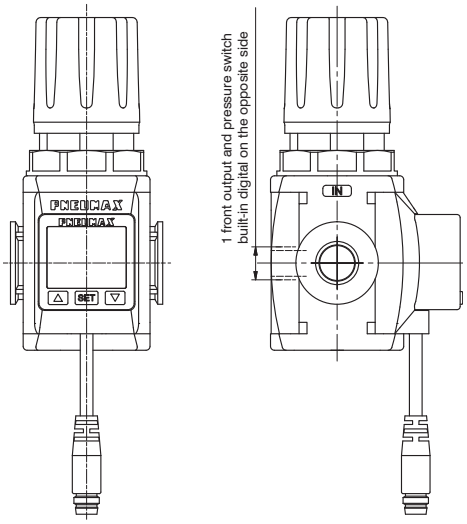
Pressure gauge version



Integrated pressure gauge version



Integrated digital pressure switch version



Coding: Ⓥ17ⓉⓄ¹ⓇⓄ²Ⓞ³Ⓞ⁴

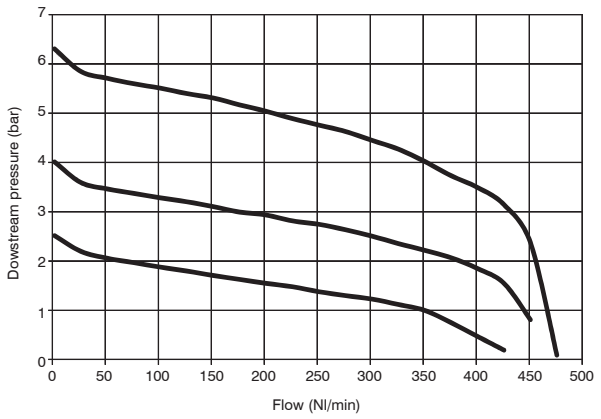
Ⓥ	VERSION
	N = Technopolymer body and metal inserts
	T = Technopolymer body and thread
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8"
	1B = Size 1 - G1/4"
	1C = Size 1 - 1/4" NPT only for N version
Ⓞ¹	PRESSURE MEASUREMENT OPTIONS
	B = G1/8" Thread
	M = Integrated pressure gauge
	P = Digital pressure switch
Ⓡ	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
Ⓞ²	RELIEVING OPTIONS
	= With reliving
	F = Controlled refiel and improved relieving
	L = Without relieving
	R = Improved relieving
Ⓞ³	KNOB OPTIONS
	= Non-lockable version
	K = Lockable version
	U = Lockable version with universal key
Ⓞ⁴	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN

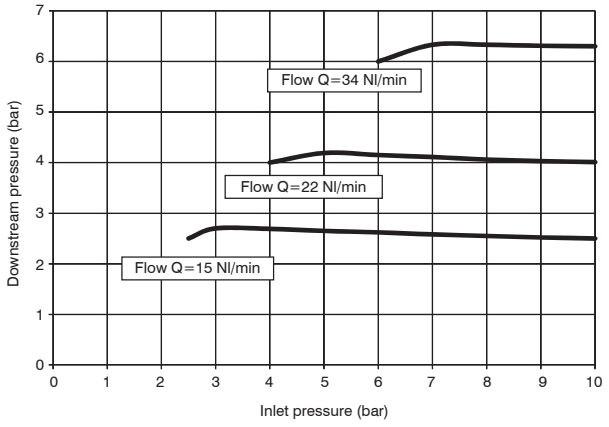
Example: **T171BBD**: Size 1 pressure regulator for manifold G1/4", 0 - 12 bar

Characteristic curves

Flow rate curves	Adjustment characteristic

Size 1 - G1/4", 0-8 bar, P1=7 bar

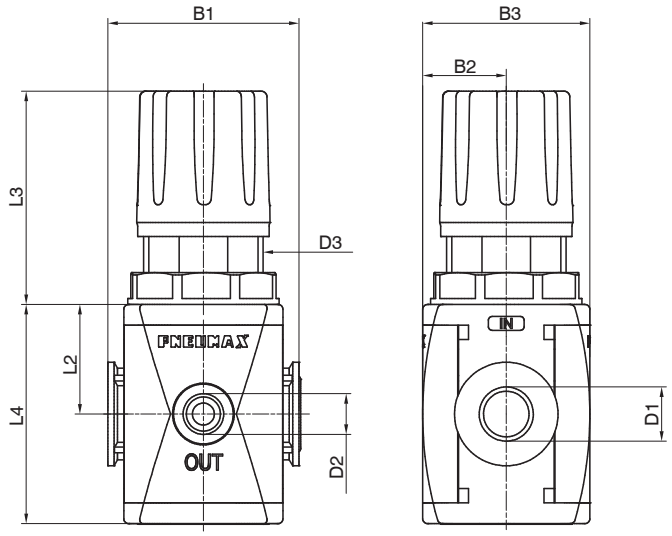




Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

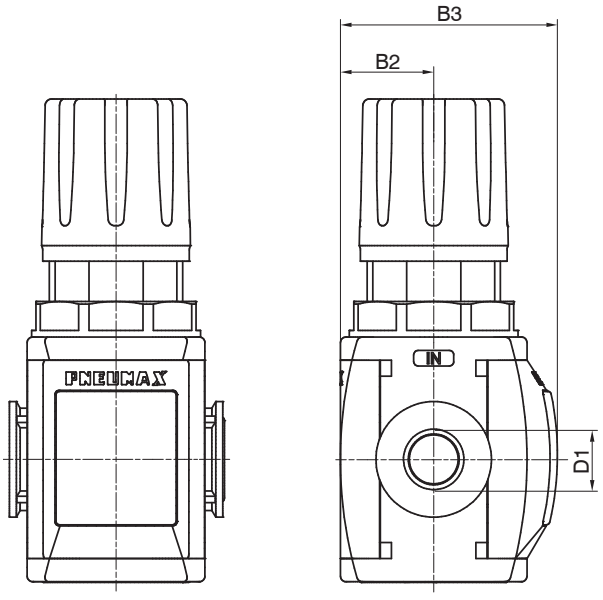
Dimensions

Pressure gauge connection port version (B)

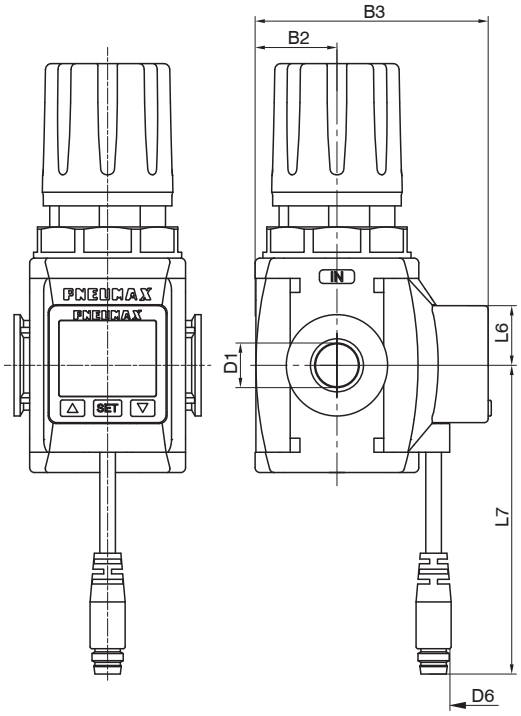


Model	B1	B2	B3	D1	D2	D3	L2	L3	L4
#171..	48	21	42	G1/4" G1/8" 1/4" NPT	G1/8"	M30x1,5	27,5	54	55

Integrated pressure gauge version (M)



Integrated digital pressure switch version



Model	B2	B3		D1	D6 - Type of digital pressure switch		L6	L7 - Type of digital pressure switch	
		with pressure gauge	With digital pressure switch		A - B	C - D		A - B	C - D
#171..	21	48.5	60	G1/8" G1/4" 1/4" NPT	M8 - 3 PIN	3 x 0,129 mm, Ø4 mm	15	150	2000

Manifold pressure regulators



- Manifold pressure regulators
- Available in four pressure ranges up to 12 bar
- Inlet pressure common for the whole manifold of pressure regulator
- A maximum of 6 pressure regulators can be mounted
- Atex certification (II 3GD)
- Assembly with X or Y flanges

Technical characteristics		
Size		Size 1
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)
		Technopolymer body, metal connections (N version)
IN connections	T version	G1/4"
	N version	G1/8" - G1/4" - 1/4 NPT
OUT connections		G1/8"
Assembly configuration		Stand alone
		Panel mounted
		With fixing bracket
Assembly positions		Indifferent
Pressure range		0-2 bar
		0-4 bar
		0-8 bar
		0-12 bar
Regulation		Manul push and lock with pressure
		Manual lockable with accessories
Pressure measurement		G1/8" pressure gauge connection port
		Integrated pressure gauge (optional)
Max. fittings torque IN / OUT connections		G1/8" metal: 15Nm
		G1/4" metal: 20Nm
		G1/4" technopolymer: 9Nm
Max.fitting torque pressure gauge connection port		G1/8" metal: 15Nm
		G1/8" technopolymer: 4Nm

Operational characteristics	
Size	Size 1
Maximum working pressure	13 bar
Minimum working pressure	0,5 bar
Working temperature	-5°C...+50°C

Coding: G(V)17(T)(O)[1](N)(R)[1](R)[2](R)[3](R)[4](R)[5](R)[6]

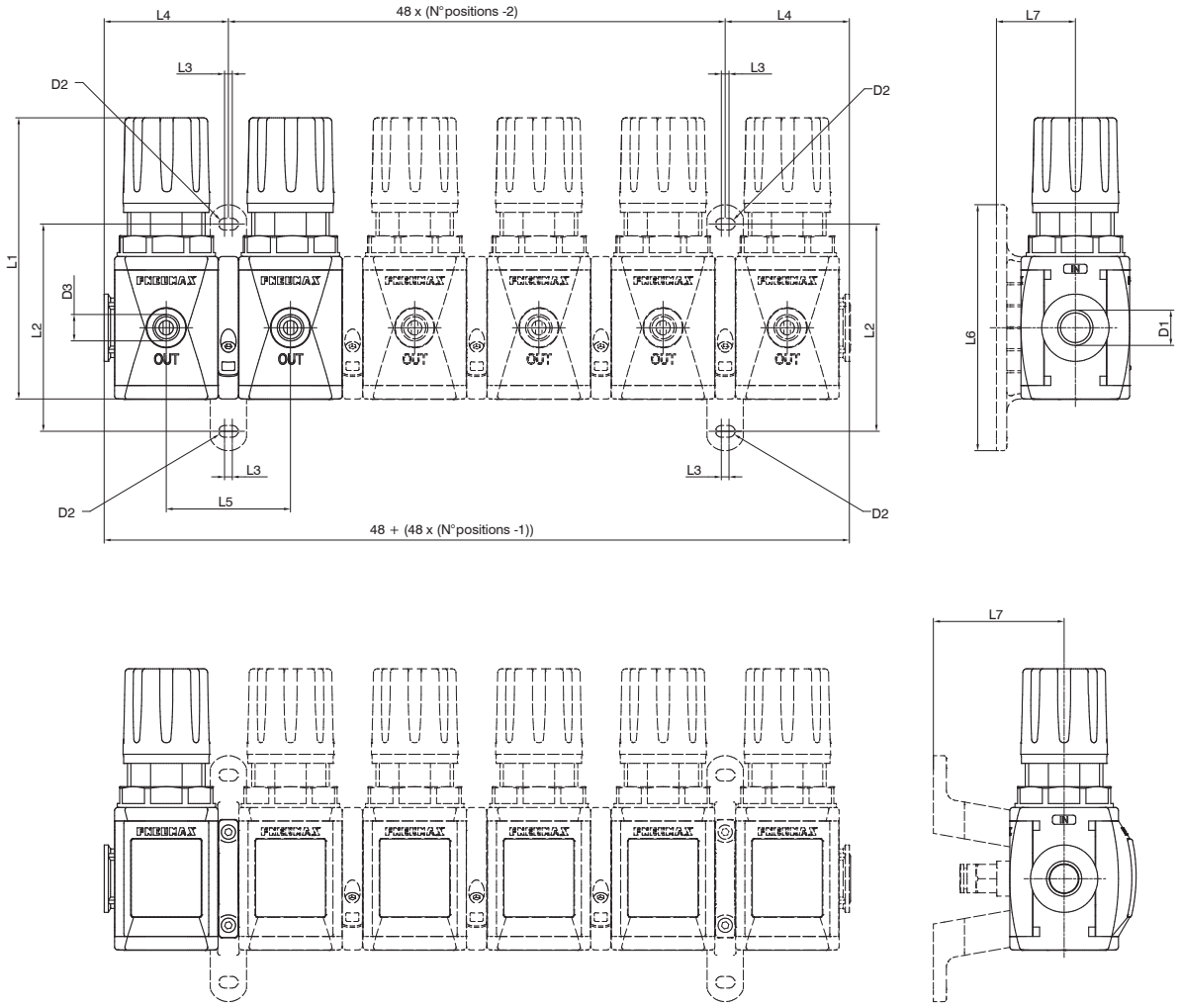
(V)	VERSION
	N = Technopolymer body and metal inserts
	T = Technopolymer body and thread
(T)	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8"
	1B = Size 1 - G1/4"
	1C = Size 1 - 1/4" NPT only for N version
(O)[1]	PRESSURE MEASUREMENT OPTIONS
	B = G1/8" thread with flanges X
	M = Integrated pressure gauge with flanges X
	P = G1/8" thread with extended flanges Y
	R = Integrated pressure gauge with extended flanges Y
	W = G1/8" thread with flanges Y
	Z = Integrated pressure gauge with flanges Y
(N)	NUMBER OF REGULATORS
	2 = n. 2 regulators
	3 = n. 3 regulators
	4 = n. 4 regulators
	5 = n. 5 regulators
	6 = n. 6 regulators
(R)[1]	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar

(R)[2]	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
(R)[3]	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
(R)[4]	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
(R)[5]	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
(R)[6]	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar

Example: **T171BM6CCCCCC**: Size 1 manifold pressure regulators
G1/4", 0 - 8 bar, integrated pressure gauge

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Dimensions

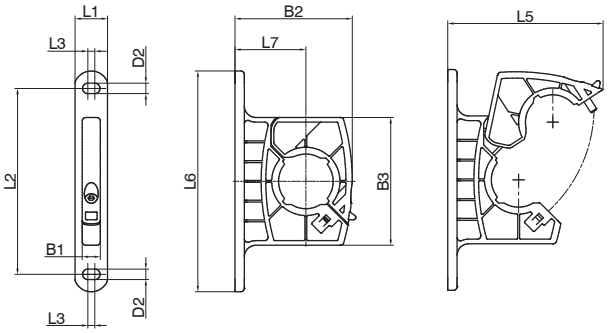


Model	D1	D2	D3	L1	L2	L3	L4	L5	L6	L7
#171..with flanges X	G1/4" G1/8" 1/4" NPT	/	G1/8"	109	/	/	48	48	/	/
#171..with flanges Y		Ø 4,5			80	3			105	30,5
#171..with extended flanges Y										50,5

Manifold mounting flanges

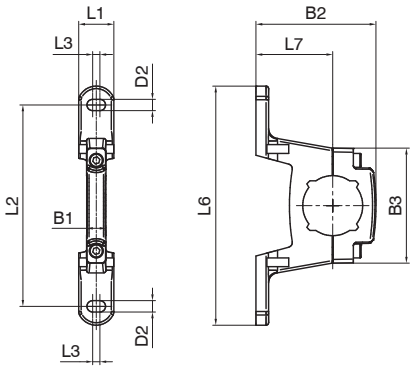
Flange Y





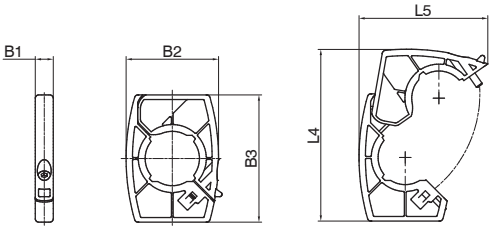
Extended flange Y





Flange X





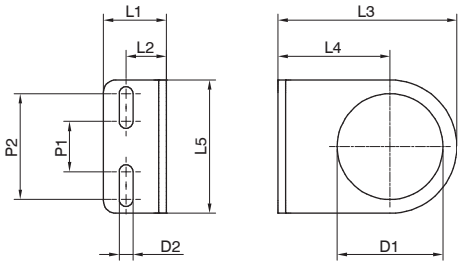
Model	B1	B2	B3	D2	L1	L2	L3	L4	L5	L6	L7
T171Y	7,8	50,5	55	Ø 4,5	14	80	3	/	66	95	30,5
N171YP		67.7	45.7	Ø 4,5	14	80	3	/	66		50.5
T171X		40	55	/	/	/	/	74.5	55,5	/	/

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Fixing bracket

Coding: 17150





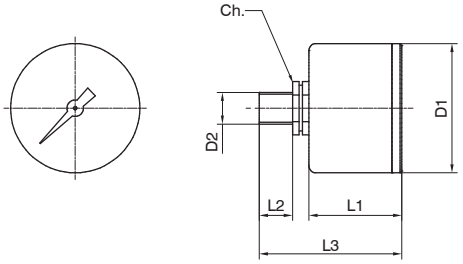
Model	L1	L2	L3	L4	L5	D1	D2	P1	P2
17150	20	13	50	30	40	30	5,5	20	30

Pressure gauge

Coding: 17070ⓋⓈ

Ⓥ	VERSION
	A = Dial Ø40
	B = Dial Ø50
Ⓢ	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
	C = 0 - 12 bar





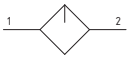
Model	D1	D2	L1	L2	L3	Ch
17070A...	41	Gc - 1/8"	26	10	44	14
17070B...	49	Gc - 1/8"	27	10	45	14

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Lubricators (L)



- Oil mist lubricator
- Available in 4 sizes with flow rates up to 16000 Nl/min and connections from 1/8" to 1"
- Bowl assembly via bayonet type quick coupling mechanism with safety button
- Variable orifice size in function of the flow rate
- Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate (PC)
- Oil refill plug
- Lubricator oil recharge with pressurized system
- Available with low level electrical sensor NO and NC
- Atex certification (II 2GD or II 3GD)



Technical characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)			/
		Technopolymer body, metal connections (N version)			
		/	Aluminium body, integrated aluminium connections (P - L versions)		
Protection and bowl type		Technopolymer protection - PA bowl			
		Technopolymer protection - PC bowl			
		/	Metal protection - PA bowl		
			Metal protection - PC bowl		
			Metal bowl (Blind metal bowl or with display)		
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	
	P and L versions	not available	G3/8"	G1/2"	G1"
Assembly configuration		Stand alone			
		/			Panel mounted
Assembly positions		Vertical ±5°			
Bowl capacity		36 cm³	70 cm³	136 cm³	360 cm³
Lubrication type		Oil mist lubrication			
Oil level regulation		Manual, complete with visual indicator			
Max. fittings torque IN / OUT connections	G1" metal	/		/	35Nm
	G1/2" metal			30Nm	/
	G1/4" metal	20Nm		/	
	G1/8" metal	15Nm	/		
	G3/8" metal	/	25Nm		
	G1/2" technopolymer		/	22Nm	
	G1/4" technopolymer	9Nm		/	
	G3/8" technopolymer	/	16Nm		

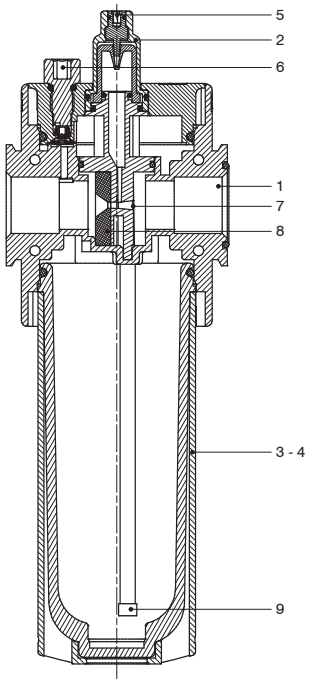
Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure	13 bar			
Minimum working pressure	0,5 bar			
Min. operational flow at 6,3 bar	40 Nl/min	70 Nl/min	100 Nl/min	
Indicative oil drop rate	1 drope every 300/600 Nl/min			
Oil type	FD22 - HG32			
Working temperature	-5°C...+50°C			
	/	-30°C...+80°C (body and metal bowl versions P)		
		-40°C...+80°C (body and metal bowl versions L)		

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Fully technopolymer version	121 g	215 g	347 g	/
Technopolymer body version, aluminium bowl protection and technopolymer bowl	/	245 g	383 g	/
Aluminium body version, technopolymer protection and bowl	/	315 g	477 g	1032 g
Aluminium body version, aluminium bowl protection and technopolymer bow	/	345 g	513 g	1077 g
Metal body and bowl	/	380 g	580 g	1137 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Materials

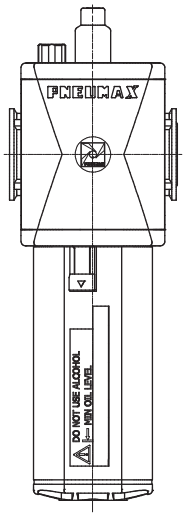
Exploded sectioned



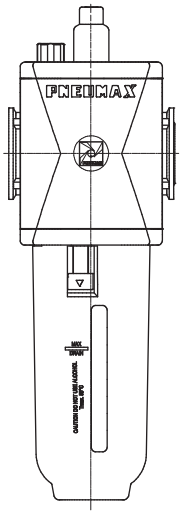
Lubricator		
1	Body	Polyamide Die-cast aluminium
2	Visual indicator	Polyamide
3	Bowl	Polycarbonate Polyamide Die-cast aluminium
4	Bowl protection	Polyamide Die-cast aluminium
5	Oil regulation needle	Brass
6	Recharge plug	Acetal resin
7	Diaphragm support	Acetal resin
8	Diaphragm	NBR
9	Filter	Sintered brass

Design

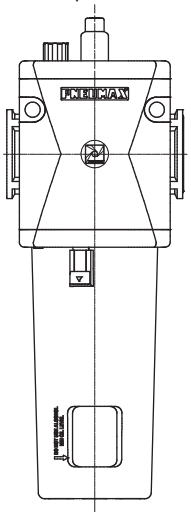
Size 1 - Size 2 - Size 3
Technopolymer protection



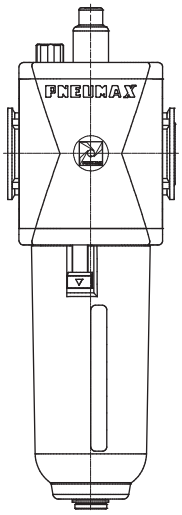
Size 1 - Size 2 - Size 3
Metal protection



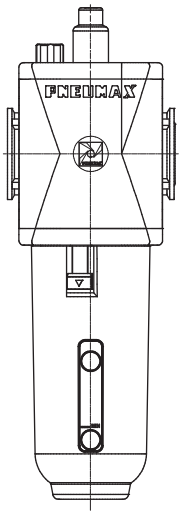
Size 4
Technopolymer protection and metal protection



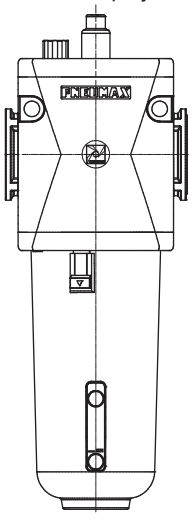
Size 2 - Size 3
Body and metal bowl



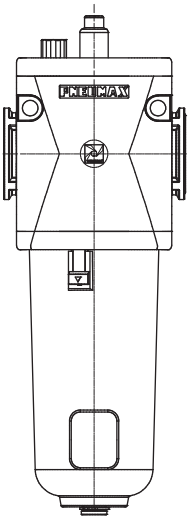
Size 2 - Size 3
Body and metal bowl with display



Size 4
Body and metal bowl with display



Size 4
Body and metal bowl



Coding: Ⓥ17ⓉLⓄ[1]Ⓞ[2]

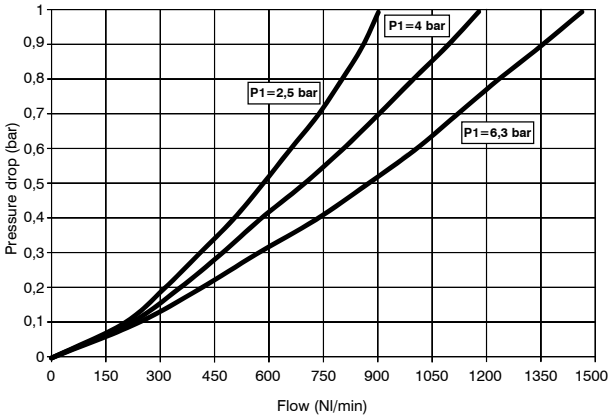
Ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
	L = Aluminum body, low temperature (not available for size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P-L version

Ⓞ[1]	OPTIONS
	= No electric level sensor device
	A = Electrical minimum level sensor NO (not available for size 1)
	C = Electrical minimum level sensor NC (not available for size 1)
Ⓞ[2]	BOWL OPTIONS
	= Technopolymer protection - PC bowl (not available for L version)
	N = Technopolymer protection - PA bowl (not available for L version)
	P = Metal protection - PC bowl (not available for size 1 and L version)
	R = Metal protection - PA bowl (not available for size 1 and L version)
	T = Metal bowl without oil level indicator (not available for Size 1)
	VT = Metal bowl with oil level display (not available for Size 1)

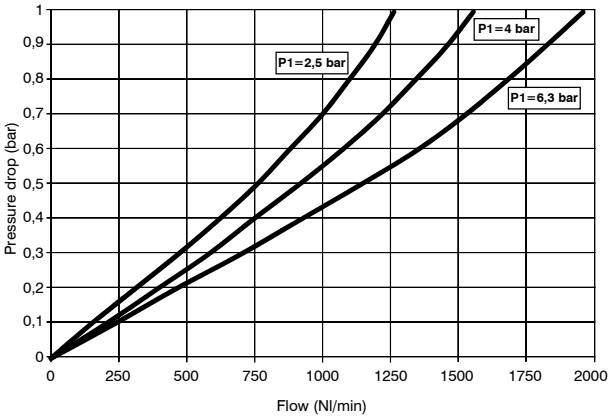
Example: **T173BLAN**: Size 3 lubricator G1/2", normally open low level electrical sensor, PA bowl with technopolymer protection

Characteristic curves

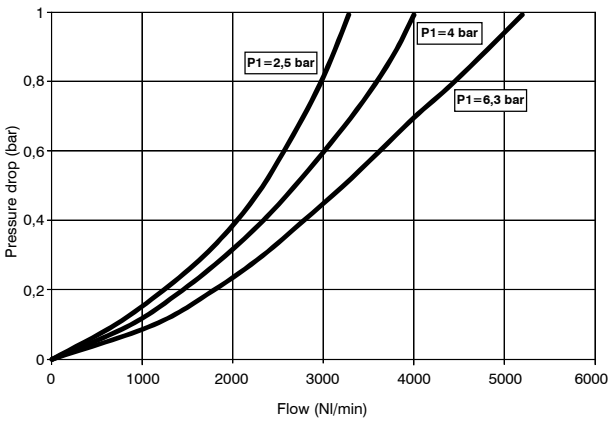
Flow rate curves, Size 1



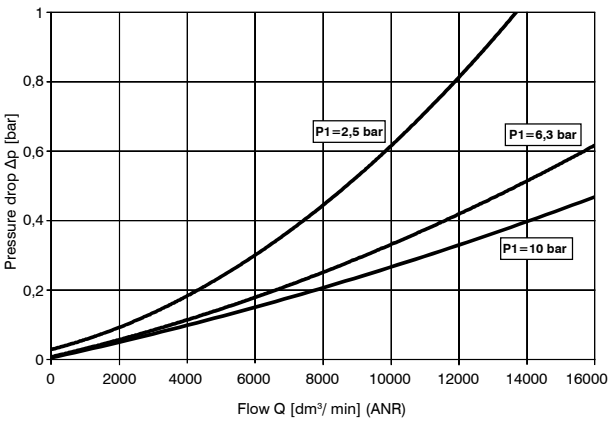
Flow rate curves, Size 2



Flow rate curves, Size 3



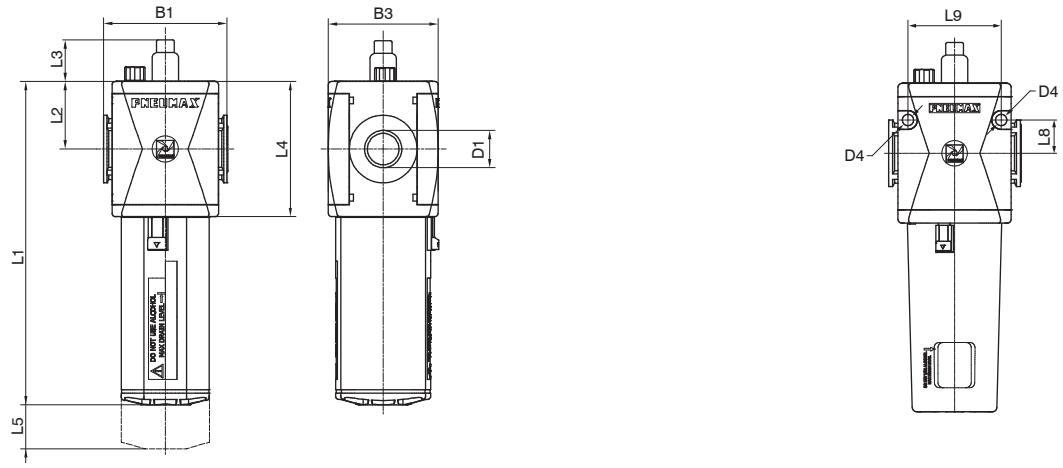
Flow rate curve, Size 4



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Dimensions

Fixing holes dimension detail
(only for size 4)

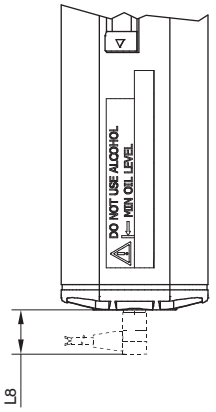


Model	B1	B3	D1	D4	L1	L2	L3	L4	L5	L8	L9
#171..	48	42	G1/8" G1/4" 1/4" NPT	/	131	27,5	24	55	70	/	/
#172..	62	57	G1/4" G3/8" 3/8" NPT	/	152,7	34	24	68	90	/	/
#173..	73	65	G3/8" G1/2" 1/2" NPT	/	191,4	40	24	80	120	/	/
#174..	99	88	G1"	8,5	247	52,5	24	105	145	25	70

Variable dimensions

Model	L8	Electrical connection details
Electrical minimum level sensor NO	16	C1 - C2 - C3 (see sensors section of general catalog
Electrical minimum level sensor NC		

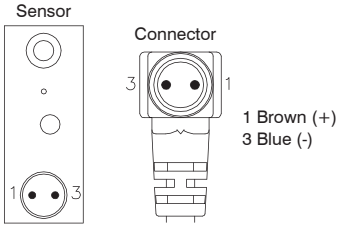
Connector for electrical minimum level sensor



Accessories

Connectors for minimum electrical level

C1: connector with 2,5 m cable 2 wires (PVC Ø3,5 mm 2x0,25mm²)
C2: connector with 5 m cable 2 wires (PVC Ø3,5 mm 2x0,25mm²)
C3: connector with 10 m cable 2 wires (PVC Ø3,5 mm 2x0,25mm²)

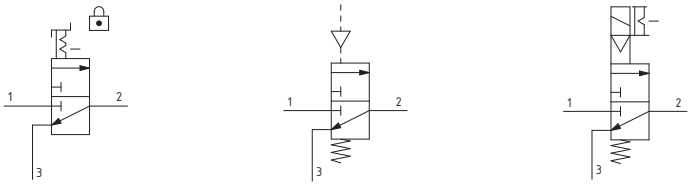


SNAP code connectors	
C1	Ø 3,5 mm
C2	PVC
C3	2x 0,25 mm²

Shut off valves (VL - VP - VE)



- 3/2 N.C. shut off valve
- Suitable for system downstream pneumatic feeding or exhaust
- Manual, pneumatic and electropneumatic operation available
- Up to 3 off manual operation lockable device available (closed position)
- Atex certification (II 2GD or II 3GD)



Technical characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Body and connections type		Technopolymer body, integrated technopolymer connections (T version)			/
		Technopolymer body, metal connections (N version)			
		/	Aluminium body, integrated aluminium connections (P version)		
Operated type		Manual			
		Pneumatic			
		Electropneumatic			
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4" NPT	G3/8" - G1/4" - 3/8" NPT	G3/8" - G1/2" - 1/2" NPT	
	P and L versions	not available	G3/8"	G1/2"	G1"
Pilot ports size		G1/8			
Exhaust connection		G1/4"	G3/8"		G1/2"
Assembly configuration		Stand alone			
		/			Panel mounted
Assembly positions		Indifferent			
Max. fittings torque IN / OUT connections	G1" metal	/		/	35Nm
	G1/2" metal			30Nm	
	G1/4" metal	20Nm		/	/
	G1/8" metal	15Nm	/		
	G3/8" metal	/	25Nm		
	G1/2" technopolymer		/	22Nm	
	G1/4" technopolymer	9Nm		/	
	G3/8" technopolymer	/	16Nm		

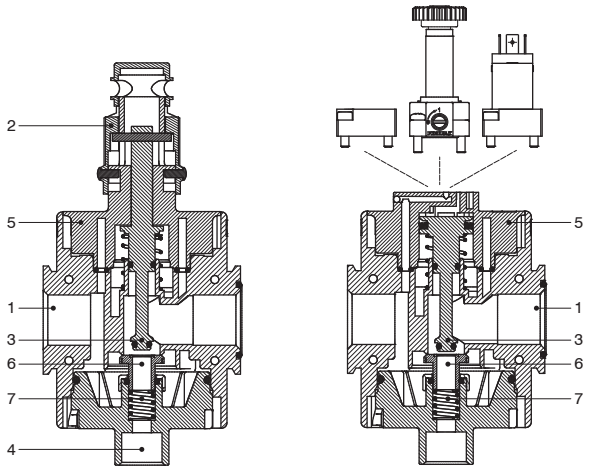
Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Operator	Manual				Pneumatic / Solenoid			
Maximum working pressure	13 bar			10 bar	10 bar			
Minimum working pressure	0,5 bar				2,5 bar			
Working temperature	-5 °C ... +50 °C				-5 °C ... +50 °C			
	/	30°C ... +80°C (only for P version) -40°C ... +80°C (only for L version)			/	-30°C ... +80°C (only with metal body and pneumatic version) -40°C ... +80°C (only with metal body and pneumatic version)		
Nominal flow rate at 6 bar with Δp=1 (from 1 to 2)	1400 Nl/min	2200 Nl/min	3600 Nl/min	15000 Nl/min	1400 Nl/min	2200 Nl/min	3600 Nl/min	15000 Nl/min
Exhaust nominal flow rate at 6 bar with Δp=1 (from 2 to 3)	550 Nl/min	1500 Nl/min		3600 Nl/min	550 Nl/min	1500 Nl/min		3600 Nl/min
Un-conveyed exhaust nominal flow rate (from 2 to 3)	1000 Nl/min	2500 Nl/min		5000 Nl/min	1000 Nl/min	2500 Nl/min		5000 Nl/min

Weights						
Size			Size 1	Size 2	Size 3	Size 4
Operator	Manual	Technopolymer body version	110 g	190 g	250 g	/
		Aluminium body version	/	270 g	400 g	1100 g
	Electropneumatic	Technopolymer body version	99 g	181 g	270 g	/
		Aluminium body version	/	265 g	398 g	1135 g
	Solenoid M2 actuator	Technopolymer body version	140 g	210 g	310 g	/
		Aluminium body version	/	298 g	429 g	1170 g
	Solenoid 15mm coil	Technopolymer body version	140 g	216 g	310 g	/
		Aluminium body version	/	301 g	432 g	1180 g

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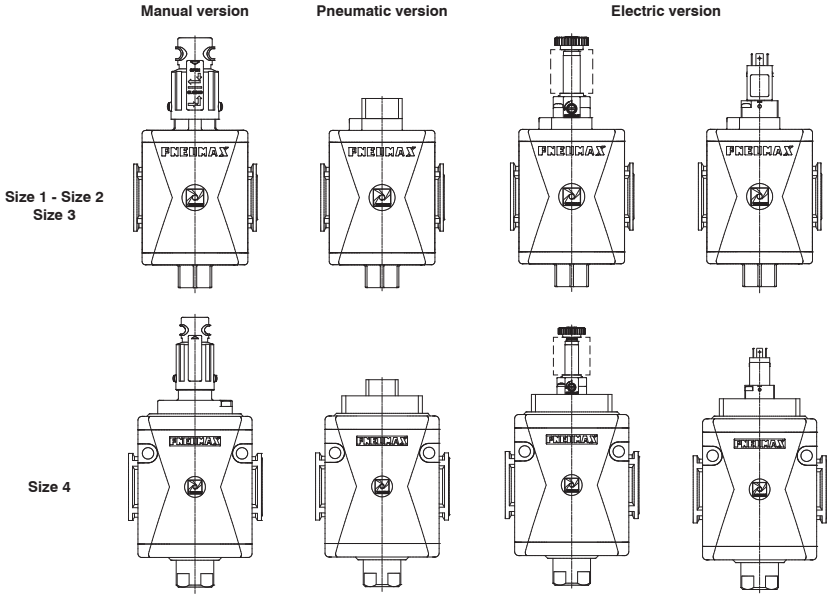
Materials

Exploded sectioned



Shut off valve		
1	Body	Polyamide Die-cast aluminium
2	Manual override	Polyamide
3	Drive pin Piston	Aluminium
4	Exhaust plug	Polyamide
5	Central support	Polyamide
6	Poppet	Brass + NBR
7	Repositioning spring	Steel

Design



Coding: ⓥ17ⓉVⒶⓄ

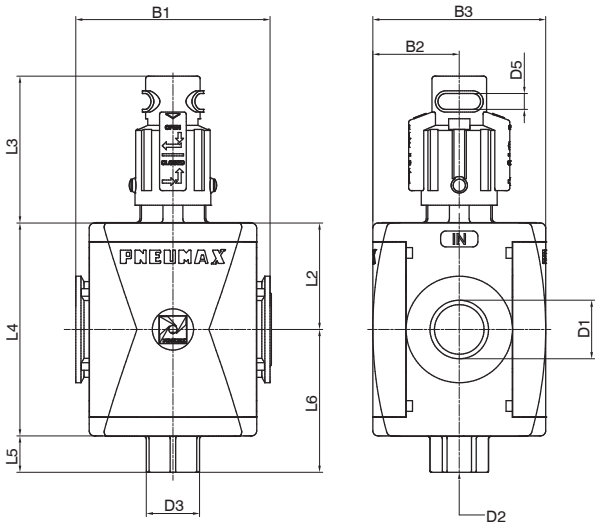
ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
	L = Aluminium body, low temperature (not available for solenoid version and size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P - L versions
Ⓐ	OPERATOR
	L = Manual
	P = Pneumatic
	E = Solenoid

Ⓞ	COIL OPTIONS
	15 mm coil
	A4 = 12 VDC
	A5 = 24 VDC
	A6 = 24 VAC (50-60 Hz)
	A7 = 110 VAC (50-60 Hz)
	A8 = 230 VAC (50-60 Hz)
	A9 = 24 VDC (1 Watt)
	22 mm coil
	B2 = Mechanical M2, without coil
	B4 = 12 VDC
	B5 = 24 VDC
	B6 = 24 VAC (50-60 Hz)
	B7 = 110 VAC (50-60 Hz)
	B8 = 230 VAC (50-60 Hz)
	B9 = 24 V DC (2 Watt) (Atex certification not available)
	30 mm coil
	C5 = 24 VDC
	C6 = 24 VAC (50-60 Hz)
	C7 = 110 VAC (50-60 Hz)
	C8 = 230 VAC (50-60 Hz)
	C9 = 24 V DC (2 Watt) (Atex certification not available)

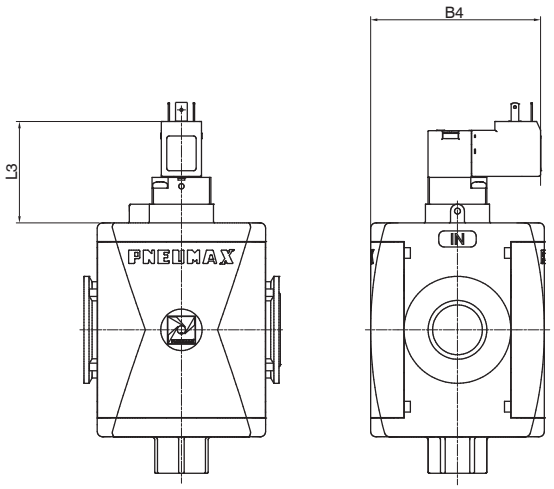
Example: **T173BVEA5**: Size 3 electric shut off valve G1/2", 15 mm coil, 24VDC

Dimensions

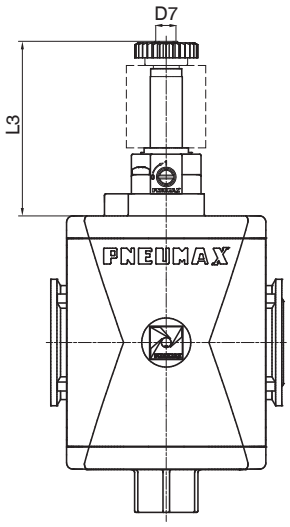
Manual operated version



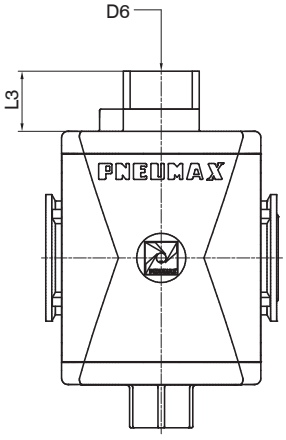
Solenoid operated version (15 mm coil)



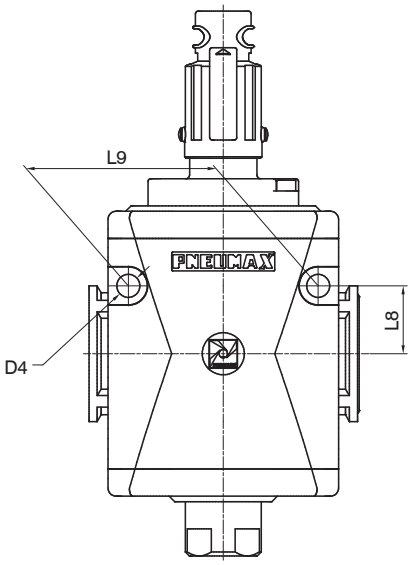
Solenoid operated version
(22 / 30 mm coil)



Pneumatic operated version



Fixing holes dimension detail
(only for size 4)



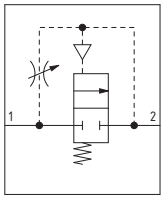
Model	B1	B2	B3	B4	D1	D2	D3	D4	D5	D6	D7	L2	L3 Manual	L3 Pneumatic	L3 Solenoid coil 22 or 30mm	L3 Solenoid 15mm coil	L4	L5	L6	L8	L9
#171..	48	21	42	52	G1/8" G1/4" 1/4 NPT	G1/4"	Ch.17	/	6	G1/8"	M5	27,5	55	19	57	37.5	55	11	38.5	/	/
#172..	62	28.5	57	59.6	G1/4" G3/8" 3/8 NPT	G3/8"	Ch.20	/	6	G1/8"	M5	34	54.2	22	60	40.3	68	14	48	/	/
#173..	73	32.5	65	63.6	G3/8" G1/2" 1/2 NPT	G3/8"	Ch.20	/	6	G1/8"	M5	40	55	19	57	37.4	80	14	54	/	/
#174..	99	44	88	75	G1"	G1/2"	Ch.25	8.5	6	G1/8"	M5	52.5	71.5	27	67	45.5	105	22	74.5	25	70

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Progressive start-up valve (AP - APW)



- Progressive start-up valve
- Available in 4 sizes with flow rates up to 15000 Nl/min and connections from 1/8" to 1"
- Suitable for downstream system gradual pressurization
- Downstream circuit filling time regulated via a built in flow regulator
- Full pressure is allowed once the down stream circuit pressure reaches 50% of the inlet pressure
- Atex certification (II 2GD or II 3GD)



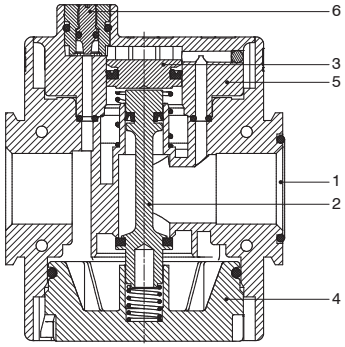
Technical characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Body and connections type		/	Aluminium body, integrated aluminium connections (P version)		
		Technopolymer body, integrated technopolymer connections (T version)			/
		Technopolymer body, metal connections (N version)			
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT	
	P version	not available	G3/8"	G1/2"	G1"
Assembly configuration		Stand alone			
		/			Panel mounted
Assembly positions		Indifferent			
Max. fittings torque IN / OUT connections	G1" metal	/		/	35Nm
	G1/2" metal			30Nm	/
	G1/4" metal	20Nm		/	
	G1/8" metal	15Nm	/		
	G3/8" metal	/	25Nm		
	G1/2" technopolymer		/	22Nm	
	G1/4" technopolymer	9Nm		/	
	G3/8" technopolymer	/	16Nm		

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure	13 bar			10 bar
Minimum working pressure	2,5 bar			
Working temperature	-5°C...+50°C			
Nominal flow rate at 6 bar with Δp=1 (from 1 to 2)	1400 Nl/min	2200 Nl/min	3600 Nl/min	15000 Nl/min
Fully open flow control device maximum flow rate	75 Nl/min	200 Nl/min		1000 Nl/min

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Technopolymer body version	80 g	150 g	240 g	/
Aluminium body version	/	235 g	370 g	1100 g

Materials

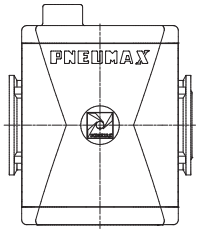
Exploded sectioned



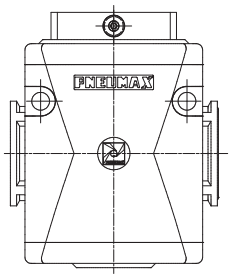
Progressive start-up valve		
1	Body	Polyamide Die-cast aluminium
2	Drive pin	Aluminium
3	Piston	Aluminium
4	Rear end cap	Polyamide / Die-cast aluminium
5	Central support	Polyamide / Aluminium
6	Modulating needle	Brass

Design

Size 1 - Size 2 - Size 3



Size 4

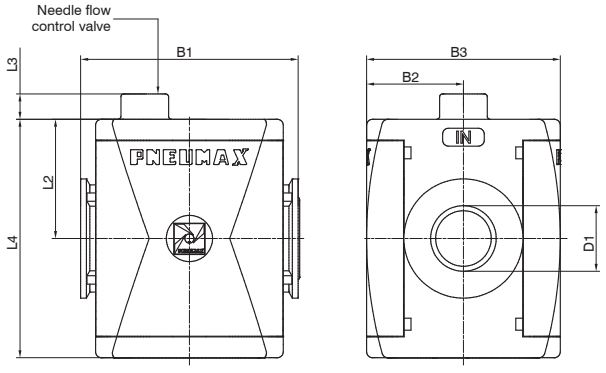


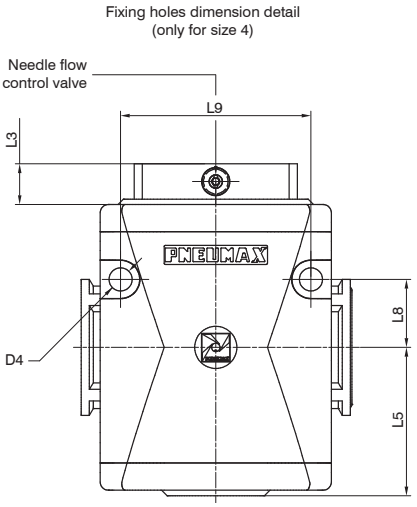
Coding: ⓥ17ⓉAPⒻ

ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P version
Ⓕ	FLOW DIRECTION (ONLY FOR SIZE 4)
	= From left to right
	W = From right to left

Example: **T173BAP**: Size 3 progressive start-up valve G1/2"

Dimensions





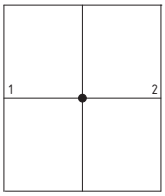
Model	B1	B2	B3	D1	D4	L2	L3	L4	L5	L8	L9
#171..	48	21	42	G1/8" G1/4"	/	27,5	12	55	/	/	/
#172..	62	28.5	57	G1/4" G3/8"		34	9.2	68			
#173..	73	32.5	65	G3/8" G1/2"		40	8.7	80			
#174..	99	44	88	G1"	8.5	52.5	13	105	54.5	25	70

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Air intake (PA)



- Pneumatic by-pass
- Available with 2 threaded connections
- Atex certification (II 2GD or II 3GD)



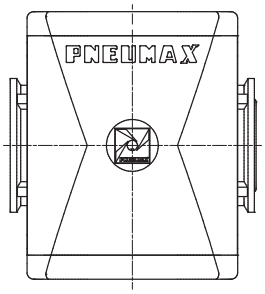
Technical characteristics						
Size		Size 1	Size 2	Size 3	Size 4	
Body and connections type		/	Aluminium body, integrated aluminium connections (P version)			
		Technopolymer body, integrated technopolymer connections (T version)			/	
		Technopolymer body, metal connections (N version)				
IN / OUT / INTAKE connections	T version	G1/4"	G3/8"	G1/2"	not available	
	N version	G1/8" - G1/4" - 1/4 NPT	G3/8" - G1/4" - 3/8 NPT	G3/8" - G1/2" - 1/2 NPT		
	P version	not available	G3/8"	G1/2"	G1"	
Assembly configuration		Stand alone				
		/			Panel mounted	
Assembly positions		Indifferent				
Max. fittings torque IN / OUT / INTAKE connections	G1" metal	/		/	35Nm	
	G1/2" metal			30Nm	/	
	G1/4" metal	20Nm		/		
	G1/8" metal	15Nm	/			
	G3/8" metal	/	25Nm			
	G1/2" technopolymer		/	22Nm		
	G1/4" technopolymer	9Nm		/		
	G3/8" technopolymer	/	16Nm			

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure	13 bar			20 bar
Working temperature	-5°C...+50°C			-
	-			-30°C ... +80°C (only for P version)

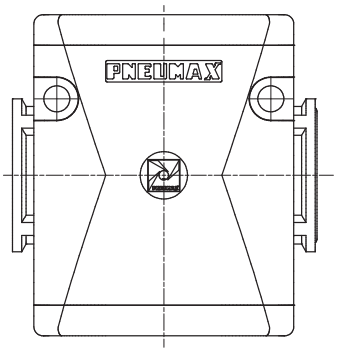
Weights				
Size	Size 1	Size 2	Size 3	Size 4
Technopolymer body version	52 g	95,5 g	151 g	/
Aluminium body version	/	248 g	370 g	720 g

Design

Size 1 - Size 2 - Size 3



Size 4



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

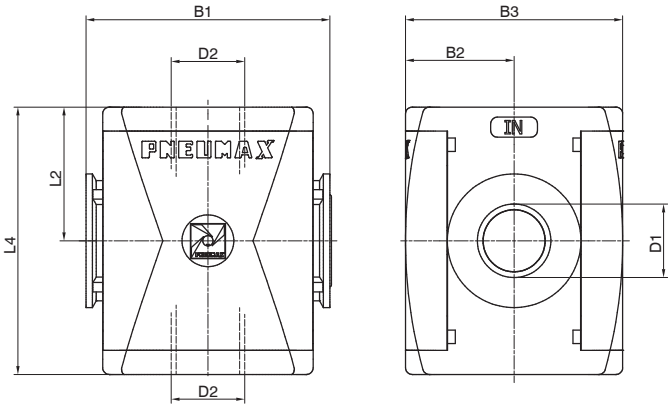
Coding: Ⓥ17ⓉPA

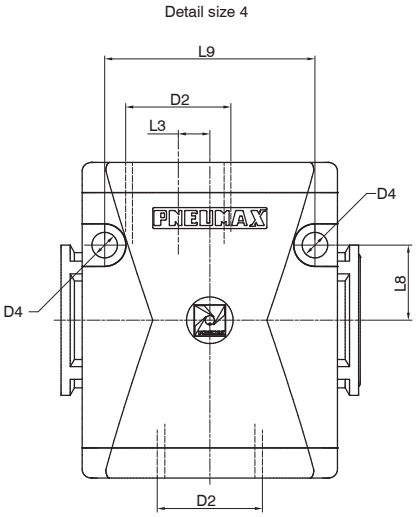
Ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P version

Example: **T173BPA**: Size 3 air intake G1/2"

2 AIR TREATMENT

Dimensions





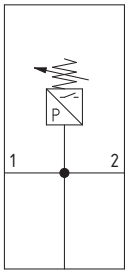
Model	B1	B2	B3	D1	D2	D4	L2	L3	L4	L8	L9
#171..	48	21	42	G1/8" G1/4" 1/4 NPT			27,5		55		
#172..	62	28.5	57	G3/8" G1/4" 3/8 NPT		/	34	/	68	/	/
#173..	73	32.5	65	G3/8" G1/2" 1/2 NPT			40		80		
#174..	99	44	88	G1"		8.5	52.5	10.5	105	25	70

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pressure switch (PP)



- 2 to 10 bar adjustable pressure switch with electrical connection
- The electrical connection is made by mean of a 15 mm connector (DIN 43650 type C)
- The microswitch contact could be normally closed or open (change overswitch)



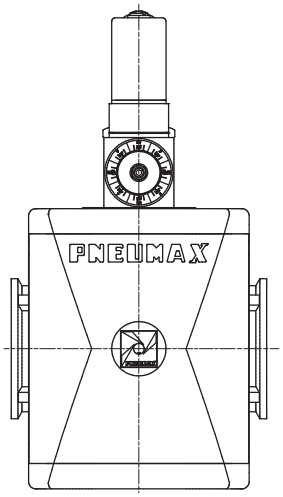
Technical characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Body and connections type		/	Aluminium body, integrated aluminium connections (P version)		
		Technopolymer body, integrated technopolymer connections (T version)			/
		Technopolymer body, metal connections (N version)			
IN / OUT / INTAKE connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4" NPT	G3/8" - G1/4" - 3/8" NPT	G3/8" - G1/2" - 1/2" NPT	
	P version	not available	G3/8"	G1/2"	G1"
Assembly configuration		Stand alone			
		/			Panel mounted
Assembly positions		Indifferent			
Microswitch capacity		1A			
Microswitch maximum tension		250 VAC			
Microswitch IP Rating		IP65 (with mounted connector)			
Max. fittings torque IN / OUT / INTAKE connections	G1" metal	/		/	35Nm
	G1/2" metal			30Nm	/
	G1/4" metal	20Nm		/	
	G1/8" metal	15Nm	/		
	G3/8" metal	/	25Nm		
	G1/2" technopolymer		/	22Nm	
	G1/4" technopolymer	9Nm		/	
	G3/8" technopolymer	/	16Nm		

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure	13 bar			
Working temperature	-5°C...+50°C			
Operating pressure range	2 - 10 bar			

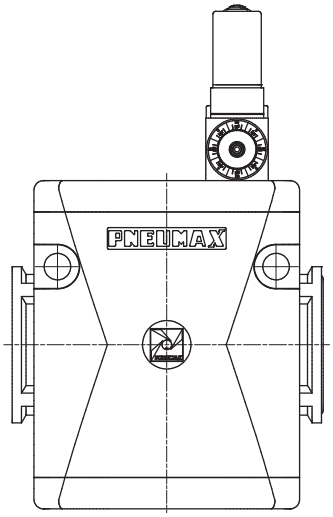
Weights				
Size	Size 1	Size 2	Size 3	Size 4
Technopolymer body version	138 g	179 g	235 g	/
Aluminium body version	/	330 g	780 g	800 g

Design

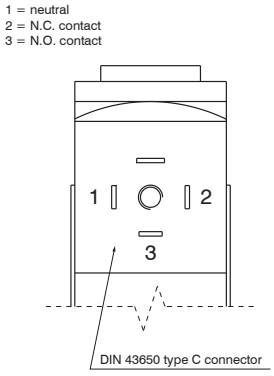
Size 1 - Size 2 - Size 3



Size 4



Electrical connection

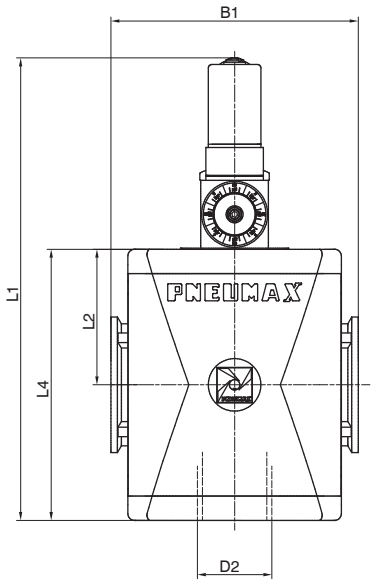


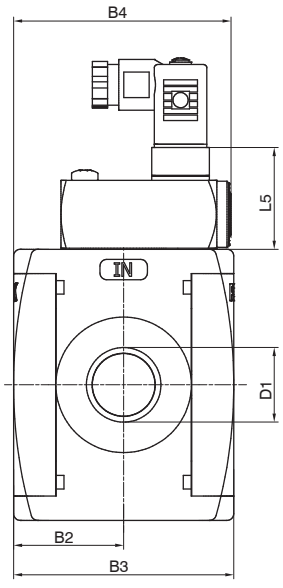
Coding: Ⓥ17ⓉPPⒻ

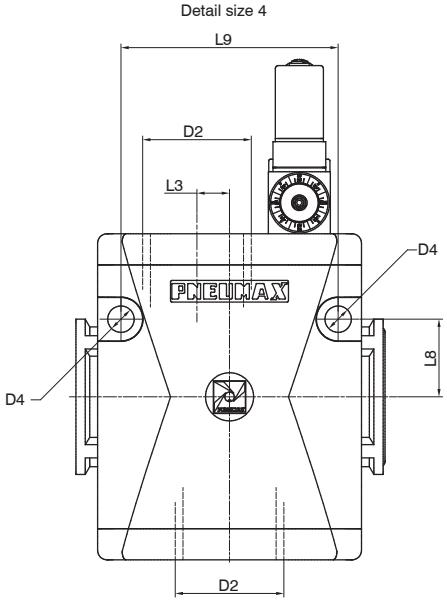
Ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P version
Ⓕ	FLOW DIRECTION (ONLY FOR SIZE 4)
	= From left to right
	W = From right to left

Example: **T173BPP**: Size 3 pressure switch G1/2"

Dimensions





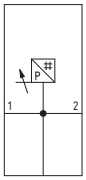


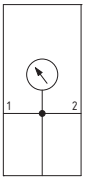
Model	B1	B2	B3	D1 D2	D4	L1	L2	L3	L4	L5	L8	L9
#171..	48	21	42	G1/8" G1/4" 1/4 NPT	/	114.7	27,5	/	55	32.7	/	/
#172..	62	28.5	57	G3/8" G1/4" 3/8 NPT		125	34		68	30		
#173..	73	32.5	65	G3/8" G1/2" 1/2 NPT		137	40		80			
#174..	99	44	88	G1"	8.5	162	52.5	10.5	105		25	70

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Air intake with pressure gauge or digital pressure switch integrated (PM-PW-PP-PZ)







- Available with pressure gauge or digital pressure switch integrated
- Air intake connection device available
- Material and version wide selection
- Available in 4 sizes with connections from 1/8" to 1"
- Atex certification (II 2GD or II 3GD) for Integrated pressure gauge version

Technical characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Body and connections type		/	Aluminium body, integrated aluminium connections (P version)		
		Technopolymer body, integrated technopolymer connections (T version)			/
		Technopolymer body, metal connections (N version)			
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4" NPT	G3/8" - G1/4" - 3/8" NPT	G3/8" - G1/2" - 1/2" NPT	
	P version	not available	G3/8"	G1/2"	G1"
Air intake connection		G1/4"	G3/8"	G3/8"	G1"
Assembly configuration		Stand alone			
		/			Panel mounted
Assembly positions		Indifferent			
Pressure measurement		Integrated pressure gauge			
		Digital pressure switch			
Max. fittings torque IN / OUT connections	G1" metal	/		/	35Nm
	G1/2" metal			30Nm	/
	G1/4" metal	20Nm		/	
	G1/8" metal	15Nm	/		
	G3/8" metal	/	25Nm		
	G1/2" technopolymer		/	22Nm	
	G1/4" technopolymer	9Nm		/	
	G3/8" technopolymer	/	16Nm		

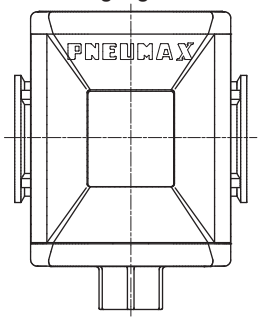
Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure	13 bar			
Working temperature with integrated pressure gauge	-5 °C ... +50 °C			
	/	-30°C ... +80°C (only with metal body)		
Working temperature with digital pressure switch	0 °C ... +50 °C			

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Technopolymer body and integrated gauge	83 g	161 g	249 g	/
Working temperature with digital pressure switch	111 g	189 g	277 g	/
Technopolymer body version with Integrated pressure gauge	/	245 g	373 g	770 g
Technopolymer body version with integrated digital pressure switch	/	273 g	401 g	787 g

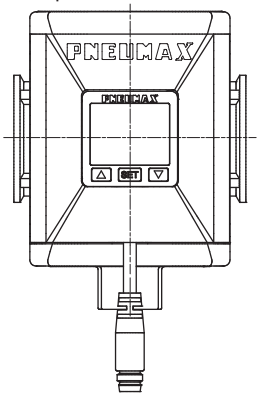
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Design

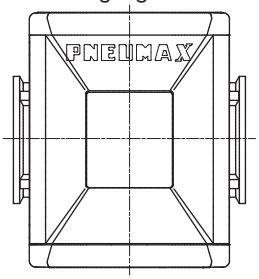
Size 1 - Size 2 - Size 3
Technopolymer body and integrated pressure gauge



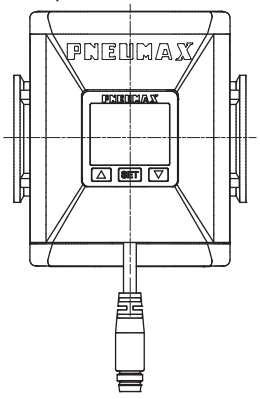
Size 1 - Size 2 - Size 3
Technopolymer body and integrated digital pressure switch



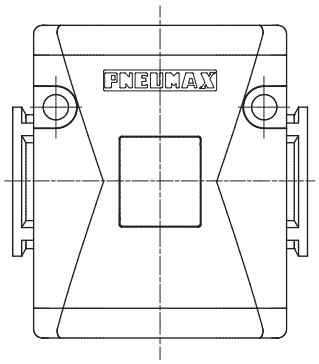
Size 2 - Size 3
Aluminium body and integrated pressure gauge



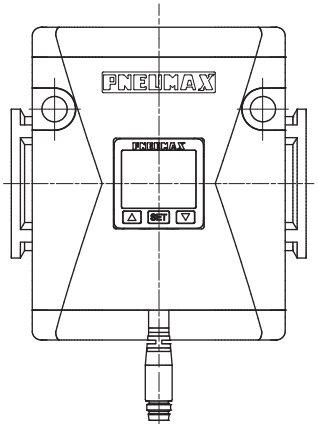
Size 2 - Size 3
Aluminium body and integrated digital pressure switch



Size 4
Integrated pressure gauge version



Size 4
Integrated digital pressure switch version



Coding: Ⓥ17ⓉPⓄ[1]Ⓞ[2]

Ⓥ	VERSION
	N = Technopolymer body and metal inserts (not available for size 4)
	T = Technopolymer body and thread (not available for size 4)
	P = Aluminum body (not available for size 1)
Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8" only for N version
	1B = Size 1 - G1/4" only for T - N versions
	1C = Size 1 - 1/4" NPT only for N version
	2A = Size 2 - G1/4" only for N version
	2B = Size 2 - G3/8" for all versions
	2C = Size 2 - 3/8" NPT only for N version
	3A = Size 3 - G3/8" only for N version
	3B = Size 3 - G1/2" for all versions
	3C = Size 3 - 1/2" NPT only for N version
	4B = Size 4 - G1" only for P version

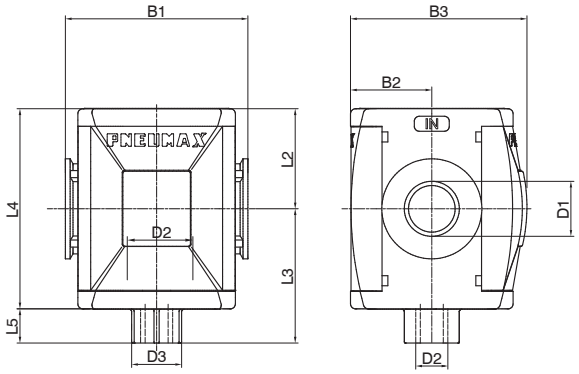
Ⓞ[1]	PRESSURE MEASUREMENT OPTIONS
	M = Integrated pressure gauge
	W = Integrated pressure gauge Right - Left
	P = Digital pressure switch
	Z = Digital pressure switch Right - Left
Ⓞ[2]	DIGITAL PRESSURE SWITCH OPTIONS
	A = Cable 150 mm + M8 PNP
	B = Cable 150 mm + M8 NPN
	C = Cable 2 m PNP
	D = Cable 2 m NPN

Example: **T173BPPA**: Digital pressure switch with cable 150 mm + M8 PNP, size 3 G1/2"

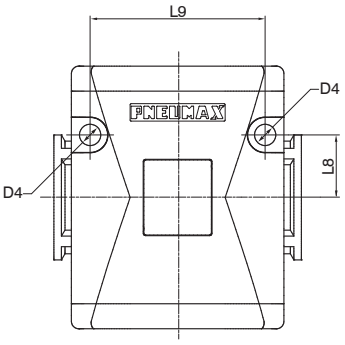
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Dimensions - Integrated pressure gauge version

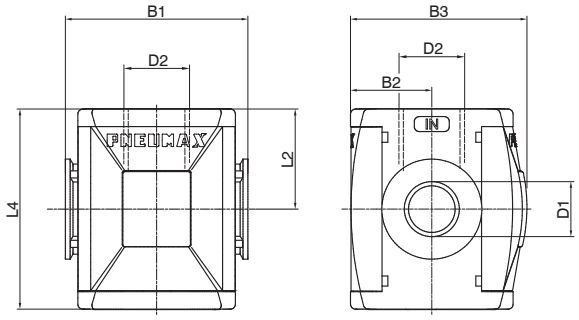
Technopolymer body version



Fixing holes dimension detail (only for size 4)

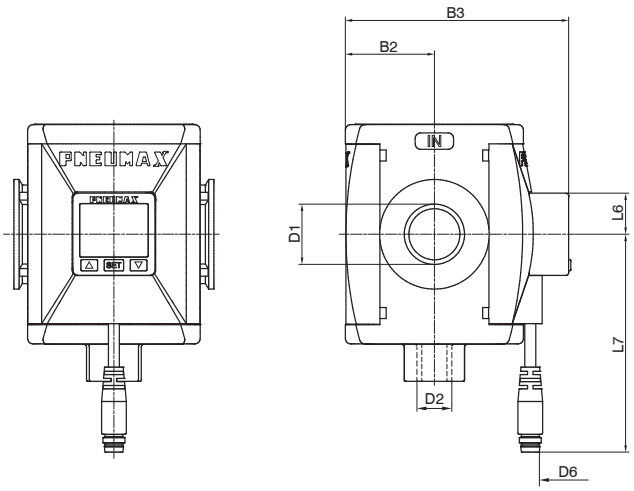


Aluminum body version (Size 2 - Size 3 - Size 4)



Model	B1	B2	B3	D1	D2	D3	D4	L2	L3	L4	L5	L8	L9
#171...	48	21	48,5	G1/8" G1/4" 1/4 NPT	G1/4"	Ch. 17	/	27,5	38,5	55	11	/	/
#172...	62	28,5	62,5	G1/4" G3/8" 3/8" NPT	G3/8"	Ch. 20	/	34	48	68	14	/	/
#173...	73	32,5	70,5	G3/8" G1/2" 1/2 NPT	G3/8"	Ch. 20	/	40	54	80	14	/	/
#174...	99	44	90,5	G1"	G1"	/	8,5	52,5	52.5	105	/	25	70

Variable dimensions - Digital pressure switch version



Model	B2	B3	D1	D2	D6 - Type of digital pressure switch		L6	L7 - Type of digital pressure switch	
					A - B	C - D		A - B	C - D
#171...	21	60	G1/8" G1/4" 1/4 NPT	G1/4"	M8 - 3 PIN	3 x 0,129 mm, Ø 4 mm	15	150	2000
#172...	28,5	73,5	G1/4" G3/8" 3/8" NPT	G3/8"					
#173...	32,5	81,5	G3/8" G1/2" 1/2 NPT	G3/8"					
#174...	44	101,5	G1"	G1/2"					

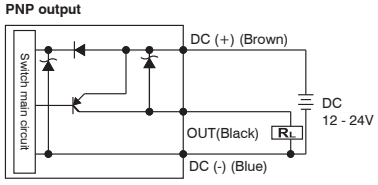
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

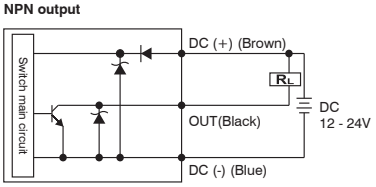
Digital pressure switch



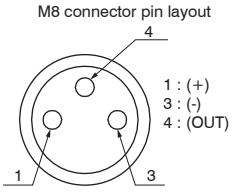
- 3 color digital LCD display, easy readout
- 4 units of measurement for pressure indication
- Optional PNP or NPN digital output
- N.O. and N.C. output contact selection directly on the digital pressure switch
- Available with M8-3PIN connector or 3 wire cable length 2 m

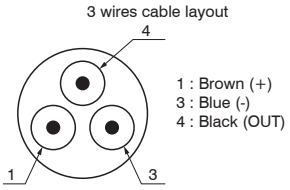
Output circuit wiring diagrams





Digital pressure switch layout





Cable ordering code

MCH1: cable 3 wires l=2,5m with M8 connector
MCH2: cable 3 wires l=5m with M8 connector
MCH3: cable 3 wires l=10m with M8 connector

Connector



Technical characteristics	
Pressure range and display	0 ... 10 bar
Max. inlet pressure	15 bar
Fluid	40μm filtered and dehumidified air
Display unit of measurement	MPa - kgf/cm^2 - bar - psi
Supply voltage	12 ... 24 VDC
Current consumption	≤40mA (without load)
Digital output type	PNP - NPN
Type of contact output	Normally Open - Normally Closed
Max. load current	125 mA
Digital output activation mode	single threshold with fixed hysteresis - window with fixed hysteresis - window without hysteresis
Digital output activation time	0.05s - 0.25s - 0.5s - 1s - 2s - 3s (selections for chattering-proof options)
Display characteristics	Double 3 1/2 digit display Digital output status indication Three-pushbuttons touchpad
Indicator accuracy	≤±2% full scale value ± 1 digit
Protection degree	IP40
Working temperature	0 °C ... 50 °C
Cable section	3 x 0,129 mm^2, Ø4 mm, PVC

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Supply and discharge valves SAFELINE



- Interruption of supply and unloading of the downstream pneumatic circuit
- Single version classified in CATEGORY 1, suitable for use in safety circuits up to PL=c
- Double version classified in CATEGORY 4, suitable for use in safety circuits up to PL=e
- Compliance with the ATEX Directive and the Machinery Directive
- Solenoid valves with marking:

II 3G Ex ec h IIC T6 Gc X
II 3D Ex tc IIIC T85°C Dc X
-10°C ≤ Ta ≤ +50°C

Upon implementation of the **size 3 AIRPLUS** series air treatment units, Pneumax develops a supply and discharge valve, with an electropneumatic control and spring-return, fitted with a diagnostic system regarding the state of the valve, with the possibility of creating a double channel to determine the system's redundancy.

The version with one single channel emphasises the features of an S.V. 3/2 NC, monostable with electropneumatic control and spring-return, which operation involves:

- condition of the **valve at rest**, with a **de-energised** coil; port 1 (air supply) is not connected to port 2 (downstream air circuit). port 2 is discharged through port 3;
- condition of the **valve activated**, with an **energised** coil; port 1 (air supply) is connected to port 2 (downstream air circuit), with port 3 (discharge) closed. By de-energising the coil, the system resets the condition of **valve at rest** by means of the return spring, which repositions the spool. Once again port 2 (downstream air circuit), is discharged via port 3.

The state of the valve is constantly monitored by a diagnostic system, using a Hall effect sensor, which reads the position of the spool and consequently takes note of the valve's position.
The sensor is in the ON state when the valve is at rest (**de-energised** coil), while it is in the OFF state when the valve is activated (**energised** coil).
The sensor is in the OFF state under conditions of an activated valve (**de-energised** coil), indicating a possible problem.

The version with a double redundant channel is made using two single solenoid valves 3/2 NC provided with diagnostics, mounted in series so that the port 2 of the first solenoid valve is linked to the port 1 of the second solenoid valve.
It is sufficient that only one of the S.V. is de-energised to guarantee the discharge of the air circuit.
If one of the two S.V. remained blocked due to a malfunction, the other one ensures the discharge function of the pneumatic installation. Even in this case, the diagnostic system of both solenoid valves constantly monitors the state of the 2 single S.V.

Construction characteristics	
Body	Aluminium
Solenoid Operator	Technopolymer
Rear end cap	Aluminium
Spool	Aluminium
Spool seals	Polyurethane
Piston	Aluminium
Spring	EN 10270-1 DH steel
Electrical Interface	Male M12 5P TYPE A connector

Operational characteristics	
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Working temperature	-10°C ... +50°C
Minimum working pressure	2,5 bar
Maximum working pressure	10 bar

Instructions for installation and use

Undertake the installation respecting the safety requirements with regards to the system and components for hydraulic and pneumatic transmissions. Install the device as close as possible to the point of use. Its assembly is possible in any position. Pay attention to the flow direction, indicated on the main body with the labels IN and OUT. During the components discharge, high levels of noise occur.
The use of a silencer on the discharge port is recommended. Ensure there is sufficient space for assembly during the installation process. Please ensure that the discharge area is always clear, and in case a silencer is used, periodically verify that it is not obstructed.
It is possible to integrate and install the device in an existing AIRPLUS group or in a new installation, or else to use the device individually attaching it by aligning the assembled unit with the relevant fastening flange for the supply and discharge valve, or to use the device individually attaching it by aligning the assembled unit with the type “Y” fastening flange for the double supply and discharge valve



WARNING!

Pay particular attention to external factors such as the nearness of live wires, magnetic fields, metallic objects providing magnetic conduction very close to the device, which may influence and disturb the diagnostic system.



WARNING!

The electrical connection must be made exclusively by specialized personnel, using components that have no voltage present. Only use power supplies which can guarantee a safe electrical isolation of the working voltage in accordance to IEC/EN 60204-1. Additionally, observe the requirements anticipated by the PELV circuits in accordance to IEC/EN 60204-1.

Care and maintenance



WARNING!

Do not connect or disconnect the device when energised! Do not open and/or disassemble the parts that are included in the energised valve. Once the power supply is disconnected, wait for a few minutes before opening or disassembling parts of the valve that result in its disassembly.

Before carrying out any operation, it is essential to remove the pneumatic and power supply to the device and wait for the residual pressure to be completely discharged.
Please ensure that the discharge is always clear, and in case a silencer is used, periodically verify that it is not obstructed.
Periodically remove any dust deposits from the valve using a damp cloth.
Use soapy water to clean the device.
Do not use corrosive or alcohol-based products.
For maintenance operations on internal components, please consult with PNEUMAX SPA.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Supply and discharge valve single (VS)

Technical characteristics	
Connections	G1/2" UNI-ISO 228/1
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Function	3/2 N.C. monostable
Minimum working pressure	2,5 bar
Maximum working pressure	10 bar
Working temperature	-10°C ... +50°C
Flow rate at 6bar Δp (from 1 to 2)	3500 Nl/min
Flow rate at 6bar Δp (from 2 to 3)	2000 Nl/min
Flow rate at 6bar (from 2 to 3) with free discharge	3800 Nl/min
Type of installation	Stand alone
Assembly positions	Indifferent
Noise level	90 dB
Response time ON ISO 12238	36 ms
Response time OFF ISO 12238	76 ms
Protection degree	IP65 (with mounted connector)

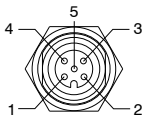
Electrical characteristics	
Electrical connection	Male M12 5P TYPE A connector
Coil Features	24 V DC, 1 W
Suppressor diode for coil reverse voltage spike	Present
Supply voltage allowance	-5% ... +10%

Electrical characteristics of sensor	
Sensor characteristics	10 ... 30 V DC
Operating principle	Hall effect
Contact type	N.O.
Output type	PNP
Permanent maximum current	100 mA
Permanent maximum power	3 W
Voltage drop max.	2 V

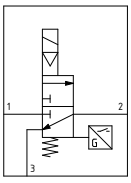
Safety characteristics	
Regulatory compliance	EN ISO 13849
Safety function fulfiled	Interruption of supply and unloading of the downstream pneumatic circuit
Performance Level (PL)	Up to c
EN ISO 13849 category	up to 1
Safety Integrity Level (SIL) EN 62061	up to 1
B10d	7.000.000 cycles
CE marking	Directive 2006/42/EC
	Directive 2014/34/EU
	Directive 2011/65/EU

Note B10d:
Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

Electrical connection



PIN	Description
1	+ 24 V DC (Sensor)
2	+ 24 V DC (EV)
3	0 V DC (EV)
4	SENSOR OUTPUT
5	0 V DC (Sensor)



Certifications available

II 3G Ex ec h IIC T6 Gc X
II 3D Ex tc IIIC T85°C Dc X
-10°C ≤ Ta ≤ +50°C

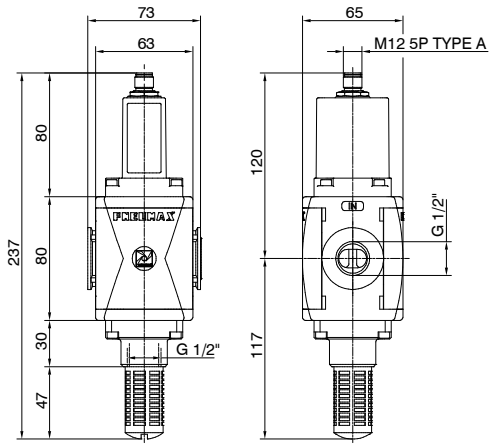
CODING: P173BVS(V)(F)

(V)	VERSIONS
	= Standard
	M = Integrated pressure gauge
	W = Integrated pressure gauge (Right-Left)
	G = G1/8" pressure gauge connection
(F)	FIXING
	= Without fixing
	01 = Fixing bracket mounted (Left-Right)
	02 = Fixing bracket mounted (Right-Left)

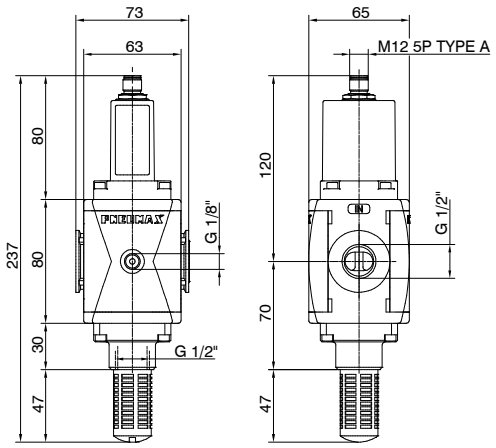
Example: **P173BVSM01**
Size 3 single safety valve G1/2", Built-in pressure gauge and fixing bracket mounted (Left-Right)

Dimensions

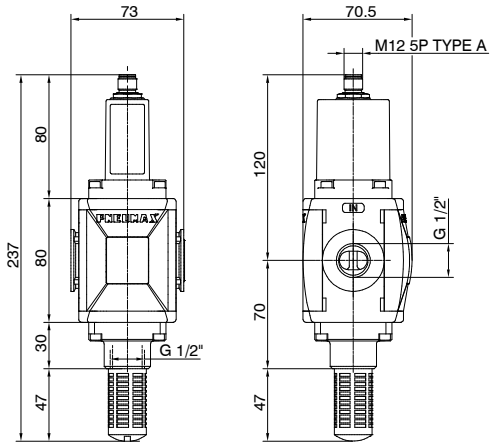


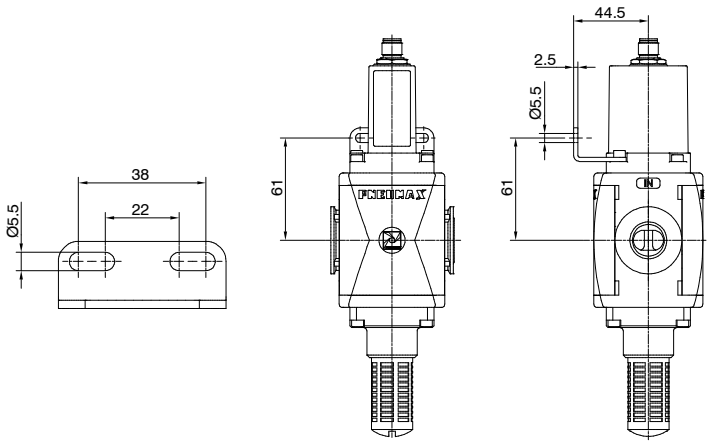












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Supply and discharge valve double (V2S)

Technical characteristics	
Connections	G1/2" UNI-ISO 228/1
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Function	3/2 N.C. monostable
Minimum working pressure	2,5 bar
Maximum working pressure	10 bar
Working temperature	-10°C ... +50°C
Flow rate at 6bar Δp (from 1 to 2)	2500 Nl/min
Flow rate at 6bar Δp (from 2 to 3)	2000 Nl/min
Flow rate at 6bar (from 2 to 3) with free discharge	3800 Nl/min
Type of installation	Stand alone
Assembly positions	Indifferent
Noise level	90 dB
Response time ON ISO 12238	68 ms
Response time OFF ISO 12238	79 ms
Protection degree	IP65 (with mounted connector)

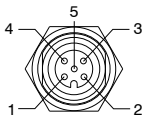
Electrical characteristics	
Electrical connection	2 Male M12 5P TYPE A connectors
Coil Features	24 V DC, 1 W + 1 W
Suppressor diode for coil reverse voltage spike	Present
Supply voltage allowance	-5% ... +10%

Electrical characteristics of sensor	
Sensor characteristics	10 ... 30 V DC
Operating principle	Hall effect
Contact type	N.O.
Output type	PNP
Permanent maximum current	100 mA + 100 mA
Permanent maximum power	3 W + 3 W
Voltage drop max.	2 V + 2 V

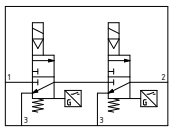
Safety characteristics	
Regulatory compliance	EN ISO 13849
Safety function fulfiled	Interruption of supply and unloading of the downstream pneumatic circuit
Performance Level (PL)	up to e
EN ISO 13849 category	up to 4
Safety Integrity Level (SIL) EN 62061	Up to 3
B10d	7.000.000 cycles
CE marking	Directive 2006/42/EC
	Directive 2014/34/EU
	Directive 2011/65/EU

Note B10d:
Reliability and lifetime of pneumatic valves assessed in accordance with ISO 19973-2: Pneumatic fluid power – Assessment of component reliability by testing – Part 2: Directional control valves.

Electrical connection



PIN	Description
1	+ 24 V DC (Sensor)
2	+ 24 V DC (EV)
3	0 V DC (EV)
4	SENSOR OUTPUT
5	0 V DC (Sensor)



Certifications available

II 3G Ex ec h IIC T6 Gc X
II 3D Ex tc IIIC T85°C Dc X
-10°C ≤ Ta ≤ +50°C

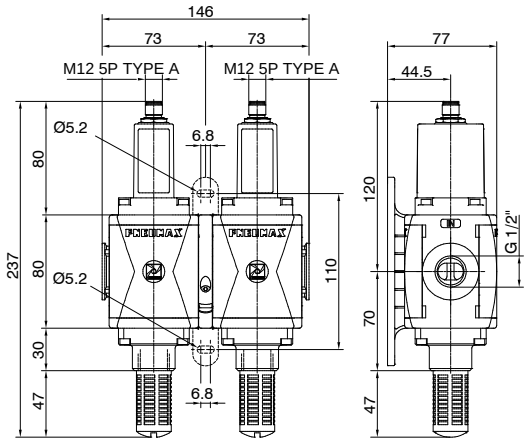
CODING: P173BV2S(V)(F)(D)

(V)	VERSIONS
	= Standard
	M = Integrated pressure gauge
	G = G1/8" pressure gauge connection
(F)	FIXING
	X = Flange X
	Y = Flange Y
	K = Aluminium flange Y
	Z = Aluminium flange X
(D)	FLOW RATE DIRECTION
	= Standard (Left-Right)
	W = (Right-Left)

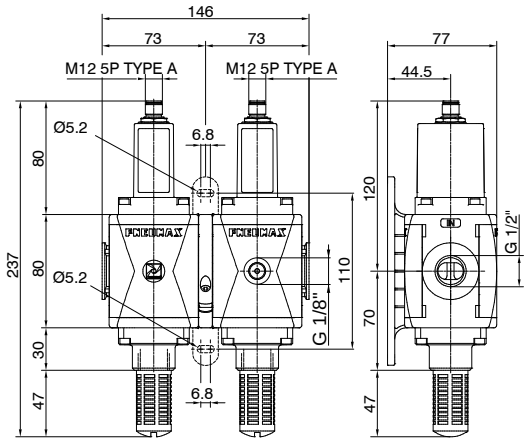
Example:**P173BV2SMK**
Size 3 double safety valve G1/2", built-in pressure gauge and Y aluminum flange

Dimensions

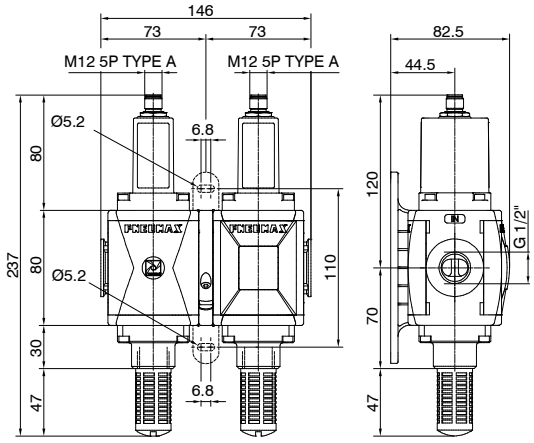






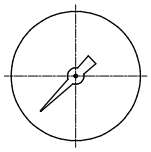


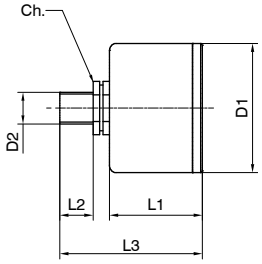




Pressure gauge







CODING: 17070 Ⓥ Ⓢ

Ⓥ	VERSION
	A = Dial Ø40
	B = Dial Ø50
Ⓢ	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
	C = 0 - 12 bar

Model	D1	D2	L1	L2	L3	Ch
17070A...	41	Gc - 1/8"	26	10	44	14
17070B...	49	Gc - 1/8"	27	10	45	14

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Regulatory Framework

The purpose of the Machinery Directive is to define the health and safety requirements in the framework of designing and constructing machinery.
Since 2009, the new Machinery Directive has become effective in the European Union.
Member countries of the EU are required to implement this standard.
The manufacturers of machinery can comply with the Machinery Directive applying the harmonised standards listed in the Official Journal of the European Union.

The design and manufacture of safety controls are developed in compliance with one of the two important harmonised standards:

EN ISO 13849
Safety of machinery Safety-related parts of control systems Part 1: General design principles

EN 62061
Safety of machinery Functional safety of electrical, electronic and programmable control systems regarding safety

The EN ISO 13849 standard is one of the most important harmonised standards, which has been widely used; it is intended to provide a guide to principles for design and integration of safety-related parts of the control system.

Each safety-related control system must be designed and constructed in accordance with the principles of ISO 12100 and ISO 14121 by which the possible risks are considered and assessed, in view of the intended uses and the reasonably anticipated incorrect uses.

The parts of a machinery's control system are called "Safety-related parts of control systems". Their capacity to perform a safety function under predictable conditions is assigned by means of five possible levels called **"performance levels" (PL)**. These levels are defined in terms of probability of dangerous malfunction per hour.

PL - Performance Level	Average probability of dangerous malfunction per hour (1/h)
a	$\geq 10^{-5}$ up to $< 10^{-4}$
b	$\geq 3 \times 10^{-6}$ up to $< 10^{-4}$
c	$\geq 10^{-6}$ up to $< 3 \times 10^{-6}$
d	$\geq 10^{-7}$ up to $< 10^{-6}$
e	$\geq 10^{-8}$ up to $< 10^{-10}$

The calculated PL must be greater or equal to the necessary value, which arises from the calculation of the risk correlated to one single function and to the need to reduce it to an acceptable level.

Calculated risk assessment			
S1 - Slight danger	F1 - Occasional danger and brief exposure	P1 - possibly avoidable danger	PL= a PL= b
		P2 - largely unavoidable danger	
	F2 - Frequent danger and long exposure	P1 - possibly avoidable danger	
		P2 - largely unavoidable danger	PL= c PL= d
S2 - Serious danger	F1 - Occasional danger and brief exposure	P1 - possibly avoidable danger	
		P2 - largely unavoidable danger	
	F2 - Frequent danger and long exposure	P1 - possibly avoidable danger	
		P2 - largely unavoidable danger	PL= e

Manifold unit



- Modular system
- Compact and linear design
- Maximum flexibility and reliability
- Up to 10 items assembly with unlimited configuration
- Plug-n-play connection thru couplig flanges
- Maintenance possible without completely disassembling the group
- Integral safety elements in assembled group
- Material and version wide selection
- Available in 4 sizes with connections from 1/8" to 1"
- Atex certification (II 2GD or II 3GD)

Operational characteristics					
Size		Size 1	Size 2	Size 3	Size 4
Maximum working pressure *		10 bar / 13 bar / 16 bar / 20 bar			
Minimum working pressure *		0,5 bar / 2,5 bar			
Working temperature *		-5 °C ... +50 °C / -30 °C ... +80 °C / -40 °C ... +80 °C			
IN / OUT connections	T version	G1/4"	G3/8"	G1/2"	not available
	N version	G1/8" - G1/4" - 1/4" NPT	G3/8" - G1/4" - 3/8" NPT	G3/8" - G1/2" - 1/2" NPT	
	P and L versions	not available	G3/8" - 1/4" NPT	G1/2" - 1/2" NPT	G1" - 1" NPT
Assembly configuration		Stand alone			
		Panel mounted thru fixing elements			
Assembly positions		Vertical ±5° with no restriction in case of elements without bowl			
Max. fittings torque IN / OUT connections	G1" metal	/		/	35Nm
	G1/2" metal			30Nm	/
	G1/4" metal	20Nm		/	
	G1/8" metal	15Nm	/		
	G3/8" metal	/	25Nm		
	G1/2" technopolymer		/	22Nm	
	G1/4" technopolymer	9Nm		/	
	G3/8" technopolymer	/	16Nm		
Max. fittings torque G1/8" pressure gauge connection		G1/8" metal: 15Nm			
		G1/8" technopolymer: 4 Nm			

* Module configuration shall be identified according to individual technical details of each items included in applicable manifold.

Manifold assembly

The assembly operation of selected items (module) is carried out thru dedicated quick connection flanges.
Both aluminum and techno polymer materials selection available, with fixing holes in case of panel mounting configuration.
Due to its design, Pneumax connection flanges allow user-friendly maintenance activities with no need of entire manifold disassembling procedure.



Thanks to a wide range of modules with different functions and characteristics, together with a wide choice of materials selection, make the Pneumax AIRPLUS air treatment units a robust, reliable and extremely flexible modular system, adaptable to different applications.
AIRPLUS units properly assembled are modular with unlimited configurations and solutions and capable to satisfy and fulfill all their functions of compressed air treatment. Pneumax Airplus air treatment units can be integrated with safety elements that comply with EN-ISO 13849-1 and CE marking according to EU Machinery Directive, Annex V. Simple instruction provides an easy manifold configuration.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Configuration instructions
Manifold configuration as per following instructions.
As a result, a dedicated code will be provided, and the two main parameters will be identified, as follow:
- Features applicable to all items included in manifold (i.e. version, size, connection, flow direction).
- Assembly sequence of the single item + coupling flanges.
Note: Max 10 items for each manifold.

The group can be configured by consulting the Pneumax catalog here:
http://pneumax.partcommunity.com/3d-cad-models/
also reachable through a special link available on the home page of the Pneumax website



Coding

Initial code that identifies the main characteristics of the group such as:
- version
- size and connections
- flow direction
These will be the same for all the modules included in manifold, in accordance with the characteristics of the individual items available.

Code that identifies the succession of individual modules and related coupling flanges included in manifold from module 1 to 10.

COMPLETE APPLICABLE ORDER CODE ← G 17 - - - →

Version	
N	Technopolymer body and metal inserts (not available for size 4)
T	Technopolymer body and thread (not available for size 4)
P	Aluminum body (not available for size 1)
L	Aluminum body, low temperature (not available for size 1)

Size and connections	
1A	Size 1 - G1/8" only for N version
1B	Size 1 - G1/4" only for T - N versions
1C	Size 1 - 1/4" NPT only for N version
2A	Size 2 - G1/4" only for N version
2B	Size 2 - G3/8" for all versions
2C	Size 2 - 3/8" NPT only for N version - 1/4" NPT only for P - L versions
3A	Size 3 - G3/8" only for N version
3B	Size 3 - G1/2" for all versions
3C	Size 3 - 1/2" NPT only for N - P - L versions
4B	Size 4 - G1" only for P - L versions
4C	Size 4 - 1" NPT only for P - L versions

Flow direction	
	From left to right
W	From right to left

Module 1
See list of modules

Mounting hardware 1	
X	Technopolymer flange X
Y	Technopolymer flange Y
K	Aluminium flange X
T	Aluminium flange Y

Module 2
See list of modules

Mounting hardware 2	
X	Technopolymer flange X
Y	Technopolymer flange Y
K	Aluminium flange X
T	Aluminium flange Y

Module 10
See list of modules

2 AIR TREATMENT

List of modules

Below the list of modules available for assembly of the manifold

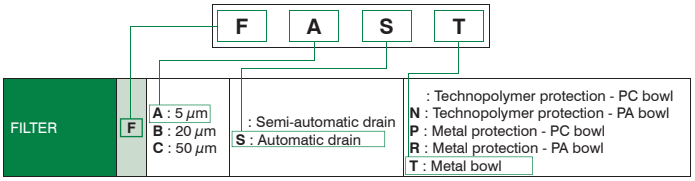
FILTER	F	**A** : 5 µm **B** : 20 µm **C** : 50 µm	: Semi-automatic drain **S** : Automatic drain	: Technopolymer protection - PC bowl **N** : Technopolymer protection - PA bowl **P** : Metal protection - PC bowl **R** : Metal protection - PA bowl **T** : Metal bowl
COALESCING FILTER	DA	: Semi-automatic drain **S** : Automatic drain	: Technopolymer protection - PC bowl **N** : Technopolymer protection - PA bowl **P** : Metal protection - PC bowl **R** : Metal protection - PA bowl **T** : Metal bowl	
OIL REMOVAL FILTER	D	**AV** : Size 4 **BV** : Size 3 **CV** : Size 3 oversize cartridge	: Semi-automatic drain **S** : Automatic drain	: Technopolymer protection - PC bowl **N** : Technopolymer protection - PA bowl **P** : Metal protection - PC bowl **R** : Metal protection - PA bowl **T** : Metal bowl
CARBON FILTER	DD	: Technopolymer protection - PC bowl **N** : Technopolymer protection - PA bowl **P** : Metal protection - PC bowl **R** : Metal protection - PA bowl **T** : Metal bowl		
REGULATOR	R	: G1/8" connection **M** : Integrated pressure gauge **W** : Integrated pressure gauge Right - Left **P** : Digital pressure switch **Z** : Digital pressure switch Right - Left	**A** : 0-2 bar **B** : 0-4 bar **C** : 0-8 bar **D** : 0-12 bar	: With relieving **F** : Controlled refiel and improved relieving **L** : Without relieving **R** : Improved relieving
		: Standard knob **K** : Lockable knob	**A** : Cable 150 mm M8 PNP **B** : Cable 150 mm M8 NPN **C** : Cable 2 m PNP **D** : Cable 2 m NPN	
FILTER REGULATOR	E	: G1/8" connection **M** : Integrated pressure gauge **W** : Integrated pressure gauge Right - Left **P** : Digital pressure switch **Z** : Digital pressure switch Right - Left	**A** : 5 µm **B** : 20 µm **C** : 50 µm	**A** : 0-2 bar **B** : 0-4 bar **C** : 0-8 bar **D** : 0-12 bar
		: Semi-automatic drain **S** : Automatic drain	: With relieving **L** : Without relieving	: Standard knob **K** : Lockable knob
		A : Cable 150 mm M8 PNP **B** : Cable 150 mm M8 NPN **C** : Cable 2 m PNP **D** : Cable 2 m NPN	: Technopolymer protection - PC bowl **N** : Technopolymer protection - PA bowl **P** : Metal protection - PC bowl **R** : Metal protection - PA bowl **T** : Metal bowl	
LUBRICATOR	L	: No electric level sensor device **A** : Electrical minimum level sensor NO (Normally open) **C** : Electrical minimum level sensor NC (Normally closed)	: Technopolymer protection - PC bowl **N** : Technopolymer protection - PA bowl **P** : Metal protection - PC bowl **R** : Metal protection - PA bowl	

SHUT OFF VALVE	V		15 mm coil	22 mm coil	30 mm coil
		L : Manual **P** : Pneumatic **E** : Solenoid	**A4** : 12 VDC **A5** : 24 VDC **A6** : 24 VAC (50-60 Hz) **A7** : 110 VAC (50-60 Hz) **A8** : 230 VAC (50-60 Hz) **A9** : 24 VDC (1 Watt)	**B2** : Mechanical M2, without coil **B4** : 12 VDC **B5** : 24 VDC **B6** : 24 VAC (50-60 Hz) **B7** : 110 VAC (50-60 Hz) **B8** : 230 VAC (50-60 Hz) **B9** : 24 VDC (2 Watt)	**C5** : 24 VDC **C6** : 24 VAC (50-60 Hz) **C7** : 110 VAC (50-60 Hz) **C8** : 230 VAC (50-60 Hz) **C9** : 24 VDC (2 Watt)

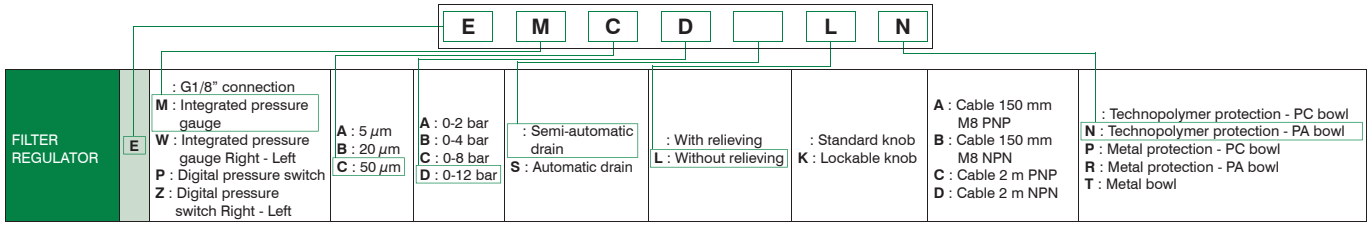
SAFETY VALVE	V				
		S : Single	: Without connection **M** : Integrated pressure gauge **W** : Integrated pressure gauge (Right - Left) **G** : G1/8" pressure gauge connection		
		2S : Double	: Without connection **M** : Integrated pressure gauge **G** : G1/8" pressure gauge connection	**X** = Flange X **Y** = Flange Y **K** = Aluminium flange Y **Z** = Aluminium flange X	: Standard (Right - Left) **W** : Integrated pressure gauge (Right - Left)

PROGRESSIVE START-UP VALVE	AP	: Size 1 - Size 2 - Size 3 **W** : Size 4 - flow direction Right - Left	
AIR INTAKE	PA		
AIR INTAKE WITH PRESSURE GAUGE OR DIGITAL PRESSURE SWITCH INTEGRATED	P	**M** : Integrated pressure gauge **W** : Integrated pressure gauge (Right - Left) **P** : Integrated digital pressure switch **Z** : Integrated digital pressure switch (Right - Left)	**A** : Cable 150 mm M8 PNP **B** : Cable 150 mm M8 NPN **C** : Cable 2 m PNP **D** : Cable 2 m NPN
PRESSURE SWITCH	PP	: Size 1 - Size 2 - Size 3 **W** : Size 4 - flow direction Right - Left	

Examples of module identification: 5 µm filter, automatic drain, metal bowl is identified as: **F A S T**



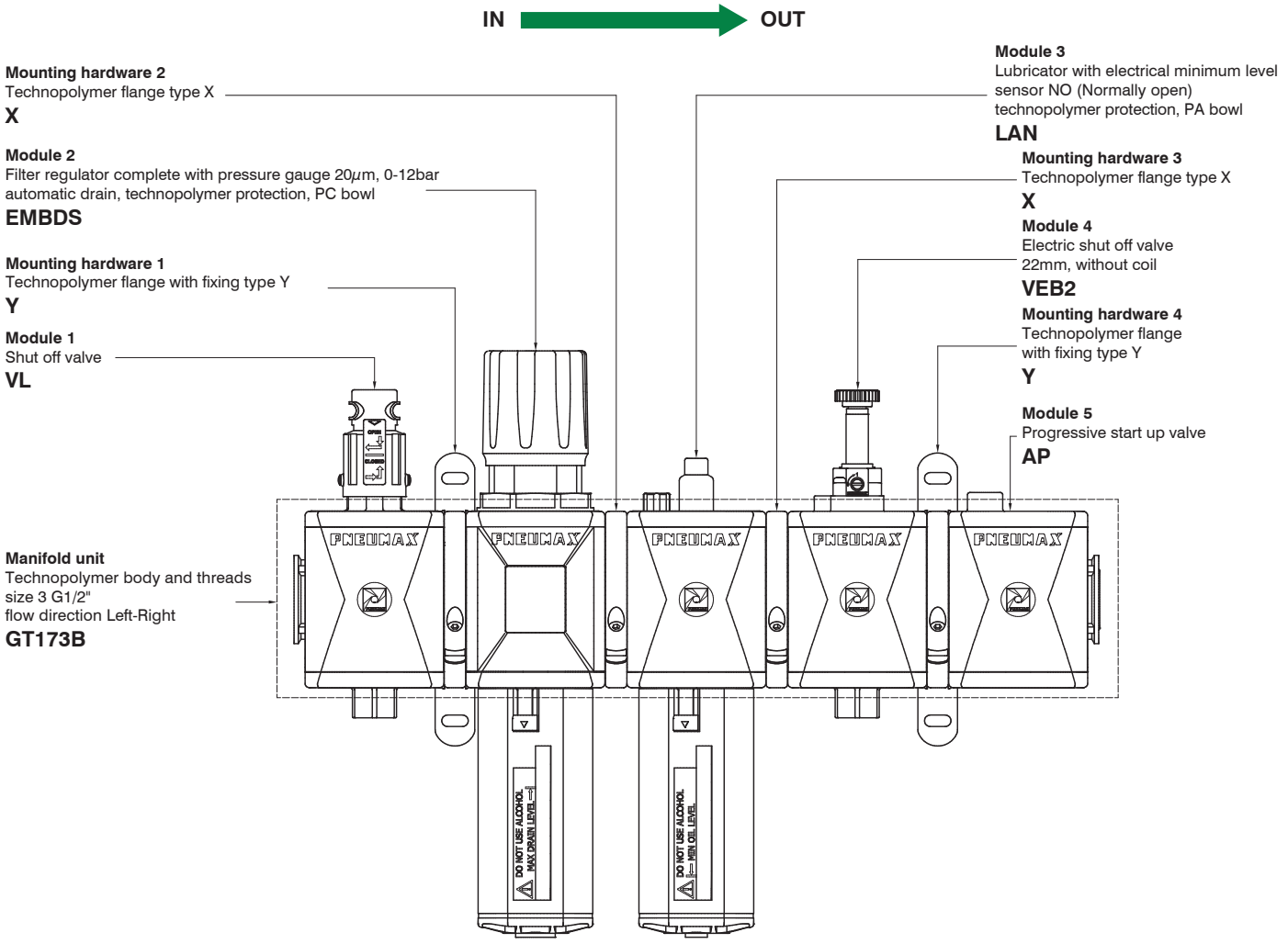
- Filter regulator with pressure gauge 50 µm, 0-12 bar semi-automatic drain, without relieving, technopolymer bowl protection, PA bowl, is identified as: **E M C D L N**



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AIRPLUS assembled groups configuration

Configuration example of a Size 3, G1/2" technopolymer group SX - DX composed of:
- Shut off valve
- Filter regulator, 20μm, 0-12bar, automatic drain
- Lubricator with electrical minimum level sensor NO
- Electric shut off valve, 22mm, without coil
- Progressive start-up valve



Applicable order code:

Initial code that identifies the main characteristics of the group such as:
- version
- size and connections
- flow direction

These will be the same for all the modules included in manifold, in accordance with the characteristics of the individual items available.

Code that identifies the succession of individual modules and related coupling flanges included in manifold from module 1 to 10.

G	T	17	3B		-	VL	-	Y	-	EMBDS	-	X	-	LAN	-	X	-	VEB2	-	Y	-	AP

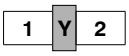
GT173 - VL - Y - EMBDS - X - LAN - X - VEB2 - Y - AP

Quick coupling flanges

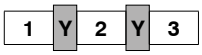
Pneumax AIRPLUS quick coupling flanges series are made of technopolymer or die-cast aluminium and allow for rapid module interconnection as well as wall mounting of the assembly. Due to its design, Pneumax connection flanges allow user-friendly maintenance activities with no need of entire manifold disassembling procedure.
Two types of flanges are available: X type flange for assembling the modules together, and Y type flange suitable for panel mounted also.

Here below some indications related to flanges positioning according to the number of seats.

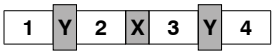
Group 2 seats



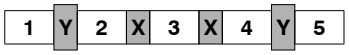
Group 3 seats



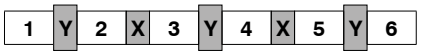
Group 4 seats



Group 5 seats

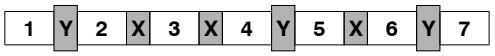


Group 6 seats

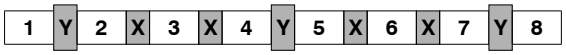


Y: Y type flange (Aluminium or technopolymer)
X: X type flange (Aluminium or technopolymer)
1 ... 10: AIRPLUS modules

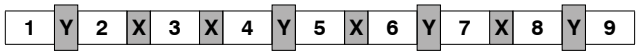
Group 7 seats



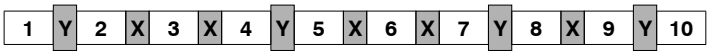
Group 8 seats



Group 9 seats



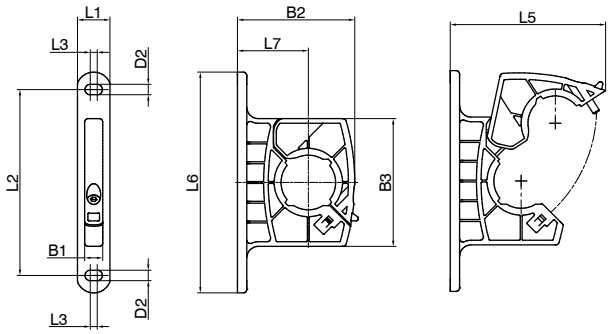
Group 10 seats



Technopolymer flanges

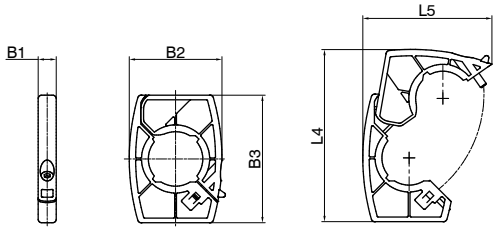
Flange Y





Flange X





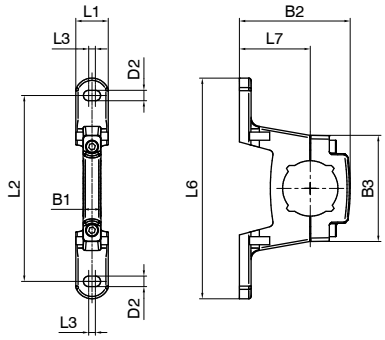
Model	B1	B2	B3	D2	L1	L2	L3	L4	L5	L6	L7
T171Y	7,8	50,5	55	Ø 4,5	14	80	3	/	66	95	30,5
T171X		40		/	/	/	/	74,5	55,5	/	/
T172Y	9,7	67,6	68	Ø 5,2	18	95	6,8	/	86,5	117,9	40,5
T172X		53,6		/	/	/	/	96,5	72,5	/	/
T173Y	9,7	75,5	80	Ø 5,2	18	110	6,8	/	98,3	133	44,5
T173X		62		/	/	/	/	112,8	85	/	/
T174Y	13,7	106,5	105	Ø 8,5	25	148	6,5	/	133,5	175	64
T174X		85		/	/	/	/	153,5	112	/	/

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Aluminium flanges

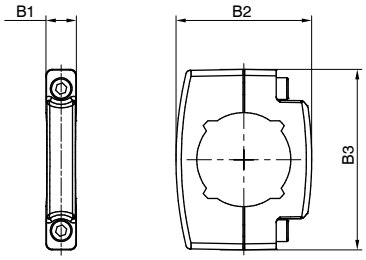
Flange Y





Flange X

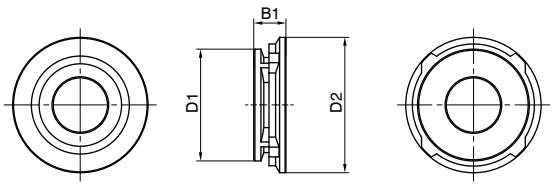




Model	B1	B2	B3	D2	L1	L2	L3	L6	L7
N171Y	7,8	47,7	45,7	Ø 4,5	14	80	3	95	30,5
N171X		34,4		/	/	/	/	/	/
N172Y	9,7	64,6	55,6	Ø 5,2	18	95	6,8	117,9	40,5
N172X		55,6		/	/	/	/	/	/
N173Y	9,7	75,5	56	Ø 5,2	18	110	6,8	133	44,5
N173X		62		/	/	/	/	/	/
N174Y	13,7	106,5	102	Ø 8,5	25	148	6,5	175	64
N174X		85		/	/	/	/	/	/

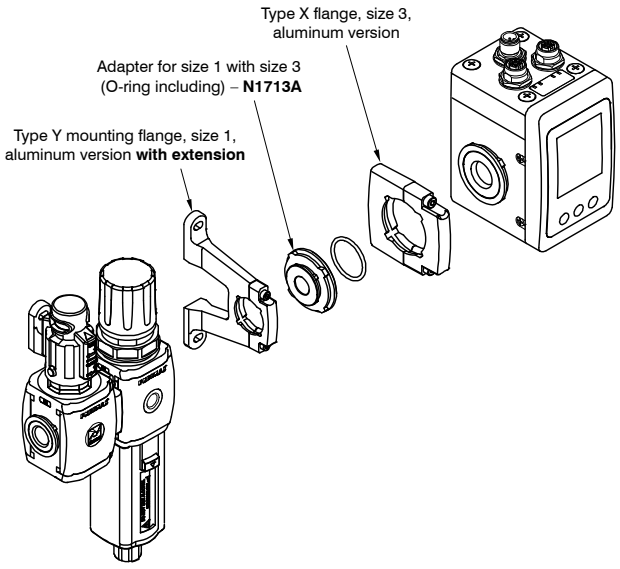
Size adapters



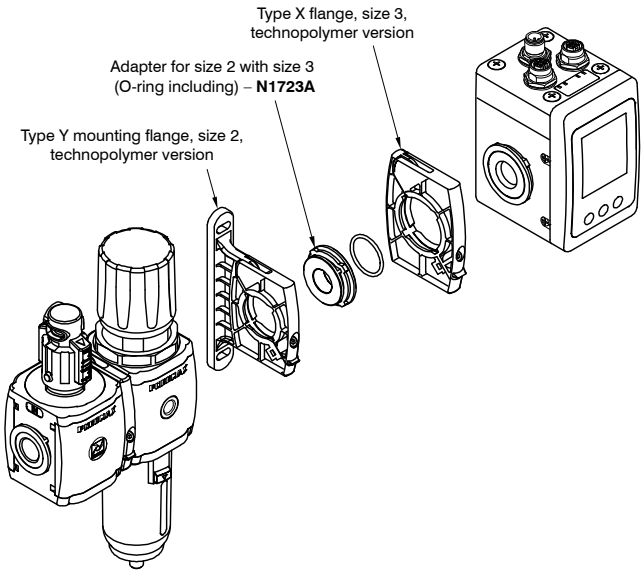


Model	Fits	B1	D1	D2
N1713A	Size 1 → Size 3	9	25.9	39.9
N1723A	Size 2 → Size 3	9.5	32.9	

Example configuration of adapter connecting size 1 with size 3



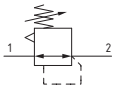
Example configuration of adapter connecting size 2 with size 3



Panel mounted pressure regulators (RP)



- Diaphragm pressure regulator with relieving
- Aluminium body version
- High flow rates with low pressure drops
- Available with 1/8" and 1/4" connections
- Low hysteresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Atex certification Atex II 2GD



Note

For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics	
Size	Size 1
Body and connections type	Aluminium body version
IN / OUT connections	G1/8" - G1/4"
Assembly configuration	Stand alone
Assembly configuration	Panel mounted
Assembly configuration	With fixing bracket
Assembly positions	Indifferent
Pressure range	0-2 bar
	0-4 bar
	0-8 bar
	0-12 bar
Regulation	Manul push and lock with pressure
Pressure measurement	G1/8" pressure gauge connection port
Max. fittings torque IN / OUT connections	G1/8" metal: 15Nm
	G1/4" metal: 20Nm
Max.fitting torque pressure gauge connection port	G1/8" metal: 15Nm

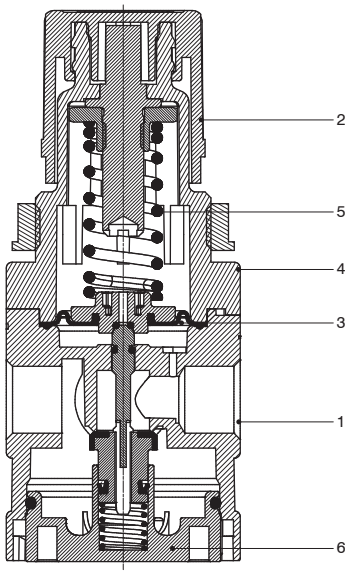
Operational characteristics	
Size	Size 1
Maximum working pressure	13 bar
Minimum working pressure	0,5 bar
Working temperature	-10 °C ... +50 °C

Weights	
Size	Size 1
Aluminium body version	130 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

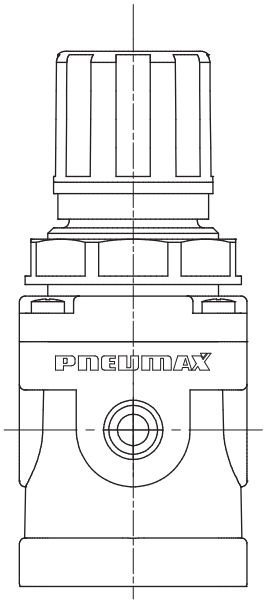
Materials

Exploded sectioned



Panel mounted pressure regulator		
1	Body	Die-cast aluminium
2	Adjusting knob	Polyamide
3	Diaphragm	NBR
4	Adjustment support	Polyamide
5	Adjusting spring	Steel
6	Rear end cap	Polyamide

Design



Coding: RP17ⓉBⓇⓄ¹ⒸⓄ²

Ⓣ	SIZE AND CONNECTIONS
	1A = Size 1 - G1/8"
	1B = Size 1 - G1/4"
Ⓡ	PRESSURE RANGE
	A = 0 - 2 bar
	B = 0 - 4 bar
	C = 0 - 8 bar
	D = 0 - 12 bar
Ⓞ¹	RELIEVING OPTIONS
	A = With reliving
	F = Controlled refiel and improved relieving
	L = Without relieving

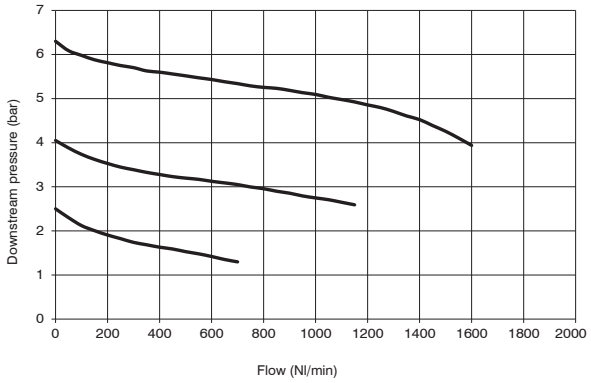
Ⓒ	KNOB COLOUR
	V = Green knob (RAL6032)
	G = Grey knob (RAL7004)
Ⓞ²	KNOB OPTIONS
	= Non-lockable version
	K = Lockable version
	U = Lockable version with universal key

Table example RP171ABAAV : Size 1 G1/8" Panel mounted pressure regulator, 0 - 2 bar, with relieving and green knob.

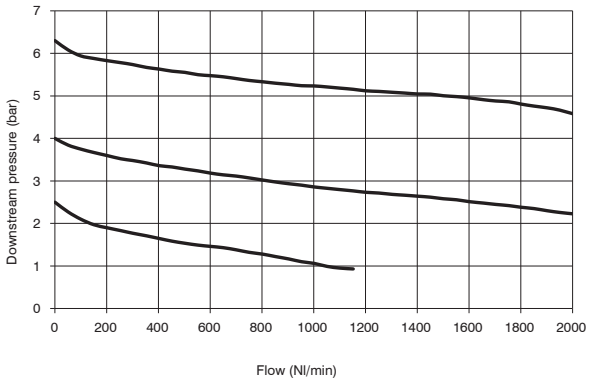
Characteristic curves

Flow rate curves

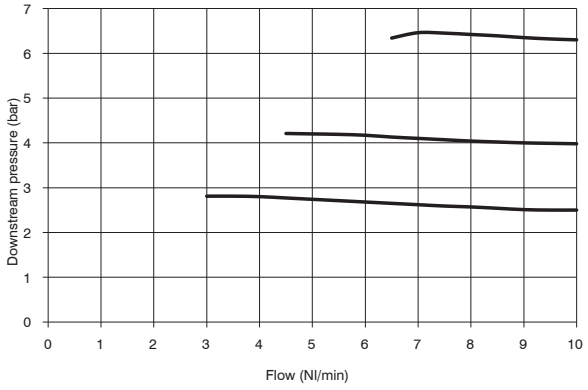
G1/8" 0-8 bar P1= 7 bar

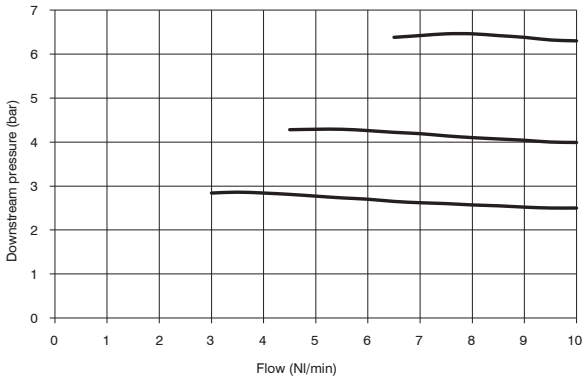


G1/4" 0-8 bar P1= 7 bar

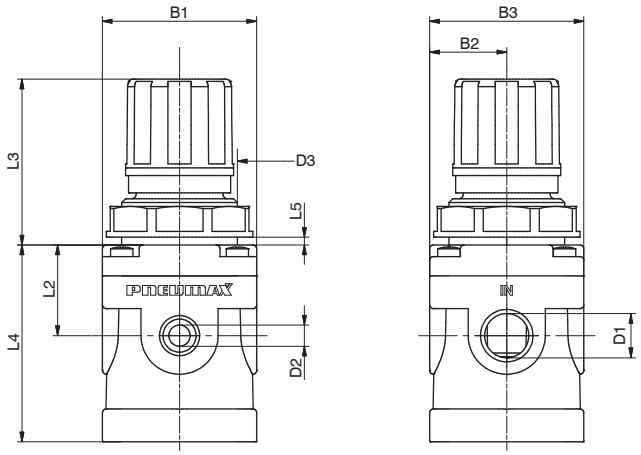


Adjustment characteristic





Dimensions



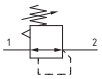
Model	B1	B2	B3	D1	D2	D3	L2	L3	L4	L5
RP171A...	40	20	40	G1/8"	G1/8"	M30x1,5	23.5	43	51	4 max
RP171B...	40	20	40	G1/4"	G1/8"	M30x1,5	23.5	43	51	4 max

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Panel mounted pressure regulator with pressure gauge built into the adjusting knob (RP)



- Diaphragm pressure regulator with relieving
- Aluminium body version
- High flow rates with low pressure drops
- Available with G1/8" and G1/4" connections
- Low hysteresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Atex certification Atex II 2GD
- Ø 24,5 pressure gauge built into adjusting knob
- Pressure gauge with 4 mounting positions relative to IN connection (0°-90°-180°-270°)
- Class 4 pressure gauge (±4% full scale)



Note

For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

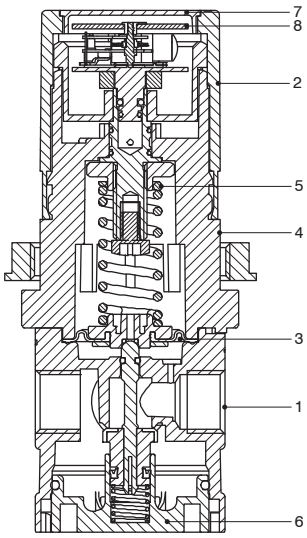
Technical characteristics	
Size	Size 1
Body and connections type	Aluminium body version
IN / OUT connections	G1/8" - G1/4"
Assembly configuration	Stand alone
	Panel mounted
	With fixing bracket
Assembly positions	Indifferent
Pressure range	0-2 bar
	0-4 bar
	0-8 bar
	0-12 bar
Regulation	Manul push and lock with pressure
Pressure measurement	Pressure gauge built into knob
Max. fittings torque IN / OUT connections	G1/8" metal: 15Nm
	G1/4" metal: 20Nm
Max.fitting torque pressure gauge connection port	G1/8" metal: 15Nm

Operational characteristics	
Size	Size 1
Maximum working pressure	13 bar
Minimum working pressure	0,5 bar
Working temperature	-10 °C ... +50 °C

Weights	
Size	Size 1
Aluminium body version	190 g

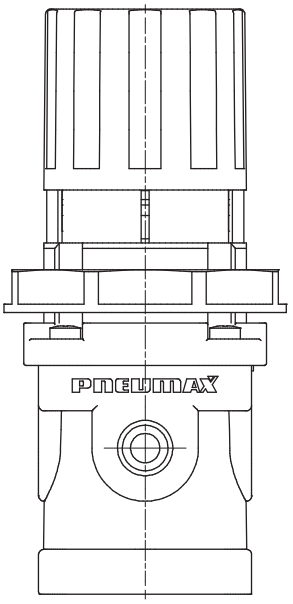
Materials

Exploded sectioned



Panel mounted pressure regulator		
1	Body	Die-cast aluminium
2	Adjusting knob	Polyamide
3	Diaphragm	NBR
4	Adjustment support	Polyamide
5	Adjusting spring	Steel
6	Rear end cap	Polyamide
7	Lens	Polycarbonate
8	Pressure gauge	Brass/ABS

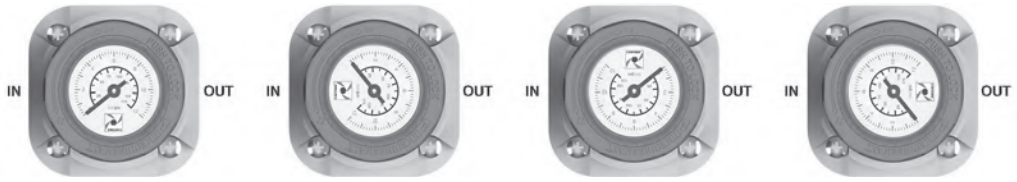
Design



Coding: RP17ⓒBMⓇⓄ¹⓪²⓪³

ⓒ	CONNECTIONS	⓪³	KNOB OPTIONS
	1A = G1/8"		**V** = Green knob (RAL6032)
	1B = G1/4"		**G** = Grey knob (RAL7004)
Ⓡ	PRESSURE RANGE		
	A =0 - 2 bar		
	B =0 - 4 bar		
	C =0 - 8 bar		
	D =0 - 12 bar		
⓪¹	RELIEVING OPTIONS		
	A =With reliving		
	F =Controlled refiel and improved relieving		
	L =Without relieving		
⓪²	PRESSURE GAUGE ORIENTATION		
	A = 0°		
	B = 90°		
	C = 180°		
	D = 270°		

Pressure gauge orientation



A: 0° **B**: 90° **C**: 180° **D**: 270°

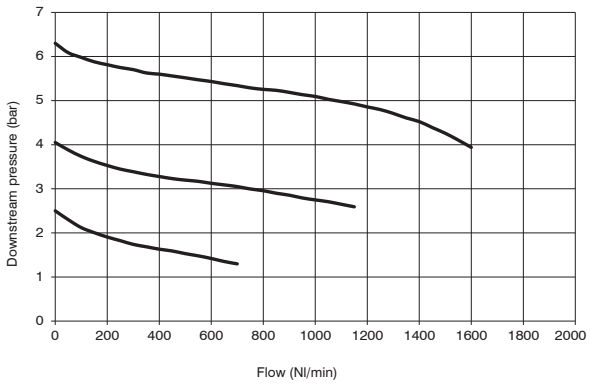
Example: **RP171ABMAAV** Panel mounted pressure regulator with pressure gauge G1/8", 0 - 2 bar, pressure gauge orientation at 0°, with relieving and green knob.

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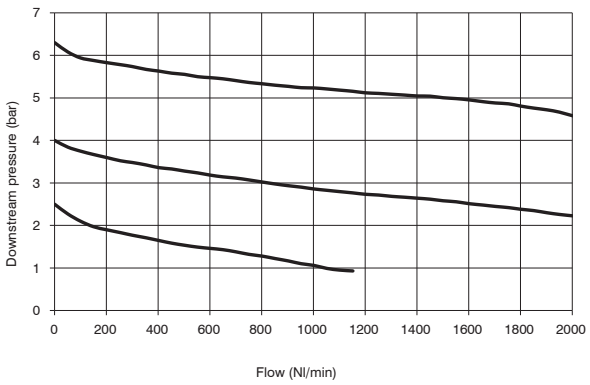
Characteristic curves

Flow rate curves

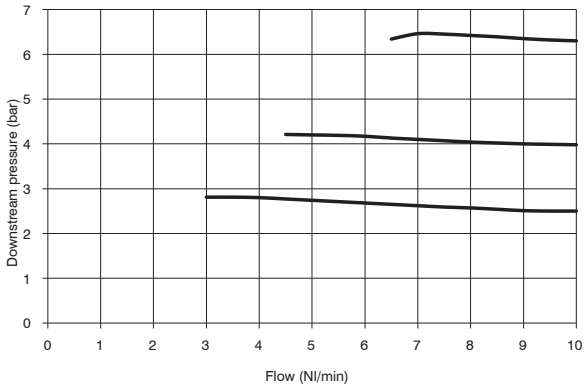
G1/8" 0-8 bar P1= 7 bar

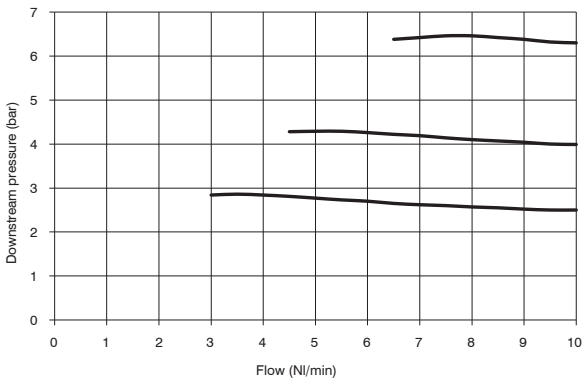


G1/4" 0-8 bar P1= 7 bar

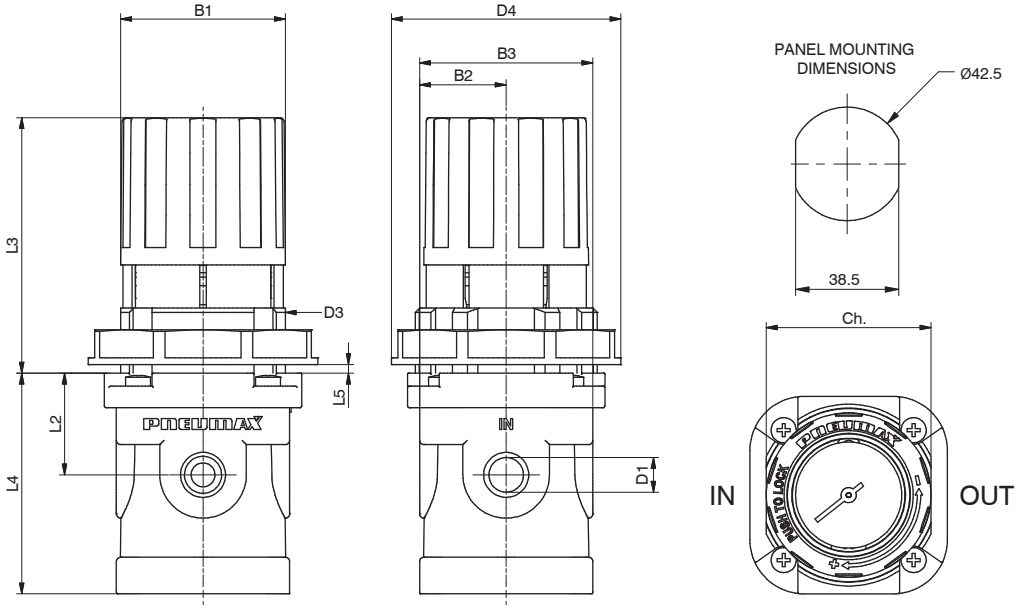


Adjustment characteristic





Dimensions



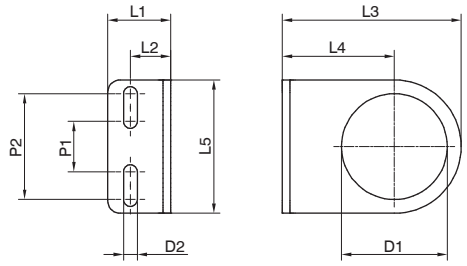
Model	B1	B2	B3	D1	D2	D3	D4	L2	L3	L4	L5	CH
RP171ABM...	38	20	40	G1/8"	G1/8"	M42x1,5	53	23.5	59	51	4 max	38
RP171BBM...	38	20	40	G1/4"	G1/8"	M42x1,5	53	23.5	59	51	4 max	38

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Fixing bracket

Coding: 17150





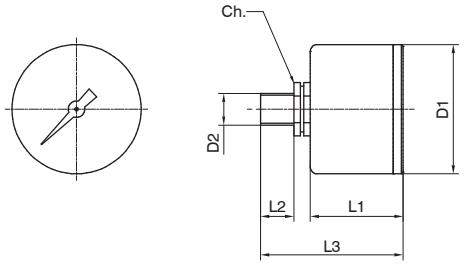
Model	L1	L2	L3	L4	L5	D1	D2	P1	P2
17150	20	13	50	30	40	30	5,5	20	30

Pressure gauge

Coding: 17070ⓋⓈ

Ⓥ	VERSION
	A = Dial Ø40
	B = Dial Ø50
Ⓢ	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
	C = 0 - 12 bar





Model	D1	D2	L1	L2	L3	Ch
17070A...	41	Gc - 1/8"	26	10	44	14
17070B...	49	Gc - 1/8"	27	10	45	14

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1700

- **Modular sistem**
- **Available for 4 sizes with connections from 1/8” to 1”**
- **ATEX certification (II 2GD o II 3GD) on request**



Construction and working characteristics
1700 air treatment series includes a wide range of elements for individual use or modular assembling.
Available in 4 sizes e connections from 1/8” to 1”.
The bowls are made in zinc alloy body with zinc alloy integrated connections, technopolymer with integrated metal connections for size 1 and aluminium with integrated aluminium connections for sizes 2, 3 and 4.
The bowls are in Nylon, with technopolymer protection for sizes 1, 2, 3 (also available for size 1 without protection). The bowls are in metal with condensation drain display for size 4.
Filters can be equipped with manual or semiautomatic condensation drain; furthermore it’s possible to install the automatic draining device inside the bowl.
Wall mounting by means of screws directly through the body and hidden by protective covers.
The pressure regulator handle is lockable in the desired position, the shut-off valves are lockable with a maximum of three pad-locks to prevent accidents or damages due to unauthorized operation.
The lubricator oil flow is adjustable with proper handle and it is visibly checked through the sight dome.
The progressive start-up valve, pneumatically or electropneumatically controlled, allows air supply to the circuit progressively and with adjustable time. The accessories like panel mounted brackets, pressure gauges with different scales and diameters and the air intake blocks are completing the range. They are assembled between the elements to get filtered or filtered non-lubricated air in the system.

Instruction for installation and operation
Pay attention to install a group or a single component with air flow direction according to the arrows and to the following sequence: filter, pressure regulator, lubricator and with bowls downwards. The group can be fixed to the wall by removing the covers, which can be installed again after fixing for covering the screws. Do not exceed the recommended torque while assembling the connectors.
Do not exceed the recommended air pressure and temperature limits. The moisture should not exceed the level marked on the bowl and it can be drawn off and carried by a flexible tube of Ø 6/4 directly connected to the discharge valve handle.
The pressure should be set from minimum to maximum, rotating the adjusting handle clockwise.
As lubricant, we suggest to use oil class FD22 or HG32. Verify that the lubricator is not fed with a flow lower than the minimum operational.
To set the oil flow rotate the proper adjusting handle in order to get one drop of oil every 300-600 liters of air.
The oil flow will be kept automatically and proportionally to the air flow. The oil can be refilled by mean of proper plug or directly into the bowl after having de-pressurized the system. Do not exceed the maximum level indicated on the bowl. For opening the shut-off valve push and rotate clockwise the operating handle. For closing it and consequently discharging the down stream line, rotate the handle counter-clockwise.

Maintenance
Clean the bowls with water and detergent. Do not use alcohol.
The filter element made with HPDE is reusable by blowing and cleaning it with proper detergent. For replacing or cleaning it, remove the bowl and unscrew the baffle spins.
Replace the pressure regulator diaphragm whenever the operation is not correct or there is a continuos air leaking through the relieving (over pressure discharge); reinstall the adjusting mechanism support, locking it with about 8 Nm torque. In case it is necessary to replace the lubricator transparent dome, tight it at 5 Nm torque maximum.

Product overview

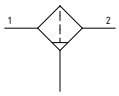
PRODUCT	BODY MATERIAL	SIZES AND CONNECTIONS			
		SIZE 1	SIZE 2	SIZE 3	SIZE 4
FILTER	Zinc alloy	G1/8" - G1/4"	/	/	/
	Technopolymer	G1/8" - G1/4"	/	/	/
	Aluminum	/	G1/4" - G3/8"	G3/8" - G1/2" - G 3/4"	G1"
DYNAMIC DRIER	Aluminum	/	/	/	G1"
FILTER REGULATORS	Zinc alloy	G1/8" - G1/4"	/	/	/
	Technopolymer	G1/8" - G1/4"	/	/	/
	Aluminum		G1/4" - G3/8"	G3/8" - G1/2" - G 3/4"	/
REGULATORS	Zinc alloy	G1/8" - G1/4"	/	/	/
	Technopolymer	G1/8" - G1/4"	/	/	/
	Aluminum		G1/4" - G3/8"	G3/8" - G1/2" - G 3/4"	G1"
REGULATORS WITH INTEGRATED PRESSURE GAUGE	Zinc alloy	G1/8" - G1/4"	/	/	/
	Technopolymer	G1/8" - G1/4"	/	/	/
	Aluminum	/	G1/4" - G3/8"	G3/8" - G1/2"	/
PRECISION PRESSURE REGULATORS WITH HIGH FLOW RATE RELIEVING	Aluminum	G1/4"		G1/2"	/
PRECISION PRESSURE REGULATORS WITH PNEUMATIC PILOT	Aluminum	/	/	G1/2"	/
PRECISION PRESSURE REGULATOR FOR MANIPULATION APPLICATIONS	Aluminum	/	/	G1/2" (IN and OUT) G3/8" (EXH)	/
PILOTED PRESSURE REGULATORS	Aluminum	/	G1/4" - G3/8"	G3/8" - G1/2"	G1"
PANEL MOUNTING PRESSURE REGULATOR	Technopolymer	G1/8" - G1/4"	/	/	/
PRESSURE REGULATORS FOR MANIFOLD	Zinc alloy	G1/8" - G1/4"	/	/	/
MANIFOLD PRESSURE REGULATORS	Zinc alloy	G1/8" - G1/4"	/	/	/
LUBRICATORS	Zinc alloy	G1/8" - G1/4"	/	/	/
	Technopolymer	G1/8" - G1/4"	/	/	/
	Aluminum	/	G1/4" - G3/8"	G3/8" - G1/2" - G 3/4"	G1"
SHUT-OFF VALVE	Zinc alloy	G1/4"	/	/	/
	Technopolymer	G1/4"	/	/	/
	Aluminum	/	G3/8"	G1/2"	G1"
ELECTRIC SHUT-OFF VALVE	Zinc alloy	G1/4"	/	/	/
	Technopolymer	G1/4"	/	/	/
	Aluminum	/	G3/8"	G1/2"	/
PNEUMATIC SHUT-OFF VALVE	Zinc alloy	G1/4"	/	/	/
	Technopolymer	G1/4"	/	/	/
	Aluminum	/	G3/8"	G1/2"	/
PROGRESSIVE START-UP VALVE	Aluminum	G1/4"	G3/8"	G1/2"	G1"
AIR INTAKE	Aluminum	G1/4"	G3/8"	G1/2"	G1"
AIR INTAKE -"H" PROFILE	Aluminum	G1/4"	G3/8"	G1/2"	/
PRESSURE SWITCH COMPLETE WITH ADAPTER	Aluminum	G1/8"	G3/8"	G1/2"	Ø36

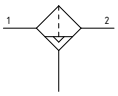
Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Filters



- Double filter action: air flow centrifugation and filter element
- Available in 4 sizes with flow rates up to 10000 Nl/min and connections from 1/8” to 1”
- Filtering cartridge made of HDPE available in three different filtration grades (5µm, 20µm, 50µm)
- Filter cartridge can be regenerated by washing / blowing it or replaced
- Bowls screwed to the body (Size 1)
- Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 - Size 3 - Size 4)
- Semi-automatic or automatic condensation drain
- Atex certification (II 2GD o II 3GD) on request





Note
In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you to use a 6mm fitting and tube

Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections		
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)			Metal bowl with blind metal bowl
IN / OUT connections	G1/8” - G1/4”	G1/4” - G3/8”	G3/8” - G1/2”, G3/4”	G1”
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M8 screws
Assembly position	Vertical ±5°			
Filter pore size (µm)	5 / 20 / 50			
Bowl capacity (cm³)	20	30	48	178
Condensation drain	Semi-automatic Automatic			
Max. fittings torque IN / OUT connections (Nm)	G1/8” metal: 15 G1/4” metal: 20	G1/4” metal: 20 G3/8” metal: 25	G3/8” metal: 25 G1/2” metal: 30 G3/4” metal: 35	G1”metal: 35

Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain	Semi-automatic				Automatic			
Maximum working pressure (bar)	13				10			
Minimum working pressure (bar)	0,5							
Working temperature (°C)	-5 ... +50							

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	218	/	/	/
Technopolymer body version (g)	103	/	/	/
Aluminium body version (g)	/	255	405	1700

Order codes



Size, body and connections	
001A	Zinc alloy body, connections G1/8" (only for size 1)
001B	Zinc alloy body, connections G1/4" (only for size 1)
101A	Technopolymer body, connections G1/8" (only for size 1)
101B	Technopolymer body, connections G1/4" (only for size 1)
201A	Aluminium body, connections G1/4" (only for size 2)
201B	Aluminium body, connections G3/8" (only for size 2)
301A	Aluminium body, connections G3/8" (only for size 3)
301B	Aluminium body, connections G1/2" (only for size 3)
301E	Aluminium body, connections G3/4" (only for size 3)
401B	Aluminium body, connections G1" (only for size 4)

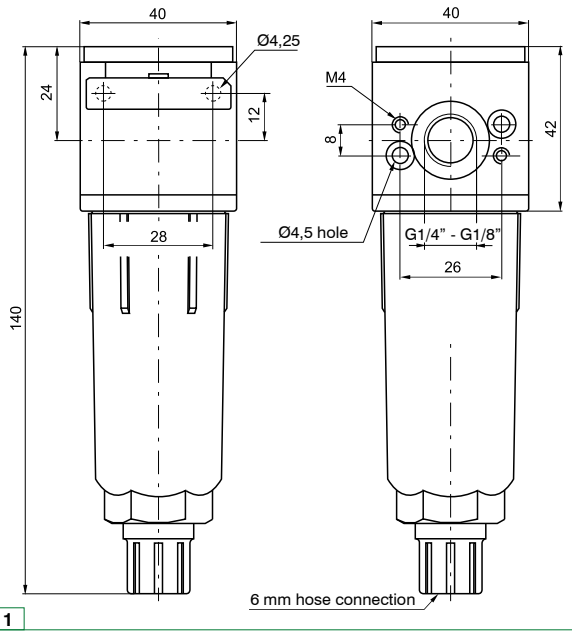
Filter pore size	
A	5 μm
B	20 μm
C	50 μm

Type	
P	Bowl protection (only for size 1)
S	Automatic drain (for all sizes)
PS	Bowl protection and automatic drain (only for size 1)

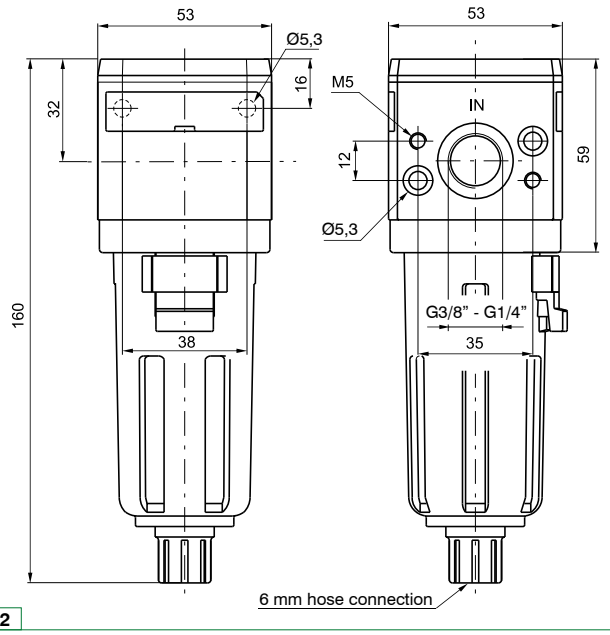
Example: 17301A.A.S
Size 3 filter, aluminium body, G3/8" connections, filter pore size5 μm, automatic drain

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

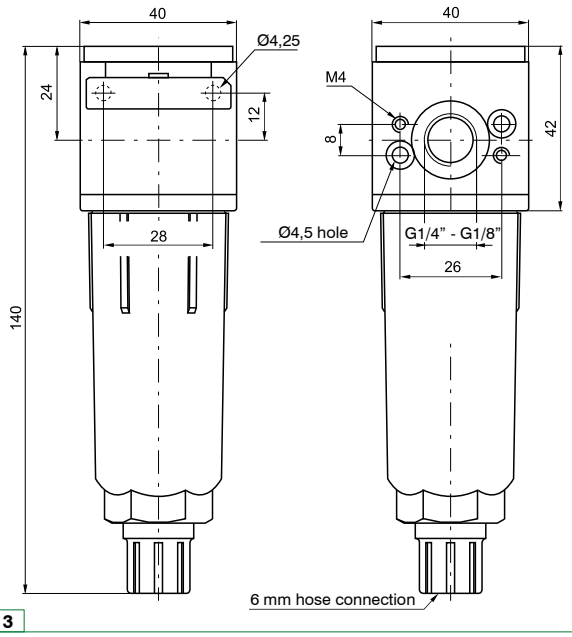
Dimensions



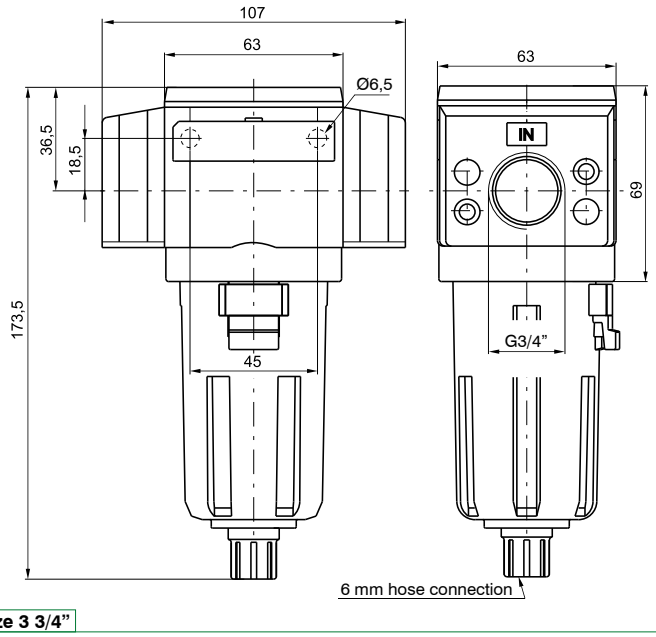
Size 1



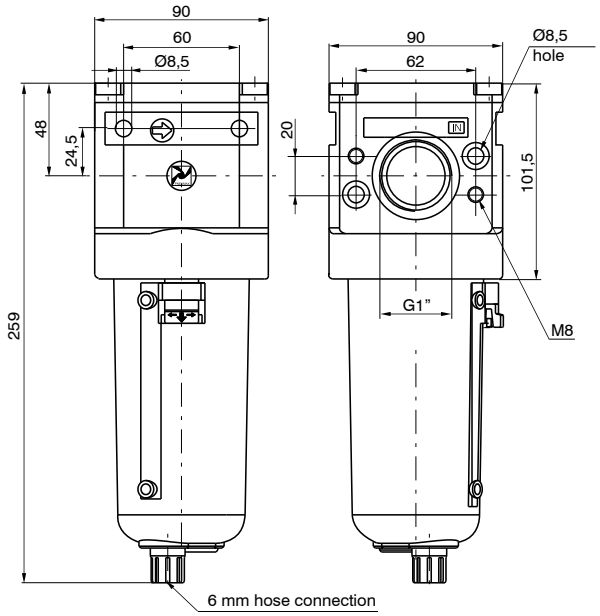
Size 2



Size 3



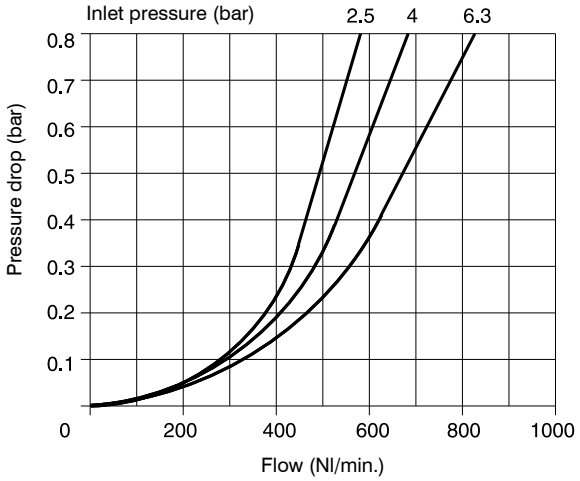
Size 3 3/4"



Size 4

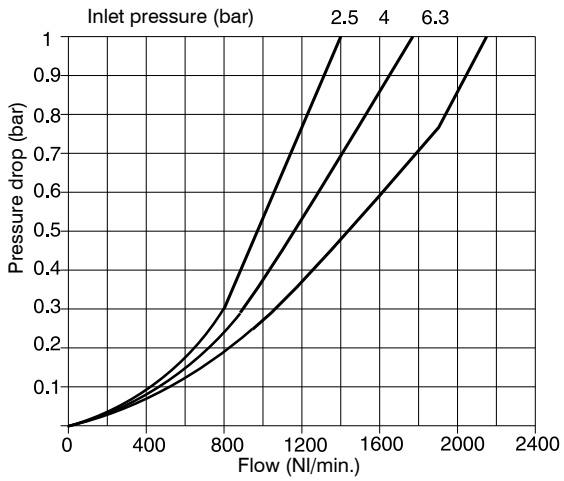
Characteristic curves

Flow rate curves



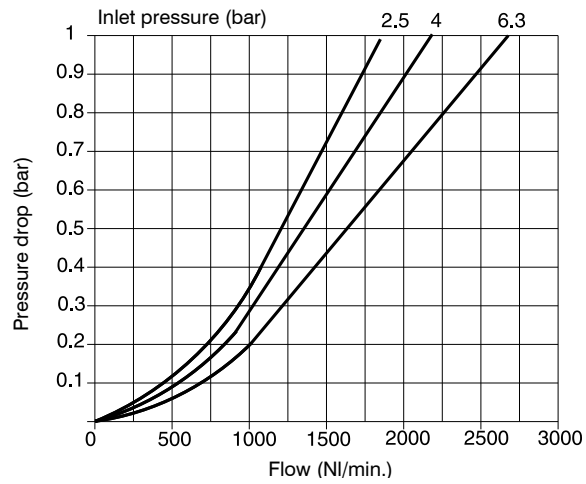
Size 1

Flow rate curves



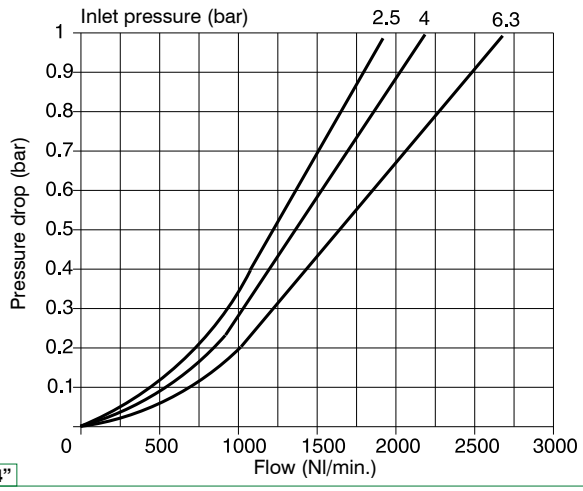
Size 2

Flow rate curves



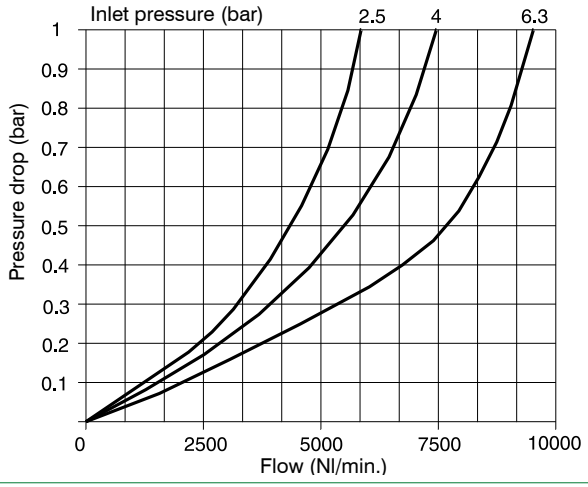
Size 3

Flow rate curves



Size 3 3/4"

Flow rate curves



Size 4

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Coalescing filters



- Coalescing filter
- Available in 4 sizes with flow rates up to 3000 Nl/min and connections from 1/8” to 1”
- Filtering cartridge with filtration grade of 0,01 μm
- Filtering performances 99.97% (particles up to 0.01 μm)
- Bowls screwed to the body (Size 1)
- Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 - Size 3 - Size 4)
- Semi-automatic or automatic drain
- Atex certification (II 2GD o II 3GD) on request



Note
In order to ensure the high level of filtration, it is recommended that a 5μ filter is installed before the coalescing filter. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you use a 6mm fitting and tube.

Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections		
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)			Metal bowl with blind metal bowl
IN / OUT connections	G1/8” - G1/4”	G1/4” - G3/8”	G3/8” - G1/2”, G3/4”	G1”
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M8 screws
Assembly position	Vertical ±5°			
Filter pore size (μm)	0,01 efficiency of 99,97%			
Bowl capacity (cm³)	20	30	48	178
Condensation drain	Semi-automatic Automatic			
Max. fittings torque IN / OUT connections (Nm)	G1/8” metal: 15 G1/4” metal: 20	G1/4” metal: 20 G3/8” metal: 25	G3/8” metal: 25 G1/2” metal: 30 G3/4” metal: 35	G1”metal: 35

Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain	Semi-automatic				Automatic			
Maximum working pressure (bar)	13				10			
Minimum working pressure (bar)	0,5							
Working temperature (°C)	-5 ... +50							

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	225	/	/	/
Technopolymer body version (g)	110	/	/	/
Aluminium body version (g)	/	255	405	1700

Order codes



Size, body and connections	
008A	Zinc alloy body, connections G1/8” (only for size 1)
008B	Zinc alloy body, connections G1/4” (only for size 1)
108A	Technopolymer body, connections G1/8” (only for size 1)
108B	Technopolymer body, connections G1/4” (only for size 1)
208A	Aluminium body, connections G1/4” (only for size 2)
208B	Aluminium body, connections G3/8” (only for size 2)
308A	Aluminium body, connections G3/8” (only for size 3)
308B	Aluminium body, connections G1/2” (only for size 3)
308E	Aluminium body, connections G3/4” (only for size 3)
408B	Aluminium body, connections G1” (only for size 4)

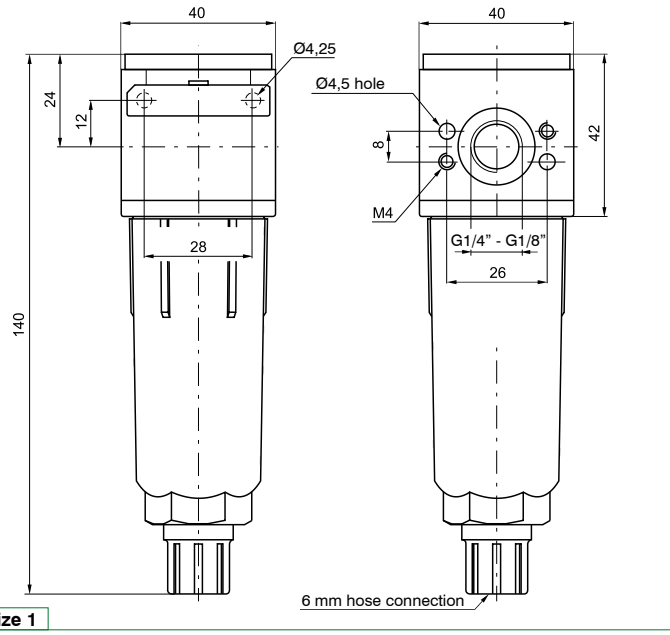
Filter efficiency	
E	0,01 μm, efficiency of 99,97%

Type	
P	Bowl protection (only for size 1)
S	Automatic drain (for all sizes)
PS	Bowl protection and automatic drain (only for size 1)

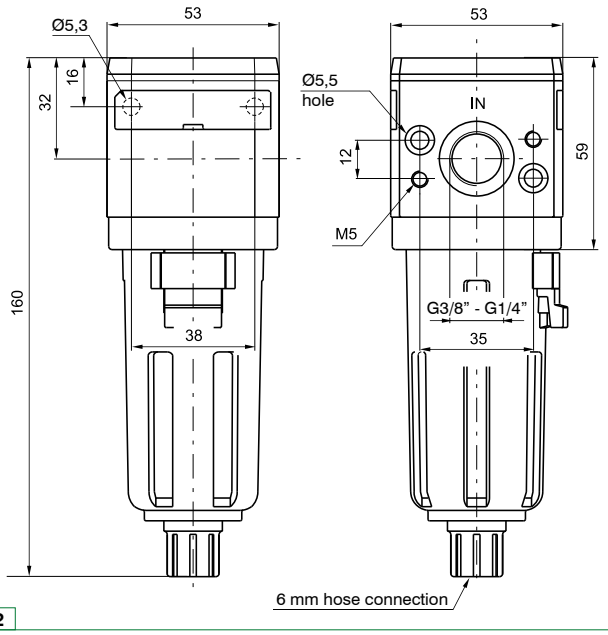
Example: 17308A.E.S
Size 3, coalescing filter, aluminium body, G3/8” connections, filter efficiency of 99,97%, automatic drain

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

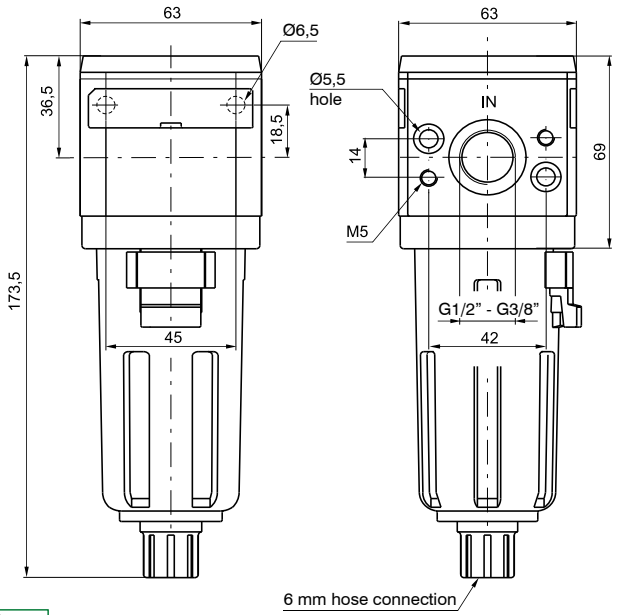
Dimensions



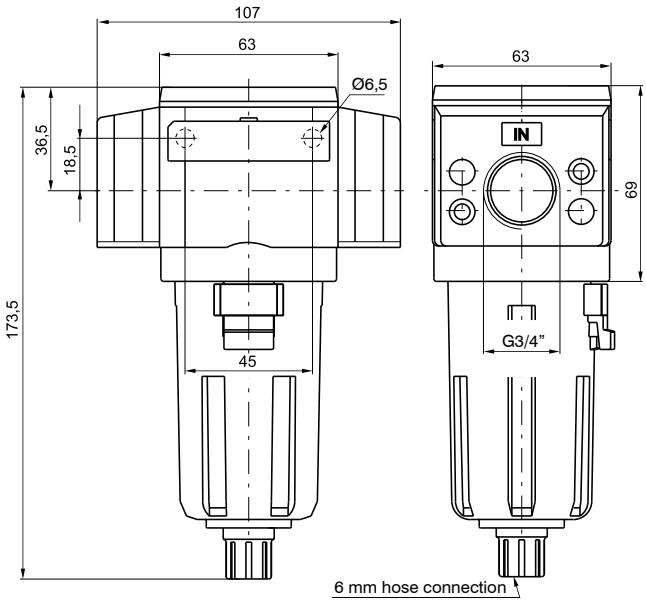
Size 1



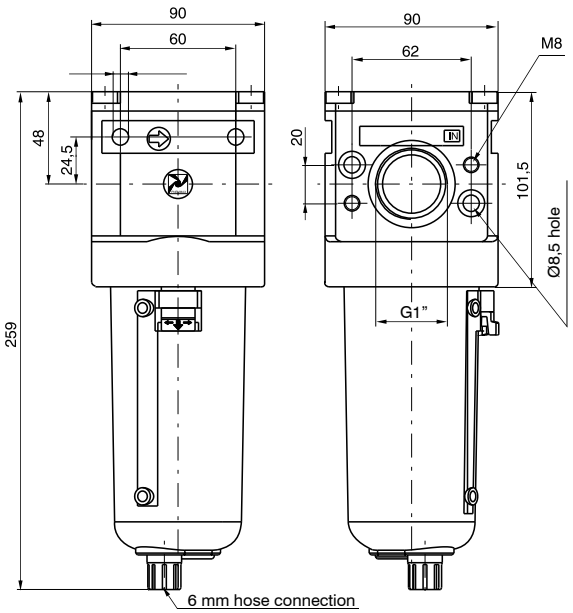
Size 2



Size 3



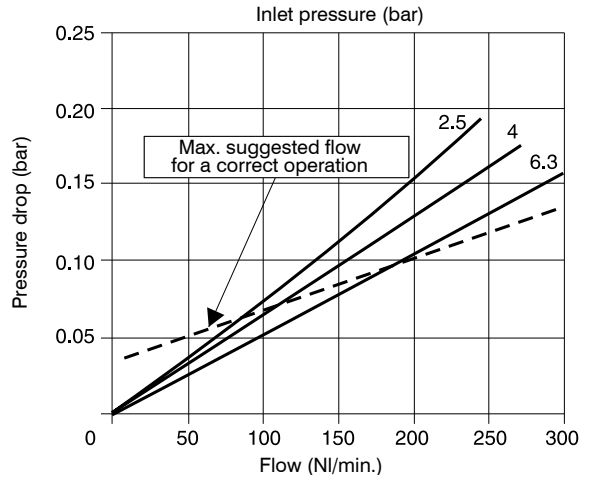
Size 3 3/4"



Size 4

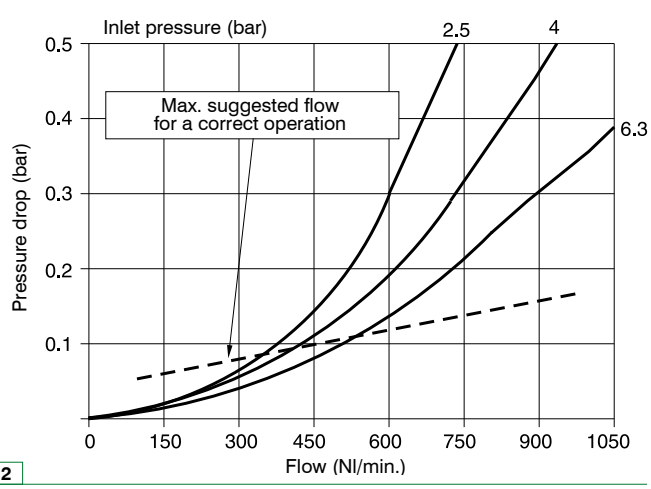
Characteristic curves

Flow rate curves



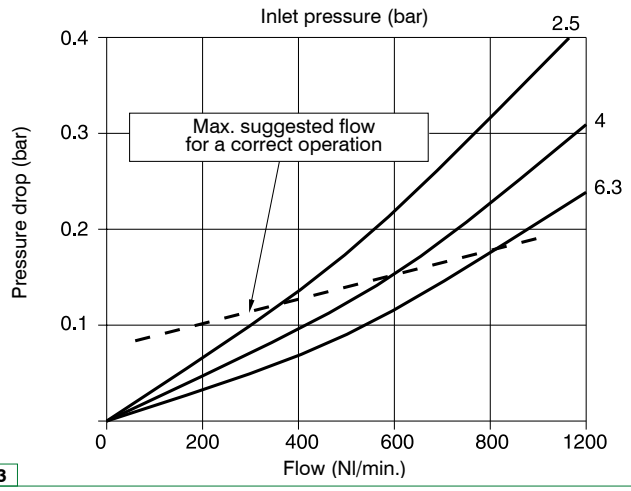
Size 1

Flow rate curves



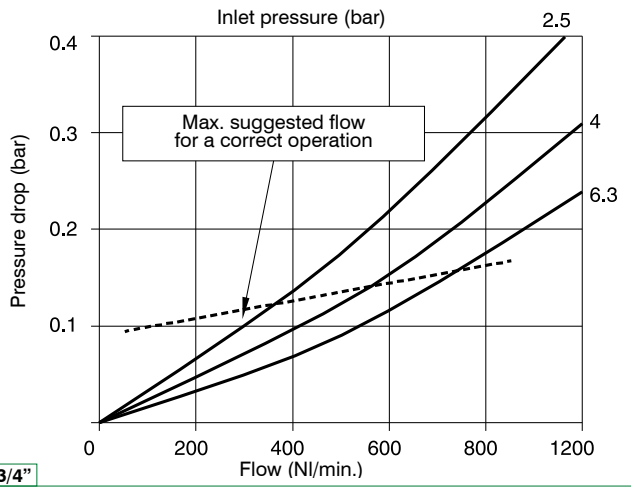
Size 2

Flow rate curves



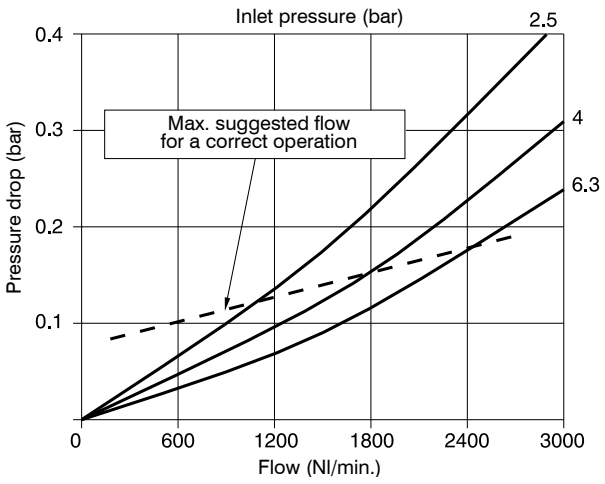
Size 3

Flow rate curves



Size 3 3/4"

Flow rate curves



Size 4

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Dynamic drier



- Aluminium body
- Wall mounting possibility with M8 screws
- Filtering cartridge made of HDPE available in three different filtration grades (5µm, 20µm, 50µm)
- Filter cartridge can be regenerated by washing / blowing it or replaced
- With blind metal bowl
- Bowl assembly via bayonet type quick coupling mechanism with safety button
- Automatic condensation drain

Technical characteristics	
Size	Size 4
Body and connections type	Aluminium body with integrated aluminium connections
Protection and bowl type	Metal bowl with blind metal bowl
IN / OUT connections	G1"
Assembly configuration	Stand alone Panel mounted with M8 screws
Assembly position	Vertical ±5°
Filter pore size (µm)	5 / 20 / 50
Filter efficiency at flow rate 1500 Nl/min	96,00%
Bowl capacity (cm³)	160
Condensation drain	Automatic
Max. fittings torque IN / OUT connections (Nm)	G1"metal: 35

Operational characteristics	
Size	Size 4
Condensation drain	Automatic
Maximum working pressure (bar)	13
Minimum working pressure (bar)	0,5
Nominal flow rate at 6 bar with Δp=1 (Nl/min)	2500
Working temperature (°C)	-5 ... +50

Weights	
Size	Size 4
Aluminium body version (g)	1700

Order codes

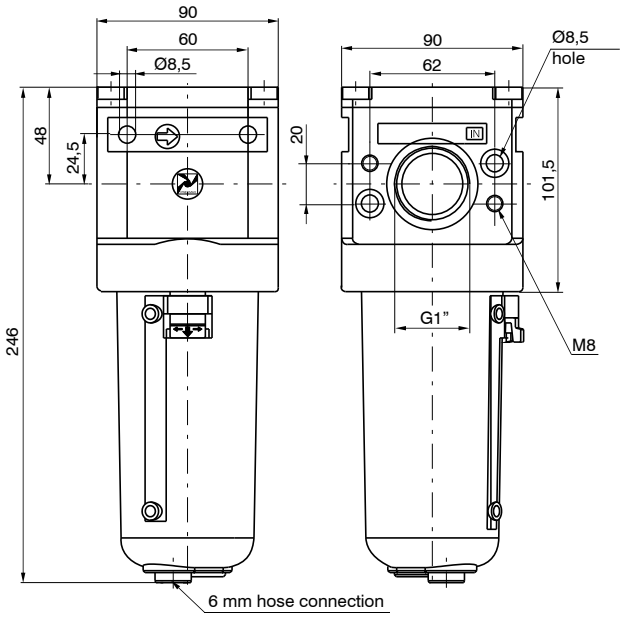
17 | 40EB | . | A | . S

Size, body and connections	
40EB	Aluminium body, connections G1" (only for size 4)

Filter pore size	
A	5 μm
B	20 μm
C	50 μm

Example: 1740EB.A.S
Size 4, dynamic drier, aluminium body, G1" connections, filter pore size 5 μm

Dimensions



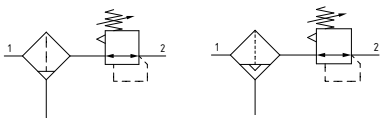
Size 4

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Filter regulators



- Filter - diaphragm pressure regulator with relieving
- Available in 3 sizes with flow rates up to 3500 Nl/min and connections from 1/8" to 3/4"
- Low histeresis rolling diaphragm and balanced spool
- Filtering element made of HDPE available in 3 different filtration grades (5µm, 20µm and 50µm)
- Bowls screwed to the body (Size 1)
- Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 - Size 3)
- Semi-automatic or automatic drain
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Atex certification (II 2GD o II 3GD) on request



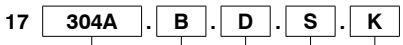
Note
For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use. In order to ensure that any fluid discharged by the auto drain assembly is adequately drained away, it is recommended you to use a 6mm fitting and tube.

Technical characteristics			
Size	Size 1	Size 2	Size 3
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections	
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)		
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M5 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M6 screws With fixing bracket
Assembly position	Vertical ±5°		
Filter pore size (µm)	5 / 20 / 50		
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12		
Bowl capacity (cm^3)	20	30	48
Condensation drain	Semi-automatic Automatic		
Regulation	Manual push and lock with pressure Manual lockable with accessories		
Pressure measurement	G1/8" Pressure gauge connection port		
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25	G3/8" metal: 25 G1/2" metal: 30 G3/4" metal: 35

Operational characteristics						
Size	Size 1	Size 2	Size 3	Size 1	Size 2	Size 3
Condensation drain	Semi-automatic			Automatic		
Maximum working pressure (bar)	13			10		
Minimum working pressure (bar)	0,5					
Working temperature (°C)	-5 ... +50					

Weights			
Size	Size 1	Size 2	Size 3
Zinc alloy body version (g)	295	/	/
Technopolymer body version (g)	180	/	/
Aluminium body version (g)	/	450	645

Order codes



Size, body and connections	
004A	Zinc alloy body, connections G1/8" (only for size 1)
004B	Zinc alloy body, connections G1/4" (only for size 1)
104A	Technopolymer body, connections G1/8" (only for size 1)
104B	Technopolymer body, connections G1/4" (only for size 1)
204A	Aluminium body, connections G1/4" (only for size 2)
204B	Aluminium body, connections G3/8" (only for size 2)
304A	Aluminium body, connections G3/8" (only for size 3)
304B	Aluminium body, connections G1/2" (only for size 3)
304E	Aluminium body, connections G3/4" (only for size 3)

Filter pore size	
A	5 μm
B	20 μm
C	50 μm

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

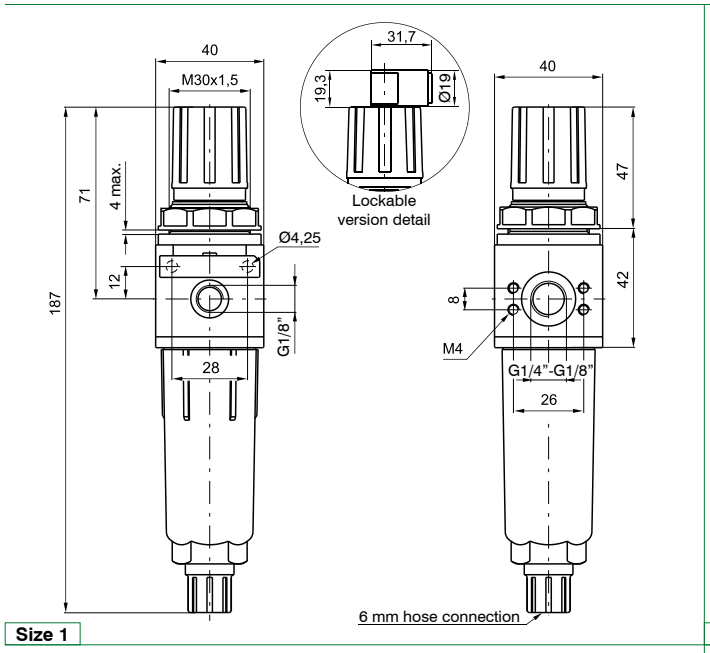
Type	
P	Bowl protection (only for size 1)
S	Automatic drain (for all sizes)
PS	Bowl protection and automatic drain (only for size 1)

Options	
	Standard
K	Lockable version
KF	Lockable version with universal key

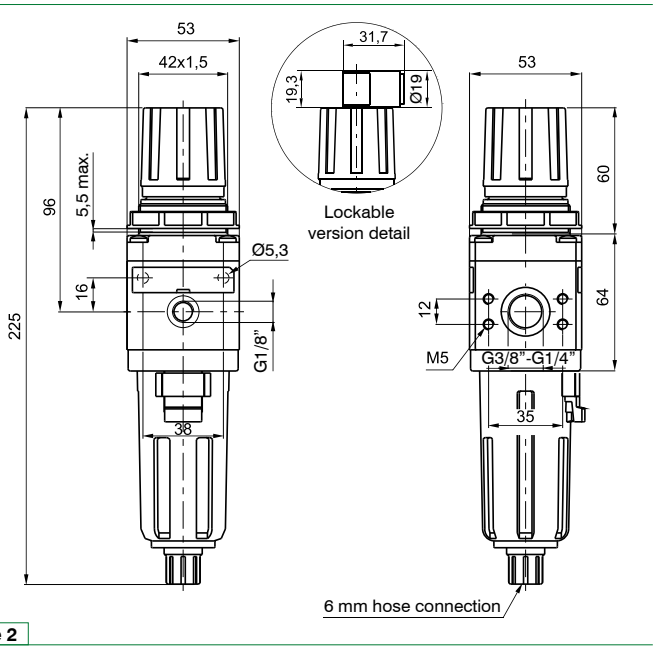
Example: 17304A.B.D.S.K
Size 3, filter regulator, aluminium body, G3/8" connections, filter pore size 20 μm 0 - 12 bar, automatic drain lockable version

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

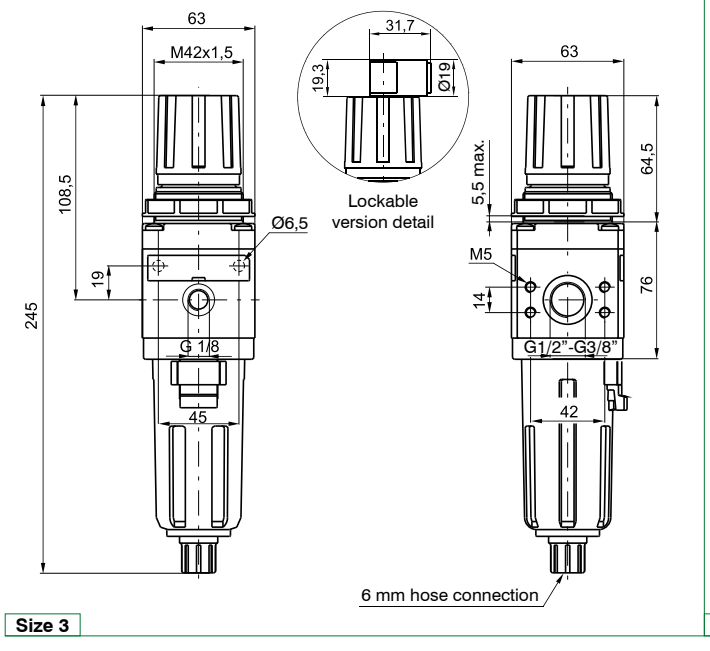
Dimensions



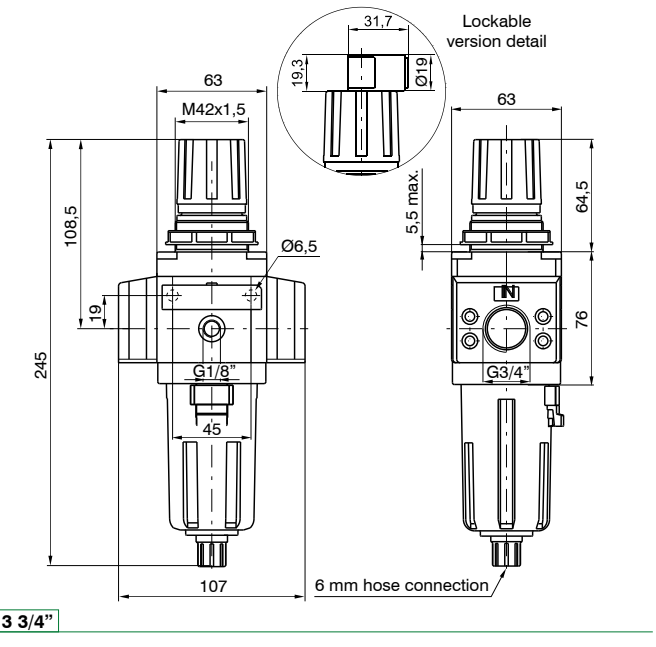
Size 1



Size 2



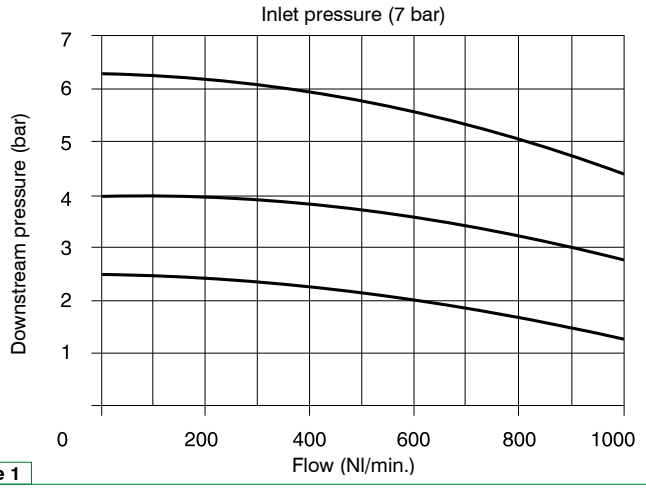
Size 3



Size 3 3/4"

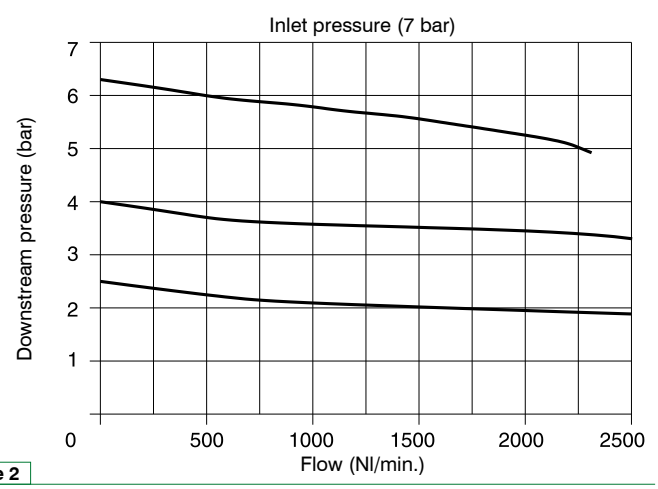
Characteristic curves

Flow rate curves



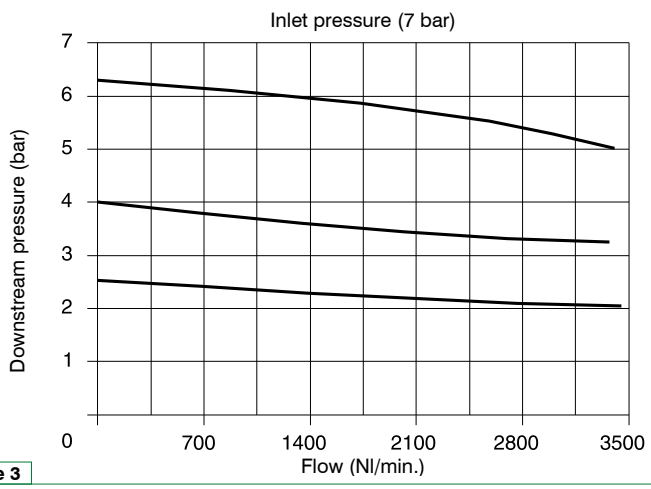
Size 1

Flow rate curves



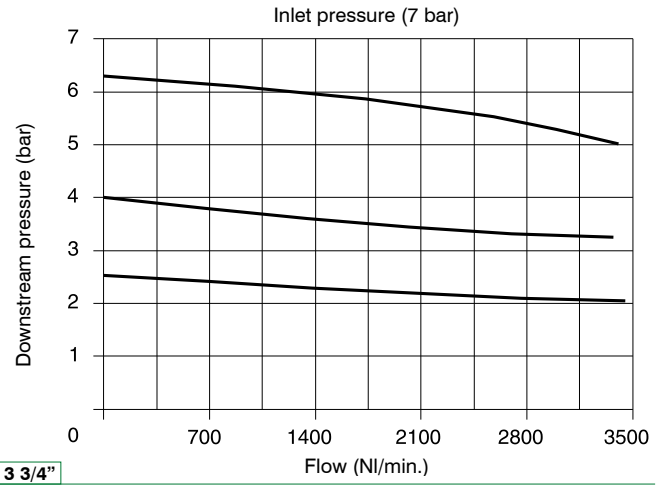
Size 2

Flow rate curves



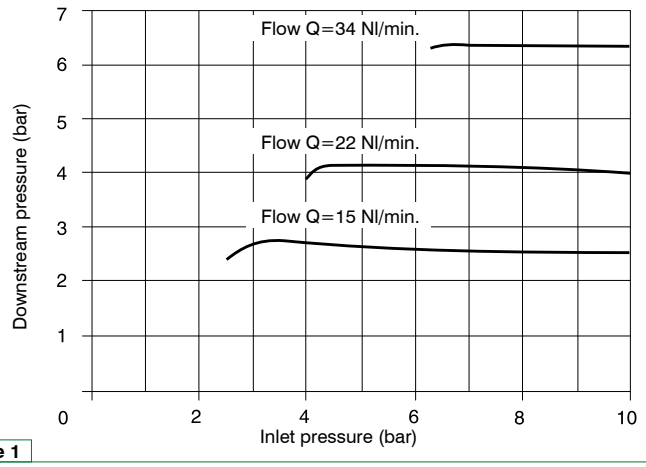
Size 3

Flow rate curves



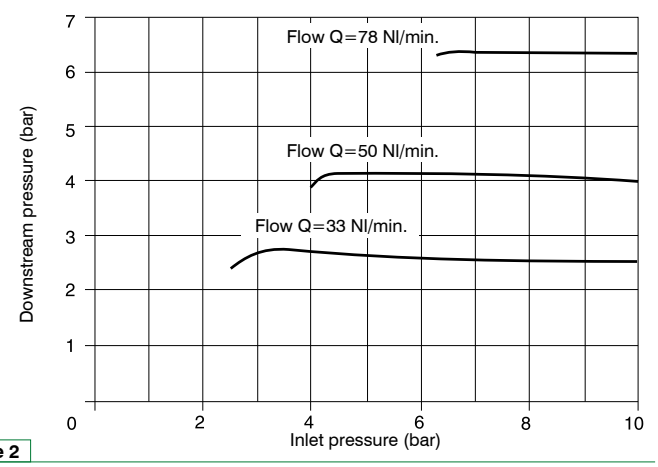
Size 3 3/4"

Adjustment characteristic



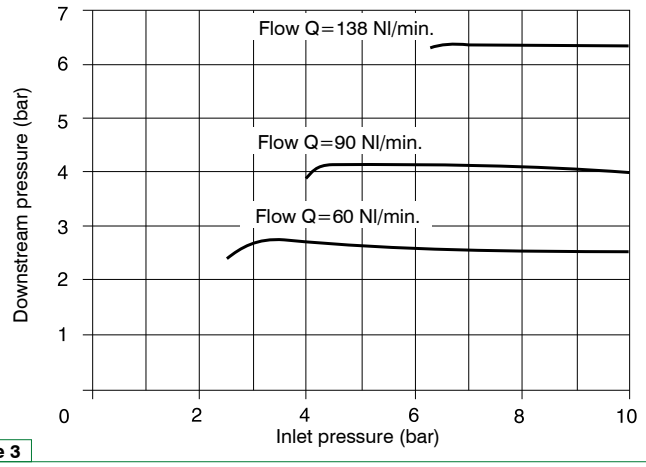
Size 1

Adjustment characteristic



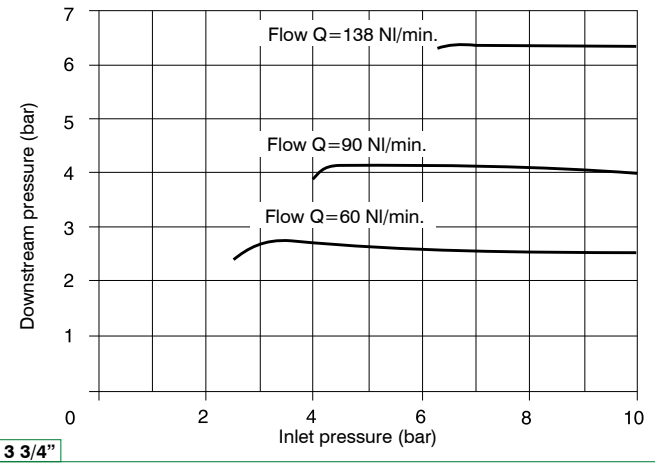
Size 2

Adjustment characteristic



Size 3

Adjustment characteristic



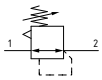
Size 3 3/4"

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Regulators



- Diaphragm pressure regulator with relieving
- Available in 4 sizes with flow rates up to 8000 Nl/min and connections from 1/8” to 1”
- Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- High flow rate of the discharge valve for the dowstream overpressure (Size 4)
- Atex certification (II 2GD o II 3GD) on request



Note
For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections		
IN / OUT connections	G1/8” - G1/4”	G1/4” - G3/8”	G3/8” - G1/2”, G3/4”	G1”
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M5 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M6 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M8 screws
Assembly position	Indifferent			
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12			
Regulation	Manual push and lock with pressure Manual lockable with accessories			
Pressure measurement	G1/8” Pressure gauge connection port			
Max. fittings torque IN / OUT connections (Nm)	G1/8” metal: 15 G1/4” metal: 20	G1/4” metal: 20 G3/8” metal: 25	G3/8” metal: 25 G1/2” metal: 30 G3/4” metal: 35	G1” metal: 35

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure (bar)	13			
Minimum working pressure (bar)	0,5			
Working temperature (°C)	-5 ... +50			

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	250	/	/	/
Technopolymer body version (g)	135	/	/	/
Aluminium body version (g)	/	390	550	1900

Order codes

17 | 302A | . | D | . | L | . | K

Size, body and connections	
002A	Zinc alloy body, connections G1/8” (only for size 1)
002B	Zinc alloy body, connections G1/4” (only for size 1)
102A	Technopolymer body, connections G1/8” (only for size 1)
102B	Technopolymer body, connections G1/4” (only for size 1)
202A	Aluminium body, connections G1/4” (only for size 2)
202B	Aluminium body, connections G3/8” (only for size 2)
302A	Aluminium body, connections G3/8” (only for size 3)
302B	Aluminium body, connections G1/2” (only for size 3)
302E	Aluminium body, connections G3/4” (only for size 3)
402NB	Aluminium body, connections G1” (only for size 4)

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

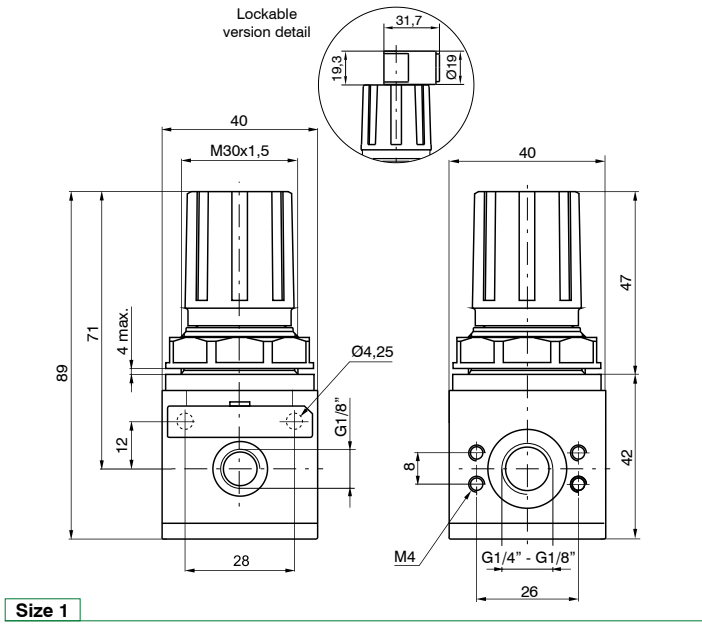
Type	
L	Without relieving
SM	Improved relieving (not available for Size 4)

Options	
	Standard
K	Lockable version
KF	Lockable version with universal key

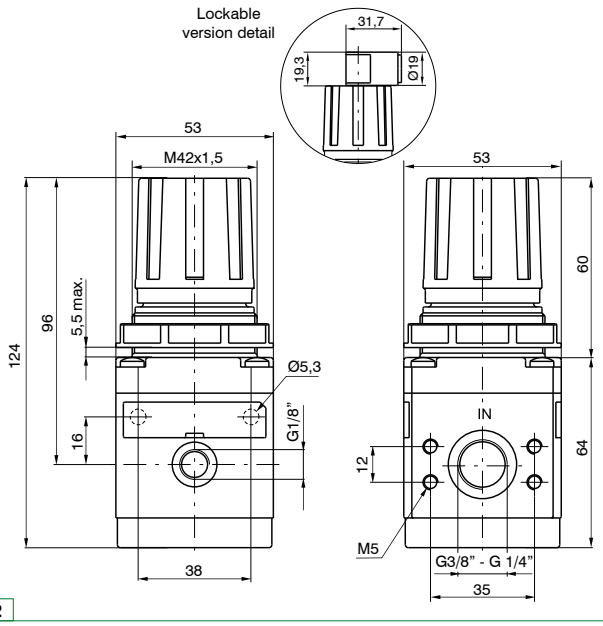
Example: 17302A.D.L.K
Size 3, regulator, body in light aluminium alloy, G3/8”connections, 0 - 12 bar, without relieving, lockable version

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

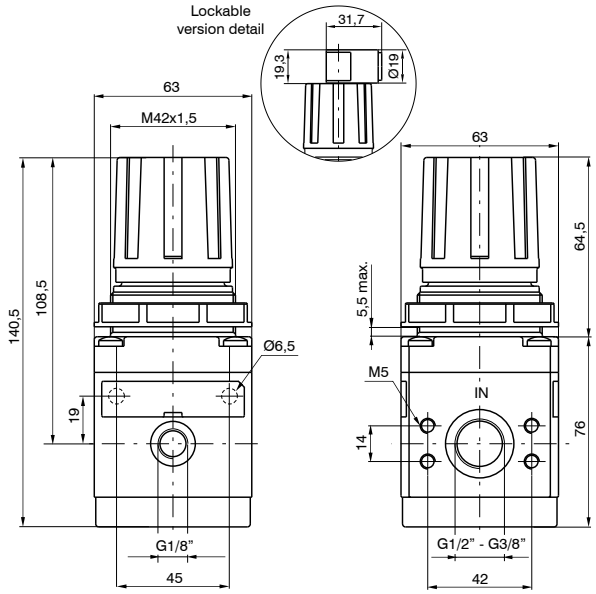
Dimensions



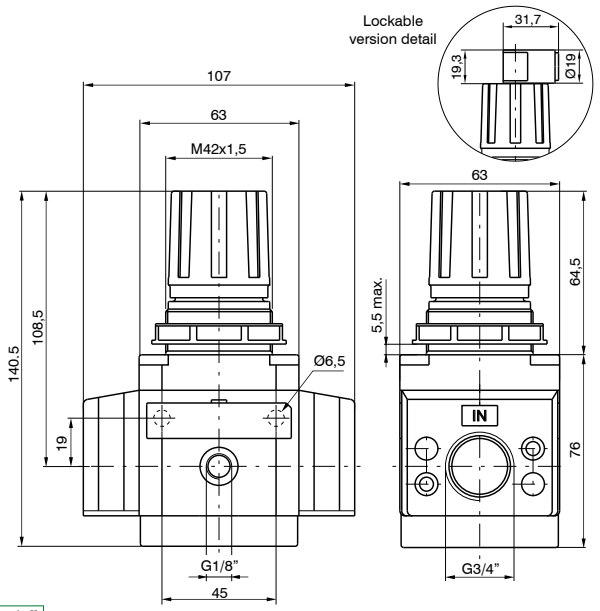
Size 1



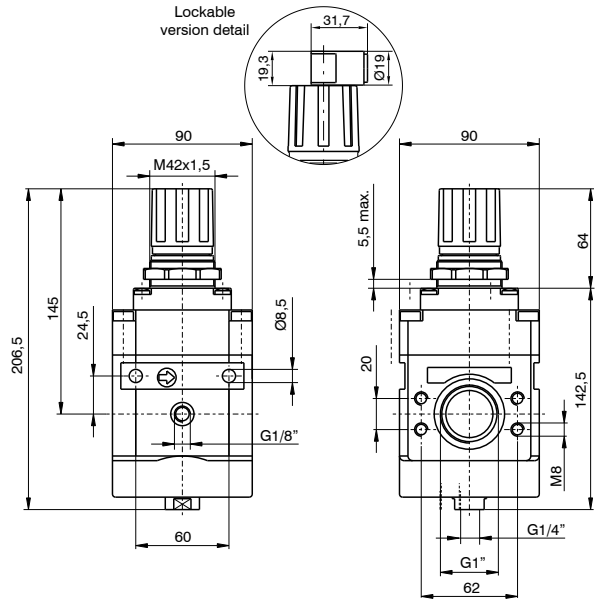
Size 2



Size 3



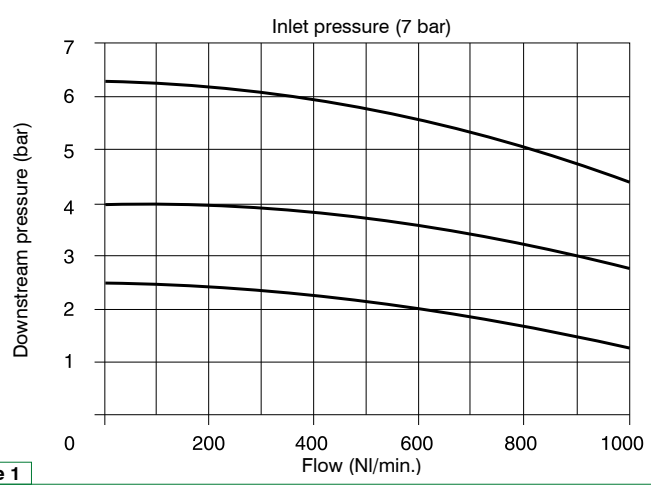
Size 3 3/4"



Size 4

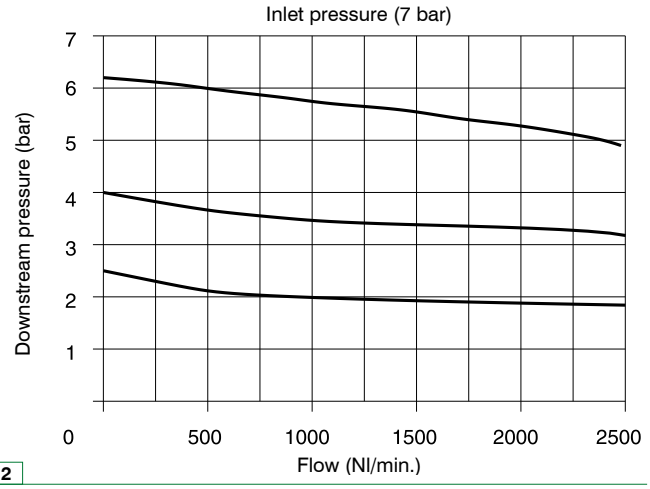
Characteristic curves

Flow rate curves



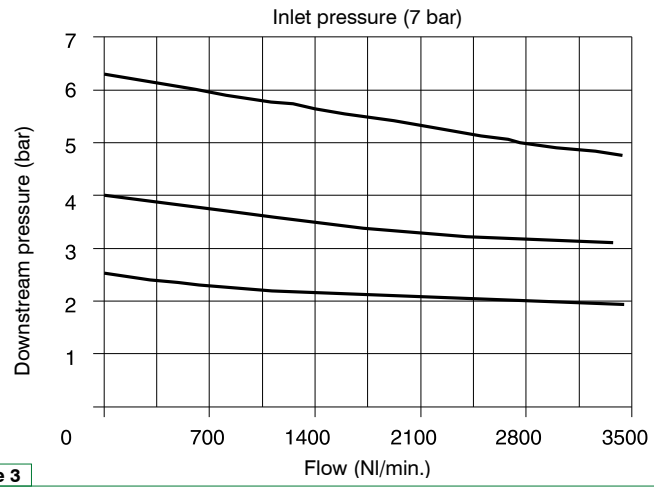
Size 1

Flow rate curves



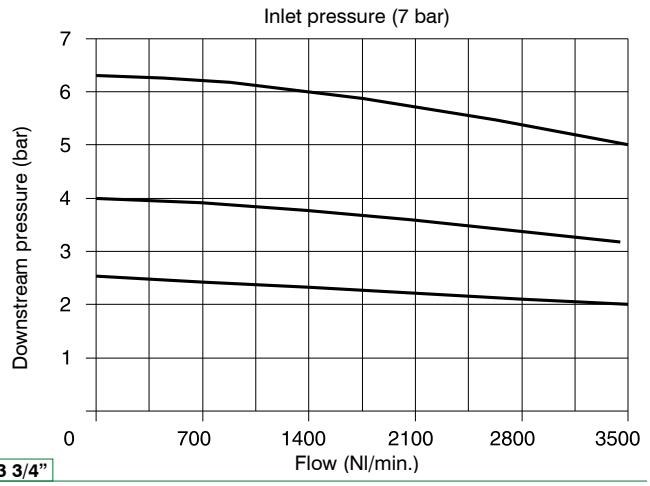
Size 2

Flow rate curves



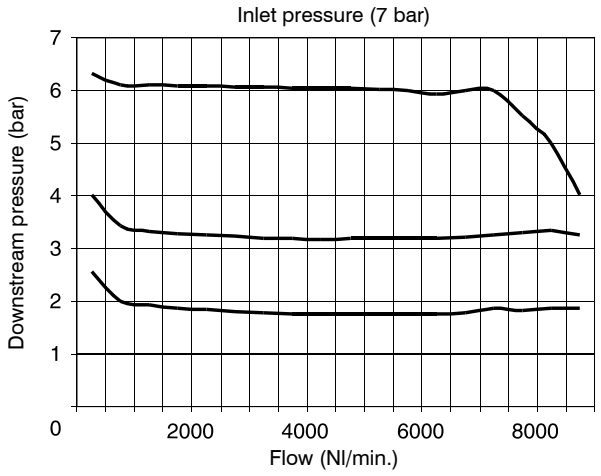
Size 3

Flow rate curves



Size 3 3/4"

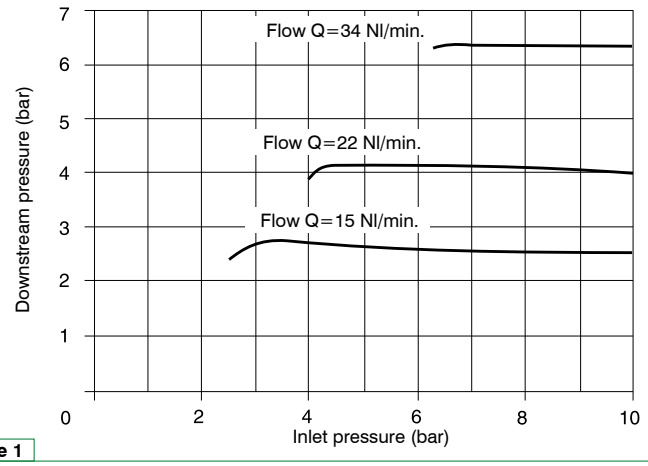
Flow rate curves



Size 4

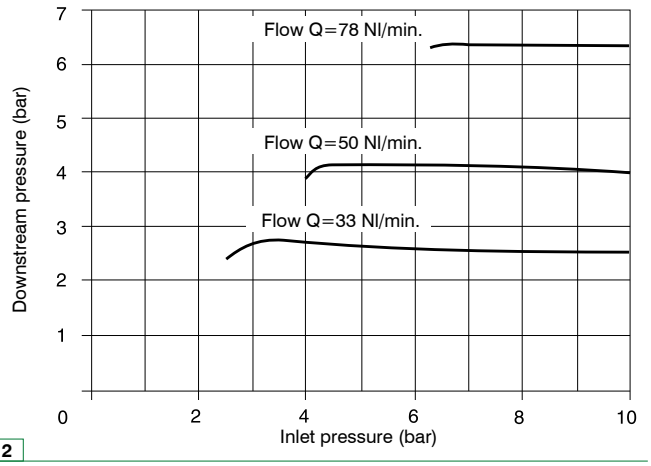
Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Adjustment characteristic



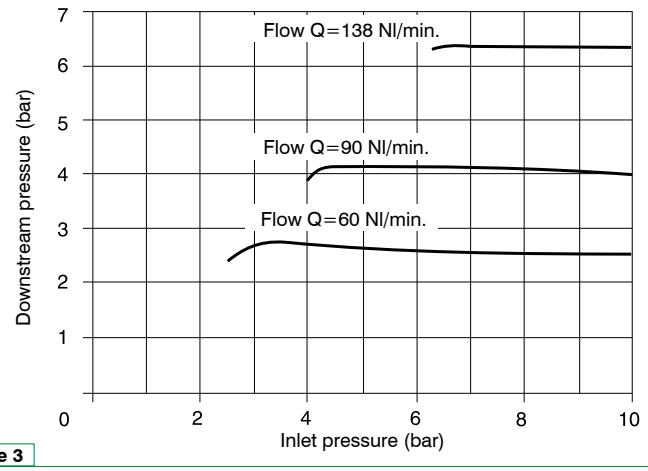
Size 1

Adjustment characteristic



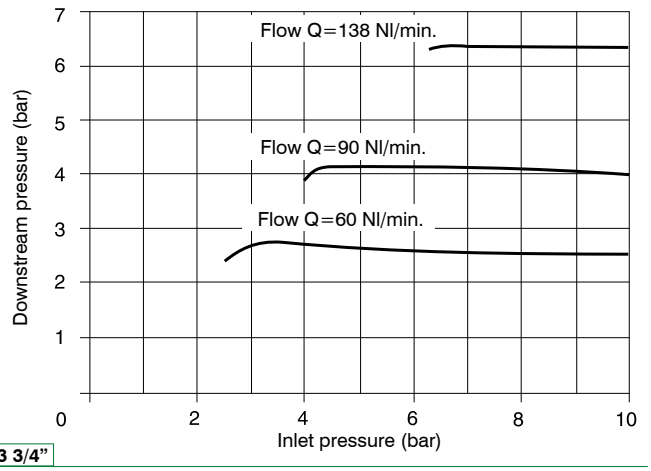
Size 2

Adjustment characteristic



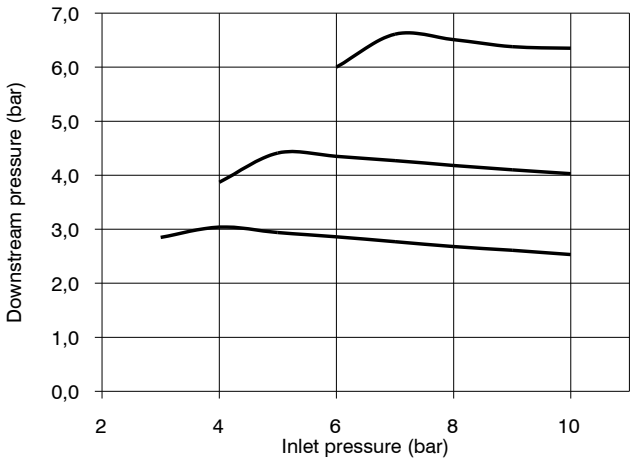
Size 3

Adjustment characteristic



Size 3 3/4"

Adjustment characteristic



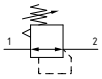
Size 4

2 AIR TREATMENT

Regulators with integrated pressure gauge



- Diaphragm pressure regulator with relieving
- Available in 4 sizes with flow rates up to 3500 Nl/min and connections from 1/8” to 1/2”
- Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Fitted with panel mounting locking ring
- Pressure gauge included on the top of adjusting knob
- Atex certification (II 2GD o II 3GD) on request



Note
For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics			
Size	Size 1	Size 2	Size 3
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections	
IN / OUT connections	G1/8” - G1/4”	G1/4” - G3/8”	G3/8” - G1/2”
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M5 screws With fixing bracket	Stand alone Panel mounting Panel mounted with M6 screws With fixing bracket
Assembly position	Indifferent		
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12		
Regulation	Manual push and lock with pressure		
Pressure measurement	G1/8” Pressure gauge connection port is included on the top of adjusting knob		
Max. fittings torque IN / OUT connections (Nm)	G1/8” metal: 15 G1/4” metal: 20	G1/4” metal: 20 G3/8” metal: 25	G3/8” metal: 25 G1/2” metal: 30

Operational characteristics			
Size	Size 1	Size 2	Size 3
Maximum working pressure (bar)	13		
Minimum working pressure (bar)	0,5		
Working temperature (°C)	-5 ... +50		

Weights			
Size	Size 1	Size 2	Size 3
Zinc alloy body version (g)	380	/	/
Technopolymer body version (g)	250	/	/
Aluminium body version (g)	/	440	600

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Order codes

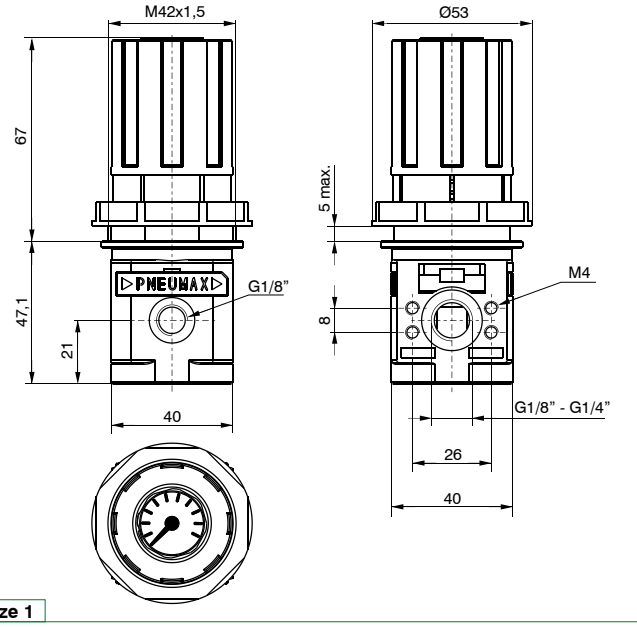
17 | 322A | . | D

Size, body and connections	
022A	Zinc alloy body, connections G1/8” (only for size 1)
022B	Zinc alloy body, connections G1/4” (only for size 1)
122A	Technopolymer body, connections G1/8” (only for size 1)
122B	Technopolymer body, connections G1/4” (only for size 1)
222A	Aluminium body, connections G1/4” (only for size 2)
222B	Aluminium body, connections G3/8” (only for size 3)
322A	Aluminium body, connections G3/8” (only for size 3)
322B	Aluminium body, connections G1/2” (only for size 3)

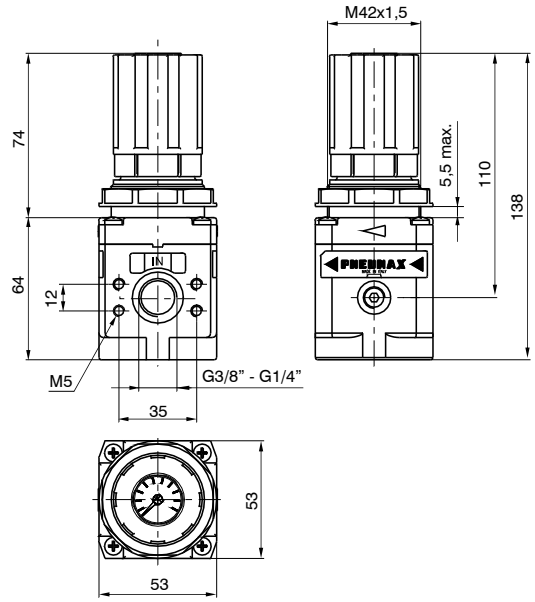
Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Example: 17322A.D
Size 3, regulator with integrated pressure gauge, aluminium body, G3/8” connections, 0 - 12 bar

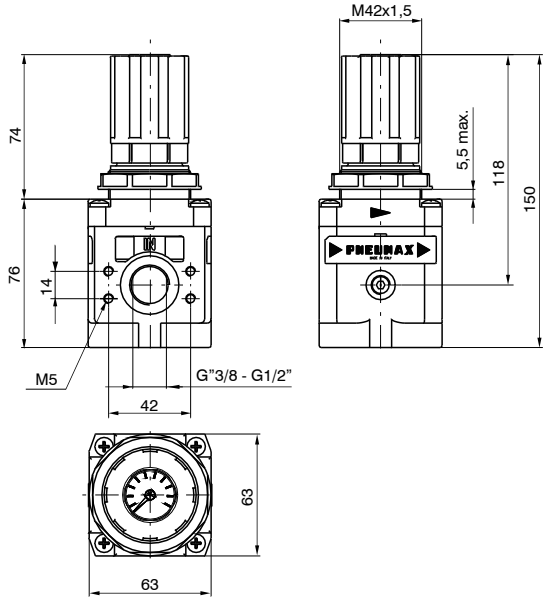
Dimensions



Size 1



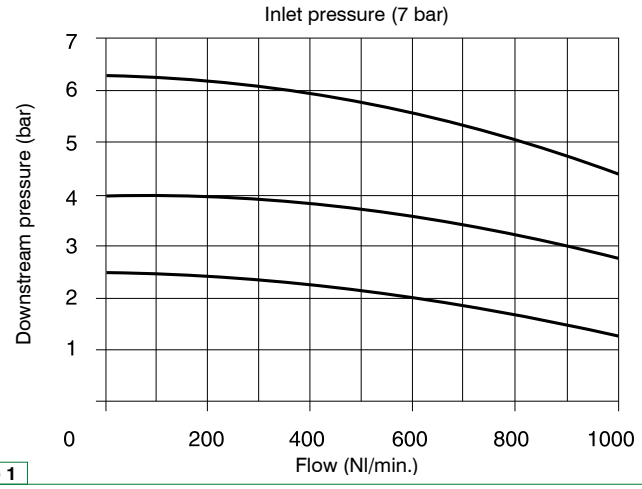
Size 2



Size 3

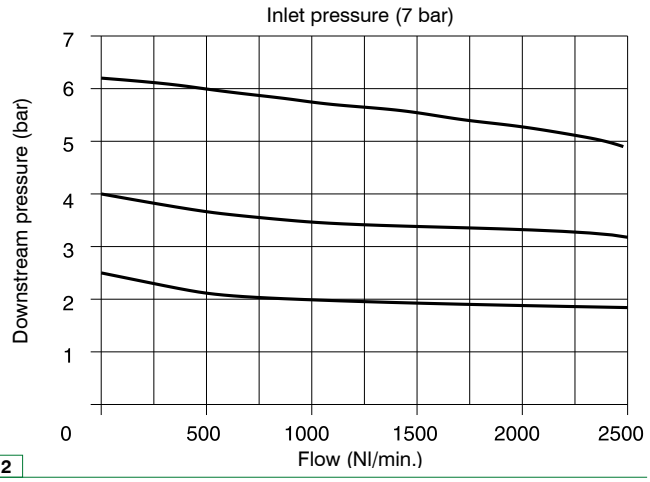
Characteristic curves

Flow rate curves



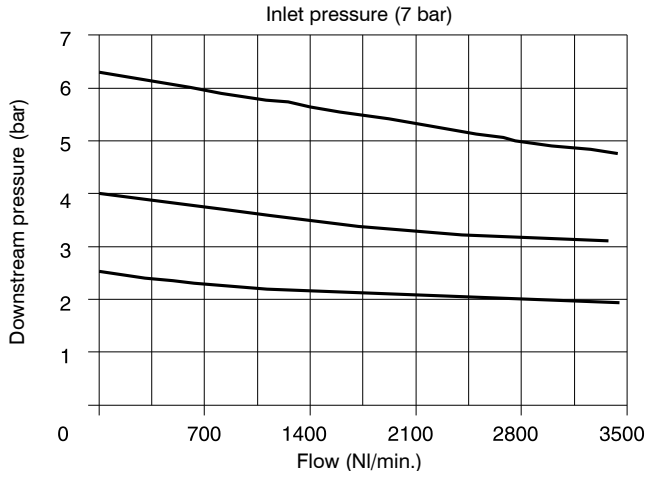
Size 1

Flow rate curves



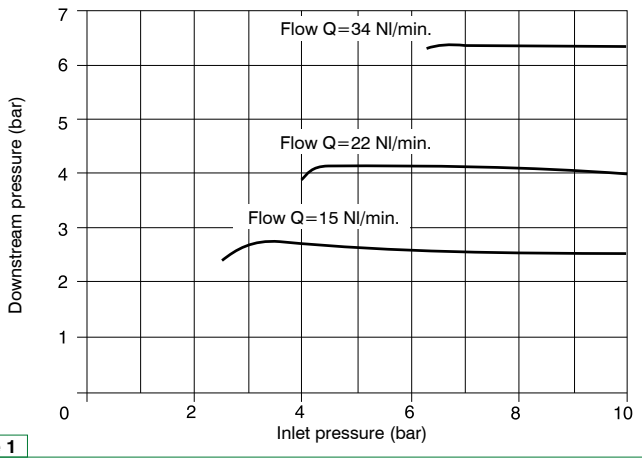
Size 2

Flow rate curves



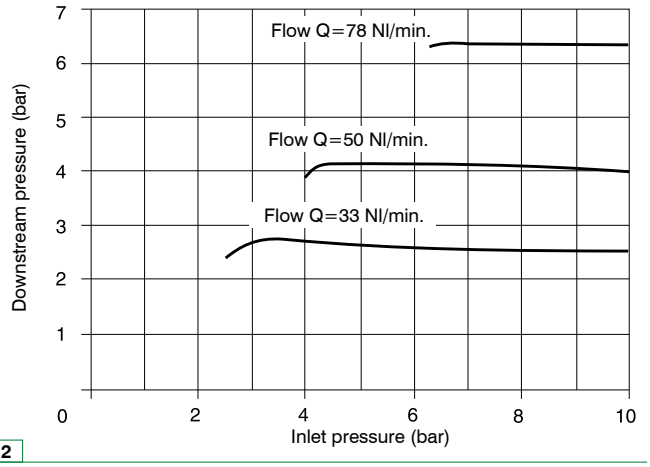
Size 3

Adjustment characteristic



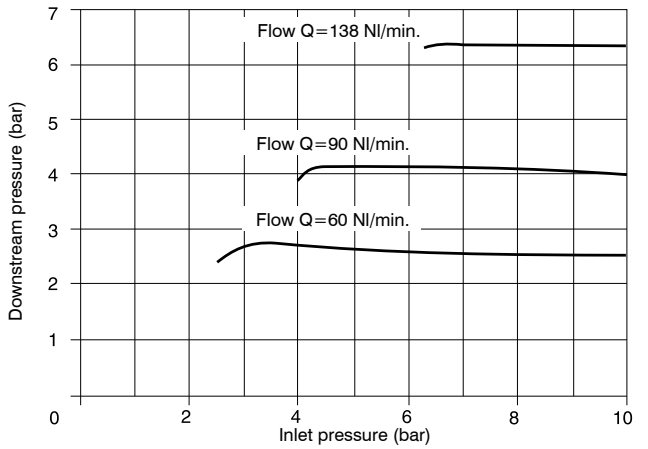
Size 1

Adjustment characteristic



Size 2

Adjustment characteristic



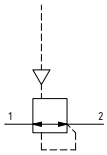
Size 3

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Piloted pressure regulators



- Diaphragm piloted pressure regulator
- Available in 3 sizes with flow rates up to 3500 Nl/min and connections from 1/4" a 1"
- Atex certification (II 2GD o II 3GD) on request



Note
Always regulate the rising pressure.

Technical characteristics			
Size	Size 2	Size 3	Size 4
Body and connections type	Aluminium body, integrated aluminium connections		
IN / OUT connections	G1/4" - G3/8"	G3/8" - G1/2"	G1"
Assembly configuration	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M8 screws
Assembly position	Indifferent		
Pressure range (bar)	0,5...10		
Regulation	Pneumatic piloting		
Pressure measurement	G1/8" Pressure gauge connection port		
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20 G3/8" metal: 25	G3/8" metal: 25 G1/2" metal: 30	G1" metal: 35

Operational characteristics			
Size	Size 2	Size 3	Size 4
Maximum working pressure (bar)	13		
Minimum working pressure (bar)	0,5		
Pilot pressure range (bar)	0,5...10		
Working temperature (°C)	-5 ... +50		

Weights			
Size	Size 2	Size 3	Size 4
Aluminium body version (g)	313	510	1638

Order codes

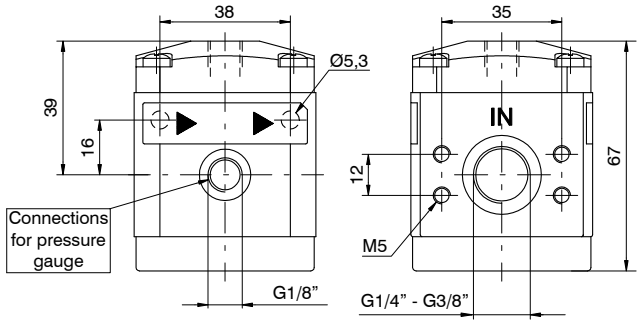
17 **302A** . P . **L**

Size, body and connections	
202A	Aluminium body, connections G1/4" (only for size 2)
202B	Aluminium body, connections G3/8" (only for size 2)
302A	Aluminium body, connections G3/8" (only for size 3)
302B	Aluminium body, connections G1/2" (only for size 3)
402NB	Aluminium body, connections G1" (only for size 4)

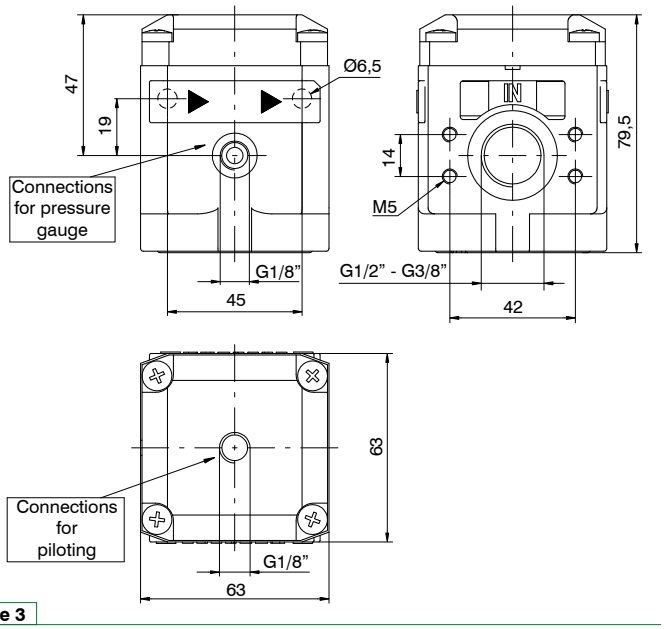
Options	
	Standard
L	Without relieving (not available for Size 4)

Example: 17302A.P.L
Size 3, piloted pressure regulator, aluminium body, G3/8" connections, without relieving

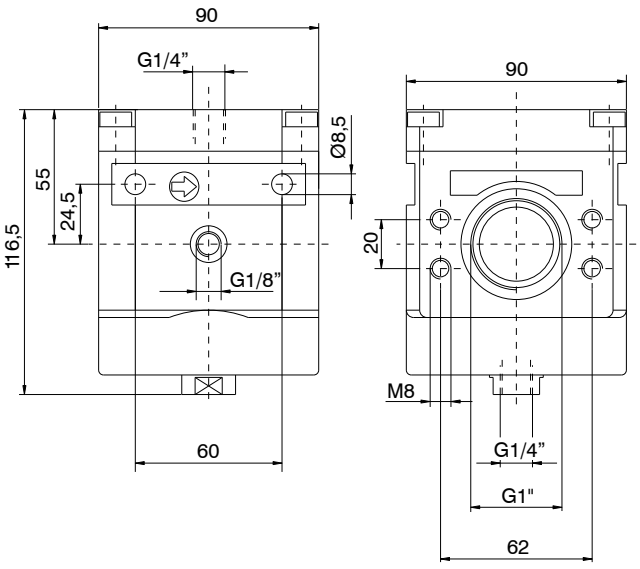
Dimensions



Size 2



Size 3

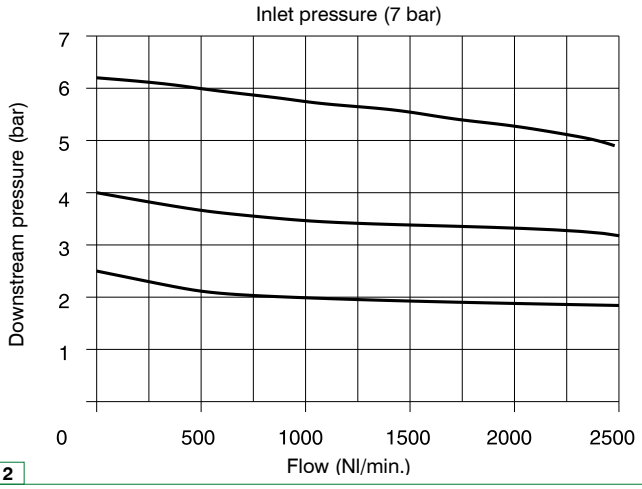


Size 4

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

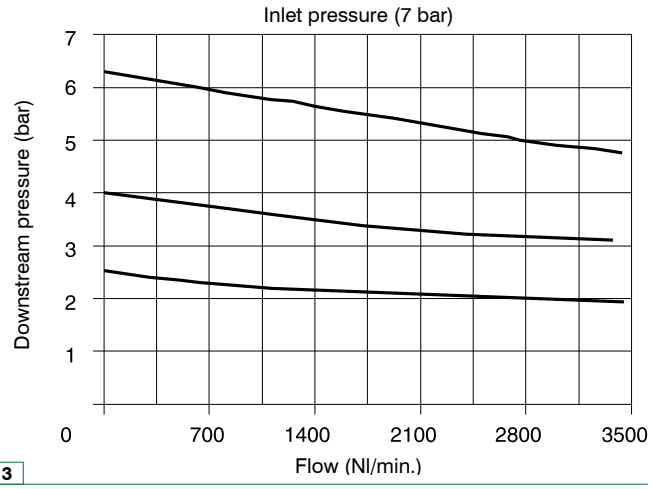
Characteristic curves

Flow rate curves



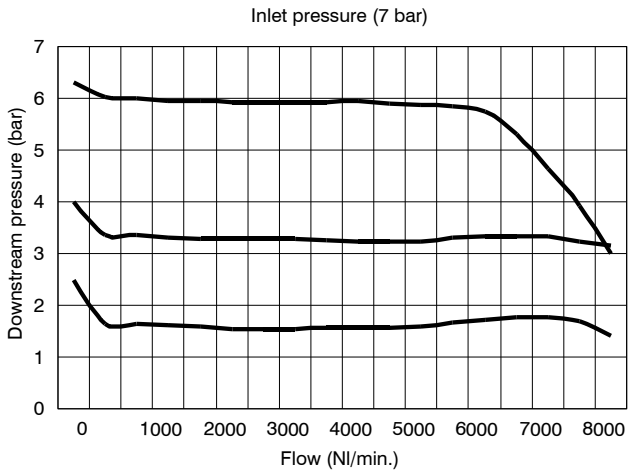
Size 2

Flow rate curves



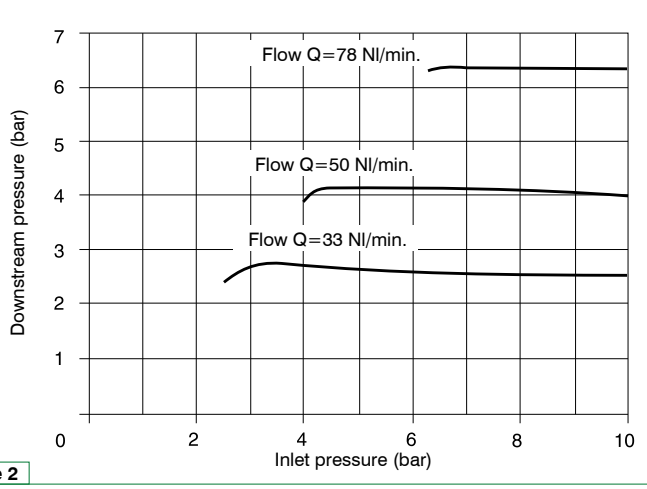
Size 3

Flow rate curves



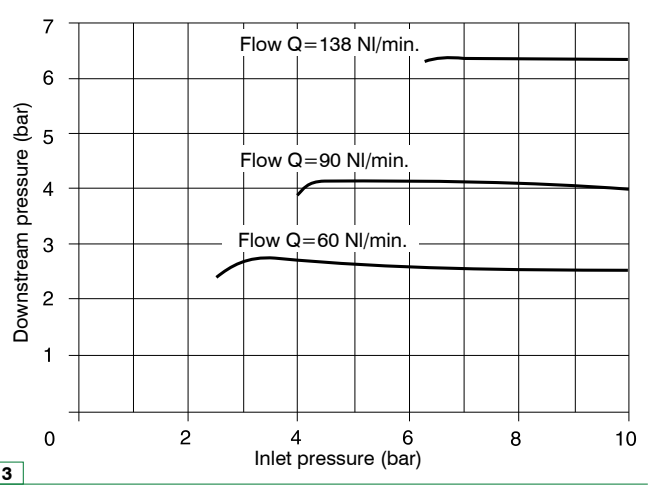
Size 4

Adjustment characteristic



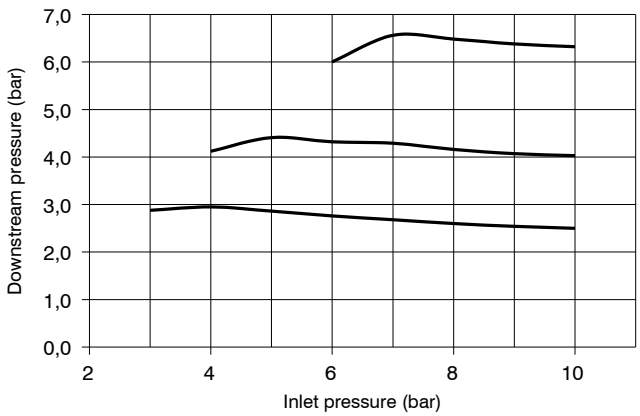
Size 2

Adjustment characteristic



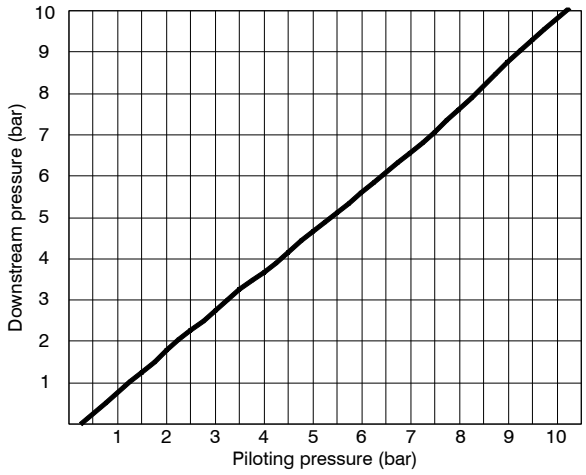
Size 3

Adjustment characteristic



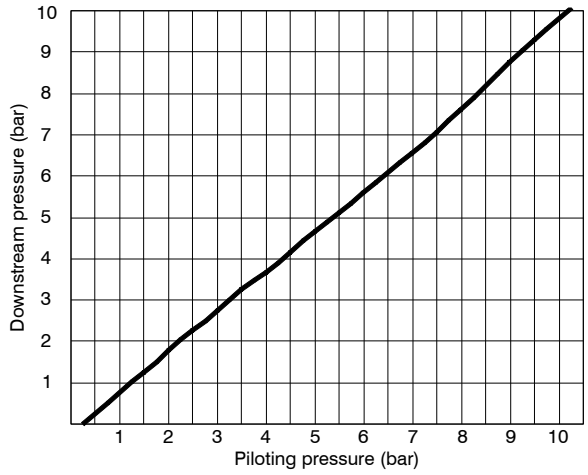
Size 4

Piloting curves



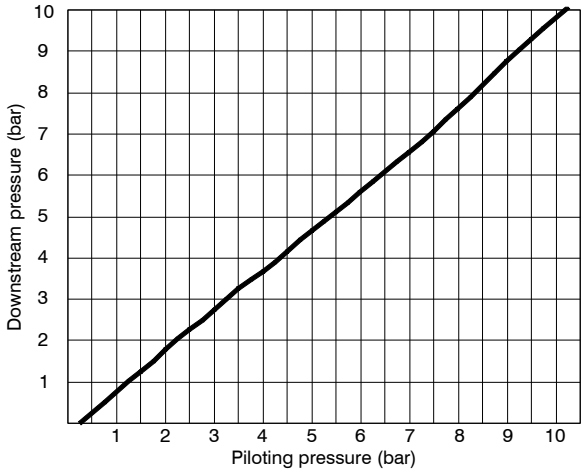
Size 2

Piloting curves



Size 3

Piloting curves



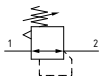
Size 4

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Pressure regulators for manifold



- Diaphragm pressure regulator with relieving.
- Available with 2 front outputs connections G1/8”
- Available in four pressure ranges up to 12 bar
- Ring nut for panel mounting
- Available with integrated pressure gauge on the top of adjusting knob
- Air supply can be applied by both directions (Right or Left)
- Max. 6 off pressure regulators in manifold configuration
- Atex certification (II 2GD) on request



Note
For installations where a more accurate and constant pressure is required, the unit should be installed as close as possible to the point of use.

Technical characteristics	
Size	Size 1
Body and connections type	Zinc alloy body, integrated zinc alloy connections
IN / OUT connections	G1/8” - G1/4”
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket
Assembly position	Indifferent
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12
Regulation	Manual push and lock with pressure Manual lockable with accessories (only for version without pressure gauge)
Pressure measurement	Integrated pressure gauge on the top of adjusting knob (optional)
Max. fittings torque IN / OUT connections (Nm)	G1/8” metal: 15 G1/4” metal: 20

Operational characteristics	
Size	Size 1
Maximum working pressure (bar)	13
Minimum working pressure (bar)	0,5
Working temperature (°C)	-5 ... +50

Weights	
Size	Size 1
Zinc alloy body version (g)	380

Order codes

17 | 0B2A | . | D | . | K

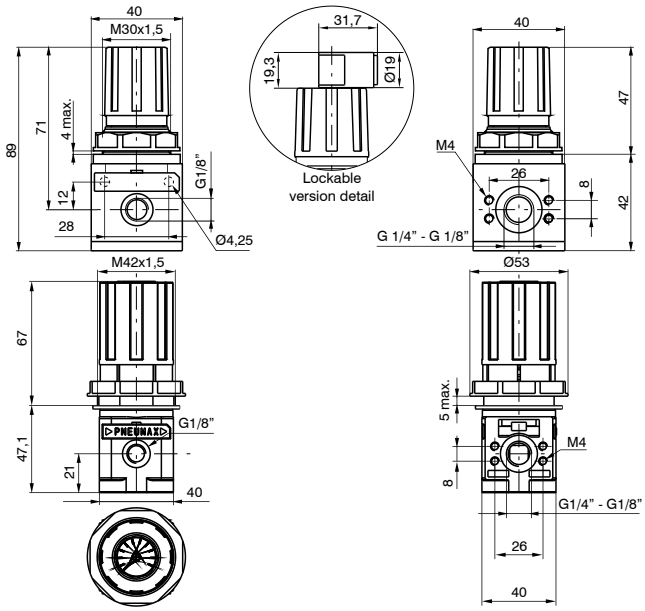
Size, body and connections	
0B2A	Zinc alloy body, connections G1/8”
0B2B	Zinc alloy body, connections G1/4”
0M2A	Zinc alloy body, connections G1/8” with integrated pressure gauge
0M2B	Zinc alloy body, connections G1/4” with integrated pressure gauge

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Options	
	Standard
K	Lockable version (only for version without pressure gauge)
KF	Lockable version with universal key (only for version without pressure gauge)

Example: 170B2A.D.K
Size 1, pressure regulators for manifold, zinc alloy body, G1/8” connections, 0 - 12 bar, without pressure gauge, lockable version

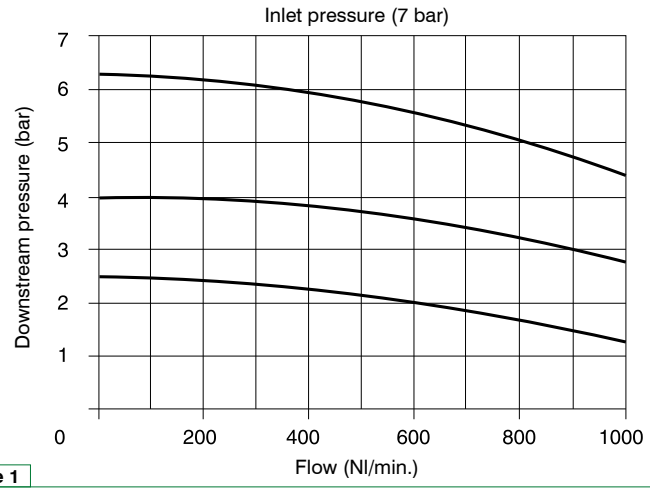
Dimensions



Size 1

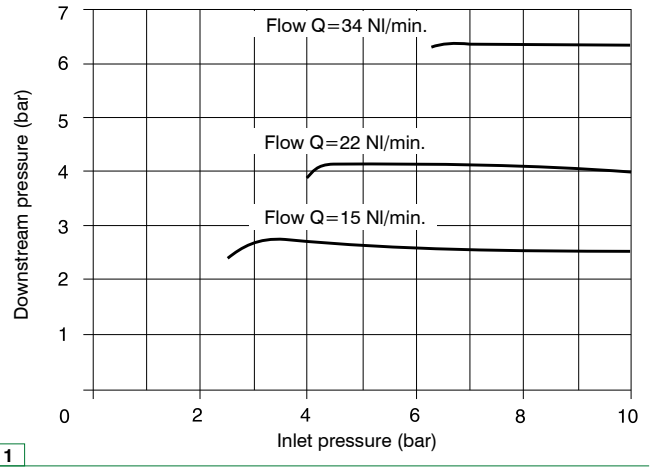
Characteristic curves

Flow rate curves



Size 1

Adjustment characteristic



Size 1

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Manifold pressure regulators



- Manifold pressure regulators
- Available in four pressure ranges up to 12 bar
- Inlet pressure common for the whole manifold of pressure regulator
- A maximum of 6 pressure regulators can be mounted
- Atex certification (II 2GD) on request

Technical characteristics	
Size	Size 1
Body and connections type	Zinc alloy body, integrated zin alloy connections
IN / OUT connections	G1/8" - G1/4"
Assembly configuration	Stand alone Panel mounting Panel mounted with M4 screws With fixing bracket
Assembly position	indifferent
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12
Regulation	Manual push and lock with pressure Manual lockable with accessories (only for version without pressure gauge)
Pressure measurement	G1/8" Pressure gauge connection port
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20

Operational characteristics	
Size	Size 1
Maximum working pressure (bar)	13
Minimum working pressure (bar)	0,5
Working temperature (°C)	-5 ... +50

Order codes

17 | BB2A | . | 6 | . | C | . | C | . | C | . | C | . | C | . | C | . | K |

Size, body and connections	
BB2A	Zinc alloy body, connections G1/8”
BB2B	Zinc alloy body, connections G1/4”
BM2A	Zinc alloy body, connections G1/8” with integrated pressure gauge
BM2B	Zinc alloy body, connections G1/4” with integrated pressure gauge

Number of regulators	
2	n. 2 Regulators
3	n. 3 Regulators
4	n. 4 Regulators
5	n. 5 Regulators
6	n. 6 Regulators

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

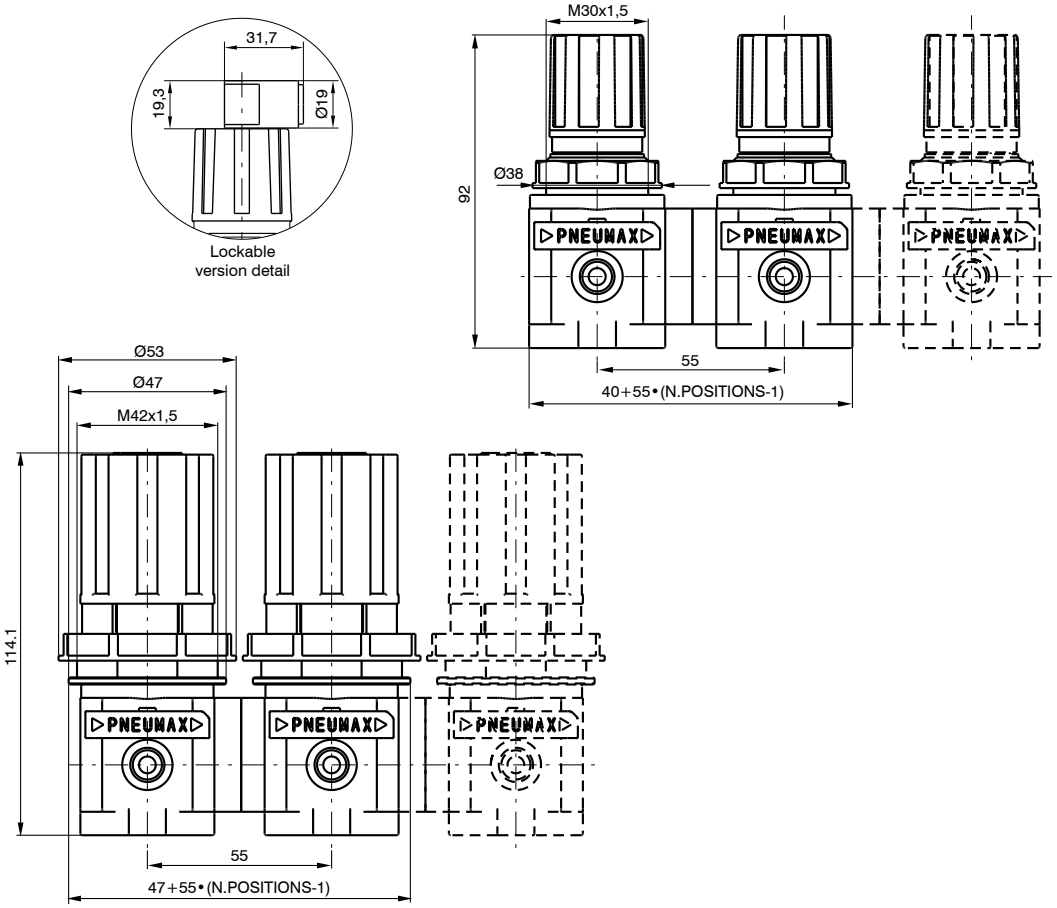
Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Options	
	Standard
K	Lockable version (only for version without pressure gauge)
KF	Lockable version with universal key (only for version without pressure gauge)

Example : 17BB2A.6.C.C.C.C.C.C.K : Size 1, manifold pressure regulators G1/8”, 0 - 8 bar, without pressure gauge, lockable version

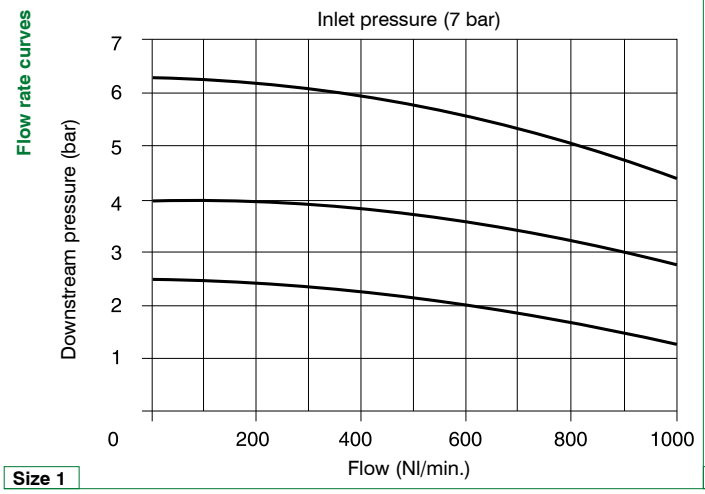
Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Dimensions

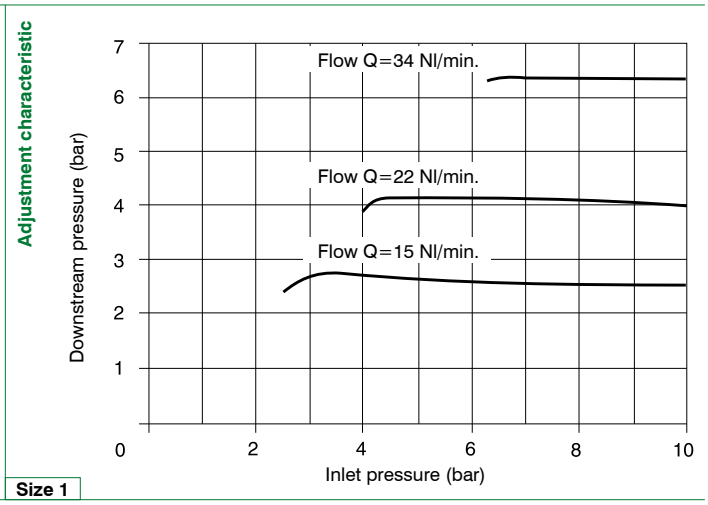


Size 1

Characteristic curves



Size 1

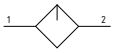


Size 1

Lubricators



- Oil mist lubricator
- Available in 4 sizes with flow rates up to 10000 Nl/min and connections from 1/8” to 1”
- Bowls screwed to the body (Size 1)
- Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 - Size 3 - Size 4)
- Variable orifice size in function of the flow rate
- Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate (PC)
- Oil refill plug
- Available with low level electrical sensor NO and NC
- Atex certification (II 2GD o II 3GD) on request



2 AIR TREATMENT

Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections		
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)			Metal bowl with blind metal bowl
IN / OUT connections	G1/8” - G1/4”	G1/4” - G3/8”	G3/8” - G1/2”, G3/4”	G1”
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M8 screws
Assembly position	Vertical ±5°			
Bowl capacity (cm³)	36	52	62	300
Lubrication type	Oil mist			
Oil level regulation	Manual, complete with visual indicator			
Max. fittings torque IN / OUT connections (Nm)	G1/8” metal: 15 G1/4” metal: 20	G1/4” metal: 20 G3/8” metal: 25	G3/8” metal: 25 G1/2” metal: 30 G3/4” metal: 35	G1”metal: 35

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure (bar)	13			
Minimum working pressure (bar)	0,5			
Min.operational flow at 6,3 bar (Nl/min)	10	20		100
Indicative oil drop rate (Nl/min)	1 drop every 300/600			
Oil type	FD22 - HG32			
Working temperature (°C)	-5 ... +50			

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	258	/	/	/
Technopolymer body version (g)	108	/	/	/
Aluminium body version (g)	/	280	435	1500

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Order codes

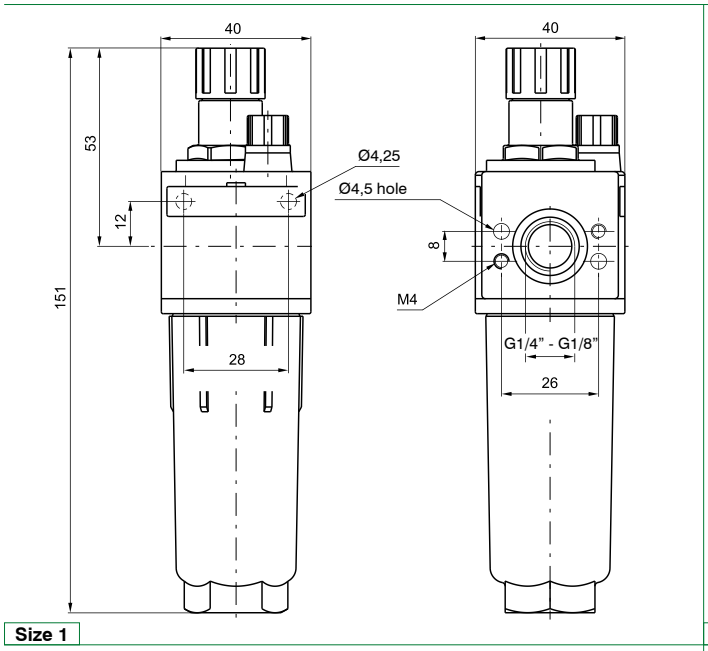
17 | 303A | . | MA

Size, body and connections	
003A	Zinc alloy body, connections G1/8” (only for size 1)
003B	Zinc alloy body, connections G1/4” (only for size 1)
103A	Technopolymer body, connections G1/8” (only for size 1)
103B	Technopolymer body, connections G1/4” (only for size 1)
203A	Aluminium body, connections G1/4” (only for size 2)
203B	Aluminium body, connections G3/8” (only for size 2)
303A	Aluminium body, connections G3/8” (only for size 3)
303B	Aluminium body, connections G1/2” (only for size 3)
303E	Aluminium body, connections G3/4” (only for size 3)
403B	Aluminium body, connections G1” (only for size 4)

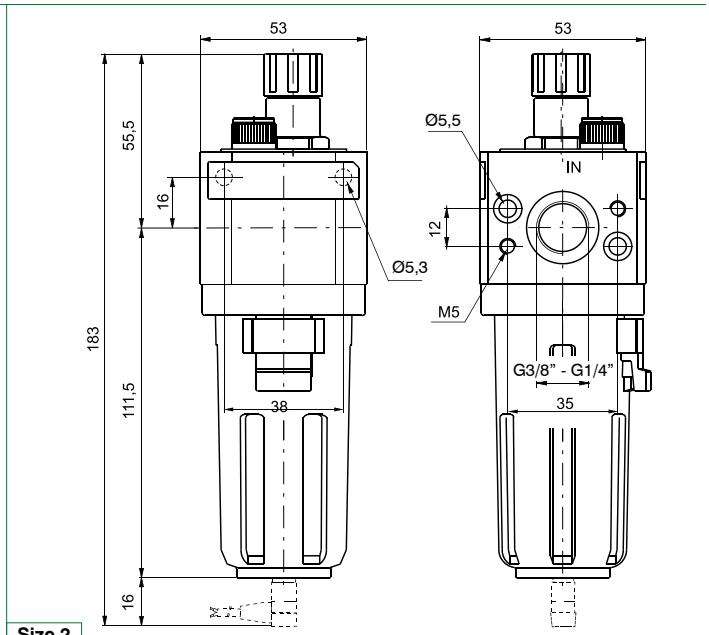
Type	
P	Protected bowl (only for size 1)
MA	Electrical minimum level sensor NO (not available for Size 1)
MC	Electrical minimum level sensor NC (not available for Size 1)

Example: 17303A.MA
Size 3, lubricator, aluminium body, G3/8” connections, normally open low level electrical sensor

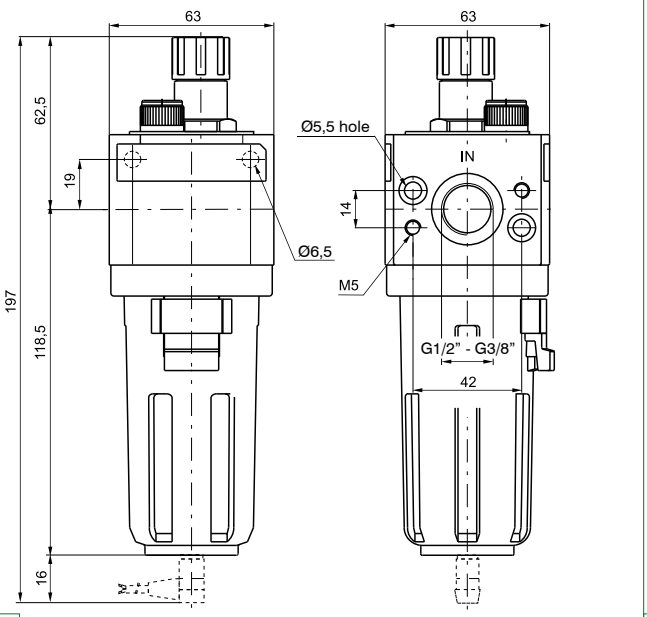
Dimensions



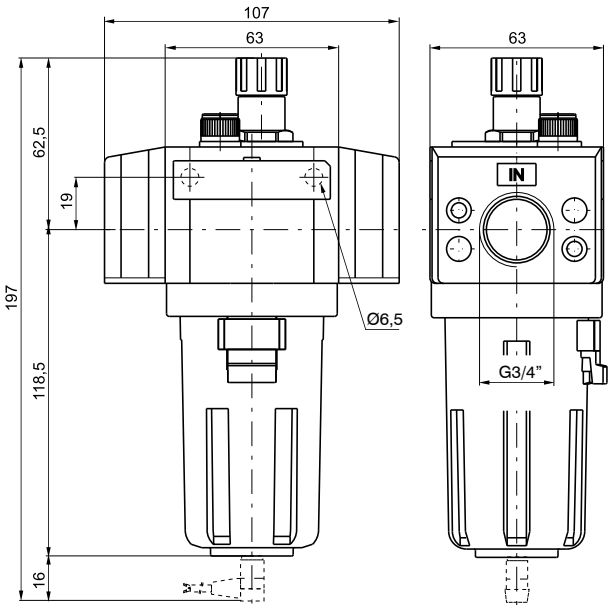
Size 1



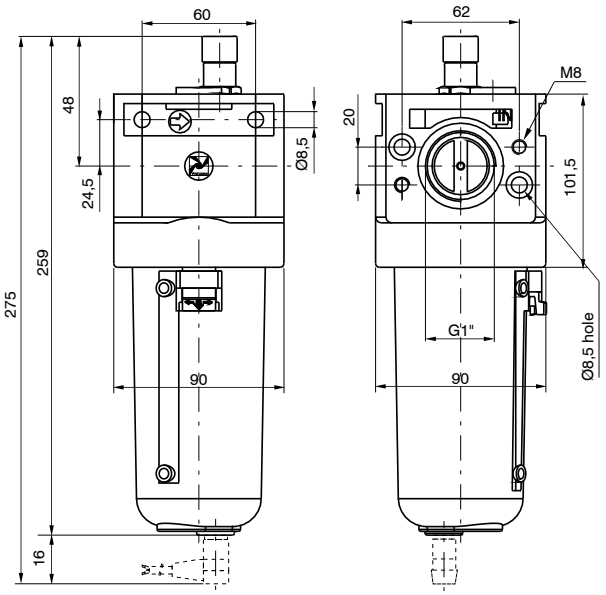
Size 2



Size 3



Size 3 3/4"

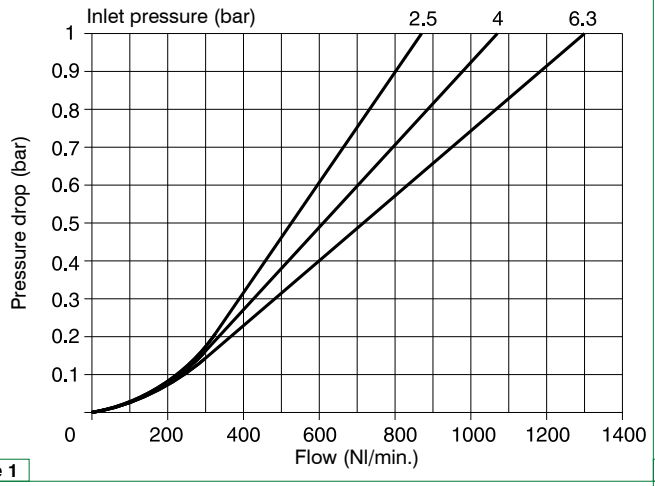


Size 4

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

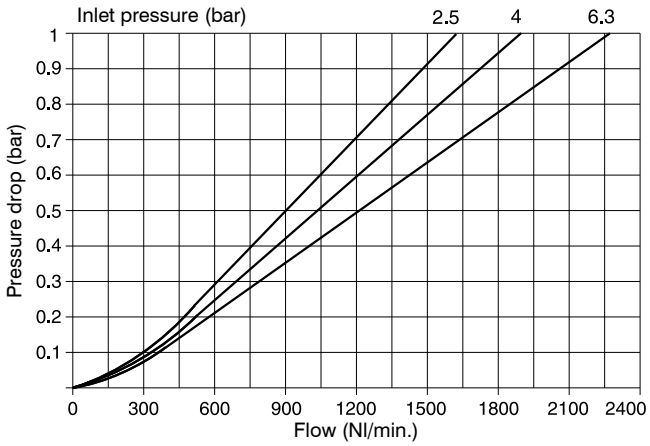
Characteristic curves

Flow rate curves



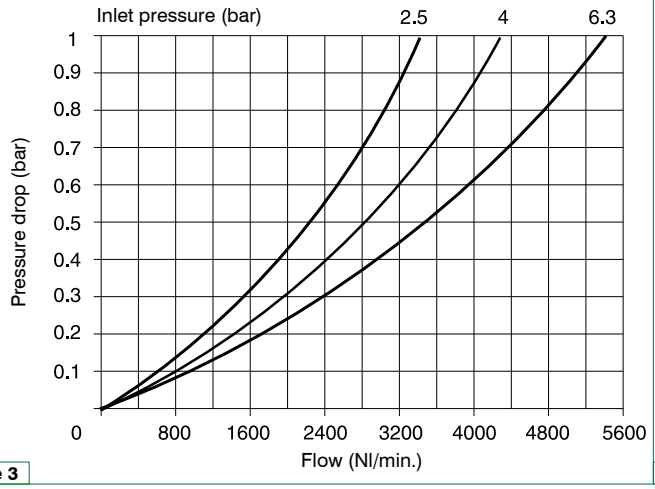
Size 1

Flow rate curves



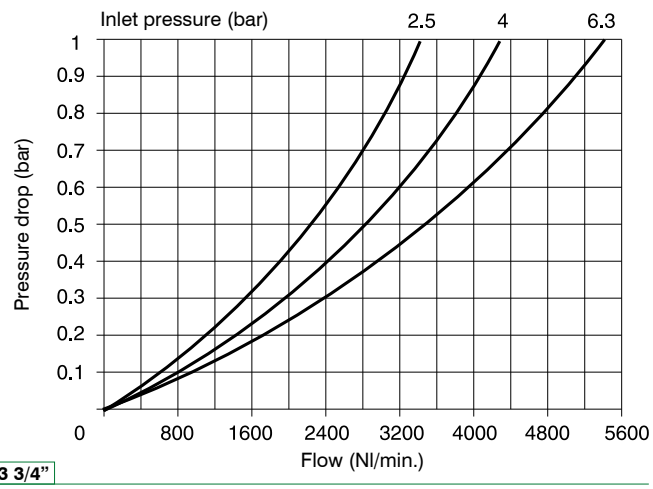
Size 2

Flow rate curves



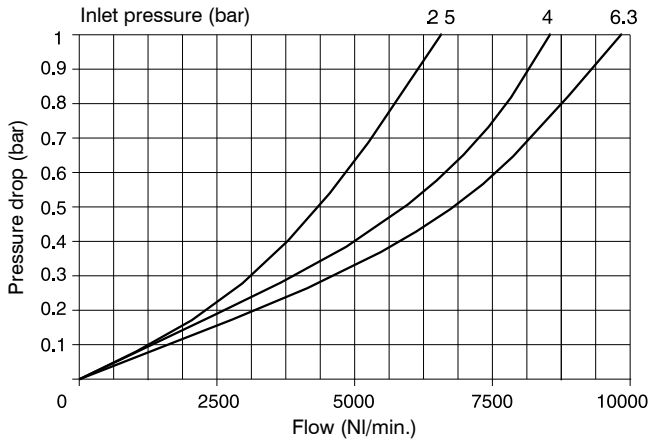
Size 3

Flow rate curves



Size 3 3/4"

Flow rate curves

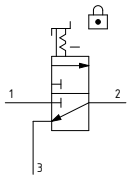


Size 4

Shut-off valve



- 3/2 N.C. poppet valve for opening and exhausting the circuit
- Allows to pneumatically supply the part of the system downstream of the valve
- Manual adjusting lockable handle (in shut-off position) with a maximum of three pad-locks
- Atex certification (II 2GD o II 3GD) on request



Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections		
Operated type	Manual			
IN / OUT connections	G1/4"	G3/8"	G1/2"	G1"
Discharge connections	G1/8"	G1/4"	G3/8"	G1/4"
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M8 screws
Assembly position	Indifferent			
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30	G1"metal: 35

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure (bar)	13			10
Minimum working pressure (bar)	0,5			
Nominal flow rate at 6 bar with Δp=1 (Nl/min)	1000	2100	2500	8000
Working temperature (°C)	-5 ... +50			

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	280	/	/	/
Technopolymer body version (g)	155	/	/	/
Aluminium body version (g)	/	380	550	1600

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Order codes

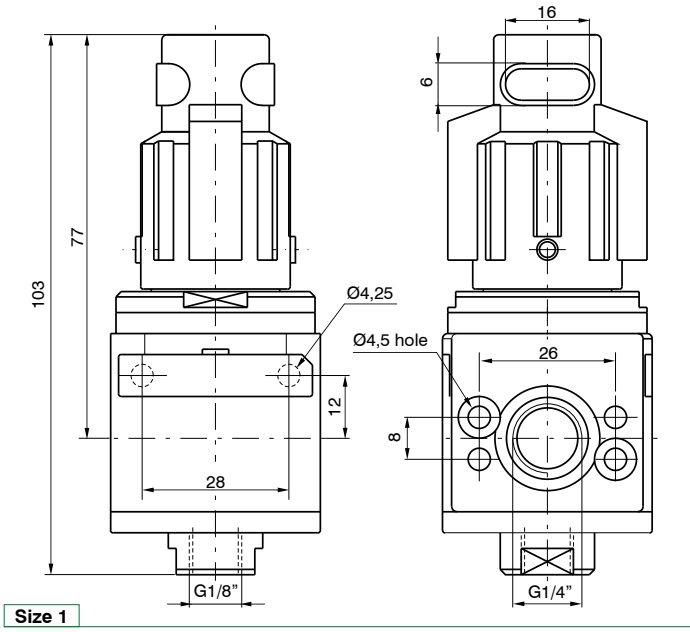
17 | 330 | . | A

Size, body and connections	
030	Zinc alloy body, connections G1/4” (only for size 1)
130	Technopolymer body, connections G1/4” (only for size 1)
230	Aluminium body, connections G3/8” (only for size 2)
330	Aluminium body, connections G1/2” (only for size 3)
430	Aluminium body, connections G1” (only for size 4)

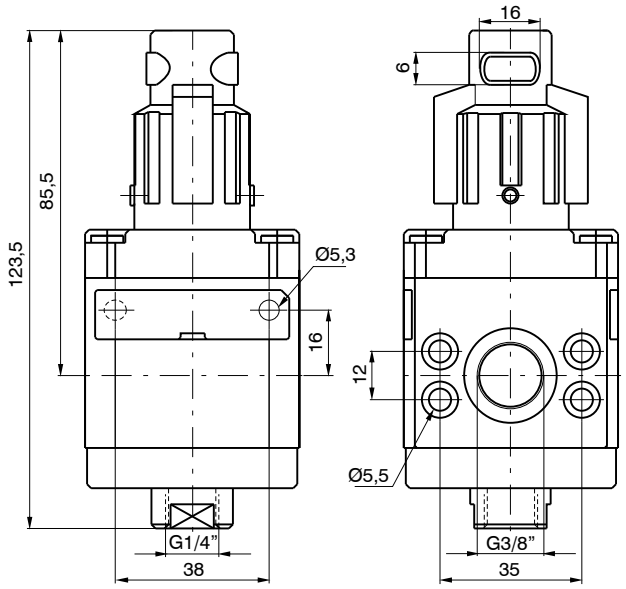
Type	
A	Not lockable handle
B	Lockable handle

Example: 17330.A
Size 3, shut-off valve, aluminium body, G1/2” connections, with not lockable handle

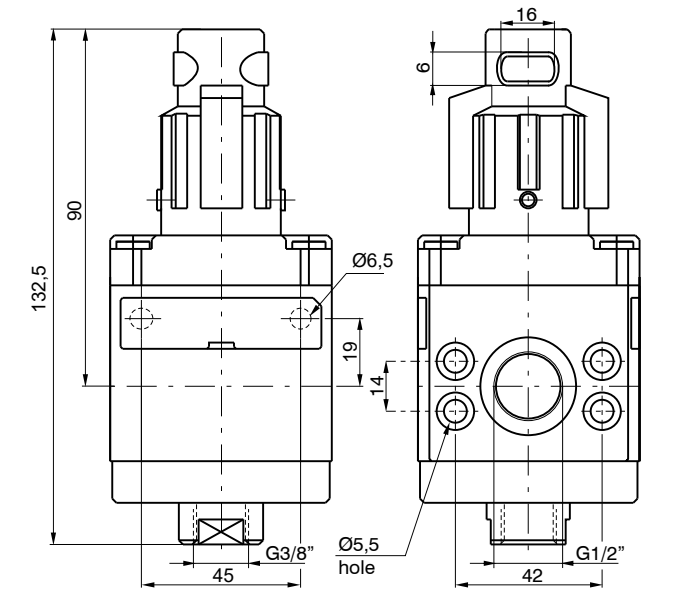
Dimensions



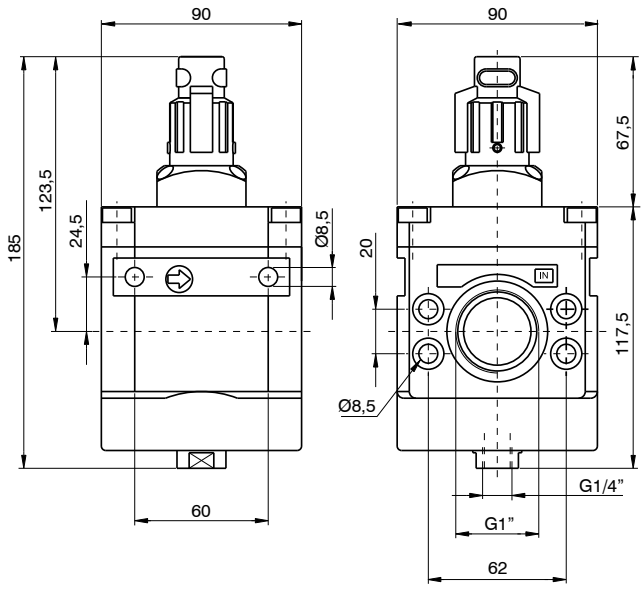
Size 1



Size 2



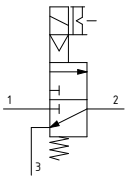
Size 3



Size 4

Electric shut-off valve





- 3/2 N.C. poppet valve for entering and exhausting the circuit
- It allows to pneumatically supply the part of the system downstream of the valve
- Opening and closing of the valve via solenoid operator
- The supply pressure must be minimum 2 bars or higher
- It is possible to produce the external supplied solenoid version by mounting the 305.10.05 between the valve main body and the solenoid pilot valve.
- The air supply can only be done via port 1
- Ensure that the downstream air consumption will not cause a pressure drop which could result in the pressure falling below the minimum operating values.
- If the pressure inside the valve falls below 2 bars , the valve might shut off.
- Atex certification (II 2GD o II 3GD) on request

Technical characteristics			
Size	Size 1	Size 2	Size 3
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections	
Operated type	Electric		
IN / OUT connections	G1/4”	G3/8”	G1/2”
Discharge connections	G1/8”	G1/4”	G3/8”
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws
Assembly position	Indifferent		
Max. fittings torque IN / OUT connections (Nm)	G1/4” metal: 20	G3/8” metal: 25	G1/2” metal: 30

Operational characteristics			
Size	Size 1	Size 2	Size 3
Maximum working pressure (bar)	10		
Minimum working pressure (bar)	2		
Nominal flow rate at 6 bar with Δp=1 (Nl/min)	1000	2100	3200
Working temperature (°C)	-5 ... +50		

Weights			
Size	Size 1	Size 2	Size 3
Zinc alloy body version (g)	345	/	/
Technopolymer body version (g)	215	/	/
Aluminium body version (g)	/	440	680

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Order codes

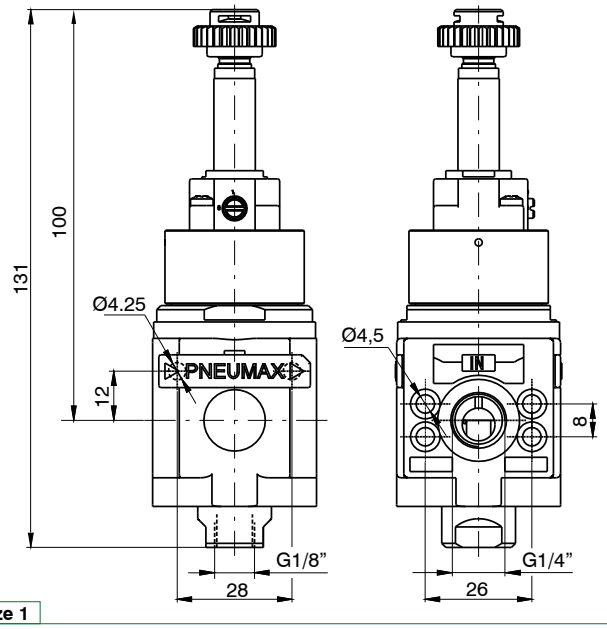
17 | 330 | . | M2

Size, body and connections	
030	Zinc alloy body, connections G1/4” (only for size 1)
130	Technopolymer body, connections G1/4” (only for size 1)
230	Aluminium body, connections G3/8” (only for size 2)
330	Aluminium body, connections G1/2” (only for size 3)

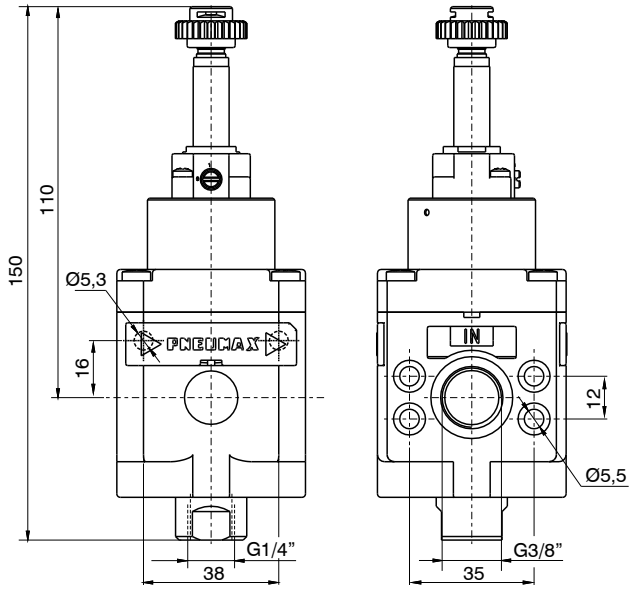
Type	
M2	Electric with M2
M2/9	Electric with M2/9

Example: 17330.M2
Size 3, electric shut-off valve, aluminium body, G1/2” connections, electric with M2

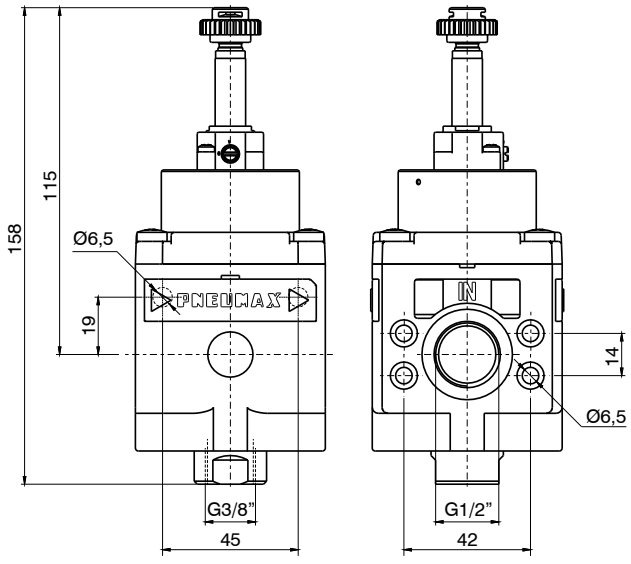
Dimensions



Size 1



Size 2

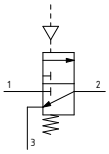


Size 3

Pneumatic shut-off valve



- 3/2 N.C. poppet valve for entering and exhausting the circuit
- It allows to pneumatically supply the part of the system downstream of the valve
- Opening and closing of the valve via pneumatic operator
- The piloting pressure must be minimum 2 bar or higher
- The air supply can only be done via port 1
- Ensure that the downstream air consumption will not cause a pressure drop which could result in the pressure falling below the minimum operating values
- If the pressure inside the valve falls below 2 bars , the valve might shut off
- Atex certification (II 2GD o II 3GD) on request



Technical characteristics			
Size	Size 1	Size 2	Size 3
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections	
Operated type	Pneumatic		
IN / OUT connections	G1/4"	G3/8"	G1/2"
Discharge connections	G1/8"	G1/4"	G3/8"
Pilot connections	G1/8"		
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws
Assembly position	Indifferent		
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30

Operational characteristics			
Size	Size 1	Size 2	Size 3
Maximum working pressure (bar)	13		
Minimum working pressure (bar)	2		
Piloting pressure (bar)	2		
Nominal flow rate at 6 bar with Δp=1 (Nl/min)	1000	2100	3200
Working temperature (°C)	-5 ... +50		

Weights			
Size	Size 1	Size 2	Size 3
Zinc alloy body version (g)	310	/	/
Technopolymer body version (g)	180	/	/
Aluminium body version (g)	/	405	645

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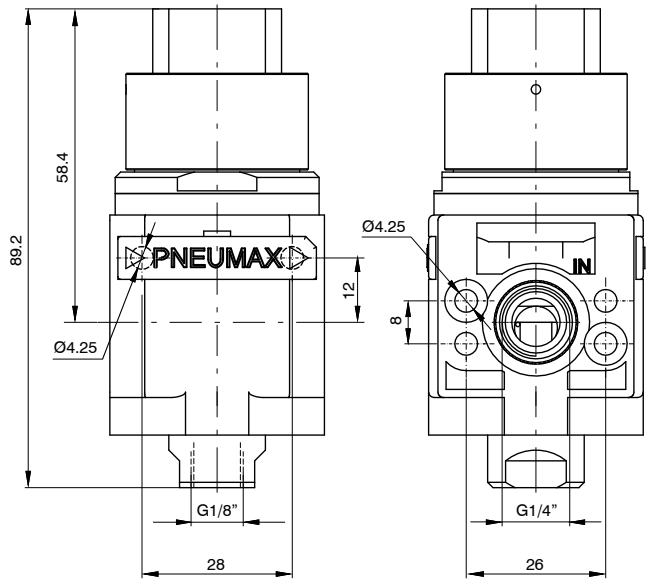
Order codes

17 **330** . PN

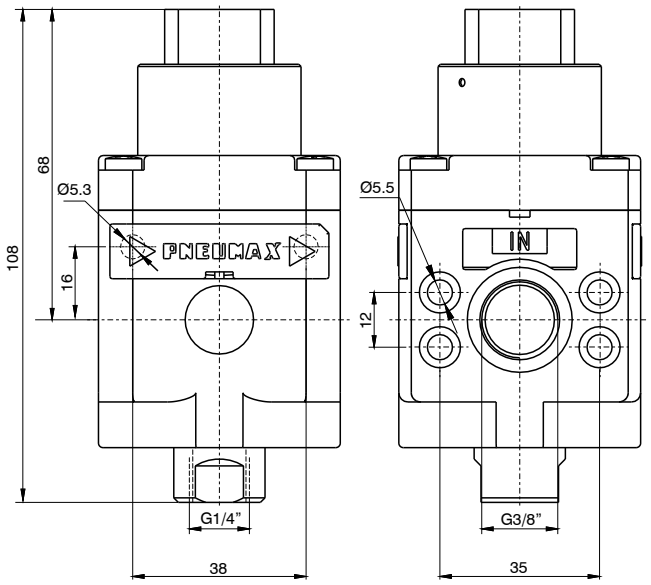
Size, body and connections	
030	Zinc alloy body, connections G1/4” (only for size 1)
130	Technopolymer body, connections G1/4” (only for size 1)
230	Aluminium body, connections G3/8” (only for size 2)
330	Aluminium body, connections G1/2” (only for size 3)

Example: 17330.PN
Size 3, pneumatic shut-off valve, aluminium body, G1/2” connections, with pneumatic pilot

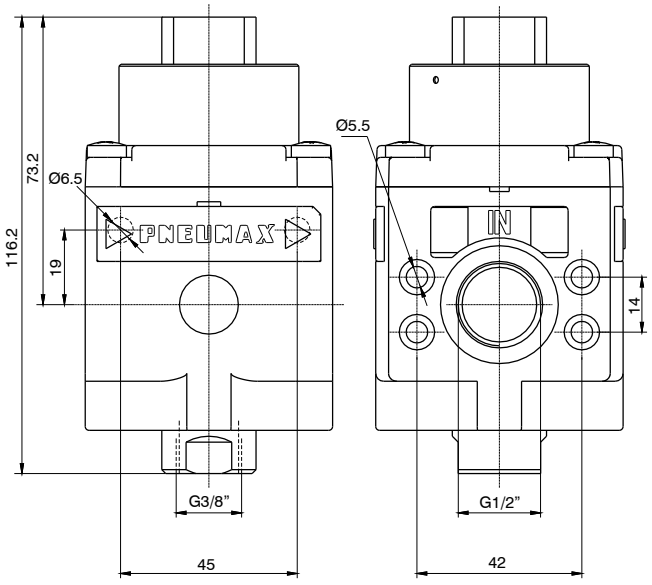
Dimensions



Size 1



Size 2

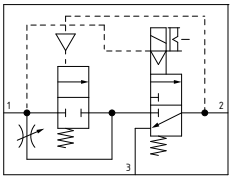


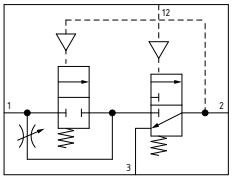
Size 3

Progressive start-up valve



- 3 way valve with double poppet
- Aluminium body
- Possibility to adjust the down stream circuit filling time by the enclosed adjustable metering screw
- Quick down stream circuit discharge
- Possibility for a pneumatic or electric piloting control
- Atex certification (II 2GD o II 3GD) on request





Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Aluminium body, integrated aluminium connections			
IN / OUT connections	G1/4"	G3/8"	G1/2"	G1"
Discharge connections	G1/8"	G1/4"	G3/8"	G3/4"
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M8 screws
Assembly position	Indifferent			
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30	G1"metal: 35

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure (bar)	10			
Minimum working pressure (bar)	2,5			
Nominal flow rate at 6 bar with Δp=1 (Nl/min)	1000	1700	2500	8000
Flow with adjustable metering screw fully open (Nl/min)	150	340		3000
Working temperature (°C)	-5 ... +50			

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Aluminium body version (g)	365	595	1010	2300

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Order codes

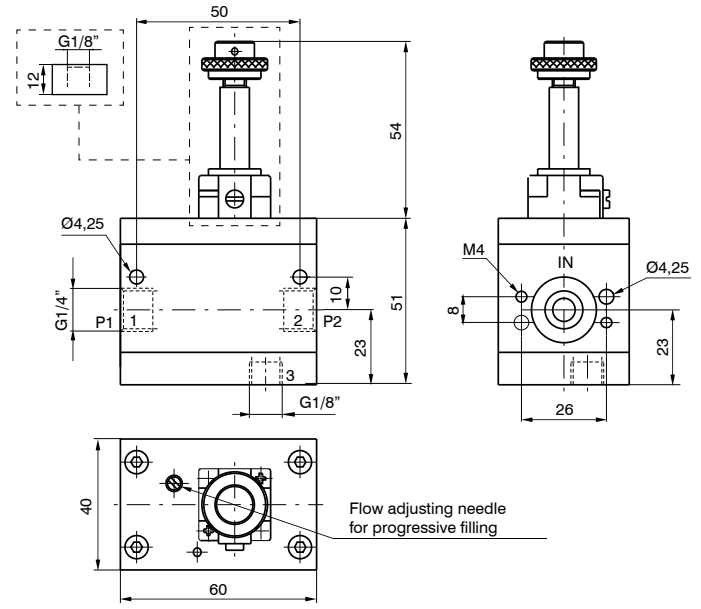
17	3	20

Size, body and connections	
1	Aluminium body, connections G1/4" (only for size 1)
2	Aluminium body, connections G3/8" (only for size 2)
3	Aluminium body, connections G1/2" (only for size 3)
4	Aluminium body, connections G1" (only for size 4)

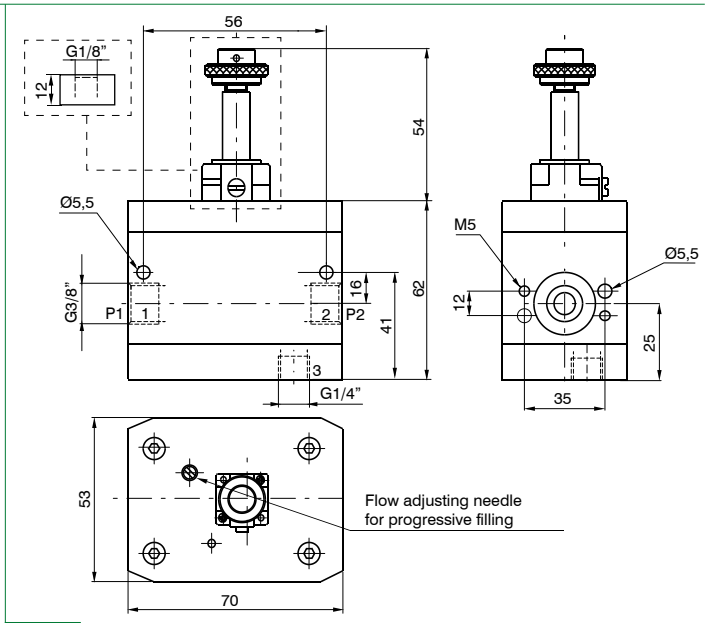
Type	
10.M2	Electric control complete wih M2 mechanic
20	Pneumatic pilot

Example: 17320
Size 3, progressive start-up valve, aluminium body, G1/2" connections, with pneumatic pilot

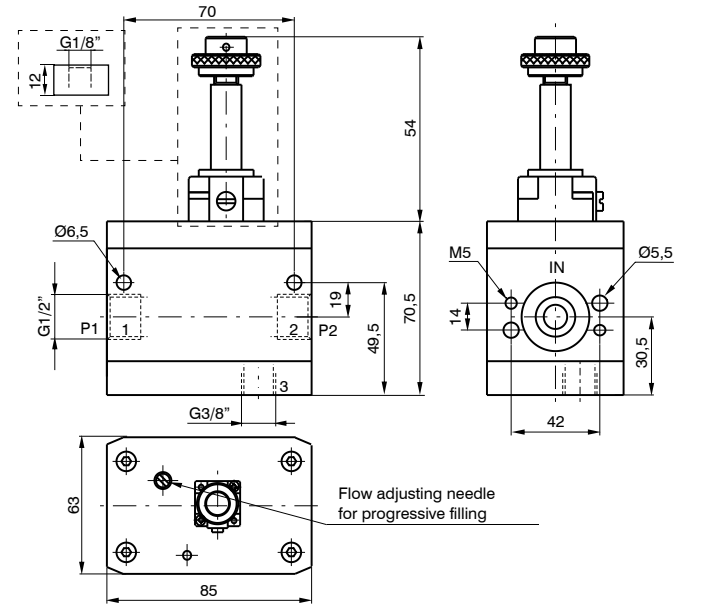
Dimensions



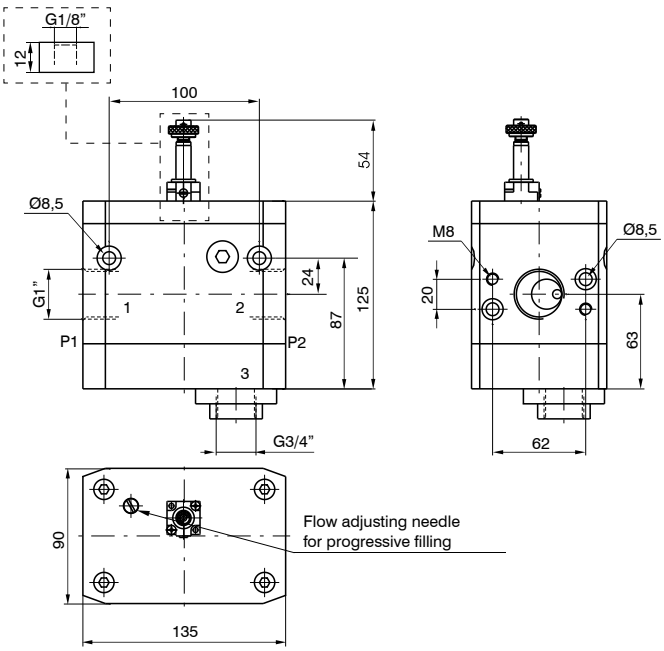
Size 1



Size 2



Size 3

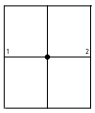


Size 4

Air Intake



- Pneumatic by-pass
- Available with 2 threaded connections



Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Aluminium body, integrated aluminium connections			
IN / OUT Connections	G1/4"	G3/8"	G1/2"	G1"
INTAKE connections	G1/8"	G1/4"	G3/8"	G3/4"
Assembly configuration	Stand alone	Stand alone	Stand alone	Stand alone
Assembly position	Indifferent			
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G3/8" metal: 25	G1/2" metal: 30	G1"metal: 35

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure (bar)	13			
Working temperature (°C)	-5 ... +50			

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Aluminium body version (g)	78	159	271	761

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

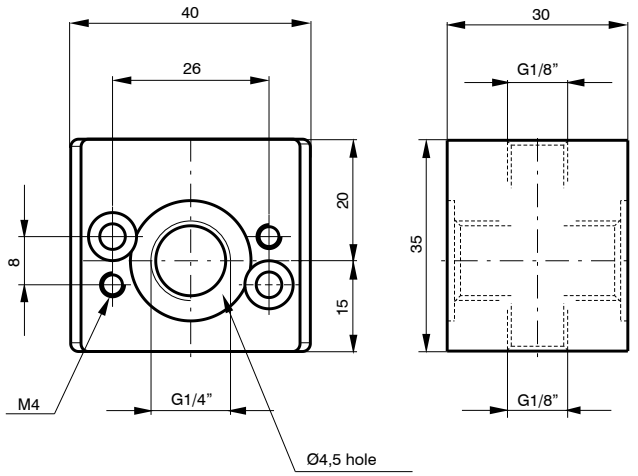
Order codes

17 | 3 | 40

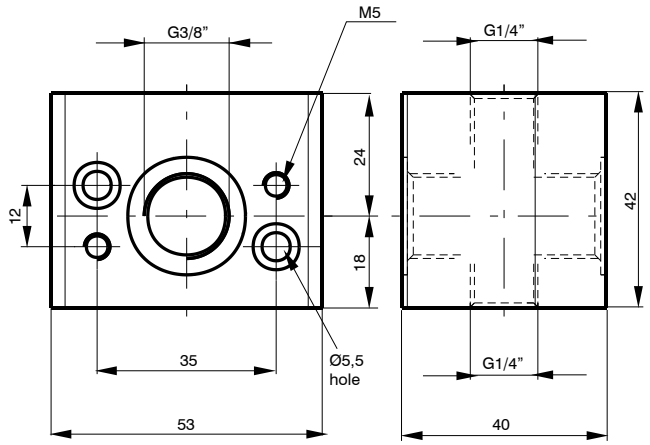
Size, body and connections	
1	Aluminium body, connections G1/4” (only for size 1)
2	Aluminium body, connections G3/8” (only for size 2)
3	Aluminium body, connections G1/2” (only for size 3)
4	Aluminium body, connections G1” (only for size 4)

Example: 17340
Size 3, air intake, aluminium body, G1/2” connections

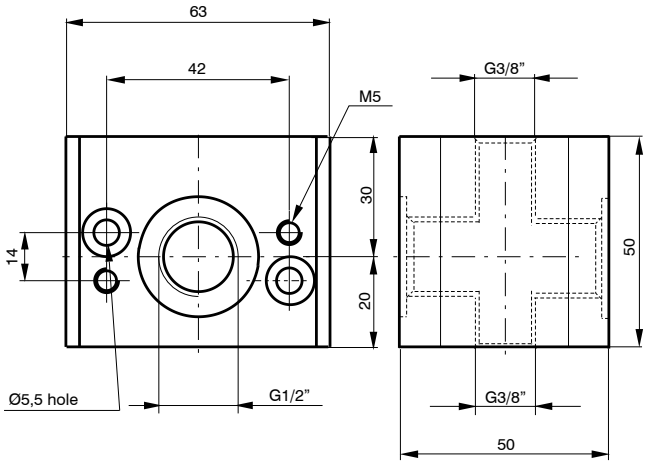
Dimensions



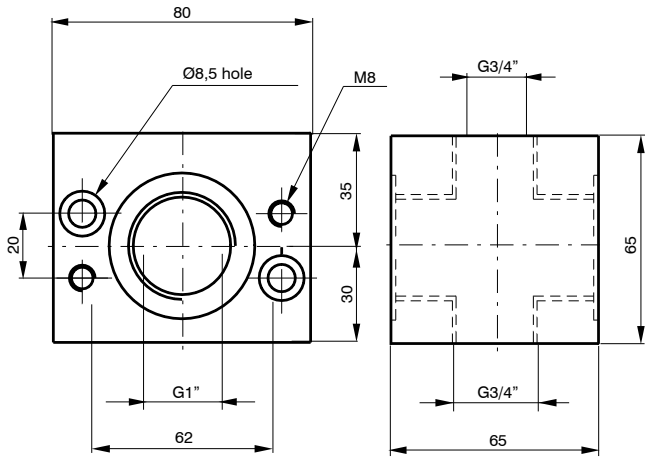
Size 1



Size 2



Size 3

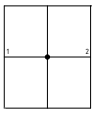


Size 4

Air Intake -“H” profile



- Pneumatic by-pass
- Available with 2 threaded connections



Technical characteristics			
Size	Size 1	Size 2	Size 3
Body and connections type	Aluminium body		
IN / OUT Connections	G1/4”	G3/8”	G1/2”
INTAKE connections	G1/8”	G1/4”	G3/8”
Assembly configuration	Stand alone	Stand alone	Stand alone
Assembly position	Indifferent		
Max. fittings torque IN / OUT connections (Nm)	G1/4” metal: 20	G3/8” metal: 25	G1/2” metal: 30

Operational characteristics			
Size	Size 1	Size 2	Size 3
Maximum working pressure (bar)	13		
Working temperature (°C)	-5 ... +50		

Weights			
Size	Size 1	Size 2	Size 3
Aluminium body version (g)	50	116	192

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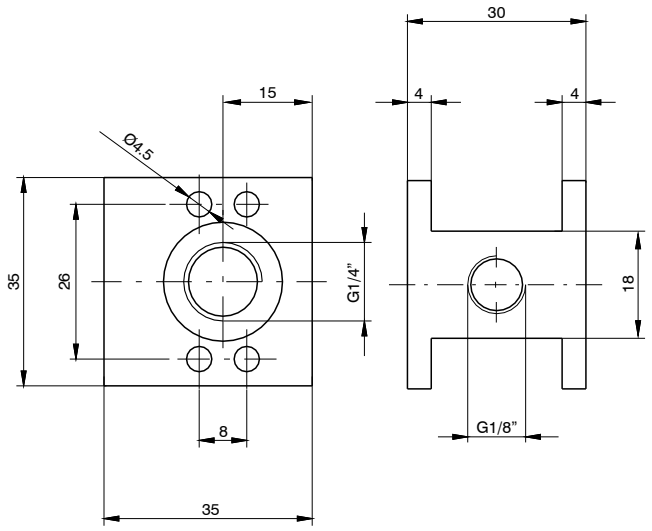
Order codes

17 | 3 | 40H

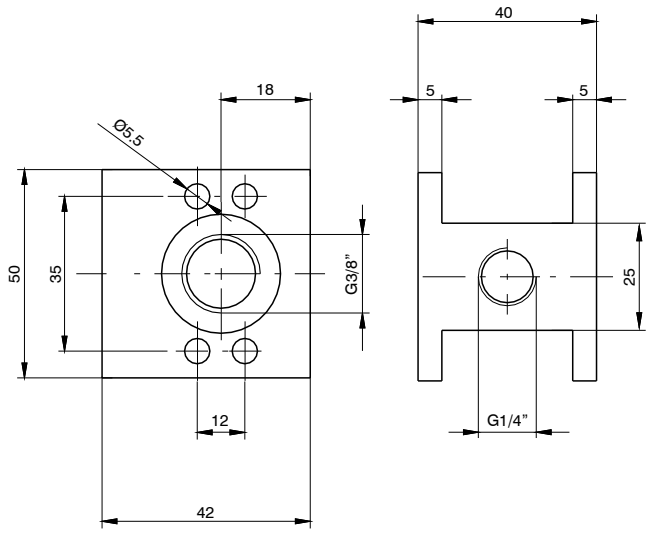
Size, body and connections	
1	Aluminium body, connections G1/4” (only for size 1)
2	Aluminium body, connections G3/8” (only for size 2)
3	Aluminium body, connections G1/2” (only for size 3)

Example: 17340H
Size 3, air intake -“H” profile, aluminium body, G1/2” connections

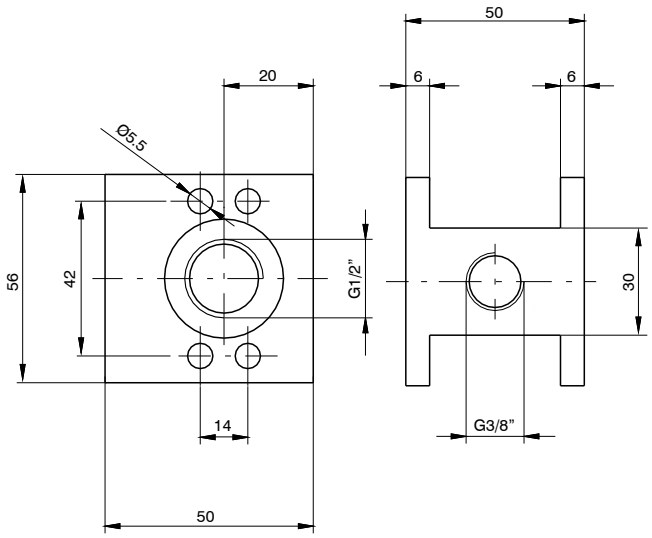
Dimensions



Size 1



Size 2

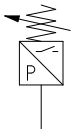


Size 3

Pressure Switch complete with adapter



- The pressure switch can be set at desired pressure from 2 to 10 bar with electrical connection applied
- The electrical connection is made by mean of a 15 mm connector DIN 43650 type C
- The microswitch contact could be Normally Closed or open (change over switch)



Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Aluminium body			
IN / OUT Connections	G1/8"	G3/8"	G1/2"	Ø36
Assembly configuration	Stand alone	Stand alone	Stand alone	Stand alone
Assembly position	Indifferent			
Microswitch capacity (A)	1			
Microswitch Maximum voltage (VAC)	250			
Grade of protection	IP65 (with connector assembled)			

Operational characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Maximum working pressure (bar)	13			
Working temperature (°C)	-5 ... +50			
Pressure range (bar)	2 ... 10			

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Aluminium body version (g)	160	200	220	450

Order codes

17 **34C**

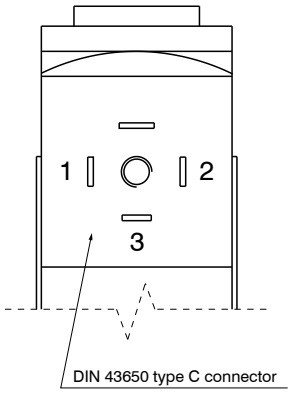
Type	
14A	Pressure switch adapter (only for size 1)
14B	Pressure switch (for all sizes)
14C	Pressure switch complete with adapter (only for size 1)
24A	Pressure switch adapter (only for size 2)
24C	Pressure switch complete with adapter (only for size 2)
34A	Pressure switch adapter (only for size 3)
34C	Pressure switch complete with adapter (only for size 3)
44A	Pressure switch adapter (only for size 4)
44C	Pressure switch complete with adapter (only for size 4)

Example: 1734C
Size 3, pressure switch adapter

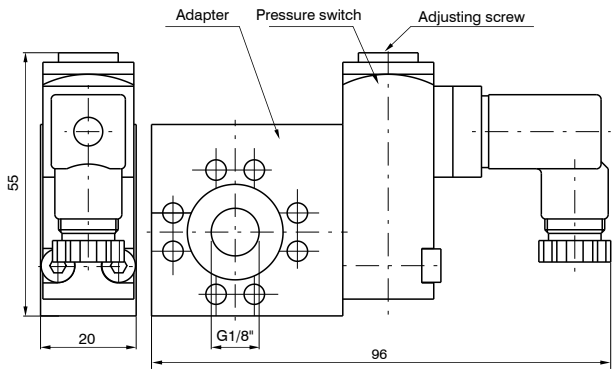
Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Electrical connection

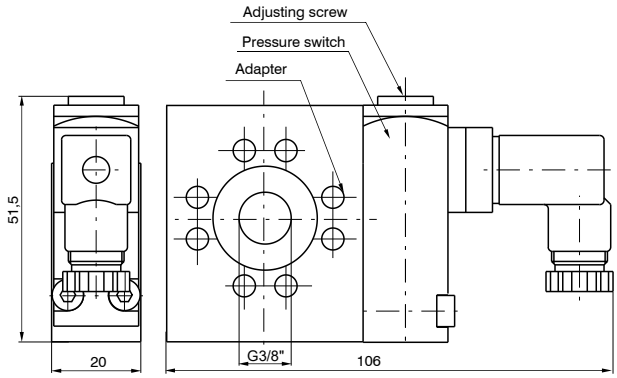
1 = neutral
2 = N.C. contact
3 = N.O. contact



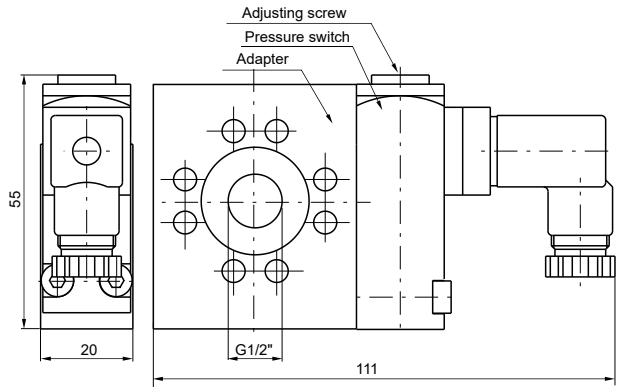
Dimensions



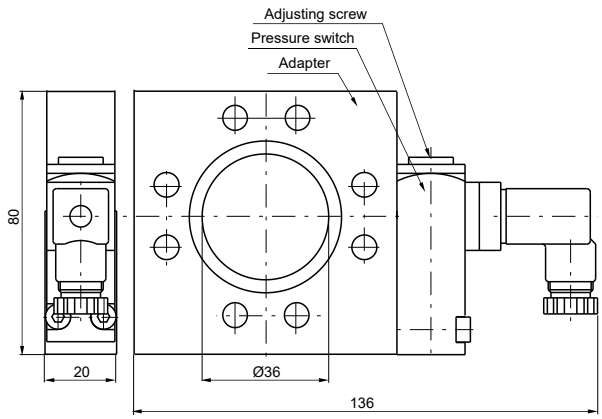
Size 1



Size 2



Size 3



Size 4

Filter pressure regulator + Lubricator



- Filter - diaphragm pressure regulator with relieving
- Low histeresis rolling diaphragm and balanced spool
- Filtering element made of HDPE available in 3 different filtration grades (5µm, 20µm, 50µm)
- Semi-automatic or automatic drain
- Available in four pressure ranges up to 12 bar
- Oil mist lubricator
- Variable orifice size in function of the flow rate
- Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate (PC)
- Oil refill plug
- Available with low level electrical sensor NO and NC
- Bowls screwed to the body (Size 1)
- Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 - Size 3)
- Atex certification (II 2GD o II 3GD) on request

Technical characteristics			
Size	Size 1	Size 2	Size 3
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections	
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)		
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws
Assembly position	Vertical ±5°		
Filter pore size (µm)	5 / 20 / 50		
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12		
Bowl capacity (cm^3)	20	30	48
Condensation drain	Semi-automatic Automatic		
Regulation	Manual push and lock with pressure Manual lockable with accessories		
Pressure measurement	G1/8" Pressure gauge connection port		
Bowl capacity (cm^3)	36	52	62
Lubrication type	Oil mist		
Min.operational flow at 6,3 bar (Nl/min)	10	20	
Oil level regulation	Manual, complete with visual indicator		
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25	G3/8" metal: 25 G1/2" metal: 30 G3/4" metal: 35

Operational characteristics						
Size	Size 1	Size 2	Size 3	Size 1	Size 2	Size 3
Condensation drain	Semi-automatic			Automatic		
Maximum working pressure (bar)	13			10		
Minimum working pressure (bar)	0,5					
Indicative oil drop rate (Nl/min)	1 drop every 300/600					
Oil type	FD22 - HG32					
Working temperature (°C)	-5 ... +50					

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Weights			
Size	Size 1	Size 2	Size 3
Zinc alloy body version (g)	560	/	/
Technopolymer body version (g)	295	/	/
Aluminium body version (g)	/	750	1100

Order codes

17 **306A** . **B** . **D** . **S** . **K**

Size, body and connections	
006A	Zinc alloy body, connections G1/8" (only for size 1)
006B	Zinc alloy body, connections G1/4" (only for size 1)
106A	Technopolymer body, connections G1/8" (only for size 1)
106B	Technopolymer body, connections G1/4" (only for size 1)
206A	Aluminium body, connections G1/4" (only for size 2)
206B	Aluminium body, connections G3/8" (only for size 2)
306A	Aluminium body, connections G3/8" (only for size 3)
306B	Aluminium body, connections G1/2" (only for size 3)
306E	Aluminium body, connections G3/4" (only for size 3)

Filter pore size	
A	5 μm
B	20 μm
C	50 μm

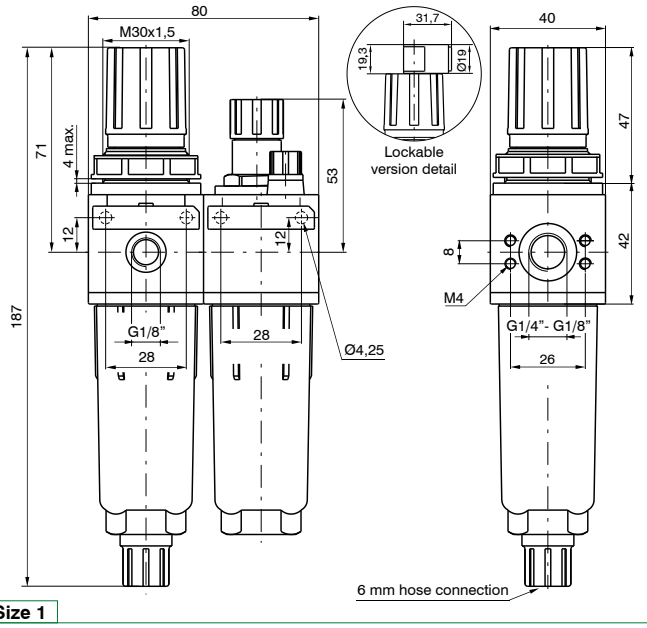
Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Type	
P	Bowl protection (only for size 1)
S	Automatic drain (for all sizes)
PS	Bowl protection and automatic drain (only for size 1)

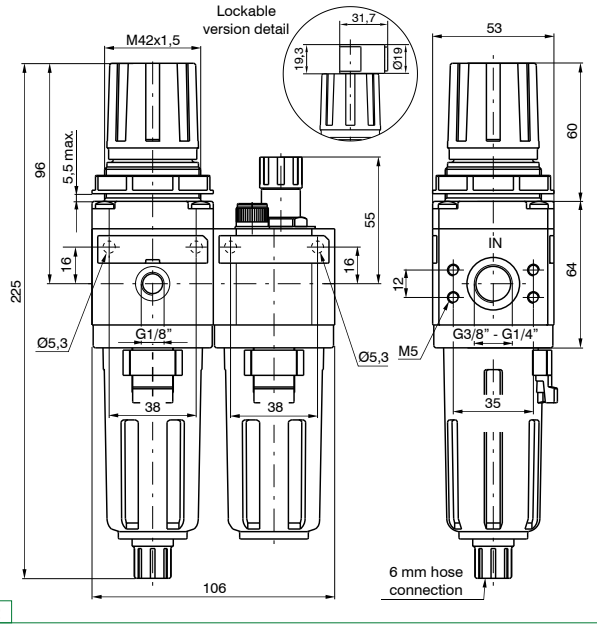
Options	
	Standard
K	Lockable version
KF	Lockable version with universal key

Example: 17306A.B.D.S.K
Size 3, filter pressure regulator + lubricator, aluminium body, G3/8" connections, filter pore size 20 μm 0 - 12 bar, automatic drain lockable version

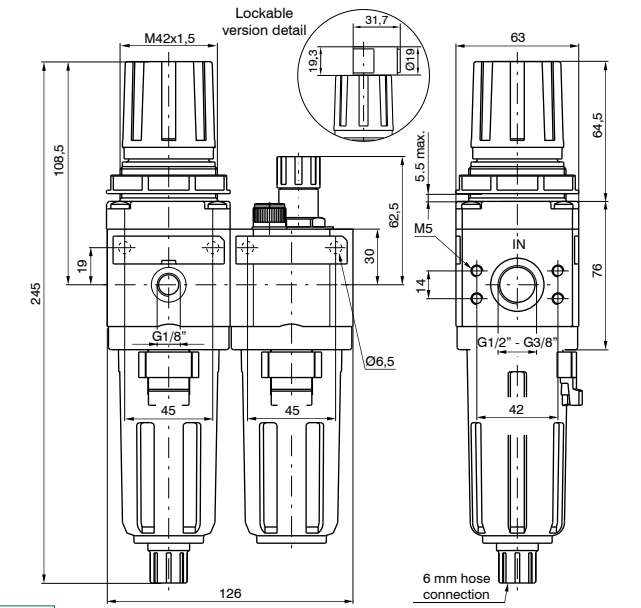
Dimensions



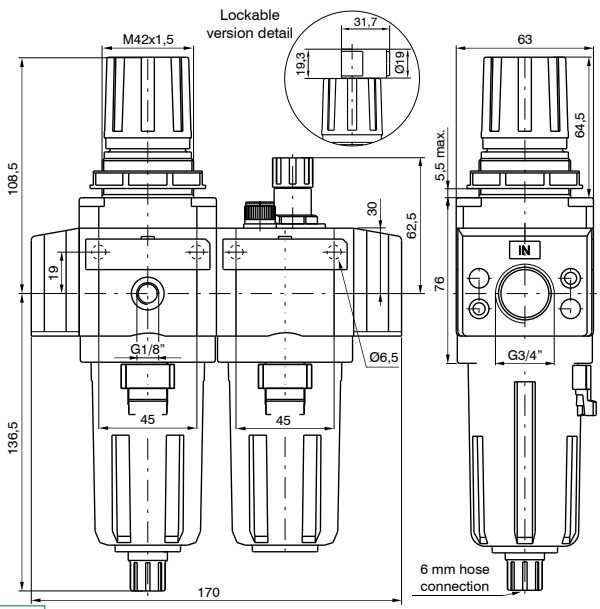
Size 1



Size 2



Size 3

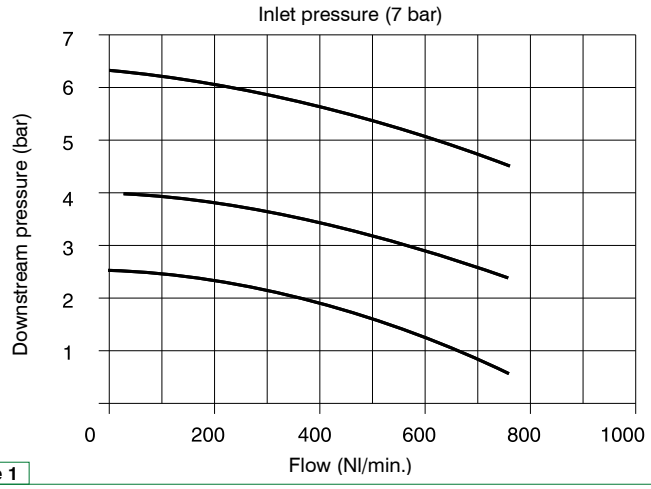


Size 3 3/4"

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

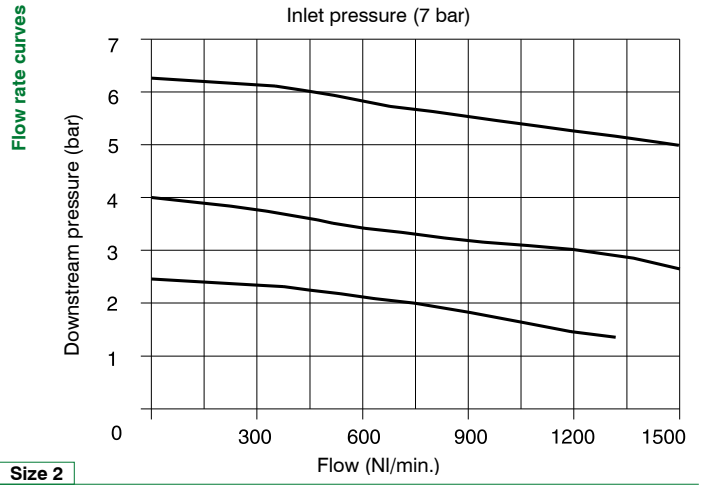
Characteristic curves

Flow rate curves



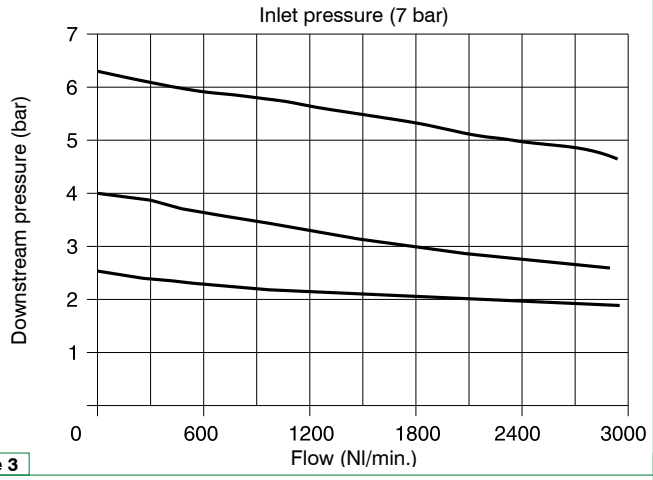
Size 1

Flow rate curves



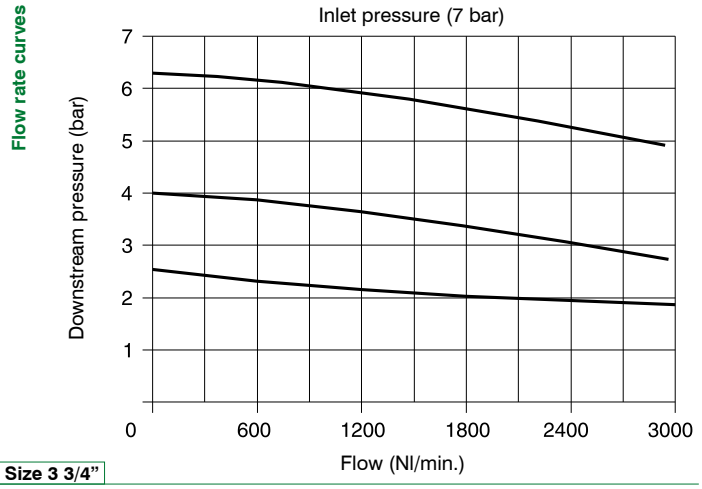
Size 2

Flow rate curves



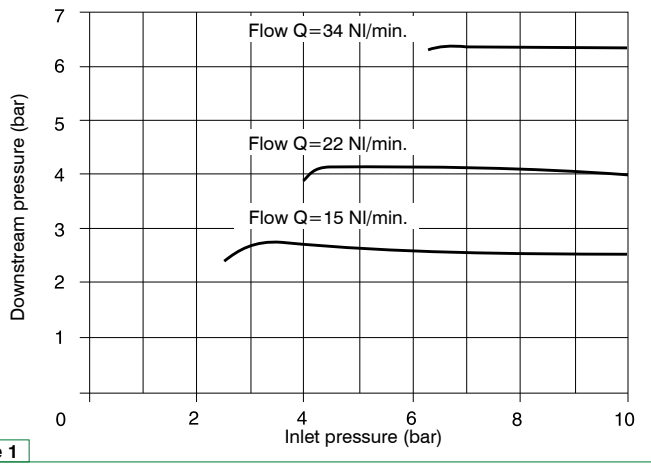
Size 3

Flow rate curves



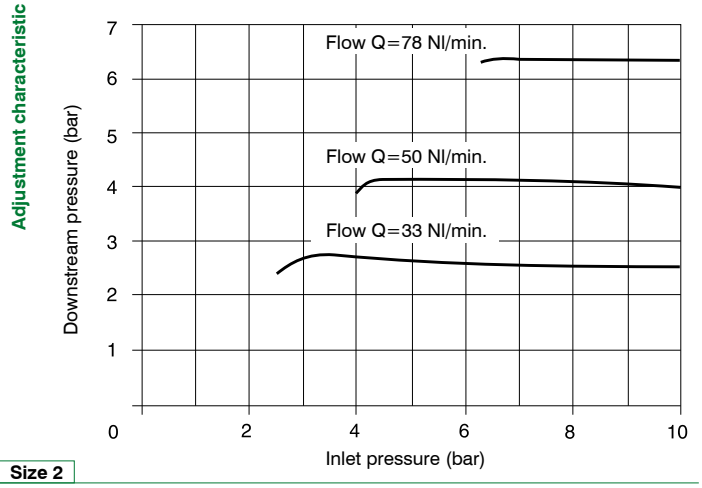
Size 3 3/4"

Adjustment characteristic



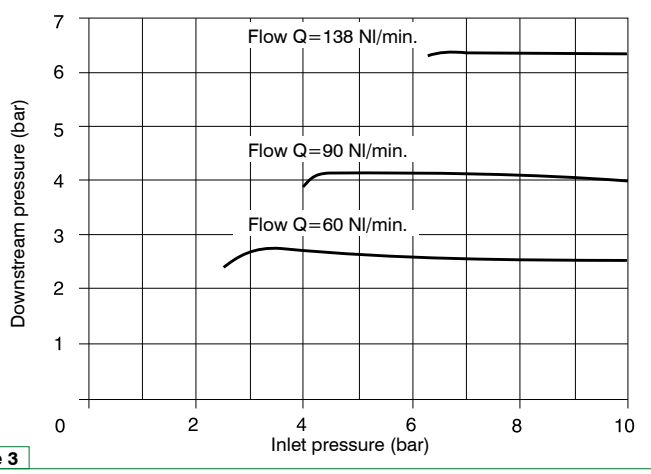
Size 1

Adjustment characteristic



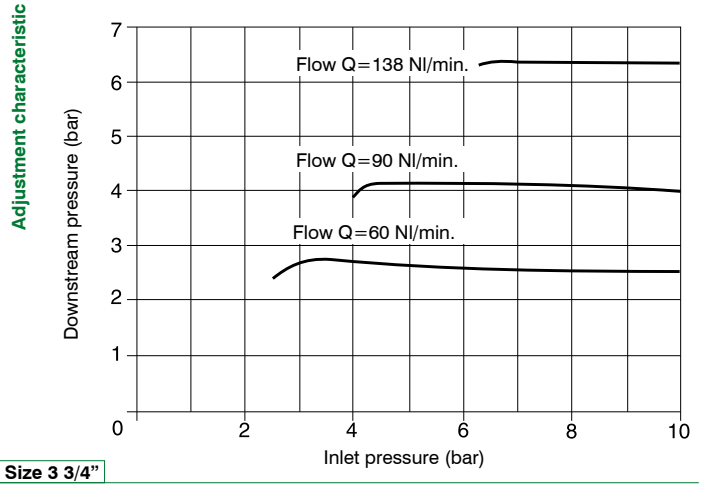
Size 2

Adjustment characteristic



Size 3

Adjustment characteristic



Size 3 3/4"

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Filter + Pressure regulator + Lubricator



- Double filter action: air flow centrifugation and filter element
- Filtering cartridge made of HDPE available in three different filtration grades (5μm, 20μm, 50μm)
- Filter cartridge can be regenerated by washing / blowing it or replaced
- Semi-automatic or automatic drain
- Diaphragm pressure regulator with relieving
- Low histeresis rolling diaphragm and balanced spool
- Available in four pressure ranges up to 12 bar
- Oil mist lubricator
- Variable orifice size in function of the flow rate
- Oil quantity regulation mechanism and oil quantity visualization dome made of polycarbonate (PC)
- Oil refill plug
- Available with low level electrical sensor NO and NC
- Bowls screwed to the body (Size 1)
- Bowl assembly via bayonet type quick coupling mechanism with safety button (Size 2 - Size 3 - Size 4)
- Atex certification (II 2GD o II 3GD) on request

Technical characteristics				
Size	Size 1	Size 2	Size 3	Size 4
Body and connections type	Zinc alloy body, Zinc alloy integrated connections Technopolymer body, metal connections	Aluminium body, integrated aluminium connections		
Protection and bowl type	Technopolymer protection - PA bowl (Size 1 available without protection)			Metal bowl with blind metal bowl
IN / OUT connections	G1/8" - G1/4"	G1/4" - G3/8"	G3/8" - G1/2", G3/4"	G1"
Assembly configuration	Stand alone Panel mounted with M4 screws	Stand alone Panel mounted with M5 screws	Stand alone Panel mounted with M6 screws	Stand alone Panel mounted with M6 screws
Assembly position	Vertical ±5°			
Filter pore size (μm)	5 / 20 / 50			
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12			
Bowl capacity (cm^3)	20	30	48	178
Condensation drain	Semi-automatic Automatic			
Regulation	Manual push and lock with pressure Manual lockable with accessories			
Pressure measurement	G1/8" Pressure gauge connection port			
Bowl capacity (cm^3)	36	52	62	300
Lubrication type	Oil mist			
Min.operational flow at 6,3 bar (Nl/min)	10	20		100
Oil level regulation	Manual, complete with visual indicator			
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20	G1/4" metal: 20 G3/8" metal: 25	G3/8" metal: 25 G1/2" metal: 30 G3/4" metal: 35	G1"metal: 35

Operational characteristics								
Size	Size 1	Size 2	Size 3	Size 4	Size 1	Size 2	Size 3	Size 4
Condensation drain	Semi-automatic				Automatic			
Maximum working pressure (bar)	13				10			
Minimum working pressure (bar)	0,5							
Indicative oil drop rate (Nl/min)	1 drop every 300/600							
Oil type	FD22 - HG32							
Working temperature (°C)	-5 ... +50							

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Weights				
Size	Size 1	Size 2	Size 3	Size 4
Zinc alloy body version (g)	755	/	/	/
Technopolymer body version (g)	375	/	/	/
Aluminium body version (g)	/	960	1430	5300

Order codes

17 **307A** . **B** . **D** . **S** . **K**

Size, body and connections	
007A	Zinc alloy body, connections G1/8" (only for size 1)
007B	Zinc alloy body, connections G1/4" (only for size 1)
107A	Technopolymer body, connections G1/8" (only for size 1)
107B	Technopolymer body, connections G1/4" (only for size 1)
207A	Aluminium body, connections G1/4" (only for size 2)
207B	Aluminium body, connections G3/8" (only for size 2)
307A	Aluminium body, connections G3/8" (only for size 3)
307B	Aluminium body, connections G1/2" (only for size 3)
307E	Aluminium body, connections G3/4" (only for size 3)
407NB	Aluminium body, connections G1" (only for size 4)

Filter pore size	
A	5 μm
B	20 μm
C	50 μm

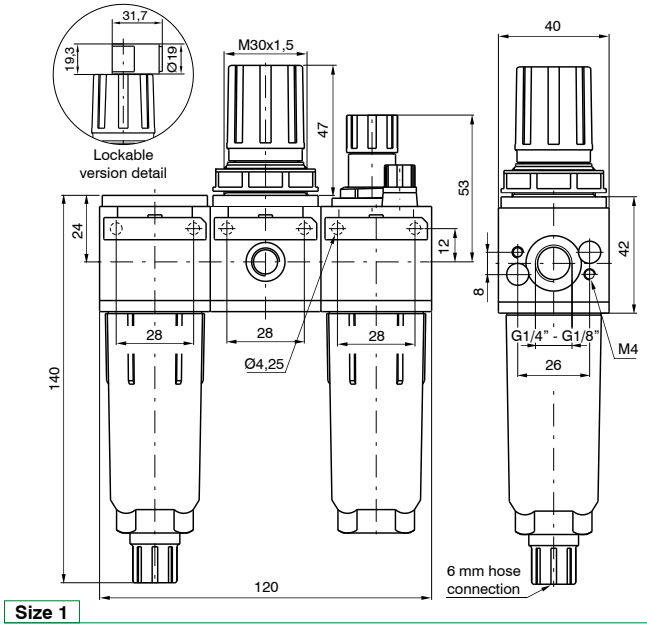
Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Type	
P	Bowl protection (only for size 1)
S	Automatic drain (for all sizes)
PS	Bowl protection and automatic drain (only for size 1)

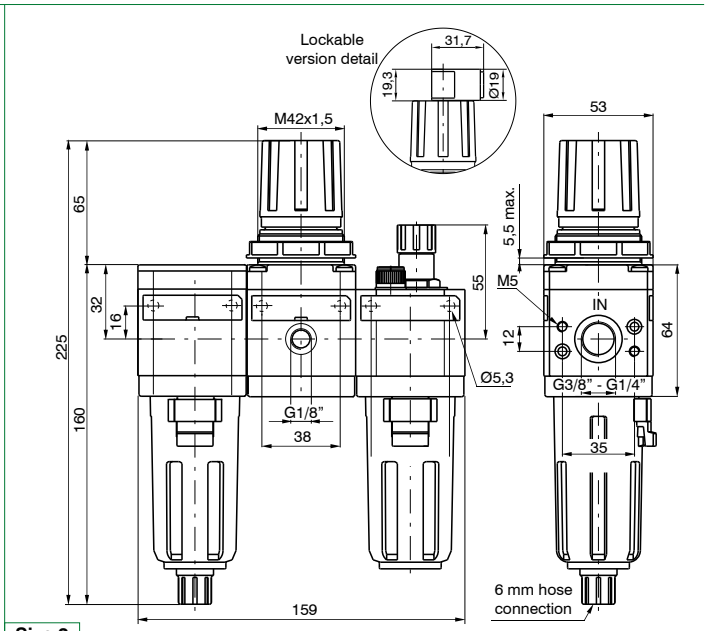
Options	
	Standard
K	Lockable version
KF	Lockable version with universal key

Example: 17307A.B.D.S.K
Size 3, filter + pressure regulator + lubricator, aluminium body, G3/8" connections, filter pore size 20 μm 0 - 12 bar, automatic drain lockable version

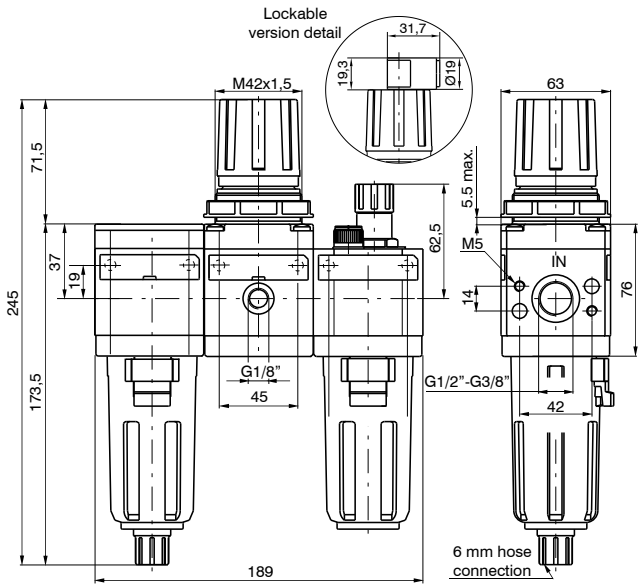
Dimensions



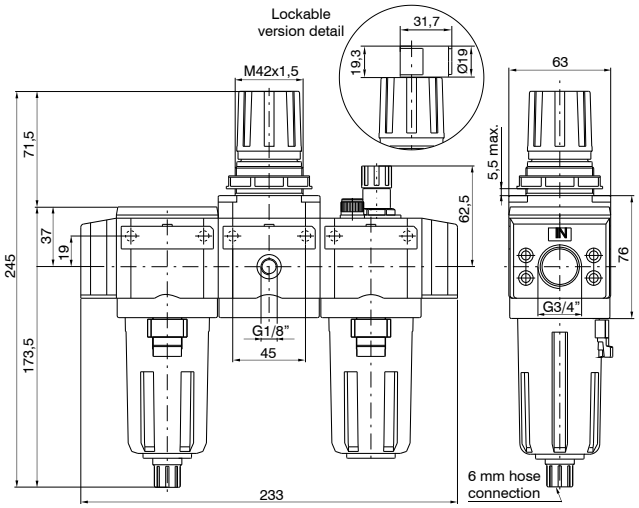
Size 1



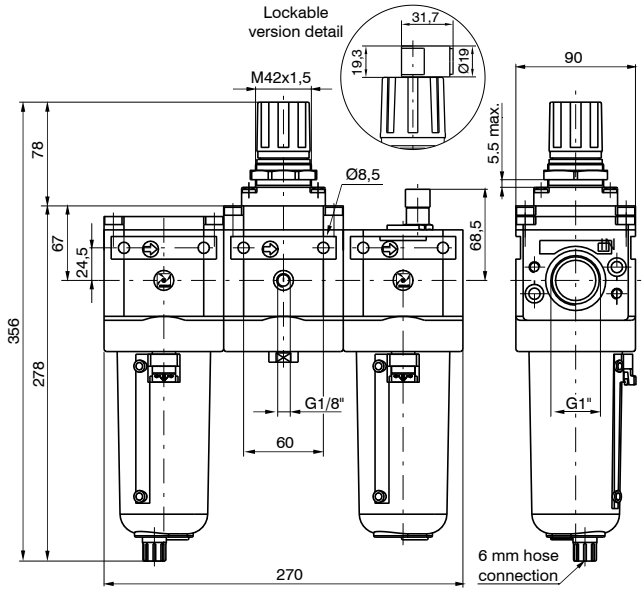
Size 2



Size 3



Size 3 3/4"

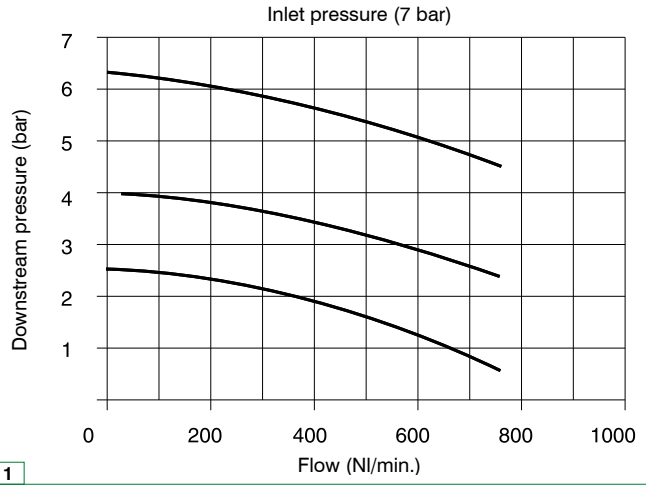


Size 4

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

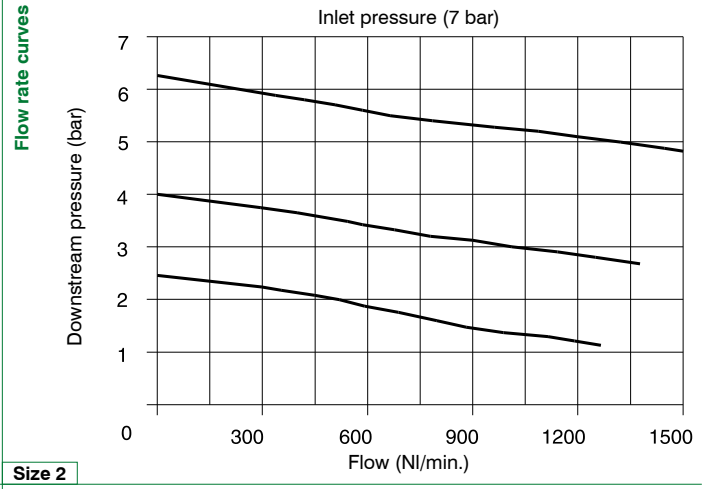
Characteristic curves

Flow rate curves



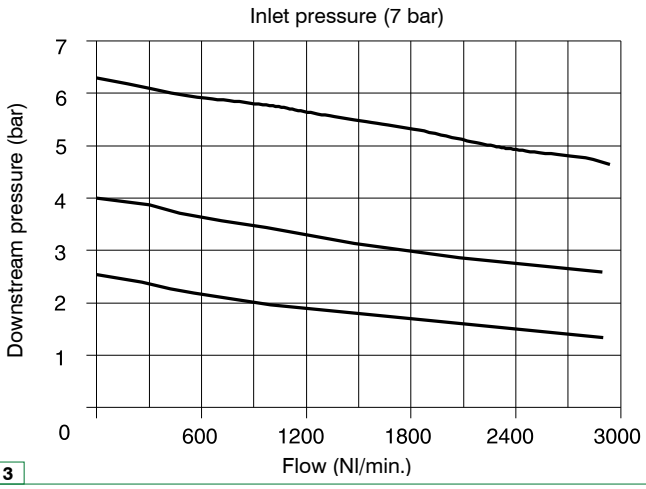
Size 1

Flow rate curves



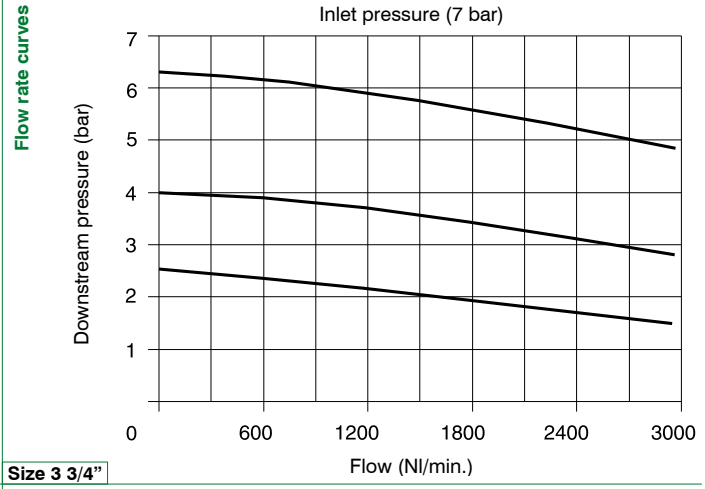
Size 2

Flow rate curves



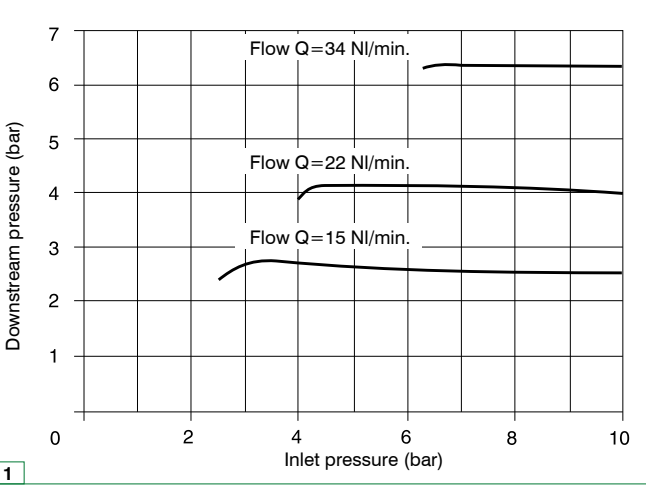
Size 3

Flow rate curves



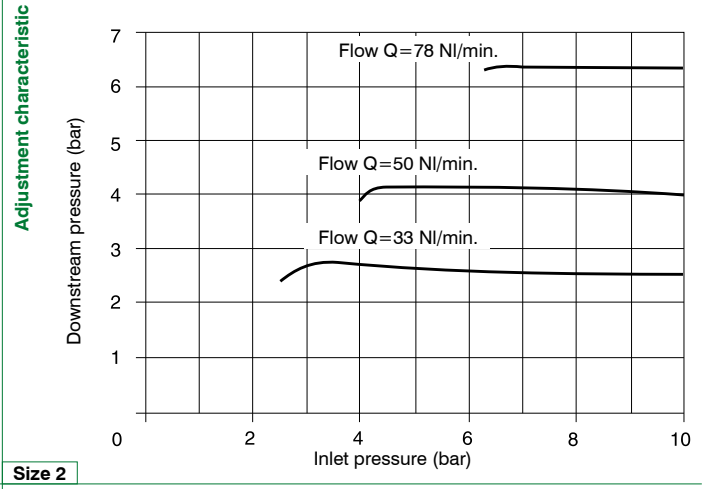
Size 3 3/4"

Adjustment characteristic



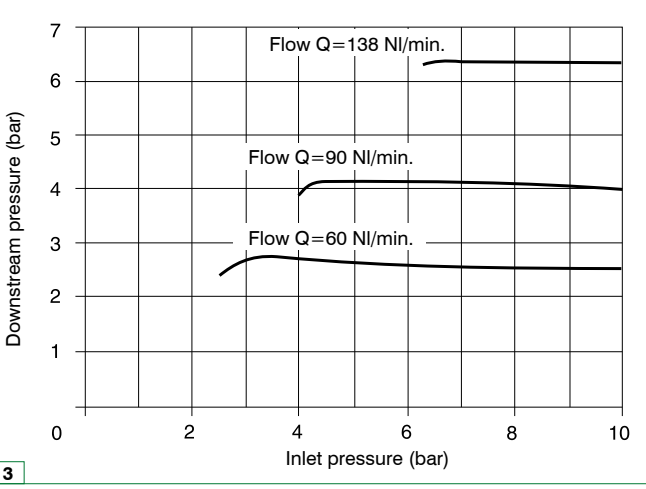
Size 1

Adjustment characteristic



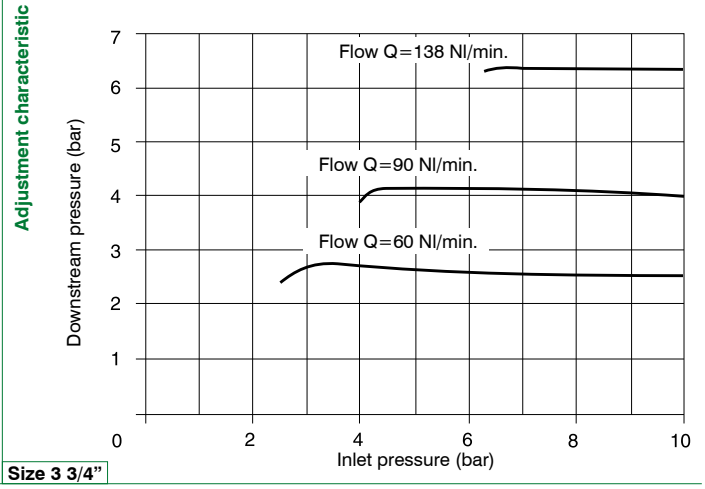
Size 2

Adjustment characteristic



Size 3

Adjustment characteristic



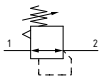
Size 3 3/4"

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Panel mounting pressure regulator



- Diaphragm pressure regulator with relieving
- Balanced poppet
- Technopolymer body, metal connections
- Lockable adjusting knob, simply press downwards to engage the locked position
- Ring nut for panel mounting
- Atex certification (II 3GD) on request



Technical characteristics	
Size	Size 1
Body and connections type	Technopolymer body, integrated metal connections
IN / OUT connections	G1/8" - G1/4"
Assembly configuration	Stand alone Panel mounting With fixing bracket
Assembly position	indifferent
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12
Regulation	Manual push and lock with pressure Manual lockable with accessories
Pressure measurement	G1/8" Pressure gauge connection port
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20

Operational characteristics	
Size	Size 1
Maximum working pressure (bar)	13
Minimum working pressure (bar)	0,5
Working temperature (°C)	-5 ... +50

Weights	
Size	Size 1
Technopolymer body version (g)	110

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Order codes

17 | 109A | . | D | . | L | . | K

Size, body and connections	
109A	Technopolymer body, connections G1/8”
109B	Technopolymer body, connections G1/4”

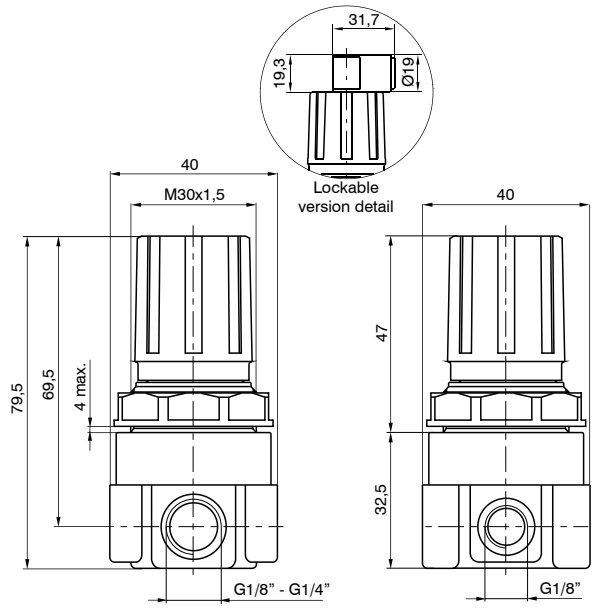
Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

Type	
L	Without relieving
SM	Improved relieving
SR	Quick exhaust (Unbalanced poppet)
SRM	Quick exhaust with improved relieving
SMF	Improved relieving with controlled relief

Options	
	Standard
K	Lockable version
KF	Lockable version with universal key

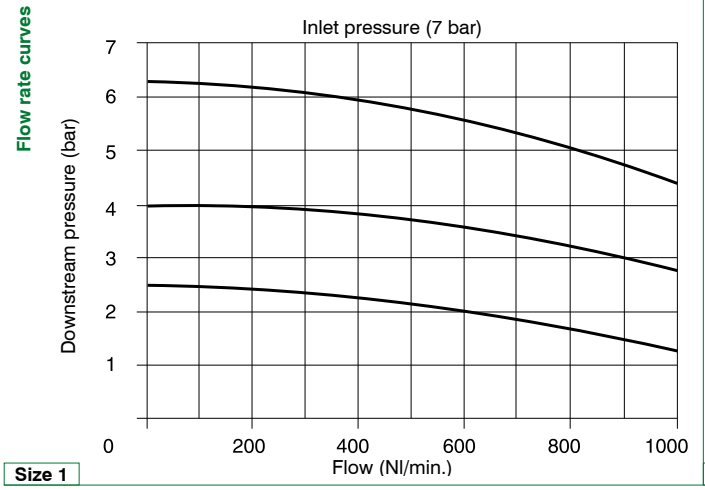
Example: 17109A.D.L.K
Size 1, panel mounting pressure regulator, technopolymer body, G1/8” connections, 0 - 12 bar, without relieving, lockable version

Dimensions

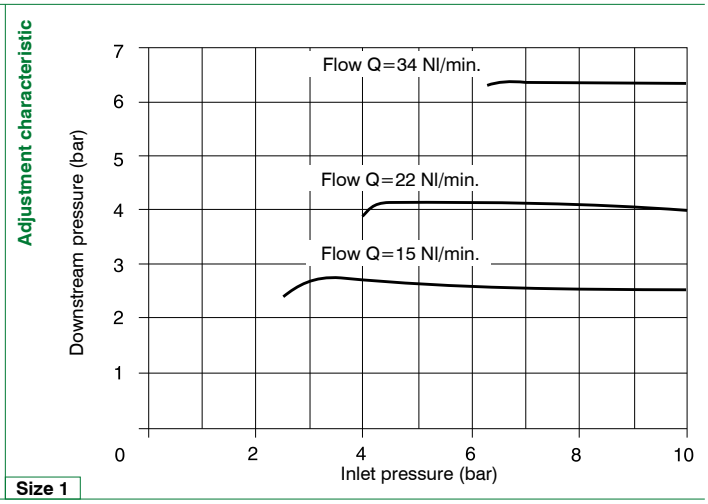


Size 1

Characteristic curves



Size 1



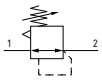
Size 1

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Panel mounting pressure regulator including pressure gauge



- Diaphragm pressure regulator with relieving
- Balanced poppet
- Technopolymer body with aluminum reinforced threaded connections
- Lockable adjusting knob, simply press downwards to engage the locked position
- Including pressure gauge integrated on the knob
- Ring nut for panel mounting
- Atex certification (II 3GD) on request



Technical characteristics	
Size	Size 1
Body and connections type	Technopolymer body, aluminum reinforced threaded connections
IN / OUT connections	G1/8" - G1/4"
Assembly configuration	Stand alone Panel mounting With fixing bracket
Assembly position	Indifferent
Pressure range (bar)	0 - 2 / 0 - 4 / 0 - 8 / 0 - 12
Regulation	Manual push and lock with pressure
Pressure measurement	G1/8" Pressure gauge connection port integrated on the knob
Max. fittings torque IN / OUT connections (Nm)	G1/8" metal: 15 G1/4" metal: 20

Operational characteristics	
Size	Size 1
Maximum working pressure (bar)	13
Minimum working pressure (bar)	0,5
Working temperature (°C)	-5 ... +50

Weights	
Size	Size 1
Technopolymer body version (g)	250

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Order codes

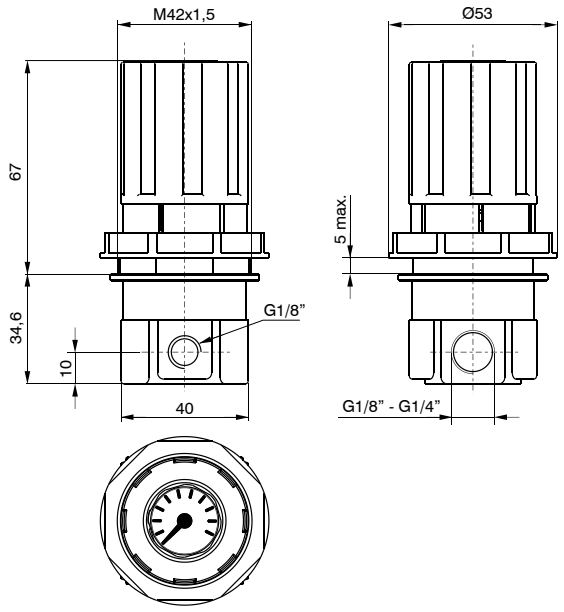
17 | 129A | . | D

Size, body and connections	
129A	Technopolymer body, connections G1/8”
129B	Technopolymer body, connections G1/4”

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar
D	0 - 12 bar

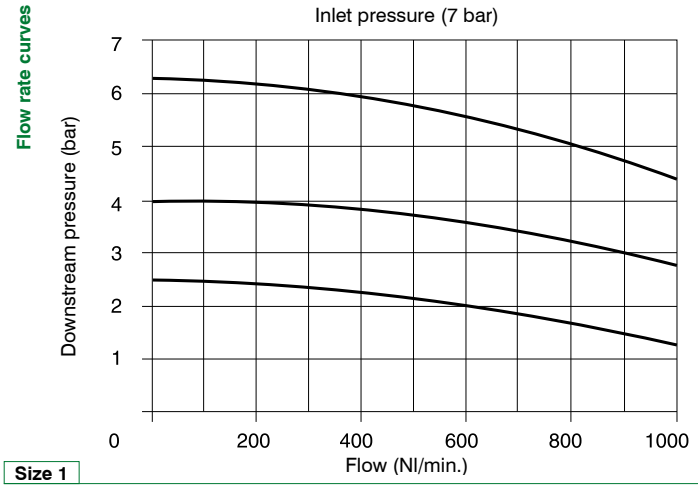
Example: 17129A.D
Size 1, panel mounting pressure regulator including pressure gauge, technopolymer body, G1/8” connections, 0 - 12 bar

Dimensions

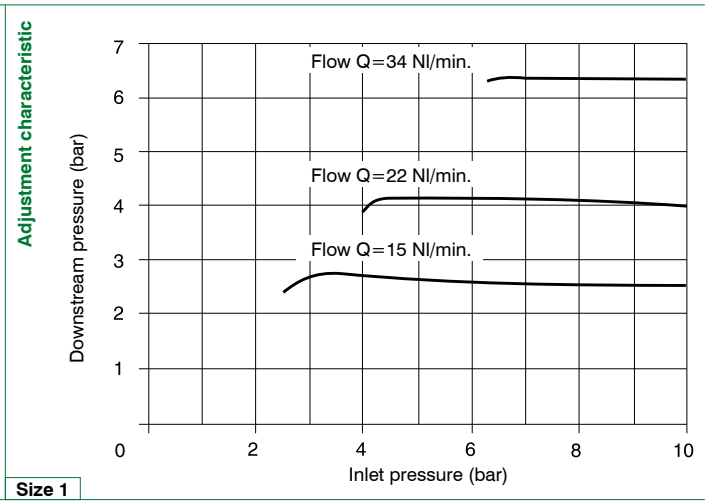


Size 1

Characteristic curves



Size 1



Size 1

Precision pressure regulators with high flow rate relieving



- Maintains accurate pressure settings
- Sensitivity combined with high relieving rates
- High flow rate with extremely low pressure drop
- Lockable adjusting knob, simply press downwards to engage the locked position
- Aluminium body
- Ring nut for panel mounting
- Controlled relief
- Atex certification (II 2GD) on request

Technical characteristics		
Size	Size 1	Size 3
Body and connections type	Aluminium body, integrated aluminium connections	
IN / OUT connections	G1/4"	G1/2"
Assembly configuration	Stand alone Panel mounting With fixing bracket	Stand alone Panel mounting With fixing bracket
Assembly position	Indifferent	
Fluid	20μ filtered air and preferably non lubricated	
Air flow with inlet pressure 10 bar (Nl/min)	5	
Pressure range (bar)	0,1 - 2 / 0,1 - 4 / 0,1 - 7 / 0,1 - 10	
Regulation	Manual push and lock with pressure Manual lockable with accessories	
Pressure measurement	G1/8" Pressure gauge connection port	
Max. fittings torque IN / OUT connections (Nm)	G1/4" metal: 20	G1/2" metal: 30

Operational characteristics		
Size	Size 1	Size 3
Maximum working pressure (bar)	10	
Minimum working pressure (bar)	0,5	
Working temperature (°C)	-5 ... +50	

Weights		
Size	Size 1	Size 3
Aluminium body version (g)	380	970

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Order codes

17 | 3S2B | . | 0010 | . | E | . | K

Size, body and connections	
1S2B	Aluminium body, connections G1/4” (only for size 1)
3S2B	Aluminium body, connections G1/2” (only for size 3)

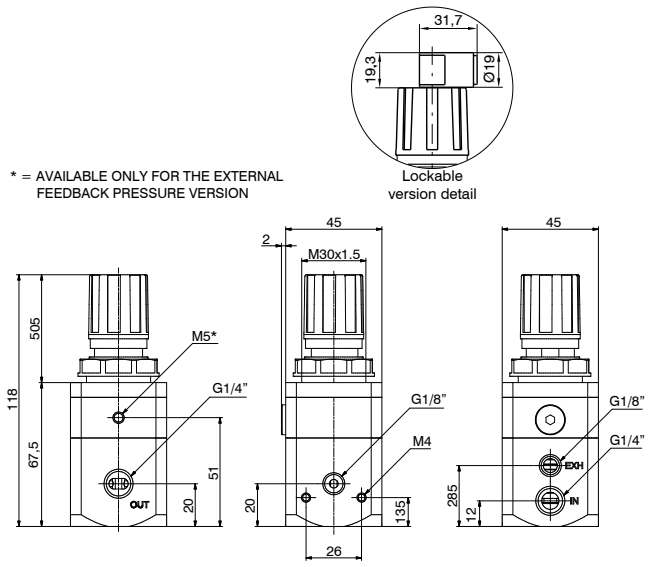
Pressure range	
0002	0,1 - 2 bar
0004	0,1 - 4 bar
0007	0,1 - 7 bar
0010	0,1 - 10 bar

Type	
	Standard
E	External pressure feedback

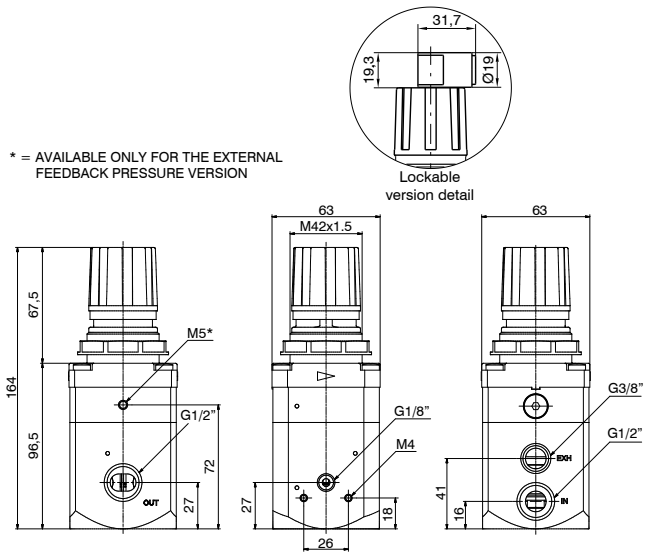
Options	
	Standard
K	Lockable version
KF	Lockable version with universal key

Example: 173S2B.0010.E.K
Size 3, precision pressure regulator with high flow rate relieving, aluminium body, G1/2” connections, 0,1 - 10 bar, external pressure feedback, lockable version

Dimensions



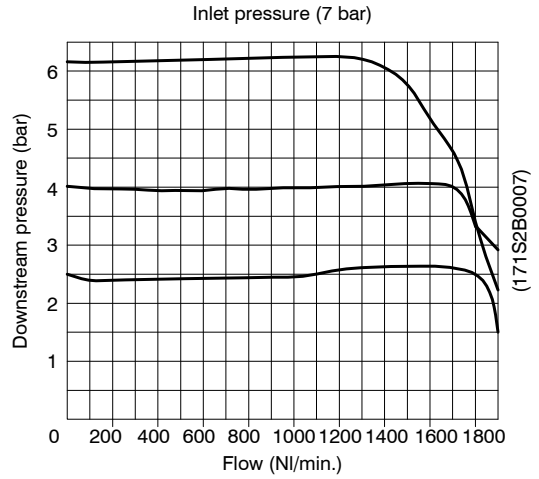
Size 1



Size 3

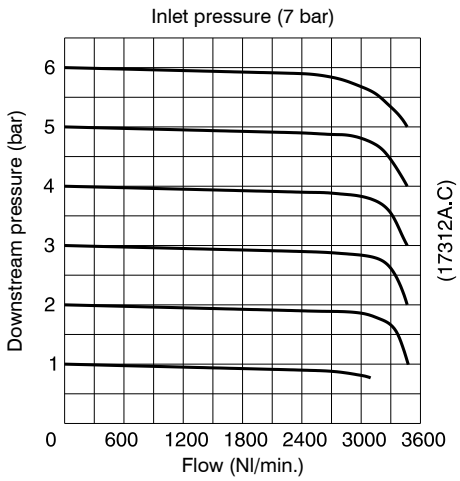
Characteristic curves

Flow rate curves



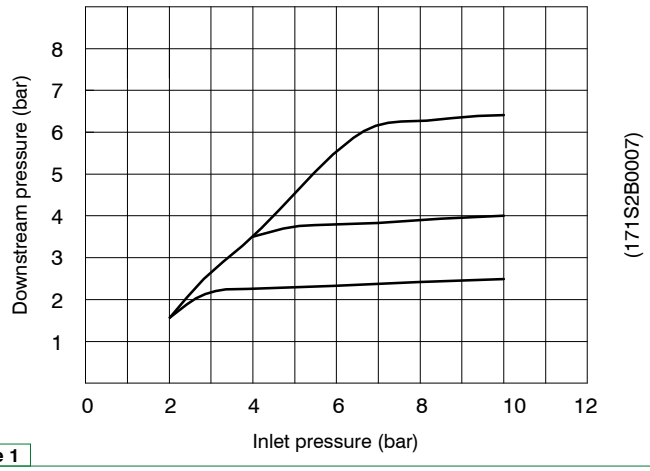
Size 1

Flow rate curves



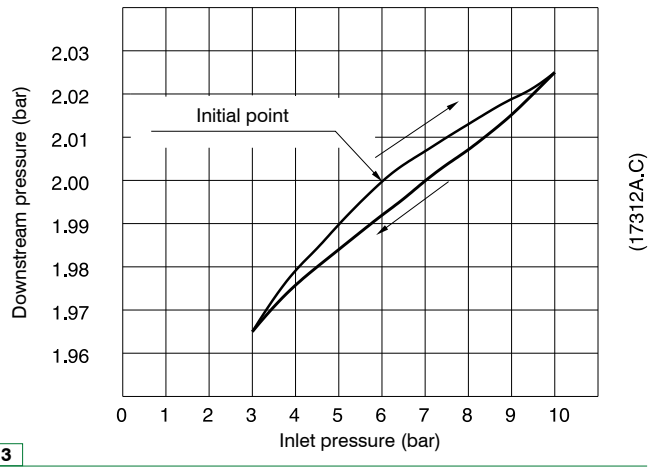
Size 3

Adjustment characteristic



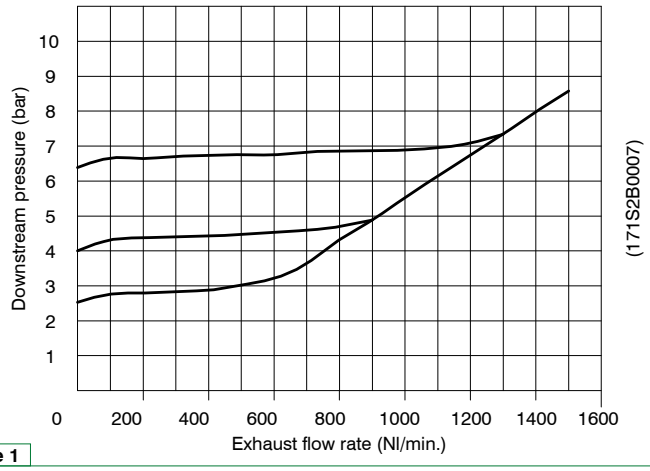
Size 1

Adjustment characteristic



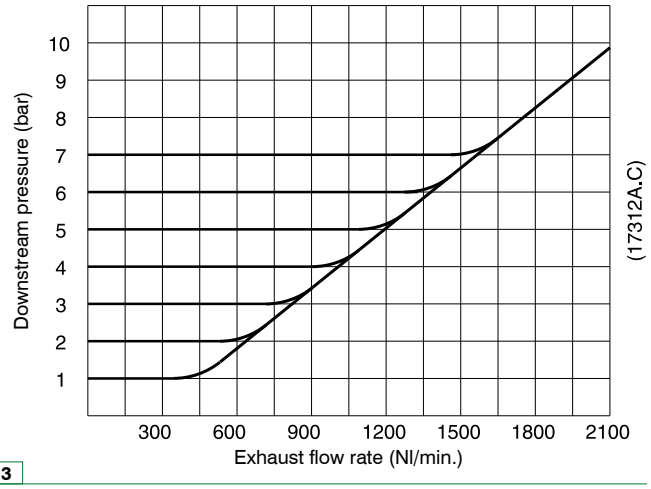
Size 3

Exhaust flow rate curves



Size 1

Exhaust flow rate curves



Size 3

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Precision pressure regulators with pneumatic pilot



- Maintains accurate pressure settings
- Sensitivity combined with high relieving rates
- High flow rate with extremely low pressure drop
- Aluminium body
- Controlled relief
- Atex certification (II 2GD) on request

Technical characteristics	
Size	Size 3
Body and connections type	Aluminium body, integrated aluminium connections
IN / OUT connections	G1/2"
Assembly configuration	Stand alone
Assembly position	Indifferent
Fluid	20μ filtered air and preferably non lubricated
Air flow with inlet pressure 10 bar (Nl/min)	5
Pressure measurement	G1/8" Pressure gauge connection port
Max. fittings torque IN / OUT connections (Nm)	G1/2" metal: 30

Operational characteristics	
Size	Size 3
Maximum working pressure (bar)	10
Minimum working pressure (bar)	0,5
Working temperature (°C)	-5 ... +50

Weights	
Size	Size 3
Aluminium body version (g)	970

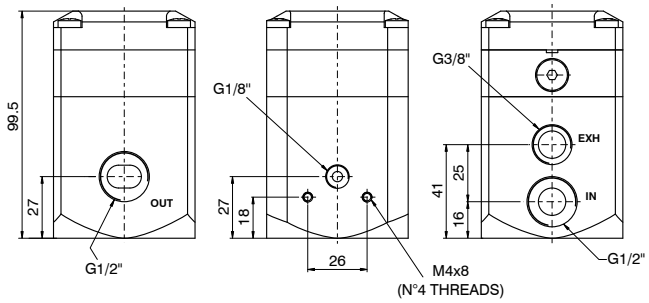
Order codes

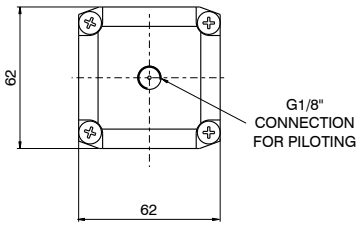
17 | 3P2B | .0010

Size, body and connections	
3P2B	Aluminium body, connections G1/2”

Example: 173P2B.0010
Size 3, precision pressure regulator with pneumatic pilot, aluminium body, G1/2” connections

Dimensions

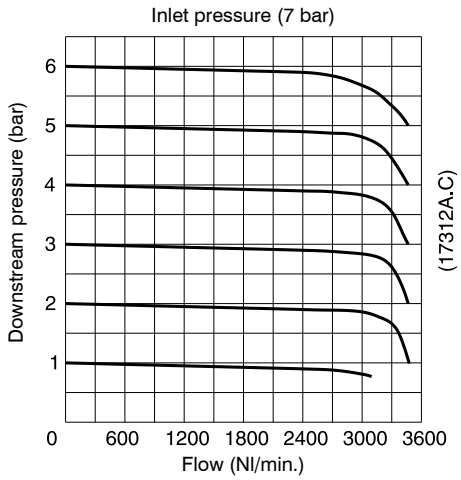




Size 3

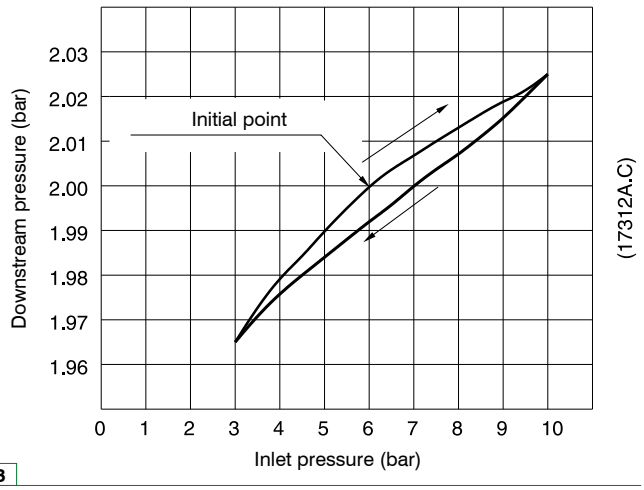
Characteristic curves

Flow rate curves



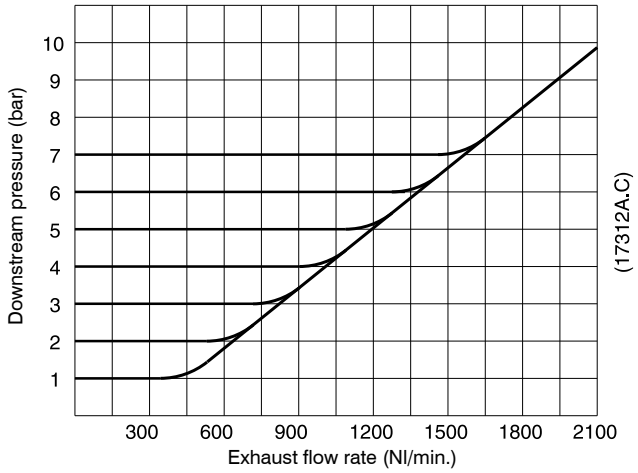
Size 3

Adjustment characteristic



Size 3

Exhaust flow rate curves



Size 3

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Precision pressure regulator for manipulation applications



- Maintains accurate pressure settings
- Sensitivity combined with high relieving rates
- High flow rate with extremely low pressure drop
- Manual and piloted adjustment for structure and load balancing
- Aluminium body
- Controlled relief
- Manual adjustment: 5 Bar Maximum
- Pilot adjustment: 5 Bar Maximum
- Hysteresis ±0.01bar

Technical characteristics	
Size	Size 3
Body and connections type	Aluminium body, integrated aluminium connections
IN / OUT / EXH connections	G1/2" (IN and OUT) / G3/8 (EXH)
Pilot connection	G1/8
Assembly configuration	Stand alone With fixing bracket
Assembly position	Indifferent
Fluid	20μ filtered air and preferably non lubricated
Air flow with inlet pressure 10 bar (Nl/min)	5
Pressure range (bar)	0.1 - 5 (max manual adjustment) / 0.1 - 8 (max pilot adjustment)
Regulation	Manual (for balancing of the structure) Piloted (for load balancing)
Pressure measurement	G1/8" Pressure gauge connection port
Max. fittings torque IN / OUT connections (Nm)	G1/2" metal: 30 G3/8" metal: 25

Operational characteristics	
Size	Size 3
Maximum working pressure (bar)	10
Minimum working pressure (bar)	OUT pressure + 1 bar
Working temperature (°C)	-5 ... +70
Sensitivity	0.2% F.S
Repeatability	±0.5% F.S
Hysteresis	± 0.01 bar

Weights	
Size	Size 3
Aluminium body version (g)	1600

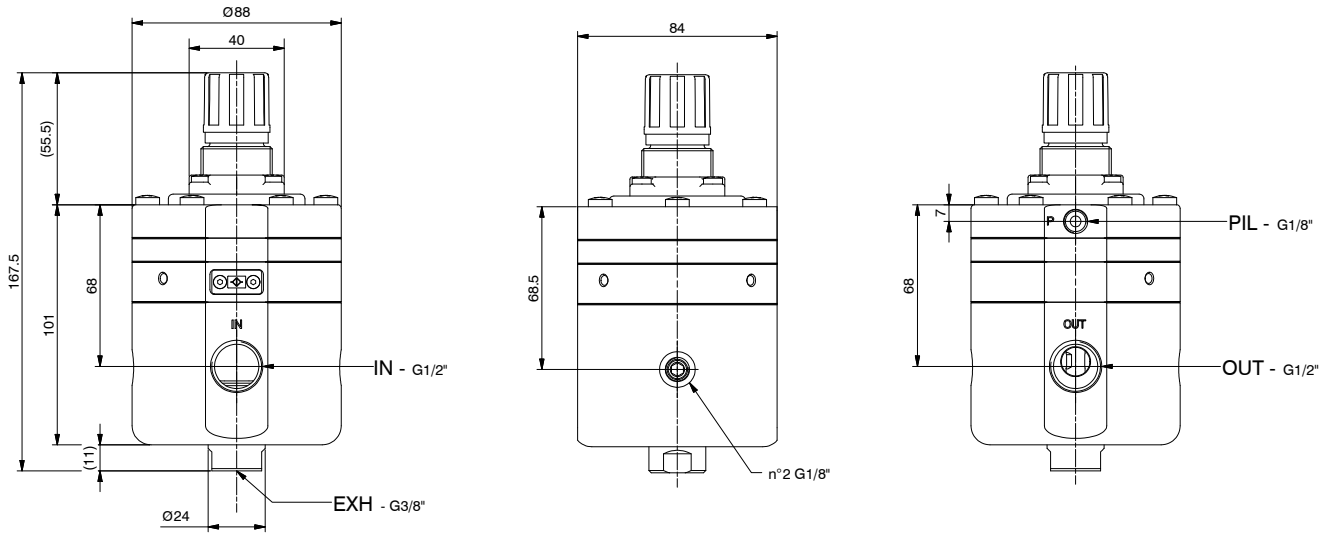
Order codes

RB17 | 3B | R2C

Size, body and connections	
3B	Aluminium body, connections G1/2”

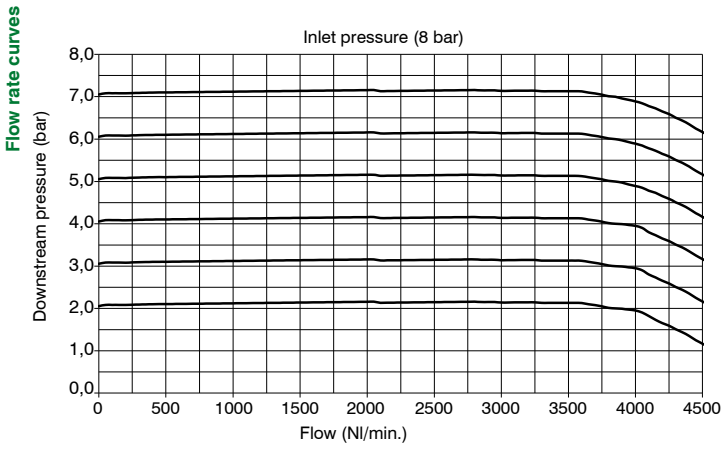
Example: RB173BR2C
Size 3, precision pressure regulator for manipulation applications, aluminium body, G1/2” connections

Dimensions

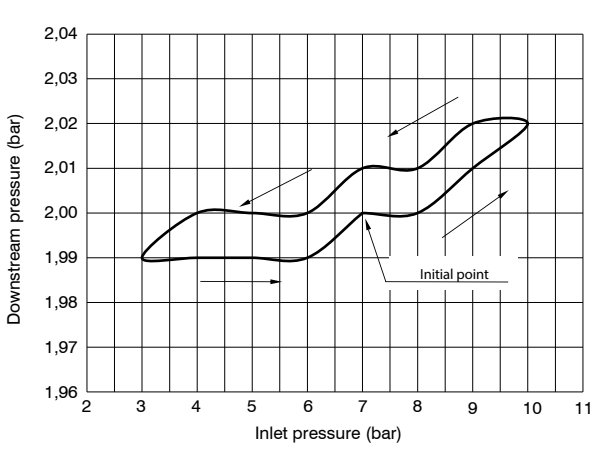


Size 3

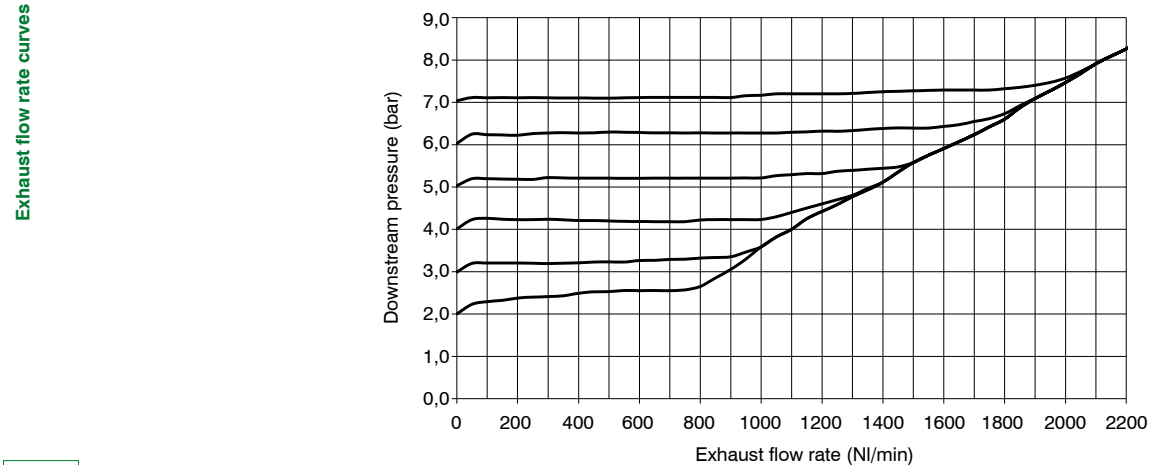
Characteristic curves



Size 3



Size 3

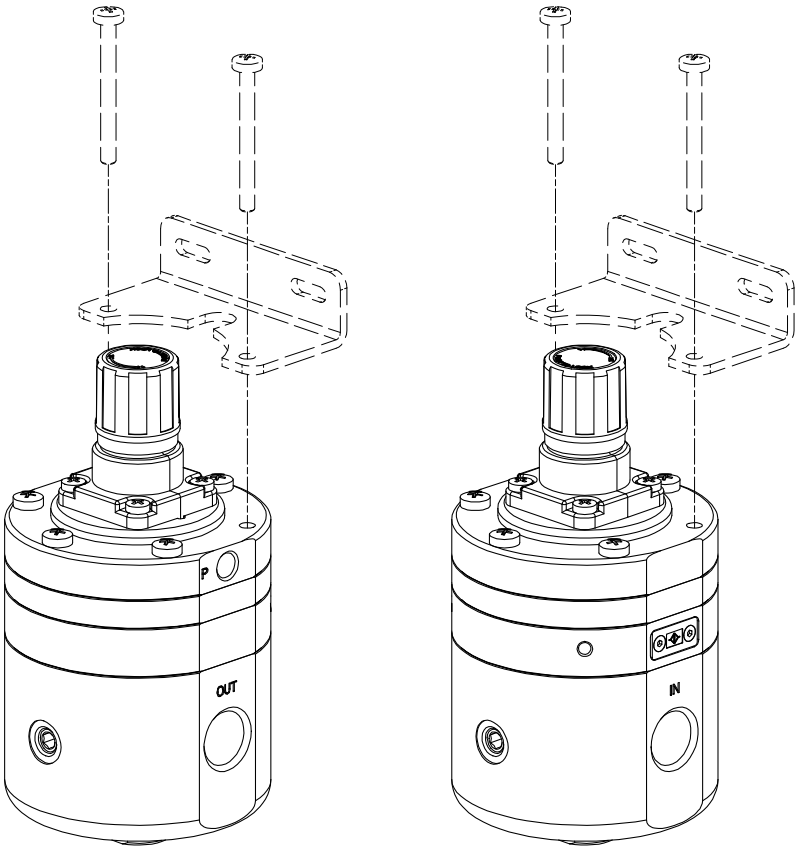


Size 3

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Accessories and fixing

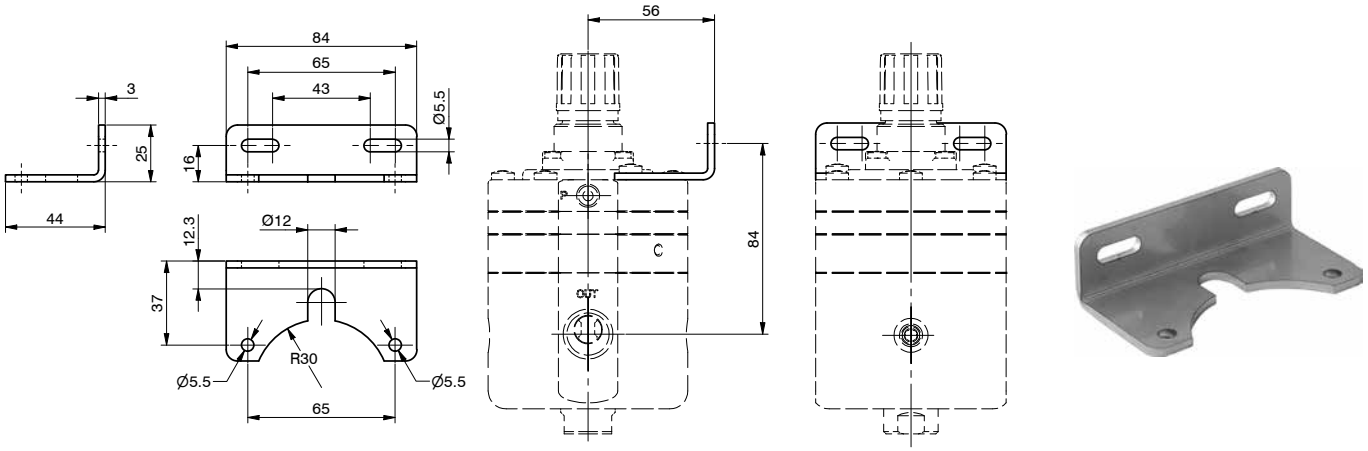
The regulator can be mounted by means of a bracket. To enable fixing, unscrew the two screws indicated and screw them back with the bracket mounted. It is advisable to apply soft thread-locker to the screws before screwing them back in.



Fixing bracket

RB17350

Model	
RB17350	Fixing bracket for the precision pressure regulator for manipulation applications



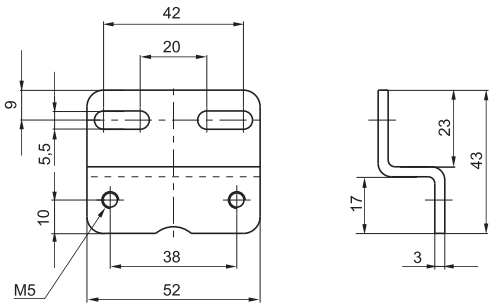
Fixing bracket for regulators

1725	0

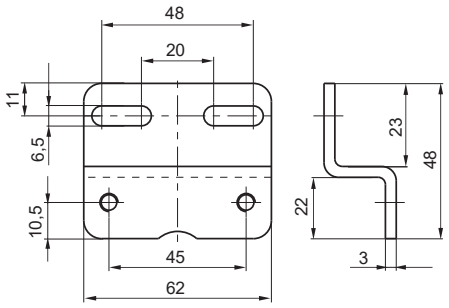
Size	
1725	Size 2
1735	Size 3

Type	
0	For standard regulators
2	For pressure regulators





Size 2



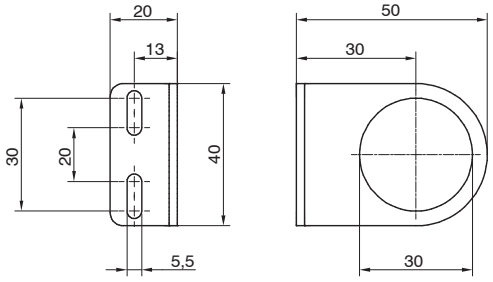
Size 3

Fixing bracket

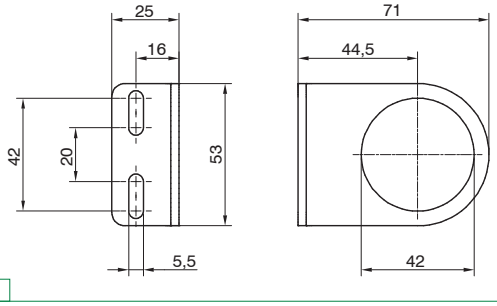
171	50

Size	
171	Size 1
T172	Size 2 - Size 3





Size 1



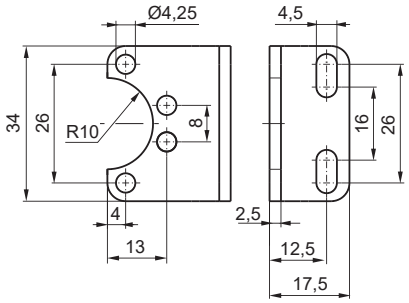
Size 2 - Size 3

Fixing bracket

170	M5

Size	
170	Size 1





Size 1

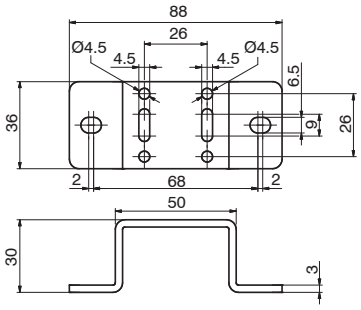
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Fixing bracket for pressure regulator

170 50

Size	
170	Size 1





Size 1

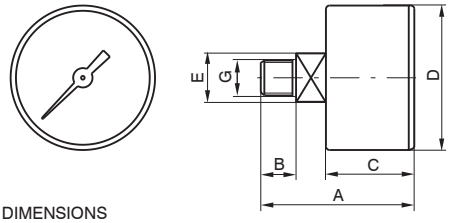
Pressure gauge

17070 A C

Version	
A	Dial Ø40
B	Dial Ø50

Scale	
A	0 - 4 bar
B	0 - 6 bar
C	0 - 12 bar





DIMENSIONS

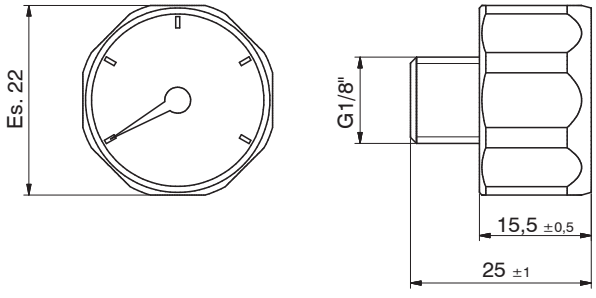
CODE	A	B	C	D	E	G	Weight g
17070A	44	10	26	41	14	1/8"	60
17070B	45	10	27	49	14	1/8"	80

Pressure gauge diameter Ø23

17070M A

Scale	
A	0 - 4 bar
B	0 - 6 bar
C	0 - 12 bar





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Assembling kit

1726	0

Size	
1716	Size 1
1726	Size 2
1736	Size 3
1746	Size 4

Type	
0	Standard
5	For progressive start-up valve



Assembling kit for manifold regulators

170	M6

Size	
170	Size 1



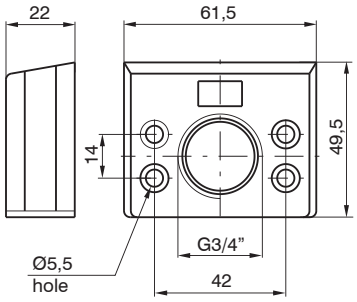
Flange G3/4”

1738	1E

Size	
1738	Size 3

Type	
1E	Inlet flange
2E	Output flange





Size 3

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1700 Steel line



- **Wide working temperature range**
- **Available in 3 sizes with connections from 1/4" to 1"**
- **ATEX certification (II 2G or II 2D), SIL, EAC**
- **Clean profile versions available**

The stainless steel SS1700 air treatment series has been engineered and developed to approach specifically the OIL & GAS industry and more widely for all the severe service applications that require excellent corrosion resistance due to chemical and/or harsh environmental condition.
All external and internal parts (except for the automatic drain version) are AISI 316L stainless steel material in compliance with NACE standard MR0175/ISO 15156/1. The product range includes FILTER, with filtration elements up to 3 filtration degree (5μm-20 μm-50 μm), available in AISI316 stainless steel or HDPE (high density polyethylene), and manual or automatic condensed exhaust; The PRESSURE REGULATOR is supplied with low hysteresis rolling diaphragm and an over-pressure exhaust valve (RELIEVING), available in 4 different adjustment ranges from 0 to 12 bar. As a last the FILTER REGULATOR range, which combines the features of a filter and pressure regulator into a one single device. "CLEAN PROFILE" version is available for all the sizes, featuring a glossy finish on the external surface. The over-pressure exhaust hole (RELIEVING) has a 1/8" NPT threading, and it is protected by an AISI 316 sintered filter series. Note: for CLEAN PROFILE series this is a simple unthread hole.

Instructions for installation and use
Product shall be installed reducing the distance from inlet point. Check and install the device following the flow direction (clearly marked with an arrow stamped on the body). Vertical position installation with condensed exhaust tap pointing downward is recommended.
Devices must be used in compliance with pressure and temperature operating range. To set the pressure there is an adjustable knob, located on the top of the device. Pneumax recommend selection of pressure regulator adjusting range option in line with client required performance The condensed exhaust action for the manual drain version shall be performed only in the absence of pressure. To discharge liquid, turn the tap clockwise until the discharge of liquid is triggered, then tighten it all the way.

Construction and operational characteristics			
Size	Size 2	Size 3	Size 4
Body, bowl and adjustment mechanism	AISI 316L stainless steel		
Caseback regulator	AISI 316L stainless steel		
Adjustment screw, locking nut and fastening screws	AISI 316L stainless steel (stainless steel A4-70)		
Internal components	AISI 316L stainless steel		
Filtering elements	AISI 316L stainless steel or HDPE (High density polyethylene)		
Springs	AISI 316L stainless steel		
Seals	NBR (standard versions and automatic drain) NBR for low temperatures (L versions) FPM - HNBR (H versions) EPDM-FDA (EF versions) Silicone - PU (Z version)		
Automatic drain	Brass, stainless steel AISI 304 and AISI 302, sintered bronze Acetal resin, NBR, FPM		

Operating range			
Size	Size 2	Size 3	Size 4
Fluid	Filtered air. No lubrication needed, if applied it shall be continuous Inert gases Natural gases		
Working temperature (°C)	-30 ... +80 (standard version) -50 ... +80 (low temperature L version) -60 ... +80 (low temperature version -60 °C Z) -5 ... +150 (high temperature H version) -35 ... +70 (automatic drain S version and reduced orifice automatic drain SR version) -40 ... +100 (EPDM-FDA version)		
Maximum working pressure (bar)	20 (standard, low and high temperature versions) 16 (automatic drain version) 10 (reduced orifice automatic drain version)		

Maintenance

Filtration elements and filter regulator are reusable through blowing and/or washing and is made of stainless steel or HDPE (high density polyethylene). To replace, remove the cup, loosen the set screw of the support and replace the filter element with a new one or refurbished one. Replace the regulator diaphragm whenever the performance is compromised or if there is a continuous discharge from the relieving hole (over-pressure exhaust). Fully discharge the adjustment spring before removing the adjustment mechanism. For other maintenance activities, due to complexity of assembly and requirement for dedicated **PNEUMAX** testing activities, it is strongly recommended to contact the manufacturer.

Certifications available

II 2G Ex h IIC Gb
II 2D Ex h IIIC Db

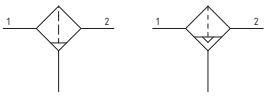
: Suitable up to SIL 3

: CU - TR 012

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Filter





- Body, bowl and internal components in AISI 316L stainless steel
- A4 (AISI 316) stainless steel fixing screws
- Manual or automatic drain
- ATEX certification (II 2G or II 2D), SIL, EAC
- Filter cartridge available in AISI 316 stainless steel or HDPE
- Clean profile versions available
- Versions with 1/8" NPT pressure gauge connection available

Technical characteristics			
Size	Size 2	Size 3	Size 4
Type	Rough finishing Clean profile (bowl)		
IN / OUT connections	G1/4" 1/4" NPT 3/8" NPT	G1/2" 1/2" NPT 1/4" NPT	G1" 1" NPT 3/4" NPT
Assembly configuration	Stand alone		
Assembly position	Vertical		
Filter pore size (µm)	5 20 50		
Max. bowl capacity (cm³)	15	25	78
Condensation drain	Manual Automatic		

Operational characteristics						
Size	Size 2	Size 3	Size 4	Size 2	Size 3	Size 4
Condensation drain	Manual			Automatic		
Maximum working pressure (bar)	20 (standard version)			16 (automatic drain version) 10 (reduced orifice automatic drain version)		
Minimum working pressure (bar)	/			0,5		
Working temperature (°C)	-30 ... +80 (standard version) -50 ... +80 (low temperature L version) -60 ... +80 (low temperature version -60 °C Z) -5 ... +150 (lhigh temperature H version) -40 ... +100 (EPDM-FDA version)			-35 ... +70 (automatic drain S version and reduced orifice automatic drain SR version)		

Weights	Size		
	Size 2	Size 3	Size 4
Standard version (g)	1088	1903	4655
Automatic drain version / Reduced orifice automatic drain version (g)	1175	2070	4692

Order codes

S | S | 17 | 2B | F | B | S | G

Version	
S	Rough finishing
F	Clean profile

Size and connections	
2A	Size 2 - 1/4" NPT
2B	Size 2 - 3/8" NPT
2C	Size 2 - G1/4"
3A	Size 3 - 1/4" NPT
3B	Size 3 - 1/2" NPT
3D	Size 3 - G1/2"
4A	Size 4 - 3/4" NPT
4B	Size 4 - 1" NPT
4D	Size 4 - G1"

Filter pore size	
A	5 μm - 316 stainless steel
B	20 μm - 316 stainless steel
C	50 μm - 316 stainless steel
D	5 μm - HDPE
E	20 μm - HDPE
F	50 μm - HDPE

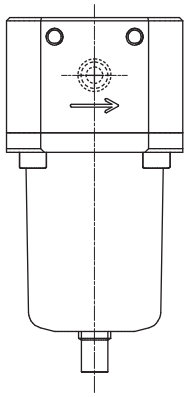
Options	
	Standard
L	Low temperature
Z	Low temperature (-60 °C)
H	High temperature
S	Automatic drain
SR	Reduced orifice automatic drain version
EF	EPDM-FDA

Body options	
	Standard
G	With pressure gauge connection port

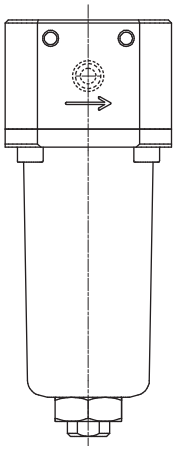
Example: SS172BFBSG
Size 2 filter, rough finishing, 3/8" NPT connection, filter pore size 20 μm - 316 stainless steel, automatic drain with pressure gauge connection port.

Design

Size 2 - Size 3 - Size 4
Manual drain



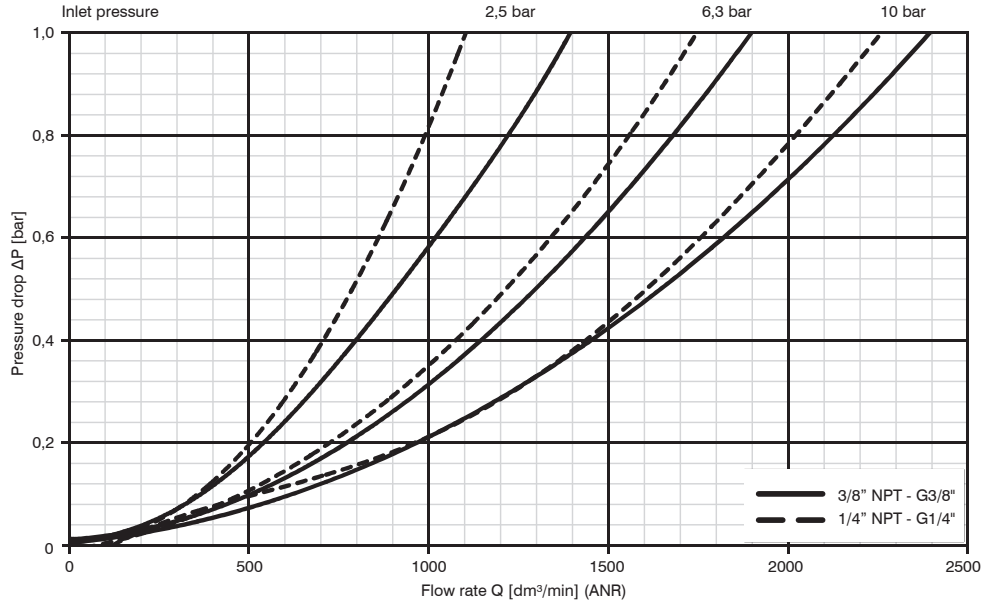
Size 2 - Size 3 - Size 4
Automatic drain



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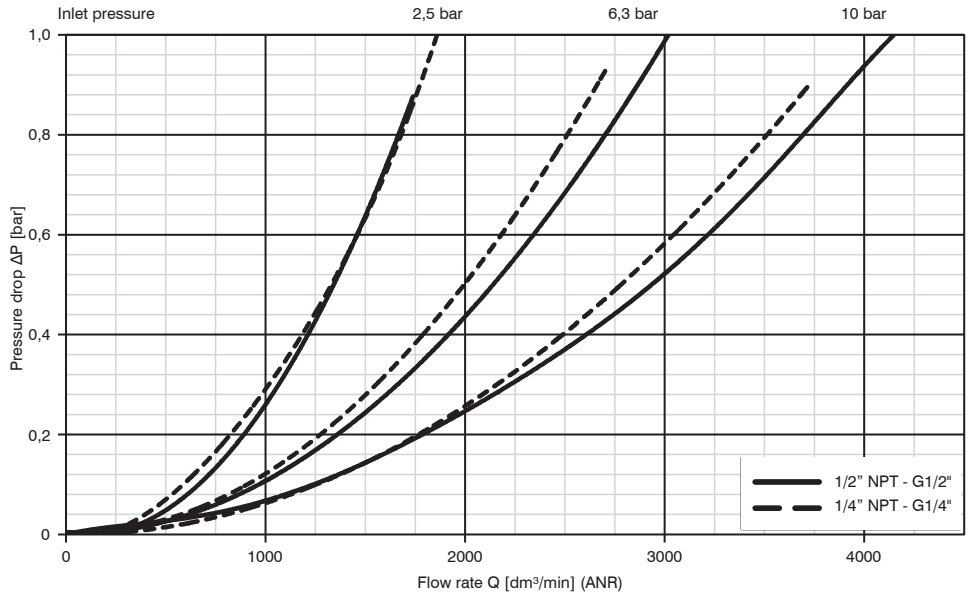
Characteristic curves

Flow rate curves



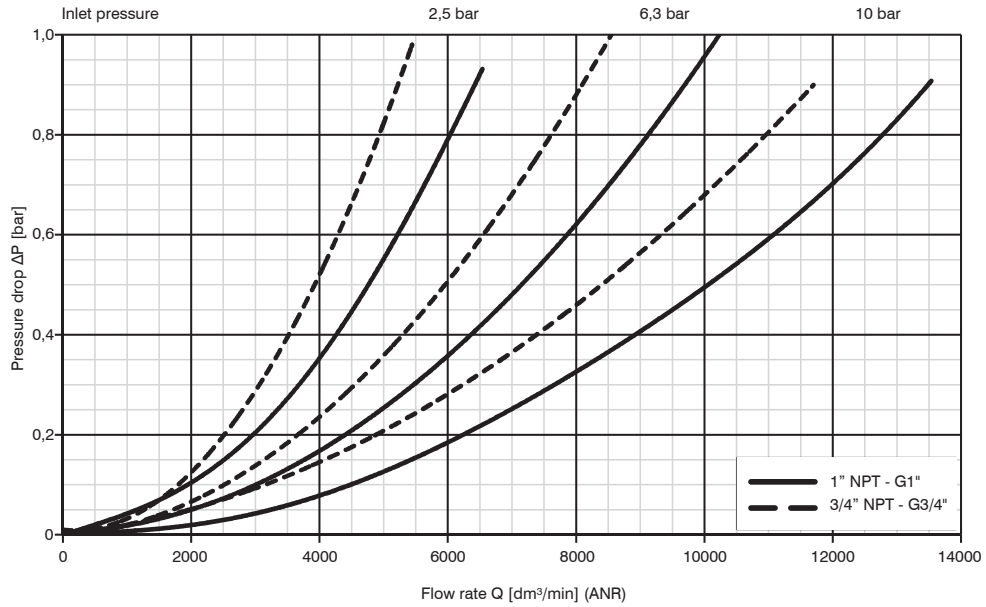
Size 2

Flow rate curves



Size 3

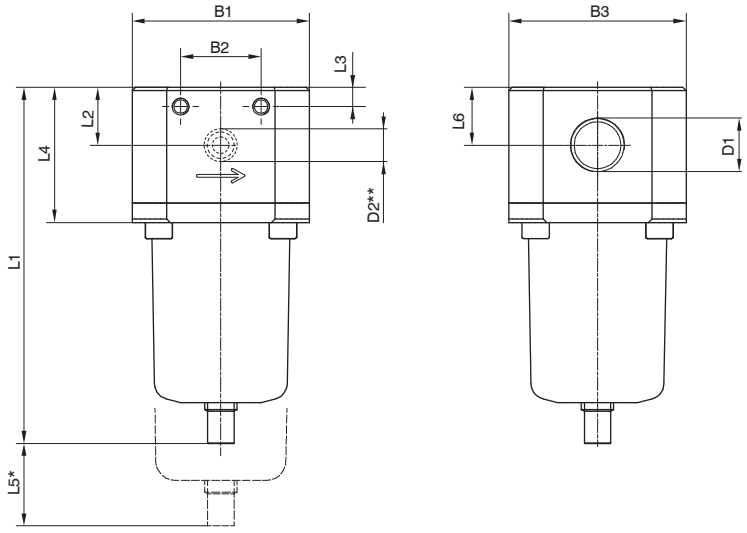
Flow rate curves



Size 4

Dimensions

Overall manual drain version

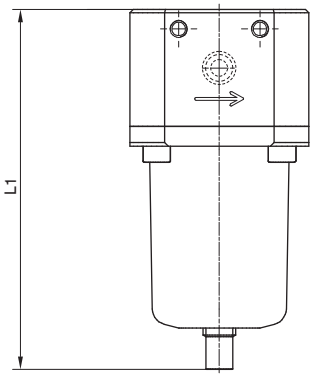


* = BOWL REMOVAL MAXIMUM HEIGHT
** = ONLY FOR VERSION WITH PRESSURE GAUGE CONNECTION PORT

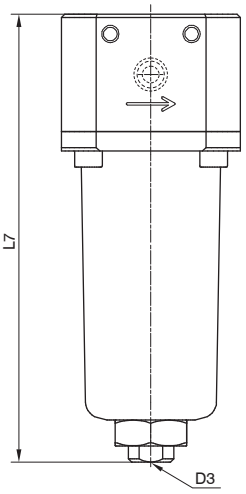
Model	B1	B2	B3	D1	D2	L1	L2	L3	L4	L5	L6
#172...	55	25	55	G1/4" 1/4" NPT 3/8" NPT	1/8" NPT	111	18	6	42	45	18
#173...	71	22	71	G1/2" 1/2" NPT 1/4" NPT	1/8" NPT	124	20	5,5	48	65	20
#174...	92	36	92	G1" 1" NPT 3/4" NPT	1/8" NPT	198,5	32,5	10	73,5	80	32,5

Variable dimensions

Manual drain version



Automatic
drain version (A.D.)

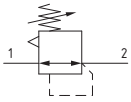


Model	L1	L7	D3
#172...	111	138	1/8" NPT
#173...	124	160	1/8" NPT
#174...	198,5	207,5	1/8" NPT

Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Regulators





- Pressure regulator diaphragm with over-pressure drain (Relieving)
- Body, adjustment mechanism, back plate and caseback internal components in AISI 316L stainless steel
- AISI 316 stainless steel adjustment springs
- Fixing screws, adjustment screw and locking nut in inox A4 (AISI 316)
- Clean profile versions available
- Low hysteresis rolling diaphragm
- Balanced system
- ATEX certification (II 2G or II 2D), SIL, EAC

Note
The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics			
Size	Size 2	Size 3	Size 4
Type	Rough finishing Clean profile (Back plate and adjustment mechanism)		
IN / OUT connections	1/4" NPT 3/8" NPT G1/4"	1/4" NPT 1/2" NPT G1/2"	3/4" NPT 1" NPT G1"
Assembly configuration	Stand alone		
Assembly position	Indifferent		
Pressure range (bar)	0-2 0-4 0-8 0-12		
Regulation	Manual		
Pressure measurement	1/8" NPT pressure gauge connection port		

Operational characteristics			
Size	Size 2	Size 3	Size 4
Maximum working pressure (bar)	20		
Minimum working pressure (bar)	0,5		
Working temperature (C°)	-30 ... +80 (standard version) -50 ... +80 (low temperature L version) -60 ... +80 (low temperature version -60 °C Z) -5 ... +150 (lhigh temperature H version) -40 ... +100 (EPDM-FDA version)		

Weights			
Size	Size 2	Size 3	Size 4
Weight (g)	1283	2270	5400

Order codes

S | S | 17 | 3B | R | B | N | L

Version	
S	Rough finishing
F	Clean profile

Size and connections	
2A	Size 2 - 1/4" NPT
2B	Size 2 - 3/8" NPT
2C	Size 2 - G1/4"
3A	Size 3 - 1/4" NPT
3B	Size 3 - 1/2" NPT
3D	Size 3 - G1/2"
4A	Size 4 - 3/4" NPT
4B	Size 4 - 1" NPT
4D	Size 4 - G1"

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar (0 - 7 bar for size 4)
D	0 - 12 bar (0 - 10 bar for size 4)

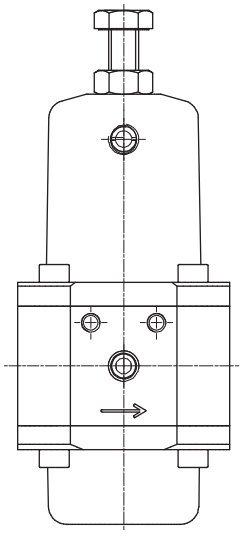
Type	
	Standard
N	without relieving

Options	
	Standard
L	Low temperature
Z	Low temperature (-60 °C)
H	High temperature
EF	EPDM-FDA

Example: SS173BRBNL
Size 3 regulator, rough finishing, 1/2" NPT connection, pressure range 0 - 4 bar, without relieving, low temperature version.

Design

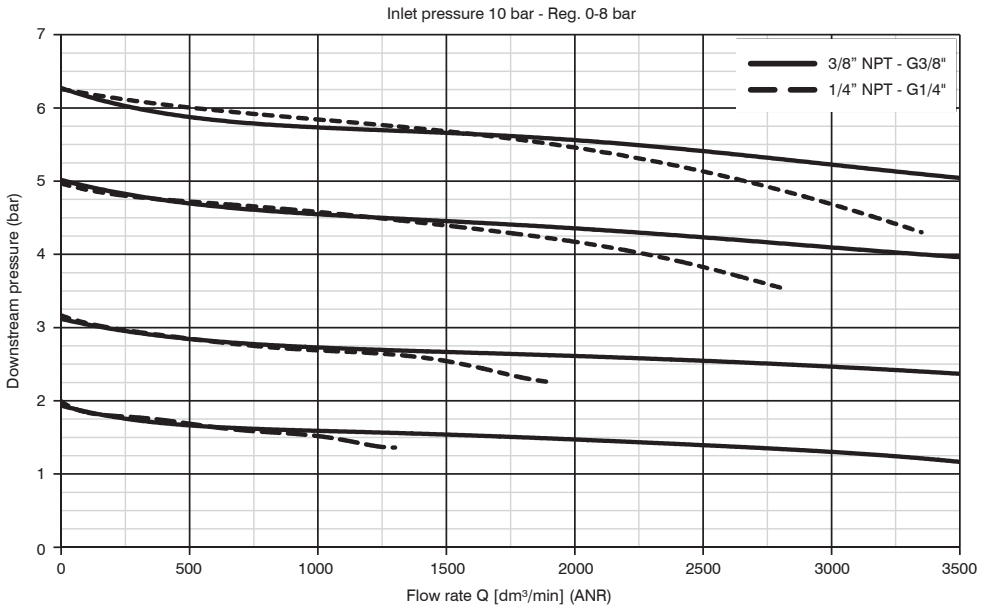
Size 2 - Size 3 - Size 4



Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

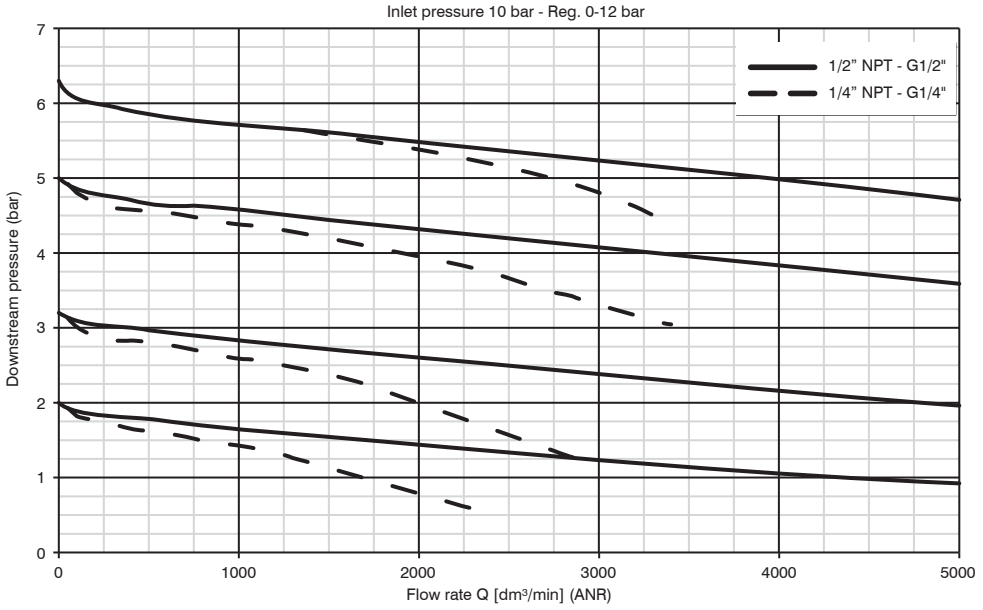
Characteristic curves

Flow rate curves



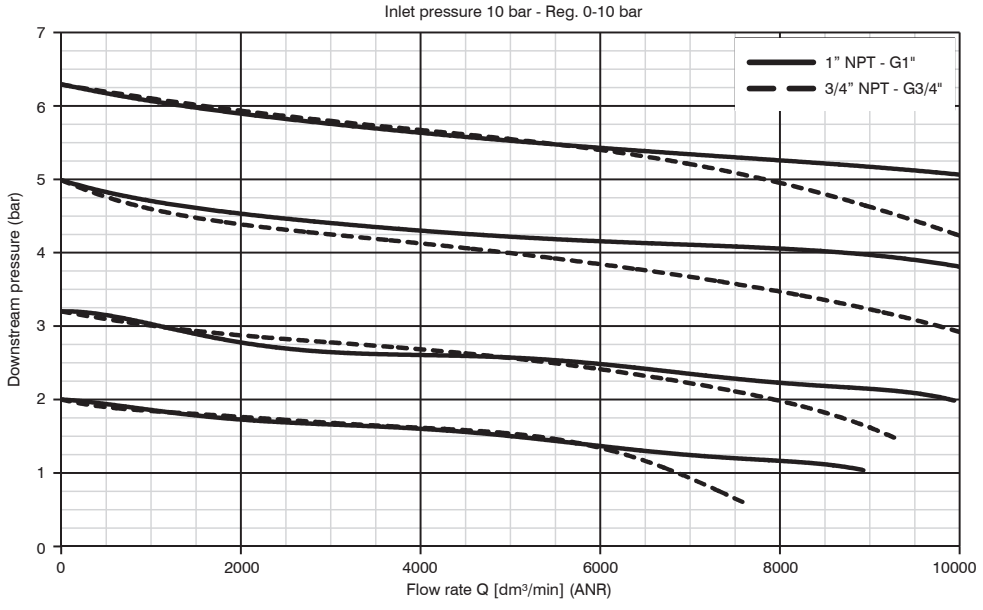
Size 2

Flow rate curves



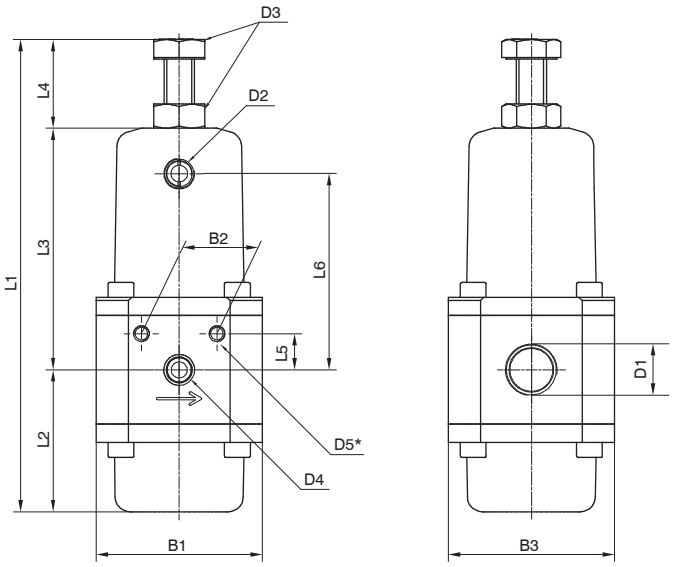
Size 3

Flow rate curves



Size 4

Dimensions



*THREADED HOLES ON BOTH SIDES

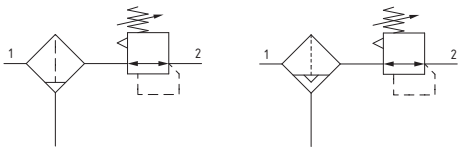
Model	B1	B2	B3	D1	D2	D3	D4	D5	L1	L2	L3	L4	L5	L6
#172...	55	25	55	1/4" NPT 3/8" NPT G1/4"	1/8" NPT	Ch.17	1/8" NPT	M5 2 front holes 2 rear holes	156,5	47	80	29,5	12	65
#173...	71	22	71	1/4" NPT 1/2" NPT G1/2"	1/8" NPT	Ch.17	1/8" NPT	M6 2 front holes 2 rear holes	172,5	53	91	28,5	14,5	76,5
#174...	92	36	92	3/4" NPT 1" NPT G1"	1/8" NPT	Ch.19	1/8" NPT	M8 2 front holes 2 rear holes	260,5	74	147	39,5	22,5	128

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Filter regulators



- Filter-pressure regulator diaphragm with over-pressure drain (Relieving)
- Body, adjustment mechanism, back plate and caseback internal components in AISI 316L stainless steel
- AISI 316 stainless steel adjustment springs
- Fixing screws, adjustment screw and locking nut in inox A4 (AISI 316)
- Clean profile versions available
- Filter cartridge available in AISI 316 stainless steel or HDPE
- Low hysteresis rolling diaphragm
- Balanced system
- Manual or automatic drain
- ATEX certification (II 2G or II 2D), SIL, EAC



Note
The pressure must be always regulating while increasing. For a more precise regulation and higher sensibility, the use of a regulator with a pressure range as close as possible to the regulated pressure is recommended.

Technical characteristics			
Size	Size 2	Size 3	Size 4
Type	Rough finishing Clean profile (Bowl and adjustment mechanism)		
IN / OUT connections	1/4" NPT 3/8" NPT G1/4"	1/4" NPT 1/2" NPT G1/2"	3/4" NPT 1" NPT G1"
Assembly configuration	Stand alone		
Assembly position	Vertical		
Filter pore size (µm)	5 20 50		
Pressure range (bar)	0-2 0-4 0-8 0-12		0-2 0-4 0-7 0-10
Max. bowl capacity (cm^3)	34	68	90
Condensation drain	Manual Automatic		
Regulation	Manual		
Pressure measurement	1/8" NPT pressure gauge connection port		

Operational characteristics						
Size	Size 2	Size 3	Size 4	Size 2	Size 3	Size 4
Condensation drain	Manual			Automatic		
Maximum working pressure (bar)	20 (standard version)			16 (automatic drain version) 10 (reduced orifice automatic drain version)		
Minimum working pressure (bar)	/			0,5		
Working temperature (C°)	-30 ... +80 (standard version) -50 ... +80 (low temperature L version) -60 ... +80 (low temperature version -60 °C Z) -5 ... +150 (Ihigh temperature H version) -40 ... +100 (EPDM-FDA version)			-35 ... +70 (automatic drain S version and reduced orifice automatic drain SR version)		

Weight			
Size	Size 2	Size 3	Size 4
Standard version (g)	1492	2557	6253
Automatic drain version / Reduced orifice automatic drain version (g)	1579	2723	6290

Order codes

S | S | 17 | 3B | E | B | B | N | L

Version	
S	Rough finishing
F	Clean profile
M	Modular assembly version (only for size 2 and size 3)

Size and connections	
2A	Size 2 - 1/4" NPT
2B	Size 2 - 3/8" NPT
2C	Size 2 - G1/4"
3A	Size 3 - 1/4" NPT
3B	Size 3 - 1/2" NPT
3D	Size 3 - G1/2"
4A	Size 4 - 3/4" NPT
4B	Size 4 - 1" NPT
4D	Size 4 - G1"

Filter pore size	
A	5 μm - 316 stainless steel
B	20 μm - 316 stainless steel
C	50 μm - 316 stainless steel
D	5 μm - HDPE
E	20 μm - HDPE
F	50 μm - HDPE

Pressure range	
A	0 - 2 bar
B	0 - 4 bar
C	0 - 8 bar (0 - 7 bar for size 4)
D	0 - 12 bar (0 - 10 bar for size 4)

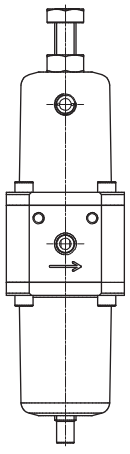
Type	
	Standard
N	Without relieving

Options	
	Standard
L	Low temperature
Z	Low temperature (-60 °C)
H	High temperature
S	Automatic drain
SR	Reduced orifice automatic drain version
EF	EPDM-FDA

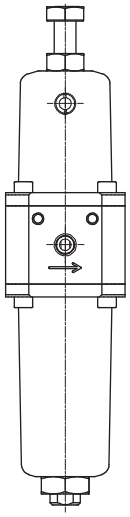
Example: SS173BEBBNL
Size 3 filter regulator, rough finishing, 1/2" NPT connection, filter pore size 20 μm - 316 stainless steel, pressure range 0 - 4 bar, without relieving, low temperature version.

Design

Size 2 - Size 3 - Size 4
Manual drain



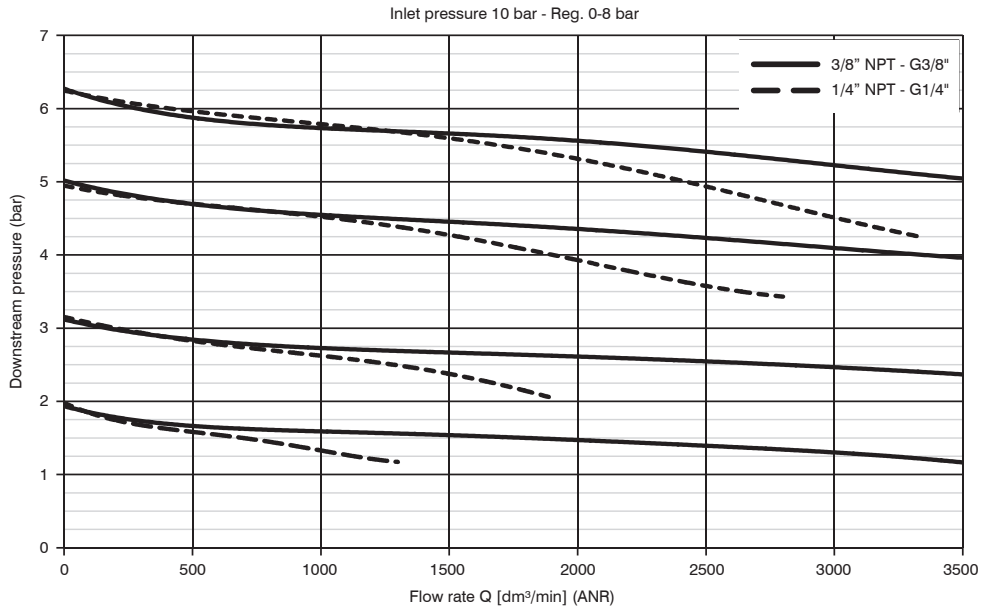
Size 2 - Size 3 - Size 4
Automatic drain



Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

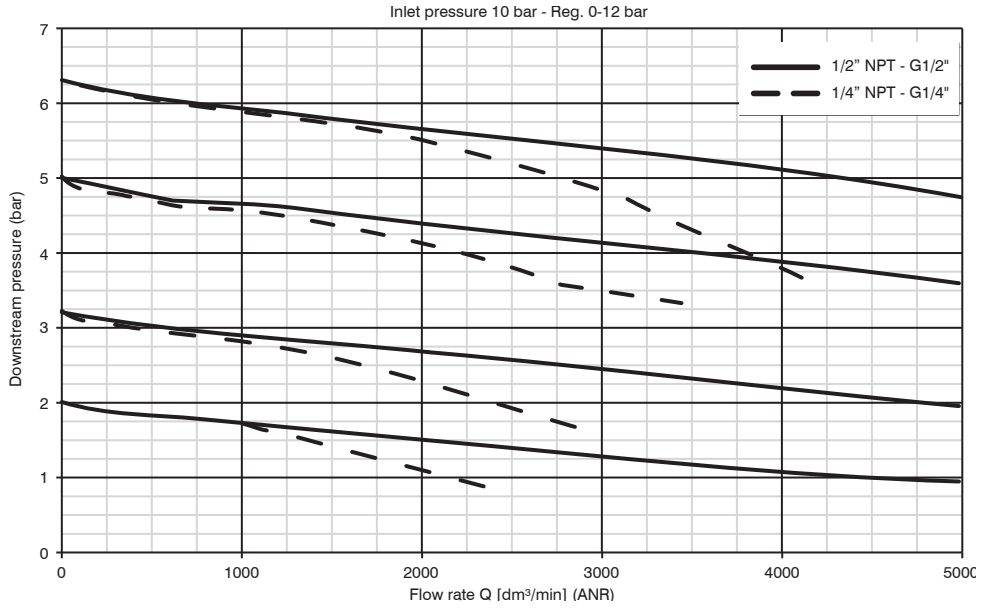
Characteristic curves

Flow rate curves



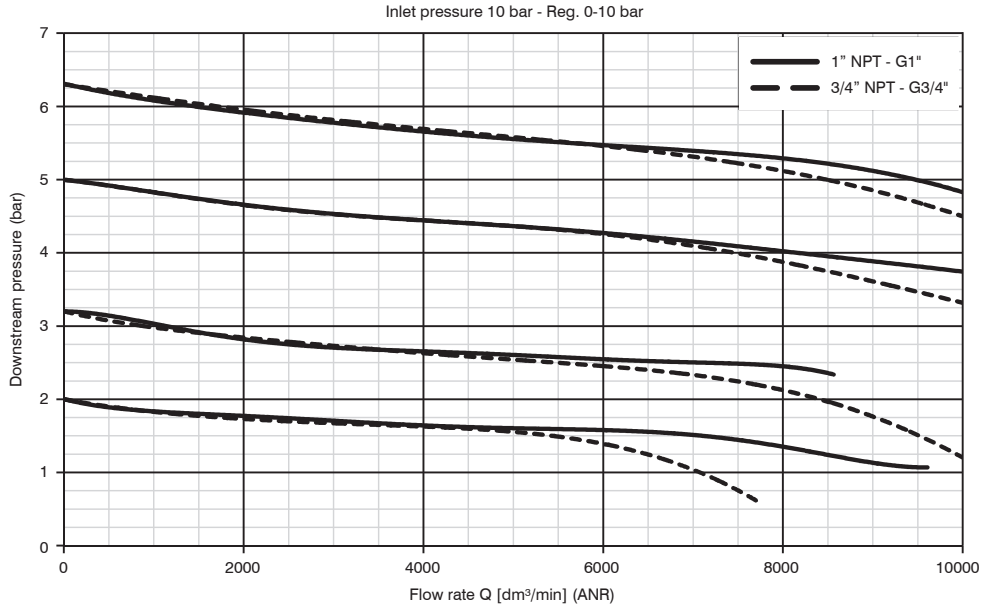
Size 2

Flow rate curves



Size 3

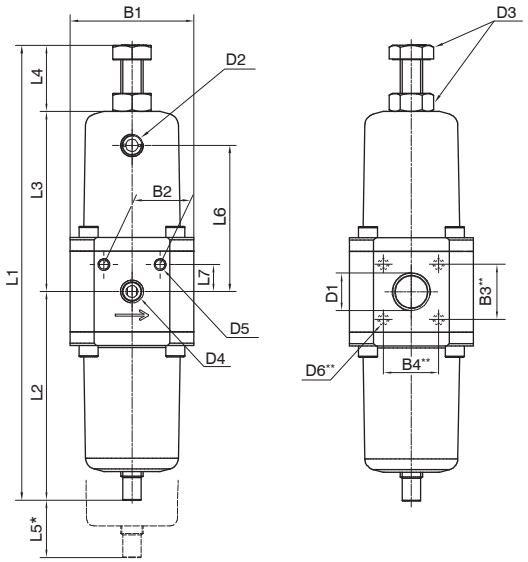
Flow rate curves



Size 4

Dimensions

Overall manual drain version



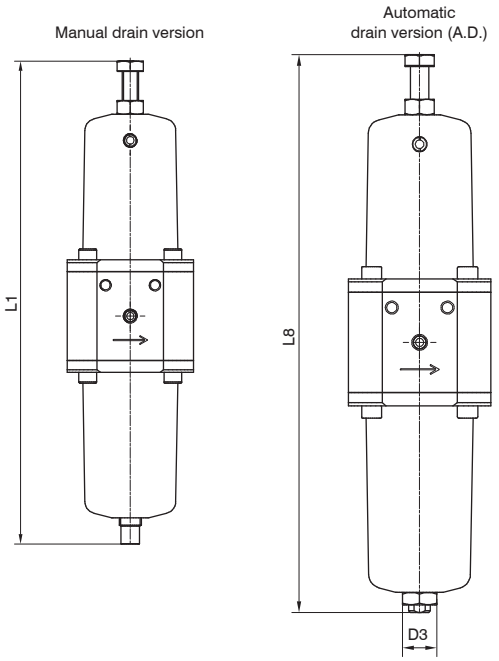
* = BOWL REMOVAL MAXIMUM HEIGHT
** = ONLY FOR M VERSION

Model	B1	B2	B3	B4	D1	D2	D3	D4	D5	D6	L1	L2	L3	L4	L5	L6	L7
#172...	55	25	25	25	1/4" NPT 3/8" NPT G1/4"	1/8" NPT	Ch.17	1/8" NPT	M5 2 front holes 2 rear holes	M4 4 holes IN side 4 holes OUT side	202,5	93	80	29,5	45	65	12
#173...	71	22	31,5	31,5	1/4" NPT 1/2" NPT G1/2"	1/8" NPT	Ch.17	1/8" NPT	M6 2 front holes 2 rear holes	M5 4 holes IN side 4 holes OUT side	223,5	104	91	28,5	65	76	14,5
#174...	92	36	/	/	3/4" NPT 1" NPT G1"	1/8" NPT	Ch.19	1/8" NPT	M8 2 front holes 2 rear holes	/	352,5	166	147	39,5	80	128	22,5

Variable dimensions

Manual drain version

Automatic drain version (A.D.)

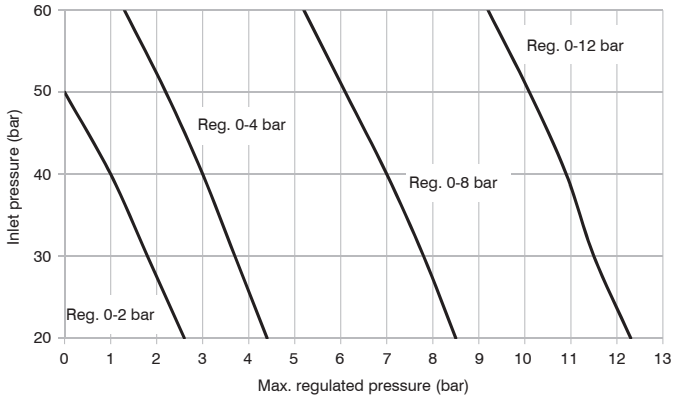


Model	L1	L8	D3
#172...	202,5	229,5	1/8" NPT
#173...	223,5	259,5	1/8" NPT
#174...	352,5	361	1/8" NPT

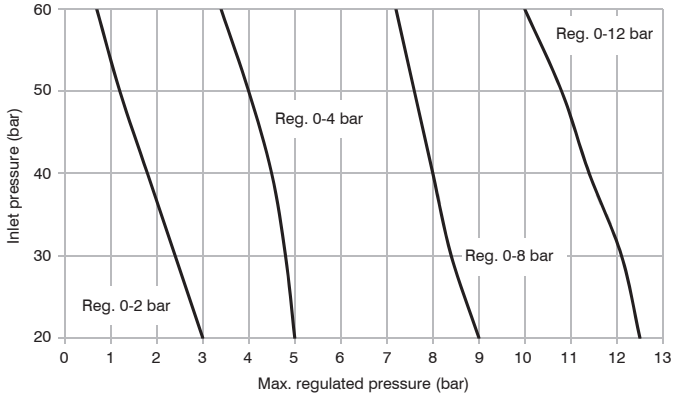
Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Inlet pressure notes

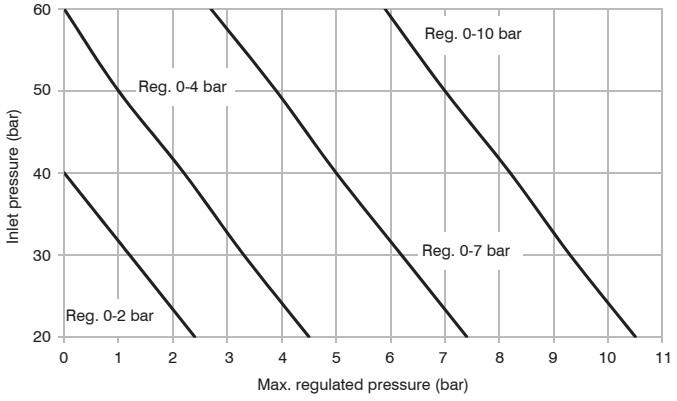
Pressure regulator Stainless steel line have been designed to withstand **a 60 bar** maximum inlet pressure. **Maximum regulated outlet pressure is 20 bar**. For performance details please refer to diagram alongside.



Size 2



Size 3



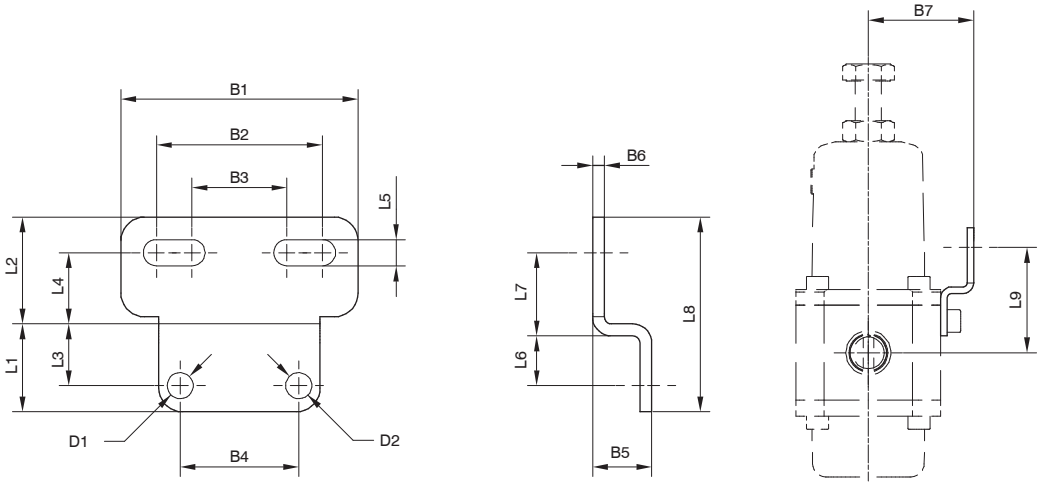
Size 4

Fixing bracket

SS174 **50**

Size	
SS172	Size 2
SS173	Size 3
SS174	Size 4





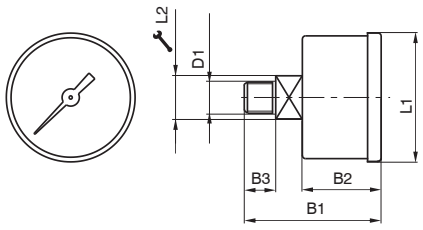
Model	B1	B2	B3	B4	B5	B6	B7	D1	D2	L1	L2	L3	L4	L5	L6	L7	L8	L9
SS17250	50	35	20	25	12,5	2,5	40	Ø5,5	Ø5,5	18,5	22,5	13	15	5,5	10,5	17,5	41	40
SS17350	60	45	20	22	14,5	3	50	Ø6,5	Ø6,5	14	24,5	/	16,5	6,5	11	19,5	44,5	45
SS17450	80	60	40	36	16	4	62	Ø8,5	Ø8,5	24	31	/	/	8,5	11	25	55	58,5

Pressure gauge

SS17070A **A**

Scale	
A	0 - 4 bar
B	0 - 12 bar





Model	B1	B2	B3	D1	L1	L2
SS17070AA SS17070AB	40	25	10	1/8" NPT	42,5	11

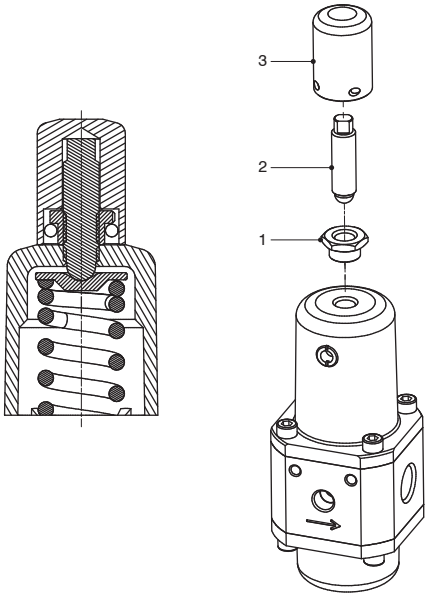
Overall dimensions and technical information are provided solely for informative purpose and may be modified without notice

Tamper-proof kit

SS174 55

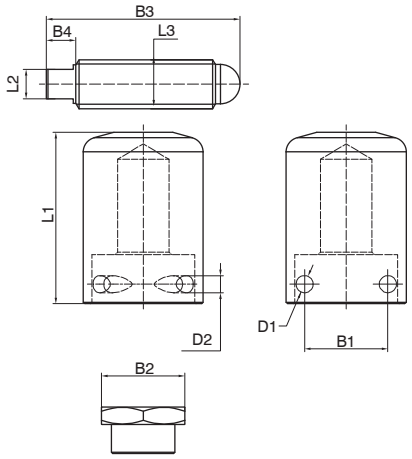
Size	
SS172	Size 2 - Size 3
SS174	Size 4





To use, replace the standard adjustment screw and nut with the screw and nut supplied in the kit. Assemble the screw and nut as shown (see adjacent drawing), adjust until the desired P_2 value is reached, lock the nut and insert the cap that can be locked with wire or padlock.

Tamper-proof kit	
1	Adjustment screw
2	Locking nut
3	Tamper-proof cap



Model	B1	B2	B3	B4	D1	D2	L1	L2	L3
SS17250	17	Ch.17	39,5	6	Ø3,5	Ø3,5	35	Ch. 6	M10x1,5
SS17450	19	Ch. 20	56,5	6,5	Ø3,5	Ø3,5	45	Ch. 7	M12x1,75

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Series 1700 - Electronic proportional regulators - Size 0 - 1 - 3

Modern industrial applications require increasingly high performances from their pneumatic components. For example, the speed and thrust of a pneumatic actuator may need to be varied. These parameters often need to be modified dynamically while an operation is running.
This solution can be achieved by means of a regulator that can vary pressure over time.
Pneumax portfolio includes 1700 Series electronic proportional regulator, available in three different sizes with flow rates of 7, 1100, and 4000 Nl/min respectively and supporting Analog/Digital, CANopen® or IO-Link communication interfaces.

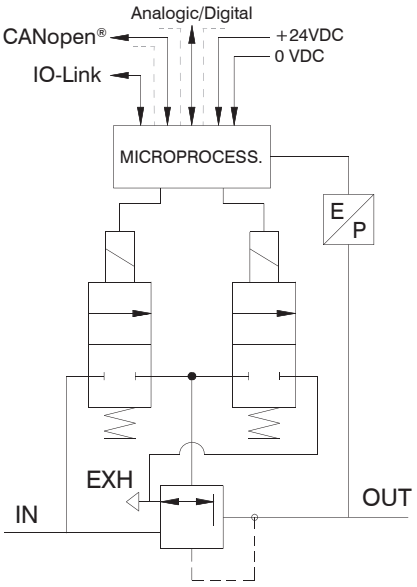
Application fields

Typical applications will include the necessity to dynamically control the force of the actuator, be it thrust of torque.
Examples include: Closing systems, painting systems, tensioning systems, packaging systems, pneumatic braking systems, force control for welding grippers, thickness compensation systems, balancing systems, laser cutting, pressure transducers for the control of modulating valves, test benches for system testing, force control for buffers on polishers, etc.

Product presentation

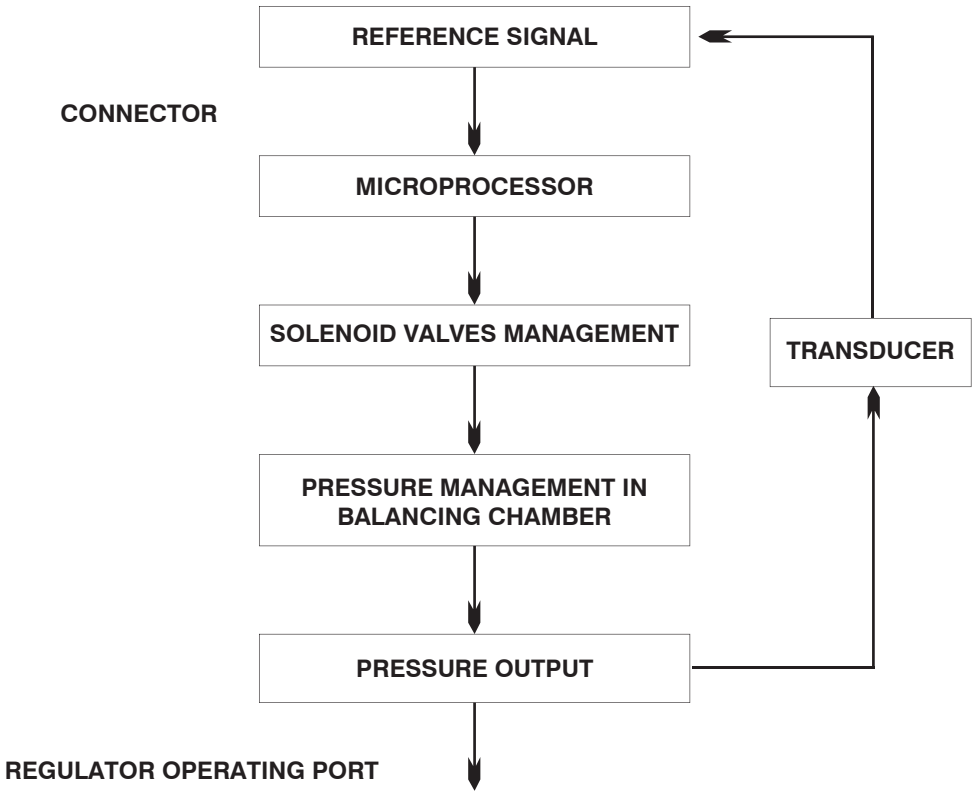
The supply and exhaust connections are on one side of the regulator and the working port is on the opposite side. The two remaining sides carry G 1/8" ports that are blanked off with removable plugs, these can be used to connect a pressure gauge or as an outlet port. If you order the version with the external feedback there is a M5 threaded connection to which connect the feedback pressure (to the pressure transducer). This connection is placed on the outlet connection side. This option allows to take the signal from a remote point instead of directly from the outlet connection; this function is typically used when the regulated pressure is used far away to the regulator. The control solenoid valves, the pressure sensor, and the management electronics are placed in upper part of the regulator. The electronic management system is the same for all the size 0, size 1 and size 3 regulators.

Functional diagram



CLOSED LOOP diagram (internal control circuit)

The proportional regulator is known as a CLOSED LOOP regulator because a pressure transducer in the circuit transmits a continuous analog signal to the microprocessor, which compares the reference value and supplies the control solenoid valves accordingly.



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Features

Pneumatic			
Fluid	Air filtered at 5 micron and dehumidified		
Minimum inlet pressure	Desired outlet pressure + 1 bar		
Maximum inlet pressure	10 bar		
Outlet pressure	0 ... 9 bar		
Nominal flowrate from 1 to 2 (6 bar ΔP 1 bar)	Size 0	Size 1	Size 3
	7 Nl/min	1100 Nl/min	4000 Nl/min
Discharge flowrate (a 6 bar with 1 bar overpressure)	7 Nl/min	1300 Nl/min	4500 Nl/min
Air consumption	< 1 Nl/min	< 1 Nl/min	< 1 Nl/min
Supply connection	M5	G 1/4"	G 1/2"
Operating connection	M5	G 1/4"	G 1/2"
Exhaust connection	Ø1,8	G 1/8"	G 3/8"
Maximum fitting tightening	3 Nm	15 Nm	15 Nm

Electric		
Supply voltage		24VDC ± 10% (stabilized with ripple<1%)
Standby current consumption		70mA
Current consumption with solenoid valves on		400mA
**Reference Signal	Voltage	*0 ... 10 V *0 ... 5 V *1 ... 5 V
	Current	*4 ... 20 mA *0 ... 20 mA
**Input Impedance	Voltage	10 kΩ
	Current	250 Ω
**Digital Inputs		24VDC ± 10%
**Digital Output		24 VDC PNP (max current 50 mA)

Functional	
Linearity	± Insensitivity
Hysteresis	± Insensitivity
Repeatability	± Insensitivity
Sensitivity	0,01 bar
Assembly position	Indifferent
Protection grade	IP65 (with casing fitted)
Ambient temperature	-5°C ... 50°C / 23°F ... 122°F

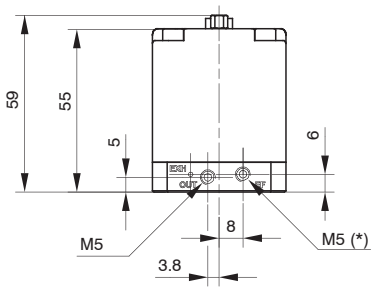
Constructional			
Body	Anodized aluminum		
Shutters	Brass with vulcanized NBR		
Diaphragm	Cloth-covered rubber		
Seals	NBR		
Cover for electrical part	Technopolymer		
Springs	AISI 302		
Weight	Size 0	Size 1	Size 3
	168 g	360 g	850 g

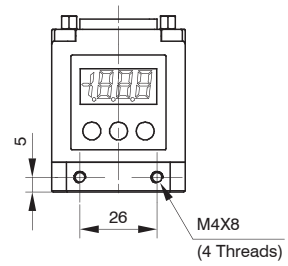
* Selectable by keyboard or by RS-232
** Valid only for devices with analog input

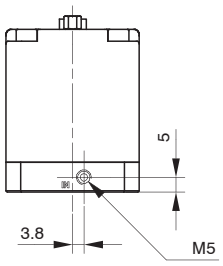
Overall dimensions ("521" standard version and CANopen® version with SUB-D 15 poles)

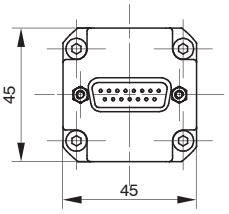
Size 0







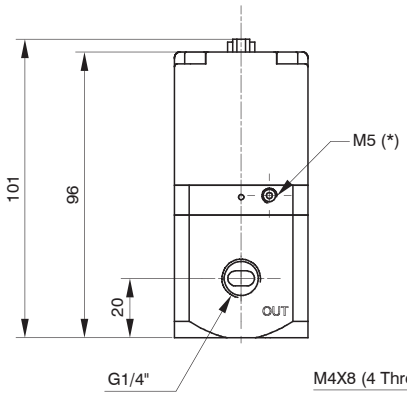


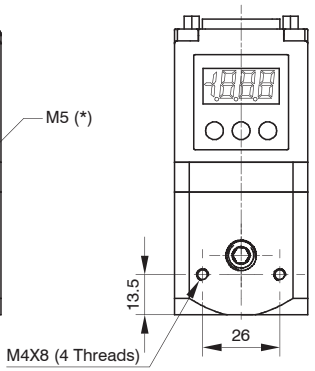


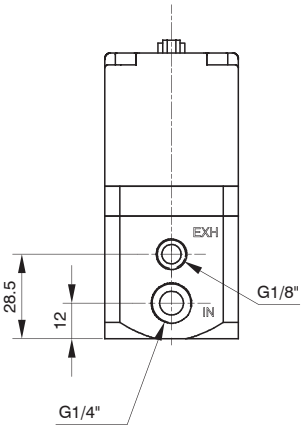
* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL FEEDBACK VERSION)

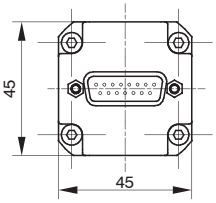
Size 1







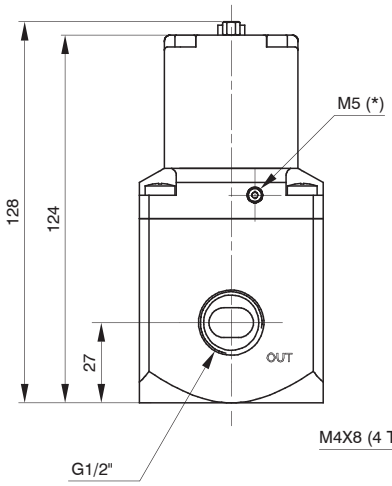


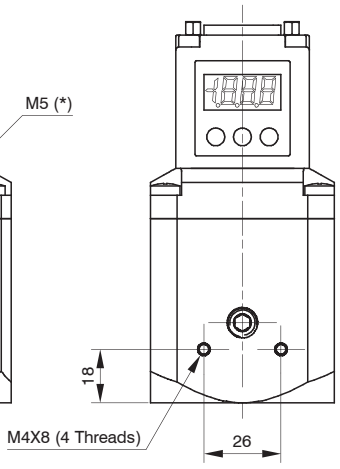


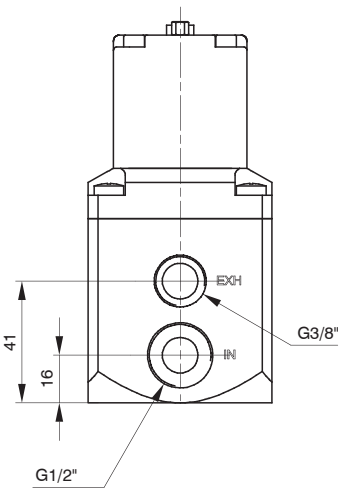
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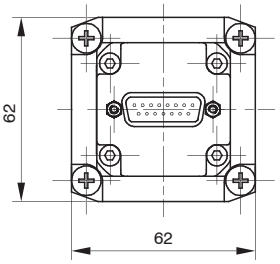
Size 3









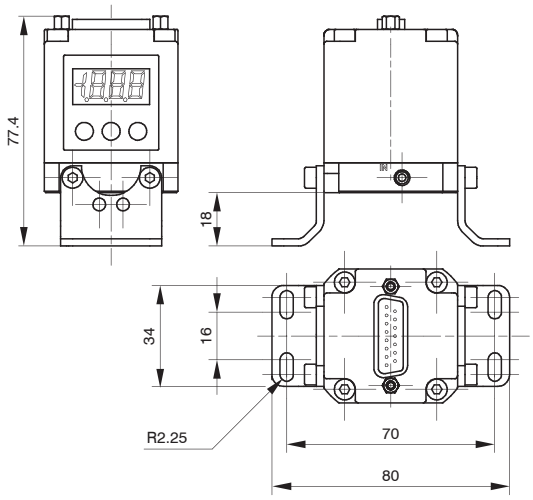


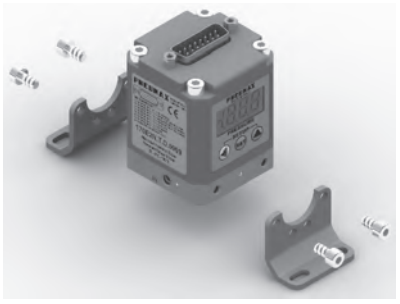
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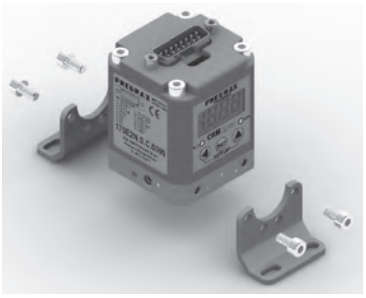
Mounting options ("521" standard version and CANopen® version with SUB-D 15 poles)

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below:

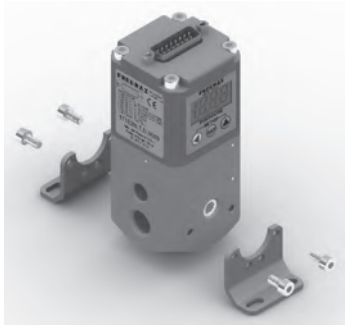




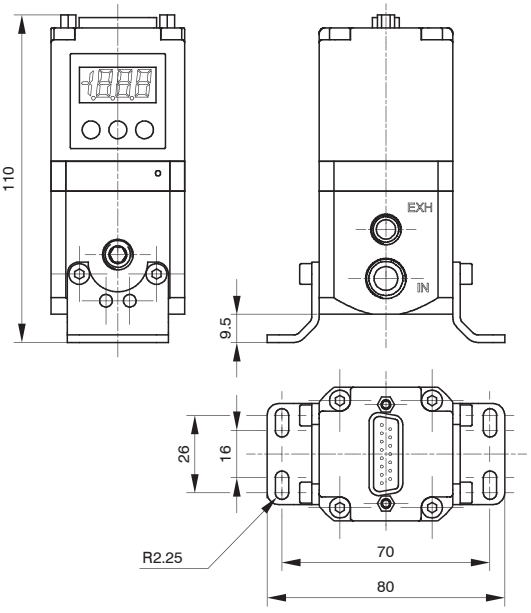
Size 0

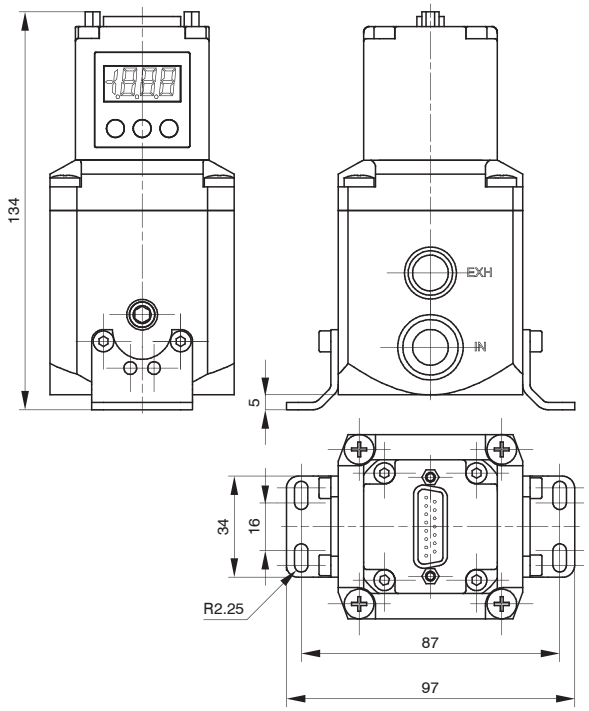


Size 1

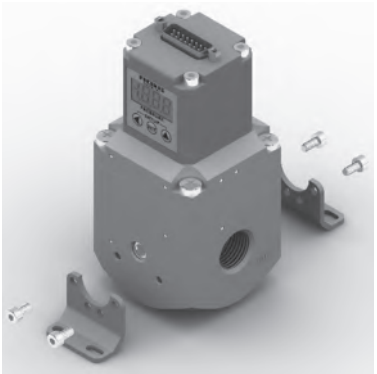


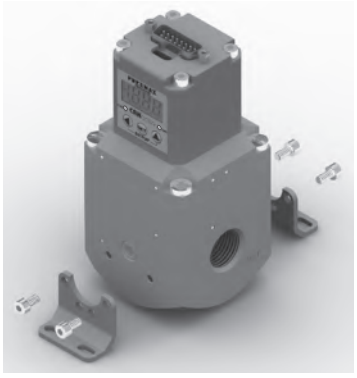






Size 3

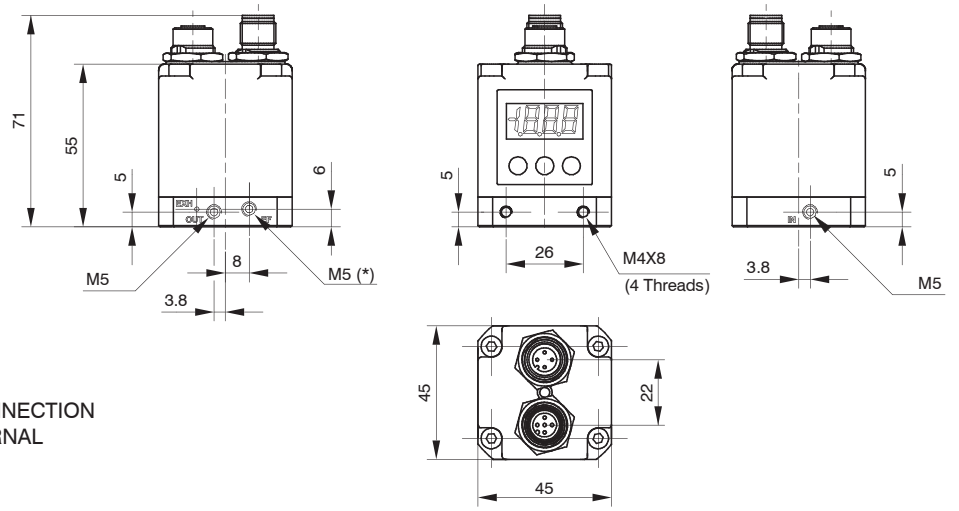




Overall dimensions ("521 M12 version" - CANopen® version)

Size 0

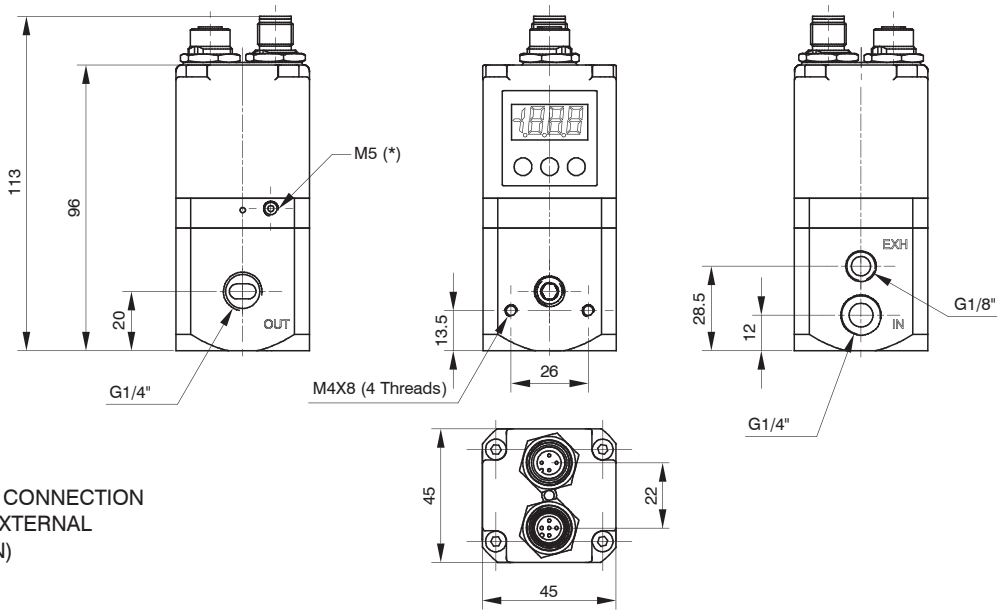




* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Size 1

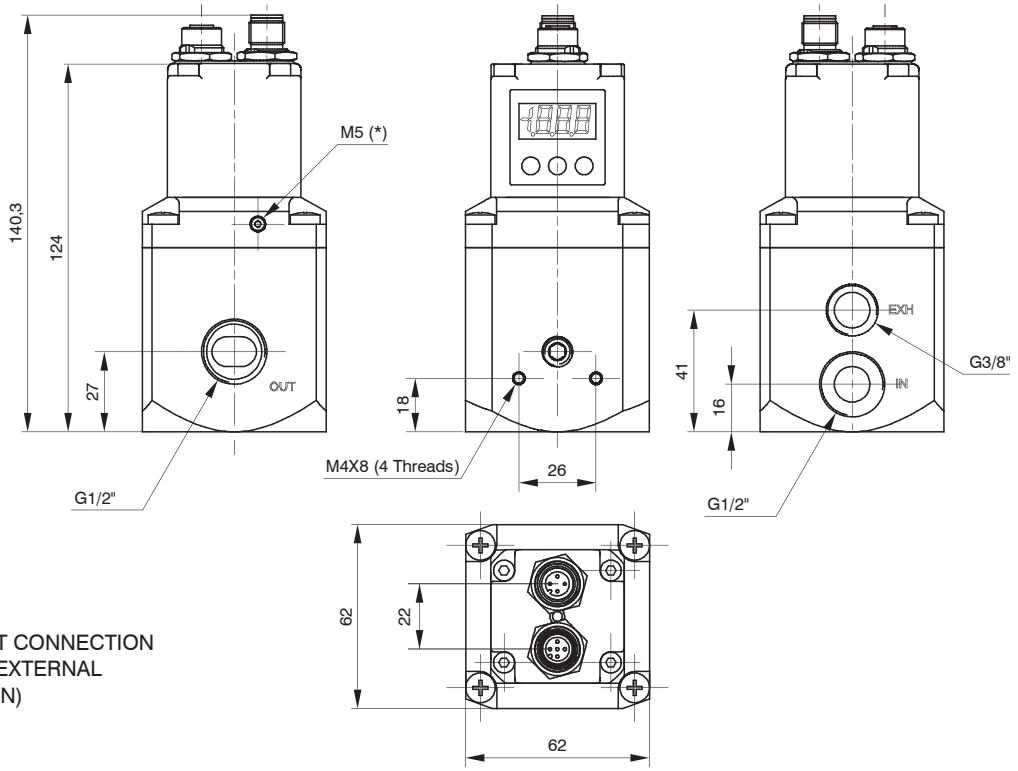




* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Size 3



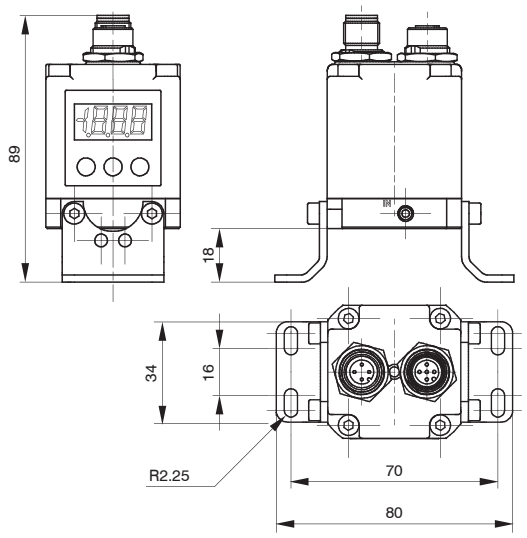


* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Mounting options ("521 M12 version" - CANopen® version)

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below:

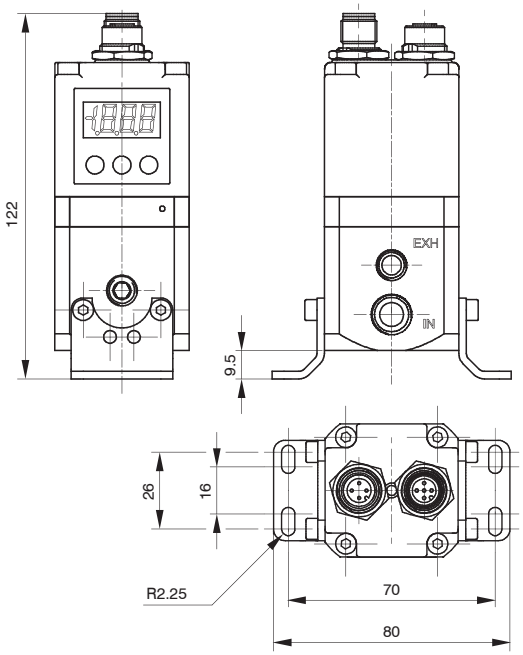


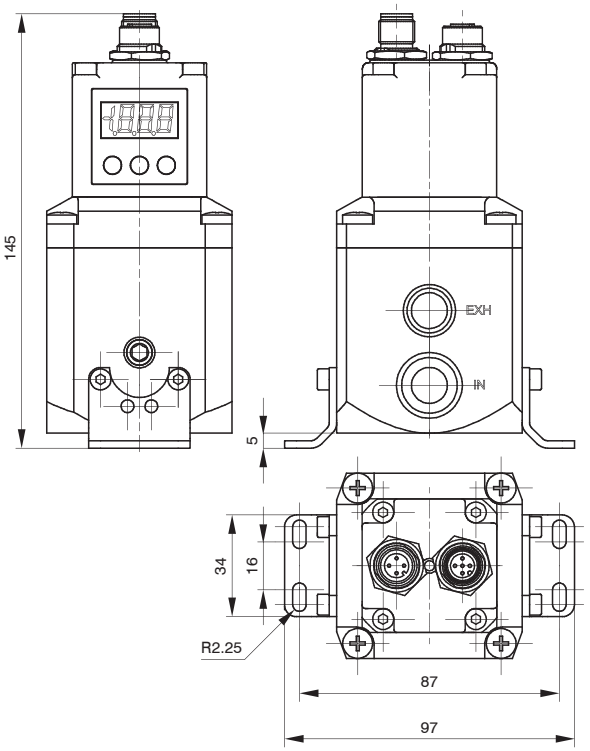
Size 0



Size 1







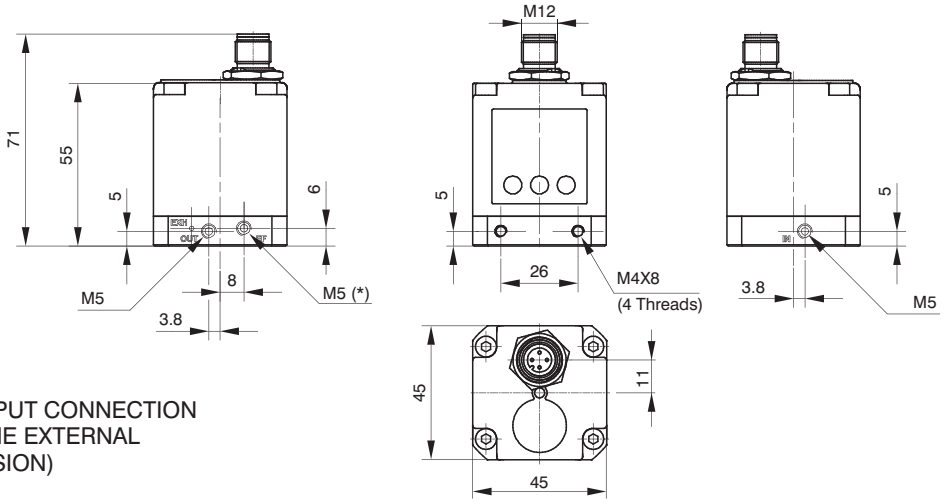
Size 3



Overall dimensions ("521 M12 BASIC version")

Size 0

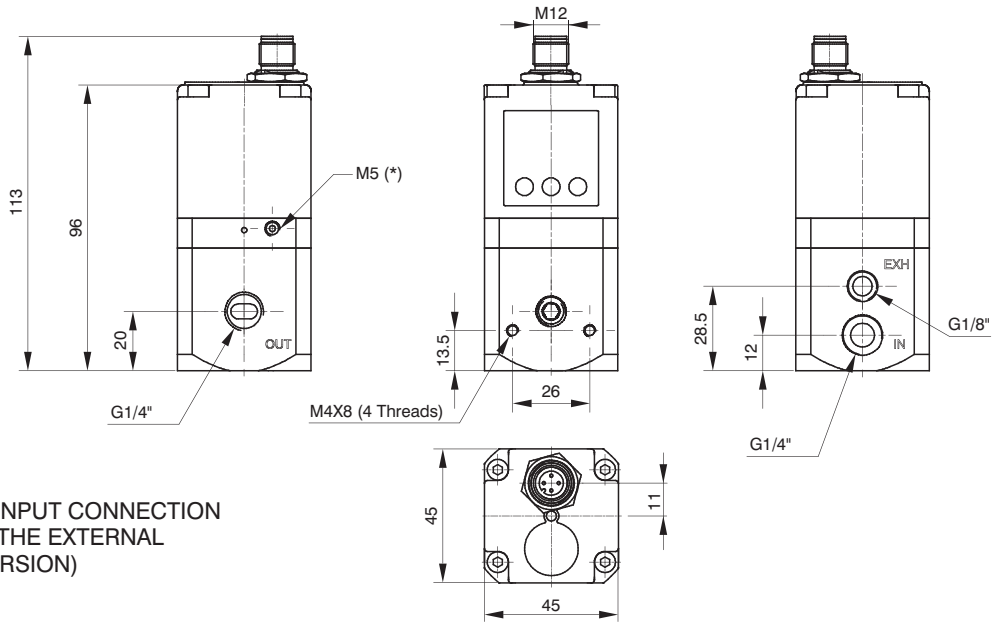




* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Size 1

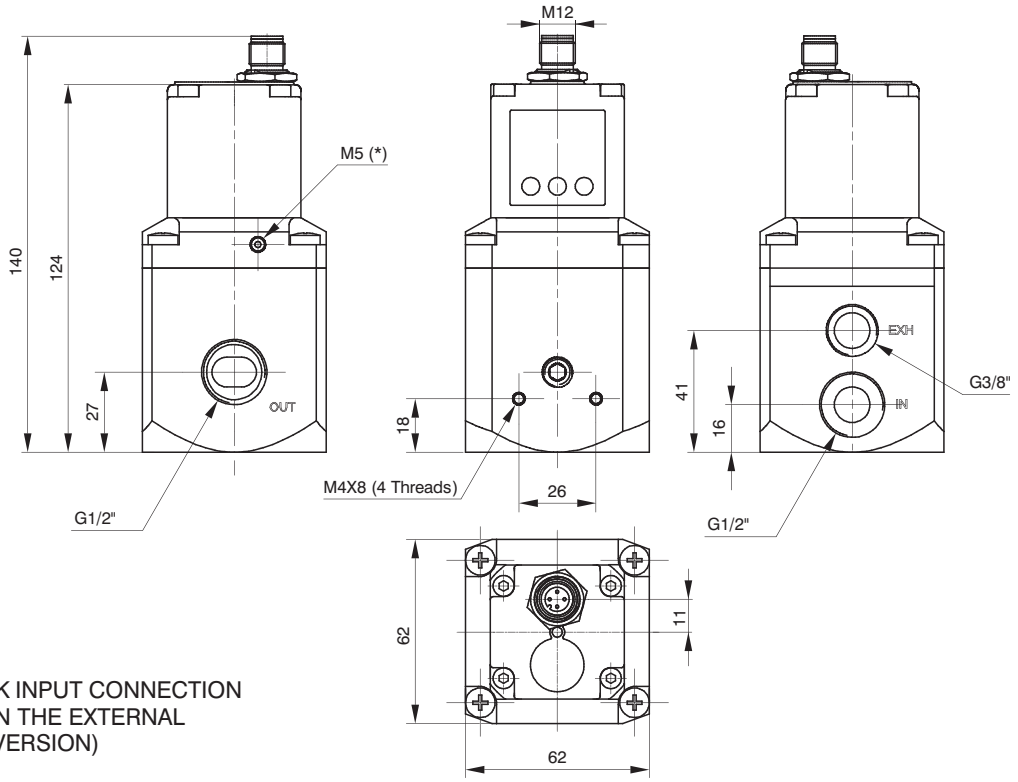




* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Size 3



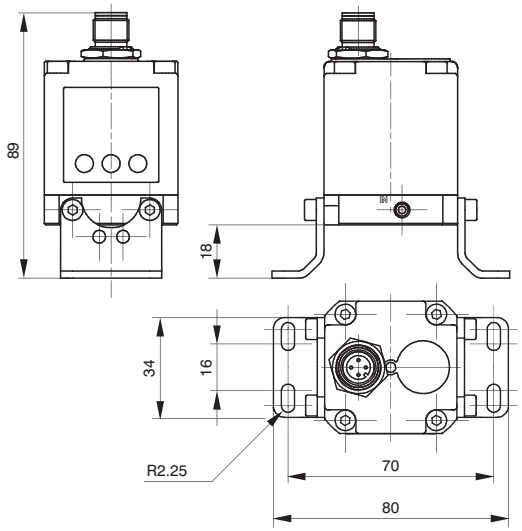


* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Mounting options ("521 M12 BASIC version")

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below:

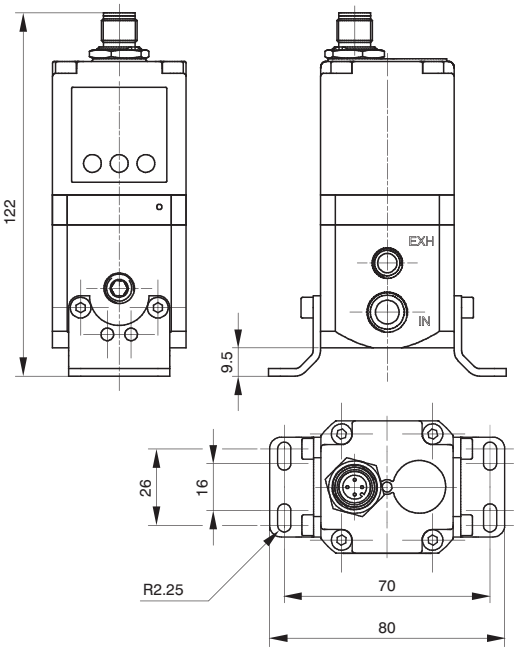


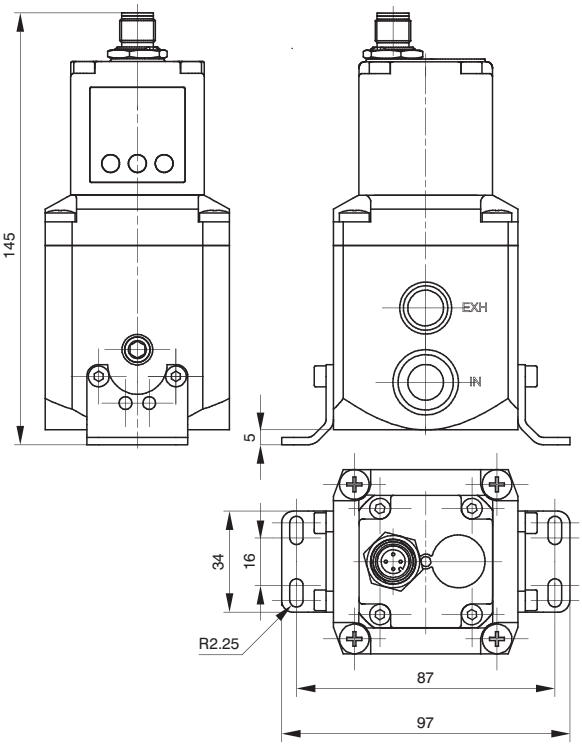
Size 0



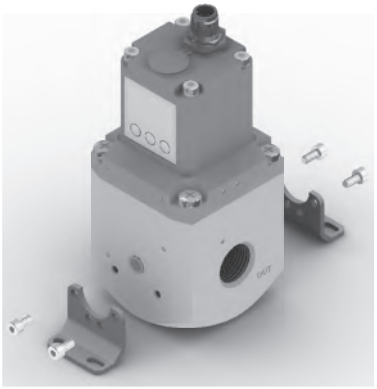
Size 1







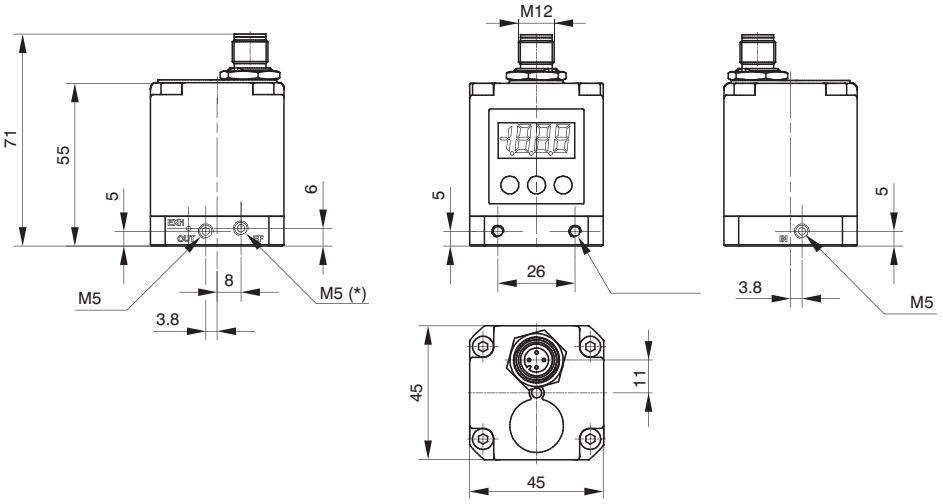
Size 3



Overall dimensions ("521 M12 version" - Standard version)

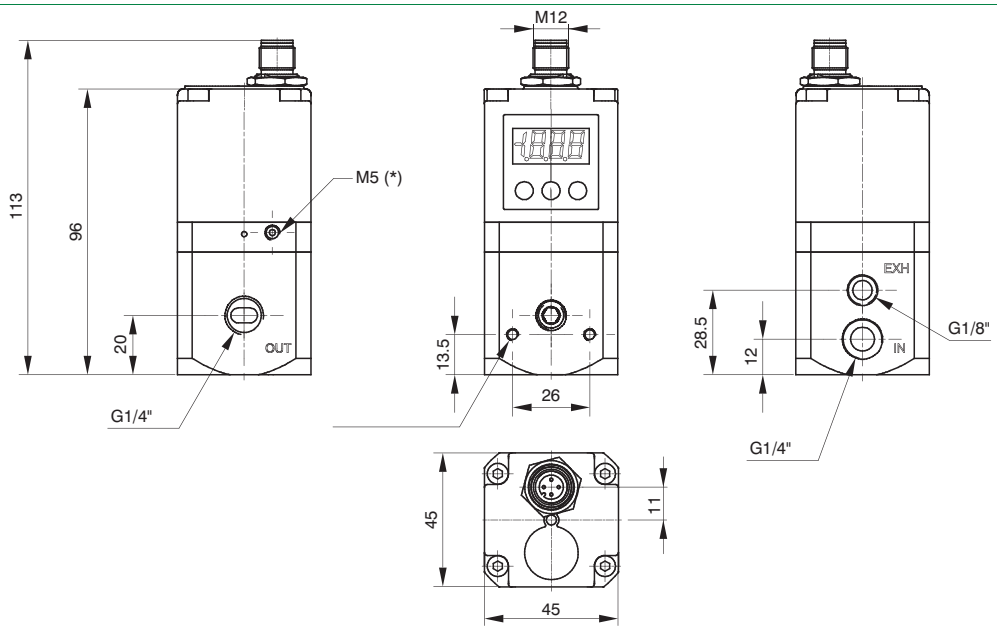
Size 0





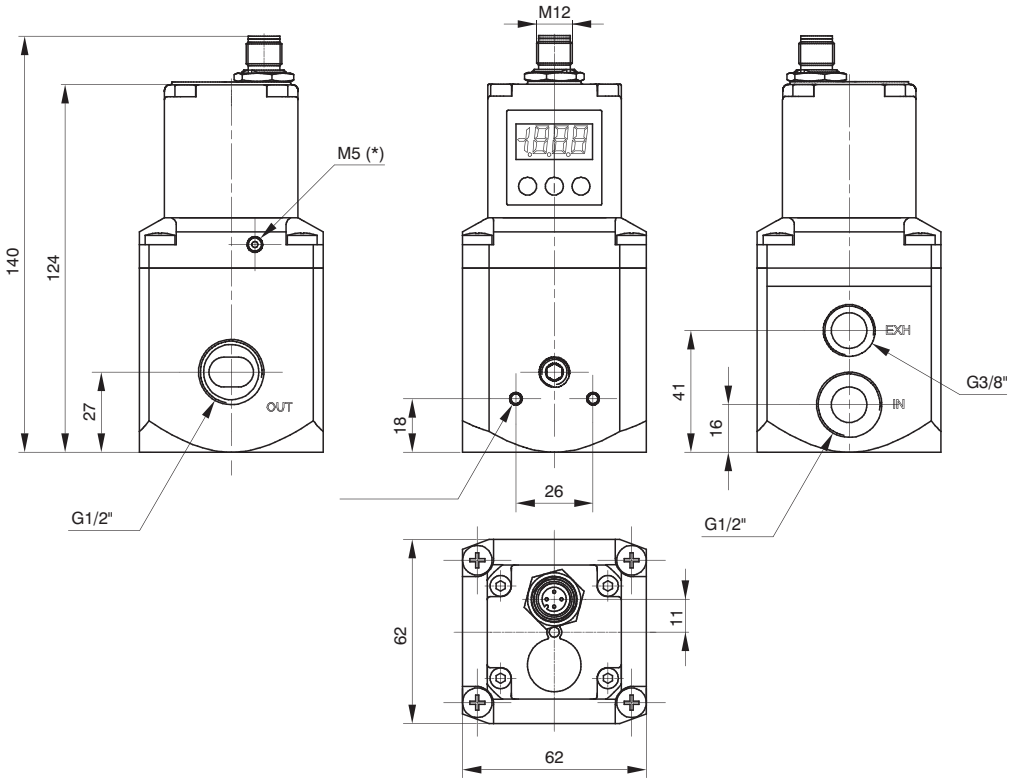
Size 1





Size 3



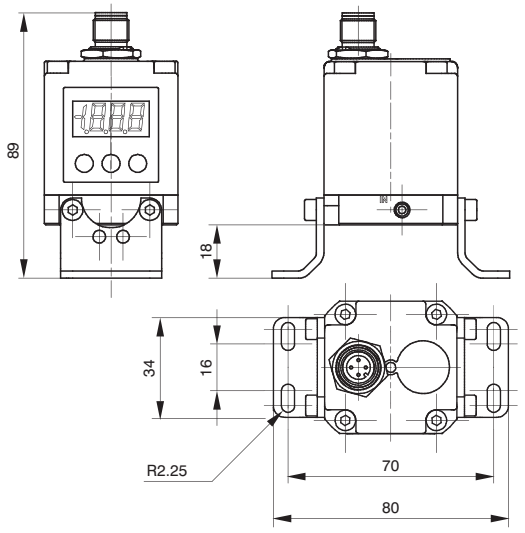


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Mounting options ("521 M12 version" - Standard version)

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below:

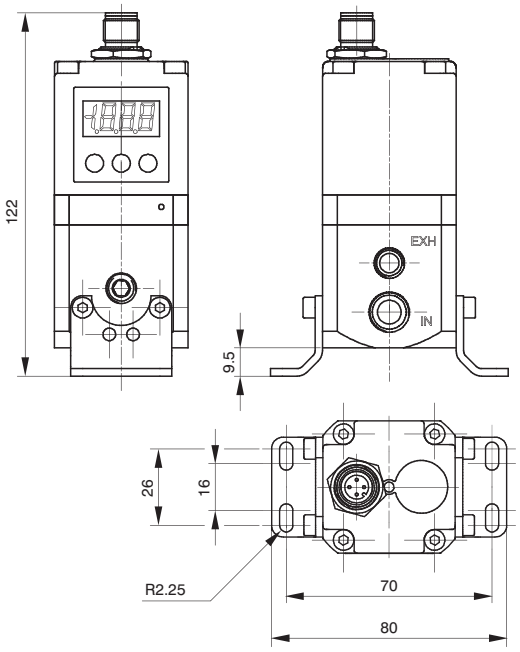
Size 0

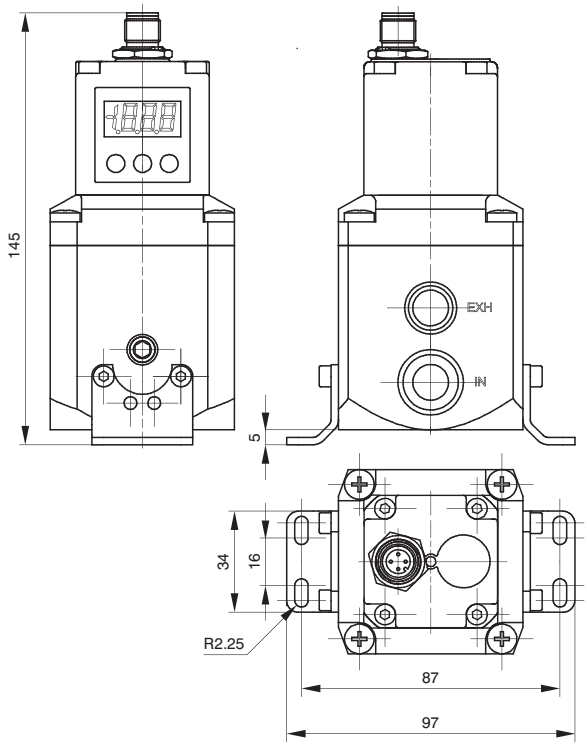




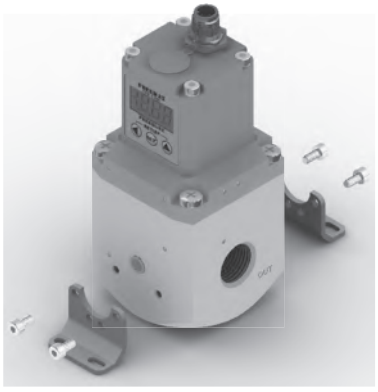
Size 1







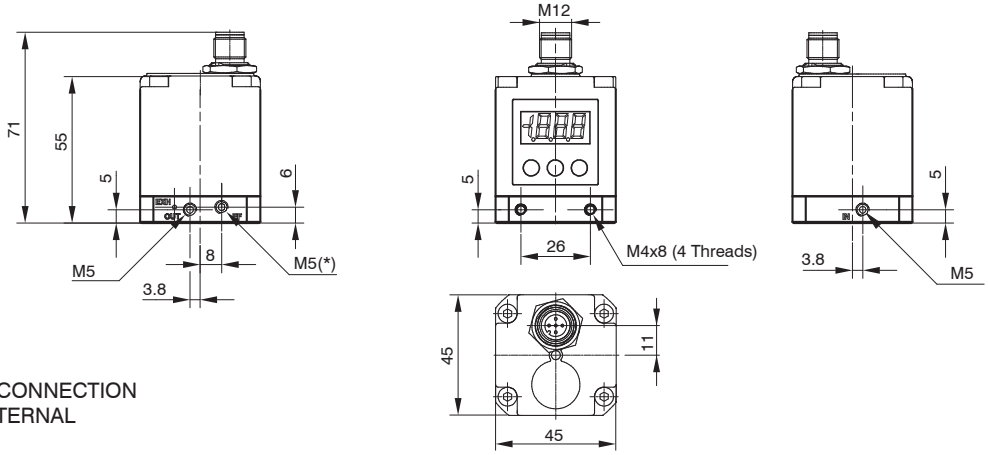
Size 3



Overall dimensions ("521 IO-Link version")

Size 0

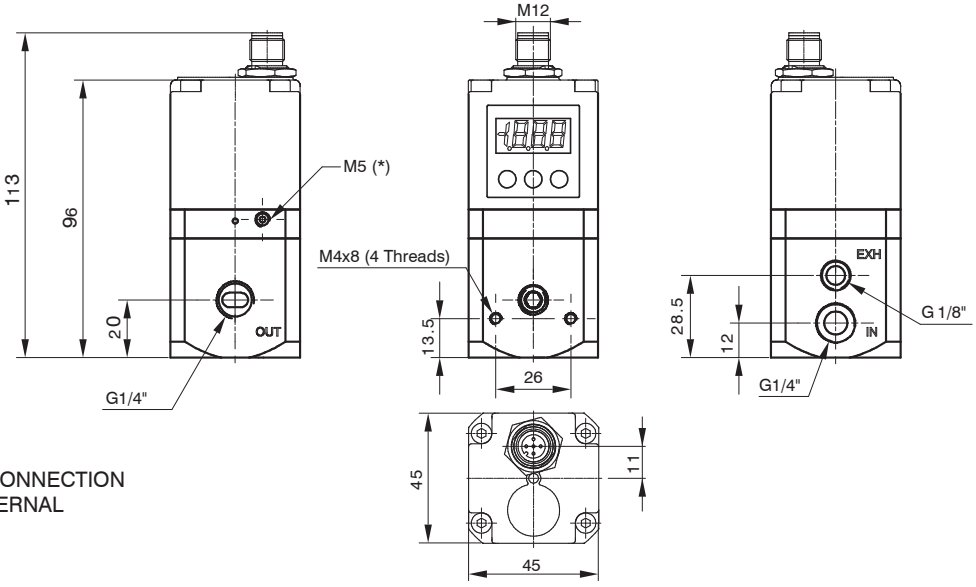




* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Size 1

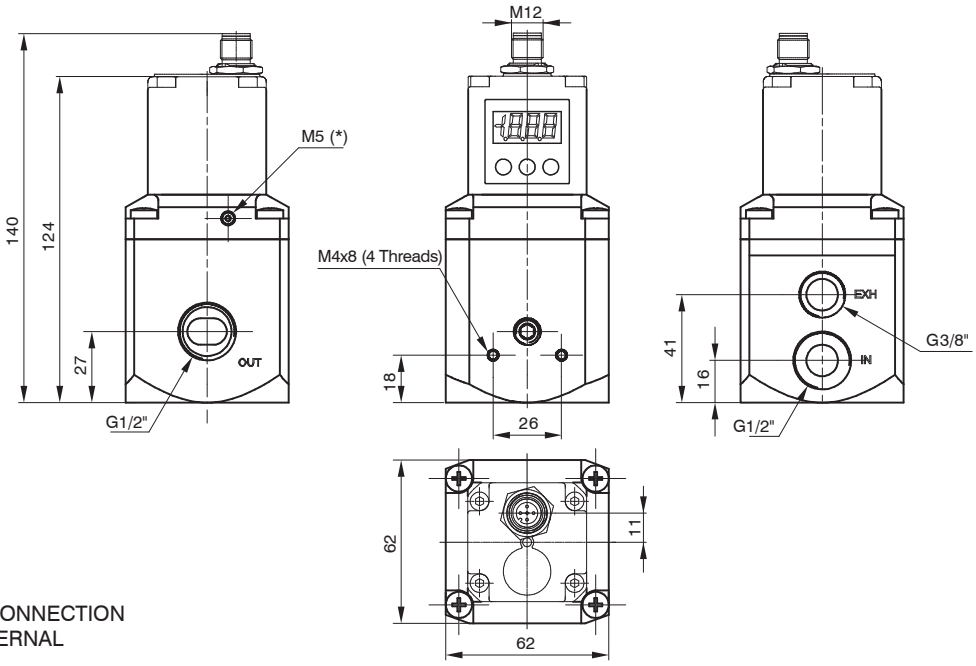




* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Size 3



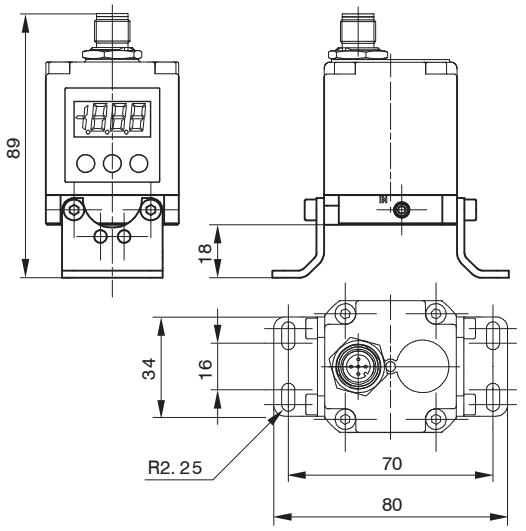


* = EXTERNAL FEEDBACK INPUT CONNECTION
(AVAILABLE ONLY ON THE EXTERNAL
FEEDBACK VERSION)

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Mounting options ("521 IO-Link version")

In addition to mounting directly using the M4 tappings on the body, the 170M5 bracket may also be used, as shown below.

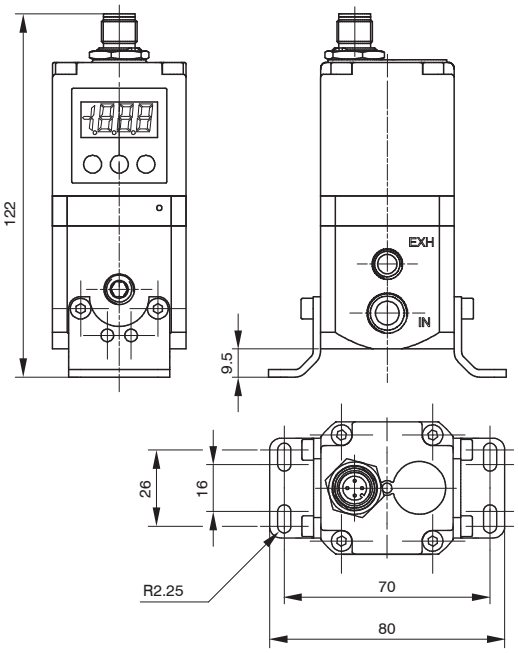


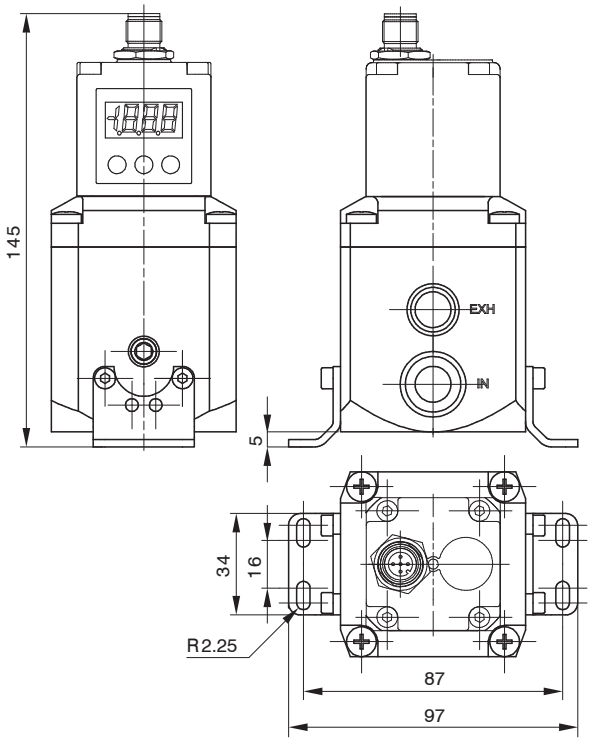
Size 0



Size 1







Size 3



Installation/Operation

PNEUMATIC CONNECTION

The compressed air is connected by means of M5 threaded holes (for size 0 regulators), G 1/4" threaded holes (for size 1 regulators) and G 1/2" threaded holes (for size 3 regulators) on the body.
Before making the connections, eliminate any impurities in the connecting pipes to prevent chippings or dust entering the unit. Do not supply the circuit with more than 10 bar pressure and make sure that the compressed air is dried (excessive condensate could cause the appliance to malfunction) and filtered at 5 micron. The supply pressure to the regulator must always be at least 1 bar greater than the desired outlet pressure.
If a silencer is applied to the discharge path the unit response time may change; periodically check that the silencer is not blocked and replace it if necessary.

ELECTRICAL CONNECTION

For the electrical connection a SUB-D 15-pole female or a M12 connector is used (accordingly to the model, to be ordered separately). Wire in accordance with the wiring diagram shown below.
Warning: INCORRECT CONNECTIONS MAY DAMAGE THE DEVICE

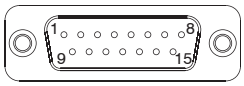
NOTES ON OPERATION

If the electric supply is interrupted, the outlet pressure is maintained at the set value. However, maintaining the exact value cannot be ensured as it is impossible to operate the solenoid valves.
In order to discharge the circuit downstream, zero the reference, make sure that the display shows a pressure value equal to zero and then disconnect the electric power supply.
A version of the device is available that exhausts the downstream circuit when the power supply is removed. (Option "A" at the end of the ordering code).
If the compressed-air supply is suspended and the electric power supply is maintained a whirring will be heard that is due to the solenoid valves; an operating parameter can be activated (P18) that triggers the regulator protection whenever the requested pressure is not reached within 4 seconds of the reference signal being sent. In this case the system will intervene to interrupt the control of the solenoid valves. Every twenty seconds, the unit will start the reset procedure until standard operating conditions have been restored.

"521" Standard version with D-SUB connector



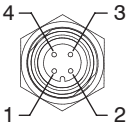
TOP VIEW OF THE REGULATOR CONNECTOR



CONNECTOR PINOUT:
1 = DIGITAL INPUT 1
2 = DIGITAL INPUT 2
3 = DIGITAL INPUT 3
4 = DIGITAL INPUT 4
5 = DIGITAL INPUT 5
6 = DIGITAL INPUT 6
7 = DIGITAL INPUT 7
8 = ANALOG INPUT / DIGITAL INPUT 8
9 = SUPPLY (24 VDC)
10 = DIGITAL OUTPUT (24 VDC PNP)
11 = ANALOG OUTPUT (CURRENT)
12 = ANALOG OUTPUT (VOLTAGE)
13 = Rx RS-232
14 = Tx RS-232
15 = 0 V

"521" M12 BASIC and Standard versions





M12 4P
MALE

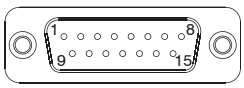
M12 BASIC version
CONNECTOR PINOUT:
1 = POWER SUPPLY (24 VDC)
2 = NC
3 = 0 V
4 = ANALOG INPUT

M12 Standard version
CONNECTOR PINOUT:
1 = POWER SUPPLY (24 VDC)
2 = ANALOG OUTPUT (depending on the model)
3 = 0 V
4 = ANALOG INPUT

"521" CANopen® version with D-SUB connector



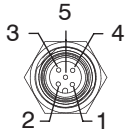
TOP VIEW OF THE REGULATOR CONNECTOR



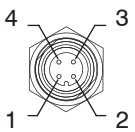
CONNECTOR PINOUT:
1 = CAN_SHIELD
2 = CAN_V+
3 = CAN_GND
4 = CAN_H
5 = CAN_L
6 = NC
7 = NC
8 = NC
9 = SUPPLY (+24 VDC)
10 = CAN_SHIELD
11 = CAN_V+
12 = CAN_GND
13 = CAN_H
14 = CAN_L
15 = 0 V

"521" CANopen® version with M12 connector





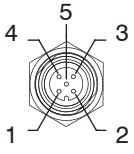
M12 5P
FEMALE



M12 4P
MALE

"521 IO-Link version"





M12 5P
MALE

CONNECTOR PINOUT:
1 = L+
2 = +24 VDC (P24)
3 = L-
4 = C/Q
5 = 0 V (N24)

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

ORDERING CODES
"521" standard version with SUB-D 15 poles



17_E2N. _ . D . ____ . __

VARIANT
- = Standard Version (no addictional letter required)
- **E** = External pressure feedback
- **A** = Exhaust downstream pressure when power supply is removed
- **AE** = A Variant + E Variant

PRESSURE RANGE :
- **0001** = Range 0 - 1 bar
- **0005** = Range 0 - 5 bar
- **0009** = Range 0 - 9 bar

MANAGEMENT :
- **C** = Current signal (4-20 mA / 0-20 mA)
- **T** = Voltage signal (0-10 V / 0-5 V / 1-5 V)

SIZE :
- **0** = Size 0
- **1** = Size 1
- **3** = Size 3

WARNING: Pressure from 0 to 0.1 bar cannot be adjusted.

ORDERING CODES
"521" CANopen® version with SUB-D 15 poles



17_E2N. S . C . ____ . __

SIZE :
- **0** = Size 0
- **1** = Size 1
- **3** = Size 3

VARIANT
- = Standard Version (no addictional letter required)
- **E** = External pressure feedback
- **A** = Exhaust downstream pressure when power supply is removed
- **AE** = A Variant + E Variant

PRESSURE RANGE :
- **0001** = Range 0 - 1 bar
- **0005** = Range 0 - 5 bar
- **0009** = Range 0 - 9 bar

WARNING: Pressure from 0 to 0.1 bar cannot be adjusted.

Accessories

Model with SUB-D 15 poles connector	
	**5300.F15.00.00** : Straight connector + Casing IP65
	5300.F15.00.03 : Straight connector + Cable 3 meters
	5300.F15.00.05 : Straight connector + Cable 5 meters
	5300.F15.90.00 : 90° connector + Casing IP65
	5300.F15.90.03 : 90° connector + Cable 3 meters
	5300.F15.90.05 : 90° connector + Cable 5 meters

Fixing bracket
170M5


*** Without cable**

ORDERING CODES
"521 M12 version" - CANopen® version



17_E2N. M . C . ____ . __

SIZE :
- **0** = Size 0
- **1** = Size 1
- **3** = Size 3

VARIANT
- = Standard Version (no addictional letter required)
- **E** = External pressure feedback
- **A** = Exhaust downstream pressure when power supply is removed
- **AE** = A Variant + E Variant

PRESSURE RANGE :
- **0001** = Range 0 - 1 bar
- **0005** = Range 0 - 5 bar
- **0009** = Range 0 - 9 bar

NOTE: This model doesn't include the terminating resistor.

WARNING: Pressure from 0 to 0.1 bar cannot be adjusted.

Accessoris

Model with M12 connector
POWER SUPPLY connector
Female straight connector M12A 4P
5312A.F04.00


Model with M12 connector
NETWORK connector
Male straight connector M12A 5P
5312A.M05.00


Fixing bracket
170M5


ORDERING CODES
"521 M12 BASIC version"



17_E2N. _ . M . ____ . __

SIZE :
- **0** = Size 0
- **1** = Size 1
- **3** = Size 3

MANAGEMENT :
- **C** = Current signal (4-20 mA)
- **T** = Voltage signal (0-10 V)

PRESSURE RANGE :
- **0001** = Range 0 - 1 bar
- **0005** = Range 0 - 5 bar
- **0009** = Range 0 - 9 bar

VARIANT
- = Standard Version (no addictional letter required)
- **E** = External pressure feedback
- **A** = Exhaust downstream pressure when power supply is removed
- **AE** = A Variant + E Variant

NOTE:
This model doesn't include display a keyboard. Therefore it is not possible to set the parameters. Unless specifically requested it is provided with all parameters set with default values. Personalisations are available.

WARNING: Pressure from 0 to 0.1 bar cannot be adjusted.

Accessories

Model with M12 connector
POWER SUPPLY connector
Female straight connector M12A 4P
5312A.F04.00


Fixing bracket
170M5


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

ORDERING CODES
"521 M12 version" - Standard version





17_E2N. _ . _ . ____ . __

VARIANT
- = Standard Version (no addictional letter required)
- **E** = External pressure feedback
- **A** = Exhaust downstream pressure when power supply is removed
- **AE** = A Variant + E Variant

PRESSURE RANGE
- **0001** = Range 0 - 1 bar
- **0005** = Range 0 - 5 bar
- **0009** = Range 0 - 9 bar

OUTPUT
- **F** = Voltage analogue output
- **G** = Current analogue output
- **H** = Digital output

MANAGEMENT
- **C** = Current signal (4-20 mA)
- **T** = Voltage signal (0-10 V)

SIZE
- **0** = Size 0
- **1** = Size 1
- **3** = Size 3

WARNING: Pressure from 0 to 0.1 bar cannot be adjusted.

Accessories

Model with M12 connector
POWER SUPPLY connector
Female straight connector M12A 4P
5312A.F04.00


Fixing bracket
170M5


ORDERING CODES
"521 IO-Link version"





17_E2N. I . B . ____ . __

VARIANT:
- Standard version
- E = External pressure feedback
- A = Exhaust downstream circuit without power supply
- AE = A Variant + E Variant

PRESSURE RANGE:
- 0009 = Range 0 - 9 bar

SIZE
- 0 = Size 0
- 1 = Size 1
- 3 = Size 3

WARNING: Pressure from 0 to 0.1 bar cannot be adjusted.

Accessories

Model with M12 connector
POWER SUPPLY connector
Female straight connector M12A 5P
5312A.F05.00


Fixing bracket
170M5


Series 1700 - Miniaturised proportional pressure regulator - Size 0 - 1 - 3

Modern industrial applications constantly require more sophisticated and better performing pneumatic components.
Flexibility and adaptability are key factor when designing a machine. The possibility to change the application parameter during operation such as for example the speed of a cylinder or the force generated by a rotary actuator are beneficial to the designer.
In the past it was necessary to design complicated pneumatic circuits based on pneumatic logic elements which required a lot of space and complicated set up, today, thanks to the electronic proportional regulators such operations are extremely easy to achieve and offer even more flexibility.
Pneumax miniaturized proportional regulators series integrates all the main features of the 521 series with the exclusion of the display and analogue/digital output.
High precision in pressure regulation, fast response speed, assembling options and reduced dimensions are the main advantages.

Pneumatic characteristics		
Fluid		Air filtered at 5 micron and dehumidified
Minimum inlet pressure		Desired outlet pressure + 1 bar
Maximum inlet pressure		10 bar
Outlet pressure	Ordering code	009
	Presure value	0 ... 9 bar
Nominal flowrate from 1 to 2 (6 bar Δp 1 bar)		7 Nl /min
Discharge flowrate (at 6 bar with 1 bar overpressure)		7 Nl /min
Air consumption		M5 / Ø4
Operating connection		M5 / Ø4
Exhaust connection		M5 / Ø4
Maximum fitting tightening		3 Nm

Electrical characteristics		
Supply voltage		24VDC ± 10% (stabilised with ripple <1%)
Standby current consumption		55 mA
Current consumption with solenoid valves on		145 mA
Reference signal	Voltage*	0 ... 10 V
	Current*	4 ... 20 mA
Input impedance	Voltage	10 KΩ
	Current	250 Ω
Analog outputs voltage		0,2 ... 10 V (10 V to 9 bar)
Connector		M8 4 poles

Operational characteristics	
Linearity	< ± 0,3 % F.S.
Hysteresis	<0,3 % F.S.
Repeatability	< ± 0,5 % F.S.
Sensitivity	< ± 0,5 % F.S.
Assembly position	Indifferent
Protection degree	IP65 (with casing fitted)
Environment temperature	-5°C ... 50°C / 23°F ... 122°F

Construction characteristics	
Body	Technopolymer
Seals	NBR
Cover for electrical part	Technopolymer
Weight	60 g

*** Request during ordering process**

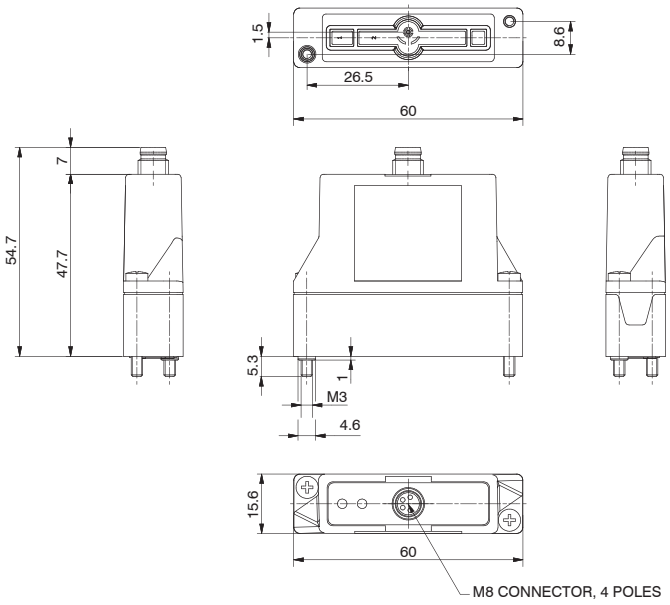
PARAMETER 18 - Protection mode

If during operation in “standard” mode the desired pressure cannot be reached (for example, there is no compressed-air supply or it is insufficient) or the discharge conduit is blocked or closed, the regulator continues to work on the solenoid valves to try to reach the desired pressure. This parameter allows the automatic switch-off of the control solenoid valves for up to 20 seconds to be enabled. This function is used to safeguard the solenoid valves over time. The protection is triggered if the desired pressure is not reached and the outlet pressure does not undergo significant variations within a 4-seconds control of the solenoid valves. A significant variation is defined as a variation that is greater than the defined insensitivity value, parameter P1. After the 4 seconds have elapsed in which the regulator attempts to reach the desired pressure, the protection is triggered. This protection switches off the solenoid valves for a maximum of 20 seconds. If the 20 seconds have elapsed or if during the 20 seconds during which the solenoid valves are switched off the required pressure (reference) varies or the outlet pressure varies the regulator will again start to control the solenoid valves for another 4 seconds, trying to reach the desired pressure.
If this does not occur, the protection is reactivated. From this point on 4 seconds of controlling the solenoid valves and 20 seconds of switch-off alternate cyclically.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

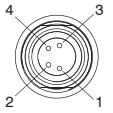
Proportional pressure regulator



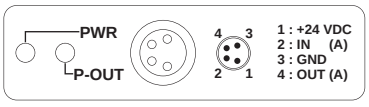


Ordering code	
170EⓅM.Ⓥ.M.Ⓖ	
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

M8 CONNECTOR, 4 POLES

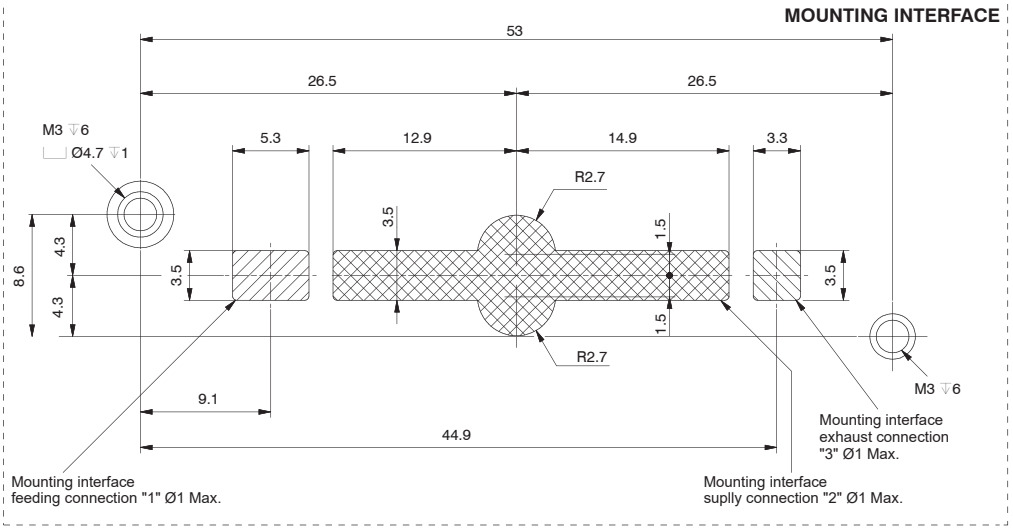


PIN	DESCRIPTION
1	+24 VDC
2	ANALOG INPUT
3	GND
4	ANALOG OUTPUT



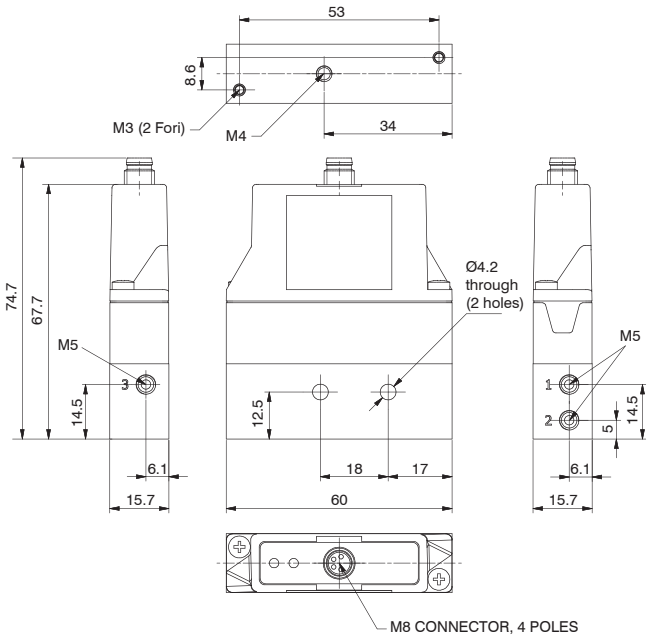
PWR	Green Led: The regulator is properly powered
P-OUT	Green Led: lights up when the outlet pressure is higher than the desired pressure minus 0.2 bar and less than the desired pressure more 0.2 bar

MOUNTING INTERFACE



Proportional Pressure Regulator c/w M5 In-Line Single Base





Ordering code
170EⓅM.Ⓥ.M.Ⓖ.FO

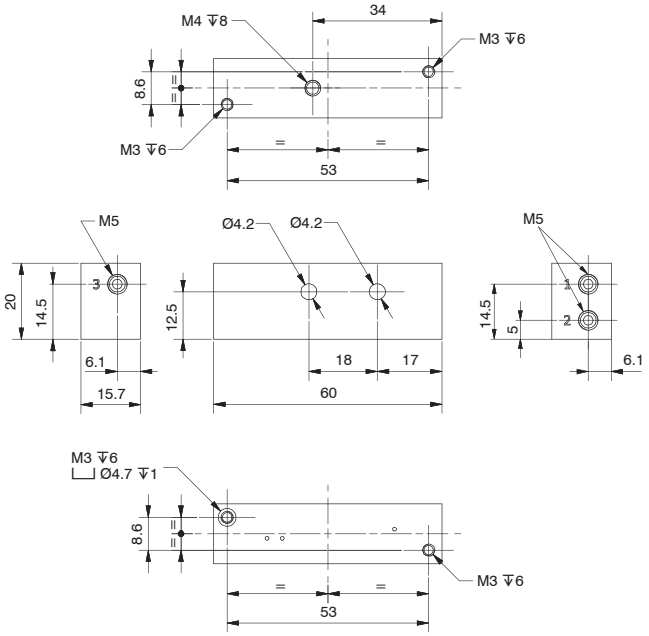
	PROTECTION
Ⓟ	0 = Parameter 18 active
	2 = Parameter 18 not active
	VERSION
Ⓥ	T = Voltage signal
	C = Current signal
	PRESSURE RANGE
Ⓖ	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

M5 In-Line Single Base

Ordering code
170M1.FO



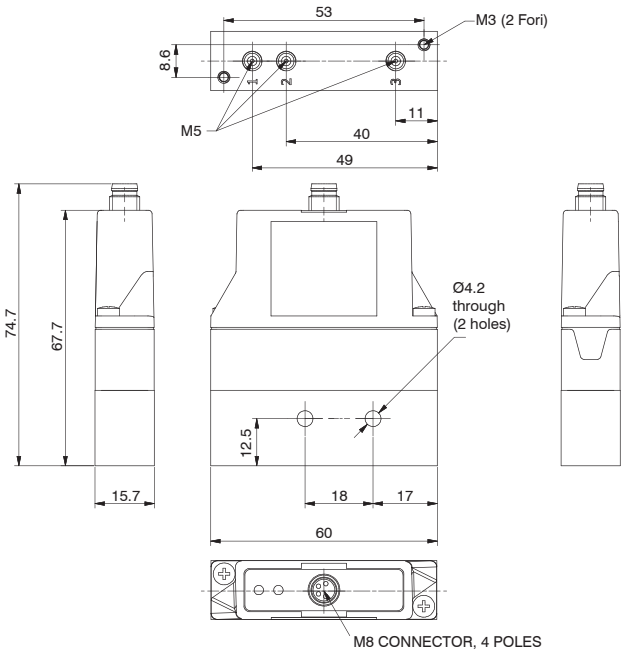


Weight: 50 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Proportional Pressure Regulator c/w M5 Bottom Entry Base





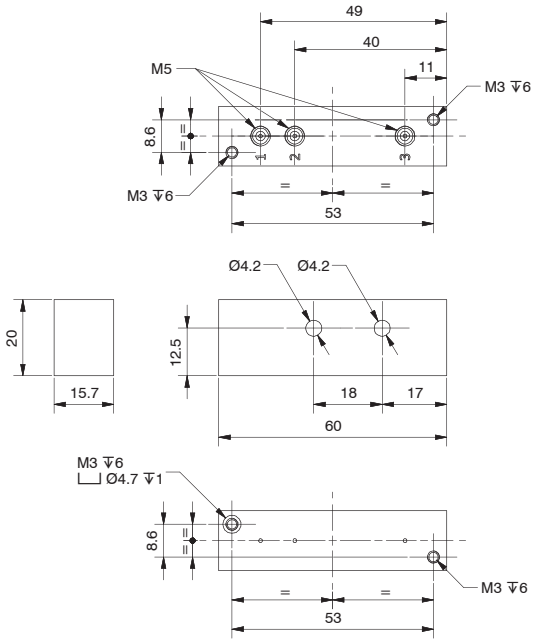
Ordering code
170EⓅM.Ⓥ.M.Ⓖ.FV

Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

M5 Bottom Entry Single Base



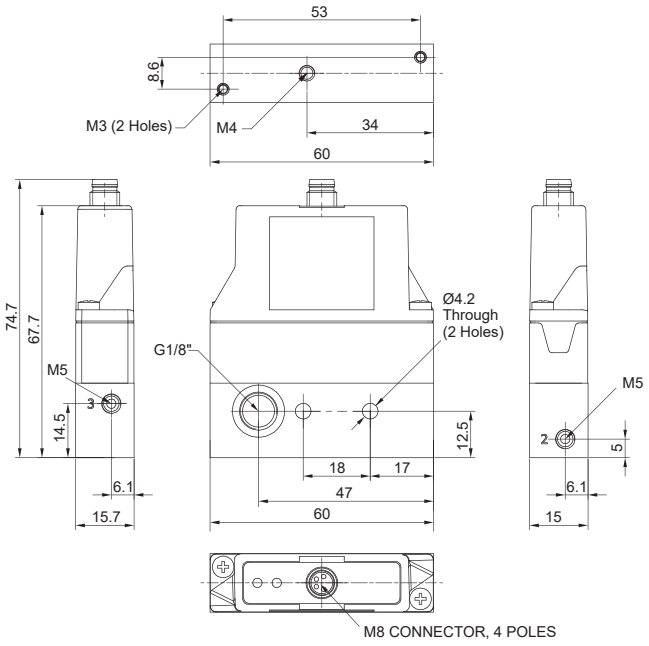


Ordering code
170M1.FV

Weight: 50 g

Proportional Pressure Regulator c/w Modular In-Line Base





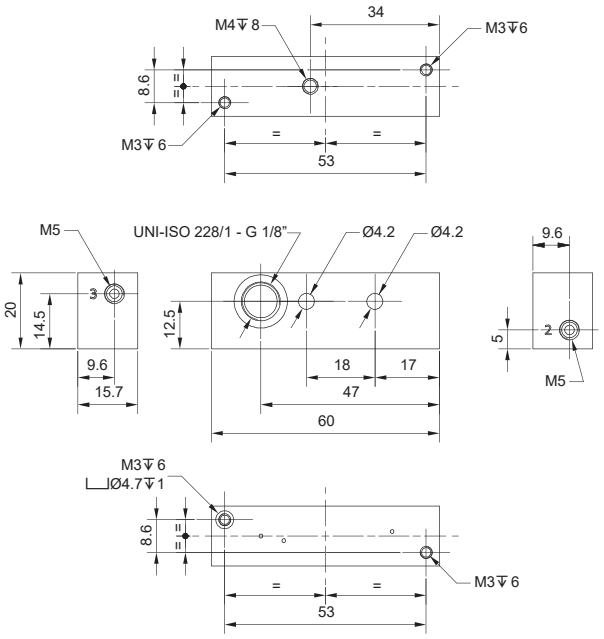
Ordering code	
170EⓅM.Ⓥ.M.Ⓖ.FP	
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

Single Modular In-Line Base

Ordering code
170M1.FP



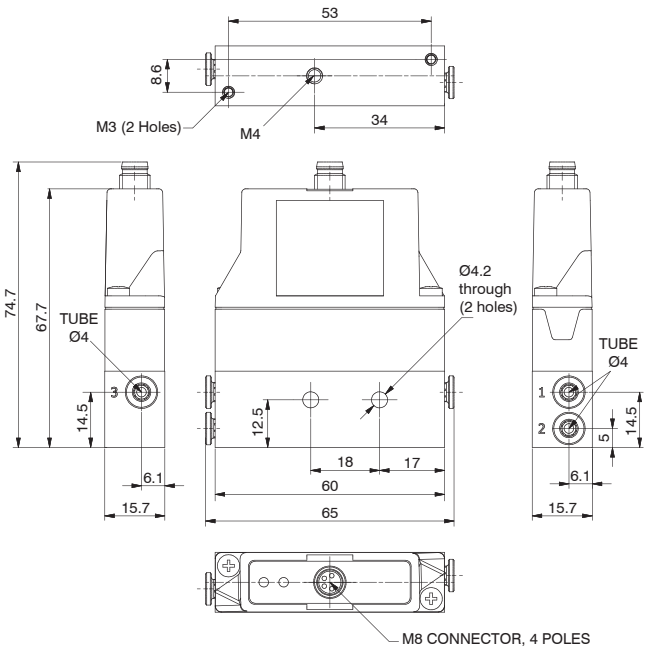


Weight: 50 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Proportional Pressure Regulator c/w 4mm In-Line Single base





Ordering code
170EⓅM.Ⓥ.M.Ⓖ.TO

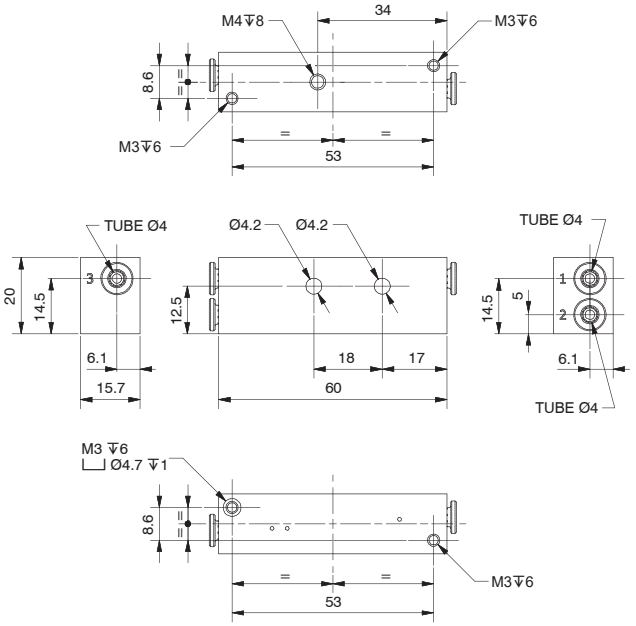
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

Single 4mm In-Line Base

Ordering code
170M1.TO

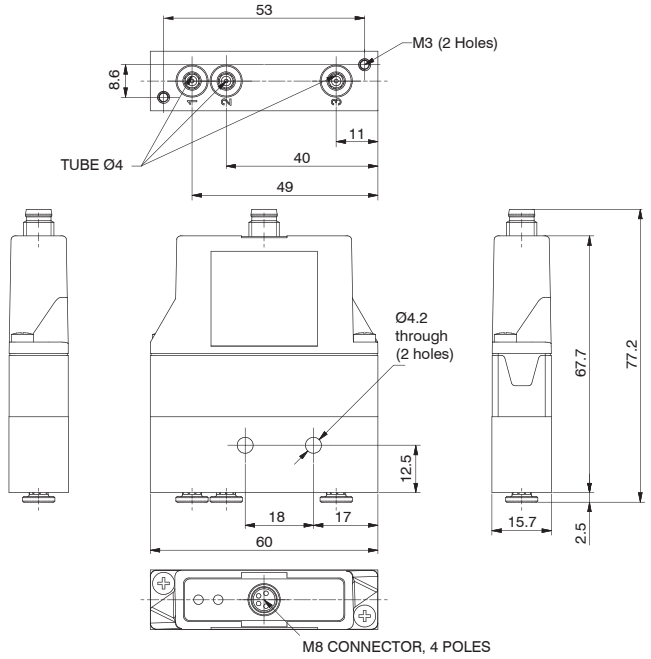




Weight: 50 g

Proportional Pressure Regulator c/w 4mm Bottom Entry Single Base





Ordering code
170EⓅM.Ⓥ.M.Ⓖ.TV

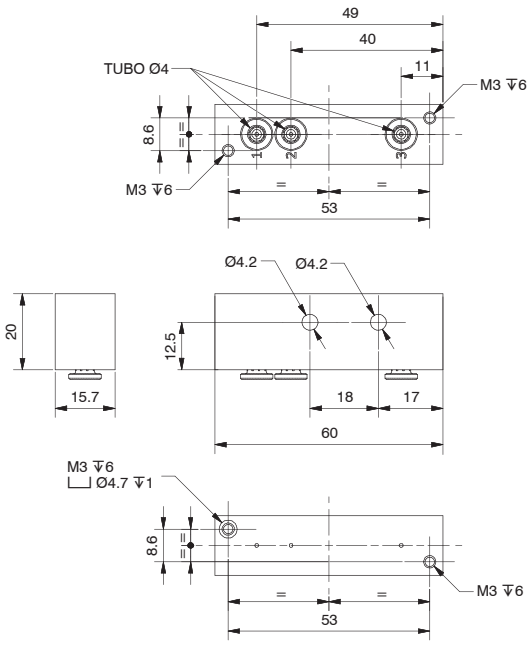
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

Single 4mm Bottom Entry Base

Ordering code
170M1.TV



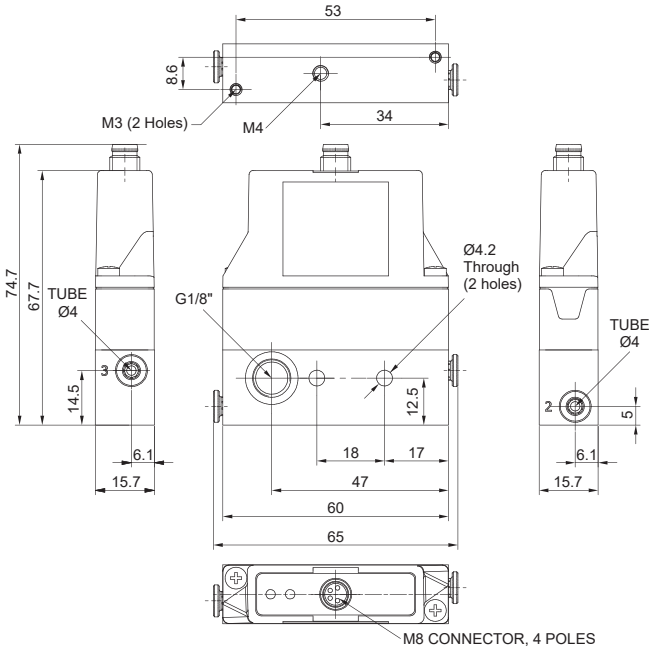


Weight: 50 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Proportional Pressure Regulator c/w 4mm In-Line Modular Base





Ordering code
170EⓅM.Ⓥ.M.Ⓖ.TP

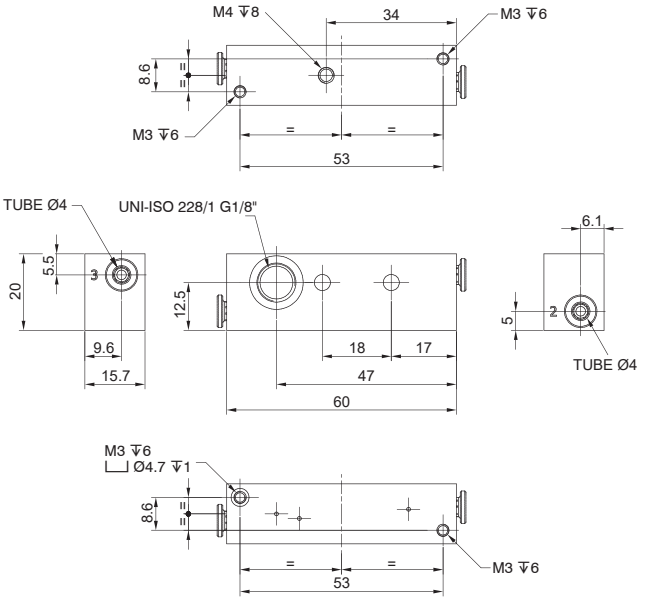
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

Single 4mm In-Line Modular Base

Ordering code
170M1.TP

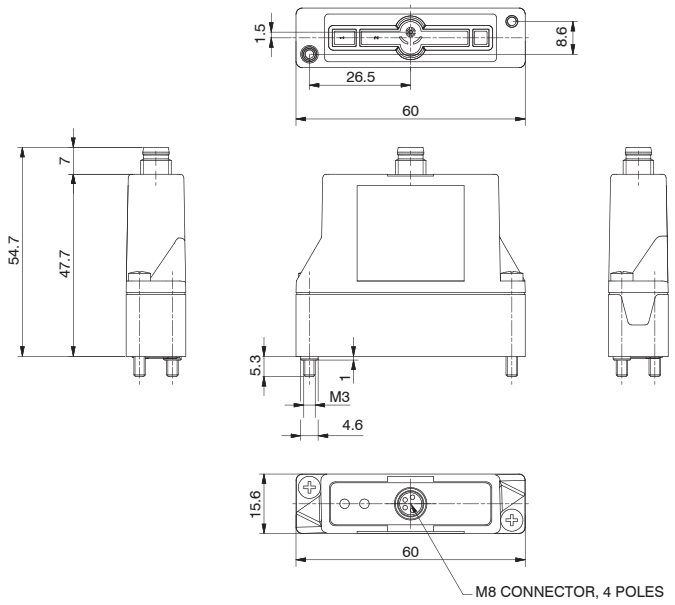




Weight: 50 g

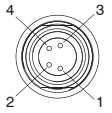
Proportional pressure regulator with external feedback



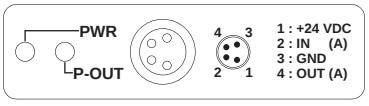


Ordering code	
170EⓅM.ⓋM.ⒼE	
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

M8 CONNECTOR, 4 POLES

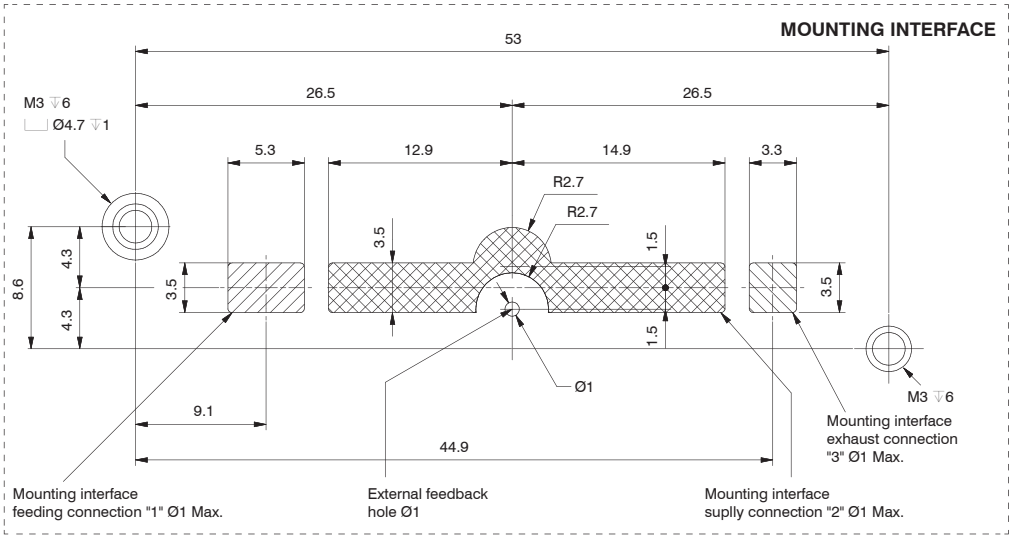


PIN	DESCRIPTION
1	+24 VDC
2	ANALOG INPUT
3	GND
4	ANALOG OUTPUT



PWR	Green Led: The regulator is properly powered
P-OUT	Green Led: lights up when the outlet pressure is higher than the desired pressure minus 0.2 bar and less than the desired pressure more 0.2 bar

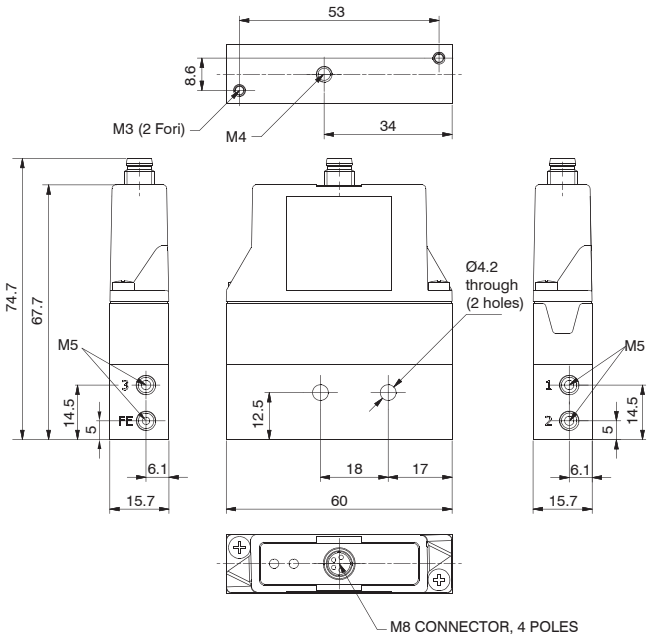
MOUNTING INTERFACE



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Proportional Pressure Regulator c/w M5 In-Line Single Base with External Feedback





Ordering code
170EⓅM.ⓋM.ⒼEFO

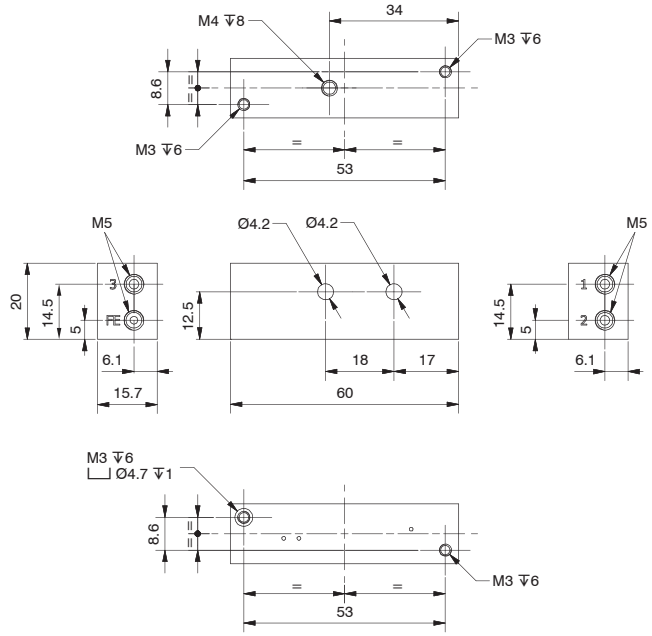
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

Single M5 In-Line Base with External Feedback

Ordering code
170M1.EFO

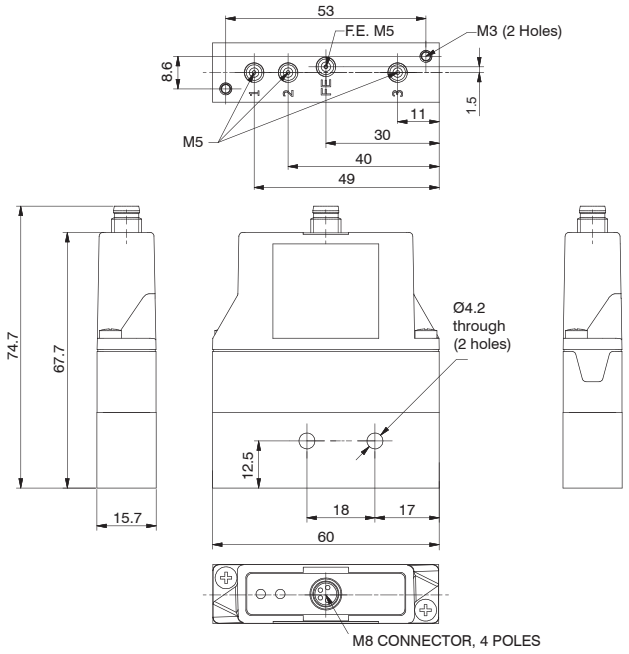




Weight: 50 g

Proportional Pressure Regulator c/w M5 Bottom Entry Base with External Feedback





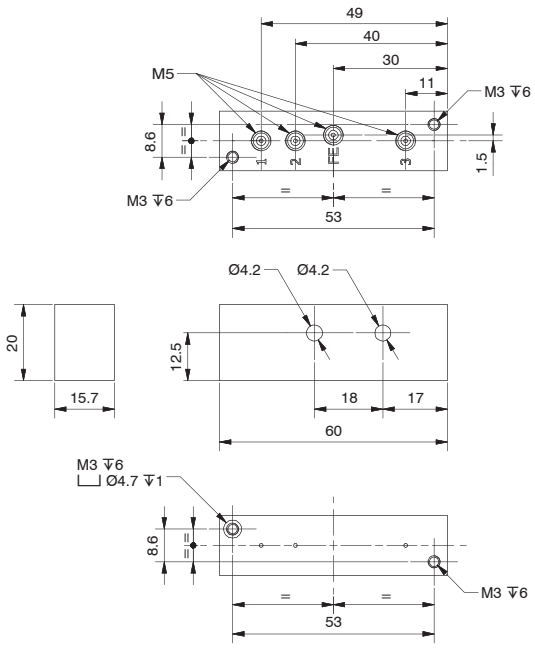
Ordering code	
170EⓅM.Ⓥ.M.Ⓖ.EFV	
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

Single M5 Bottom Entry Base with External Feedback

Ordering code
170M1.EFV



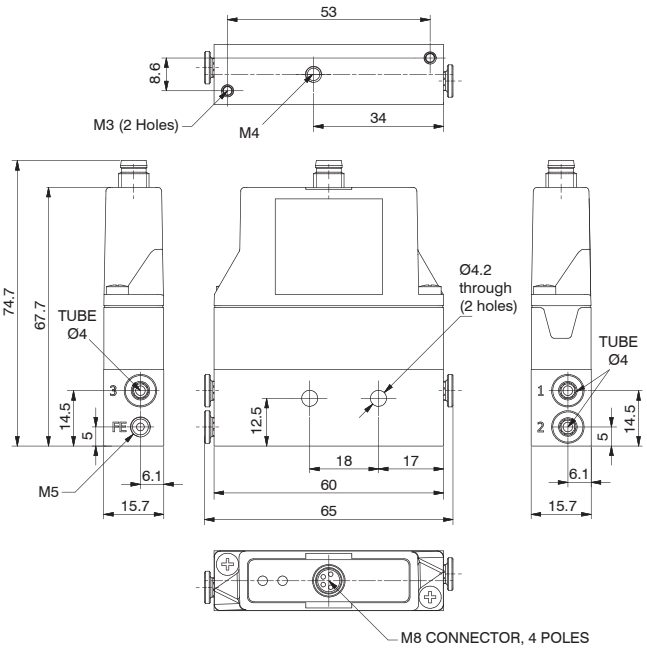


Weight: 50 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Proportional Pressure Regulator c/w 4mm In-Line Single Base with External Feedback





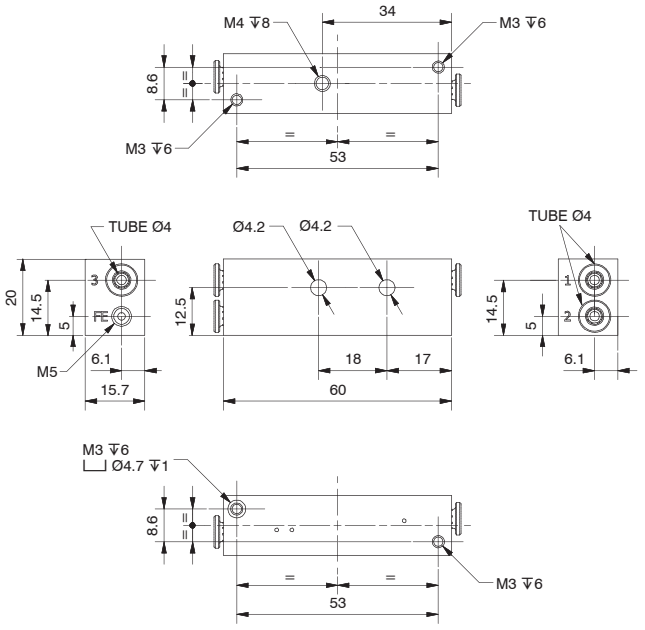
Ordering code	
170EⓅM.Ⓥ.M.Ⓖ.ETO	
Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

Single 4mm In-Line Base with External Feedback

Ordering code
170M1.ETO

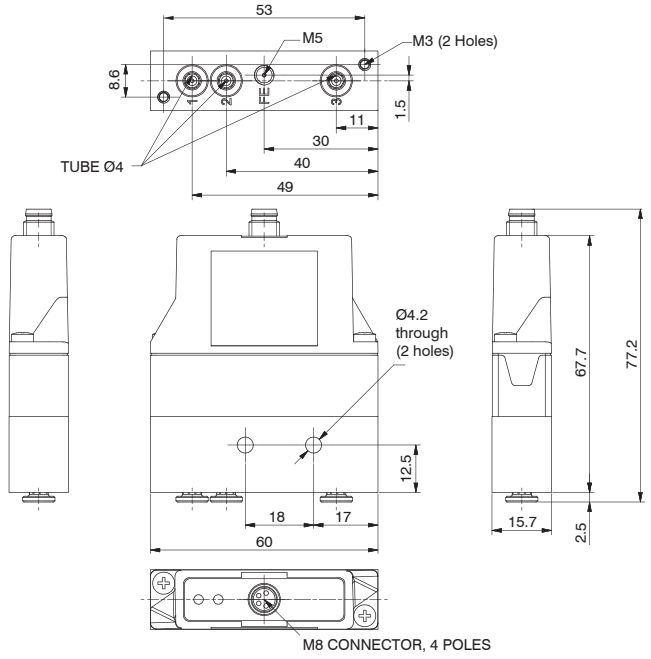




Weight: 50 g

Proportional Pressure Regulator c/w 4mm Bottom Entry Single Base with External Feedback





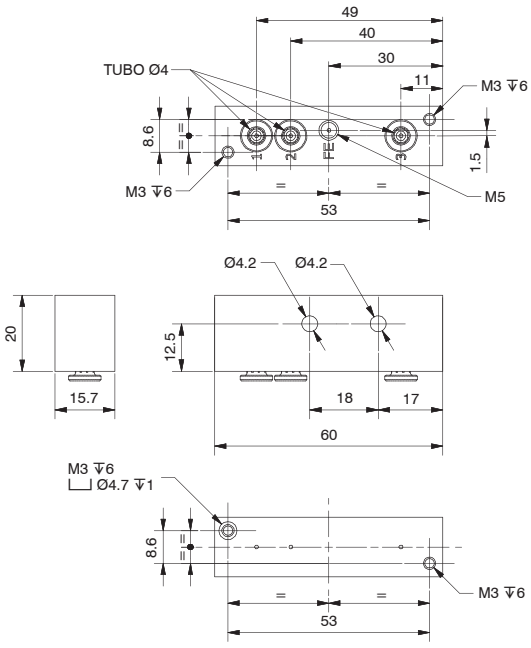
Ordering code
170EⓅM.Ⓥ.M.Ⓖ.ETV

Ⓟ	PROTECTION
	0 = Parameter 18 active
	2 = Parameter 18 not active
Ⓥ	VERSION
	T = Voltage signal
	C = Current signal
Ⓖ	PRESSURE RANGE
	001= Range 0 ... 1 bar
	005= Range 0 ... 5 bar
	009= Range 0 ... 9 bar

Weight: 110 g

Single 4mm Bottom Entry Base with External Feedback





Ordering code
170M1.ETV

Weight: 50 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Coding For Proportional Pressure Regulator Modular Manifold

It is possible to assemble a manifold of Miniature Proportional Regulators to a maximum of 12 Regulators.
For the coding of the Manifold, refer to the configuration Table below.
The Regulators are feed by a single supply pressure via the G1/8" connection. In the Manifold, the Pressure Regulators operate independently, the output pressure is supplied via the M5 or 4mm output connection depending on the model requested. The electrical signal is controlled via the M8 connector.
There are also configured single bases up to a maximum of 12 positions with power supplies and independent consumptions (See following pages).

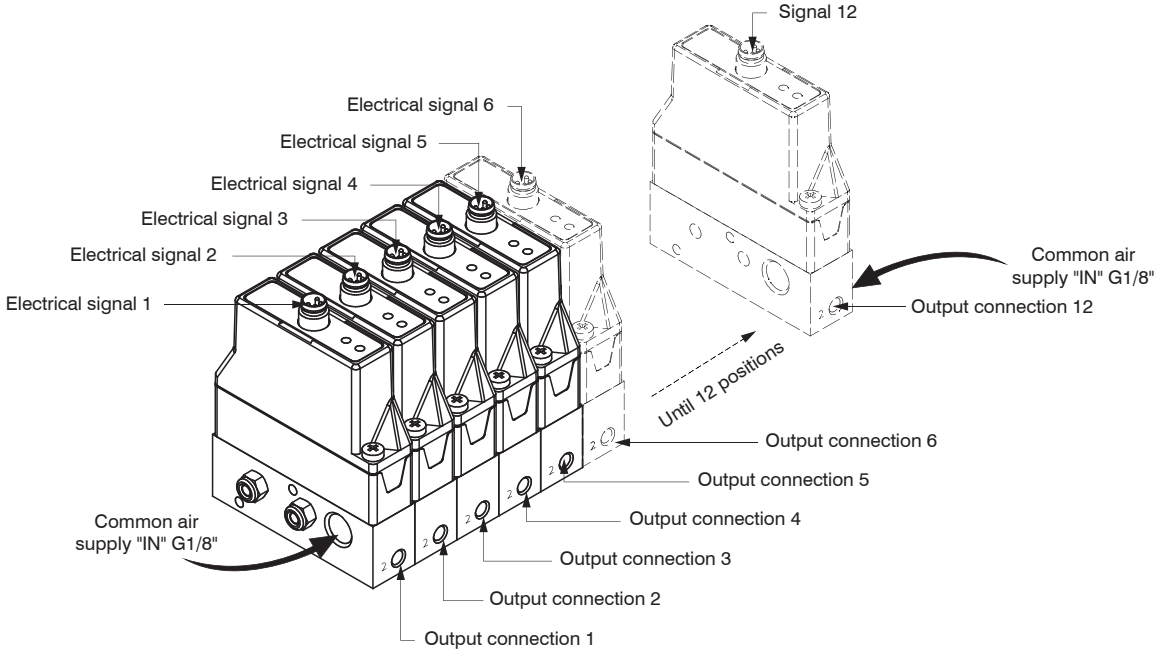
G	1	7	0	_	_	_	M	_	_	_	_	P	_

Group	Series	Size	Parameter 18	N. Places	Control Type	Electrical connection	Pressure range	Connection	Version	Options
			0=Eco P18 On	**A**=02	**T**=Voltage		**001**=0 - 1 bar	**T**=Tube Ø4		= Standard *
			2=Eco P18 Off	**B**=03	**C**=Current		**005**=0 - 5 bar	**F**=M5 Thread		**E**= External feedback
				C=04			**009**=0 - 9 bar			* no additional letter required
				D=05						
				E=06						
				F=07						
				G=08						
				H=09						
				I=10						
				L=11						
				M=12						

Example
Code: G1700ITM009FP
Description: 10 Position Miniature Proportional Pressure Regulator, Voltage controlled with M5 Outputs

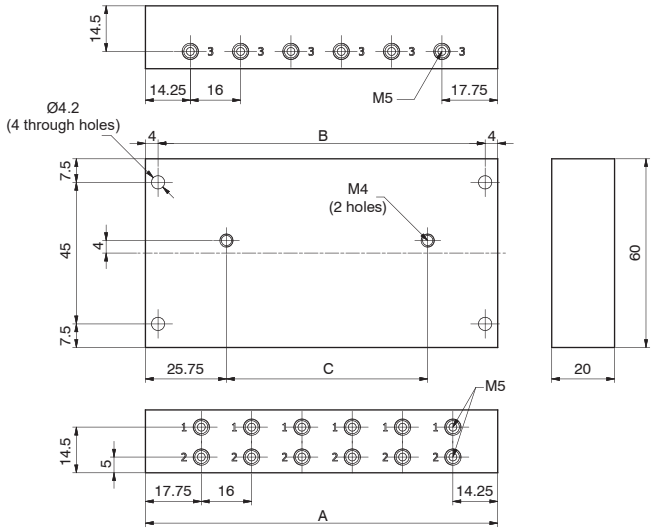






Multiple M5 In-Line Base





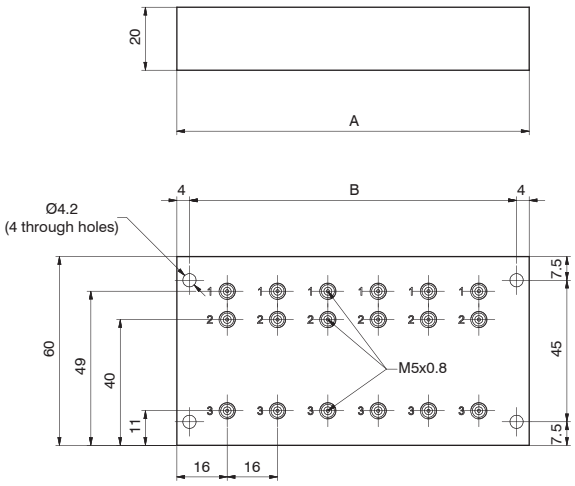
Ordering code
170MⓃ.FO

Ⓝ	NO. POSITIONS
	2 = 2 positions (weight 100 g)
	3 = 3 positions (weight 150 g)
	4 = 4 positions (weight 200 g)
	5 = 5 positions (weight 250 g)
	6 = 6 positions (weight 300 g)
	7 = 7 positions (weight 350 g)
	8 = 8 positions (weight 400 g)
	9 = 9 positions (weight 450 g)
	10 = 10 positions (weight 500 g)

Dimensions	No. positions								
	2	3	4	5	6	7	8	9	10
A	48	64	80	96	112	128	144	160	176
B	40	56	72	88	104	120	136	152	168
C	0	16	32	48	64	80	96	112	128

Multiple M5 Bottom Entry Base





Ordering code
170MⓃ.FV

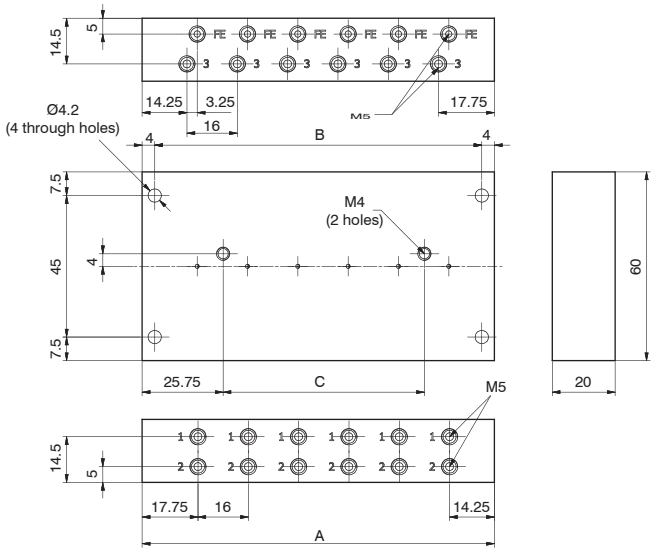
Ⓝ	NO. POSITIONS
	2 = 2 positions (weight 100 g)
	3 = 3 positions (weight 150 g)
	4 = 4 positions (weight 200 g)
	5 = 5 positions (weight 250 g)
	6 = 6 positions (weight 300 g)
	7 = 7 positions (weight 350 g)
	8 = 8 positions (weight 400 g)
	9 = 9 positions (weight 450 g)
	10 = 10 positions (weight 500 g)

Dimensions	No. positions								
	2	3	4	5	6	7	8	9	10
A	48	64	80	96	112	128	144	160	176
B	40	56	72	88	104	120	136	152	168

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Multiple M5 In-Line Base with External Feedback





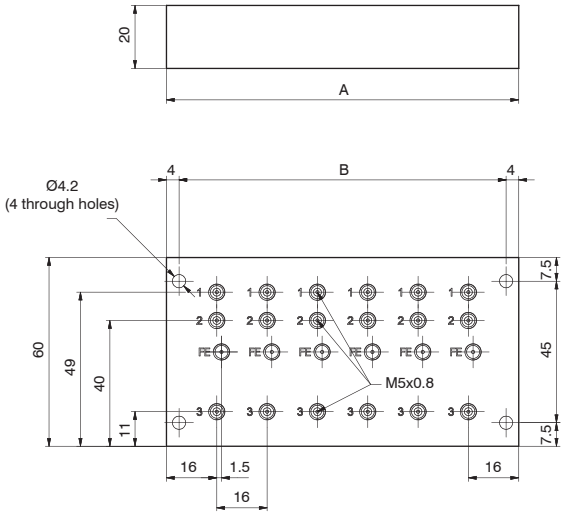
Ordering code
170MⓃ.EFO

	NO. POSITIONS
Ⓝ	2 = 2 positions (weight 100 g)
	3 = 3 positions (weight 150 g)
	4 = 4 positions (weight 200 g)
	5 = 5 positions (weight 250 g)
	6 = 6 positions (weight 300 g)
	7 = 7 positions (weight 350 g)
	8 = 8 positions (weight 400 g)
	9 = 9 positions (weight 450 g)
	10 = 10 positions (weight 500 g)

Dimensions	No. positions								
	2	3	4	5	6	7	8	9	10
A	48	64	80	96	112	128	144	160	176
B	40	56	72	88	104	120	136	152	168
C	0	16	32	48	64	80	96	112	128

Multiple M5 Bottom Entry Base with External Feedback





Ordering code
170MⓃ.EFV

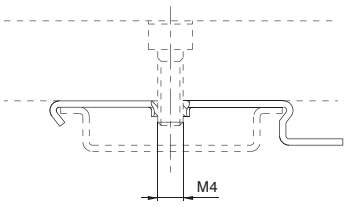
	NO. POSITIONS
Ⓝ	2 = 2 positions (weight 100 g)
	3 = 3 positions (weight 150 g)
	4 = 4 positions (weight 200 g)
	5 = 5 positions (weight 250 g)
	6 = 6 positions (weight 300 g)
	7 = 7 positions (weight 350 g)
	8 = 8 positions (weight 400 g)
	9 = 9 positions (weight 450 g)
	10 = 10 positions (weight 500 g)

Dimensions	No. positions								
	2	3	4	5	6	7	8	9	10
A	48	64	80	96	112	128	144	160	176
B	40	56	72	88	104	120	136	152	168

Clip

Ordering code
800.00





Weight g 5

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series WPR



- Output pressure up to 18 bar
- Flow rate up to 4000Nl/min
- There are versions available with or without proportional integration
- Proportional Integrated versions available with Analogue/Digital, CANopen®, IO-Link, EtherCAT®, PROFINET IO RT and EtherNet/IP interface
- IN / OUT connections, main regulator G1/2"
- EXH connection, main regulator G1/4"
- IN connection, pilot regulator M5
- Versions available with external feedback

WPR proportional piloting pressure regulators are designed to be able to provide an output pressure value P2 up to 18 bar and are available with the integrated pilot proportional pressure regulator or with an M5 connection for pneumatic proportional remote piloting.
The main regulator and pilot regulator maintain separate supplies, while the main regulator has a maximum inlet pressure of 20 bar the proportional pilot regulator maintains the inlet pressure of 10 bar.
The ratio of pilot pressure to outlet pressure is between 1:1 and 1:2 depending on the inlet pressure and pilot pressure.
The device is made with G1/2" IN/OUT main connections and provides a nominal flow rate of 4.000 Nl/min.
The device is available with pneumatic, Analog/Digital, CANopen®, IO-Link, EtherCAT®, PROFINET IO RT and EtherNet/IP interfaces
Proportional management refers only to the low-pressure piloting part.
Proportional management refers only to the low-pressure piloting part.

Product presentation and applications

WPR proportional regulators (Wide Pressure Range) are ideal for all applications where there is a need to use a low-pressure (0-9 bar) reference signal resulting in a high-pressure (0-18 bar) P2 output.
The devices have separate pneumatic supplies for the main regulator and the integrated pilot proportional regulator.
The main regulator features G1/2" IN/OUT connections and a G1/4" EXH drain connection.
The input connection of the integrated pilot proportional regulator is M5 ported.
An external feedback version is available an option that allows the P2 pressure signal to be taken from a remote point rather than directly from the usage connection. This function is usually used when the end user is not near to the devices.
At the top is located the management electronics or the connection for remote piloting.
The fixing takes place through the use of a special fixing bracket.

Technical characteristics

IN/OUT connections	G1/2"
EXH connections	G1/4"
Max. torque fitting tightening (Nm) IN/OUT/EXH connections	G1/2" Metallic: 30 G1/4" Metallic: 20
Fluid	20μm filtered and preferably non-lubricated air. For the proportional regulator pilot 5μm filtered non-lubricated and dehumidified air.
Pressure measurement	G1/8" pressure gauge socket
Assembly configuration	Stand alone
Assembly positions	Indifferent
Body and connections type	Aluminum body, integrated aluminum connections

Operational characteristics

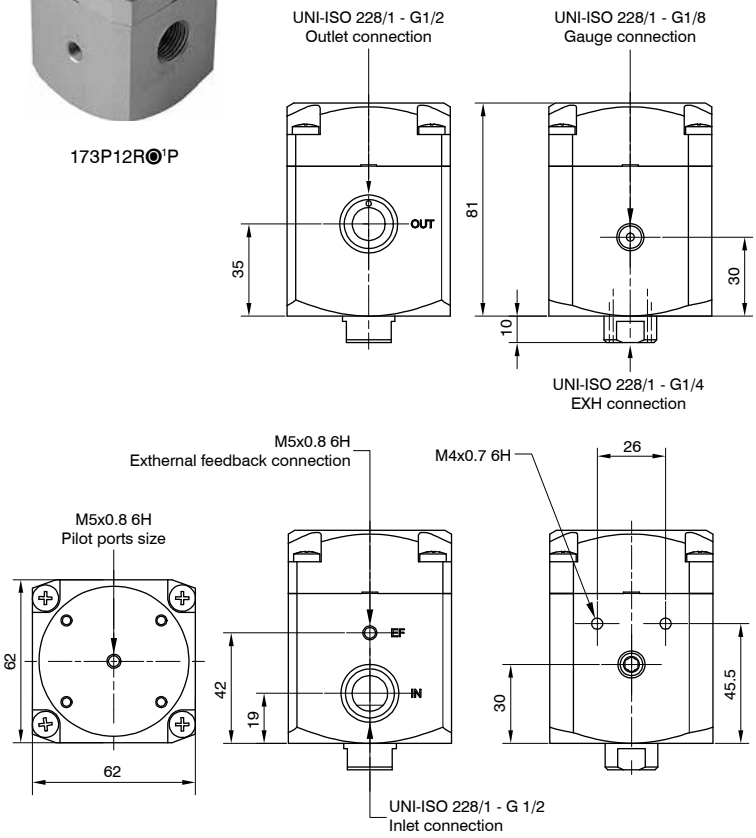
Main regulator max inlet pressure (bar)	20 (the inlet pressure must be at least 1 bar higher than the desired outlet pressure)
Pilot regulator max inlet pressure (bar)	10 (the inlet pressure must be at least 1 bar higher than the desired outlet pressure)
Piloting pressure range (bar)	0 ... 9
Temperature range (°C)	-5 ... +50

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

WPR pressure regulator



173P12R●¹P

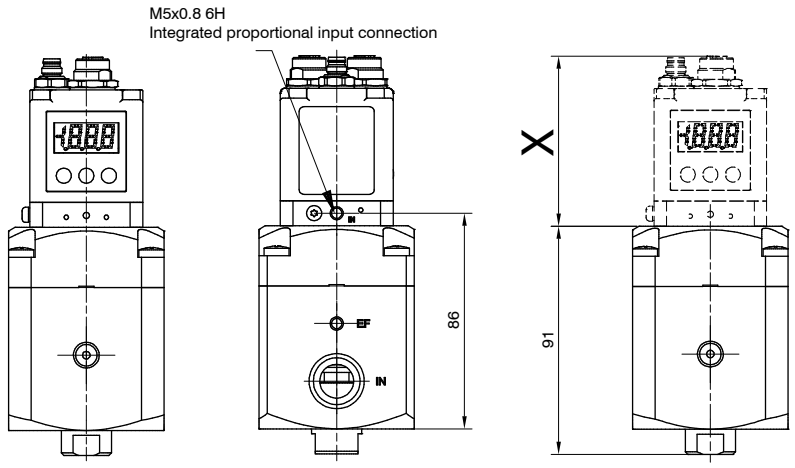


Coding: 173P12R●¹P●²

●¹	FEEDBACK OPTIONS
	1 = Internal feedback
	E = External feedback
P	PILOTING OPTIONS
	P = M5 connection
	N = Integrated pilot proportional regulator
●²	INTEGRATED PILOT OPTIONS
	DC=SUB-D 15 poles connector current signal, 0-9 bar
	DCA =SUB-D 15 poles connector current signal, 0-9 bar, N.O.
	DT=SUB-D 15 poles connector voltage signal, 0-9 bar
	DTA=SUB-D 15 poles connector voltage signal, 0-9 bar, N.O.
	SC=SUB-D 15 poles connector, CANopen®, 0-9 bar
	SCA=SUB-D 15 poles connector, CANopen®, 0-9 bar, N.O.
	MC=M12 connector, CANopen®, 0-9 bar
	MCA=M12 connector, CANopen® 0-9 bar, N.O.
	NCF=M12 connector, current signal, voltage analogue output, 0-9 bar
	NCFA=M12 connector, current signal, voltage analogue output, 0-9 bar, N.O.
	NCG=M12 connector, current signal, current analogue output, 0-9 bar
	NCGA=M12 connector, current signal, current analogue output, 0-9 bar, N.O.
	NCH=M12 connector, current signal, digital output, 0-9 bar
	NCHA=M12 connector, current signal, digital output, 0-9 bar, N.O.
	NTF=M12 connector, voltage signal, voltage analogue output, 0-9 bar
	NTFA=M12 connector, voltage signal, voltage analogue output, 0-9 bar, N.O.
	NTG=M12 connector, voltage signal, current analogue output, 0-9 bar
	NTGA=M12 connector, voltage signal, current analogue output, 0-9 bar, N.O.
	NTH=M12 connector, voltage signal, digital output, 0-9 bar
	NTHA=M12 connector, voltage signal, digital output, 0-9 bar, N.O.
	IB=IO-Link, 0-9 bar
	IBA=IO-Link, 0-9 bar, N.O.
	EC=EtherCAT®, 0-9 bar
	ECA=EtherCAT®, 0-9 bar, N.O.
	PN=PROFINET, 0-9 bar
	PNA=PROFINET, 0-9 bar, N.O.
	EI=EtherNet/IP, 0-9 bar
	EIA=EtherNet/IP, 0-9 bar, N.O.



173P12R●¹N●²



Type	X dimension
Standard - Socket connector	68
CANopen® - Socket connector	59
CANopen® - M12 connector	71
Standard - M12 connector	71
IO-Link	71
EtherCAT®	68
PROFINET IO RT	68
ETHERNET/IP	68

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Pilot regulator construction characteristics	
Body	Anodized aluminium
Cover for electrical section	Technopolymer
Seals	NBR
Diaphragm	Cloth-covered rubber
Springs	AISI 302
Actuators	Brass with vulcanised NBR
Weight	168 g

Pilot regulator functional characteristics	
Supply connection	M5
Exhaust connection	Ø1,8
Operating connection	M5
Air consumption	< 1 Nl/min
Standby current consumption	70mA
Current consumption with solenoid valves on	400mA
Maximum fittings tightening	3 Nm
Fluid	Air filtered at 5 micron and dehumidified
Protection degree	IP65 (with casing fitted)
** Input Impedance - Current	250 Ω
** Input Impedance - Voltage	10 kΩ
Digital inputs	+ 24 V DC ± 10%
Hysteresis	± Insensitivity
Linearity	± Insensitivity
Discharge flowrate	7 Nl/min
Nominal flowrate from 1 to 2 (6 bar ΔP 1 bar)	7 Nl/min
Assembly positions	Indifferent
Outlet pressure	0-9 bar
Maximum inlet pressure	10 bar
Minimum inlet pressure	Desired outlet pressure + 1 bar
Repeatability	± Insensitivity
** Reference Signal - Current	*4 ... 20 mA *0 ... 20 mA
** Reference Signal - Voltage	*0 ... 10 V *0 ... 5 V *1 ... 5 V
Sensitivity	0,01 bar
Environment temperature	-5°C ... 50°C / 23°F ... 122°F
Supply voltage	+ 24 V DC ± 10% (stabilised with ripple <1%)
**Digital output	+ 24 V DC PNP (Max. current 50 mA)

* Selectable by keyboard or by RS-232
** Valid only for devices with analog input

Installation and operation of the piloting proportional regulator

PNEUMATIC CONNECTION
The compressed air is connected by means of M5 threaded port in the body.
Ensure the compressed air entering the unit is filtered for both water and dust down to 5 microns.
Maximum inlet pressure is 10 Bar.
The supply pressure to the regulator must always be at least 1 bar greater than the required outlet pressure.

ELECTRICAL CONNECTION
For the electrical connection a D-SUB 15-pole female connector is used (supplied separately).
Wire in accordance with the wiring diagram shown below.
Warning: INCORRECT CONNECTIONS MAY DAMAGE THE DEVICE.

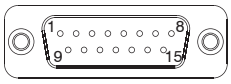
OPERATING NOTES
If the electric supply is interrupted, the outlet pressure is maintained at the set value.
However, maintaining the exact value cannot be ensured as it is impossible to operate the solenoid valves.
In order to discharge the circuit downstream, zero the reference, make sure that the display shows a pressure value equal to zero and then disconnect the electric power supply.
A version of the device is available that exhausts the downstream circuit when the power supply is removed. (Option A at the end of the part number).
If the compressed-air supply is suspended and the electric power supply is maintained a whirring will be heard that is due to the solenoid valves; an operating parameter can be activated (P18) that triggers the regulator protection whenever the requested pressure is not reached within 4 seconds of the reference signal being sent.
In this case the system will intervene to interrupt the control of the solenoid valves. Every twenty seconds, the unit will start the reset procedure until standard operating conditions have been restored.

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Proportional regulator, standard version with socket connector



CONNECTOR UPPER VIEW



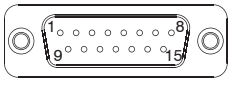
Connector PIN:
1 = DIGITAL INPUT 1
2 = DIGITAL INPUT 2
3 = DIGITAL INPUT 3
4 = DIGITAL INPUT 4
5 = DIGITAL INPUT 5
6 = DIGITAL INPUT 6
7 = DIGITAL INPUT 7
8 = ANALOGUE INPUT / DIGITAL INPUT 8

9 = POWER SUPPLY (+ 24 V DC)
10 = DIGITAL OUTPUT (+ 24 V DC PNP)
11 = ANALOGUE OUTPUT (CURRENT)
12 = ANALOGUE OUTPUT (VOLTAGE)
13 = Rx RS-232
14 = Tx RS-232
15 = 0 V

Proportional regulator, CANopen® version with socket connector



CONNECTOR UPPER VIEW

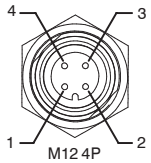


Connector PIN:
1 = CAN_SHIELD
2 = CAN_V+
3 = CAN_GND
4 = CAN_H
5 = CAN_L
6 = NC
7 = NC
8 = NC

9 = POWER SUPPLY (+ 24 V DC)
10 = CAN_SHIELD
11 = CAN_V+
12 = CAN_GND
13 = CAN_H
14 = CAN_L
15 = 0 V

Proportional regulator, M12 BASIC and Standard version





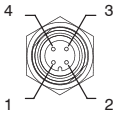
M12 4P
MALE

Connector PIN of the M12 BASIC version:
1 = POWER SUPPLY (+ 24 V DC)
2 = NC
3 = 0 V
4 = ANALOGUE INPUT

Connector PIN of the M12 Standard version:
1 = POWER SUPPLY (+ 24 V DC)
2 = OUTPUT (depending on model)
3 = 0 V
4 = ANALOGUE INPUT

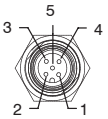
Proportional regulator, CANopen® version with M12 connector





M12 4P
MALE

PIN	DESCRIPTION
1	+ 24 V DC (NODE AND INPUTS)
2	NC
3	0 V
4	+ 24 V DC (OUTPUTS)

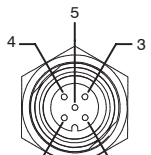


M12 5P
FEMALE

PIN	SIGNAL	DESCRIPTION
1	CAN_SHIELD	Optional Can Shield
2	CAN_V+	Optional Can external positive supply (Dedicated for supply of transceiver and Optocouplers, if galvanic isolation of the bus node applies)
3	CAN_GND	0 V
4	CAN_H	CAN_H bus line (Dominant high)
5	CAN_L	CAN_L bus line (Dominant low)

Proportional regulator, IO-Link version



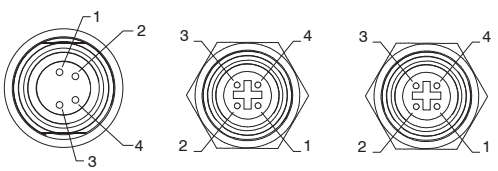


M12 5P
MALE

Connector PIN:
1 = L+
2 = + 24 V DC (P24)
3 = L-
4 = C/Q
5 = 0 V (N24)

Proportional regulator, EtherCAT® version, PROFINET IO RT and EtherNet/IP





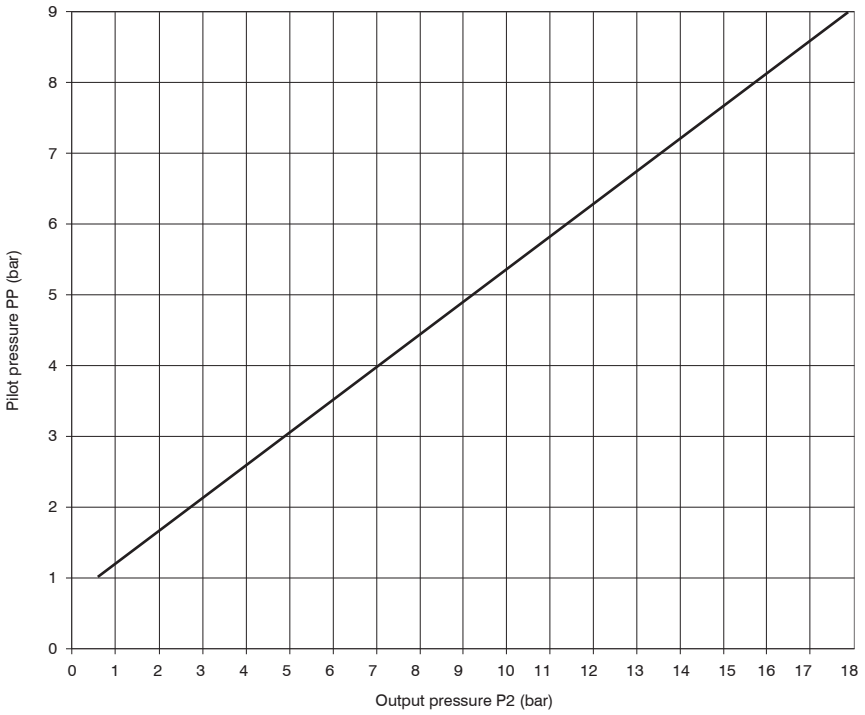
M8 4P
MALE

M12D 4P
FEMALE

Connector PIN:
1 = Device logical power supply
2 = NC
3 = 0 V
4 = Solenoid valve power supply

Connector PIN:
1 = Signal TX + (Ethernet Transmit High)
2 = Signal RX + (Ethernet Receive High)
3 = Signal TX - (Ethernet Transmit Low)
4 = Signal RX - (Ethernet Receive Low)

Piloting curves



Inlet pressure P1=20bar																	
Piloting pressure	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9
Output pressure	0.6	1.7	2.7	3.7	4.9	5.9	7	8.2	9.7	10.5	11.6	12.7	13.7	14.8	15.8	16.9	18
P1/P2	0.62	1.14	1.36	1.5	1.64	1.69	1.75	1.82	1.94	1.91	1.93	1.95	1.96	1.97	1.98	1.99	2

Outlet pressure/Piloting pressure table

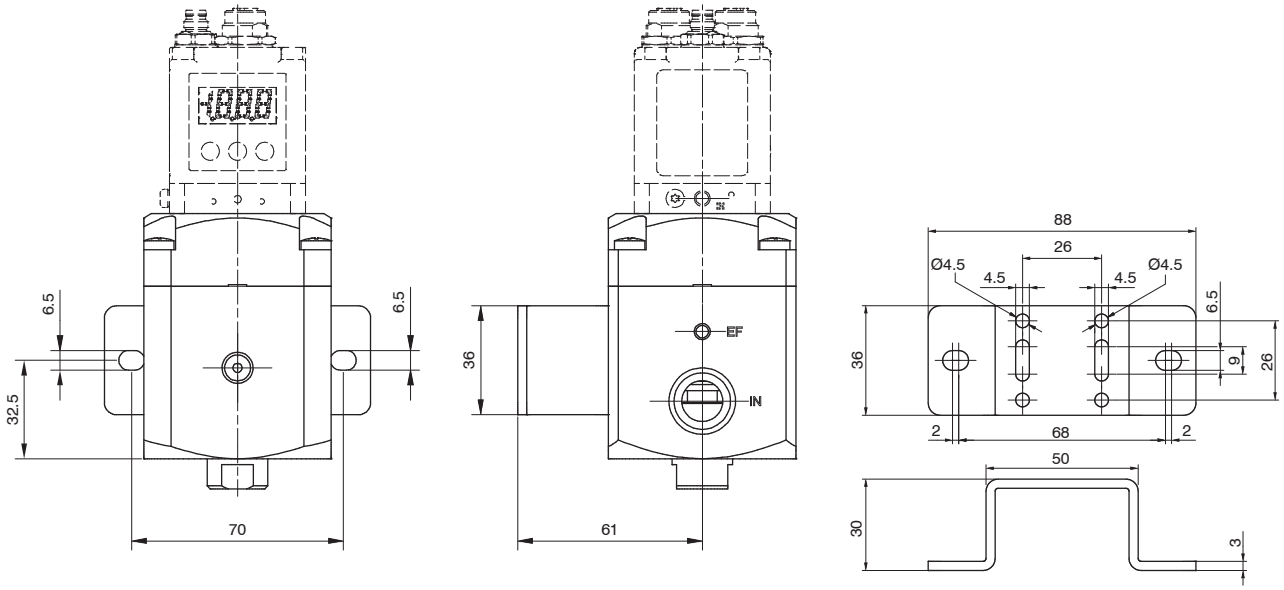
Inlet pressure Main regulator (bar)	Pilot pressure (bar)									
	1	2	3	4	5	6	7	8	9	10
2	1.6	1	/	/	/	/	/	/	/	/
3	1.6	1.5	1	/	/	/	/	/	/	/
4	1.6	1.8	1.3	1	/	/	/	/	/	/
5	1.5	1.8	1.7	1.3	1	/	/	/	/	/
6	1.4	1.8	1.9	1.5	1.2	1	/	/	/	/
7	1.4	1.7	1.8	1.8	1.4	1.2	1	/	/	/
8	1.4	1.8	1.9	1.9	1.6	1.3	1.1	1	/	/
9	1.3	1.7	1.8	1.9	1.8	1.5	1.3	1.1	1	/
10	1.3	1.7	1.8	1.9	1.9	1.7	1.4	1.3	1.1	1
11	1.4	1.6	1.8	1.9	1.9	1.8	1.6	1.4	1.2	1.1
12	1.3	1.6	1.8	1.8	1.9	1.9	1.7	1.5	1.3	1.2
13	1.3	1.6	1.7	1.8	1.9	1.9	1.9	1.6	1.4	1.3
14	1.2	1.5	1.7	1.8	1.9	1.9	1.9	1.8	1.6	1.4
15	1	1.5	1.7	1.8	1.9	1.9	1.9	1.9	1.7	1.5
16	1	1.5	1.7	1.8	1.8	1.9	1.9	1.9	1.8	1.6
17	/	1.5	1.7	1.8	1.8	1.9	1.9	1.9	1.9	1.7
18	/	1.5	1.7	1.8	1.8	1.9	1.9	1.9	2	1.8
19	/	1.5	1.7	1.8	1.8	1.9	1.9	1.9	2	1.9
20	/	1.5	1.6	1.8	1.8	1.9	1.9	1.9	1.9	2

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Fixing bracket

Coding: 17050

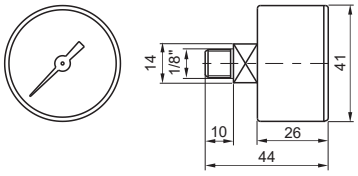




Pressure gauge

Coding: 17070ⓋⓈ





Ⓥ	VERSION
	A = Dial Ø40
Ⓢ	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
	C = 0 - 12 bar
	D = 0 - 16 bar
	E = 0 - 20 bar

POWER SUPPLY and NETWORK connectors

SUB-D 15 pins female connector



Coding: 5300.F15.Ⓒ.Ⓛ

Ⓒ	CONNECTOR
	10 = Stand alone
	90 = 90° Angle
Ⓛ	CABLE LENGTH
	00 = IP65 with casing, without cable
	03 = 3 meters
	05 = 5 meters

POWER SUPPLY connectors

Straight connector M12A 4P female





Upper view slave connector

PIN	DESCRIPTION
1	+ 24 V DC (LOGICS AND INPUTS)
2	N.C.
3	0 V
4	+ 24 V DC (OUTPUTS)

Coding: 5312A.F04.00

Connector version for standard and CANopen

Straight connector M12A 5P female





Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

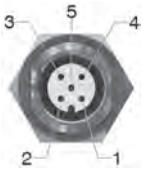
Coding: 5312A.F05.00

Connector version for IO-Link

NETWORK connectors

Straight connector M12A 5P male





Upper view slave connector

PIN	DESCRIPTION
1	(CAN_SHIELD)
2	(CAN_V+)
3	CAN_GND
4	CAN_H
5	CAN_L

Coding: 5312A.M05.00

Connector version for standard and CANopen

Straight connector M12D 4P male





Upper view slave connector

PIN	SIGNAL	DESCRIPTION
1	TX+	EtherNet Transmit High
2	RX+	EtherNet Receive High
3	TX-	EtherNet Transmit Low
4	RX-	EtherNet Receive Low

Coding: 5312D.M04.00

Connector version for EtherCAT, PROFINET and EtherNet/IP

Plugs

M12 plug

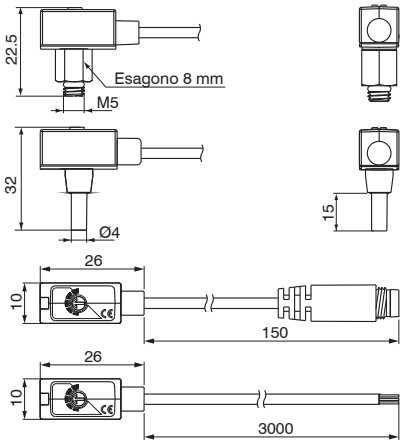


Coding: 5300.T12

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Mini digital pressure switch





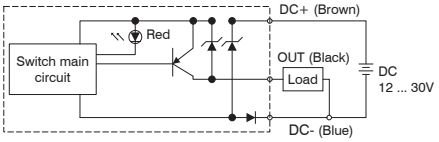
Coding: DS.10.P.B.Ⓒ.Ⓛ.Ⓞ

Ⓒ	CONNECTION
	F4 = Male M5
	R4 = Plug-in connection Ø4
Ⓛ	CABLE LENGTH
	A = 150 mm*
	E = 3000 mm**
Ⓞ	OPTIONS
	0 = Without connector
	1 = With connector M8 male 3 Pin

*only with M8 connector
**only without connector

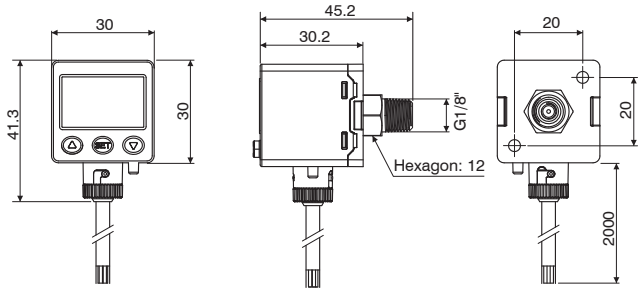
Technical characteristics		
Working pressure range		0...0,6 MPa
Regulation pressure range		0...0,6 MPa
Maximum supported pressure		1,5 MPa
Allowed fluids		Air, non-corrosive gases, non-combustible gases
Supply voltage		From 12 to 30 VDC ±10%
Current consumption		≤ 10 mA
Digital output		PNP N.O. 1 outputs Maximum load current: 80mA Maximum supply voltage: 30 VDC Voltage drop: ≤0.8V
Repeatability		± 1% Full Scale
Digital output	Type of hysteresis	fixed
	Hysteresis	3% Full Scale max.
Response time		1 ms
Protection from short circuit at output		Present
Method of setting threshold		Adjustable, trimmer
Indicator		LED red (output)
Ingress protection rating	Protection degree	IP40
	Environment temperature	Operational: 0 - 60°C, Storage: -20 - 70°C (without ice or condensation)
	Ambient humidity	Operational/Storage: 35 ... 85% (without condensation)
	Vibration	Total amplitude 1.5mm.,10Hz-55Hz-10Hz scanning for 1 minute, 2 hours in each direction of X, Y and Z
	Impacts/shocks	980m/s² (100G), 3 times in each direction of X, Y and Z
Temperature characteristics		±2% Full Scale in a range between 0 ... 50°C
Type of connection		Male M5x0.8, Plug-in connection Ø4
Electrical cable		Oilproof cable, 3 wires (0.18 mm), Ø2.6 mm
Weight		Approximately 50 g (with 3 metres of cable)

Output circuit wiring diagrams



Panel-mounted digital pressure switch



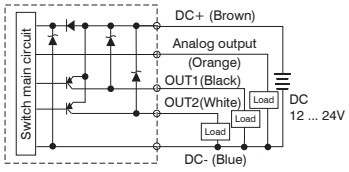


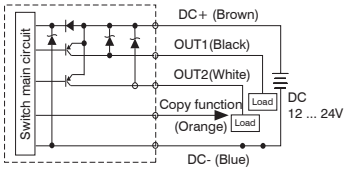
Coding: DS.45.P.Ⓤ.F3.D.0

Ⓤ	OUTPUTS
	E = 2 PNP outputs + Analog output (4 / 20 mA)
	L = 2 PNP outputs + copy function

Technical characteristics		
Working pressure range		0,000 ... 1,000 MPa
Regulation pressure range		-0,100 ... 1,000 MPa
Maximum supported pressure		1,5 MPa
Allowed fluids		Air, non-corrosive gases, non-combustible gases
Pressure calibration sensitivity	kPa	0.1
	kgf/cm²	0.001
	bar	0.001
	psi	0.01
	InHg	0.1
Supply voltage		From 12 to 24 VDC
Current consumption		≤40mA (without load)
Digital output		PNP N.O. 2 outputs Maximum load current: 125mA Maximum supply voltage: 24 VDC Voltage drop: ≤1.5V
Repeatability		± 0.2% Full Scale ± 1 digit
Digital output	Type of hysteresis	Settable
	Hysteresis	from 0.001 to 0.008 bar
Response time		≤2,5 ms (anti-interference function: 25ms, 100ms, 250ms, 500ms, 1000ms and 1500ms selectable)
Protection from short circuit at output		Present
Display		Display with 3 1/2 digits (red/Green)
Indicator accuracy		±2% FS. ±1 digit
Indicator		LED Orange (output1) LED Orange (output2)
Analog output		Output current: 4 ... 20mA ±2.5% F. S. Linearity: ±1% F. S. Maximum load resistance: 250Ω supply at 12V and 600Ω supply at 24V Minimum load resistance: 50Ω
Ingress protection rating	Protection degree	IP65
	Environment temperature	Operational: 0 - 50°C, Storage: -10 ... 60°C (without ice or condensation)
	Ambient humidity	Operational/Storage: 35 ... 85% (without condensation)
	Supported voltage	1000VAC in 1min. (between body and cable)
	Insulation resistance	50MΩ (at 500VDC, between body and cable)
	Vibration	Total amplitude 1.5mm or 10G,10Hz-55Hz-10Hz scanning for 1 minute, 2 hours in each direction of X, Y and Z
	Impacts/shocks	100m/s² (10G), 3 times in each direction of X, Y and Z
Temperature characteristics		±2.5% Full Scale in a range between 0 ... 50°C
Type of connection		G1/8" (BSPP), M5 female
Electrical cable		Oil resistant cable (internal 0.15 mm²)
Weight		Approximately 86 g (with 2 metres of cable)

Output circuit wiring diagrams

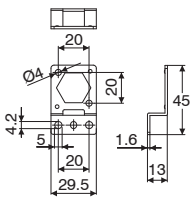




Accessories

Fixing bracket

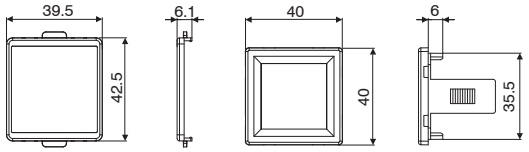




Coding: DS.BT10

Panel mount adapter

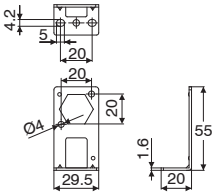




Coding: DS.PAE

Fixing bracket

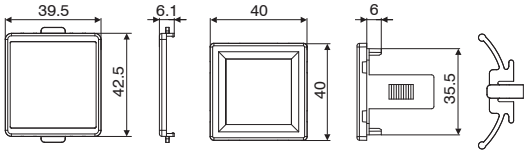




Coding: DS.BT11

Panel mount adapter with screen protection





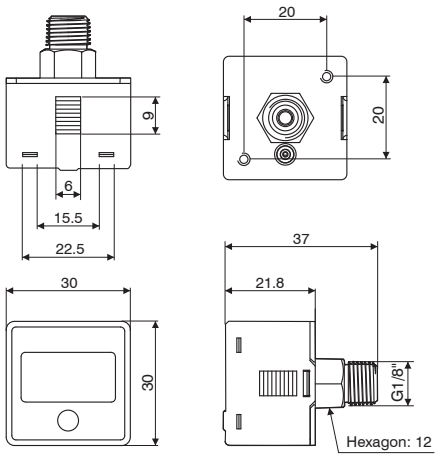
Coding: DS.PAF

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Digital battery pressure gauge

Coding: DS.60.P.I.F1.F.0



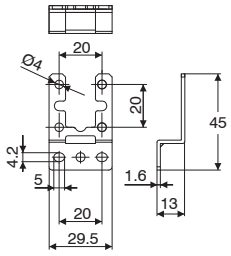


Technical characteristics		
Working pressure range		0,000 ... 1,000 MPa
Regulation pressure range		-0,100 ... 1,000 MPa
Maximum supported pressure		1,5 MPa
Allowed fluids		Air, non-corrosive gases, non-combustible gases
Current consumption	kPa	0.1
	bar	0.01
	psi	0.1
	mmHg	1
Battery		CR 2032 lithium
Backlight		Not present
Battery life		3 years (5 power ups a day)
Indication of battery level		Present
Battery replaceable		Yes
Display power up time		Goes off after 60 seconds
Sampling frequency		2 Hz (2 times per second)
Repeatability		±1% F. S. ±1 digit
Display		Display with 3 1/2 digits
Indicator accuracy		±2% F.S. ±1 digit (at ambient temperature of 25°C ±3°C)
Ingress protection rating	Protection degree	IP65 (only with connected air pipe)
	Environment temperature	Operational: 0 - 50°C, Storage: -10 ... 60°C (without ice or condensation)
	Ambient humidity	Operational/Storage: 35 ... 85% (without condensation)
	Vibration	Total amplitude 1.5mm or 10G,10Hz-55Hz-10Hz scanning for 1 minute,2 hours in each direction of X,Y and Z
	Impacts/shocks	100m/s² (10G), 3 times in each direction of X, Y and Z
Temperature characteristics		±2% Full Scale in a range between 0 ... 50°C
Type of connection		R1/8", M5 female
Weight		Approximately 40 g

Accessories

Fixing bracket

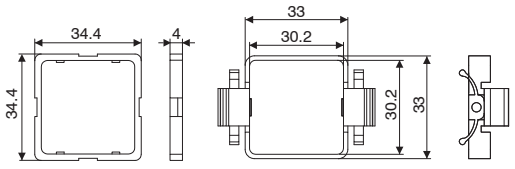




Coding: DS.BT5

Panel mount adapter

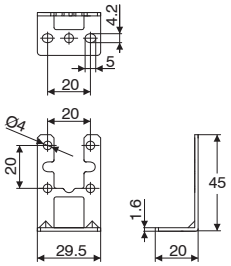




Coding: DS.PAC

Fixing bracket

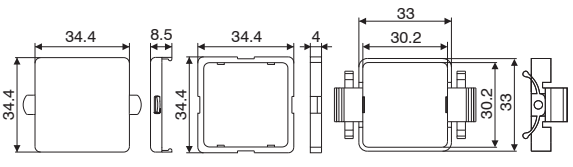




Coding: DS.BT6

Panel mount adapter with screen protection

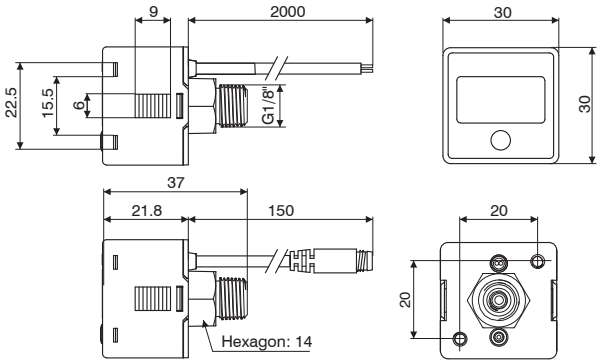




Coding: DS.PAD

Digital pressure gauge





Coding: DS.61.P.I.F1.Ⓛ.Ⓞ

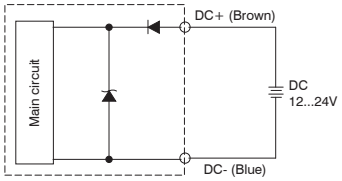
Ⓛ	CABLE LENGTH
	A = 150 mm*
	D = 2000 mm**
Ⓞ	OPTIONS
	O = Without connector
	2 = With connector M8 male 4 Pin

*only with M8 connector
**only without connector

2 AIR TREATMENT

Technical characteristics		
Working pressure range		0,000 ... 1,000 MPa
Regulation pressure range		-0,100 ... 1,000 MPa
Maximum supported pressure		1,5 MPa
Allowed fluids		Air, non-corrosive gases, non-combustible gases
Pressure calibration sensitivity	kPa	1
	kgf/cm²	0.01
	bar	0.01
	psi	0.1
Supply voltage		From 12 to 24 VDC ± 10%
Current consumption		10 mA
Repeatability		± 1% Full Scale ±1 digit
Display		Display with 3 1/2 digits (sampling 5 times per sec.)
Indicator accuracy		±2% F.S. ±1 digit (at ambient temperature of 25°C ±3°C)
Ingress protection rating	Protection degree	IP65 (only with connected air pipe)
	Environment temperature	Operational: 0 - 50°C, Storage: -10 ... 60°C (without ice or condensation)
	Ambient humidity	Operational/Storage: 35 ... 85% (without condensation)
	Supported voltage	1000VAC in 1 min. (between body and cable)
	Insulation resistance	50MΩ (at 500VDC, between body and cable)
	Vibration	Total amplitude 1.5mm or 10G,10Hz-55Hz-10Hz scanning for 1 minute, 2 hours in each direction of X, Y and Z
	Impacts/shocks	100m/s² (10G), 3 times in each direction of X, Y and Z
Temperature characteristics		±2% Full Scale in a range between 0 ... 50°C
Type of connection		R1/8", M5 female
Electrical cable		Oil resistant cable (internal 0.15 mm²)
Weight		Approximately 60 g (with 2 metres of cable) and Approximately 40 g (with M8 4 pin male connector)

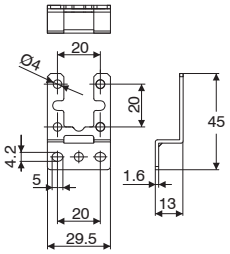
Output circuit wiring diagrams



Accessories

Fixing bracket

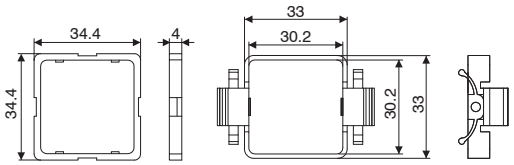




Coding: DS.BT5

Panel mount adapter

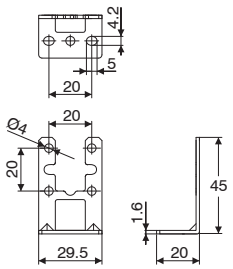




Coding: DS.PAC

Fixing bracket

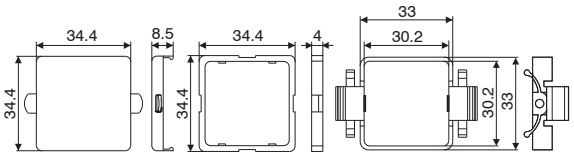




Coding: DS.BT6

Panel mount adapter with screen protection





Coding: DS.PAD

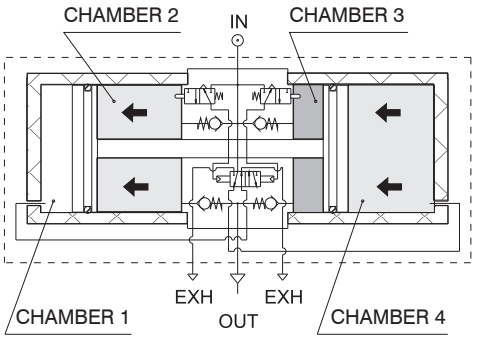
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1700

It is not unusual that, during some applications the thrust generated by a pneumatic cylinder is not sufficient for the specific purpose it has been designed for.
In order to get over the problem, the working pressure may be increased to a maximum line pressure which normally is 6 - 7 bar; alternatively the problem is solved by an higher bore cylinder that suits the machine.
Three size pressure boosters, with pressure ratio of 2:1, have been designed to avoid these problems.
This device is utilizing the compressed air of the circuit where it is installed.

Construction and working characteristics

The working method is based on the pump effect of the four chambers cylinder as shown in fig. 1. Two chambers are alternatively compressing the air in the boost one, while the fourth one is discharging.
By means of an internal circuit, the pressure booster keeps on pumping air till the down stream pressure reaches a value double the inlet pressure. In these circumstances there is a balance condition.
When the down stream pressure decreases, the pressure booster starts again its alternating cycle till a new balance condition is restored.
The pressure booster can be furnished complete with pressure regulator installed on the inlet port for getting an accurate outlet pressure value. A wall mounting plate is also available.



Instructions for installation and use

Do not exceed the indicated pressure and temperature limits.
It is advisable to install a small air tank after the pressure booster to avoid pressure pulsation effects.
Discharge the down stream circuit before any maintenance operation as the inner circuit of the booster does not allow the down stream line discharge even if the inlet pressure drops down.

Maintenance

Pressure booster has an average life of about 20 millions of valve cycles, depending on working conditions (every back stroke corresponds to one valve cycles).
A proper lubrication and filtration of air improve the life of pressure booster parts.
It is advisable to protect the exhaust ports in environment.
Replaceable spare seal kits are available.

How to calculate the required time of pressure booster to increase the air pressure in a tank whose capacity is known.

Operating Data

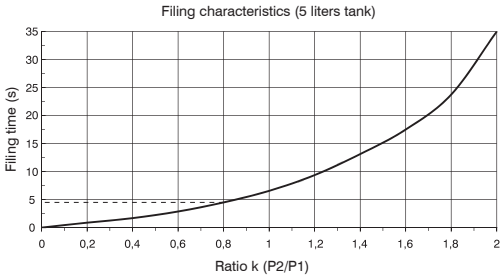
P1 = Inlet pressure
P2' = Tank initial pressure
P2'' = Tank final pressure
V = Tank volume

Procedure:

1) Calculate the ratio K' between the initial pressure of the tank and the inlet pressure of the booster (P2' / P1).
2) Calculate the ratio K" between the final pressure of the tank and the inlet pressure of the booster (P2'' / P1).
3) Locate the intersection point between the ratio K' and the curve on filling time diagram related to the specific booster. Trace a vertical line from the above point and read the correspondent time T' (the example shows the ratio K = 0.8 and correspondent time of about 4.8 seconds).
4) Repeat same procedure also for ratio K" to get time T".
5) Use the following formula

$$T = \frac{V}{5} \cdot (T''-T')$$

to obtain the total time required to move the pressure P2' to P2'' of tank volume V.

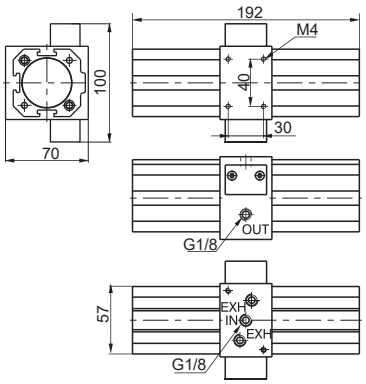


P1 = inlet pressure
P2 = tank pressure

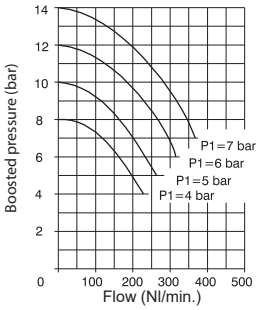
Pressure booster ø40

Coding: 1740.50N



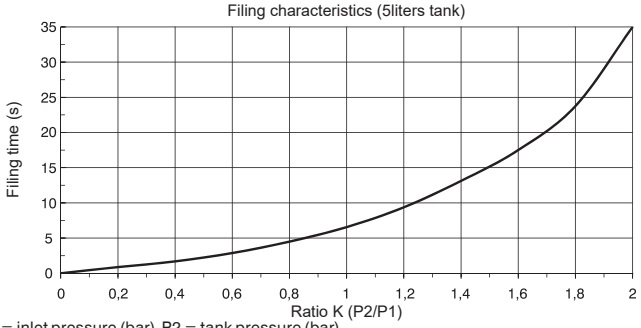


Flow rate characteristics



P1 = inlet pressure (bar)

Filling curve



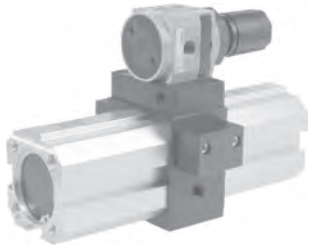
P1 = inlet pressure (bar) P2 = tank pressure (bar)

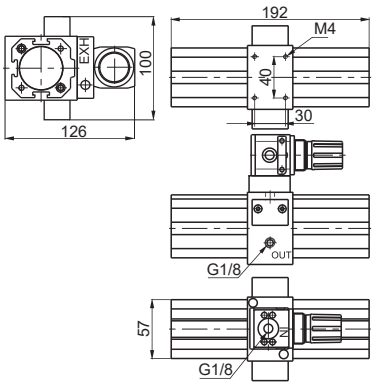
Construction characteristics
• Self operating pressure booster with pressure ratio of 2:1. • Automatic functioning: to operate the booster just connect it to compressed air line. • Body made with light alloy. • Barrel made of extruded and anodized aluminium. • Downstream circuit pressure is kept under pressure even in absence of inlet pressure.

Technical characteristics	
Connections	G1/8"
Max working pressure (bar)	2 ... 8
Working temperature °C	-5 ... +50
Orifice size (mm)	5
Weight (g)	1500
Assembly positions	Indifferent
Max. fittings torque (Nm)	15

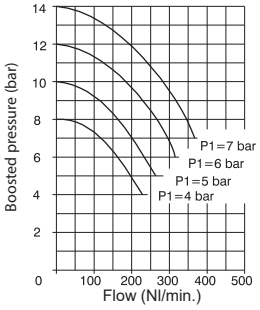
Pressure booster Ø40 with pressure regulator

Coding: 1740.50NR



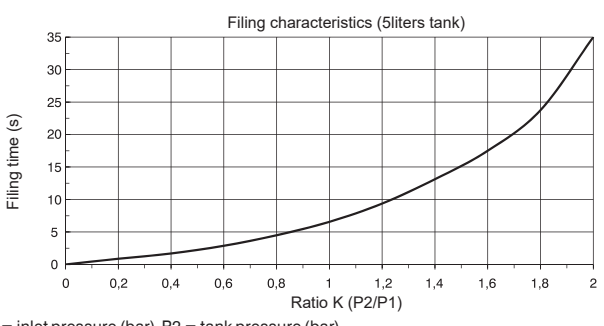


Flow rate characteristics



P1 = inlet pressure (bar)

Filling curve



P1 = inlet pressure (bar) P2 = tank pressure (bar)

Construction characteristics
• Self operating pressure booster with pressure ratio of 2:1. • Automatic functioning: to operate the booster just connect it to compressed air line. • Body made with light alloy.- Barrel made of extruded and anodized aluminium. • Downstream circuit pressure is kept under pressure even in absence of inlet pressure. • Regulation of the inlet pressure (and as a consequence regulation of the outlet pressure).

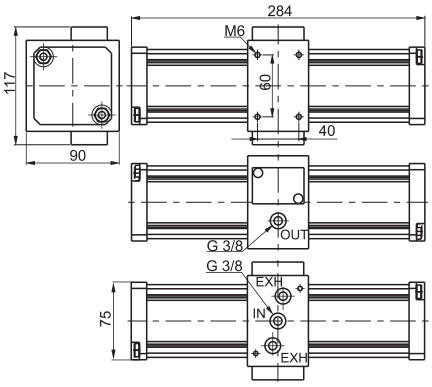
Technical characteristics	
Connections	G1/8"
Max working pressure (bar)	2 ... 8
Working temperature °C	-5 ... +50
Orifice size (mm)	5
Weight (g)	1600
Assembly positions	Indifferent
Max. fittings torque (Nm)	15

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

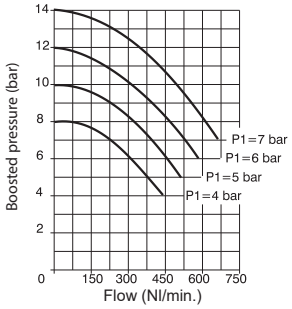
Pressure booster ø63

Coding: 1763.80N



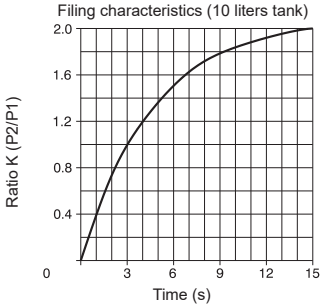


Flow rate characteristics



P1 = inlet pressure (bar)

Filling curve



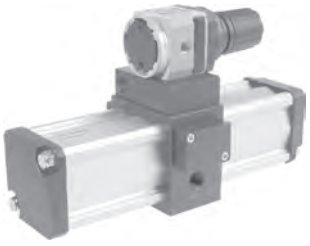
P1 = inlet pressure (bar) P2 = tank pressure (bar)

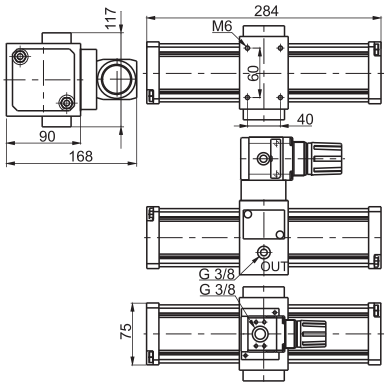
Construction characteristics
• Self operating pressure booster with pressure ratio of 2:1. • Automatic functioning: to operate the booster just connect it to compressed air line. • Body made with light alloy. • Barrel made of extruded and anodized aluminium. • Downstream circuit pressure is kept under pressure even in absence of inlet pressure.

Technical characteristics	
Connections	G3/8"
Max working pressure (bar)	2 ... 8
Working temperature °C	-5 ... +50
Orifice size (mm)	7
Weight (g)	3000
Assembly positions	Indifferent
Max. fittings torque (Nm)	15

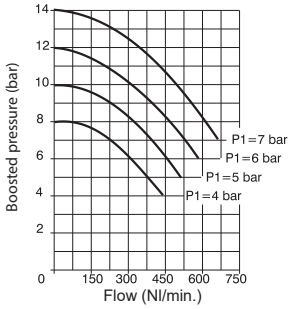
Pressure booster Ø63 complete with pressure regulator

Coding: 1763.80NR



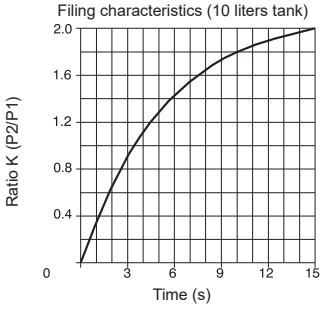


Flow rate characteristics



P1 = inlet pressure (bar)

Filling curve



P1 = inlet pressure (bar) P2 = tank pressure (bar)

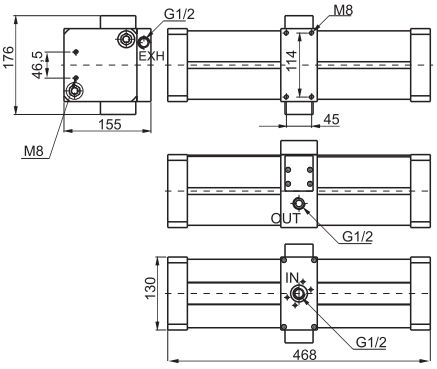
Construction characteristics
• Self operating pressure booster with pressure ratio of 2:1. • Automatic functioning: to operate the booster just connect it to compressed air line. • Body made with light alloy.- Barrel made of extruded and anodized aluminium. • Downstream circuit pressure is kept under pressure even in absence of inlet pressure. • Regulation of the inlet pressure (and as a consequence regulation of the outlet pressure).

Technical characteristics	
Connections	G3/8"
Max working pressure (bar)	2 ... 8
Working temperature °C	-5 ... +50
Orifice size (mm)	5
Weight (g)	3200
Assembly positions	Indifferent
Max. fittings torque (Nm)	15

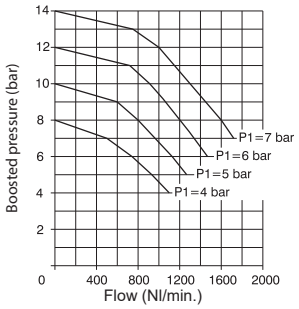
Pressure booster ø100

Coding: 17100.125N



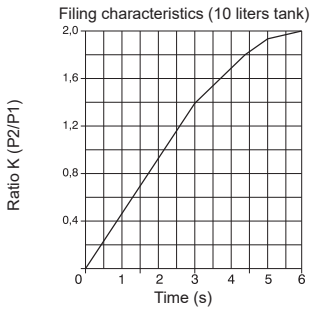


Flow rate characteristics



P1 = inlet pressure (bar)

Filling curve



P1 = inlet pressure (bar) P2 = tank pressure (bar)

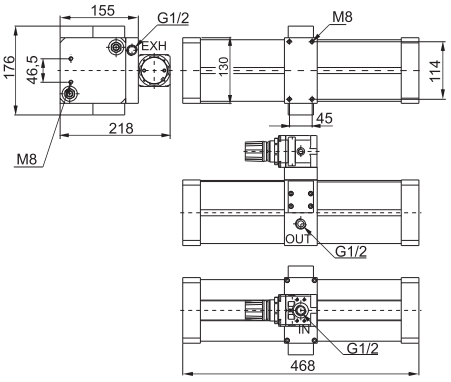
Construction characteristics
• Self operating pressure booster with pressure ratio of 2:1. • Automatic functioning: to operate the booster just connect it to compressed air line. • Body made with light alloy. • Barrel made of extruded and anodized aluminium. • Downstream circuit pressure is kept under pressure even in absence of inlet pressure.

Technical characteristics	
Connections	G1/2"
Max working pressure (bar)	2 ... 8
Working temperature °C	-5 ... +50
Orifice size (mm)	12
Weight (g)	12000
Assembly positions	Indifferent
Max. fittings torque (Nm)	40

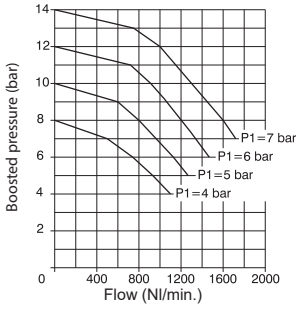
Pressure booster ø100 complete with pressure regulator

Coding: 17100.125NR



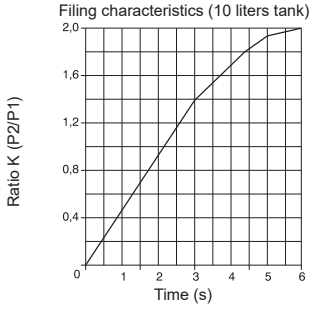


Flow rate characteristics



P1 = inlet pressure (bar)

Filling curve



P1 = inlet pressure (bar) P2 = tank pressure (bar)

Construction characteristics
• Self operating pressure booster with pressure ratio of 2:1. • Automatic functioning: to operate the booster just connect it to compressed air line. • Body made with light alloy.- Barrel made of extruded and anodized aluminium. • Downstream circuit pressure is kept under pressure even in absence of inlet pressure. • Regulation of the inlet pressure (and as a consequence regulation of the outlet pressure).

Technical characteristics	
Connections	G1/2"
Max working pressure (bar)	2 ... 8
Working temperature °C	-5 ... +50
Orifice size (mm)	12
Weight (g)	12600
Assembly positions	Indifferent
Max. fittings torque (Nm)	40

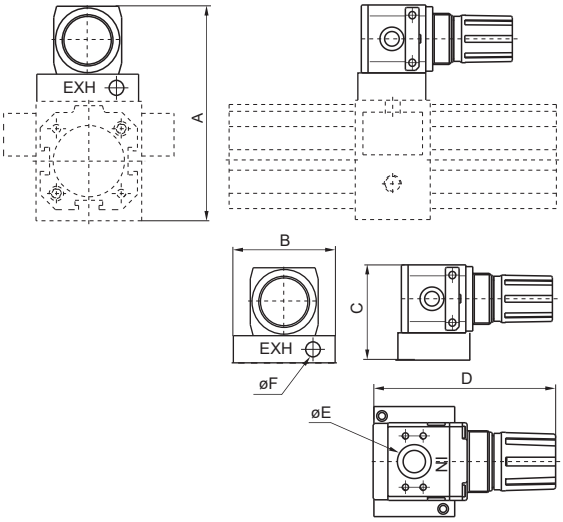
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Base complete with pressure reducer

Coding: 17Ⓥ.BR

Ⓥ	VERSION
	40 = Base complete with pressure reducer for Ø40 booster
	63 = Base complete with pressure reducer for Ø63 booster

ø100 = Mount directly the pressure reducer Code 17302B.C



Dimensions						
Code	A	B	C	D	E	F
1740.BR	126	60	56	91	G1/8''	G1/8''
1763.BR	168	75	78	124	G3/8''	G3/8''

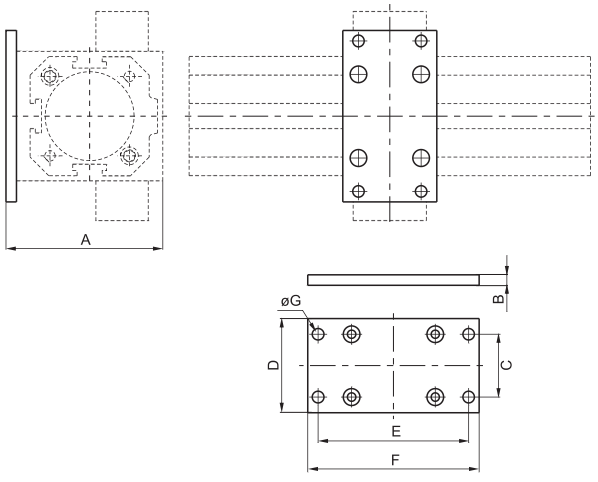
Booster mounting plate

Coding: 17Ⓥ.02

Ⓥ	VERSION
	40 = Mounting plate for Ø40 booster
	63 = Mounting plate for Ø63 booster

ø100 = Use short foot bracket code 1320.50.05/1F





Dimensions							
Code	A	B	C	D	E	F	ØG
1740.02	75	5	30	45	72	82	5.5
1763.02	100	15	53	70	98	110	M8

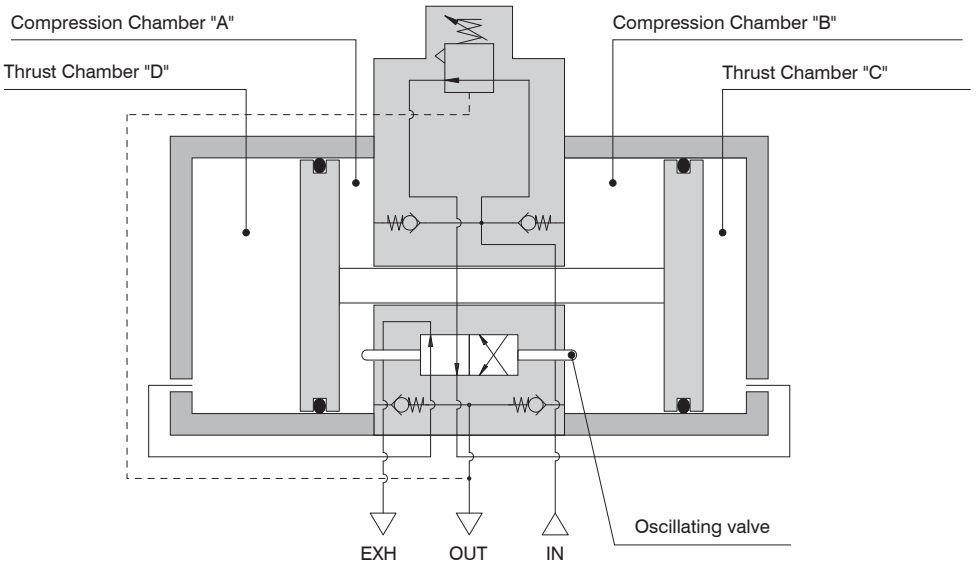
Series P+

In some cases the force generated by a pneumatic actuator is not sufficient to carry out its required function.
To overcome this problem it is then necessary, where possible, to either increase the working pressure or use a larger bore actuator providing it will fit within the structure of the machine.
If you cannot fit a larger actuator, the solution is to use a pressure booster to increase the air pressure to that portion of the pneumatic circuit.
The booster operates using the same compressed air used by the pneumatic system and does not require an external power supply. It is easy to install and can increase the working pressure in any part of the system where ever its needed, maintaining the normal working pressure in the rest of the system.
The new pressure booster **P+** is lightweight with a new compact and linear design.
P+ has an integrated pressure regulator that adjusts the setting of the output pressure P2 which is also fitted with a pressure relief valve.
The design of the internal circuit provides high flow rates and fast filling times whilst the two G1/8" manometer connections built into the body of the booster allow monitoring of the input and output pressures.

Operation

The operating principle of the device is based on a four chamber pump in which with a reciprocating movement, two chambers compress the air in the compression chamber whilst the fourth chamber is in the discharge phase.
The incoming air passes through the non-return valves and supplies the compression chambers "A" and "B" at the same time.
Meanwhile the integrated pressure regulator, via the switching valve, feeds the thrust chamber "C", discharging chamber "D".
The movement of the piston, with the thrust of chamber "C", compresses the air in the multiplication chamber "B", which is pushed through the output Non return valve and then onto the OUT connection.
When the piston reaches the end of stroke the switching valve feeds chamber "D" putting chamber "C" into the discharge position thus reversing the motion of the piston.
The previous process compressing the air in compression chamber "A", pushing it through the non-return valve and out through the outlet connection.
The oscillating motion of the piston allows the pressure booster to pump intensified air into the downstream circuit until the chambers reach a state of equilibrium; this in turn stops the booster.
When the downstream pressure decays the booster restarts oscillating until the state of equilibrium is re-established

Pneumatic Circuit



The **P+** pressure booster, is certified by ATEX:

CE Ex II 3GD c T6 T85°C X 5°C≤Ta≤50°C.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

General Warning

It is recommended you follow the instructions below in order to prevent personal injury or damage to the booster.
- The pressure booster is supplied as standard with the regulating spring completely unwand. in this condition it is possible to detect a leak of air from below the regulating knob or through the exhaust port. this conditions is standard for the unit. When the spring is completely unwand the downstream pressure and the inlet pressure are the same. in order to increase the downstream pressure it is necessary to operate th regulation knob increasing the sping compression.
- Please apply the necessary safety measures to ensure that the booster only operates within the specified pressure range. Exceeding the maximum output pressure is dangerous.
- The Booster is fitted with a non-return valve on the output which prevents discharge of the downstream pressure, It is recommended that a 3/2 valve be installed in the OUT connection if it is necessary to rapidly discharge the downstream pressure.
- When the booster is not in use it is recommended that the inlet pressure is removed to let the booster stop, thus avoiding unexpected operation or malfunction.
- If there is not downstream air consumption it is possible to register a leak through the exhaust port of the unit. This condition is normal and is the conseguence of the internal designed aimed at discharging any pressure building up in the unit in the rest condition.

Use and maintenance

The pressure booster must always be used in accordance with the operating parameters and instruction.
Any improper use may cause injury or malfunction.
The pressure booster is not an alternative to a compressor because continuous uninterrupted operation will greatly reduce the life of the unit.
- The operating life of the device depends mainly on the operational duty cycle. Prolonged uninterrupted use without pause may reduce the operating life of the booster.
- Ensure the unit is supplied with a suitable compressed air supply, please note: appropriate filtration and lubrication may help to increase the durability of the product.
- **The input flow value must be equal or greater than double the output flow value (Q1/Q2>2). Ensure that the value of the output pressure is at least 1bar higher than the input pressure (P2>P1+1).**
- To avoid pulsation of the output pressure during operation, it is recommended that an accumulation tank (reservoir) is installed in the downstream circuit.
- To avoid pulsation of the output pressure during operation, it is recommended that an accumulation tank (reservoir) is installed in the downstream circuit.
- To reduce the noise generated by the unit, install silencers into the exhaust ports.
- Pressure booster has an average life of about 20 millions of valve cycles, depending on working conditions (every back stroke corresponds to one valve cycles).

Pressure regulation

The booster is fitted with an internal pressure regulator which allows regulation of the output pressure P2 and is also fitted with pressure relief valve. For correct operation of the booster, please consider the following instructions:
- Air leaking from under the adjusting knob when the spring is decompressed is not a defect but a sign that the device is working correctly.
- In order to increase the regulated pressure, pull the knob upwards to unlock, then rotate the knob in the direction indicated by the arrow (+).
- The rotation of the knob has an upper and lower block beyond which the knob is damaged.
- To lock the knob after the adjustment has been made, push the knob downwards until it detents in the locked position.
- To reduce the output pressure, pull the knob upwards, rotate the knob indicated by the arrow (-), the built in pressure relief valve will discharge the excess pressure from under the adjusting knob.
- Always regulate the rising pressure.



Method of calculation of the time necessary to increase the pressure in a tank of a given volume using a pressure booster.

DATA:
P1 = Inlet pressure
P2' = Tank initial pressure
P2" = Final tank pressure
V = Tank volume

Procedure

1) Calculate the K' ratio between the initial tank pressure and the inlet booster pressure (P2'/ P1).
2) Calculate the K'' ratio between the final tank pressure and the inlet booster pressure (P2''/ P1).
3) Locate, on the chart illustrating, the booster filling time, the intersection point between the K' ratio and the curve, then trace a vertical line from the intersection point to the vertical axis and read the correspondent value T' (in the example chart, to a ratio of 0.8 corresponds a time value of about 3.6 seconds).
4) Repeat the operation for the K'' ratio, obtaining the T'' time.
5) Use the following formula

$$T = \frac{V}{5} \cdot (T''-T')$$

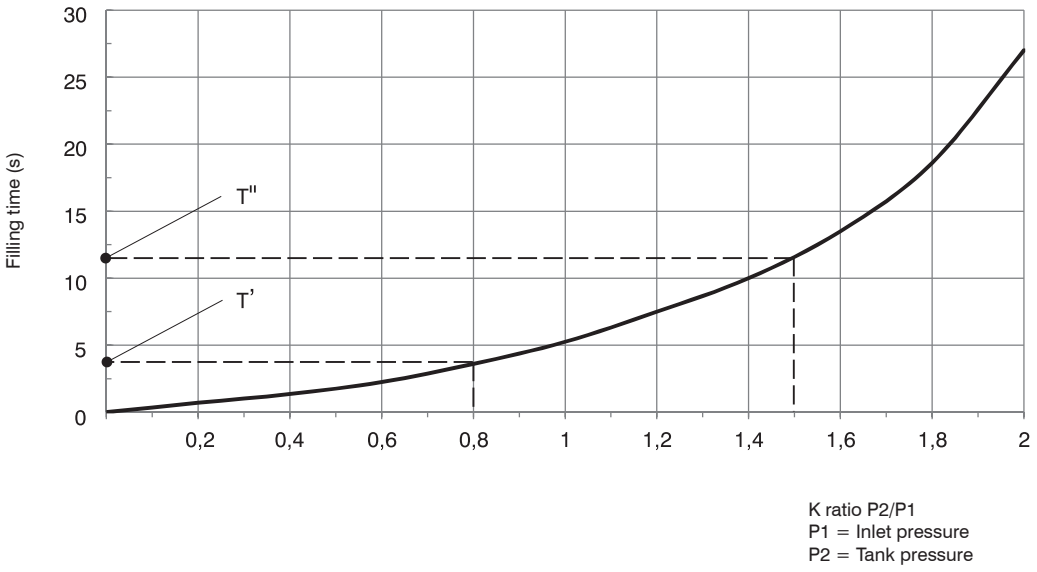
to obtain the total time needed to take the tank of volume V from the pressure value P2' to the pressure value P2'.

Example of calculation of the necessary time to take a 10L tank from the pressure value P2' to the value P2"

K' = 0,8 T' = 3,6 sec. V = 5L.
K'' = 1,5 T'' = 12 sec.

$$T = \frac{5}{5} \cdot (12-3,6) = 8,4 \text{ sec.}$$

Filling Characteristics (5 litres tank)



K ratio P2/P1
P1 = Inlet pressure
P2 = Tank pressure

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

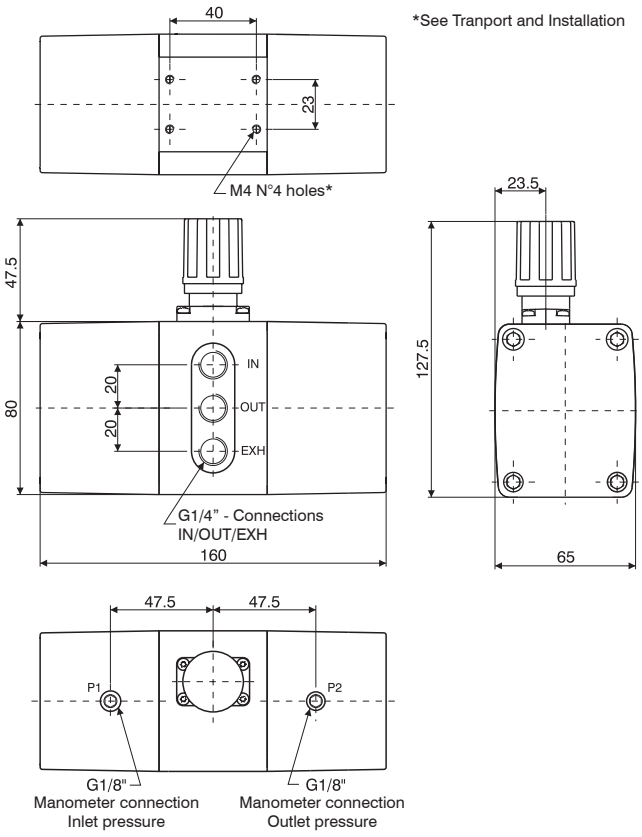
Pressure booster in technopolymer Ø40

Coding: MDPT40.2R.◉

◉	MANOMETER OPTIONS
	Standard without manometer
	A = Manometer P1 0-12 bar Manometer P2 0-20 bar
	B = Manometer P1 0-12 bar Manometer P2 0-16 ba
	C = Manometer P1 0-12 bar Manometer P2 0-12 bar





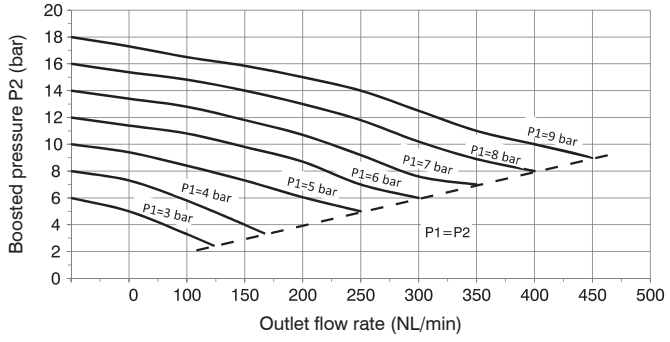


Construction characteristics
• Pressure Booster with max. 2:1 Compression ratio • Automatic operation for use with compressed air only • Maintains downstream air when the supply pressure fails (Providing the circuit has no leakage) • Integrated regulator for output pressure control, with overpressure relief valve • IN,OUT and EXH connections – G1/4" on the same side • Manometer connections G1/8" to monitor and control the input and output pressures • Body and cover in technopolymer • Connections in technopolymer

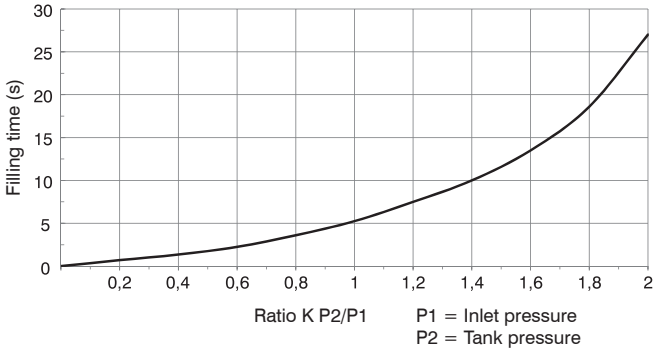
Technical characteristics	
Connections IN / OUT / EXT	G1/4"
Manometer connections P1/P2	G1/8"
Max working pressure (bar)	2,5 ... 10
Working temperature °C	-5 ... +50
Moltiplication ratio max.	2 : 1
Assembly positions	Indifferent
Pressure regulation	Manual with relieving
Weight (g)	905
Max. fittings torque (Nm)	G1/8 = 4 G1/4 = 9

Characteristic curves

Flow rate characteristics



Filling curve

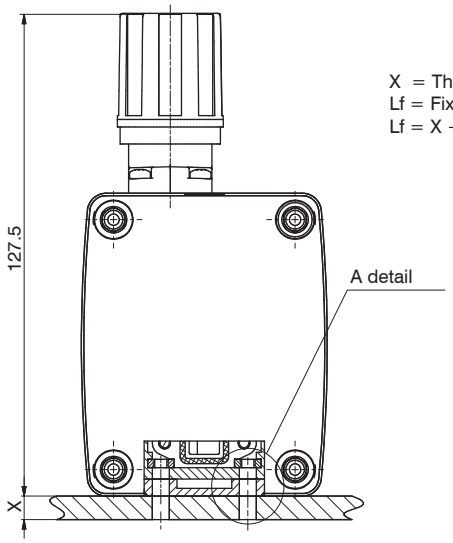


Transport and Installation

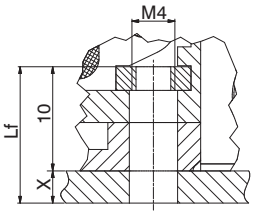
The installation and implementation of the device must be done by skilled personnel. Respecting the safety requirements specified in the **UNI norm UNI EN 983-97 Machinery Safety – Safety Requirements concerning oleo-hydraulic and pneumatic systems** and their components. The following instructions are essential for a correct installation:

- Do not use the green knob to lift and transport the device, because it could rip off causing injuries or damaging objects.
- Install the booster by fixing it through the threaded M4 holes on the body of the machine or using the special accessories (see the “Accessories” chapter).

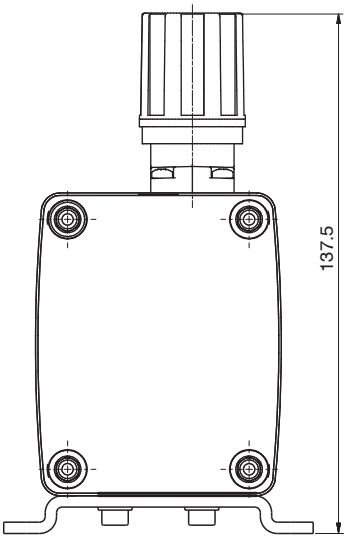
Direct wall fixing



X = Thickness of the support surface
Lf = Fixing screw thread lenght
Lf = X + 10



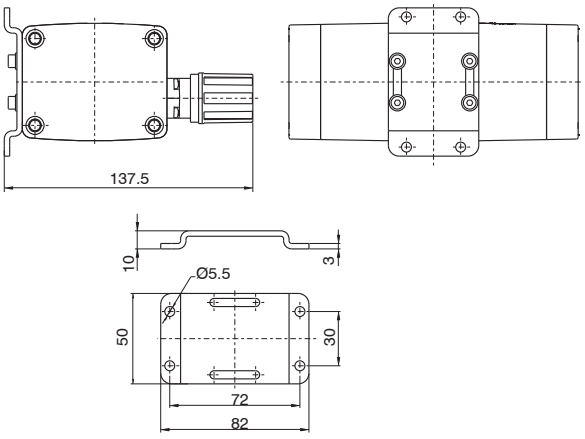
Fixing with a steel plate fixing clamp



Bracket

Coding: T1740.01





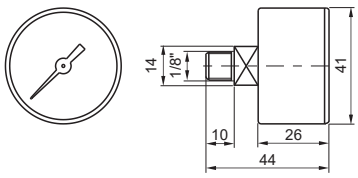
Weight: 94,5
Complete with booster fixing screws

Pressure gauge

Coding: 17070 Ⓥ Ⓢ

Ⓥ	VERSION
	A = Dial Ø40
Ⓢ	SCALE
	A = 0 - 4 bar
	B = 0 - 6 bar
	C = 0 - 12 bar
	D = 0 - 16 bar
	E = 0 - 20 bar





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Section 03

Pneumatic actuation

Pneumatic cylinders, handling and magnetic sensors

Cylinders with piston rod according to standard

ISO 6432 Microbore cylinders

Versions available: with threaded end covers, rolled end covers, aluminium, stainless steel and technopolymer versions


Series 1200
Threaded end covers **3**.1


Series 1200, Tecno-MIR **3**.4

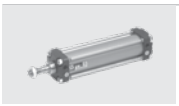

Series 1200
Rolled end covers MIR **3**.10


Series 1200
Rolled end covers MIR-INOX **3**.13


Series 1200, Steel line **3**.18

CNOMO-CETOP-ISO cylinders

Cylinders manufactured according to standards CNOMO, CETOP and ISO: standard versions, through rod versions, tandem push with common rod, tandem push with independent rods or opposed tandem with common rod


Series 1303-1308 **3**.30

Cylinders according to standard ISO 15552

Cylinders according to ISO 15552 with bores from Ø32 to Ø200 mm and strokes up to 1250 mm.
Available versions: ECOPLUS with aluminium or technopolymer end plates, ECOLIGHT optmized in weight and dimensions, Steel line completely in stainless steel, round tube versions tie rod (Ø250-Ø320 mm)


Series 1319-1320-1321 **3**.41


Series 1348-1349-1350
Non rotating cylinders **3**.44


Series Ecoplus - High-performance
1386-87-88 and 1396-97-98 **3**.47


Series Ecolight
1390-1391-1392 **3**.51

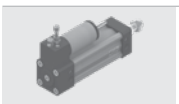

Series Ecolight
with protective bellows **3**.58


Series 1315
Round tube cylinders **3**.73


Series Steel line - AISI 316 **3**.77

Hydro-pneumatic speed control cylinders according to standard ISO 15552

ISO 15552 hydro-pneumatic speed control cylinders with internal hydraulic circuit for movement control


Series 1450 - 1463 - Ø50 - Ø63 **3**.86

Compact cylinders according to standard ISO 21287

Compact cylinders according to standard ISO with integrated slots suitable for sensors mounting without adaptors. Bores from Ø20 to Ø100 mm. Versions with end stroke adjustable pneumatic cushioning are also available according to ISO 21287



Series 1500 Ecompact **3**.92

Cylinders with piston rod not according to standard

Threaded body microbore cylinders

Special performance microbore cylinders with hexagonal or round bodied and either completely threaded or threaded with a plain rod ending



Series 1200
Special performance
microbore cylinders **3**.108

Profile tube cylinders, non rotating

Non rotating profile tube cylinders twin rod version, available with bores from Ø32 to Ø100 mm, and strokes up to 500 mm



Series 1325-1326-1345-1347
Twin rod cylinders **3**.110

Flat profile cylinders

ECOFLAT cylinders available with sizes from Ø25 to Ø63 mm and strokes up to 300 mm. Profiled tube has two “T” slots on the side hosting sensors 1580._, MRS._, MHS._. without adaptors. Two additional connections are also available on rear cover for cylinder feeding



Series ECOFLAT **3**.115

Hydraulic speed control cylinders

Hydraulic speed control cylinders with outward, inward and outward/inward control, with lateral or in-line tank. Available with SKIP valve (accelerating device) and blocking valve (STOP).



Series 1400 - Ø40 - Ø63 **3**.121

Compact cylinders

Short stroke and compact cylinders with bores from Ø20 to Ø100 mm, available in single and double acting versions, tandem and through rod with magnetic piston versions. The Europe versions are mainly compliant with the ISO or UNITOP standard (depending on bores), while the Ecompact-S versions have connections and rods according to the ISO 15552 standard



Series 1500 - Short stroke cylinders **3**.132



Series 1500 Europe **3**.139



Series 1500 Ecompact-S **3**.147

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Cylinders with piston rod not according to standard (following)

Multimount cylinders

Multimount cylinders available with bores from Ø10 to Ø25 mm, with strokes up to 50 mm and with magnetic piston versions



Series 6500 **3**.152

Guided compact cylinders

These cylinders are available in sizes Ø12 to Ø80 mm, and comprise a single compact cylinder with integral guide rods, the rod guide is available in two styles: self-lubricating bronze bushes and bearing bushes



Series 6100-6101-6110 **3**.154

Slide cylinders

Slide cylinders manufactured with bores from Ø8 to Ø25 mm, with strokes up to 150 mm. Available with simple and double regulation end stroke and also with front and rear shock absorber



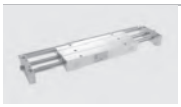
Series 6600 **3**.168

Slide units

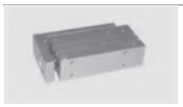
Twin-rod linear guide units with bores from Ø10 to Ø32 mm, and with control unit with bronze bush versions, with control unit with bearing bush versions. Are also available the through twin-rod slide units and the compact slide units



Series 6200 - Twin-rod slide units **3**.179



Series 6210
Through twin-rod slide units **3**.183

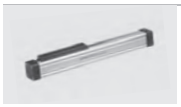


Series 6700 **3**.188

Rodless cylinders

Rodless cylinders - Standard

Rodless cylinders with bore from Ø16 to Ø63 mm, and strokes up to 6000 mm, available also with linear control unit



Series 1605 **3**.195



Series 1605 - Ø16 **3**.206

Rotary actuators

Rack rotary actuators

Double or single rack & pinion rotary actuators


Series 1330 - 1331 - 1332 - 1333, rotary actuators **3**.211


Series 6400 - Double rack rotary actuators with turn table **3**.215


Series 6411 **3**.218

Vane type rotary actuators

Vane type rotary actuators with the shaft that runs into ball bearings, available with sizes from Ø10 to Ø100 mm


Series 6420 **3**.221

Handling

Pneumatic grippers

Pneumatic grippers manufactured with 2 angular fingers (from -10° to +30°), wide opening 180°, or 3 finger parallel style.
Swing clamp cylinders has been developed to meet the need to clamp a workpiece by means of a clamping arm.


Series 6300 **3**.231


Series RT **3**.245

Sensors

Magnetic sensors

Magnetic sensors with Reed type or Hall effect


Series SA **3**.250

Miniaturised magnetic sensors

Miniaturised magnetic sensors with Reed and Hall style versions, available with rectangular, square, square section UL/CSA approved, and round section versions


Series SR **3**.262


Series SU **3**.266


Series SQ **3**.267


Series ST **3**.271

Accessories and fixing devices

Piston rod lock

Piston rod lock for cylinders with bores from da Ø12 to Ø125 mm


Series 1260 - 1320 **3**.279

Linear guiding units

Linear guiding units series 1200 (Ø20-25 mm) and series 1320 (from Ø32 to Ø80 mm)


Series 1260 - 1320 **3**.281

Shock absorbers

Shock absorbers with M8x1-M10x1-M14x1,5-M20x1,5-M27x1,5 threads


Series 6900 **3**.283

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1200, Threaded end covers

Construction characteristics

Barrel	anodised aluminium (brass for Ø8 and Ø10)
Fixing devices	steel painted in cataphoresis
Forks	zinc plated steel
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (HNBR or FPM seals available upon request)
Single-acting springs	Steel for springs and stainless steel
Pistons	aluminium
Piston rod	non magnetic piston: Ø8 - Ø10: stainless steel / Ø12 ... Ø50: C43 chromed magnetic piston: Ø10 ... 20: stainless steel / Ø25 ... 50: C43 chromed
End caps	anodized aluminium

Cushioning lenght	Ø	16	20	25	32	40	50
	mm	15	18	18	18	22	22

Operational characteristics

Fluid	filtered air, preferably lubricated
Max. working pressure	10 bar
Working temperature	-5°C ... +70°C with standard seals magnetic or non magnetic piston -5°C ... +80°C with FPM seals magnetic piston -5°C ... +80°C with HNBR seals magnetic piston -5°C ... +120°C with HNBR seals non magnetic piston -5°C ... +150°C with FPM seals non magnetic piston

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

Ø8 - Ø10:
15 - 25 - 50 - 75 - 80 - 100 mm
Ø12 - Ø16:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm
Ø20 - Ø25:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 mm
Ø32 ... Ø50:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm

On request are available strokes up to:
Ø8 - Ø10: 250 mm
Ø12 - Ø16: 700 mm
Ø20 ... Ø50: 1000 mm

Single acting version

Ø12 ... Ø50:
up to stroke 40 mm
On request are available strokes up to 200 mm

Minimum and maximum springs load for single acting version

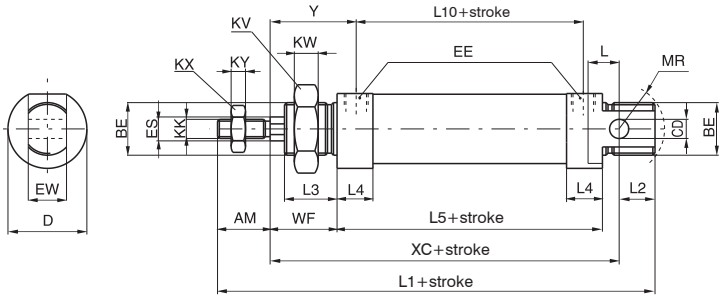
Bore	Ø12 ... Ø20	Ø25	Ø32	Ø40 - Ø50
Min. load (N)	10	10	20	40
Max. load (N)	25	50	55	110

Basic version

Coding: 12Ⓣ.Ø.stroke.ⓋⒼ

Ⓣ	TYPE
	60 = Double acting version
	71 = front spring from Ø12 (max stroke 40 mm)
	72 = rear spring from Ø12 (max stroke 40 mm)
Ø	BORE
	8 = Ø8
	10 = Ø10
	...
	50 = Ø50
Ⓥ	VERSION
	A = Adjustable cushioning (from Ø16)
	M = Magnetic piston (from Ø10)
	X = Stainless steel rod
	MA = Cushioning with magnetic piston
	MAX = Cushioning, magnetic piston and stainless steel piston rod
Ⓖ	SEALS
	= NBR
	T = HNBR
	V = FPM





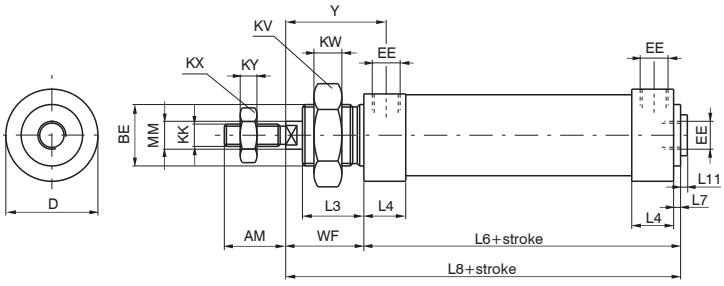
Standard execution, fully complying with ISO standards from ø8 to ø25. Bores 32, 40 and 50 not included in the standard, comply with our own specifications. Can use all available mountings. For single acting type, the maximum stroke is 40 mm., after which overall dimensions increase in length to an extent not proportional to the stroke (and in any case not longer than stroke 100).

Without rear eye version

Coding: 12Ⓣ.Ø.stroke.ⓋⒼ

Ⓣ	TYPE
	61 = Double acting version
	73 = front spring from Ø12 (max stroke 40 mm)
	74 = rear spring from Ø12 (max stroke 40 mm)
Ø	BORE
	8 = Ø8
	10 = Ø10
	...
	50 = Ø50
Ⓥ	VERSION
	A = Adjustable cushioning (from Ø16)
	E = version with non-rotating hexagonal rod, non magnetic piston (from Ø12)
	M = Magnetic piston (from Ø10)
	X = Stainless steel rod
	AE = version with non-rotating hexagonal rod, with cushioning (from Ø16)
	MA = Cushioning with magnetic piston
	ME = version with non-rotating hexagonal rod, magnetic piston (from Ø12)
	MAE = version with non-rotating hexagonal rod, with cushioning and magnetic piston (from Ø16)
	MAX = Cushioning, magnetic piston and stainless steel piston rod
	L = Air inlet at 90° version
Ⓖ	SEALS
	= NBR
	T = HNBR
	V = FPM





Version derived from standard execution 1260 and not included in ISO standard. Not having a rear eye it is shorter and the air inlet is from the rear or at 90° like it is on the front. The considerations made for the basic type 1260 apply for all single-acting types.

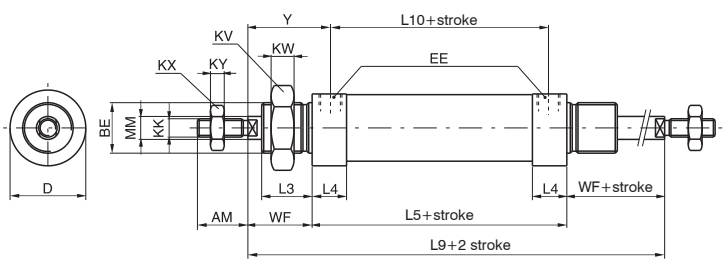
Through rod cylinder version

Coding: 1262.Ø.stroke.ⓋⒼ

Ø	BORE
	8 = Ø8
	10 = Ø10
	...
	50 = Ø50
Ⓥ	VERSION
	A = Adjustable cushioning (from Ø16)
	E = version with non-rotating hexagonal rod, non magnetic piston (from Ø12)
	M = Magnetic piston (from Ø10)
	X = Stainless steel rod
	AE = version with non-rotating hexagonal rod, with cushioning (from Ø16)
	MA = Cushioning with magnetic piston
	ME = version with non-rotating hexagonal rod, magnetic piston (from Ø12)
	MAE = version with non-rotating hexagonal rod, with cushioning and magnetic piston (from Ø16)
	MAX = Cushioning, magnetic piston and stainless steel piston rod
Ⓖ	SEALS
	= NBR
	T = HNBR*
	V = FPM*

***Excludes hexagonal rod version**





Execution by rod coming out from both end caps, with overall dimensions. except for the rod, equal to 1260 version. Not available with Ø8 and 10.

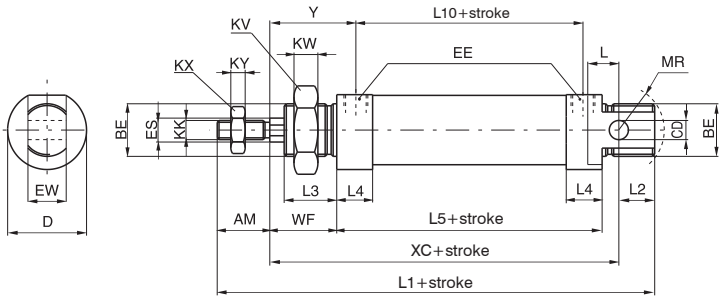
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Non rotating hexagonal piston rod version (from Ø 12)

Coding: 12Ⓣ.Ø.stroke.ⓋⒼ

Ⓣ	TYPE
	60 = Double acting version
	71 = front spring from Ø12 (max stroke 40 mm)
	72 = rear spring from Ø12 (max stroke 40 mm)
Ø	BORE
	8 = Ø8
	10 = Ø10
	...
	50 = Ø50
Ⓥ	VERSION
	E = with non magnetic piston
	AE = version with non-rotating hexagonal rod, with cushioning (from Ø16)
	ME = Hexagonal piston rod with magnetic piston (from Ø12)
	MAE = version with non-rotating hexagonal rod, with cushioning and magnetic piston (from Ø16)
Ⓖ	SEALS
	= NBR
	T = HNBR
	V = FPM





Similar overall dimensions as 1260 basic type, it differs because of the hexagonal rod (instead of circular) to avoid the rotation. It is particularly suitable when it is used as a guide and support to the linked element. Not for use with high frequencies and long strokes. For which, whenever possible use front spring.

Table of dimensions

Bore	8	10	12	16	20	25	32	40	50
AM (-0,2)	12	12	16	16	20	22	20	25	25
BE	M12x1,25	M12x1,25	M16x1,5	M16x1,5	M22x1,5	M22x1,5	M30x1,5	M40x1,5	M40x1,5
CD (H9)	4	4	6	6	8	8	12	14	14
D (-0,3)	16	17	19	24	28	33	40	48	58
EE	M5	M5	M5	M5	G1/8"	G1/8"	G1/8"	G1/4"	G1/4"
ES	-	-	6	6	8	10	12	12	12
EW (d13)	8	8	12	12	16	16	26	30	30
KK (6g)	M4x0,7	M4x0,7	M6x1	M6x1	M8x1,25	M10x1,25	M10x1,25	M12x1,75	M12x1,75
KV	17	17	22	22	30	30	42	52	52
KW	5,5	5,5	6	6	7	7	8	9	9
KX	7	7	10	10	13	17	17	19	19
KY	3	3	4	4	5	6	6	7	7
L	6	6	9	9	12	13	13	16	16
L1(±1) *	85	85	105	111	130	141	139	164	167
L2	9	9	14	13	15	15	14	16	16
L3	11	11	17	17	18	22	22	25	25
L4	10	10	9,5	10,5	15	15	15	18	18
L5 (±1) *	46	46	50	56	68	69	69	79	82
L6 (±1) *	48	48	52	58	70,5	71,5	71,5	82	85
L7	2	2	2	2	2,5	2,5	2,5	3	3
L8 (±1) *	64	64	74	80	94,5	99,5	99,5	117	120
L9 (±1,2) *	78	78	94	100	116	125	125	149	152
L10 (±1) *	35	35	40	45	52	53	53	60	63
L11	-	-	-	1,5	2	2	2	2	2
MM (f7)	4	4	6	6	8	10	12	14	14
MR (min.)	12	12	16	16	18	19	22	28	28
WF (±1,2)	16	16	22	22	24	28	28	35	35
XC (±1) *	64	64	75	82	95	104	105	123	126
Y (±1,2)	21,5	21,5	27	27,5	32	36	36	44,5	44,5

(*) These dimensions increase of 10 mm for microbore cylinders equipped with magnetic piston and spring return, and of 9 mm for microbore cylinders with 10 mm BORE magnetic piston

STROKE TOLERANCE: until stroke 100 mm - 1,5, beyond + 2 mm.

Weight	Stroke 0	55	60	80	100	175	240	365	610	790
g	every 10mm	6	7	5	5	8	11	15	19	21

Without rear eye version

Weight	Stroke 0	50	55	75	95	170	230	345	570	750
g	every 10mm	6	7	5	5	8	11	15	19	21

Through rod cylinder version

Weight	Stroke 0	55	60	95	120	220	310	450	760	950
g	every 10mm	7	8	7	7	12	17	24	31	33

Hexagonal rod version

Weight	Stroke 0	-	-	85	105	180	250	370	590	760
g	every 10mm	-	-	5	6	8	12	16	17	19

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1200 Tecno-MIR

Construction characteristics

Barrel	nylon 66 reinforced with glass fibres
Fixing devices	steel painted / stainless steel AISI 304
Forks	zinc plated steel / stainless steel AISI 304
Piston seals	NBR oil-resistant rubber seal
Rod seal	PUR
Pistons	aluminium
Piston rod	C43 chromed (non magnetic piston version) stainless steel (magnetic piston version)
End caps	nylon 66 reinforced with glass fibres

Operational characteristics

Fluid	filtered air, preferably lubricated
Max. working pressure	8 bar
Working temperature	-5 °C ... +50 °C

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

Ø12:
15 - 25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 - 200 mm
Ø16:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 mm
Ø20 - Ø25:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm
On request are available strokes up to:
Ø12: 200 mm
Ø16: 250 mm
Ø20 - Ø25: 300 mm

Maximum fitting torque

Bore	Thread	Maximum torque (Nm)
Ø12	M5	1
Ø16	M5	1
Ø20	G 1/8"	4
Ø25	G 1/8"	4

Weight charts

Weight table series TECNO MIR 1230 - 1231					
Bore		Ø12	Ø16	Ø20	Ø25
Weight (g)	Stroke 0	50	65	120	160
	every 10 mm	3,75	4	6,5	9

Weight table series TECNO MIR 1232					
Bore		Ø12	Ø16	Ø20	Ø25
Weight (g)	Stroke 0	60	75	180	200
	every 10 mm	7	8,5	10	20

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

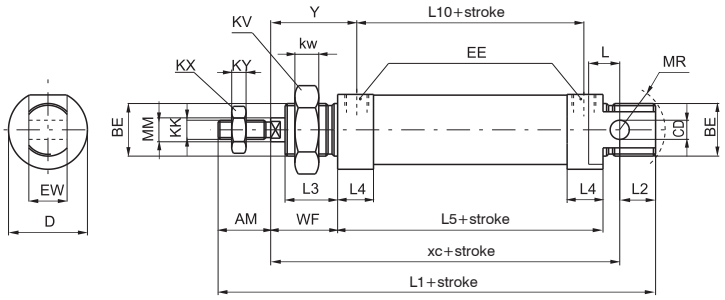
Basic version

Coding: 1230.Ø.stroke.Ⓥ

Ø	BORE
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
Ⓥ	VERSION
	= non magnetic piston
	M = magnetic piston

Standard version, fully complying with ISO standards. Can use all available mountings.





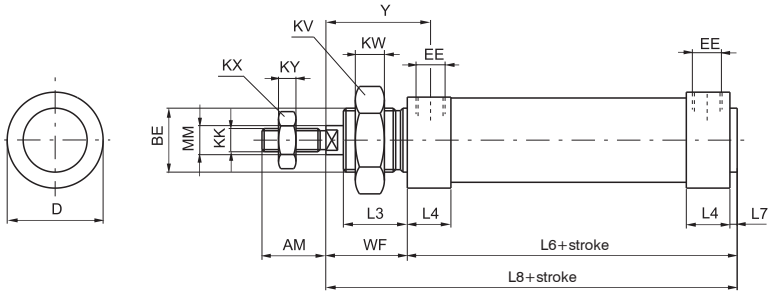
Without rear eye version

Coding: 1231.Ø.stroke.Ⓥ

Ø	BORE
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
Ⓥ	VERSION
	= non magnetic piston
	M = magnetic piston

This version derived from standard version 1230 and not included in ISO standard.
Not having a rear eye it is shorter.
The inlet connection is lateral on the rear caps (like on the front caps).





Through rod cylinder version

Coding: 1232.Ø.stroke.Ⓥ

Ø	BORE
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
Ⓥ	VERSION
	= non magnetic piston
	M = magnetic piston

Through rod model, dimensions as for the 1230 (except the rod).



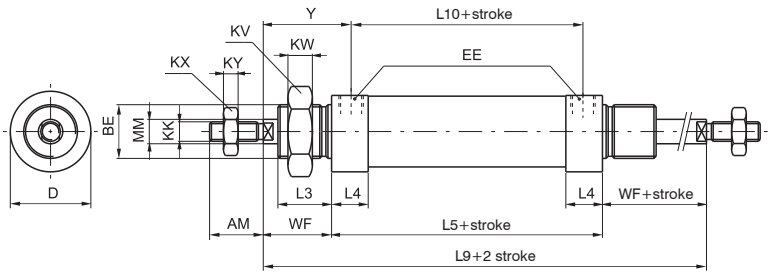


Table of dimensions

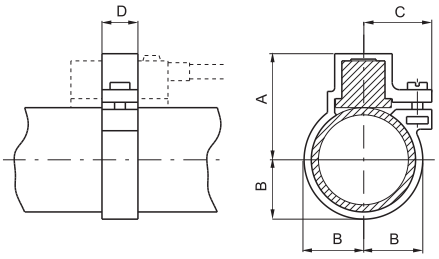
Bore	AM (-0,2)	BE	CD (H9)	D (h11)	EE	EW (d13)	KK (6g)	KV	KW	KX	KY	L	L1 (±1)	L2	L3	L4	L5 (±1)	L6	L7	L8	L9 (±1,2)	L10 (±1)	MM (f7)	WF (±1,2)	XC (±1)	Y (±1)
12	16	M16X1,5	6	19	M5	12	M6X1	22	6	10	4	9	105	14	17	13,5	50	52	2	74	94	41	6	22	75	26,5
16	16	M16X1,5	6	23	M5	12	M6X1	22	6	10	4	9	111	13	17	14,5	56	58	2	80	100	45	6	22	82	27,5
20	20	M22X1,5	8	28,5	G1/8"	16	M8X1,25	30	7	13	5	12	130	15	18	20,5	68	70,5	2,5	94,5	116	52	8	24	95	32
25	22	M22X1,5	8	31,5	G1/8"	16	M10X1,25	30	7	17	6	14	140	14	22	20	68	70,5	2,5	98,5	124	52	10	28	104	36

Sensor clamps - codes 1500._, RS._, HS._

Coding: 1260.Ø.F

	BORE
Ø	**10** = Ø10
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

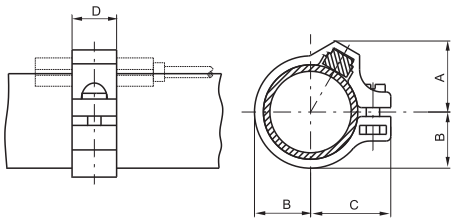
Bore	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
A	23	23	25	27	29,5	33	37	42
B	10	10	12	14	16,5	20	24	29
C	15	15	16,5	17,5	19	20	22	24
D	10	10	10	10	10	10	10	10
Weight (g)	2	2	3	5	7	10	14	16

Sensor clamps - codes 1580._, MRS._, MHS._

Coding: 1260.Ø.FS

	BORE
Ø	**10** = Ø10
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

Bore	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
A	13	14	15.4	17.2	19.3	20.5	22	29
B	9	10	12	14	16.5	20	24	29
C	16	16	18	19.5	22	26	30	35
D	10	10	10	10	10	10	10	10
Weight (g)	2	2	3	5	7	8	10	11

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

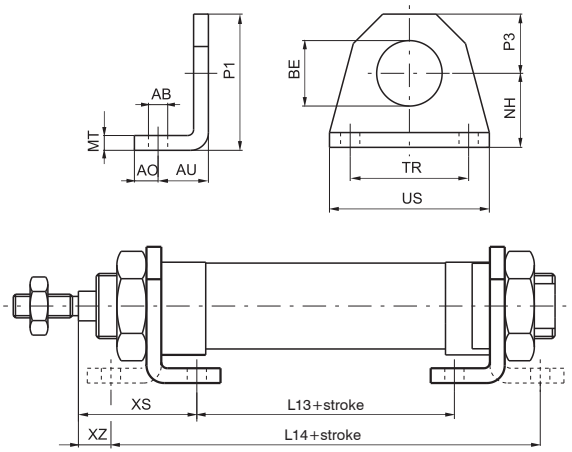
Foot

Coding: 1200.Ø.01

Ø	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50

(1 piece)





Used to mount the cylinder on the mounting plane with the rod parallel to said plane. Use one for short strokes and two for long strokes. It is made of stamped steel, made corrosion resistant by cataphoreses treatment. Attached to the end caps by means of nuts (or lock nuts) 05.

Attention: the dimensions of microbore cylinders with threaded end covers (*) increase of 10 mm. for microbore cylinders equipped with magnetic piston and spring return, and of 9 mm. for microbore cylinders with 10 mm. bore magnetic piston.

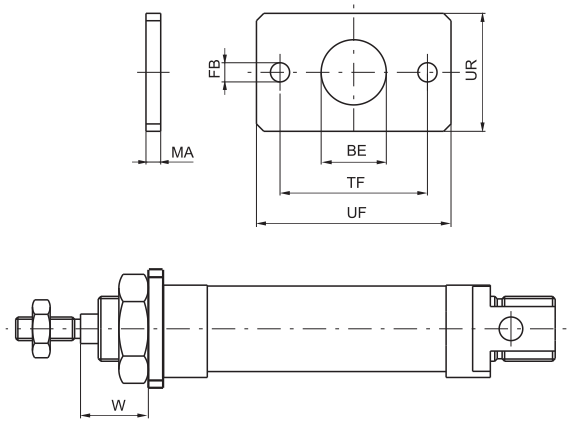
Bore	8	10	12	16	20	25	32	40	50
AB (H13)	4,5	4,5	5,5	5,5	6,5	6,5	6,5	8,5	8,5
AO	5	5	6	6	8	8	8	10	10
AU	11	11	14	14	17	17	17	20	20
BE	12	12	16	16	22	22	30	40	40
L13 (±1) *	30	30	30	36	44	45	45	49	52
L14 (±1) *	68	68	78	84	102	103	103	119	122
MT	3	3	4	4	5	5	5	5	5
NH (±0,3)	16	16	20	20	25	25	28	40	40
P1	26	26	33	33	45	45	50	70	70
P3	10	10	13	13	20	20	22	30	30
TR (JS14)	25	25	32	32	40	40	52	70	70
US	35	35	42	42	54	54	66	90	90
XS (±1,4)	24	24	32	32	36	40	40	50	50
XZ (±1,4)	5	5	8	8	7	11	11	15	15
Weight (g)	22	22	45	45	90	90	110	210	210

Flange

Coding: 1200.Ø.02

Ø	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50





Used to mount the microcylinder at a right angle to the mounting plane. Attached to the front (or rear) end cap by a nut (or lock nut) 05. Made of extruded steel, made corrosion resistant by cataphoresis.

Bore	8	10	12	16	20	25	32	40	50
BE	12	12	16	16	22	22	30	40	40
FB (H13)	4,5	4,5	5,5	5,5	6,5	6,5	6,5	8,5	8,5
UF	40	40	53	53	66	66	68	90	90
UR	25	25	30	30	40	40	50	60	60
MA	3	3	4	4	5	5	5	5	5
TF (JS14)	30	30	40	40	50	50	52	70	70
W (±1,4)	13	13	18	18	19	23	23	30	30
Weight (g)	20	20	40	40	85	85	100	150	150

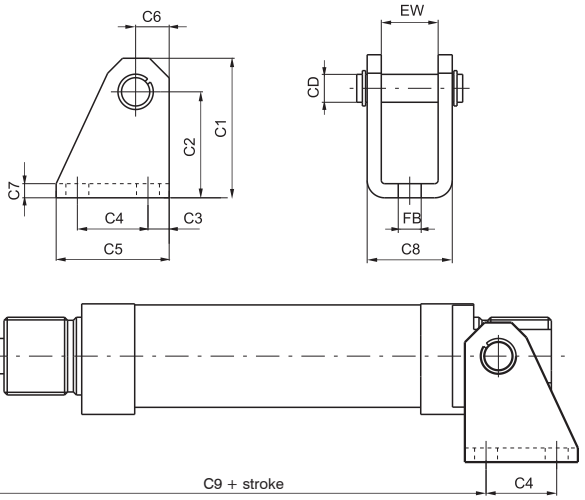
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rear clevis

Coding: 1200.Ø.03

Ø	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50





Use with the rear end cover to mount the cylinder either parallel or at a right-angle to the mounting plane. This allows the cylinder to oscillate and self-align with the linked element to the rod. This is necessary when the rod may be subject to lateral during travel.

Bore	8	10	12	16	20	25	32	40	50
CD	4	4	6	6	8	8	12	14	14
C1	28,5	28,5	33,5	33,5	39,5	39,5	44,5	53,5	53,5
C2 (±0,3)	24	24	27	27	30	30	33	40	40
C3	3,5	3,5	5	5	6	6	7	10	10
C4	12,5	12,5	15	15	20	20	24	28	28
C5	20	20	25	25	32	32	38	45	45
C6	4,5	4,5	6,5	6,5	9,5	9,5	11,5	13,5	13,5
C7	2,5	2,5	3	3	4	4	4	4	4
C8	13	13	18	18	24	24	34	38	38
C9 (±0,4) *	63	63	73,5	80,5	91,5	100,5	100,5	119,5	122,5
EW	8,1	8,1	12,1	12,1	16,1	16,1	26,1	30,1	30,1
FB (H13)	4,5	4,5	5,5	5,5	6,5	6,5	6,5	8,5	8,5
Weight (g)	20	20	35	35	75	75	135	180	180

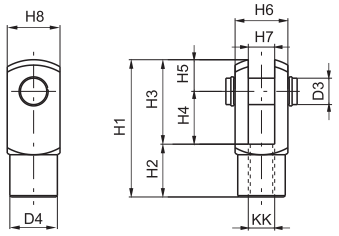
Attention: the dimensions of microbore cylinders with threaded end covers (*) increase of 10 mm. for microbore cylinders equipped with magnetic piston and spring return, and of 9 mm. for microbore cylinders with 10 mm. bore magnetic piston.

Fork with pin

Coding: 1200.Ø.04

Ø	BORE
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50





Similar to hinge 03, mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of zinc plated steel.

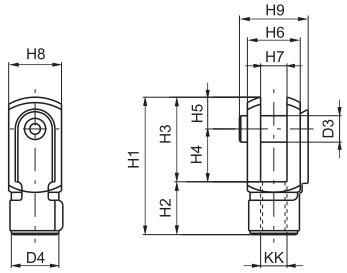
Bore	D3	D4	H1	H2	H3	H4	H5	H6	H7 (B12)	H8	KK	Weight (g)
12	6	10	31	12	19	12	7	12	6	12	M6x1	20
16	6	10	31	12	19	12	7	12	6	12	M6x1	20
20	8	14	42	16	26	16	10	16	8	16	M8x1,25	45
25	10	18	52	20	32	20	12	20	10	20	M10x1,25	90
32	10	18	52	20	32	20	12	20	10	20	M10x1,25	90
40	12	20	62	24	38	24	14	24	12	24	M12x1,75	145
50	12	20	62	24	38	24	14	24	12	24	M12x1,75	145

Fork with clips

Coding: 1200.Ø.04/1

Ø	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50





Similar to hinge 03, mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of zinc plated steel.

Bore	D3	D4	H1	H2	H3	H4	H5	H6	H7 (B12)	H8	H9	KK	Weight (g)
8	4	8	21	8	13	8	5	8	4	10	11	M4x0,7	12
10	4	8	21	8	13	8	5	8	4	10	11	M4x0,7	12
12	6	10	31	12	19	12	7	12	6	12	18	M6x1	20
16	6	10	31	12	19	12	7	12	6	12	18	M6x1	20
20	8	14	42	16	26	16	10	16	8	16	23	M8x1,25	45
25	10	18	52	20	32	20	12	20	10	20	27	M10x1,25	90
32	10	18	52	20	32	20	12	20	10	20	27	M10x1,25	90
40	12	20	62	24	38	24	14	24	12	24	32	M12x1,75	145
50	12	20	62	24	38	24	14	24	12	24	32	M12x1,75	145

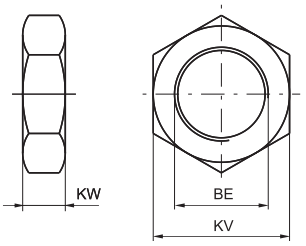
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Nut for the endcap

Coding: 1200.Ø.05

	BORE
Ø	**8** = Ø8
	10 = Ø10
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25





Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 8 to 25. Supplied as standard (1 piece) with microcylinders.

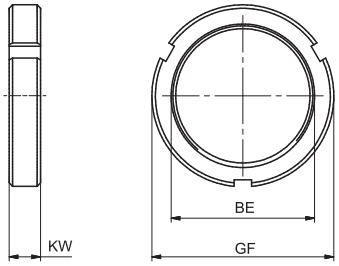
Bore	BE	KV	KW	Weight (g)
8	M12x1,25	17	5.5	7
10	M12x1,25	17	5.5	7
12	M16x1,5	22	6	16
16	M16x1,5	22	6	16
20	M22x1,5	30	7	25
25	M22x1,5	30	7	25

Lock nut for the end cap

Coding: 1200.Ø.05

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50





Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 32 to 50. Supplied as standard (1 piece) with microcylinders.

Bore	BE	GF	KW	Weight (g)
32	M30x1,5	42	8	42
40	M40x1,5	52	9	60
50	M40x1,5	52	9	60

Series 1200, Rolled end covers MIR

Construction characteristics

Barrel	stainless steel AISI 304
Fixing devices	steel painted in cataphoresis
Forks	zinc plated steel
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (HNBR or FPM seals available upon request)
Single-acting springs	C98 zinc plated steel for springs
Pistons	brass (Ø8-10-12) aluminium (Ø16-20-25-32)
Piston rod	stainless steel
End caps	anodized aluminium

Cushioning lenght	Ø	16	20	25	32
	mm	15	18	18	18

Operational characteristics

Fluid	filtered air, preferably lubricated
Max. working pressure	10 bar
Working temperature	-5°C ... +70°C with standard seals magnetic or non magnetic piston -5°C ... +80°C with FPM seals magnetic piston -5°C ... +80°C with HNBR seals magnetic piston -5°C ... +120°C with HNBR seals non magnetic piston -5°C ... +150°C with FPM seals non magnetic piston

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

Ø8 - Ø10:
15 - 25 - 50 - 75 - 80 - 100 mm
Ø12 - Ø16:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm
Ø20 - Ø25:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 mm
Ø32:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm
On request are available strokes up to:
Ø8 - Ø10: 250 mm
Ø12 - Ø16: 700 mm
Ø20 - Ø32: 1000 mm

Single acting version

Front spring **Ø8 - Ø32**: up to stroke 50 mm
Rear spring **Ø16 - Ø32**: up to stroke 50 mm

Minimum and maximum springs load for single acting version

Bore	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Min. load (N)	2.2	2.2	4	7.5	11	16.5	23
Max. load (N)	4.2	4.2	8.7	21	22	30.7	52.5

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

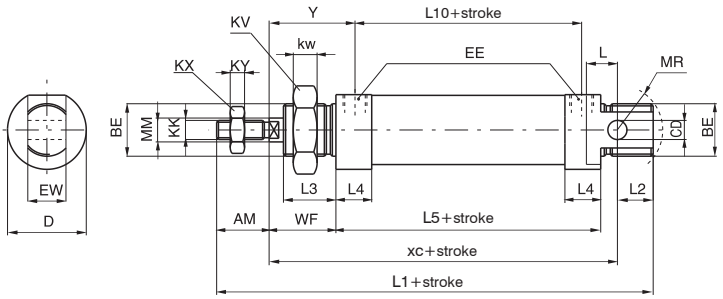
Basic version

Coding: 12Ⓣ.Ø.stroke.ⓋⒼ

Ⓣ	TYPE
	80 = Double acting version
	91 = front spring (max stroke 50 mm)
	92 = rear spring from Ø16 (max stroke 50 mm)
Ø	BORE
	8 = Ø8
	10 = Ø10
	...
	32 = Ø32
Ⓥ	VERSION
	A = Adjustable cushioning (from Ø16)
	M = Magnetic piston
	AM = Cushioning with magnetic piston (from Ø16)
Ⓖ	SEALS
	= NBR
	T = HNBR
	V = FPM

Standard version, fully compliant with ISO standards. Can use all available mountings. For single acting type, the maximum stroke is 50 mm, after which overall dimensions increase in length to an extent not proportional to the stroke (and in any case not longer than stroke 100).





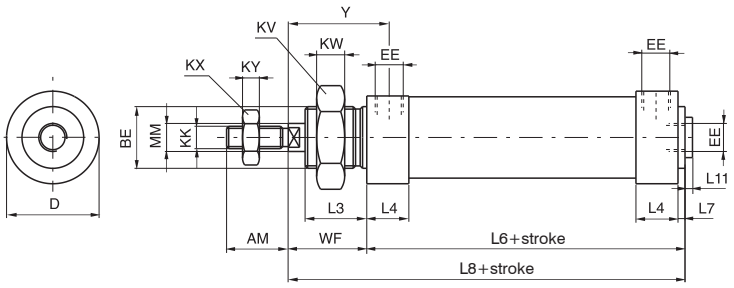
Without rear eye version

Coding: 12Ⓣ.Ø.stroke.ⓋⒼ

Ⓣ	TYPE
	81 = Double acting version
	93 = front spring (max stroke 50 mm)
	94 = rear spring from Ø16 (max stroke 50 mm)
Ø	BORE
	8 = Ø8
	10 = Ø10
	...
	32 = Ø32
Ⓥ	VERSION
	A = Adjustable cushioning (from Ø16)
	M = Magnetic piston
	AM = Cushioning with magnetic piston (from Ø16)
Ⓖ	SEALS
	= NBR
	T = HNBR
	V = FPM

Version derived from standard version 1260 and not included in ISO standard. Not having a rear eye it is shorter. Rear inlet connection is at 90 like the front one, in line and plugged. The considerations made for the basic type 1280 apply for all single-acting types.





Through rod cylinder version

Coding: 1282.Ø.stroke.ⓋⒼ

Ø	BORE
	8 = Ø8
	10 = Ø10
	...
	32 = Ø32
Ⓥ	VERSION
	= Double acting version
	A = Adjustable cushioning (from Ø16)
	M = Magnetic piston
	AM = Cushioning with magnetic piston (from Ø16)
Ⓖ	SEALS
	= NBR
	T = HNBR
	V = FPM

This version having rods coming out from both end plates with overall dimensions, except for the rod, equal to 1280 version. This version is not suitable for Ø8 and Ø10 due to difficulty in anchoring the pistons to rods.



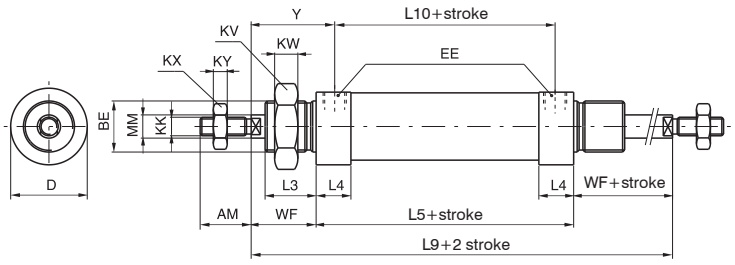


Table of dimensions

Bore	8	10	12	16	20	25	32
AM (-0,2)	12	12	16	16	20	22	20
BE	M12X1,25	M12X1,25	M16X1,5	M16X1,5	M22X1,5	M22X1,5	M30X1,5
CD (H9)	4	4	6	6	8	8	12
D (h11)	16	16	20	21	27	30	38
EE	M5	M5	M5	M5	G1/8"	G1/8"	G1/8"
EW (d13)	8	8	12	12	16	16	26
KK (6g)	M4X0,7	M4X0,7	M6X1	M6X1	M8X1,25	M10X1,25	M10X1,25
KV	17	17	22	22	30	30	42
KW	5,5	5,5	6	6	7	7	8
KX	7	7	10	10	13	17	17
KY	3	3	4	4	5	6	6
L	6	6	9	9	12	13	13
L1 (±1) *	86	86	105	111	130	141	139
L2	10	10	14	13	15	15	14
L3	12	12	17	17	18	22	22
L4	9	9	9	11	15,5	15	14,5
L5 (±1) *	46	46	50	56	68	69	69
L6 *	48	48	52	58	70,5	71,5	71,5
L7	2	2	2	2	2,5	2,5	2,5
L8 *	64	64	74	80	94,5	99,5	99,5
L9 (±1,2) *	78	78	94	100	116	125	125
L10 (±1) *	37	37	41	45	52,5	53	54,5
L11	1,5	1,5	1,5	1,5	2	2	2
MM (f7)	4	4	6	6	8	10	12
MR	12	12	16	16	18	19	22
WF (±1,2)	16	16	22	22	24	28	28
XC (±1) *	64	64	75	82	95	104	105
Y (±1,2)	20,5	20,5	26,5	27,5	32	36	35

Dimensions marked with * do not increase proportionally to stroke for rear spring version (over 25 mm stroke)

STROKE TOLERANCE: until stroke 100 mm - 1,5, beyond + 2 mm.

Weight	Stroke 0	30	35	65	80	160	200	310
g	every 10mm	2	2,5	4	5	7,5	11,5	18

Without rear eye version

Weight	Stroke 0	25	35	60	75	150	185	290
g	every 10mm	2	2,5	4	5	7,5	11,5	18

Through rod cylinder version

Weight	Stroke 0	35	40	75	95	200	250	370
g	every 10mm	2,5	3	6	7	10,5	15,5	24

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1200 Rolled end covers MIR-INOX

Construction characteristics

Barrel	stainless steel AISI 304
Fixing devices	stainless steel AISI 304
Forks	stainless steel AISI 304
Piston seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (FPM seals available upon request)
Pistons	aluminium
Piston rod	stainless steel
End caps	stainless steel AISI 316

Operational characteristics

Fluid	filtered air, preferably lubricated
Max. working pressure	10 bar
Working temperature	-5°C ... +70°C with standard seals magnetic or non magnetic piston -5°C ... +80°C with FPM seals magnetic piston -5°C ... +150°C with FPM seals non magnetic piston

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

Ø16:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm
Ø20 - Ø25:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 mm
Ø32:
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm
On request are available strokes up to:
Ø16: 700 mm
Ø20 - Ø32: 1000 mm

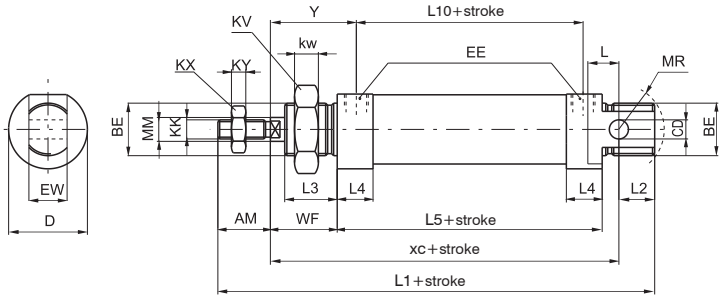
Basic version

Coding: 1280.Ø.stroke.Ⓥ Ⓖ

Ø	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ⓥ	VERSION
	X = non-magnetic
	AX = non-magnetic version with cushions (non-adjustable cushioning)
	MX = Stainless steel magnetic version
	AMX = stainless steel magnetic version with cushions (non-adjustable cushioning)
Ⓖ	SEALS
	= NBR
	V = FPM

Standard version, fully complying with ISO standards. Can use all available mountings.





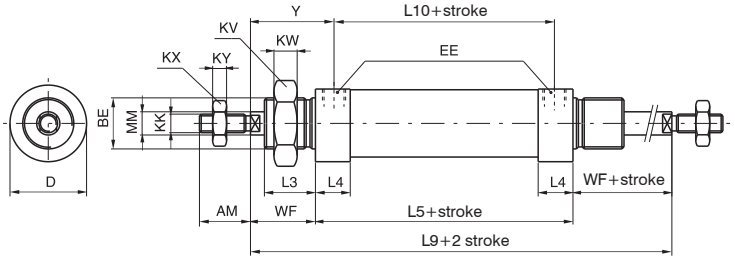
Through rod cylinder version

Coding: 1282.Ø.stroke.Ⓥ Ⓖ

Ø	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ⓥ	VERSION
	X = non-magnetic
	AX = non-magnetic version with cushions (non-adjustable cushioning)
	MX = Stainless steel magnetic version
	AMX = stainless steel magnetic version with cushions (non-adjustable cushioning)
Ⓖ	SEALS
	= NBR
	V = FPM

This version having rods coming out from both end caps, with overall dimensions, except for the rod, equal to 1280 version.





3 PNEUMATIC ACTUATION

Table of dimensions

Bore	AM	BE	CD	D	EE	EW	KK	KV	KW	KX	KY	L	L1	L2	L3	L4	L5	L9	L10	MM	MR	WF	XC	Y
16	16	M16X1,5	6	21	M5	12	M6X1	22	6	10	4	9	111	13	17	10,5	56	100	45	6	16	22	82	27,5
20	20	M22X1,5	8	27	G1/8"	16	M8X1,25	30	7	13	5	12	130	15	18	10,5	68	116	52,5	8	18	24	95	32
25	22	M22X1,5	8	30	G1/8"	16	M10X1,25	30	7	17	6	13	140	15	22	15,5	68	125	52,5	10	18	28	104	36
32	20	M30X1,5	12	38	G1/8"	26	M10X1,25	42	8	17	6	13	139	14	22	14,5	69	125	54,5	12	22	28	105	35

Bore	Standard weight (g)		Weight push-pull version (g)	
	Stroke 0	every 10 mm	Stroke 0	every 10 mm
16	145	5	180	7
20	280	8	330	11
25	370	12	440	16
32	580	18	660	24

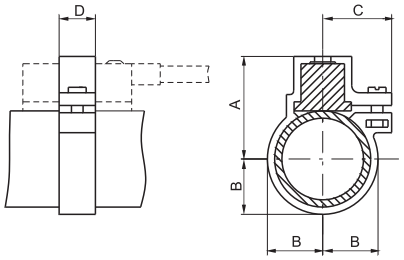
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Sensor clamps - codes 1500._, RS._, HS._

Coding: 1280.Ø.Ⓣ

Ø	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ⓣ	TYPE
	F = Cylinders MIR
	FX = Cylinders MIR-INOX





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

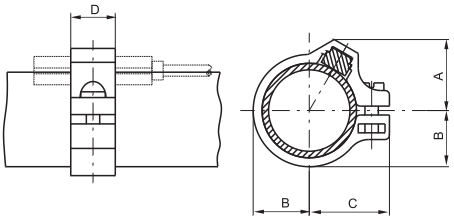
Bore	Ø16	Ø20	Ø25	Ø32
A	24	25,5	28,5	31,8
B	10,5	12,5	15,5	18,8
C	16,5	17,5	19	20
D	10	10	10	10
Weight (g)	3	5	7	10

Sensor clamps - codes 1580._, MRS._, MHS._

Coding: 1280.Ø.Ⓣ

Ø	BORE
	8 = Ø8
	10 = Ø10
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ⓣ	TYPE
	FS = Cylinders MIR
	FSX = Cylinders MIR-INOX





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

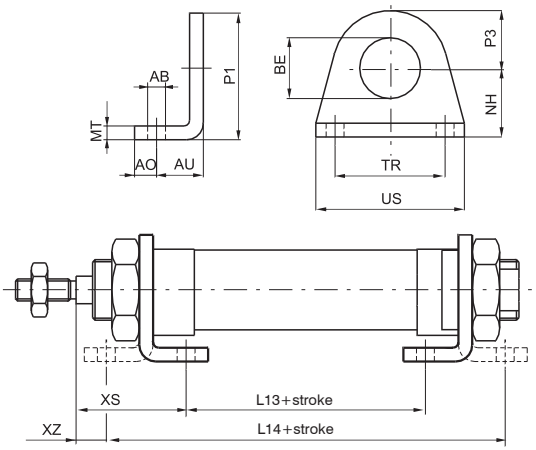
Bore	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
A	11	12	13	14.5	16	17.5	19.5
B	6.5	7.5	8.5	10.5	12.5	15.3	18.8
C	12.5	13.5	15	16	18	20.5	24
D	10	10	10	10	10	10	10
Weight (g)	2	2	2	3	5	7	10

Foot

Coding: 1200.Ø.01X

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32





Bore	16	20	25	32
AB (H13)	5,5	6,5	6,5	6,5
AO	6	8	8	8
AU	14	17	17	17
BE	16	22	22	30
L13 (±1)	36	44	44	45
L14 (±1)	84	102	102	103
MT	4	5	5	5
NH (±0,3)	20	25	25	28
P1	33	45	45	50
P3	13	20	20	22
TR (Js14)	32	40	40	52
US	42	54	54	66
XS (±1,4)	32	36	40	40
XZ (±1,4)	8	7	11	11
Weight (g)	45	90	90	110

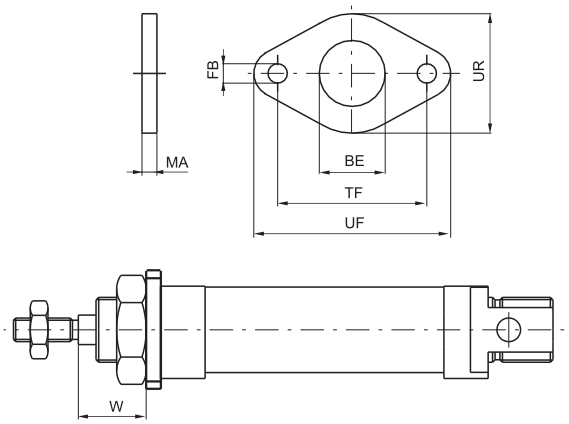
Used to mount the cylinder on the mounting plane with the rod parallel to said plane. Use one for short strokes and two for long strokes. It is made stamped stainless steel AISI 303. Attached to the end caps by means of nuts (or lock nuts) 05X.

Flange

Coding: 1200.Ø.02X

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32





Use to mount the microcylinder at a right angle to the mounting plane. Attached to the front (or rear) end cap by a nut (or lock nut)05X. Made ofstainless steel AISI 303.

Bore	16	20	25	32
BE	16	22	22	30
FB (H13)	5,5	6,5	6,5	6,5
UF	53	66	66	68
UR	30	40	40	50
MA	4	5	5	5
TF (JS14)	40	50	50	52
W (±1,4)	18	19	23	23
Weight (g)	40	85	85	100

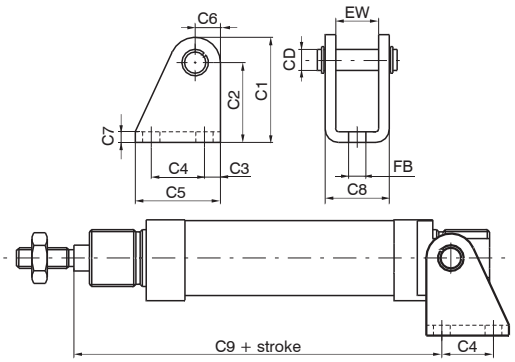
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rear clevis

Coding: 1200.Ø.03X

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32





Used to mount by using the rear end cover to mount either parallel or at a right angle to the mounting plane. Allows the cylinder to oscillate and self-align with the linked element to the rod. Necessary to use when the rod may be subject to lateral forces during travel. Made of stamped stainless steel AISI 303.

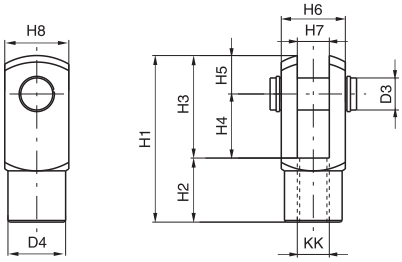
Bore	16	20	25	32
CD	6	8	8	12
C1	33,5	39,5	39,5	44,5
C2 (±0,3)	27	30	30	33
C3	5	6	6	7
C4	15	20	20	24
C5	25	32	32	38
C6	6,5	9,5	9,5	11,5
C7	3	4	4	4
C8	18	24	24	34
C9 (±0,4)	80,5	91,5	100,5	100,5
EW	12,1	16,1	16,1	26,1
FB (H13)	5,5	6,5	6,5	6,5
Weight (g)	35	75	75	135

Fork with pin

Coding: 1200.Ø.04X

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32





Similar to hinge 03X, mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of stainless steel AISI 303.

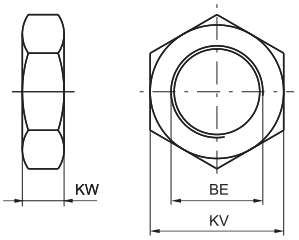
Bore	D3	D4	H1	H2	H3	H4	H5	H6	H7 (B12)	H8	KK	Weight (g)
16	6	10	31	12	19	12	7	12	6	12	M6X1	20
20	8	14	42	16	26	16	10	16	8	16	M8X1,25	45
25	10	18	52	20	32	20	12	20	10	20	M10X1,25	90
32	10	18	52	20	32	20	12	20	10	20	M10X1,25	90

Nut for the endcap

Coding: 1200.Ø.05X

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25





Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 16 to 25. Supplied as standard (1 piece) with microcylinders. Made of stainless steel AISI 303.

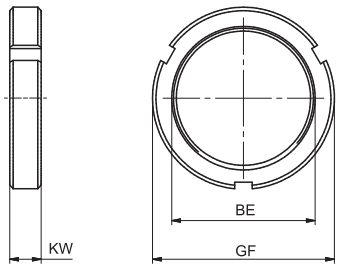
Bore	BE	KV	KW	Weight (g)
16	M16X1,5	22	6	16
20	M22X1,5	30	7	25
25	M22X1,5	30	7	25

Lock nut for the end cap

Coding: 1200.32.05X

Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameter 32. Supplied as standard (1 piece) with microcylinders. Made of stainless steel AISI 303.





Bore	BE	GF	KW	Weight (g)
32	M30X1,5	42	8	42

Series 1200, Steel line

The 12X stainless steel ISO 6432 cylinders Series are designed for corrosion resistance application such as marine, pharmaceutical and food ambiences.
The pre lubrication grease used is NSF H1 certified for food application.
Specific care has been taken during the design stages and the result is a clean profile cylinder easy to clean and free from possible residue build-up areas.
All parts in contact with the external environment are in Stainless steel 316L and the seals are available in three different compounds for different temperature applications:
NBR -5 °C ... +70 °C, PUR -30 °C ... +80 °C, FPM -5 °C ... +150 °C
The range starts from 16 bore up to 63 bore, double acting version standard or with through rod, magnetic or not magnetic piston available. The end caps are crimped onto the barrel for bore sizes 16 to 25 and screwed on the barrel from 32 to 63 bore.
Depending on the type of mounting required it is possible to choose different end caps style.
The piston is aluminium and the sensor bracket, when required is in stainless steel 316 with plastic adaptor or in plastic material. The cylinder can be fixed with the wide range of stainless steel accessories.

Construction characteristics

Barrel	stainless steel AISI 316
Fixing devices	stainless steel AISI 316 / 304
Seals	NBR (PUR piston rod seals) FPM PUR
Pistons	Aluminium
Piston rod	stainless steel AISI 316
End caps	stainless steel AISI 316

Operational characteristics

Fluid		filtered air, preferably lubricated						
Max. working pressure		10 bar						
Bore	Ø	16	20	25	32	40	50	63
Cushioning lenght	mm	15	18	18	18	22	22	25

Working temperature

Seals	Operating temperature	Piston		Cushioning		Bores
		Magnetic	Non magnetic	Pneumatic adjustable	Pneumatic fix	
NBR	-5 °C ... +70 °C	•	•	•	•	Ø16-Ø20-Ø25-Ø32-Ø40-Ø50-Ø63
FPM	-5°C ... +80°C	•	/	•	•	Ø16-Ø20-Ø25-Ø32-Ø40-Ø50-Ø63
	-5°C ... +150°C	/	•	•	•	Ø16-Ø20-Ø25-Ø32-Ø40-Ø50-Ø63
PUR	-5 °C ... +70 °C	•	•	•	/	Ø16-Ø20-Ø25-Ø32
	-30°C ... +80°C	•	•	/	•	Ø16-Ø20-Ø25-Ø32
		•	•	•	•	Ø40-Ø50-Ø63

Use and maintenance

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Ø16 :
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 mm
Ø20-Ø25 :
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 mm
Ø 32 ... Ø 63 :
15 - 25 - 50 - 75 - 80 - 100 - 150 - 160 - 200 - 250 - 300 - 320 - 350 - 400 - 450 - 500 mm

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Coding key

12X . . . . . .

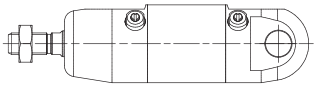
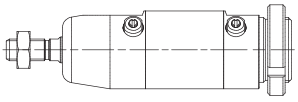
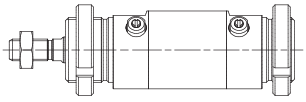
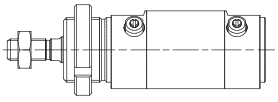
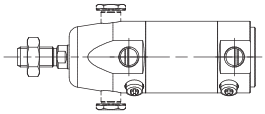
FUNCTION	
A	Double acting
B	Double acting cushioned
C	Double acting through rod
D	Double acting cushioned through rod

BORE
016
020
025
032
040
050
063

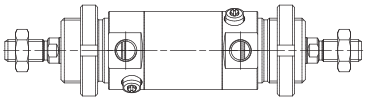
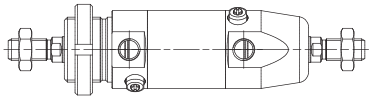
STROKE

MAGNETIC PISTON VARIANTS	
M	Magnetic piston max. temperature +80°C
N	Non magnetic piston

SEALS	
N	NBR
V	FPM
P	PUR

	TYPE		
	Front end cap	Basic version	Rear end cap
A	CLEAN PROFILE		WITH INTEGRATED TRUNNION
B	CLEAN PROFILE		THREADED
C	THREADED		THREADED
D	THREADED		SHORT END CAP
E*	FOR PIN		SHORT END CAP

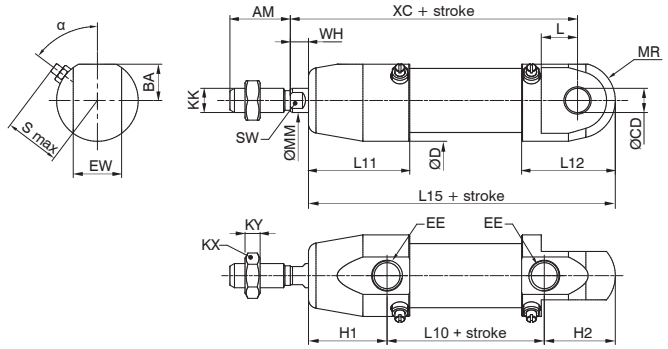
* available only for Ø32 - Ø40 - Ø50 - Ø63

	END CAP	THROUGH ROD CYLINDER VERSION	END CAP
S	THREADED		THREADED
T	THREADED		CLEAN PROFILE

Cylinder type "A"

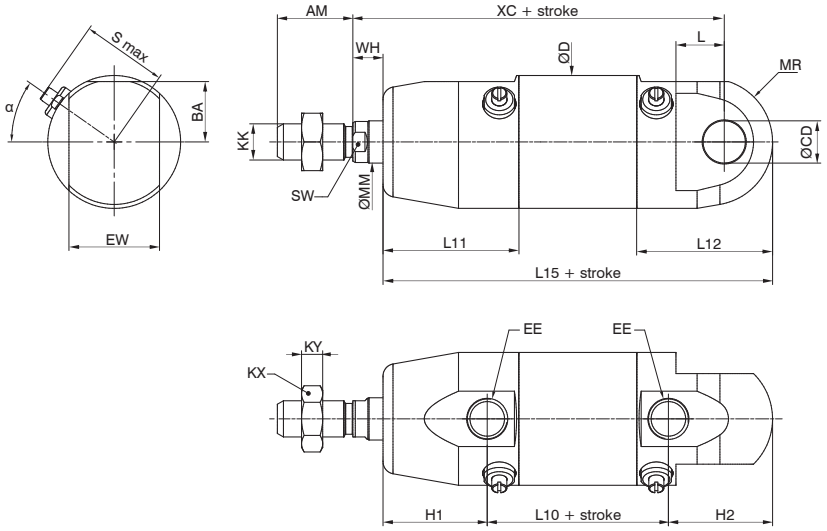


from Ø16 to Ø25





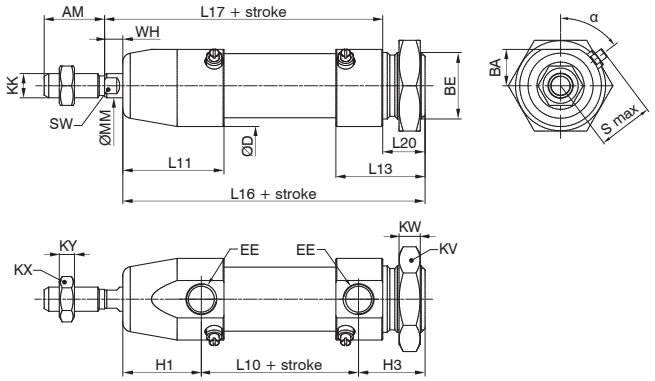
from Ø32 to Ø63



Cylinder type "B"

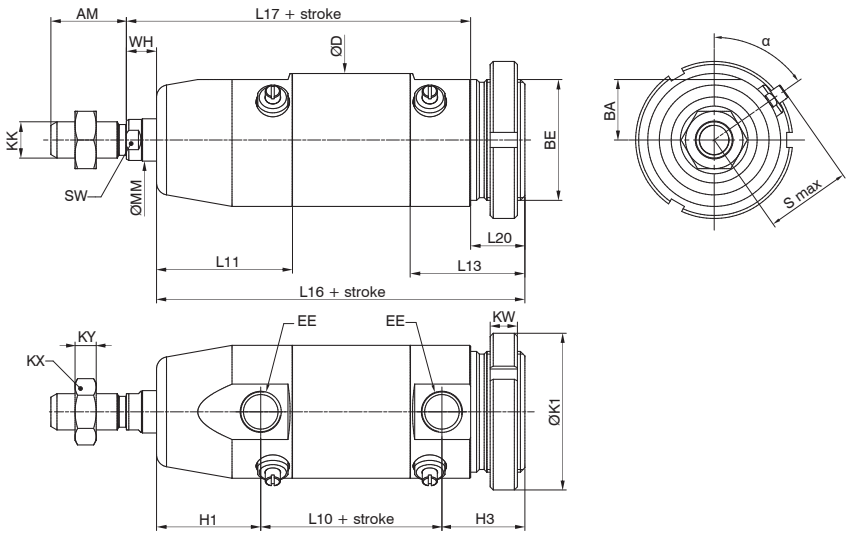


from Ø16 to Ø25





from Ø32 to Ø63

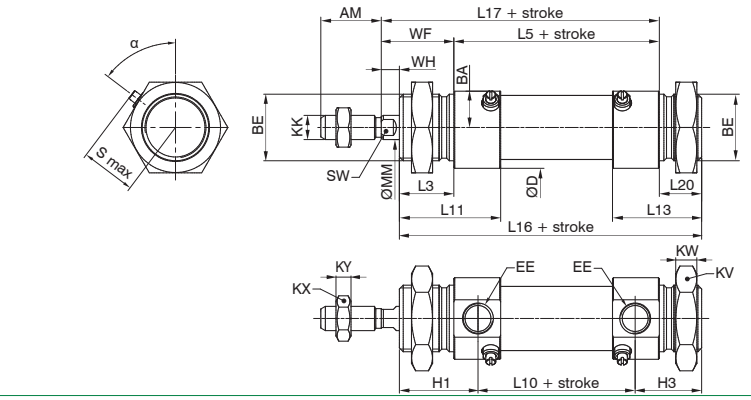


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Cylinder type "C"

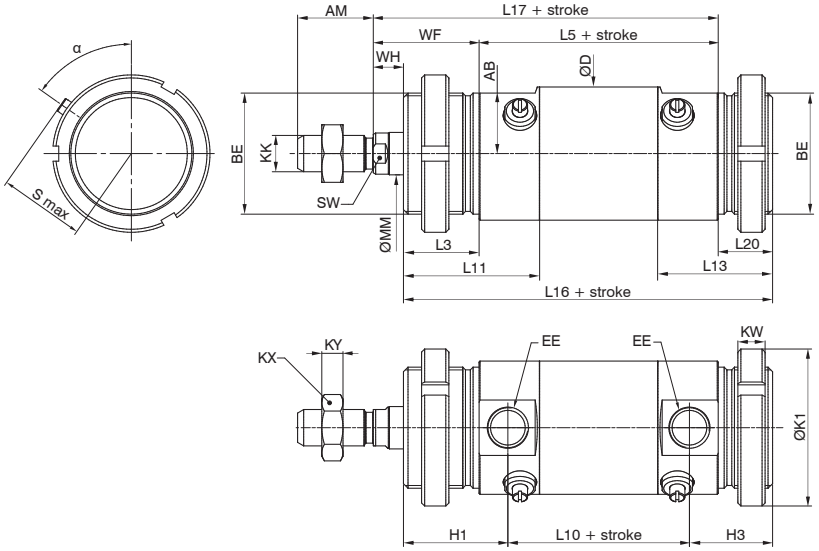


from Ø16 to Ø25





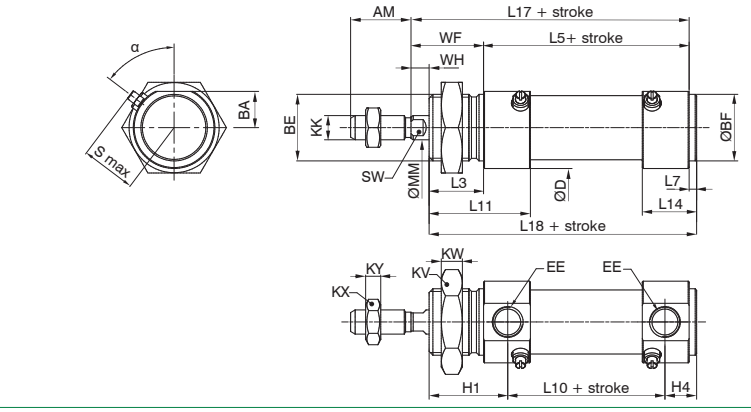
from Ø32 to Ø63



Cylinder type "D"

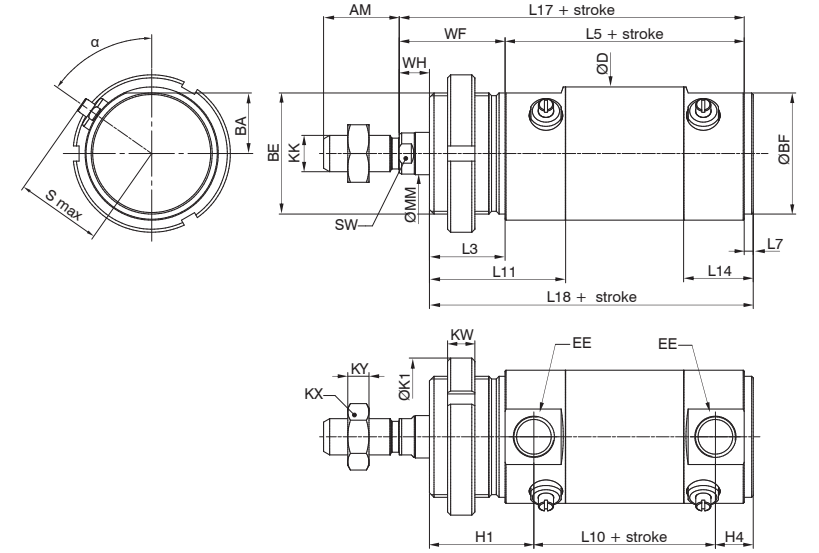


from Ø16 to Ø25



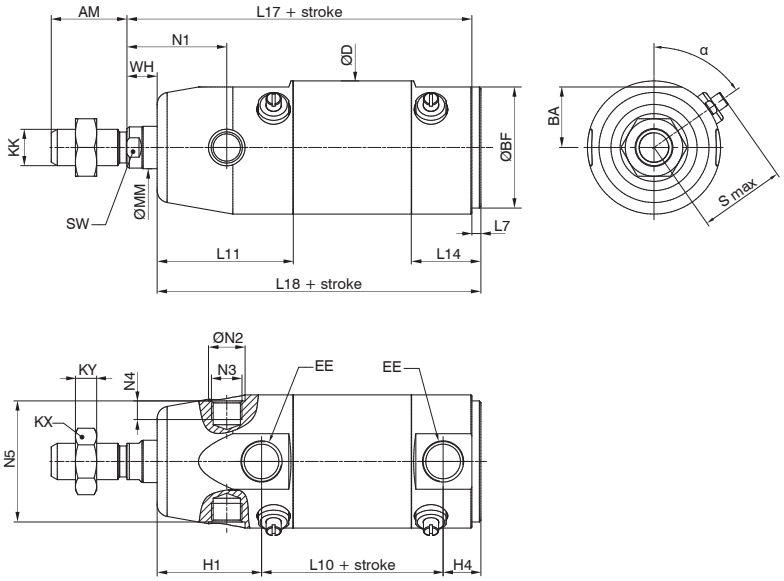


from Ø32 to Ø63



Cylinder type "E"

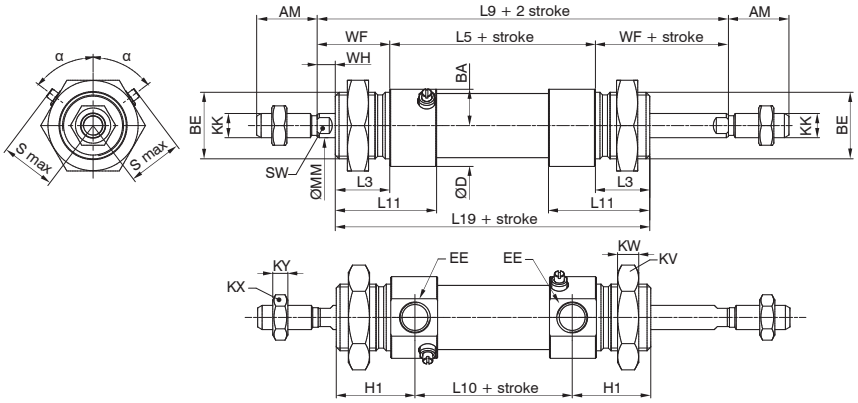




from Ø32 to Ø63

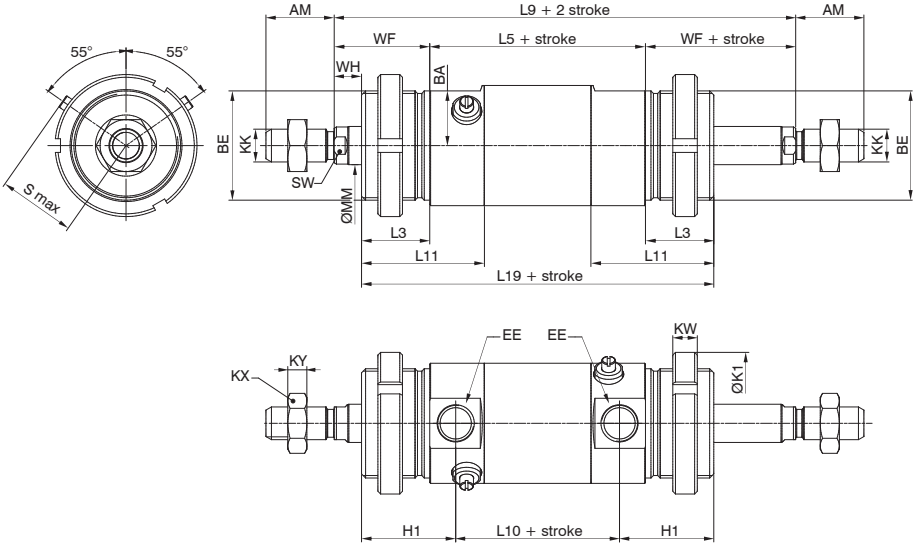
Cylinder type "S"





from Ø16 to Ø25



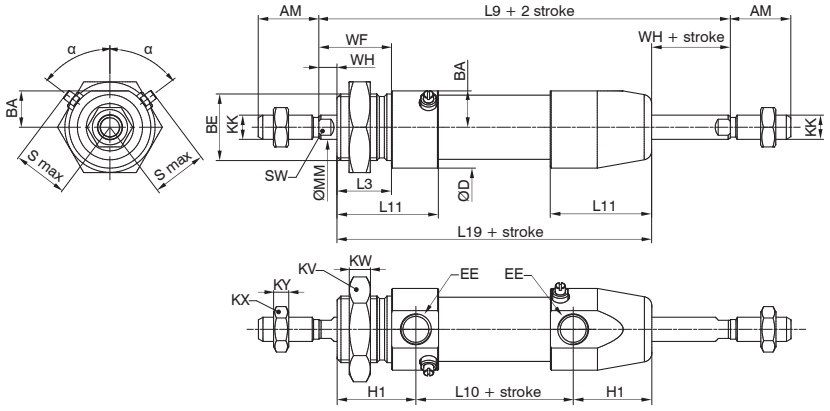


from Ø32 to Ø63

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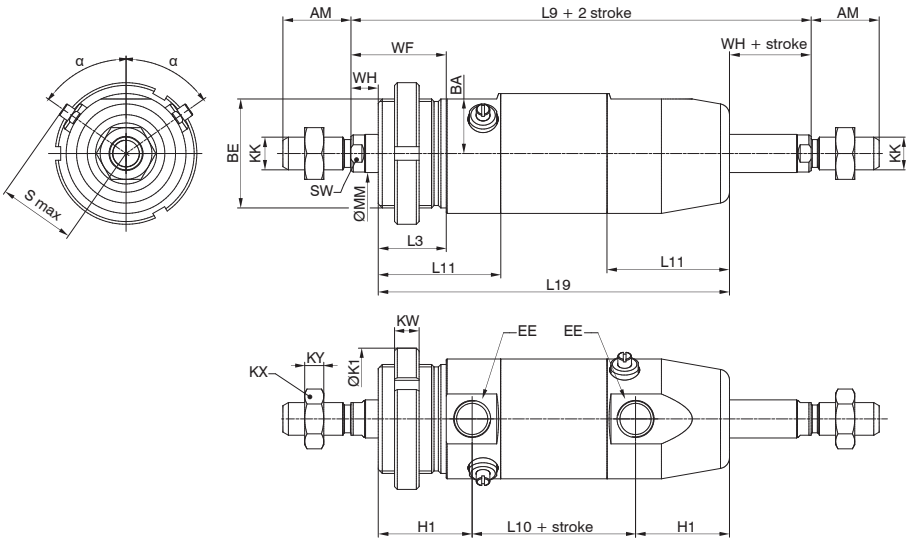
Cylinder type "T"





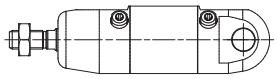
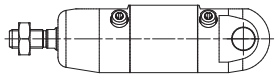
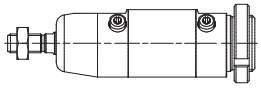
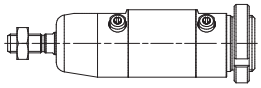
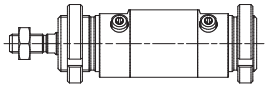
from Ø16 to Ø25





from Ø32 to Ø63

Weight charts

Weight (g)								
Basic version			Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
A		Stroke 0	131	264	371	621	1060	1600	3150
		every 10mm	5	7	11	26	33	42	65
B		Stroke 0	150	310	410	666	1160	1700	3230
		every 10mm	5	7	11	26	33	42	65
C		Stroke 0	153	323	411	688	1200	1660	3060
		every 10mm	5	7	11	26	33	42	65
D		Stroke 0	129	267	359	580	1020	1460	2800
		every 10mm	5	7	11	26	33	42	65
E*		Stroke 0	/	/	/	558	960	1480	2930
		every 10mm	/	/	/	26	33	42	65

* Available only for Ø32 - Ø40 - Ø50 - Ø63

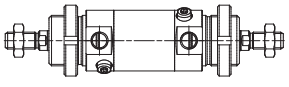
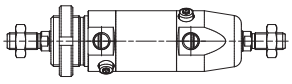
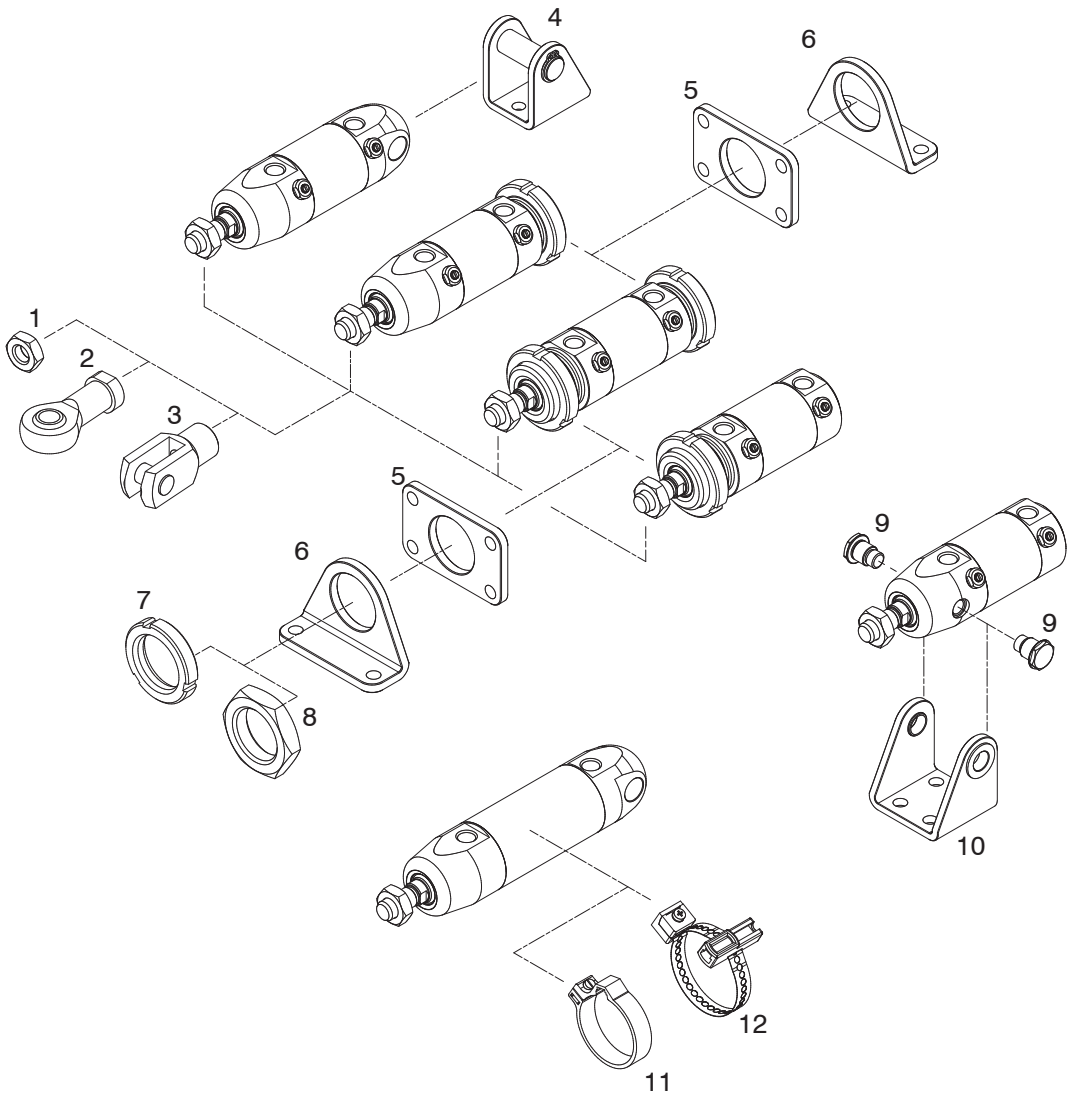
Weight (g)								
Through rod cylinder version			Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
S		Stroke 0	172	350	465	745	1364	1793	3318
		every 10mm	5	7	11	26	33	42	90
T		Stroke 0	181	336	470	723	1299	1832	3483
		every 10mm	5	7	11	26	33	42	90

Table of dimensions

Bore	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
α	53°	53°	53°	55°	55°	55°	55°
AM	16	20	22	20	25	25	32
BA	9	12	13,5	16	20	25	31
BE	M16x1,5	M22x1,5	M22x1,5	M30x1,5	M40x1,5	M40x1,5	M45x1,5
ØBF	16	22	22	30	40	40	45
EE	M5	G1/8	G1/8	G1/8	G1/4	G1/4	G3/8
EW	12	16	16	26	30	30	40
ØCD^{H9}	6	8	8	12	14	14	16
ØD	21	27	30	36	44	54	68
H1	22,5	26	30	30	34,5	34,5	40
H2	17,5	23,5	27,5	30	34,5	34,5	40
H3	16,5	22	22	23	27,5	27,5	30
H4	7,5	10,5	10,5	10,5	12,5	12,5	16
ØK1	/	/	/	/	52	52	60
KK	M6x1	M8x1,25	M10x1,25	M10x1,25	M12x1,75	M12x1,75	M16x1,5
KX	10	13	17	17	19	19	24
KY	4	5	6	6	7	7	8
KV	22	30	30	42	/	/	/
KW	6	7	7	8	9	9	10
L	9	12	14	13	16	16	22
L3	17	18	22	22	25	25	28
L5	56	68	69	69	79	82	106
L7	2	2,5	2,5	2,5	3	3	4
L9	100	116	125	125	149	152	180
L10	45	52	53	53	60	63	82
L11	28	33,5	37	38,5	45	45	54
L12	23	31	34,5	38,5	45	45	54
L13	22	29,5	29	31,5	38	38	44
L14	12,8	18	17,5	19	23	23	30
L15	85	101,5	110,5	113	129	132	162
L16	84	100	105	106	122	125	152
L17	78	92	97	97	114	117	143
L18	75	88,5	93,5	93,5	107	110	138
L19	90	104	113	113	129	132	162
L20	11	14	14	15	18	18	18
ØMM	6	8	10	12	14	16	20
MR	8	12,5	12,5	17	21	26	34,5
N1	/	/	/	27	33	40	45
ØN2$^{+0/-0,05}$	/	/	/	10,1	12,1	14,1	16,1
N3	/	/	/	M8x0,75	M10x1	M12x1	M14x1
N4	/	/	/	5,5	6	8,7	11,7
N5$^{+0,1/-0}$	/	/	/	32	40	50	64
S max.	15,5	18,5	19,5	25	28,5	33,5	40
SW	5	6	8	10	12	12	17
WF	22	24	28	28	35	35	37
WH	5	6	6	6	10	10	9
XC	82	95	104	105	123	126	154

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Position	Description	Coding	Materials
1	Rod lock nut	12X.Ø.11	Stainless steel AISI 316
2	Ball joint	12X.Ø.10	Stainless steel
3	Fork with pin	12X.Ø.04	Stainless steel
4	Rear clevis	12X.Ø.03	Stainless steel
5	Flange	12X.Ø.02	Stainless steel AISI 316
6	Foot	12X.Ø.01	Stainless steel AISI 316
7	Lock nut for the end cap (Ø32 ... Ø63)	12X.Ø.05	Stainless steel AISI 316
8	Nut for the endcap (Ø16 ... Ø25)	12X.Ø.05	Stainless steel AISI 316
9	Pin for front clevis (Ø32 ... Ø63)	12X.Ø.09	Stainless steel AISI 316
10	Front clevis (Ø32 ... Ø63)	12X.Ø.08	Stainless steel AISI 316
11	Sensor clamps cod. 1580._, MRS._, MHS._ (Ø16 ... Ø50)	12X.Ø.FS	Technopolymer
12	Sensor clamps cod. 1580._, MRS._, MHS._ (Ø16 ... Ø63)	12X.Ø.FSX	Stainless steel Technopolymer

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

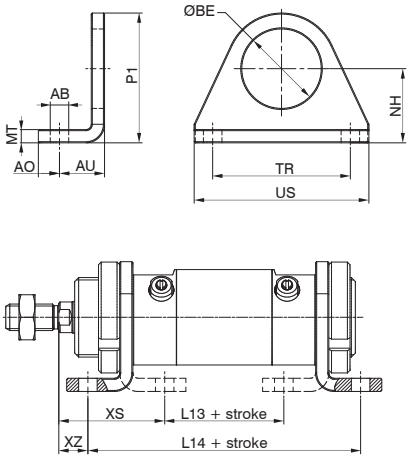
Foot

Coding: 12X.Ø.01

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 foot (AISI 304)





Used to mount the cylinder on the mounting plane with the rod parallel to said plane. Use one for short strokes and two for long strokes. It is made stamped stainless steel AISI 316.

Bore	16	20	25	32	40	50	63
AB (H13)	5,5	6,5	6,5	6,5	9	9	9
AO	6	8	8	8	10	10	10
AU	14	17	17	17	20	20	20
ØBE	16	22	22	30	40	40	45
L13 (±1)	36	44	44	45	49	52	78
L14 (±1)	84	102	102	103	119	122	146
MT	4	5	5	5	5	5	6
NH (±0.3)	20	25	25	28	40	40	50
P1	33	45	45	50	66,5	66,5	80
TR (Js14)	32	40	40	52	70	70	70
US	42	54	54	66	90	90	90
XS (±1.4)	32	36	40	40	50	50	51
XZ (±1.4)	8	7	11	11	15	15	17
Weight (g)	45	90	90	110	210	210	262

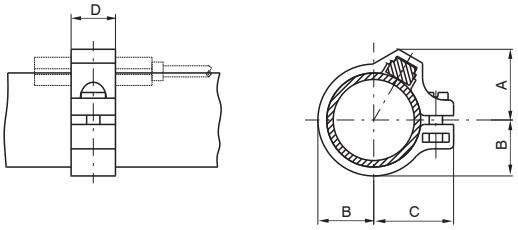
Sensor clamps cod. 1580._, MRS._, MHS._

Coding: 12X.Ø.FS

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50

The kit comprises:
n° 1 clamp (Technopolymer)
n° 1 screw (AISI 304)
n° 1 nut (AISI 304)





Bore	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
A	14,5	16	17,5	20,5	22	29
B	10,5	12,5	15,3	20	24	29
C	16	18	20,5	26	30	35
D	10	10	10	10	10	10
Weight (g)	3	5	7	8	10	11

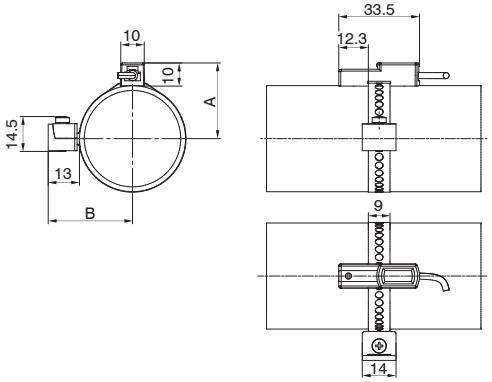
Sensor clamps cod. 1580._, MRS._, MHS._

Coding: 12X.Ø.FSX

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 clamp (AISI 304)
n° 1 switch bracket + support (Technopolymer)
n° 1 screw (AISI 304)
n° 1 nut (AISI 304)





Bore	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
A	19	21	23	28	32	37	44
B	22	24	26	31	35	40	47

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Flange

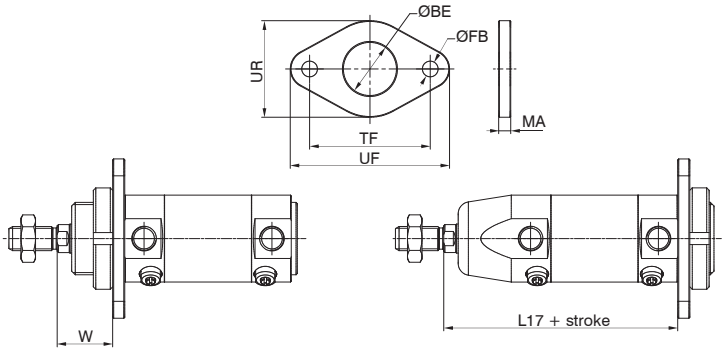
Coding: 12X.Ø.02

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 flange (AISI 316)

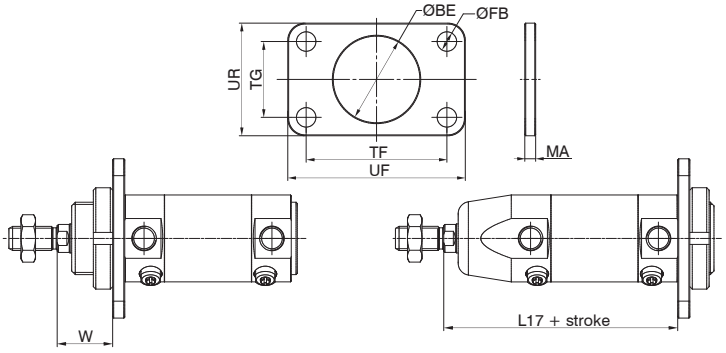


(For Ø16-Ø20-Ø25)





(For Ø32-Ø40-Ø50-Ø63)



Use to mount the microcylinder at a right angle to the mounting plane. Made of stainless steel AISI 316.

Bore	16	20	25	32	40	50	63
ØBE	16	22	22	30	40	40	45
ØFB (H13)	5.5	6.5	6.5	6.5	9	9	9
UF	53	66	66	66	82	82	96
UR	30	40	40	42	52	52	70
MA	4	5	5	5	5	5	6
TF (JS14)	40	50	50	52	65	65	76
TG	/	/	/	28	35	35	50
W (±1.4)	18	19	23	23	30	30	31
L17	78	92	97	97	114	117	143
Weight (g)	40	85	85	100	105	105	225

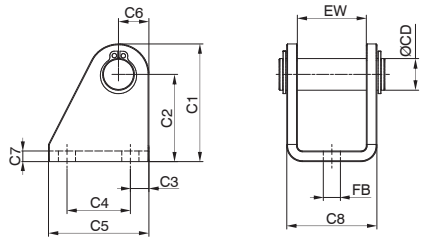
Rear clevis

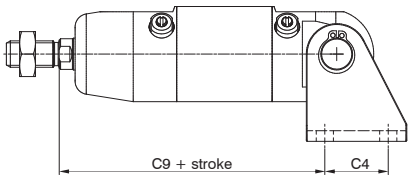
Coding: 12X.Ø.03

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 clevis (AISI 316)
n° 1 pin (AISI 316)
n° 2 circlips (AISI 420)







Used to mount by using the rear end cover to mount either parallel or at a right angle to the mounting plane. Allows the cylinder to oscillate and self-align with the linked element to the rod. Necessary to use when the rod may be subject to lateral forces during travel. Made of stamped stainless steel.

Bore	16	20	25	32	40	50	63
ØCD	6	8	8	12	14	14	16
C1	33,5	39,5	39,5	44,5	53,5	53,5	64
C2 (±0.3)	27	30	30	33	40	40	50
C3	5	6	6	7	10	10	8
C4	15	20	20	24	28	28	34
C5	25	32	32	38	45	45	50
C6	6,5	9,5	9,5	11,5	13,5	13,5	14
C7	3	4	4	4	4	4	6
C8	18	24	24	34	38	38	52
C9 (±0.4)	80,5	91,5	100,5	100,5	119,5	122,5	148
EW	12,1	16,1	16,1	26,1	30,5	30,5	40,5
FB (H13)	5,5	6,5	6,5	6,5	8,5	8,5	9
Weight (g)	35	75	75	135	138	138	284

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Rod lock nut

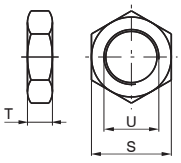
Coding: 12X.Ø.11

Ø	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 rod lock nut (AISI 316)

Mounted on the rod thread.
Made of stainless steel AISI 316.





Bore	S	T	U	Weight (g)
16	10	4	M6X1	3
20	13	5	M8X1,25	4
25	17	6	M10X1,25	9
32	17	6	M10X1,25	9
40	19	7	M12X1,75	12
50	19	7	M12X1,75	12
63	24	8	M16X1,5	21

Nut for the endcap

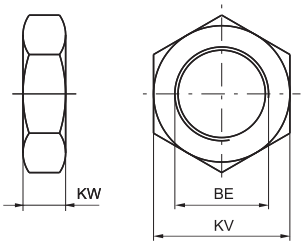
Coding: 12X.Ø.05

Ø	BORE
	16 = Ø16
	20 = Ø20
	25 = Ø25

The kit comprises:
n° 1 nut for the endcap (AISI 316)

Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 16 to 25. Supplied as standard (1 piece) with microcylinders.





Bore	BE	KV	KW	Weight (g)
16	M16x1,5	22	6	16
20	M22x1,5	30	7	25
25	M22x1,5	30	7	25

Lock nut for the end cap

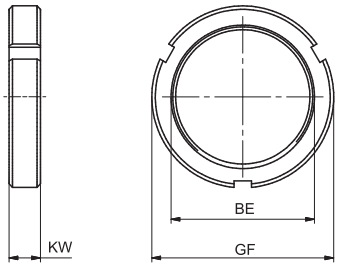
Coding: 12X.Ø.05

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 lock nut for the end cap (AISI 316)

Used to fasten flanges or feet to the endcaps of the microcylinder Mounted on diameters from 32 to 63. Supplied as standard (1 piece) with microcylinders.





Bore	BE	GF	KW	Weight (g)
32	M30x1,5	42	8	42
40	M40x1,5	52	9	62
50	M40x1,5	52	9	62
63	M45x1,5	60	10	100

Front clevis

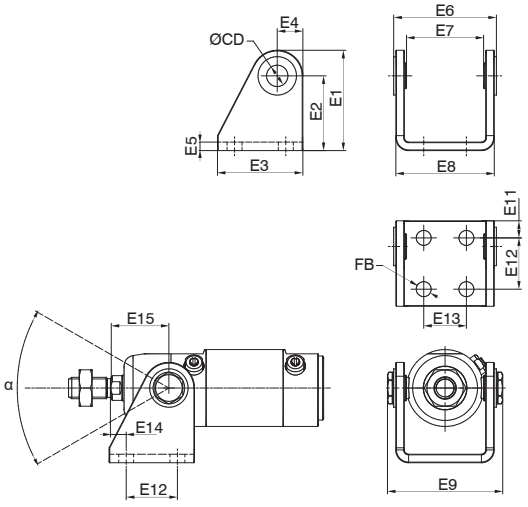
Coding: 12X.Ø.08

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 clevis (AISI 316)
n° 2 bushings (Technopolymer)

Used to mount by using the front end cap to mount parallel to the mounting plane. Allows the cylinder to oscillate and self-align with the linked element to the rod. Necessary to use when the rod may be subject to lateral forces during travel. Made of stamped stainless steel AISI 316.





Bore	E2 (±0,2)	E3	E4	E5	E6	E7	E8	E9	E11	E12	E13	E14	E15	FB (H13)	ØCD	α	Weight (g)
32	35	40	12	4	48	36	46	54	8	24	20	7	27	7	10	50°	121
40	40	50	13	4	60	49	58	68	10	30	28	6	33	9	12	50°	175
50	45	54	14	6	74	54	72	84	10	34	36	10	40	9	14	50°	330
63	50	65	16	6	88	72	86	98	15	35	42	11	45	9	16	40°	458

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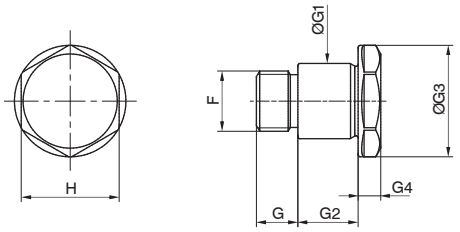
Pin for front clevis

Coding: 12X.Ø.09

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 pin (AISI 316)





Bore	32	40	50	63
G	5,5	6	8,5	11
G1 (h7)	10	12	14	16
G2	8	10	12	12
G3	15	17	19	24
G4	3	4	5	5
F	M8X0,75	M10X1	M12X1	M14X1
H	13	15	17	21

Ball joint

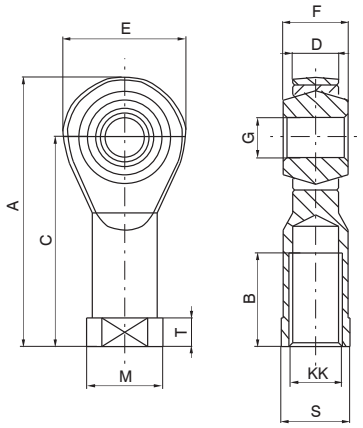
Coding: 12X.Ø.10

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 ball joint (AISI 304 and 420)

Mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of stainless steel AISI 304 and 420.





Bore	16	20	25	32	40	50	63
A	40	48	57	57	66	66	85
B	12	16	20	20	22	22	28
C	30	36	43	43	50	50	64
D	6,75	9	10,5	10,5	12	12	15
E	20	24	28	28	32	32	42
F	9	12	14	14	16	16	21
G (H 7)	6	8	10	10	12	12	16
KK	M6	M8	M10X1,25	M10X1,25	M12X1,75	M12X1,75	M16X1,5
M	13	16	19	19	22	22	27
S	11	14	17	17	19	19	22
T	5	5	6,5	6,5	6,5	6,5	8
Weight (g)	25	25	75	75	112	112	222

Fork with pin

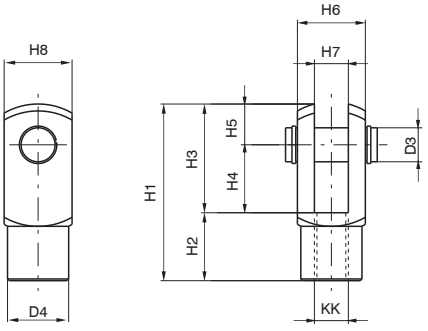
Coding: 12X.Ø.04

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

The kit comprises:
n° 1 fork (AISI 303)
n° 1 pin (AISI 316)
n° 2 circlips (AISI 420)

Mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element. Made of stainless steel.





Bore	D3	D4	H1	H2	H3	H4	H5	H6	H7 (B12)	H8	KK	Weight (g)
16	6	10	31	12	19	12	7	12	6	12	M6X1	20
20	8	14	42	16	26	16	10	16	8	16	M8X1.25	45
25	10	18	52	20	32	20	12	20	10	20	M10X1.25	90
32	10	18	52	20	32	20	12	20	10	20	M10X1.25	90
40	12	20	62	18	38	24	14	24	12	24	M12X1.75	121
50	12	20	62	18	38	24	14	24	12	24	M12X1.75	121
63	16	26	83	32	51	32	19	32	16	32	M16X1.5	340

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1303-1308

They conform to CNOMO standards, fully complying with CETOP and ISO standards, with mounted fixing devices 32 to 100.

Construction characteristics

Cushion bushings	aluminium
Piston rod bushings	brass (Ø32, Ø40, Ø50) in aluminium with self-lubricating bearings in sinterized bronze for the remaining bores
Barrel	oxidised aluminium
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (FPM seals available upon request)
Pistons	aluminium lathed from bar
Piston rod	C43 chromed steel, by thickness or stainless steel
End caps	solid aluminium bar up to Ø100, alloy aluminium from Ø125 to Ø200
Tie rods	steel with rolled threads

Operational characteristics

Fluid	filtered and lubricated air - hydraulic oil (with special bushing)
Pressure	max. 12 bar (air) - 20 bar (oil)
Working temperature	-5 °C ... +70 °C with 1303 ... 1308 standard seals -5 °C ... +80 °C with FPM seals for 1306 ... 1308 Series (magnetic piston) -5 °C ... +150 °C with FPM seals for 1303 ... 1305 Series (non magnetic piston)

Cushioning lenght	Ø	32	40	50	63	80	100	125	160	200
	mm	20	20	22	24	24	25	27	35	35

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version

From 0 to 150 every 25 mm; from 150 to 500 every 50 mm; from 500 to 1000 every 100 mm. (for all diameters).
On request are available strokes up to: 2800 mm

Single acting version

up to stroke 50 mm.

Minimum and maximum springs load for single acting version

Bore	Ø32	Ø40-50	Ø63	Ø80 - Ø100
Min. load (N)	17	25	50	100
Max. load (N)	50	80	115	200

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

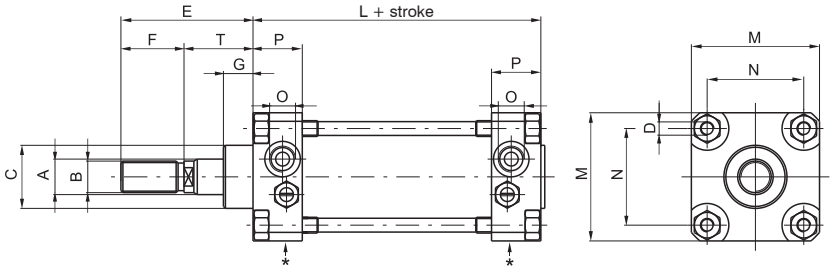
Basic version

Coding: 13Ⓝ.Ø.stroke.01AⒼⓂⓈ

Ⓝ	STANDARDS
	03 = CNOMO (Non magnetic rod)
	04 = CETOP (Non magnetic piston)
	05 = ISO (Non magnetic piston)
	06 = CNOMO (Magnetic piston)
	07 = CETOP (Magnetic piston)
	08 = ISO (Magnetic piston)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
Ⓜ	SPRING
	= Double acting
	MA = Front springs (Ø32 ... Ø125)*
	MP = Rear springs (Ø32 ... Ø125)*
Ⓢ	PISTON ROD
	= C43 chromed steel piston rod
	X = Stainless steel piston rod

* max. stroke 50



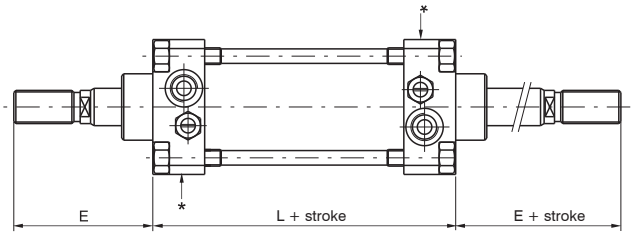


Through rod cylinder version

Coding: 13Ⓝ.Ø.stroke.02AⒼⓈ

Ⓝ	STANDARDS
	03 = CNOMO (Non magnetic rod)
	04 = CETOP (Non magnetic piston)
	05 = ISO (Non magnetic piston)
	06 = CNOMO (Magnetic piston)
	07 = CETOP (Magnetic piston)
	08 = ISO (Magnetic piston)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
Ⓢ	PISTON ROD
	= C43 chromed steel piston rod
	X = Stainless steel piston rod



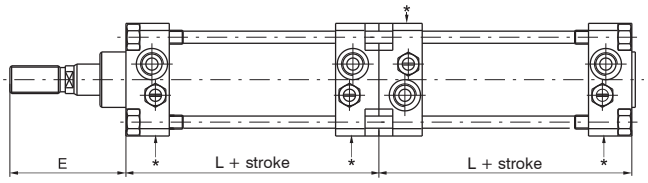


Tandem push with a common rod

Coding: 13Ⓝ.Ø.stroke.H

Ⓝ	STANDARDS
	03 = CNOMO (Non magnetic rod)
	04 = CETOP (Non magnetic piston)
	05 = ISO (Non magnetic piston)
	06 = CNOMO (Magnetic piston)
	07 = CETOP (Magnetic piston)
	08 = ISO (Magnetic piston)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200



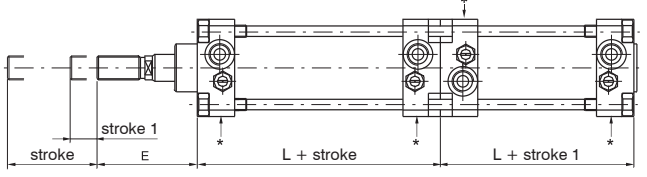


Tandem push with independent rods

Coding: 13Ⓝ.Ø.stroke.stroke1.N

Ⓝ	STANDARDS
	03 = CNOMO (Non magnetic rod)
	04 = CETOP (Non magnetic piston)
	05 = ISO (Non magnetic piston)
	06 = CNOMO (Magnetic piston)
	07 = CETOP (Magnetic piston)
	08 = ISO (Magnetic piston)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200





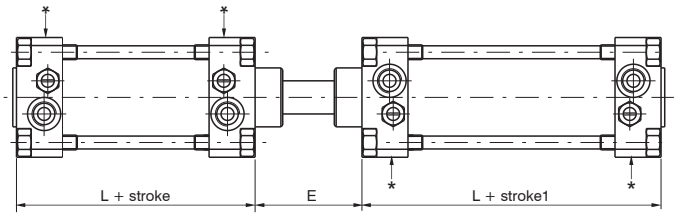
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Opposed tandem with common rods

Coding: 13Ⓝ.Ø.stroke.stroke1.R

Ⓝ	STANDARDS
	03 = CNOMO (Non magnetic rod)
	04 = CETOP (Non magnetic piston)
	05 = ISO (Non magnetic piston)
	06 = CNOMO (Magnetic piston)
	07 = CETOP (Magnetic piston)
	08 = ISO (Magnetic piston)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200



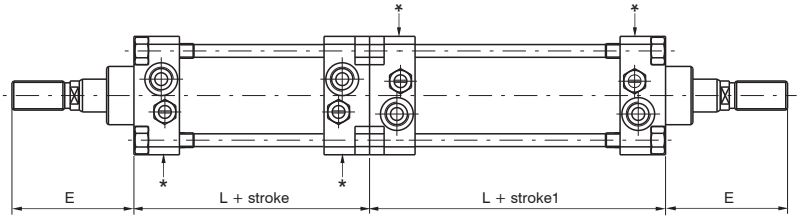


Tandem with opposed rods

Coding: 13Ⓝ.Ø.stroke.stroke1.U

Ⓝ	STANDARDS
	03 = CNOMO (Non magnetic rod)
	04 = CETOP (Non magnetic piston)
	05 = ISO (Non magnetic piston)
	06 = CNOMO (Magnetic piston)
	07 = CETOP (Magnetic piston)
	08 = ISO (Magnetic piston)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200





Note: Cushion adjustment (for Ø32, Ø40, Ø125, Ø160 and Ø200) is on the side indicated by * (see drawings).

Table of dimensions

Bore	32	40	50	63	80	100	125	160	200
A (f7)	12	18	18	22	22	30	30	40	40
B - CNOMO (6g)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M27x2	M36x2	M36x2
B - CETOP (6g)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M24x2	M36x2	M36x2
B - ISO (6g)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
C (d11)	25	32	32	45	45	55	55	65	65
H	2,5	2	2	2	2	2	3	3	3
D	M6	M6	M8	M8	M10	M10	M12	M16	M16
E - CNOMO	45	70	70	85	85	110	110	135	135
E - CETOP	44	52	67	67	82	87	109	152	162
E - ISO	46	52	67	67	82	87	115	152	162
F - CNOMO	20	36	36	46	46	63	63	85	85
F - CETOP	20	24	32	32	40	40	48	72	72
F - ISO	22	24	32	32	40	40	54	72	72
G	15	15	15	20	20	20	20	25	25
M	45	52	65	75	95	115	140	180	220
N	33	40	49	59	75	90	110	140	175
O	G1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 3/4"	G 3/4"
P	16	23	25	31	31	35	36	45	45
T - CNOMO	25	34	34	39	39	47	47	50	50
T - CETOP-ISO	24	28	35	35	42	47	61	80	90
L - CNOMO (±1)	80	110	110	125	125	145	145	180	180
L - CETOP-ISO (±1)	98	110	110	125	136	145	168	180	190

STROKE TOLERANCE: + 2 mm.

WEIGHT IN (g) OF THE CYLINDERS WITH VARIOUS BARRELS (BASIC VERSION)

Bore		32	40	50	63	80	100	125	160	200
Aluminium	Stroke 0	580	1010	1350	2110	3350	5400	7450	13300	18300
	every 10 mm.	24	38	47	63	75	117	130	235	250

FOR CYLINDERS IN TANDEM THE WEIGHT IS APPROXIMATELY DOUBLE

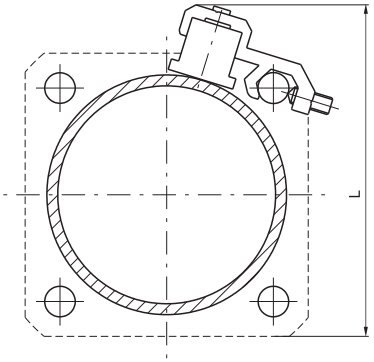
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Sensor brackets codes - 1500._, RS._, HS._

Coding: 1306.Ⓣ

	TYPE
Ⓣ	**A** = from Ø32 to Ø63
	B = from Ø80 to Ø125
	C = Ø160-Ø200





Sensor for microbore cylinders

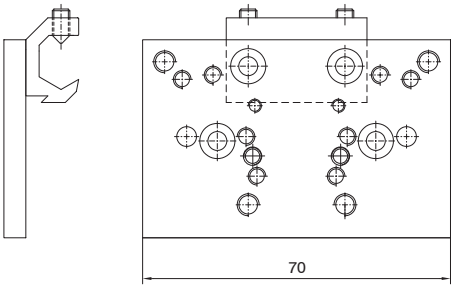
For technical characteristics and ordering codes see the "Magnetic sensors" sections

Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	Ø200
L	59	65	76	87	103	121	144	179	215

Support for solenoid valves

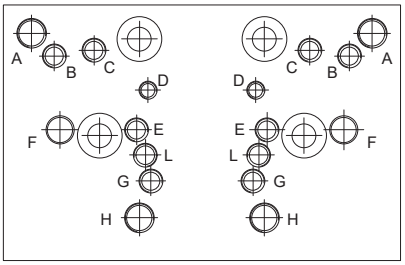
Coding: 1306.15
Ø32 ... Ø100





Fixing holes for valves series:

A = 414/2
B = 824
C = 828, T488, 488, 484
D = 2400
E = 2600
F = Bases for ISO solenoid valves
G = 858/2
H = T424
L = 888_



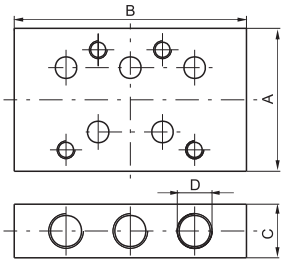
This accessory allows valves or solenoid valves to mount on the side of the cylinder. Support should be anchored to the tie rods and on it either a threaded distributor can be mounted or a base upon which an ISO distributor can be mounted. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.Ⓝ

	STANDARDS
Ⓝ	**21** = ISO1
	22 = ISO2



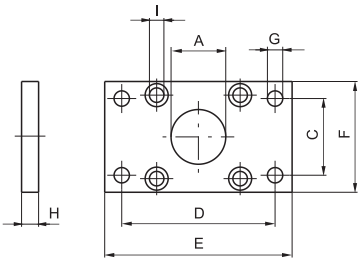


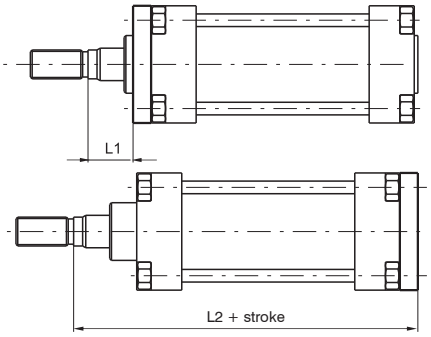
Dimensions				
Bases for solenoid valves	A	B	C	D
ISO 1	40	75	15	G 1/8"
ISO 2	50	95	20	G 1/4"

Front and rear flanges

Coding: 130Ⓝ.Ø.03F

Ⓝ	STANDARDS
	3 = CNOMO
	4 = CETOP - ISO
Ø	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200







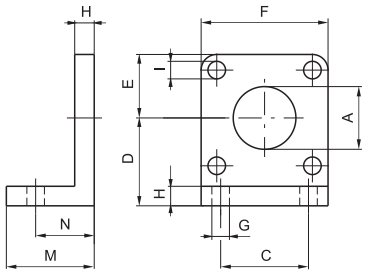
Bore	32	40	50	63	80	100	125	160	200
A (H11)	25	32	32	45	45	55	55	65	65
C - CNOMO (JS 14)	33	40	49	59	75	90	110	140	175
C - CETOP ISO (JS 14)	32	36	45	50	63	75	90	115	135
D - CNOMO (JS 14)	68	78	94	104	130	150	180	228	268
D - CETOP - ISO (JS 14)	64	72	90	100	126	150	180	230	270
E	80	90	110	120	150	170	205	260	300
F	45	52	65	75	95	115	140	180	220
G - CNOMO (H13)	9	9	11	11	14	14	18	22	22
G - CETOP - ISO (H13)	7	9	9	9	12	14	16	18	22
H (JS 14)	8	8	10	10	12	12	16	20	20
I	6,5	6,5	9	9	10,5	10,5	13,5	16,5	16,5
L1 - CNOMO	17	26	24	29	27	35	31	30	30
L1 - CETOP - ISO	16	20	25	25	30	35	45	60	70
L2 - CNOMO	113	152	154	174	176	204	208	250	250
L2 - CETOP - ISO	130	145	155	170	190	205	245	280	300
Weight (g)	165	200	540	1060	1460	1510	3100	6400	9500

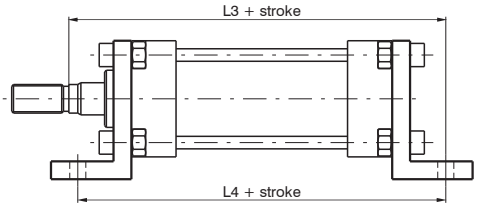
Plate which allows anchorage of the cylinder at a right angle to the plane. It is made of zinc-plated extruded steel.

Standard feet

Coding: 130Ⓝ.Ø.05F

Ⓝ	STANDARDS
	3 = CNOMO
	4 = CETOP - ISO
Ø	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200







Bore	32	40	50	63	80	100	125	160	200
A (H11)	25	32	32	45	45	55	55	65	65
C - CNOMO (JS 14)	28	36	45	55	70	90	100	130	170
C - CETOP ISO (JS 14)	32	36	45	50	63	75	90	115	135
D - CNOMO (JS 15)	32	36	45	50	63	73	91	115	135
D - CETOP - ISO (JS 15)	32	36	45	50	63	71	90	115	135
E	22	26	32	37	47	57	70	90	110
F	45	52	65	75	95	115	140	180	220
G - CNOMO (H14)	9	9	11	11	14	14	18	22	22
G - CETOP (H14)	7	9	9	9	12	14	16	18	22
G - ISO (H14)	7	9	9	9	12	14	16	18	22
H	8	8	10	10	12	12	16	20	20
I	7	7	9	9	11	11	13	17	17
M	35	35	45	45	55	55	68	82	91
N - CNOMO (±0,2)	27	27	35	35	43	43	52	62	62
N - CETOP - ISO (±0,2)	22	25,5	30	30	37	37,5	41	60	65
L3 - CNOMO	132	171	179	199	207	235	244	292	292
L3 - CETOP - ISO	144	163	175	190	215	230	270	320	345
L4 - CNOMO	134	164	180	195	211	231	249	304	304
L4 - CETOP - ISO	142	161	170	185	210	220	250	300	320
Weight (g)	55	70	150	175	260	550	920	2200	3200

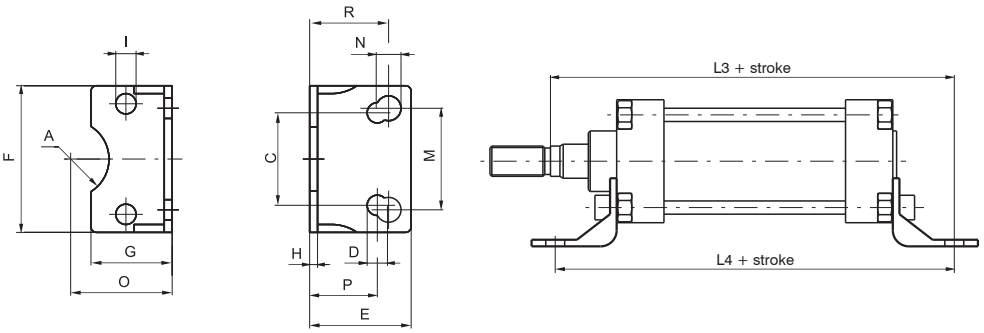
Elements used to anchor the cylinder parallel to the mounting plane. They are made of cast aluminium, painted black.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Short sheet metal feet

Coding: 1303.Ø.05/1F

	BORE
Ø	**32** = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100



CNOMO - CETOP - ISO
(1 piece)



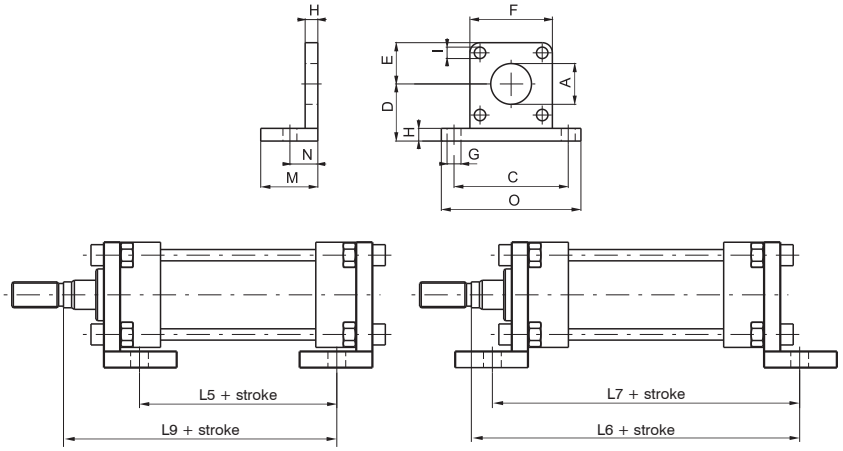
Bore	32	40	50	63	80	100
A	13	17	17	23,5	23,5	-
C - CETOP - ISO (JS 14)	32	36	45	50	63	75
D - CETOP - ISO (JS 15)	7	9	9	9	12	14
E	35	36	45	45	55	56
F	45	52	65	75	95	115
G	30	30	36	35	45	44
H	3,5	3,5	3,5	4,5	5	5
I	7	7	9	9	11	11
M - CNOMO (JS 14)	28	36	45	55	70	90
N - CNOMO (JS 15)	9	9	11	11	13	13
O - CNOMO (JS 15)	32	36	45	50	63	73
O - CETOP - ISO (JS 15)	32	36	45	50	63	71
P - CETOP - ISO (±0,2)	22	25,5	30	30	37	37,5
R - CNOMO (±0,2)	27	27	35	35	43	43
L3 - CNOMO	132	171	179	199	207	235
L3 - CETOP - ISO	144	163	175	190	215	230
L4 - CNOMO	134	164	180	195	211	231
L4 - CETOP - ISO	142	161	170	185	210	220
Weight (g)	58	70	118	184	305	385

Elements used to anchor the cylinder parallel to the mounting plane. They are made of stamped and pierced sheet metal and painted in black. The mounting holes allow use with CNOMO, CETOP and ISO. Available up to 100 mm bore.

Large internal and external feet

Coding: 1303.Ø.Ⓣ F

	BORE
Ø	**32** = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200
Ⓣ	TYPE
	06 = Internal CNOMO (1 piece)May be used with CETOP-ISO cylinders but are not specified in the standards
	07 = External CNOMO (1 piece)





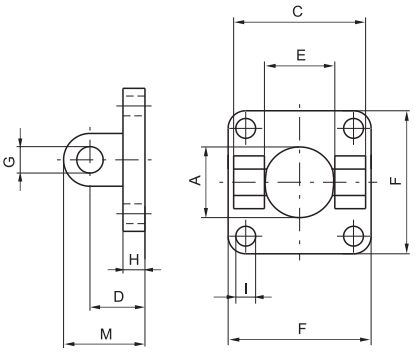
Bore	32	40	50	63	80	100	125	160	200
A (H11)	25	32	32	45	45	55	55	65	65
C (JS 14)	65	72	90	100	126	148	180	230	270
D (JS 15)	32	36	45	50	63	73	91	115	135
E	22	26	32	37	47	57	70	90	110
F	45	52	65	75	95	115	140	180	220
G (H14)	9	9	11	11	14	14	18	22	22
H	8	8	10	10	12	12	16	20	20
I	7	7	9	9	11	11	13	17	17
M	35	35	45	45	55	55	67	80	80
N (±0,2)	18	18	22	22	28	28	32	40	40
O	82	90	110	120	155	180	215	275	315
L5 - CNOMO	60	90	86	101	93	113	113	140	140
L5 - CETOP - ISO	78	90	86	101	104	113	136	140	150
L6 - CNOMO	123	162	166	186	192	220	224	270	270
L6 - CETOP - ISO	141	162	166	186	203	220	247	270	280
L7 - CNOMO	116	146	154	169	181	201	209	260	260
L7 - CETOP - ISO	134	146	154	169	192	201	232	260	270
L9 - CNOMO	95	134	132	152	148	176	176	210	210
L9 - CETOP - ISO	112	128	133	148	162	176	213	240	250
Weight (g)	80	90	190	210	460	600	1080	2400	3100

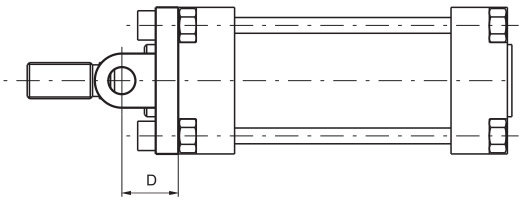
Elements used to anchor the cylinder parallel to the mounting plane. They are made of cast aluminium, painted black.

Front clevis

Coding: 130Ⓝ.Ø.08F

Ⓝ	STANDARDS
	3 = CNOMO
	4 = CETOP-ISO
Ø	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200







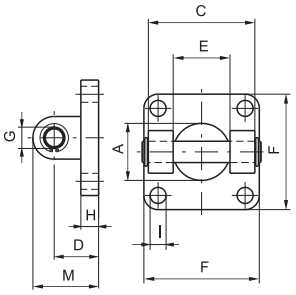
This type of mounting allows anchorage of the cylinder both parallel and at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary. It is made of aluminium alloy and painted black.

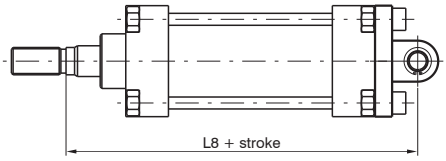
Bore	32	40	50	63	80	100	125	160	200
A	25	32	32	45	45	55	55	65	65
C - CNOMO (H1)	45	52	65	75	95	115	140	180	220
C - CETOP - ISO (H14)	45	52	60	70	90	110	130	170	170
D - CNOMO (±0,2)	18	24	26	30	32	37	41	55	55
D - CETOP (±0,2)	20	22	25	30	32	37	46	55	55
E - CNOMO (H14)	26	33	33	47	47	57	57	72	72
E - CETOP (H14)	26	28	32	40	50	60	70	90	90
F	45	52	65	75	95	115	140	180	220
G - CNOMO (H9)	8	12	12	16	16	20	20	25	25
G - CETOP - ISO (H9)	10	12	12	16	16	20	25	30	30
H	8	8	10	10	12	12	16	19	19
I	7	7	9	9	11	11	13	17	17
M - CNOMO	26	36	38	46	48	57	61	80	80
M - CETOP - ISO	30	35	37	46	48	57	71	85	85
Weight (g)	55	60	120	145	325	510	900	2080	3100

Rear clevis complete with pin

Coding: 130Ⓝ.Ø.09F

Ⓝ	STANDARDS
	3 = CNOMO
	4 = CETOP - ISO
Ø	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200







This type of mounting allows anchorage of the cylinder both parallel and at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary. It is made of aluminium alloy and painted black.

Bore	32	40	50	63	80	100	125	160	200
A	25	32	32	45	45	55	55	65	65
C - CNOMO (H1)	45	52	65	75	95	115	140	180	220
C - CETOP - ISO (H14)	45	52	60	70	90	110	130	170	170
D - CNOMO (±0,2)	18	24	26	30	32	37	41	55	55
D - CETOP (±0,2)	20	22	25	30	32	37	46	55	55
E - CNOMO (H14)	26	33	33	47	47	57	57	72	72
E - CETOP (H14)	26	28	32	40	50	60	70	90	90
F	45	52	65	75	95	115	140	180	220
G - CNOMO (H9)	8	12	12	16	16	20	20	25	25
G - CETOP - ISO (H9)	10	12	12	16	16	20	25	30	30
H	8	8	10	10	12	12	16	19	19
I	7	7	9	9	11	11	13	17	17
M - CNOMO	26	36	38	46	48	57	61	80	80
M - CETOP - ISO	30	35	37	46	48	57	71	85	85
L8 - CNOMO	123	168	170	194	196	229	233	285	285
L8 - CETOP - ISO	142	160	170	190	210	230	275	315	335
Weight (g)	75	110	190	280	490	820	1270	2800	3900

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rear male clevis

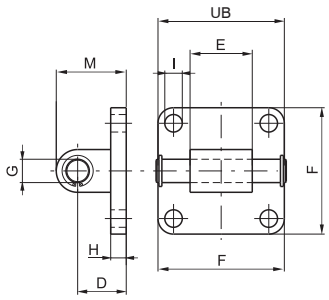
Coding: 1304.Ø.09/1F

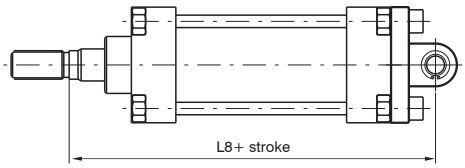
	BORE
Ø	**32** = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200

For CETOP-ISO cylinders May be used with CNOMO cylinders but is not specified in the standards



Similar to 09 clevis except for the connection, which is male rather than female. It can also be used as a counter clevis for type 10 (only CETOP - ISO). Allows mounting of cylinder at right angle to the plane of the cylinder rod.





Bore	32	40	50	63	80	100	125	160	200
D (±0,2)	20	22	25	30	32	37	46	55	55
E (-0,2/-0,6)	26	28	32	40	50	60	70	90	90
F	45	52	65	75	95	115	140	180	220
UB	46	53	61	71	91	111	132	172	172
G (H 9)	10	12	12	16	16	20	25	30	30
H	8	8	8	10	12	12	16	20	20
I	7	7	9	9	11	11	14	18	18
M	30	35	36	45	47	57	71	80	80
L8 - CNOMO	125	166	169	194	196	229	233	285	285
L8 - CETOP - ISO	142	160	170	190	210	230	275	315	335
Weight (g)	50	80	110	185	325	460	1300	2850	3980

Rear clevis bracket

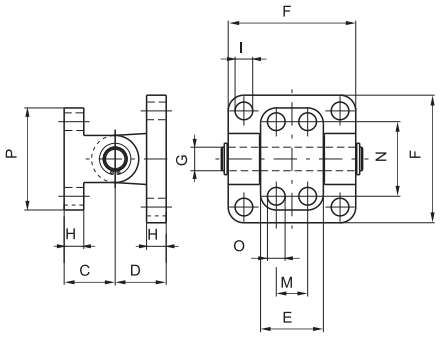
Coding: 1303.Ø.10F

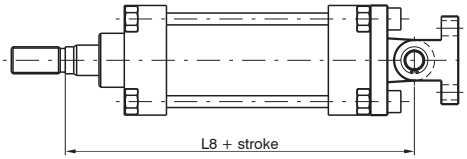
	BORE
Ø	**32** = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200

May be used with CETOP - ISO cylinders but is not specified in the standard



Mounting consists of clevis 09 and counter clevis. Used to mount cylinders at a right angle to the plane to which the counter clevis is attached. Allows selfalignment of the cylinder rod under load with an oscillation of ± 60 degrees





Bore	32	40	50	63	80	100	125	160	200
C (±0,2)	18	26	26	34	34	41	41	55	55
D (±0,2)	18	24	26	30	32	37	41	55	55
E	25	32	32	46	46	56	56	71	71
F	45	52	65	75	95	115	140	180	220
G (H 9)	8	12	12	16	16	20	20	25	25
H	8	10	10	12	12	16	16	20	20
I	7	7	9	9	11	11	13	17	17
M (JS 14)	-	16	16	25	25	32	32	43	43
N (JS 14)	28	38	38	54	54	90	90	150	150
O (H 13)	7	9	9	11	11	14	14	18	18
P	40	52	52	75	75	115	115	180	180
L8 - CNOMO	123	168	170	194	196	229	233	285	285
L8 - CETOP - ISO	140	162	171	190	210	229	270	315	335
Weight (g)	90	165	240	470	665	1190	1660	3700	4700

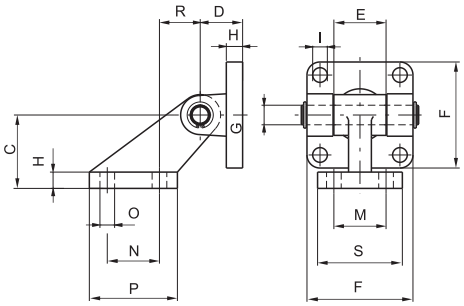
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

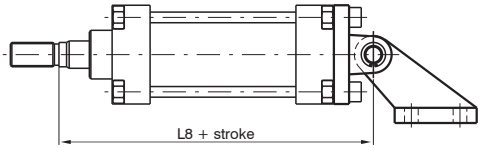
Trunnion with support bracket

1303.Ø.11F

Ø	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200

CNOMO
May be used with CETOP - ISO cylinders but is not specified in the standard







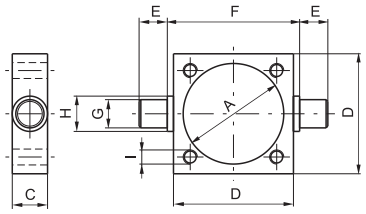
Mounting consists of clevis 09 and right angle counter clevis. Used to mount cylinders parallel to the plane to which the counterclevis is attached. Allows self-alignment of the cylinder rod under load with an oscillation up to 90 degrees from the mounting plane.

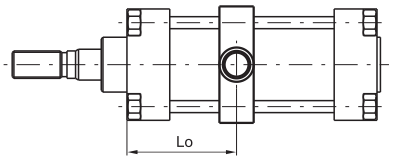
Bore	32	40	50	63	80	100	125	160	200
C (JS 15)	32	45	45	63	63	90	90	140	140
D (±0,2)	18	24	26	30	32	37	41	55	55
E	25	32	32	46	46	56	56	71	71
F	45	52	65	75	95	115	140	180	220
G (H9)	8	12	12	16	16	20	20	25	25
H	8	10	10	12	12	16	16	20	20
I	7	7	9	9	11	11	13	17	17
M (JS14)	25	32	32	40	40	50	50	63	63
N (Js14)	20	32	32	50	50	70	70	110	110
O (JS 13)	7	9	9	11	11	14	14	18	18
P	37	54	54	75	75	102	102	154	154
R	18	25	25	32	32	40	40	50	50
S	41	51	51	62	62	80	80	110	110
L8 - CNOMO	123	168	170	194	196	229	233	285	285
L8 - CETOP - ISO	140	162	171	190	210	229	270	315	335
Weight (g)	125	250	325	600	800	1570	2100	4600	5700

Intermediate trunnion

Coding: 1300.Ø.12F

Ø	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200







Clevis to be mounted between the endcaps of the cylinder allowing rotation at any point along the barrel. One piece construction from zinc-plated stamped steel. Can be mounted in fixed position or attached to adjustable tie rods.
NOTE: Lo max means at stroke 0.

Bore	32	40	50	63	80	100	125	160	200
A	37	46	56	69	87	107	133	170	211
C	15	20	20	25	25	30	32	40	40
D	46	59	69	84	102	125	155	190	240
E (h 14)	12	16	16	20	20	25	25	32	32
F (h 14)	50	63	73	90	108	131	160	200	250
G (e 9)	12	16	16	20	20	25	25	32	32
H	15	20	20	25	25	30	30	40	40
I	M6	M6	M8	M8	M10	M10	M12	M16	M16
Lo min.	32	35	40	47	53	55	61	78	79
Lo max. +stroke - CNOMO	48	75	70	80	72	90	84	103	102
Lo max. + stroke - CETOP - ISO	67	75	70	80	84	90	107	103	112
Weight (g)	130	310	370	700	900	1590	2600	4300	7500

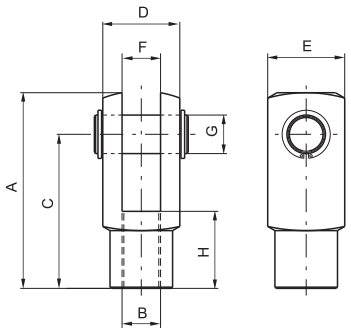
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Fork with pin

Coding: 130Ⓝ.Ø.13F

Ⓝ	STANDARDS
	0 = CNOMO
	1 = CETOP
	2 = ISO
Ø	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200





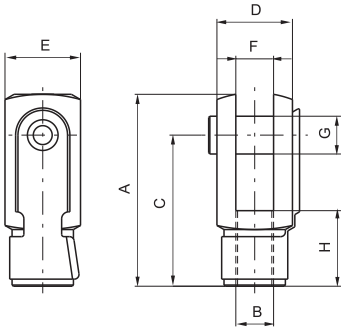
Bore	32	40	50	63	80	100	125	160	200
A - CNOMO	45	64	64	80	80	105	105	140	140
A - CETOP - ISO	51	62	82	82	105	105	132/148	188	188
B - CNOMO (6H)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M27x2	M36x2	M36x2
B - CETOP (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M24x2	M36x2	M36x2
B - ISO (6 H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
C - CNOMO	36	51	51	63	63	85	85	115	115
C - CETOP - ISO	40	48	64	65	80	80	100/100	144	144
D - CNOMO	22	36	36	45	45	63	63	80	80
D - CETOP - ISO	20	24	32	32	40	40	50/55	70	70
E - CNOMO	22	26	26	34	34	42	42	50	50
E - CETOP - ISO	20	24	32	32	40	40	50/55	70	70
F - CNOMO (H 14)	11	18	18	22	22	30	30	40	40
F - CETOP - ISO (B 12)	10	12	16	16	20	20	25/30	35	35
G - CNOMO (H 9)	8	12	12	16	16	20	20	25	25
G - CETOP - ISO (H 9)	10	12	16	16	20	20	25/30	35	35
H - CNOMO	20	26	26	30	30	45	45	75	75
H - CETOP - ISO	20	24	32	32	40	40	50/56	72	72
Weight (g)	90	150	350	350	680	680	2500	4000	4000

Fork with clips

Coding: 130Ⓝ.Ø.13/1F

Ⓝ	STANDARDS
	0 = CNOMO
	1 = CETOP
	2 = ISO
Ø	BORE
	32 = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100





Bore	32	40	50	63	80	100
A - CNOMO	45	64	64	80	80	105
A - CETOP - ISO	51	62	82	82	105	105
B - CNOMO (6H)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2
B - CETOP (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
B - ISO (6 H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
C - CNOMO	36	51	51	63	63	85
C - CETOP - ISO	40	48	64	65	80	80
D - CNOMO	22	36	36	45	45	63
D - CETOP - ISO	20	24	32	32	40	40
E - CNOMO	22	26	26	34	34	42
E - CETOP - ISO	20	24	32	32	40	40
F - CNOMO (H 14)	11	18	18	22	22	30
F - CETOP - ISO (B 12)	10	12	16	16	20	20
G - CNOMO (H 9)	8	12	12	16	16	20
G - CETOP - ISO (H 9)	10	12	16	16	20	20
H - CNOMO	20	26	26	30	30	45
H - CETOP - ISO	20	24	32	32	40	40
Weight (g)	90	150	350	350	680	680

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

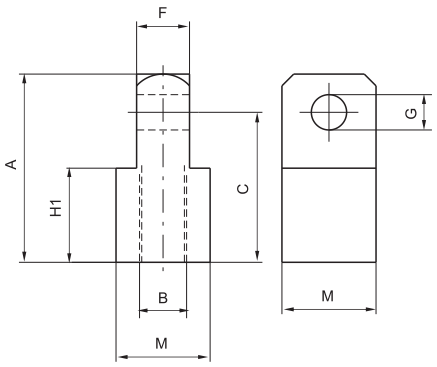
Male fork

Coding: 1300.Ø.14F

	BORE
Ø	**32** = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200

only for CNOMO cylinders





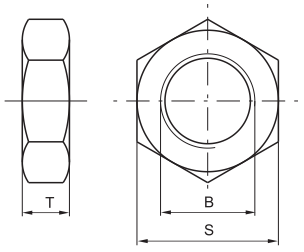
Bore	32	40	50	63	80	100	125	160	200
A - CNOMO	45	64	64	80	80	105	105	140	140
A - CETOP - ISO	51	62	82	82	105	105	132/148	188	188
B - CNOMO (6H)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M27x2	M36x2	M36x2
B - CETOP (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M24x2	M36x2	M36x2
B - ISO (6 H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
C - CNOMO	36	51	51	63	63	85	85	115	115
C - CETOP - ISO	40	48	64	65	80	80	100/100	144	144
F - CNOMO (H 14)	11	18	18	22	22	30	30	40	40
F - CETOP - ISO (B 12)	10	12	16	16	20	20	25/30	35	35
G - CNOMO (H 9)	8	12	12	16	16	20	20	25	25
G - CETOP - ISO (H 9)	10	12	16	16	20	20	25/30	35	35
H1 - CNOMO	20	32	32	40	40	55	55	75	75
M	22	32	32	36	36	45	45	70	70
Weight (g)	113	359	359	500	500	1300	1300	3500	3500

Rod lock nut

Coding: 130Ⓝ.Ø.18F

	STANDARDS
Ⓝ	**0** = CNOMO
	1 = CETOP
	2 = ISO
	BORE
Ø	**32** = Ø 32
	40 = Ø 40
	50 = Ø 50
	63 = Ø 63
	80 = Ø 80
	100 = Ø 100
	125 = Ø 125
	160 = Ø 160
	200 = Ø 200





Bore	32	40	50	63	80	100	125	160	200
B - CNOMO (6H)	M10x1,5	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M27x2	M36x2	M36x2
B - CETOP (6H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M24x2	M36x2	M36x2
B - ISO (6 H)	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
S - CNOMO	17	24	24	30	30	41	41	55	55
S - CETOP	17	19	24	24	30	30	36	55	55
S - ISO	17	19	24	24	30	30	41	55	55
T - CNOMO	6	8	8	9	9	12	12	18	18
T - CETOP	6	7	8	8	9	9	10	18	18
T - ISO	6	7	8	8	9	9	12	18	18
Weight (g)	10	20	20	35	35	80	80	210	210

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1319-1320-1321

This series of pneumatic cylinders is manufactured according to ISO 6431 standards adapted to VDMA 24562 and CNOMO/AFNOR 49003 that guarantee the interchangeability of the cylinders even without mounted anchoring.

Construction characteristics

Cushion bushings	hardened aluminium
Piston rod bushings	self-lubricating sintered bronze
Barrel	oxidised aluminium
Seals	standard: NBR Oil resistant rubber, PUR Piston rod and cushion seals (FPM seals available upon request)
Pistons	vulcanized rubber block on steel core with incorporated plastoferrite permanent magnet, or without magnet for non magnetic version (plus rear spacer).
Piston rod	stainless steel or C43 chromed steel
End caps	from Ø32 to Ø125: UNI 5079 aluminium alloy casting painted black by cataphoresis from Ø160 to Ø200: UNI 3051 aluminium chilled painted black by cataphoresis
Cushion adjustment screws	brass

Operational characteristics

Fluid	filtered and lubricated air
Pressure	max. 10 bar
Working temperature	-5 °C ... +70 °C with standard seals (magnetic or non magnetic piston) -5 °C ... +80 °C with FPM seals for 1319 and 1320 series (magnetic piston) -5 °C ... +150 °C with FPM seals for 1321 series (non magnetic piston)

Cushioning lenght	Ø	32	40	50	63	80	100	125	160	200
	mm	28	32	32	40	44	50	55	55	55

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes (for all diameters)

Double acting version
from 0 to 150, every 25 mm
over 150 up to 500, every 50 mm
over 500 up to 1000, every 100 mm

On request are available strokes up to: 2800 mm

Single acting version
From 32 to 125, up to stroke 50 mm.
On request are available strokes up to: 200 mm

Stroke tolerance (ISO 15552)

Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
	over 500 up to 1000	+3,2 0
63-80-100	up to 500 mm	+2,5 0
	over 500 up to 1000	+4 0
125-160-200	up to 500 mm	+4 0
	over 500 up to 1000	+5 0

Minimum and maximum springs load (stroke 0 ... 50mm)

Bore	Ø32	Ø40	Ø50 - Ø63	Ø80 - Ø100	Ø125
Min. load (N)	15	25	50	100	150
Max. load (N)	40	80	115	200	250

Basic version "01"

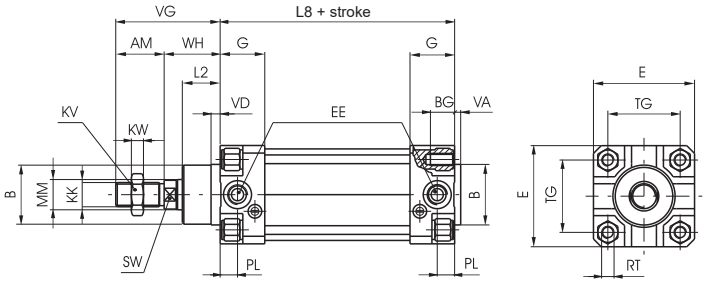
Coding: 13Ⓥ.Ø.stroke.01ⒼⓂ

Ⓥ	VERSION
	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
Ⓜ	SPRING
	= Double acting
	MA = Front springs (Ø32 ... Ø125)*
	MP = Rear springs (Ø32 ... Ø125)*

* max. stroke 50

This is the configuration that represents the basic cylinder according to ISO-VDMA standards. It can be directly anchored on machine parts using the four thread on the end cap. For other applications see the following pages where different types of attachments are shown.



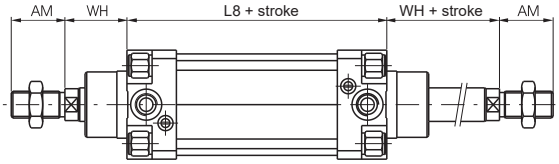


Through rod cylinder version "02"

Coding: 13Ⓥ.Ø.stroke.02Ⓖ

Ⓥ	VERSION
	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓖ	SEALS
	= Standard seals
	V = FPM seals



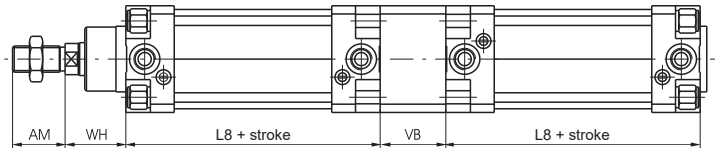


Tandem push with a common rods “G”

Coding: 13Ⓥ.Ø.stroke.G

Ⓥ	VERSION
	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200



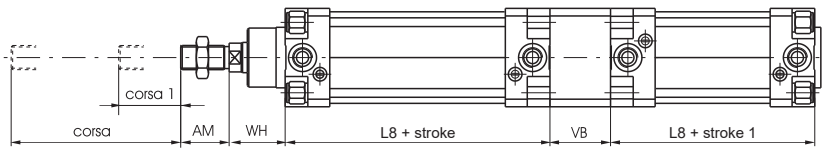


Tandem push with independent rods”F”

Coding: 13Ⓥ.Ø.stroke.stroke1.F

Ⓥ	VERSION
	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200





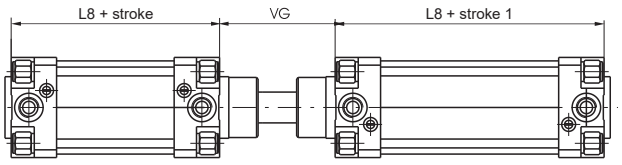
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Opposed tandem with common rod "D"

Coding: 13Ⓥ.Ø.stroke.stroke1.D

Ⓥ	VERSION
	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200





Tandem with opposed rods "E"

Coding: 13Ⓥ.Ø.stroke.stroke1.E

Ⓥ	VERSION
	19 = Magnetic chromed rod
	20 = Magnetic stainless steel rod
	21 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200



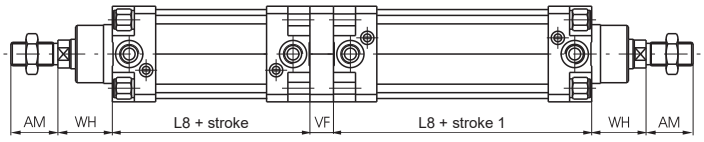


Table of dimensions

Bore		32	40	50	63	80	100	125	160	200
AM		22	24	32	32	40	40	54	72	72
B (d 11)		30	35	40	45	45	55	60	65	75
BG		14	14	16	16	21	21	23	24	24
E		46	52	65	75	95	115	140	180	220
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 3/4"	G 3/4"
G		25	29	29,5	36	36	40	45	49	49
KK		M10X1,25	M12X1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5	M27x2	M36x2	M36x2
KV		17	19	24	24	30	30	41	55	55
KW		6	7	8	8	9	9	12	18	18
L2		16	20	25	25	32	35	45	50	60
L8 *		94	105	106	121	128	138	160	180	180
MM		12	16	20	20	25	25	32	40	40
PL		9	11,5	13	14	16	18	19	24	25
RT		M6	M6	M8	M8	M10	M10	M12	M16	M16
SW		10	13	17	17	22	22	27	32	32
TG		32,5	38	46,5	56,5	72	89	110	140	175
VA		4	4	4	4	4	4	6	5	5
VB		25	30	40	40	50	50	75	70	75
VD		5	6	6	6	10	10	12	10	10
VF		12	12	16	16	20	20	25	30	30
VG		48	54	69	69	86	91	119	152	167
WH		26	30	37	37	46	51	65	80	95
Weight g	Stroke 0	480	730	1150	1600	2800	3600	7800	15000	21500
	every 10 mm	25	32	56	60	90	100	140	265	325

*** For strokes over 50mm, the length does not increase proportionally to the stroke, and allowance must be made for adequate spring allocation (see table of L8 dimensions)**

"L8" dimensions for "rear spring" and "front spring"

Bore	32	40	50	63	80	100	125
L8 (stroke 51 ... 100)	134	150	151	166	183	193	230
L8 (stroke 101 ... 150)	174	195	196	211	238	248	300
L8 (stroke 151 ... 200)	214	240	241	256	293	303	370

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1348-1349-1350, Non rotating cylinders

Construction characteristics

Cushion bushings	2011 UNI 9002/5 hardened alloy aluminium
Barrel	UNI 9006/1 aluminium alloy square section, hardened 30 micron oxidate
Piston seals	NBR oil-resistant rubber, PUR Piston rod and cushions
Pistons	polyacetal resin, self-lubricated and anti-wear, with plastoferrite rings in magnetic version
Piston rod	C43 chromed steel Ra = 0.2
End caps	UNI 5079 aluminium alloy casting painted black by cataphoresis
Cushion adjustment screws	brass

Operational characteristics

Fluid	filtered and lubricated air
Pressure	10 bar
Working temperature	-5 °C ... +70 °C

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Bore	Usable surface (square profile) cm^2	Max couple on the rod (max torque) Nm	Grade precision (rest rod, without load) anti-rotation	Cushion length mm
32	8,31	0,5	12'	22
40	12,41	0,8	12'	27
50	18,41	1,1	12'	27
63	29,67	1,5	12'	32

Standard strokes

Ø32: 25 - 50 - 75 - 80 - 100 - 125 - 150 mm
Ø40: 25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 mm
Ø50: 25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 - 200 - 250 mm
Ø63: 25 - 50 - 75 - 80 - 100 - 125 - 150 - 160 - 200 - 250 - 300 - 320 mm
On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

Bore	Stroke	Tolerance
32 - 40 - 50	up to 500 mm	+2 0
	over 500 mm	+3.2 0
63	up to 500 mm	+2.5 0
	over 500 mm	+4 0

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

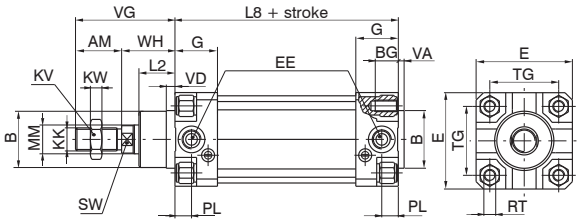
Basic version

Coding: 13Ⓥ.Ø.stroke.01

Ⓥ	VERSION
	48 = Magnetic chromed rod
	49 = Magnetic stainless steel rod
	50 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

This is the configuartion that represents the basic cylinder according to ISO standards. It can be directly anchored on machine parts using the four threads on the end cap.
For other applications see the following pages where different types of attachments shown.





Through rod cylinder version

Coding: 13Ⓥ.Ø.stroke.02

Ⓥ	VERSION
	48 = Magnetic chromed rod
	49 = Magnetic stainless steel rod
	50 = Non magnetic chromed rod
Ø	BORE
	30 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63



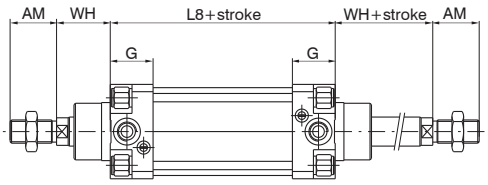


Table of dimensions

Bore		32	40	50	63
AM		22	24	32	32
B (d 11)		30	35	40	45
BG		12	12	16	16
E		46	52	65	75
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"
G		25	29	29,5	36
KK		M10x1,25	M12x1,25	M16x1,5	M16x1,5
KV		17	19	24	24
KW		6	7	8	8
L 2		16	20	25	25
L 8		94	105	106	121
MM		12	16	20	20
PL		9	11,5	13	14
RT		M6	M6	M8	M8
SW		10	13	17	17
TG		32,5	38	46,5	56,5
VA		4	4	4	4
VD		5	6	6	6
VG		48	54	69	69
WH		26	30	37	37
Weight g	Stroke 0	505	705	1320	1710
	every 10 mm	24	33	53	58

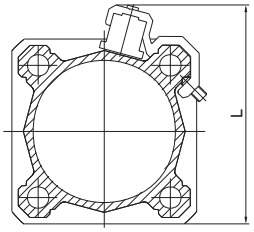
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Sensor brackets codes - 1500._, RS._, HS._

Coding: 1320.Ⓣ

Ⓣ	TYPE
	A = Ø32-Ø40
	B = Ø50-Ø63
	C = Ø80-Ø100
	D = Ø125
	E = Ø160
	F = Ø200





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

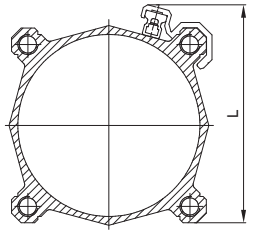
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	Ø200
L	60	65	77	87	105	125	145	184	222

Sensor brackets codes - 1595.HAP

Coding: 1320.Ⓣ

Ⓣ	TYPE
	ASC = Ø32-Ø40
	BSC = Ø50-Ø63
	CSC = Ø80-Ø100
	DSC = Ø125
	ESC = Ø160
	FSC = Ø200





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	Ø200
L	60	65	77	87	105	125	145	184	222

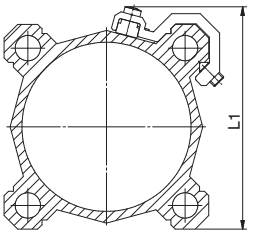
Sensor brackets codes - 1580._,MRS._,MHS

Coding: 1320.Ⓣ

Ⓣ	TYPE
	AS = Ø32-Ø40
	BS = Ø50-Ø63
	CS = Ø80-Ø100

For Ø125, Ø160 and Ø200, use sensor bracket 1595.HAP





Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections

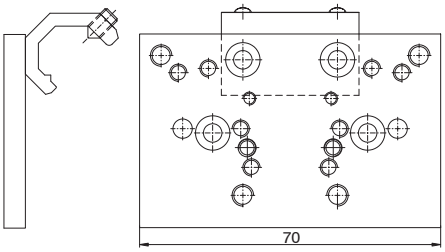
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L1	48	54	66	76	96	112

Support for solenoid valves

Coding: 1320.Ⓣ

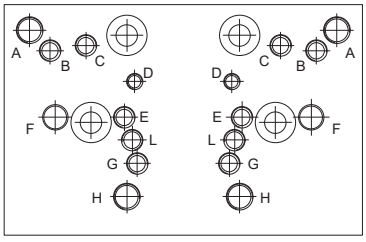
Ⓣ	SIZE
	15 = Ø32-Ø40
	16 = Ø50-Ø63
	17 = Ø80-Ø100
	18 = Ø125
	19 = Ø160
	20 = Ø200





Fixing holes for valves series:

A = 414/2
B = 824
C = 828, T488, 488, 484
D = 2400
E = 2600
F = Bases for ISO solenoid valves
G = 858/2
H = T424
L = 888_



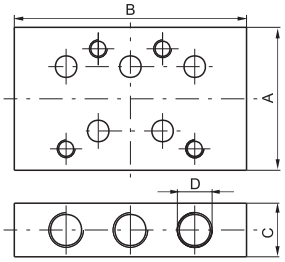
This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel, and, on it, can be mounted either a threaded distributor or a base on whic can be mounted an ISO distributor. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.Ⓝ

Ⓝ	STANDARDS
	21 = ISO1
	22 = ISO2





Dimensions				
Bases for solenoid valves	A	B	C	D
ISO 1	40	75	15	G 1/8"
ISO 2	50	95	20	G 1/4"

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series Ecoplus - High Performance

Profiled tube has two "T" slots on the three sides hosting sensors 1580._, MRS._, MHS._. without adaptors.

Construction characteristics

Piston rod bushings	self-lubricating sintered bronze
Barrel	anodised aluminium alloy
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (PUR seals available upon request)
Pistons	acetal resin, aluminium on request
Piston rod	C43 chromed steel or stainless steel
End caps	Series 1386 ... 1388: high resistant thermoplastic material Series 1396 ... 1398: Die-cast aluminium
Cushion adjustment screws	brass

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Pressure	max 10 bar
Working temperature	-5°C ... +70°C with standard seals -30°C ... +80°C with PUR seals

Bore	Ø	32	40	50	63	80	100
Cushioning lenght	mm	27	31	31	37	40	44
Cushioning lenght "K" and "PK" version	mm	20	20	22	22	32	32

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes (for all diameters)

from 0 to 150, every 25 mm
from 150 to 500, every 50 mm
from 500 to 1000, every 100 mm
On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

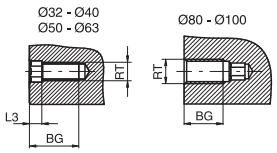
Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
	over 500 up to 1000	+3,2 0
63-80-100	up to 500 mm	+2,5 0
	over 500 up to 1000	+4 0

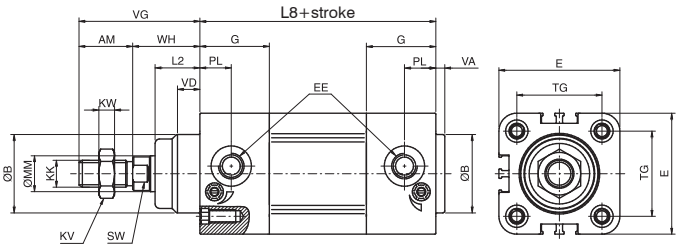
Basic version "01"

Coding: 13Ⓥ.Ø.stroke.01Ⓣ

Ⓥ	VERSION
	86 = Magnetic chromed rod (technopolymer covers)
	87 = Magnetic stainless steel rod (technopolymer covers)
	88 = Non magnetic chromed rod (technopolymer covers)
	96 = Magnetic chromed rod (aluminium covers)
	97 = Magnetic stainless steel rod (aluminium covers)
	98 = Non magnetic chromed rod (aluminium covers)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	100 = Ø100
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston
	PK = Version with PUR seals and aluminium piston





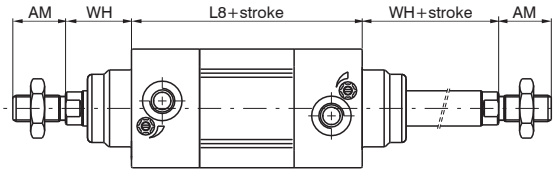


Through rod cylinder version “02”

Coding: 13Ⓥ.Ø.stroke.02Ⓣ

Ⓥ	VERSION
	86 = Magnetic chromed rod (technopolymer covers)
	87 = Magnetic stainless steel rod (technopolymer covers)
	88 = Non magnetic chromed rod (technopolymer covers)
	96 = Magnetic chromed rod (aluminium covers)
	97 = Magnetic stainless steel rod (aluminium covers)
	98 = Non magnetic chromed rod (aluminium covers)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	100 = Ø100
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston
	PK = Version with PUR seals and aluminium piston



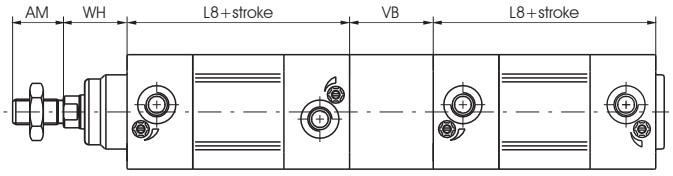


Tandem push with a common rods “G”

Coding: 13Ⓥ.Ø.stroke.GⓉ

Ⓥ	VERSION
	86 = Magnetic chromed rod (technopolymer covers)
	87 = Magnetic stainless steel rod (technopolymer covers)
	88 = Non magnetic chromed rod (technopolymer covers)
	96 = Magnetic chromed rod (aluminium covers)
	97 = Magnetic stainless steel rod (aluminium covers)
	98 = Non magnetic chromed rod (aluminium covers)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	100 = Ø100
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston
	PK = Version with PUR seals and aluminium piston



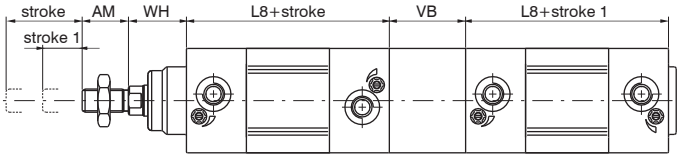


Tandem push with independent rods”F”

Coding:13Ⓥ.Ø.stroke.stroke1.FⓉ

Ⓥ	VERSION
	86 = Magnetic chromed rod (technopolymer covers)
	87 = Magnetic stainless steel rod (technopolymer covers)
	88 = Non magnetic chromed rod (technopolymer covers)
	96 = Magnetic chromed rod (aluminium covers)
	97 = Magnetic stainless steel rod (aluminium covers)
	98 = Non magnetic chromed rod (aluminium covers)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	100 = Ø100
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston
	PK = Version with PUR seals and aluminium piston





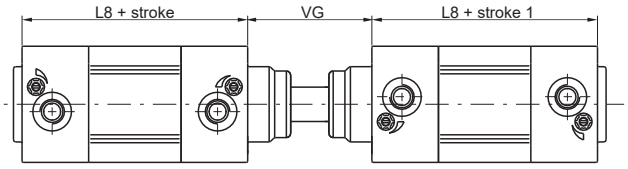
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Opposed tandem with common rod "D"

Coding:13Ⓥ.Ø.stroke.stroke1.DⓉ

Ⓥ	VERSION
	86 = Magnetic chromed rod (technopolymer covers)
	87 = Magnetic stainless steel rod (technopolymer covers)
	88 = Non magnetic chromed rod (technopolymer covers)
	96 = Magnetic chromed rod (aluminium covers)
	97 = Magnetic stainless steel rod (aluminium covers)
	98 = Non magnetic chromed rod (aluminium covers)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	100 = Ø100
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston
	PK = Version with PUR seals and aluminium piston





Tandem with opposed rods "E"

Coding:13Ⓥ.Ø.stroke.stroke1.EⓉ

Ⓥ	VERSION
	86 = Magnetic chromed rod (technopolymer covers)
	87 = Magnetic stainless steel rod (technopolymer covers)
	88 = Non magnetic chromed rod (technopolymer covers)
	96 = Magnetic chromed rod (aluminium covers)
	97 = Magnetic stainless steel rod (aluminium covers)
	98 = Non magnetic chromed rod (aluminium covers)
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	100 = Ø100
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston
	PK = Version with PUR seals and aluminium piston



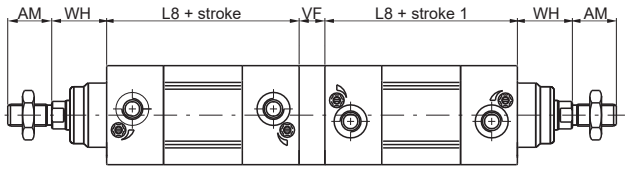


Table of dimensions

Bore	32	40	50	63	80	100
AM	22	24	32	32	40	40
B (d 11)	30	35	40	45	45	55
BG	16	16	18	18	16	16
E	46	54	65	77,5	95,5	115,5
EE	G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"
G	29	31	33	36	40	44
KK	M10X1,25	M12X1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
KV	17	19	24	24	30	30
KW	6	7	8	8	9	9
L2	16	20	25	25	32	35
L3	4	4	5	5	/	/
L8	94	105	106	121	128	138
MM	12	16	20	20	25	25
PL	13	14	14	16	16	18
RT	M6	M6	M8	M8	M10	M10
SW	10	13	17	17	22	22
TG	32,5	38	46,5	56,5	72	89
VA	4	4	4	4	4	4
VB	33	41	51	51	65	71
VD	8	10	12	12	15	16
VF	12	12	16	16	20	20
VG	48	54	69	69	86	91
WH	26	30	37	37	46	51

Aluminium covers							
Weight	Stroke 0	550	690	1200	1590	2500	3670
g	every 10 mm	29	40	57	66	96	112

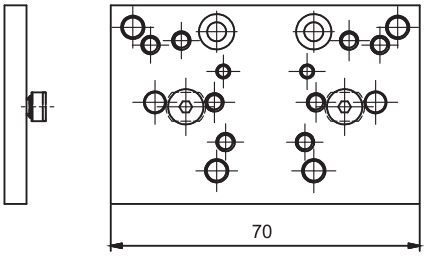
Technopolymer covers							
Weight	Stroke 0	470	590	1020	1320	2090	3010
g	every 10 mm	29	40	57	66	96	112

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Support for solenoid valves

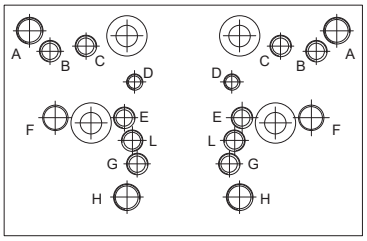
Coding: 1386.15
Attention: do not use ISO distributor for base mounting





Fixing holes for valves series:

A = 414/2
B = 824
C = 828, T488, 488, 484
D = 2400
E = 2600
= 858/2
H = T424



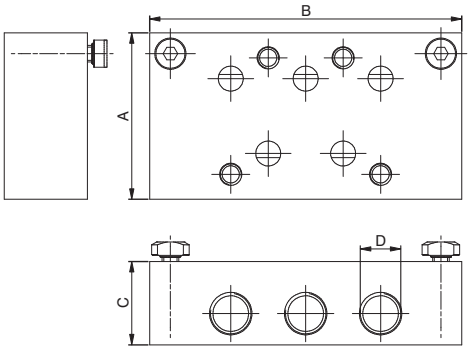
This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel, and, on it, can be mounted either a threaded distributor or a base on whic can be mounted an ISO distributor. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.Ⓝ

	STANDARDS
Ⓝ	**23** = ISO1
	24 = ISO2





Dimensions				
Bases for solenoid valves	A	B	C	D
ISO 1	40	75	15	G 1/8"
ISO 2	50	95	20	G 1/4"

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series Ecolight

Construction characteristics

Piston rod bushings	spheroid bronze on steel band with P.T.F.E. coat
Barrel	anodised aluminium alloy
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals **V** version: FPM **P** version: PUR **Q** version: NBR and PUR with plastic rod scraper with high wear resistance **R** version: PUR with metallic rod scraper **L** version: special PUR
Pistons	Ø32 ... Ø100 acetal resin, aluminium on request Ø125 ... Ø200 aluminium V, Q, R, L Version: aluminium
Piston rod	C43 chromed steel or stainless steel
End caps	die-casting aluminium
Cushion adjustment screws	brass

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous) **L version** (for low temperature): dried air, guarantee a dew point lower than the minimum operating temperature
Pressure	max 10 bar
Working temperature	-5°C ... +70°C with standard seals -30 °C ... +80 °C with PUR seals (**P** version) -5 °C ... +80 °C with FPM seals for 1390 and 1391 series (magnetic piston) (**V** version) -5 °C ... +150 °C with FPM seals for 1392 series (Non magnetic rod) (**V** Version) -20°C ... +80°C (**Q** Version) -10 °C ... +80 °C (**R** Version) -50 °C ... +80 °C (**L** Version)

Bore	Ø	32	40	50	63	80	100	125	160	200
Cushioning lenght	mm	27	31	31	37	40	44	44	50	55
Cushioning lenght, version with aluminum piston	mm	20	20	22	22	32	32	44	50	55

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

VERSIONS WITH ADDITIONAL ROD SCRAPER

Version with plastic rod scraper (Q)
The pneumatic seal is manufactured using a special NBR seal material, with the rod scraper that comes in contact with the external environment made of a plastic material with a high wear resistance. The geometric shape with its excellent scraping capacity guarantees additional protection of the piston rod and nose seal against the impurities, liquids, water, and debris.
Version with metallic rod scraper (R)
The pneumatic seal is manufactured using a special FPM seal material with its own scraping lip with the additional rod scraper that comes into contact with the external environment made of metal. This combination of scraping lip and metal rod scraper enable these actuators to be used in particularly extreme environments.
Here are some examples:
Aluminum foundries: To remove the residues of alumina or fluorine compounds that are deposited on the piston rod during the preparation phase of aluminum casting.
Automotive: To prevent debris which has collected on the piston rod damaging the nose seal during operation especially waste produced during the welding process.
Industrial ovens: To eliminate cement powders or those produced during the manufacture of bricks/tiles Thanks to the high-performance nose seal and scraper protection of the piston rod, the cylinder will be protected against premature wear that you would normally experience using standard cylinders in these harsh environments.
Thanks to the high-performance nose seal and scraper protection of the piston rod, the cylinder will be protected against premature wear that you would normally experience using standard cylinders in these harsh environments.
Low temperature version (L): The special seals compound allows the use of the cylinders up to a temperature of -50°C. The rod scraper seal is equipped with a metallic scraper which removes ice crystals which might form at minus temperature
Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes (for all diameters)

from 0 to 150, every 25 mm
from 150 to 500, every 50 mm
from 500 to 1000, every 100 mm
On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
	over 500 up to 1000	+3,2 0
63-80-100	up to 500 mm	+2,5 0
	over 500 up to 1000	+4 0
125-160-200	up to 500 mm	+4 0
	over 500 up to 1000	+5 0

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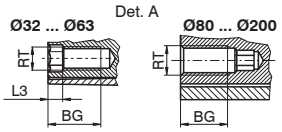
Basic version "01"

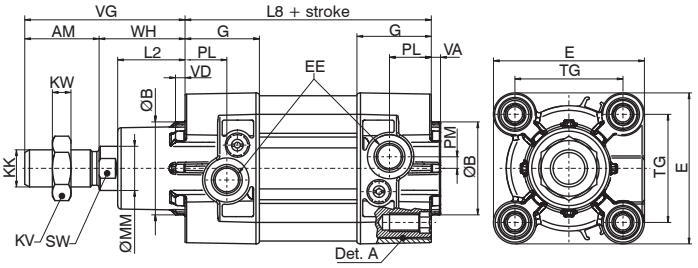
Coding:13Ⓥ.Ø.stroke.01Ⓣ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)

This is the configuration representing the basic cylinder according to ISO–VDMA standards. It can be directly anchored on machine parts using the four threads on the end cap screws. For other applications see "Cylinder section" on the General Catalogue, where different types of attachments are shown.





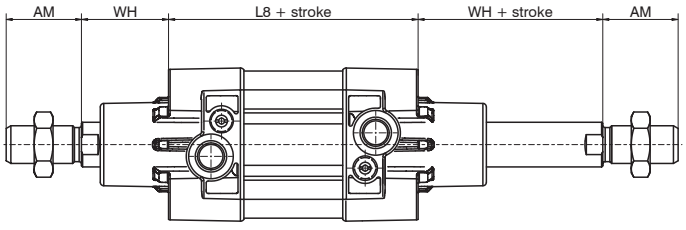


Through rod cylinder version "02"

Coding: 13Ⓥ.Ø.stroke.02Ⓣ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



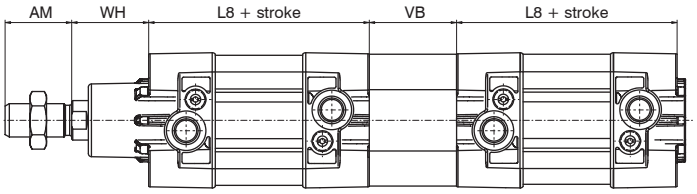


Tandem push with a common rods “G”

Coding: 13Ⓥ.Ø.stroke.GⓉ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



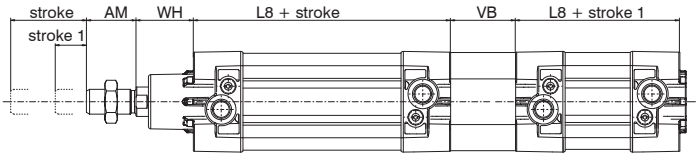


Tandem push with independent rods”F”

Coding: 13Ⓥ.Ø.stroke.stroke1.FⓉ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



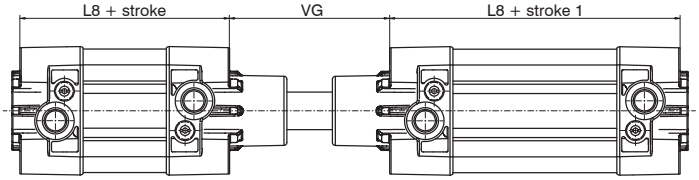


Opposed tandem with common rod ”D”

Coding: 13Ⓥ.Ø.stroke.stroke1.DⓉ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Tandem with opposed rods "E"

Coding: 13Ⓥ.Ø.stroke.stroke1.EⓉ

Ⓥ	VERSION
	90 = Magnetic chromed rod
	91 = Magnetic stainless steel rod
	92 = Non magnetic chromed rod
Ø	BORE
	32 = Ø32
	40 = Ø40
	...
	200 = Ø200
Ⓣ	TYPE
	= Version with NBR seals
	P = Version with PUR seals
	K = Version with aluminium piston (Ø32 ... Ø100)
	PK = Version with PUR seals and aluminium piston (Ø32 ... Ø100)
	V = Version with FPM seals and aluminium piston
	R = Version with PUR seals, with metallic rod scraper and aluminium piston (Ø32 ... Ø100)
	Q = Version with PUR seals, with plastic rod scraper and aluminium piston (Ø32 ... Ø100)
	L = Version for low temperature and aluminium piston (-50°C)



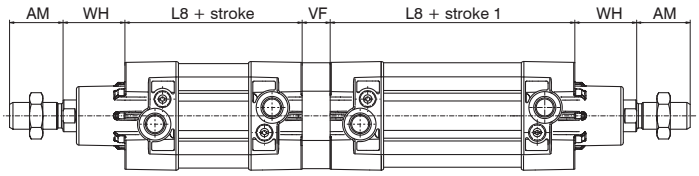
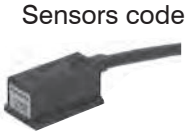


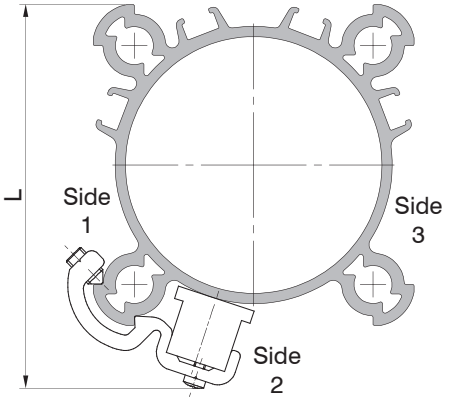
Table of dimensions

Bore		32	40	50	63	80	100	125	160	200
AM		22	24	32	32	40	40	54	72	72
B (d 11)		30	35	40	45	45	55	60	65	75
BG		16	16	18	18	16	16	21	25	25
E		47	54	65	76	95	113	138	180	216
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"	G 1/2"	G 3/4"	G 3/4"
G		29.5	33	32	36	38.5	41.5	48	49	49
KK		M10X1.25	M12X1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2	M36x2	M36x2
KV		17	19	24	24	30	30	41	55	55
KW		6	7	8	8	9	9	12	18	18
L2		19	22	29	29	35	36	45	50	60
L3		4	4	5	5	/	/	/	/	/
L8		94	105	106	121	128	138	160	180	180
MM		12	16	20	20	25	25	32	40	40
PL		13	16	18	18	16	18	25	26	25
PM		3	4	5	4.5	2.5	6	8	11	11
RT		M6	M6	M8	M8	M10	M10	M12	M16	M16
SW		10	13	17	17	22	22	27	36	36
TG		32.5	38	46.5	56,5	72	89	110	140	175
VA		4	4	4	4	4	4	6	6	6
VB		33	41	51	51	65	71	75	70	75
VD		4	4	4	4	4	4	6	6	6
VF		12	12	16	16	20	20	25	30	30
VG		48	54	69	69	86	91	119	152	167
WH		26	30	37	37	46	51	65	80	95
Weight g	Stroke 0	460	650	1030	1360	2180	2890	5700	11200	14900
	every 10 mm	23	32	45	49	75	81	130	195	245

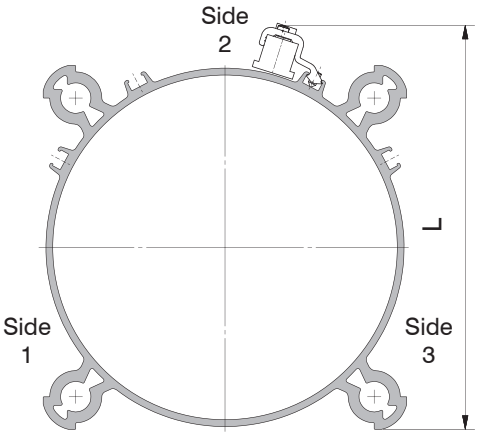
On the ECOLIGHT series it is possible to use three sensor types, according to bore, as indicated below:

Sensors code **1500._**
RS._
HS._

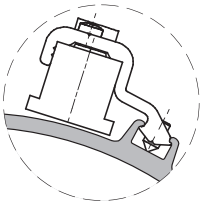




Ø32 ... Ø100 the sensor can be fixed on the three sides as indicated in the drawing, by using suitable bracket (except for Ø32 on side 2)



Ø125 ... Ø200 the sensor can be fixed on the three sides as indicated in the drawing, by using suitable bracket

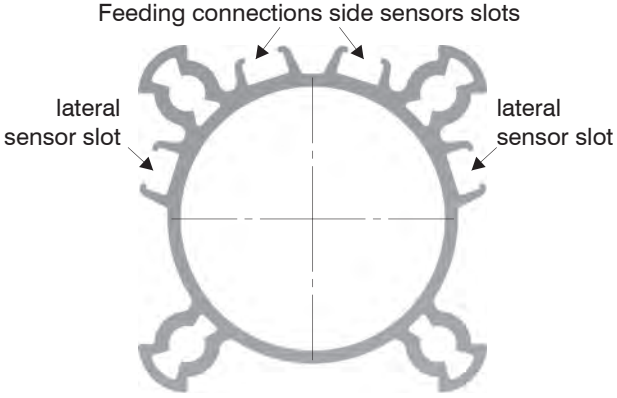


Code	Bore	L
1390.A	Ø32	58
	Ø40	65
1390.B	Ø50	75
	Ø63	86
1390.C	Ø80	105
	Ø100	122
1390.D	Ø125	150
	Ø160	190
	Ø200	225

Sensors code **1580._**
MRS._
MHS._



Feeding connections side sensors slots



Sensors code **1590._**
LRS._
LHS._



1590 series sensor only

1580 and 1590 series sensors

1580 and 1590 series sensors

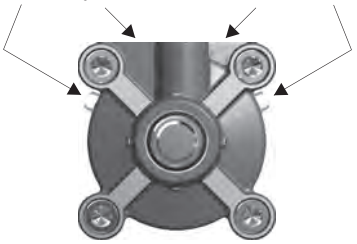


Ø32 ... Ø63



CYLINDERS - BORE SIZES Ø32 ... Ø63
The two slots on connection side are plugged, therefore only sensor 1590 can be used. Suiable for top housing and once placed by means of is screw,it can be fixed in desired position.

1580 and 1590 series sensors

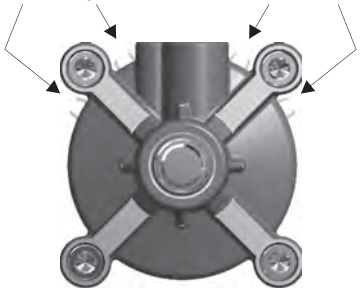


Ø80



CYLINDERS - BORE SIZES Ø80
The two top housing can be accessed from the front of the unit, once housing can be accessed from the front end cap and opposite housing from the rear end cap. It is therefore possible to use both type of sensor: 1580-1590.

1580 and 1590 series sensors



Ø100 ... Ø200



CYLINDERS - BORE SIZES Ø100 ... Ø200
All four housings can be accessed from the front of the unit. It is therefore possible to use both type of sensors: 1580-1590.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

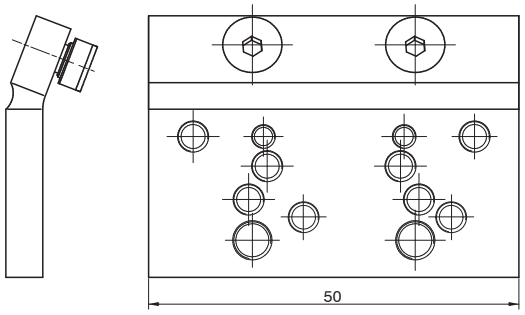
Support for solenoid valves

Coding: 1390.Ⓣ

	SIZE
Ⓣ	**25** = Ø32
	26 = Ø40
	27 = Ø50
	28 = Ø63
	29 = Ø80
	30 = Ø100

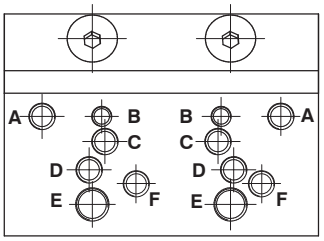
Attention: do not use ISO distributor for base mounting





Fixing holes for valves series:

A = 488 / 484
B = 2400
C = T488
D = 2600
E = T424
F = 888_



This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Series Ecolight - with protective bellows

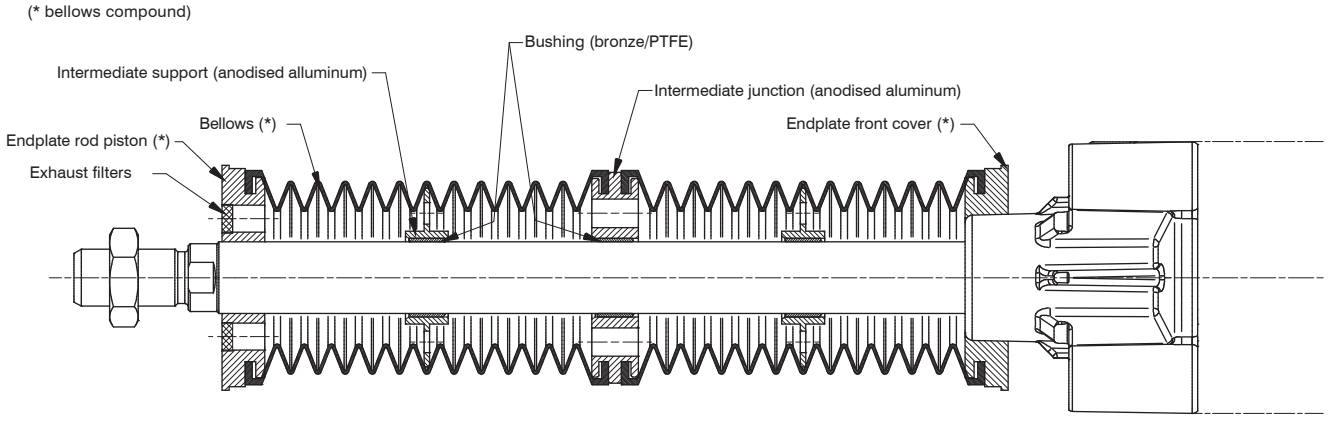
The modular bellows has the function of protecting the piston rod and piston rod nose seal on the Pneumax ECOLIGHT' cylinder range from Ø32 to Ø100 to a maximum stroke length of 1 mtr (all versions excluding cylinders fitted with the Q and R scraper seal).
It is constructed by mounting the bellows in series fixed with end plates mounted on the piston rod and front end cap.
There is also a guide washer with bushing (Sintered bronze/PTFE) placed in the middle of the bellows and guided by the piston rod to prevent the bellows sliding on the rod and to keep the orientation in line with the cylinder.
The bellows can be constructed from three different materials depending on the temperature, application or the possibility of any substance coming into contact with the cylinder.
During operation the bellows extend and retract which means the air contained within the bellows needs to be controlled, this is achieved by;
- NON CONVEYED: a series of breathers/filters on the end plate fitted to the piston rod.
- CONVEYED: a threaded connection on the end cover fitted to the cylinders front end cap.

Assembly is simple and requires a cylinder with extended rod (see ordering codes)

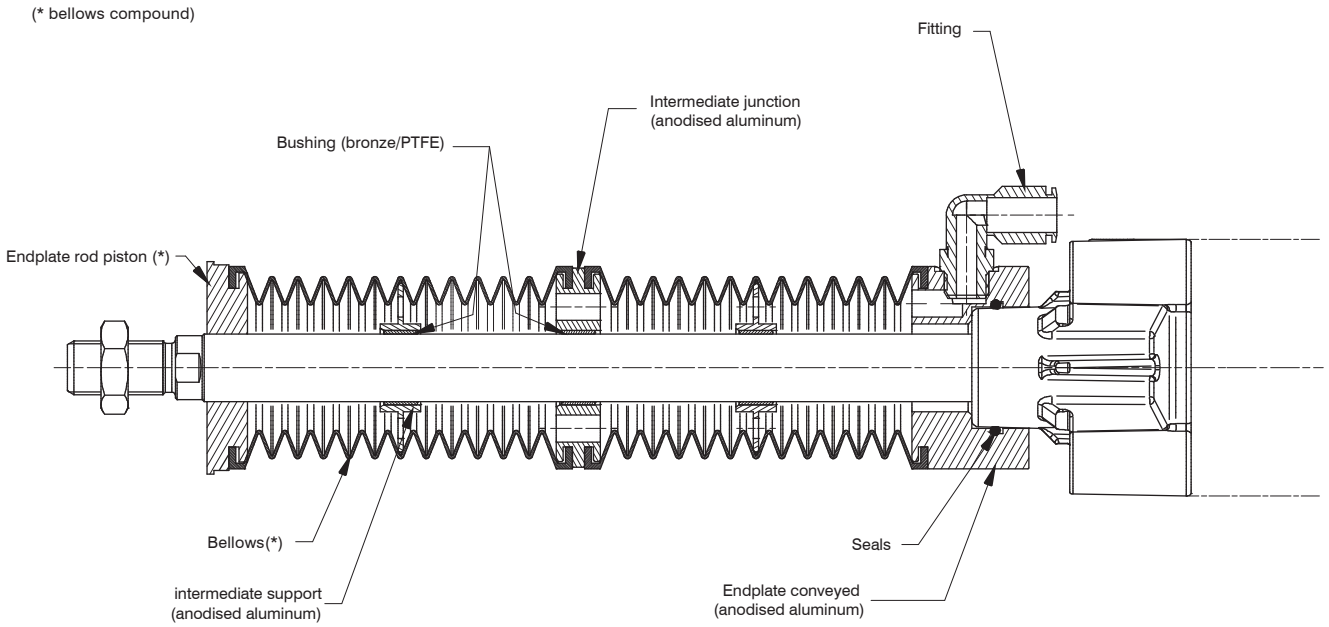
Are available:
-cylinder with bellows
-kit bellows (degrease the surface of the front cover and the piston rod before mounting the bellows terminals by interference).

Construction characteristics

Version with bellows exhaust NOT CONVEYED



Version with bellows exhaust CONVEYED



Notice: with cylinders Ø32 ... 63, use fitting G1/4 tube Ø10 and Ø12
with cylinders Ø80 – 100, use fitting G3/8 tube Ø12 and Ø14

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Operational characteristics

Maximum Speed admissible	1m/sec
Maximum stroke	Ø32 ... Ø63: 980mm – Ø80 ... Ø100: 1140mm
Assembly	endplates for interference with piston rod and front cover (in the conveyed exhaust version, endplate front cover fixed with grub screws)
cylinder orientation	unconcerned
EPDM (black color)	Limit temperatures of using: -40°C/+110°C Ideal for outdoor uses and water applications, Excellent resistance to atmospheric agents, ozone, direct sunlight, water and steam, good resistance to acids and oxygenated solvents, high resistance to permanent deformations, low resistance to oils, mineral greases and hydrocarbons contact.
NBR (black color)	Limit temperatures of using: -40°C/+130°C Application include: aerospace, automotive, high temperature, gas and vaccum application, Not adapted for external using, High resistance to oils, grease, hydrocarbons, water and alcohol, good resistance to air and gas impermeability.
SILICONE (orange color)	Limit temperatures of using: -60°C / +200°C ideal for applications: food, clean, high temperature, atmospheric agents (ozone, water), Maintenance of flexibility even at low temperatures, good elasticity, excellent electro-insulating characteristics, low resistance to oils, mineral greases and hydrocarbons contact, not recommended for contact with ketones or concentrated acids, benzene, High gas pemeability.

The temperatures indicated above refer to the material of the bellows. Therefore, the operating temperature of the assembled bellows + cylinder kit will correspond to the minimum values of the temperatures of the two components, ie those of the cylinders.

Order codes

Cylinder complete with bellows

_ _ . _ . _ _ _ _ . S . _ _ . _ . _ . _

Series cylinder	Bore cylinder	Cylinder stroke	Cylinder seals	Cylinder version	Compounds bellows	Bellows exhaust
FA= 1390	**A**= Ø32	Maximum stroke Ø32 ... Ø63: 980 mm Ø80 ... Ø100: 1140 mm (ATTENTION: for the number of bellows, see the **KIT BELLOWS** order codes)	**0N**= NBR seals	**1**= BASIC version	**N**= NBR	**0**= not conveyed
FB= 1391	**B**= Ø40		**0P**= PUR seals	**2**= THROUGH ROD CYLINDER version	**E**= EPDM	**1**= conveyed
FC= 1392	**C**= Ø50		**0V**=FPM seals for high temperatures		**S**= SILICONE	
	D= Ø63		**0L**=seals for low temperatures			
	E= Ø80		**0K**= NBR seals Aluminum piston			
	F= Ø100		**PK**=PUR seals Aluminum piston			

Kit bellows (without cylinder)

FA . _ . _ _ _ _ . S . 0 . 0 . _ . _

Cylinder bore	Cylinder stroke		Bellows compound	Bellows exhaust
	cylinders Ø32 ... Ø63	cylinders Ø80 ... Ø100		
A= Ø32	**0001**= from 0 to 240mm (n° 1 bellows)	**0001**= from 0 to 280mm (n° 1 bellows)	**N**= NBR	**0**=not conveyed
B= Ø40	**0002**= from 241 to 485mm (n° 2 bellows)	**0002**= from 281 to 570mm (n° 2 bellows)	**E**= EPDM	**1**= conveyed
C= Ø50	**0003**= from 486 to 730mm (n° 3 bellows)	**0003**= from 571 to 855mm (n° 3 bellows)	**S**= SILICONE	
D= Ø63	**0004**= from 731 to 980mm (n° 4 bellows)	**0004**= from 856 to 1140mm (n° 4 bellows)		
E= Ø80				
F= Ø100				

Version with bellows exhaust NOT CONVEYED



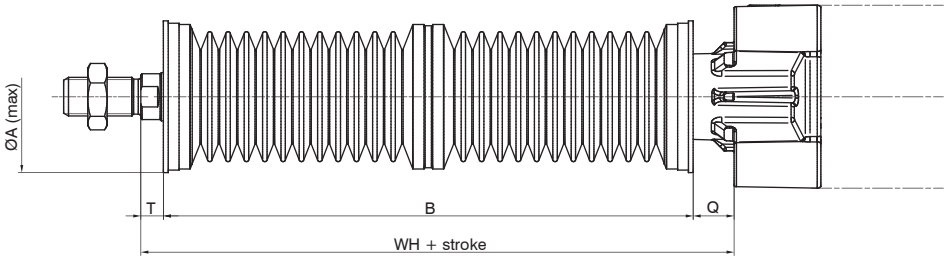


Table of dimensions

Bore	ØA	T	B + stroke				Q	WH + stroke			
Ø32	60	10	60	115	170	225	7	77	132	187	242
Ø40		10,5	60	115	170	225	10	80,5	135,5	190,5	245,5
Ø50		12	60	115	170	225	17	89	144	199	254
Ø63		12	60	115	170	225	17	89	144	199	254
strokes	/	/	0 ... 240	241 ... 485	486 ... 730	731... 980	/	0 ... 240	241 ... 485	486 ... 730	731 ... 980
Ø80	83	14	70	130	195	260	23	107	167	232	297
Ø100		14	70	130	195	260	24	108	168	233	298
strokes	/	/	0 ... 280	281 ... 570	271 ... 855	856 ... 1140	/	0 ... 280	281 ... 570	571 ... 855	856 ... 1140

Version with bellows exhaust CONVEYED



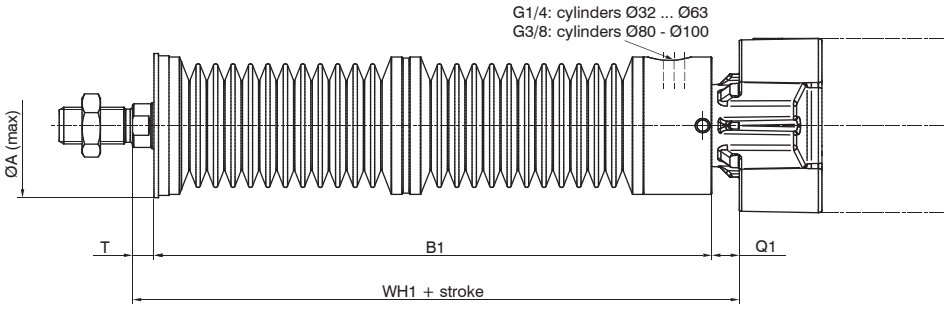


Table of dimensions

Bore	ØA	T	B1 + stroke				Q1	WH1 + stroke			
Ø32	60	10	75	130	185	240	10	95	150	205	260
Ø40		10,5	75	130	185	240	13	98,5	153,5	208,5	263,5
Ø50		12	83	138	193	248	12	107	162	217	272
Ø63		12	83	138	193	248	12	107	162	217	272
strokes	/	/	0 ... 240	241 ... 485	286 ... 730	731 ... 980	/	0 ... 240	241 ... 485	486 ... 730	731 ... 980
Ø80	83	14	94	154	219	284	18	126	186	251	316
Ø100		14	94	154	219	284	19	127	187	252	317
strokes	/	/	0 ... 280	281 ... 570	571 ... 855	856 ... 1140	/	0 ... 280	281 ... 570	571 ... 855	856 ... 1140

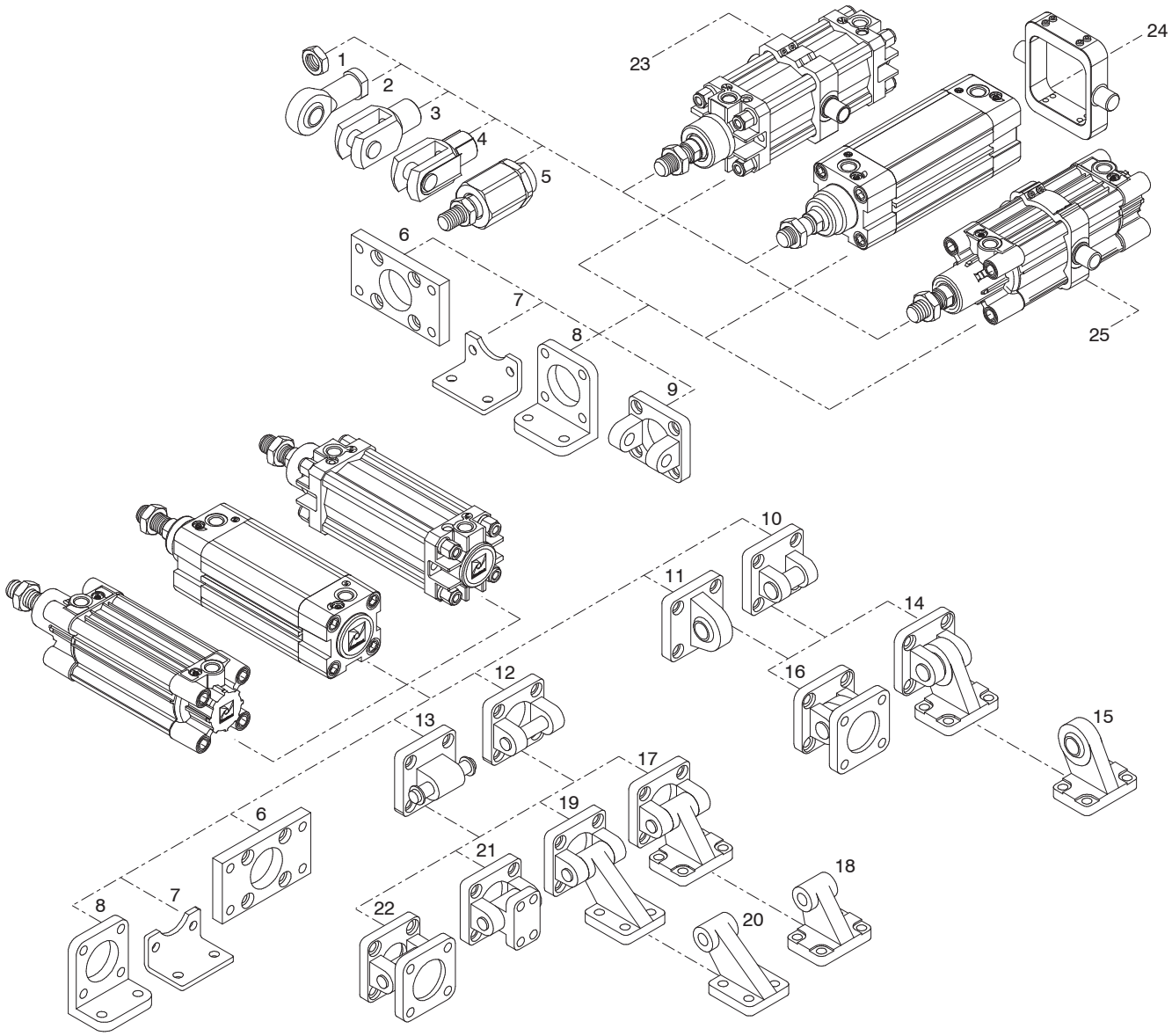
Fixing device

All ISO 15552 series ECOLIGHT cylinder fixing device/accessories and sensors available in the general catalog can be used except to:

- front clevis
- front clevis and normal foot code, not available for Ø32 cylinders in the version with not conveyed exhaust bellows.

in case of cylinder complete of bellows, for the accessories assembly on the front cover is require to take off the bellows kit.
therefore, for the re-assembling, consider the dimension in preceding page about the overall dimensions.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



Position	Description	Aluminium	Steel
1	Nuts	/	1320.Ø.18F
2	Ball joint	/	1320.Ø.32F
3	Fork with pin	/	1320.Ø.13F
4	Fork with clips	/	1320.Ø.13/1F
5	Self-aligning joint	/	1320.Ø.33F
6	Front and rear flange (MF1 - MF2) *	1390.Ø.03FP	1380.Ø.03F
7	Short mounting foot brackets (in sheet metal MS1)	/	1320.Ø.05/1F
8	Standard feet *	1320.Ø.05F	/
9	Front clevis (not specified by ISO-VDMA standards) **	1380.Ø.08F	1320.Ø.19F
10	Rear narrow clevis	1380.Ø.30F	1320.Ø.29F
11	Rear male clevis (with jointed head according to DIN 648K standard)	1380.Ø.15F	1320.Ø.25F
12	Rear clevis (MP2)	1380.Ø.09F	1320.Ø.20F
13	Rear male clevis (MP4)	1380.Ø.09/1F	1320.Ø.21F
14	Complete square angle trunnion (with joined head according to DIN 648K standards) (pos.10 + pos.15)	/	1320.Ø.27F
15	Simple square counter clevis (pos.14)	/	1320.Ø.28F
16	Complete square angle trunnion (with joined head according to DIN 648K standards) (pos.10 + pos.11)	1380.Ø.36F	1320.Ø.26F
17	Square angle trunnion (AB7) (pos.18 + pos.12)	1380.Ø.35F	1320.Ø.23F
18	Simple square counter clevis (pos.17)	1320.Ø.11/2F	1320.Ø.24F
19	Simple rear trunnion with support brackets (not specified by ISO-VDMA standards) (pos.20 + pos.12)	1380.Ø.11F	/
20	Simple square counter clevis (pos.19)	1320.Ø.11/1F	/
21	Standard trunnion (not specified by ISO-VDMA standards)	1380.Ø.10F	/
22	Standard complete trunnion (pos.12 + pos.13)	1380.Ø.22F	1320.Ø.22F
23	1319 ... 1321 cylinders series Intermediate trunnion	1320.Ø.12BF	1320.Ø.12F
24	1386 ... 1388 / 1396 - 1398 Ecoplus series Intermediate trunnion	/	1386.Ø.12F
25	1390 ... 1392 Ecolight series Intermediate trunnion	1390.Ø.12F	/

* Do not use on Ecolight Series cylinders with bellows Ø32
** Do not use on Ecolight Series cylinders with bellows

Front and rear flanges (MF1 - MF2)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	80 = Steel
	90 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
Ⓥ	VERSION
	03F = Steel flange (Ø32 ... Ø200)
	03FP = Aluminium flange (Ø32 ... Ø100)



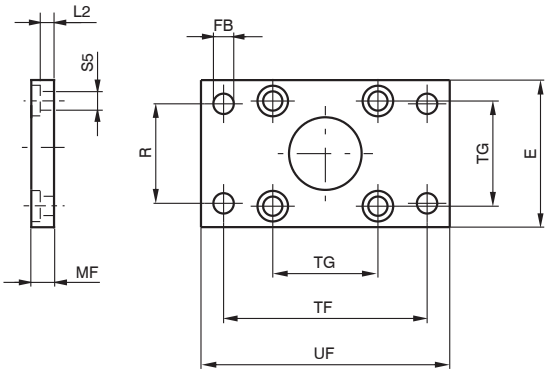
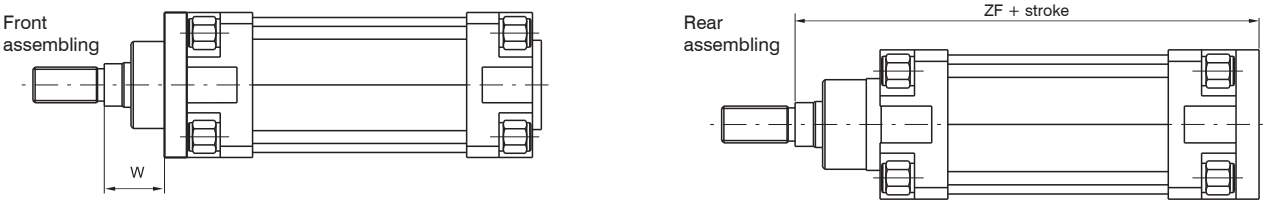


Plate which allows anchorage of the cylinder at a right angle to the plane. It is made of zincplated extruded steel.



Bore	E	FB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	ZF	W	L2	S5	Weight (g) steel	Weight (g) aluminium
32	45	7	10	32	64	32,5	80	130	16	5	6,6	190	60
40	52	9	10	36	72	38	90	145	20	5	6,6	250	69
50	65	9	12	45	90	46,5	110	155	25	6,5	9	480	130
63	75	9	12	50	100	56,5	120	170	25	6,5	9	620	170
80	95	12	16	63	126	72	150	190	30	9	11	1430	345
100	115	14	16	75	150	89	170	205	35	9	11	1990	485
125	140	16	20	90	180	110	205	245	45	10,5	14	3750	/
160	180	18	20	115	230	140	260	280	60	9,5	18	6350	/
200	220	22	25	135	270	175	300	300	70	12,5	18	11350	/

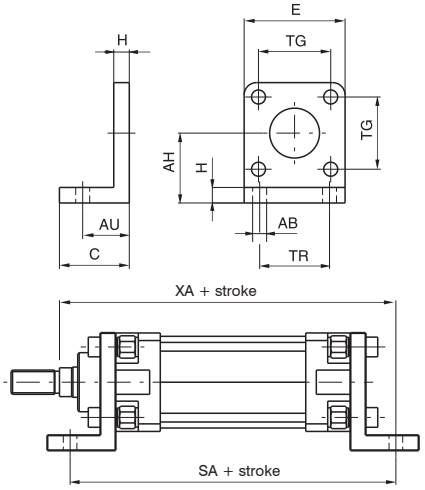
Standard feet

Coding: 1320.Ø.05F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200

Aluminium
(1 piece)





Bore	32	40	50	63	80	100	125	160	200
AB (H 14)	7	9	9	9	12	14	16	18	22
AH (JS 15)	32	36	45	50	63	71	91	115	135
AU (±0,2)	24	28	32	32	41	41	45	60	70
C	35	35	45	45	55	56	68	82	90
E	45	52	65	75	95	115	140	180	220
H	8	8	10	10	12	12	16	20	20
SA	142	161	170	185	210	220	250	300	320
TG	32,5	38	46,5	56,5	72	89	110	140	175
TR (JS 14)	32	36	45	50	63	75	90	115	135
XA	144	163	175	190	215	230	270	320	345
Weight (g)	45	65	140	175	380	470	920	2300	3200

Elements used to anchor the cylinder parallel to the mounting plane.
They are made of cast aluminium, painted black.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

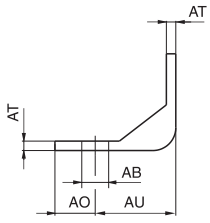
Short mounting foot brackets (in sheet metal MS1)

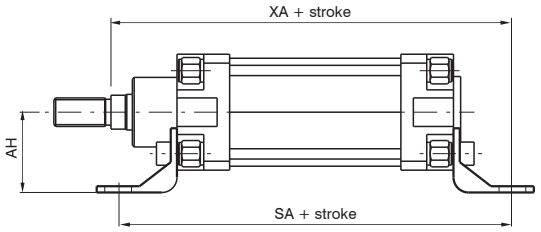
Coding: 1320.Ø.05/1F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200

Steel
(1 piece)







Elements used to anchor the cylinder parallel to the mounting plane.
They are made of steel, and painted black.

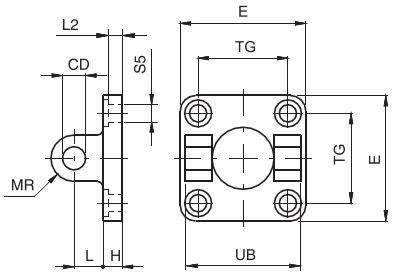
Bore	32	40	50	63	80	100	125	160	200
AB (H 14)	7	9	9	9	12	14	16	18	22
AH (JS 15)	32	36	45	50	63	71	90	115	135
AU (± 0.2)	24	28	32	32	41	41	45	60	70
AO (± 0.2)	11	8	15	13	14	16	25	15	30
E	45	52	65	75	95	115	140	180	220
AT	4	4	5	5	6	6	8	9	12
SA	142	161	170	185	210	220	250	300	320
TG	32,5	38	46,5	56,5	72	89	110	140	175
TR (JS 14)	32	36	45	50	63	75	90	115	135
XA	144	163	175	190	215	230	270	320	345
Weight (g)	65	80	170	190	380	452	1090	1190	3450

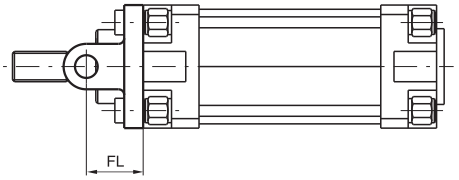
Front clevis (not specified by ISO-VDMA standards)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
Ⓥ	VERSION
	08F = Aluminium front clevis
	19F = Steel front clevis







Used to mount the cylinder either parallel or at a right angle to the mounting plane; allows the cylinder to self-align under load.
Made of aluminium alloy or steel (see ordering code) and painted black.

Bore		32	40	50	63	80	100	125	160	200
CD (H9)		10	12	12	16	16	20	25	30	30
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
FL (±0,2)		22	25	27	32	36	41	50	55	60
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	20	20
L	Aluminium	13	16	16	21	22	27	30	35	35
	Steel	12	15	17	20	22	25	30	35	40
MR		10	12	12	16	16	20	25	25	25
TG		32,5	38	46,5	56,5	72	89	110	140	175
UB (h14)		45	52	60	70	90	110	130	170	170
L2(±0,5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5 (H13)		6,6	6,6	9	9	11	11	14	18	18
Weight (g)	Aluminium	50	75	125	190	380	620	1180	1780	2900
	Steel	150	235	340	550	1010	1710	3360	5750	8960

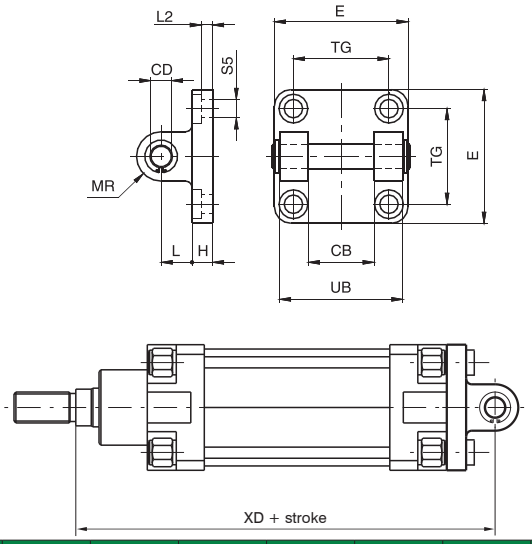
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rear clevis (MP2)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
Ⓥ	VERSION
	20F = Steel rear clevis
	09F = Aluminium rear clevis





Similar to type 08 but includes a hinge pin.
This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load.
Made of aluminium alloy or steel (see ordering code) and painted black.

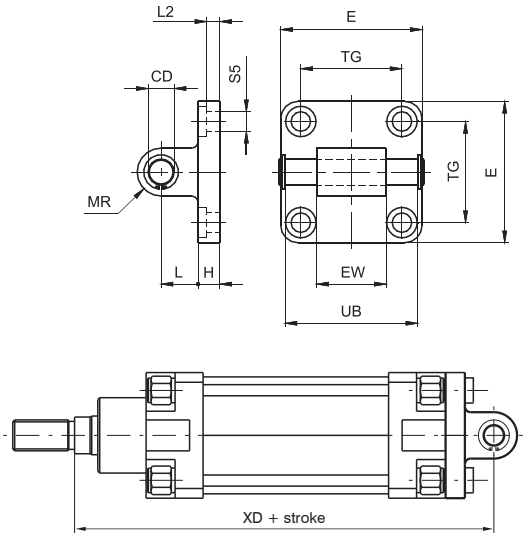
Bore		32	40	50	63	80	100	125	160	200
CB (H 14)		26	28	32	40	50	60	70	90	90
CD		10	12	12	16	16	20	25	30	30
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	20	20
L	Aluminium	13	16	16	21	22	27	30	35	35
	Steel	12	15	17	20	22	25	30	35	40
MR		10	12	12	16	16	20	25	25	25
TG		32,5	38	46,5	56,5	72	89	110	140	175
UB (h14)		45	52	60	70	90	110	130	170	170
XD		142	160	170	190	210	230	275	315	335
L2(±0,5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5		6,6	6,6	9	9	11	11	14	18	18
Weight (g)	Aluminium	80	130	185	310	530	910	1710	2760	3820
	Steel	180	290	400	670	1160	2000	3890	6730	9880

Rear male clevis (MP4)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
Ⓥ	VERSION
	21F = Steel rear male clevis
	09/1F = Aluminium rear male clevis





Similar to 09 clevis except for the connection, which is male rather than female.
Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under load.
Made of aluminium alloy or steel (see ordering code) and painted black.

Bore		32	40	50	63	80	100	125	160	200
CD		10	12	12	16	16	20	25	30	30
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
EW		26 (-0.2/-0.6)	28 (-0.2/-0.6)	32 (-0.2/-0.6)	40 (-0.2/-0.6)	50 (-0.2/-0.6)	60 (-0.2/-0.6)	70 (-0.5/-1.2)	90 (-0.5/-1.2)	90 (-0.5/-1.2)
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	20	20
L	Aluminium	13	16	16	21	22	27	30	35	35
	Steel	12	15	17	20	22	25	30	35	40
MR		10	12	12	16	16	20	25	25	25
TG		32,5	38	46,5	56,5	72	89	110	140	175
UB (-0.5/-0)		46	53	61	71	91	111	132	171,5	171,5
XD		142	160	170	190	210	230	275	315	335
L2 (±0.5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5		6,6	6,6	9	9	11	11	14	18	18
Weight (g)	Aluminium	90	130	190	340	580	960	1890	2830	3940
	Steel	210	330	430	810	1350	2400	4300	6880	8560

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

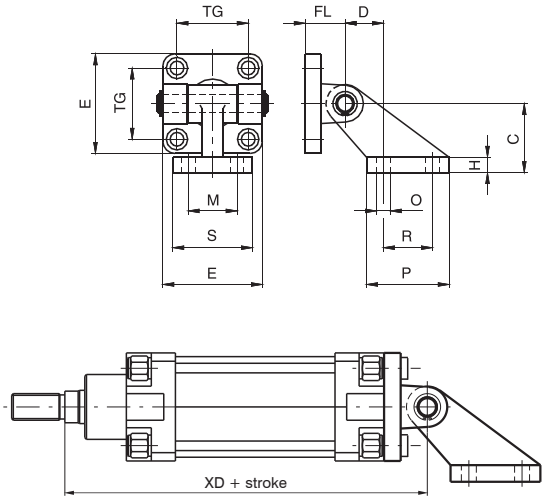
Simple rear trunnion with support brackets (not specified by ISO-VDMA standards)

Coding: 1380.Ø.11F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200

Aluminium
Counter clevis can be ordered separately with code1320.Ø.11/1F





Bore	32	40	50	63	80	100	125	160	200
C (±0,2)	32	45	45	63	63	90	90	140	140
D (±0,5)	18	25	25	32	32	40	40	50	50
E	45	52	65	75	95	115	140	180	220
H	8	10	10	12	12	17	17	20	20
FL	22	25	27	32	36	41	50	55	60
M (JS 14)	25	32	32	40	40	50	50	63	63
TG	32,5	38	46,5	56,5	72	89	110	140	175
O (H 13)	7	9	9	11	11	14	14	18	18
P	37	54	54	75	75	103	103	154	154
R (JS 14)	20	32	32	50	50	70	70	110	110
S	41	52	52	63	63	80	80	110	110
XD	142	160	170	190	210	230	275	315	335
Weight (g)	130	260	330	600	820	1560	2530	4735	5795

Used to mount cylinders parallel to the plane to which the counter clevis is attached. Allows selfalignment of the cylinder rod under load with an oscillation up to 90 degrees from the mounting plane.

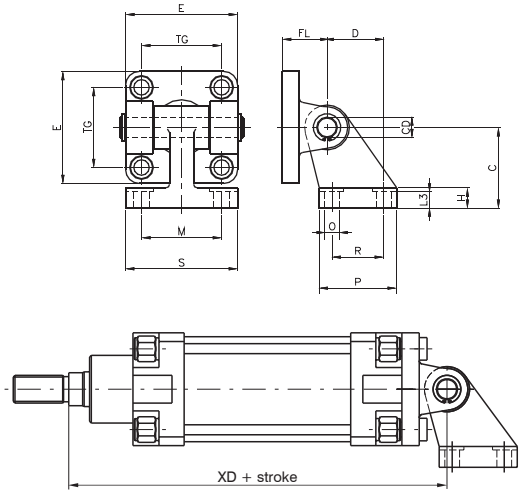
Square angle trunnion (AB7)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
Ⓥ	VERSION
	23F = Steel square angle trunnion (Ø32 ... Ø100)
	35F = Aluminium square angle trunnion

Counter clevis
can be ordered separately with code:
1320.Ø.11/2F (aluminium)
1320.Ø.24F (steel) (Ø32...Ø100)





Bore		32	40	50	63	80	100	125	160	200
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
TG		32,5	38	46,5	56,5	72	89	110	140	175
FL		22	25	27	32	36	41	50	55	60
D (JS14)		21	24	33	37	47	55	70	97	105
CD		10	12	12	16	16	20	25	30	30
C (JS15)		32	36	45	50	63	71	90	115	135
H	Aluminium	8	10	12	14	14	17	20	25	30
	Steel	8	10	12	12	14	15	/	/	/
L3	Aluminium	6,4	8,4	10,4	12,4	11,5	14,5	16,8	21	26
	Steel	6,5	8,5	10,5	10,5	11,5	12,5	/	/	/
R (JS14)		18	22	30	35	40	50	60	88	90
P		31	35	45	50	60	70	90	126	130
O (H13)		6,6	6,6	9	9	11	11	14	14	18
S		51	54	65	67	86	96	124	156	162
M (JS14)		38	41	50	52	66	76	94	118	122
XD		142	160	170	190	210	230	275	315	335
Weight (g)	Aluminium	120	180	225	435	730	1220	2325	3780	4950
	Steel	340	500	640	1250	2100	3500	/	/	/

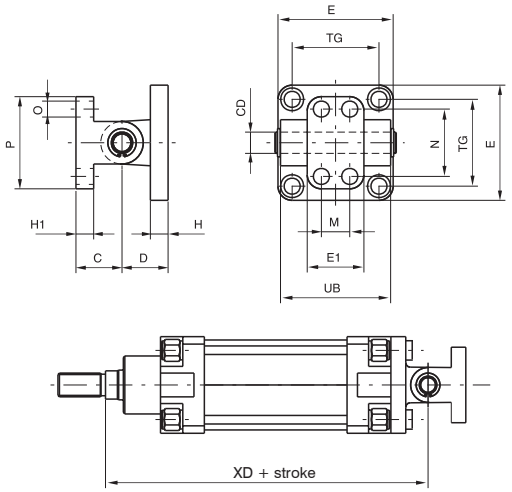
Standard trunnion (not specified by ISO-VDMA standards)

Coding: 1380.Ø.10F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200

Aluminium





Mounting consists of clevis 09 and counter clevis.
Used to mount cylinders at a right angle to the plane to which the counter clevis is attached.
Allows self-alignment of the cylinder rod under load with an oscillation of ± 60 degrees.

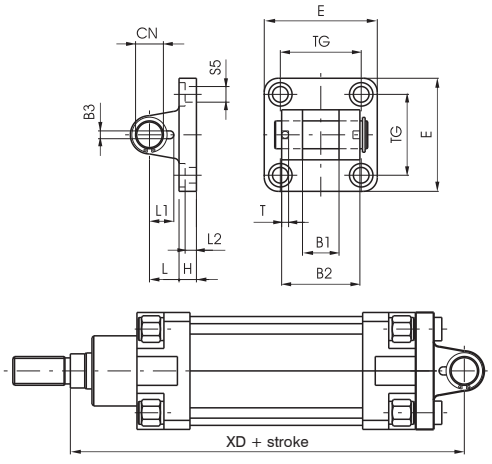
Bore	32	40	50	63	80	100	125	160	200
C (±0.2)	18	26	26	34	34	41	41	55	55
CD	10	12	12	16	16	20	25	30	30
D	22	25	27	32	36	41	50	55	60
E	45	52	65	75	95	115	140	180	220
E1	25	32	32	46	46	56	56	71	71
H	10	10	12	12	16	16	20	20	25
H1	8	10	10	12	12	16	16	20	20
M (±0.2)	-	16	16	25	25	32	32	43	43
N (±0.2)	28	38	38	54	54	90	90	150	150
O	7	9	9	11	11	14	14	18	18
P	40	52	52	75	75	115	115	180	180
TG	32.5	38	46.5	56.5	72	89	110	140	175
UB	45	52	60	70	90	110	130	170	170
XD	142	160	170	190	210	230	275	315	335
Weight (g)	11	190	240	490	710	1290	2090	3690	4810

Rear narrow clevis

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
Ⓥ	VERSION
	29F = Steel rear narrow clevis (Ø32 ... Ø125)
	30F = Aluminium rear narrow clevis





Bore		32	40	50	63	80	100	125	160	200
B1 (H 14)		14	16	21	21	25	25	37	43	43
B2 (d 12)		34	40	45	51	65	75	97	122	122
B3 (+0,2/-0)		3,3	4,3	4,3	4,3	4,3	6,3	6,3	6,3	6,3
CN		10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	/	/
L	Aluminium	13	16	16	21	22	27	30	35	35
	Steel	12	15	17	20	22	25	30	/	/
L1		11,5	12	14	14	16	16	24	26,5	26,5
L2 (±0,5)		5,5	5,5	6,5	6,5	10	10	10	10	11
S5		6,6	6,6	9	9	11	11	14	18	18
T		3	4	4	4	4	4	6	6	6
TG		32,5	38	46,5	56,5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight (g)	Aluminium	70	115	200	290	570	820	1710	3010	4380
	Steel	160	270	370	670	1110	2100	4150	/	/

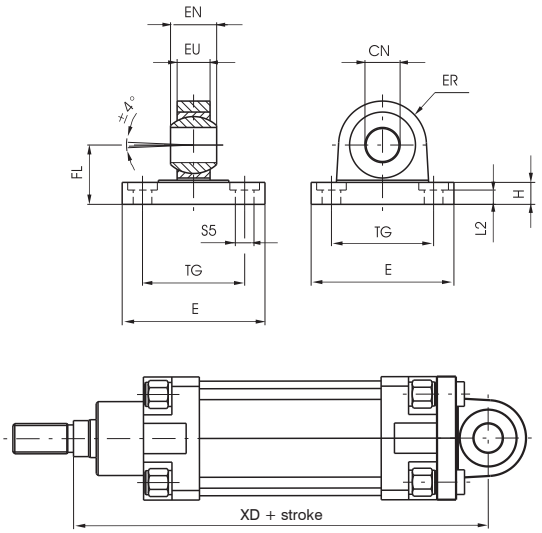
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rear male clevis (with jointed head according to DIN 648K standard)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
Ⓥ	VERSION
	25F = Steel rear male clevis (Ø32 ... Ø125)
	15F = Aluminium rear male clevis





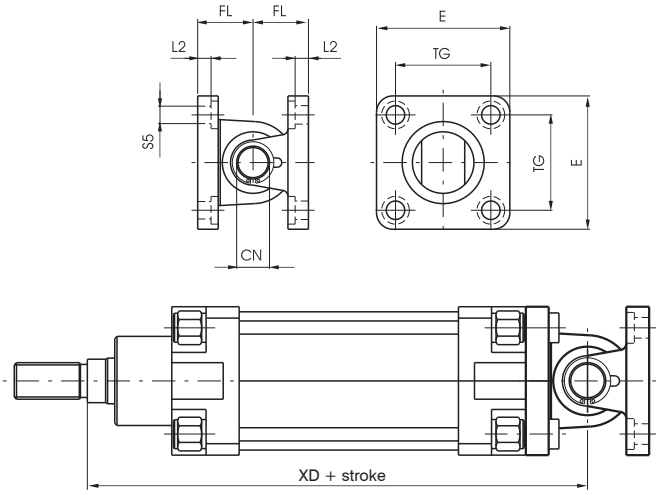
Bore		32	40	50	63	80	100	125	160	200
CN (H 7)		10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
EN (-0.1)		14	16	21	21	25	25	37	43	43
ER	Aluminium	16	19	21	24	28.5	30	40	45	48
	Steel	15	18	20	23	27	30	40	/	/
EU		10.5	12	15	15	18	18	25	28	28
FL (JS 15)		22	25	27	32	36	41	50	55	60
H	Aluminium	9	9	11	11	14	14	20	20	25
	Steel	10	10	10	12	14	16	20	/	/
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10	10	10	11
S5		6.6	6.6	9	9	11	11	14	18	18
TG		32.5	38	46.5	56.5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight (g)	Aluminium	60	100	180	245	480	650	1410	2420	3840
	Steel	210	310	400	710	1350	2400	4000	/	/

Complete standard trunnion (with joined head according to DIN 648K standards)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200
Ⓥ	VERSION
	26F = Steel complete standard trunnion (Ø32 ... Ø125)
	36F = Aluminium complete standard trunnion





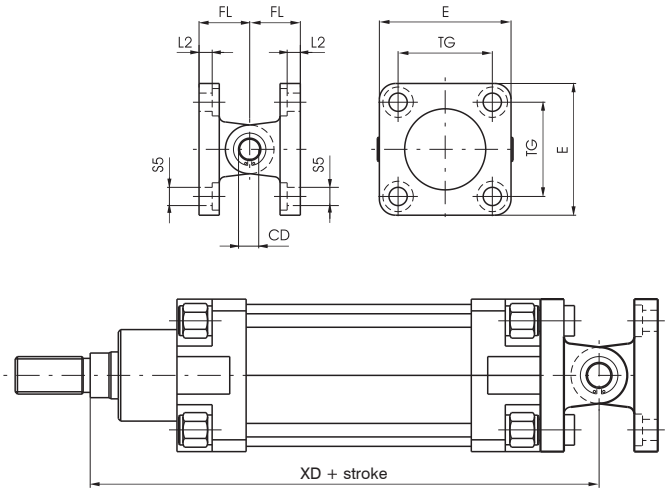
Bore		32	40	50	63	80	100	125	160	200
CN		10	12	16	16	20	20	30	35	35
E	Aluminium	45	52	65	75	95	115	140	180	220
	Steel	45	55	65	75	95	115	140	180	220
FL (JS 15)		22	25	27	32	36	41	50	55	60
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10	10	10	11
S5		6.6	6.6	9	9	11	11	14	18	18
TG		32.5	38	46.5	56,5	72	89	110	140	175
XD		142	160	170	190	210	230	275	315	335
Weight (g)	Aluminium	130	215	380	535	1050	1470	3120	5430	8220
	Steel	380	580	770	1380	2460	4500	8150	/	/

Standard complete trunnion

Coding: 13Ⓜ.Ø.22F

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200





Bore	32	40	50	63	80	100	125	160	200
CD	10	12	12	16	16	20	25	30	30
E	45	55	65	75	95	115	140	180	220
FL	22	25	27	32	36	41	50	55	60
L 2 (±0.5)	5,5	5,5	6,5	6,5	10	10	10	10	11
S 5	6,6	6,6	9	9	11	11	14	18	18
TG	32,5	38	46,5	56,5	72	89	110	140	175
XD	142	160	170	190	210	230	275	315	335
Weight (g)	360	580	780	1370	2370	4110	7670	12650	17480

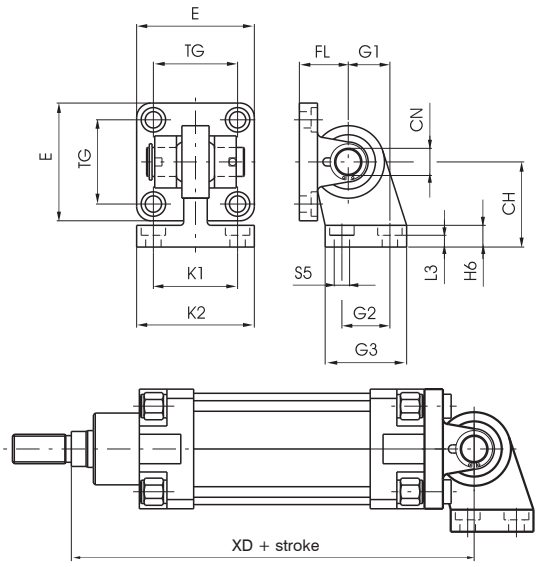
Complete square angle trunnion (with joined head according to DIN 648K standards)

Coding: 1320.Ø.27F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125

Steel
Counter clevis can be ordered separately with code 1320.Ø.28F





Bore	32	40	50	63	80	100	125
CH (JS 15)	32	36	45	50	63	71	90
CN	10	12	16	16	20	20	30
E	45	55	65	75	95	115	140
FL (JS 15)	22	25	27	32	36	41	50
G1 (JS 15)	21	24	33	37	47	55	70
G2 (JS 14)	18	22	30	35	40	50	60
G3	31	35	45	50	60	70	90
H6	10	10	12	12	14	15	20
K1 (JS 14)	38	41	50	52	66	76	94
K2	51	54	65	67	86	96	124
L3 (+0,5/-0)	8,5	8,5	10,5	10,5	11,5	12,5	17
S5	6,6	6,6	9	9	11	11	14
TG	32,5	38	46,5	56,5	72	89	110
XD	142	160	170	190	210	230	275
Weight (g)	330	480	830	1220	2100	3580	7000

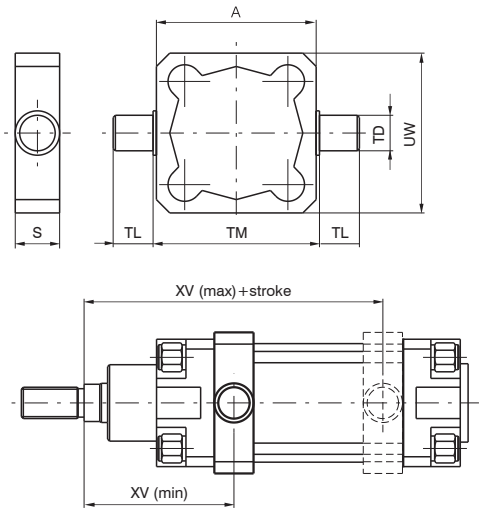
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Intermediate trunnion (Steel)

Coding: 1320.Ø.12F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200





Clevis to be mounted on the barrel to have the centre of rotation of the hinge pin at a point between the end caps of the cylinder. It is attached to the barrel by means of eight pointed grains that block in the "V" groove of the four protruding shapes.
In the case of anchorage subject to heavy use, it is recommended to connect the clevis once the right position has been found.
Attention: mounting of the clevis with contact to the end caps does not allow the use of the magnetic sensors as the switch limits.

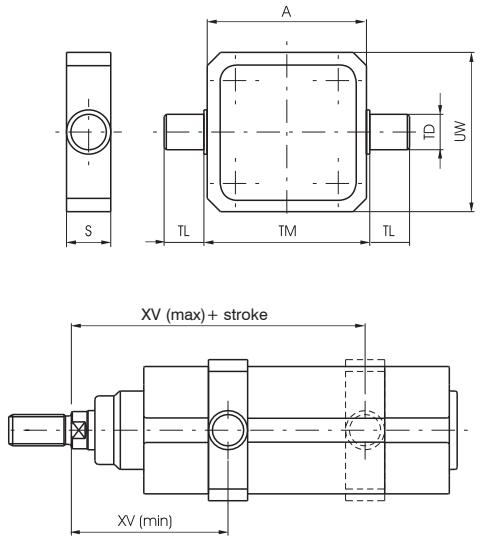
Bore	32	40	50	63	80	100	125	160	200
A	49	62	73	87	109	130	155	190	240
S	18	21	21	27	27	32	32	40	40
TD (e9)	12	16	16	20	20	25	25	32	32
TL (h14)	12	16	16	20	20	25	25	32	32
TM (h14)	50	63	75	90	110	132	160	200	250
UW	59	62	73	87	109	130	155	190	240
XV (max.)	85	96	102	109	123.5	131.5	162	193	204
XV (min.)	61	69	78	86	96.5	108.5	128	150	168
Weight (g)	180	270	330	650	890	1550	1950	3580	5850

Intermediate trunnion (Steel)

Coding: 1386.Ø.12F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Clevis to be mounted on the barrel to have the centre of rotation of the hinge pin at a point between the end caps of the cylinder. It is attached to the barrel by means of eight pointed grains.
In the case of anchorage subject to heavy use, it is recommended to connect the clevis once the right position has been found.
Attention: mounting of the clevis with contact to the end caps does not allow the use of the magnetic sensors as the switch limits.

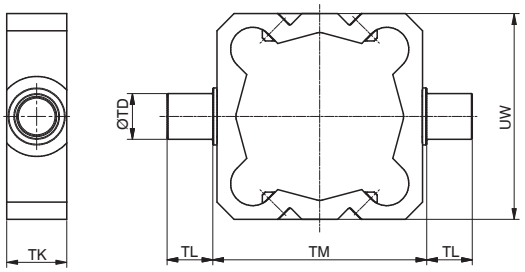
Bore	32	40	50	63	80	100
A	49.8	62.6	74.1	89.1	109.1	130.1
S	18	21	21	27	27	30
TD (e 9)	12	16	16	20	20	25
TL (h 14)	12	16	16	20	20	25
TM (h 14)	50	63	75	90	110	132
UW	70	78	91	94	130	145
XV (max.)	80	91.5	97.5	106.5	118.5	127
XV (min.)	66	73.5	82.5	88.5	101.5	113
Weight (g)	195	350	430	565	1035	1450

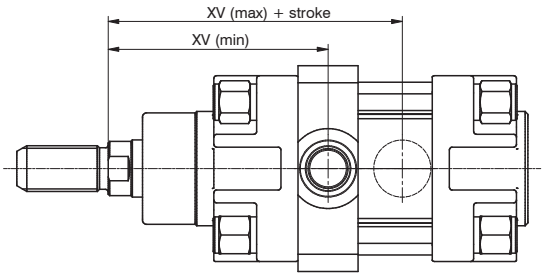
Intermediate trunnion (Aluminium with steel bushes)

Coding: 1320.Ø.12BF

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







Aluminium Intermediate Trunnion with steel bushes to be mounted on the barrel. This solution allows the cylinder to rotate around the hinge which can be mounted in any position between the end caps. It is attached to the barrel by means of 8 grub screws which secure the Trunnion to the extruded barrel
In the case of heavy duty applications it is recommended that the Trunnion is secured using expansion pins. In case off applications with high speed, high load and high pressure please contact our technical office.
Attention: mounting of the clevis with contact to the end caps does not allow the use of the magnetic sensors as the switch limits.

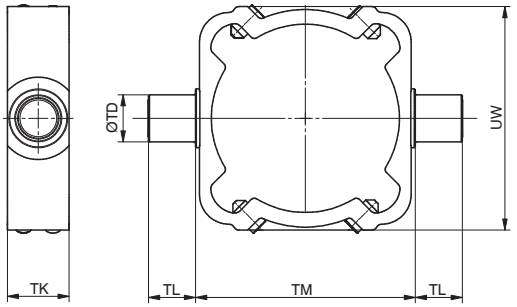
Bore	32	40	50	63	80	100
TD	Ø12	Ø16	Ø16	Ø20	Ø20	Ø25
TL	12	16	16	20	20	25
TM	50	63	75	90	110	132
TK	18	21	21	27	27	32
UW	54	60	72	87	109	130
XV min.	61	69	78	86	96.5	108.5
XV max.	85	96	102	109	123.5	131.5
Weight (g)	70	110	140	280	370	630

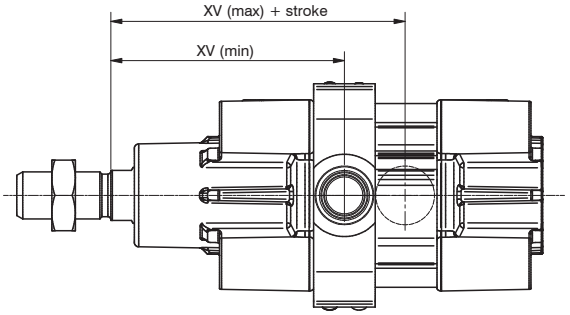
Intermediate trunnion (Aluminium with steel bushes)

Coding: 1390.Ø.12F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







Aluminium Intermediate Trunnion with steel bushes to be mounted on the barrel. This solution allows the cylinder to rotate around the hinge which can be mounted in any position between the end caps. It is attached to the barrel by means of 8 grub screws which secure the Trunnion to the extruded barrel
In the case of heavy duty applications it is recommended that the Trunnion is secured using expansion pins. In case off applications with high speed, high load and high pressure please contact our technical office.
Attention: If the Trunnion is mounted in direct contact with the cylinder end cap, it will not be possible to fit magnetic sensors at the end of stroke 1500._, RS._, HS._ series.

Bore	32	40	50	63	80	100
TD	Ø12	Ø16	Ø16	Ø20	Ø20	Ø25
TL	12	16	16	20	20	25
TM	53*	63	75	90	110	132
TK	18	21	21	27	27	32
UW	56	64	76	92	112	134
XV min.	65	74	80	87	99	109
XV max.	81	91	100	108	121	130.5
Weight (g)	60	100	125	240	320	540

** Ø32, TM: not according to standard ISO 15552*

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

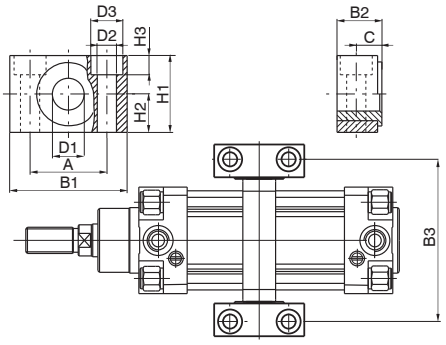
Support for intermediate trunnion

Coding: 1320.Ø.12/1F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	...
	200 = Ø200

(1 piece)
Combining two supports to the intermediate trunnion it is possible to fix the cylinder on plane surface.





Bore	32	40	50	63	80	100	125	160	200
A (±0.2)	32	36	36	42	42	50	50	60	60
B1	46	55	55	65	65	75	75	92	92
B2	18	21	21	23	23	28.5	28.5	40	40
B3	71	87	99	116	136	164	192	245	295
C	10.5	12	12	13	13	16	16	22.5	22.5
D1 (F7)	12	16	16	20	20	25	25	32	32
D2	6.6	9	9	11	11	14	14	18	18
D3	11	15	15	18	18	20	20	26	26
H1	30	36	36	40	40	50	50	60	60
H2 (±0.1)	15	18	18	20	20	25	25	30	30
H3	7	9	9	11	11	13	13	17	17
Weight (g) (1 piece)	100	150	150	235	235	435	435	850	850

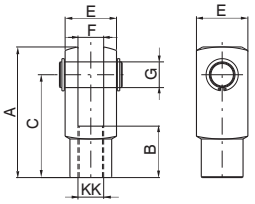
Fork with pin

Coding: 1320.Ø.13F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200

Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zincplated steel.





Bore	32	40	50	63	80	100	125	160	200
A	52	62	83	83	105	105	148	188	188
B	20	24	32	32	40	40	56	72	72
C	40	48	64	64	80	80	110	144	144
E	20	24	32	32	40	40	55	70	70
F(B12)	10	12	16	16	20	20	30	35	35
G	10	12	16	16	20	20	30	35	35
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5	M27X2	M36X2	M36X2
Weight (g)	100	140	340	340	680	680	2500	4000	4000

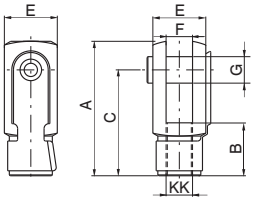
Fork with clips

Coding: 1320.Ø.13/1F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zincplated steel.





Bore	32	40	50	63	80	100
A	52	62	83	83	105	105
B	20	24	32	32	40	40
C	40	48	64	64	80	80
E	20	24	32	32	40	40
F(B12)	10	12	16	16	20	20
G	10	12	16	16	20	20
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5
Weight (g)	100	140	340	340	680	680

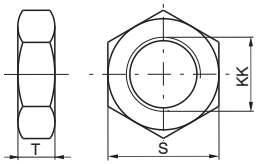
Nuts

Coding: 1320.Ø.18F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	...
	200 = Ø200

Used to block the position of the fork.





Bore	32	40	50	63	80	100	125	160	200
S	17	19	24	24	30	30	41	55	55
T	6	7	8	8	9	9	12	18	18
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5	M27X2	M36X2	M36X2
Weight (g)	15	20	20	20	40	40	100	210	210

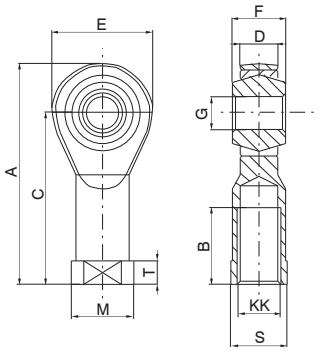
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Ball joint

Coding: 1320.Ø.32F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125
	160 = Ø160
	200 = Ø200





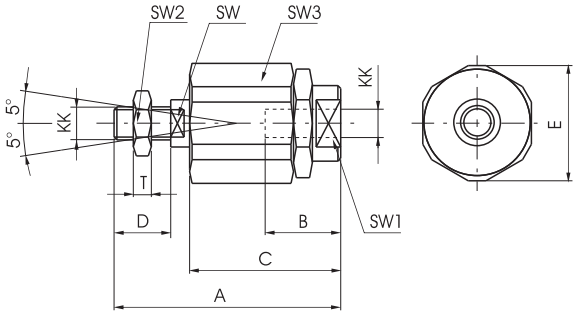
Bore	32	40	50	63	80	100	125	160	200
A	57	66	85	85	102	102	145	165	165
B	20	22	28	28	33	33	51	56	56
C	43	50	64	64	77	77	110	125	125
D (-0.1)	10.5	12	15	15	18	18	25	28	28
E	28	32	42	42	50	50	70	80	80
F	14	16	21	21	25	25	37	43	43
G (H7)	10	12	16	16	20	20	30	35	35
KK	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2	M36x2	M36x2
M	19	22	27	27	34	34	50	58	58
S	17	19	22	22	30	30	41	50	50
T	6.5	6.5	8	8	10	10	15	17	17
Weight (g)	76	110	220	220	410	410	1200	1600	1600

Self-aligning joint

Coding: 1320.Ø.33F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Bore	32	40	50	63	80	100
A	71	75	103	103	119	119
B	20	20	32	32	40	40
C	46	46	63	63	71	71
D	20	24	32	32	40	40
E	32	32	45	45	45	45
KK	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5
SW	12	12	20	20	20	20
SW1	19	19	27	27	27	27
SW2	17	19	24	24	30	30
SW3	30	30	41	41	41	41
T	6	7	8	8	9	9
Weight (g)	220	230	660	660	700	700

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1315, Round tube cylinders

These cylinders are built according to ISO 15552.

Construction characteristics

Cushion bushings	aluminium
Piston rod bushings	sintered bronze
Barrel	oxidised aluminium
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals
Pistons	aluminium
Piston rod	C43 chromed steel
End caps	aluminium alloy casting
Tie rods	steel with rolled threads

Operational characteristics

Fluid	filtered and lubricated air - hydraulic oil (with special bushing)
Pressure	max. 10 bar
Working temperature	-5 °C ... +70 °C
Cushioning lenght	50 mm

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

On request are available strokes up to: 2800 mm

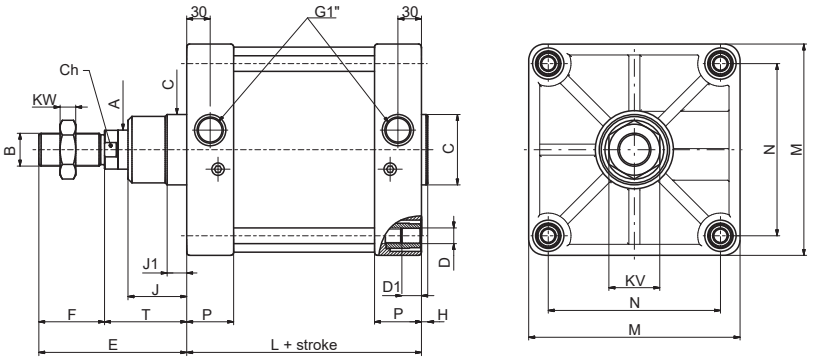
Basic version "01"

Coding: 1315.Ø.stroke.01A

Ø	BORE
	250 = 250mm
	320 = 320mm

magnetic, aluminium barrel





Through rod cylinder version "02"

Coding: 1315.Ø.stroke.02A

Ø	BORE
	250 = 250mm
	320 = 320mm

magnetic, aluminium barrel



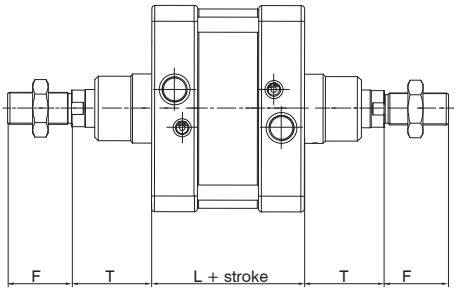


Table of dimensions

Bore	250	320
A	Ø50	Ø63
B	M42x2	M48x2
Ch	46	55
C	Ø90	Ø110
D	M20	M24
D1	25	28
E	189	216
F	84	96
J	75	90
J1	25	25
H	8	10
KW	21	24
KV	Es65	Es65
L	200	220
M	270	350
N	220	270
P	60	65
T	105	120
Weight (g)	28.170 (increase of 380 g each 10 mm stroke)	49.810 (increase of 616 g each 10 mm stroke)

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

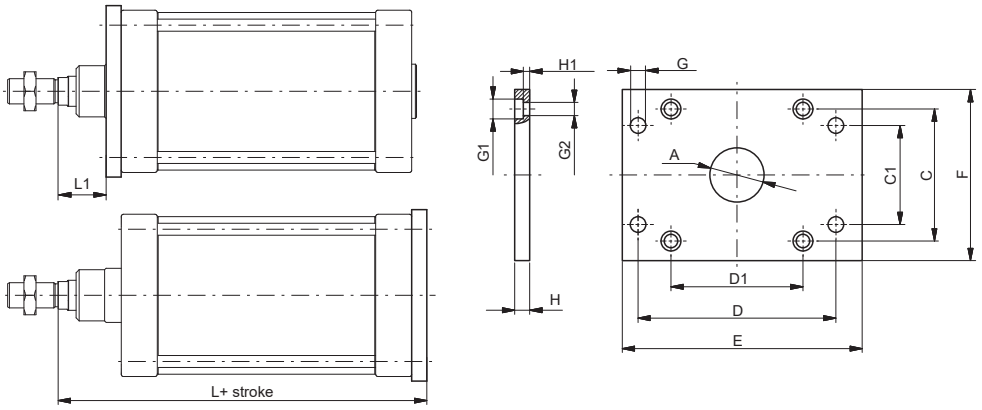
Front and rear flanges

Coding: 1315.Ø.03F

Ø	BORE
	250 = 250mm
	320 = 320mm

Steel





Bore	A(H11)	C	C1 (JS14)	D (JS14)	D1	E	F	G (H13)	G1 (H13)	G2 (H13)	H (±0,2)	H1 (+0/-0,5)	L	L1	Weight (g)
250	90	220	165	330	220	400	285	26	33	22	25	10,5	330	80	20.150
320	110	270	200	400	270	470	350	33	39	26	30	15	370	90	34.000

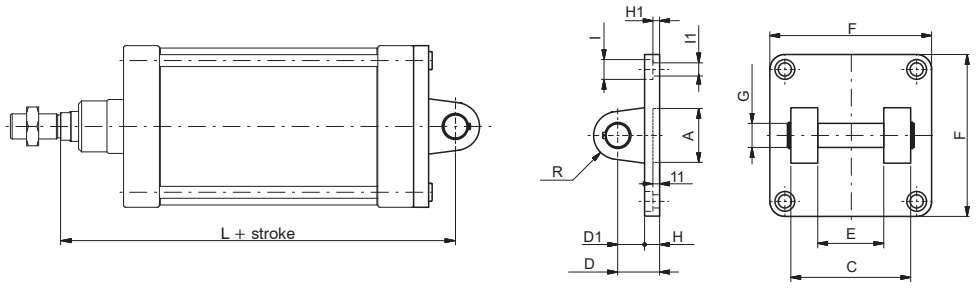
Rear clevis

Coding: 1315.Ø.09F

Ø	BORE
	250 = 250mm
	320 = 320mm

Steel





Bore	A	C (h14)	D (±0,2)	D1	E (H14)	F	G (H9)	H	H1	I	I1	L	R	Weight (g)
250	Ø90	200	70	45	110	270	40	25	11	33	22	375	40	7.800
320	Ø110	220	80	50	120	350	45	30	15	39	26	420	45	13.000

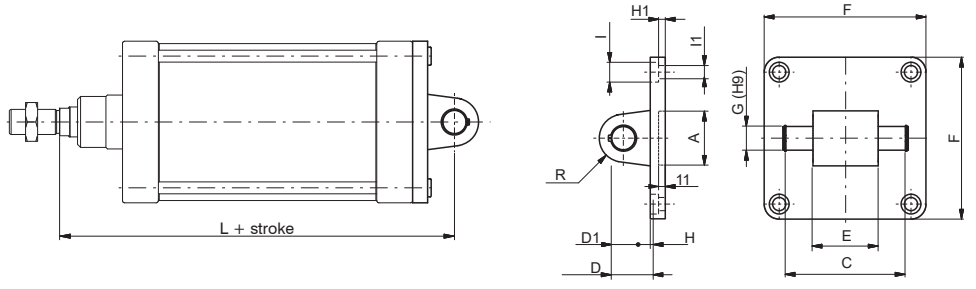
Rear male clevis

Coding: 1315.Ø.09/1F

Ø	BORE
	250 = 250mm
	320 = 320mm

Steel





Bore	A	C (+0,3/-0)	D (±0,2)	D1	E (-0,5/-1,2)	F	G (H9)	H	H1	I	I1	L	R	Weight (g)
250	Ø90	202	70	45	110	270	40	25	11	33	22	375	40	8300
320	Ø110	222	80	50	120	350	45	30	15	39	26	420	45	13060

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

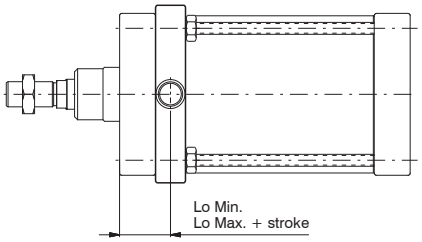
Intermediate trunnion

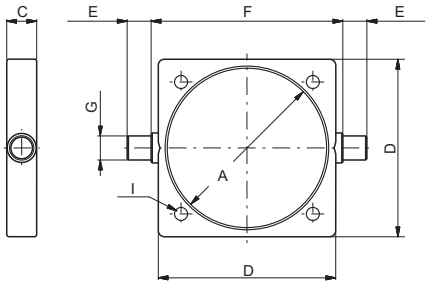
Coding: 1315.Ø.12F

Ø	BORE
	250 = 250mm
	320 = 320mm

Steel







Bore	A	C	D	E (h14)	F (h14)	G (e9)	I	Lo Min.	Lo Max.	Weight (g)
250	Ø268	50	295	40	320	Ø40	Ø20,25	85	115 + stroke	10.500
320	Ø343	70	370	50	400	Ø50	Ø24,25	95	125 + stroke	25.300

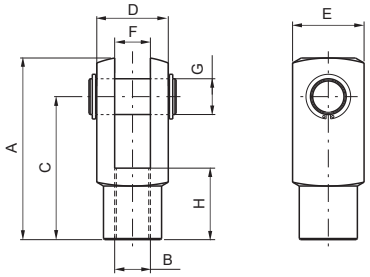
Fork with pin

Coding: 1302.Ø.13F

Ø	BORE
	250 = 250mm
	320 = 320mm

Steel





Bore	A	B	C	D	E	F	G	H	Weight (g)
250	188	M42x2 (H8)	144	70	70	35 (B12)	Ø35 (H9)	72	3.700
320	265	M48x2	192	96	96	50	Ø50	96	9.700

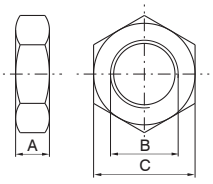
Rod lock nut

Coding: 1302.Ø.18F

Ø	BORE
	250 = 250mm
	320 = 320mm

Steel





Bore	A	B	C	Weight (g)
250	21	M42x2	65	260
320	24	M48x2	72	580

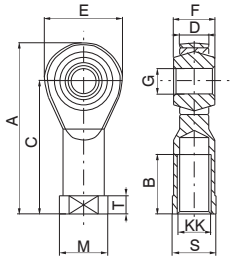
Ball joint

Coding: 1302.Ø.32F

Ø	BORE
	250 = 250mm
	320 = 320mm

Steel





Bore	A	B	C	D (-0.1)	E	F	G (H 7)	KK	M	S	T	Weight (g)
250	187	60	142	33	91	49	40	M42x2	65	55	19	2.400
320	218	65	162	45	117	60	50	M48x2	75	65	23	5.000

Sensor bracket - codes 1500._,RS._,HS._

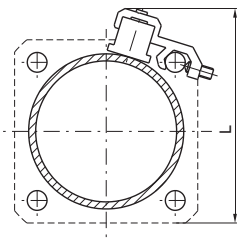
Coding: 1306.Ⓣ

Ⓣ	TYPE
	D = 250 mm
	E = 320 mm

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





Bore	L
250	250
320	365

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series Steel line - AISI 316

The 1393-1394 stainless steel ISO 15552 cylinders series are designed for corrosion resistance application such as marine, pharmaceutical and food ambiences.
The pre lubrication grease used is NSF H1 certified for food application.
Specific care has been taken during the design stages and the result is a clean profile cylinder easy to clean and free from possible residue build-up areas.
All parts in contact with the external environment are in Stainless steel 316L and the seals are available in two different compounds for different temperature applications:
PUR -30°C ... +80°C FPM -5°C ... +150°C.
The range starts from 32 bore up to 100 bore , round barrel and tie rods design. Double acting version standard or with through rod, magnetic or not magnetic piston available.
The piston is aluminium and the sensor bracket, when required is in stainless steel 316.
The cylinder can be fixed via the threaded holes in the tie rod nuts or with the wide range of stainless steel accessories.

Construction characteristics

Piston rod bushings	Stainless steel AISI 316 with P.T.F.E. coat
Barrel	Stainless steel AISI 316
Lubricating grease	NSF-H1 certified grease for incidental contact with food
Seals	PUR or FPM on request
Half-pistons	Aluminium
Piston rod	Stainless steel AISI 316
End caps	Stainless steel AISI 316
Cushion screws	Stainless steel AISI 316

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Pressure	10 bar
Working temperature	-30° C ... +80°C with PUR seals -5° C ... +150°C with FPM seals and non magnetic piston -5° C ... +80°C with FPM seals and magnetic piston

Cushioning lengths

Bore	Ø	32	40	50	63	80	100
Cushioning lenght	mm	20	20	22	22	32	32

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.

Standard strokes (for all diameters)

from 0 to 150, every 25 mm
from 150 to 500, every 50 mm
from 500 to 1000, every 100 mm
On request are available strokes up to: 2800 mm

Stroke tolerance (ISO 15552)

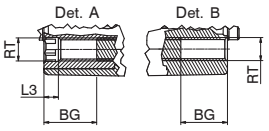
Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
	over 500 up to 1000	+3,2 0
63-80-100	up to 500 mm	+2,5 0
	over 500 up to 1000	+4 0

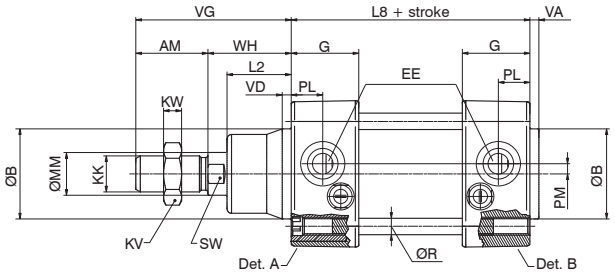
Basic version "01"

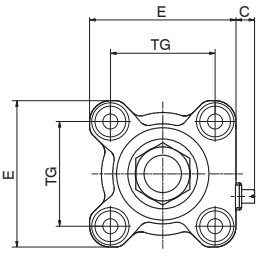
Coding: 13Ⓥ.Ø.stroke.01Ⓖ

Ⓥ	VERSION
	93 = Magnetic
	94 = Non magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓖ	SEALS
	= PUR
	V = FPM









Through rod cylinder version "02"

Coding: 13Ⓥ.Ø.stroke.02Ⓖ

Ⓥ	VERSION
	93 = Magnetic
	94 = Non magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓖ	SEALS
	= PUR
	V = FPM



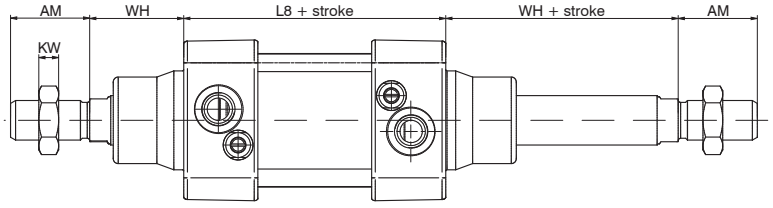
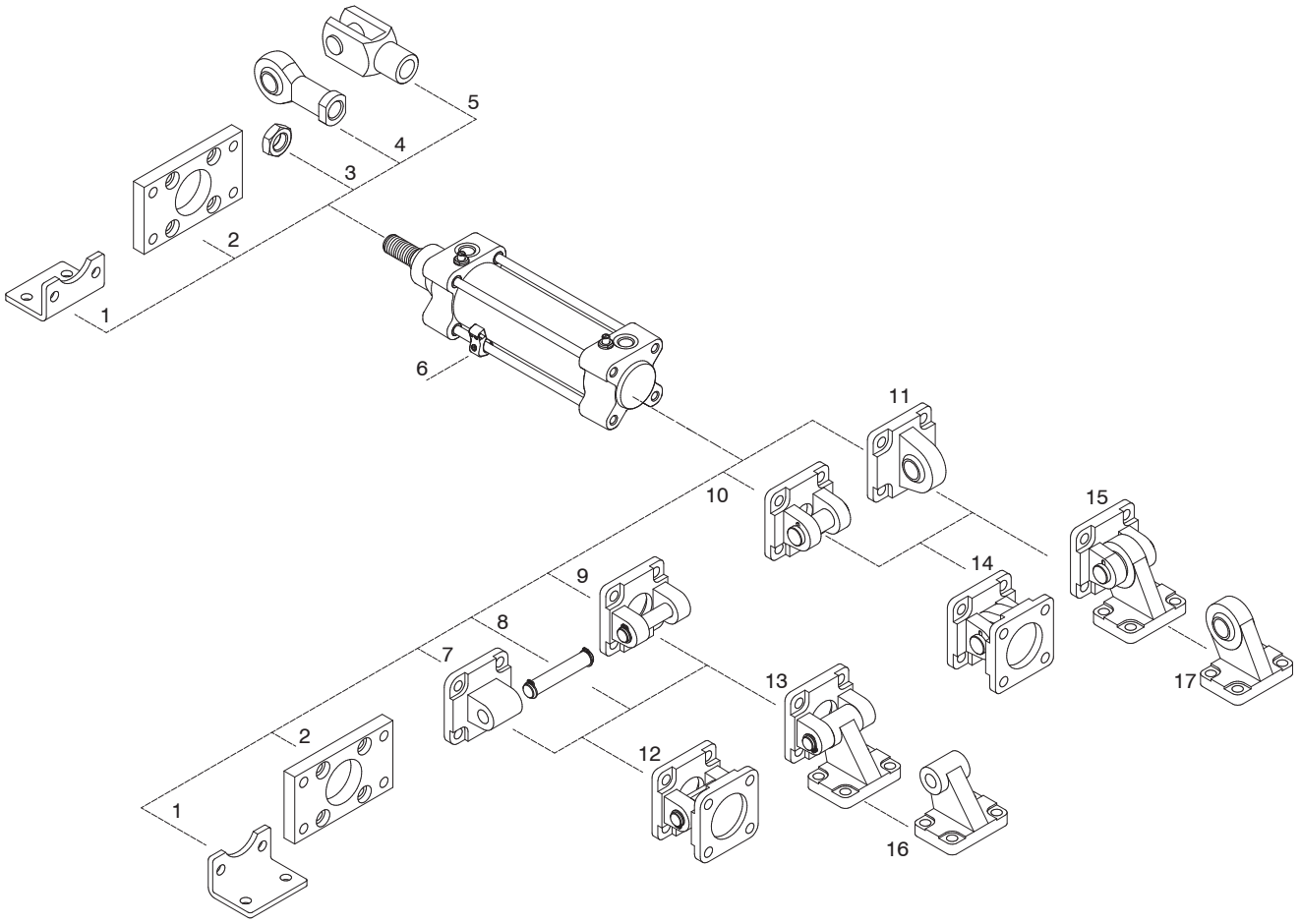


Table of dimensions

Bore		32	40	50	63	80	100
AM		22	24	32	32	40	40
ØB (d 11)		30	35	40	45	45	55
BG min.		16	16	16	16	18	17
C min.		4	4	4	4	3,5	3,5
C max.		7.5	7,5	8,5	8,5	9	9
E		47	52	65	76	95	113
EE		G1/8"	G1/4"	G1/4"	G3/8"	G3/8"	G1/2"
G		29	31	30	34	36	40,5
KK		M10X1,25	M12X1,25	M16X1,5	M16X1,5	M20x1,5	M20X1,5
KV		17	19	24	24	30	30
KW		16	7	8	8	9	9
L2		20	22	28,5	29	35	36
L3		4,5	4,5	5	5	6	6
L8		94	105	106	121	128	138
ØMM		12	16	20	20	25	25
PL		13	14	14	16	16	18
PM		3	3,5	4,5	7	8	8
ØR		Ø5,2	Ø5,2	Ø7,1	Ø7,1	Ø8,9	Ø8,9
RT		M6	M6	M8	M8	M10	M10
SW		10	13	17	17	22	22
TG		32,5	38	46,5	56,5	72	89
VA		4	4	4	4	4	4
VD		4	4	4	4	4	4
VG		48	54	69	69	86	91
WH		26	30	37	37	46	51
Weight g	Stroke 0	1000	1430	2150	3000	4400	6400
	every 10 mm	35	45	63	80	120	135

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



Position	Description	Coding	Materials
1	Short mounting foot brackets (MS1)	1393.Ø.05/1F	Stainless steel AISI 316
2	Front and rear flanges (MF1 - MF2)	1393.Ø.03F	Stainless steel AISI 316
3	Nuts	1393.Ø.18F	Stainless steel AISI 316
4	Ball joint	1393.Ø.32F	Stainless steel
5	Fork	1393.Ø.13F	Stainless steel
6	Sensor brackets codes - 1580._,MRS._,MHS	1393._	Stainless steel AISI 316
7	Rear male clevis (MP4)	1393.Ø.09/1F	Stainless steel AISI 316
8	Pin with circlips for rear clevis (MP4 and MP2) (pos. 9)	1393.Ø.37F	Stainless steel AISI 316
9	Rear female clevis (MP2)	1393.Ø.09F	Stainless steel AISI 316
10	Rear narrow clevis	1393.Ø.30F	Stainless steel AISI 316
11	Rear male clevis (with jointed head according to DIN 648K standard)	1393.Ø.15F	Stainless steel AISI 316
12	Standard complete trunnion (pos. 7 + pos. 9)	1393.Ø.22F	Stainless steel AISI 316
13	Square angle trunnion (AB7) (pos. 9 + pos. 16)	1393.Ø.35F	Stainless steel AISI 316
14	Complete square angle trunnion (with joined head according to DIN 648K standards) (pos. 10 + pos. 11)	1393.Ø.36F	Stainless steel AISI 316
15	Complete square angle trunnion (with joined head according to DIN 648K standards) (pos. 10 + pos. 17)	1393.Ø.27F	Stainless steel AISI 316
16	Simple square counter clevis (AB7) (pos. 13)	1393.Ø.11/2F	Stainless steel AISI 316
17	Simple square counter clevis (pos. 15)	1393.Ø.28F	Stainless steel AISI 316

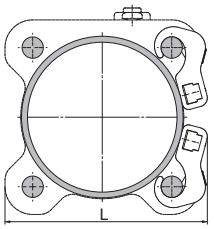
Sensor brackets codes - 1580._,MRS._,MHS

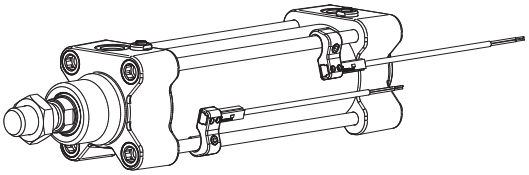
Coding: 1393.Ⓣ

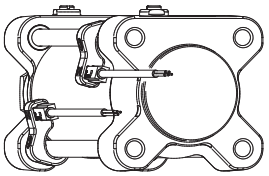
Ⓣ	TYPE
	A = Ø32-Ø40
	B = Ø50-Ø63
	C = Ø80-Ø100

Fixing bracket made of stainless steel AISI 316 for sensor mounting on cylinders.









To mount the brackets on the tie rods use the dedicated stainless steel grub screw

Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	51	57	67	79	98	115

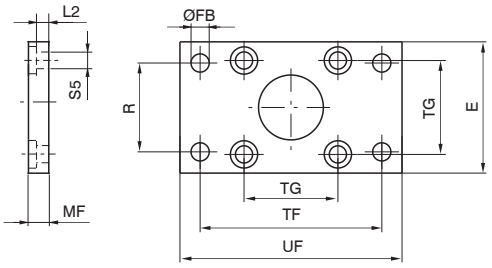
Front and rear flanges (MF1 - MF2)

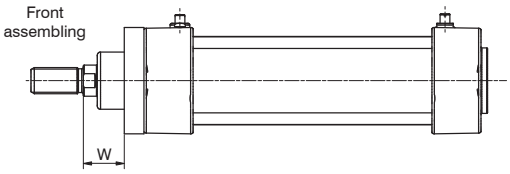
Coding: 1393.Ø.03F

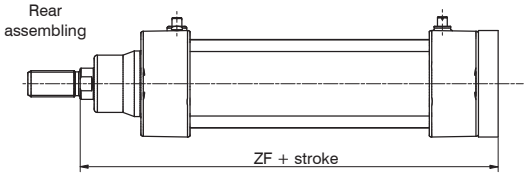
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Plate in stainless steel AISI 316 which allows anchorage of the cylinder at a right angle to the plane.









Bore	E	ØFB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	ZF	W	L2	ØS5	Weight (g)
32	45	7	10	32	64	32,5	80	130	16	5	6,6	190
40	52	9	10	36	72	38	90	145	20	5	6,6	250
50	65	9	12	45	90	46,5	110	155	25	6,5	9	480
63	75	9	12	50	100	56,5	120	170	25	6,5	9	620
80	95	12	15	63	126	72	150	189	31	7	11	1430
100	115	14	15	75	150	89	170	204	36	7	11	1990

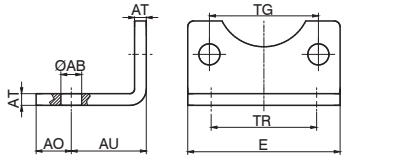
Short mounting foot brackets (MS1)

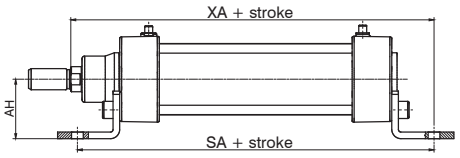
Coding: 1393.Ø.05/1F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Elements used to anchor the cylinder parallel to the mounting plane.
Made of stainless steel AISI 316.







Bore	32	40	50	63	80	100
ØAB (H 14)	7	9	9	9	12	14
AH	32	36	45	50	63	71
AU (± 0.2)	24	28	32	32	41	41
AO	11	8	15	13	14	16
E	45	52	65	75	95	115
AT	4	4	5	5	6	6
SA	142	161	170	185	210	220
TG	32,5	38	46,5	56,5	72	89
TR (JS 14)	32	36	45	50	63	75
XA	144	163	175	190	215	230
Weight (g)	60	70	160	180	370	430

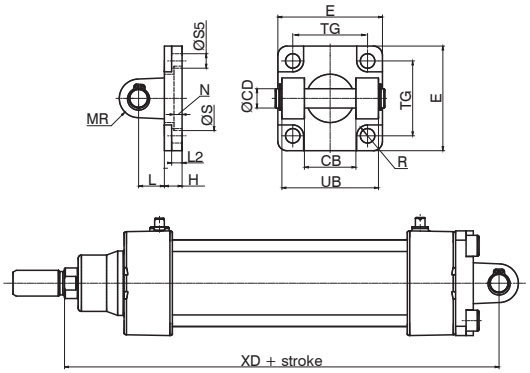
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rear clevis (MP2)

Coding: 1393.Ø.09F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load.Made of stainless steel AISI 316.

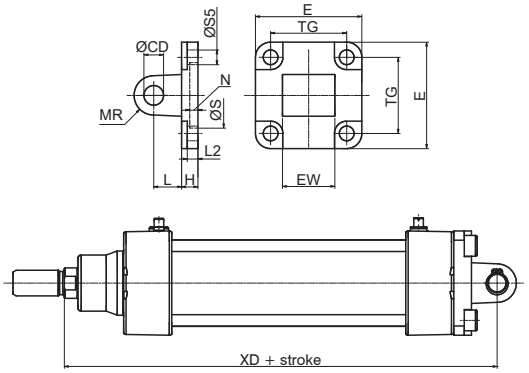
Bore	32	40	50	63	80	100
CB (H 14)	26	28	32	40	50	60
ØCD	10	12	12	16	16	20
E	45	55	65	75	95	115
ØS (H11)	30	35	40	45	45	55
N	5	5	5	5	/	/
R (H13)	5,5	5,5	7,5	7,5	9	9
H	10	10	10	12	14	16
L	12	15	17	20	22	25
MR	10	12	12	16	16	20
TG	32,5	38	46,5	56,5	72	89
UB (h14)	45	52	60	70	90	110
XD	142	160	170	190	210	230
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H13)	6,6	6,6	9	9	11	11
Weight (g)	140	230	370	540	1000	1700

Rear male clevis (MP4)

Coding: 1393.Ø.09/1F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Similar to 09 clevis except for the connection, which is male rather than female.
Used to mount the cylinder either parallel or at a right angle to the plane; the cylinder rod can oscillate and self-align as necessary when under load.
Made of stainless steel AISI 316.

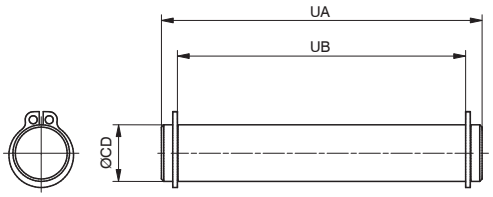
Bore	32	40	50	63	80	100
CD (H 9)	10	12	12	16	16	20
E	45	55	65	75	95	115
EW (-0,2/-0,6)	26	28	32	40	50	60
H	10	10	10	12	14	16
L	12	15	17	20	22	25
ØS (H11)	30	35	40	45	45	55
N	5	5	5	5	/	/
R (H13)	5,5	5,5	7,5	7,5	9	9
MR	10	12	12	16	16	20
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H13)	6,6	6,6	9	9	11	11
Weight (g)	180	280	370	680	1200	2100

Pin with circlips for rear clevis (MP4 and MP2)

Coding: 1393.Ø.37F

Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Stainless steel AISI 316 pin, complete with stainless steel circlips, which can be used with clevis code 1393.Ø.09/1F and 1393.Ø.09F

Bore	32	40	50	63	80	100
CD (e8)	10	12	12	16	16	20
UA	53	60	68	78	98	118
UB (-0,5/-0)	46	53	61	71	91	111
Weight (g)	35	50	60	120	150	290

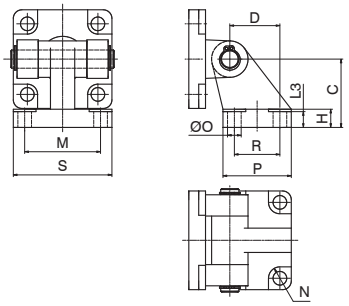
Square angle trunnion (AB7)

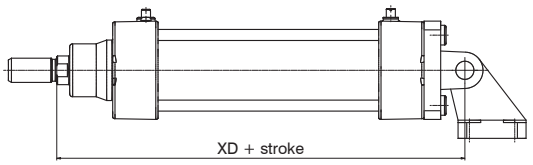
Coding: 1393.Ø.35F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Counter clevis
can be ordered separately with code:
1393.Ø.11/2F







Made of stainless steel AISI 316

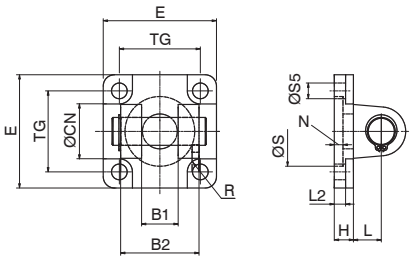
Bore	32	40	50	63	80	100
D (JS 15)	21	24	33	37	47	55
C (JS 15)	32	36	45	50	63	71
H	8	10	12	12	14	15
N (H 13)	5,5	5,5	7,5	7,5	9	9
L3	6,5	8,5	10,5	10,5	11,5	12,5
R (JS 14)	18	22	30	35	40	50
P	31	35	45	50	60	70
O (H 13)	6,6	6,6	9	9	11	11
S	51	54	65	67	86	96
M (JS 14)	38	41	50	52	66	76
XD	142	160	170	190	210	230
Weight (g)	330	520	810	1200	2200	4710

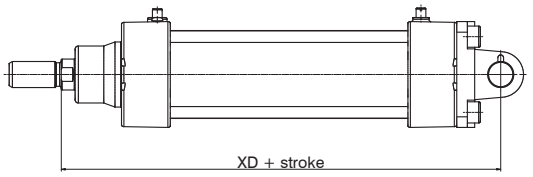
Rear narrow clevis

Coding: 1393.Ø.30F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100







Bore	32	40	50	63	80	100
B1 (H 14)	14	16	21	21	25	25
B2 (h 14)	34	40	45	51	65	75
ØCN	10	12	16	16	20	20
E	45	55	65	75	95	115
H	10	10	10	12	14	16
L	12	15	17	20	22	25
L2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
ØS (H 12)	30	35	40	45	45	55
R (H 13)	5,5	5,5	7,5	7,5	9	9
N	5	5	5	5	5	5
Weight (g)	170	270	420	650	1380	2050

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

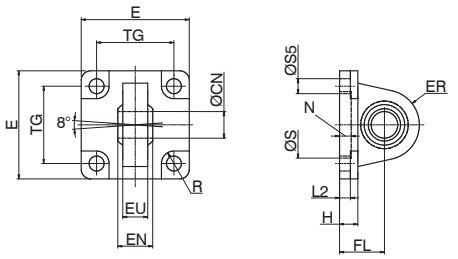
Rear male clevis (with jointed head according to DIN 648K standard)

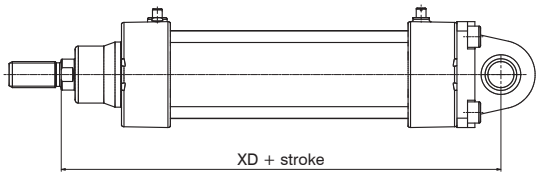
Coding: 1393.Ø.15F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Made of stainless steel AISI 316







Bore	32	40	50	63	80	100
ØCN (H 7)	10	12	16	16	20	20
E	45	55	65	75	95	115
EN (-0.1)	14	16	21	21	25	25
ER	15	18	20	23	27	30
EU	10,5	12	15	15	18	18
FL (JS 15)	22	25	27	32	36	41
H	10	10	10	12	14	16
L2	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
ØS (H 11)	30	35	40	45	45	55
R (H 13)	5,5	5,5	7,5	7,5	9	9
N	5	5	5	5	5	5
Weight (g)	150	260	370	600	1130	1800

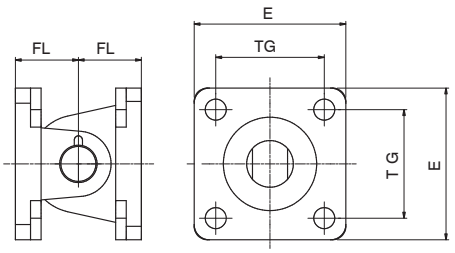
Complete standard trunnion (with joined head according to DIN 648K standards)

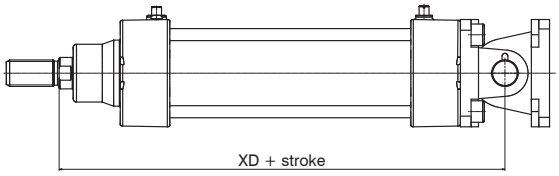
Coding: 1393.Ø.36F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Made of stainless steel AISI 316







Bore	32	40	50	63	80	100
E	45	55	65	75	95	115
FL (JS 15)	22	25	27	32	36	41
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
Weight (g)	320	530	790	1250	2510	3850

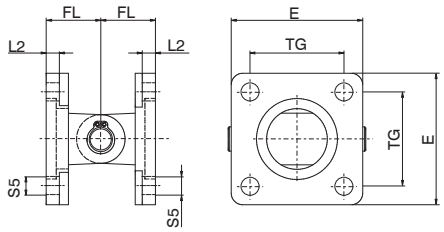
Standard complete trunnion

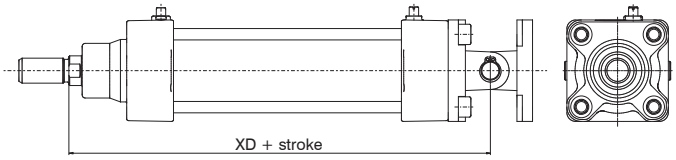
Coding: 1393.Ø.22F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Made of stainless steel AISI 316







Bore	32	40	50	63	80	100
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
L 2 (±0,5)	5,5	5,5	6,5	6,5	10	10
S 5	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
Weight (g)	360	580	780	1370	2370	4110

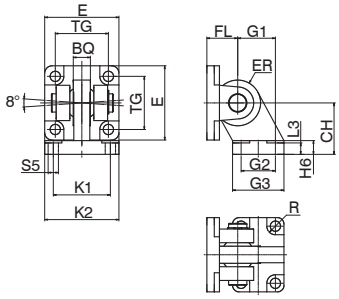
Complete square angle trunnion (with joined head according to DIN 648K standards)

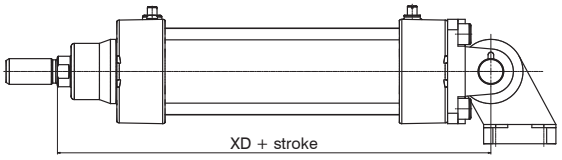
Coding: 1393.Ø.27F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Counter clevis
can be ordered separately with code:
1393.Ø.28F







Bore	32	40	50	63	80	100
CH (JS 15)	32	36	45	50	63	71
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
G1 (JS 15)	21	24	33	37	47	55
G2 (JS 14)	18	22	30	35	40	50
G3	31	35	45	50	60	70
H6	10	10	12	12	14	15
K1 (JS 14)	38	41	50	52	66	76
K2	51	54	65	67	86	96
L3 (+0,5/-0)	8,5	8,5	10,5	10,5	11,5	12,5
S5 (H13)	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	142	160	170	190	210	230
BQ	10,5	12	15	15	18	18
ER	15	18	20	23	27	30
R (H 13)	5,5	5,5	7,5	7,5	9	9
Weight (g)	350	540	880	1200	2350	3380

Made of stainless steel AISI 316

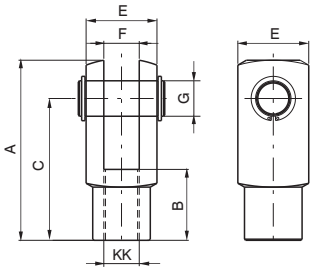
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Fork with pin

Coding: 1393.Ø.13F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Bore	32	40	50	63	80	100
A	52	62	83	83	105	105
B	20	24	32	32	40	40
C	40	48	64	64	80	80
E	20	24	32	32	40	40
F(B12)	10	12	16	16	20	20
G	10	12	16	16	20	20
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5
Weight (g)	100	140	340	340	680	680

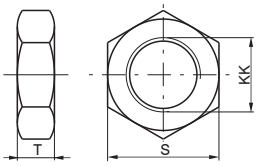
Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point.Made of stainless steel AISI 303.

Nuts

Coding: 1393.Ø.18F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Bore	32	40	50	63	80	100
S	17	19	24	24	30	30
T	6	7	8	8	9	9
KK	M10X1.25	M12X1.25	M16X1.5	M16X1.5	M20X1.5	M20X1.5
Weight (g)	15	20	20	20	40	40

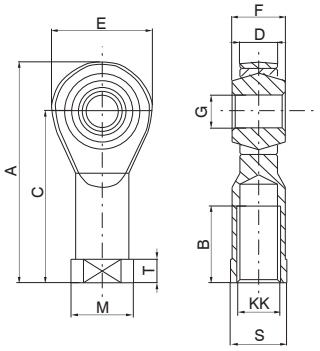
Used to block the position of the fork.Made of stainless steel AISI 316.

Ball joint

Coding: 1393.Ø.32F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Bore	32	40	50	63	80	100
A	57	66	85	85	102	102
B	20	22	28	28	33	33
C	43	50	64	64	77	77
D	10,5	12	15	15	18	18
E	28	32	42	42	50	50
F	14	16	21	21	25	25
G (H 7)	10	12	16	16	20	20
KK	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
M	19	22	27	27	34	34
S	17	19	22	22	30	30
T	6,5	6,5	8	8	10	10
Weight (g)	75	110	220	220	410	410

Mounted on the rod thread, assures a regular operation even in the presence of significant forces to the linked element.Made of stainless steel AISI 304 and 420.

Series 1450 - 1463 - Ø50 - Ø63

Pneumatic cylinder ISO 15552 handling and controlling movement by means of internal hydraulic circuit. All ISO fixing devices can be used except for:
- Cylinder Ø63 front clevis code 1463.63.08F
- Cylinder Ø63 front flange code 1463.63.03F
- Cylinder Ø63 foot code 1463.63.05/1F

Coding

14_.stroke._._ . _

Ø50
Ø63

Regulation
A = Regulation on extraction
B = Regulation on compression
D = Double regulation

STOP function
0 = None
A = Stop N.C. extraction
B = Stop N.C. compression
C = Double Stop N.C.
D = Stop N.O. extraction
E = Stop N.O. compression
F = Double Stop N.O.

SKIP function
0 = None
A = Skip N.C. extraction
B = Skip N.C. compression
C = Double Skip N.C.
D = Skip N.O. extraction
E = Skip N.O. compression
F = Double Skip N.O.

Construction characteristics

Barrel	aluminium alloy anodised
Hydraulic piston seal (hydraulic side)	PUR
Pneumatic piston seal (pneumatic side)	oil resistant NBR rubber
Rod and cushion seal	PUR
Magnetic piston	aluminium
Oil tank	aluminium
Piston rod	steel tube externally chrome plated
End caps	aluminium black anodised
Cushion adjustment screws	nickel plated steel

Operational characteristics

Pneumatic media	filtered and lubricated air
Hydraulic media	filtered 1μ hydraulic oil
SKIP & STOP valve minimum operating pressure	3 bar
Max. pressure	8 bar
Environment temperature	-5 °C ... +70 °C
Minimum regulated speed	40 mm/min. *
Maximum regulated speed	6000 mm/min. *
Speed with SKIP	150 mm/sec. *
Free speed (without regulation)	300 mm/sec. *
Cushioning lenght	20 mm
Standard stroke	from 50 to 450 steps 50 mm**
Possibility of rear regulation (on request)	

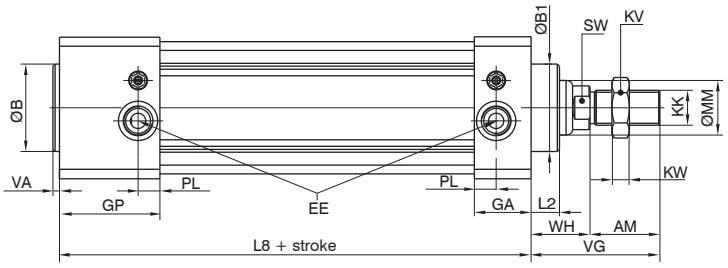
*** Attenction:** speed recorded with cylinder on horizontal position fed at 8 bar without load on piston rod.
** Strokes exceeding 450 mm (up to max. 750 mm) are only available after technical evaluation.

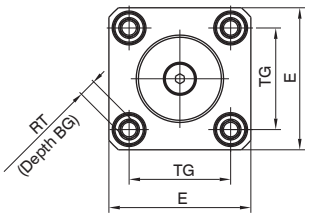
Bore	Force (N)	Pressure (bar)									
		1	2	3	4	5	6	7	8	9	10
50	Out	181,4	362,9	544,3	725,7	907,2	1088,6	1270	1451,5	1632,9	1814,3
	In	144,4	288,8	433,2	577,6	722	866,3	1010,7	1155,1	1299,5	1443,9
63	Out	294,6	589,1	883,7	1178,2	1472,8	1767,3	2061,9	2356,5	2651	2945,6
	In	211,3	422,6	633,9	845,2	1056,6	1267,9	1479,2	1690,5	1901,8	2113,1

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Base cylinder dimensions



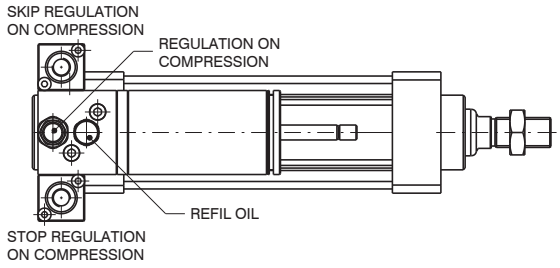




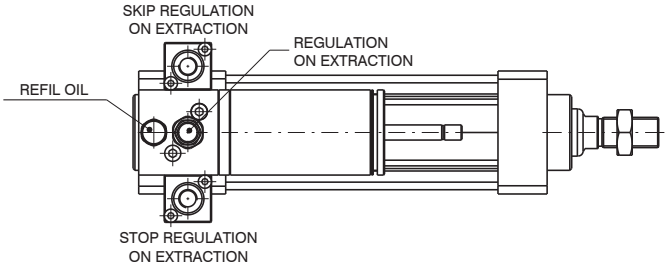
Bore	AM	B (d 11)	BG	E	EE	GA	GP	KK	KV	KW	L2	L8	MM	PL	RT	SW	TG	VA	VG	WH
50	32	40	16	65	G1/4"	26	46	M16x1,5	24	8	13	116	25	10	M8	17	46.5	3	59	27
63		50		75	G3/8"						20	121	35	12			56.5	4	69	37

Function valves and regulators position for the different versions

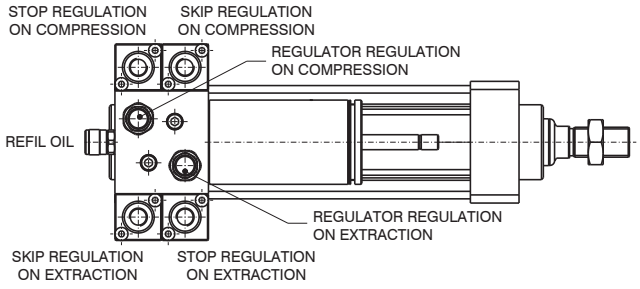
Compression



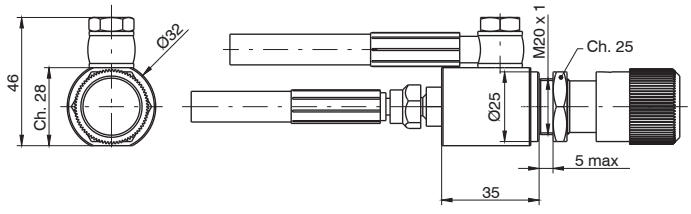
Extraction



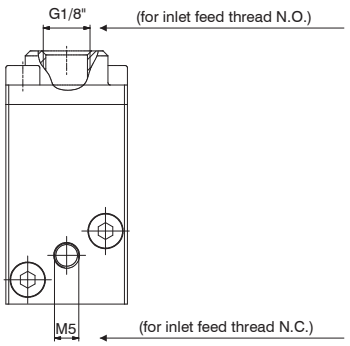
Double regulation



Rear regulator dimensions



SKIP and STOP valves inlet feed position

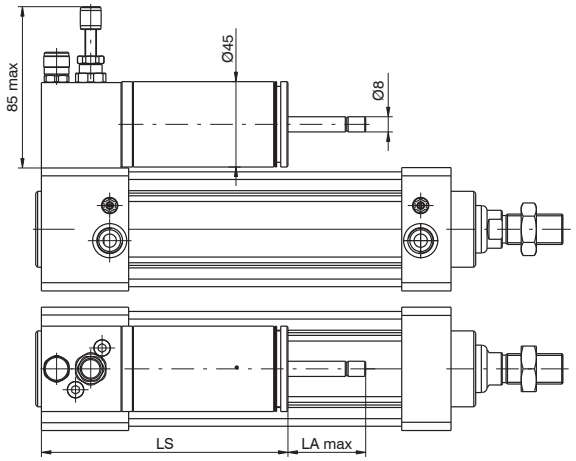


Regulation on the outward stroke

Coding: 14Ø.stroke.A.0.0

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 1970 g + 200 g every 50 mm stroke
Ø63: 2591 g + 280 g every 50 mm stroke

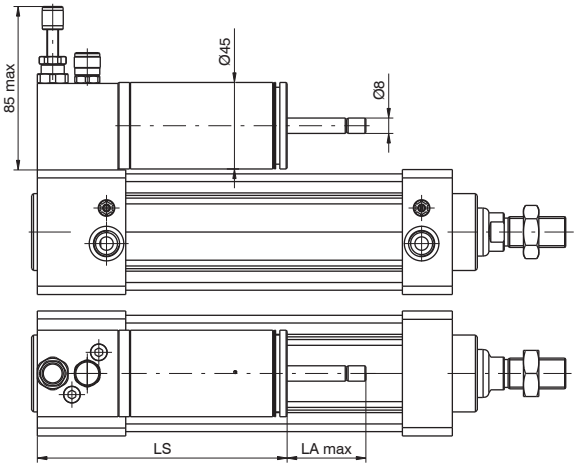
Strokes	LS	LA max
0 ... 150	130	41
151 ... 350	185	66
351 ... 450	255	106

Regulation on the inward stroke

Coding: 14Ø.stroke.B.0.0

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 1970 g + 200 g every 50 mm stroke
Ø63: 2591 g + 280 g every 50 mm stroke

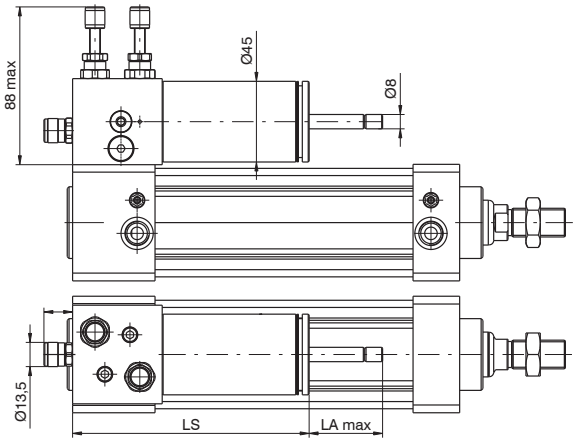
Strokes	LS	LA max
0 ... 150	130	41
151 ... 350	185	66
351 ... 450	255	106

Regulation in both directions

Coding: 14Ø.stroke.D.0.0

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2128 g + 200 g every 50 mm stroke
Ø63: 2749 g + 280 g every 50 mm stroke

Strokes	LS	LA max
0 ... 150	132	41
151 ... 350	187	66
351 ... 450	257	106

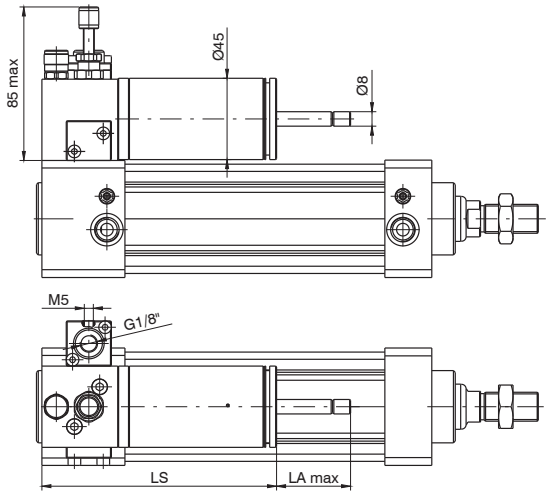
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Regulation on the outward stroke with SKIP N.O.

Coding: 14Ø.stroke.A.0.D

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2059 g + 200 g every 50 mm stroke
Ø63: 2928 g + 280 g every 50 mm stroke

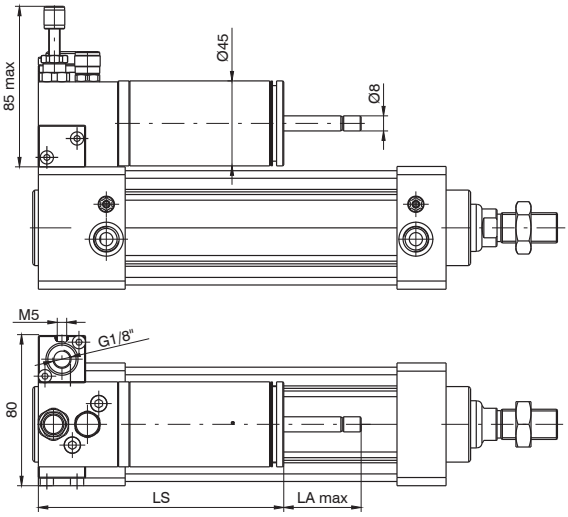
Strokes	LS	LA max
0 ... 150	130	41
151 ... 350	185	66
351 ... 450	255	106

Regulation on the inward stroke with SKIP N.O.

Coding: 14Ø.stroke.B.0.E

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2059 g + 200 g every 50 mm stroke
Ø63: 2928 g + 280 g every 50 mm stroke

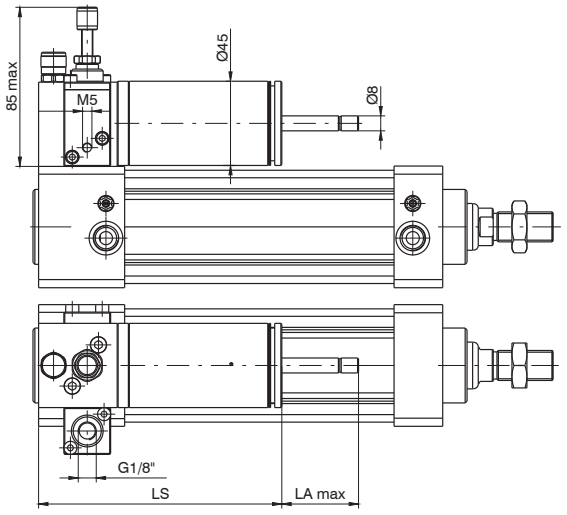
Strokes	LS	LA max
0 ... 150	130	41
151 ... 350	185	66
351 ... 450	255	106

Regulation on the outward stroke with STOP N.O.

Coding: 14Ø.stroke.A.D.0

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2059 g + 200 g every 50 mm stroke
Ø63: 2928 g + 280 g every 50 mm stroke

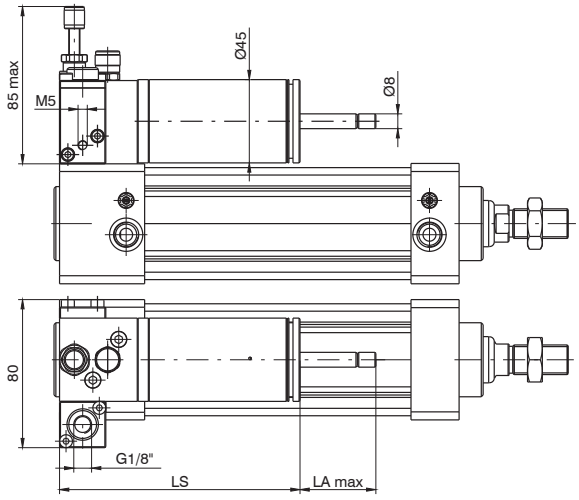
Strokes	LS	LA max
0 ... 150	130	41
151 ... 350	185	66
351 ... 450	255	106

Regulation on the inward stroke with STOP N.O.

Coding: 14Ø.stroke.B.E.0

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2059 g + 200 g every 50 mm stroke
Ø63: 2928 g + 280 g every 50 mm stroke

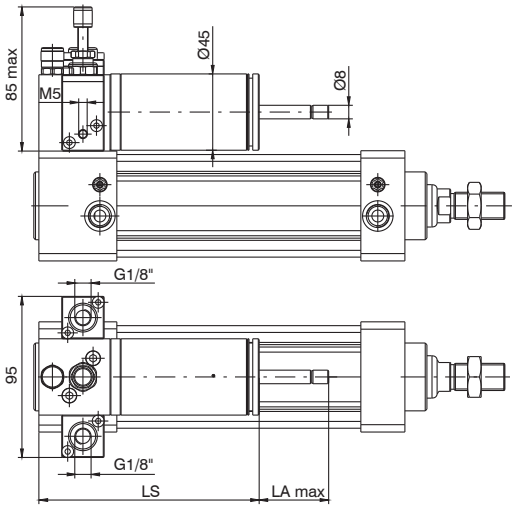
Strokes	LS	LA max
0 ... 150	130	41
151 ... 350	185	66
351 ... 450	255	106

Regulation on the outward stroke with SKIP N.O. - STOP N.O.

Coding: 14Ø.stroke.A.D.D

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2140 g + 200 g every 50 mm stroke
Ø63: 2761 g + 280 g every 50 mm stroke

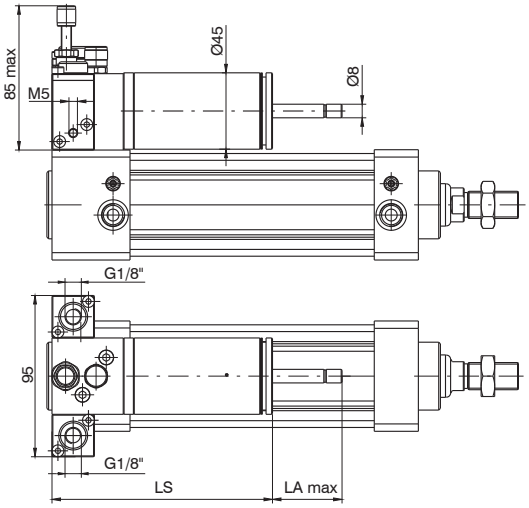
Strokes	LS	LA max
0 ... 150	130	41
151 ... 350	185	66
351 ... 450	255	106

Regulation on the inward stroke with SKIP N.O. - STOP N.O.

Coding: 14Ø.stroke.B.E.E

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2140 g + 200 g every 50 mm stroke
Ø63: 2761 g + 280 g every 50 mm stroke

Strokes	LS	LA max
0 ... 150	130	41
151 ... 350	185	66
351 ... 450	255	106

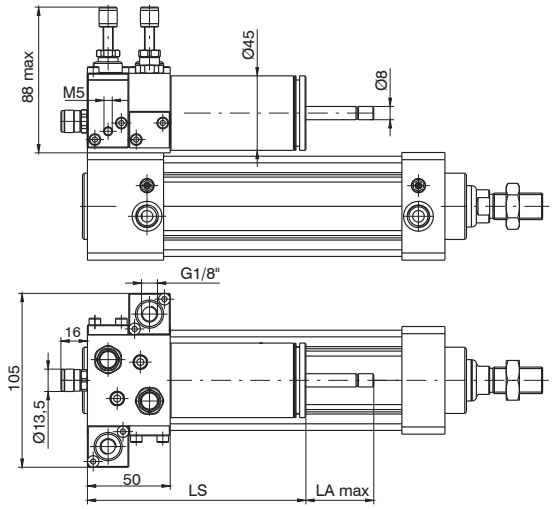
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Regulation and SKIP in both directions (N.O. SKIP valves in both directions)

Coding: 14Ø.stroke.D.0.F

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2311 g + 200 g every 50 mm stroke
Ø63: 2932 g + 280 g every 50 mm stroke

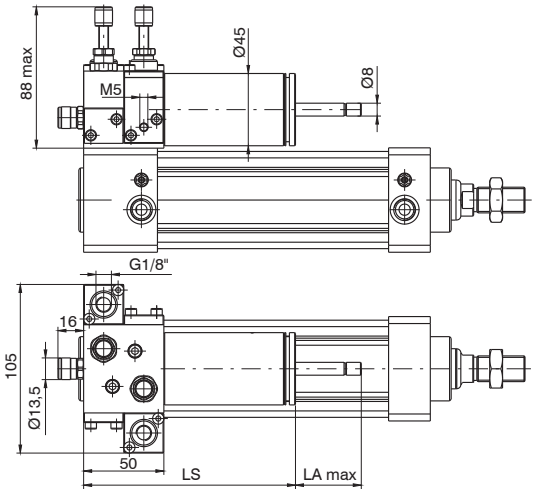
Strokes	LS	LA max
0 ... 150	132	41
151 ... 350	187	66
351 ... 450	257	106

Regulation and STOP in both directions (N.O. STOP valves in both directions)

Coding: 14Ø.stroke.D.F.0

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2311 g + 200 g every 50 mm stroke
Ø63: 2932 g + 280 g every 50 mm stroke

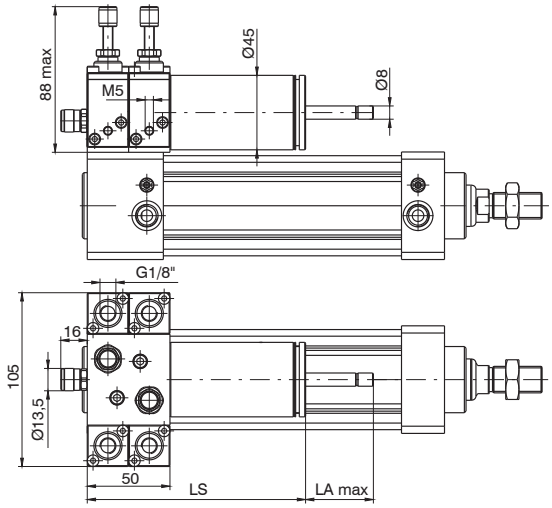
Strokes	LS	LA max
0 ... 150	132	41
151 ... 350	187	66
351 ... 450	257	106

Regulation with SKIP and STOP in both directions (N.O. SKIP and STOP valves in both directions)

Coding: 14Ø.stroke.D.F.F

	BORE
Ø	**50** = Ø50
	63 = Ø63





Weight
Ø50: 2473 g + 200 g every 50 mm stroke
Ø63: 3094 g + 280 g every 50 mm stroke

Strokes	LS	LA max
0 ... 150	132	41
151 ... 350	187	66
351 ... 450	257	106

Series 1500 Ecompact

These cylinders are built according to ISO 21287 standards. New barrel profile has two sensor slots on the three sides (Ø 20 and Ø 25 one slot) suitable for sensors 1580._, MRS._, MHS._ series housing, without need for adaptors.
Versions with end stroke adjustable pneumatic cushioning are also available, allowing adjustments to deceleration and keeping the required overall dimensions according to ISO 21287.
For fixing operation is possible to use the four threaded holes on the end covers, or screws in body holes, alternatively all the fixing devices of UNITOP RU-P/6-P/7 (Ø20 and Ø25) and ISO 15552 (from Ø32 to Ø100) series.

Construction characteristics

Body	anodized aluminium
Piston rod bushings	sintered bronze
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (PUR or FPM on request)
Springs	stainless steel
Pistons	from Ø20 to Ø40 acetal resin (aluminium on request), Ø50 and Ø100 aluminium (with FPM seals, aluminium piston for all standard diameters)
Piston rod	from Ø 20 to Ø 25 stainless steel from Ø32 to Ø100 C43 chromed (on request stainless steel)
End caps	aluminium alloy casting painted
Fixing screws	zinc plated steel

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Max. pressure	10 bar
Working temperature	-5°C ... +70°C with standard seals (magnetic or non magnetic piston) -30°C ... +80°C with PUR seals (magnetic or non magnetic piston) -5°C ... +80°C with FPM seals (magnetic piston) -5°C - +150°C with FPM seals (non magnetic piston)

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Stroke tolerance, minimum and maximum spring loads and cushioning length

Bore (mm)	Stroke tolerance (mm)	Minimum springs load (N)	Maximum springs load (N)	Cushioning length (mm)
Ø20	+ 1,5 / 0 mm	10,8	19,6	/
Ø25		16,7	22,6	5
Ø32	+ 2 / 0 mm	19,6	25,5	6,5
Ø40		25,5	42,2	8
Ø50		44,1	96,3	7,5
Ø63	+ 2,5 / 0 mm	44,1	96,3	7,5
Ø80		63,8	100,1	8
Ø100		107,9	193,3	12

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Standard strokes

DOUBLE ACTING BASIC version and THROUGH ROD CYLINDER version

Cylinders with longer strokes than those in the chart are also available.
The end user is responsible for the load applied on the product and for its correct use.
For special applications, please get in touch with our sales rep.

	Stroke																											
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	100	125	150	160	200	250	300	320	350	400	450	500
Bore	WITHOUT CUSHIONING DEVICE																											Maximum suggested strokes
Ø20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							450
Ø25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							
Ø32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					650
Ø40	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
Ø50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Ø63	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Ø80	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø100	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Bore	WITH CUSHIONING DEVICE																											Maximum suggested strokes
Ø20																												450
Ø25					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●							
Ø32					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					650
Ø40					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
Ø50					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Ø63					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Ø80					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø100					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

DOUBLE ACTING THROUGH ROD CYLINDER BORED version

Cylinders with longer strokes than those in the chart are also available.
The end user is responsible for the load applied on the product and for its correct use.
For special applications, please get in touch with our sales rep.

	Stroke																										
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	25	30	35	40	45	50	55	60	65	70	75	80
Bore	WITHOUT CUSHIONING DEVICE																WITH CUSHIONING DEVICE											Maximum suggested strokes
Ø20	●	●	●	●	●	●	●	●	●	●																		110
Ø25	●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●						
Ø32	●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●						125
Ø40	●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●						
Ø50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	150
Ø63	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	
Ø80	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø100	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

DOUBLE ACTING version WITH NON-ROTATING DEVICE

Cylinders with longer strokes than those in the chart are also available, exceptionally for applications without twisting moments and/or radial loads on the anti-rotation device.

	Stroke																										
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	25	30	35	40	45	50	55	60	65	70	75	80
Bore	WITHOUT CUSHIONING DEVICE																WITH CUSHIONING DEVICE											
Ø20	●	●	●	●	●	●	●	●																				
Ø25	●	●	●	●	●	●	●	●									●	●	●	●								
Ø32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø40	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø63	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø80	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø100	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

SINGLE ACTING version

Please get in touch with our sales rep. for dimensions over 25 mm stroke.

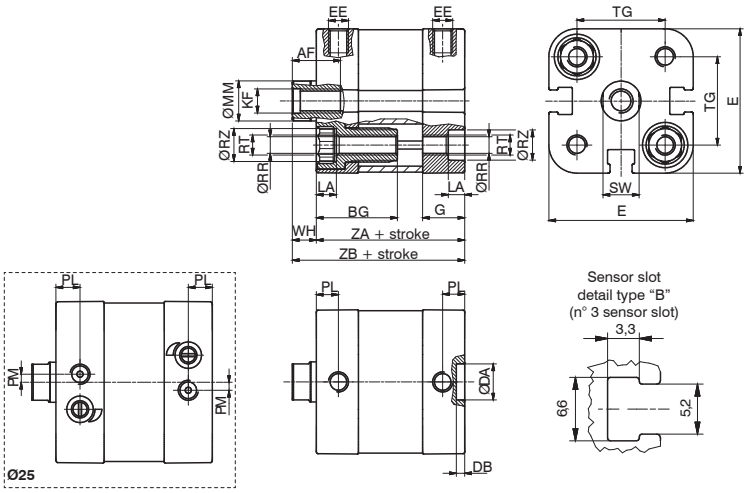
	Bore							
Stroke	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
5	●	●	●	●	●	●	●	●
10	●	●	●	●	●	●	●	●
15	●	●	●	●	●	●	●	●
20	●	●	●	●	●	●	●	●
25	●	●	●	●	●	●	●	●
Maximum suggested strokes	75							

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

BASIC version double and single acting

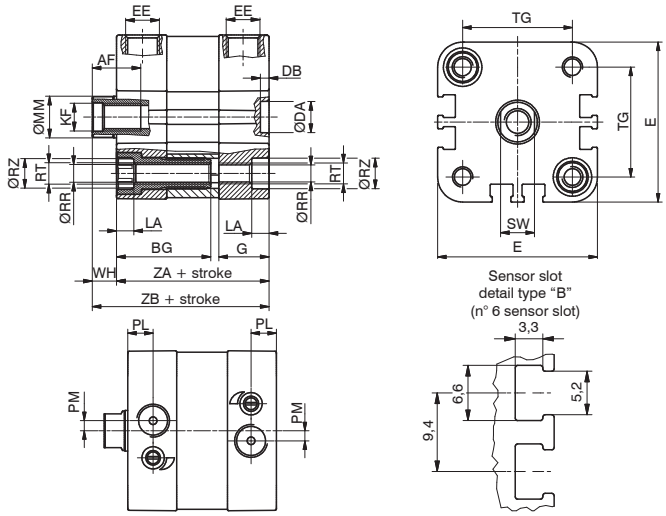


Ø20 and Ø25



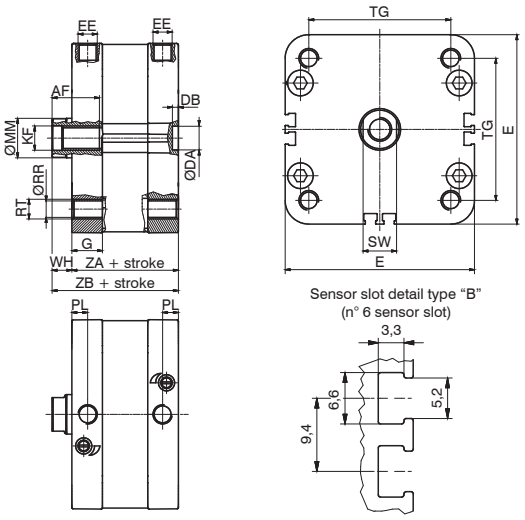


from Ø32 to Ø63



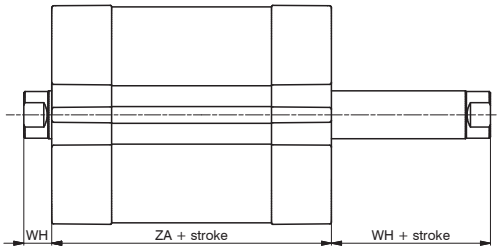


Ø80 and Ø100



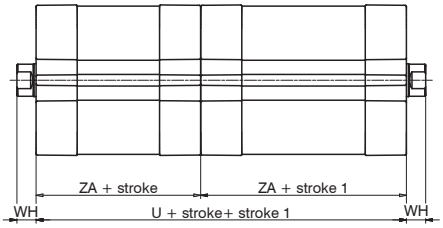
THROUGH ROD CYLINDER version, double and single acting





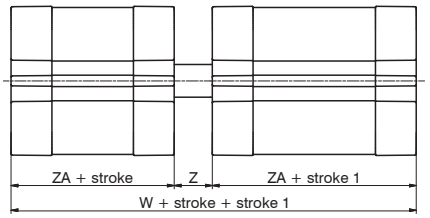
TANDEM version with opposed rods





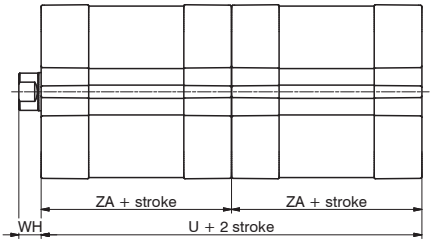
TANDEM version opposed common rod





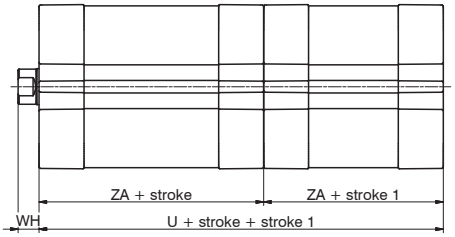
TANDEM version push with common rods





TANDEM version push with independent rods





Ordering code

Basic and Through rod cylinder version

15 _ _ .Ø.stroke. _ _ . _

- **1** = magnetic piston, Double acting
- **2** = magnetic piston, Single acting with front spring
- **3** = magnetic piston, Single acting with rear spring
- **4** = non magnetic piston, Double acting
- **5** = non magnetic piston, Single acting with front spring
- **6** = non magnetic piston, Single acting with rear spring

- **01** = Basic, female threaded rod
- **02** = Basic, male threaded rod
- **03** = through rod, female threaded rod
- **04** = through rod, male threaded rod
- ** **05** = through rod, bored female threaded rod
- **06** = through rod, bored male threaded rod
- **07** = with non-rotating device
- **08** = through rod, female threaded rod, with non-rot. device on one side ***
- **09** = through rod, male threaded rod, with non-rot. device on one side ***

- **0** = NBR seals and C43 chromed plated rod *
- **1** = NBR seals and stainless steel rod (starting from bore Ø32)
- **4** = PUR seals and C43 chromed plated rod *
- **5** = PUR seals and stainless steel rod (starting from bore Ø32)
- **6** = FPM seals and C43 chromed plated rod *
- **7** = FPM seals and stainless steel rod (starting from bore Ø32)

* (Ø20 and Ø25 stainless steel)

- **4** = Non-cushioned versions (mechanical cushioning only)
- **5** = Versions with adjustable end of stroke cushioning system (from Ø25)

** It is possible to order the Ø20, Ø25, Ø32 and Ø40 cylinders with an aluminium piston by replacing the '0' with 'K' in the ordering code.
Example: 1540.20.10.01.1 (Acetyl Resin Piston)
1540.20.10.K1.1 (Aluminium Piston version)

*** for single acting version, the spring is on the anti-rotation side

TANDEM version (magnetic pistons)

15 _ _ . Ø .stroke. (stroke 1) . _

C = female threaded rod **G** = male threaded rod **H** = with through rod and female threaded rod **R** = with through rod and male threaded rod **N** = with non-rotating device	**Tandem push with common rods**
B = female threaded rod **F** = male threaded rod **M** = with non-rotating device **P** = with through rod and female threaded rod **Q** = with through rod and male threaded rod	**Tandem push with independent rods**
D = **Opposed tandem with common rod**	
A = female threaded rod **E** = male threaded rod **L** = with non-rotating device on both ends	**Tandem with opposite rods**

- **0** = NBR seals and C43 chromed plated rod *
- **1** = NBR seals and stainless steel rod (starting from bore Ø32)
- **4** = PUR seals and C43 chromed plated rod *
- **5** = PUR seals and stainless steel rod (starting from bore Ø32)
- **6** = FPM seals and C43 chromed plated rod *
- **7** = FPM seals and stainless steel rod (starting from bore Ø32)

* (Ø20 and Ø25 stainless steel)

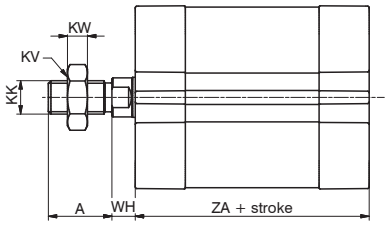
- **4** = Non-cushioned version (mechanical cushioning only)
- **5** = Versions with adjustable end of stroke cushioning system (from Ø25)

Seals compounds scheme: **NBR** oil resistant nitrilic rubber
PUR: polyurethane seals **FPM**: fluoropolymer rubber seals

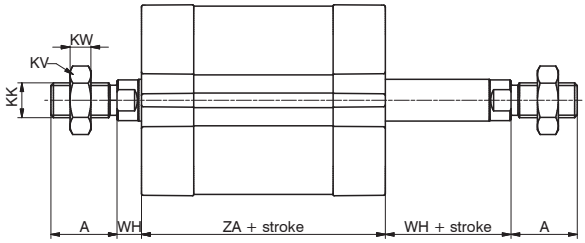
Bore		Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
AF (min)		12	12	14	14	18	18	24	24
BG		20	20	16	16	16	16	/	/
DA (H9)		9	9	9	9	12	12	12	12
DB (+0,1/0)		2,1	2,1	2,5	2,5	2,6	2,6	3	3
E (max)		36	40,5	47,5	55	66	78	96	116
EE		M5	M5	G1/8	G1/8	G1/8	G1/8	G1/8	G1/8
G		10,5	12	14,5	15	15	15	15,5	18,5
KF		M6	M6	M8	M8	M10	M10	M12	M12
LA (0/-0,1)		4.1	4,1	5	5	5	5	/	/
MM (f7)		10	10	12	12	16	16	20	25
PL (+0,1/0)		5,5	6	7,5	8	8	8	8	8
PM		/	2	3	/	/	/	/	/
RR (min)		4,1	4,1	5,1	5,1	6,6	6,6	8,4	8,4
RT		M5	M5	M6	M6	M8	M8	M10	M10
RZ (min)		7,5	7,5	8,5	8,5	10,5	10,5	/	/
SW (0/-0,1)		9	9	10	10	13	13	17	22
TG (±0,2)		22	26	32,5	38	46,5	56,5	72	89
U		74	78	88	90	90	98	108	134
W		83	89	100	103	105	113	124	154
WH (±1)		6	6	7	7	8	8	10	10
Z		9	11	12	13	15	15	16	20
ZA (±0,5)		37	39	44	45	45	49	54	67
ZB (+1/0)		43	45	51	52	53	57	64	77
Weight (g)	stroke	105	110	200	270	420	550	760	1400
	every 5mm	10	10,5	13	17	23,5	27	37	51

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

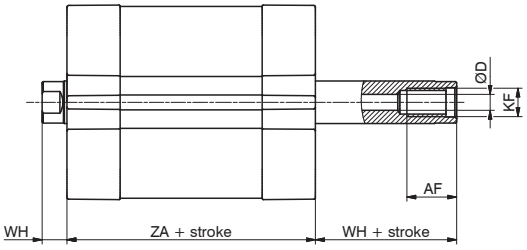
Basic version male piston rod



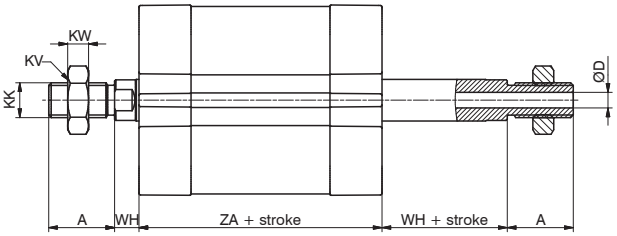
Through rod cylinder version male rod



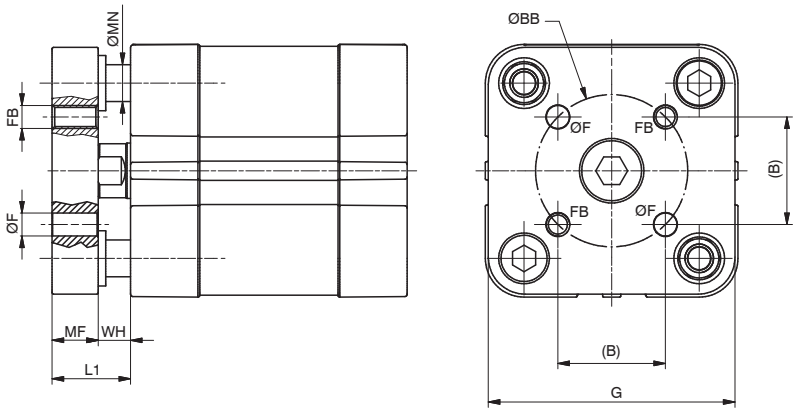
Through rod cylinder version bored female piston rod



Through rod cylinder version bored male piston rod

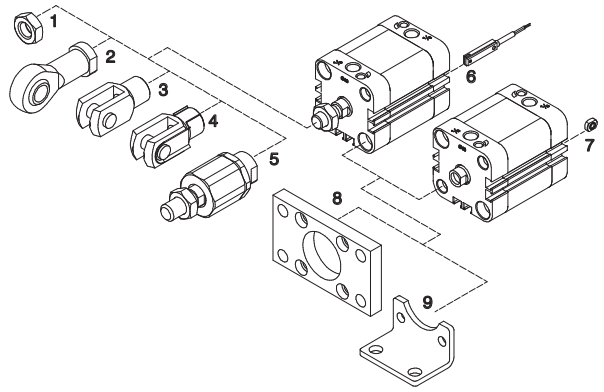


Non-rotating version

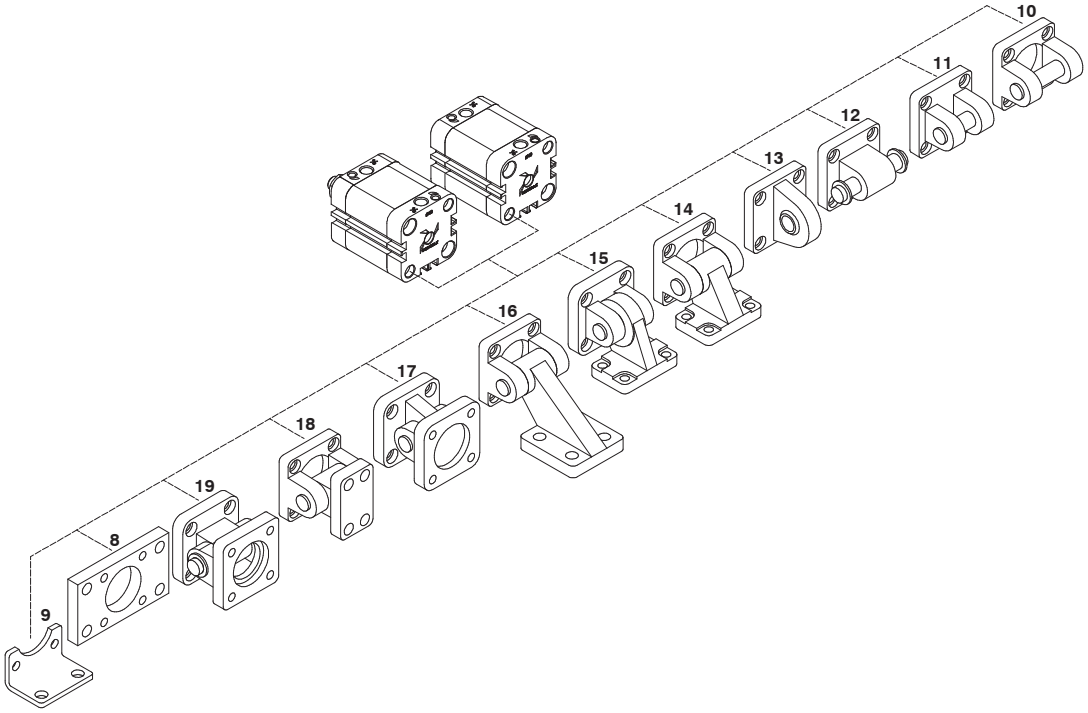


Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
A (0/-0,5)	16	16	19	19	22	22	28	28
AF (min)	12	12	14	14	18	18	24	24
B	12	15,6	19,8	23,3	29,7	35,4	46	56,6
BB (±0,1)	17	22	28	33	42	50	65	80
D	3	3,8	4,5	4,5	6	6	8	10
F (+0,1/0)	4	5	5	5	6	6	8	10
FB	M4	M5	M5	M5	M6	M6	M8	M10
G	35	39,5	45	52	65	75	95	115
KF	M6	M6	M8	M8	M10	M10	M12	M12
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
KV	13	13	17	17	19	19	24	24
KW	5	5	6	6	7	7	8	8
L1	14	14	17	17	20	20	24	24
MF (+0,1/0)	8	8	10	10	12	12	14	14
MN (f7)	6	6	8	8	10	10	12	12
WH (±1)	6	6	7	7	8	8	10	10
ZA (±0,5)	37	39	44	45	45	49	54	67

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



Position	Description	Coding	
1	Nuts	1200.20.06 1320.32.18F 1320.40.18F 1320.50.18F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
2	Ball joint	1200.20.32F 1320.32.32F 1320.40.32F 1320.50.32F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
3	Fork with pin	1200.20.04 1320.32.13F 1320.40.13F 1320.50.13F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
4	Fork with clips	1200.20.04/1 1320.32.13/1F 1320.40.13/1F 1320.50.13/1F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
5	Self-aligning joint	1200.20.33F 1320.32.33F 1320.40.33F 1320.50.33F	(Ø20 and Ø25) (Ø32 and Ø40) (Ø50 and Ø63) (Ø80 and Ø100)
6	Sensors	(see sensor section)	
7	Valves direct mounting bolt	1500.20F	(Ø20, Ø100)



Position	Description	Coding	
		Aluminium	Steel
8	Front and rear flanges (MF1 - MF2)	/	1540.Ø.03F (Ø20 and Ø25) 1380.Ø.03F (Ø32 ... Ø100)
9	Short mounting foot brackets (in sheet metal MS1)	/	1540.Ø.05/1F (Ø32 ... Ø100)
10	Rear clevis (MP2)	1380.Ø.09F (Ø32 ... Ø100)	1320.Ø.20F (Ø32 ... Ø100)
11	Rear narrow clevis	1380.Ø.30F (Ø32 ... Ø100)	1320.Ø.29F (Ø32 ... Ø100)
12	Rear male clevis (MP4)	1580.Ø.09/1F (Ø20 and Ø25) 1380.Ø.09/1F (Ø32 ... Ø100)	1580.Ø.09/2F (Ø20 and Ø25) 1320.Ø.21F (Ø32 ... Ø100)
13	Rear male clevis (with jointed head according to DIN 648K standard)	1380.Ø.15F (Ø32 ... Ø100)	1320.Ø.25F (Ø32 ... Ø100)
14	Square angle trunnion (AB7)	1380.Ø.35F (Ø32 ... Ø100)	1320.Ø.23F (Ø32 ... Ø100)
15	Complete square angle trunnion (with joined head according to DIN 648K standards)	/	1320.Ø.27F (Ø32 ... Ø100)
16	Square angle trunnion (not specified by ISO 15552)	1380.Ø.11F (Ø32 ... Ø100)	/
17	Complete standard trunnion (with joined head according to DIN 648K standards)	1380.Ø.36F (Ø32 ... Ø100)	1320.Ø.26F (Ø32 ... Ø100)
18	Standard trunnion (not specified by ISO 15552)	1380.Ø.10F (Ø32 ... Ø100)	/
19	Standard complete trunnion	/	1320.Ø.22F (Ø32 ... Ø100)

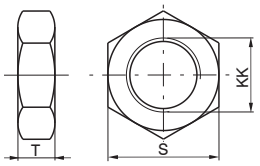
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Nuts

Coding: 1Ⓣ.Ø.Ⓜ

Ⓣ	TYPE
	200 = Nut (Ø20 and Ø25)
	320 = Nut (Ø32 ... Ø100)
Ø	BORE
	20 = Ø20 and Ø25
	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100
Ⓜ	MODEL
	05 = Ø20 and Ø25
	18F = Ø32 ... Ø100





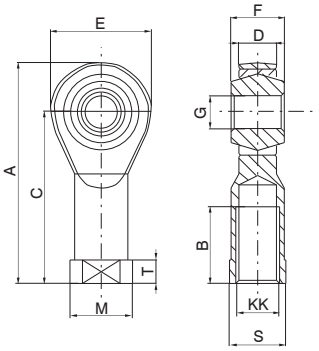
Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
S	13	13	17	17	19	19	24	24
T	5	5	6	6	7	7	8	8
KK	M8x1.25	M8x1.25	M10x1.25	M10x1.25	M12x1.25	M12x1.25	M16x1.5	M16x1.5
Weight (g)	12	12	15	15	20	20	20	20

Ball joint

Coding: 1Ⓣ.Ø.32F

Ⓣ	TYPE
	200 = Ball joint (Ø20 and Ø25)
	320 = Ball joint (Ø32 ... Ø100)
Ø	BORE
	20 = Ø20 and Ø25
	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100





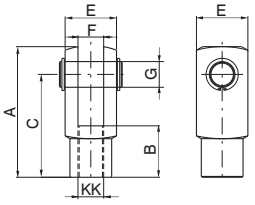
Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
A	48	48	57	57	66	66	85	85
B	16	16	20	20	22	22	28	28
C	36	36	43	43	50	50	64	64
D (-0,1)	9	9	10,5	10,5	12	12	15	15
E	24	24	28	28	32	32	42	42
F	12	12	14	14	16	16	21	21
G (H7)	8	8	10	10	12	12	16	16
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
M	16	16	19	19	22	22	27	27
S	14	14	17	17	19	19	22	22
T	5	5	6,5	6,5	6,5	6,5	8	8
Weight (g)	46	46	76	76	110	110	220	220

Fork with pin

Coding: 1Ⓣ.Ø.Ⓜ

Ⓣ	TYPE
	200 = Fork with pin (Ø20 and Ø25)
	320 = Fork with pin (Ø32 ... Ø100)
Ø	BORE
	20 = Ø20 and Ø25
	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100
Ⓜ	MODEL
	04 = Ø20 and Ø25
	13F = Ø32 ... Ø100





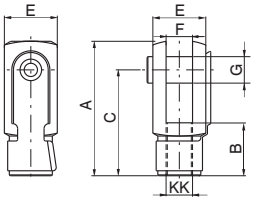
Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
A	42	42	52	52	62	62	83	83
B	16	16	20	20	24	24	32	32
C	32	32	40	40	48	48	64	64
E	16	16	20	20	24	24	32	32
F (B12)	8	8	10	10	12	12	16	16
G	8	8	10	10	12	12	16	16
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
Weight (g)	45	45	100	100	140	140	340	340

Fork with clips

Coding: 1Ⓣ.Ø.Ⓜ

Ⓣ	TYPE
	200 = Fork with clips (Ø20 and Ø25)
	320 = Fork with clips (Ø32 ... Ø100)
Ø	BORE
	20 = Ø20 and Ø25
	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100
Ⓜ	MODEL
	04/1 = Ø20 and Ø25
	13/1F = Ø32 ... Ø100





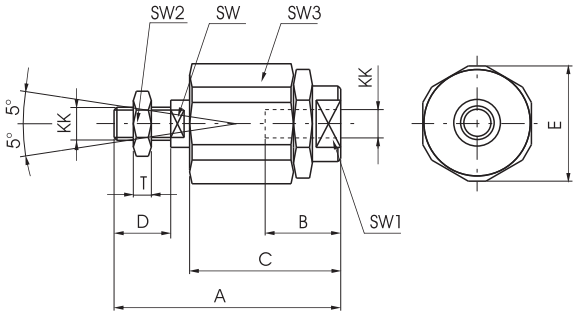
Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
A	42	42	52	52	62	62	83	83
B	16	16	20	20	24	24	32	32
C	32	32	40	40	48	48	64	64
E	16	16	20	20	24	24	32	32
F (B12)	8	8	10	10	12	12	16	16
G	8	8	10	10	12	12	16	16
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
Weight (g)	45	45	100	100	140	140	340	340

Self-aligning joint

Coding: 1Ⓣ.Ø.33F

Ⓣ	TYPE
	200 = Self-aligning joint (Ø20 and Ø25)
	320 = Self-aligning joint (Ø32 ... Ø100)
Ø	BORE
	20 = Ø20 and Ø25
	32 = Ø32 and Ø40
	40 = Ø50 and Ø63
	50 = Ø80 and Ø100



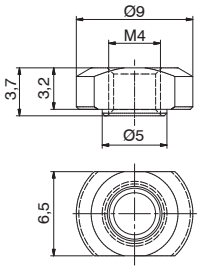


Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
A	57	57	71	71	75	75	103	103
B	20	20	20	20	20	20	32	32
C	33	33	46	46	46	46	63	63
D	20	20	20	20	24	24	32	32
E	19	19	32	32	32	32	45	45
KK	M8x1,25	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M12x1,25	M16x1,5	M16x1,5
SW	7	7	12	12	12	12	20	20
SW1	11	11	19	19	19	19	27	27
SW2	13	13	17	17	19	19	24	24
SW3	17	17	30	30	30	30	41	41
T	5	5	6	6	7	7	8	8
Weight (g)	60	60	220	220	230	230	660	660

Valves direct mounting bolt

Coding: 1500.20.F





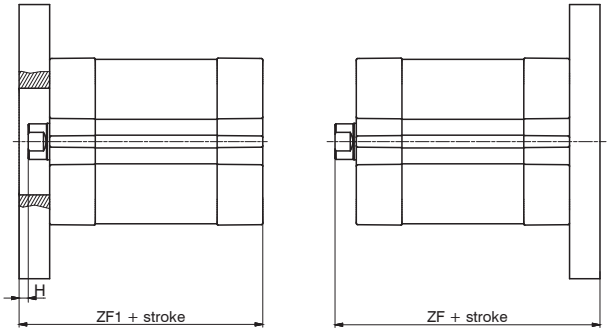
Front and rear flanges (MF1 - MF2)

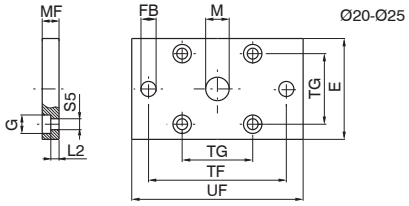
Coding: 1Ⓣ.Ø.03F

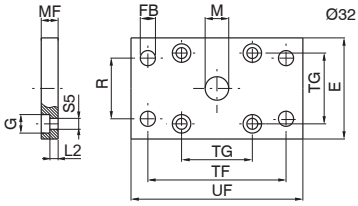
Ⓣ	TYPE
	540 = Flange (Ø20 and Ø25)
	380 = Flange (Ø32 ... Ø100)
Ø	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100



The kit comprises:
n° 1 flange (plated zinc steel)
n° 4 screws (plated zinc steel)







Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
E	35	40	45	52	65	75	95	115
FB (H 13)	6.6	6.6	7	9	9	9	12	14
G	9.5	9.5	10.5	10.5	15	15	18	18
M (H 11)	16	16	30	35	40	45	45	55
MF (JS 14)	8	8	10	10	12	12	16	16
R (JS 14)	/	/	32	36	45	50	63	75
TF (JS 14)	55	60	64	72	90	100	126	150
TG	22	26	32.5	38	46.5	56.5	72	89
UF	70	75	80	90	110	120	150	170
ZF	51	53	130	145	155	170	190	205
ZF1	45	47	54	55	57	61	70	83
H	2	2	3	3	4	4	6	6
L2	3	3	5	5	6.5	6.5	8	8
S5	5.5	5.5	6.6	6.6	9	9	11	11
Weight (g)	125	160	190	250	480	620	1430	1990

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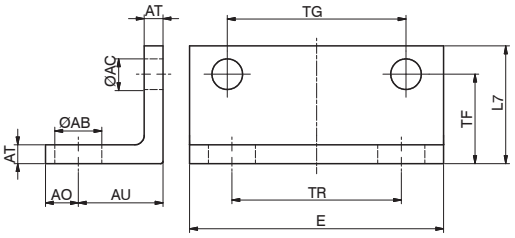
Short mounting foot brackets (in sheet metal MS1)

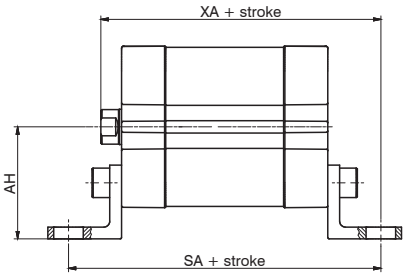
Coding: 1540.Ø.05/1F

Ø	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

The kit comprises:
n° 1 foot (plated zinc steel)
n° 2 screws (plated zinc steel)







Bore	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
AB (H 14)	7	7	7	10	10	10	12	14.5
AC	5.5	5.5	6.5	6.5	8.5	8.5	10.5	10.5
AH	27	29	33.5	38	45	50	63	74
AO (max)	7	7	7	7	9	9	11	13
AT (±0.5)	4	4	4	4	5	5	6	6
AU (±0.2)	16	16	16	18	21	21	26	27
E (max)	35.5	39.5	46.5	54	65	77	95	115
L7	20	20	25	25	30	30	40	45
TF (±0.1)	16	16	17.25	19	21.75	21.75	27	29.5
TG (±0.2)	22	26	32.5	38	46.5	56.5	72	89
TR (JS 14)	22	26	32	36	45	50	63	75
SA	69	71	76	81	87	91	106	121
XA	59	61	67	70	74	78	90	104
Weight (g)	40	45	60	70	130	160	300	405

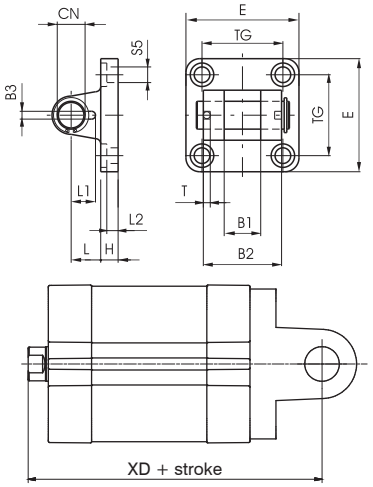
Rear narrow clevis

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓥ	VERSION
	29F = Steel rear narrow clevis
	30F = Aluminium rear narrow clevis

The kit comprises:
n° 1 clevis (plated zinc steel or painted)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel) complete with elastic pin and ring





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
B1 (H 14)		14	16	21	21	25	25
B2 (d 12)		34	40	45	51	65	75
B3 (+0,2/-0)		3.3	4.3	4.3	4.3	4.3	6.3
CN		10	12	16	16	20	20
E	Aluminium	45	52	65	75	95	115
	Steel	45	55	65	75	95	115
H	Aluminium	9	9	11	11	14	14
	Steel	10	10	10	12	14	16
L	Aluminium	13	16	16	21	22	27
	Steel	12	15	17	20	22	25
L1		11.5	12	14	14	16	16
L2 (±0.5)		5,5	5.5	6.5	6.5	10	10
S5		6,6	6.6	9	9	11	11
T		3	4	4	4	4	4
TG		32.5	38	46.5	56.5	72	89
XD		73	77	80	89	100	118
Weight (g)	Aluminium	70	115	200	290	570	820
	Steel	160	270	370	670	1110	2100

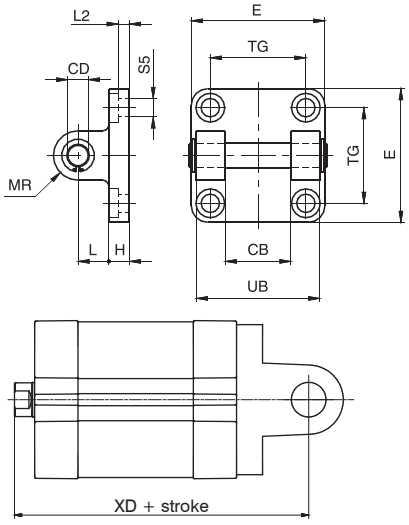
Rear clevis (MP2)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓥ	VERSION
	20F = Steel rear clevis
	09F = Aluminium rear clevis

The kit comprises:
n° 1 clevis (steel or painted aluminium)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel)
n° 2 circlips (steel)





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CB (H14)		26	28	32	40	50	60
CD		10	12	12	16	16	20
E	Aluminium	45	52	65	75	95	115
	Steel	45	55	65	75	95	115
H	Aluminium	9	9	11	11	14	14
	Steel	10	10	10	12	14	16
L	Aluminium	13	16	16	21	22	27
	Steel	12	15	17	20	22	25
MR		10	12	12	16	16	20
TG		32.5	38	46.5	56.5	72	89
UB (h14)		45	52	60	70	90	110
XD		73	77	80	83	100	118
L2(±0.5)		5.5	5,5	6.5	6.5	10	10
S5		6.6	6.6	9	9	11	11
Weight (g)	Aluminium	80	130	185	310	530	910
	Steel	180	290	400	670	1160	2000

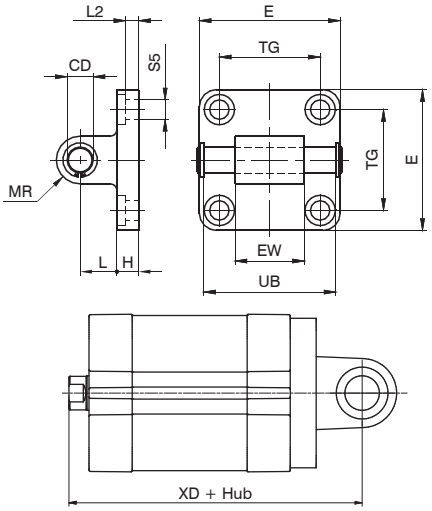
Rear male clevis (MP4)

Coding: 1ⓉⓂ0.Ø.Ⓥ

Ⓣ	TYPE
	5 = Rear male clevis (Ø20 and Ø25)
	3 = Rear male clevis (Ø32 ... Ø100)
Ⓜ	MATERIALS
	8 = Steel (Ø20 and Ø25) - Aluminium (Ø20 ... Ø100)
	2 = Steel (Ø32 ... Ø100)
Ø	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓥ	VERSION
	09/1F = Aluminium rear male clevis (Ø20 ... Ø100)
	09/2F = Steel rear male clevis (Ø20 and Ø25)
	21F = Steel rear male clevis (Ø32 ... Ø100)

The kit comprises:
n° 1 clevis (steel or painted aluminium)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel) *
n° 2 circlips (steel)





Bore		Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CD		8(H9)	8(H9)	10	12	12	16	16	20
E	Aluminium	34	38	45	52	65	75	95	115
	Steel	34	38	45	55	65	75	95	115
EW		16(h14)	16(h14)	26 (-0,2/-0,6)	28 (-0,2/-0,6)	32 (-0,2/-0,6)	40 (-0,2/-0,6)	50 (-0,2/-0,6)	60 (-0,2/-0,6)
H	Aluminium	6	6	9	9	11	11	14	14
	Steel	/	/	10	10	10	12	14	16
L	Aluminium	14	14	13	16	16	21	22	27
	Steel	/	/	12	15	17	20	22	25
MR		8	8	10	12	12	16	16	20
TG		22	26	32,5	38	46,5	56,5	72	89
UB (-0,5/-0)		/	/	46	53	61	71	91	111
XD		63	65	73	77	80	89	100	118
L2(±0.5)		2,6	2,6	5,5	5,5	6,5	6,5	10	10
S5		5,5	5,5	6,6	6,6	9	9	11	11
Weight (g)	Aluminium	25	28	90	130	190	340	580	960
	Steel	70	80	210	330	430	810	1350	2400

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

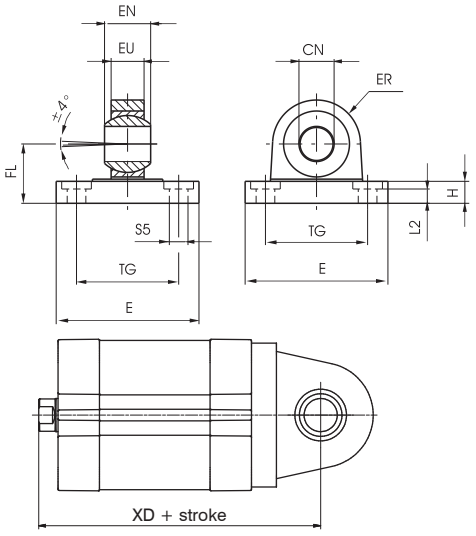
Rear male clevis (with jointed head according to DIN 648K standard)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓥ	VERSION
	25F = Steel rear male clevis
	15F = Aluminium rear male clevis

The kit comprises:
n° 1 clevis (steel or painted aluminium)
n° 4 screws (plated zinc steel)





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CN (H 7)		10	12	16	16	20	20
E	Aluminium	45	52	65	75	95	115
	Steel	45	55	65	75	95	115
EN (-0.1)		14	16	21	21	25	25
ER	Aluminium	16	19	21	24	28.5	30
	Steel	15	18	20	23	27	30
EU		10.5	12	15	15	18	18
FL (JS 15)		22	25	27	32	36	41
H	Aluminium	9	9	11	11	14	14
	Steel	10	10	10	12	14	16
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10
S5		6.6	6.6	9	9	11	11
TG		32.5	38	46.5	56.5	72	89
XD		73	77	80	89	100	118
Weight (g)	Aluminium	60	100	180	245	480	650
	Steel	210	310	400	710	1350	2400

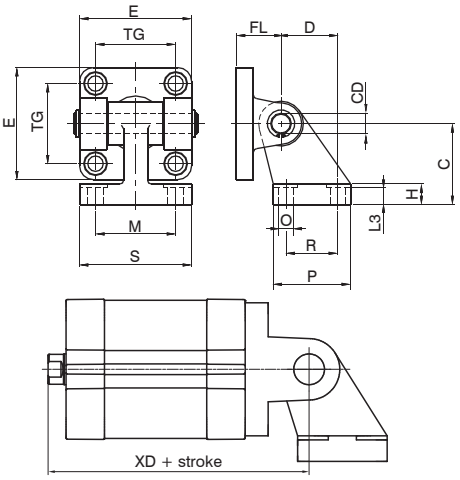
Square angle trunnion (AB7)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓥ	VERSION
	23F = Steel square angle trunnion
	35F = Aluminium square angle trunnion

The kit comprises:
n° 1 clevis (steel or painted aluminium)
n° 1 counter clevis, square (steel or painted aluminium)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel)
n° 2 circlips (steel)





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
E	Aluminium	45	52	65	75	95	115
	Steel	45	55	65	75	95	115
TG		32.5	38	46.5	56.5	72	89
FL		22	25	27	32	36	41
D (JS14)		21	24	33	37	47	55
CD		10	12	12	16	16	20
C (JS15)		32	36	45	50	63	71
H	Aluminium	8	10	12	14	14	17
	Steel	8	10	12	12	14	15
L3	Aluminium	6.4	8.4	10.4	12.4	11.5	14.5
	Steel	6.5	8.5	10.5	10.5	11.5	12.5
R (JS14)		18	22	30	35	40	50
P		31	35	45	50	60	70
O (H13)		6.6	6.6	9	9	11	11
S		51	54	65	67	86	96
M (JS14)		38	41	50	52	66	76
XD		73	77	80	89	100	118
Weight (g)	Aluminium	120	180	225	435	730	1220
	Steel	340	500	640	1250	2100	3500

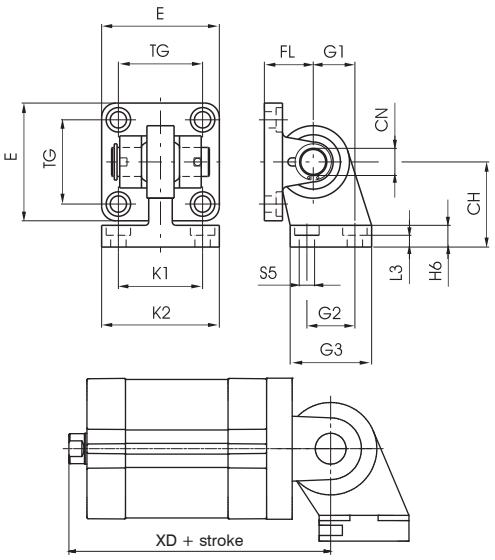
Complete square angle trunnion (with joined head according to DIN 648K standards)

Coding: 1320.Ø.27F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Steel
The kit comprises:
n° 1 clevis (painted steel)
n° 1 counter clevis square with joined head (painted steel)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel)
n° 2 circlips (steel)





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CH (JS 15)	32	36	45	50	63	71
CN	10	12	16	16	20	20
E	45	55	65	75	95	115
FL (JS 15)	22	25	27	32	36	41
G1 (JS 15)	21	24	33	37	47	55
G2 (JS 14)	18	22	30	35	40	50
G3	31	35	45	50	60	70
H6	10	10	12	12	14	15
K1 (JS 14)	38	41	50	52	66	76
K2	51	54	65	67	86	96
L3 (+0,5/-0)	8,5	8,5	10,5	10,5	11,5	12,5
S5	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	73	77	80	89	100	118
Weight (g)	330	480	830	1220	2100	3580

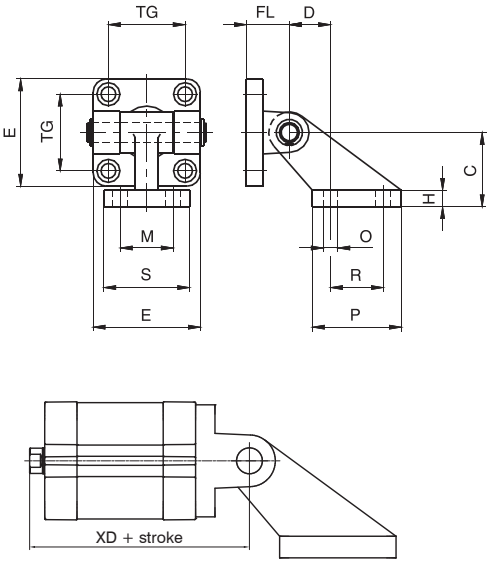
Square angle trunnion (not specified by ISO 15552)

Coding: 1380.Ø.11F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Aluminium
The kit comprises:
n° 1 clevis (painted aluminium)
n° 1 counter clevis square (painted aluminium)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel)
n° 2 circlips (steel)





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
C (±0,2)	32	45	45	63	63	90
D (±0,5)	18	25	25	32	32	40
E	45	52	65	75	95	115
H	8	10	10	12	12	17
FL	22	25	27	32	36	41
M (JS 14)	25	32	32	40	40	50
TG	32,5	38	46,5	56,5	72	89
O (H 13)	7	9	9	11	11	14
P	37	54	54	75	75	103
R (JS 14)	20	32	32	50	50	70
S	41	52	52	63	63	80
XD	73	77	80	89	100	118
Weight (g)	130	260	330	600	820	1560

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

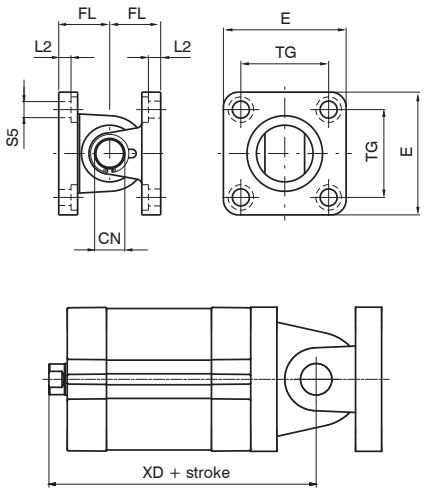
Complete standard trunnion (with joined head according to DIN 648K standards)

Coding: 13Ⓜ.Ø.Ⓥ

Ⓜ	MATERIALS
	20 = Steel
	80 = Aluminium
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓥ	VERSION
	26F = Steel complete standard trunnion
	36F = Aluminium complete standard trunnion

The kit comprises:
n° 1 clevis (steel or painted aluminium)
n° 1 counter clevis with joined head (steel or painted aluminium)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel) complete with elastic pin and ring





Bore		Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CN		10	12	16	16	20	20
E	Aluminium	45	52	65	75	95	115
	Steel	45	55	65	75	95	115
FL (JS 15)		22	25	27	32	36	41
L2 (±0.5)		5.5	5.5	6.5	6.5	10	10
S5		6.6	6.6	9	9	11	11
TG		32.5	38	46.5	56.5	72	89
XD		73	77	80	89	100	118
Weight (g)	Aluminium	130	215	380	535	1050	1470
	Steel	380	580	770	1380	2460	4500

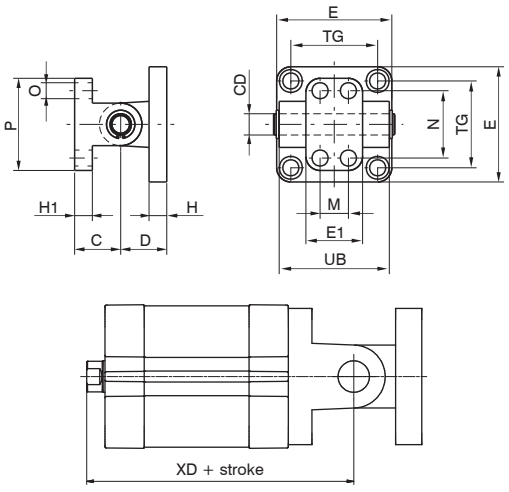
Standard trunnion (not specified by ISO 15552)

Coding: 1380.Ø.10F

Ø	BORE
	32 = Ø 32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Aluminium
The kit comprises:
n° 1 clevis (painted aluminium)
n° 1 counter clevis (painted aluminium)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel)
n° 2 circlips (steel)





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
C (±0,2)	18	26	26	34	34	41
CD	10	12	12	16	16	20
D	22	25	27	32	36	41
E	45	52	65	75	95	115
E1	25	32	32	46	46	56
H	10	10	12	12	16	16
H1	8	10	10	12	12	16
M (±0,2)	-	16	16	25	25	32
N (±0,2)	28	38	38	54	54	90
O	7	9	9	11	11	14
P	40	52	52	75	75	115
TG	32,5	38	46,5	56,5	72	89
UB	45	52	60	70	90	110
XD	73	77	80	89	100	118
Weight (g)	110	190	240	490	710	1290

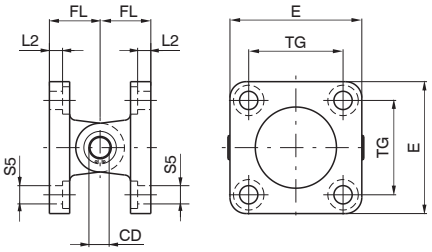
Standard complete trunnion

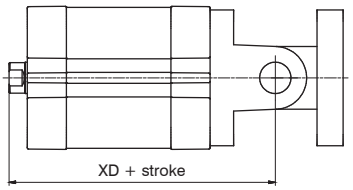
Coding: 1320.Ø.22F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

Steel
The kit comprises:
n° 1 clevis (painted steel)
n° 1 counter clevis (painted steel)
n° 4 screws (plated zinc steel)
n° 1 pin (plated zinc steel)
n° 2 circlips (steel)



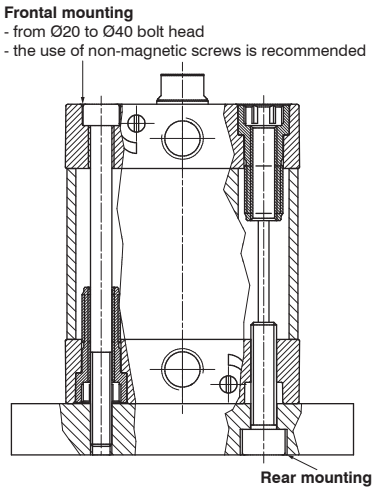




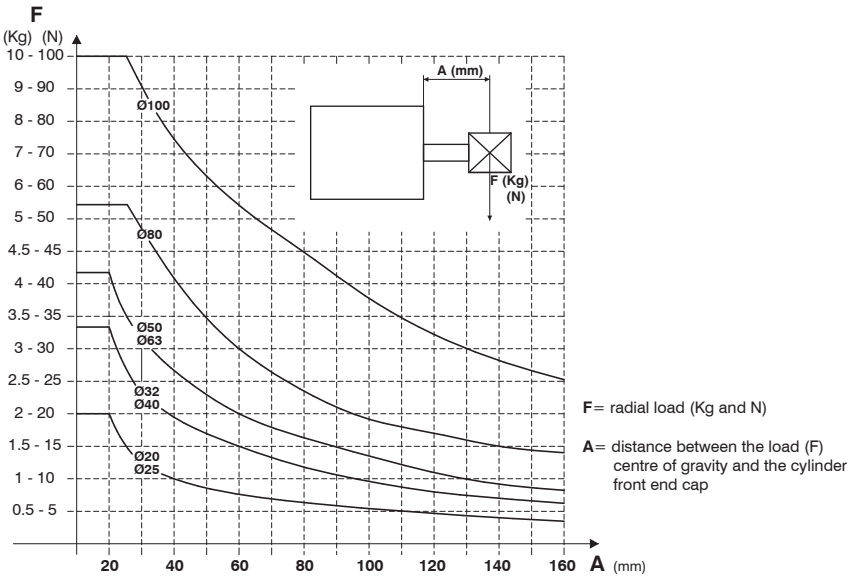
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
CD	10	12	12	16	16	20
E	45	55	65	75	95	115
FL	22	25	27	32	36	41
L 2 (±0.5)	5,5	5,5	6,5	6,5	10	10
S 5	6,6	6,6	9	9	11	11
TG	32,5	38	46,5	56,5	72	89
XD	73	77	80	89	100	118
Weight (g)	360	580	780	1370	2370	4110

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Alternative fixing options



Admissible maximum radial load diagram

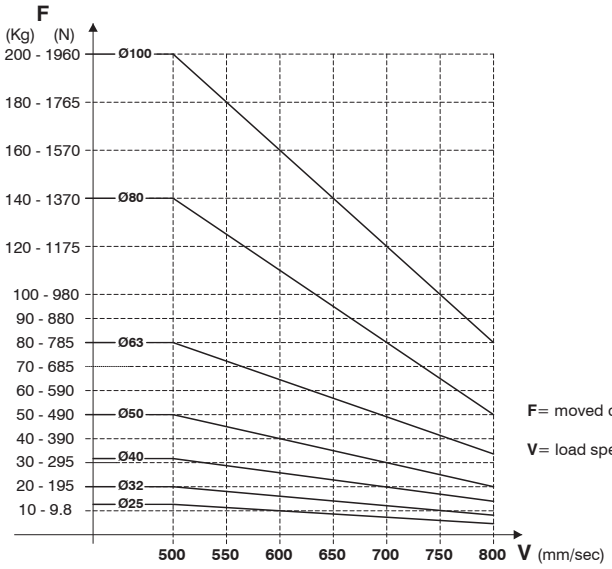


F= radial load (Kg and N)

A= distance between the load (F) centre of gravity and the cylinder front end cap

The diagram shows the maximum radial load **F** (in Newtons) that can be applied to the cylinder piston rod as a function of the distance **A** (in mm), based upon the standard version cylinder under static conditions.
Important: Do not exceed the recommended values in the table as reduced life or damage to the cylinder may result.

End of stroke cushioning capacity diagram



F= moved cylinder load (Kg and N)

V= load speed

The diagram shows, for each diameter, the safety curves relative to the maximum loads which can be moved by the cylinder in function of it's speed **V**.
The data has been calculated under the following test conditions: Cylinder mounted vertically with the rod pointing down, air pressure at 5 bar and with a guided load.
Important: Do not exceed the recommended values in the table as reduced life or damage to the cylinder may result.

Series 1200 - Special performance microbore cylinders

These microbore cylinders are not subject to a standard; they are single acting with a front spring, can be either hexagonal or round bodied and either completely threaded or threaded with a plain rod ending.
They are available with M5 connections or with incorporated quick fittings.

Construction characteristics

Body	brass
Rod bushing	brass
Seals	NBR
Springs	stainless steel
Rod / piston	stainless steel (AISI 303)

Operational characteristics

Fluid	Filtered air. No lubrication needed, if applied it shall be continuous
Pressure	3 ... 7 bar
Working temperature	-5 °C ... +70 °C

Attention: air must be dried for applications with lower temperature.

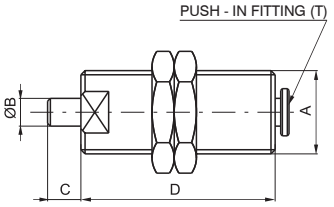
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Threaded body, round execution

Coding: 1213.Ø.Ⓒ

Ø	BORE
	6 = Ø6
	8 = Ø8
	10 = Ø10
Ⓒ	STROKE
	3 = 3 mm stroke (Ø10 only)
	5 = 5 mm stroke (for all diameters)
	10 = 10 mm stroke (Ø6 and Ø10 only)
	20 = 20 mm stroke (Ø6 only)





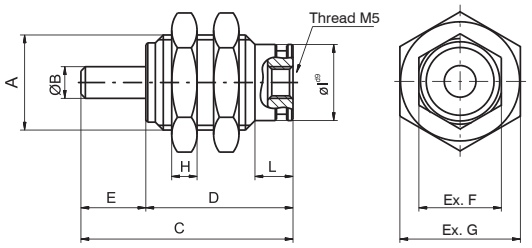
A	ØB	C	D	T
M10x1	Ø3	5	30,5	4/2
			35,5	
			49,5	
M12x1		6	28	
M15x1,5	Ø5	1	44	
		5	40	
		12	44	

Threaded body, hexagonal execution

Coding: 1213.Ø.stroke.Ⓜ

Ø	BORE
	6 = Ø6
	10 = Ø10
	16 = Ø16
Ⓒ	STROKE
	5 = 5 mm stroke
	10 = 10 mm stroke
	15 = 15 mm stroke
Ⓜ	SPRING
	C = Single acting front spring
	CF = Single acting front spring threaded body

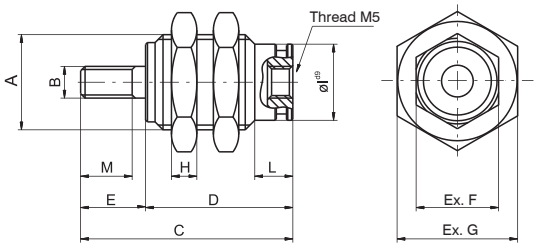




Single acting front spring

Single acting front spring threaded rod



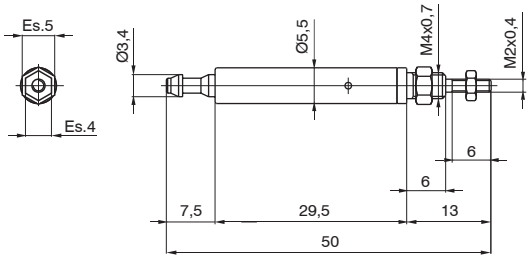


A	ØB	B	C	D	E	Hex. F	Hex. G	H	ØI	L	M
M10x1	Ø3	M3x0.5	27,5	18,5	9	9	12	3	Ø8,5	6	7
			34,5	25.7							
			41,5	32,5							
M15x1.5	Ø5	M4x0.7	32,5	21.5	12	13	19	4	Ø12		10
			39	28							
			46	34							
M22x1.5	Ø6	M5x0.8	37,5	24.5	14	20	27	5	Ø19	7	12
			43,5	30.5							
			50	37							

Front fixing microbore cylinders

Coding: 1273.4.10





Series 1325-1326-1345-1347 - Twin rod cylinders

Construction characteristics

Other seals	NBR 80 shore rubber
Cushion bushings	hardened aluminium
Barrel	RA=0.3-0.5 anodised aluminium
Flange	zinc plated steel
Rod seal	PUR
Pistons	vulcanized rubber block on steel core with incorporated permanent magnet, or without magnet for non magnetic version (plus spacer).
Piston rod	C43 chromed steel or stainless steel
Front cap	oxidised aluminium
Rear cap	UNI 5079 aluminium alloy casting
Cushion adjustment screws	nickel plated steel

Operational characteristics

Fluid	filtered and lubricated air
Pressure	10 bar
Working temperature	-5 °C ... +70 °C

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Cushioning lengths

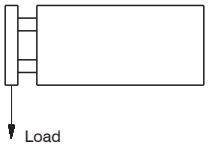
Bore	Ø	32	40	50	63	80	100
Front length	mm	22	22	24	32	32	32
Rear length	mm	28	32	32	40	44	50

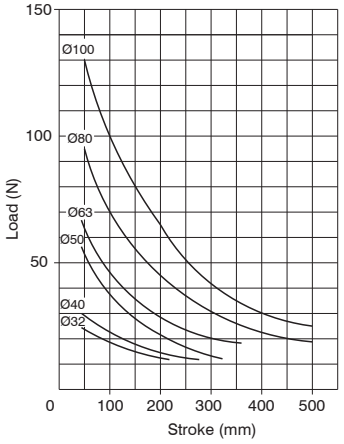
Standard strokes

Ø32: 25 - 50 - 75 - 100 - 150 - 200 mm
Ø40: 25 - 50 - 75 - 100 - 150 - 200 - 250 mm
Ø50: 25 - 50 - 75 - 100 - 150 - 200 - 250 - 300 mm
Ø63: 25 - 50 - 75 - 100 - 150 - 200 - 250 - 300 - 350 mm
Ø80: 25 - 50 - 75 - 100 - 150 - 200 - 250 - 300 - 350 - 400 - 500 mm
Ø100: 25 - 50 - 75 - 100 - 150 - 200 - 250 - 300 - 350 - 400 - 500 mm
On request are available strokes up to: 1000 mm

Stroke tolerance (ISO 15552)

Bore	Stroke	Tolerance
32-40-50	up to 500 mm	+2 0
63-80-100		





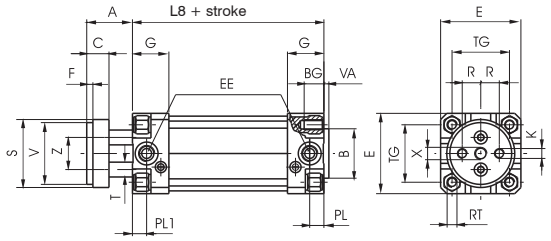
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Basic version

Coding: 13Ⓥ.Ø.stroke.Ⓢ

Ⓥ	VERSION
	25 = magnetic
	26 = non-magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓢ	PISTON ROD
	01 = C43 chromed steel
	01X = Stainless steel



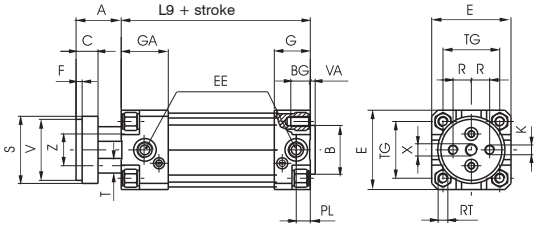


Extended front cap

Coding: 13Ⓥ.Ø.stroke.Ⓢ

Ⓥ	VERSION
	45 = magnetic
	47 = non-magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓢ	PISTON ROD
	01 = C43 chromed steel
	01X = Stainless steel



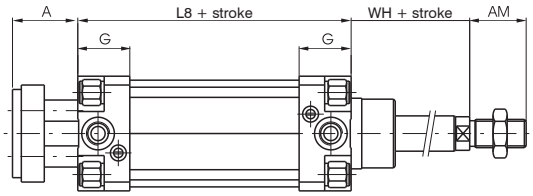


Through rod cylinder version with ISO standard

Coding: 13Ⓥ.Ø.stroke.Ⓢ

Ⓥ	VERSION
	25 = magnetic
	26 = non-magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓢ	PISTON ROD
	02 = C43 chromed steel
	02X = Stainless steel





Through rod twin cylinder version

Coding: 13Ⓥ.Ø.stroke.Ⓢ

Ⓥ	VERSION
	25 = magnetic
	26 = non-magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓢ	PISTON ROD
	06 = C43 chromed steel
	06X = Stainless steel



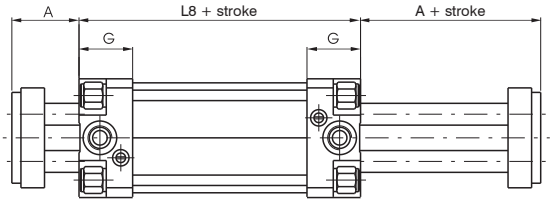


Table of dimensions

Bore			32	40	50	63	80	100
A			26	30	37	37	46	51
AM			22	24	32	32	40	40
B			30	35	40	45	45	55
BG			12	12	16	16	20	20
C			15	15	18	22	22	22
E			46	52	65	75	95	115
EE			G1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"
F			4	4	5	5	5	5
G			25	29	29,5	36	36	40
GA			50	54	54,5	61	61	65
K			M6	M8	M8	M10	M12	M12
L8			94	105	106	121	128	138
L9			119	130	131	146	153	163
PL			9	11,5	13	14	16	18
PL1			9.5	11	10,5	14	13	15
R			9.5	11,25	15	19	25	35
RT			M6	M6	M8	M8	M10	M10
S			35	45	55	70	85	105
T			8	10	12	16	20	20
TG			32.5	38	46,5	56,5	72	89
V			32	40	50	63	80	100
VA			4	4	4	4	4	4
Z			18	22	26	35	40	50
WH			26	30	37	37	46	51
X			M8	M10	M10	M12	M14	M14
Weight (g)	Stroke 0	Basic version	560	810	1380	2300	3680	5740
		Extended front cap	650	950	1500	2500	4100	6300
	every 10 mm		20	26	30	40	80	90

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Sensor brackets codes - 1500._, RS._, HS._

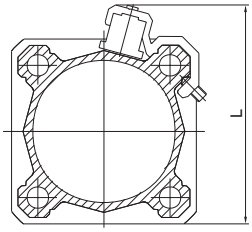
Coding: 1320.Ⓣ

Ⓣ	TYPE
	A = Ø32-Ø40
	B = Ø50-Ø63
	C = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	60	65	77	87	105	125

Sensor brackets codes - 1595.HAP

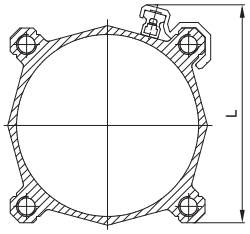
Coding: 1320.Ⓣ

Ⓣ	TYPE
	ASC = Ø32-Ø40
	BSC = Ø50-Ø63
	CSC = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	60	65	77	87	105	125

Sensor brackets codes - 1580._,MRS._,MHS

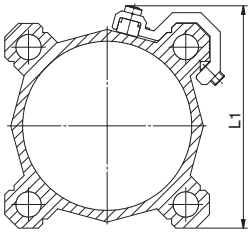
Coding: 1320.Ⓣ

Ⓣ	TYPE
	AS = Ø32-Ø40
	BS = Ø50-Ø63
	CS = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





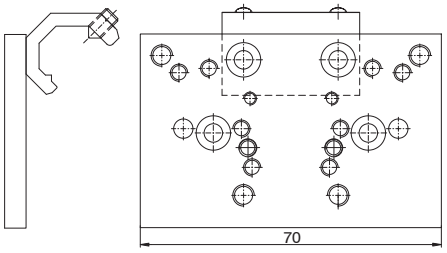
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L1	48	54	66	76	96	112

Support for solenoid valves

Coding: 1320.Ⓣ

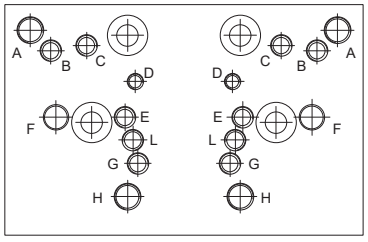
Ⓣ	SIZE
	15 = Ø32-Ø40
	16 = Ø50-Ø63
	17 = Ø80-Ø100





Fixing holes for valves series:

A = 414/2
B = 824
C = 828, T488, 488, 484
D = 2400
E = 2600
F = Bases for ISO solenoid valves
G = 858/2
H = T424
L = 888_



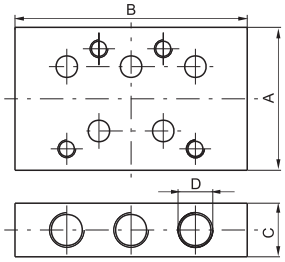
This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel, and, on it, can be mounted either a threaded distributor or a base on whic can be mounted an ISO distributor. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.Ⓝ

Ⓝ	STANDARDS
	21 = ISO1
	22 = ISO2





Dimensions				
Bases for solenoid valves	A	B	C	D
ISO 1	40	75	15	G 1/8"
ISO 2	50	95	20	G 1/4"

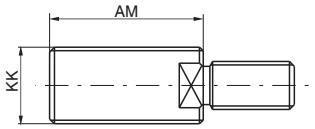
All of the attachments of the ISO 15552 can be mounted, with the exclusion of the front flange and the foot mounting bracket that, although they are part of the same series, need a small adjustment in the exit zone of the rods. For these there is a different code and the dimensions are indicated below.

Threaded Nipple

Coding: 1325.Ø.17F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





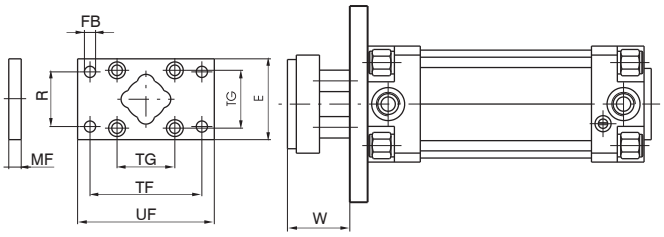
Bore	32	40	50	63	80	100
AM	22	24	32	35	40	40
KK	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
Weight (g)	17	27	63	65	110	110

Front Flange

Coding: 1325.Ø.03F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Bore	32	40	50	63	80	100
E	45	52	65	75	95	115
FB (H13)	7	9	9	9	12	14
MF (JS 14)	10	10	12	12	16	16
R (JS 14)	32	36	45	50	63	75
TF (JS 14)	64	72	90	100	126	150
TG	32,5	38	46,5	56,5	72	89
UF	80	90	110	120	150	170
W	16	20	25	25	30	35
Weight (g)	160	250	480	620	1430	3500

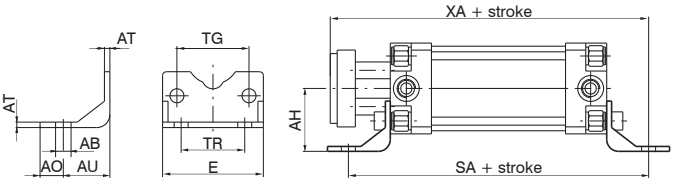
Front foot mounting bracket (short)

Coding: 1325.Ø.05/1F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100

(1 piece)





Bore	32	40	50	63	80	100
AB (H14)	7	9	9	9	12	14
AH (JS 15)	32	36	45	50	63	71
AO (± 0,2)	11	8	13	13	14	15
AT	3,5	3,5	3,5	4,5	5	5
AU	24	28	32	32	41	41
E	45	52	65	75	95	115
SA	142	161	170	185	210	220
TG	32,5	38	46,5	56,5	72	89
TR (JS 14)	32	36	45	50	63	75
XA	144	163	175	190	215	230
Weight (g)	50	70	120	180	320	400

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series ECOFLAT

Profiled tube has two "T" slots on the side hosting sensors 1580._, MRS._, MHS._. without adaptors.
Two additional connections are also available on rear cap for cylinder feeding

Construction characteristics

Barrel	aluminium alloy anodised
Piston seals	PUR
Piston rod seals	PUR (FPM upon request)
Shock absorber	NBR
Pistons	acetal resin, aluminium on request
Piston rod	C43 chromed steel or stainless steel
End caps	anodized aluminium
Fixing screws	zinc plated steel

Operational characteristics

Fluid	filtered and lubricated air or not (if lubricated the lubrication must be continuous)
Pressure	10 bar
Working temperature	-5 °C ... +70 °C

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Maximum standard strokes

Size 25: 200 mm
Size 32 ... 63: 300 mm
On request are available strokes up to: 500 mm

Sections (cm^2)

Size	25	32	40	50	63
Out stroke (cm^2)	5,28	8,09	13,09	20,28	32,68
In stroke (cm^2)	4,49	6,96	11,08	17,14	29,54

In order to calculate the theoretical force generated by the unit, both outstroke and instroke, it is necessary to use the following equation:
FORCE(Kg) = Surface (cm^2) x Pressure(bar)
It is also necessary to remember that the theoretical force must be reduced by 10-15% in order to account for the unit internal friction.

Maximum rod radial movement (°)

Size	25	32	40	50	63
rod radial movement	±0.8	±0.7	±0.6	±0.5	±0.4

Maximum torque applicable on the piston rod (Nm)

Size	25	32	40	50	63
Maximum torque	0,8	1	1,3	1,8	2,1

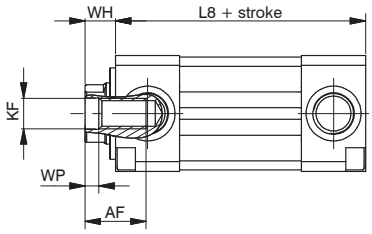
The maximum torque values must also be accounted for while mounting accessories on the piston rod.

Basic version "1" female rod

Coding: 13Ⓥ.Ⓣ.stroke.ⒶⓅ

Ⓥ	VERSION
	70 = Magnetic chromed rod
	71 = Magnetic stainless steel rod
	72 = Non magnetic chromed rod
	73 = Non magnetic stainless steel rod
Ⓣ	SIZE
	25 = Equivalent Ø25 piston area
	32 = Equivalent Ø32 piston area
	40 = Equivalent Ø40 piston area
	50 = Equivalent Ø50 piston area
	63 = Equivalent Ø63 piston area
Ⓐ	FEEDING
	1 = Side connection
	1P= Rear connection
Ⓟ	PISTON
	= Standard version
	K = Version with aluminium piston



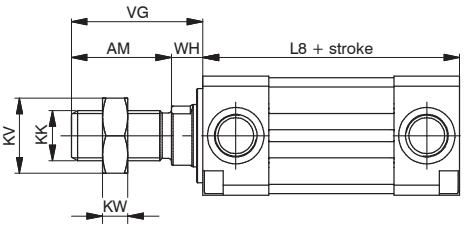


Basic version "2" male rod

Coding: 13Ⓥ.Ⓣ.stroke.ⒶⓅ

Ⓥ	VERSION
	70 = Magnetic chromed rod
	71 = Magnetic stainless steel rod
	72 = Non magnetic chromed rod
	73 = Non magnetic stainless steel rod
Ⓣ	SIZE
	25 = Equivalent Ø25 piston area
	32 = Equivalent Ø32 piston area
	40 = Equivalent Ø40 piston area
	50 = Equivalent Ø50 piston area
	63 = Equivalent Ø63 piston area
Ⓐ	FEEDING
	2 = Side connection
	2P = Rear connection
Ⓟ	PISTON
	= Standard version
	K = Version with aluminium piston



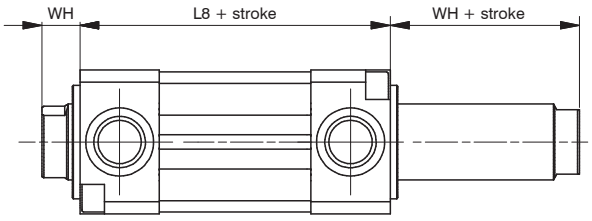


Female through rod cylinder version "3"

Coding: 13Ⓥ.Ⓣ.stroke.3Ⓟ

Ⓥ	VERSION
	70 = Magnetic chromed rod
	71 = Magnetic stainless steel rod
	72 = Non magnetic chromed rod
	73 = Non magnetic stainless steel rod
Ⓣ	SIZE
	25 = Equivalent Ø25 piston area
	32 = Equivalent Ø32 piston area
	40 = Equivalent Ø40 piston area
	50 = Equivalent Ø50 piston area
	63 = Equivalent Ø63 piston area
Ⓟ	PISTON
	= Standard version
	K = Version with aluminium piston



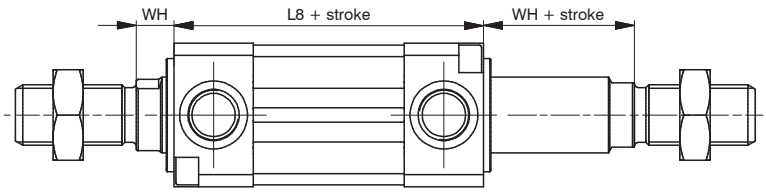


Male through rod cylinder version "4"

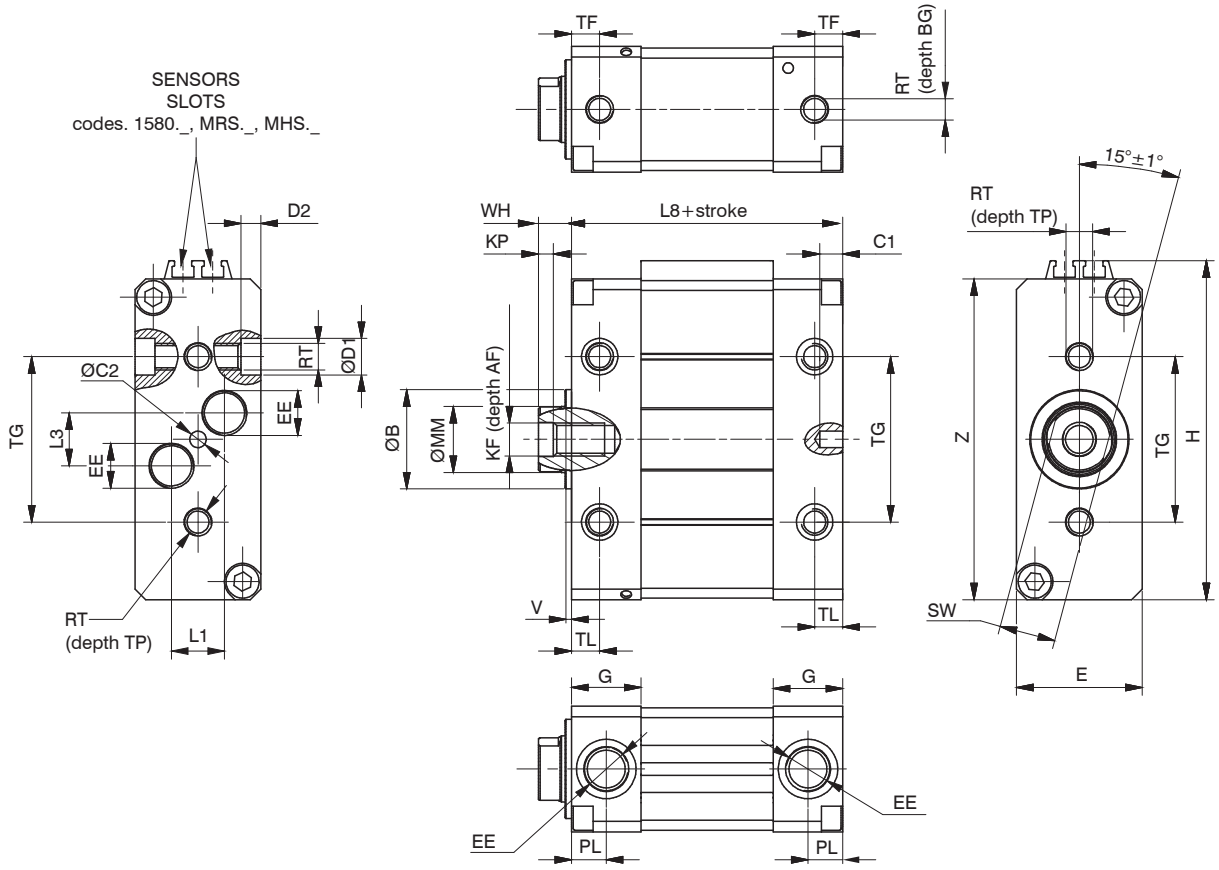
Coding: 13Ⓥ.Ⓣ.stroke.4Ⓟ

Ⓥ	VERSION
	70 = Magnetic chromed rod
	71 = Magnetic stainless steel rod
	72 = Non magnetic chromed rod
	73 = Non magnetic stainless steel rod
Ⓣ	SIZE
	25 = Equivalent Ø25 piston area
	32 = Equivalent Ø32 piston area
	40 = Equivalent Ø40 piston area
	50 = Equivalent Ø50 piston area
	63 = Equivalent Ø63 piston area
Ⓟ	PISTON
	= Standard version
	K = Version with aluminium piston





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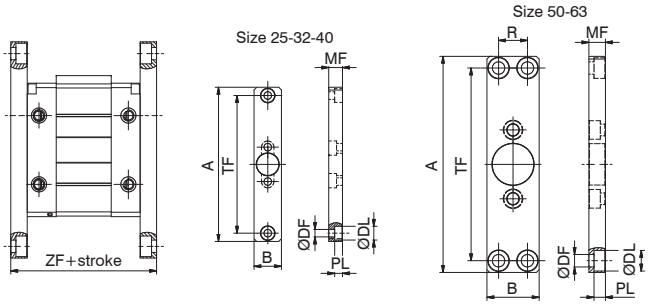
Size				25	32	40	50	63
AM				22	22	24	32	32
AF				12	14	16	20	20
Ø B (h9)				16	20	25	30	30
BG				8	9	9	12	14
C1				7	7	7	7	7
C2 (H9)				4	4	4	5	5
Ø D1				8	10	10	11	15
D2				4	4	5	6	6
E				20	24	30	38	50
EE				M5	G1/8"	G1/8"	G1/4"	G1/4"
G				12	17	17	21	21
H				56,5	65,5	82,5	102,5	127
KF				M5	M6	M8	M10	M10
KK				M10x1,25	M10x1,25	M12x1,25	M16x1,5	M16x1,5
KP				2	2,5	3	4,5	4,5
KV				17	17	19	24	24
KW				6	6	7	8	8
L1				6	7,5	7,5	16	19
L3				10	14,5	14,5	16	21
L8				62	72	76	82	82
Ø MM				10	12	16	20	20
PL				6,5	8,5	8,5	10,5	10,5
RT				M5	M6	M6	M8	M10
SW (H13)				8	10	13	17	17
TF				5	8,5	8,5	8,5	8,5
TG				25	32	40	50	60
TL				5	8,5	8,5	8,5	8,5
TP				8	9	9	12	14
V				2	2	2	2	2
VG				30	30	33	42	42
WH				8	8	9	10	10
Z				51	60	77	97	1215
Weight (g)	Version	1	Stroke 0	180	285	482	848	1350
		2	Stroke 0	203	309	520	929	1431
	every 10 mm			22	29	49	79	118
Weight (g)	Version	3	Stroke 0	195	314	534	959	1478
		4	Stroke 0	242	362	610	1096	1615
	every 10 mm			28	38	65	103	143

Front and rear flanges

Coding: 1370.Ⓣ.03

Ⓣ	SIZE
	25 = Size 25
	32 = Size 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





Brackets used to anchor the cylinder parallel to the mounting plane. Manufactured from steel with a rust proof protective treatment. Mounted to the cylinder end caps with bolts.

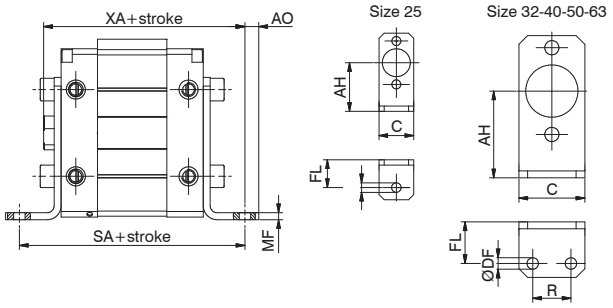
Size	25	32	40	50	63
A	112	130	146	157	157
B	20	24	30	38	50
ØDF	5.5	6.6	6.6	9	9
ØDL	10	11	11	15	15
PL	5.7	6.5	6.3	8.3	8.3
MF	10	10	10	12	15
R	/	/	/	21	33
TF	100	115	132	140	140
ZF	82	92	96	106	112

Foot

Coding: 1370.Ⓣ.05/1F

Ⓣ	SIZE
	25 = Size 25
	32 = Size 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





Brackets used to anchor the cylinder parallel to the mounting plane. Manufactured from steel with a rust proof protective treatment. Mounted to the cylinder end caps with bolts.

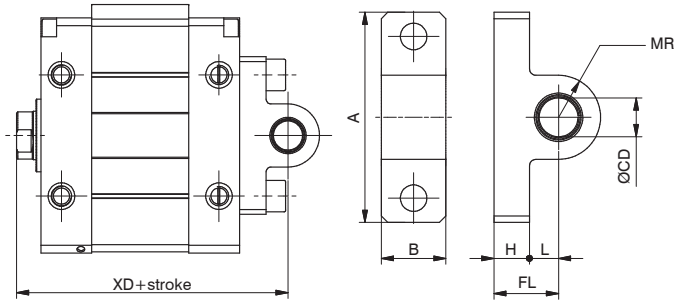
Size	25	32	40	50	63
AH	28	32	40	50	63
AO	7	5.5	7	8	10
C	20	24	30	38	50
ØDF	5.5	5.5	5.5	6.6	9
FL	16	18	20	24	27
MF	3	3	4	4	4
R	/	13	16	22	30
SA	94	108	116	130	136
XA	86	98	105	116	119

Rear male clevis

Coding: 1370.Ⓣ.09/1F

Ⓣ	SIZE
	25 = Size 25
	32 = Size 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load.

Size	25	32	40	50	63
A	37	44	52	65	78
B	9	10.5	10.5	20	25
ØCD (H7)	8	10	12	12	16
FL	14	15	18	20	24
H	6	9	9	11	11
L	8	6	9	9	13
MR	7.5	10	13	13	17
XD	84	95	103	112	116

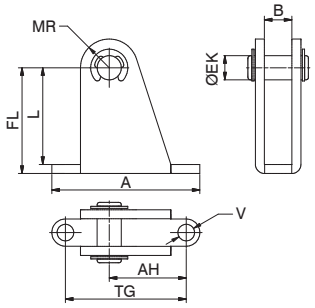
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rear clevis

Coding: 1370.Ⓣ.09F

Ⓣ	SIZE
	25 = Size 25
	32 = Size 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





To be used in conjunction with 09/1 clevis. Similar to type 08 but includes a hinge pin. This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and selfalign as necessary when under load. Manufactured from sheet metal with rust proof protective treatment.

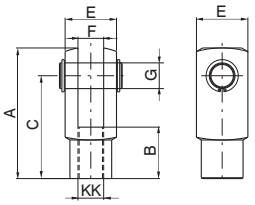
Size	25	32	40	50	63
A	49	60	60	46	60
AH	25.5	33	29.5	24	32
B	9.1	10.6	10.6	20.1	25.1
ØEK	8	10	12	12	16
FL	35	42	51	55	68
L	32	38	47	50	63
MR	9.5	11	14	14	18
TG	40	50	50	30	40
ØV	5.5	6.6	6.6	9	11

Fork with pin

Coding: 1320.Ⓣ.13F

Ⓣ	SIZE
	32 = Size 25 and 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zincplated steel.

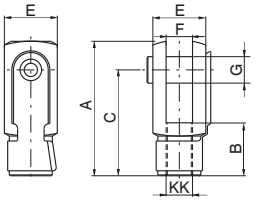
Bore	25	32	40	50	63
A	52	52	62	83	83
B	20	20	24	32	32
C	40	40	48	64	64
E	20	20	24	32	32
F(B12)	10	10	12	16	16
G	10	10	12	16	16
KK	M10X1.25	M10X1.25	M12X1.25	M16X1.5	M16X1.5
Weight (g)	100	100	140	340	340

Fork with clips

Coding: 1320.Ⓣ.13/1F

Ⓣ	SIZE
	32 = Size 25 and 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





Element that when screwed to the rod consents a regular functioning even when there are significant lateral forces as the connection point. Made of zincplated steel.

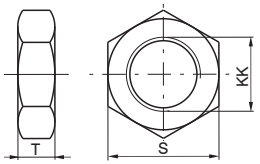
Bore	25	32	40	50	63
A	52	52	62	83	83
B	20	20	24	32	32
C	40	40	48	64	64
E	20	20	24	32	32
F(B12)	10	10	12	16	16
G	10	10	12	16	16
KK	M10X1.25	M10X1.25	M12X1.25	M16X1.5	M16X1.5
Weight (g)	100	100	140	340	340

Nuts

Coding: 1320.Ⓣ.18F

Ⓣ	SIZE
	32 = Size 25 and 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





Used to block the position of the fork.

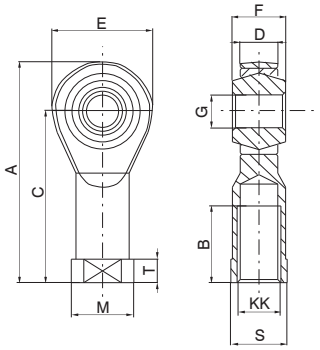
Bore	25	32	40	50	63
S	17	17	19	24	24
T	6	6	7	8	8
KK	M10X1.25	M10X1.25	M12X1.25	M16X1.5	M16X1.5
Weight (g)	15	15	20	20	20

Ball joint

Coding: 1320.Ⓣ.32F

	SIZE
Ⓣ	**32** = Size 25 and 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





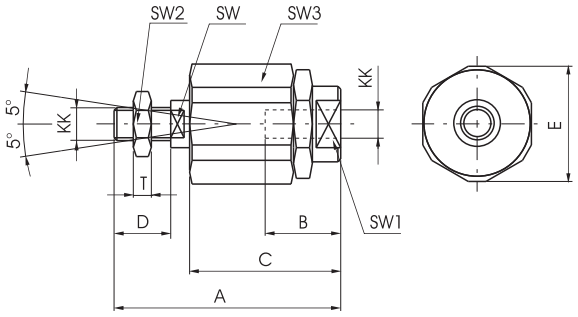
Bore	25	32	40	50	63
A	57	57	66	85	85
B	20	20	22	28	28
C	43	43	50	64	64
D (-0.1)	10.5	10.5	12	15	15
E	28	28	32	42	42
F	14	14	16	21	21
G (H7)	10	10	12	16	16
KK	M10x1.25	M10x1.25	M12x1.25	M16x1.5	M16x1.5
M	19	19	22	27	27
S	17	17	19	22	22
T	6.5	6.5	6.5	8	8
Weight (g)	76	76	110	220	220

Self-aligning joint

Coding: 1320.Ⓣ.33F

	SIZE
Ⓣ	**32** = Size 25 and 32
	40 = Size 40
	50 = Size 50
	63 = Size 63





Bore	25	32	40	50	63
A	71	71	75	103	103
B	20	20	20	32	32
C	46	46	46	63	63
D	20	20	24	32	32
E	32	32	32	45	45
KK	M10x1.25	M10x1.25	M12x1.25	M16x1.5	M16x1.5
SW	12	12	12	20	20
SW1	19	19	19	27	27
SW2	17	17	19	24	24
SW3	30	30	30	41	41
T	6	6	7	8	8
Weight (g)	220	220	230	660	660

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Series 1400 - Ø40 - Ø63

The SKIP and STOP valves are pneumatically actuated 2 ways poppet valves.
The SKIP valve (accelerating device) is normally open and is equipped with a supplementary regulator for maximum speed control; it must be activated to obtain speed regulation.
The STOP valve can be normally closed or normally open.

Construction characteristics

Bore	40 mm and 63 mm diameter
Barrel	bright painted drawn steel
Regulators group	brass
Waterproof seals	NBR rubber
Piston seals	FPM
Rod seal	PUR
Circuit oil	hydraulic with viscosity 2.9° E at 50°C (viscosity index minimum 118)
Pistons	aluminium
Piston rod	C43 chromed steel
End caps	black anodised aluminium
Tie rods	zinc plated steel
SKIP and STOP valves	black anodised aluminium

Operational characteristics

Max connecting load	600 kg (Ø40) -1200 Kg (Ø63)
Working temperature	-5 °C ... +70 °C
Min. and max. speed	60 ... 10000 mm/min.
Minimum pressure for the actuation of SKIP and STOP valves	4 bar

Attention: air must be dried for applications with lower temperature.

Standard strokes

50 - 75 - 100 - 150 - 200 - 250 - 300 - 350 - 400 - 450 - 500 mm
For minimum strokes see different types.
On request are available strokes up to: 1300 mm

Operation instructions

Important: If the hydraulic regulator is mounted parallelly with a pneumatic actuator, to avoid the bending moment on the rod generated when the stroke is adjusted or when the stop is engaged, it is recommended to guide and support the load to be moved.
The limit pressure is indicated below, based on the size of the pneumatic actuator, above which it is recommended to guide and support the load:

Cylinder	Limit pressure (bar)
Ø40 and Ø50	10
Ø63	5
Ø80	2
Over Ø100	always guide and support the load

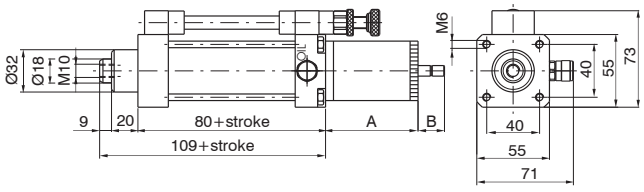
Maintenance

The speed control check is a closed system and there are no external factors that can adversely affect its function.
Care however, has to be exercised not to allow the hydraulic fluid level to drop below the minimum indicated on the auxiliary tank. Should this occur, cavitation, or worse, an air pocket would result causing erratic control.
Additional fluid should be put in exclusively through a unidirectional valve by means of an appropriate syringe (such as our code number 1400.99.01).
Excess fluid will be expelled through a vent into an appropriate container. It is necessary to completely disassemble the regulator and be sure to bleed the system to eliminate air pockets.
We suggest that you create a vacuum before beginning to refill.
This can be done with a small unidirectional valve turned up and repeatedly loaded with a syringe. The rod must be manually actuated successively releasing air through the valve using a small and pointed instrument.

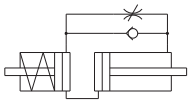
Regulation on the outward stroke - Tank in line

Coding: 1400.40.stroke.01.1





Weight
1450 g + 300 g every 50 mm stroke

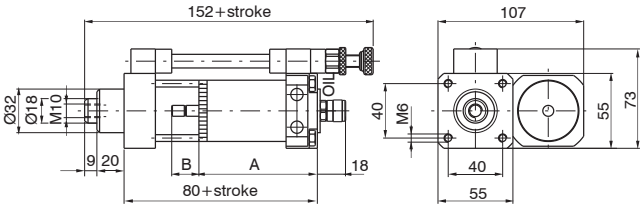


Strokes	A	B max.
< 75	78	30
75...<150	102	45
150...<250	127	60
250...<350	187	90
350...<500	202	120

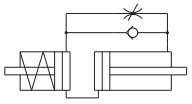
Regulation on the outward stroke – Lateral tank

Coding: 1400.40.stroke.01.2





Weight
1530 g + 300 g every 50 mm stroke

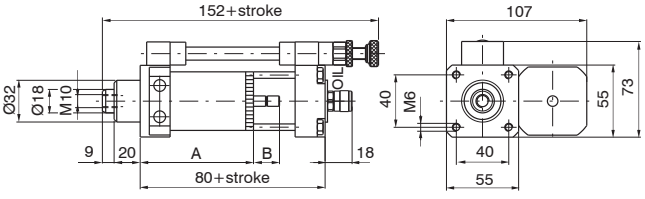


Strokes	A	B max.
< 75	93	30
75...<150	118	45
150...<250	143	60
250...<350	183	90
350...<500	218	120

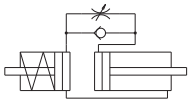
Regulation on the inward stroke

Coding: 1400.40.stroke.02.2





Weight
1530 g + 300 g every 50 mm stroke

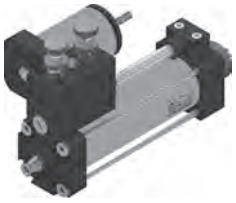


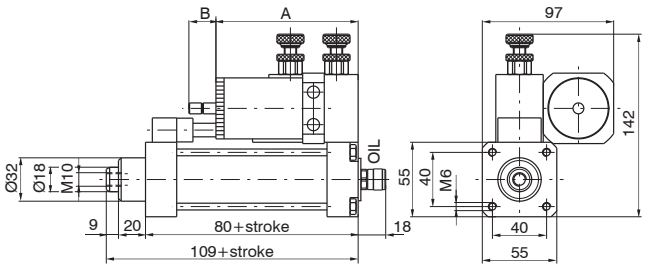
Strokes	A	B max.
< 75	93	30
75...<150	118	45
150...<250	143	60
250...<350	183	90
350...<500	218	120

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Regulation in both directions

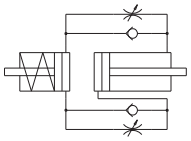
Coding: 1400.40.stroke.03.2





Weight
1870 g + 300 g every 50 mm stroke

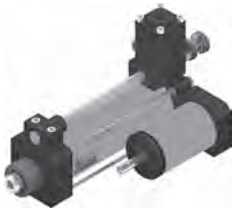
Attention: minimum stroke=150 mm when fitted in tandem (parallel or in-line) with 1319-1320-1321 cylinders series.

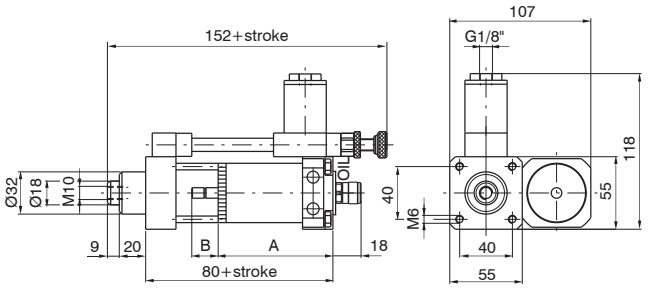


Strokes	A	B max.
< 75	110	30
75...<150	135	45
150...<250	160	60
250...<350	200	90
350...<500	235	120

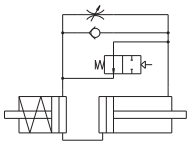
Regulation on the outward stroke with skip (acceleration valve)

Coding: 1400.40.stroke.01.04





Weight
1670 g + 300 g every 50 mm stroke



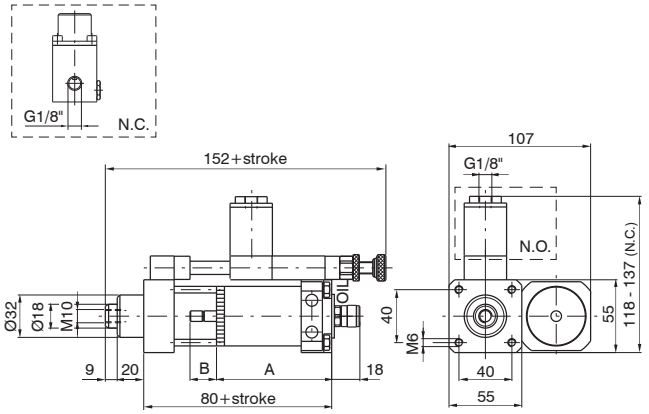
Strokes	A	B max.
< 75	93	30
75...<150	118	45
150...<250	143	60
250...<350	183	90
350...<500	218	120

Regulation on the outward stroke with STOP (STOP valve)

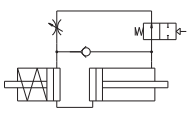
Coding: 1400.40.stroke.01.0Ⓥ

	VERSION
Ⓥ	**5** = STOP N.O.
	7 = STOP N.C.





Weight
1710 g + 300 g every 50 mm stroke



Strokes	A	B max.
< 75	93	30
75...<150	118	45
150...<250	143	60
250...<350	183	90
350...<500	218	120

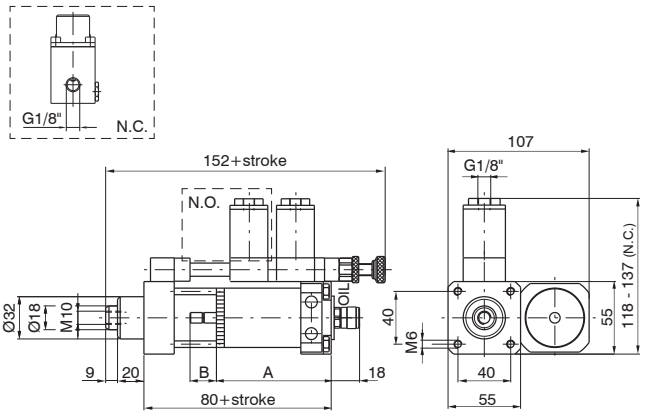
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Regulation on the outward stroke with SKIP and STOP (acceleration and STOP valves)

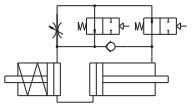
Coding: 1400.40.stroke.01.0Ⓥ

Ⓥ	VERSION
	6 = STOP N.O.
	8 = STOP N.C.





Weight
1830 g + 300 g every 50 mm stroke

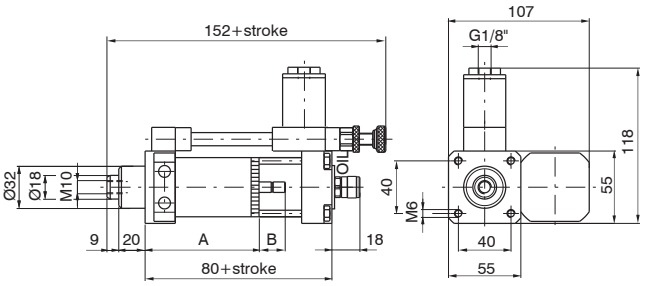


Strokes	A	B max.
< 75	93	30
75...<150	118	45
150...<250	143	60
250...<350	183	90
350...<500	218	120

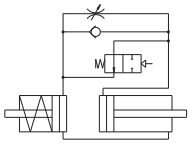
Regulation on the inward stroke with SKIP (acceleration valve)

Coding: 1400.40.stroke.02.04





Weight
1670 g + 300 g every 50 mm stroke



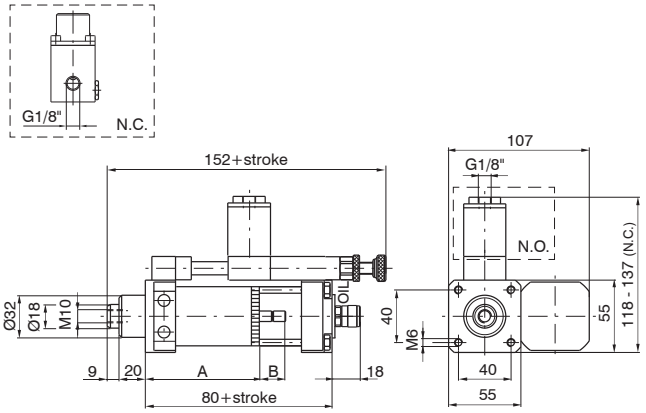
Strokes	A	B max.
< 75	93	30
75...<150	118	45
150...<250	143	60
250...<350	183	90
350...<500	218	120

Regulation on the inward stroke with stop (stop valve)

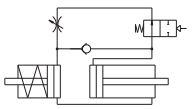
Coding: 1400.40.stroke.02.0Ⓥ

Ⓥ	VERSION
	5 = STOP N.O.
	7 = STOP N.C.





Weight
1710 g + 300 g every 50 mm stroke



Strokes	A	B max.
< 75	93	30
75...<150	118	45
150...<250	143	60
250...<350	183	90
350...<500	218	120

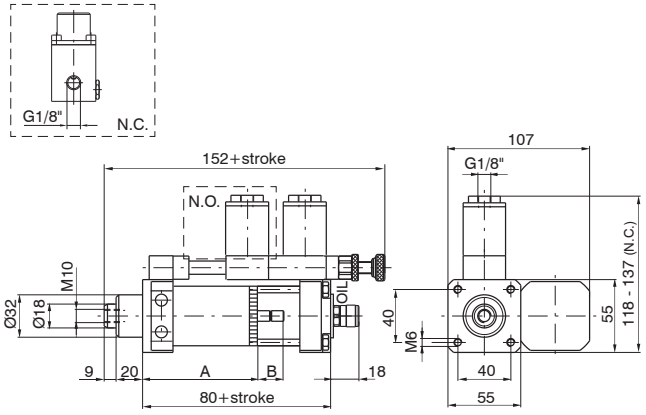
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Regulation on the inward stroke with skip and stop (acceleration and stop valves)

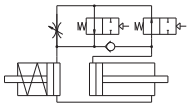
Coding: 1400.40.stroke.02.0Ⓥ

Ⓥ	VERSION
	6 = STOP N.O.
	8 = STOP N.C.





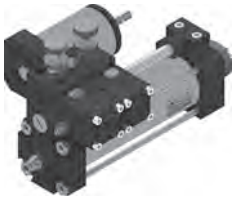
Weight
1830 g + 300 g every 50 mm stroke

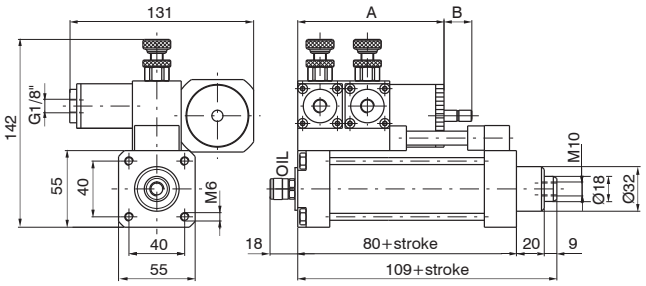


Strokes	A	B max.
< 75	93	30
75...<150	118	45
150...<250	143	60
250...<350	183	90
350...<500	218	120

Regulation in both directions with skip (acceleration valves in both directions)

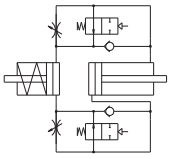
Coding: 1400.40.stroke.03.04





Weight
2110 g + 300 g every 50 mm stroke

Attention: minimum stroke=150 mm when fitted in tandem (parallel or in-line) with 1319-1320-1321 cylinders series.

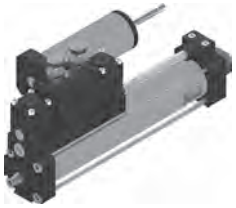


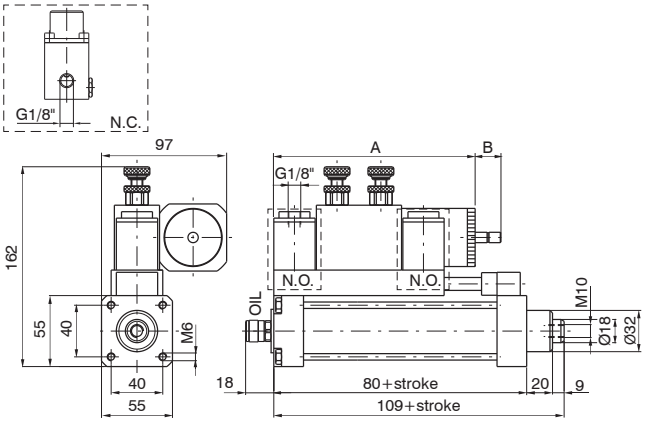
Strokes	A	B max.
< 75	110	30
75...<150	135	45
150...<250	160	60
250...<350	200	90
350...<500	235	120

Regulation in both directions with STOP (STOP valves in both directions)

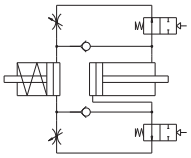
Coding: 1400.40.stroke.03.0Ⓥ

Ⓥ	VERSION
	5 = STOP N.O.
	7 = STOP N.C.





Min. stroke 150 mm
Weight
2390 g + 300 g every 50 mm stroke

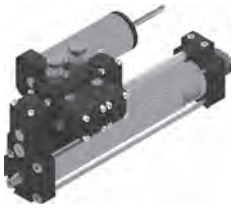


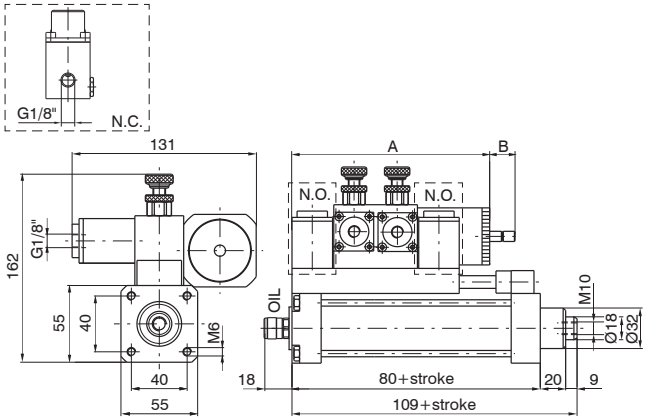
Strokes	A	B max.
150...<250	197	60
250...<350	237	90
350...<500	272	120

Regulation in both directions with SKIP and STOP (acceleration and STOP valves in both directions)

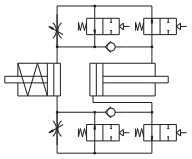
Coding: 1400.40.stroke.03.0Ⓥ

Ⓥ	VERSION
	6 = STOP N.O.
	8 = STOP N.C.





Min. stroke 150 mm
Weight
2630 g + 300 g every 50 mm stroke



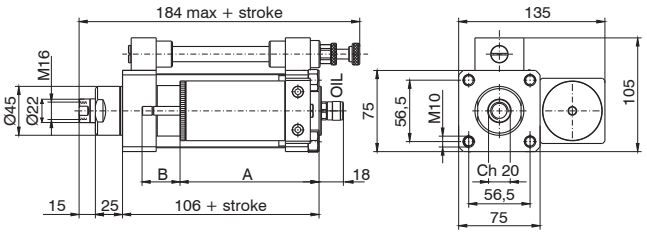
Strokes	A	B max.
150 - < 250	197	60
250 - < 350	237	90
350 - < 500	272	120

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

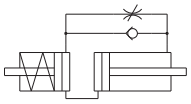
Regulation on the outward stroke – Lateral tank

Coding: 1400.63.stroke.01.2





Min. stroke 75 mm
Weight
2950 g + 850 g every 50 mm stroke

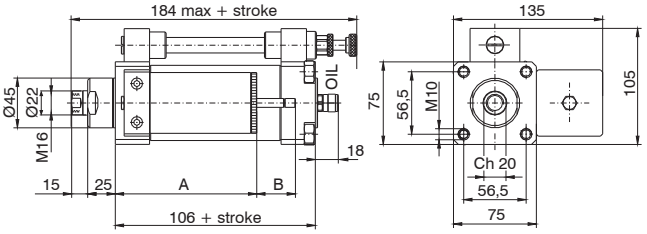


Strokes	A	B max.
≥75 ... <150	128	50
≥150 ... <250	188	80
≥250 ... <350	238	100
≥350 ... <450	298	130
≥450 ... <600	358	160

Regulation on the inward stroke

Coding: 1400.63.stroke.02.2





Min. stroke 75 mm
Weight
2950 g + 850 g every 50 mm stroke

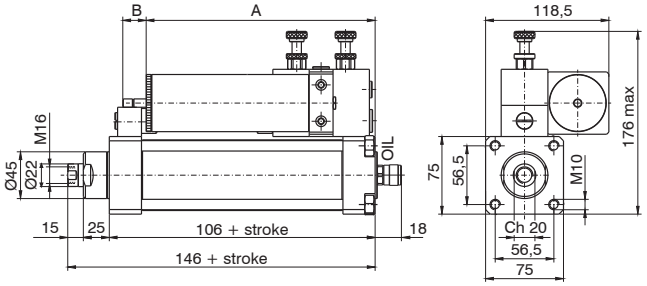


Strokes	A	B max.
≥75 ... <150	128	50
≥150 ... <250	188	80
≥250 ... <350	238	100
≥350 ... <450	298	130
≥450 ... <600	358	160

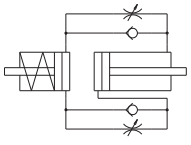
Regulation in both directions

Coding: 1400.63.stroke.03.2





Min. stroke 100 mm
Weight
3600 g + 850 g every 50 mm stroke



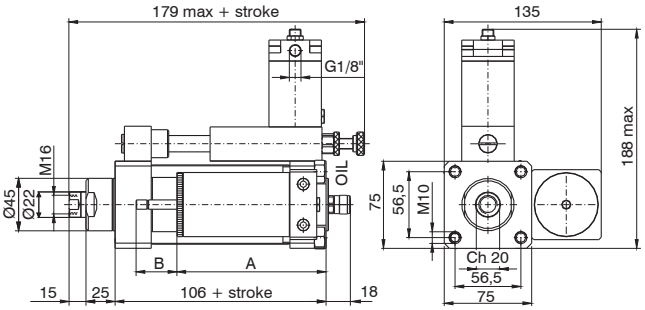
Strokes	A	B max.
≥100 ... <150	160	50
≥150 ... <250	220	80
≥250 ... <350	270	100
≥350 ... <450	330	130
≥450 ... <600	390	160
≥600 ... <700	450	190

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

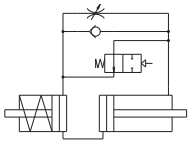
Regulation on the outward stroke with skip (acceleration valve)

Coding: 1400.63.stroke.01.04





Min. stroke 75 mm
Weight
3450 g + 850 g every 50 mm stroke



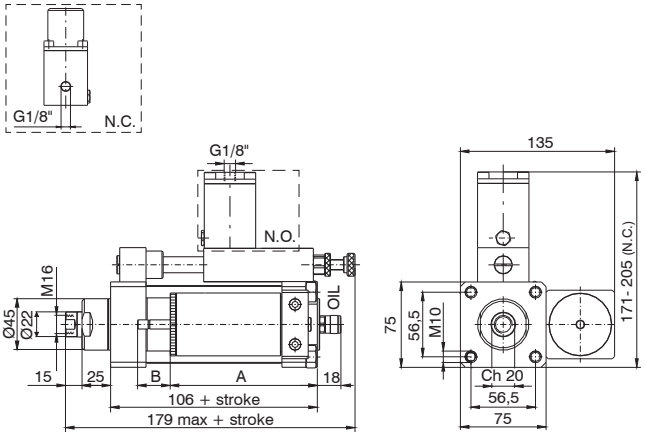
Strokes	A	B max.
≥75 ... <150	128	50
≥150 ... <250	188	80
≥250 ... <350	238	100
≥350 ... <450	298	130
≥450 ... <600	358	160

Regulation on the outward stroke with STOP (STOP valve)

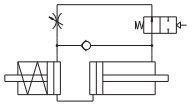
Coding: 1400.63.stroke.01.0Ⓥ

Ⓥ	VERSION
	5 = STOP N.O.
	7 = STOP N.C.





Min. stroke 75 mm
Weight
3450 g + 850 g every 50 mm stroke



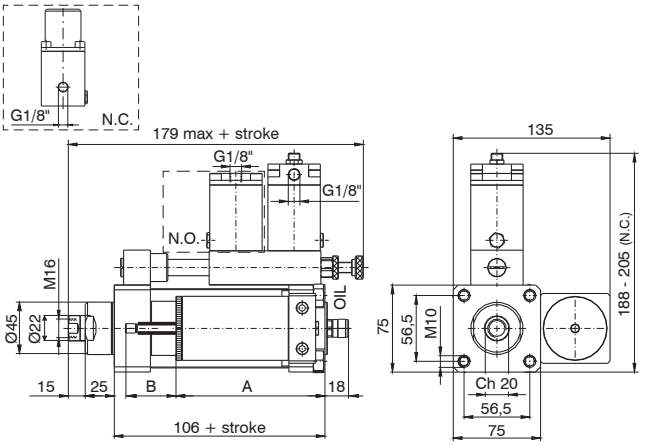
Strokes	A	B max.
≥75 ... <150	128	50
≥150 ... <250	188	80
≥250 ... <350	238	100
≥350 ... <450	298	130
≥450 ... <600	358	160

Regulation on the outward stroke with SKIP and STOP (acceleration and STOP valves)

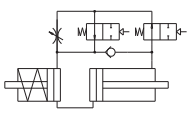
Coding: 1400.63.stroke.01.0Ⓥ

Ⓥ	VERSION
	6 = STOP N.O.
	8 = STOP N.C.





Min. stroke 75 mm
Weight
3700 g + 850 g every 50 mm stroke

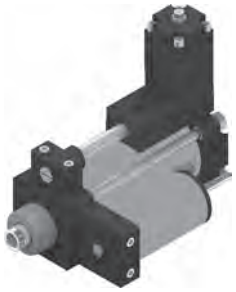


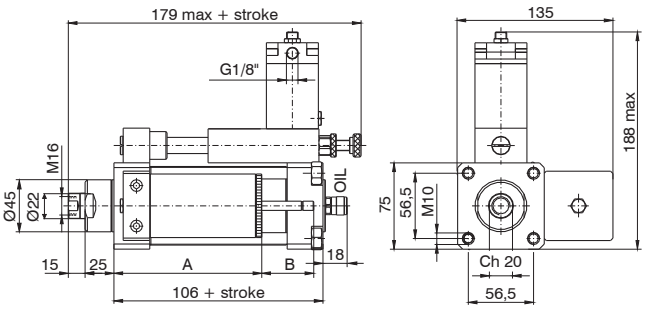
Strokes	A	B max.
≥75 ... <150	128	50
≥150 ... <250	188	80
≥250 ... <350	238	100
≥350 ... <450	298	130
≥450 ... <600	358	160

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

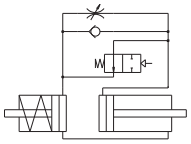
Regulation on the inward stroke with SKIP (acceleration valve)

Coding: 1400.63.stroke.02.04





Min. stroke 75 mm
Weight
3450 g + 850 g every 50 mm stroke

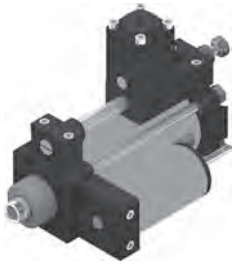


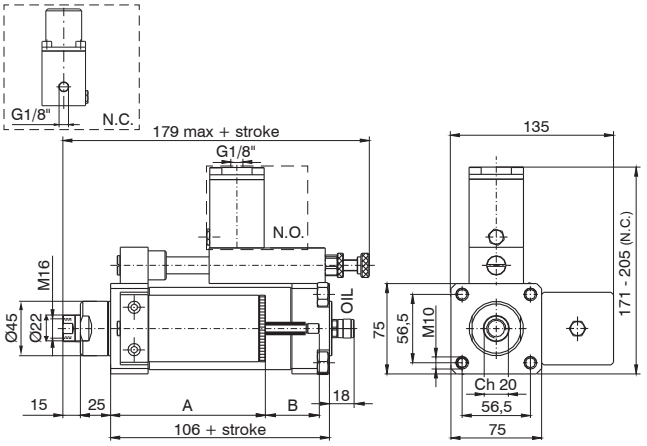
Strokes	A	B max.
≥75 ... <150	128	50
≥150 ... <250	188	80
≥250 ... <350	238	100
≥350 ... <450	298	130
≥450 ... <600	358	160

Regulation on the inward stroke with stop (stop valve)

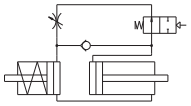
Coding: 1400.63.stroke.02.0Ⓥ

Ⓥ	VERSION
	5 = STOP N.O.
	7 = STOP N.C.





Min. stroke 75 mm
Weight
3450 g + 850 g every 50 mm stroke

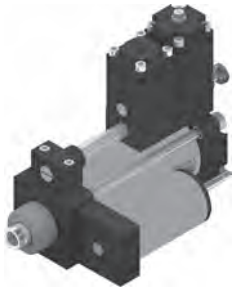


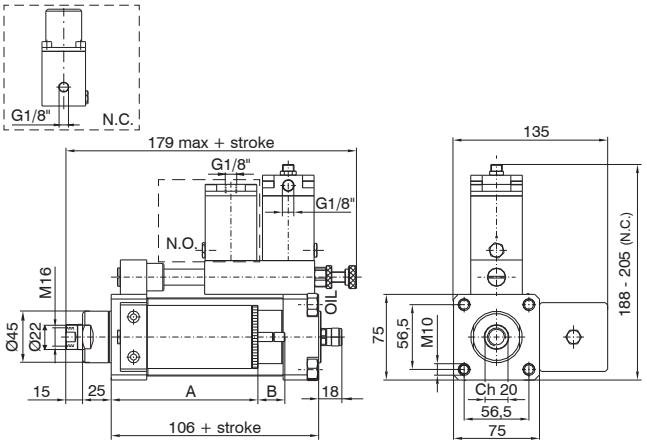
Strokes	A	B max.
≥75 ... <150	128	50
≥150 ... <250	188	80
≥250 ... <350	238	100
≥350 ... <450	298	130
≥450 ... <600	358	160

Regulation on the inward stroke with skip and stop (acceleration and stop valves)

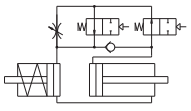
Coding: 1400.63.stroke.0Ⓥ

Ⓥ	VERSION
	6 = STOP N.O.
	8 = STOP N.C.





Min. stroke 75 mm
Weight
3700 g + 850 g every 50 mm stroke

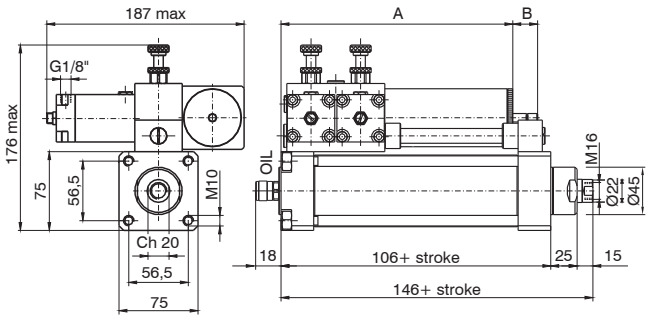


Strokes	A	B max.
≥75 ... <150	128	50
≥150 ... <250	188	80
≥250 ... <350	238	100
≥350 ... <450	298	130
≥450 ... <600	358	160

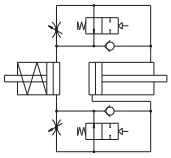
Regulation in both directions with skip (acceleration valves in both directions)

Coding: 1400.63.stroke.03.04





Min. stroke 100 mm
Weight
4100 g + 850 g every 50 mm stroke



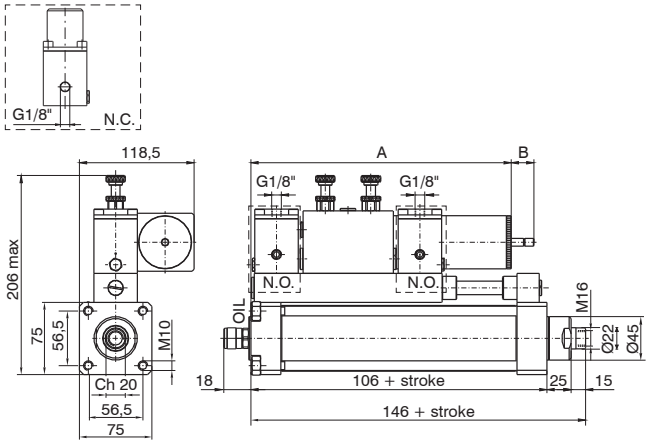
Strokes	A	B max.
≥100 ... <150	160	50
≥150 ... <250	220	80
≥250 ... <350	270	100
≥350 ... <450	330	130
≥450 ... <600	390	160
≥600 ... <700	450	190

Regulation in both directions with STOP (STOP valves in both directions)

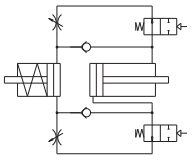
Coding: 1400.63.stroke.03.0Ⓥ

Ⓥ	VERSION
	5 = STOP N.O.
	7 = STOP N.C.





Min. stroke 200 mm
Weight
4850 g + 850 g every 50 mm stroke

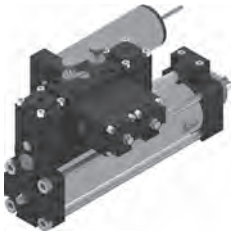


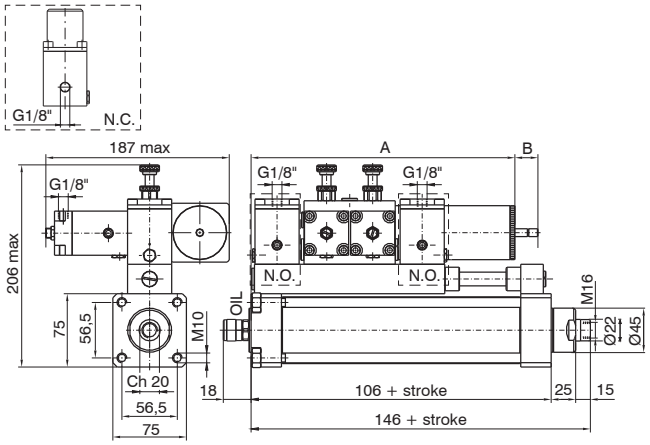
Strokes	A	B max.
≥200 ... <250	270	50
≥250 ... <350	320	100
≥350 ... <450	380	130
≥450 ... <600	440	160
≥600 ... <700	500	190

Regulation in both directions with SKIP and STOP (acceleration and STOP valves in both directions)

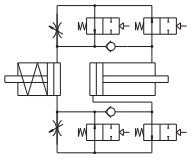
Coding: 1400.63.stroke.03.0Ⓥ

Ⓥ	VERSION
	6 = STOP N.O.
	8 = STOP N.C.





Min. stroke 200 mm
Weight
5400 g + 850 g every 50 mm stroke



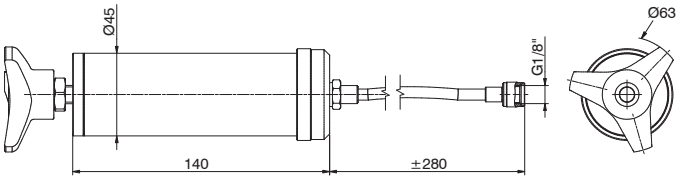
Strokes	A	B max.
≥200 ... <250	270	50
≥250 ... <350	320	100
≥350 ... <450	380	130
≥450 ... <600	440	160
≥600 ... <700	500	190

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Hydraulic fluid refill syringe

Coding: 1400.99.02





Weight 420 g

Oil for hydraulic and pneumatic circuits

Coding: PNEUM.OIL01



1 L bottle.

This oil is suitable to lubricate pneumatic circuits and also to refill hydraulic speed control tanks. It is completely compatible with our seals.

Series 1500 - Short stroke cylinders

Profiled tube has three "T" slots on the three sides hosting sensors 1500._, RS._, HS._. without adaptors and with adaptor code 1380.01F codes 1580._, MRS._, MHS._.
A complete range of clamps makes them easy to install under any conditions.
It is interesting to note that as these cylinders (from Ø32 to Ø100) have anchoring holes with the same lead and thread as those of series 1320 ISO 6431, they accept all mountings except for the intermediate trunnion.

Construction characteristics

Body	oxidised aluminium
Piston rod bushing	oxidised aluminium
Bottom plates	oxidised aluminium
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (HNBR or FPM seals available upon request)
Pistons	aluminium
Piston rod	C43 chromed steel (stainless steel for magnetic cylinder Ø20 and Ø25)

Operational characteristics

Fluid	filtered air, preferably lubricated
Pressure	10 bar
Working temperature	-5°C ... +70°C with standard seals magnetic or non magnetic piston -5°C ... +80°C with FPM seals magnetic piston -5°C ... +80°C with HNBR seals magnetic piston -5°C ... +120°C with HNBR seals non magnetic piston -5°C ... +150°C with FPM seals non magnetic piston

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

Double acting version
Series 1501, 1504, 1511, 1514, 1515, 1516, 1517 and 1518:
for all bores from 5 to 50 mm every 5 mm.

Maximum suggested strokes:
Ø20-Ø25: up to stroke 250 mm
Ø32-Ø40: up to stroke 300 mm
Ø50-Ø63: up to stroke 350 mm
Ø80-Ø100: up to stroke 400 mm
for strokes longer than 50 mm, please get in touch with our area sales rep.

Single acting version
Serie 1502, 1503, 1512 and 1513:
for all bores from 5 to 10 mm.
for strokes longer than 10 mm, please get in touch with our area sales rep.

Series with non-rotating device:
Ø20-Ø25: from 5 to 40 mm every 5 mm
Ø32-Ø40: from 5 to 50 mm every 5 mm
Ø50-Ø63: from 5 to 60 mm every 5 mm
Ø80-Ø100: from 5 to 80 mm every 5 mm
For longer strokes, please get in touch with the area sales rep.

Minimum and maximum springs load for single acting version

Bore	20	25	32	40	50	63	80-100
Min. load (N)	8.5	9.5	34	34	49	54	110
Max. load (N)	14.5	26	59.5	63.5	79	85	137

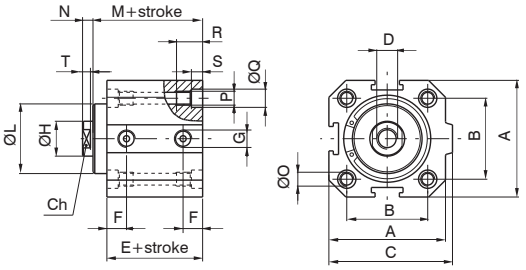
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Double acting version

Coding: 15Ⓟ.Ø.stroke.Ⓖ

Ⓟ	PISTON
	01 = Non magnetic
	11 = Magnetic
Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





Bore		20	25	32	40	50	63	80	100
A		35	41	48	57	67	80	100	120
B		26	28	32,5	38	46,5	56,5	72	89
C		39,5	44,5	52	61	71	84	106	126
D		M4x8	M5x10	M6x12	M10x15	M12x18	M12x18	M16x20	M16x20
E	Non magnetic	29	30,5	32	33,5	35	38	44	47
	Magnetic	34	35,5	37	38,5	40	43	49	52
F		9	9,15	9,75	10,5	11	11,25	13,75	15,25
G		G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 3/8"	G 3/8"
Ø H		8	10	12	16	20	20	25	25
Ø L ±0,05 (0/-0,1 for Ø80 and Ø100)		17	20,5	26	31	39	40	55	55
M	Non magnetic	32	33	35,5	39,5	43	46	51,5	54,5
	Magnetic	37	38	40,5	44,5	48	51	56,5	59,5
N		4	4	4	5	6	6	8	8
Ø O		4,3	5,3	5,3	5,3	7	7	9	9
P		M5	M6	M6	M6	M8	M8	M10	M10
Ø Q		7,5	8,5	8,5	8,5	10,5	10,5	13,5	13,5
R		15	18	18	18	22	22	30	30
S		4,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5
T		3	3	3	4	4,5	4,5	5,5	5,5
Ch		6	8	10	13	17	17	22	22

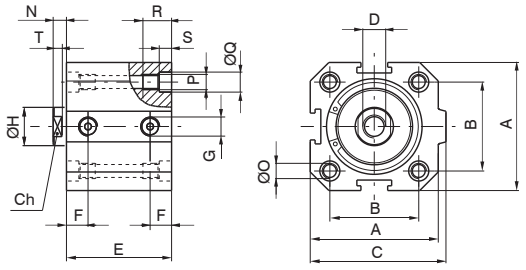
Weight (g)									
Non magnetic	Stroke 0	75	110	170	260	400	600	800	1500
	every 10 mm	20	30	40	60	80	100	120	145
Magnetic	Stroke 0	90	130	200	310	460	700	910	1620
	every 10 mm	20	30	40	60	80	100	120	145

Single acting version with front spring

Coding: 15Ⓟ.Ø.stroke.Ⓖ

Ⓟ	PISTON
	02 = Non magnetic
	12 = Magnetic
Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





Bore			20	25	32	40	50	63	80	100
A			35	41	48	57	67	80	100	120
B			26	28	32,5	38	46,5	56,5	72	89
C			39,5	44,5	52	61	71	84	106	126
D			M4X8	M5X10	M6X12	M10X15	M12X18	M12X18	M16X20	M16X20
E	Non magnetic	stroke 5	29	30,5	32	33,5	35	38	44	47
		stroke 10	34	35,5	37	38,5	40	43	49	52
	Magnetic	stroke 5	34	35,5	37	38,5	40	43	49	52
		stroke 10	39	40,5	42	43,5	45	48	54	57
F			9	9,15	9,75	10,5	11	11,25	13,75	15,25
G			G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 3/8"	G 3/8"
Ø H			8	10	12	16	20	20	25	25
N			4	4	4	5	6	6	8	8
Ø O			4,3	5,3	5,3	5,3	7	7	9	9
P			M5	M6	M6	M6	M8	M8	M10	M10
Ø Q			7,5	8,5	8,5	8,5	10,5	10,5	13,5	13,5
R			15	18	18	18	22	22	30	30
S			4,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5
T			3	3	3	4	4,5	4,5	5,5	5,5
Ch			6	8	10	13	17	17	22	22

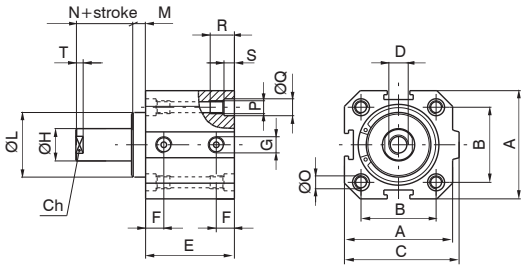
Weight (g)									
Non magnetic	stroke 5	70	105	160	250	370	550	750	1440
	stroke 10	80	120	180	280	410	600	810	1500
Magnetic	stroke 5	85	125	190	300	430	650	860	1560
	stroke 10	95	140	210	330	470	700	920	1620

Single acting version with rear spring

Coding: 15Ⓟ.Ø.stroke.Ⓖ

Ⓟ	PISTON
	03 = Non magnetic
	13 = Magnetic
Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





Bore			20	25	32	40	50	63	80	100
A			35	41	48	57	67	80	100	120
B			26	28	32,5	38	46,5	56,5	72	89
C			39,5	44,5	52	61	71	84	106	126
D			M4X8	M5X10	M6X12	M10X15	M12X18	M12X18	M16X20	M16X20
E	Non magnetic	stroke 5	29	30,5	32	33,5	35	38	44	47
		stroke 10	34	35,5	37	38,5	40	43	49	52
	Magnetic	stroke 5	34	35,5	37	38,5	40	43	49	52
		stroke 10	39	40,5	42	43,5	45	48	54	57
F			9	9,15	9,75	10,5	11	11,25	13,75	15,25
G			G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 3/8"	G 3/8"
Ø H			8	10	12	16	20	20	25	25
Ø L ±0,05 (0/-0,1 for Ø80 and Ø100)			17	20,5	26	31	39	40	55	55
M			3	2,5	3,5	6	8	8	7,5	7,5
N			4	4	4	5	6	6	8	8
Ø O			4,3	5,3	5,3	5,3	7	7	9	9
P			M5	M6	M6	M6	M8	M8	M10	M10
Ø Q			7,5	8,5	8,5	8,5	10,5	10,5	13,5	13,5
R			15	18	18	18	22	22	30	30
S			4,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5
T			3	3	3	4	4,5	4,5	5,5	5,5
Ch			6	8	10	13	17	17	22	22

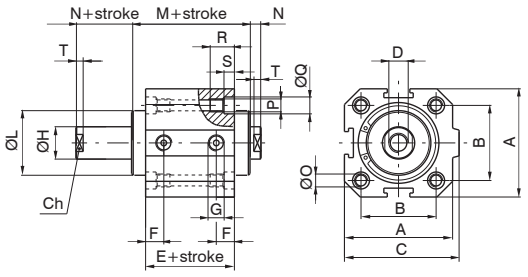
Weight (g)									
Non magnetic	stroke 5	70	105	160	250	370	550	750	1440
	stroke 10	80	120	180	280	410	600	810	1500
Magnetic	stroke 5	85	125	190	300	430	650	86	1560
	stroke 10	95	40	210	330	470	700	920	1620

Double acting push-pull rod version

Coding: 15Ⓟ.Ø.stroke.Ⓖ

Ⓟ	PISTON
	04 = Non magnetic
	14 = Magnetic
Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





Bore		20	25	32	40	50	63	80	100
A		35	41	48	57	67	80	100	120
B		26	28	32,5	38	46,5	56,5	72	89
C		39,5	44,5	52	61	71	84	106	126
D		M4X8	M5X10	M6X12	M10X15	M12X18	M12X18	M16X20	M16X20
E	Non magnetic	29	30,5	32	33,5	35	38	44	47
	Magnetic	34	35,5	37	38,5	40	43	49	52
F		9	9,15	9,75	10,5	11	11,25	13,75	15,25
G		G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 3/8"	G 3/8"
Ø H		8	10	12	16	20	20	25	25
Ø L ±0,05 (0/-0,1 for Ø80 and Ø100)		17	20,5	26	31	39	40	55	55
M	Non magnetic	35	35,5	39	45,5	51	54	59	62
	Magnetic	40	40,5	44	50,5	56	59	64	67
N		4	4	4	5	6	6	8	8
Ø O		4,3	5,3	5,3	5,3	7	7	9	9
P		M5	M6	M6	M6	M8	M8	M10	M10
Ø Q		7,5	8,5	8,5	8,5	10,5	10,5	13,5	13,5
R		15	18	18	18	22	22	30	30
S		4,5	5,5	5,5	5,5	6,5	6,5	8,5	8,5
T		3	3	3	4	4,5	4,5	5,5	5,5
Ch		6	8	10	13	17	17	22	22

Weight (g)									
Non magnetic	Stroke 0	90	130	200	320	460	670	1100	1680
	every 10 mm	20	35	50	70	90	110	155	185
Magnetic	Stroke 0	105	160	240	380	530	740	1210	1820
	every 10 mm	20	35	50	70	90	110	155	185

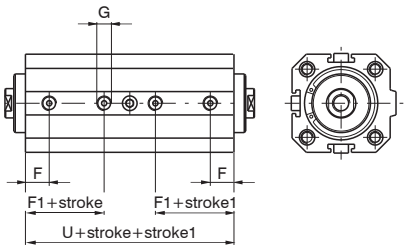
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Tandem with opposed rods

Coding: 1515.Ø.stroke.stroke1.Ⓟ Ⓖ

Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓟ	PISTON
	= Non magnetic
	M = Magnetic
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





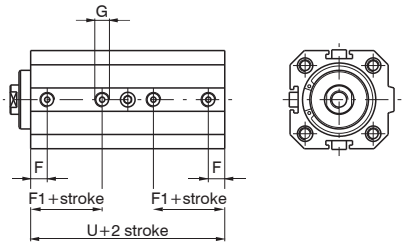
Bore		20	25	32	40	50	63	80	100
F		9	9,15	9,75	10,5	11	11,25	13,75	15,25
F1	Non magnetic	17,5	18,35	19,75	20,5	21,5	24,25	24,75	26,25
	Magnetic	22.5	23.35	24.75	25.5	26.5	29.25	29.75	31.25
G		G 1/8"						G 3/8"	
U	Non magnetic	59	60,5	67	68,5	70	78	89	97
	Magnetic	69	70.5	77	78.5	80	88	99	107

Tandem push with common rods

Coding: 1516.Ø.stroke.Ⓟ Ⓖ

Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓟ	PISTON
	= Non magnetic
	M = Magnetic
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





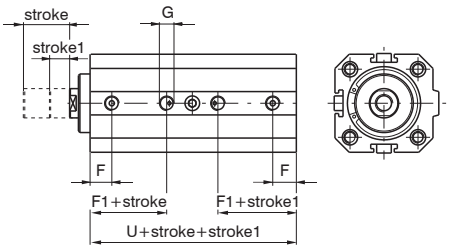
Bore		20	25	32	40	50	63	80	100
F		9	9,15	9,75	10,5	11	11,25	13,75	15,25
F1	Non magnetic	17,5	18,35	19,75	20,5	21,5	24,25	24,75	26,25
	Magnetic	22.5	23.35	24.75	25.5	26.5	29.25	29.75	31.25
G		G 1/8"						G 3/8"	
U	Non magnetic	59	60,5	67	68,5	70	78	89	97
	Magnetic	69	70.5	77	78.5	80	88	99	107

Tandem push with independent rods

Coding: 1517.Ø.stroke.stroke1.Ⓟ Ⓖ

Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓟ	PISTON
	= Non magnetic
	M = Magnetic
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





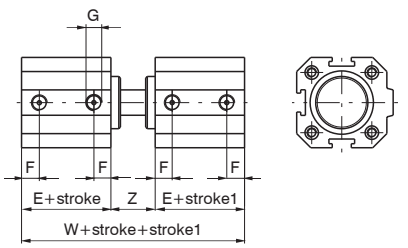
Bore		20	25	32	40	50	63	80	100
F		9	9,15	9,75	10,5	11	11,25	13,75	15,25
F1	Non magnetic	17,5	18,35	19,75	20,5	21,5	24,25	24,75	26,25
	Magnetic	22.5	23.35	24.75	25.5	26.5	29.25	29.75	31.25
G		G 1/8"						G 3/8"	
U	Non magnetic	59	60,5	67	68,5	70	78	89	97
	Magnetic	69	70.5	77	78.5	80	88	99	107

Opposed tandem with common rods

Coding: 1518.Ø.stroke.stroke1.Ⓟ Ⓖ

Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓟ	PISTON
	= Non magnetic
	M = Magnetic
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





Bore		20	25	32	40	50	63	80	100
E	Non magnetic	29	30.5	32	33.5	35	38	44	47
	Magnetic	34	35.5	37	38.5	40	43	49	52
F		9	9.15	9.75	10.5	11	11.25	13.75	15.25
G		G1/8"						G3/8"	
W	Non magnetic	72	74	79	89	98	104	119	125
	Magnetic	82	84	89	99	108	114	129	135

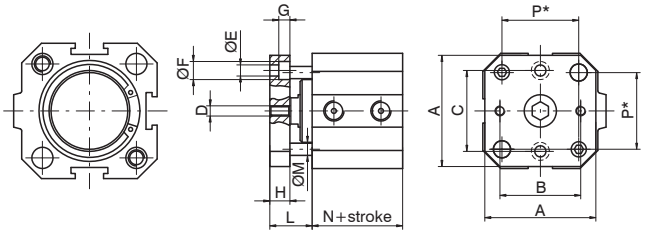
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Double acting version with non-rotating device

Coding: 15Ⓟ.Ø.stroke.ARⒼ

Ⓟ	PISTON
	01 = Non magnetic
	11 = Magnetic
Ø	BORE
	20 = Ø20
	25 = Ø25
	...
	100 = Ø100
Ⓖ	SEALS
	= Standard seals
	V = FPM seals
	T = HNBR seals





* = distance between rods centres

Bore		20	25	32	40	50	63	80	100
A		35	40	45	55	65	80	100	120
B		22	26	32	40	50	62	82	103
C		22	28	34	40	50	62	82	103
D		M4	M5	M5	M5	M6	M6	M8	M8
Ø E		4,5	5,5	5,5	5,5	6,5	8,5	8,5	8,5
Ø F		7,5	9	9	9	10,5	13,5	13,5	13,5
G		4,5	5,5	5,5	5,5	6,5	8,5	8,5	8,5
H		8	8	10	10	12	12	15	15
L		15	14,5	17,5	21	26	26	30,5	30,5
Ø M		6	6	6	6	8	8	10	10
N	Non magnetic	29	30,5	32	33,5	35	38	44	47
	Magnetic	34	35,5	37	38,5	40	43	49	52
P		26	28	32,5	38	46,5	56,5	72	89
Max. suggestion stroke		40	40	50	50	60	60	80	80

Weight (g)									
Non magnetic	Stroke 0	115	160	240	350	600	850	1290	2150
	every 10 mm	25	35	45	65	90	110	140	165
Magnetic	Stroke 0	130	180	270	400	660	950	1400	2270
	every 10 mm	25	35	45	65	90	110	140	165

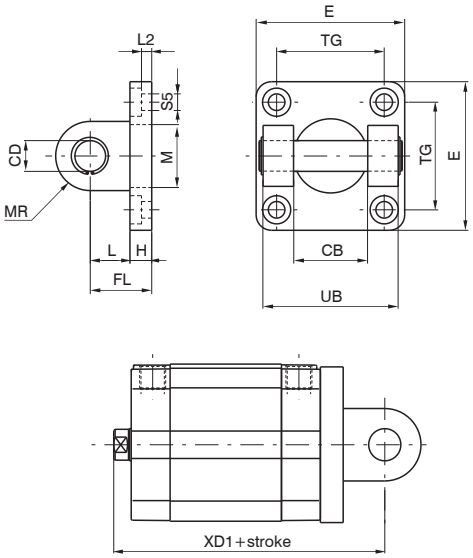
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Rear clevis (MP2)

Coding: 1500.Ø.09F

	BORE
Ø	**20** = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load.
It is made of aluminium alloy and painted black.

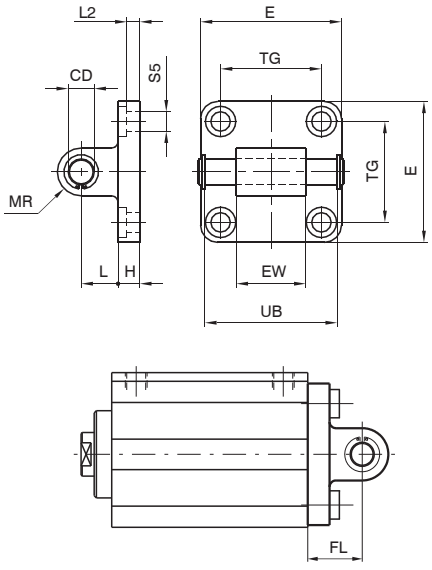
Bore	20	25	32	40	50	63	80	100
CB (H 9)	16	20	26	28	32	40	50	60
CD (H 9)	8	10	10	12	12	16	16	20
E	35	40	45	52	65	75	95	115
H	6	8	9	9	11	11	14	14
L	12	12	13	16	16	21	22	27
MR	8	9	10	12	12	16	16	20
TG	26	28	32,5	38	46,5	56,5	72	89
UB	35	40	45	52	60	70	90	110
FL	18	20	22	25	27	32	36	41
L2	/	/	5,5	5,5	6,5	6,5	10	10
S5 (H13)	5,5	6,6	6,6	6,6	9	9	11	11
Weight (g)	45	75	80	130	185	310	530	910

Rear male clevis (MP4)

Coding: 1500.Ø.09/1F

	BORE
Ø	**20** = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





This type of mounting allows anchorage of the cylinder either parallel or right angle to plane; the cylinder rod can oscillate and self-align as necessary when under load.
It is made of aluminium alloy and painted black.

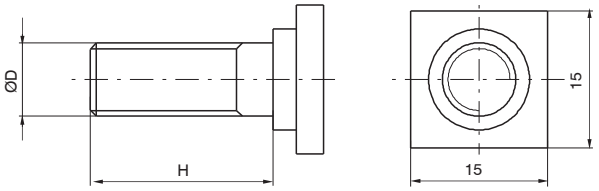
Bore	20	25	32	40	50	63	80	100
CD (H 9)	8	10	10	12	12	16	16	20
E	35	40	45	52	65	75	95	115
EW	16	20	26	28	32	40	50	60
H	6	8	9	9	11	11	14	14
L	12	12	13	16	16	21	22	27
MR	8	9	10	12	12	16	16	20
TG	26	28	32,5	38	46,5	56,5	72	89
UB	35	40	46	53	61	71	91	111
FL	18	20	22	25	27	32	36	41
L2	/	/	5,5	5,5	6,5	6,5	10	10
S5 (H 13)	5,5	6,6	6,6	6,6	9	9	11	11
Weight (g)	53	85	90	130	190	340	580	960

Slot fixing screws

Coding: 1500.1ⓉF

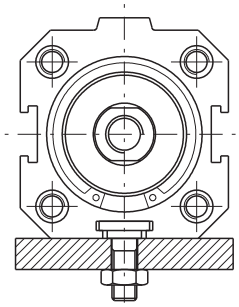
Ⓣ	SIZE
	5 = from Ø20 to Ø32
	6 = from Ø40 to Ø63
	8 = Ø80 and Ø100

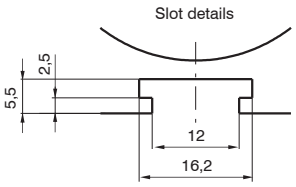




Example of mounting with square head screws







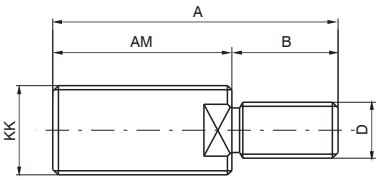
Bore	20	25	32	40	50	63	80	100
ØD	M6	M6	M6	M8	M8	M8	M10	M10
H	15	15	15	20	20	20	25	25
Weight (g)	10			18			25	

Nipple with ISO standard thread

Coding: 1500.Ø.17F

Ø	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





Bore	20	25	32	40	50	63	80	100
KK	M8x1,25	M10x1,25	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
AM	20	22	22	24	32	32	40	40
A	26	30	32	36	47	47	58	58
B	6	8	10	12	15	15	18	18
D	M4	M5	M6	M10	M12	M12	M16	M16
Weight (g)	8	15	16	27	65	65	110	110

Fitted on the female thread of the compact cylinders, restore the ISO configurations rod (ISO 6432 for cylinders Ø20 and Ø25; ISO 6431 for cylinders from Ø32 to Ø100).

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1500 Europe

This series of cylinders is available in two versions with different threaded fixing holes. The first one includes cylinders from Ø32 to Ø100 called "ISO" with fixing holes same as cylinders ISO 6431 - VDMA 24562.
Cylinders from Ø20 to Ø100 called "UNITOP", parts of second series, are mainly according to standard UNITOP RU - P/6 - P/7. Cylinders Ø12 and Ø16 non standard, are interchangeable with similar products available on the market.
The ISO version uses all fixing devices of series 1320 with exception of intermediate trunnion, while for cylinders Ø12, Ø16 and for "UNITOP" version are available fixing devices as flanges, foot, male and female clevis made with aluminium or steel. For use of magnetic sensors see directions on next page.

Construction characteristics

Body	anodized aluminium
Piston rod bushings	sintered bronze
Seals	PUR (on request HNBR)
Springs	zinc plated steel for springs
Pistons	from Ø12 to Ø25 brass from Ø32 from Ø100 aluminium alloy 2011 UNI 9002/5
Piston rod	from Ø12 to Ø25 stainless steel froml Ø32 to Ø100 C43 chromed (on request stainless steel for all bores)
End caps	from Ø12 to Ø25 aluminium alloy UNI 9006/1 anodised from Ø32 to Ø100 UNI 5076 aluminium die-casting and painted (cataphoresis)
Fixing screws	zinc plated steel

Operational characteristics

Fluid	Filtered and lubricated air or non
Max. working pressure	10 bar
Working temperature	-30°C ... +80°C with standard seals (magnetic or non magnetic piston) -5°C ... +80°C with HNBR seals (magnetic piston) -5°C ... +120°C with HNBR seals (non magnetic piston)

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Standard strokes

VERSION	DOUBLE ACTING				SINGLE ACTING	
Base	●				●	
Through rod	●				●	
Bored through rod			●		●	
Non-rotating device				●	●	
Through rod and non-rotating device				●	●	
BORE	**Standard strokes**	***Maximum suggested strokes**	**Max. stroke**	****Standard strokes**	**Standard strokes**	**Maximum suggested strokes**(please get in touch with our sales rep. for the dimensions)
12	from 5 to 40 mm every 5 mm	150	65	40	5 -10	20
16		250	100		from 5 to 25 mm every 5 mm	75
20	from 5 to 50 mm every 5 mm	450	110			
25						
32	from 5 to 80 mm every 5 mm	650	125	80		
40						
50			150			
63						
80			200			
100						

*Cylinders with longer strokes than those in the chart are also available.
The end user is responsible for the load applied on the product and for its correct use.
For special applications, please get in touch with our sales rep.
**Cylinders with longer strokes than those in the chart are also available, exceptionally for applications without twisting moments and/or radial loads on the anti-rotation device.

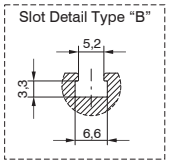
Minimum and maximum springs load

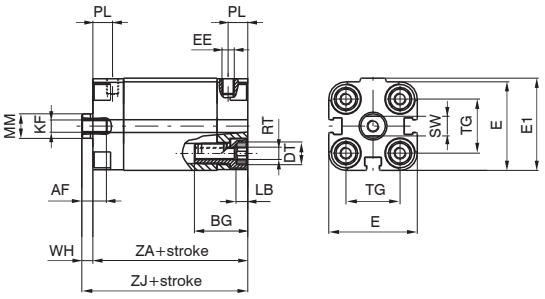
Bore	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Min. load (N)	3,9	7,2	7,8	9,8	12,3	16,7	27,5	37,3	59,4	101,3
Max. load (N)	12,7	37,2	20,6	25,5	34,3	44,1	51,0	63,8	99,4	141,9

BASIC version double and single acting



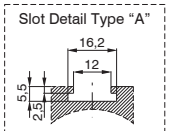
for bores from Ø12 to Ø25 use sensors codes
1580._, MHS._, MRS._ only

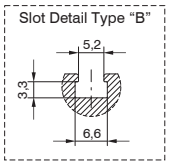


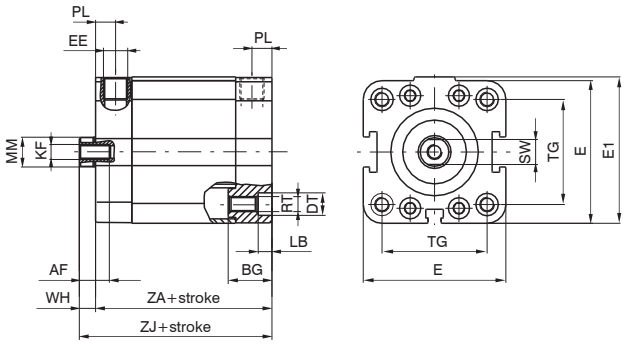




for bores from Ø32 to Ø50 use sensors codes
1500._, RS._, HS._ (slot A) 1580._, MHS._, MRS._
(slot B and slot A with adapter code 1380.01F)

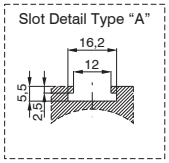


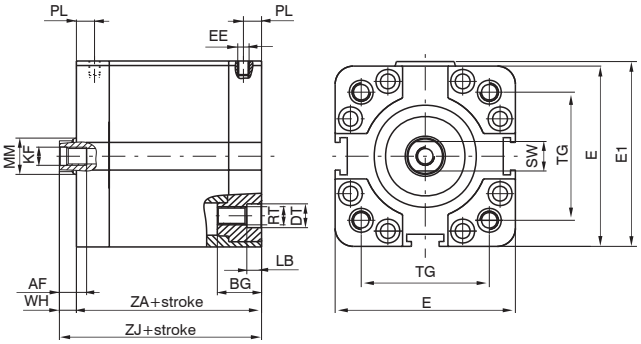






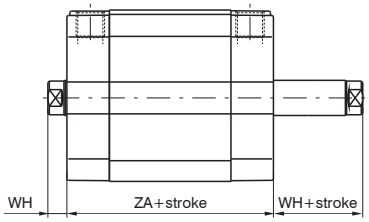
for bores from Ø63 to Ø100 use sensors codes
1500._, RS._, HS._ and 1580._, MHS._, MRS._
(with adapter code 1380.01F)





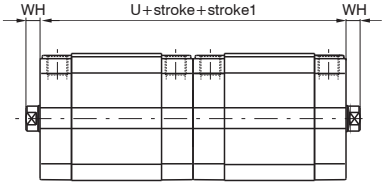
Through rod cylinder version, double and single acting





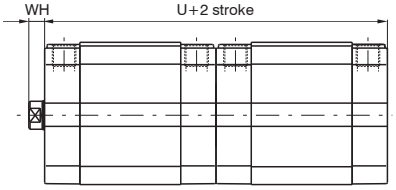
Tandem with opposed rods





Tandem push with common rods

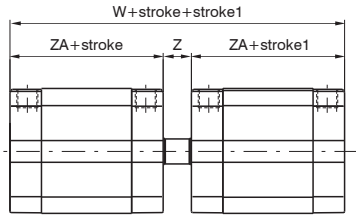




Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

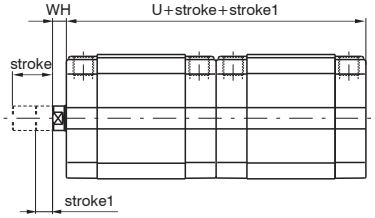
Opposed tandem with common rods





Tandem push with independent rods





Ordering code

Basic version push/pull

15_ _. Ø . stroke . _ _ . _

- **1**= Double acting (magnetic)
- **2**= Front spring (magnetic)
- **3**= Rear spring (magnetic)
- **4**= Double acting (non magnetic)
- **5**= Front spring (non magnetic)
- **6**= Rear spring (non magnetic)

- **01**= Basic version - female piston rod
- **02**= Basic version - male piston rod
- **03**= Push / pull version - female piston rod
- **04**= Push / pull version - male piston rod
- **05**= Push / pull version - bored male piston rod
- **06**= Push / pull version - bored female piston rod
- **07**= Non - rotating version
- **08**= Push / pull version with non rotating device on one side - female piston rod *
- **09**= Push / pull version with non rotating device on one side - male piston rod *

- **1**= Chromed rod C43 (from Ø12 to Ø25 stainless steel)
- **2**= Stainless steel rod (from Ø32 to Ø100)

- **6**= ISO (Ø32 ... Ø100)
- **7**= ISO HNBR (Ø32 ... Ø100)
- **8**= UNITOP (Ø12 ... Ø100)
- **9**= UNITOP HNBR (Ø12 ... Ø100)

* for single acting version, the spring is on the anti-rotation side

Tandem version

15_ _. Ø . stroke .(stroke1) . _

- **A**= Tandem with opposite rods female thread
- **E**= Tandem with opposite rods male thread
- **L**= Tandem opposite rods with non rotating device on both sides
- **C**= Tandem push with common rods female thread
- **G**= Tandem push with common rods male thread
- **H**= Tandem push with common rods, push-pull version rod female threads
- **N**= Tandem push with common rods with non rotating device
- **D**= Opposed tandem with common rod
- **B**= Tandem push with independent rods female thread
- **F**= Tandem push with independent rods male thread
- **M**= Tandem push with independent rods with non rotating device
- **P**= Tandem push/pull with independent rods - female thread
- **Q**= Tandem push/pull with independent rods - male thread

- **1**= Chromed rod C43 (from Ø12 to Ø25 stainless steel)
- **2**= Stainless steel rod (from Ø32 to Ø100)

- **6**= ISO (Ø32 ... Ø100)
- **7**= ISO HNBR (Ø32 ... Ø100)
- **8**= UNITOP (Ø12 ... Ø100)
- **9**= UNITOP HNBR (Ø12 ... Ø100)

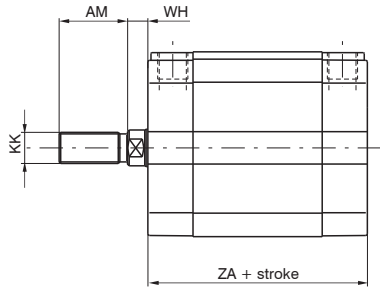
Table of dimensions

Bore		12	16	20	25	32	40	50	63	80	100
AF		6	8	10	10	12	12	12	12	16	20
BG		19	19	20	20	17,5	17,5	19,5	19,5	23,5	24,5
DT		6	6	8	8	10	9	10,5	10,5	14	14
E		29	29	36	40	48	57	67	80	102	122
E1		30	30	37,5	41,5	49,5	58,5	69	82	105	125
EE		M 5	M 5	M 5	M 5	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/8"	G 1/4"
KF		M 3	M 4	M 5	M 5	M 6	M 6	M 8	M 8	M 10	M12
LB		3,5	3,5	4,8	4,8	5,5	5,5	6,5	6,5	8,5	8,5
MM		6	8	10	10	12	12	16	16	20	25
PL		8	8	8	8	8	8	8	8	8,5	10,5
RT		M 4	M 4	M 5	M 5	M 6	M 6	M 8	M 8	M 10	M 10
SW		5	7	8	8	10	10	13	13	17	22
TG ISO		/	/	/	/	32,5	38	46,5	56,5	72	89
TG UNITOP		18	18	22	26	32	42	50	62	82	103
U		76	76	76	79	89	91	91	100	112	133
W		85	85	85	90	101	104	106	115	128	153
WH		4,5	4,5	4,5	5,5	6	6,5	7,5	7,5	8	10
Z		9	9	9	11	12	13	15	15	16	20
ZA *		38	38	38	39,5	44,5	45,5	45,5	50	56	66,5
ZJ *		42,5	42,5	42,5	45	50,5	52	53	57,5	64	76,5
Weight (g)	Stroke 0	88	90	140	170	210	320	460	690	1390	2290
	every 5 mm	8	8	12	13	15	19	25	31	50	66

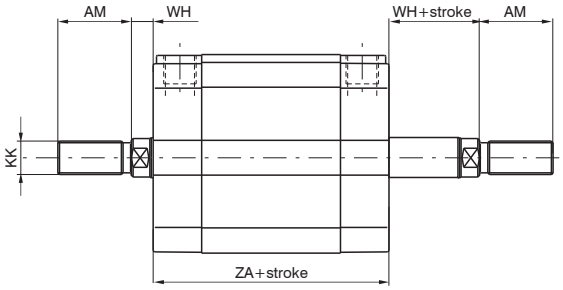
*Dimensions marked with * increase of 10 mm for cylinders Ø12 front spring version*
Tabular weights above refer to BASIC version; the weights of TANDEM versions are approximately double those shown

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

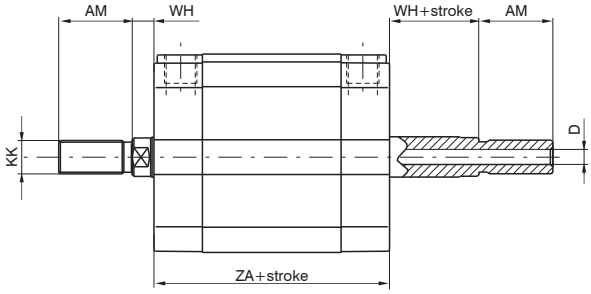
Basic version male piston rod



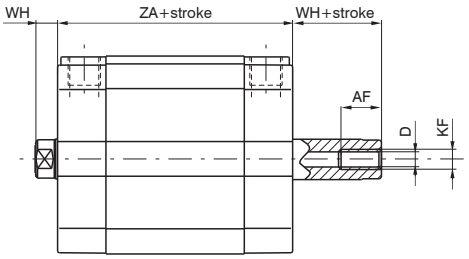
Through rod cylinder version male rod



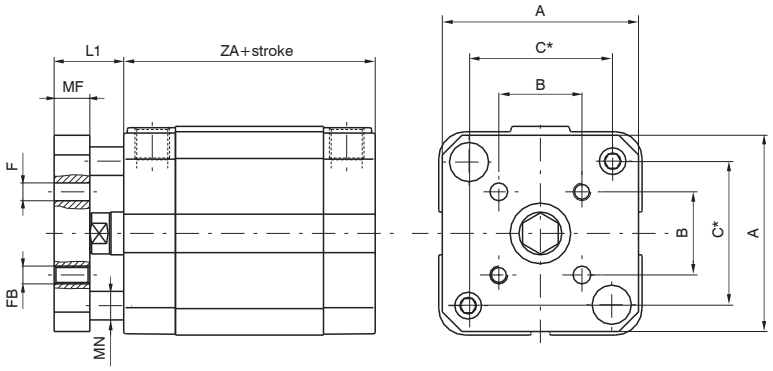
Through rod cylinder version bored male piston rod



Through rod cylinder version bored female piston rod



Non-rotating version



* = distance between rods centres

Bore	12	16	20	25	32	40	50	63	80	100
A	28,5	28,5	35,5	39,5	45	55	65	80	100	120
AF	6	8	10	10	12	12	12	12	16	20
AM	16	20	22	22	22	22	24	24	32	40
B	9,9	9,9	12	15,6	19,8	23,3	29,7	35,4	46	56,6
C	18	18	22	26	34	40,5	49	59,5	77	94
D	2,3	3,2	3,8	3,8	4,5	4,5	6	6	8	10
F	3	3	4	5	5	5	6	6	8	10
FB	M3	M3	M4	M5	M5	M5	M6	M6	M8	M10
KF	M3	M4	M5	M5	M6	M6	M8	M8	M10	M12
KK	M6X1	M8X1,25	M10X1,25	M10X1,25	M10X1,25	M10X1,25	M12X1,25	M12X1,25	M16X1,5	M20X1,5
L1	10,5	10,5	12,5	13,5	16	16,5	19,5	19,5	22	24
MF	6	6	8	8	10	10	12	12	14	14
MN	5	5	6	6	8	8	10	10	12	12
WH	4,5	4,5	4,5	5,5	6	6,5	7,5	7,5	8	10
ZA	38	38	38	39,5	44,5	45,5	45,5	50	56	66,5

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

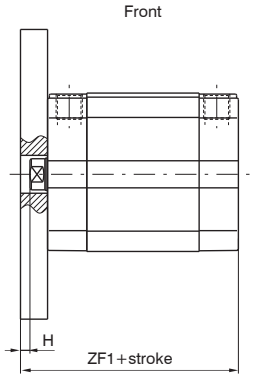
Front and rear flanges (MF1 - MF2)

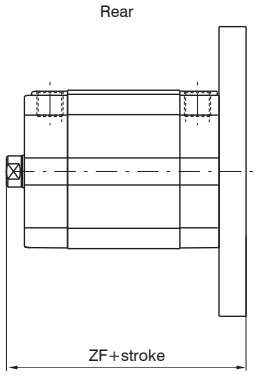
Coding: 15Ⓝ.Ø.Ⓜ

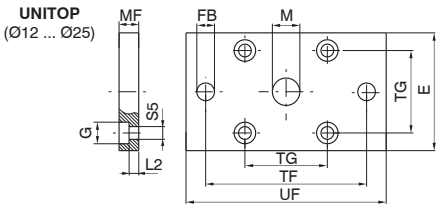
Ⓝ	STANDARDS
	00 = ISO
	80 = UNITOP
Ø	BORE
	12 = Ø12 (UNITOP)
	16 = Ø16 (UNITOP)
	20 = Ø20 (UNITOP)
	25 = Ø25 (UNITOP)
	32 = Ø32 (ISO / UNITOP)
	40 = Ø40 (ISO / UNITOP)
	50 = Ø50 (ISO / UNITOP)
	63 = Ø63 (ISO / UNITOP)
	80 = Ø80 (ISO / UNITOP)
	100 = Ø100 (ISO / UNITOP)
Ⓜ	MATERIALS
	03F = Steel
	03/1F = Aluminium (UNITOP)

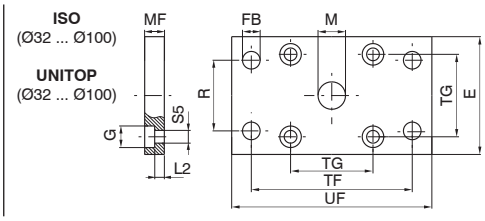


Plate which allows anchorage of the cylinder at a right angle to the plane. It is made with zincplated extruded steel or with aluminium.









		ISO Dimensions						UNITOP Dimensions								
Bore		32	40	50	63	80	100	12-16	20	25	32	40	50	63	80	100
E		45	52	65	75	95	115	29	36	40	50	60	68	87	107	128
S5 (H13)		6,6	6,6	9	9	11	11	4,5	5,5	5,5	6,6	6,6	9	9	11	11
FB(H13)		7	9	9	9	12	14	5,5	6,6	6,6	7	9	9	9	12	14
G		10,5	11	15	15	18	18	9	10	10	11	11	15	15	18	18
H		4	3,5	4,5	4,5	8	6	5,5	5,5	4,5	4	3,5	4,5	7,5	7	5
L2		5	5	6,5	6,5	8	8	4,6	4,6	4,6	3,6	3,6	3,4	6,4	4,4	4,4
M(H11)		30	35	40	45	45	55	10	12	12	14	14	18	18	23	28
MF(JS14)		10	10	12	12	16	16	10	10	10	10	10	12	15	15	15
R(JS14)		32	36	45	50	63	75	/	/	/	32	36	45	50	63	75
TF(JS14)		64	72	90	100	126	150	43	55	60	65	82	90	110	135	163
TG		32,5	38	46,5	56,5	72	89	18	22	26	32	42	50	62	82	103
UF		80	90	110	120	150	170	55	70	76	80	102	110	130	160	190
ZF		60,5	62	65	69,5	80	92,5	52,5	52,5	55	60,5	62	65	72,5	79	91,5
ZF1		54,5	55,5	57,5	62	72	82,5	48	48	49,5	54,5	55,5	57,5	65	71	81,5
Weight (g)	Steel	160	250	480	620	1430	1970	100	170	210	270	430	600	1210	1810	2610
	Aluminium	/	/	/	/	/	/	35	60	70	90	150	210	420	630	900

Foot

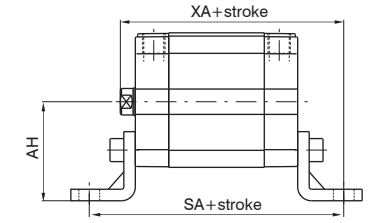
Coding: 15Ⓝ.Ø.05/1F

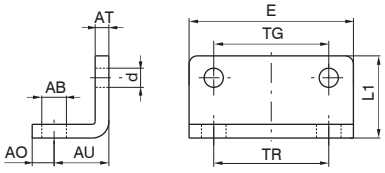
Ⓝ	STANDARDS
	00 = ISO
	80 = UNITOP
Ø	BORE
	12 = Ø12 (UNITOP)
	16 = Ø16 (UNITOP)
	20 = Ø20 (UNITOP)
	25 = Ø25 (UNITOP)
	32 = Ø32 (ISO / UNITOP)
	40 = Ø40 (ISO / UNITOP)
	50 = Ø50 (ISO / UNITOP)
	63 = Ø63 (ISO / UNITOP)
	80 = Ø80 (ISO / UNITOP)
	100 = Ø100 (ISO / UNITOP)

(1 piece)



Element used to anchor the cylinder parallel to the mounting plane. They are made with stamped and pierced sheet metal black painted.





	ISO Dimensions						UNITOP Dimensions								
Bore	32	40	50	63	80	100	12-16	20	25	32	40	50	63	80	100
AB (H14)	7	9	9	9	12	14	5,5	6,6	6,6	6,6	9	9	11	11	13,5
AH (JS15)	32	36	45	50	63	71	22	27	30	32	42,5	47	59,5	65,5	78
AO (±0,2)	11	8	15	13	14	16	4,5	6	6	8	8	8	12	12	12
AT	4	4	5	5	6	6	3	4	4	5	5	6	6	8	8
AU (±0,2)	24	28	32	32	41	41	13	16	16	18	20	24	27	30	33
d	7	7	9	9	11	11	4,4	5,4	5,4	6,6	6,6	9	9	11	11
E	45	52	65	75	95	115	30	36	40	50	60	68	84	102	123
L1	30	30	36	35	47	53	17,5	22	23	24	29,5	30	39	36,5	38,5
SA	92,5	101,5	109,5	114	138	148,5	64	70	71,5	80,5	85,5	93,5	104	116	132,5
TG	32,5	38	46,5	56,5	72	89	18	22	26	32	42	50	62	82	103
TR	32	36	45	50	63	75	18	22	26	32	42	50	62	82	103
XA	74,5	80	85	89,5	105	117,5	55,5	58,5	61	68,5	72	77	84,5	94	109,5
Weight (g)	50	70	120	180	320	400	20	35	45	75	100	150	250	390	500

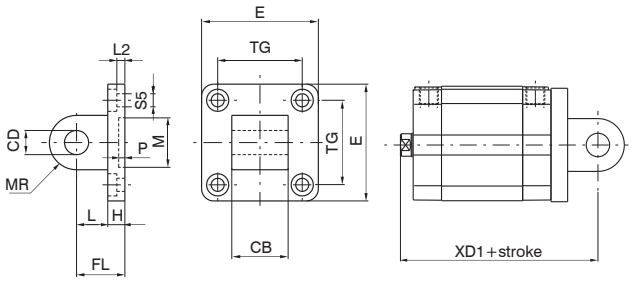
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

UNITOP rear male clevis

Coding: 1580.Ø.Ⓜ

	BORE
	12 = Ø12
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	MATERIALS
Ⓜ	**09/1F** = Aluminium
	09/2F = Steel





This type of mounting allows anchorage of the cylinder both parallel and at the right angle to the plane. The cylinder rod can oscillate and self-align to the connected load. It's made with aluminium alloy black painted or with zinc plated steel (from Ø20).

Bore		12-16	20	25
CB(H14)		12	16	16
CD (H9)		6	8	8
E (±0,5)		27	34	38
FL		16	20	20
H		6	6	6
L		10	14	14
L2 (±0,5)		2,6	2,6	2,6
M (H11)		10	12	12
MR		6	8	8
P (+0,3)		3	3	3
S5 (H13)		4,5	5,5	5,5
TG (±0,2)		18	22	26
XD1		58,5	62,5	65
Weight (g)	Steel	/	70	80
	Aluminium	13	25	28

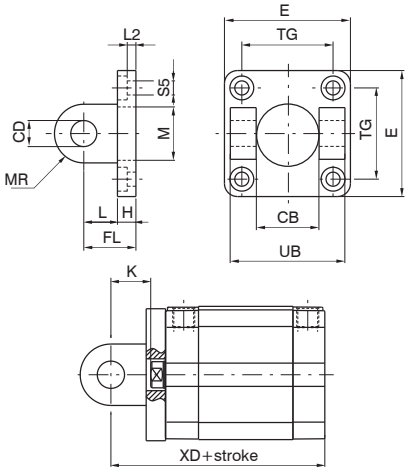
Front clevis

Coding: 15Ⓝ.Ø.Ⓜ

	STANDARDS
Ⓝ	**00** = ISO
	80 = UNITOP
	BORE
	32 = Ø32
	40 = Ø40
Ø	**50** = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	MATERIALS
Ⓜ	**08F** = Aluminium (ISO)
	11F = Aluminium (UNITOP)
	13F = Steel (UNITOP)



This type of mounting allows anchorage of the cylinder both parallel and at the right angle to the plane. The cylinder rod can oscillate and self-align to the connected load. It's made with aluminium alloy black painted or with zinc plated steel.



		ISO Dimensions						UNITOP Dimensions					
Bore		32	40	50	63	80	100	32	40	50	63	80	100
CB (H14)		26	28	32	40	50	60	26	28	32	40	50	60
CD (H9)		10	12	12	16	16	20	10	12	12	16	16	20
E		45	52	65	75	95	115	48	58	66	83	102	123
FL		22	25	27	32	36	41	22	25	27	32	36	41
H		9	9	11	11	14	14	9	9	11	11	13	15
K		16	18,5	19,5	24,5	28	31	16	18,5	19,5	24,5	28	31
L		13	16	16	21	22	27	13	16	16	21	23	26
L2		5,5	5,5	6,5	6,5	10	10	5,5	5,5	6,5	6,5	10	10
M		30	35	40	45	45	55	14	14	18	18	23	28
MR		10	12	12	16	16	20	10	12,5	12,5	15	15	20
S5		6,6	6,6	9	9	11	11	6,6	6,6	9	9	11	11
TG		32,5	38	46,5	56,5	72	89	32	42	50	62	82	103
UB		45	52	60	70	90	110	45	52	60	70	90	110
XD		66,5	70,5	72,5	82	92	107,5	66,5	70,5	72,5	82	92	107,5
XD1		72,5	77	80	89,5	100	117,5	72,5	77	80	89,5	100	117,5
Weight (g)	Steel	/	/	/	/	/	/	180	310	420	700	1240	2210
	Aluminium	40	70	120	170	360	570	65	110	145	240	430	770

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

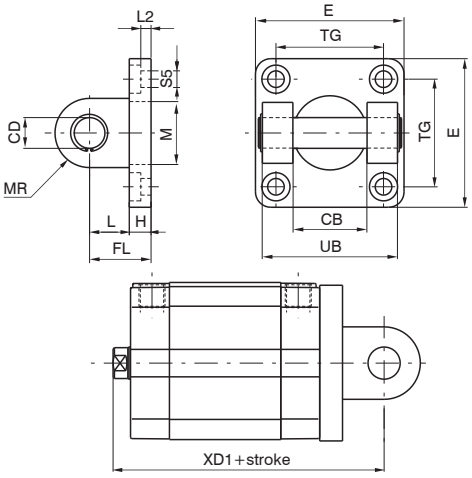
Rear clevis (MP2)

Coding: 15Ⓝ.Ø.Ⓜ

Ⓝ	STANDARDS
	00 = ISO
	80 = UNITOP
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓜ	MATERIALS
	09F = Aluminium (ISO)
	10F = Aluminium (UNITOP)
	12F = Steel (UNITOP)



This type of mounting allows anchorage of the cylinder both parallel and at the right angle to the plane. The cylinder rod can oscillate and self-align to the connected load. It's made with aluminium alloy black painted or with zinc plated steel.



		ISO Dimensions						UNITOP Dimensions					
Bore		32	40	50	63	80	100	32	40	50	63	80	100
CB (H14)		26	28	32	40	50	60	26	28	32	40	50	60
CD (H9)		10	12	12	16	16	20	10	12	12	16	16	20
E		45	52	65	75	95	115	48	58	66	83	102	123
FL		22	25	27	32	36	41	22	25	27	32	36	41
H		9	9	11	11	14	14	9	9	11	11	13	15
K		16	18,5	19,5	24,5	28	31	16	18,5	19,5	24,5	28	31
L		13	16	16	21	22	27	13	16	16	21	23	26
L2		5,5	5,5	6,5	6,5	10	10	5,5	5,5	6,5	6,5	10	10
M		30	35	40	45	45	55	14	14	18	18	23	28
MR		10	12	12	16	16	20	10	12,5	12,5	15	15	20
S5		6,6	6,6	9	9	11	11	6,6	6,6	9	9	11	11
TG		32,5	38	46,5	56,5	72	89	32	42	50	62	82	103
UB		45	52	60	70	90	110	45	52	60	70	90	110
XD		66,5	70,5	72,5	82	92	107,5	66,5	70,5	72,5	82	92	107,5
XD1		72,5	77	80	89,5	100	117,5	72,5	77	80	89,5	100	117,5
Weight (g)	Steel	/	/	/	/	/	/	220	360	480	830	1390	2500
	Aluminium	80	120	180	300	500	860	80	125	170	290	480	865

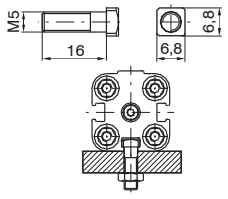
Slot fixing screws

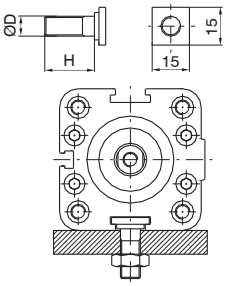
Coding: 1500.1ⓉF

Ⓣ	SIZE
	7 = Small slot (from Ø12 to Ø50)
	5 = Large slot (Ø32)
	6 = Large slot (from Ø40 to Ø63)
	8 = Large slot (from Ø80 to Ø100)



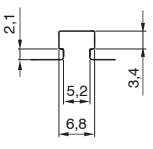




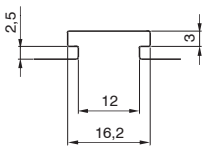


Example of mounting with square head screws





Small slot detail



Large slot detail

Bore	12 ... 50	32	40 ... 63	80 ... 100
ØD	/	M6	M8	M10
H	/	15	20	25
Weight (g)	8	10	18	25

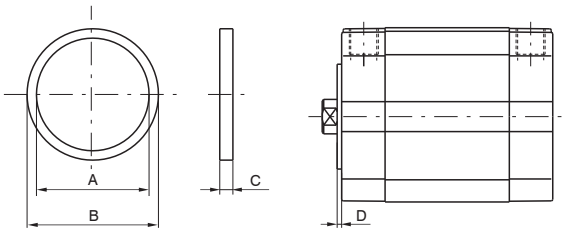
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Centering rings

Coding: 1580.Ø.02F

	BORE
Ø	**32** = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100





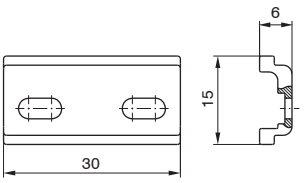
This aluminium ring allows the center assembling of the cylinder.

Bore	32	40	50	63	80	100
A	25	30	35	40	40	50
B (e11)	30	35	40	45	45	55
C	3,5	3,5	3,5	4,5	5,5	5,5
D	1,5	1,5	1,5	2	2,5	2,5
Weight (g)	2	2	3	4	5	6

Sensor adapter (Series SR)

Coding: 1380.01F





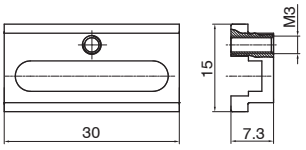
Nylon accessory for sensor mounting 1580._, MRS._, MHS._ in grooves "A" shape.

Weight 1 g

Sensor adapter (Series SQ-SU)

Coding: 1500.22F





Aluminium accessory for sensor mounting square section in grooves "A" shape.

Weight 4 g

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1500 Ecompact-S

Based on the **ECOMPACT** series with piston rods and centring diameters according to ISO 15552 standard

Construction characteristics

Body	anodized aluminium
Piston rod bushings	spheroid bronze on steel band with P.T.F.E. coat
Seals	standard: NBR Oil resistant rubber, PUR Piston rod seals (PUR or FPM on request)
Springs	stainless steel
Pistons	Ø32 and Ø40 acetal resin (aluminium on request) Ø50 and Ø63 aluminium (with FPM seals, aluminium for all of standard diameters)
Piston rod	C43 chromed steel (on request stainless steel)
End caps	aluminium alloy casting painted with brass centring bearing
Fixing screws	zinc plated steel

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Max. pressure	10 bar
Working temperature	-5°C ... +70°C with standard seals (magnetic or non magnetic piston) -30°C ... +80°C with PUR seals (magnetic or non magnetic piston) -5°C ... +80°C with FPM seals (magnetic piston) -5°C - +150°C with FPM seals (non magnetic piston)

Use and maintenance

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

Stroke tolerance, minimum and maximum spring loads and cushioning length

Bore (mm)	Stroke tolerance (mm)	Minimum springs load (N)	Maximum springs load (N)	Cushioning length (mm)
Ø32	+ 2 / 0 mm	19,6	25,5	6,5
Ø40		25,5	42,2	8
Ø50		44,1	96,3	7,5
Ø63	+ 2,5 / 0 mm	44,1	96,3	7,5

Standard strokes

DOUBLE ACTING BASIC version and THROUGH ROD CYLINDER version

Cylinders with longer strokes than those in the chart are also available.
The end user is responsible for the load applied on the product and for its correct use.
For special applications, please get in touch with our sales rep.

	Stroke																											
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	100	125	150	160	200	250	300	320	350	400	450	500
Bore	WITHOUT CUSHIONING DEVICE																											Maximum suggested strokes
Ø32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					650
Ø40	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
Ø50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Ø63	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Bore	WITH CUSHIONING DEVICE																											Maximum suggested strokes
Ø32					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					650
Ø40					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
Ø50					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Ø63					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

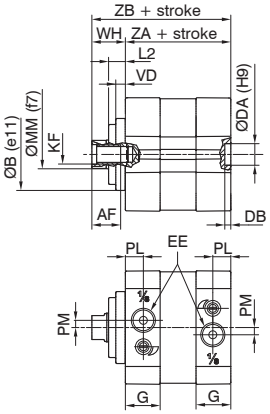
DOUBLE ACTING THROUGH ROD CYLINDER BORED version

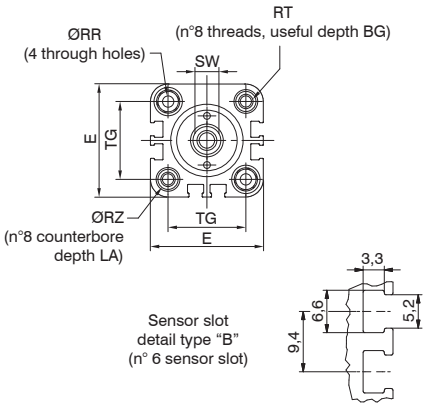
Cylinders with longer strokes than those in the chart are also available.
The end user is responsible for the load applied on the product and for its correct use.
For special applications, please get in touch with our sales rep.

	Stroke																											
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	25	30	35	40	45	50	55	60	65	70	75	80
Bore	WITHOUT CUSHIONING DEVICE																WITH CUSHIONING DEVICE											Maximum suggested strokes
Ø32	●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●						125
Ø40	●	●	●	●	●	●	●	●	●	●							●	●	●	●	●	●						
Ø50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	150
Ø63	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	

Basic version

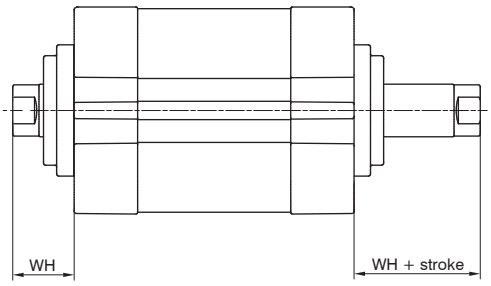






Through rod cylinder version





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Ordering codes

15 _ _.Ø.stroke. _ _ . _

- **1** = Double acting, magnetic piston
- **4** = Double acting, non magnetic piston

*
- **10** = Basic, female threaded rod
- **11** = Basic, male threaded rod
- **12** = Through rod, female threaded rods
- **13** = Through rod, male threaded rods
- **14** = Through rod, bored female threaded rods
- **15** = Through rod, bored male threaded rods

* it is possible to order the Ø32 and Ø40 cylinders with an aluminium piston by replacing the '1' with '2' in the ordering code
Example: 1540.32.10.10.1 (acetyl resin piston)
1540.32.10.20.1 (aluminium piston version)

- **0** = NBR seals and C43 chromed plated rod
- **1** = NBR seals and stainless steel rod
- **4** = PUR seals and C43 chromed plated rod
- **5** = PUR seals and stainless steel rod
- **6** = FPM seals and C43 chromed plated rod
- **7** = FPM seals and stainless steel rod

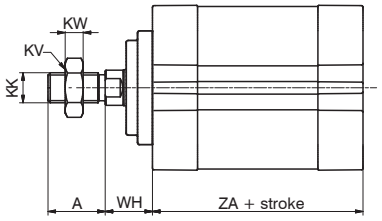
- **4** = Non-cushioned version (mechanical cushioning only)
- **5** = Versions with adjustable end of stroke cushioning system

Seals compounds scheme
NBR: Oil resistant nitrilic rubber seals
PUR: Polyurethane seals
FPM: Fluoropolymer rubber seals

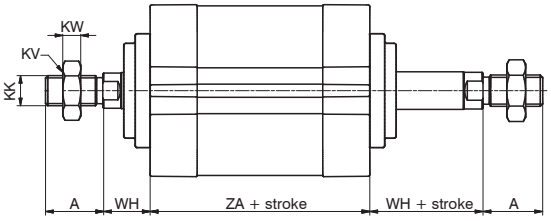
Table of dimensions

Bore		Ø32	Ø40	Ø50	Ø63
AF (min)		12	16	20	20
ØB (e11)		30	35	40	45
BG		16	16	16	16
ØDA (H9)		9	9	12	12
DB (+0,1/0)		2,5	2,5	2,6	2,6
E (max)		47,5	55	66	78
EE		G1/8"	G1/8"	G1/8"	G1/8"
G		14,5	15	15	15
KF		M8	M10	M12	M12
LA (0/-0,1)		5	5	5	5
L2		7	7	10	10
ØMM (f7)		12	16	20	20
PL (+0,1/0)		7,5	8	8	8
PM		3	/	/	/
ØRR (min)		5,1	5,1	6,6	6,6
RT		M6	M6	M8	M8
ØRZ (min)		8,5	8,5	10,5	10,5
SW (0/-0,1)		10	13	17	17
TG (±0,2)		32,5	38	46,5	56,5
VD		4	4	5	5
WH (±1)		14	14	18	18
ZA (±0,5)		44	45	45	49
ZB (+1/0)		58	59	63	67
Weight (g)	stroke	240	330	530	700
	every 5 mm	13	17	24	27

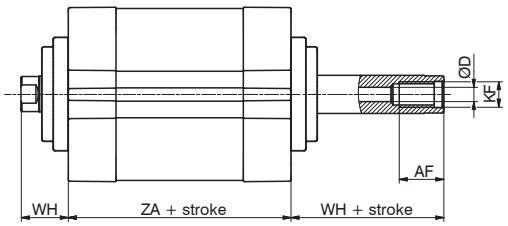
Basic version male piston rod



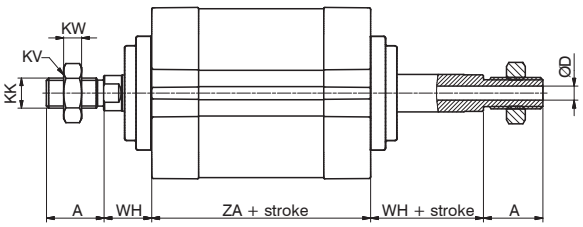
Through rod cylinder version male rod



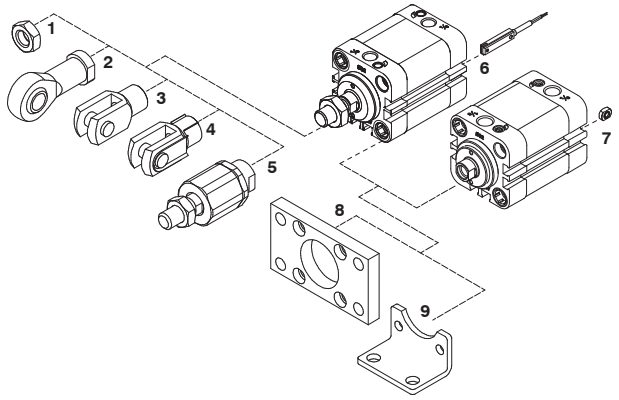
Through rod cylinder version bored female piston rod



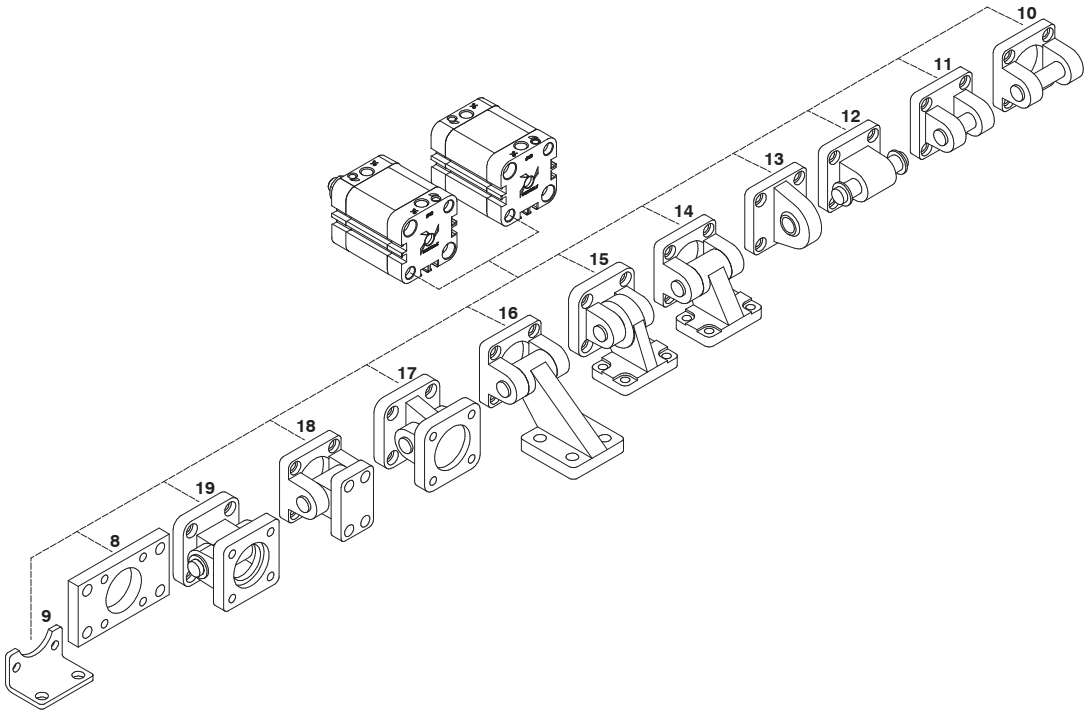
Through rod cylinder version bored male piston rod



Bore	A (0/-0,5)	AF (min)	DØ	KF	KK	KV	KW	WH (±1)	ZA (±0,5)
Ø32	22	14	4,5	M8	M10x1,25	17	6	14	44
Ø40	24	18	4,5	M10	M12x1,25	19	7	14	45
Ø50	32	24	6	M12	M16x1,5	24	8	18	45
Ø63	32	24	6	M12	M16x1,5	24	8	18	49



Position	Description	Coding	
1	Nuts	1320.32.18F 1320.40.18F 1320.50.18F	(Ø32) (Ø40) (Ø50 and Ø63)
2	Ball joint	1320.32.32F 1320.40.32F 1320.50.32F	(Ø32) (Ø40) (Ø50 and Ø63)
3	Fork with pin	1320.32.13F 1320.40.13F 1320.50.13F	(Ø32) (Ø40) (Ø50 and Ø63)
4	Fork with clips	1320.32.13/1F 1320.40.13/1F 1320.50.13/1F	(Ø32) (Ø40) (Ø50 and Ø63)
5	Self-aligning joint	1320.32.33F 1320.40.33F 1320.50.33F	(Ø32) (Ø40) (Ø50 and Ø63)
6	Sensors	(see sensor section)	
7	Valves direct mounting bolt	1500.20F	(Ø32 ... Ø63)

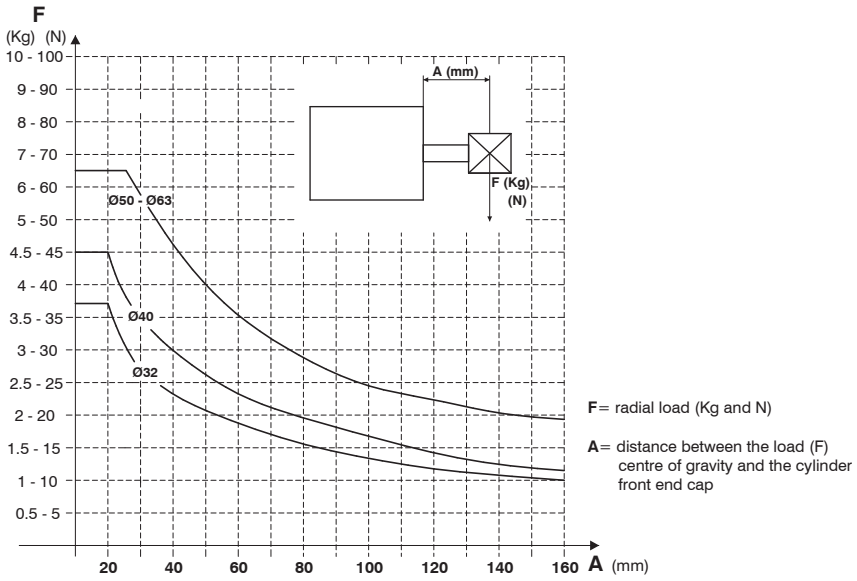


Note
For dimensions and characteristics of fixings see ISO 15552 cylinder chapter (for the foot pos. 9, see compact cylinder chapter ISO 21287).

Position	Description	Coding:	
		Aluminium	Steel
8	Front and rear flanges (MF1 - MF2)	1390.Ø.03FP	1380.Ø.03F
9	Short mounting foot brackets (in sheet metal MS1)	/	1540.Ø.05/1F
10	Rear clevis (MP2)	1380.Ø.09F	1320.Ø.20F
11	Rear narrow clevis	1380.Ø.30F	1320.Ø.29F
12	Rear male clevis (MP4)	1380.Ø.09/1F	1320.Ø.21F
13	Rear male clevis (with jointed head according to DIN 648K standard)	1380.Ø.15F	1320.Ø.25F
14	Square angle trunnion (AB7)	1380.Ø.35F	1320.Ø.23F
15	Complete square angle trunnion (with joined head according to DIN 648K standards)	/	1320.Ø.27F
16	Square angle trunnion (not specified by ISO 15552)	1380.Ø.11F	/
17	Complete standard trunnion (with joined head according to DIN 648K standards)	1380.Ø.36F	1320.Ø.26F
18	Standard trunnion (not specified by ISO 15552)	1380.Ø.10F	/
19	Standard complete trunnion	1380.Ø.22F	1320.Ø.22F

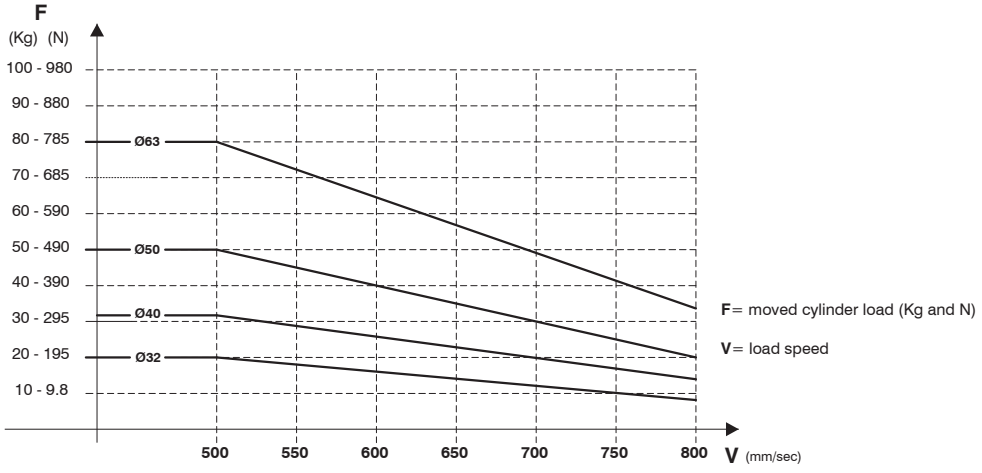
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Admissible maximum radial load diagram



The diagram shows the maximum Radial load **F** (in Newtons) that can be applied to the cylinder piston rod as a function of the distance **A** (in mm); based upon the standard version cylinder under static conditions
Important: Do not exceed the recommended values in the table as reduced life or damage to the cylinder may result.

End of stroke cushioning capacity diagram



The diagram shows, for each diameter, the safety curves relative to the maximum loads **F** which can be moved by the cylinder in function of it's speed **V**. The data has been calculated under the following test conditions: Cylinder mounted vertically with the rod pointing down, air pressure at 5 bar and with a guided load.
Important: Do not exceed the recommended values in the table as reduced life or damage to the cylinder may result.

Series 6500

Construction characteristics

Body	anodized aluminium
Piston rod bushings	sintered bronze
Rear end cap	anodized aluminium
Seals	oil resistant NBR rubber
Piston	Brass
Cushioning washer	PUR
Piston rod	stainless steel

Operational characteristics

Fluid	filtered and lubricated air or not (if lubricated the lubrication must be continuous)
Max. working pressure	7 bar
Working temperature	-5 °C ... +70 °C
Minimum working pressure	0.6 bar (for bore Ø10 - Ø16) 0.5 bar (for bore Ø20 - Ø25)
Cushioning	with elastic bumper
Stroke tolerance	+1 / 0 mm
Piston speed	50 ... 500 mm/s (without load)

Standard strokes

	Stroke							
Bore	5	10	15	20	25	30	40	50
Ø10	●	●	●	●	●	●		
Ø16	●	●	●	●	●	●		
Ø20	●	●	●	●	●	●	●	●
Ø25	●	●	●	●	●	●	●	●

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

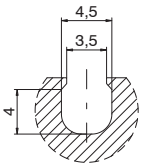
Multimount cylinders

Coding: 6500.Ø.Ⓒ.1.Ⓟ

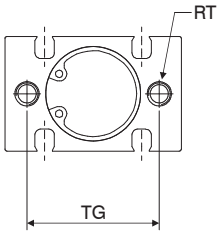
	BORE
	10 = Ø10
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	STROKE
	5 = 5 mm
	10 = 10 mm
	15 = 15 mm
Ⓒ	**20** = 20 mm
	25 = 25 mm
	30 = 30 mm
	40 = 40 mm
	50 = 50 mm
	PISTON
Ⓟ	= non-magnetic
	M = magnetic



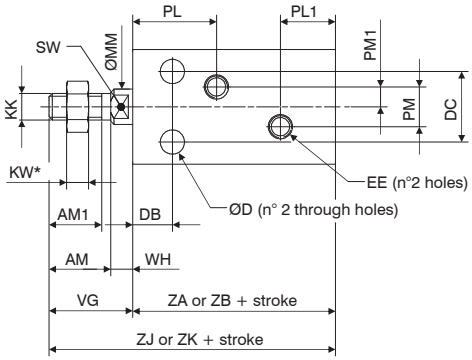
Slot Detail Type "D"

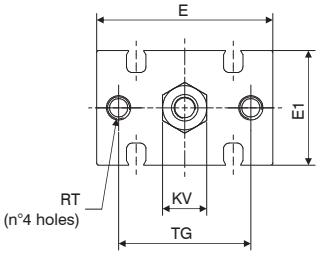


Overall dimensions



*Ø10: n° 2 piston rod nuts
Ø16: n° 1 piston rod nut





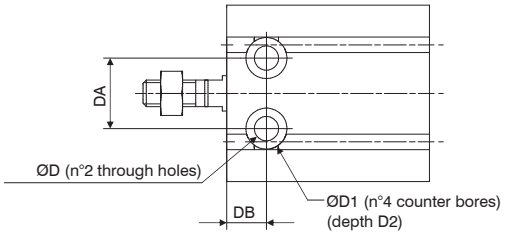
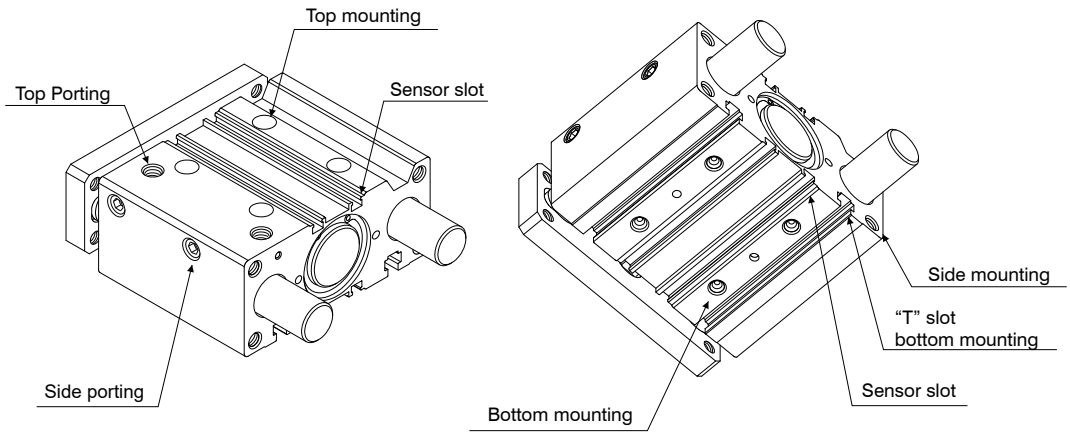


Table of dimensions

Bore		Ø10	Ø16	Ø20	Ø25
AM		/	12,5	14	18
AM1		10	11	12	15,5
ØD		Ø3,2	Ø4,5	Ø5,5	Ø5,5
ØD1		Ø6	Ø7,6	Ø9,3	Ø9,3
D2		5	6,5	8	9
DA		11	14	16	20
DB		7	7	9	10
DC		9	12	16	20
E		24	32	40	50
E1		15	20	26	32
EE		M5	M5	M5	M5
KK		M4	M5	M6	M8
KV		7	8	10	13
KW		3	4	5	5
ØMM		Ø4	Ø6	Ø8	Ø10
PL		16,5	16,5	19	21,5
PL1		10	11,5	12,5	13
PM		/	4	9	9
PM1		/	2	4,5	4,5
RT		M3 (useful depth 5)	M4 (useful depth 6)	M5 (useful depth 8)	M5 (useful depth 8)
SW		/	5	6	8
TG		18	25	30	38
VG		16	16	19	23
WH		/	3,5	5	5
ZA magnetic		36	40	46	50
ZB non magnetic		36	30	36	40
ZJ magnetic		52	56	65	73
ZK non magnetic		52	46	55	63
Weight (g)	Stroke 0	32	44	84	159
	every 5 mm	4	6	11	17

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 6100-6101-6110



These guided compact cylinders, characterised by reduced overall dimensions, can be used for the compression, conveyance and manipulation of objects in many industrial sectors.
Similarly they can also be used in pushing, lifting and stopping applications.
These cylinders are available in sizes 32mm to 63 mm diameter, and comprise a single compact cylinder with integral guide rods, making it a true guide cylinder designed with installation flexibility and space saving in mind.
The rod guide is available in two styles:
Self-lubricating bronze bushes - useful for absorbing lateral loads and forces, especially as a stopper.
Bearing bushes - guaranteeing high precision and uniform movement with low friction characteristics, useful with mis-aligned loads.
Guided compact cylinders are ideal for use in applications requiring a combination of reduced dimensions and anti-rotation features.
Mounting can be achieved on three sides through holes or "T" slots.
When sensors are required, there are special slots in the barrel extrusion where 1580 series miniaturised sensors are easily fitted.

Construction characteristics

Body	anodized aluminium
Guide rods	C43 chromed steel (control unit with bronze bush) tempered and chromed steel (control unit with bearing bush)
Rods bushing	teflon coated bush
Piston rod bushing	bronze or bearing bushing
Rear end cap	anodized aluminium
Piston seals	oil resistant NBR rubber
Piston rod seals	PUR (NBR 12-16)
Plate	anodized aluminium
Piston	aluminium
Wipers	PUR
Piston rod	C43 chromed steel or stainless steel

Operational characteristics

Fluid	filtered and lubricated air or not (if lubricated the lubrication must be continuous)
Working pressure	max. 10 bar
Function	Double acting
Working temperature	-5 °C ... +70 °C
Cushioning	elastic bumper on both ends

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Guided compact cylinder

Coding: 6100.Ø.Ⓒ.Ⓖ.Ⓚ

Ø	BORE
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
Ⓒ	STROKE
	10 = 10 mm
	20 = 20 mm
	25 = 25 mm
	30 = 30 mm
	40 = 40 mm
	50 = 50 mm
	75 = 75 mm
	100 = 100 mm
	125 = 125 mm
	150 = 150 mm
	175 = 175 mm
	200 = 200 mm
	250 = 250 mm *
	300 = 300 mm *
	350 = 350 mm *
	400 = 400 mm *
	450 = 450 mm *
	500 = 500 mm *
Ⓖ	CONTROL UNIT
	B = Control unit with bronze bush
	C = Control unit with bearing bushes
Ⓚ	CONNECTIONS
	= Side supply ports closed
	L = Top supply ports closed

Only for bronze bushings* **B *version*



Construction characteristics

Body	anodized aluminium
Guide rods	C43 chromed steel (control unit with bronze bush) tempered and chromed steel (control unit with bearing bush)
Piston	aluminium
Piston rod	stainless steel (for bores Ø12, Ø16, Ø20, Ø25) C43 chromed steel (for bores Ø32, Ø40, Ø50, Ø63)
Piston rod bushings	bronze or bearing bushing
Bottom plates	anodized aluminium
Piston seals	oil resistant NBR rubber
Rod seal	PUR (NBR 12-16)
Wipers	PUR
Plate	zinc plated steel

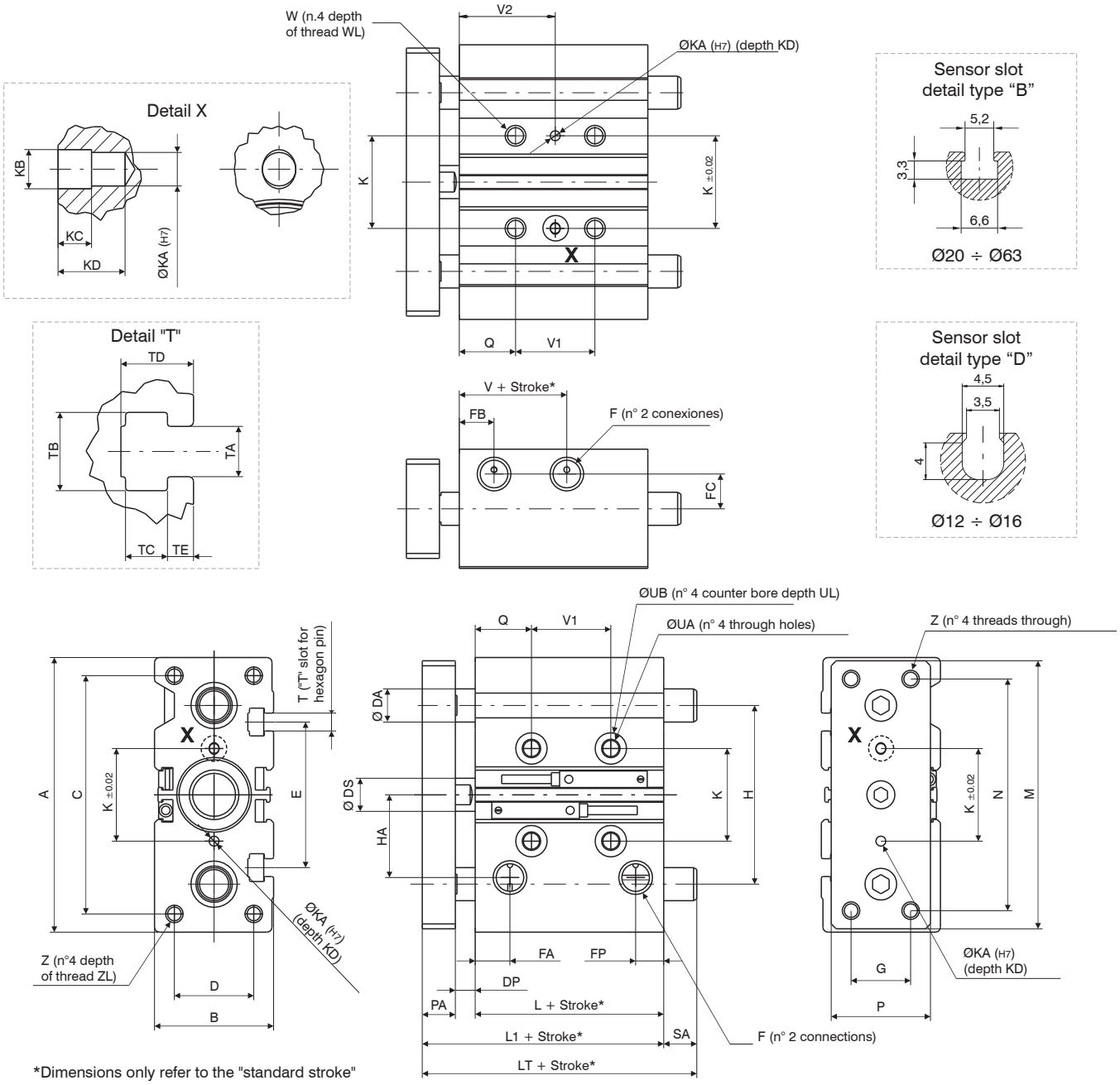
Operational characteristics	
Cushioning	elastic bumper on both ends
Fluid	filtered and lubricated air or not (if lubricated the lubrication must be continuous)
Function	Double acting
Working pressure (bar)	max 10
Temperature °C	-5 ... +70

Standard strokes

Stroke																		
Bore	10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400	450	500
Ø12	●	●		●	●	●	●	●										
Ø16	●	●		●	●	●	●	●										
Ø20		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø25		●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø32			●			●	●	●	●	●	●	●	●	●	●	●	●	●
Ø40			●			●	●	●	●	●	●	●	●	●	●	●	●	●
Ø50			●			●	●	●	●	●	●	●	●	●	●	●	●	●
Ø63			●			●	●	●	●	●	●	●	●	●	●	●	●	●
													Only for bronze bushings **B** version					

Intermediate strokes can be obtained by adding specific spacers (5, 10, 15, 20 mm).
Example: It is possible to obtain a **6100.32.45.B** cylinder from a **6100.32.50.B** cylinder by adding a 5 mm spacer.
The Intermediate strokes manufactured without the use of spacers are considered special executions.

Overall dimensions



*Dimensions only refer to the "standard stroke"

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Overall dimensions

Bore	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
A	58	64	83	93	112	120	148	162
B	26	30	36	42	48	54	64	78
C	40	42	72	82	98	106	130	142
D	18	22	24	30	34	40	46	58
DA Control unit with bronze bushes	8	10	12	16	20	20	25	25
DA Control unit with bearing bushes	6	8	10	14	16	16	20	20
DP	2	4	5,5	5,5	9,5	10	13	13
DS	6	8	10	12	16	16	20	20
E	/	/	44	50	63	72	92	110
F	M5	M5	G1/8"	G1/8"	G1/8"	G1/8"	G1/4"	G1/4"
FA	11	11	11	12	13	13	13	14
FB	11	11	11	12	13	13	13	14
FC	8,5	10	10,5	13,5	15	18	21,5	28
FP	15	17	9	10,5	9,5	11	11	12,5
G	14	16	18	26	30	30	40	50
H	41,5	46	54	64	78	86	110	124
HA	19,5	23	25	28,5	34	38	47	55
K	23	24	28	34	42	50	66	80
KA	/	/	3	4	4	4	5	5
KB	/	/	3,5	4,5	4,5	4,5	6	6
KC	/	/	3	3	3	3	4	4
KD	/	/	6	6	6	6	8	8
L	29	31	38	38,5	38,5	44	44	49
L1	39	43	53,5	54	60	66	72	77
LT Control unit with bronze bushes stroke ≤50	39	43	53,5	54	97	97	106,5	106,5
LT Control unit with bronze bushes stroke ≤50 stroke ≤200	57	64	84,5	85	102	102	118	118
LT >200 < Stroke ≤ 500	/	/	122	122	140	140	161	161
LT Control unit with bearing bushes	See table 1							
M	56	62	81	91	110	118	146	158
N	48	52	70	78	96	104	130	130
PA	8	8	10	10	12	12	15	15
P	22	25	30	38	44	44	60	70
Q	5	5	17,5	17,5	21,5	22	24	24
SA Control unit with bronze bushes stroke ≤50	/	/	/	/	37	31	34,5	29,5
SA Control unit with bronze bushes ≤50 stroke ≤200	18	21	31	31	42	36	46	41
SA >200 < Stroke ≤ 500	/	/	68.5	68	80	74	89	84
SA Control unit with bearing bushes	See table 1							
T	/	/	M5	M5	M6	M6	M8	M10
TA	/	/	5,4	5,4	6,5	6,5	8,5	11
TB	/	/	8,4	8,4	10,5	10,5	13,5	17,8
TC	/	/	4,5	4,5	5,5	5,5	7,5	10
TD	/	/	7,8	8,2	9,5	11	13,5	18,5
TE	/	/	2,8	3	3,5	4	4,5	7
UA	4,3	4,3	5,6	5,6	6,6	6,6	8,6	8,6
UB	8	8	9,5	9,5	11	11	14	14
UL	4,5	4,5	5,5	5,5	7,5	7,5	9	9
V	14	14	13	13	7,5	13	9	14
V1	See table 2							
V2								
W	M5	M5	M6x1	M6x1	M8x1,25	M8x1,25	M10x1,5	M10x1,5
WL	10	10	12	12	16	16	20	20
Z	M4	M5	M5x0,8	M6x1	M8x1,25	M8x1,25	M10x1,5	M10x1,5
ZL	9	11	13	15	20	20	22	22

Table 1

Bore	LT			SA		
	stroke≤30	30<stroke≤100	100<stroke≤200	stroke≤30	30<stroke≤100	100<stroke≤200
Ø12	39	53	53	/	14	/
Ø16	43	64	64	/	21	/
Ø20	47	72	72	/	18,5	49
Ø25	49	77	77	/	23	48
	stroke <50	50≤stroke≤100	100<stroke≤200	stroke <50	50≤stroke≤100	100<stroke≤200
Ø32	/	87	117	/	27	57
Ø40	/			/	21	51
Ø50	/	92	127	/	20	55
Ø63	/			/	15	50

Table 2

Bore	V1				V2			
	stroke≤30	30<stroke≤100	100<stroke≤200	200<stroke≤500	stroke≤30	30<stroke≤100	100<stroke≤200	200<stroke≤500
Ø12	4+stroke			/	/	/	/	/
Ø16								
Ø20	24	44	120	200	29,5	39,5	77,5	124
Ø25								
	stroke≤25	25<stroke≤100	100<stroke≤200	200<stroke≤500	stroke≤25	25<stroke≤100	100<stroke≤200	200<stroke≤500
Ø32	24	48	124	200	33,5	45,5	83,5	124
Ø40					34	46	84	
Ø50					36	48	86	
Ø63	28	52	128		38	50	88	

Weight (g)

	Bore							
	Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
Stroke	Control unit with bronze bushes							
10	240	330	/	/	/	/	/	/
20	280	380	670	950	/	/	/	/
25	/	/	/	/	1690	1950	3360	4180
30	310	430	750	1050	/	/	/	/
40	350	480	830	1160	/	/	/	/
50	390	530	910	1270	2070	2370	4000	4940
75	500	680	1170	1650	2470	2830	4730	5780
100	5903	800	1370	1920	2850	3250	5370	6540
125	/	/	1570	2190	3240	3680	6010	7290
150	/	/	1760	2470	3620	4100	6650	8050
175	/	/	1960	2740	4000	4530	7290	8800
200	/	/	2160	3010	4380	4950	7930	9560
250	/	/	2360	3280	4760	5370	8570	10320
300	/	/	2560	3550	5140	5790	9210	11080
350	/	/	2760	3820	5520	6210	9850	11840
400	/	/	2960	4090	5900	6630	10490	12600
450	/	/	3160	4360	6280	7050	11130	13360
500	/	/	3360	4630	6660	7470	11770	14120
Stroke	Moving parts							
10	100	155	/	/	/	/	/	/
20	108	170	330	520	/	/	/	/
25	/	/	/	/	1070	1140	2150	2500
30	116	185	350	560	/	/	/	/
40	124	200	380	600	/	/	/	/
50	132	215	400	640	1230	1300	2400	2750
75	152	250	520	840	1420	1490	2750	3090
100	172	285	580	950	1580	1650	3000	3350
125	/	/	640	1050	1740	1810	3260	3600
150	/	/	700	1150	1910	1980	3510	3860
175	/	/	760	1250	2070	2140	3760	4110
200	/	/	820	1350	2230	2300	4020	4360
250	/	/	880	1450	2390	2460	4280	4610
300	/	/	940	1550	2550	2620	4540	4860
350	/	/	1000	1650	2710	2780	4800	5110
400	/	/	1060	1750	2870	2940	5060	5360
450	/	/	1120	1850	3030	3100	5320	5610
500	/	/	1180	1950	3190	3260	5580	5860
Stroke	Control unit with bearing bushes							
10	240	340	/	/	/	/	/	/
20	270	390	700	980	/	/	/	/
25	/	/	/	/	1540	1790	3110	3930
30	300	430	770	1070	/	/	/	/
40	350	510	890	1250	/	/	/	/
50	390	560	970	1340	1850	2150	3660	4590
75	470	670	1140	1570	2300	2640	4410	5460
100	560	790	1310	1810	2620	300	4960	6120
125	/	/	1520	2080	2990	3420	5600	6880
150	/	/	1690	2310	3310	3780	6150	7540
175	/	/	1870	2540	3620	4140	6700	8210
200	/	/	2040	2770	3940	4500	7250	8870
Stroke	Moving parts							
10	95	145	/	/	/	/	/	/
20	100	153	310	490	/	/	/	/
25	/	/	/	/	820	870	1770	2110
30	105	161	330	520	/	/	/	/
40	110	169	370	580	/	/	/	/
50	120	177	390	610	940	1010	1950	2300
75	145	197	440	690	1110	1180	2240	2590
100	170	217	480	760	1230	1300	2430	2770
125	/	/	560	880	1410	1480	2710	3050
150	/	/	600	950	1530	1600	2890	3240
175	/	/	650	1020	1650	1720	3080	3420
200	/	/	700	1100	1770	1830	3270	3610

Cylinder theoretic force (N)

Working pressure																
2 bar	23	17	40	30	63	47	98	76	161	121	251	211	393	330	623	561
3 bar	34	26	60	45	94	71	147	113	241	181	377	317	589	495	935	841
4 bar	45	34	80	60	126	94	196	151	322	241	503	422	785	660	1247	1121
5 bar	57	43	101	76	157	118	246	189	402	302	629	528	982	825	1559	1402
6 bar	68	51	121	91	188	142	295	227	482	362	754	634	1178	989	1870	1682
7 bar	79	60	141	106	220	165	344	265	563	422	880	739	1374	1154	2182	1962
8 bar	90	68	161	121	251	189	393	302	643	482	1006	845	1570	1319	2494	2242
9 bar	102	77	181	136	283	212	442	340	724	543	1131	950	1767	1484	2805	2523
10 bar	113	85	201	151	314	236	491	378	804	603	1257	1056	1963	1649	3117	2803
Effective area (mm^2)	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In
	113	85	201	151	314	236	491	378	804	603	1257	1056	1963	1649	3117	2803

Maximum permissible Momentum

J	0,08	0,09	0,11	0,18	0,29	0,52	0,91	1,54

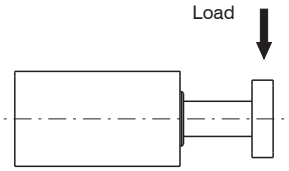
How to calculate the Momentum:$Ec = 1/2\ V^2(J)$
m = Total moving mass: weight of driven object added to weight of cylinder moving parts (kg)
v = V = max. speed: equal to average speed + 40% (m/s)

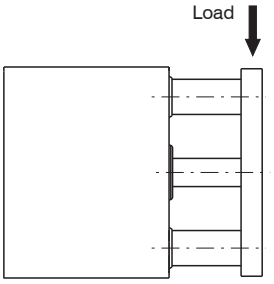
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Operating criteria

Permissible lateral load(N) - applied on overall plate

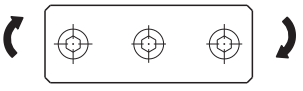
Version	Stroke	Bore Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
Control unit with bronze bushes	10	30	48						
	20	23	37	49	69				
	25					203	203	296	296
	30	19	30	43	60				
	40	16	25	38	54				
	50	14	20	35	49	164	164	245	245
	75	12	18	87	116	182	182	273	273
	100	10	15	75	100	159	159	241	241
	125			66	88	142	142	216	216
	150			59	79	127	127	195	195
	175			54	71	116	116	179	179
	200			49	65	106	106	164	164
Control unit with bearing bushes	10	20	35						
	20	15	28	58	69				
	25					191	190	208	206
	30	13	22	48	68				
	40	11	18	101	132				
	50	10	16	90	118	157	157	173	171
	75	8	14	70	93	164	163	223	221
	100	6	11	58	77	144	144	199	196
	125			62	80	203	203	264	262
	150			54	70	186	185	242	240
	175			48	62	171	171	224	221
	200			43	55	158	158	207	205





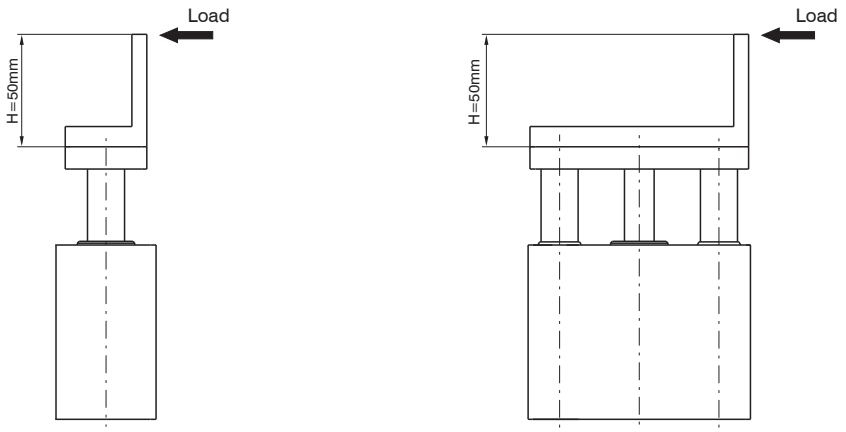
Recommended torque moments(Nm)

Version	Stroke	Bore Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63
Control unit with bronze bushes	10	0,40	0,70						
	20	0,35	0,65	1,1	1,8				
	25					6,4	7	13	14,7
	30	0,28	0,48	0,9	1,6				
	40	0,25	0,45	0,8	1,4				
	50	0,21	0,39	0,8	1,3	5,1	5,7	10,8	12,1
	75	0,42	0,68	1,9	3,0	5,7	6,3	12,0	13,5
	100	0,40	0,60	1,6	2,6	5,0	5,5	10,6	11,9
	125			1,4	2,3	4,4	4,9	9,5	10,7
	150			1,3	2,0	4,0	4,4	8,6	9,7
	175			1,2	1,8	3,6	4,0	7,9	8,9
	200			1,1	1,7	3,3	3,7	7,2	8,2
Control unit with bearing bushes	10	0,62	0,70						
	20	0,41	0,65	1,3	2,1				
	25					6,0	6,6	9,2	10,2
	30	0,33	0,48	1,0	1,8				
	40	0,30	0,45	2,2	3,4				
	50	0,48	0,39	1,9	3,0	4,9	5,4	7,6	8,5
	75	0,38	0,68	1,5	2,4	5,1	5,6	9,8	11,0
	100	0,32	0,60	1,3	2,0	4,5	5,0	8,7	9,7
	125			1,3	2,1	6,3	7,0	11,6	13,0
	150			1,2	1,8	5,8	6,4	10,7	11,9
	175			1,0	1,6	5,3	5,9	9,8	11,0
	200			0,9	1,4	4,9	5,4	9,1	10,2



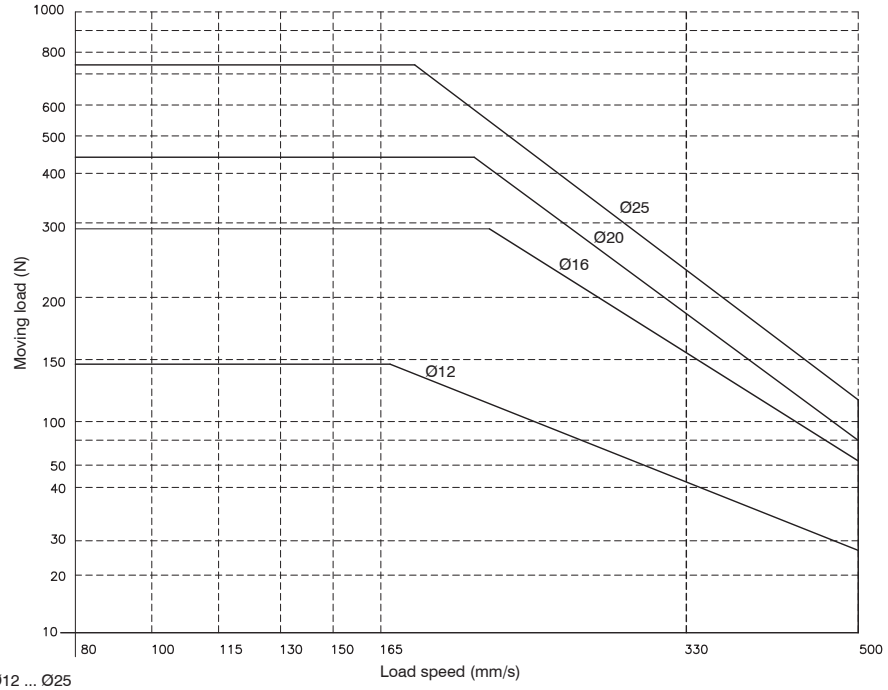
Operating criteria

"Stopper" device applications



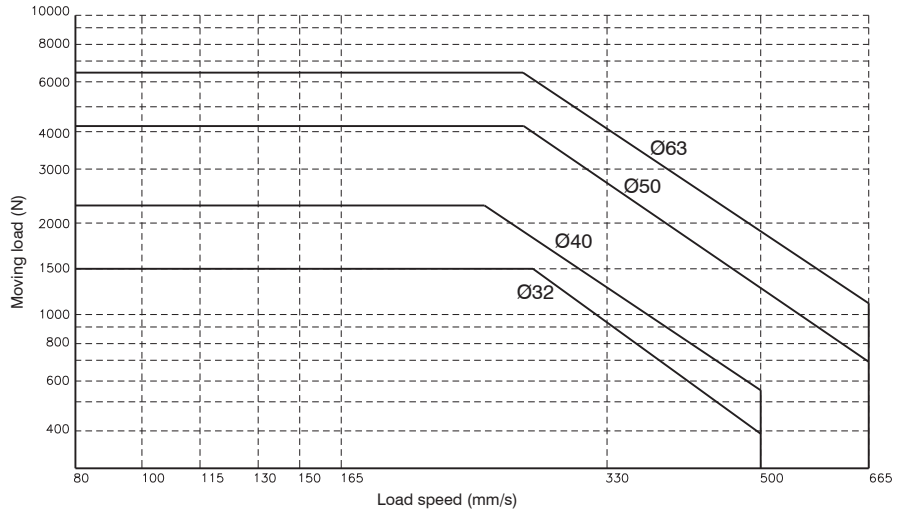
Control unit with bronze bush

ATTENTION: if H>50 mm use larger bore



Ø12 ... Ø25

ATTENTION: use with stroke ≤ 30 mm



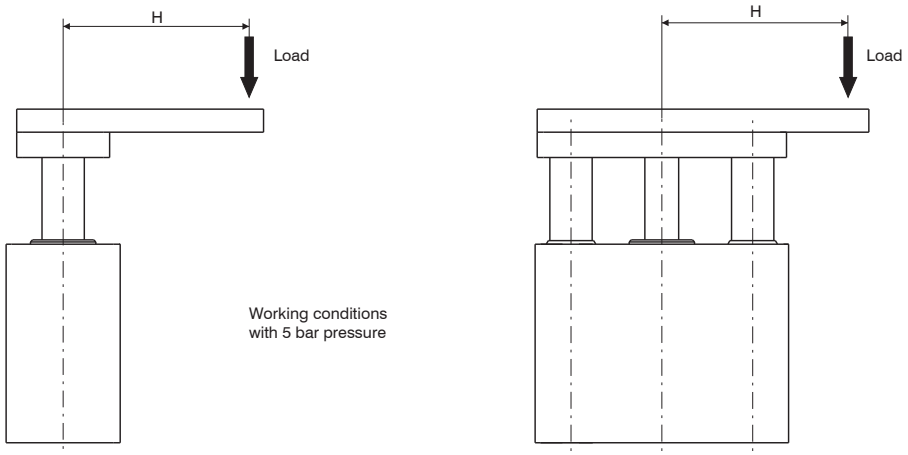
Ø32 ... Ø63

ATTENTION: use with stroke ≤ 50 mm

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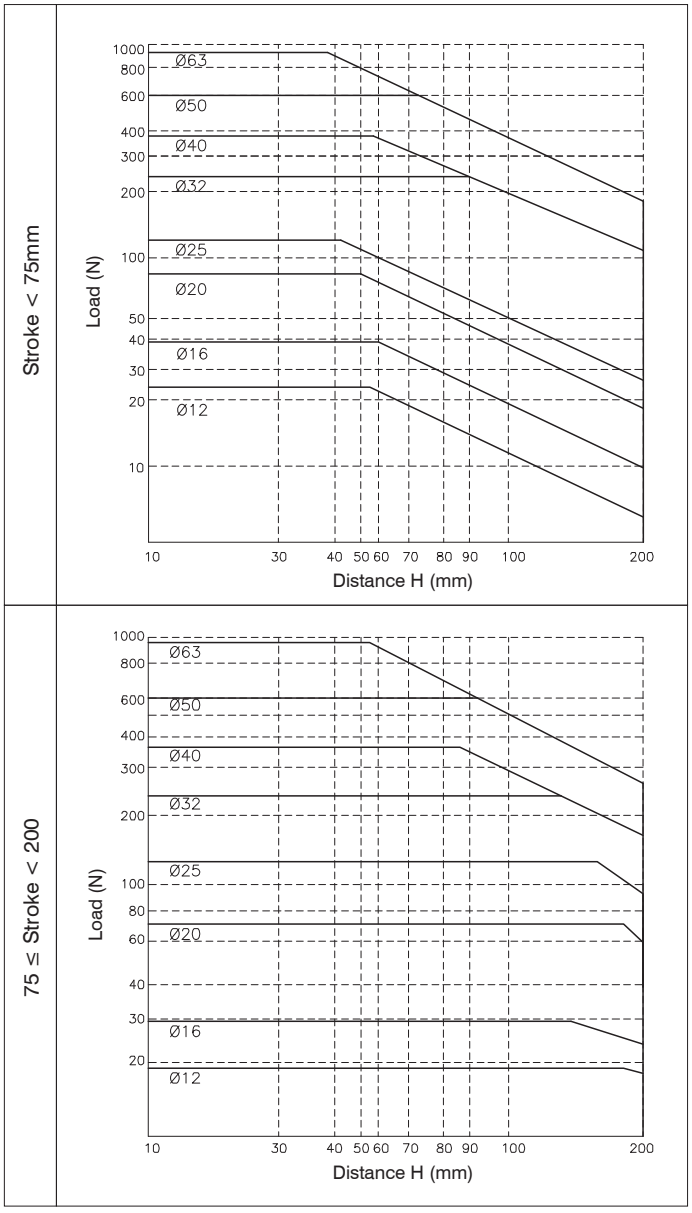
Operating criteria

Handling applications



Working conditions
with 5 bar pressure

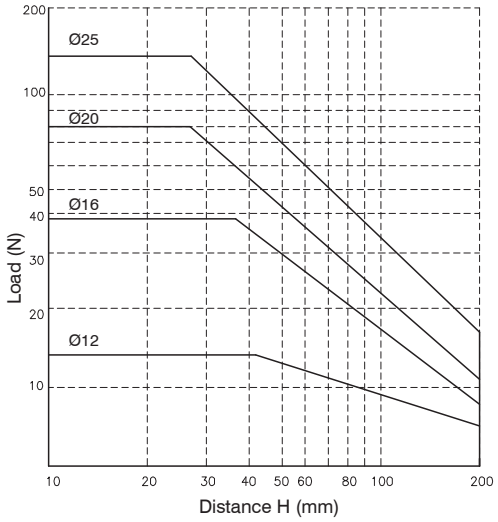
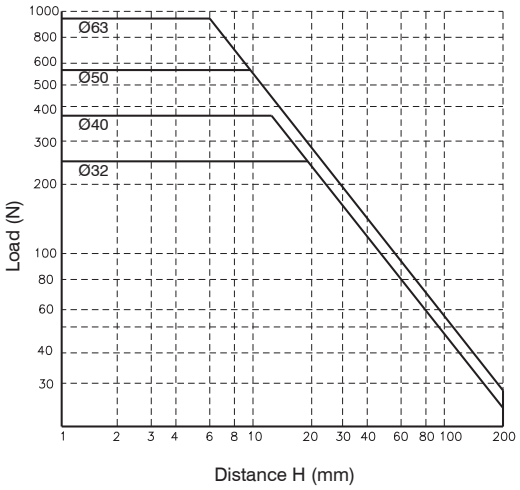
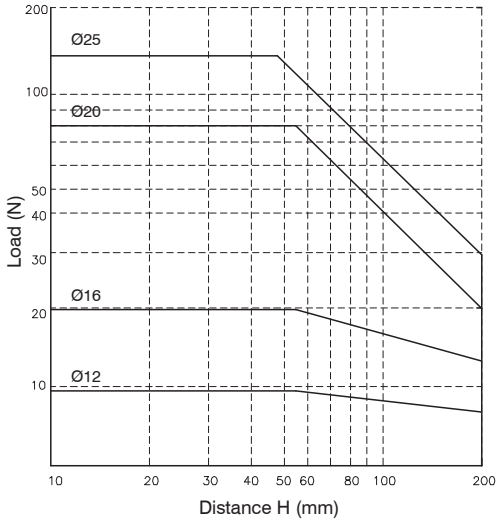
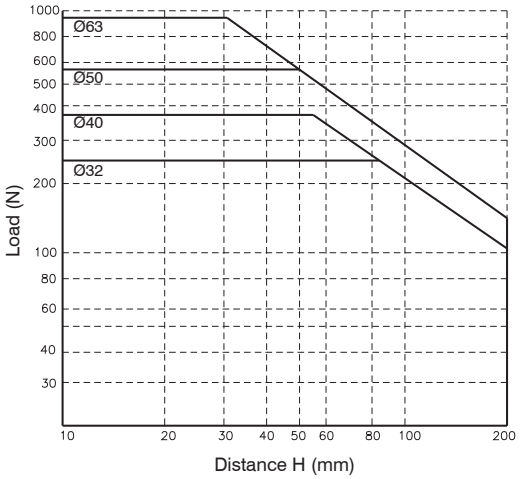
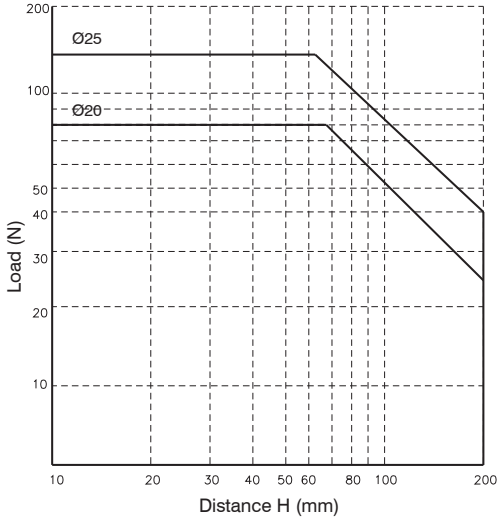
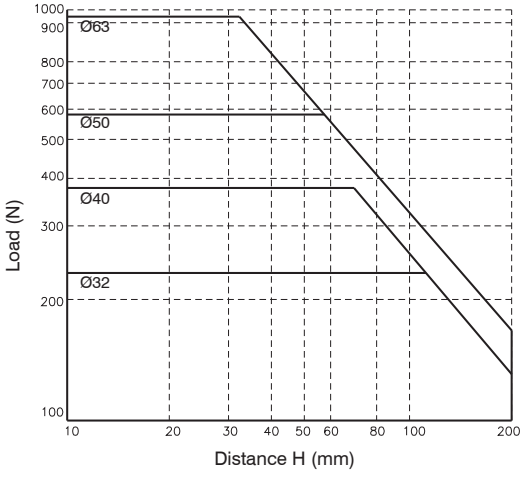
Control unit with bronze bush



Operating criteria

Handling applications

Control unit with bronze bushes

	Ø20 ... Ø25	Ø32 ... Ø63
Stroke < 40 mm		
40 ≤ Stroke < 125		
125 ≤ Stroke < 200		

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Heavy duty guided compact cylinder

Coding: 6101.80.Ⓒ.B.Ⓚ

	STROKE
	25 = 25 mm
	50 = 50 mm
	75 = 75 mm
Ⓒ	**100** = 100 mm
	125 = 125 mm
	150 = 150 mm
	175 = 175 mm
	200 = 200 mm
	CONNECTIONS
Ⓚ	= Side supply ports closed
	L = Top supply ports closed



Construction characteristics

Body	anodized aluminium
Guide rods	C43 chromed steel
Piston	aluminium
Piston rod	C43 chromed steel
Piston rod bushing	sintered bronze
Rods bushing	teflon coated bush
Rear end cap	anodized aluminium
Piston seals	oil resistant NBR rubber
Piston rod seals	PUR
Plate	anodized aluminium

Operational characteristics

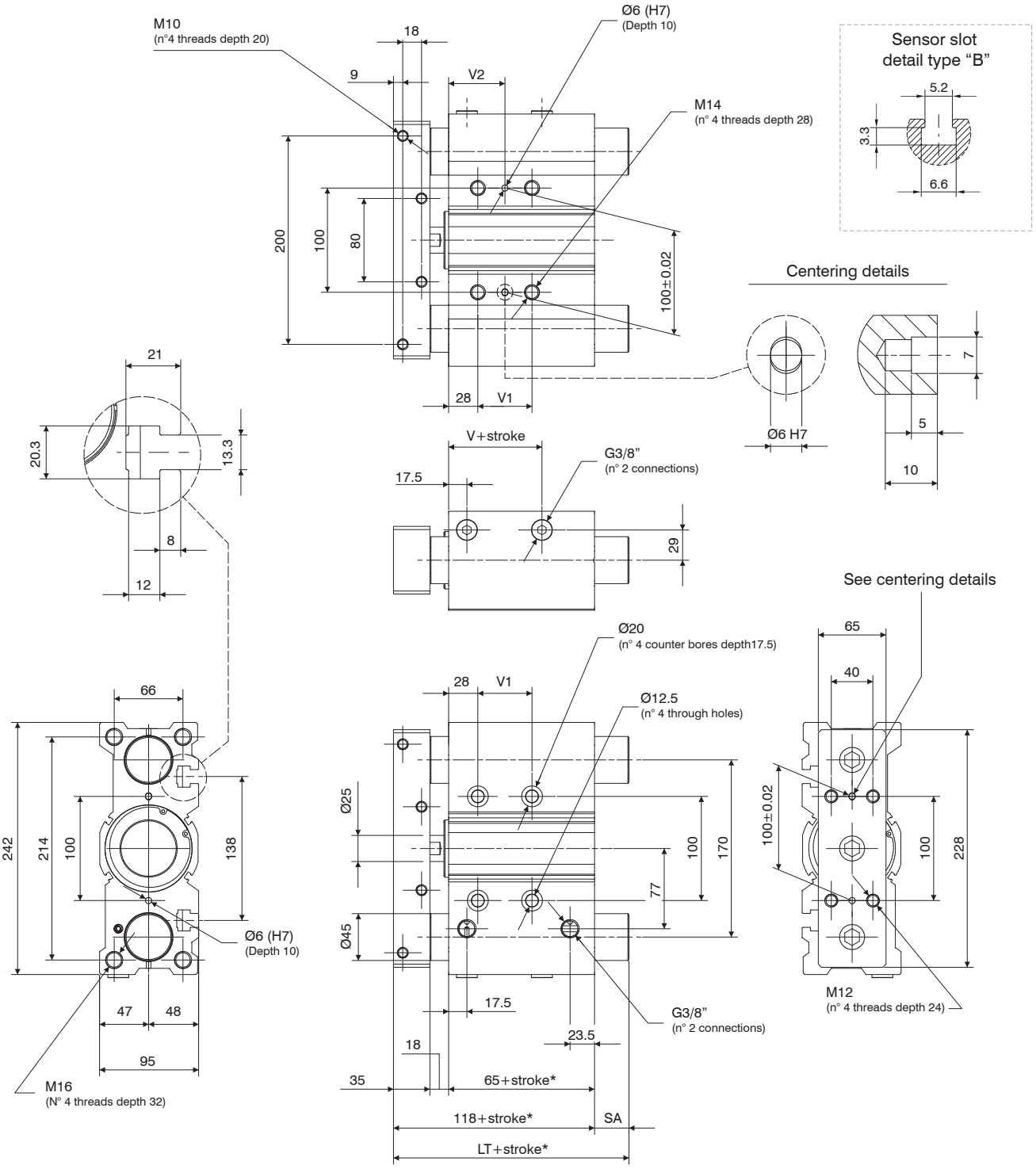
Operational characteristics	
Cushioning	elastic bumper on both ends
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Function	Double acting
Working pressure (bar)	max 10
Temperature °C	-5 ... +70

Standard strokes

	Stroke							
Bore	25	50	75	100	125	150	175	200
Ø80	●	●	●	●	●	●	●	●

Intermediate strokes can be obtained by adding specific spacers (5, 10, 15, 20 mm).
Example: It is possible to obtain a **6101.80.45.B** cylinder from a **6101.80.50.B** cylinder by adding a 5 mm spacer.
The Intermediate strokes manufactured without the use of spacers are considered special executions.

Overall dimensions



*Dimensions only refer to the "standard stroke"

Table of dimensions

Strokes		
25	LT	118
50		118
> 50		151
	V	14,5
25	V1	28
50		52
75		52
100		52
> 100		128
25	V2	42
50		54
75		54
100		54
> 100		92
25	SA	0
50		
> 50		33

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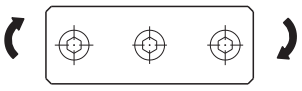
Cylinder force - Operating criteria

Cylinder theoretic force (N)

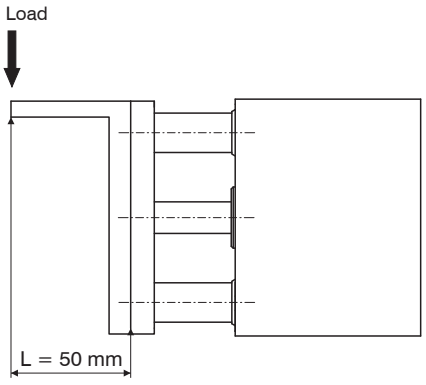
Working pressure		
2 bar	1005	907
3 bar	1508	1361
4 bar	2011	1814
5 bar	2513	2268
6 bar	3016	2721
7 bar	3519	3175
8 bar	4021	3629
9 bar	4524	4082
10 bar	5027	4536
Effective area (mm^2)	Out	In
	5027	4536

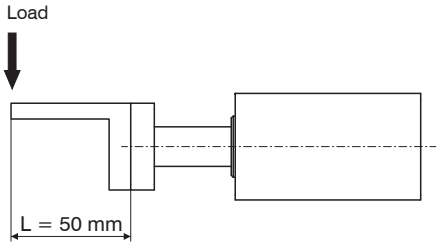
Recommended torque moments

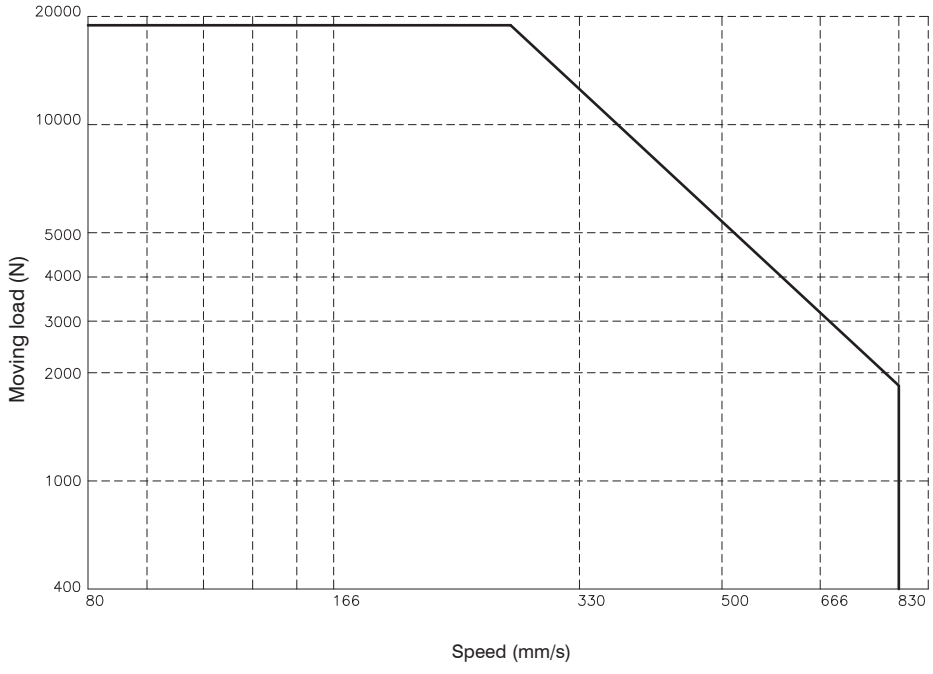
Stroke	Nm
25	49
50	41
75	51
100	45
125	41
150	38
175	35
200	32



"Stopper" device applications





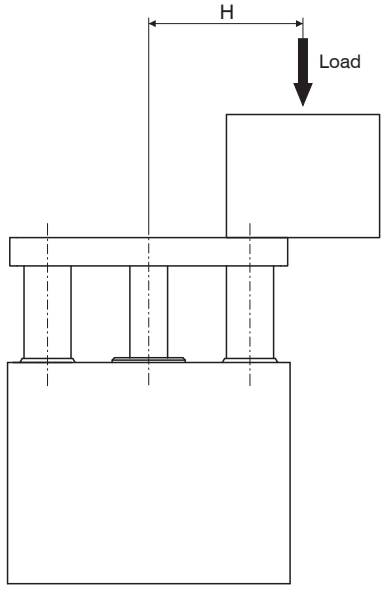


ATTENTION : max stroke 50 mm

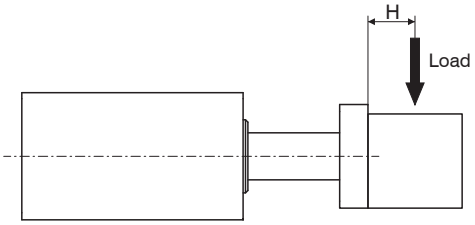
Operating criteria

Handling applications

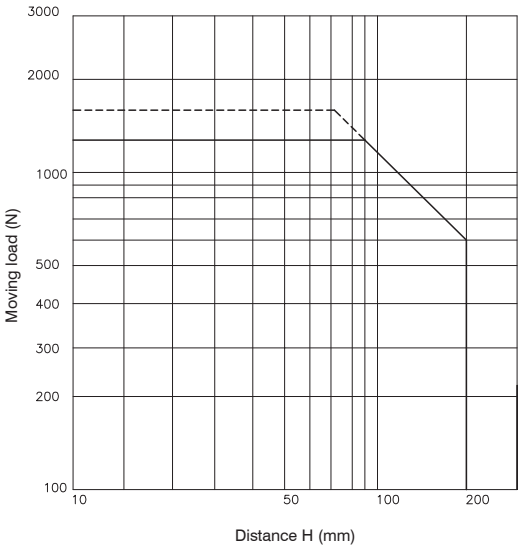
VERTICAL assembly position



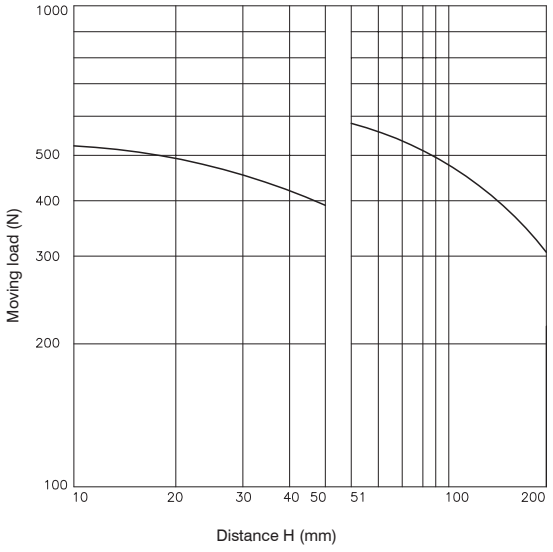
HORIZONTAL assembly position



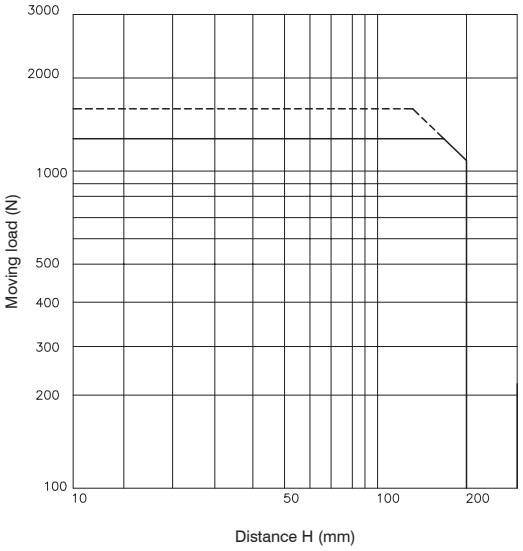
Stroke ≤ 50 mm / V = 200 mm/s



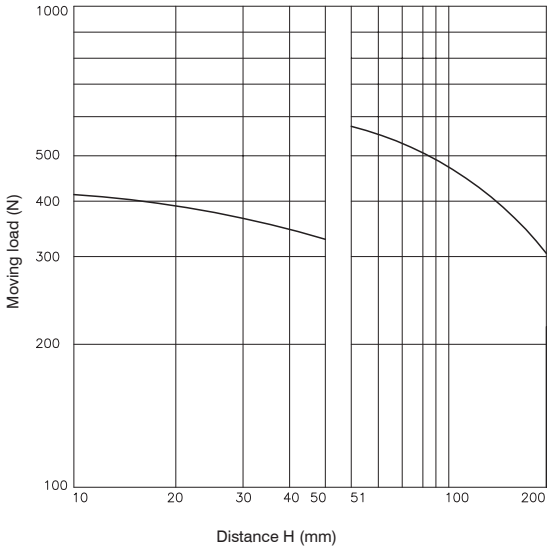
H = 50 mm / V = 200 mm/s



Stroke > 50 mm / V = 200 mm/s



H = 100 mm / V = 200 mm/s



——— Working pressure : 4 bar
- - - - - - - - Working pressure : 5 bar

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Compact guided cylinders with metal rodscrapers

Coding: 6110.Ø.Ⓒ.C.Ⓚ

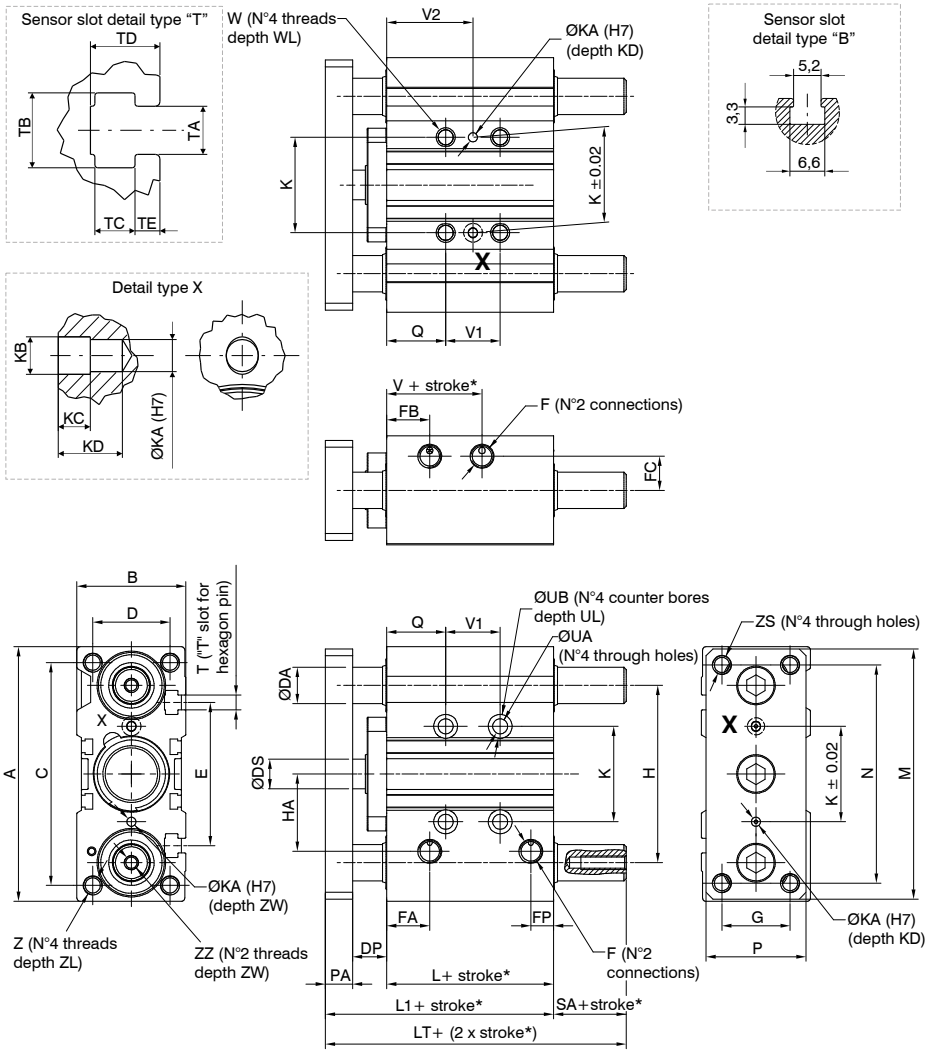
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63

Ⓒ	STROKE
	25 = 25 mm
	50 = 50 mm
	75 = 75 mm
	100 = 100 mm
	125 = 125 mm
	150 = 150 mm
	175 = 175 mm
	200 = 200 mm

Ⓚ	WORKING PORTS SIZE
	= Side supply ports closed
	L = Top supply ports closed



Overall dimensions



Intermediate strokes can be obtained by adding specific spacers (5, 10, 15, 20 mm).
Example: it is possible to obtain a **6110.32.45.B** cylinder from a **6110.32.50.B** cylinder by adding a 5 mm spacer.
The intermediate strokes manufactured without the use of spacers are considered special executions.

Table of dimensions

Bore	Ø32	Ø40	Ø50	Ø63
A	112	120	148	162
B	48	54	64	78
C	98	106	130	142
D	34	40	46	58
DA Rods with bronze bushes	16	16	20	20
DP	15	20	23	23
DS	16	16	20	20
E	63	72	92	110
F	G1/8"	G1/8"	G1/4"	G1/4"
FA	19	13	13	14
FB	19	13	13	14
FC	15	18	21,5	28
FP	10	11	11	12,5
G	30	30	40	50
H	78	86	110	124
HA	34	38	47	55
K	42	50	66	80
KA	4	4	5	5
KB	4,5	4,5	6	6
KC	3	3	4	4
KD	6	6	8	8
L	48,5	50	50	55
L1	75,5	82	88	93
M	110	118	146	158
N	96	104	130	130
PA	12	12	15	15
P	44	44	60	70
Q	26	22	24	24
SA	7	7	5	7
T	M6	M6	M8	M10
TA	6,5	6,5	8,5	11
TB	10,5	10,5	13,5	17,8
TC	5,5	5,5	7,5	10
TD	9,5	11	13,5	18,5
TE	3,5	4	4,5	7
UA	6,6	6,6	8,6	8,6
UB	11	11	14	14
UL	7,5	7,5	9	9
V	17	19	15	20
V1	See table 1			
V2				
W	M8x1,25	M8x1,25	M10x1,5	M10x1,5
WL	16	16	20	20
Z	M8x1,25	M8x1,25	M10x1,5	M10x1,5
ZL	20	20	22	22
ZS	M8x1,25	M8x1,25	M10x1,5	M10x1,5
ZW	20	20	25	25
ZZ	M6	M8	M10	M10

Standard strokes

	Stroke							
Bore	25	50	75	100	125	150	175	200
Ø32	●	●	●	●	●	●	●	●
Ø40	●	●	●	●	●	●	●	●
Ø50	●	●	●	●	●	●	●	●
Ø63	●	●	●	●	●	●	●	●

Table 1	V1			V2		
Bore	stroke≤25	25<stroke≤100	100<stroke≤200	stroke≤25	25<stroke≤100	100<stroke≤200
Ø32	24	48	124	38	50	88
Ø40				34	46	84
Ø50				36	48	86
Ø63	28	52	128	38	50	88

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 6600

Slide cylinders

Coding: 6600.Ø.Ⓒ.Ⓐ

	BORE
Ø	**8** = Ø8
	12 = Ø12
	16 = Ø16
	20 = Ø20
	25 = Ø25

	STROKE
Ⓒ	**10** = 10 mm
	20 = 20 mm
	30 = 30 mm
	40 = 40 mm
	50 = 50 mm
	75 = 75 mm
	100 = 100 mm
	125 = 125 mm
	150 = 150 mm

	ACCESSORIES
Ⓐ	= Without accessories
	A = Double regulation end stroke
	AU = Regulation front end stroke
	AR = Regulation rear end stroke
	D = Double shock absorber
	DU = Front shock absorber
	DR = Rear shock absorber



Construction characteristics

Body	anodized aluminium
Piston rod bushings	sintered bronze
Flange	anodized aluminium
Rear end cap	anodized aluminium
Seals	oil resistant NBR rubber
Piston	stainless steel
Cushioning washer	PUR
Piston rod	stainless steel

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Working pressure	1,5 bar ... 7 bar
Working temperature	-5 °C ... +70 °C
Cushioning	with elastic bumper

Theoretical force

Bore	Effective area (mm²)		Force (N)					
Ø8	Out	101	20	30	40	51	61	71
	In	75	15	23	30	38	45	53
Ø12	Out	226	45	68	90	113	136	158
	In	170	34	51	68	85	102	119
Ø16	Out	402	80	121	161	201	241	281
	In	302	60	91	121	151	181	211
Ø20	Out	628	126	188	251	314	377	440
	In	471	94	141	188	236	283	330
Ø25	Out	982	196	295	393	491	589	687
	In	756	151	227	302	378	454	529
			2	3	4	5	6	7
			Working pressure (bar)					

Standard strokes

	Stroke								
Bore	10	20	30	40	50	75	100	125	150
Ø8	●	●	●	●	●	●			
Ø12	●	●	●	●	●	●	●		
Ø16	●	●	●	●	●	●	●	●	
Ø20	●	●	●	●	●	●	●	●	●
Ø25	●	●	●	●	●	●	●	●	●

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Overall dimensions - Ø8

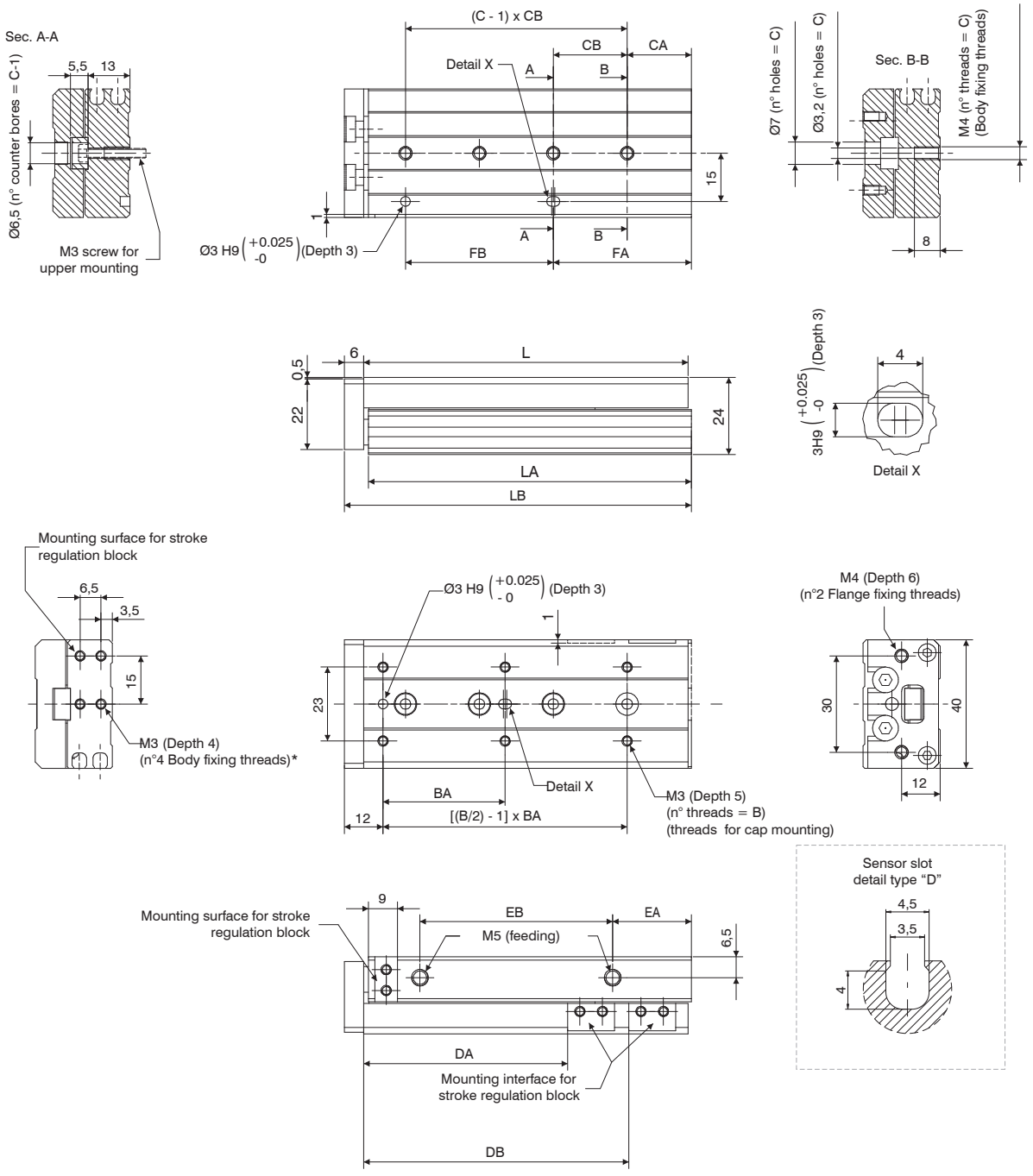


Table of dimensions

	Standard strokes					
	10	20	30	40	50	75
B	4	4	4	4	6	6
BA	25	25	40	50	38	50
C	2	2	3	3	4	5
CA	9	12	13	15	20	27
CB	28	30	20	28	23	28
DA	23,5	33,5	43,5	53,5	63,5	88,5
DB	/	/	/	/	82,5	132,5
FA	17	12	33	43	43	83
FB	20	30	20	28	46	56
EA	13	8,5	9,5	10,5	24,5	38,5
EB	19,5	29	39	56	60	96
L	49	54	65	83	101	151
LA	48,5	53,5	64,5	82,5	100,5	150,5
LB	56	61	72	90	108	158
Weight (g)	150	160	190	235	285	410

Overall dimensions - Ø12

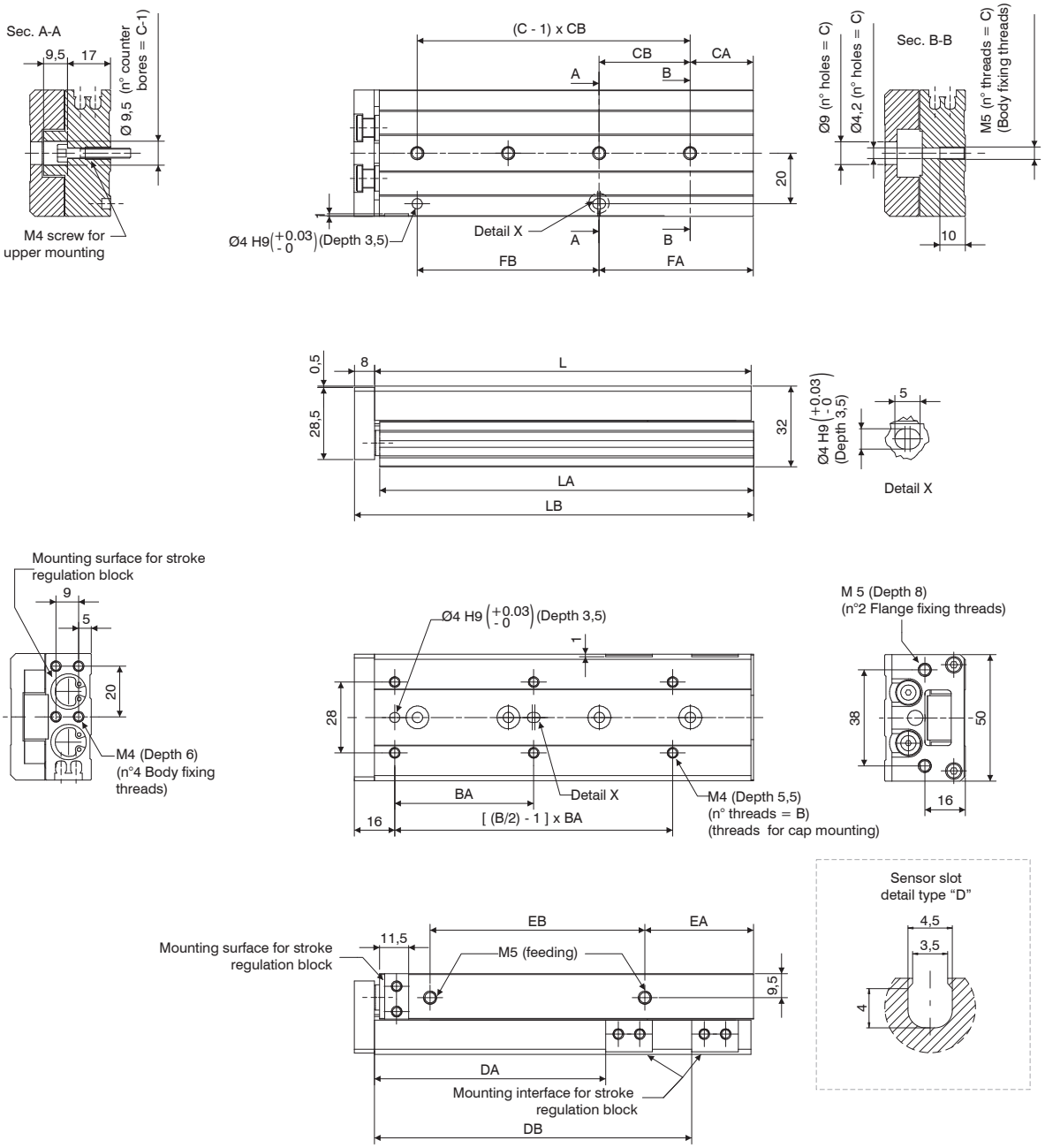


Table of dimensions

	Standard strokes						
	10	20	30	40	50	75	100
B	4				6		
BA		35		50	35	55	65
C		2		3	3	4	5
CA		15		17	15	25	35
CB		40		25	36	36	38
DA	26,5	36,5	46,5	56,5	66,5	91,5	116,5
DB	/	/	/	/	/	125,5	179,5
FA		15		42	51	61	111
FB		40		25	36	72	76
EA	10				22	43	52
EB		40		52	60	85	130
L		71		83	103	149	203
LA		70		82	102	148	202
LB		80		92	112	158	212
Weight (g)		325		385	480	660	890

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Overall dimensions - Ø16

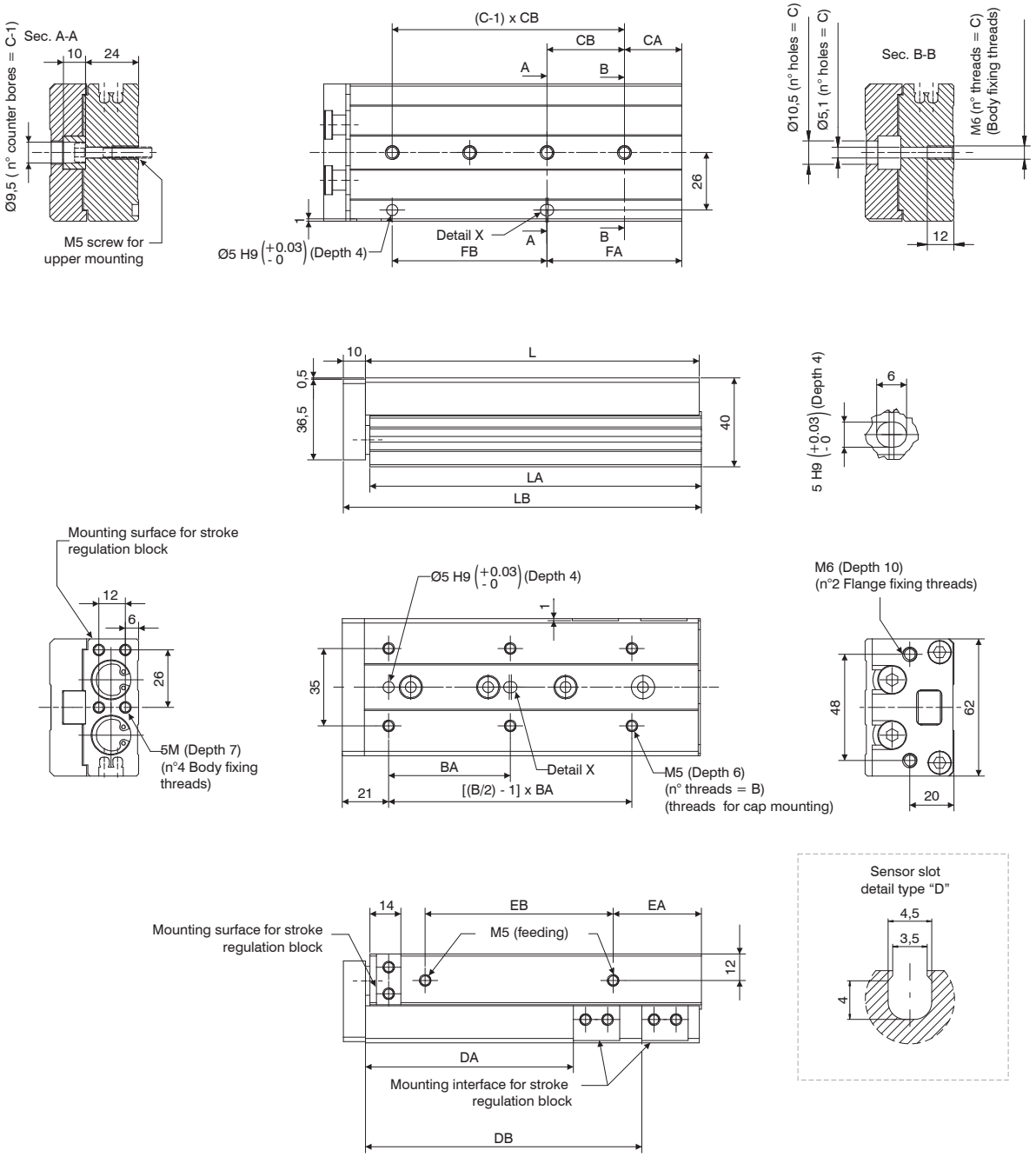


Table of dimensions

	Standard strokes							
	10	20	30	40	50	75	100	125
B	4	4	4	4	6	6	6	8
BA	35	35	35	40	30	55	65	70
C	2	2	2	2	3	4	5	7
CA	16	16	16	16	21	26	39	19
CB	40	40	40	50	30	35	35	35
DA	29	39	49	59	69	94	119	144
DB	/	/	/	/	/	125	173	223
FA	16	16	16	16	51	61	109	159
FB	40	40	40	50	30	70	70	70
EA	10	10	10	10	15	40	55	68
EB	40	40	40	50	60	85	118	155
L	76	76	76	86	101	151	199	249
LA	75	75	75	85	100	150	198	248
LB	87	87	87	97	112	162	210	260
Weight (g)	570	570	580	640	760	1090	1370	1700

Overall dimensions - Ø20

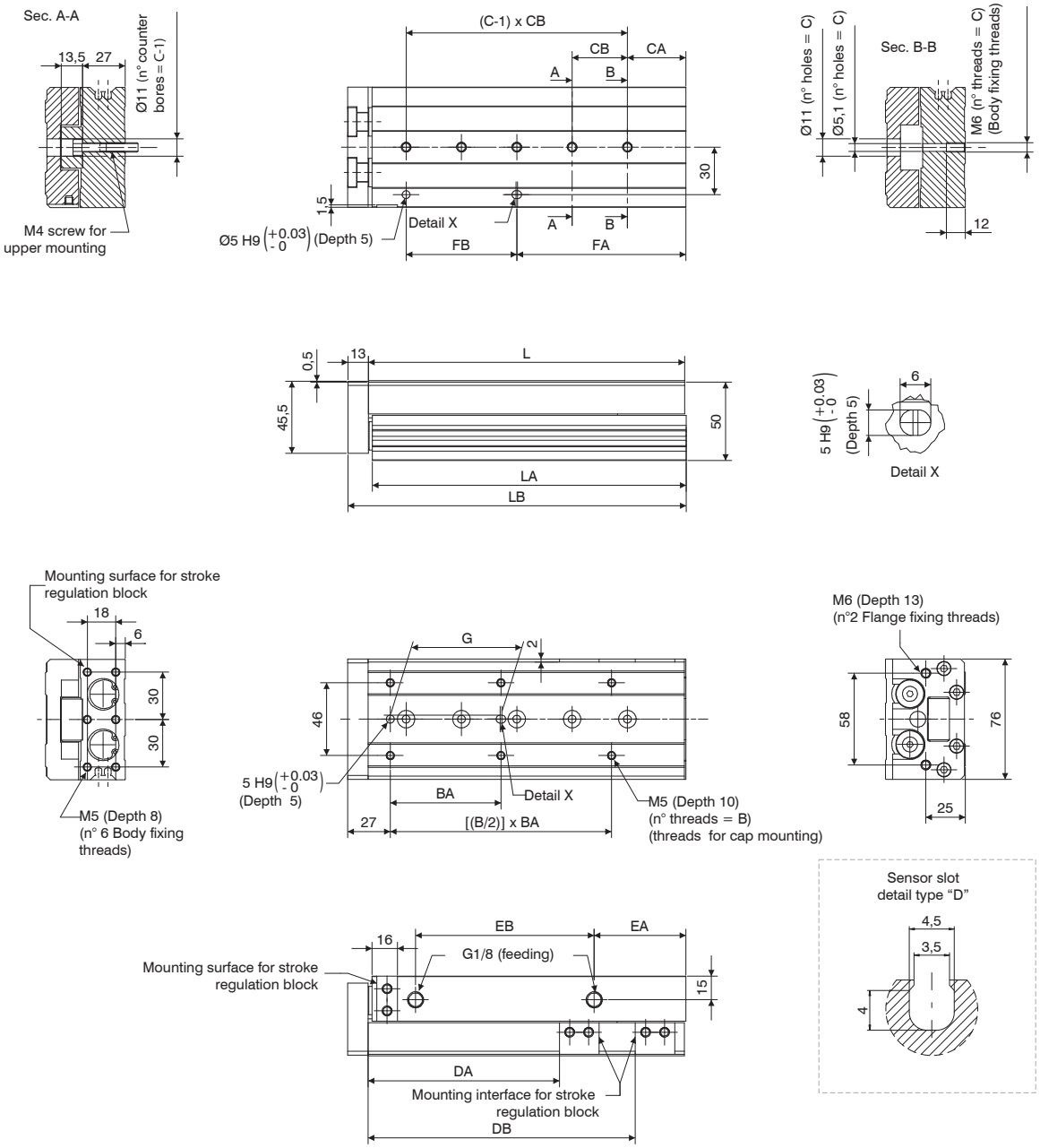


Table of dimensions

	Standard strokes								
	10	20	30	40	50	75	100	125	150
B	4	4	4	4	6	6	6	8	8
BA	50	50	50	60	35	60	70	70	80
C	2	2	2	2	3	4	5	6	7
CA	15	15	15	15	15	19	37	41	19
CB	45	45	45	55	35	35	35	38	44
DA	31	41	51	61	71	96	121	146	171
DB	/	/	/	/	/	/	169	223	275
EA	10	10	10	10	10	10	58	70	87
EB	44	44	44	54	69	108	113	155	190
FA	25	25	25	35	50	54	107	155	195
FB	35	35	35	35	35	70	70	76	88
G	40	40	40	50	35	60	70	70	80
L	83	83	83	93	108	147	200	254	306
LA	81,5	81,5	81,5	91,5	106,5	145,5	198,5	252,5	304,5
LB	97	97	97	107	122	161	214	268	320
Weight (g)	960	980	1010	1100	1250	1630	2150	2670	3190

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Overall dimensions - Ø25

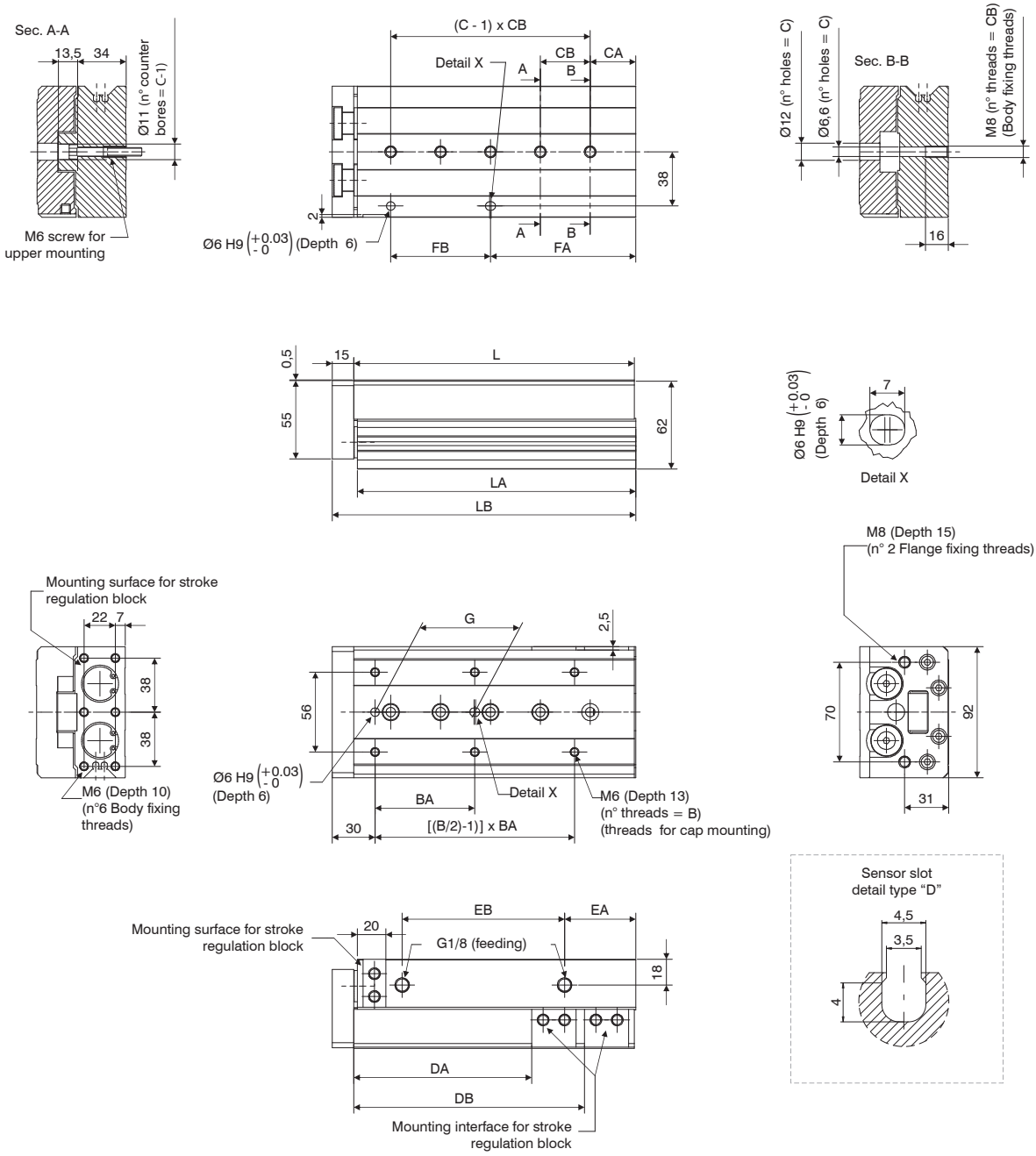
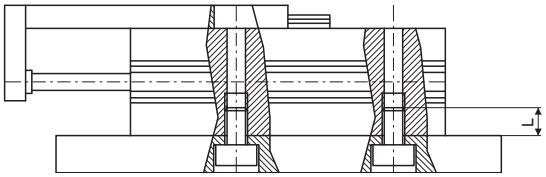


Table of dimensions

	Standard strokes								
	10	20	30	40	50	75	100	125	150
B	4	4	4	4	6	6	6	8	8
BA	50	50	50	60	35	60	70	75	80
C	2	2	2	2	3	4	5	6	7
CA	22	22	22	22	20	26	32	40	30
CB	45	45	45	55	35	35	35	38	40
DA	35	45	55	65	75	100	125	150	175
DB	/	/	/	/	/	/	162	218	258
EA	12	12	12	12	12	33	50	67	82
EB	47	47	47	57	70	90	114	155	180
FA	22	22	22	22	55	61	102	154	190
FB	45	45	45	55	35	70	70	76	80
G	40	40	40	50	35	60	70	75	80
L	92	92	92	102	115	156	197	255	295
LA	90,5	90,5	90,5	100,5	113,5	154,5	195,5	253,5	293,5
LB	108	108	108	118	131	172	213	271	311
Weight (g)	1660	1680	1690	1840	2090	2650	3270	4140	4710

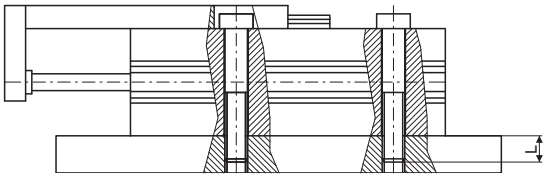
Assembly configuration

SIDE THREADED HOLES



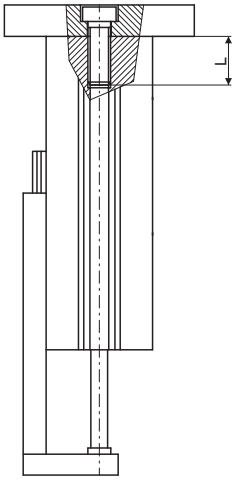
Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	2,1	8
Ø12	M4	4,4	10
Ø16	M5	7,4	12
Ø20	M5	7,4	12
Ø25	M6	18	16

SIDE THROUGH HOLES



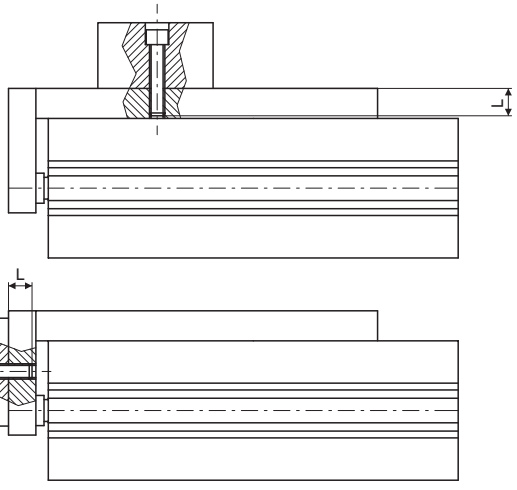
Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	1,2	13
Ø12	M4	2,8	18,5
Ø16	M5	5,7	24
Ø20	M5	5,7	29
Ø25	M6	18	34

AXIAL THREADED HOLES



Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	0,9	4
Ø12	M4	2,1	6
Ø16	M5	4,4	7
Ø20	M5	4,4	8
Ø25	M6	7,4	10

Mounting load



Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	2,1	6
Ø12	M4	4,4	8
Ø16	M5	7,4	10
Ø20	M5	7,4	13
Ø25	M6	18	15

Bore	Screw	Torque (Nm)	Max. Lenght L (mm)
Ø8	M3	0,9	5
Ø12	M4	2,1	5,5
Ø16	M5	4,4	6
Ø20	M5	4,4	10
Ø25	M6	7,4	13

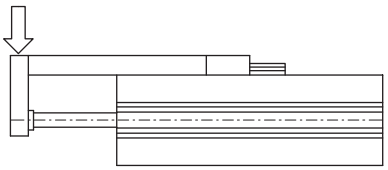
Kinetic energy (J)

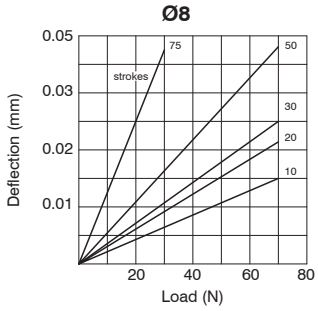
Bore	With elastic bumper	With shock absorbers
Ø8	0,027	See shock absorbers 6900
Ø12	0,055	
Ø16	0,11	
Ø20	0,16	
Ø25	0,24	

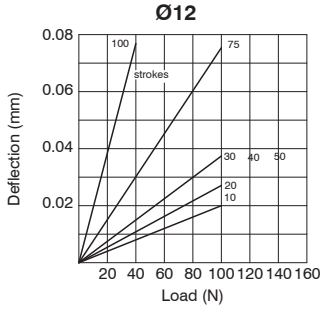
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

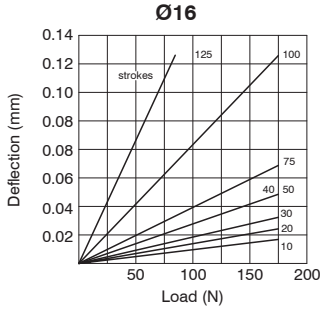
Plate deflection

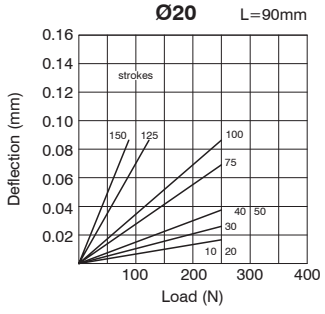
With front moment under static conditions completely extended and with load applied as indicated by the arrows

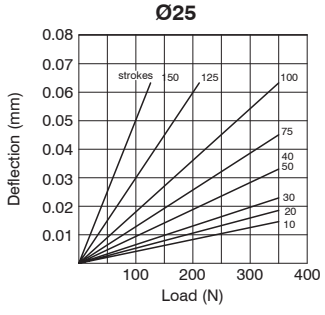




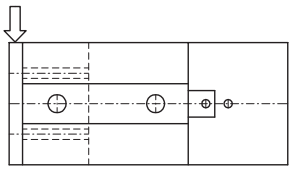


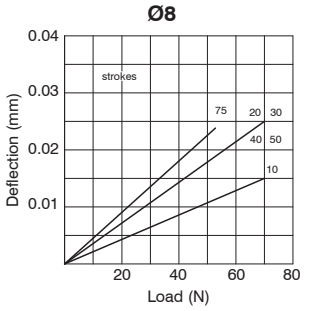


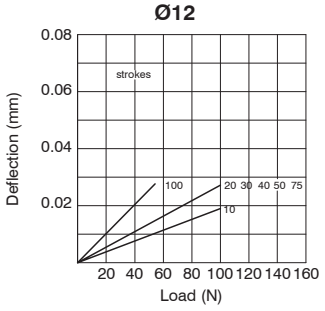


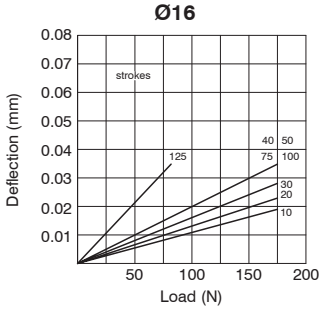


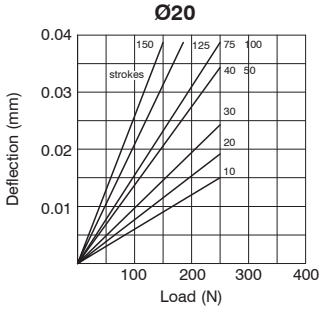
With side moment under static conditions completely extended and with load applied as indicated by the arrow

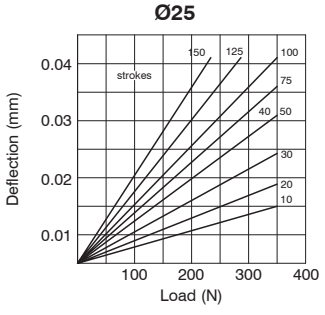




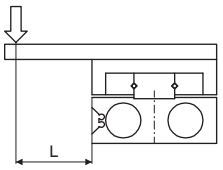


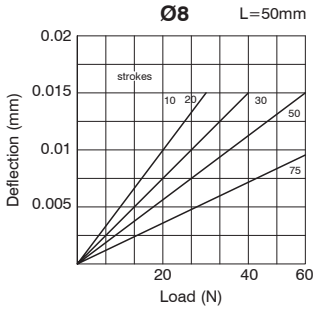


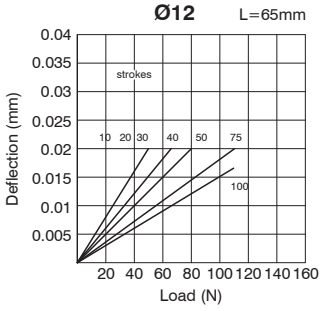


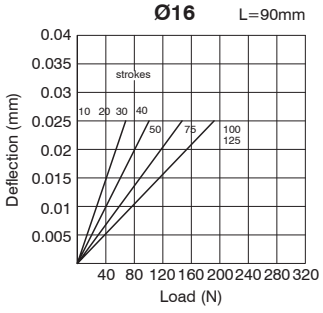


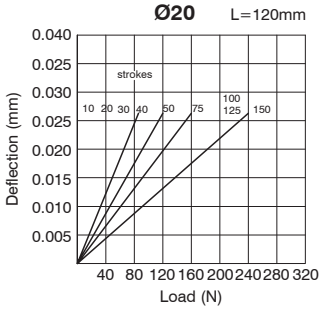
With misaligned side moment with load applied as indicated by the arrow at a distance “L” and with plate completely retracted

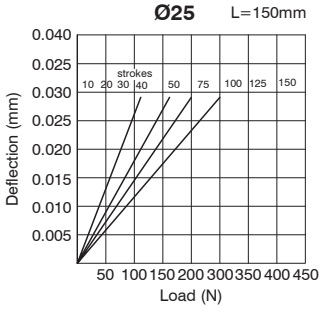






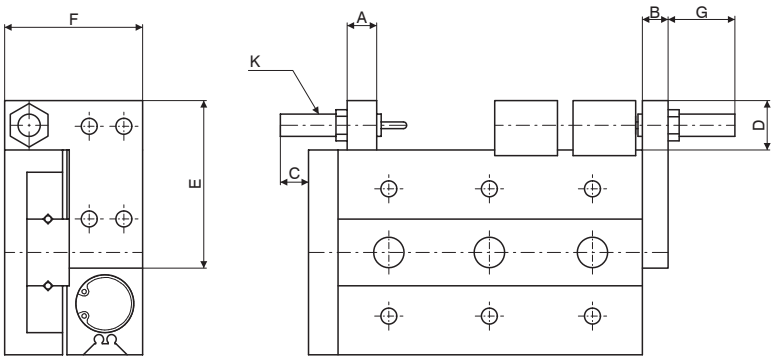




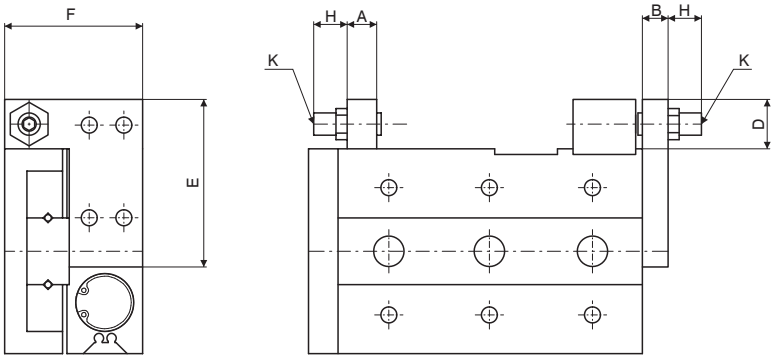


Accessories - Static moment

Dimensions with shock absorbers



Dimensions with adjusting screw



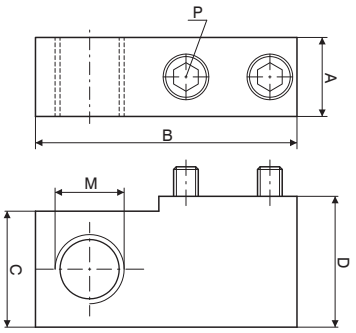
Bore	A	B	C	D	E	F	G max.	H max.	K
Ø8	7	8	26	14,5	38,5	23	25,5	28,5	M8x1
Ø12	9,5	8	21	15	45	31,5	24,5	32	M8x1
Ø16	11	10	19	18	55	37,5	29	34,5	M10x1
Ø20	13	12	28	24,5	70	47,5	42,5	35,5	M14x1,5
Ø25	16	15	34	24,5	80	54,5	39,5	37,5	M14x1,5

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Shock absorber mounting block / front stroke adjusting screw

Coding: 6600.Ø.SU

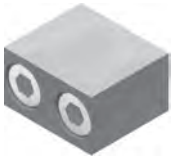


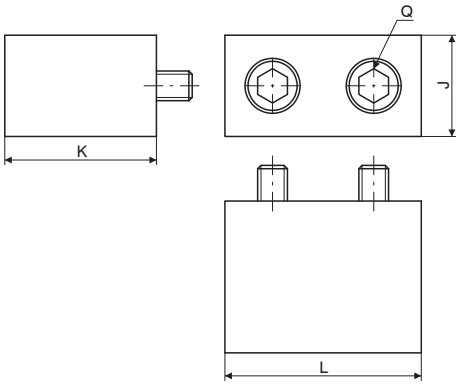


Bore	A	B	C	D	M	P
Ø8	7	23	14	15,5	M8x1	M3x16
Ø12	9,5	31	14,5	16		M4x16
Ø16	11	37	17,5	19	M10x1	M5x18
Ø20	13	45,5	23,5	26	M14x1,5	M6x25
Ø25	16	53,5		26,5		M8x25

Reference block

Coding: 6600.Ø.SI



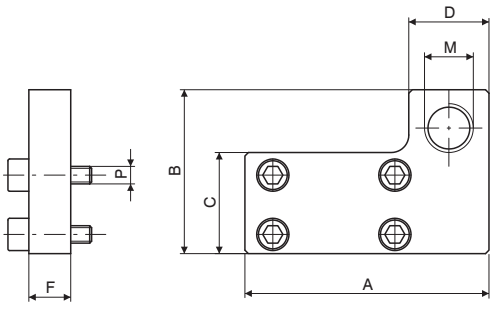


Bore	J	K	L	Q
Ø8	7	15,5	14,6	M3x16
Ø12	10	15	18,5	M4x14
Ø16	12	18,5	21	M5x18
Ø20	13	25,5	25	M6x25
Ø25	17		31	M8x25

Shock absorber mounting block / rear stroke adjusting screw

Coding: 6600.Ø.SR



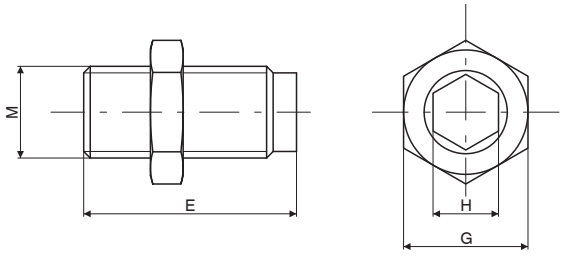


Bore	A	B	C	D	F	M	P
Ø8	38	23	12,5	14	8	M8x1	M3x12
Ø12	45	31	18				M4x12
Ø16	55	37	23,5	16	10	M10x1	M5x14
Ø20	70	47	29	23	12	M14x1,5	M5x16
Ø25	80	54	35		15		M6x20

Adjusting screw

Coding: 6600.Ø.VR





Bore	E	G	H	M
Ø8	36,5	12	4	M8x1
Ø12	40			
Ø16	44,5	14	5	M10x1
Ø20	47,5	19	6	M14x1,5
Ø25	52,5			

Series 6200 and 6210

TWIN-ROD SLIDE UNITS SERIES 6200 AND 6210

The 6200 series twin-rod linear guide units are wide cylinders used in manipulation applications and are characterised by their high force output thanks to their double piston design.
Bores range from 10mm to 32mm diameter, with sintered bronze bearings for standard applications and linear ball bearings for more rugged applications.
One major characteristic of these cylinders is the precision of their anti-rotational design, with the possibility of regulating the stroke to within 0.5mm.
When using magnetic sensors, the 1580 series sensor sits entirely within the extrusion, resulting in a smooth profile.
The liner guided units range includes , alongside the conventional two rod version with flange series 6200 , also the through rod version with twin flanges series 6210
Thanks to the twin-rod, double yoke design of the 6210 series it is possible to either fix the body and use the ends of the rods, or alternatively to fix the rod ends and use the body as the moving part.
The cylinder can be piped through the body or through the rods depending on the application.
Stroke limiting screws are fitted at either end of the stroke.
The substitution of these screws with shock absorbers makes it possible to use the cylinder on higher velocity applications (up to 500 mm/s).
Slots are provided along the edge of these units to accommodate 1580 series miniature sensors.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Twin-rod slide units

Coding: 6200.Ø.Ⓒ.Ⓖ

Ø	BORE
	10 = Ø10
	15 = Ø15
	20 = Ø20
	25 = Ø25
	32 = Ø32
Ⓒ	STROKE
	10 = 10 mm
	15 = 15 mm
	20 = 20 mm
	25 = 25 mm
	30 = 30 mm
	35 = 35 mm
	40 = 40 mm
	45 = 45 mm
	50 = 50 mm
	60 = 60 mm
	70 = 70 mm
	80 = 80 mm
	90 = 90 mm
	100 = 100 mm
Ⓖ	CONTROL UNIT
	B = Control unit with bronze bush
	C = Control unit with bearing bushes





Construction characteristics

Body	anodized aluminium
Guide rods	C43 chromed steel (control unit with bronze bush) tempered and chromed steel (control unit with bearing bush)
Piston	aluminium
Piston rod bushing	brass
Rear end cap	anodized aluminium
Piston seals	oil resistant NBR rubber
Piston rod seals	PUR
Plate	anodized aluminium

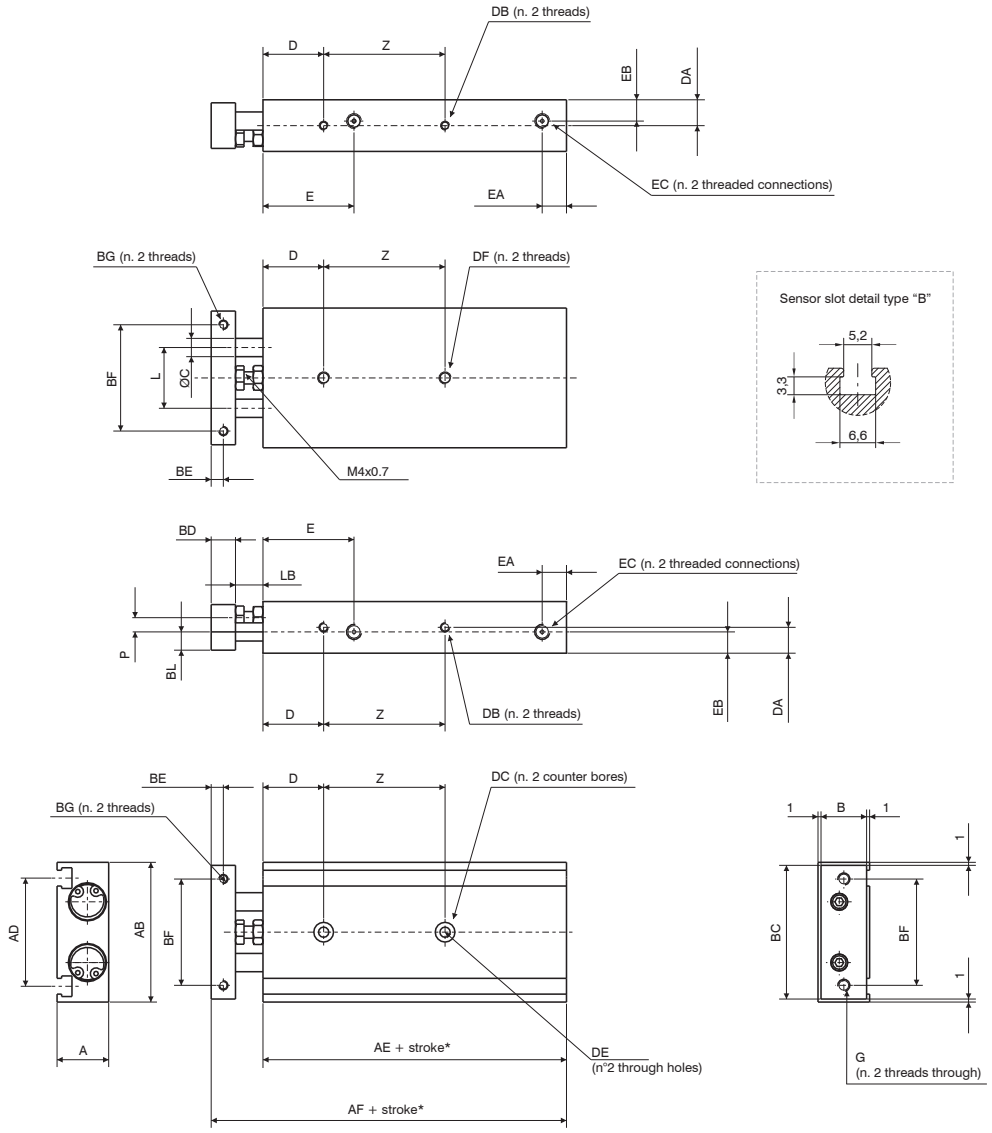
Operational characteristics

Operational characteristics	
Cushioning	elastic bumper
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Function	Double acting
Max. working pressure (bar)	7
Temperature °C	-5 ... +70

Standard strokes

	Stroke														
Bore	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
Ø10	●	●	●	●	●	●	●	●	●	●	●	●			
Ø15	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø20	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ø32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

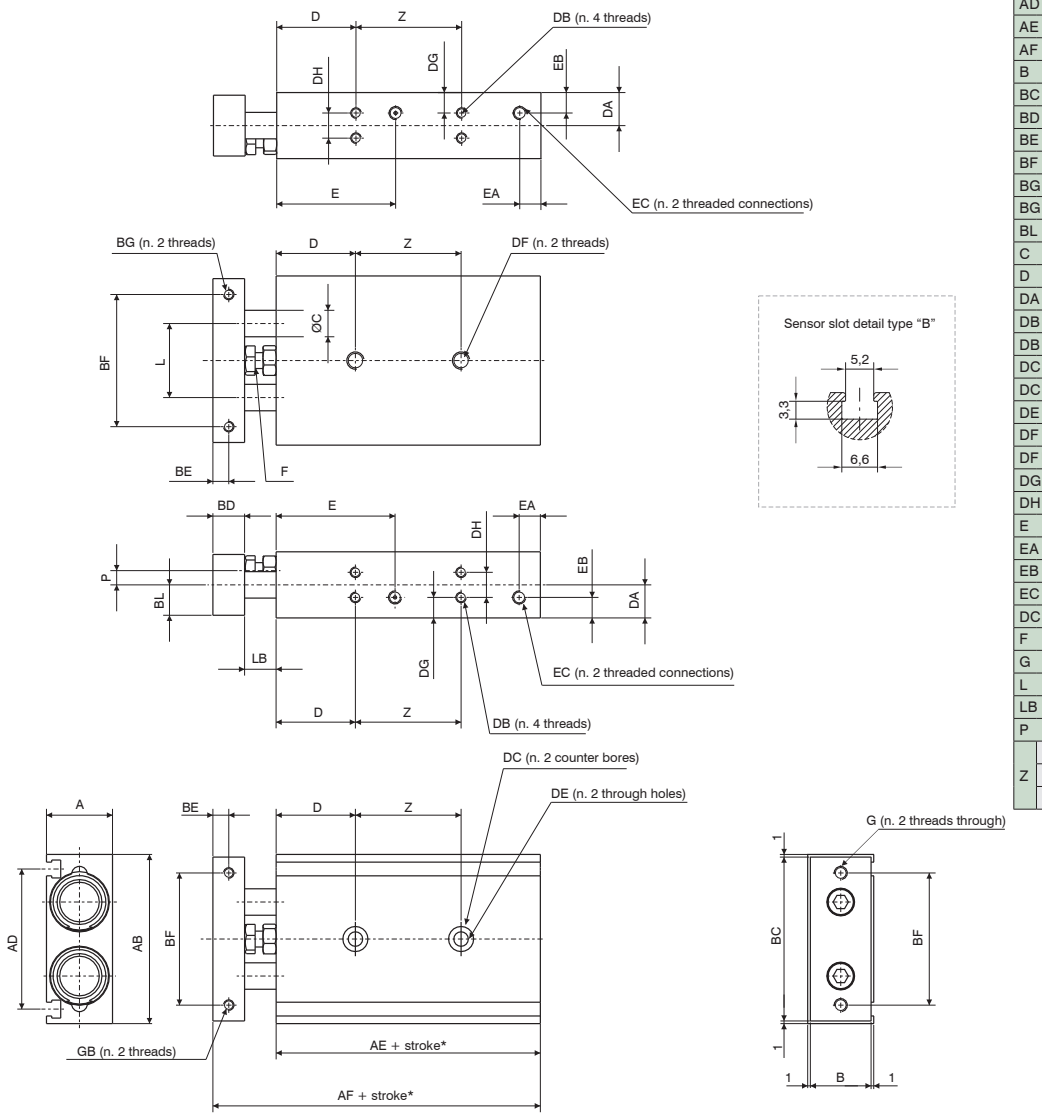
Overall dimensions Ø10 - Ø15



Bore		Ø10	Ø15
A		17	20
AB		46	58
AD		35,6	48
AE		55	60
AF		72	79
B		15	18
BC		44	56
BD		8	10
BE		4	5
BF		35	45
BG		M3x0,5	M4x0,7
	Useful depth	5	6
BL		6	9
C		6	8
D		20	30
DA		8,5	10
DB		M3x0,5	M4x0,7
	Useful depth	4,5	5
DC		6,5	8
	Useful depth	3,3	4,4
DE		3,4	4,3
DF		M4x0,7	M5x0,8
	Useful depth	7	8
E		30	38,5
EA		8	8
EB		7	10
EC		M5x0,8	M5x0,8
	Useful depth	4,5	4,5
F		M4x0,7	M4x0,7
G		M4x0,7	M5x0,8
L		20	25
LB		9	9
P		4,7	4,5
Z	stroke 10 … 25	30	25
	stroke 30 … 50	40	35
	stroke 60 … 75	50	45
	stroke 80	-	45
	stroke 90-100	-	55

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Overall dimensions Ø20 - Ø25 - Ø32



Bore		Ø20	Ø25	Ø32
A		25	30	38
AB		64	80	98
AD		53	64	76
AE		70	72	82
AF		94	96	112
B		23	28	36
BC		62	78	96
BD		12	12	16
BE		6	6	8
BF		50	60	75
BG		M4x0,7	M5x0,8	M5x0,8
BG Useful depth		6	7,5	8
BL		11,5	14	18
C		10	12	16
D		30	30	30
DA		12,5	15	19
DB		M4x0,7	M5x0,8	M5x0,8
DB Useful depth		6	7,5	7,5
DC		9,5	11	11
DC Useful depth		5,3	6,3	6,3
DE		5,5	6,9	6,9
DF		M6x1	M8x1,25	M8x1,25
DF Useful depth		10	12	12
DG		7,75	8,5	9
DH		9,5	13	20
E		45	46	56
EA		8	9	10
EB		7,75	15	19
EC		M5x0,8	G1/8	G1/8
DC Useful depth		4,5	6,5	6,5
F		M6x1	M6x1	M6x1
G		M5x0,8	M6x1	M6x1
L		28	35	44
LB		12	12	14
P		5,4	7,8	12
Z	stroke 10 ... 25	30	30	40
	stroke 30 ... 50	40	40	50
	stroke 60 ... 100	60	60	70

*Dimensions only refer to the "standard stroke"

Weight - Theoretical slide force

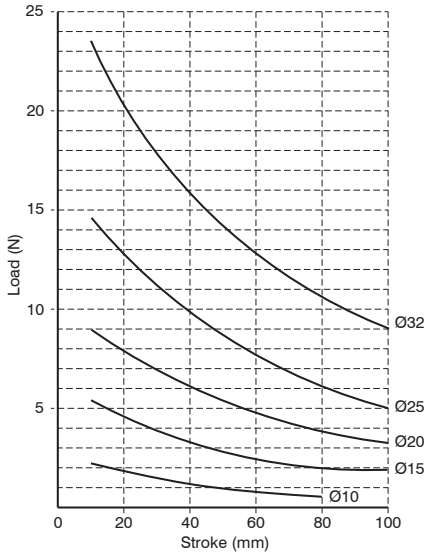
	Bore				
	Ø10	Ø15	Ø20	Ø25	Ø32
Stroke	Control unit with bronze bush				Weight (g)
10	150	250	400	610	1150
15	160	265	420	635	1190
20	170	280	440	660	1230
25	180	290	460	690	1275
30	190	300	480	720	1320
35	200	315	495	745	1360
40	210	330	510	770	1400
45	220	345	530	800	1450
50	230	360	550	830	1490
60	250	390	585	890	1580
70	270	420	620	950	1665
75	280	435	640	970	1710
80		450	660	995	1755
90		480	700	1060	1840
100		510	740	1000	1930
Stroke	Control unit with bearing bush				
10	160	270	430	620	1160
15	165	285	445	645	1205
20	170	300	460	670	1250
25	180	310	480	700	1295
30	190	320	500	730	1340
35	200	335	515	755	1380
40	210	350	530	780	1420
45	220	365	550	810	1465
50	230	380	570	840	1510
60	250	410	605	895	1595
70	270	440	640	955	1680
75	280	455	660	980	1720
80		470	680	1005	1765
90		500	715	1065	1855
100		530	750	1110	1940

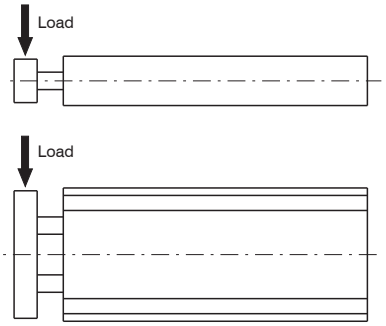
Working pressure	Theoretical slide force (N)									
1 bar	16	10	35,5	25	63	47	98	75,5	161	120,5
1,5 bar	23,5	15	53	38	94	62,5	147,5	113,5	241	181
2 bar	31,5	20,0	70,5	50,5	125,5	94	196,5	151	321,5	241
3 bar	47	30	106	75,5	188,5	141	294,5	227	482,5	362
4 bar	63	40	141	101	251	188	393	302,5	643	482,5
5 bar	78,5	50	176,5	126	314	236	491	378	804	603
6 bar	94	60	212	151	377	283	589	453,5	965	723,5
7 bar	110	70	247	176,5	440	330	687,5	529	1125,6	844
	Out	In	Out	In	Out	In	Out	In	Out	In

Operating criteria

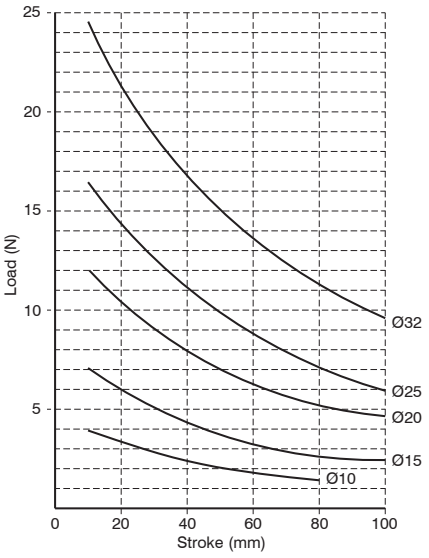
Permissible Loads

Control unit with bronze bushes





Control unit with bearing bush



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Through twin-rod slide units

Coding: 6210.Ø.Ⓒ.Ⓥ

Ø	BORE
	10 = Ø10
	15 = Ø15
	25 = Ø25
Ⓒ	STROKE
	25 = 25 mm
	50 = 50 mm
	75 = 75 mm
	100 = 100 mm
	125 = 125 mm
	150 = 150 mm
	175 = 175 mm
	200 = 200 mm
Ⓥ	VERSION
	C = Fixed body
	P = Fixed end plates



Construction characteristics

Body	anodized aluminium
Guide rods	stainless steel
Piston	aluminium
Piston rod bushing	brass
Piston seals	oil resistant NBR rubber
Piston rod seals	PUR
Plate	anodized aluminium

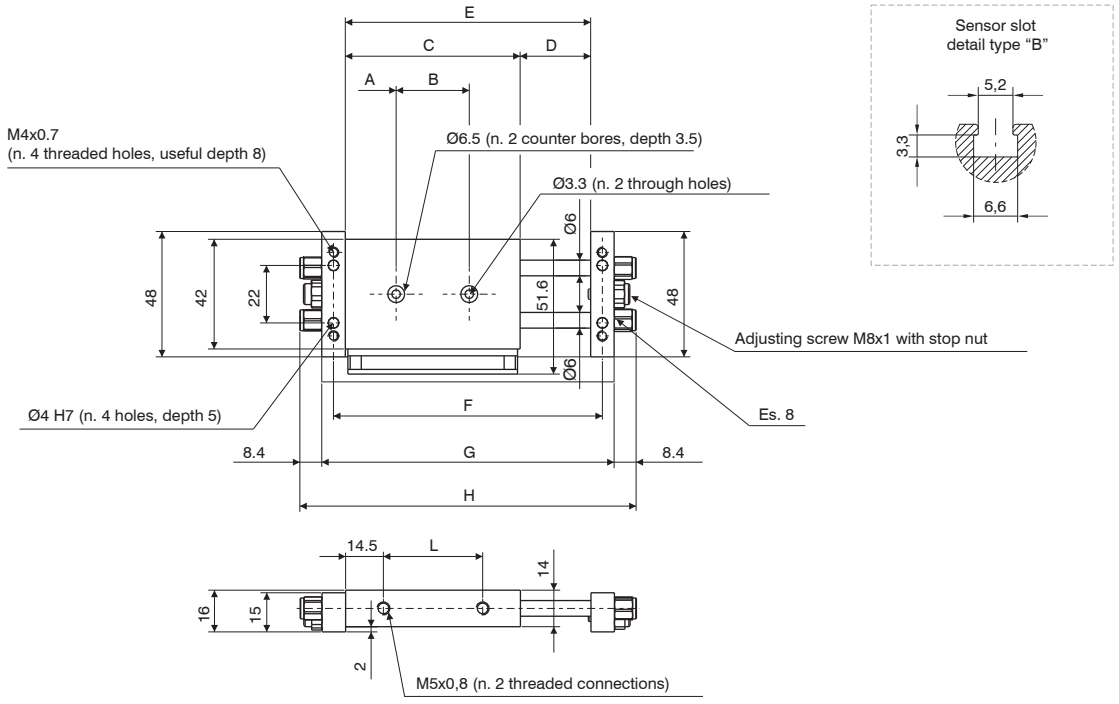
Operational characteristics

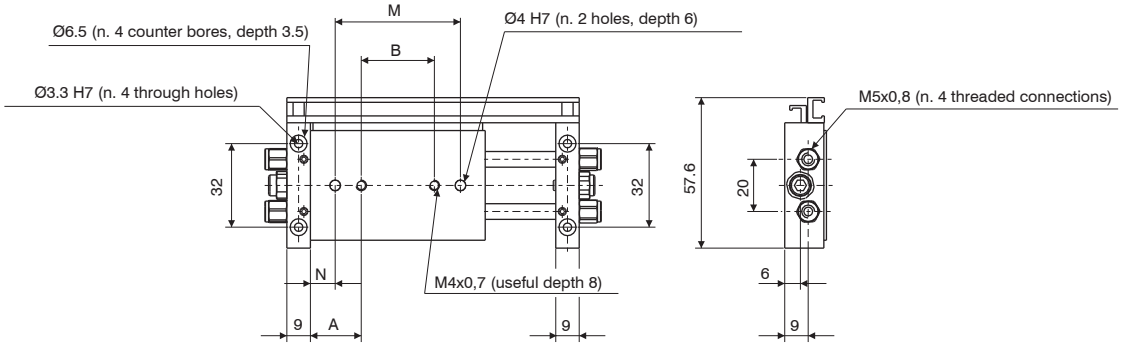
Operational characteristics	
Cushioning	with shock absorbers (available on request)
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Function	Double acting
Max. working pressure (bar)	10
Temperature °C	-5 ... +70

Standard strokes

Stroke								
Bore	25	50	75	100	125	150	175	200
Ø10	●	●	●	●				
Ø15	●	●	●	●	●	●	●	●
Ø25	●	●	●	●	●	●	●	●

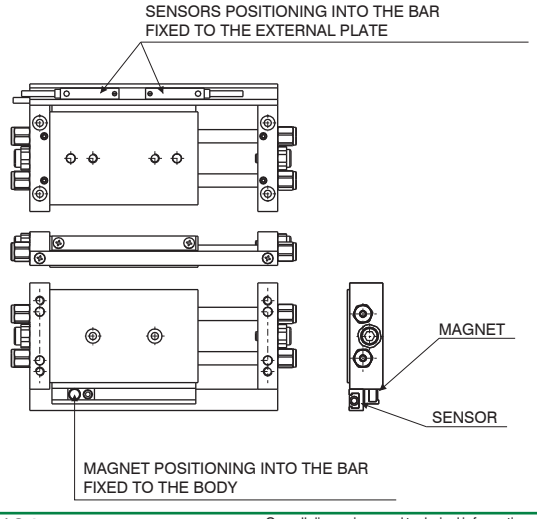
Overall dimensions - Ø10



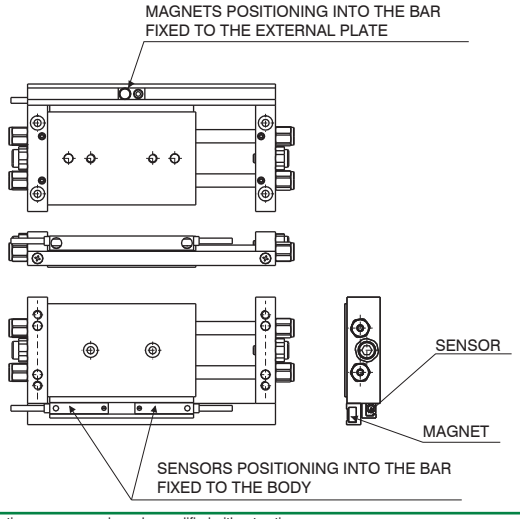


Stroke	25	50	75	100
A	19,5	30	35	35
B	28	32	47	72
C	67	92	117	142
D	27	52	77	102
E	94	144	194	244
F	103	153	203	253
G	112	162	212	262
H	129	179	229	279
L	38	63	88	113
M	48	52	67	92
N	9,5	20	25	25
Weight				
g	160	230	280	310

MOUNTING WITH FIXED PLATE

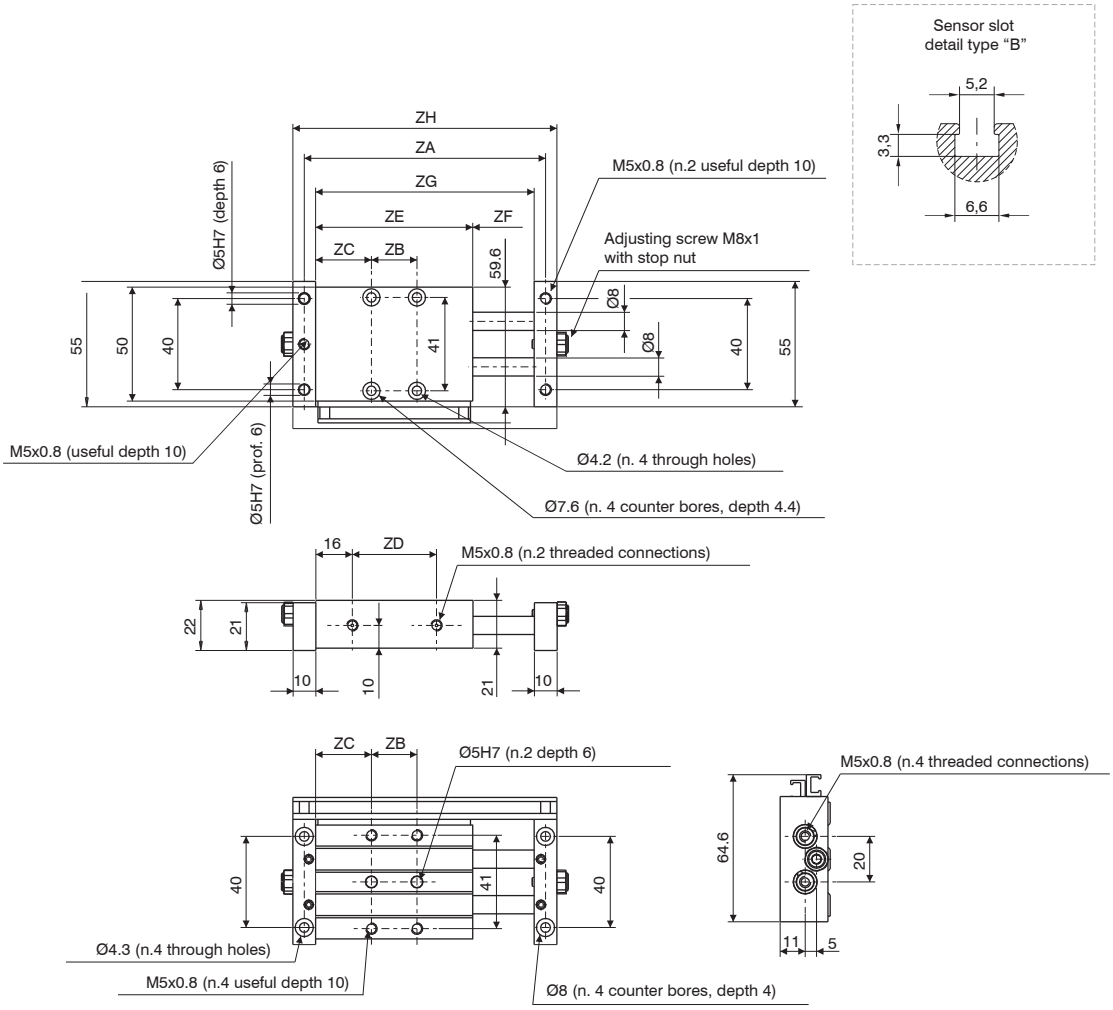


MOUNTING WITH A FIXED BODY



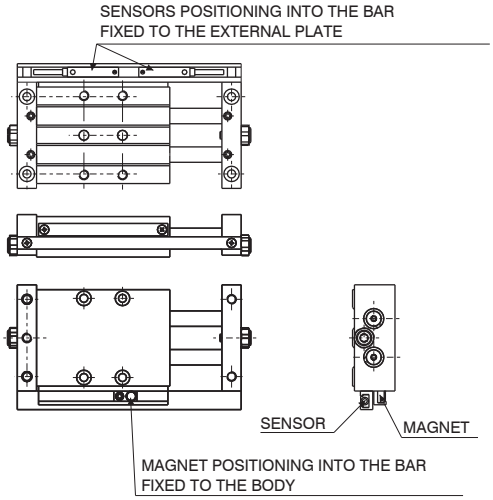
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Overall dimensions - Ø15

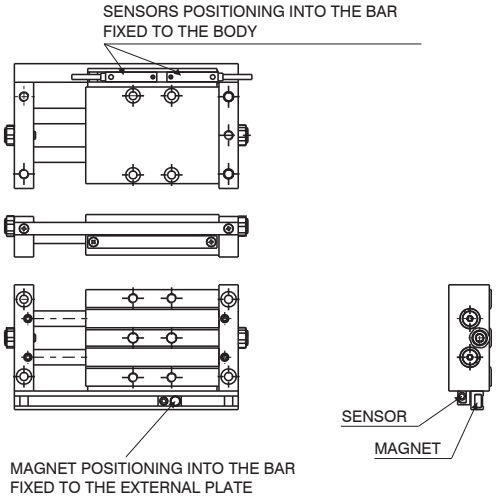


Stroke	25	50	75	100	125	150	175	200
ZA	106	156	206	256	306	356	406	456
ZB	20	45	65	90	90	90	90	90
ZC	24,5	24,5	27	27	39,5	52	64,5	77
ZD	37	62	87	112	137	162	187	212
ZE	69	94	119	144	169	194	219	244
ZF	27	52	77	102	127	152	177	202
ZG	96	146	196	246	296	346	396	446
ZH	116	166	216	266	316	366	416	466
Weight								
g	240	350	450	550	670	750	900	1000

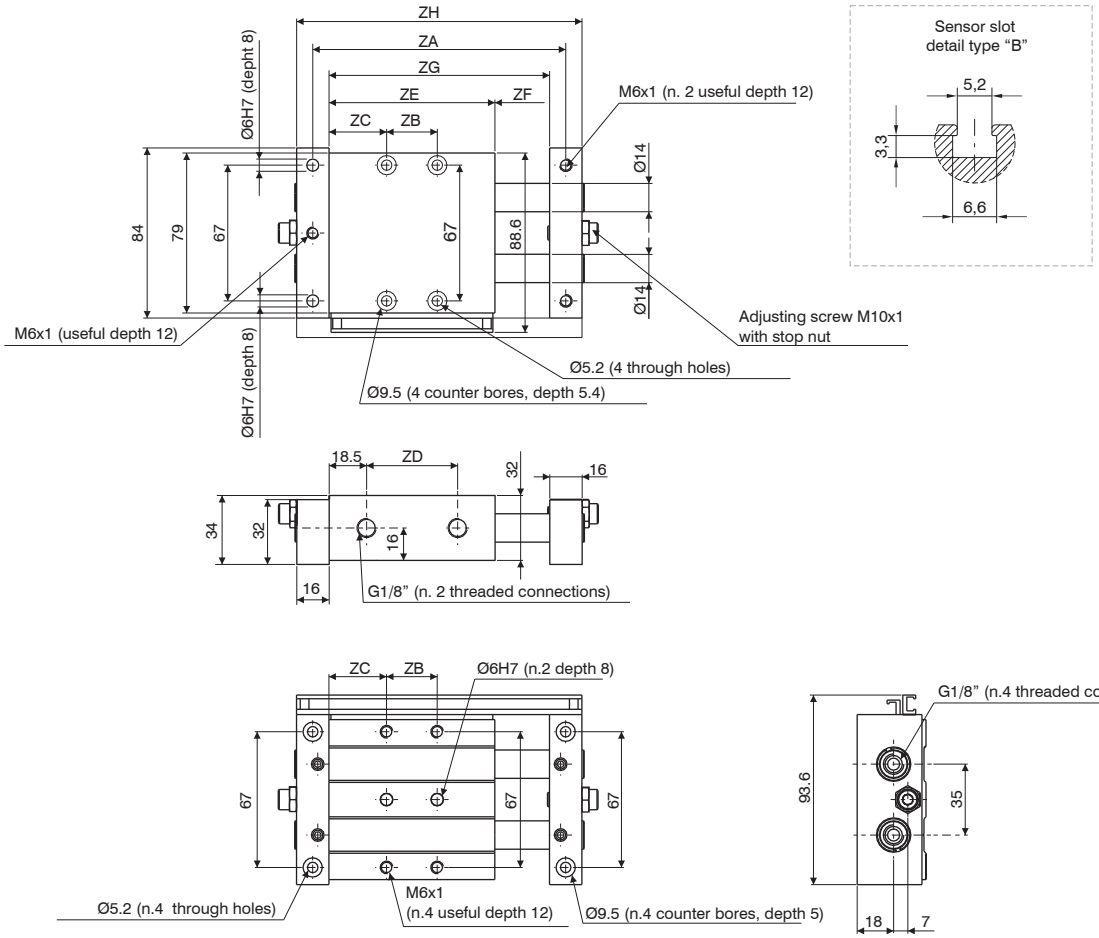
MOUNTING WITH FIXED PLATE



MOUNTING WITH A FIXED BODY

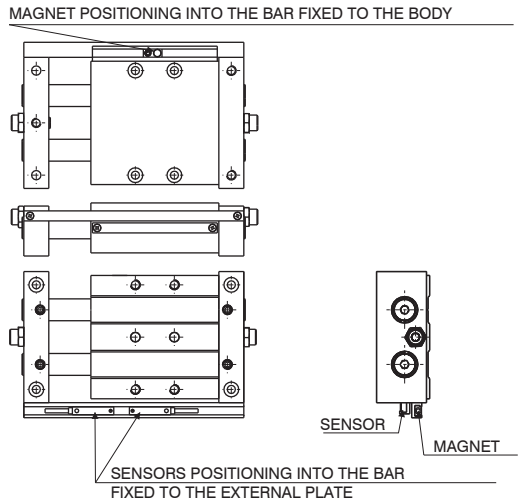


Overall dimensions - Ø25

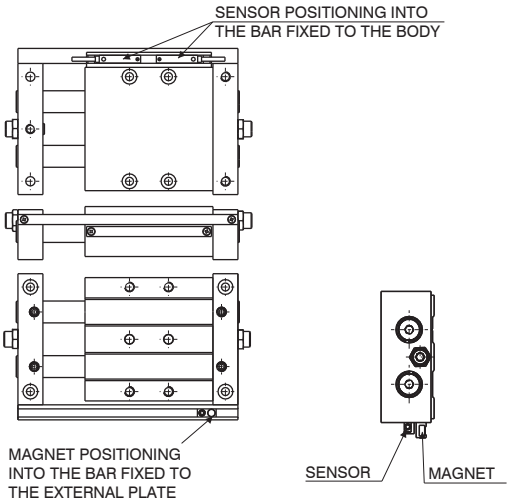


Stroke	25	50	75	100	125	150	175	200
ZA	125	175	225	275	325	375	425	475
ZB	25	45	65	90	90	90	90	90
ZC	28,5	31	33,5	33,5	46	58,5	71	83,5
ZD	45	70	95	120	145	170	195	220
ZE	82	107	132	157	182	207	232	257
ZF	27	52	77	102	127	152	177	202
ZG	109	159	209	259	309	359	409	459
ZH	141	191	241	291	341	391	441	491
Weight								
g	950	1140	1350	1600	1800	2000	2300	2500

MOUNTING WITH FIXED PLATE



MOUNTING WITH A FIXED BODY



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Slide force - Operating conditions

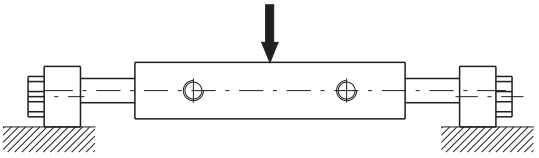
Theoretical slide force (N)

	Bore		
Working pressure	Ø10	Ø15	Ø25
2 bar	20	41	119
3 bar	30	62	179
4 bar	40	83	239
5 bar	51	104	299
6 bar	61	124	358
7 bar	71	145	418
8 bar	81	166	478
9 bar	91	186	537
	101	207	597
	Effective area (mm²)		

Deflection of piston rods

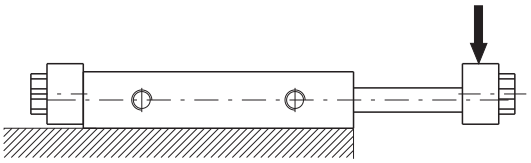
Applied load to body centre

Bore	Load	Deflection (mm)	
Ø10	10 N	0,07	/
Ø15	30 N	0,08	0,28
Ø25	60 N	0,02	0,08
		100	200
		Stroke	

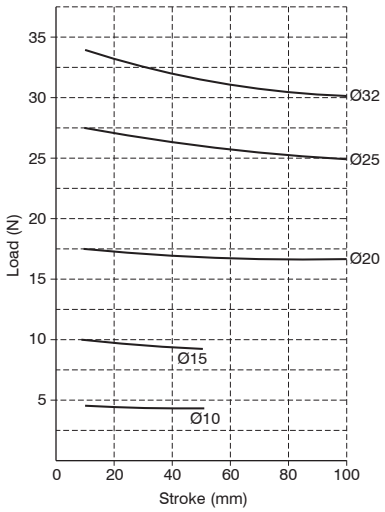


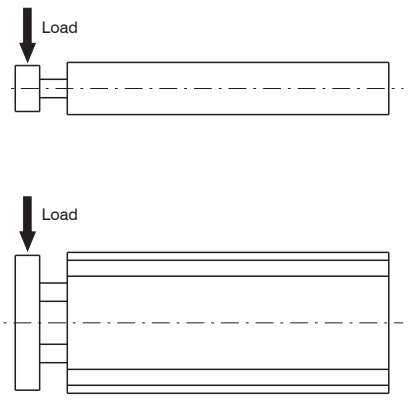
Applied load to body centre

Bore	Load	Deflection (mm)			
Ø10	3 N	0,06	0,3	/	/
Ø15	5 N	0,1	0,2	0,5	1
Ø25	10 N	0,03	0,1	0,15	0,25
		50	100	150	200
		Stroke			



Control unit with bronze bushes





Series 6700

Guide cylinders

Coding: 6700.Ø.©

Ø	BORE
	10 = Ø10
	16 = Ø16
	20 = Ø20

©	STROKE
	5 = 5 mm
	10 = 10 mm
	15 = 15 mm
	25 = 25 mm
	30 = 30 mm
	40 = 40 mm
	50 = 50 mm
	60 = 60 mm



Construction characteristics

Body	anodized aluminium
Piston rod	stainless steel
Piston	aluminium
Piston rod bushing	aluminium
Rear end cap	anodized aluminium
Seals	oil resistant NBR rubber
Plate	anodized aluminium

Standard strokes

Bore	Stroke								
	5	10	15	20	25	30	40	50	60
Ø10	●	●	●	●	●	●	●	●	●
Ø16	●	●	●	●	●	●	●	●	●
Ø20	●	●	●	●	●	●	●	●	●

Operational characteristics

Cushioning	with elastic bumper
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Working pressure (bar)	1,2 ... 7
Temperature °C	-5 ... +70

Theoretical force

Bore	Effective area (mm²)		Force (N)					
Ø10	Out	28,3	5,7	8,5	11,3	14,2	17	19,8
	In	21,2	4,2	6,4	8,5	10,6	12,7	14,8
Ø16	Out	78,5	15,7	23,6	31,4	39,3	47,1	55
	In	66	13,2	19,8	26,4	33	39,6	46,2
Ø20	Out	314	62,8	94,2	125,6	157	188,4	219,8
	In	264	52,8	79,2	105,6	132	158,4	184,8
			2	3	4	5	6	7
			Working pressure (bar)					

Overall dimensions - Ø10

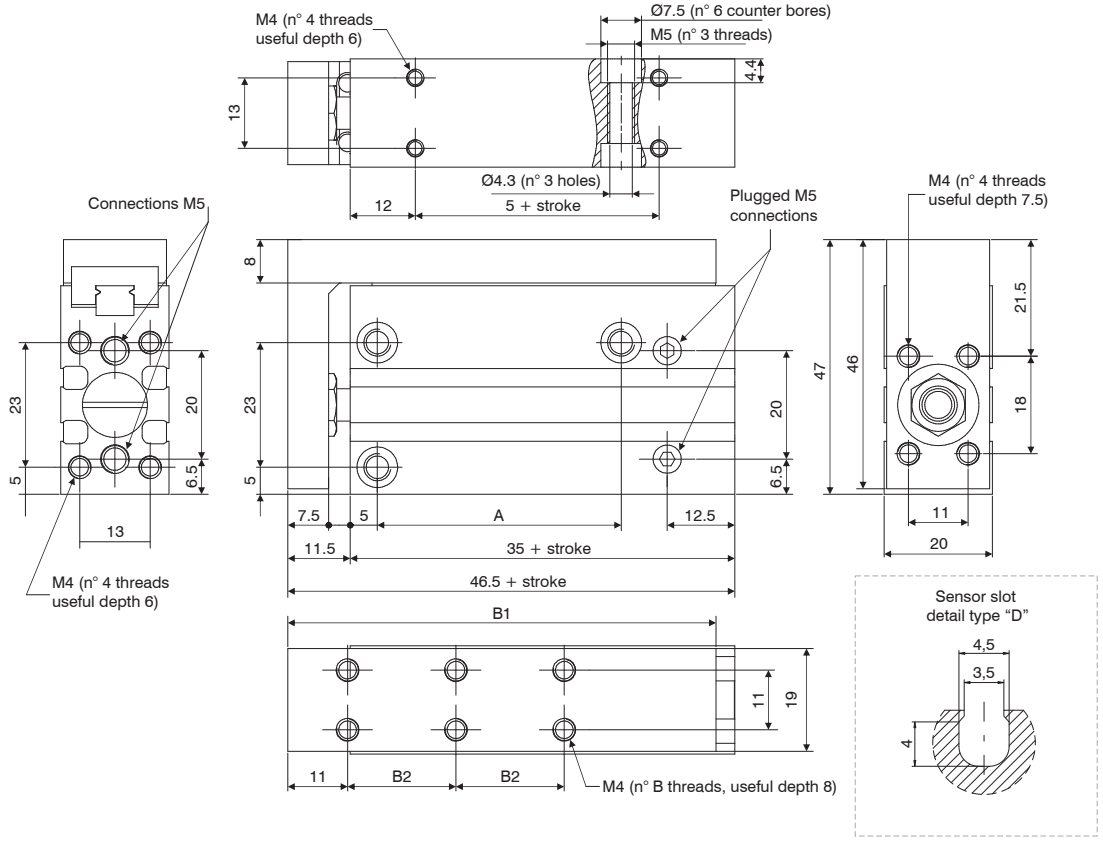


Table of dimensions

	Standard strokes								
	5	10	15	20	25	30	40	50	60
A	14		24		30		45	45	60
B1	49		59		69		79	79	99
B2	10		20		30		20	20	30
B	4						6		
Weight (g)	117	125	140	148	162	170	192	215	238

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Overall dimensions - Ø16

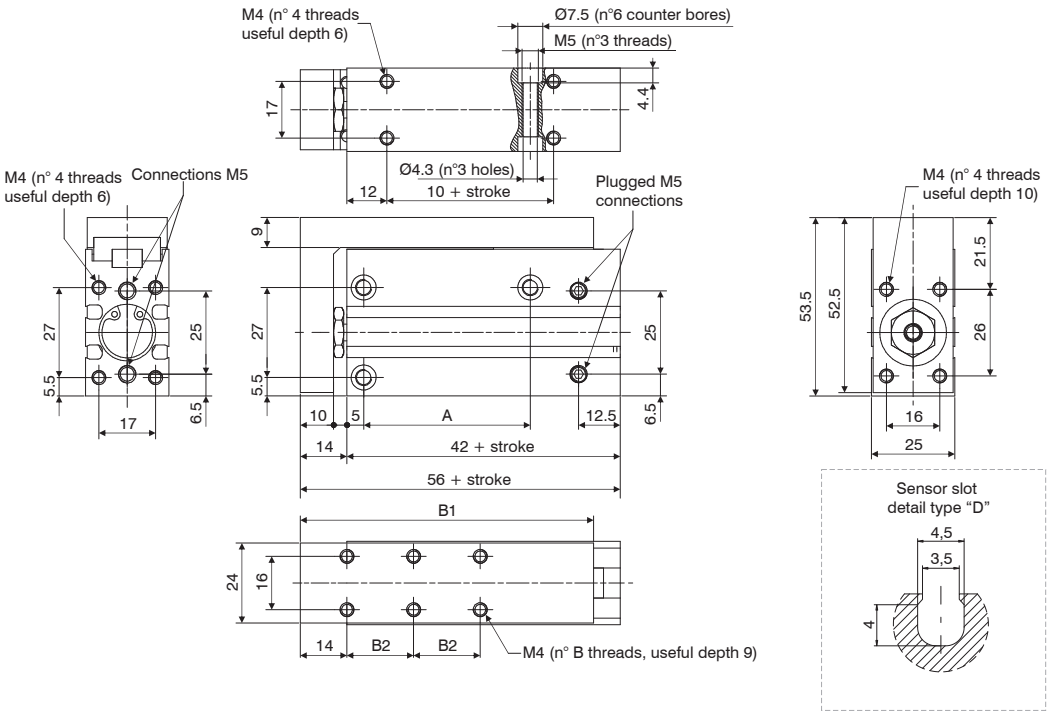


Table of dimensions

	Standard strokes								
	5	10	15	20	25	30	40	50	60
A	20		30		40		50	60	
B1	58		68		78		88	98	108
B2	10		20		30		20	25	30
B	4						6		
Weight (g)	215	230	250	260	280	290	325	350	390

Overall dimensions - Ø20

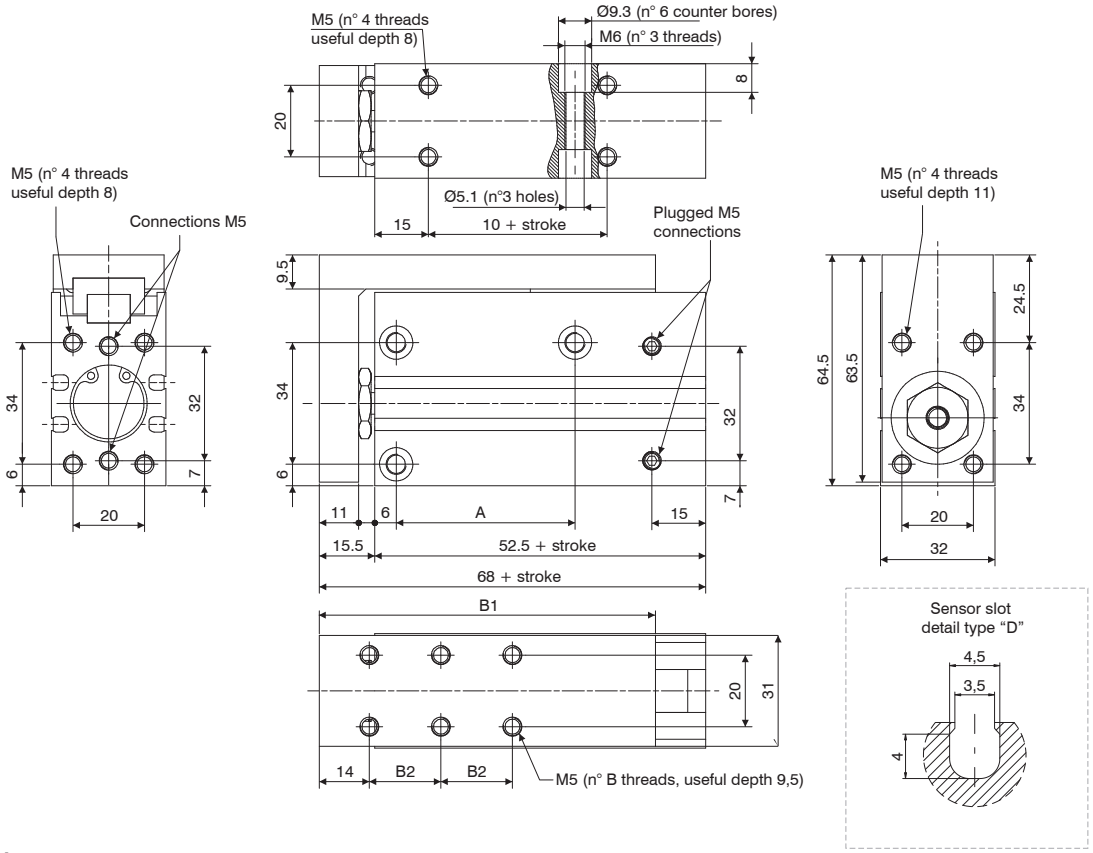
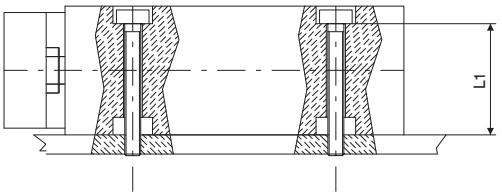


Table of dimensions

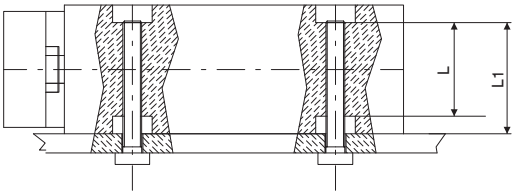
	Standard strokes								
	5	10	15	20	25	30	40	50	60
A	20		25		40		50	70	
B1	64		74		84		94	104	114
B2	10		20		30		20	25	30
B	4						6		
Weight (g)	440	455	490	505	540	560	600	660	700

Fixing - Load

LATERAL (THROUGH SCREW)



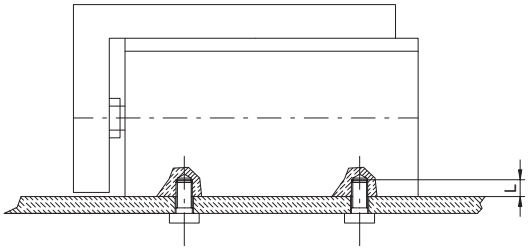
LATERAL (THREADED HOLE)



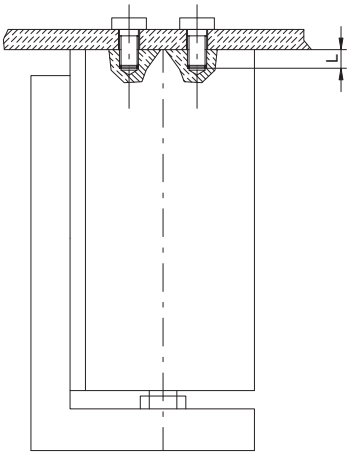
	Screw	Maximum torque (Nm)	L1
Ø10	M4	2,5	15,6
Ø16	M4	2,5	20,6
Ø20	M5	5,1	24

	Screw	Maximum torque (Nm)	L1	L
Ø10	M5	5,1	15,6	11,2
Ø16	M5	5,1	20,6	16,2
Ø20	M6	8,1	24	16

VERTICAL (THREADED HOLE)



AXIAL (THREADED HOLE)

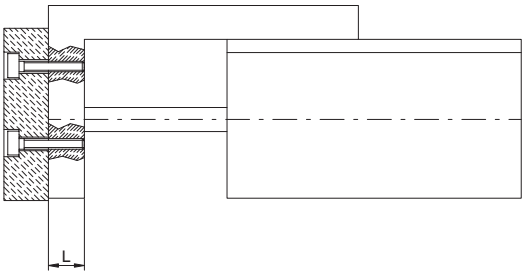


	Screw	Maximum torque (Nm)	L
Ø10	M4	2,5	6
Ø16	M4	2,5	6
Ø20	M5	5,1	8

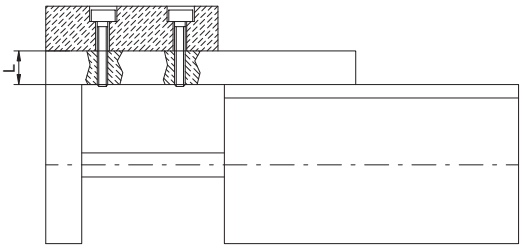
	Screw	Maximum torque (Nm)	L
Ø10	M4	2,5	6
Ø16	M4	2,5	6
Ø20	M5	5,1	8

Load

FRONTAL MOUNTING



BACK MOUNTING

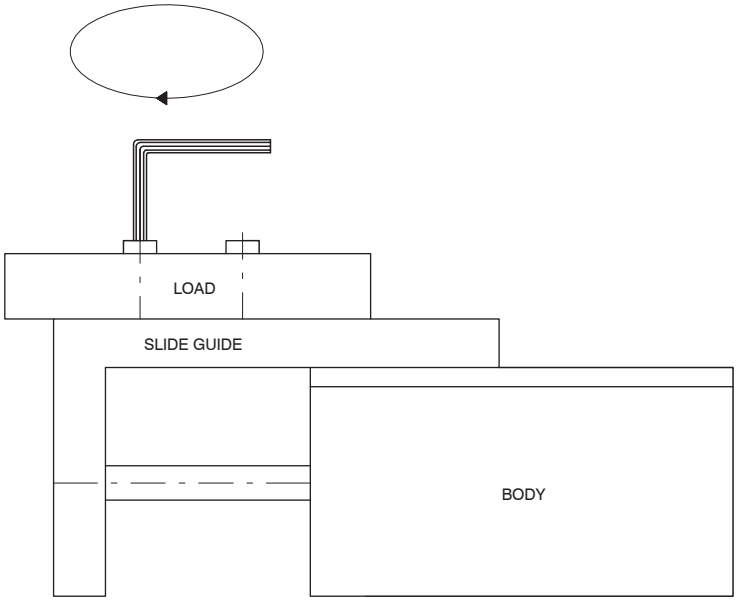


	Screw	Maximum torque (Nm)	L
Ø10	M4	2,5	7,5
Ø16	M4	2,5	10
Ø20	M5	5,1	11

	Screw	Maximum torque (Nm)	L
Ø10	M4	2,5	8
Ø16	M4	2,5	9
Ø20	M5	5,1	9,5

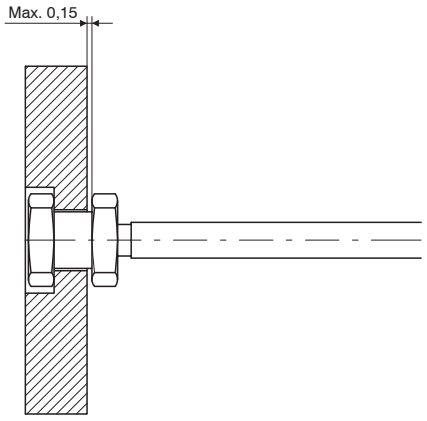
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Fixing - Load



ATTENTION : Slide must be blocked before fixing the load.
This operation shoul not be done by blocking the body as the guide could get damaged.

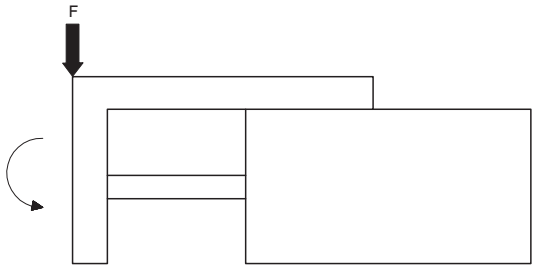
CONNECTION BETWEEN PLATE AND ROD

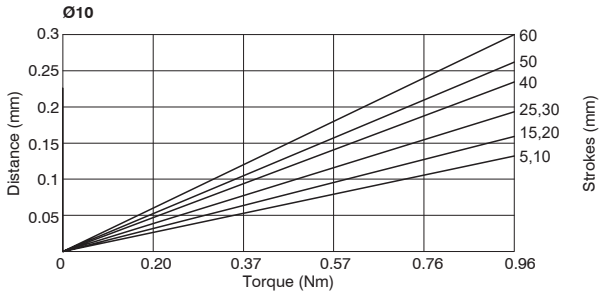


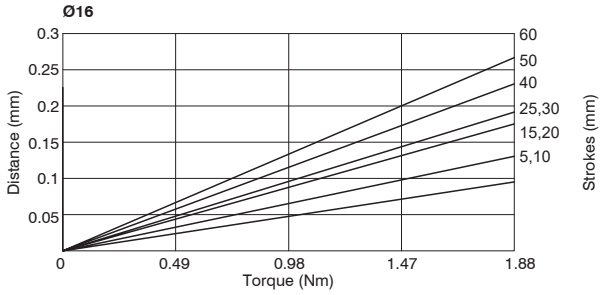
The fluctuating connection, maximum clearence 0.15mm as indicated by the arrow.

Plate deflection graphs

Plate deviation (arrow) when the load is applied on the spot indicated with the arrow and the unit completely extended







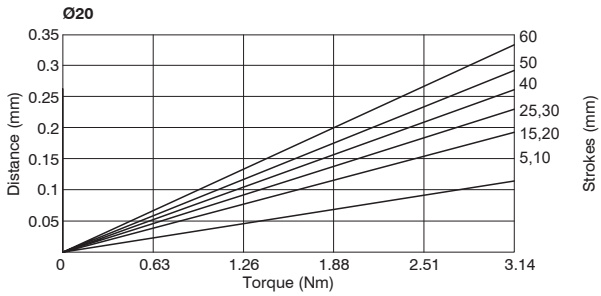
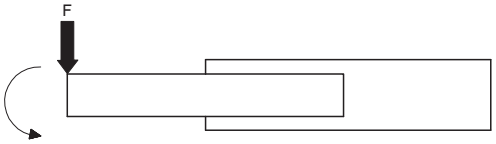
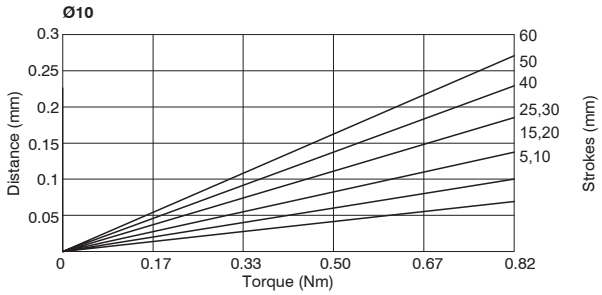
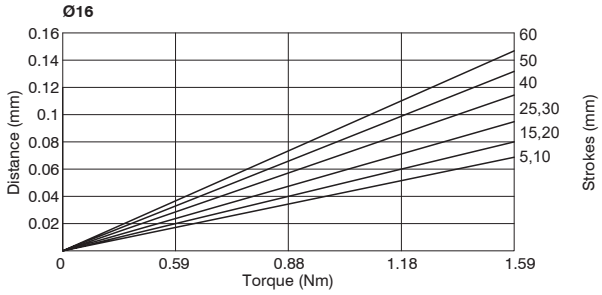
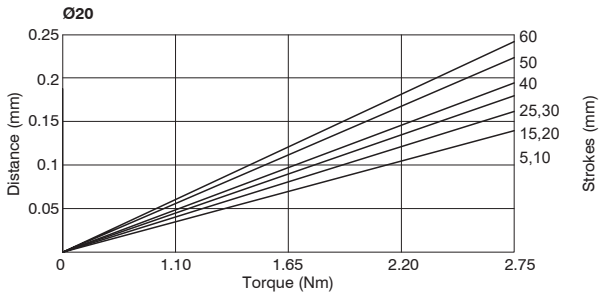


Plate deviation (arrow) when the load is applied on the spot indicated with the arrow and the unit completely extended





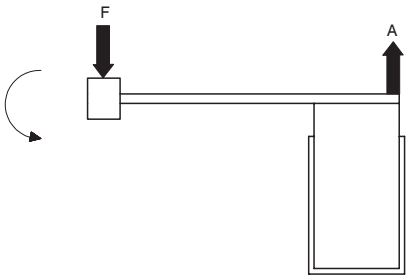


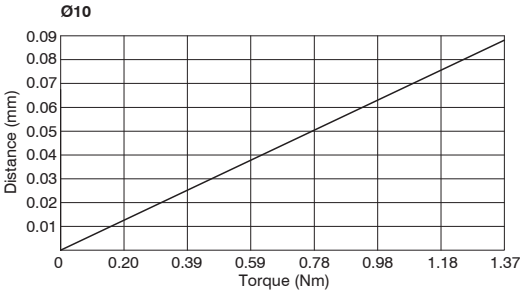


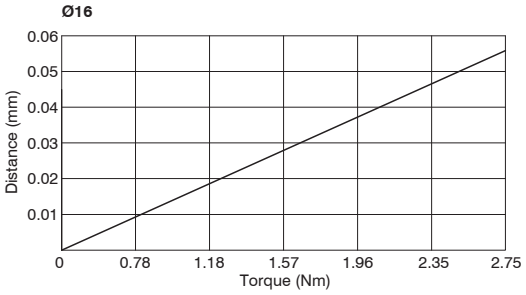
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

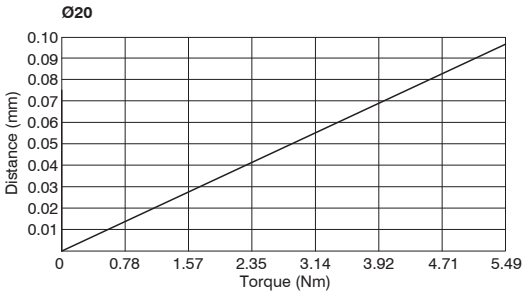
Plate deflection graphs outer stroke - selection graphs

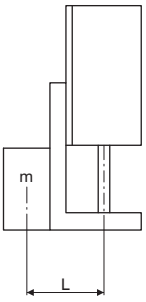
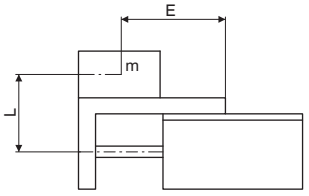
Plate deviation (compared to A) when the load is applied on the spot indicated with the arrow and the unit completely extended





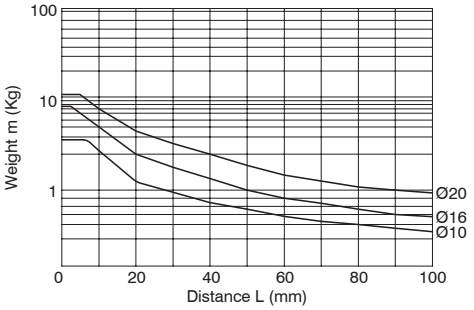




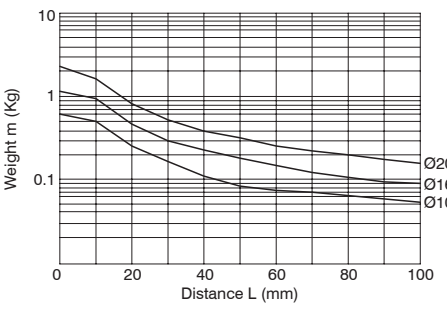
VERTICAL				HORIZONTAL								
MOUNTING POSITION												
MAX. SPEED (mm/s)	100	200	300	100			200			300		
Load eccentricity				50	100	200	50	100	200	50	100	200
Selection graphs	1	2	3	4	5	6	7	8	9	10	11	12

Selection graphs 1 - 3 (vertical mounting)

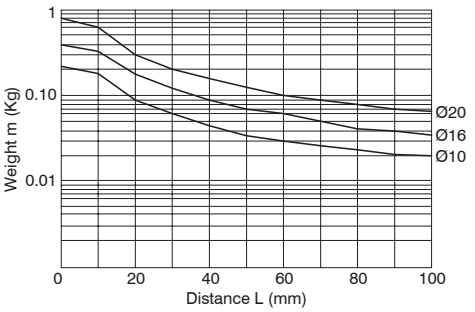
Drawing 1
Maximum speed 100 mm/s or lower



Drawing 2
Maximum speed 300 mm/s or lower



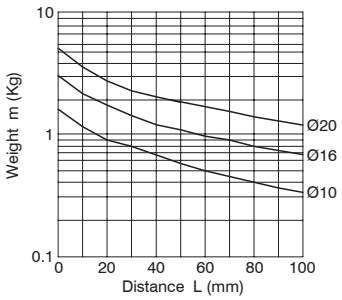
Drawing 3
Maximum speed 500 mm/s or lower



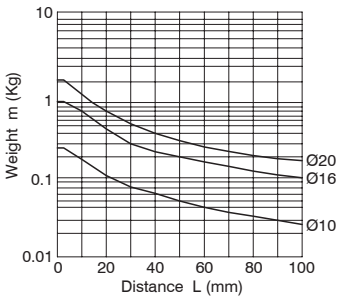
Selection graphs

Selection graphs 4 - 12 (horizontal mounting)

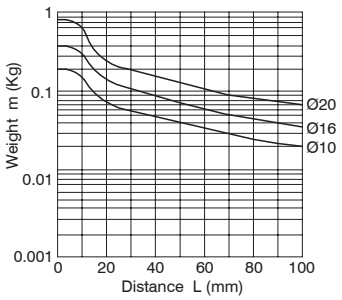
Drawing 4 load eccentricity 50 mm
Maximum speed 100 mm/s or lower



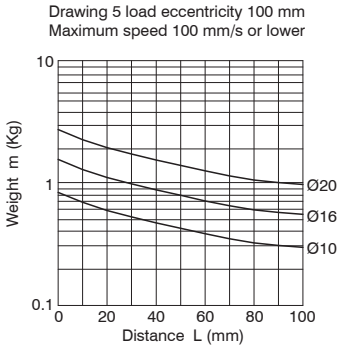
Drawing 7 load eccentricity 50 mm
Maximum speed 300 mm/s or lower



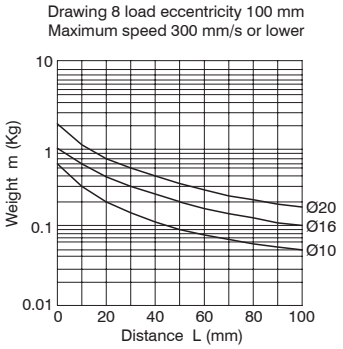
Drawing 10 load eccentricity 50 mm
Maximum speed 500 mm/s or lower



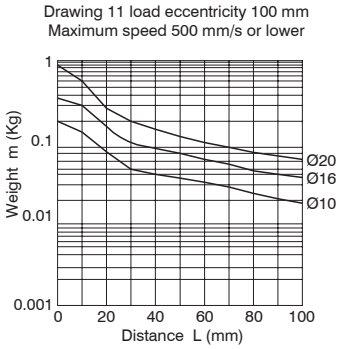
Drawing 5 load eccentricity 100 mm
Maximum speed 100 mm/s or lower



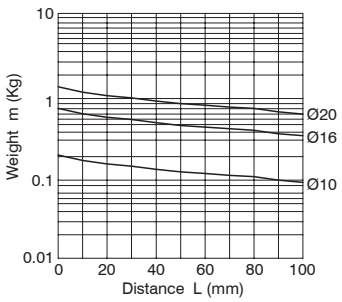
Drawing 8 load eccentricity 100 mm
Maximum speed 300 mm/s or lower



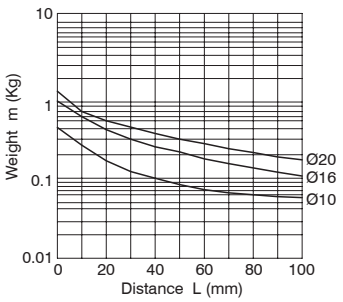
Drawing 11 load eccentricity 100 mm
Maximum speed 500 mm/s or lower



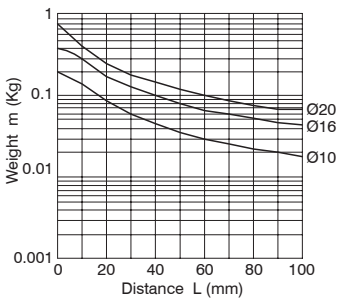
Drawing 6 load eccentricity 200 mm
Maximum speed 100 mm/s or lower



Drawing 9 load eccentricity 200 mm
Maximum speed 300 mm/s or lower



Drawing 12 load eccentricity 200 mm
Maximum speed 500 mm/s or lower



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Series 1605

The purpose of producing a rodless cylinder is to provide a space saving option over conventional cylinders. On a traditional rod type cylinder, the total space occupied with rod out is more than double the length of the cylinder, while with rodless cylinder it is little more than its stroke. Profiled tube allows mounting of sensors 1500._, RS._, HS._ and 1580._, MRS._, MHS._ on the two sides of carriage, by means of suitable brackets. Standard accessories include foot mounting brackets for installation on cylinder and caps, intermediate mounting brackets to give support to long stroke cylinders under load (over one metre), an oscillating coupling device for installation between the mounting plate and the load and on request, a very precise external movement device.

Construction characteristics

Other seals	oil resistant NBR rubber
Bands	tempered stainless steel
Cushion bushings	aluminium
Barrel	anodized aluminium
Mounting place	anodized aluminium
Piston seals	special 80 shore nitril mixture, wear resistant
Plain bearing guide	acetal resin
Piston	acetal resin
End caps	anodized aluminium

Operational characteristics

Fluid	filtered and lubricated air
Pressure	0.5 ... 8 bar
Working temperature	-5 °C ... +70 °C
Max. speed	1.5 m/s (normal working conditions)
Bores	Ø25 - Ø32 - Ø40 - Ø50 - Ø63
Max. strokes	6 meters

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- Please adequately evaluate the load involved and its direction, especially in respect to the moving carriage (also see tables for loads and admitted moments).
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.
For applications where a low smooth uniform operations speed is required, you must specify this on your purchase order so that we can use the proper special grease.

Use and maintenance

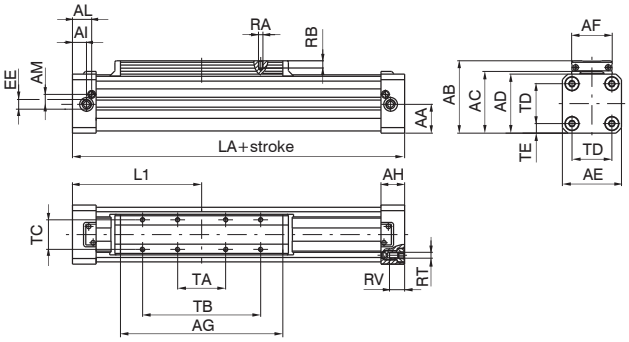
This type of cylinder, due to its characteristics, has to be used within certain criteria. Correct use will give long and troublefree operation. Filtered and lubricated compressed air reduce seal wear. Verify that the load will not produce unforeseen stresses. Never combine high speed with heavy load. Always support the long stroke cylinder with intermediate brackets and never exceed the specified working conditions. If maintenance is required, follow the instructions supplied with the repair kit.

Basic version

Coding: 1605.Ø.stroke.01.M

(Max. stroke 6 m)



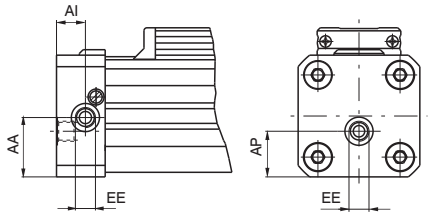


Left head

Coding: 1605.Ø.stroke.02.M

(Max. stroke 6 m)

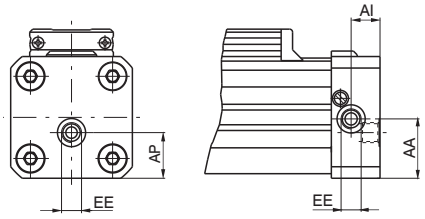
Possibility of a single feed cylinder head



Right head

Coding: 1605.Ø.stroke.03.M

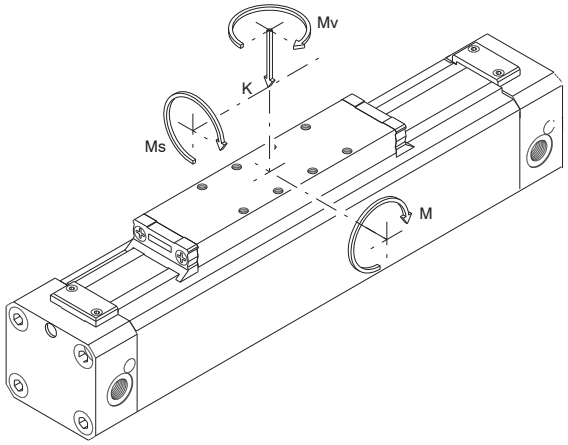
(Max. stroke 6 m)

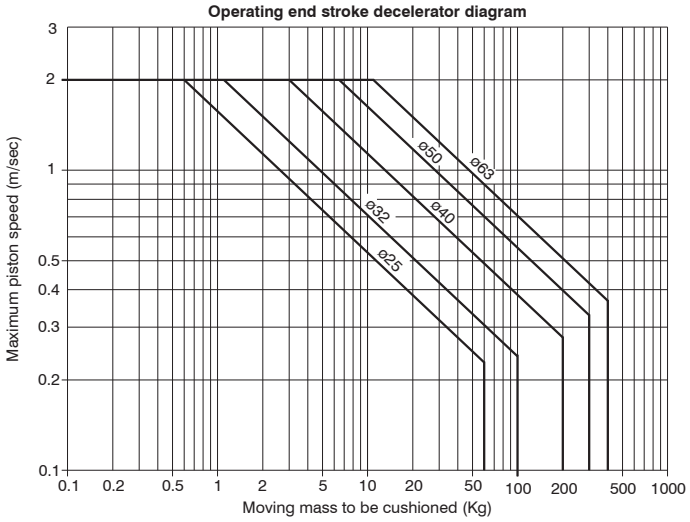


Bore		25	32	40	50	63
AA		19,5	25,5	31	39	46,5
AB		56	70	80	98	113,5
AC		48,5	60	70	85	100
AD		44	55	65	80	95
AE		40	55	65	80	95
AF		30	40	40	55	55
AG		117	146	186	220	255
AH		23	27	30	32	36
AI		12,5	14,5	17,5	19	23
AL		19	22,5	24,5	26	30
AM		7,5	10,5	11,5	13,5	16
AP		13	15,2	23	30	35,5
EE		G1/8"	G1/4"	G1/4"	G1/4"	G3/8"
L1		100	125	150	175	215
LA		200	250	300	350	430
RA		M4	M5	M5	M6	M6
RB		7,5	9,5	9,5	11,5	11,5
RT		M5	M6	M6	M8	M8
RV		13,5	16,5	16,5	20,5	20,5
TA		30	40	40	65	65
TB		80	110	110	160	160
TC		23	30	30	40	40
TD		27	36	47	54	68
TE		6,5	9,5	9	13	13,5
Weight (g)	Stroke 0	900	1650	2650	4330	8010
	every 100 mm	225	340	490	725	1070
Stroke tolerance: + 2 mm.						

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Basic version cylinder

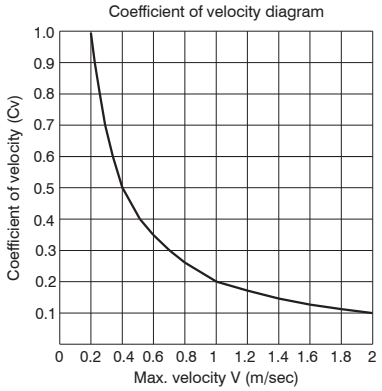




Recommended loads and moments in static conditions

Cylinder bore	Decelerating stroke (mm)	Max. recommended load K (N)	Max. recommended bending moment M (Nm)	Max. recommended cross moment Ms (Nm)	Max. recommended twisting moment Mv (Nm)
25	20	300	15	0,8	3
32	25	450	30	2,5	5
40	31	750	60	4,5	8
50	38	1200	115	7,5	15
63	49	1600	150	8,5	24

Attention: use guided carriage for heavier loads or precise linear movements (MG or MH versions).
All reported data are referred to carriage plane and indicates MAX - values in statical conditions. These values should not be exceeded either in dynamic conditions (best speed <1m/sec).
Should the cylinder be utilised at its maximum performances, ensure the proper additional absorbers are used.



Calculation of permissible load (Kd) in dynamic conditions
Kd = K • Cv

Loads under combined stressing conditions

It is important to take into consideration the following formula when there are a combination of forces with torque:

$$\left[\left(2 \times \frac{Ms}{Ms\ max}\right)+\left(1.5 \times \frac{Mv}{Mv\ max}\right)+\frac{M}{M\ max}+\frac{K}{K\ max}\right] \times \frac{100}{Cv} \leq 100$$

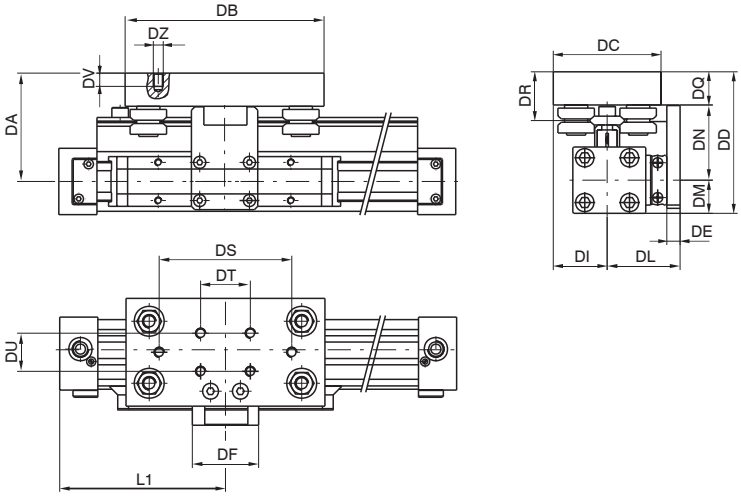
Cylinder with linear control unit

Coding: 1605.Ø.stroke.01.MG

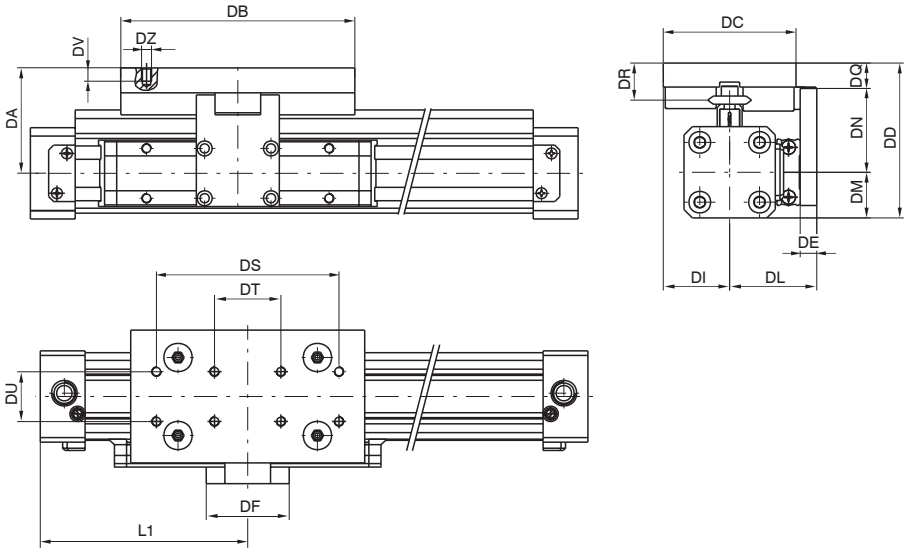
(Max. stroke 3 m)



Cylinders Ø25



Cylinders Ø32, Ø40, Ø50



Bore	DA	DB	DC	DD	DE	DF	DI	DL	DM	DN	DQ	DR	DS	DT	DU	DV	DZ	L1	Weight (g)	every 100 mm
25	65	120	65	85	8	40	32,5	44	20	45,5	19,5	29	80	30	23	8	M6	100	850	90 g
32	63	141	80	90,5	10	50	40	52,5	27,5	48,5	14,5	21,5	110	40	30	8	M5	125	950	
40	68,5	141	80	101	10	50	40	57,5	32,5	54	14,5	21,5	110	40	30	8	M5	150		
50	76	141	80	116	12	80	40	70	40	61,5	14,5	21,5	110	40	30	8	M5	175		

For cylinders weight refer to base version

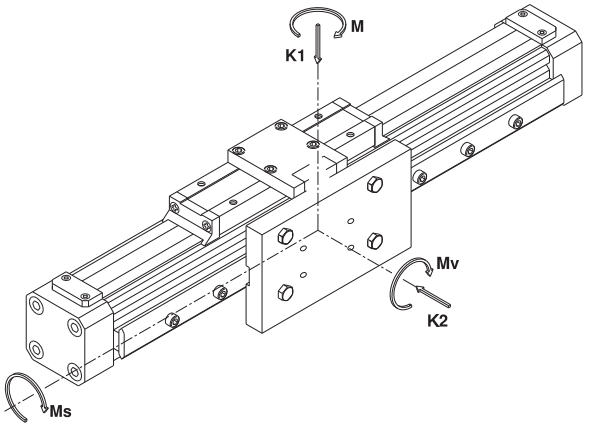
Construction and working characteristics

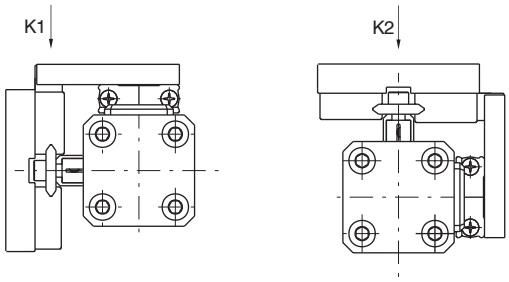
Rod	carbon steel with hardness higher than 55-60 HRC
Bearing with shaft	shielded bearing with shaped ring
Carriage plate	anodised aluminium
End cap	acetal resin

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Cylinder with linear control unit Ø25, Ø32, Ø40 and Ø50 mm

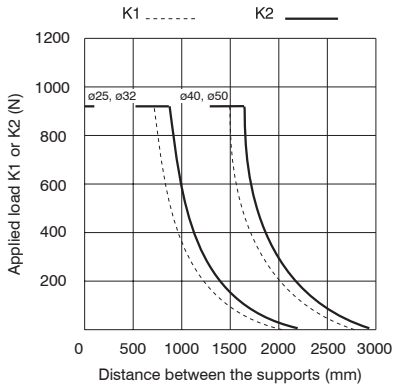
Max. suggested loads and moments

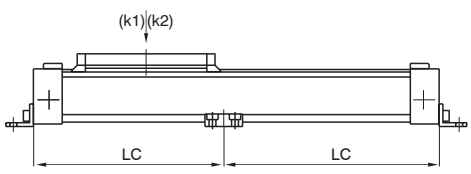




K1 (N)	K2 (N)	M (Nm)	Ms (Nm)	Mv (Nm)
960	960	40	12	40

Max. load (K1 o K2) depending on the distance LC between the supports

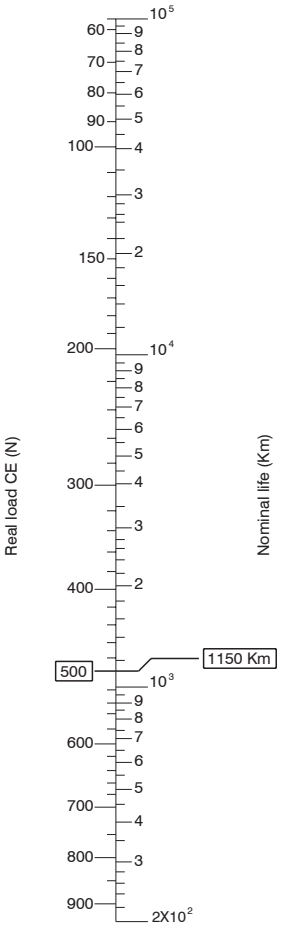




Real load (CE) under combined stressing conditions

It is important to take into consideration the following formula when there are a combination of forces with torque:
CE = [K1 + K2 + (24 x M) + (80 x Ms) + (24 x Mv)] ≤ 960

Nomograph load / life



All data refers to a linear control unit properly lubricated with linear speed < of 1.5 m/s

Example to compute the life

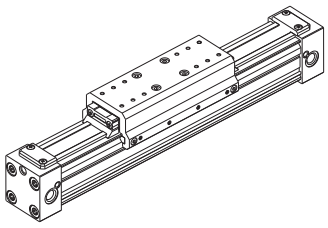
Compute the linear control unit life with a load of 100 N applied 50 mm off its axle.

Ms = 0,05 x 100 = 5 Nm K1 = 100 N
How to compute the real load using the formula:
CE = [K1 + K2 + (24 x M) + (80 x Ms) + (24 x Mv)]
CE = [(100 + 0) + (24 x 0) + (80 x 5) + (24 x 0)] = 500N
After having verified that the CE is lower than 960 N we realise that the life is 1150 Km from the nomograph.

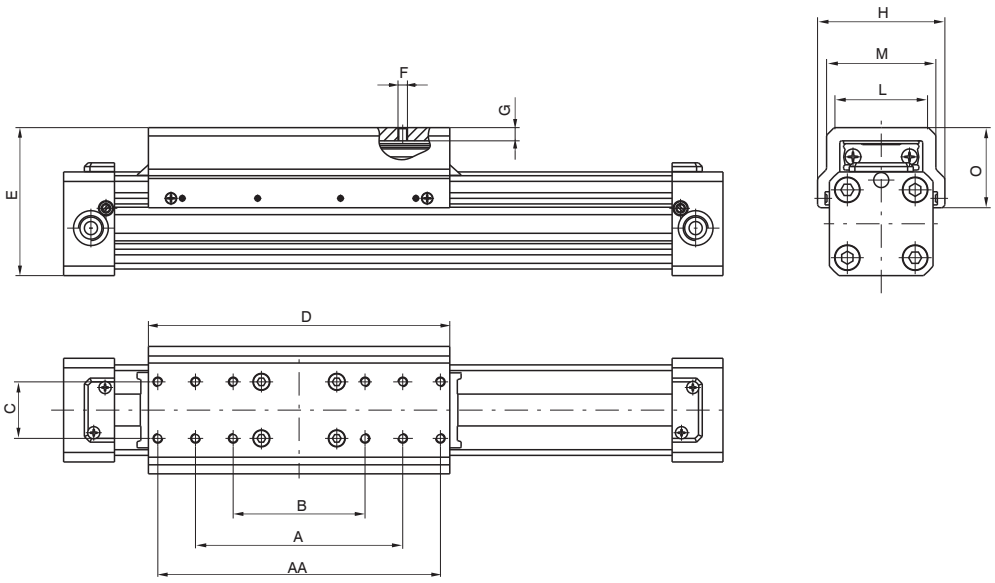
Cylinder with plain bearing guide

Coding: 1605.Ø.stroke.01.MH

(Max. stroke 6 m)







Bore	AA	A	B	C	D	E	F	G	H	L	M	O	Weight (g)
Ø25	/	80	55	23	130	64 ±1	M4	6,5	57	36	42	32	235
Ø32	/	110	70	30	160	78,5 ±1	M5	7	68	50	58	42,5	445
Ø40	/	110	70	30	202	88,5 ±1	M5	7	77	52	60	45,5	595
Ø50	210	160	110	40	235	114,5 ±1	M6	14	100	71	83	61,5	1453
Ø63	210	160	110	40	270	130 ±1	M6	14	116	76	90	65,5	1810

Complete plain bearing guide

Coding: 1600.Ø.05F



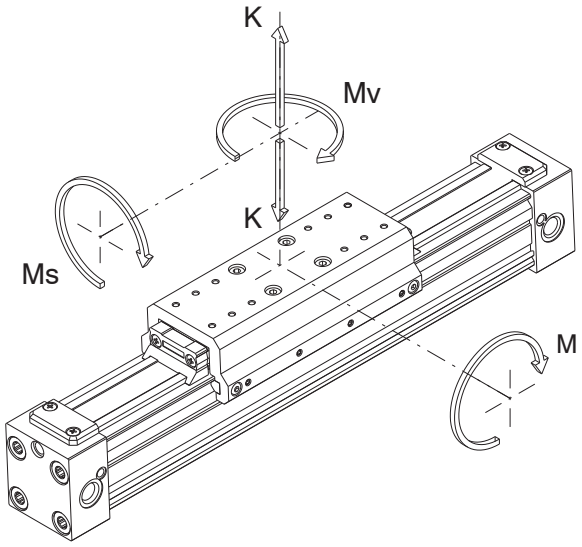
Construction and working characteristics

Plain bearing	reinforced carbon fibre nylon
Carriage plate	anodised aluminium

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Cylinder with plain bearing guide ø25, ø32, ø40, ø50 and ø63 mm

Max. suggested loads and moments



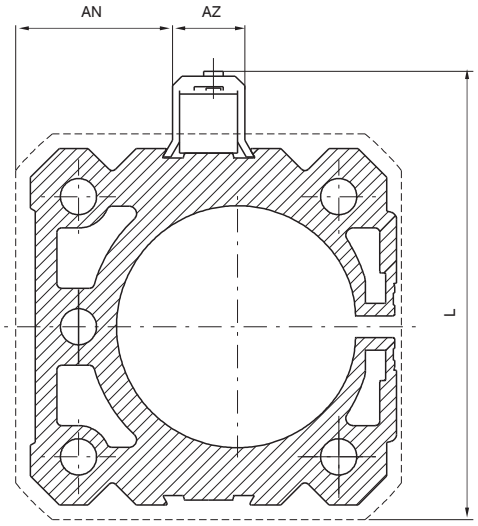
Recommended loads and moments in static conditions

Cylinder bore	Max. recommended load K (N)	Max. recommended bending moment M (Nm)	Max. recommended cross moment Ms (Nm)	Max. recommended twisting moment Mv (Nm)
Ø25	300	20	1	4
Ø32	450	35	3	6
Ø40	750	70	5	9
Ø50	1200	120	8	16
Ø63	1600	155	9	25

SA series sensor bracket

Coding: 1600.A



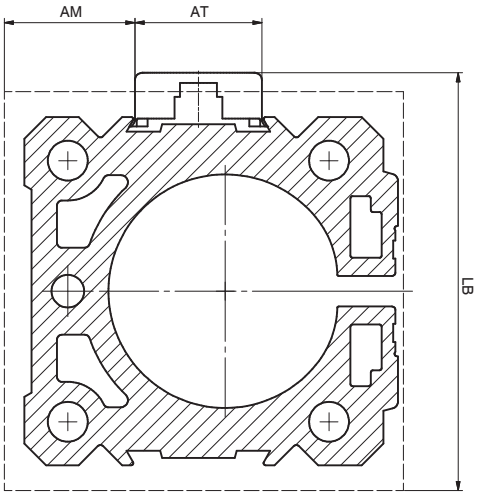


Bore		25	32	40	50	63
AN		12.5	20	25	32.5	40
AM		11	18	22	30	37.5
AZ		15				
AT		17.5				
L		55	68	79	94	110
LB		45	58	69	84	100
Weight (g)	1600.A	1				
	1600.C	2.5				

Bracket for sensor series SR - SU - SQ

Coding: 1600.C





Sensors

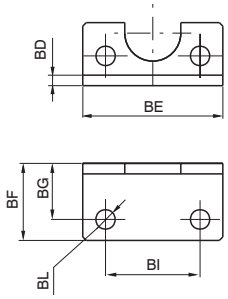
for technical characteristics and ordering codes see magnetic sensors section

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

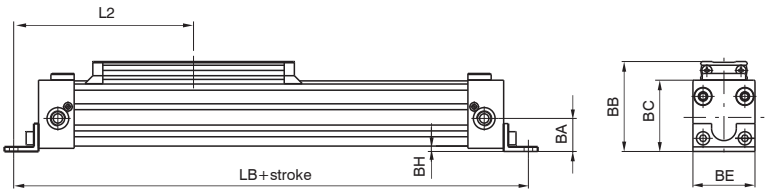
Foot

Coding: 1600.Ø.01F
(1 piece)

Bore Ø25, Ø32



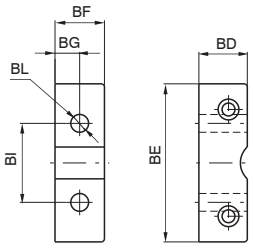


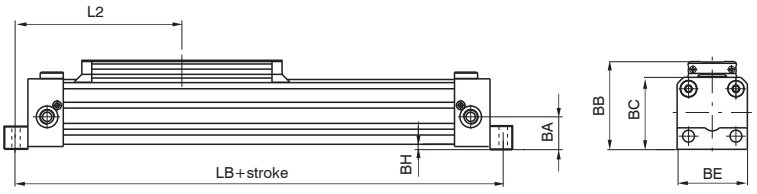


Bore Ø40, Ø50, Ø63



Bore	25	32	40	50	63
BA	21,5	28	32,5	41	49
BB	58	72,5	81,5	100	116
BC	46	57,5	66,5	82	97,5
BD	3	3	20	25	30
BE	40	55	65	80	95
BF	22	25	25	25	30
BG	16	18	12,5	12,5	15
BH	3,5	6	4,5	5	5
BI	27	36	30	40	48
BL	5,5	6,6	9	9	11
L2	116	143	162,5	187,5	230
LB	232	286	32,5	375	460
Weight (g)	30	45	65	110	190

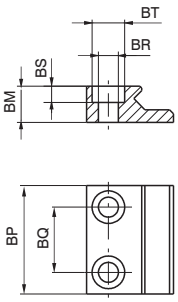




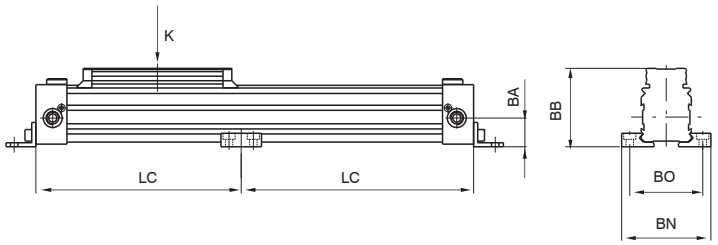
Intermediate support

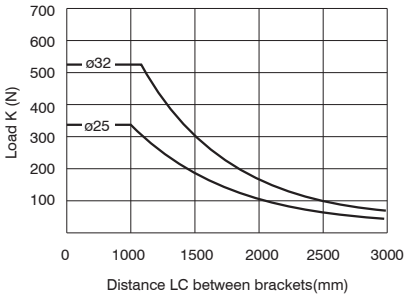
Coding: 1600.Ø.02F

Bore Ø25, Ø32





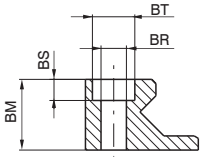


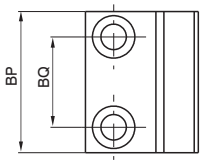


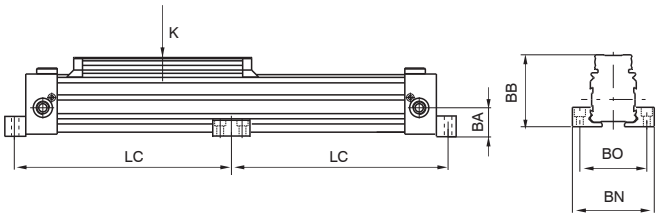
Bore Ø40, Ø50, Ø63

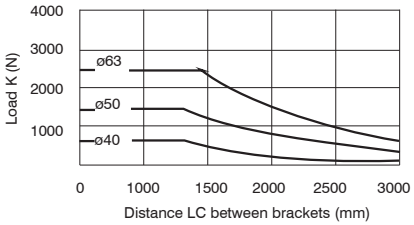


Bore	25	32	40	50	63
BA	21,5	28	32,5	41	49
BB	58	72,5	81,5	100	116
BM	10	18	18	25	30
BN	66	86	96	120	140
BO	54	70	80	100	120
BP	30	40	40	50	50
BQ	18	25	25	32	32
BR	5,5	6,6	6,6	9	9
BS	4,5	5,5	5,5	7,5	7,5
BT	9	11	11	15	15
Weight (g)	25	80	80	160	215









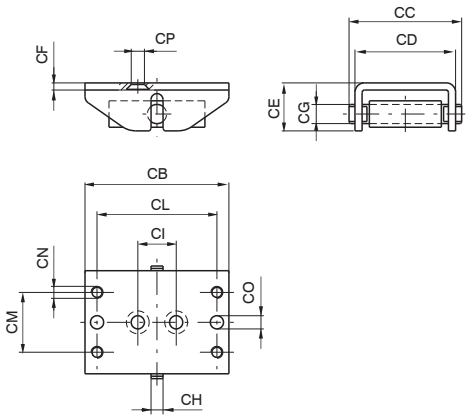
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

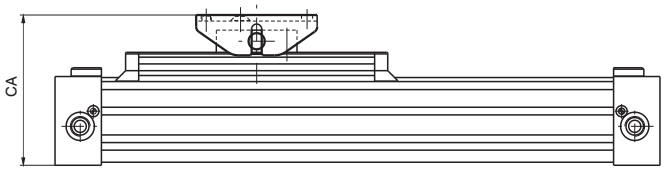
Oscillating hinge

Coding: 1600.Ø.03F

Bore Ø25, Ø32



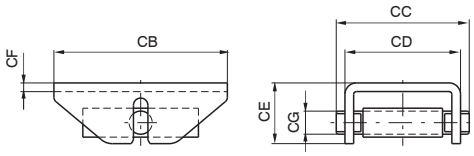


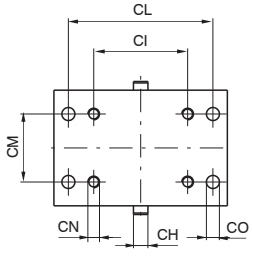


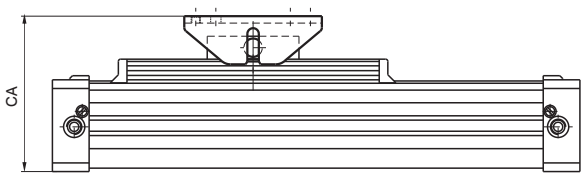
Bore Ø40, Ø50, Ø63



Bore	25	32	40	50	63
CA (±5,5)	76	99,5	108,5	135,5	151
CB	60	100	100	120	120
CC	47	64	64	92	92
CD (±5)	42	56	56	80	80
CE	20	30	30	42	42
CF	3	4	4	6	6
CG	8	12	2	16	16
CH	5	8	8	10	10
CI	16	40	40	65	65
CL	50	80	80	100	100
CM	25	30	30	47	47
CN	M5	M6	M6	M8	M8
CO	5,5	6,5	6,5	9	9
CP	5,5	7	7	-	-
Weight (g)	130	380	380	990	990







Series 1605 - Ø16

Mechanically coupled cylinder based on the stainless steel strip sealing technology widely used and tested on bigger bore sizes.
Available versions: sliding shoe as standard ("MH"). This system ensures high resistance and long life as the carriage which supports the weight is not tied to the piston and therefore the piston only transfers the movement without bearing any force.
Air connections: M5 threaded connections. All air connections on one end cap version available. (side-back-bottom side)
Mountings:
- foot brackets and intermediate supports if needed (depending on the stroke)
- oscillating hinge
- Directly in position via the slot on the end caps- in this conditions the air supply can come directly from the mounting plate.

Magnetic sensors: sensors series (1590.... , LRS.... and LHS....) can be used directly in the 2 slots on the barrel.

Construction characteristics

End caps	anodized aluminium
Barrel	anodized aluminium
Bands	stainless steel
Mounting place	anodized aluminium
Plain bearing guide	special technopolymer
Piston	acetal resin
Cushion bushings	aluminium
Piston seals	special NBR
Other seals	NBR

Operational characteristics

Fluid	filtered and lubricated air
Working pressure	1.5 ... 8 bar
Working temperature	-5 °C ... +70 °C
Max. speed	1 m/s (normal working conditions)
Max. stroke	2,5 meters
Cushioning lenght	18 mm

Please follow the suggestions below to ensure a long life for these cylinders:
• use clean and lubricated air.
• Please adequately evaluate the load involved and its direction, especially in respect to the moving carriage (also see tables for loads and admitted moments).
• avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
• evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).
Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.
For applications where a low smooth uniform operations speed is required, you must specify this on your purchase order so that we can use the proper special grease.

Use and maintenance

This type of cylinder, due to its characteristics, has to be used within certain criteria. Correct use will give long and troublefree operation.
Filtered and lubricated compressed air reduce seal wear. Verify that the load will not produce unforeseen stresses. Never combine high speed with heavy load. Always support the long stroke cylinder with intermediate brackets and never exceed the specified working conditions. If maintenance is required, follow the instructions supplied with the repair kit.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

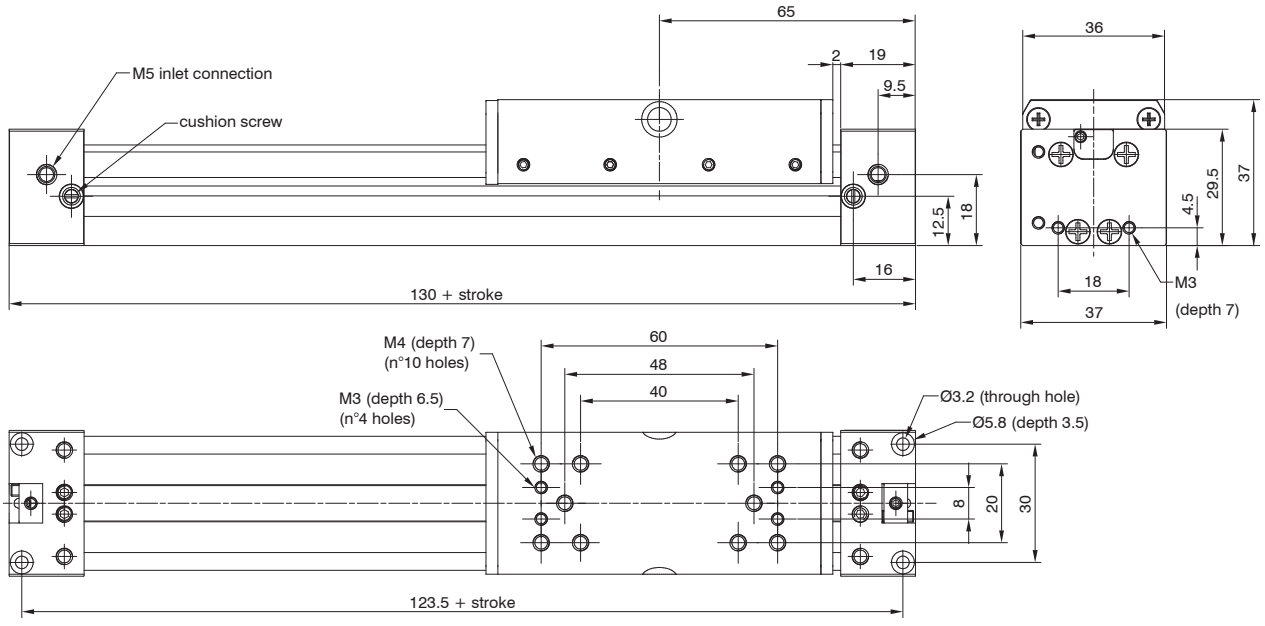
Basic version (cylinder with plain bearing guide)

Coding: 1605.16.stroke.Ⓣ.MH

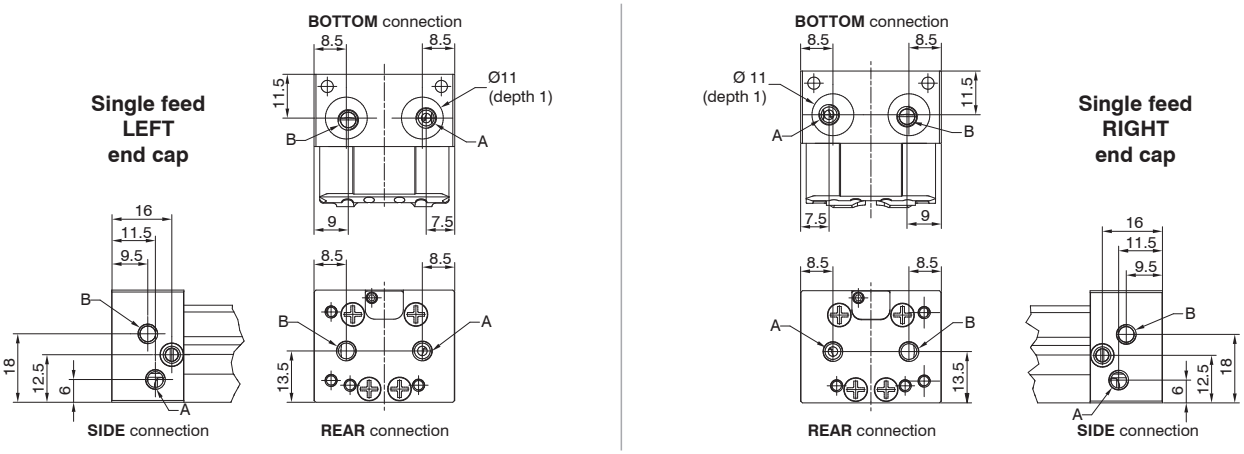
Ⓣ	END COVERS
	01 = Basic version
	02 = Left end cap-side connection
	03 = Right end cap-side connection
	04 = Left end cap-rear connection*
	05 = Right end cap-rear connection*
	06 = Left end cap-bottom connection
	07 = Right end cap-bottom connection

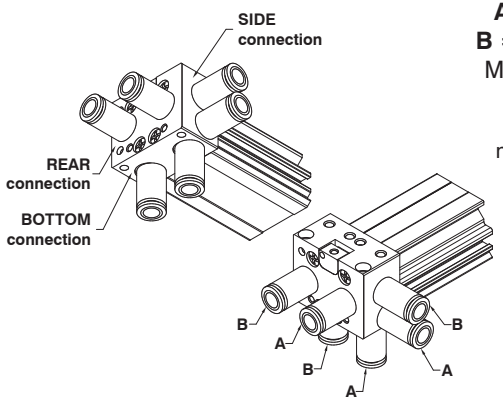
** in case of mounting with 1600.16.01F bracket, use 4mm tube fitting*



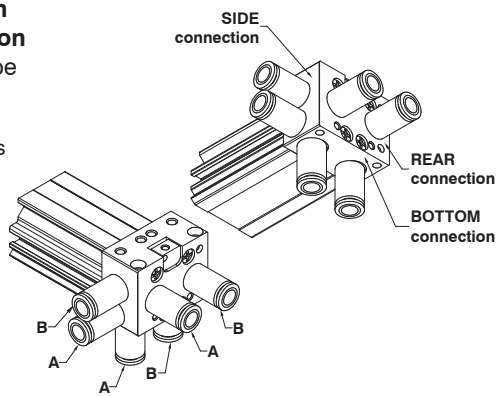


Possibility of a single feed right or left cylinder head and on 3 different end cap sides





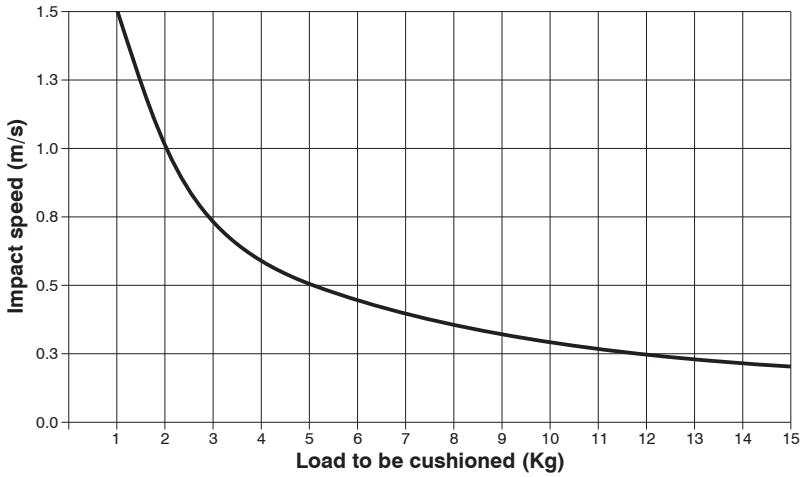
A = forward stroke connection
B = backwards stroke connection
M5 tube Ø4 and Ø6 fittings can be used for air connections.
In case of use with 1600.16.01F mounting and REAR air connections use a 4mm pipe fitting.



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Operating end stroke decelerator diagram

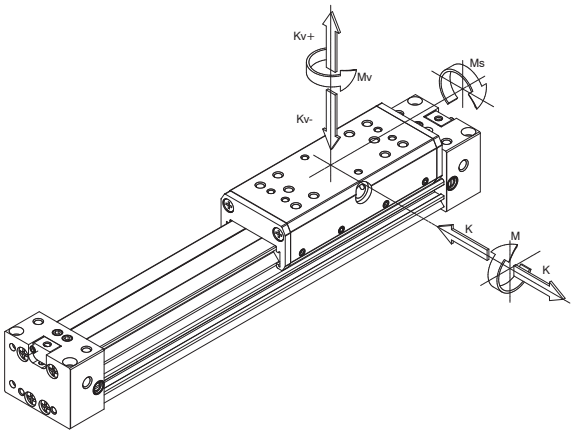
In case of extreme applications close to the maximum allowed values in the graph it is strongly recommended to add external damping systems.



Recommended loads and moments in static conditions

K1	K2	K3	M	Ms	Mv
200	250	100	10	2	3
(N)			(Nm)		

Maximum Load and moments allowed in static or dynamic conditions (max. speed 0,2 m/s)

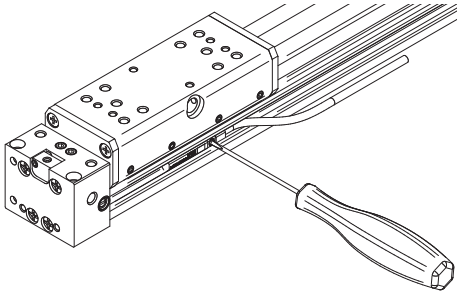


Magnetic sensors

Code
1590...
LRS...
LHS...



The two side slots allow the direct use of 1590....LRS... and LHS... sensors mounted from the top and positioned via the built in screw.



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

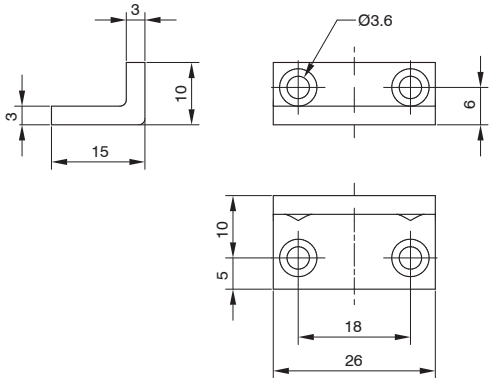
Foot

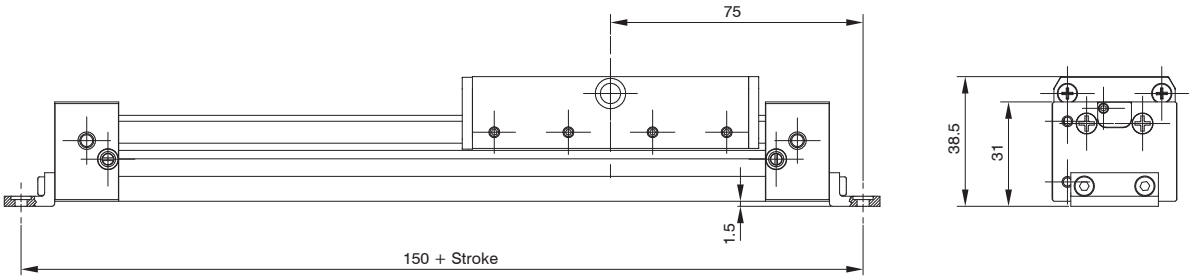
Coding: 1600.16.01F
(1 piece)

Attention: based on the stroke evaluate the need to use also side mounted supports. (see below)

The kit comprises:
n° 1 foot (plated zinc steel)
n° 2 screws (plated zinc steel)



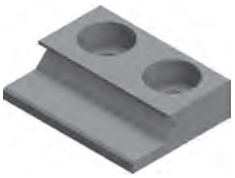


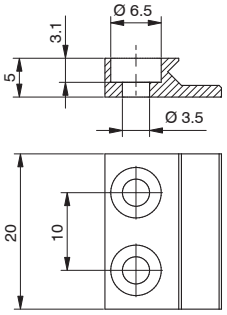


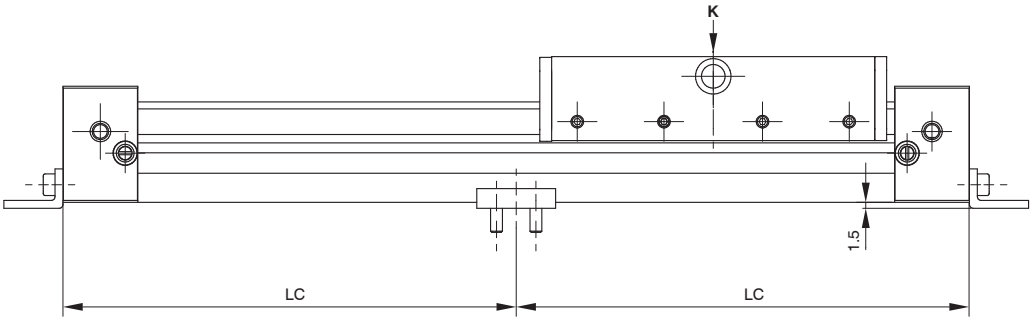
Intermediate support

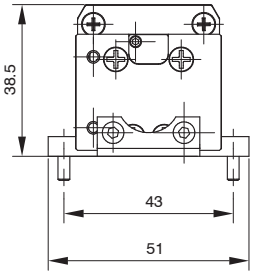
Coding: 1600.16.02F
(1 piece)

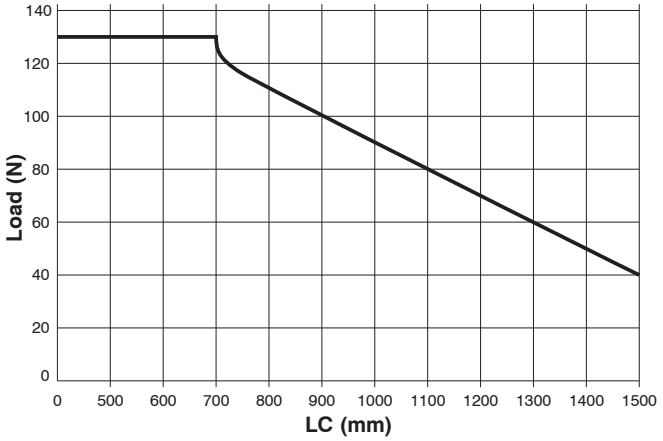
The kit comprises:
n° 1 support (aluminium)
n° 2 screws (plated zinc steel)











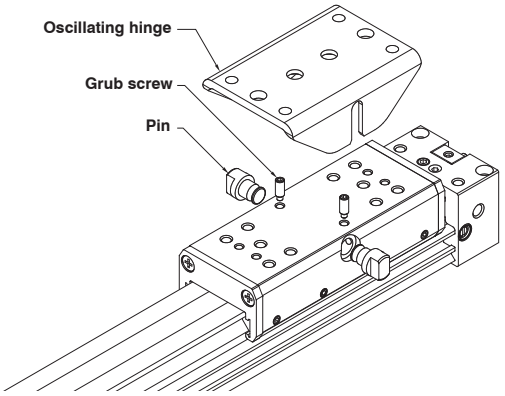
The graph shows the LC limit in conjunction with the applied load K beyond which it is necessaryto mount an intermediate side support in order to prevent the barrel from bending

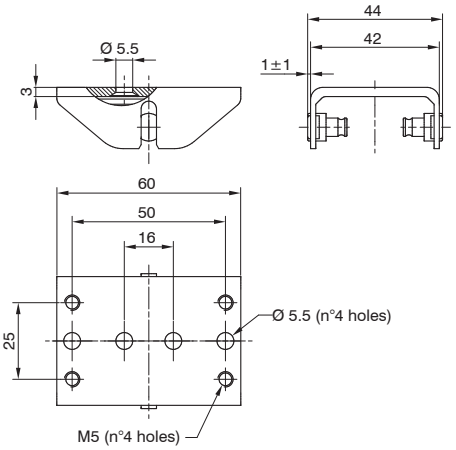
Oscillating hinge

Coding: 1600.16.03F
(1 piece)

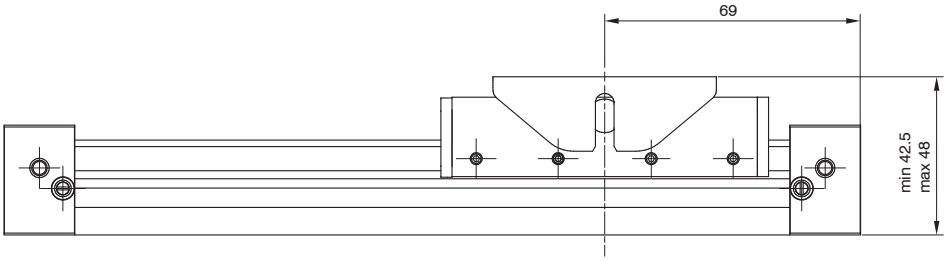
The kit comprises:
n° 2 pins (plated zinc steel)
n° 2 grub screw (steel)
n° 1 oscillating hinge (plated zinc steel)







mounting sequence:
mount the pin into the dedicated housing
tighten the blocking grub screws in the dedicated housing

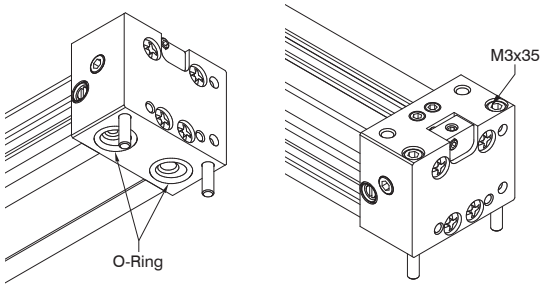


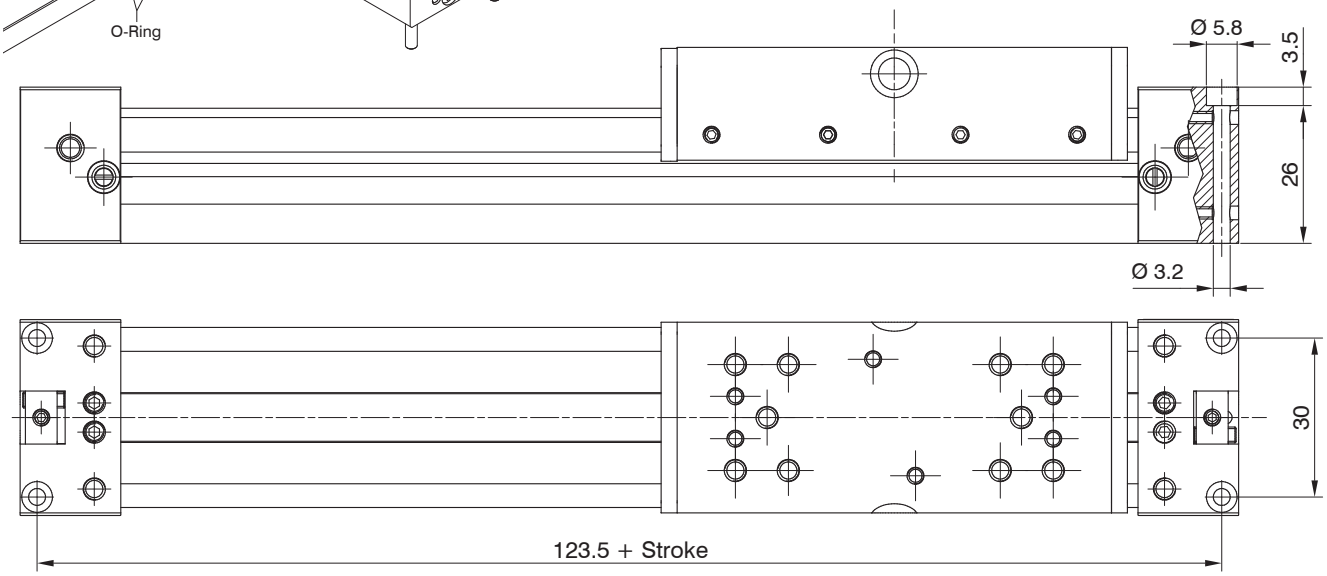
Direct mounting without brackets

Coding: 1600.16.04F
(1 piece)

The kit comprises:
n° 4 screws M3x35 (plated zinc steel)
n° 2 O-Rings (NBR)

Direct mounting without brackets
Thanks to the mounting holes with counter bores on the end caps it is possible to mount the cylinder directly onto the mounting surface. Having the end caps and barrel flush and in contact with the mounting plate it is not necessary to use any intermediate mounting brackets even in case of long strokes. It is also possible to supply air to the cylinder directly through the mounting plate through the two air connection on the bottom side of the end cap (06.MH and 07.MH) which are machined with counterbores.





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1330 - 1331 - 1332 - 1333, rotary actuators

Construction characteristics

Central body	oxidised aluminium
Cushion bushings	hardened aluminium
Barrel	anodised aluminium Ra=0.3-0.5
Rack	C43
Rotating angle adjustment assy	brass
Seals	NBR 80 shore rubber
Plain bearing guide	acetal resin
Pinion	18 NiCrMo4 cemented and tempered
Pistons	vulcanized rubber block on steel core with incorporated permanent magnet or without magnet plus rear spacer for non magnetic version
End caps	UNI 5079 aluminium alloy casting
Cushion adjustment screws	nickel plated steel

Operational characteristics

Fluid	filtered air, preferably lubricated
Pressure	10 bar
Working temperature	-5 °C ... +70 °C
Standard rotation	90° - 180° - 270° - 360°(+1°)
Rotating angle adjustment assy	±10° (±5° start position, ±5° end position)

Use and maintenance

Please follow the suggestions below to ensure a long life for these cylinders:
- use clean and lubricated air.
- correct alignment during assembly with regard to the applied load so as to avoid radial components or bending the rod.
- avoid high speeds together with long strokes and heavy loads: this would produce kinetic energy which the cylinder cannot absorb, especially if used as a limit stop (in this case use mechanical stop device).
- evaluate the environmental characteristics of cylinder used (high temperature, hard atmosphere, dust, humidity etc.).

Please note: air must be dried for applications with lower temperature.
Use hydraulic oils H class (ISO VG32) for correct continued lubrication.

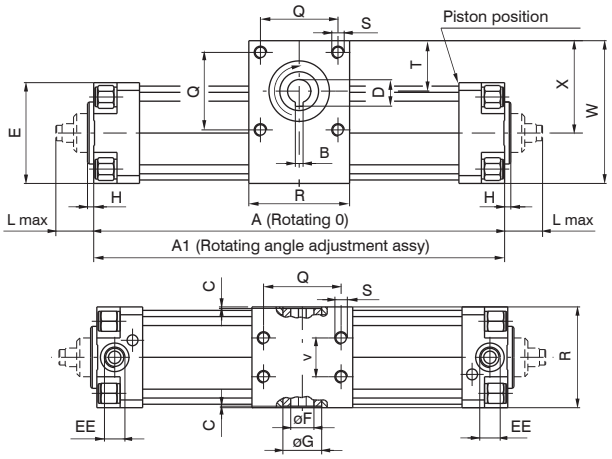
Bore	32	40	50	63	80	100
Torque moments Nm/bar	1,2	2,25	3,9	7,3	15,7	26,5
Axis load max. kg	8	10	10	12	18	22
Cushioning angle	60°	60°	50°	50°	40°	40°

Female pinion version

Coding: 133Ⓥ.Ø.Ⓐ.Ⓡ

Ⓥ	VERSION
	0 = magnetic
	1 = non-magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓐ	ROTATING ANGLE
	90 = 90°
	180 = 180°
	270 = 270°
	360 = 360°
Ⓡ	STANDARD ROTATION
	01 = basic version
	01R = with rotating adjustment

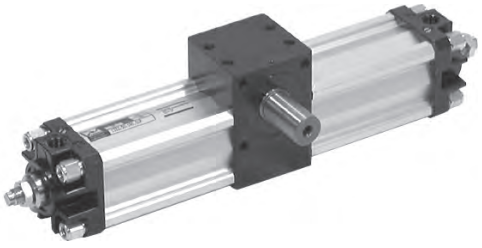


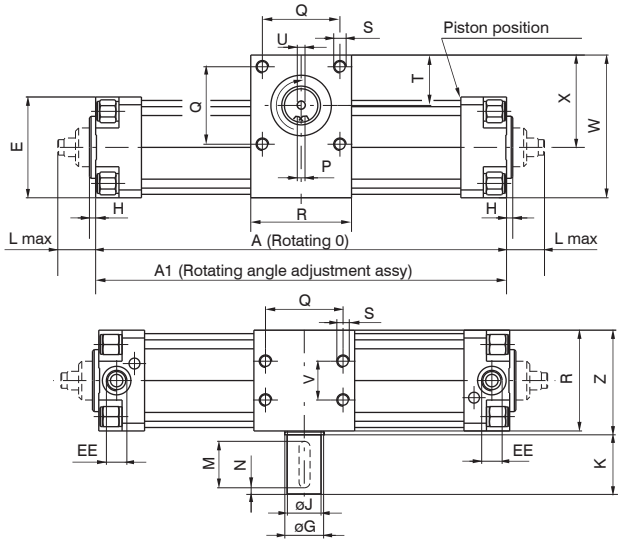


Male pinion version

Coding: 133Ⓥ.Ø.Ⓐ.Ⓡ

Ⓥ	VERSION
	2 = magnetic
	3 = non-magnetic
Ø	BORE
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓐ	ROTATING ANGLE
	90 = 90°
	180 = 180°
	270 = 270°
	360 = 360°
Ⓡ	STANDARD ROTATION
	01 = basic version
	01R = with rotating adjustment





Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Dimensions

Bore		32	40	50	63	80	100
A rot. 0°		171	195	202	233	268	300
A rot. 90°		218	252	265	308	378	427
A rot. 180°		265	308	328	382	488	555
A rot. 270°		312	364	390	457	598	682
A rot. 360°		359	421	453	531	708	809
A1 rot. 0°		174	198	206	237	274	307
A1 rot. 90°		221	255	269	312	384	434
A1 rot. 180°		268	311	332	386	494	562
A1 rot. 270°		315	367	394	461	604	689
A1 rot. 360°		362	424	457	535	714	816
B		5	5	5	6	6	8
C		1	1	1	1	1	1
D		17,3	17,3	17,3	20,8	22,8	28,3
E		46	52	65	75	95	115
Ø F (H 7)		15	15	15	18	20	25
Ø G		25	25	25	30	40	55
H		4	4	4	4	4	4
Ø J (h 7)		14	14	22	25	30	35
K		30	30	40	40	50	50
L max.		23	23	28,5	28,5	34,5	34,5
M		25	25	35	35	45	45
N		2,5	2,5	2,5	2,5	2,5	2,5
P		5	5	6	8	8	10
Q		33	40	50	60	80	80
R		50	60	65	75	100	115
S		M6	M6	M8	M8	M10	M10
T		27,5	35	32,5	35,5	50	54,5
U		M5	M5	M6	M8	M8	M10
V		18	22	25	35	50	60
W		71	85	92	105	141	162
X		48	59	59,5	67,5	93,5	104,5
Z		51	61	66	76	101	116
EE		G 1/8"	G 1/4"	G 1/4"	G 3/8"	G 3/8"	G 1/2"
Piston stroke every 10° of rotation		2,61	3,14	3,49	4,14	6,11	7,07
Female Pinion weight (g)	rot. 90°	1450	2020	3050	4850	10000	14900
	rot. 180°	1600	2240	3350	5350	11000	16350
	rot. 270°	1750	2460	3650	5850	12000	17800
	rot. 360°	1900	2680	3950	6350	13000	19250
Male Pinion weight (g)	rot. 90°	1550	2150	3280	5150	10500	15700
	rot. 180°	1700	2370	3580	5650	11500	17150
	rot. 270°	1850	2590	3880	6150	12500	18600
	rot. 360°	2000	2810	4180	6650	13500	20050

Sensor brackets codes - 1500._, RS._, HS._

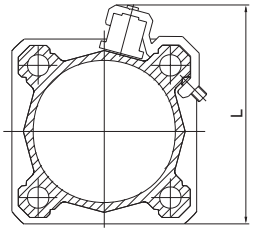
Coding: 1320.Ⓣ

Ⓣ	TYPE
	A = Ø32-Ø40
	B = Ø50-Ø63
	C = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	60	65	77	87	105	125

Sensor brackets codes - 1595.HAP

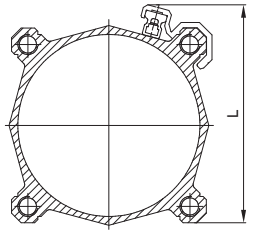
Coding: 1320.Ⓣ

Ⓣ	TYPE
	ASC = Ø32-Ø40
	BSC = Ø50-Ø63
	CSC = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L	60	65	77	87	105	125

Sensor brackets codes - 1580._,MRS._,MHS

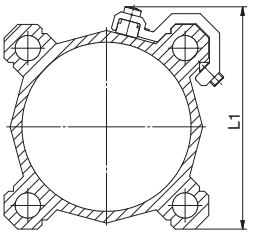
Coding: 1320.Ⓣ

Ⓣ	TYPE
	AS = Ø32-Ø40
	BS = Ø50-Ø63
	CS = Ø80-Ø100

Sensor for microbore cylinders

For technical characteristics and ordering codes see the "Magnetic sensors" sections





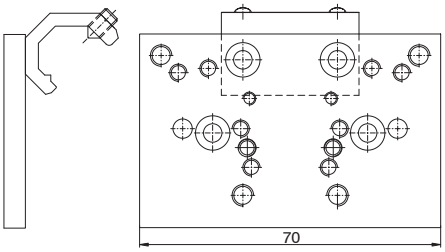
Bore	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
L1	48	54	66	76	96	112

Support for solenoid valves

Coding: 1320.Ⓣ

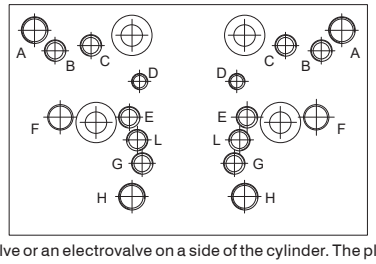
Ⓣ	SIZE
	15 = Ø32-Ø40
	16 = Ø50-Ø63
	17 = Ø80-Ø100





Fixing holes for valves series:

A = 414/2
B = 824
C = 828, T488, 488, 484
D = 2400
E = 2600
F = Bases for ISO solenoid valves
G = 858/2
H = T424
L = 888_



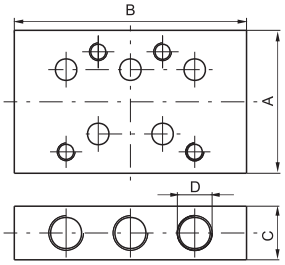
This accessory permits to mount a valve or an electrovalve on a side of the cylinder. The plate can be fitted on the cylinder profiled barrel, and, on it, can be mounted either a threaded distributor or a base on whic can be mounted an ISO distributor. Once installed the connections must be done with fittings and pipes. All of the threaded holes on the support plate are dedicated to different valves series as per attached drawing.

Bases for ISO solenoid valves

Coding: 1320.Ⓝ

Ⓝ	STANDARDS
	21 = ISO1
	22 = ISO2





Dimensions				
Bases for solenoid valves	A	B	C	D
ISO 1	40	75	15	G 1/8"
ISO 2	50	95	20	G 1/4"

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 6400 - Double rack rotary actuators with turn table

These rotary actuators convert linear motion of a piston into a rotary motion via a rack and pinion device,
using a single pinion-rack system for the 6411 version and a double system on 6400 versions.
The 6410 series actuators have fixed stops at 90 and 180 degrees; while on the 6400 series, rotation can be adjusted between 0 and 190 degrees using variable stops that can also be substituted with hydraulic stoppers (shock absorbers).
These devices are equipped with a rotating table upon which the load is fixed.

Body	anodized aluminium
Rack	steel
Rear end cap	anodized aluminium
Piston seals	NBR rubber
Pinion	steel
Turn table	anodized aluminium
Cushioning	elastic bumper (hydraulic damper available on request)
End caps	anodized aluminium

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Max. working pressure	10 bar (for type 100 and 200, 6 bar)
Temperature °C	-5 ... +70
Rotation angle range	0...190°
Max. rotation	190°
Rotation speed	s/90° (see rotation time table)

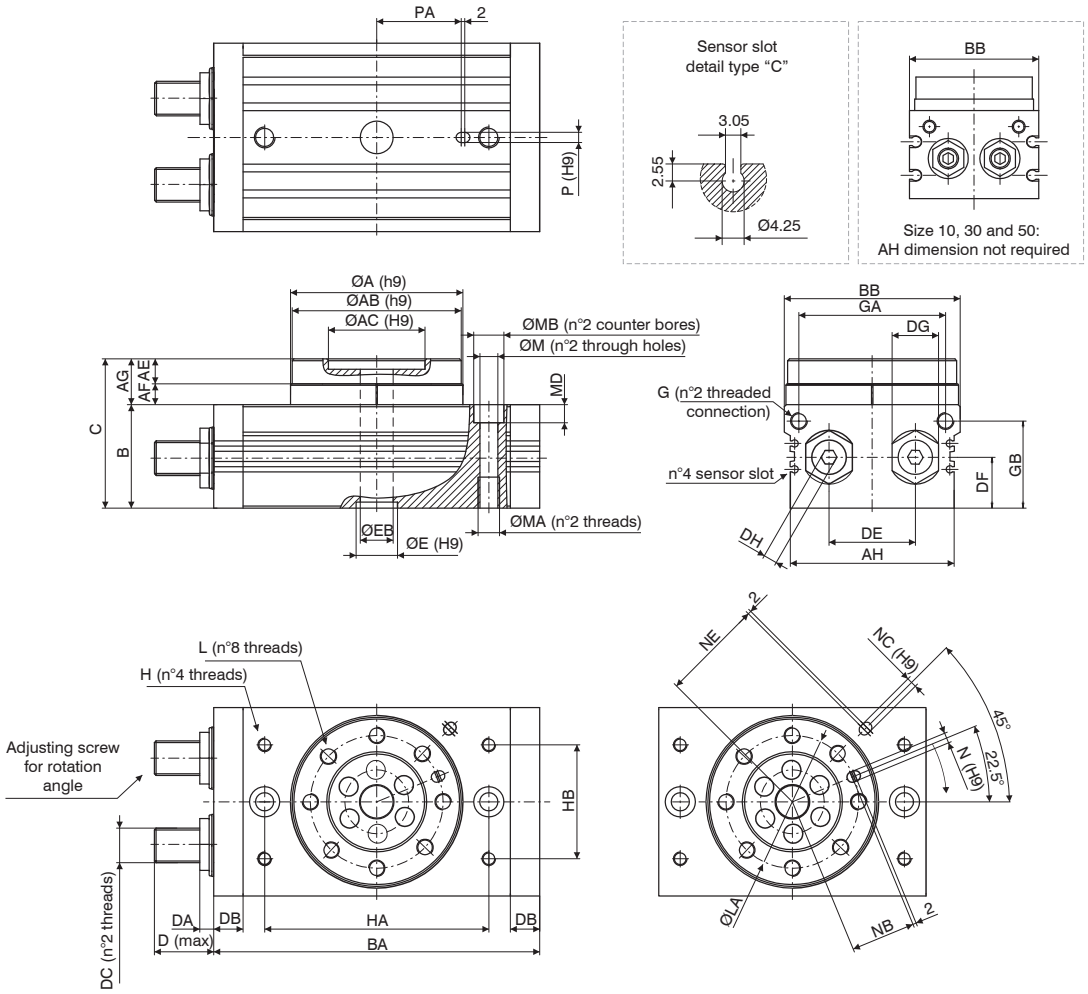
Double rack rotary actuators with turn table

Coding: 6400.Ⓟ.Ⓥ

Ⓟ	PISTON
	10 = (piston ø15)
	30 = (piston ø20)
	50 = (piston ø25)
	100 = (piston ø32)
	200 = (piston ø40)
Ⓥ	VERSION
	A = Standard
	R = Cushioning (Shock absorber)





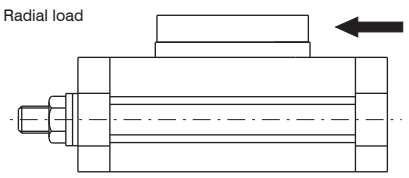


Size		10	30	50	100	200
Ø piston		Ø15	Ø21	Ø25	Ø32	Ø40
ØA^{h9}		46	67	77	100	118
ØAB^{h9}		45	65	75	98	116
ØAC^{h9}		20	32	35	56	64
	Useful depth	4	4,5	5	6	9
AE		8	10	12	14,5	16,5
AF		5	7	8	12,5	15,5
AG		13	17	20	27	32
AH		/	/	/	95	114
B$^{+0,5/0}$		34	40	46	59	74
BA		92	127	152	189	240
BB$^{+0,5/0}$		50	70	80	102	120
C$^{+0,5/0}$		47	57	66	86	106
D		17,7	25	31,4	34,3	40,2
DA		8,6	10,6	14	8	20
DB		9,5	12	15,5	17	24
DC		M8x1	M10x1	M14x1,5	M20x1,5	M27x1,5
DE		20	29	38	50	60
DF		15,5	18,5	22	29,5	36,5
DG		12	14	19	27	36
DH		4	5	6	8	10
ØE^{H9}		15	22	26	24	32
	Useful depth	3	3	3	3,5	5,5
ØEB		5	9	10	19	24
G		M5x0,8	G1/8	G1/8	G1/8	G1/8

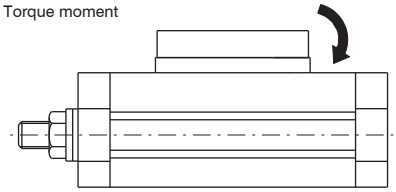
Size		10	30	50	100	200
Ø piston		Ø15	Ø21	Ø25	Ø32	Ø40
GA		34,5	50	63	85	103
GB		27,8	32	37,5	50,5	65,5
H		M5x0,8	M6x1	M8x1,25	M8x1,25	M12x1,75
	Useful depth	8	8	8	10	13
HA		60	84	100	130	150
HB		27	37	50	66	80
L		M5x0,8	M6x1	M8x1,25	M10x1,5	M12x1,75
	Useful depth	8	10	12	14,5	16,5
LA		32	48	55	77	90
M		6,8	8,6	10,5	10,4	14,2
MA		M8x1,25	M10x1,5	M12x1,75	M12x1,75	M16x2
	Useful depth	12	15	18	18	25
MB		11	14	18	17,5	20
MD		6,5	8,5	10,5	10,5	12,5
N^{H9}		3	4	5	6	8
	Useful depth	3,5	4,5	5,5	6,5	8,5
NB		15	23	26,5	37,5	44
NC^{H9}		/	/	/	6	8
	Useful depth	/	/	/	4,5	4,5
NE		/	/	/	59	69
P^{H9}		/	/	/	6	8
	Useful depth	/	/	/	4,5	6,5
PA		/	/	/	49	54
Weight (g)		530	1230	2080	4100	7650

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

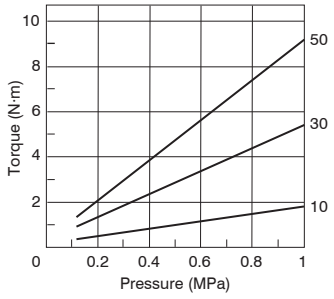
Permissible loads						
Size		10	30	50	100	200
Radial Load (N)		80	200	320	400	550
Axial Load (N)	Fc	80	370	450	710	1000
	Ft	75	200	300	500	750
Torque Moment (Nm)		2,5	5,5	9,5	18	25

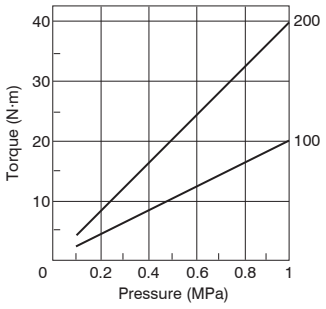






Torque Diagrams





Rotation time (sec./90°)

Dimension	With adjusting screw	With hydraulic decelerator
10 - 30 - 50	0,2 ... 1	0,2 ... 0,7
100	0,2 ... 2	0,2 ... 1
200	0,2 ... 2,5	0,2 ... 1

Kinetic energy (J)

Dimension	With adjusting screw	With hydraulic decelerator
10	0,006	Please apply to our tech-dpt for info (as general rule expressed valves can be multiplied by 3)
30	0,045	
50	0,08	
100	0,30	
200	0,52	

Series 6411

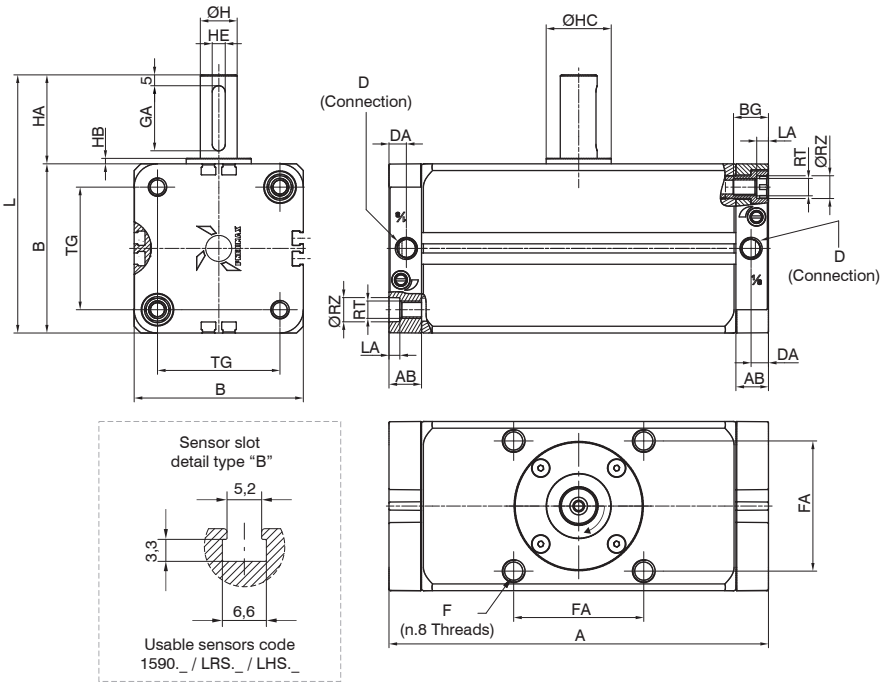
Single rack rotary actuators

Coding: 6411.Ø.Ⓥ

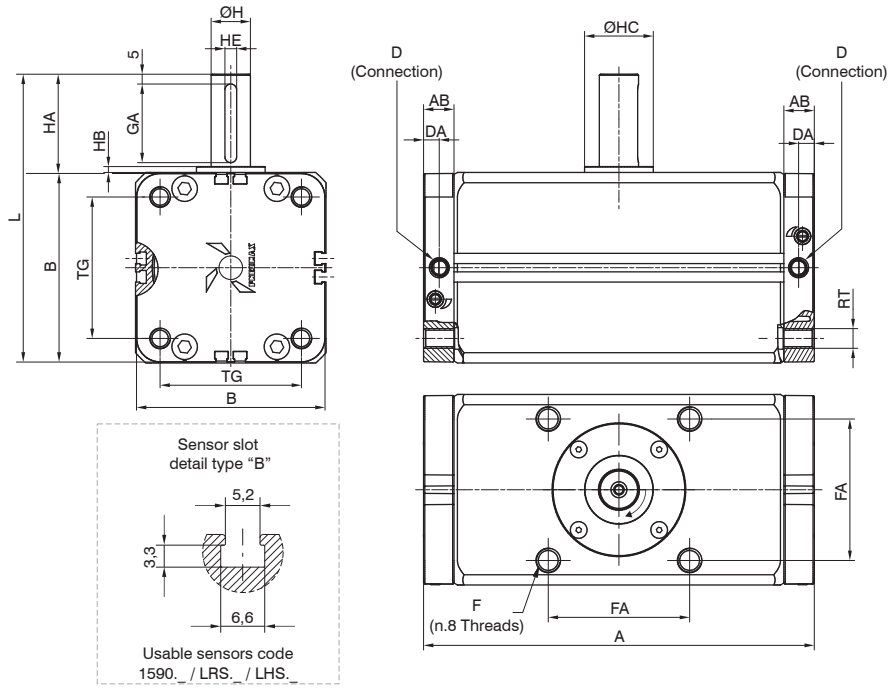
Ø	BORE
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓥ	VERSION
	90 = rotation 90°
	180 = rotation 180°



Overall dimensions Ø50 and Ø63



Overall dimensions Ø80 and Ø100



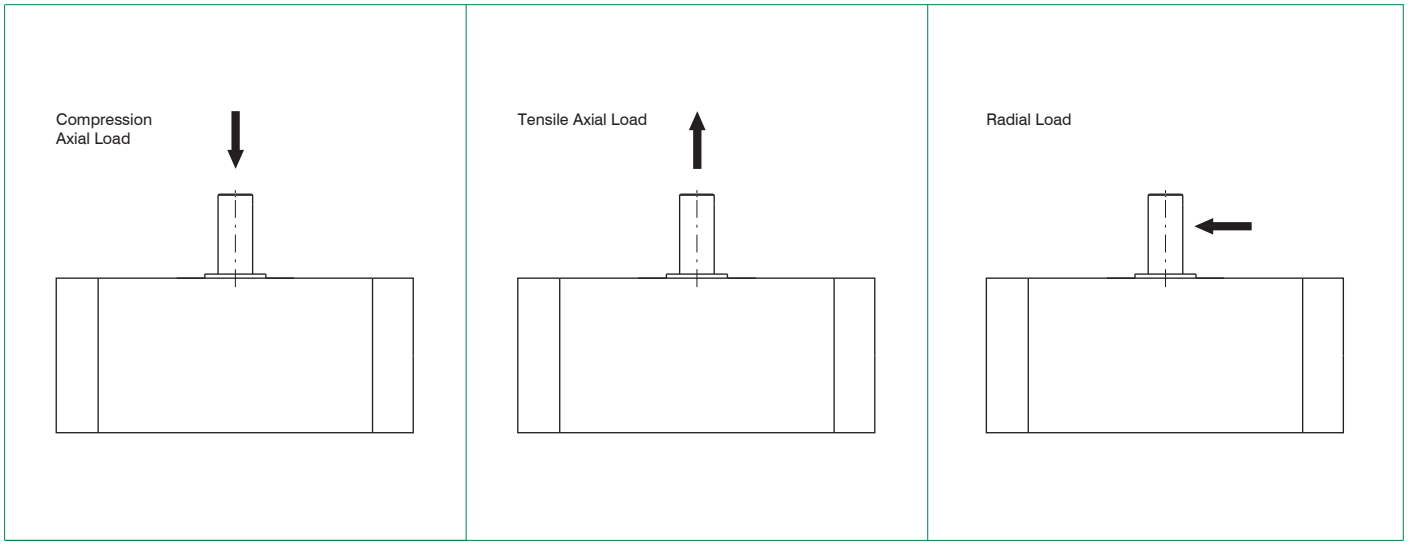
Bore		Ø50	Ø63	Ø80	Ø100
A	90°	156	175	199	259
	180°	189	214	243	325
AB		15	15	15,5	18,5
B		66	78	97	116
BG		16	16	/	/
D		G1/8	G1/8	G1/8	G1/8
DA		8	8	8	8
F		M8x1,25	M10x1,5	M12x1,75	M12x1,75
	Useful depth	12	15	15	18
FA		48	60	72	85
GA		25	30	40	45
H		15	17	20	25
HA		36	41	50	60
HB		2,5	2,5	3	4
HC		25	30	35	39,5
HEH9		5	6	6	8
L		102	119	147	176
LA		5	5	/	/
RT		M8	M8	M10	M10
RZ		10,5	10,5	/	/
TG		46,5	56,5	72	89
Weight (g)	90°	1575	2451	4162	6989
	180°	1815	2823	4774	8329

Construction characteristics	
Body	anodized aluminium
Rear end cap	anodized aluminium
Piston	aluminium
Piston seals	NBR rubber
Pinion	steel
Rack	steel

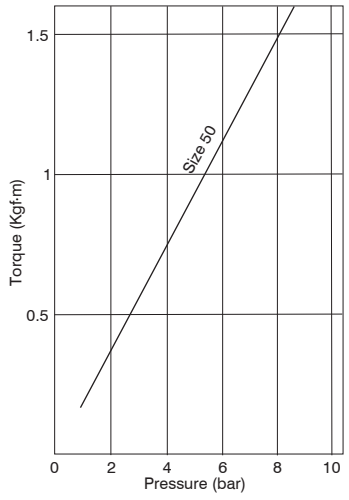
Operational characteristics	
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Max working pressure (bar)	10 bar
Temperature °C	-5 °C ... +70 °C
Rotation tolerance	0°...+4°

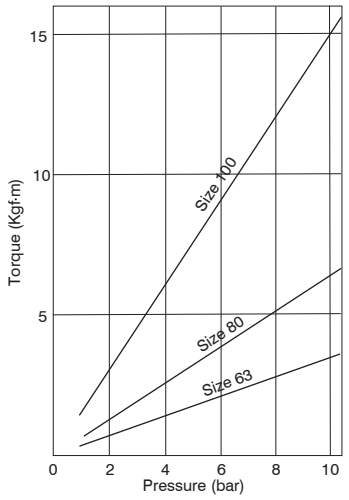
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Permissible Loads				
Bore	Ø50	Ø63	Ø80	Ø100
Radial Load (N)	200	300	400	600
Compression Axial Load	500	600	900	1000
Tensile Axial Load	200			



Torque Diagrams



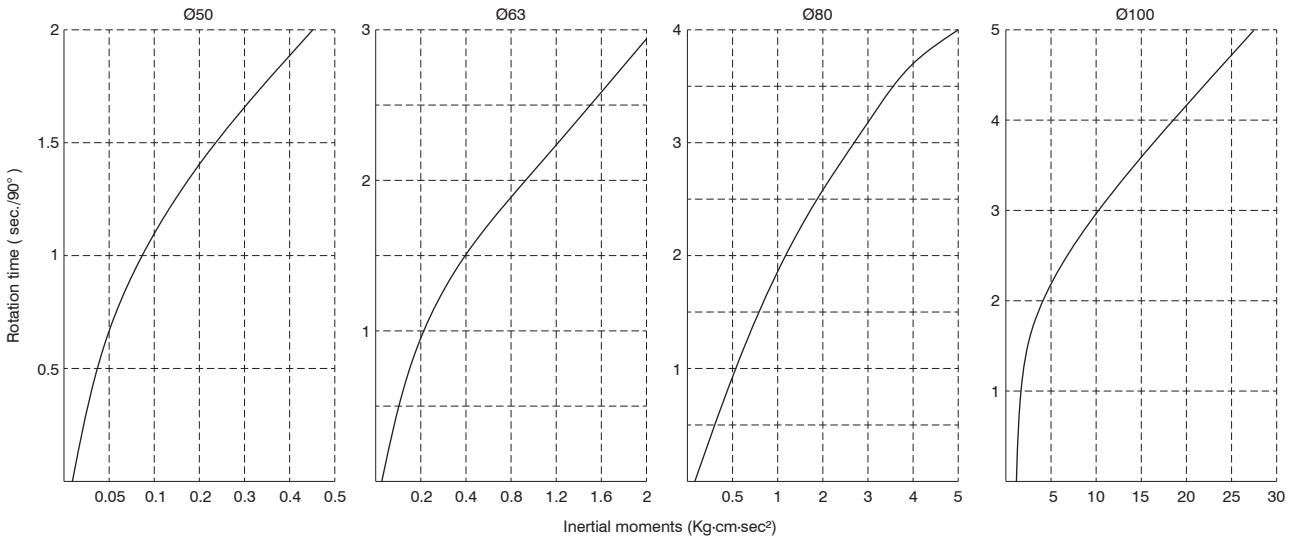


Max Kinetic energy (Kg·cm)

Kinetic energy (cushioning angle 35°)

Bore			
Ø50	Ø63	Ø80	Ø100
10	15	20	30

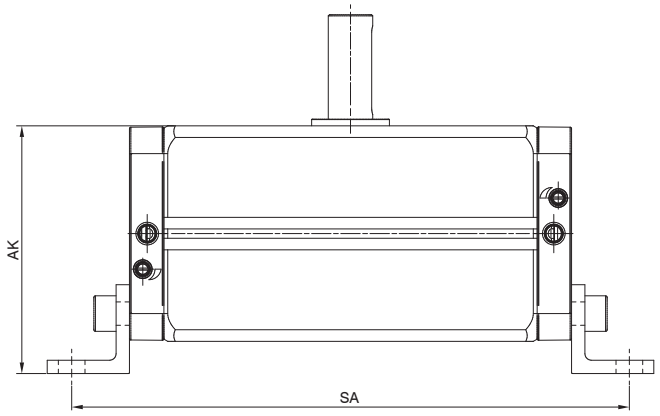
Rotation time according to inertial moments

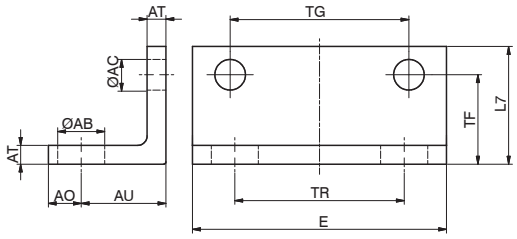


Short mounting foot brackets (in sheet metal MS1)

Coding: 1540.Ø.05/1F
The kit comprises:
n° 1 foot (plated zinc steel)
n° 2 screws (plated zinc steel)







Bore		Ø50	Ø63	Ø80	Ø100
AK		78	89	111,5	132
SA	90°	198	217	251	313
	180°	231	256	295	379

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 6420

Vane type rotary actuators

Coding: 6420.Ø.Ⓡ.Ⓥ

Ø	SIZE
	10 = Ø10
	15 = Ø15
	20 = Ø20
	30 = Ø30
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
Ⓡ	ROTATING ANGLE
	90 = 90°
	180 = 180°
	270 = 270°
Ⓥ	VERSION
	= Without adjustable rotation angle, and without sensor support
	R = With adjustable rotation angle
	S = With sensor supports
	T = With adjustable rotation angle and sensor supports

The vane type rotary actuators, 6420 series is designed to operate at 90-180 or 270 deg. in a contained space. Dimensionally are more compact than other types of rotary actuators.
The range includes bore sizes from 10 to 100 in 4 configurations:

- basic
- with adjustable rotation angle
- with sensor supports
- with adjustable rotation angle and sensor supports

The bodies are in aluminium , the shafts in chrome plated steel and the seals in NBR. The sensing support kit enables for the sensors to be positioned in any position. The rotary angle adjustment mechanism enables the adjustment of the complete rotation on bore sizes 10 to 40 while on the others sizes carries as standard hydraulic dampers which enable the adjustment only of the last part of the rotation. The units can be fixed using the thread on the body or the through holes on the body. On bore sizes 50 to 100 the shaft runs into ball bearings which ensure high resistence.

Construction characteristics	
Body	anodized aluminium
Piston rod	steel
Seals	NBR
Vane	vulcanized NBR rubber on steel core
Cushioning	elastic bumper; hydraulic dampers from size Ø50 ... Ø100 versions R or T

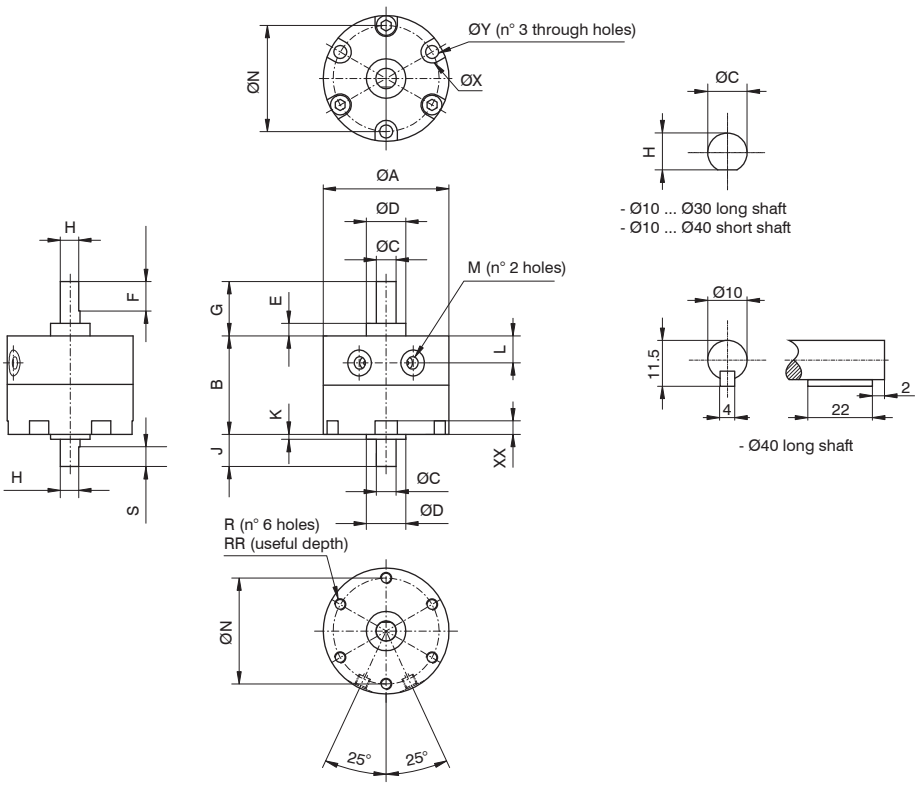
Operational characteristics	
Fluid	filtered air, preferably lubricated
Rotation range	90° - 180° - 270°
Working pressure (bar)	1,5...7
Temperature °C	0 ... +50
Max. allowed leak	Ø10...Ø40 = 0,3 Nl/min / Ø50...Ø100 = 0,5 Nl/min

Overall dimensions Ø10 ... Ø40





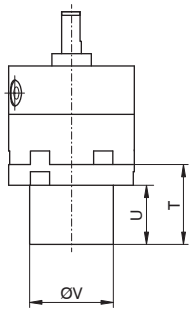




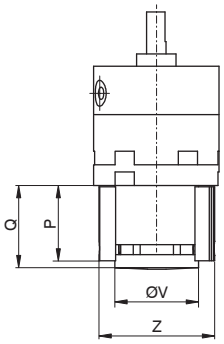
3

PNEUMATIC ACTUATION

Adjustable rotation angle version



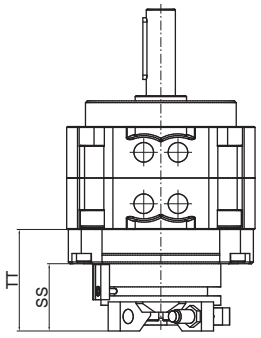
With sensor support version



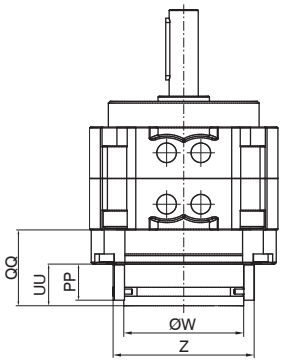
Bore - Rotation	10 - 90° / 10 - 180° / 10 - 270°	15 - 90° / 15 - 180° / 15 - 270°	20 - 90° / 20 - 180° / 20 - 270°	30 - 90° / 30 - 180° / 30 - 270°	40 - 90° / 40 - 180° / 40 - 270°
ØA	30	35	44	51	64
B	17	20,1	29,1	40	45
ØC	4	5	6	8	10
ØD	9	12	14	16	25
E	3	4	4,5	5	6,5
F	9	10	10	12	22
G	14	18	20,3	22	30
H	3,5	4,5	5,5	7,5	9
J	8	9	9,6	13	15
K	1	1,5	1,6	2	4,5
L	4,2	5	8,5	11	9,5
M	M5x0,8	M5x0,8	M5x0,8	M5x0,8	M5x0,8
ØN	24	29	36	43	56
P	23,3	28	28	30,8	33
Q	24	29,5	30,5	34	36
R	M3x0,5	M3x0,5	M4x0,7	M5x0,8	M5x0,8
RR	3	3	4,5	9	9
S	5	6	7	8	9
T	24	28	28,5	32,5	34,5
U	18	22	21	24	26
ØV	18	24	30	34	34
ØX	6	6	7,5	9	9
XX	3,5	3,5	4,5	5,5	5,5
ØY	2,3	2,3	3,2	4,2	4,2
Z	29	34	42	47	47
Weight (g) Base	28	48	112	200	342
Weight (g) With regulation rotation system	78	116	240	390	805

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

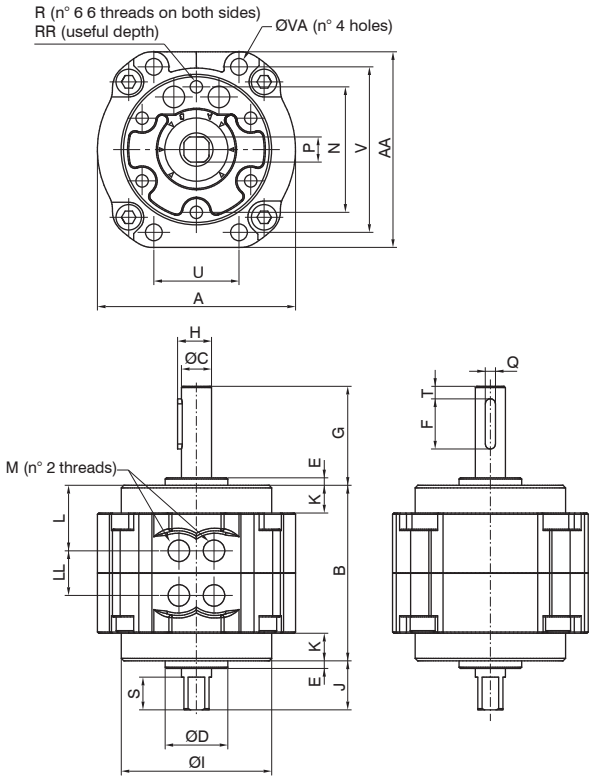
Adjustable rotation angle version



With sensor support version



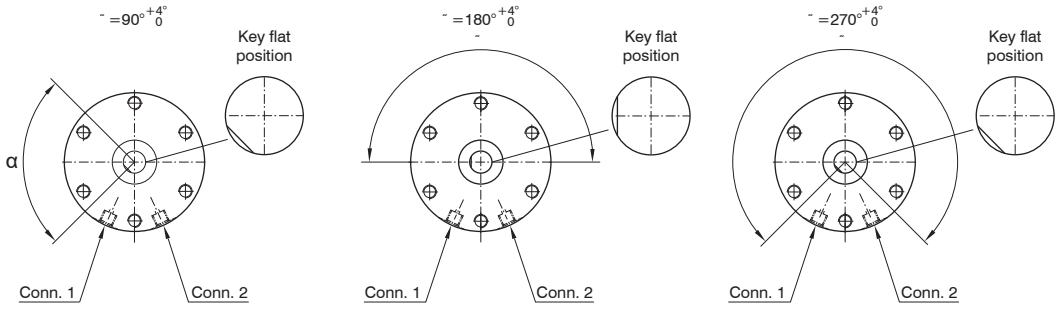
Overall dimensions Ø50 ... Ø100



Bore - Rotation	50 - 90°	63 - 90°	80 - 90°	100 - 90°
	50 - 180°	63 - 180°	80 - 180°	100 - 180°
	50 - 270°	63 - 270°	80 - 270°	100 - 270°
A	79	98	110	140
AA	78	98	110	140
B	70	80	90	103
ØC	12	15	17	25
ØD	25	28	30	45
E	3	3	3	4
F	20	25	36	40
G	39,5	45	53,5	65
H	13,5	17	19	29
ØI	60	75	88	108
J	19,5	21	23,5	30
K	11	14	15	11,5
L	26	28,9	30	35,4
LL	18	22,2	30	32,2
M	G1/8"	G1/8"	G1/4"	G1/4"
N	50	60	70	80
P	10	12	13	19
PP	21	21	21	21
Q	4	5	5	7
QQ	39,4	43	44	48,5
R	M6x1	M8x1,25	M8x1,25	M10x1,5
RR	8	10	14	14
S	13	14	16	16
SS	38	38	39	39,5
T	5	7,5	5	5
TT	53	56,5	59	63
U	34	39	48	60
UU	24,5	24,5	24,5	24,5
V	66	83	94	120
ØVA	6,5	9	9	11
ØW	60	60	70	70
Z	73	73	83	83
Weight (g) Base	760	1290	1920	4100
Weight (g) With regulation rotation system	1100	1690	2370	4840

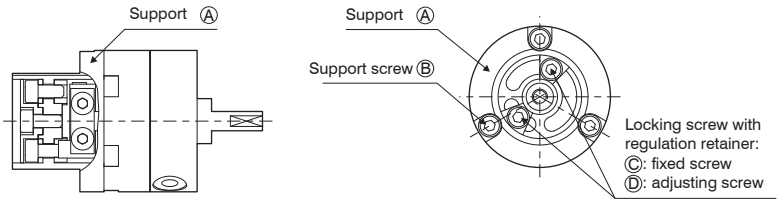
Spline position and adjustable rotation angle Ø10 ... Ø40

ROTATING SHAFT KEY FLAT POSITION



ROTATION ANGLE SETUP

To regulate the rotation angle (codes 6420..R or T), follow the instructions below

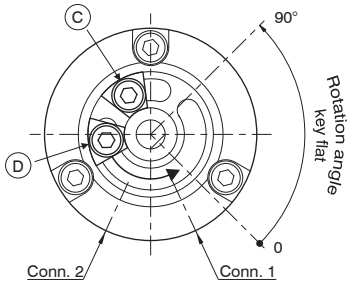


Phase 1: choose the regulation configuration based on the following options (consider the actuator base position):
rotation 90°, **regulation 0 ... 90°**, **rotation 180°**, **regulation 0 ... 180°**, **rotation 270°**, **regulation 0 ... 175°**

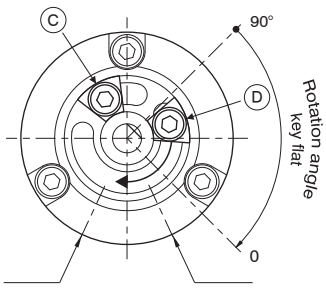
ROTATION CONFIGURATION

90°

Standard version
from 0° to 90°



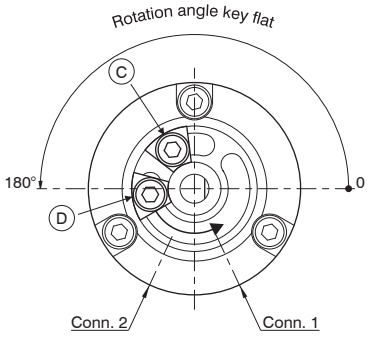
from 90° to 0°



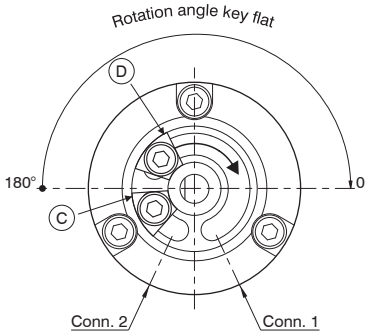
ROTATION CONFIGURATION

180°

Standard version
from 0° to 180°



from 180° to 0°



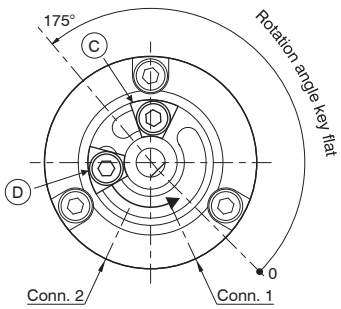
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Spline position and adjustable rotation angle Ø10 ... Ø40

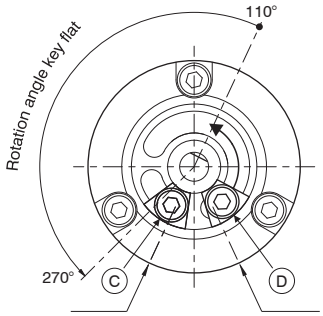
ROTATION CONFIGURATION

270°

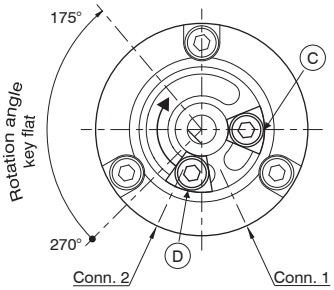
Standard version
from 0° to 175°



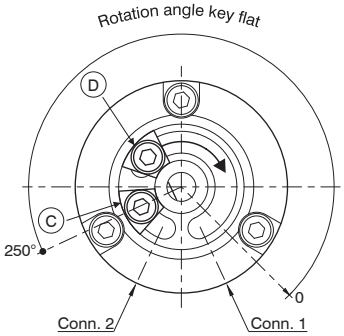
from 110° to 270°



from 270° to 175°



from 250° to 0°

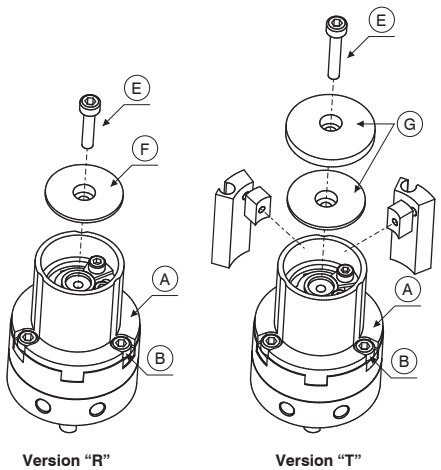


Ⓒ = **Fixed screw** Ⓓ = **Adjusting screw**

Phase 2: if the desired settings do not correspond to the basic version settings:

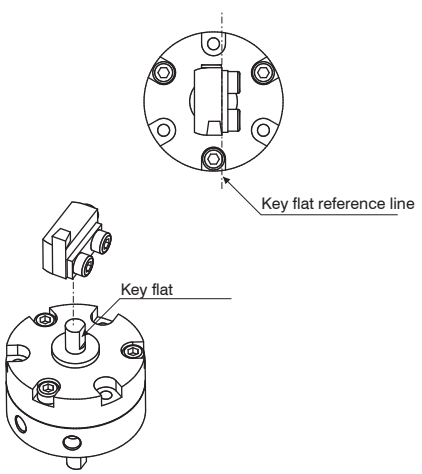
- remove screw Ⓔ and disk Ⓕ or Ⓖ (depending on the version) (see figure 1)
- remove screws Ⓑ, the actuator support Ⓐ (see figure 1) and unlock blocking screws Ⓒ and Ⓓ (see rotation configuration)
- position screws Ⓒ and Ⓓ and the key flat of rotating shaft as indicated in the chosen rotation configuration in order to align the key flat of rotating shaft (see figure 2)
- re-assemble actuator support Ⓐ, tighten screws Ⓑ
- position screws Ⓒ and Ⓓ according to the desired adjustment and tighten the screws
- re-assemble disk Ⓕ or Ⓖ and screw Ⓔ

Figure 1



Version "R" **Version "T"**

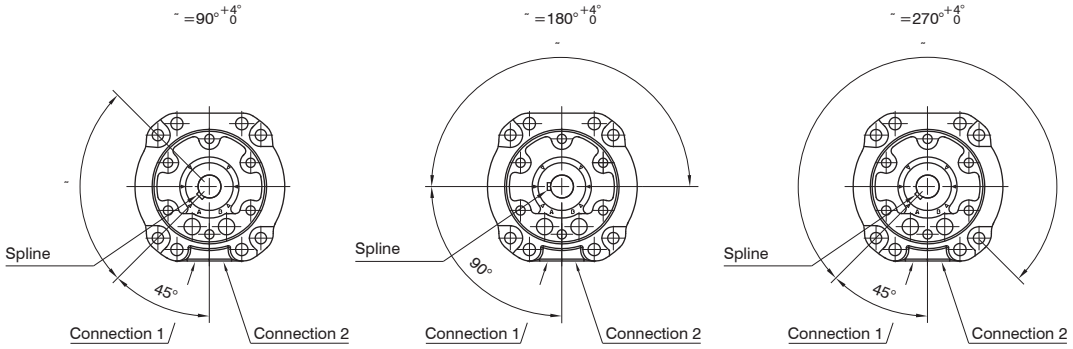
Figure 2



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Spline position and adjustable rotation angle Ø50 ... Ø100

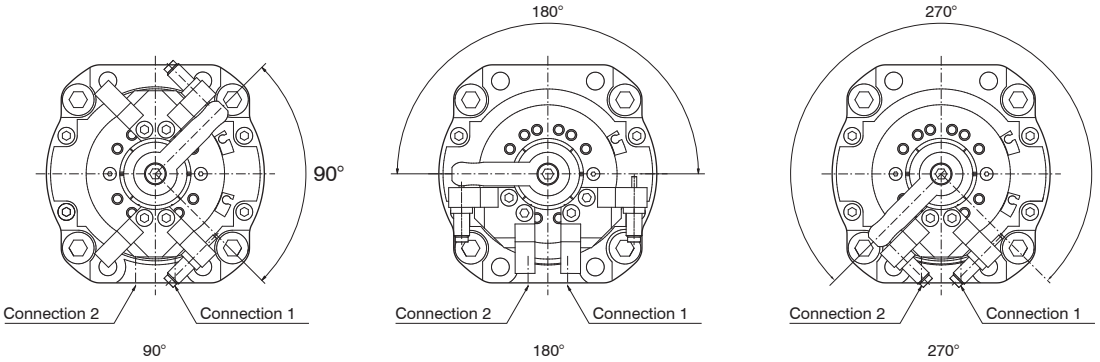
ROTATING SHAFT SPLINE POSITION



ROTATION ANGLE SETUP

The version with adjustable rotation angle (cod. 6420..R or T) is available with hydraulic shock absorbers which enable to regulate the rotation angle by 15° and to decelerate moving mass.
Example:

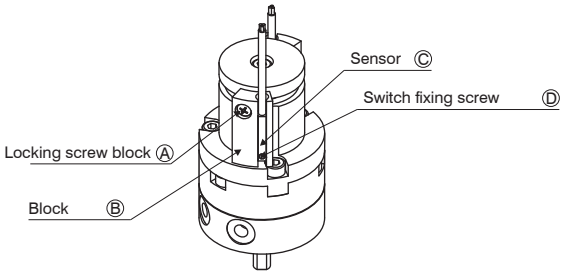
- 90° rotation - 15° for each deceleration = 60°
- 180° rotation - 15° for each deceleration = 150°
- 270° rotation - 15° for each deceleration = 240°

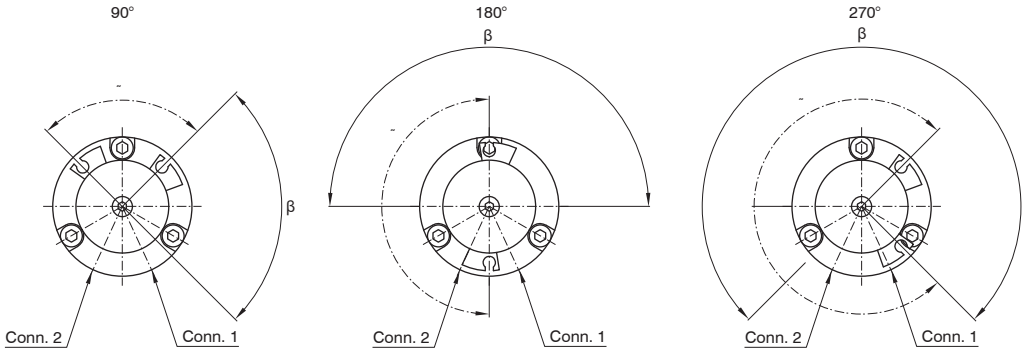


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Switch positioning instructions Ø10 ... Ø40

Phase 1: unfasten screw Ⓐ
Phase 2: assemble the switch Ⓒ into the dedicated housing Ⓑ and lock with screw Ⓓ
Phase 3: rotate block Ⓑ in the desired position (see following image)





α: magnet rotating angle
β: shaft key flat rotating angle
For correct functionality position the switch within angle **α**
Phase 4: tighten screw Ⓐ
Phase 5: repeat the following phases for the second switch

AVAILABLE SENSORS



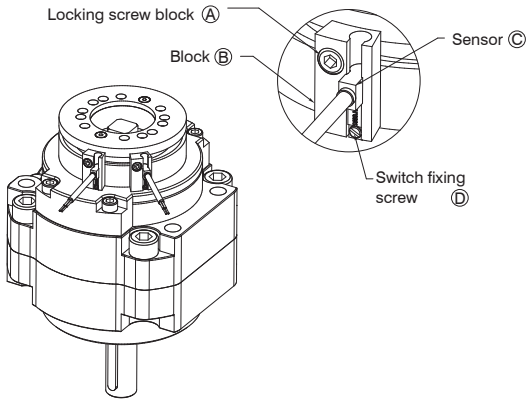
Code
1581.U
TRS.U
1581.HAP
THS.P

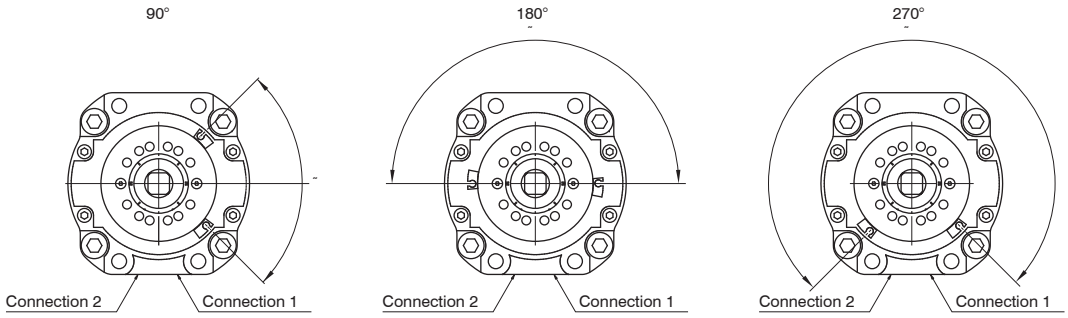


Code
1583.DC
1583.HAP
THR.P

Switch positioning instructions Ø50 ... Ø100

Phase 1: unfasten screw Ⓐ
Phase 2: assemble the switch Ⓒ into the dedicated housing Ⓑ and lock with screw Ⓓ
Phase 3: rotate block Ⓑ in the desired position (see following image)





α: magnet rotating angle (that corresponds to the shaft key flat rotating angle)
For correct functionality position the switch within angle **α**
Phase 4: tighten screw Ⓐ
Phase 5: repeat the following phases for the second switch

AVAILABLE SENSORS

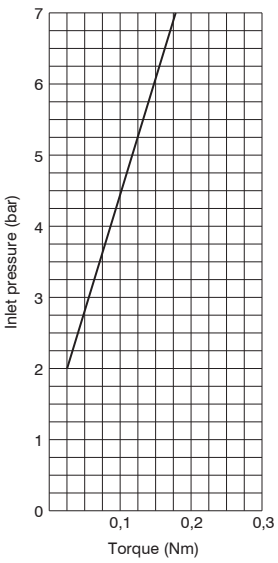


Code
1583.DC
1583.HAP
THR.P

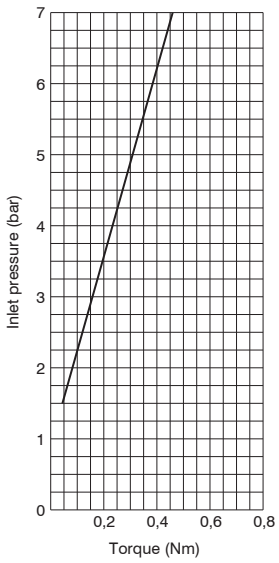
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Available torques

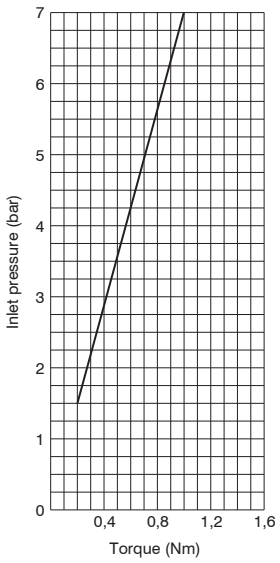
Ø10



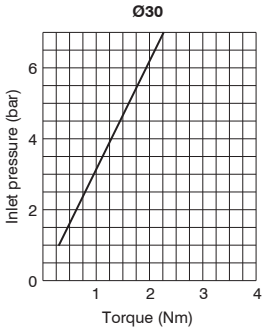
Ø15



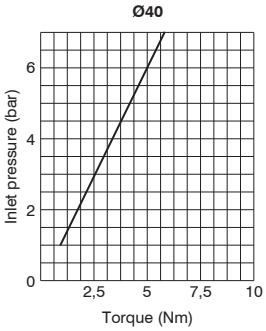
Ø20



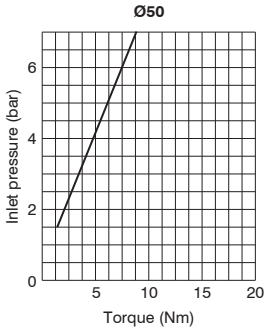
Ø30



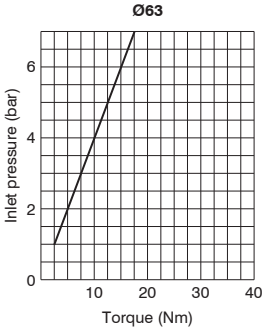
Ø40



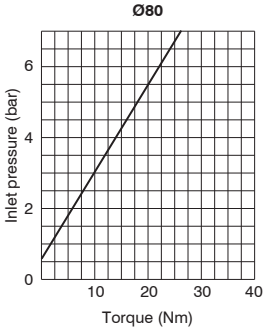
Ø50



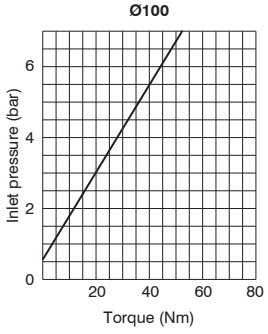
Ø63



Ø80



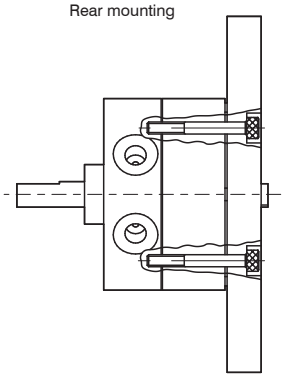
Ø100



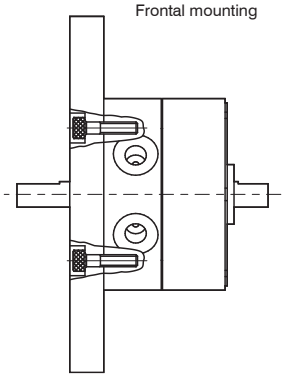
Direct mounting

Mounting types

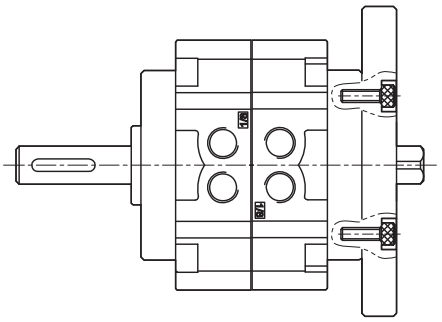
Rear mounting



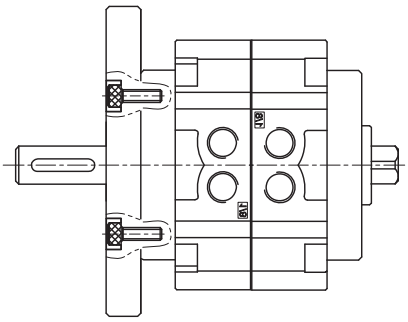
Frontal mounting



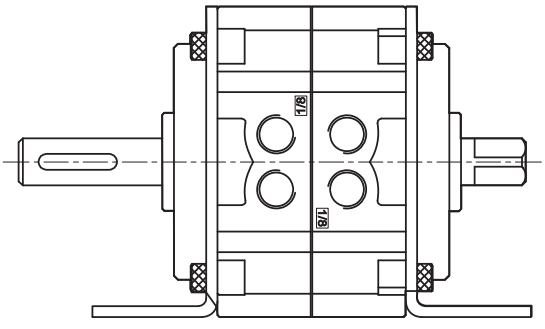
Rear mounting



Frontal mounting



Mounting with flanges



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 6300

Pneumatic grippers from the 6300 series are typically used in complex systems such as assembly machines, robots, manipulators etc. This series covers the wide range requirements of this sector, allowing a variety of applications.
The range includes grippers equipped with holding fingers operating from -10° to +30° degrees, with 180° degree opening, or a parallel guided gripper with great rigidity throughout the stroke.
The parallel grippers cater for larger openings (three different strokes for each diameter) with synchronised operation via a pinion-rack system with high strength thanks to a double piston mechanism.
For the typical application of supplying a piece upon to a machine tool, make provision for an automatic three-pronged movement carried along by a wedge mechanism, containing the elevated force dimensions.
The holding fingers can have a tolerance reference as a precise fixing device for the catching mechanism.
Every type of "hand" offers different functional levels of performance at varying diameters and lengths, secondary to the application by the "fingers".

Construction characteristics

	Materials	Series					
Body	Anodized aluminium	6301	6302	6303	6310	6311	6312
Piston	AISI 303 stainless steel	6301	/	/	/	/	/
	Aluminium	/	6302	6303	/	6311	6312
	Aluminium or stainless steel (based on bore)	/	/	/	6310	/	/
Fingers	Steel	6301	6302	6303	6310	/	6312
	Anodized aluminium	/	/	/	/	6311	/
Rear end cap	Anodized aluminium	6301	6302	6303	6310	/	/
Seals	oil resistant NBR rubber	6301	/	/	6310	/	/
Piston rod	Steel	/	/	/	/	6311	/
Rack	Steel	/	/	/	/	6311	/
Pinion	Steel	/	/	/	/	6311	/
Wedge	Steel	/	/	/	/	/	6312

Operational characteristics

	All series
Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Working pressure	1 ... 6 bar (double acting) - 2.5 ... 6 bar (single acting)
Working temperature	-5 °C ... +70 °C

	6301	6302	6303	6310	6311	6312
Opening total stroke	-10° ... 30°	-3° ... 180°	-5° ... 180°	/	/	/
Maximum operating frequency	from Ø10 to Ø25, 190 cycles/minute	from Ø10 to Ø25, 60 cycles/minute	from Ø20 to Ø25, 60 cycles/minute from Ø32 to Ø50, 30 cycles/minute	from Ø10 to Ø25, 180 cycles/minute	/	from Ø16 to Ø25, 120 cycles/minute from Ø32 to Ø63, 60 cycles/minute from Ø80 to Ø125, 30 cycles/minute
Working pressure	/	/	/	/	Ø10: 1.5 … 6 bar Ø16 … Ø40: 1 … 6 bar	2 … 6 bar (Ø16-Ø20-Ø25) 1 … 6 bar (Ø32 ... Ø125)
Function	/	/	/	/	Double acting	Double acting

	6301		
	Bore	Double acting	Single acting
Holding force (Nm) at 5 bar	Ø10	0,1	0,07
	Ø16	0,4	0,30
	Ø20	0,7	0,55
	Ø25	1,35	1,08

Pneumatic grippers, angular - Standard version

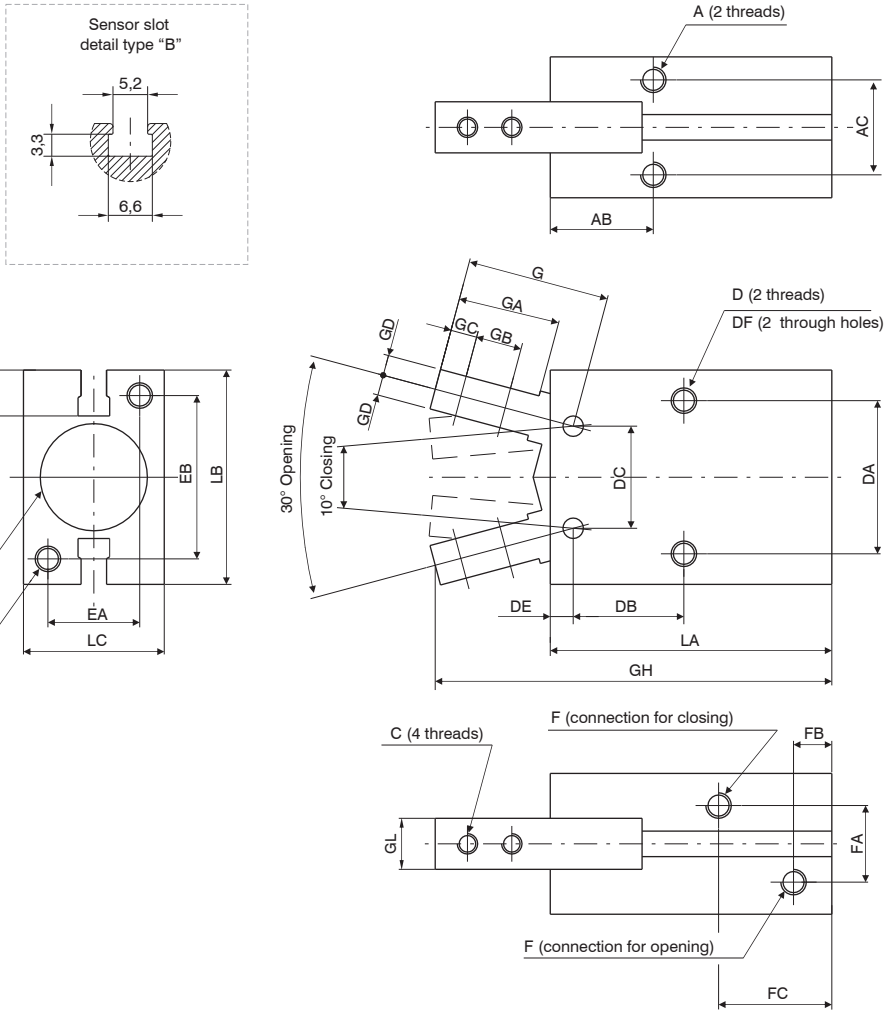
Coding: 6301.Ø.Ⓥ

Ø	BORE
	10 = Ø10
	16 = Ø16
	20 = Ø20
	25 = Ø25
Ⓥ	VERSION
	D = Double acting
	S = Single acting (N.O.)

Overall dimensions

Bore		Ø10	Ø16	Ø20	Ø25
A		M3x0,5	M4x0,7	M5x0,8	M6
	Useful depth	6	6,5	8	10
AB		11,6	14,6	20,2	23,9
AC		11,4	16	18,6	22
C		M2,5x0,45	M3x0,5	M4x0,7	M5x0,8
D		M3x0,5	M4x0,7	M5x0,8	M6
	Useful depth	5	8	10	12
DA		16	24	30	36
DB		12,8	16,2	21,7	25,8
DC		10	16	20	25
DE		2,8	3,9	4,5	4,6
DF		2,6	3,4	4,3	5,1
E		M3x0,5	M4x0,7	M5x0,8	M6
	Useful depth	6	8	10	12
EA		12	15	18	22
EB		18	22	32	40
F		M3x0,5	M5x0,8	M5x0,8	M5x0,8
FA		11	13	15	20
FB		7,2	7	7,5	7,7
FC		18,8	18,3	22,2	23,5
G		17,2	22,6	28	37,5
GA		12	16	20	27
GB		5,7	7	9	12
GC		3	4	5,2	8
GD		2	3,5	4	5
GH		52,4	62,5	78,7	92
$GL^{0/-0,1}$		6,4	8	10	12
LA		38,6	44,6	55,2	60,4
LB		23	30,6	42	52
LC		16,4	23,6	27,6	33,6
M^{H9}		11	17	21	26
PA		5,4	5,8	9	11,5
Weight (g)		40	90	180	315





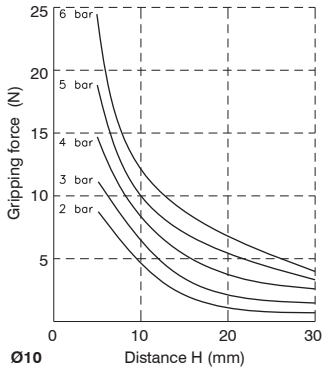
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Gripping force 5 bar (Nm)

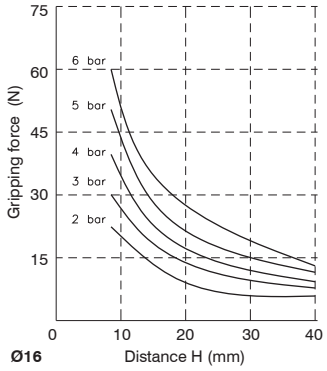
Bore	Ø10	Ø16	Ø20	Ø25
Double acting (Nm)	0,1	0,4	0,7	1,35
Single acting (Nm)	0,07	0,3	0,55	1,08

Note: Bore selection should be made considering a holding force 10 to 20 times the component weight.
In case of acceleration/deceleration a further margin of safety should be considered.

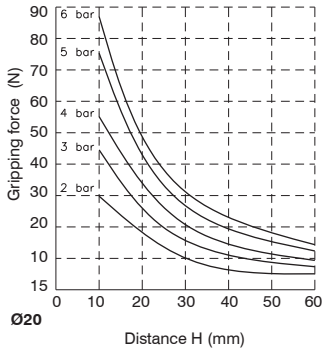
Double acting



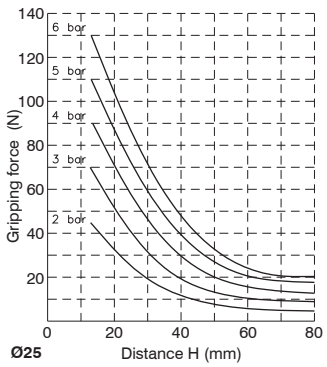
Ø10



Ø16

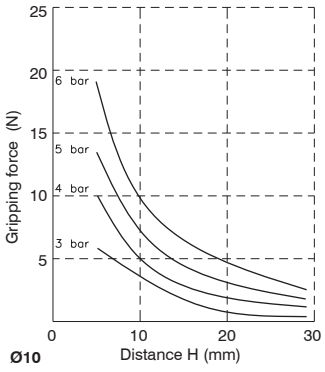


Ø20

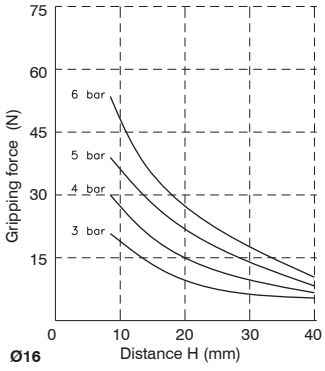


Ø25

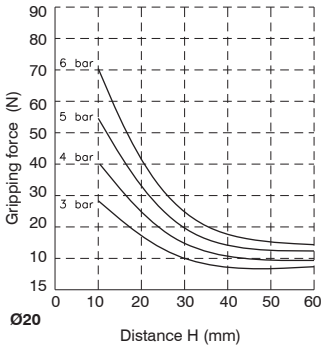
Single acting



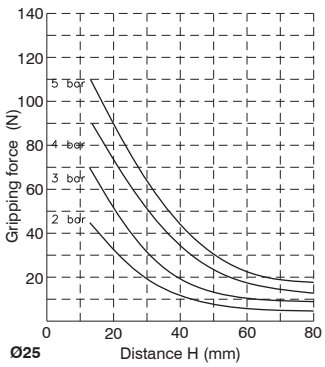
Ø10



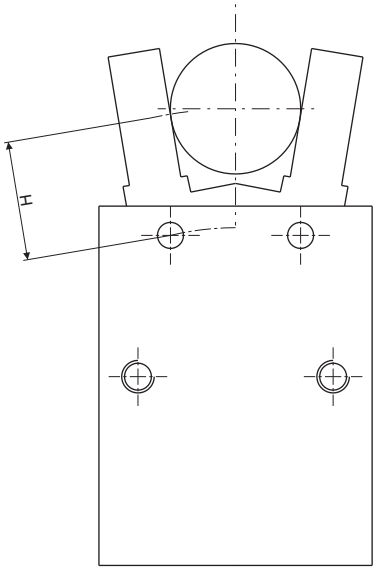
Ø16



Ø20



Ø25



Pneumatic grippers, 180 °angular

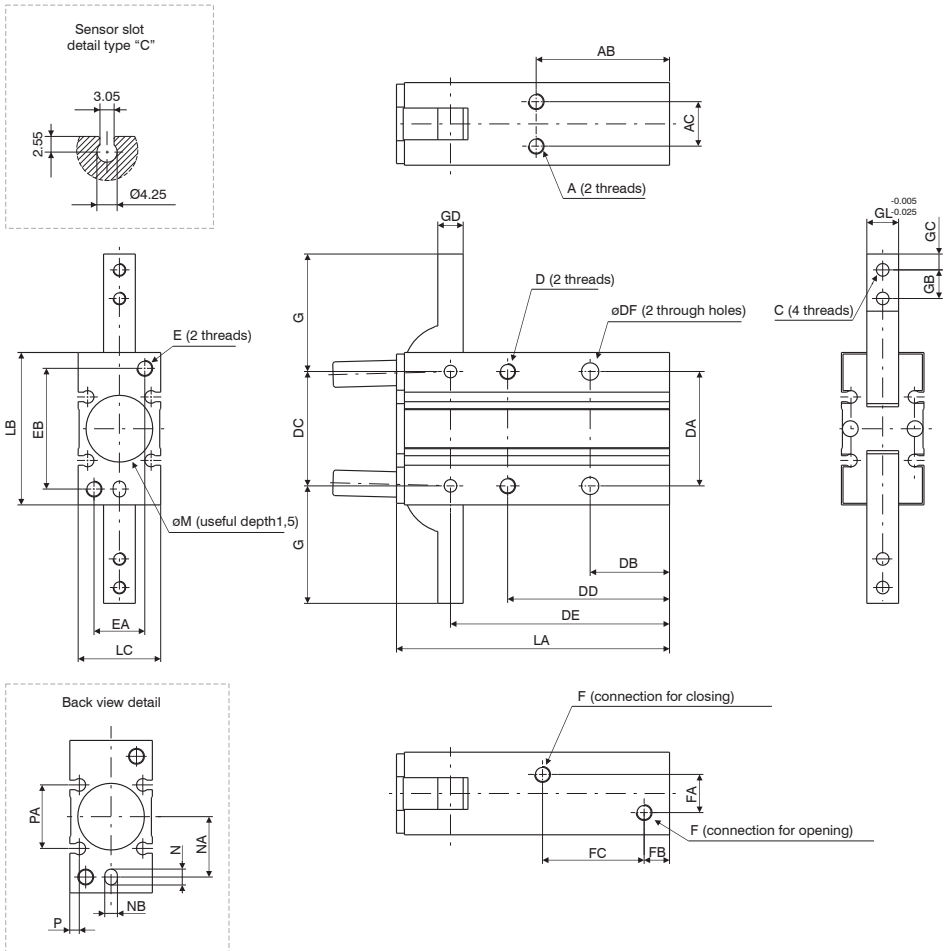
Coding: 6302.Ø.D

Ø	BORE
	10 = Ø10
	16 = Ø16
	20 = Ø20
	25 = Ø25



Overall dimensions

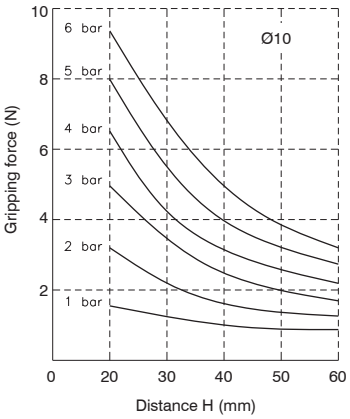
Bore		Ø10	Ø16	Ø20	Ø25
A		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	4	5	8	10
AB		30	33	42	50
AC		9	12	14	16
C		M3x0,5	M3x0,5	M4x0,7	M5x0,8
D		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	6	8	10	12
DA		24	30	36	42
DB		18	20	25	30
DC		22	28	36	45
DD		35	41	50	60
DE		47,5	55,5	69	86
DF		3,4	4,5	5,5	6,6
E		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	6	8	10	12
EA		9	12	16	18
EB		24	30	38	46
F		M5x0,8	M5x0,8	M5x0,8	M5x0,8
FA		3	8	12	14
FB		7	7	8	8
FC		23	25	32	42
G		23,5	28,5	37	45
GB		6	7	9	12
GC		3	4	5	6
GD		4	5	8	10
GL		6	8	10	12
LA		58	69	86	107
LB		30	38	48	58
LC		15	20	26	30
N		4	4	5	5
	Useful depth	3	3	4	4
NO		9	15	19	23
ØM^{H9}		11	17	21	26
ØNB^{H9}		3	3	4	4
P		2	2,5	3	3
PA		13	18	20	24
Weight (g)		70	150	320	550

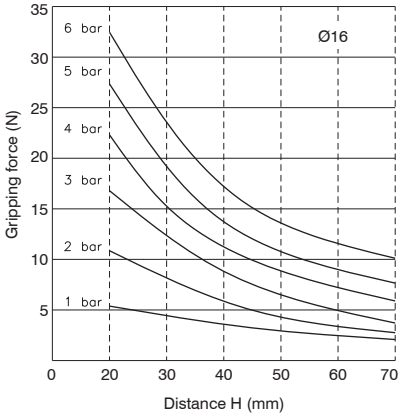


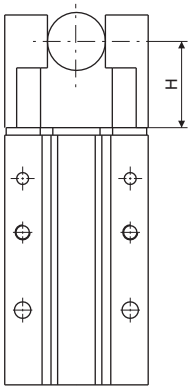
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

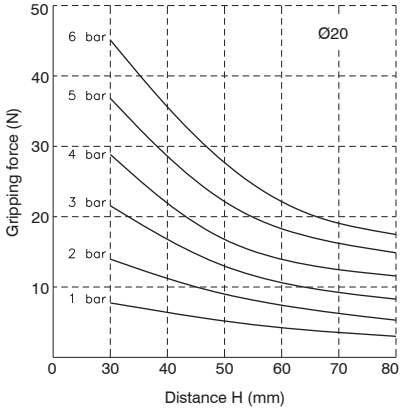
Gripping force 5 bar (Nm)

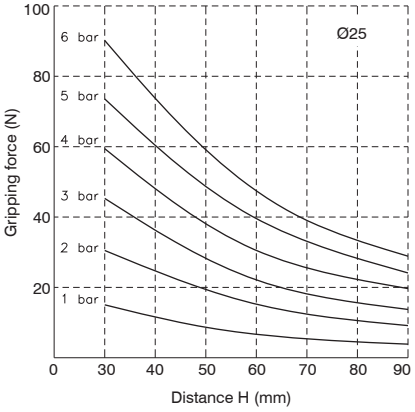
Bore	Ø10	Ø16	Ø20	Ø25
(Nm)	0,16	0,54	1,1	2,28



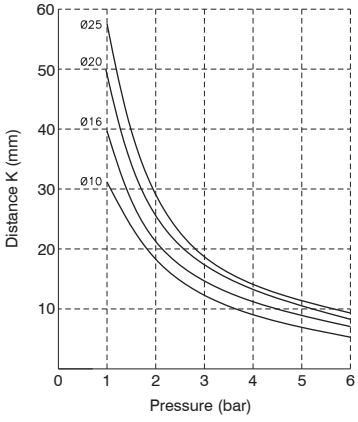


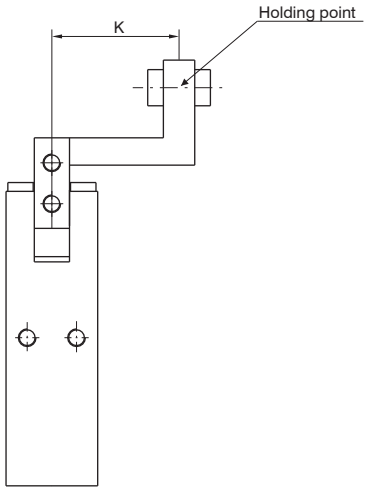






Confirmation of Holding point





Applications where the holding point is outside the recommended parameters shown on the above graph might affect the product life.

180° angular gripper rack & pinion style

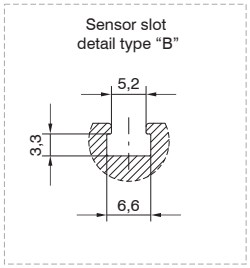
Coding: 6303.Ø.D(V)

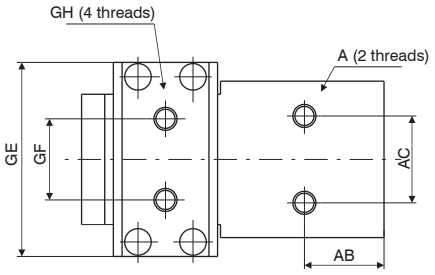
Ø	BORE
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
(V)	FINGERS
	F = Fingers, end fixing
	L = Fingers, side fixing

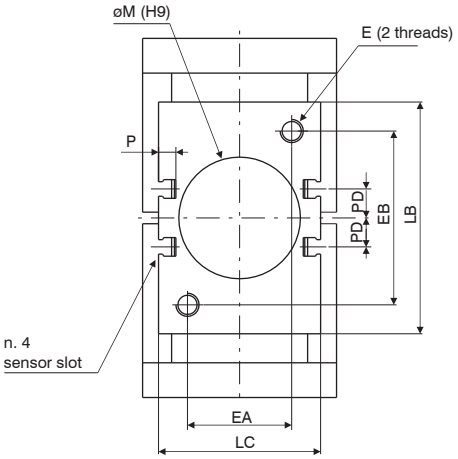


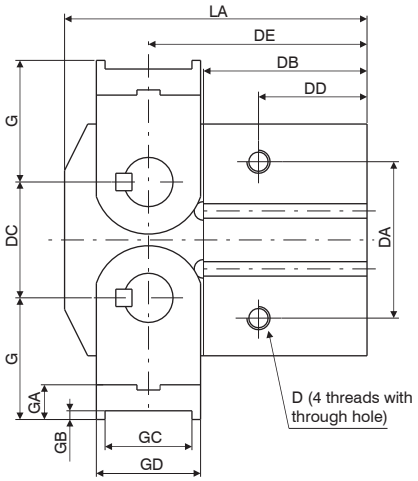
Bore		Ø20	Ø25	Ø32	Ø40	Ø50
A		M5	M6	M6	M8	M10
	Useful depth	7	10	10	15	20
AB		17	20	21	27,5	36
AC		20	24	24	30	40
D		M5	M6	M6	M8	M10
	Useful depth	10	12	12	16	20
DA		27	34	42	54	70
DB		35	40	47	56,5	69
DC		18	24	30	40	56
DD		23	27	29	37,5	48
DE		45	51	61,5	75,5	96
E		M5	M6	M6	M8	M10
	Useful depth	10	12	12	15	20
EA		26	30	30	36	40
EB		26	30	45	60	80
F		M5	M5	G1/8	G1/8	G1/4
FA		12	16	20	20	30
FB		9	10	13	14	16
FC		20	23	25	33,5	44
G		23	27	32	42	58
GA		7	8	9	12	17
GB		2	2	2	3	4
GC		12	17	23	30	44
GD		16	21	27	36	52
GE		41	45	51	67	85
GF		18	20	20	28	38
GH		M4	M5	M6	M8	M10
H		5	6	7	9	13
HA		10	12	14	21	24
HB		5	6	7	10	13
HC		28	30	34	44	58
HD		14	16	18	24	30
LA		60	69	83,5	104,5	136
LB		36	45	58	80	112
LC		36	40	45	56	66
ØM H9		21	26	34	42	52
	Useful depth	3	3	4	4	5
P		6	5,5	5,5	6	6
PD		4	4,5	11	10	13
Weight (g)		300	500	900	2100	5000

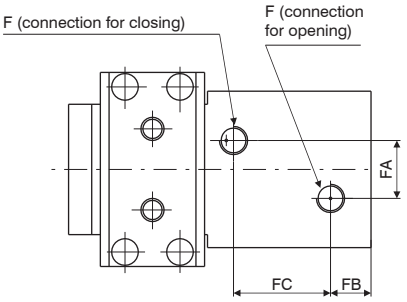
Overall dimensions



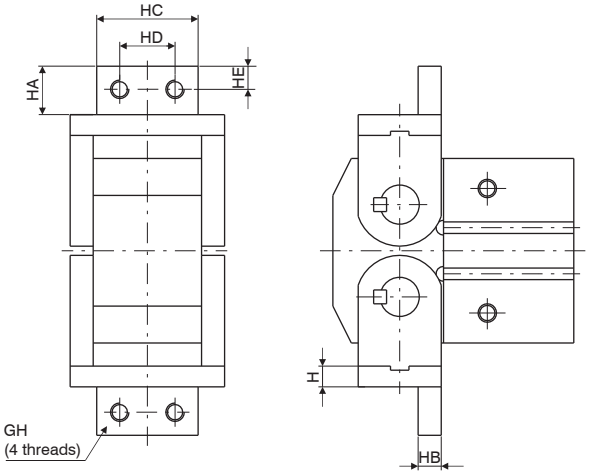








Fingers, side fixing



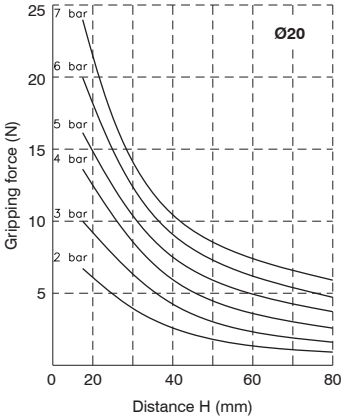
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

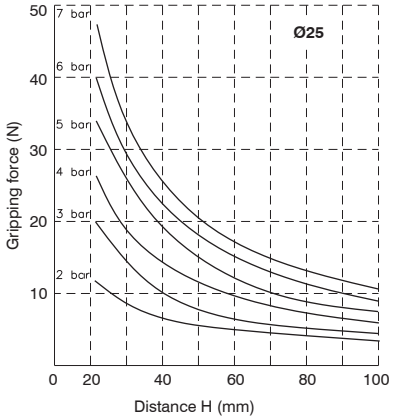
Operating criteria

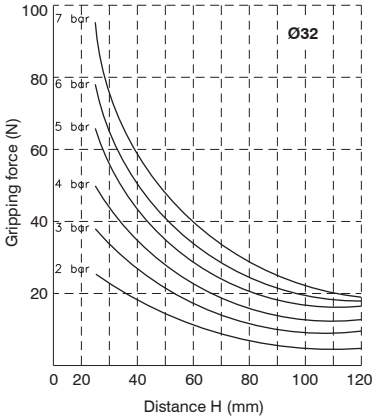
Gripping force

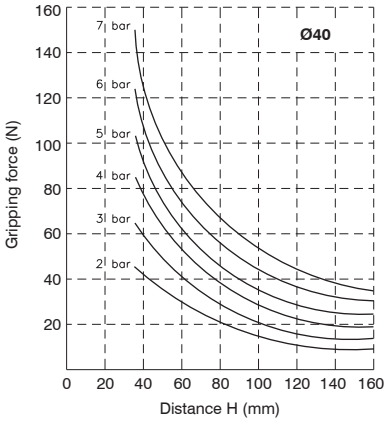
Note: Bore selection should be made considering a holding force 10 to 20 times the component weight. In case of acceleration/deceleration a further margin of safety should be considered.

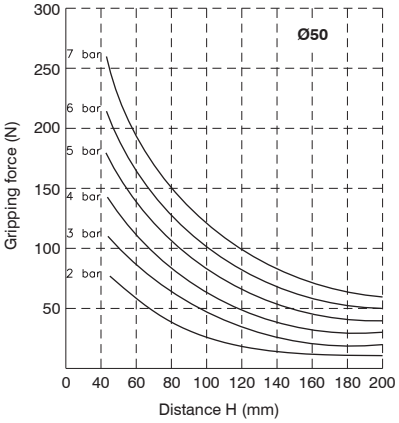
Bore	Ø20	Ø25	Ø32	Ø40	Ø50
(Nm)	0,3	0,7	1,6	3,7	8,3

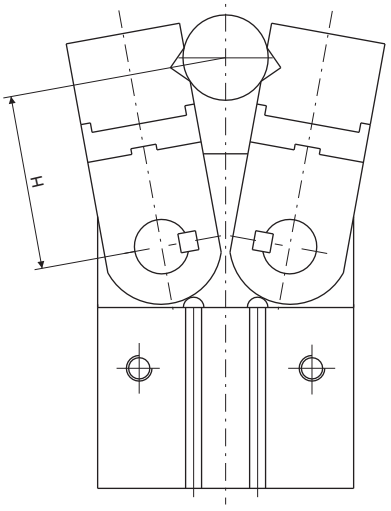












Parallel style pneumatic grippers - Standard version

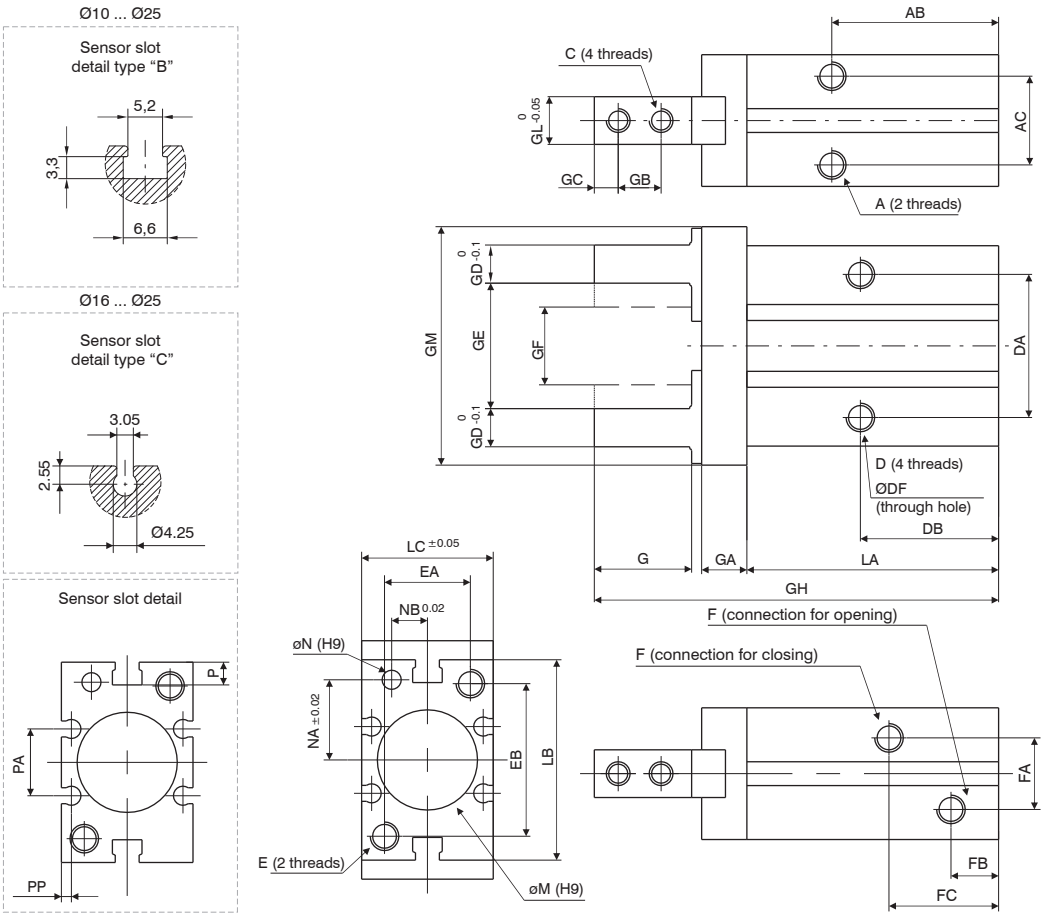
Coding: 6310.Ø.Ⓥ

Ø	BORE
	10 = Ø10
	16 = Ø16
	20 = Ø20
	25 = Ø25
Ⓥ	VERSION
	D = Double acting
	NC = Single acting (N.C.)
	NO = Single acting (N.O.)





Overall dimensions



Bore		Ø10	Ø16	Ø20	Ø25
A		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	6	4,5	8	10
AB		27	30	35	36,5
AC		11,4	16	18,6	22
C		M2,5x0,45	M3x0,5	M4x0,7	M5x0,8
D		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	5,5	8	10	12
DA		16	24	30	36
DB		23	24,5	29	30
ØDF		2,6	3,4	4,3	5,1
E		M3x0,5	M4x0,7	M5x0,8	M6x1
	Useful depth	6	8	10	12
EA		12	15	18	22
EB		18	22	32	40
F		M3x0,5	M5x0,8	M5x0,8	M5x0,8
FA		11	13	15	20
FB		9	7,5	10	10,7
FC		19	19	23	23,5
G		12	15,5	20	25
GA		6	7,5	9,5	11
GB		5,7	7	9	12
GC		3	4	5	6
GD		4	5	8	10
GE		15,2	20,9	26,3	33,3
GF		11,2	14,9	16,3	19,3
GH		57	67,5	84,8	102,7
GL		5	8	10	12
GM		29	38	50	63
LA		37,8	42,5	52,8	63,6
LB		23	30,6	42	52
LC		16,4	23,6	27,6	33,6
ØM H9		11	17	21	26
	Useful depth	2	2	3	3,5
ØN H9		2	3	4	4
	Useful depth	3	3	4	4
NO		7,6	11	16,8	21,8
NB		5,2	6,5	7,5	10
P		5,4	5,8	9	11,5
PA		/	11,6	14	19
PP		/	2,1	2,1	3,5
Weight (g)		55	120	230	425

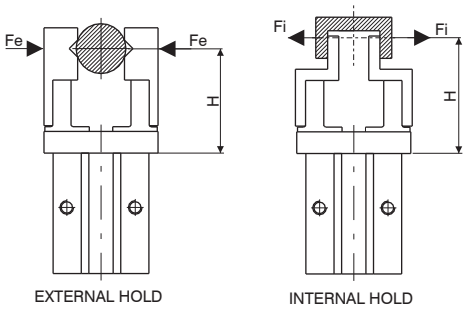
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Operating criteria

Gripping force (N) (pressure 5 bar, holding point H=20 half stroke)

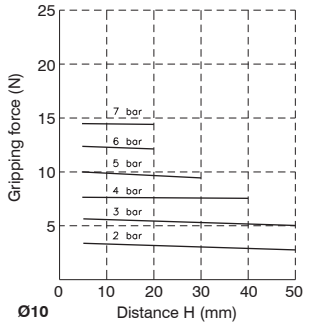
Version		Force (N)	Bore Ø10	Ø16	Ø20	Ø25
Double acting		Fe	9,8	30	42	65
		Fi	17	40	66	104
Single acting	N.O.	Fe	6,3	24	28	45
	N.C.	Fi	12	31	56	83

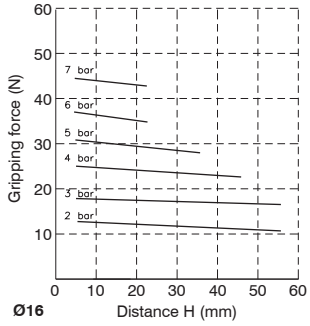
Fe = External hold Force **Fi** = Internal hold Force

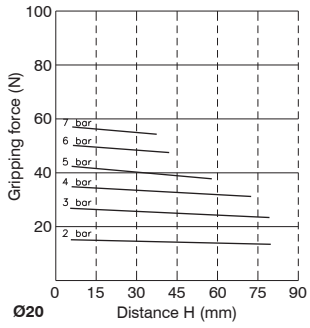


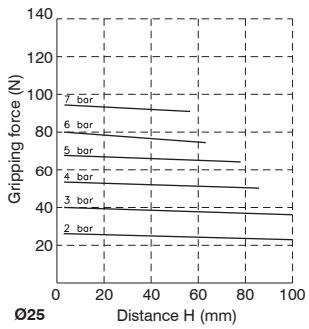
Double acting

External hold Force

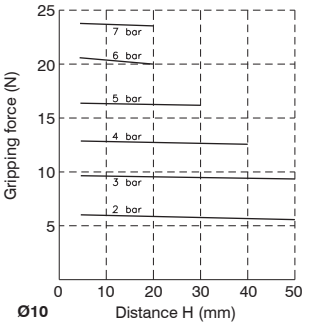


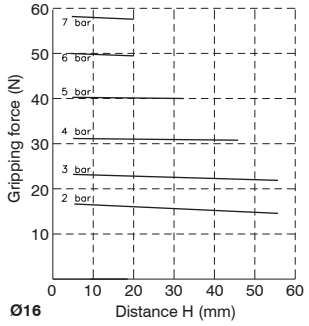


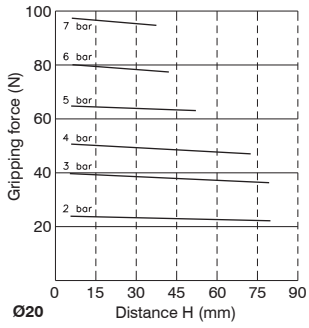


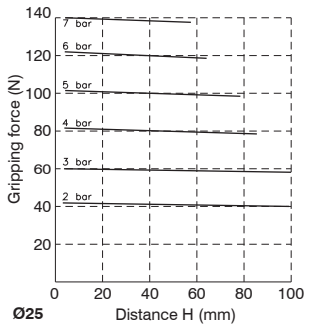


Internal hold Force



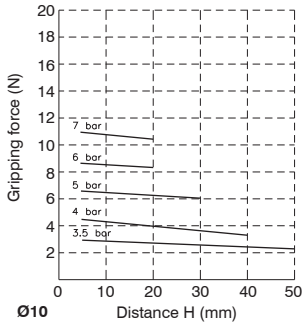


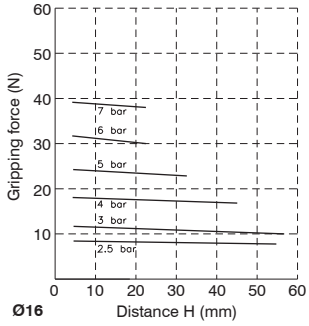


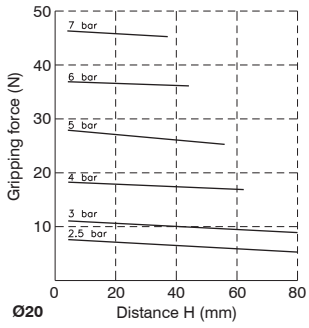


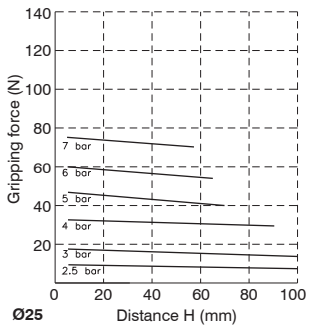
Single acting

External hold Force

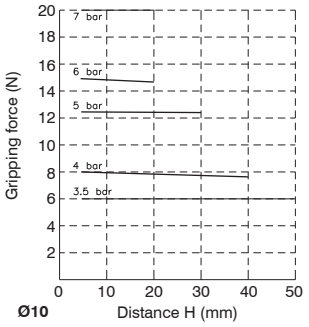


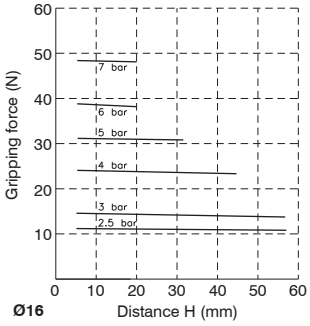


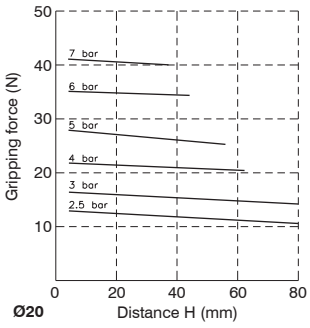


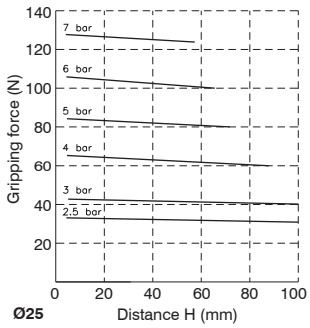


Internal hold Force









Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Parallel style pneumatic grippers - Wide opening

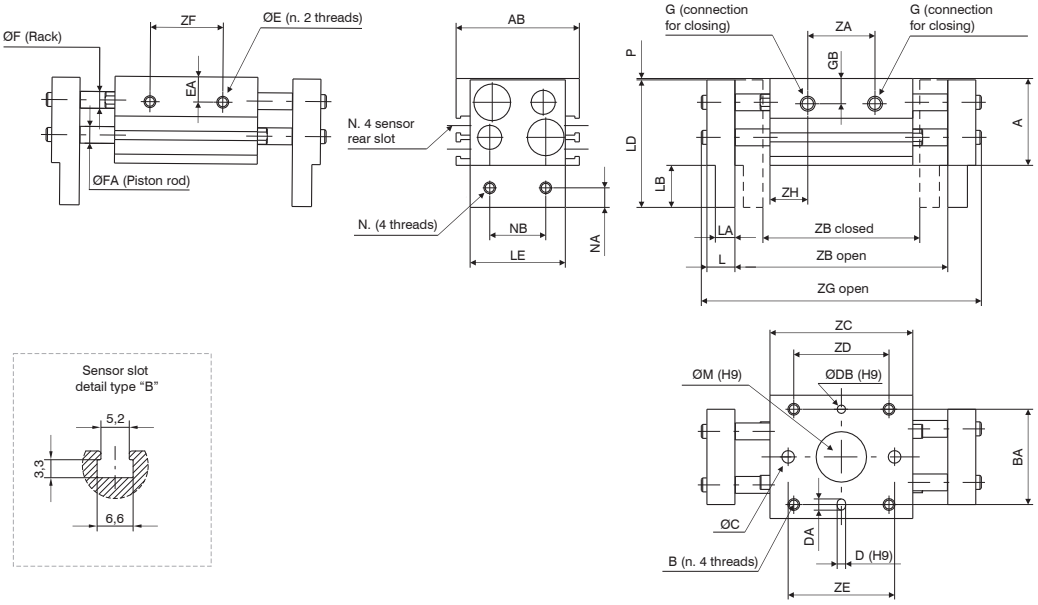
Coding: 6311.Ø.D.Ⓒ

Ø	BORE
	10 = Ø10
	16 = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
Ⓒ	STROKE
	= 20 mm (Ø10), 30 mm (Ø16), 40 mm (Ø20), 50 mm (Ø25), 70 mm (Ø32), 100 mm (Ø40)
	1 = 40 mm (Ø10), 60 mm (Ø16), 80 mm (Ø20), 100 mm (Ø25), 120 mm (Ø32), 160 mm (Ø40)
	2 = 60 mm (Ø10), 80 mm (Ø16), 100 mm (Ø20), 120 mm (Ø25), 160 mm (Ø32), 200 mm (Ø40)

Coding examples:
6311.10.D (Stroke 20 mm, Ø10)
6311.10.D.1 (Stroke 40 mm, Ø10)
6311.10.D.2 (Stroke 60 mm, Ø10)



Overall dimensions



Bore		Ø10			Ø16			Ø20			Ø25			Ø32			Ø40		
A		31			39			46			52			68			79		
AB		44			55			65			76			82			98		
B		M4x0,7			M5x0,8			M6x1			M8x1,25			M8x1.25			M10x1.5		
	Useful depth	8			10			12			16			16			20		
BA		34			42			52			62			64			76		
ØC		4,5			5,5			6,6			9			/			/		
D^{H9}		3			3			4			4			6			6		
	Useful depth	3			3			4			4,5			8			8		
DA		4			4			5			5			7			7		
$ØDB^{H9}$		3			3			4			4			6			6		
	Useful depth	3			3			4			4,5			8			8		
E		M4x0,7			M5x0,8			M6x1			M8x1,25			M8x1.25			M10x1.5		
	Useful depth	5			7			7			7			11			16		
EA		9			10			11			12,5			22			28		
ØF		6			8			10			12			14			16		
FA		6			8			10			12			16			20		
G		M5x0,8			M5x0,8			M5x0,8			M5x0,8			G1/8			G1/8		
GB		9			10			11			16			16			18		
L		10			13			17			21			24			28		
LA		7			9			12,5			14			15			18		
LB		15			19			24			29			32			38		
LD		45,5			57,5			69			80			100			117		
LE		34			43			54			64			70			86		
$ØM^{H9}$		18			23			27			32			35			40		
	Useful depth	1,5			1,5			1,5			1,5			1,5			1,5		
N		M4x0,7			M5x0,8			M6x1			M8x1,25			M10x1,5			M10x1,5		
NO		7			8			10			12			15			18		
NB		20			25			30			40			50			60		
P		0,5			0,5			1			1			1			1		
ZA		24	39	57	26	50	70	32	68	88	38	86	104	54	104	148	72	130	170
ZB	closed	56	78	96	68	110	130	82	142	162	100	182	200	150	198	242	188	246	286
	open	76	118	156	98	170	210	122	222	262	150	282	320	220	318	402	288	406	486
ZC		51	67	85	60	90	110	71	113	133	88	142	160	110	158	202	148	206	246
ZD		36	52	70	45	75	95	58	100	120	70	124	142	86	134	178	116	174	214
ZE		38	54	72	40	70	90	54	96	116	66	120	138	/	/	/	/	/	/
ZF		26	42	60	28	58	78	38	80	100	48	102	120	60	108	152	80	138	178
ZG	open	100	142	180	128	200	240	160	260	300	196	328	366	272	370	454	348	466	546
ZH		13,5	14	14	17	20	20	19,5	22,5	22,5	25	28	28	28	27		38		
Weight (g)		280	350	430	600	800	950	1000	1500	1700	1700	2500	2800	2900	3800	4700	5300	6850	7900
		20	40	60	30	60	80	40	80	100	50	100	120	70	120	160	100	160	200
		Stroke																	

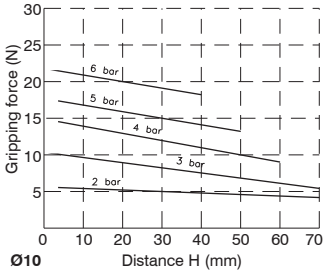
Model	Diameter (mm)	Max. operating frequence cicles/min.
6311.10.D	10	60
6311.10.D.1		40
6311.10.D.2		
6311.16.D	16	60
6311.16.D.1		40
6311.16.D.2		
6311.20.D	20	60
6311.20.D.1		40
6311.20.D.2		
6311.25.D	25	60
6311.25.D.1		40
6311.25.D.2		
6311.32.D	32	30
6311.32.D.1		20
6311.32.D.2		
6311.40.D	40	30
6311.40.D.1		20
6311.40.D.2		

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Operating criteria
Gripping force

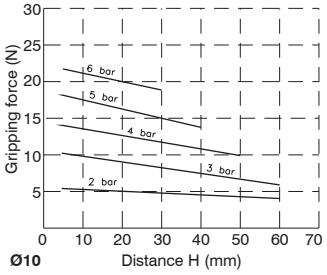
Opening / closing stroke

Basic version



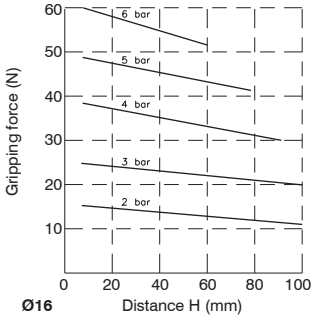
Ø10

Versions 1 and 2



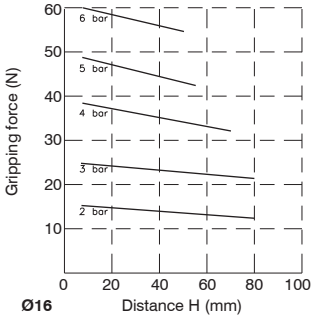
Ø10

Basic version

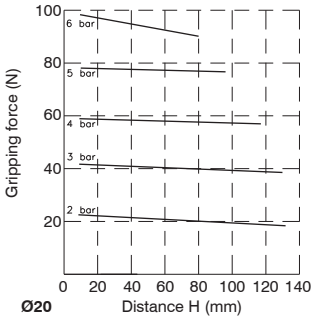


Ø16

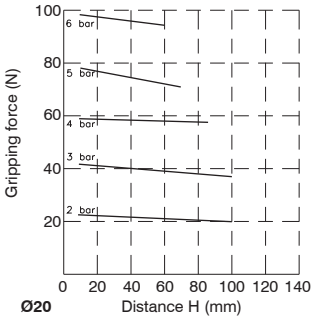
Versions 1 and 2



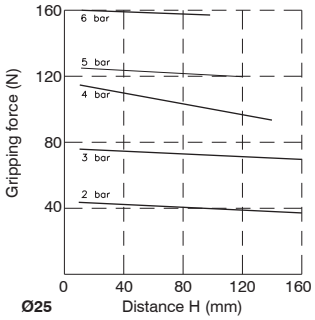
Ø16



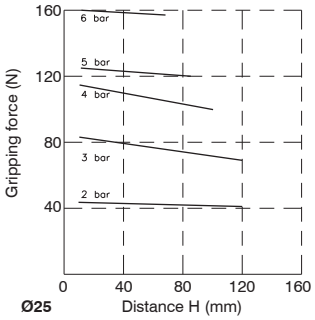
Ø20



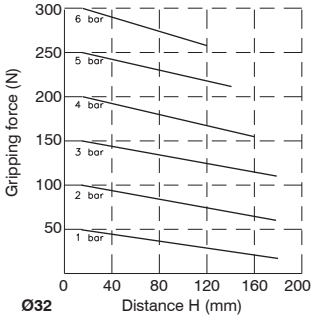
Ø20



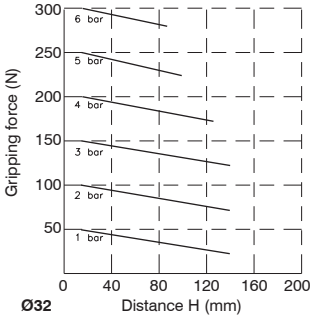
Ø25



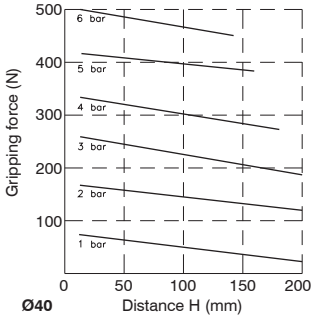
Ø25



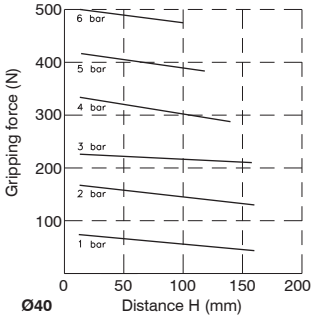
Ø32



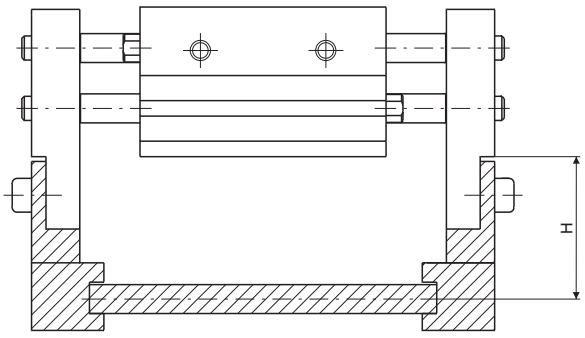
Ø32



Ø40



Ø40



3 Finger parallel style pneumatic grippers

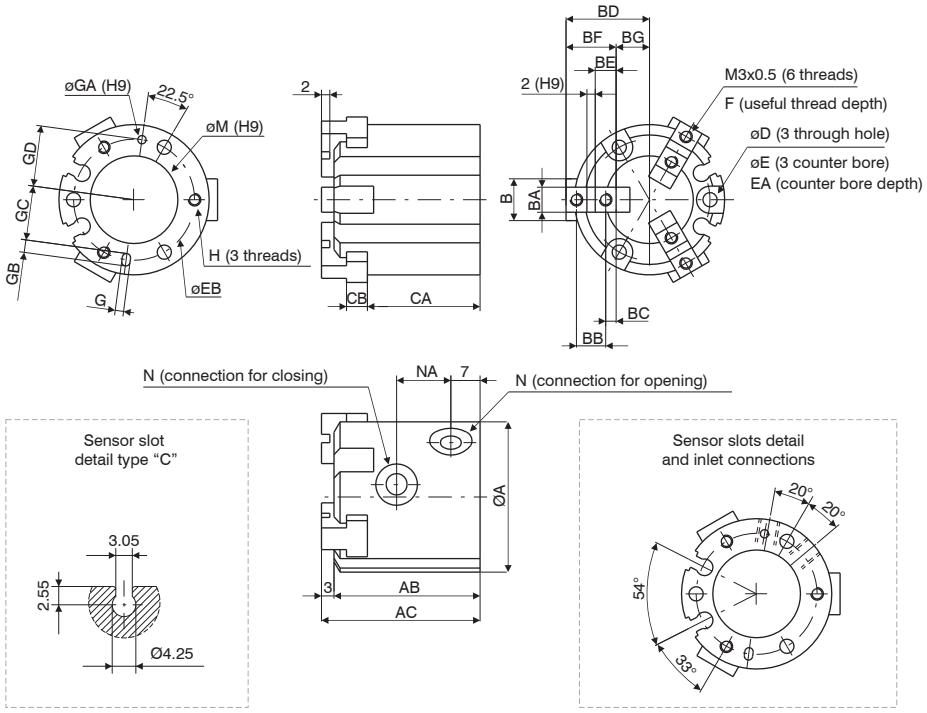
Coding: 6312.Ø.D

	BORE
Ø	**16** = Ø16
	20 = Ø20
	25 = Ø25
	32 = Ø32
	40 = Ø40
	50 = Ø50
	63 = Ø63
	80 = Ø80
	100 = Ø100
	125 = Ø125



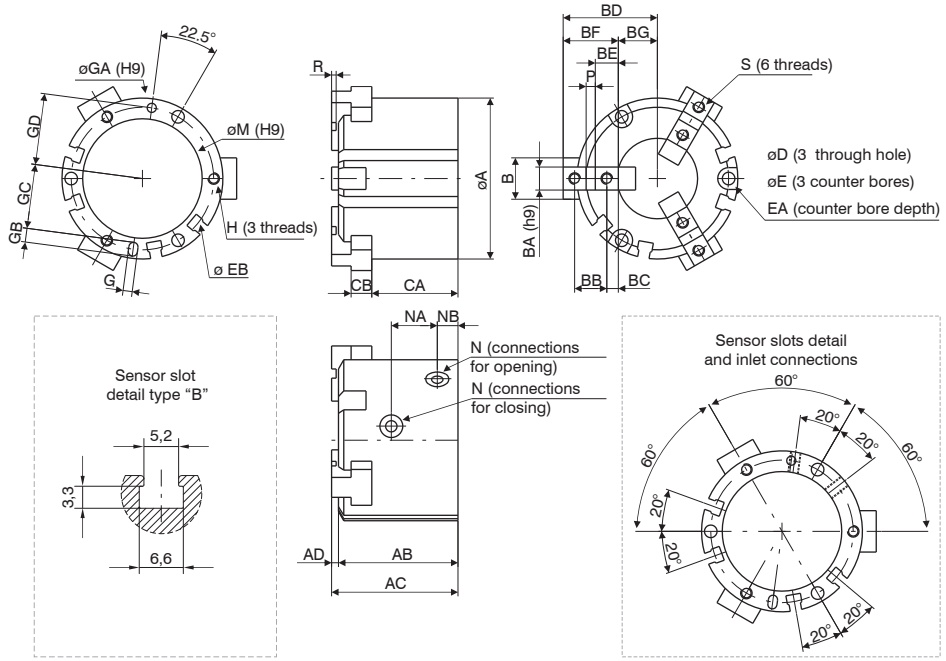
Bore		Ø16	Ø20	Ø25
ØA		30	36	42
AB		32	35	37
AC		35	38	40
B		8	10	12
BA H9		5	6	6
BB		6	7	8
BC		2	2,5	3
BD	open	17	20	24
	closed	15	18	21
BE		4	5	6
BF		10	12	14
BG	open	7	8	10
	closed	5	6	7
CA		25	27	28
CB		4	5	5
D		3,4	3,4	4,5
E		6,5	6,5	8
EA		8	9,5	10
EB		25	29	34
F		5	6	6
G H9		2	2	3
	Useful depth	2	2	3
ØGA H9		2	2	3
	Useful depth	2	2	3
GB		3	3	5
GC		11	13	14,5
GD		12,5	14,5	17
H		M3x0,5	M3x0,5	M4x0,7
	Useful depth	4,5	6	6
ØM H9		17	21	26
	Useful depth	1,5	1,5	1,5
N		M3x0,5	M5x0,8	M5x0,8
NO		11	13	15
Weight (g)		62	98	139

Overall dimensions Ø16 ... Ø25



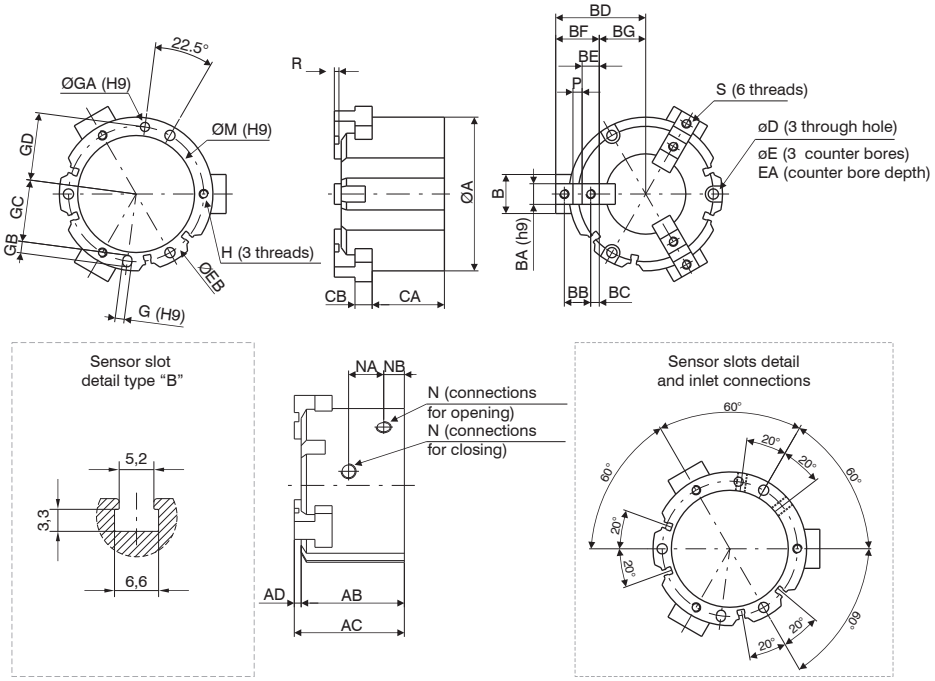
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Overall dimensions Ø32 ... Ø80



Bore		Ø32	Ø40	Ø50	Ø63	Ø80
ØA		52	62	70	86	106
AB		41	44	52	62	77
AC		44	47	55	66	82
AD		3	3	3	4	5
B		14	16	18	24	28
BA H9		8	8	10	12	14
BB		11	12	14	17	20
BC		4,5	4,5	5	5,5	6
BD	open	32	35	41	51	63,5
	closed	28	31	35	43	53,5
BE		9	9	10	11	12
BF		20	21	24	28	32
BG	open	12	14	17	23	31,5
	closed	8	10	11	15	21,5
CA		30,5	32	37,5	44	56
CB		6	7	9	11	12
D		4,5	5,5	5,5	6,6	6,6
E		8	9,5	9,5	11	11
EA		9	9	12	14	19
EB		44	53	62	76	95
H		M4x0,7	M5x0,8	M5x0,8	M6x1	M6x1
	Useful depth	6	7,5	10	9	12
G H9		3	4	4	5	6
	Useful depth	3	4	4	5	6
ØGA H9		3	4	4	5	6
	Useful depth	3	4	4	5	6
GB		5	6	6	7	8
GC		19,5	23,5	28	34,5	43,5
GD		22	26,5	31	38	47,5
N		M5x0,8	M5x0,8	M5x0,8	M5x0,8	G1/8
ØM H9		34	42	52	65	82
	Useful depth	2	2	2	2,5	3
NO		16	17	20	22	27
NB		8	9	9	12	13,5
P H9		2	3	4	6	8
R		2	2	2	3	4
S		M4x0,7	M4x0,7	M5x0,8	M5x0,8	M6x1
	Useful depth	8	8	10	10	12
Weight (g)		240	354	542	1000	1850

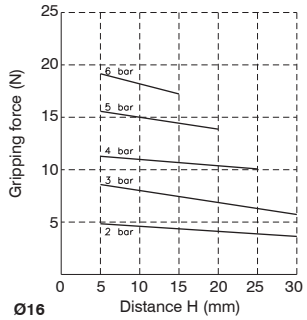
Overall dimensions Ø100 and Ø125



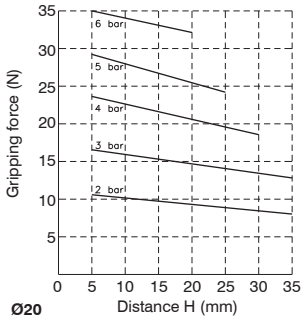
Bore		Ø100	Ø125
ØA		134	166
AB		90	114
AC		96	122
AD		6	8
B		34	40
BA H9		18	22
BB		23	31
BC		7,5	10,5
BD	open	78	98
	closed	66	82
BE		15	21
BF		38	52
BG	open	40	46
	closed	28	30
CA		63	84
CB		15	18
ØD		9	11
ØE		14	17,5
EA		21	34
EB		118	148
G H9		8	10
	Useful depth	6	8
ØGA H9		8	10
	Useful depth	6	8
GB		10	12
GC		54	68
GD		59	74
H		M8x1,25	M10x1,5
	Useful depth	16	20
ØM H9		102	130
	Useful depth	4	6
N		G1/4	G3/8
NO		30,6	38
NB		18	23,5
P H9		8	10
R		4	6
S		M8x1,25	M10x1,5
	Useful depth	16	20
Weight (g)		3360	6430

Operating criteria

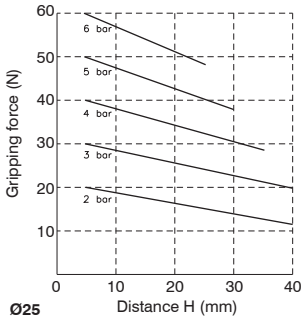
Gripping force



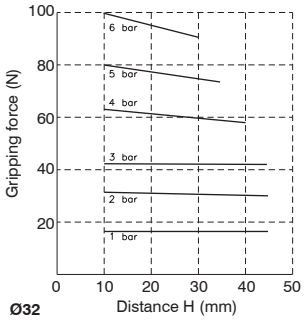
Ø16



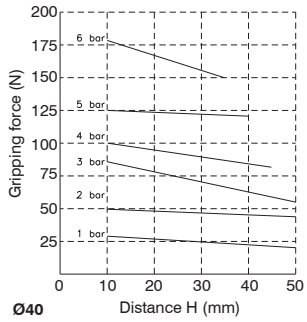
Ø20



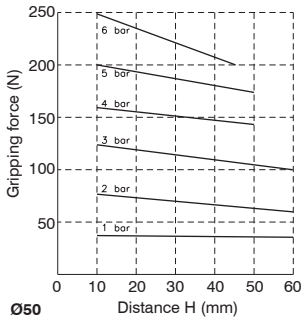
Ø25



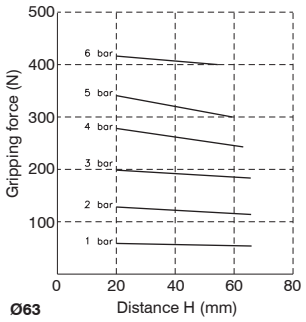
Ø32



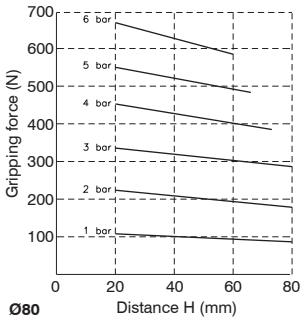
Ø40



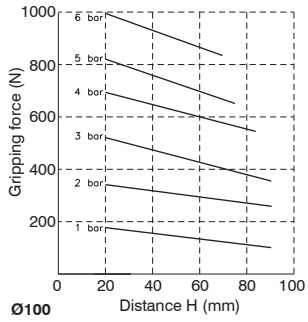
Ø50



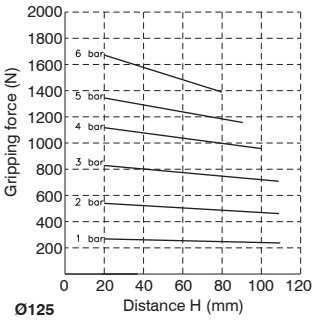
Ø63



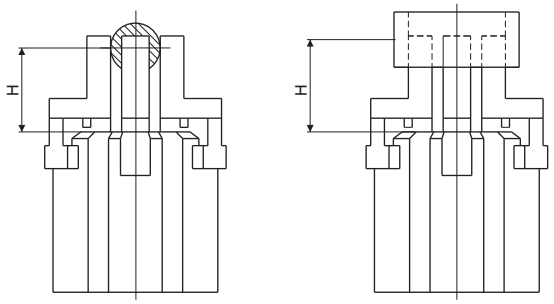
Ø80



Ø100



Ø125



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series RT



The swing clamp cylinder has been developed to meet the need to clamp a workpiece by means of a clamping arm which when released would unclamp rotate 90 degrees in order to allow unrestricted access to the workpiece; the stroke of the swing movement is 21mm.
They are supplied in two bore sizes Ø40 and Ø50 in magnetic or non magnetic versions.
The swing clamp cylinder is available with standard clamping stroke lengths of 10, 20, 30 and 50mm with both right (R) or left (L) rotation.
The following accessories are available:

- The clamp bracket can be re-positioned through 360 degree on the piston rod
- Rubber clamping tip
- Front and rear flange for fixing

Available sensors:
- SA series mounted directly in the groove
- SR series mounted with adapter 1380.01.F
- SQ and SU series mounted with adapter 1500.22F

(for ordering codes and characteristics see sensors section in the general catalogue)

Construction characteristics

Seals	**N** Version: PUR piston rod seals, NBR piston seals **P** Version: PUR piston rod seals, PUR piston seals **V** Version: FPM piston rod seals, FPM piston seals
Piston	Aluminium
Piston rod	C43 chromed steel
End caps	Aluminium

Operational characteristics

Fluid	filtered and preferably lubricated air or not (if lubricated the lubrication must be continuous)
Min. working pressure (bar)	1
Max. pressure (bar)	10
Working temperature (°C)	-5 ... +70 **N** Version (magnetic or non magnetic piston) -30 ... +80 **P** Version (magnetic or non magnetic piston) -5 ... +80 **V** Version (magnetic piston) -5 ... +150 **V** Version (non magnetic piston)
Stroke of rotation movement R / L 90° (mm)	21
Standard linear clamping strokes (mm)	10, 20, 30, 50
Theoretical clamping force at 10 bar (N)	924 (Ø40) - 1610 (Ø50)

Please follow the suggestions below to ensure a long life for these cylinders:

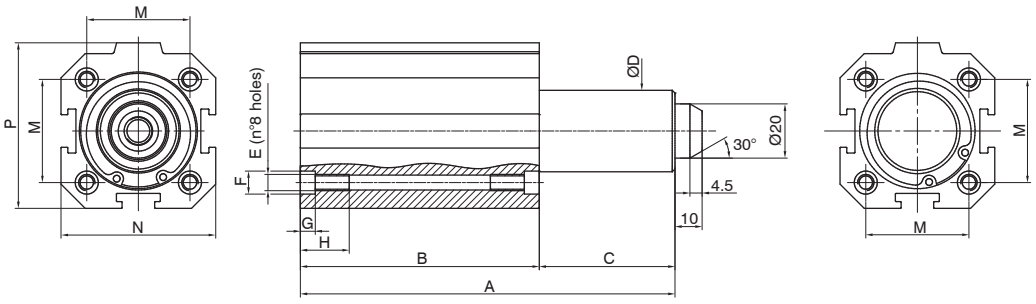
- Use of good air quality
- Observe the application advice carefully
- Operating pressure (see clamping pressure graph)
- Translation speed ≤ 50 mm/sec.

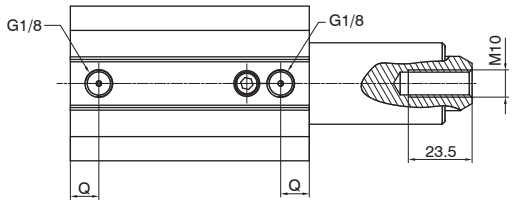
Swing clamp cylinder

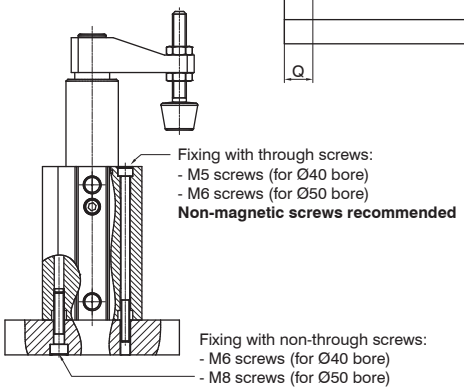
Coding: RTAØⓋⓒⓇ090GⒼ00

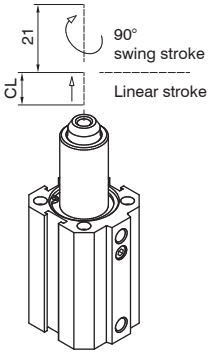
Ø	BORE
	040 = Ø40
	050 = Ø50
Ⓥ	VERSION
	M = magnetic piston
	N = non magnetic piston
Ⓒ	LINEAR CLEARANCE STROKE
	010 = 10 mm
	020 = 20 mm
	030 = 30 mm
	050 = 50 mm
Ⓡ	INPUT ROTATION OF THE ROD
	R = Right (clockwise rotation)
	L = Left (counter clockwise rotation)
Ⓖ	SEALS
	N = NBR
	P = PUR
	V = FPM

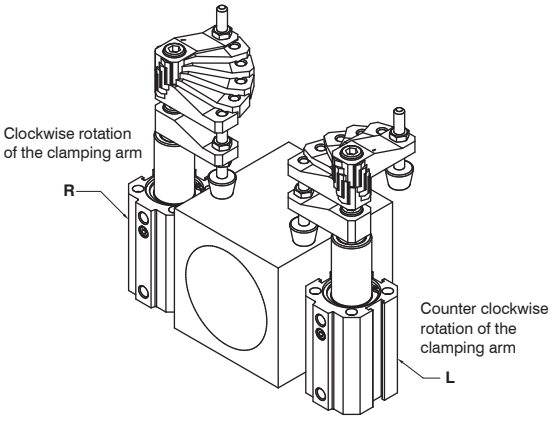








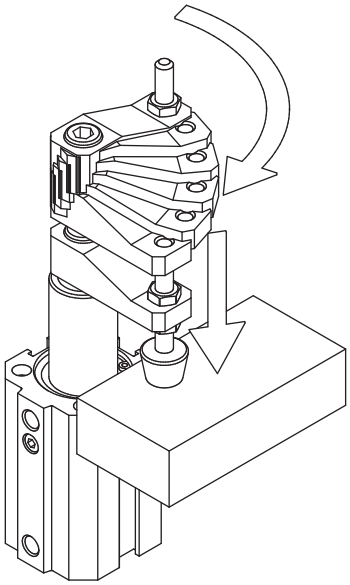




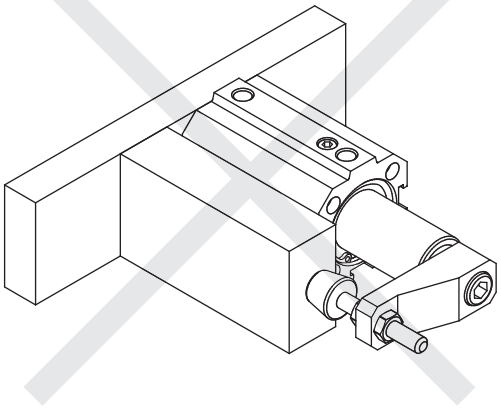
The direction of rotation is defined by the looking at the cylinder from the rod side when it retracts.

Bore	CL	A	B	C	ØD	E	ØF	G	H	M	N	P	Q	R	Weight (g)
40	10	138	88	50	30	M6	8.5	5.5	18	38	57	61	10.5	5.3	885
	20	158	98	60											982
	30	178	108	70											1080
	50	218	128	90											1274
50	10	138	88	50	39	M8	10.5	6.5	22	46.5	67	71	11	7	1004
	20	158	98	60											1114
	30	178	108	70											1225
	50	218	128	90											1447

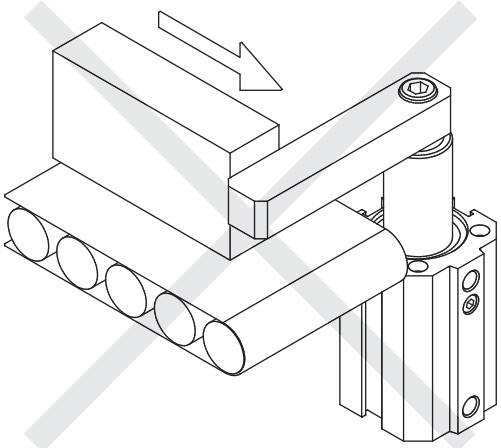
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice



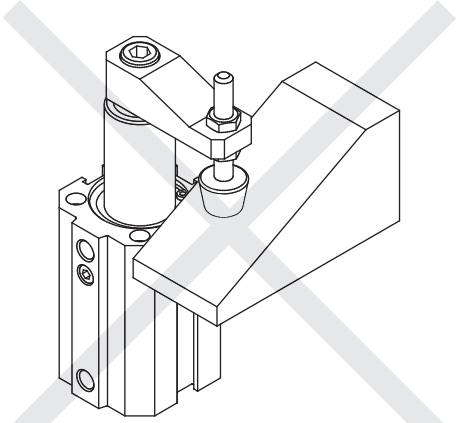
Clamping in linear stroke phase



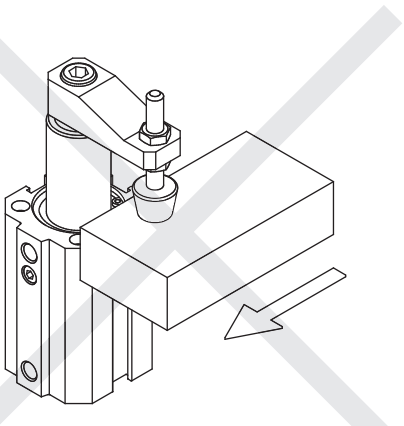
Don't use the cylinder in a horizontal position



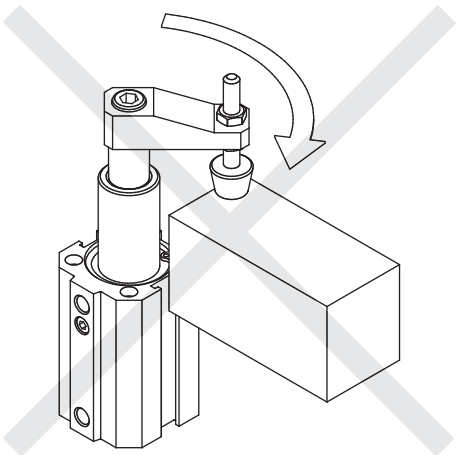
Don't stress the cylinder radially



Don't clamp on an inclined surface

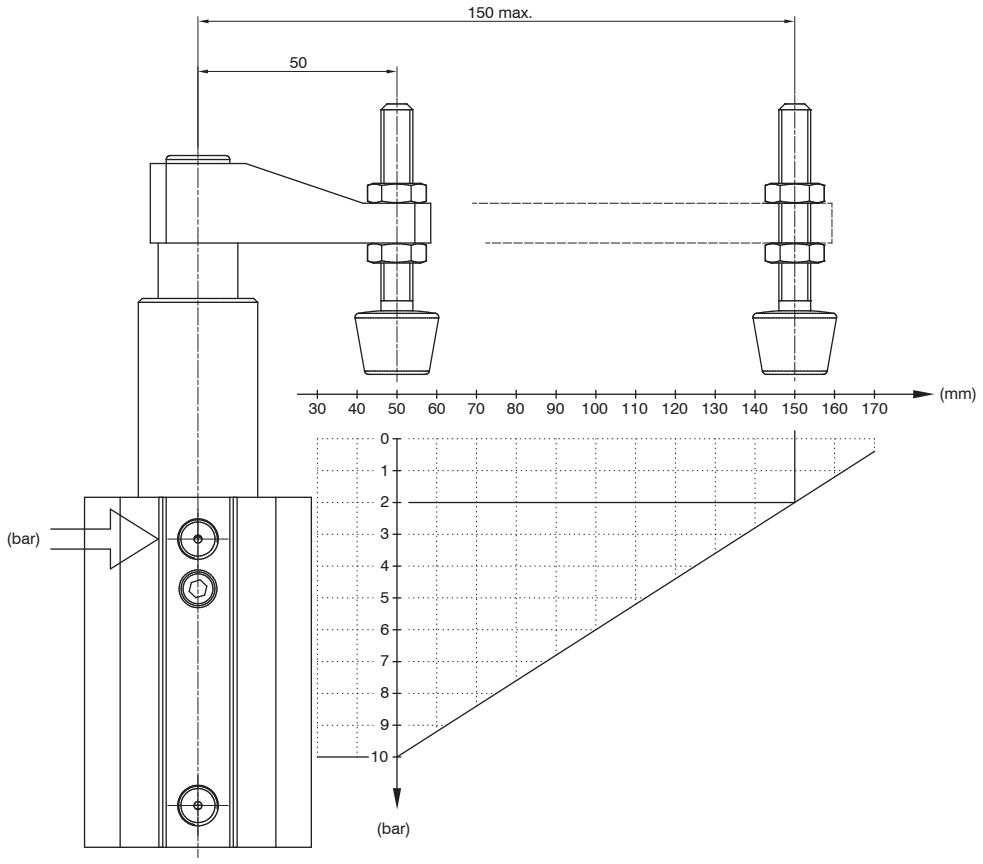


Don't clamp moving components

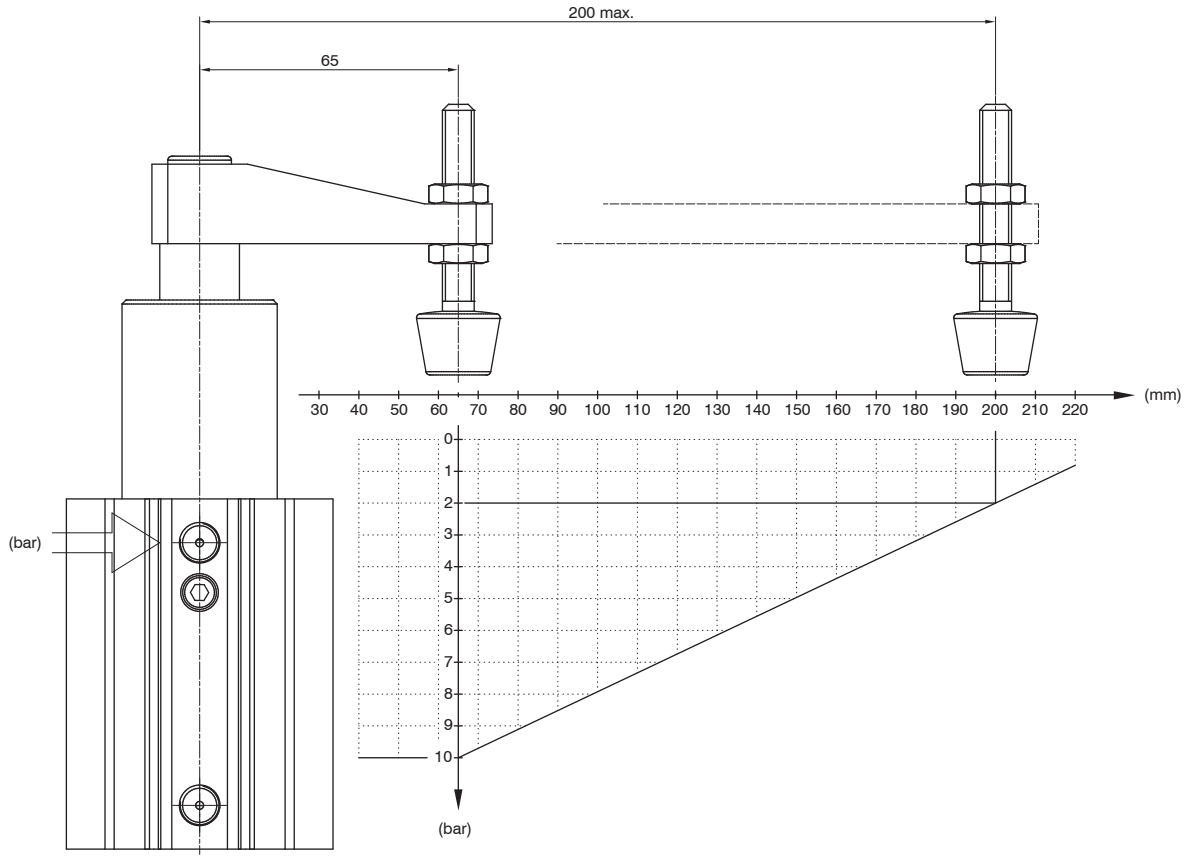


Don't clamp during the rotating movement

Clamping pressure (Ø40)



Clamping pressure (Ø50)



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

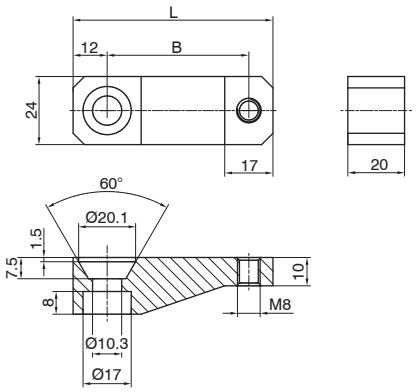
Bracket

Coding: RTØ.01

Ø	BORE
	040 = Ø40
	050 = Ø50

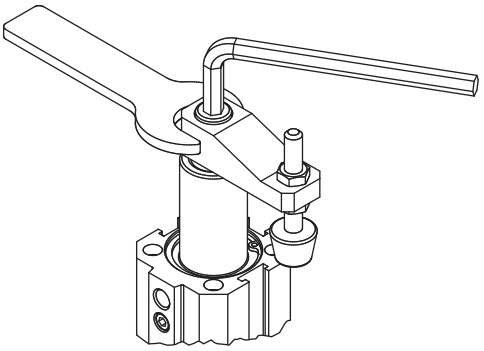
Zinc plated steel
Includes:
n° 1 screw M10x20





Bore	L	B	Weight (g)
40	70.5	50	168
50	85.5	65	211

Bracket mounting
To avoid damaging the rotation system, act as shown on the drawing below; hold the bracket with a 24mm spanner when tightening the 8mm hexagonal socket screw to a maximum torque of 30 ... 40 Nm

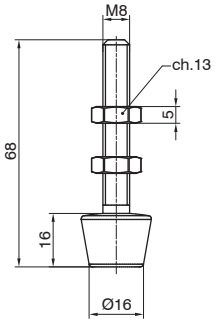


Rubber clamping tip

Coding: RT040.02
Zinc plated steel
Neoprene 85 Shore A tip



Weight 33 g



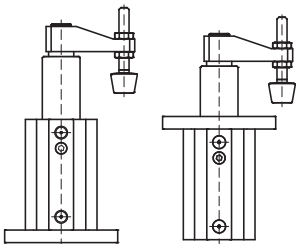
Steel front and rear flange (MF1 - MF2)

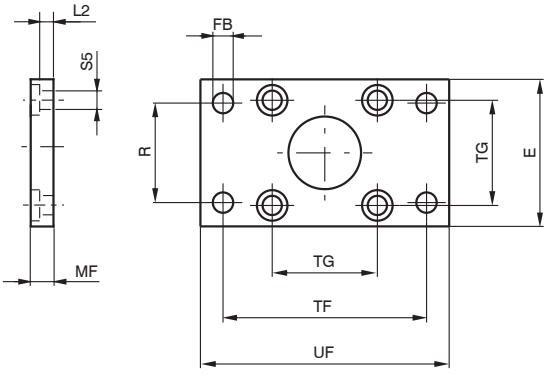
Coding: 1380.Ø.03F

Ø	BORE
	40 = Ø 40
	50 = Ø 50

Plate which allows anchorage of the cylinder at a right angle to the plane. It is made of zincplated extruded steel.







Bore	E	FB (H 13)	MF (JS 14)	R (JS 14)	TF (JS 14)	TG	UF	L2	S5	Weight (g)
40	52	9	10	36	72	38	90	5	6,6	250
50	65	9	12	45	90	46,5	110	6,5	9	480

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series SA

The limit switches of magnetic sensors must be mounted on cylinders fitted with magnetic pistons.
These, are activated by the magnetic field generated by the magnetic piston as it approaches and closes the circuit sending an electrical signal to either a relay, solenoid valve or converses with the electrical control system of the machine. There are both ampulla or Hall effect magnetic sensors available which are attached to the cylinder using a suitable cylinder clamp/adaptor or mounted in a suitable slot on the cylinder. The switch may also include an activation LED indicator.

Note: The magnetic sensors are in accordance with the **Directive 2014/30/EU** and following amendments

Instruction on how to use the sensors

Particular attention needs to be paid to ensure that you do not exceed the operating characteristics shown in the following pages. Its important to note; 2 wire sensors should not be connected to the supply voltage if a load is not connected in series. Failure to do so may result in damage to the sensor. Furthermore, please consider that the 'inrush' (loading) current absorbed by the sensors might be up to 50% higher than rated.
For direct currents (DC), The polarity of the connection must be observed: The brown cable must be connected to the live (+) and the blue wire connected to the negative (-).
For all sensor applications, particular attention must be paid to the external factors such as nearby live cables, electromagnetic fields generated by electric motors as well as nearby metallic bodies as these can affect the magnetic field generated by the magnetic piston which in turn can cause malfunctions.
Electrical cables must be kept below 10mtrs in length to guarantee correct function, however, if a 10 mtr length cable is required, Pneumax suggests the inclusion of an inductor or resistor to the load to reduce the capacitive behaviour of the cable. In this instance, the customer is responsible for the selection of the correct resistive or inductive load required as Pneumax accept no responsibility for any malfunction.
If needed, 10 meters cable length can be exceeded; Pneumax suggests the use of an inductor or resistor in series to the load in order to reduce the capacitive behavior of the cable.
In this case, the customer is responsible for the selection of the inductor or resistor value. Pneumax assume no responsibility in case of malfunction.
When using a 2-wire reed type sensor, always ensure that the correct load is applied in series on any of the two wires.
When using a sensor fitted with a SNAP connector always pay attention to the orientation of the connector because by inverting the connection the circuit will not be damaged, however, the LED will not illuminate. In case 2 or more sensors need to be connected in series, pay attention to the voltage drop generated (approx 3v per sensor), in this instance, use the version designed for series connection.
Hall effect sensors are longer lasting if compare to reed switched as they do not include any moving parts.

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Cable sensor

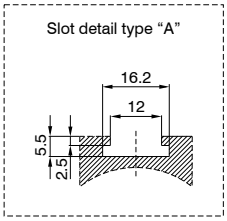
Coding: 1❶00.❷

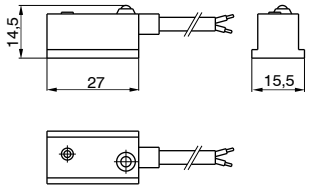
Technical characteristics	A.C.	D.C.	U		U/1	
			A.C.	D.C.	A.C.	D.C.
Permanent maximum current	1,5A	1,2A	0,5A		0,3A	
Maximum current (0.5 sec. pulses)	6A	1,5A	1A		0,8A	
Voltage field	12 ... 230V	12 ... 30V	3 ... 230V	12 ... 48V	0 ... 230V	0 ... 48V
Permanent maximum power	375VA	32W	20VA	15W	10VA	8W
Working temperature	-20°C ... 70°C					
Maximum voltage drop	3V max	2V max	3V max		0V	
Cable length	2m					
Cable colour	Black					
External cable section	Ø4,2mm					
Cover material	PUR					
Number of wires in the cable	2					
Wires section	0,34 mm²					
Connection type	With cable without connector					
Protection degree	IP65					
Switch-on time	2 ms					
Switch-off time	1 ms					
Average working time	10^7 cycles					
Repetition of intervention point	± 0,1 mm					
Contact type	N.O.					
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091					
Fixing	With screw					
Weight	50g					
With LED indication	With LED				Without LED	
LED color	Red				/	

❶	TYPE
	5 = Cylinders and microcylinders. Slot detail type "A".
	6 = Rodless cylinders
❷	VERSION
	AC = For alternating current
	DC = For continuous current
	U = Universal
	U/1 = Universal sensor (REED ampulla only)

Cylinders and microcylinders

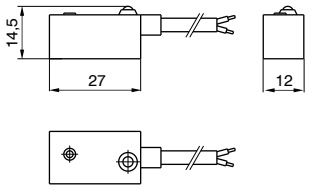






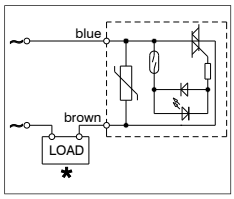
Rodless cylinders



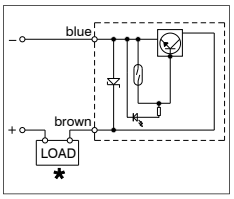


Diagrams and connections

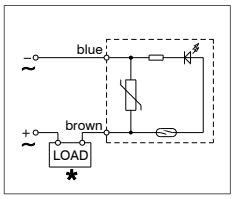
AC



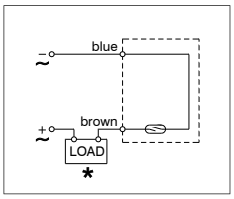
DC



U



U/1



***The load (LOAD) can be connected either to negative or positive pole.**

Sensor for SNAP connector

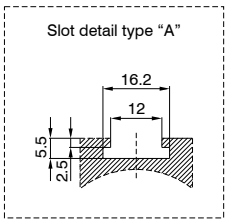
Technical characteristics	DC	UA		UC		UA/1	
		A.C.	D.C.	A.C.	D.C.	A.C.	D.C.
Contact type	N.O.	N.O.		N.C.		N.O.	
Permanent maximum current	1.2A	0.5A		0.3A		0.5A	
Maximum current (0.5 sec. pulses)	1,5A	1A		0.8A		1A	
Voltage field	12 ... 30V	3 ... 250V	12 ... 48V	3 ... 110V	12 ... 48V	0 ... 250V	0 ... 48V
Permanent maximum power	32W	20VA	15W	10VA	8W	10VA	8W
Working temperature	-20°C ... 70°C						
Maximum voltage drop	2V	<3V				0V	
Connection type	With cable and connector						
Protection degree	IP65						
Switch-on time	2 ms						
Switch-off time	1 ms						
Average working time	10^7 cycles						
Repetition of intervention point	± 0,1 mm						
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091						
Fixing	With screw						
Weight	7g						
With LED indication	With LED					Without LED	
LED color	Red						

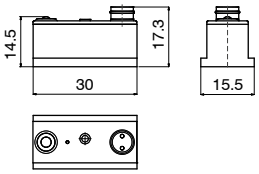
Coding: ⓉRS.Ⓥ

Ⓣ	TYPE
	= Cylinders and microcylinders. Slot detail type "A".
	S = Rodless cylinders
Ⓥ	VERSION
	DC = For continuous current
	UA = Universal sensor N.O.
	UC = Universal sensor N.C.
	UA/1 = Universal sensor N.O. Without LED

Cylinders and microcylinders

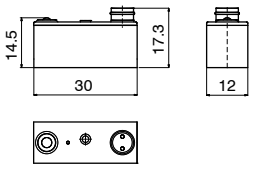




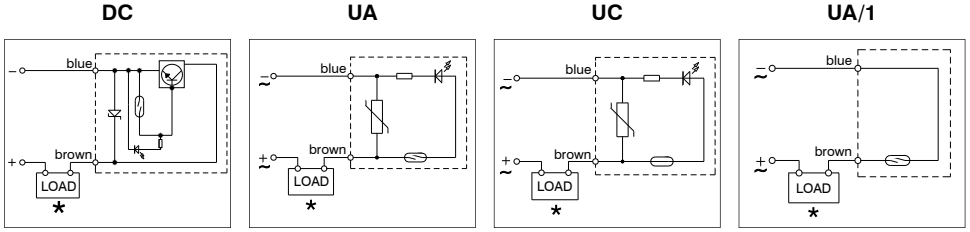


Rodless cylinders





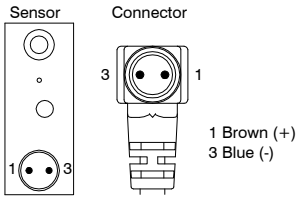
Diagrams and connections



***The load (LOAD) can be connected either to negative or positive pole.**

Technical data

Connection 2 wires 2 PIN



Sensor + Cable



Coding: ⓉRS.ⓋⓁ

Ⓣ	TYPE
	= Cylinders and microcylinders. Slot detail type "A".
	S = Rodless cylinders
Ⓥ	VERSION
	DC = For continuous current
	UA = Universal sensor N.O.
	UC = Universal sensor N.C.
	UAC = Universal sensor N.O. Without LED
Ⓛ	CABLE LENGTH (DC, UA, UC)
	C1 = 2,5 m cable
	C2 = 5 m cable
	C3 = 10 m cable
Ⓛ	CABLE LENGTH (UAC)
	1/1 = 2,5 m cable
	2/1 = 5 m cable
	3/1 = 10 m cable

2-wire cable connector



Technical characteristics	C1	C2	C3
Cable colour	Light grey		
External cable section	Ø3,5mm		
Cover material	PVC		
Number of wires in the cable	2 wires		
Wires section	0,25 mm²		

Coding: CⓁ

Ⓛ	CABLE LENGTH
	1 = 2,5 m 2-wire cable
	2 = 5 m 2-wire cable
	3 = 10 m 2-wire cable

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

3-pin sensor with SNAP connector for series assembling

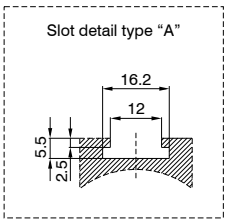
Coding: ❶RS.UA/1L

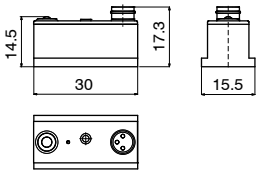
Technical characteristics	UA/1L	
	A.C.	D.C.
Permanent maximum current	0.5A	
Maximum current (0.5 sec. pulses)	1A	
Voltage field	24V	
Permanent maximum power	20VA	15W
Working temperature	-20°C ... 70°C	
Maximum voltage drop	0V	
Connection type	With cable and connector	
Protection degree	IP65	
Switch-on time	2 ms	
Switch-off time	1 ms	
Average working time	10^7 cycles	
Repetition of intervention point	± 0,1 mm	
Contact type	N.O.	
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091	
Fixing	With screw	
Weight	7g	
With LED indication	With LED	
LED color	Red	

❶	TYPE
	= Cylinders and microcylinders. Slot detail type "A".
	S = Rodless cylinders

Cylinders and microcylinders

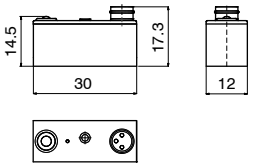






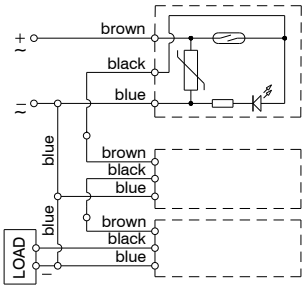
Rodless cylinders





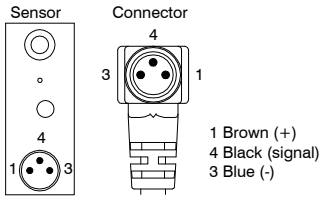
Diagrams and connections

UA/1L



Technical data

Connection 3 wires 3 PIN



Sensor + Cable

Coding: ❶RS.UA❷/1L



❶	TYPE
	= Cylinders and microcylinders. Slot detail type "A".
	S = Rodless cylinders
❷	CABLE LENGTH
	CH1 = 2,5 m cable
	CH2 = 5 m cable
	CH3 = 10 m cable

Connector with 3 wires cable

Coding: CH❷



Technical characteristics	CH1	CH2	CH3
Cable colour	Light grey		
External cable section	Ø3,5mm		
Cover material	PVC		
Number of wires in the cable	3 wires		
Wires section	0,25 mm²		

❷	CABLE LENGTH
	1 = 2,5 m cable
	2 = 5 m cable
	3 = 10 m cable

3 pin sensor in according to IEC 947 directives

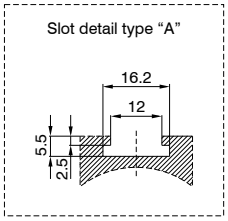
Coding: RS.Ⓥ

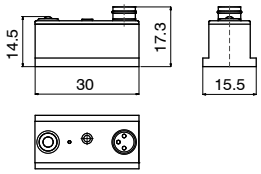
Technical characteristics	DCNO	UANO	
	DC	A.C.	D.C.
Contact type	N.O.		
Permanent maximum current	1.2A	0.5A	0.5A
Maximum current (0.5 sec. pulses)	1,5A	1A	1A
Voltage field	12 ... 30V	3 ... 250V	12 ... 48V
Permanent maximum power	32W	20VA	15W
Working temperature	-20°C ... 70°C		
Maximum voltage drop	2V	<3V	
Connection type	With cable and connector		
Protection degree	IP65		
Switch-on time	2 ms		
Switch-off time	1 ms		
Average working time	10^7 cycles		
Repetition of intervention point	± 0,1 mm		
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091		
Fixing	With screw		
Weight	7g		
With LED indication	With LED		
LED color	Red	Yellow	

Ⓥ	VERSION
	DCNO = Continuous current N.O.
	UANO = Universal sensor N.O.

Cylinders and microcylinders

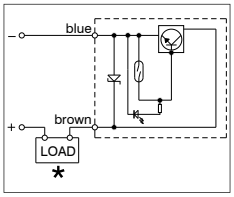




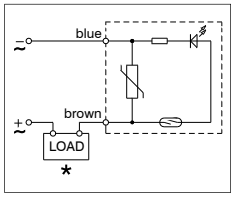


Diagrams and connections

DCNO



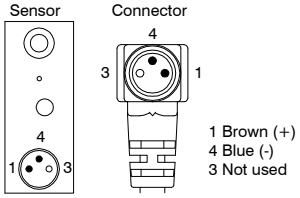
UANO



***The load (LOAD) can be connected either to negative or positive pole.**

Technical data

Connection 2 wires 3 PIN



IEC 947 standard connector with cable

Coding: CⓁNO



Technical characteristics	C1NO	C2NO	C3NO
Cable colour	Light grey		
External cable section	Ø3,5mm		
Cover material	PVC		
Number of wires in the cable	2 wires		
Wires section	0,25 mm²		

Ⓛ	CABLE LENGTH
	1 = 2,5 m cable
	2 = 5 m cable
	3 = 10 m cable

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

2 PIN Sensor with M8 connector

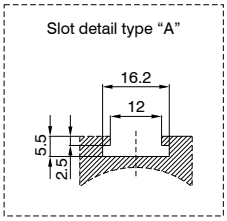
Coding: ❶RS8.❷

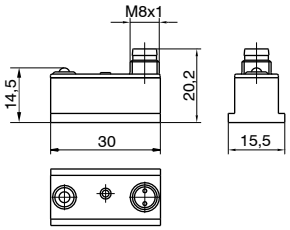
Technical characteristics	DC	UA		UC	
		A.C.	D.C.	A.C.	D.C.
Contact type	N.O.	N.O.		N.C.	
Permanent maximum current	1,2A	0,5A		0,3A	
Maximum current (0.5 sec. pulses)	1,5A	1A		0.8A	
Voltage field	12 ... 30V	3 ... 250V	12 ... 48V	3 ... 110V	12 ... 48V
Permanent maximum power	32W	20VA	15W	10VA	8W
Working temperature	-20°C ... 70°C				
Maximum voltage drop	2V	< 3V			
Connection type	With cable and connector				
Protection degree	IP65				
Switch-on time	2 ms				
Switch-off time	1 ms				
Average working time	10^7 cycles				
Repetition of intervention point	± 0,1 mm				
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091				
Fixing	With screw				
Weight	7g				
With LED indication	With LED				
LED color	Red				

❶	TYPE
	= Cylinders and microcylinders. Slot detail type "A".
	S = Rodless cylinders
❷	VERSION
	DC = For continuous current N.O.
	UA = Universal sensor with led N.O.
	UC = Universal sensor with led N.C.

Cylinders and microcylinders

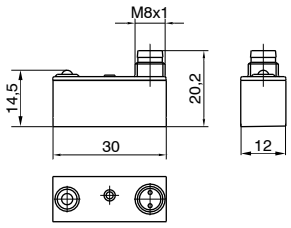






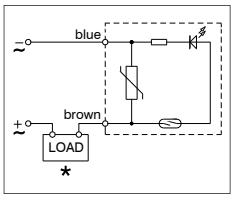
Rodless cylinders



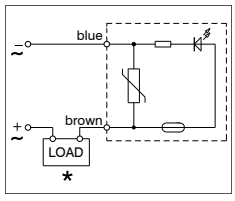


Diagrams and connections

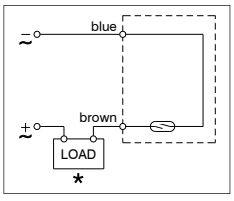
DC



UA



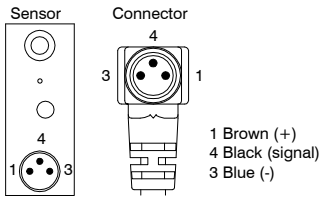
UC



***The load (LOAD) can be connected either to negative or positive pole.**

Technical data

Connection 3 wires 3 PIN



M8 connector with 3 wires cable

Coding: MCH❸



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

❸	CABLE LENGTH
	1 = 2,5 m 3-wire cable
	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

3-pin sensor with M8 connector for series assembling

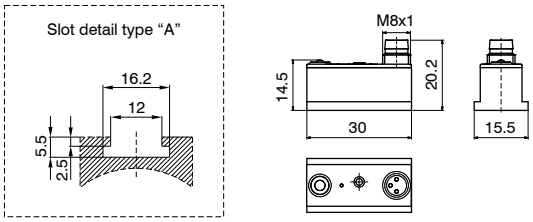
Coding: ⓉRS8UA/1L

Technical characteristics	UA/1L	
	A.C.	D.C.
Permanent maximum current	0.5A	
Maximum current (0.5 sec. pulses)	1A	
Voltage field	24V	
Permanent maximum power	20VA	15W
Working temperature	-20°C ... 70°C	
Maximum voltage drop	0V	
Connection type	With cable and connector	
Protection degree	IP65	
Switch-on time	2 ms	
Switch-off time	1 ms	
Average working time	10^7 cycles	
Repetition of intervention point	± 0,1 mm	
Contact type	N.O.	
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091	
Fixing	With screw	
Weight	7g	
With LED indication	With LED	
LED color	Red	

Ⓣ	TYPE
	= Cylinders and microcylinders. Slot detail type "A".
	S = Rodless cylinders

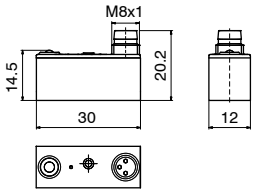
Cylinders and microcylinders



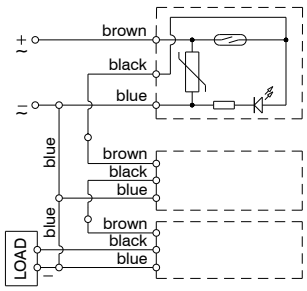


Rodless cylinders



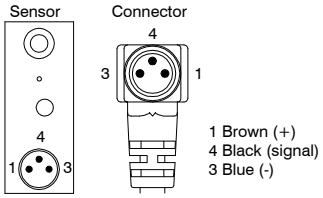


Diagrams and connections



Technical data

Connection 3 wires 3 PIN



M8 connector with 3 wires cable

Coding: MCHⓁ



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

Ⓛ	CABLE LENGTH
	1 = 2,5 m 3-wire cable
	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Sensor with 3-wire cable

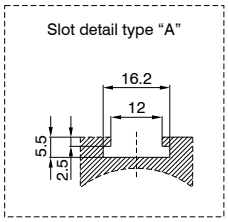
Coding: 1Ⓣ00.HAⓋ

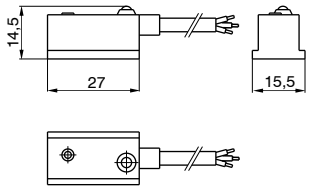
Technical characteristics	
Permanent maximum current	0,5A
Voltage field	10 ... 30V DC
Power (inductive load)	10W
Working temperature	-20°C ... 70°C
Voltage drop	2V
Cable length	3m
Cable colour	Black
External cable section	Ø4,2mm
Cover material	PUR
Number of wires in the cable	3
Wires section	0,34 mm²
Connection type	With cable without connector
Protection degree	IP65
Switch-on time	0,8 μs
Switch-off time	0,3 μs
Average working time	10^9cycles
Repetition of intervention point	± 0,1 mm
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091
Fixing	With screw
Weight	70g
With LED indication	With LED
LED color	Red

Ⓣ	TYPE
	5 = Cylinders and microcylinders. Slot detail type "A".
	6 = Rodless cylinders
Ⓥ	VERSION
	P = PNP
	N = NPN

Cylinders and microcylinders

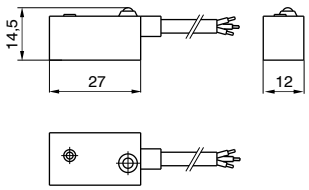






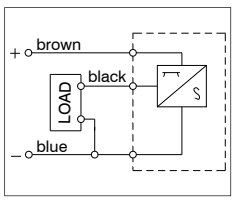
Rodless cylinders



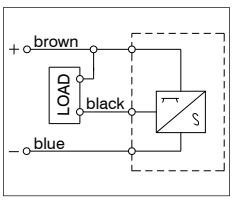


Diagrams and connections

PNP



NPN



3-pin sensor for SNAP connector

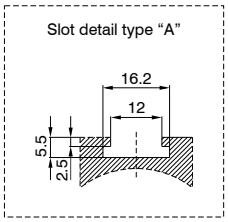
Coding: ❶HS.PA

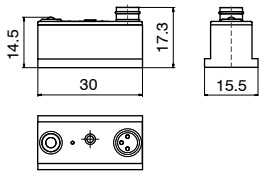
Technical characteristics	
Permanent maximum current	0,25A
Voltage field	6 ... 30V DC
Power (inductive load)	6W
Working temperature	-20°C ... 70°C
Voltage drop	2V
Connection type	With cable and connector
Protection degree	IP65
Switch-on time	0,8 μs
Switch-off time	0,3 μs
Average working time	10^9cycles
Repetition of intervention point	± 0,1 mm
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091
Fixing	With screw
Weight	6g
With LED indication	With LED
LED color	Red

❶	TYPE = Cylinders and microcylinders. Slot detail type "A". **S** = Rodless cylinders

Cylinders and microcylinders

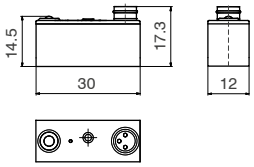




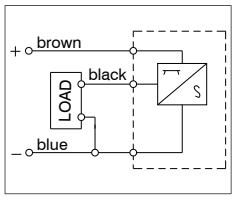


Rodless cylinders



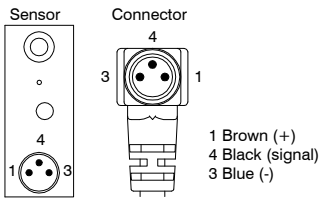


Diagrams and connections



Technical data

Connection 3 wires 3 PIN



Sensor + Cable



Coding: ❶HS.PAC❷

❶	TYPE = Cylinders and microcylinders. Slot detail type "A". **S** = Rodless cylinders
❷	CABLE LENGTH **1** = 2,5 m cable **2** = 5 m cable **3** = 10 m cable

Connector with 3 wires cable



Technical characteristics	CH1	CH2	CH3
Cable colour	Light grey		
External cable section	Ø3,5mm		
Cover material	PVC		
Number of wires in the cable	3 wires		
Wires section	0,25 mm²		

Coding: CH❷

❷	CABLE LENGTH **1** = 2,5 m cable **2** = 5 m cable **3** = 10 m cable

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

3 PIN sensor for M8 connector

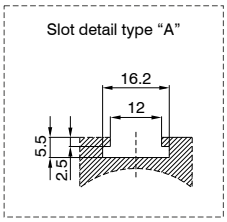
Coding: ❶HS8.❷A

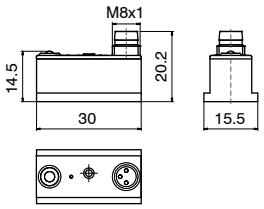
Technical characteristics	
Permanent maximum current	0,25A
Voltage field	6 ... 30V DC
Power (inductive load)	6W
Working temperature	-20°C ... 70°C
Voltage drop	2V
Connection type	With cable and connector
Protection degree	IP65
Switch-on time	0,8 μs
Switch-off time	0,3 μs
Average working time	10^9cycles
Repetition of intervention point	± 0,1 mm
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU UKCA pursuant to U.K. S.I. Regulation 2016 No. 1091
Fixing	With screw
Weight	6g
With LED indication	With LED
LED color	Red

❶	TYPE
	= Cylinders and microcylinders. Slot detail type "A".
	S = Rodless cylinders
❷	VERSION
	P = PNP
	N = NPN

Cylinders and microcylinders

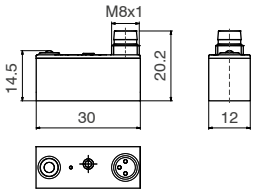






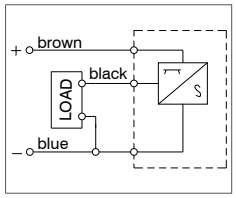
Rodless cylinders



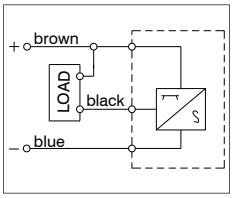


Diagrams and connections

PNP

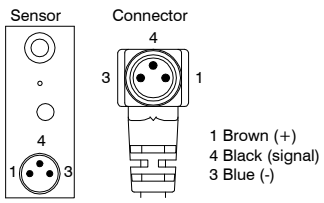


NPN



Technical data

Connection 3 wires 3 PIN



M8 connector with 3 wires cable

Coding: MCH❶



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

❶	CABLE LENGTH
	1 = 2,5 meters
	2 = 5 meters
	3 = 10 meters

Series SA		
Series	Description	Assembly
1200	for microbore with threaded end covers and “TECNO-MIR” microbore	with clamps code 1260.Ø.F
	for microbore "MIR" with rolled end covers, cylinders from Ø16 to Ø32	with clamps code 1280.Ø.F
	for microbore "MIR-INOX" with rolled end covers	with clamps code 1280.Ø.FX
1306 - 1307 - 1308	or cylinders from Ø32 to Ø63	with brackets code 1306.A
	for cylinders from Ø80 to Ø125	with brackets code 1306.B
	for cylinders from Ø160 to Ø200	with brackets code 1306.C
1315	for cylinders Ø250 and Ø320 (ISO)	with brackets code 1306.D
1319 - 1320	for cylinders Ø32 and Ø40	with brackets code 1320.A
	for cylinders Ø50 and Ø63	with brackets code 1320.B
	for cylinders Ø80 and Ø100	with brackets code 1320.C
	for cylinders Ø125	with brackets code 1320.D
	for cylinders Ø160	with brackets code 1320.E
	for cylinders Ø200	with brackets code 1320.F
1390 - 1391	for cylinders ECOLIGHT Ø32 and Ø40	with brackets code 1390.A
	for cylinders ECOLIGHT Ø50 and Ø63	with brackets code 1390.B
	for cylinders ECOLIGHT Ø80 and Ø100	with brackets code 1390.C
	for cylinders ECOLIGHT Ø125 - Ø200	with brackets code 1390.D
1500	Compact cylinders "Europe" (from Ø32)	directly on groove
1605	Rodless cylinders	with brackets code 1600.A

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series SR - SU - SQ - ST

The limit switches of magnetic sensors must be mounted on cylinders fitted with magnetic pistons.
These, are activated by the magnetic field generated by the magnetic piston as it approaches and closes the circuit sending an electrical signal to either a relay, solenoid valve or converses with the electrical control system of the machine. There are both ampulla or Hall effect magnetic sensors available which are attached to the cylinder using a suitable cylinder clamp/adaptor or mounted in a suitable slot on the cylinder. The switch may also include an activation LED indicator.

Note: The magnetic sensors are in accordance with the **Directive 2014/30/EU** and following amendments

Instruction on how to use the sensors

Particular attention needs to be paid to ensure that you do not exceed the operating characteristics shown in the following pages. Its important to note; 2 wire sensors should not be connected to the supply voltage if a load is not connected in series. Failure to do so may result in damage to the sensor. Furthermore, please consider that the 'inrush' (loading) current absorbed by the sensors might be up to 50% higher than rated.
For direct currents (DC), The polarity of the connection must be observed: The brown cable must be connected to the live (+) and the blue wire connected to the negative (-).
For all sensor applications, particular attention must be paid to the external factors such as nearby live cables, electromagnetic fields generated by electric motors as well as nearby metallic bodies as these can affect the magnetic field generated by the magnetic piston which in turn can cause malfunctions.
Electrical cable length must be kept below 10 meters in order to guarantee proper functioning.
If needed, 10 meters cable length can be exceeded; Pneumax suggests the use of an inductor or resistor in series to the load in order to reduce the capacitive behavior of the cable.
In this case, the customer is responsible for the selection of the inductor or resistor value. Pneumax assume no responsibility in case of malfunction.
When using a 2-wire reed type sensor, always ensure that the correct load is applied in series on any of the two wires.
In case two or more sensors need to be connected in series, pay attention to the voltage drop generated (around 3V for each sensor), and, in case, use the version designed for in series connection.
Hall effect sensors are longer lasting if compare to reed switched as they do not include any moving parts.

Universal sensor with cable

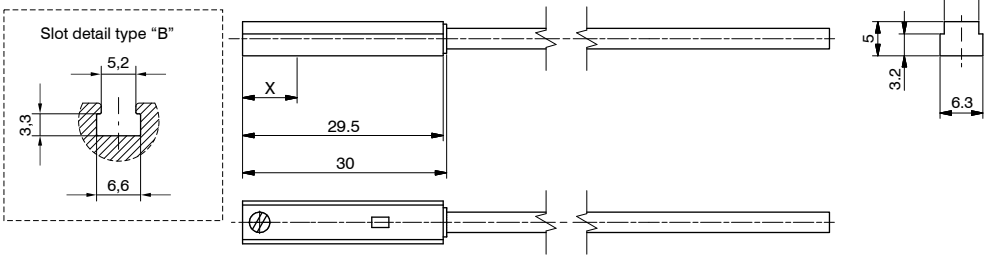
Coding: 1580.U(V)

Technical characteristics	1580.U	1580.UAP
Permanent maximum current	100mA	500mA
Permanent maximum power	10W	
Output type	/	PNP
Voltage field	5 ... 240V DC/AC	10 ... 30V DC/AC
Working temperature	-10°C ... 70°C	
Maximum voltage drop	3,5V	0.1V @100mA **
Cable length	2,5m	
Cable colour	Light grey	
External cable section	Ø3,3mm	
Cover material	PUR	
Number of wires in the cable	2	3
Wires section	0,14 mm²	
Connection type	Open end	
Protection degree	IP67	
Contact type	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	With screw	
Weight	27g	
With LED indication	With LED	
LED color	Red	Yellow

(V)	VERSION
	= 2 wires
	AP = 3 wires, PNP

*** Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.*

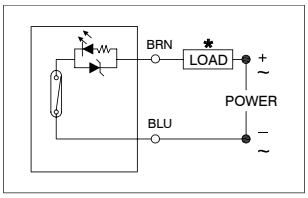




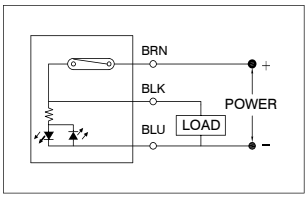
X=15mm, 1580.U point of commutation / X=13mm, 1580.UAP point of commutation

Diagrams and connections

With REED bulb, 2 wires



With REED bulb, 3 wires



***The load (LOAD) can be connected either to negative or positive pole.**

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Universal sensor with M8 connection cable

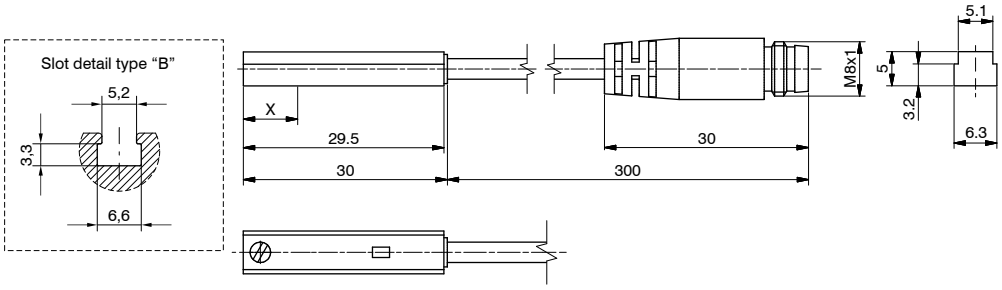
Coding: MRS.U(V)

Technical characteristics	MRS.U	MRS.UAP
Permanent maximum current	100mA	500mA
Permanent maximum power	10W	
Output type	/	PNP
Voltage field	5 ... 240V DC/AC	10 ... 30V DC/AC
Working temperature	-10°C ... 70°C	
Maximum voltage drop	3,5V	0.1V @100mA **
Cable length	300mm	
Cable colour	Light grey	
External cable section	Ø3,3mm	
Cover material	PUR	
Number of wires in the cable	2	3
Wires section	0,14 mm²	
Connection type	With M8 male connector	
Protection degree	IP67	
Contact type	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	With screw	
Weight	15g	
With LED indication	With LED	
LED color	Red	Yellow

(V)	VERSION
	= 2 wires
	AP = 3 wires, PNP

*** Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.*

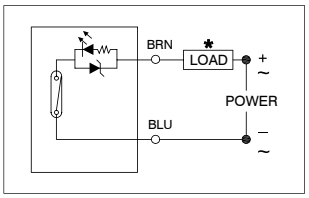




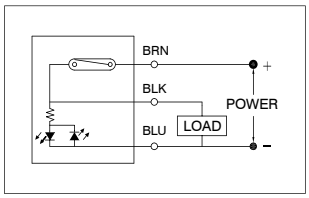
X=15mm, MRS.U point of commutation / X=13mm, MRS.UAP point of commutation

Diagrams and connections

With REED bulb, 2 wires



With REED bulb, 3 wires

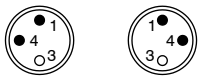


***The load (LOAD) can be connected either to negative or positive pole.**

Technical data

Connection 2 wires

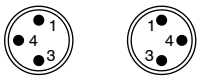
Connector / Sensor



1 Brown (+)
4 Blue (-)
3 Not used

Connection 3 wires

Connector / Sensor



1 Brown (+)
4 Black (signal)
3 Blue (-)

Connectors to use		
Sensor	MRS.U	MRS.UAP
Connectors	2 wires: MC1, MC2,MC3 3 wires: MCH1, MCH2, MCH3	

M8 connector with 2 wires cable

Coding: MC(L)



Technical characteristics	MC1	MC2	MC3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	2 wires		
Wires section	0,15 mm²		

(L)	CABLE LENGTH
	1 = 2,5 m 2-wire cable
	2 = 5 m 2-wire cable
	3 = 10 m 2-wire cable

M8 connector with 3 wires cable

Coding: MCH(L)



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

(L)	CABLE LENGTH
	1 = 2,5 meters
	2 = 5 meters
	3 = 10 meters

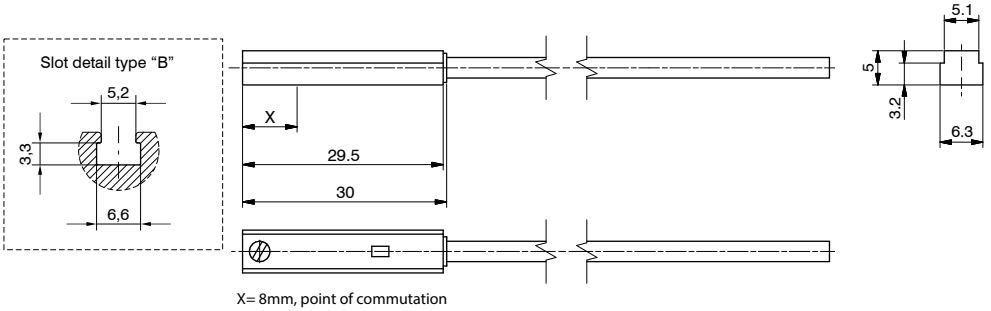
Cable sensor

Coding: 1580.HA(V)

Technical characteristics		
	1580.HAP	1580.HAN
Permanent maximum current	100mA	
Permanent maximum power	3W	
Output type	PNP	NPN
Voltage field	10 ... 30V DC	
Working temperature	-10°C ... 70°C	
Maximum voltage drop	1.5V	
Cable length	2,5m	
Cable colour	Light grey	
External cable section	Ø3,3mm	
Cover material	PUR	
Number of wires in the cable	3	
Wires section	0,14 mm²	
Connection type	Open end	
Protection degree	IP67	
Contact type	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	With screw	
Weight	27g	
With LED indication	With LED	
LED color	Yellow	Red

(V)	VERSION
	P = 3 wires PNP
	N = 3 wires NPN

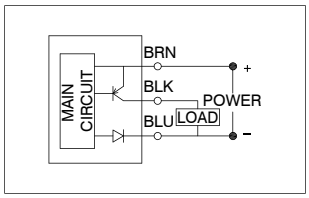




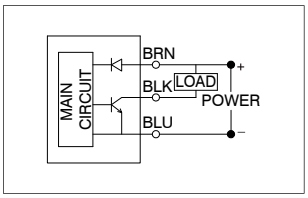
X= 8mm, point of commutation

Diagrams and connections

HALL effect-PNP, 3 wire



HALL effect-NPN, 3 wire



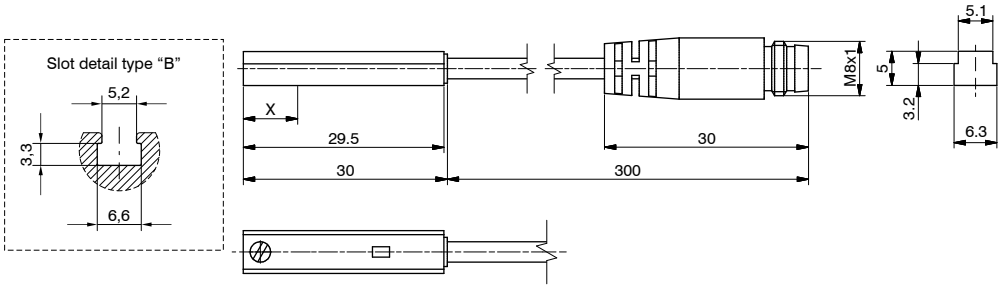
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Sensor with M8 connection cable

Coding: MHS.P

Technical characteristics	
Output type	PNP
Permanent maximum current	100mA
Permanent maximum power	3W
Voltage field	10 ... 30V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	1.5V
Cable length	300mm
Cable colour	Light grey
External cable section	Ø3,3mm
Cover material	PUR
Number of wires in the cable	3
Wires section	0,14 mm²
Connection type	With M8 male connector
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	15g
With LED indication	With LED
LED color	Yellow

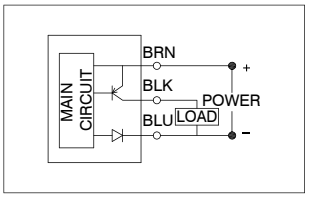




X=8mm, point of commutation

Diagrams and connections

HALL effect-PNP, 3 wire



Technical data

Connection 3 wires

Connector



Sensor



1 Brown (+)
4 Black (signal)
3 Blue (-)

Connectors to use	
Sensor	MHS.P
Connectors	MCH1 - MCH2 - MCH3

M8 connector with 3 wires cable

Coding: MCH L



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

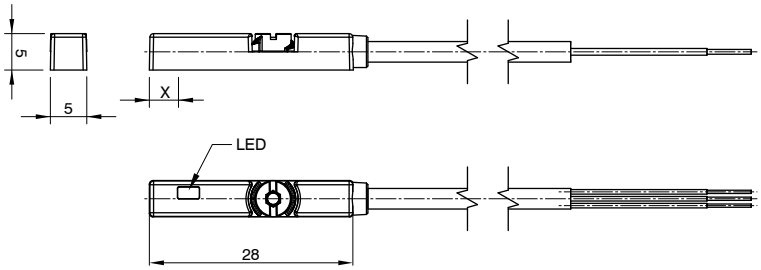
L	CABLE LENGTH
	1 = 2,5 meters
	2 = 5 meters
	3 = 10 meters

Cable sensor

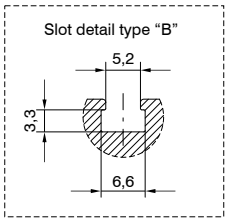
Coding: 1595.HAP

Technical characteristics	
Output type	PNP
Permanent maximum current	100mA
Permanent maximum power	3W
Voltage field	10 ... 28V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	1,5V
Cable length	2,5m
Cable colour	Black
External cable section	Ø2,8mm
Cover material	PUR
Number of wires in the cable	3
Wires section	0,14 mm²
Connection type	Open end
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	23g
With LED indication	With LED
LED color	Yellow

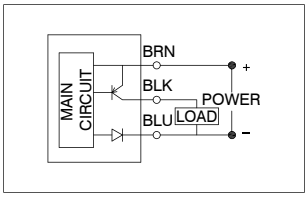




X= 2,3mm, point of commutation



Diagrams and connections



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Cable sensor

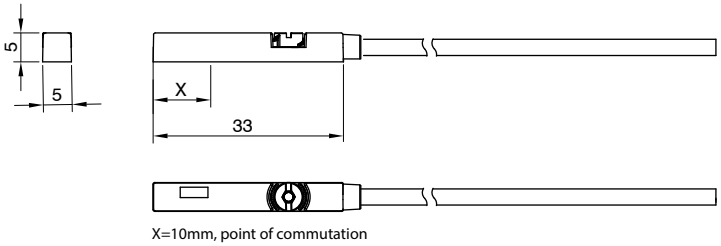
Coding: 1590.U(V)

(V)	VERSION
	= 2 wires
	AP = 3 wires, PNP

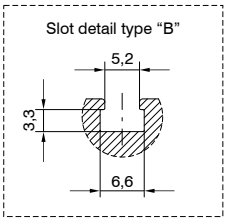
Technical characteristics		
	1590.U	1590.UAP
Output type	-	PNP
Permanent maximum current	100mA	500mA
Permanent maximum power	10W	
Voltage field	5 ... 240V DC/AC	10 ... 30V DC/AC
Working temperature	-10°C ... 70°C	
Maximum voltage drop	3V	0.1V @100mA **
Cable length	2,5m	
Cable colour	Black	
External cable section	Ø2,8mm	
Cover material	PUR	
Number of wires in the cable	2	3
Wires section	0,14 mm²	
Connection type	Open end	
Protection degree	IP67	
Contact type	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	With screw	
Weight	27g	
With LED indication	With LED	
LED color	Red	Yellow

*** Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.*



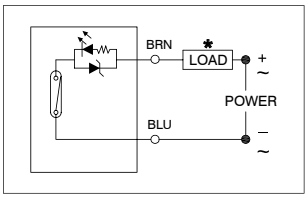


X=10mm, point of commutation

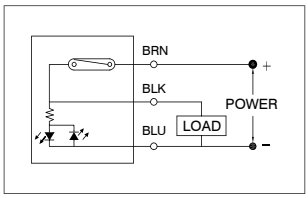


Diagrams and connections

With REED bulb, 2 wires



With REED bulb, 3 wires



***The load (LOAD) can be connected either to negative or positive pole.**

Sensor with M8 connection cable

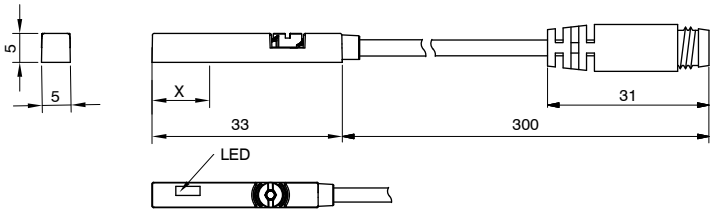
Coding: LRS.U(V)

Technical characteristics		
	LRS.U	LRS.UAP
Output type	-	PNP
Permanent maximum current	100mA	500mA
Permanent maximum power	10W	
Voltage field	5 ... 240V DC/AC	10 ... 30V DC/AC
Working temperature	-10°C ... 70°C	
Maximum voltage drop	3V	0.1V @100mA **
Cable length	300mm	
Cable colour	Black	
External cable section	Ø2,8mm	
Cover material	PUR	
Number of wires in the cable	2	3
Wires section	0,14 mm²	
Connection type	With M8 male connector	
Protection degree	IP67	
Contact type	N.O.	
Directive	CE as set out in Directive 2014/30/EU	
Fixing	With screw	
Weight	15g	
With LED indication	With LED	
LED color	Red	Yellow

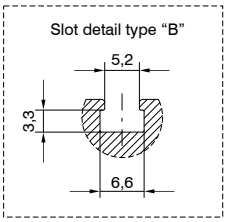
(V)	VERSION
	= 2 wires
	AP = 3 wires, PNP

*** Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.*



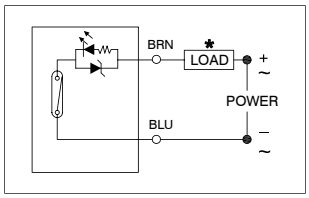


X=10mm, point of commutation

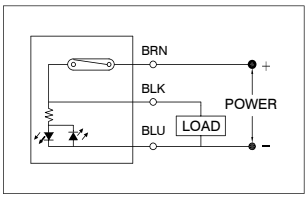


Diagrams and connections

With REED bulb, 2 wires



With REED bulb, 3 wires

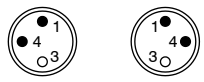


***The load (LOAD) can be connected either to negative or positive pole.**

Technical data

Connection 2 wires

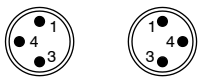
Connector Sensor



1 Brown (+)
4 Blue (-)
3 Not used

Connection 3 wires

Connector Sensor



1 Brown (+)
4 Black (signal)
3 Blue (-)

Connectors to use		
Sensors	LRS.U	LRS.UAP
Connectors	MC1 - MC2 - MC3	MCH1 - MCH2 - MCH3

M8 connector with 2 wires cable

Coding: MC(L)



Technical characteristics	MC1	MC2	MC3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	2 wires		
Wires section	0,15 mm²		

(L)	CABLE LENGTH
	1 = 2,5 m 2-wire cable
	2 = 5 m 2-wire cable
	3 = 10 m 2-wire cable

M8 connector with 3 wires cable

Coding: MCH(L)



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

(L)	CABLE LENGTH
	1 = 2,5 m 3-wire cable
	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

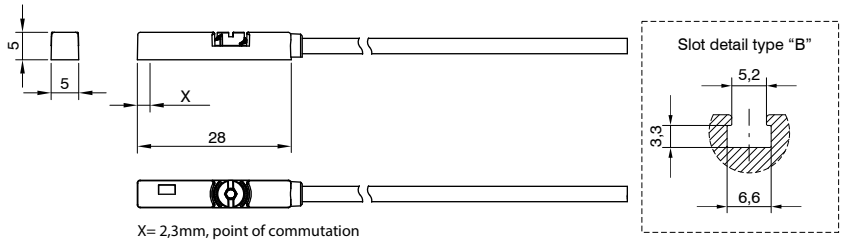
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Cable sensor

Coding: 1590.HAP

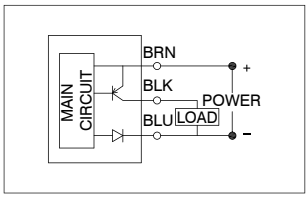
Technical characteristics	
Output type	PNP
Permanent maximum current	200mA
Permanent maximum power	5.5W
Voltage field	10 ... 28V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	1,5V
Cable length	2,5m
Cable colour	Black
External cable section	Ø2,8mm
Cover material	PUR
Number of wires in the cable	3
Wires section	0,14 mm²
Connection type	Open end
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	27g
With LED indication	With LED
LED color	Yellow





X= 2,3mm, point of commutation

Diagrams and connections

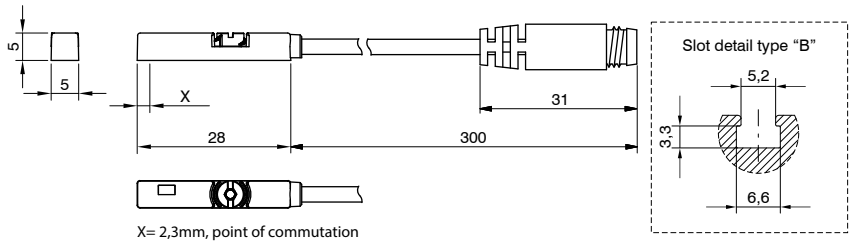


Sensor with M8 connection cable

Coding: LHS.P

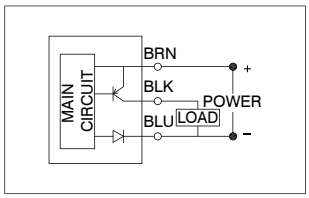
Technical characteristics	
Output type	PNP
Permanent maximum current	200mA
Permanent maximum power	5.5W
Voltage field	10 ... 28V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	1,5V
Cable length	300mm
Cable colour	Black
External cable section	Ø2,8mm
Cover material	PUR
Number of wires in the cable	3
Wires section	0,14 mm²
Connection type	With M8 male connector
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	15g
With LED indication	With LED
LED color	Yellow





X= 2,3mm, point of commutation

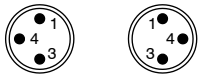
Diagrams and connections



Technical data

Connection 3 wires

Connector Sensor



1 Brown (+)
4 Black (signal)
3 Blue (-)

Connectors to use	
Sensors	LHS.P
Connectors	MCH1 - MCH2 - MCH3

M8 connector with 3 wires cable

Coding: MCH(L)



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

(L)	CABLE LENGTH
	1 = 2,5 m 3-wire cable
	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

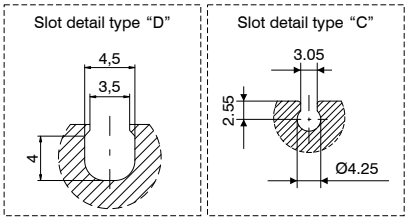
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

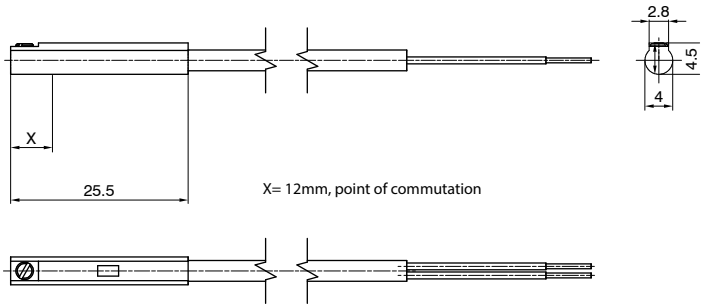
Universal sensor with cable

Coding: 1581.U

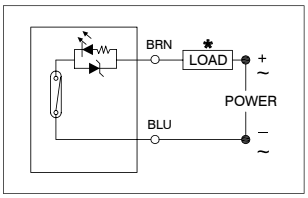
Technical characteristics	
Permanent maximum current	100mA
Permanent maximum power	10W
Voltage field	5 ... 120V DC/AC
Working temperature	-10°C ... 70°C
Maximum voltage drop	3,5V
Cable length	2,5m
Cable colour	Light grey
External cable section	Ø2,8mm
Cover material	PUR
Number of wires in the cable	2
Wires section	0,14 mm²
Connection type	Open end
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	27g
With LED indication	With LED
LED color	Red







Diagrams and connections



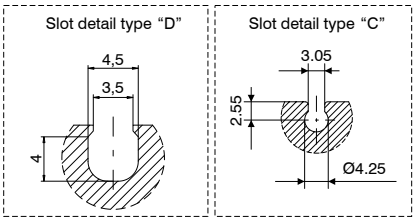
***The load (LOAD) can be connected either to negative or positive pole.**

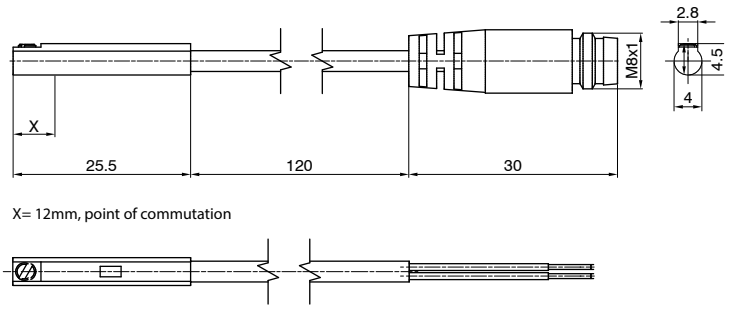
Universal sensor with M8 connection cable

Coding: TRS.U

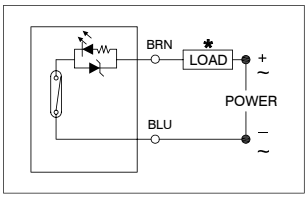
Technical characteristics	
Permanent maximum current	100mA
Permanent maximum power	10W
Voltage field	5 ... 120V DC/AC
Working temperature	-10°C ... 70°C
Maximum voltage drop	3,5V
Cable length	150mm
Cable colour	Light grey
External cable section	Ø2,8mm
Cover material	PUR
Number of wires in the cable	2
Wires section	0,14 mm²
Connection type	With M8 male connector
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	10g
With LED indication	With LED
LED color	Red







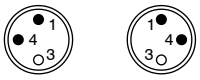
Diagrams and connections



Technical data

Connection 2 wires

Connector Sensor



1 Brown (+)
4 Blue (-)
3 Not used

Connectors to use	
Sensors	TRS.U
Connectors	MC1 - MC2 - MC3

M8 connector with 2 wires cable

Coding: MC(L)



Technical characteristics	MC1	MC2	MC3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	2 wires		
Wires section	0,15 mm²		

(L)	CABLE LENGTH
	1 = 2,5 m 2-wire cable
	2 = 5 m 2-wire cable
	3 = 10 m 2-wire cable

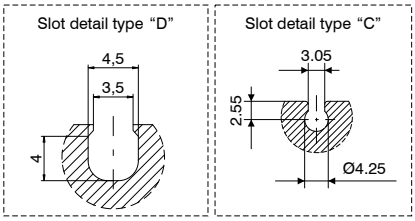
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

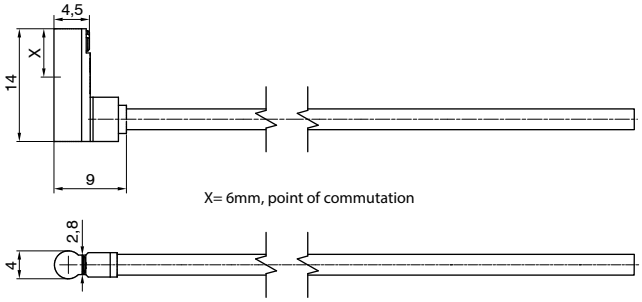
Sensor with 90° cable

Coding: 1583.DC

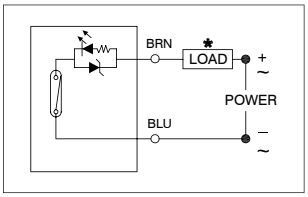
Technical characteristics	
Permanent maximum current	50mA
Permanent maximum power	1.5W
Voltage field	5 ... 30V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	3,5V
Cable length	2m
Cable colour	Black
External cable section	Ø2,6mm
Cover material	PVC
Number of wires in the cable	2
Wires section	0,14 mm²
Connection type	Open end
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	22g
With LED indication	With LED
LED color	Red







Diagrams and connections



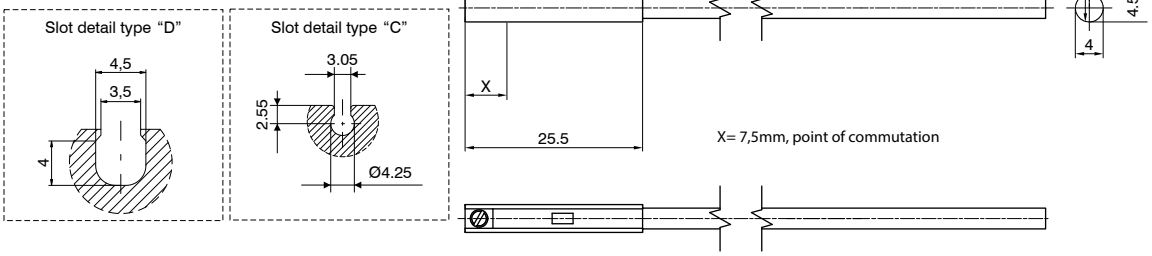
Cable sensor

Coding: 1581.HAP

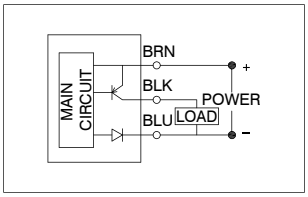
Technical characteristics	
Output type	PNP
Permanent maximum current	200mA
Permanent maximum power	6W
Voltage field	5 ... 30V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	1V @200mA *
Cable length	2,5m
Cable colour	Black
External cable section	Ø2,8mm
Cover material	PUR
Number of wires in the cable	3
Wires section	0,14 mm²
Connection type	Open end
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	22g
With LED indication	With LED
LED color	Green

** Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.*





Diagrams and connections



Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

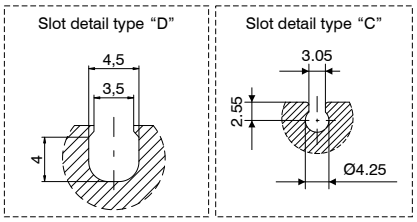
Sensor with M8 connection cable

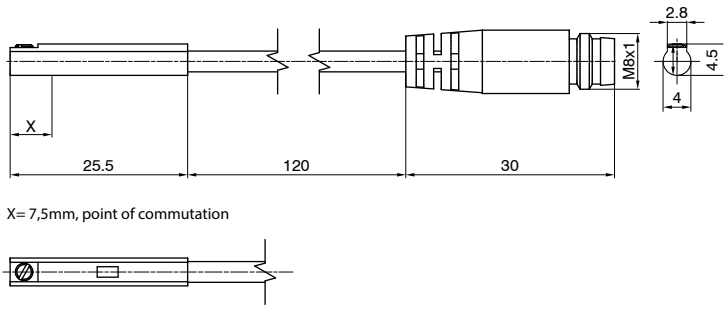
Coding: THS.P

Technical characteristics	
Output type	PNP
Permanent maximum current	200mA
Permanent maximum power	6W
Voltage field	5 ... 30V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	1V @200mA *
Cable length	150mm
Cable colour	Black
External cable section	Ø2,8mm
Cover material	PUR
Number of wires in the cable	3
Wires section	0,14 mm²
Connection type	With M8 male connector
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	10g
With LED indication	With LED
LED color	Green

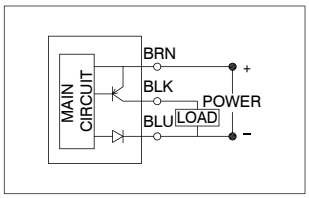
** Test conditions: 24V DC, ambient temperature 25°C, cable length 2 meters.*







Diagrams and connections



Technical data

Connection 3 wires

Connector



Sensor



1 Brown (+)
4 Black (signal)
3 Blue (-)

Connectors to use	
Sensors	THS.P
Connectors	MCH1 - MCH2 - MCH3

M8 connector with 3 wires cable

Coding: MCH(L)



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

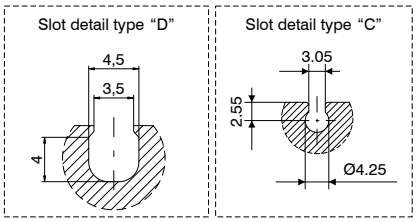
(L)	CABLE LENGTH
	1 = 2,5 m 3-wire cable
	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

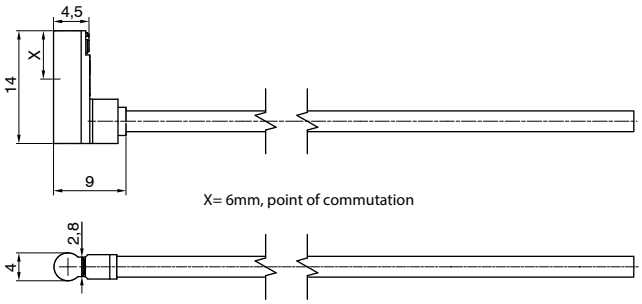
Sensor with 90° cable

Coding: 1583.HAP

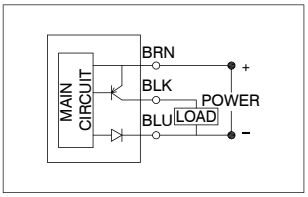
Technical characteristics	
Output type	PNP
Permanent maximum current	50mA
Permanent maximum power	1,5W
Voltage field	4,5 ... 28V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	0,5V
Cable length	3m
Cable colour	Black
External cable section	Ø2,6mm
Cover material	PVC
Number of wires in the cable	3
Wires section	0,14 mm²
Connection type	Open end
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	22g
With LED indication	With LED
LED color	Red







Diagrams and connections

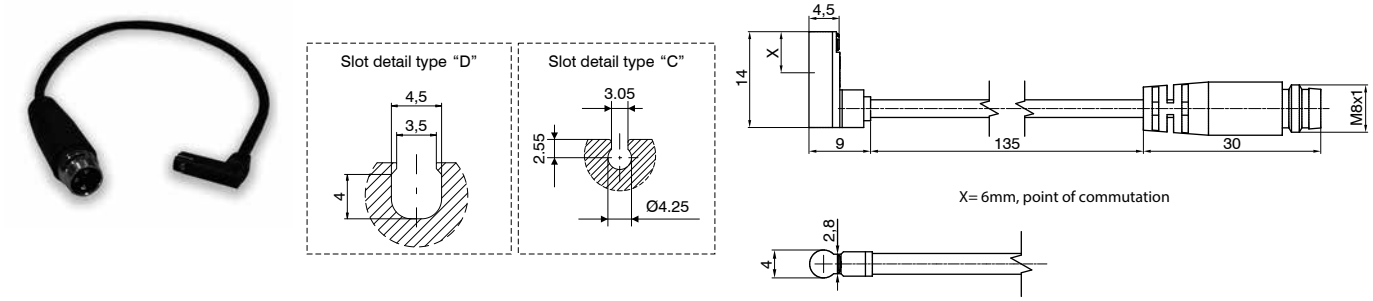


Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

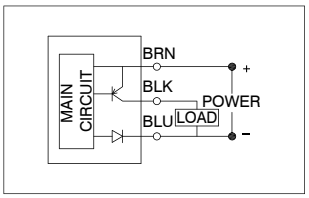
Sensor with 90° cable and M8 connection

Coding: THR.P

Technical characteristics	
Output type	PNP
Permanent maximum current	50mA
Permanent maximum power	1,5W
Voltage field	4,5 ... 28V DC
Working temperature	-10°C ... 70°C
Maximum voltage drop	0,5V
Cable length	100mm
Cable colour	Black
External cable section	Ø2,6mm
Cover material	PVC
Number of wires in the cable	3
Wires section	0,14 mm²
Connection type	With M8 male connector
Protection degree	IP67
Contact type	N.O.
Directive	CE as set out in Directive 2014/30/EU
Fixing	With screw
Weight	10g
With LED indication	With LED
LED color	Red

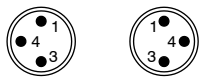


Diagrams and connections



Technical data

Connection 3 wires



1 Brown (+)
4 Black (signal)
3 Blue (-)

Connectors to use	
Sensors	THR.P
Connectors	MCH1 - MCH2 - MCH3

M8 connector with 3 wires cable

Coding: MCH**L**



Technical characteristics	MCH1	MCH2	MCH3
Cable colour	Light grey		
External cable section	Ø2,6mm		
Cover material	PUR		
Number of wires in the cable	3 wires		
Wires section	0,15 mm²		

L	CABLE LENGTH
	1 = 2,5 m 3-wire cable
	2 = 5 m 3-wire cable
	3 = 10 m 3-wire cable

SR series, rectangular section version (for “B” type slot)		
Series	Description	Assembly
1200	Microbore with threaded end covers and “TECNO-MIR” microbore “MIR” with rolled end covers Microbore “MIR-INOX” with rolled end covers	with clamps code 1260.Ø.FS with clamps code 1280.Ø.FS with clamps code 1280.Ø.FSX
1319 - 1320 1325 - 1345 1330 - 1332 1348 - 1349	for cylinders Ø32 ... Ø40	with bracket code 1320.AS
	for cylinders Ø50 ... Ø63	with bracket code 1320.BS
	for cylinders Ø80 ... Ø100	with bracket code 1320.CS
	for cylinders Ø125	with bracket code 1320.DSC
	for cylinders Ø160	with bracket code 1320.ESC
	for cylinders Ø200	with bracket code 1320.FSC
1386-87 / 1396-97	Cylinders according to standard ISO 15552 ECOPLUS	directly on groove
1390 - 1391	Cylinders according to standard ISO 15552 ECOLIGHT Warning: To use only into the lateral slot, from Ø32 to Ø63 cylinders. (do not use into the 2 slots positioned on the side of feeding connection)	directly on groove
1370 ... 1373	Cylinders ECOFLAT	directly on groove
1500	Short stroke compact cylinders	with adapter code 1380.01F
	Compact cylinders “Europe”	from Ø12 to Ø25: directly on groove
		from Ø32 to Ø50:directly on groove or with adapter 1380.01F
		from Ø63 to Ø100: with adapter cod. 1380.01F
	Compact cylinder according to standard ISO 21287 ECOMPACT	directly on groove
1605	Rodless cylinders	with adapter code 1600.C
6100	Guided compact cylinder (Ø20 - Ø63)	directly on groove
6101	Heavy duty guided shortstroke cylinder	directly on groove
6200	Twin-rod slide units	directly on groove
6210	Through twin-rod slide units	directly on groove
6301	Pneumatic grippers, angular standard version	directly on groove
6303	180° angular gripper rack & pinion style	directly on groove
6310	Parallel style pneumatic grippers standard version (Ø10 - Ø25)	directly on groove
6311	Parallel style pneumatic grippers wide opening	directly on groove
6312	3 finger parallel style pneumatic grippers (Ø32 - Ø125)	directly on groove



SQ-SU series, square section version (for sensor slot type “B”)		
Series	Description	Assembly
1319 - 1320 1325 - 1345 1330 - 1332 1348 - 1349	for cylinders Ø32 ... Ø40	with brackets code 1320.ASC
	for cylinders Ø50 ... Ø63	with brackets code 1320.BSC
	for cylinders Ø80 ... Ø100	with brackets code 1320.CSC
	for cylinders Ø125	with bracket code 1320.DSC
	for cylinders Ø160	with bracket code 1320.ESC
	for cylinders Ø200	with bracket code 1320.FSC
1386-87 / 1396-97	Cylinders according to standard ISO 15552 ECOPLUS	directly on groove
1390 - 1391	Cylinders according to standard ISO 15552 ECOLIGHT	directly on groove
1370 ... 1373	Cylinders ECOFLAT	directly on groove
1500	Short stroke compact cylinders	with adapter code 1380.01F
	Compact cylinders “Europe”	from Ø12 to Ø25: directly on groove
		from Ø32 to Ø50: directly on groove
		directly on groove
	Compact cylinder according to standard ISO 21287 ECOMPACT	directly on groove
1605	Rodless cylinders	with adapter code 1600.C
6100	Guided compact cylinder (Ø20 - Ø63)	directly on groove
6101	Heavy duty guided shortstroke cylinder	directly on groove
6200	Twin-rod slide units	directly on groove
6210	Through twin-rod slide units	directly on groove
6301	Pneumatic grippers, angular standard version	directly on groove
6303	180° angular gripper rack & pinion style	directly on groove
6310	Parallel style pneumatic grippers standard version (Ø10 - Ø25)	directly on groove
6311	Parallel style pneumatic grippers wide opening	directly on groove
6312	3 finger parallel style pneumatic grippers (Ø32 - Ø125)	directly on groove
6411	Single rack rotary actuators	directly on groove



ST Series, round section version (for sensor slot type “C” and “D”)		
Series	Description	Assembly
6100	Guided compact cylinder (Ø12 - Ø16)	directly on groove
6302	Pneumatic grippers, 180 °angular	directly on groove
6310	Parallel style pneumatic grippers standard version (Ø16 and Ø25)	directly on groove
6312	3 finger parallel style pneumatic grippers (Ø16 ... (Ø25)	directly on groove
6400	Double rack rotary actuators with turn table	directly on groove
6420	Vane type rotary actuators (from Ø10 to Ø40)	directly on groove
6500	Multimount cylinders	directly on groove
6600	Slide cylinders	directly on groove
6700	Guide cylinders	directly on groove



ST Series, 90° round cable section version (for sensor slot type “C” and “D”)		
Series	Description	Assembly
6420	Vane type rotary actuators	directly on groove



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Series 1260-1320

The piston rod lock devices are clamping units mounted on the microbore cylinders front head. They allow the piston rod to lock in any position. Piston rod clamping is mechanically obtained by springs actuated purpose-made jaws. This method allows to lock the cylinder in the desired position, should the air pressure drop.
The piston rod lock device is not a safety device.

Construction characteristics

Body	anodized aluminium
Clamping jaws	hardened alloy copper
Seals	NBR
Springs	spring steel
Pistons	acetal resin
Body	anodized aluminium

Operational characteristics

Fluid	filtered and lubricated air
Working pressure	3 bar ... 6 bar
Function	mechanical double jaws
Locking	axial, two-direction (normally locked)
Unlocking	pneumatic
Working temperature	-5 °C ... +70 °C

Holding force with static load (microbore cylinders)	Ø12	Ø16	Ø20	Ø25	Ø32
	180N	180N	350N	350N	600N

Holding force with static load (cylinders)	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
	600N	1000N	1400N	2000N	5000N	5000N	7000N

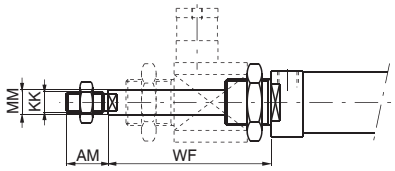
Attention: Dry air must be used for application below 0°C

Use and maintenance

Operate within the specified technical characteristics.
The piston rod lock does not require maintenance if properly utilised.
The working inlet port has to be pressurised for assembling the piston rod lock device on cylinder. Alternatively adjust the jaws with screw located on connection.
Spare parts are not available.

Microbore for piston rod lock

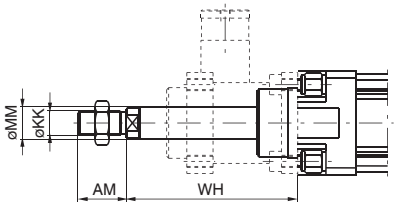
Threaded end covers version



Ordering code
12_ _.Ø.stroke.B

Order piston rod lock separately.
Do not use with stainless steel or hexagonal piston rod.

ISO 15552 cylinders for piston rod lock

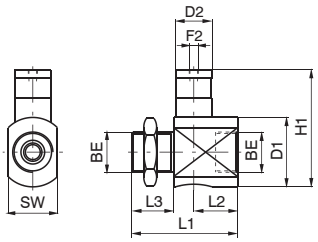


Order piston rod lock separately. Do not use with stainless steel piston rod.

Ordering code
13 – –.Ø.stroke.– –.B

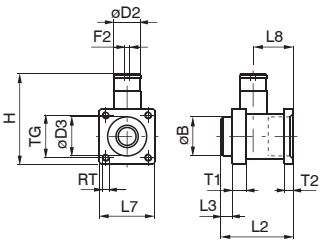
Piston rod lock complete





Do not use as safety device



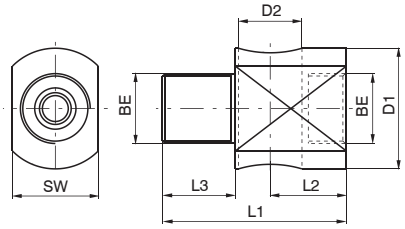


Ordering code	Ø	12	16	20	25	32
1260.Ø.51BS	Weight (g)	82	82	140	140	188

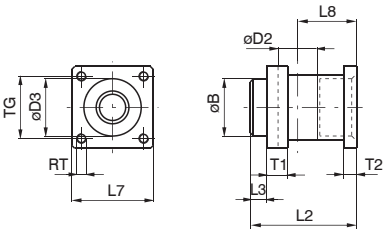
Ordering code	Ø	32	40	50	63	80	100	125
1320.Ø.51BS	Weight (g)	191	276	535	852	1772	2412	5250

Piston rod lock bracket







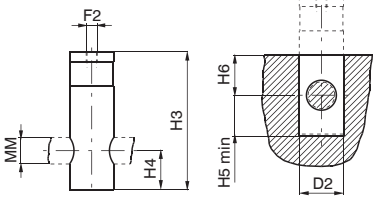


Ordering code	Ø	12	16	20	25	32
1260.Ø.51S	Weight (g)	60	60	85	85	133

Ordering code	Ø	32	40	50	63	80	100	125
1320.Ø.51S	Weight (g)	142	171	360	486	1060	1700	3500

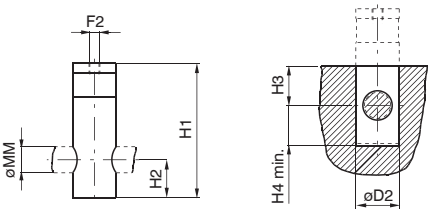
Piston rod lock and housing





Do not use as safety device





Ordering code
1260.Ø.51B (Ø12...Ø25)
1320.32.51B (Ø32)

Ø	12	16	20	25	32
Weight (g)	22	22	55	55	55

Ordering code	Ø	32	40	50	63	80	100	125
1320.Ø.51B	Weight (g)	49	105	175	366	712	712	1750

Table of dimensions (series 1200)

Bore	AM	BE	D1	D2	F2	H1	H3	H4	H5	H6	KK	L1	L2	L3	MM	SW	WF
12	16	M16x1,5	20	16	M5	35	35	10	11	10	M6x1	42	21	12	6	20	55
16	16	M16x1,5	20	16	M5	35	35	10	11	10	M6x1	42	21	12	6	20	55
20	20	M22x1,5	38	20	M5	64	62	17,5	19	18	M8x1,25	58	24	23	8	27	73
25	22	M22x1,5	38	20	M5	64	62	17,5	19	18	M10x1,25	58	24	23	10	27	77
32	20	M30x1,5	39,5	20	M5	64	62	17,5	18,5	18	M10x1,25	60	26	22	12	35	76,5

Table of dimensions (series 1300)

Bore	AM	B	D2	D3	F2	H	H1	H2	H3	H4	KK	L2	L3	L7	L8	MM	RT	T1	T2	TG	WH
32	22	30	20	30,5	M5	67	62	17,5	18	18,5	M10x1,25	58	10	45	31,5	12	M6	13	8	32,5	74
40	24	35	24	35	G 1/8"	86	83	22	22	23	M12x1,25	65	10	50	36	16	M6	13	8	38	85
50	32	40	30	40	G 1/8"	105	100	25	25	26	M16x1,5	82	12	60	45,5	20	M8	16	15	46,5	107
63	32	45	38	45	G 1/8"	121	116	30	30	31	M16x1,5	82	12	70	49,5	20	M8	16	15	56,5	107
80	40	45	48	45	G 1/8"	164	155	36	36	37	M20x1,5	110	20	90	61	25	M10	20	18	72	126
100	40	55	48	55	G 1/8"	172	155	36	36	37	M20x1,5	115	23	105	65	25	M10	20	18	89	143
125	54	60	65	60	G 1/8"	210	195	56	55	56	M27x2	167	45	140	86,5	32	M12	30	22	110	187

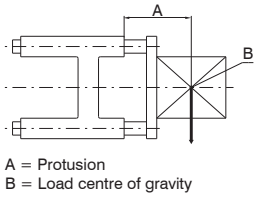
Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 1260 - 1320 Linear guiding units for ISO 6432 microcylinders and ISO 15552 cylinders

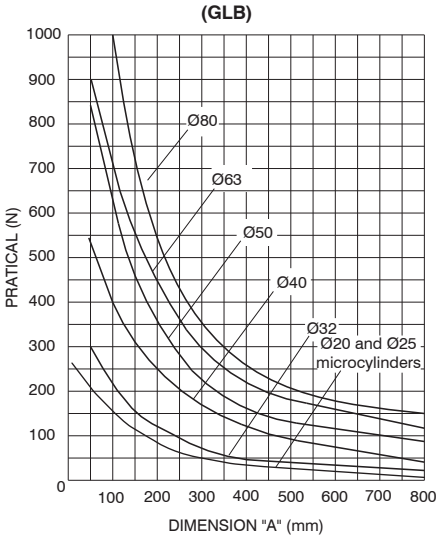
Construction characteristics

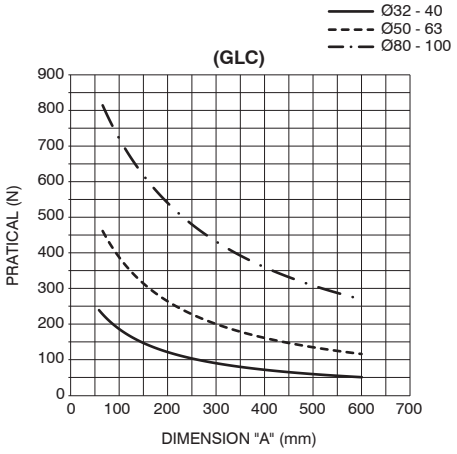
Body	sintered bronze bushings : anodised aluminium recirculating ball bearings guides : aluminium alloy black painted
Bushings	sintered bronze or recirculating ball bearing guides
Wipers	oil resistant NBR rubber
Guide rods	sintered bronze bushings : C43 chromed steel recirculating ball bearings guides : tempered and chromed steel
Plate	zinc plated steel
Mounting block	zinc plated steel

Loading diagram based on dimension "A"



A = Protusion
B = Load centre of gravity





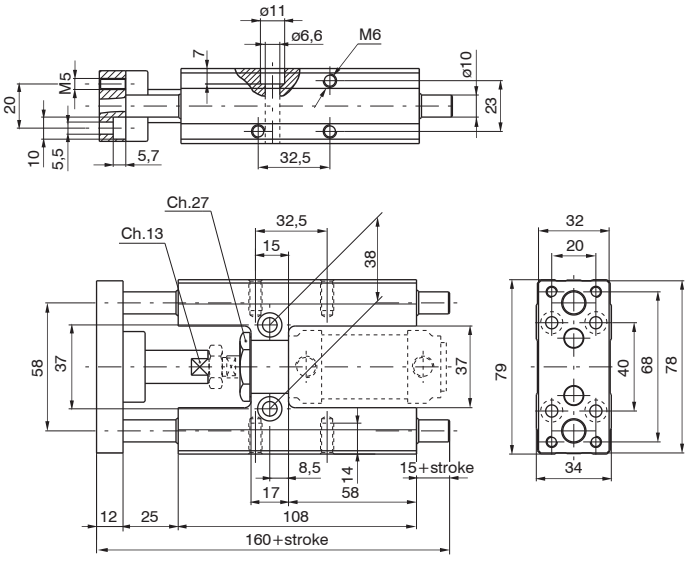
Use and maintenance

Follow the indication of the above diagram as far as loads are concerned. A large quantity of grease is placed between the two wipers during assembly, therefore the linear control units should not require special maintenance.

Linear guiding units for ISO 6432 microcylinders with sintered bronze rod bushings

Coding: 1260.Ø.stroke.GLB
(Microbore cylinders ISO 6432 must be ordered separately)





Standard strokes

Ø20 100 - 150 - 200 mm
Ø25 100 - 150 - 200 - 250 mm
On request are available strokes up to: 1000 mm

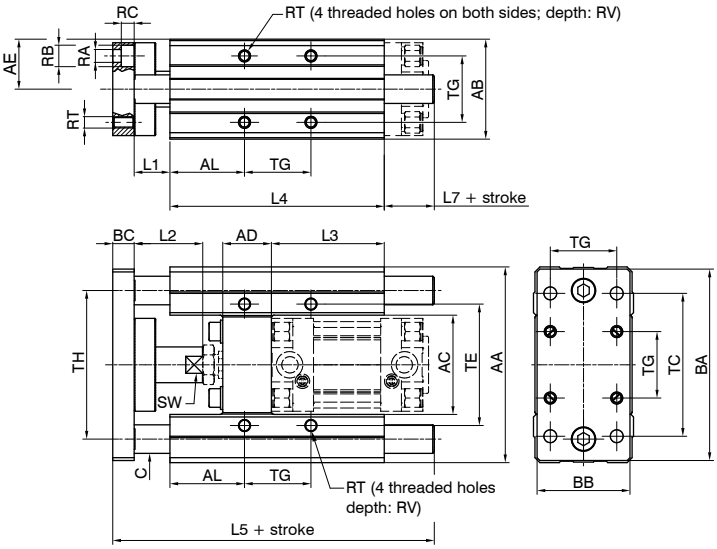
Weight (g)	
stroke 100	970
each 50 mm	60

Sensors and clamps: standard sensors and clamps are used

Linear guiding units for ISO 15552 cylinders with sintered bronze rod bushings

Coding: 1320.Ø.stroke.GLB
(Cylinders must be ordered separately)





Standard strokes

Ø32 100 - 150 - 200 - 250 - 300 mm
Ø40 100 - 150 - 200 - 250 - 300 - 350 mm
Ø50 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 mm
Ø63 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 - 500 mm
Ø80 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 - 500 - 550 mm
On request are available strokes up to: 2800 mm

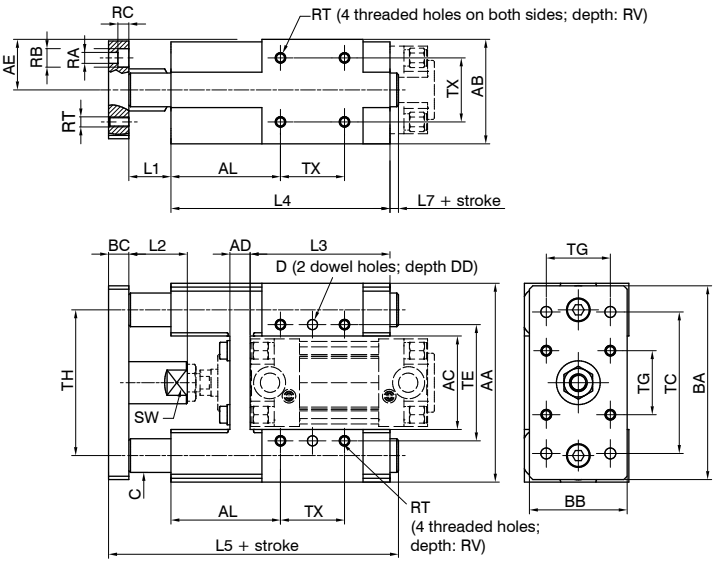
Weight (g)					
Bore	32	40	50	63	80
stroke 100	1720	2900	4700	6000	11300
each 50mm	91	159	159	250	380

Sensor clamps and brackets for 1319-1320 series:
Use standard sensors and brackets on the rear and following special brackets on front of cylinders for use sensors codes 1500._, RS._, HS._ which have the following ordering codes:
1320.AGL sensor bracket for cylinders Ø32 and Ø40
1320.BGL sensor bracket for cylinders Ø50 and Ø63
1320.CGL sensor bracket for cylinders Ø80

Linear guiding units for ISO 15552 cylinders with recirculating ball bearings guides

Coding: 1320.Ø.stroke.GLC
(Cylinders must be ordered separately)





Standard strokes

Ø32 100 - 150 - 200 - 250 - 300 mm
Ø40 100 - 150 - 200 - 250 - 300 - 350 mm
Ø50 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 mm
Ø63 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 - 500 mm
Ø80-Ø100 100 - 150 - 200 - 250 - 300 - 350 -400 - 450 - 500 - 550 mm
On request are available strokes up to: 2800 mm

Weight (g)						
Bore	32	40	50	63	80	100
stroke 100	3100	3050	6350	6200	15500	
each 50mm	246		385		455	

Sensor clamps and brackets for 1319-1320 series:
Use standard sensors and brackets on the rear and following special brackets on front of cylinders for use sensors codes 1500._, RS._, HS._ which have the following ordering codes:
1320.AGL sensor bracket for cylinders Ø32 and Ø40
1320.BGL sensor bracket for cylinders Ø50 and Ø63
1320.CGL sensor bracket for cylinders Ø80

Table of dimensions

	Bore	AA	AB	AE	AC	AD	AL	BA	BB	BC	C	ØD	DD	RA	RB	RC	RT	RV	TE	TC	TG	TX	TH	L1	L2	L3	L4	L5	L7	SW
GLB	32	97	49	28,5	50	24	44,7	93	45	12	12	/	/	6,6	11	6,5	M6	12	61	78	32,5	32,5	74	25	39	76	125	187	25	15
	40	115	58	29	57,5	28	48	112	55	12	16			6,6	11	6,5	M6	14	69	84	38	38	87	25	44	81	140	207	30	15
	50	137	70	35	69,5	34	52,2	134	65	15	20			9	15	9	M8	16	85	100	46,5	46,5	104	25	48	79	150	225	35	22
	63	152	85	42,5	84,5	34	55,7	149	80	15	20			9	15	9	M8	16	100	105	56,5	56,5	119	25	48	111	182	242	20	22
	80	189	105	52,5	106	34	66	180	100	20	25			11	18	11	M10	20	130	130	72	72	148	25	53	128	215	302	42	27
GLC	32	118	62	30	51	12	65	115	58	12	20	6	12	6,5	11	6,5	M6	12	69	84	38	38	84	25	35	83	130	172	5	20
	40	118	62	30	55,5	12	65	115	58	12	20	6	12	6,5	11	6,5	M6	12	69	84	38	38	86,5	25	35	83	130	172	5	20
	50	155	85,5	42,5	70	16	80	153	80	15	25	6	12	9	15	9	M8	16	100	112	56,5	46.5	112	25	35	106,5	165	210	5	24
	63	155	85,5	42,5	78	16	80	153	80	15	25	6	12	9	15	9	M8	16	100	112	56,5	46.5	116	25	35	106,5	165	210	5	24
	80-100	214	131	66,5	122	39,5	115	213	130	15	30	8	13	11	17	10,5	M10	15	176	176	89	86	168	20	55	160,5	260	300	5	24

Overall dimensions and technical information are provided solely for informative purposes and may be modified without notice

Series 6900

Operational characteristics

Code	Max. power (Nm)		Return force	Operating temperature	Weight
	For cycle	For hour			
6900.A	4	14400	2,5 ... 6 N	-20°C ... 80°C	10 g
6900.B	15	24000	3,6 ... 8 N		20 g
6900.C	30	50000	13 ... 23 N		50 g
6900.D	100	76500	12 ... 23 N		140 g
6900.E	390	175500	14 ... 31 N		340 g

Shock absorbers

Coding: 6900.Ⓕ

	THREAD
Ⓕ	**A** = Thread M8x1
	B = Thread M10x1
	C = Thread M14x1,5
	D = Thread M20x1,5
	E = Thread M27x1,5



Overall dimensions

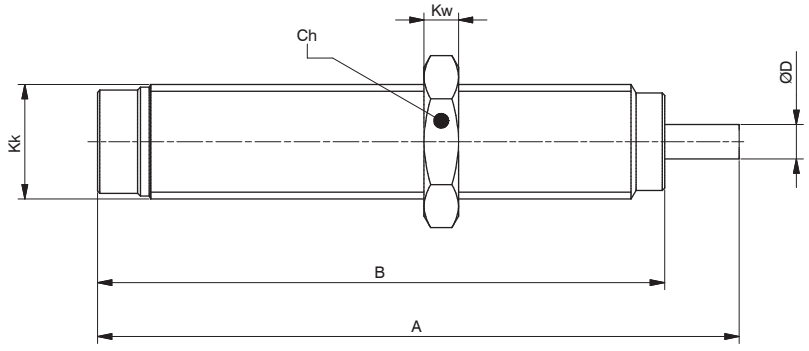


Table of dimensions

Code	A	B	Ch	D	Kk	Kw
6900.A	51	44	11	2,5	M8x1	3
6900.B	56	49,5	13	3	M10x1	3
6900.C	79	69	17	4	M14x1,5	5
6900.D	107	88	24	6	M20x1,5	6
6900.E	126,5	108,5	30	8	M27x1,5	8

Appendix

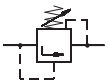
Pneumatic symbols

Air treatment

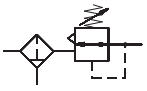
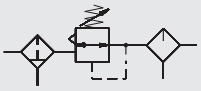
Air treatment mechanisms

Pneumatic accumulator (capacity)	
Manual air drain	
Automatic air drain	
Lubricator	
Air filter	
Filter - with manual drain	
Filter - with automatic drain	

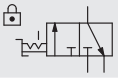
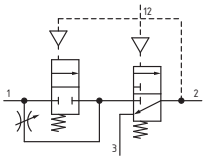
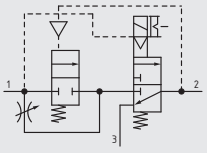
Pressure control valves

Pressure switch	
Free discharge pressure relief valve	
Free discharge pilot-operated pressure relief valve	
Sequence valve	
Pressure regulator	
Pressure regulator without exhaust valve	
Pilot-operated pressure regulator without exhaust valve	
Pressure regulator without exhaust valve (free)	
Differential pressure regulator	

Assembled units

Filter pressure regulator	
Filter pres. reg. + lubricator Filter + pres. reg. + lubricator	

Other mechanisms

Pressure gauge	
Shut-off valve	
Progressive start-up valve With Electric control	
Progressive start-up valve With Pneumatic control	

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Valves and solenoid valves

Terms and descriptions

The connections to the inlet and out lets of the valves can be of two types:

Main connections	- supply connection identified with number 1
	- consumption connection identified with number 2 and 4
	- exhaust connection identified with number 3 and 5
Pilot connections	- repositioning connection on 2/2 & 3/2 ways valves identified with number 10
	- switching connection on 2/2 & 3/2 ways valves and repositioning connection on 5/2 & 5/3 ways valves identified with number 12
	- switching connection on 5/2 & 5/3 ways valve identified with number 14

Switching: is the process that changes the state of a valve from rest position to actuated position and is achieved by means of a mechanical, pneumatic or electric signal.
Repositioning: is the process that changes the valve state from actuated back to rest position and is achieved by means of an external mechanical (spring), pneumatic (differential) or electric signal.
Ways: indicated the number of connections on the valve body and on the pneumatic diagram.
Positions: indicates the number of positions achieved by the valve and corresponds to the number of squares on the pneumatic simple.
Function: indicates the valve working diagram at rest condition and corresponds to the right square in the pneumatic scheme.

Valves symbols

Way	Pos.	Function	Symbol
2	2	Normally closed	
2	2	Normally open	
3	2	Normally closed	
3	2	Normally open	
5	2	Separated exhaust connections	
5	3	Closed centres	
5	3	Open centres	
5	3	Pressured centres	

Complementary valves

Throttle valve	
Bidirectional flow regulator	
Unidirectional flow regulator	
Quick exhaust valve	
Shuttle valve	
Silencer	
Non-return valve without spring	
Non-return valve with spring	
Non-return valve controlled during closing	
Non-return valve controlled during opening	

Switching and Repositioning

Mechanical	
Plunger	
Sensitive plunger	
Roller	
Unidirectional roller	
Sensitive roller	
Pedal	
Pedal - spring return	
Push Button	
Sensitive push button	
Push button - two positions-	
Lever	
Lever - spring to center	
Sensitive lever	
Two position mechanical stop	
Three position mechanical stop	
Spring	
Pneumatics	
Pneumatic	
Pneumatic -return to center	
Pneumatic - depressurised	
Differential (pneumatic spring)	
Differential external pilot	
Sensitive differential	
Electrical	
Solenoid	
Bistable solenoid	
Solenoid (internal pilot)	
Solenoid (external pilot)	
Solenoid - spring to center	

Valves and solenoid valves (following)

Piping and connections

Pressure line	
Control line	
Exhaust line	
Flexible line	
Electric line	
Piping connections	
Piping intersection	
Main air connection	

One-way rotating intake	
Three-way rotating intake	
Closed air intake	
Air intake with connection	
Quick coupling connection without non-return valve	
Quick coupling connection with non-return valve	
Air exhaust unthreaded connection	
Air exhaust threaded connection	

Cylinders

Single acting cylinders

With external return	
With spring return	
With spring return	

Double acting cylinders

Standard rod	
Double rod (through rod version)	
With non adjustable cushioning	
With adjustable cushioning	
With magnetic piston	
With magnetic piston with adjustable cushioning	

Tandem cylinders

In tandem, common rod	
In tandem, independant rods	
In tandem, opposite rods	
Opposed, common rod	

Non rotating cylinders

Standard rod / double acting	
Twin rod / double acting	
Twin rod / double acting through rod	
Twin through rod, double acting	
Guided compact cylinders	

Cylinders for piston rod lock

With magnetic piston with adjustable cushioning	
With non magnetic piston with adjustable cushioning	

Rodless cylinders

With magnetic piston With adjustable cushioning	
Cable cylinders with magnetic piston	
Cable cylinders with non magnetic piston	

Telescopic cylinders

Single acting	
Double acting	

Various cylinders

Rotating cylinders	
Rotating cylinder	
Bellows cylinder	

Pressure boosters

Air-Air intensifier	
Air-oil intensifier	
Hydropneumatic accumulator	

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Air quality

Compressed air is a fundamental element for the operation of various modern industrial machines.
Different compressed air purity classes are required depending on its application and the industrial sector in which it is used.
Generally, it must be free of pollutants (dusts, water and oil) in order to maintain the characteristics of the final product and guarantee safety.
Standard ISO 8573-1:2010 specifies the permissible level of pollution for every cubic meter of compressed air.
The pollutants that have been analysed are grouped in three macro-families:

- Dusts / Solid particles

Each cubic meter of compressed air could contain a maximum quantity of particles in function of its dimension.

- Water

It could be present in liquid or gaseous state.

- Oil

Each cubic meter of compressed air can contain a maximum oil quantity in any of its form: liquid, aerosol, or vapour.

To uniquely determine the purity of compressed air, it is necessary to identify a numeric value for each of the three groups of pollutants illustrated above.
In general, industrial machines require compressed air with purity class of ISO 8573-1:2010 [1:4:1] of which:

- the first number (1) refers to solid particles with maximum concentration in proportion to their size but still less than 0.1 mg/m^3;
- the second number (4) refers to dried air with dewpoint temperature less than +3°C;
- The third number (1) refers to residual oil content less than 0.01 mg/m^3.

For a correct operation of our devices, we require compressed air with purity class of **ISO 8573-1:2010 [7:4:4]** unless otherwise indicated.
For example, our proportional regulators require compressed air with a purity class of ISO 8573-1:2010 [1:4:1].
According to standard ISO 8573-1:2010 pollutant levels could be summarized in the following table:

Compressed air purity classes according to ISO 8573-1:2010							
Class	Particles				Humidity and Liquid Water		Total Oil
	Maximum number of particles per cubic meter as a function of particle size d [b]			Mass concentration[b] C_p[mg/m^3]	Pressure dewpoint [°C]	Concentration of liquid water[b] C_w[g/m^3]	Concentration of total oil[b] (liquid, aereosol and vapour) [mg/m^3]
	0,1 μm < d ≤ 0,5 μm	0,5 μm < d ≤ 1,0 μm	1,0 μm < d ≤ 5,0 μm				
0	As specified by the equipement user or supplier and more stringent than Class 1						
1	≤ 20000	≤ 400	≤ 10	-	≤ -70	-	≤ 0,01
2	≤ 400000	≤ 6000	≤ 100	-	≤ -40	-	≤ 0,1
3	-	≤ 90000	≤ 1000	-	≤ -20	-	≤ 1
4	-	-	≤ 10000	-	≤ +3	-	≤ 5
5	-	-	≤ 100000	-	≤ +7	-	-
6	-			0 < C_p ≤ 5	≤ +10	-	-
7	-			5 < C_p ≤ 10	-	C_w ≤ 0,5	-
8	-			-	-	0,5 < C_w ≤ 5	-
9	-			-	-	5 < C_w ≤ 10	-
X	-			C_p > 10	-	C_w > 10	>5

[b] At reference condition:
- Air temperature 20°C
- Absolute air pressure 100 kPa = [1 bar] (a)
- Relative water vapour pressure 0

Dimensioning

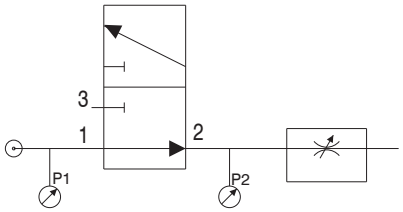
Flow characteristics

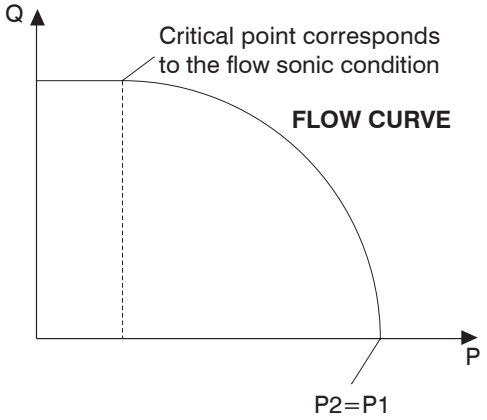
Each cylinder requires, in order to generate specific forces and operate at the needed speed, specific air flow through the control valve. It is therefore necessary to know and understand the laws that regulate the flow through a valve; and therefore the relation between pressure, pressure drop and flow rate. Only by doing so is it possible to determine whether a valve is capable of supplying the required flow rate to a cylinder at a given inlet pressure and with a reasonable pressure drop.
In order to carry out these analyses it is necessary to work with precise functional data; it is not sufficient to know the valve port size. This data is presented in different ways depending on the different applicable, standards and various experimental measurments methods.
The figures are mainly coefficients which must be used in specific equations, with which we can estimate the valve flow rate. In order to understand the meaning of these equations it is necessary to examine the flow inside a pneumatic valve. For example, let us consider the following conditions: a valve supplied with an absolute pressure P1 and with a flow regulator connected downstream.

Starting condition - flow regulator closed
- no flow rate (Q=0)
- Upstream and downstream pressure are identical (P2=P1)

Intermediate conditions - opening flow regulator
By progressively opening the flow regulator the pressure P2 will decrease and the flow rate increase up to a critical point at which the flow rate becomes constant even if the flow regulator is opened further..
This critical point corresponds to the sonic condition of the flow.

Final condition - flow regulator completely open
- maximum flow rate (constant from critical point)
- downstream pressure P2=0





On a varying P1 the curves maintain the same form and only shift into a higher or lower flow rate area depending on whether P1 has increased or decreased. The area of interest in pneumatic valve applications is the subsonic zone, just before the critical flow point is reached.
This zone is expressed in a number of different ways which average the effective flow pattern enabling simple description of the flow using experimental coefficients.

Valve coefficients "C" and "B"

CETOP RP50P recommendation (derived from ISO 6358 standard) expresses flow rate in function of two experimental coefficients:
- conductance **C**
- critical pressure ratio **b**.

Conductance C = Q*/P_1 is the ratio between maximum flow rate Q* and absolute inlet pressure P_1 under sonic flow condition at a temperature of 20°C.
Critical ratio b = P*2/P_1 is the ratio between the output absolute pressure P_2 and the inlet absolute pressure P_1 at which the flow becomes sonic.
The expression that represents an elliptic approximation of the relationship between pressure and flow follows:

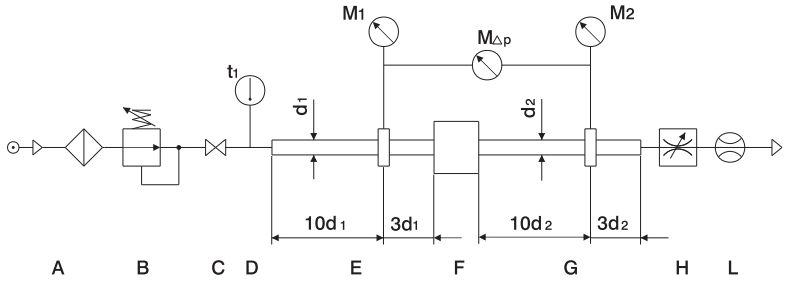
$$Q_N = C \bullet P_1 \bullet K_t \bullet \sqrt{1-\left(\frac{r-b}{1-b}\right)^2} \qquad [1]$$

where:

$Q_N\ (dm^3/s)$	is the flow rate in dm /s at normal condition : 1,013 bar and 20°C;
$C\ \left(\frac{dm^3}{s \bullet bar}\right)$	is the valve conductance;
$P_1\ (bar)$	is the inlet absolute pressure;
r	is the ratio between downstream and upstream pressure (P_2/P_1);
b	is the pressures critical ratio;
$kt = \sqrt{293/T_1}$	is a corrective factor that consider the absolute inlet temperature T_1;
$T_1 = 273 + t_1\ (°K)$	is the absolute temperature (t_1 is the temperature in °C).

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The experimental determination of the valve coefficient C & b is carried out with compressed air following standardised procedures and according to the scheme below.



CETOP test circuit

A Compressed air generator.
B Pressure regulator to set upstream pressure P1.
C Shut off valve.
D Temperature sensor to check upstream temperature t 1, positioned in a low velocity area.
E Pipe where the upstream pressure is measured.
F Test valve.
G Pipe where the downstream pressure is measured.
H Flow regulator to adjust the downstream pressure P2.
L Flow meter.
M1,M2 Pressure measuring equipment for upstream and downstream.
MΔP Pressure drop measuring equipment assuming P1-P2< 1 bar.

Pipes E & G, used to measure the valve upstream and downstream pressure, must be sized according to the standard's specifications and change in size depending on the valve port sizes; the position of the connection at which the measurements are taken depends on the pipe's inner diameter.
Conductance C is determined with the following equation, measuring the critical flow rate Q* through the valve, where upstream pressure P1 is constant and greater than 3 bar.

$$C = \frac{Q^*}{P_1 \bullet K_t} \qquad [2]$$

Pressure critical ration **b** can be calculated using the following equation:

$$b = 1 - \frac{\Delta P}{P_1 \left[1 - \sqrt{1 - \left(\frac{Q'}{Q^*}\right)^2}\right]} \qquad [3]$$

Considering a given constant pressure P_1 it is necessary to proceed measuring the flow rate Q' corresponding to a pressure drop $\Delta P = P_1 - P_2 = 1$ bar.
Equation 3 is used to calculate the critical ratio as it is difficult to experimentally identify the exact pressure P*2 at which the flow becomes sonic.
The values of both the conductance C and the critical ratio b are experimentally calculated and are the average of the results obtained.
Equation [1] is used to calculate the flow in subsonic conditions $P_2 > b \cdot P_1$ when values C ; b and the valve working conditions (P_1, P_2, T_1) are known.
Under sonic conditions , $P_2 \leq b \cdot P_1$ the equation can be simplified and the maximum flow rate can be calculated as follows:

$$\mathbf{Q^* = C \cdot P_1 \cdot k_t} \qquad [4]$$

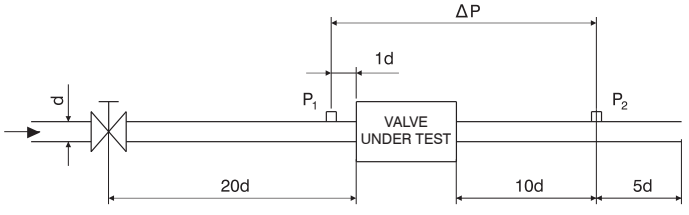
Hydraulic coefficient Kv

The hydraulic coefficient allows, using the equation. The calculation of the flow rate of a fluid through a valve.

$$Q = Kv \sqrt{\frac{\Delta p}{\varrho}} \quad (l/min) \qquad [5]$$

where:
Q is the fluid flow rate in l/min
Δp is the pressure drop inside the valve calculated in bar (P1 - P1)
ϱ is the fluid density calculated in Kg/dm³
Kv is the hydraulic coefficient calculated in $\frac{l}{min}\left(\frac{kg}{dm^3 \bullet bar}\right)^{1/2}$

Using these measurement units the flow rate coefficient Kv represents the flow rate (in liters) of water across the valve with a pressure drop of 1 bar.
The measurement are carried out using the standardised circuit below on which the connection ports are positioned according to the pipe inner bore size (norm VDE/VDI 2173).



Hydraulic circuit

In some cases flow rate is measured in m³/h which correspond a Kv measured

To obtain Kv expressed in $\frac{l}{min}\left(\frac{kg}{dm^3 \cdot bar}\right)^{1/2}$ it is sufficient to multiply the Kv value expressed in $\frac{m^3}{h}\left(\frac{kg}{dm^3 \cdot bar}\right)^{1/2}$ By the coefficient 16,66.

The coefficient kv is perfectly suitable to express the flow rate of fluids but only gives approximate values in case of compressed air. Experiences gained in hydraulic environments can be inferred in the pneumatic field, bearing in mind the difference in density, and assuming that the air flow will generate the same pressure drops and flow reductions as water It is therefore possible to calculate reliable values for compressed air using flow coefficients Kv obtained from experiments with water.

To define the flow rate Qn through a valve at a given constant absolute inlet pressure P_1, regardless of fluctuations of the downstream absolute pressure P_2, refer to the equation below:

$$Q_N = 28,6 \cdot K_v \sqrt{P_2 \cdot \Delta P} \cdot \sqrt{\frac{T_n}{T_1}} \qquad [6]$$

where:

Qn is the flow rate in volume l/min;

K_v is the hydraulic coefficient $\frac{l}{min}\left(\frac{kg}{dm^3 \cdot bar}\right)^{1/2}$

T_n is the absolute reference temperature;
T_1 is the inlet absolute temperature in °K;
P_2 is the downstream absolute pressure in bar;
ΔP is the pressure drop P_1 - P_2 in bar.

Equation [6] is real up to $\Delta P = \frac{P_1}{2}$ therefore $P_2 = \frac{P_1}{2}$

For lower P_2 values the flow rate is considered to be constant, corresponding to the sonic flow rate Q*n given by the following equation:

$$Q^*_N = 14,3 \cdot K_v \cdot P_1 \sqrt{\frac{T_n}{T_1}} \qquad [7]$$

The nominal flow rate Q_{Nn}

The nominal flow rate is the flow volume (at normal conditions) that passes through a valve with an upstream pressure P_1=6bar (7 bar absolute pressure) and a pressure drop of 1 bar, corresponding to a downstream relative pressure P_2 of 5bar (6 bar absolute pressure).
Normally the nominal flow rate is expressed in l/min and can be easily deduced from an experimental flow curve drawn for a upstream pressure of 6 bar (relative). Nominal flow rate can be useful for a preliminary assesment of the performances of different valves but in reality can be used only if the working conditions are the same as those mentioned before. In order to be able to compare valve charactersistics which are expressed in different coefficients it is possible to use conversion equations.
Given the C and b coefficient, it is possible to determine the nominal flow rate using the following equation:

$$Q_{Nn} = 420 \cdot C \cdot \sqrt{1-\left(\frac{0,857 - b}{1 - b}\right)^2} \qquad [8]$$

where: Q_{Nn} = is in l/min and C in $\frac{dm^3}{s \cdot bar}$

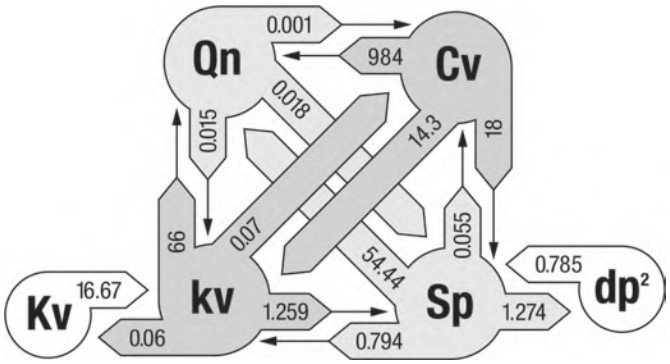
The correlation between the hydraulic coefficient K_v and the corresponding nominal flow rate is as follows:

where:

$Q_{Nn} = 66\,K_v$

Q_{Nn} is in l/min and K_v in $\frac{l}{min}\left(\frac{kg}{dm^3 \cdot bar}\right)^{1/2}$

Conversion table



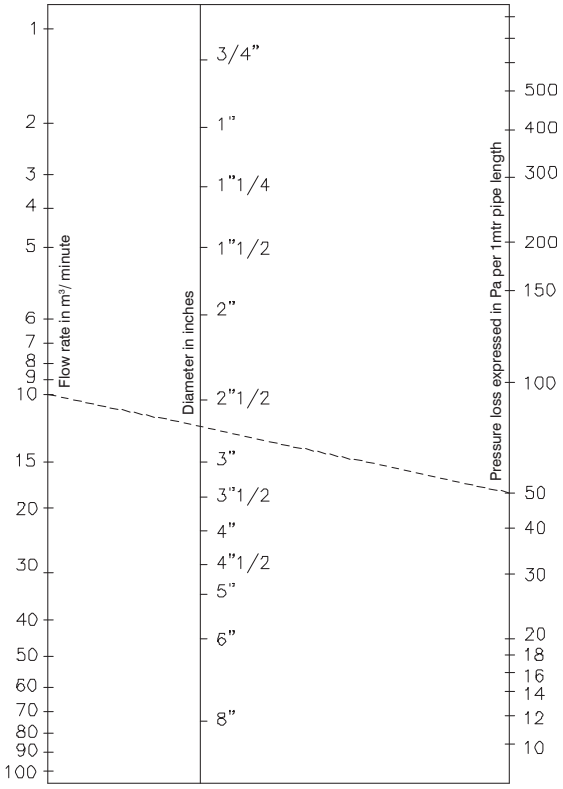
Qn	Nominal flow rate	Nl/min
kv	Hydraulic coefficient	l/min
Kv		m³ /hours
Cv		USA gallons/min
Sp	Nominal inner section area	mm²
dp²	Nominal diameter*	mm²

*to calculate the diameter dp (mm²) square root of dp²

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Pipes flow resistence

The C factor (l/sec) indicates the pipe flow capacity and is the ratio between the maximum flow rate and absolute pressure (ISO 6358). The flow capacity progressively decreases with increasing pipe length, due to the air friction on the pipe inner surface increasing the pressure drop. Therefore the longer the pipe the smaller the flow rate. The chart below shows the flow rate characteristics of different pipe sizes (i/d and o/d) in function of the length.

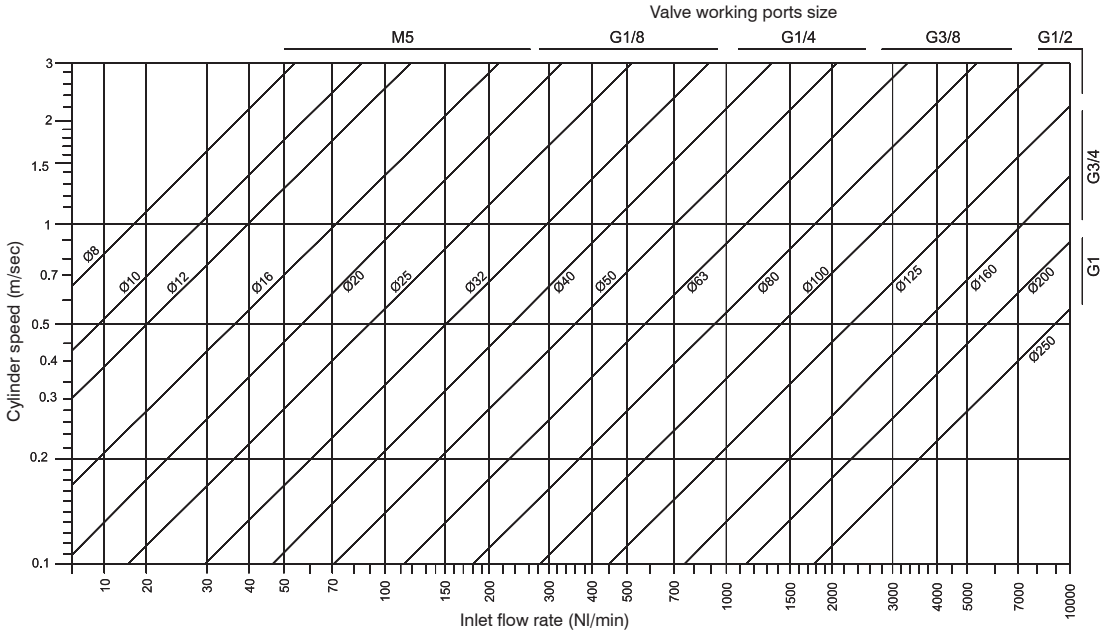


Valve sizing

The choice of the correct size valve is essential in order to ensure that the cylinder to be controlled will perform as expected. It is therefore necessary to know the cycle time to be achieved and to calculate the coefficient T which will be used as multiplier for the air consumption value previously calculated. The result of this equation, expressed in Nl/min and multiplied by a safety factor of 1.2, corresponds to the minimum flow rate needed (at standard conditions 6 bar supply and 5 bar on the consumption connection) to operate the cylinder at the required rate.

$$T = \frac{60\ Qn}{\text{cycle time}} = T \times \text{Consumption}$$

It is also imortant to ensure that the pipes used to connect the valve to the air supply and to the cylinder do not affect the flow rate in any way. The pipe inner bore must therefore be at least 1.5 times the diameter of the valve nominal orifice size. The choice of the fittings is also very important, the inner bore must be equal or greater than the pipe I/D. The diagram below shows the flow rate required to operate different size cylinders atvarying speeds and also the valve connection sizes.



Cylinder air consumption

The air consumption corresponds to the volume of air that the cylinder uses in a complete cycle (stroke out and back in) at a specific pressure.

Consumption = Pa x C x (A+b)

Pa= Absolute pressure (bar)
C= Cylinder stroke (dm)
A= see tab. 1 (dm^2)
b= see tab. 2 (dm^2)

Air consumption is measured in Normal-liters (Nl) which correspond to the volume that a specific quantity (mass) of gas would fill at atmospheric pressure.

Calculation example:
ISO 15552 cylinder - 1319 series:
Supply pressure 6 bar (Pa=7 bar)
Stroke 50mm (C=0,5 dm)
Ø63 (A=0,31157 dm^2)
Rod Ø=20 mm (b=0,28017 dm^2)

Consumption = 7 (bar) x 0,5 (dm) x (0,31157+0,28017) = **2,072 Nl**
(In order to calculate the air consumption for a specific number of cycles it is sufficient to multiply the above value for the number of cycles)

Piston surface area	
Ø cylinder	**A**
Ø8	0,00502 dm^2
Ø10	0,00785 dm^2
Ø12	0,01130 dm^2
Ø16	0,02010 dm^2
Ø20	0,03140 dm^2
Ø25	0,04906 dm^2
Ø32	0,08038 dm^2
Ø40	0,12560 dm^2
Ø50	0,19625 dm^2
Ø63	0,31157 dm^2
Ø80	0,50240 dm^2
Ø100	0,78500 dm^2
Ø125	1,22656 dm^2
Ø160	2,00960 dm^2
Ø200	3,14000 dm^2

tab.1

Surface difference cylinder piston / rod Ø	
Ø cylinder - Ø rod	**b**
Ø8 - Ø4	0,00377 dm^2
Ø10 - Ø4	0,00659 dm^2
Ø12 - Ø6	0,00848 dm^2
Ø16 - Ø6	0,01727 dm^2
Ø20 - Ø8	0,02638 dm^2
Ø25 - Ø10	0,04121 dm^2
Ø32 - Ø12	0,06908 dm^2
Ø40 - Ø14	0,11021 dm^2
Ø40 - Ø16	0,10550 dm^2
Ø40 - Ø18	0,10017 dm^2
Ø50 - Ø14	0,18086 dm^2
Ø50 - Ø18	0,17082 dm^2
Ø50 - Ø20	0,16485 dm^2
Ø63 - Ø20	0,28017 dm^2
Ø63 - Ø22	0,27357 dm^2
Ø80 - Ø22	0,46441 dm^2
Ø80 - Ø25	0,45334 dm^2
Ø100 - Ø25	0,73594 dm^2
Ø100 - Ø30	0,71435 dm^2
Ø125 - Ø30	1,15591 dm^2
Ø125 - Ø32	1,14618 dm^2
Ø160 - Ø40	1,88400 dm^2
Ø200 - Ø40	3,01440 dm^2

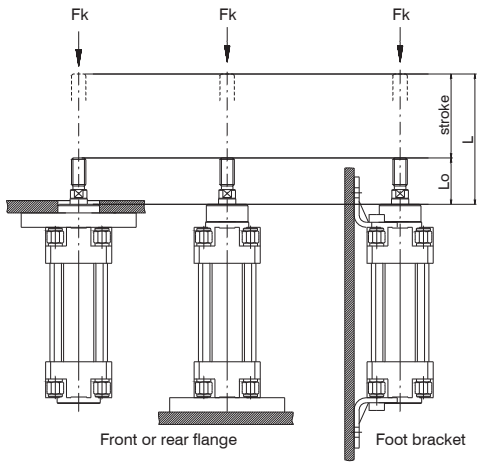
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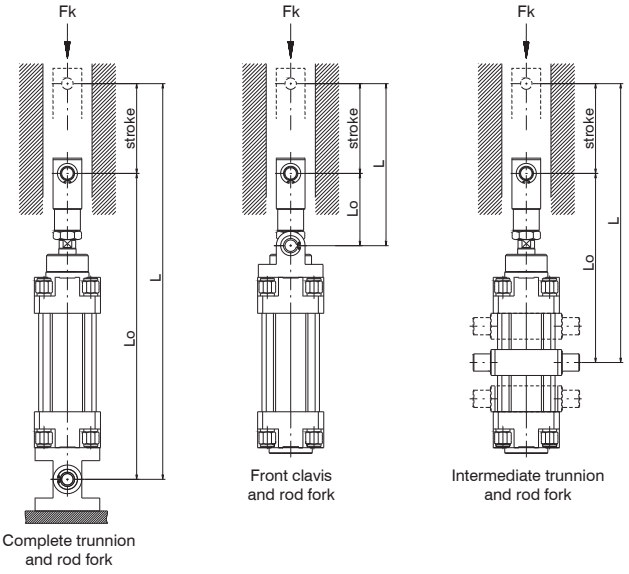
Allowed axial load (combined bending and compressing load)

This is the maximum load that can be applied axially on the rod tip. Above this value the rod might bend under compression. This value depends on a number of factors such as load size, rod diameter, the distance at which the load is applied (bending and compressing length L) and the conditions under which the load is applied (cylinder mountings). Among the possible conditions, the following three are the most common.

CASE 1
Fixed cylinder and free load



CASE 2
Cylinder fixed with pin and loosen load



The maximum axial load can be calculated in two ways:
In an empirical way (see equations) or by checking the following diagram which shows the worst possible conditions (case 1 & 2) For all other possible mountings alternatives the axial load will surely be higher.

$$Fk = \frac{\pi^3 \times E \times d^4}{64 \times L^2 \times C} \quad (N)$$

$$d = \sqrt[4]{\frac{Fk \times 64 \times L^2 \times C}{\pi^3 \times E}} \quad (cm)$$

$$L = \sqrt{\frac{\pi^3 \times E \times d^4}{Fk \times 64 \times C}} \quad (cm)$$

E = rod material coefficient of elasticity (N/cm²) (steel=2,1x10⁷ N/cm²)
d = rod diameter (cm)
L = bending and compression distance (cm)
C = safety factor (from 2,5 to 5)

Example: **Axial load verification**

Cylinder ø80 mm
Rod diameter ø20 mm
Stroke 600 mm
Mounting CASE 2 intermediate trunnion: L0=290 mm
Load 2000 N
L (distance)= 29+60=89 cm
Fk= $(\pi^3 \times 2{,}1 \times 10^7 \times 2^4) : (64 \times 89^2 \times 5) = 4104$ N
(Above the 2000 N applied)

The same result can be obtained using the below diagram : following the bending and compression distance line relative to 900 mm up to the intersection with the 20 mm Ø line we obtain 4000 N.

Example: **Rod diameter sizing**

Considering the same conditions as in the above case we need to determinate the rod diameter suitable to withstand a 4000N load

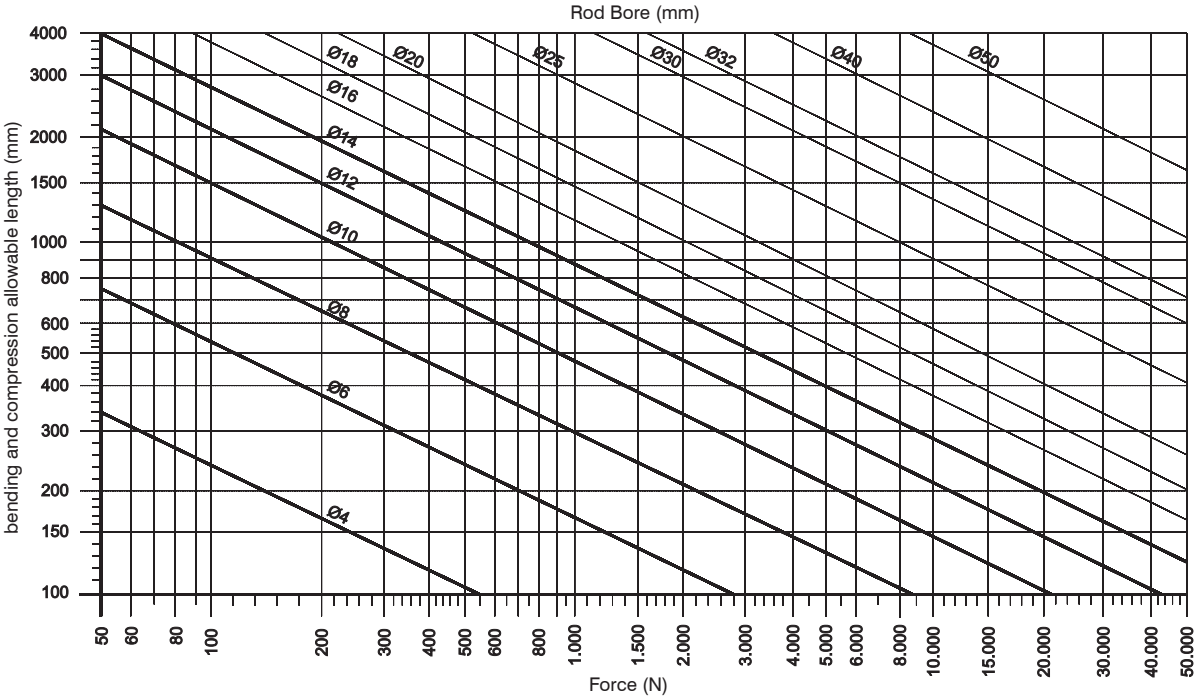
$d = \sqrt{(4000 \times 64 \times 89^2 \times 5) / (\pi^3 \times 2{,}1 \times 10^7)} = 2$ cm

The diameter to choose is the next one up : Ø25 mm

Also this second example can be resolved using the below diagram: following the bending and compression distance line relative to 900mm up to the intersection with the 4000 N maximum load we obtain Ø20 mm.

With the third equation or using the diagram it is possible to calculate the bending and compression distance.

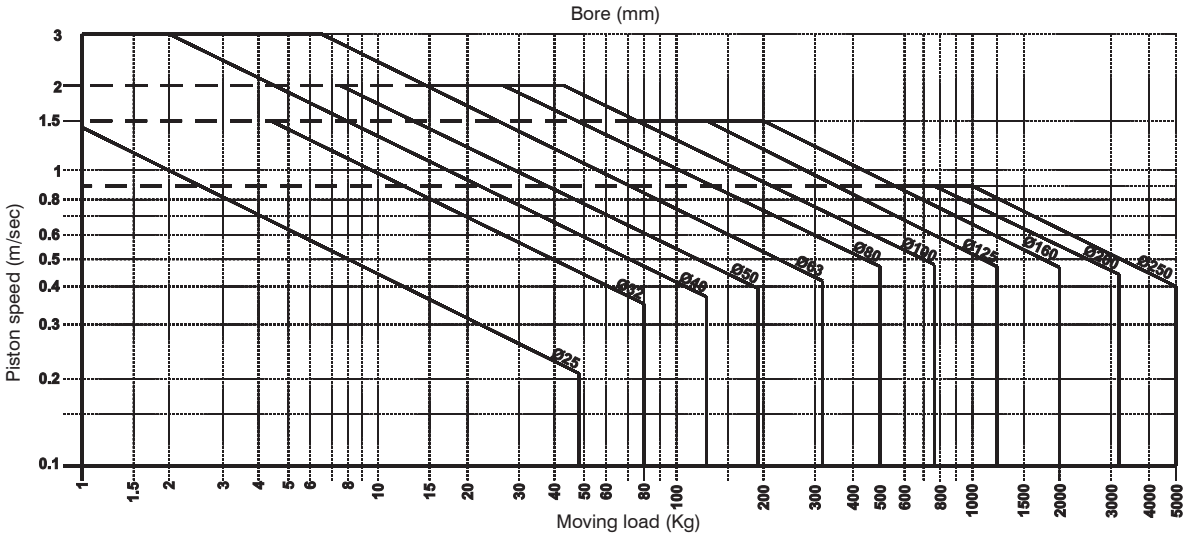
A
APPENDIX



End of stroke cushioning capability

The function of the end of stroke cushioning is to reduce the kinetic energy generated by movement of the load and to prevent high speed impact between the piston and end caps that could compromise the unit functionality. The use of non-cushioned cylinders is not recomended on high speed applications unless external means of deceleration (such as dampers) are used.

The maximum load that can be cushioned depends on the speed of the unit and the cylinder cushioning capacity. The chartbelow shows the values relative to the ISO 15552 series cylinders considering the out stroke movement and a supply pressure of 6 bar. The acceptable values for any diameter are those found below each size line.



Cylinder sizing

In order to properly size a cylinder it is necessary to consider the following parameters:

Force generated: calculated in function of the piston area and of the pressure that acts upon it.

F= area x pressure (daN) = (cm^2) x (bar)

The value is theoretical and needs to be reduced by approximately 10-15% in order to compensate for the effects of friction. We must also consider that the force generated during the return stroke (traction) is lower, as the area on which the pressure acts is reduced by the presence of the rod.

Weight of the load: the force generated by the cylinder must be sufficient to move the load in the desired direction within the specified time (cycle time). The load ratio (RdC) must not exceed 70%.

$$\frac{\text{Needed force (load weight)}}{\text{Available force (generated)}} \times 100 = \text{RdC}$$

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Load position

Vertical lift (pull upwards): the real force generated by the cylinder must be sufficient to counterbalance the load and to accelerate it.

Example:
Weight to be lifted 120Kg
Working pressure 6 bar
Load ratio 70%
Using the load ratio equation it is possible to calculate the force needed to lift the load:

$$\text{Available force} = \frac{\text{Load}}{\text{Rdc}} \times 100$$ the result is 171,4 daN

A 63 bore cylinder which generates a theoretical force of 187 daN is suitable for the application.
A similar load ratio allows, using unidirectional flow regulators, good speed control.

When the speed is below 20 mm/sec. It is difficult to properly control the movement.
The load ratio must be reduced to 50% on slow speed applications. In these conditions, or where constant movement is required, the use of a hydraulic speed control unit is recommended. On applications were the load is moving downwards, thereby increasing the force generated by the actuator, it is usually necessary to use flow regulators.

Horizontal or inclined movement: If the load is supported and the working position is horizontal, it is necessary to multiply the needed force by the coefficient of friction.

The coefficient of friction m varies according to the material.
For example considering m= 0.4
Weight to be moved 120 Kg
Pressure 6 bar
Load ratio 70%
Solving the load ratio equation it is possible to calculate the available force:

$$\text{Available force} = \frac{\text{Load}}{\text{Rdc}} \times 100 \times m$$ which, in the above conditions is 68,57 daN

A Ø40 bore cylinder that generates a theoretical force of 75.4 daN is suitable for the application.
In cases of inclined application the required force increases according to the angle.
Also in these conditions it is necessary to multiply the needed force by a coefficient of friction.

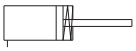
Theoretical force -Push- (N) - rod moving out											
Bore (mm)	Push area (mm^2)	Feeding pressure (bar)									
		1	2	3	4	5	6	7	8	9	10
Ø6	28	2,5	5,5	8	11	13,5	16,5	19	22	24,5	27,5
Ø8	50	4,5	9,5	14,5	19,5	24,5	29,5	34	39	44	49
Ø10	79	7,5	15	23	30,5	38	46	53,5	61,5	69	76,5
Ø12	113	11	22	33	44	55	66	77	88	99	110
Ø16	201	19	39	59	78	98	118	137	157	177	197
Ø20	314	30	61	92	123	153	184	215	246	277	307
Ø25	491	48	96	144	192	240	288	336	384	433	481
Ø32	804	78	157	236	315	394	472	551	630	709	788
Ø40	1.256	123	246	369	492	615	739	862	985	1.108	1.231
Ø50	1.963	192	384	577	769	962	1.154	1.347	1.539	1.732	1.924
Ø63	3.116	305	611	916	1.222	1.527	1.833	2.138	2.444	2.749	3.055
Ø80	5.024	492	985	1.478	1.970	2.463	2.956	3.448	3.941	4.434	4.926
Ø100	7.850	769	1.539	2.309	3.079	3.849	4.618	5.388	6.158	6.928	7.698
Ø125	12.266	1.202	2.405	3.608	4.811	6.014	7.217	8.419	9.622	10.825	12.028
Ø160	20.096	1.970	3.941	5.912	7.882	9.853	11.824	13.795	15.765	17.736	19.707
Ø200	31.400	3.079	6.158	9.237	12.317	15.396	18.475	21.555	24.634	27.713	30.792
Ø250	49.063	4.811	9.622	14.434	19.245	24.056	28.868	33.679	38.491	43.302	48.113

Surface difference - Cylinder piston / rod Ø	
Ø cylinder - Ø rod	b
Ø8 - Ø4	0,377 cm^2
Ø10 - Ø4	0,659 cm^2
Ø12 - Ø6	0,848 cm^2
Ø16 - Ø6	1,727 cm^2
Ø20 - Ø8	2,638 cm^2
Ø25 - Ø10	4,121 cm^2
Ø32 - Ø12	6,908 cm^2
Ø40 - Ø14	11,021 cm^2
Ø40 - Ø16	10,550 cm^2
Ø40 - Ø18	10,017 cm^2
Ø50 - Ø14	18,086 cm^2
Ø50 - Ø18	17,082 cm^2
Ø50 - Ø20	16,485 cm^2
Ø63 - Ø20	28,017 cm^2
Ø63 - Ø22	27,357 cm^2
Ø80 - Ø22	46,441 cm^2
Ø80 - Ø25	45,334 cm^2
Ø100 - Ø25	73,594 cm^2
Ø100 - Ø30	71,435 cm^2
Ø125 - Ø30	115,591 cm^2
Ø125 - Ø32	114,618 cm^2
Ø160 - Ø40	188,400 cm^2
Ø200 - Ø40	301,440 cm^2

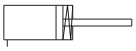
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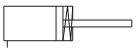
Single acting cylinder spring initial and final load characteristics

Microbore cylinders ISO 6431 - 1260 series								
	Front spring	Rear spring	Bore					
			Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50
Initial load (N) external spring			9,9	10,8	10,8	7,9	19,7	39,3	39,3
Final load (N) compressed load			26,5	22,6	22,6	49,1	53,0	106,0	106,0

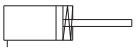
(stroke 0-40 mm)

Microbore cylinders ISO 6431 - 1280 series "MIR"								
	Front spring	Rear spring	Bore					
			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Initial load (N) external spring			2,2	2,2	4,0	7,5	11,0	16,5	23,0
Final load (N) compressed load			4,2	4,2	8,7	21,0	22,0	30,7	30,7

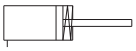
(stroke 0-50 mm)

Cylinders ISO 15552 - 1319-20-21 series								
	Front spring	Rear spring	Bore					
			Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Initial load (N) external spring			17,2	24,6	51,0	51,0	98,1	98,1
Final load (N) compressed load			41,7	83,4	114,8	114,8	194,2	194,2

(stroke 0-50 mm)

Short stroke compact cylinders									
	Front spring	Rear spring	Bore						
			Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Initial load (N) external spring			7,9	9,9	34,4	34,4	50,1	54,0	117,7	108,9
Final load (N) compressed load			27,5	26,5	59,9	63,8	79,5	85,4	157,0	134,4

(stroke 0-10 mm)

"Europe" Compact cylinders											
	Front spring	Rear spring	Bore								
			Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
Initial load (N) external spring			3,9	4,4	4,9	9,8	12,3	16,7	27,5	37,3	59,4	101,3
Final load (N) compressed load			9,3	17,7	18,1	25,5	34,3	44,1	51,0	63,8	99,4	141,9

(Ø12 stroke 0-10 mm - Ø16¸100 stroke 0-25 mm)

Cylinder nuts recommended tightening torque									
Bore size	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125	Ø160	Ø200
Torque (Nm)	8	8	16	16	22	22	30	85	85

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Measure and conversion units

International system of units - table

Size	Name	Symbol
Lenght	Meter	m
Area	square meter	m^2
Volume	cubic meter	m^3
Force	Newton	N
Mass	kilogram	Kg
Pressure	Pascal	Pa (N/m^2)
Work and Energy	Joulle	J (Nm)
Power	Watt	W (J/s)
Time	Second	s
Speed	meter / second	m/s
Acceleration	meter / $second^2$	m/s^2
Flow rate	meter / $second^3$	m^3/s
Temperature	Kelvin	°K
Frequency	Hertz	Hz (1/s)
Electric current	Ampere	A
Voltage	Volt	V (W/A)
Electrical resistance	Ohm	Ω (V/A)
Electric power	Volt Ampere	VA (VA)

Measure and conversion units

Lenght	Centimetre (cm)	Meter (m)	Inch (In)	Foot (ft)	Yard (yd)
1 Meter (m)	100	1	39,37	3,281	1,094
1 Inch (In)	2,54	$2,54x10^{-2}$	1	$8,33x10^{-2}$	0,028
1 Foot (ft)	30,48	0,3048	12	1	0,333
1 Yard (yd)	91,44	0,9144	36	3	1

Area	Square centimetre (cm^2)	Square meter (m^2)	Square inch (sq in)	Square foot (sq ft)	Square yard (sq yd)
1 Square centimetre (cm^2)	1	$1x10^{-4}$	0,155	$1,08x10^{-3}$	$1,2x10^{-4}$
1 Square meter (m^2)	$1x10^{4}$	1	1.550	10,764	1,2
1 Square inch (sq in)	6,452	$6,45x10^{-4}$	1	$6,95x10^{-3}$	$7,72x10^{-4}$
1 Square foot (sq ft)	929	$9,29x10^{-2}$	144	1	0,111
1 Square yard (sq yd)	8.361	0,8361	1.296	9	1

Volume	Litre ($l=dm^3$)	Cubic metre (m^3)	Cubic inch (cu in)	Cubic foot (cu ft)	Gallon (gal-USA)	Gallon (gal-GB)
1 Litre (l) = $1dm^3$	1	$1x10^{-3}$	61,02	$3,53x10^{-2}$	0,2642	0,22
1 Cubic meter (m^3)	1.000	1	$6,102x10^{4}$	35,31	264,2	220
1 Cubic inch (cu in)	$1,64x10^{-2}$	$1,64x10^{-5}$	1	$5,8x10^{-4}$	$4,33x10^{-3}$	$3,6x10^{-3}$
1 Cubic foot (cu ft)	28,317	$2,83x10^{-2}$	1.728	1	7,48	6,23
1 Gallon (gal -USA)	3,785	$3,79x10^{-3}$	231	0,1337	1	0,8327
1 Gallon (gal -GB)	4,546	$4,55x10^{-3}$	277,4	0,1605	1,2	1

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Mass (Weight)	Kilogram (Kg)	Pound (lb)	Hundred-weight USA	Hundred-weight GB
1 Kilogram (Kg)	1	2,205	$1{,}102 \times 10^{-3}$	$9{,}842 \times 10^{-4}$
1 Pound (lb)	0,4536	1	5×10^{-4}	$4{,}464 \times 10^{-4}$
1 Hundred-weight USA	907,2	2.000	1	0,8929
1 Hundred-weight GB	1.016	2.240	1,12	1

Force	Newton (N)	Kilopound (kgp)	Poundal (pdl)
1 Newton (N)	1	0,102	7,23
1 Kilopound (kgp)	9,807	1	70,93
1 Poundal (pdl)	0,1383	0,0141	1

Pressure	Pascal (Pa)	Bar (bar)	Poundal/ pollice^2 (psi)	Technical atmosphere (at=kg/cm^2)	Atmosphere (atm)	Column of Mercury (mmHg = Torr)	Column of water (mH_2O)
1 Pascal (Pa)	1	1×10^{-5}	$1{,}45 \times 10^{-4}$	$1{,}02 \times 10^{-5}$	$9{,}87 \times 10^{-6}$	$7{,}5 \times 10^{-3}$	$1{,}02 \times 10^{-4}$
1 Bar (bar)	1×10^{5}	1	14,50	1,02	0,9869	750	10,2
1 Poundal/pollice^2 (psi)	6.895	0,069	1	$7{,}03 \times 10^{-2}$	0,06805	51,72	0,703
1 Technical atmosphere (at=kg/cm^2)	$9{,}807 \times 10^{4}$	0,9807	14,22	1	0,9678	735,6	10
1 Atmosphere (atm)	$1{,}013 \times 10^{5}$	1,013	14,70	1,033	1	760	10,33
1 millimetre of mercury (mmHg = Torr)	133,32	$1{,}34 \times 10^{-3}$	$1{,}934 \times 10^{-2}$	$1{,}36 \times 10^{-3}$	$1{,}316 \times 10^{-3}$	1	$1{,}36 \times 10^{-2}$
1 Metre of water (mH_2O)	9.810	$9{,}81 \times 10^{-2}$	1,423	0,1	$9{,}682 \times 10^{-2}$	73,6	1

Work and Energy	Kilocalorie (kcal)	Kilogrammetre (kgm)	Kilowatt (kWh)	Horse power/hr (Hph) non Metric	Joule (J)
1 Kilocalorie (kcal)	1	427	$1{,}163 \times 10^{-3}$	$1{,}561 \times 10^{-3}$	4.190
1 Kilogrammeter (kgm)	$2{,}34 \times 10^{-3}$	1	$2{,}724 \times 10^{-6}$	$3{,}653 \times 10^{-6}$	9,806
1 Kilowatt-hour (kWh)	860	367.122	1	1,341	$3{,}6 \times 10^{5}$
1 Horsepower/hour-non metric (hph)	641	273.761	0,7457	1	$2{,}685 \times 10^{6}$
1 Joule (J)	$2{,}39 \times 10^{-4}$	0,102	$2{,}78 \times 10^{-7}$	$3{,}725 \times 10^{-7}$	1

Temperature	Kelvin (K)	Celsius (°C)	Fahrenheit (°F)
Kelvin (K)	/	K-273 = °C	(K-273)x1,8 = °F
Celsius (°C)	°C+273 = K	/	(°Cx1,8)+32 = °F
Fahrenheit (°F)	273+[(°F-32):1,8] = K	(°F-32):1,8 = °C	/

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ISO metric thread UNI 4535-64

Coarse ISO metric thread			
Thread	Pitch (mm)	Ø Drilling (mm)	Ø Drill (mm)
M 1,6	0,35	1,321	1,20
M 1,8	0,35	1,521	1,45
M 2	0,40	1,679	1,60
M 2,2	0,45	1,838	1,75
M 2,5	0,45	2,138	2,05
M 3	0,50	2,599	2,5
M 3,5	0,60	3,010	2,9
M 4	0,70	3,422	3,3
M 4,5	0,75	3,878	3,7
M 5	0,80	4,334	4,2
M 6	1	5,153	5
M 7	1	6,153	6
M 8	1,25	6,912	6,8
M 9	1,25	7,912	7,8
M 10	1,5	8,676	8,5
M 11	1,5	9,676	9,5
M 12	1,75	10,441	10,2
M 14	2	12,210	12
M 16	2	14,210	14
M 18	2,5	15,744	15,5
M 20	2,5	17,744	17,5
M 22	2,5	19,744	19,5
M 24	3	21,252	21
M 27	3	24,252	24
M 30	3,5	26,771	26,5
M 33	3,5	29,771	29,5
M 36	4	32,270	32
M 39	4	35,270	35
M 42	4,5	37,799	37,5
M 45	4,5	40,799	40,5
M 48	5	43,297	43
M 52	5	47,297	47
M 56	5,5	50,796	50,5
M 60	5,5	54,796	54,5
M 64	6	58,305	58
M 68	6	62,305	62

Fine ISO metric thread			
Thread	Pitch (mm)	Ø Drilling (mm)	Ø Drill (mm)
M 3	0,35	2,721	2,65
M 4	0,50	3,599	3,5
M 5	0,50	4,599	4,5
M 6	0,75	5,378	5,2
M 7	0,75	6,378	6,2
M 8	0,75	7,378	7,2
M 8	1	7,153	7
M 9	1	8,153	8
M 10	0,75	9,378	9,2
M 10	1	9,153	9
M 10	1,25	8,912	8,8
M 11	1	10,153	10
M 12	1	11,153	11
M 12	1,25	10,912	10,8
M 12	1,5	10,676	10,5
M 14	1	13,153	13
M 14	1,25	12,912	12,8
M 14	1,5	12,676	12,5
M 15	1	14,153	14
M 15	1,5	13,676	13,5
M 16	1	15,153	15
M 16	1,5	14,676	14,5
M 18	1	17,153	17
M 18	1,5	16,676	16,5
M 18	2	16,210	16
M 20	1	19,153	19
M 20	1,5	18,676	18,5
M 20	2	18,210	18
M 22	1	21,153	21
M 22	1,5	20,676	20,5
M 21	2	20,210	20
M 24	1	23,153	23
M 24	1,5	22,676	22,5
M 24	2	22,210	22
M 24	1	24,153	24
M 25	1,5	23,676	23,5
M 26	1,5	24,676	24,5
M 27	1,5	25,676	25,5
M 27	2	25,210	25
M 28	1,5	26,676	26,5
M 30	1,5	28,676	28,5
M 30	2	28,210	28
M 32	1,5	30,676	30,5
M 33	2	31,210	31
M 35	1,5	33,676	33,5
M 36	1,5	34,676	34,5
M 36	2	34,210	34
M 36	3	33,252	33
M 38	1,5	36,676	36,5
M 39	3	36,252	36
M 40	1,5	38,676	38,5
M 42	1,5	40,676	40,5
M 45	1,5	43,676	43,5
M 50	1,5	48,676	48,5

GAS thread

«G» UNI 338-66			
Thread	Ø External (mm)	Ø Drilling (mm)	Ø Drill point (mm)
G 1/8” - 28	9,73	8,68	8,70
G 1/4” - 19	13,16	11,62	11,75
G 3/8” - 19	16,66	15,12	15,25
G 1/2” - 14	20,95	18,86	19,00
G 5/8” - 14	22,91	20,82	21,00
G 3/4” - 14	26,44	24,35	24,50
G 7/8” - 14	30,20	28,11	28,25
G 1” - 11	33,25	30,59	30,50
G 1 1/8” - 11	37,90	35,24	35,50
G 1 1/4” - 11	41,91	39,25	39,50
G 1 3/8” - 11	44,32	41,66	41,50
G 1 1/2” - 11	47,80	45,14	45,00
G 1 5/8” - 11	51,32	48,67	48,50
G 1 3/4” - 11	53,75	51,08	51,00
G 2” - 11	59,61	56,95	57,00
G 2 1/4” - 11	65,71	63,05	63,00
G 2 1/2” - 11	75,18	72,52	72,50
G 2 3/4” - 11	81,53	78,87	79,00
G 3” - 11	87,88	85,22	85,50
G 3 1/4” - 11	93,98	91,32	91,50
G 3 1/2” - 11	100,33	97,67	97,50
G 3 3/4” - 11	106,68	104,02	104,00
G 4” - 11	113,03	110,37	110,50

«Gc» UNI 339-66			
Thread	Ø External (mm)	Ø Drilling (mm)	Ø Drill point (mm)
Gc 1/8” - 28	8,5	4,9	3,1
Gc 1/4” - 19	11,5	7,3	4,7
Gc 3/8” - 19	15,0	7,7	5,1
Gc 1/2” - 14	18,5	10,0	6,4
Gc 3/4” - 14	23,5	11,3	7,7
Gc 1” - 11	30,0	12,7	8,1
Gc 1 1/4” - 11	38,0	15,0	10,4
Gc 1 3/8” - 11	41,0	15,0	10,4
Gc 1 1/2” - 11	44,5	15,0	10,4
Gc 2” - 11	56,0	18,2	13,6
Gc 2 1/2” - 11	72,0	21,0	14,0
Gc 3” - 11	85,0	24,1	17,1
		max	**min**

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2540.10	2500-T EVO	Solenoid valves manifold	460
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2540.11	2500-T EVO	Solenoid valves manifold	460
2540.11…	2500-T EVO	Solenoid valves manifold	461
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2541.52.00...	2500-T EVO	Solenoid valves manifold	457
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25E0...F	2500-F EVO	Solenoid valves manifold	446
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261A.53...	2600	Spool type valves and solenoid valves	164
2630...	2600	Spool type valves and solenoid valves	169
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263A.53...	2600	Spool type valves and solenoid valves	168
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3100.16	PX	Solenoid valves manifold	337
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3100.KT.00	3000 EVO	Solenoid valves manifold	384
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3115.52.00.29…	3000 EVO	Solenoid valves manifold	360
3115.52.00.35…	3000 EVO	Solenoid valves manifold	358
3115.52.00.36…	3000 EVO	Solenoid valves manifold	358
3115.52.00.39…	3000 EVO	Solenoid valves manifold	358
3115.53.31.25…	3000 EVO	Solenoid valves manifold	360
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3441.52.00.36…	3000 EVO	Solenoid valves manifold	379
3441.52.00.39…	3000 EVO	Solenoid valves manifold	379
3441.53.31.35…	3000 EVO	Solenoid valves manifold	380
3441.62...35…	3000 EVO	Solenoid valves manifold	380
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355...	300	Direct operated solenoid valves	182
355.M1	300	Direct operated solenoid valves	193
355.M1/1	300	Direct operated solenoid valves	193
355.M1/9	300	Direct operated solenoid valves	193
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35M...	300	Direct operated solenoid valves	184
35S...	300	Direct operated solenoid valves	185
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411...0.1...	400	Spool type valves and solenoid valves	108
411...0.12...	400	Spool type valves and solenoid valves	108
411.53...0.0...	400	Spool type valves and solenoid valves	109
412/2...0.0...	400	Spool type valves and solenoid valves	107
412/2...0.1...	400	Spool type valves and solenoid valves	106
412/2...0.12...	400	Spool type valves and solenoid valves	106
412/2.53...0.0...	400	Spool type valves and solenoid valves	107
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452...0.1...	400	Spool type valves and solenoid valves	102
452...0.12...	400	Spool type valves and solenoid valves	102
452.53...0...	400	Spool type valves and solenoid valves	103
452/1...0.0...	400	Spool type valves and solenoid valves	105
452/1...0.1...	400	Spool type valves and solenoid valves	104
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452/1.53...0...	400	Spool type valves and solenoid valves	105
464...0.0...	400	Spool type valves and solenoid valves	98
464...0.1...	400	Spool type valves and solenoid valves	98
464...0.12...	400	Spool type valves and solenoid valves	98
464.53...0...	400	Spool type valves and solenoid valves	99
464/1...0.0...	400	Spool type valves and solenoid valves	100
464/1...0.1...	400	Spool type valves and solenoid valves	100
464/1...0.12...	400	Spool type valves and solenoid valves	100
464/1.53...0...	400	Spool type valves and solenoid valves	101
468...0.0...	400	Spool type valves and solenoid valves	92
468...0.1...	400	Spool type valves and solenoid valves	92
468...0.12...	400	Spool type valves and solenoid valves	92
468.53...0...	400	Spool type valves and solenoid valves	93
468/1...0.0...	400	Spool type valves and solenoid valves	94
468/1...0.1...	400	Spool type valves and solenoid valves	93
468/1...0.12...	400	Spool type valves and solenoid valves	93
468/1.53...0...	400	Spool type valves and solenoid valves	94
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5300.T12	2300 ENOVA	Solenoid valves manifold	524
5300.T12	3000 EVO	Solenoid valves manifold	407
5300.T12	EVO Electronics	Solenoid valves manifold	502
5300.T12	PX	Solenoid valves manifold	354
5308A.M03.00	2300 ENOVA	Solenoid valves manifold	524
5308A.M03.00	3000 EVO	Solenoid valves manifold	407
5308A.M03.00	EVO Electronics	Solenoid valves manifold	502
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5312A.F04.00	2300 ENOVA	Solenoid valves manifold	523
5312A.F04.00	3000 EVO	Solenoid valves manifold	407
5312A.F04.00	EVO Electronics	Solenoid valves manifold	502
5312A.F04.00	PX	Solenoid valves manifold	354
5312A.F05.00	2300 ENOVA	Solenoid valves manifold	523
5312A.F05.00	3000 EVO	Solenoid valves manifold	407
5312A.F05.00	EVO Electronics	Solenoid valves manifold	502
5312A.F05.00	PX	Solenoid valves manifold	354
5312A.M05.00	2200 EVO	Solenoid valves manifold	423
5312A.M05.00	2300 ENOVA	Solenoid valves manifold	523
5312A.M05.00	3000 EVO	Solenoid valves manifold	407
5312A.M05.00	EVO Electronics	Solenoid valves manifold	502
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5312B.F05.00	PX	Solenoid valves manifold	354
5312B.M05.00	2300 ENOVA	Solenoid valves manifold	523
5312B.M05.00	3000 EVO	Solenoid valves manifold	407
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808...0...	800	Spool type valves and solenoid valves	74
808...11...	800	Spool type valves and solenoid valves	72
808.53...0...	800	Spool type valves and solenoid valves	75
808.53...11...	800	Spool type valves and solenoid valves	73
888...	888	Spool type valves and solenoid valves	84
8880.32...	888	Spool type valves and solenoid valves	78
8880.52.00.35...	888	Spool type valves and solenoid valves	79
8880.52.00.39...	888	Spool type valves and solenoid valves	78
8880.53...	888	Spool type valves and solenoid valves	79
8880E.32...	888	Spool type valves and solenoid valves	79
8880E.32.00.35...	888	Spool type valves and solenoid valves	80
8880E.52.00.35...	888	Spool type valves and solenoid valves	80
8880E.52.00.39...	888	Spool type valves and solenoid valves	80
8880E.53...	888	Spool type valves and solenoid valves	81
8883...	888	Spool type valves and solenoid valves	85
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K5130.32.37P	3000 EVO	Solenoid valves manifold	401
K5130.32.37P	EVO Electronics	Solenoid valves manifold	497
K5130.32.37P	PX	Solenoid valves manifold	348
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K5230.08.M12	3000 EVO	Solenoid valves manifold	399
K5230.08.M12	PX	Solenoid valves manifold	346
K5230.08.M8	3000 EVO	Solenoid valves manifold	399
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M3...	300	Direct operated solenoid valves	197
M4...	300	Direct operated solenoid valves	197
M5/B	300	Direct operated solenoid valves	196
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Ⓜ515...00...	515	"NAMUR" valves and solenoid valves	262-263
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Ⓜ517.52...	515	"NAMUR" valves and solenoid valves	262-263
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MC...	300	Direct operated solenoid valves	197
MM7	300	Direct operated solenoid valves	188
N33...	300	Direct operated solenoid valves	181
N34...	300	Direct operated solenoid valves	181
N36...	300	Direct operated solenoid valves	177
N37...	300	Direct operated solenoid valves	177
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PⒸ1A…11E...	PG	Valves and solenoid valves poppet system	216
PⒸ1V…01…	PG	Valves and solenoid valves poppet system	219
PⒸ1V…11E…	PG	Valves and solenoid valves poppet system	218
PⒸ2A...01...	PG	Valves and solenoid valves poppet system	209
PⒸ2A...11E...	PG	Valves and solenoid valves poppet system	208
PⒸ2V...01…	PG	Valves and solenoid valves poppet system	211
PⒸ2V...11E...	PG	Valves and solenoid valves poppet system	210
PⒸ3A...01...	PG	Valves and solenoid valves poppet system	213
PⒸ3A...11E...	PG	Valves and solenoid valves poppet system	212
PⒸ3V…01…	PG	Valves and solenoid valves poppet system	215
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GT173A…	Airplus	Air service units	72-76
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GT174B…	Airplus	Air service units	72-76
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L171ADA…	Airplus	Air service units	10-13
L171AF…	Airplus	Air service units	6-9
L171AL…	Airplus	Air service units	48-51
L171AV…	Airplus	Air service units	52-54
L171BDA…	Airplus	Air service units	10-13
L171BF…	Airplus	Air service units	6-9
L171BL…	Airplus	Air service units	48-51
L171BV…	Airplus	Air service units	52-54
L171CDA…	Airplus	Air service units	10-13
L171CF…	Airplus	Air service units	6-9
L171CL…	Airplus	Air service units	48-51

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L172AF…	Airplus	Air service units	6-9
L172AL…	Airplus	Air service units	48-51
L172AR…	Airplus	Air service units	30-33
L172AV…	Airplus	Air service units	52-54
L172BDA…	Airplus	Air service units	10-13
L172BE…	Airplus	Air service units	22-27
L172BF…	Airplus	Air service units	6-9
L172BL…	Airplus	Air service units	48-51
L172BR…	Airplus	Air service units	30-33
L172BV…	Airplus	Air service units	52-54
L172CDA…	Airplus	Air service units	10-13
L172CE…	Airplus	Air service units	22-27
L172CF…	Airplus	Air service units	6-9
L172CL…	Airplus	Air service units	48-51
L172CR…	Airplus	Air service units	30-33
L172CV…	Airplus	Air service units	52-54
L173ADA…	Airplus	Air service units	10-13
L173ADD…	Airplus	Air service units	18-21
L173AE…	Airplus	Air service units	22-27
L173AF…	Airplus	Air service units	6-9
L173AL…	Airplus	Air service units	48-51
L173AR…	Airplus	Air service units	30-33
L173AV…	Airplus	Air service units	52-54
L173BDA…	Airplus	Air service units	10-13
L173BDD…	Airplus	Air service units	18-21
L173BE…	Airplus	Air service units	22-27
L173BF…	Airplus	Air service units	6-9
L173BL…	Airplus	Air service units	48-51
L173BR…	Airplus	Air service units	30-33
L173BV…	Airplus	Air service units	52-54
L173CDA…	Airplus	Air service units	10-13
L173CDD…	Airplus	Air service units	18-21
L173CE…	Airplus	Air service units	22-27
L173CF…	Airplus	Air service units	6-9
L173CL…	Airplus	Air service units	48-51
L173CR…	Airplus	Air service units	30-33
L173CV…	Airplus	Air service units	52-54
L174BDA…	Airplus	Air service units	10-13
L174BDD…	Airplus	Air service units	18-21
L174BE…	Airplus	Air service units	22-27
L174BF…	Airplus	Air service units	6-9
L174BL…	Airplus	Air service units	48-51
L174BR…	Airplus	Air service units	30-33
L174BV…	Airplus	Air service units	52-54
L174CDA…	Airplus	Air service units	10-13
L174CE…	Airplus	Air service units	22-27
L174CF…	Airplus	Air service units	6-9
L174CR…	Airplus	Air service units	30-33
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N171AB…A	Airplus	Air service units	40-43
N171AB…B	Airplus	Air service units	40-43
N171AB…C	Airplus	Air service units	40-43
N171AB…D	Airplus	Air service units	40-43
N171ADA…	Airplus	Air service units	10-13
N171AE…	Airplus	Air service units	22-27
N171AF…	Airplus	Air service units	6-9
N171AL…	Airplus	Air service units	48-51
N171AM…A	Airplus	Air service units	40-43
N171AM…B	Airplus	Air service units	40-43
N171AM…C	Airplus	Air service units	40-43
N171AM…D	Airplus	Air service units	40-43
N171AP…	Airplus	Air service units	61-63
N171AP…A	Airplus	Air service units	40-43
N171AP…B	Airplus	Air service units	40-43
N171AP…C	Airplus	Air service units	40-43
N171AP…D	Airplus	Air service units	40-43
N171APA	Airplus	Air service units	57-58
N171APP…	Airplus	Air service units	59-60
N171AR…	Airplus	Air service units	30-33
N171AV…	Airplus	Air service units	52-54
N171BAP…	Airplus	Air service units	55-56
N171BB…A	Airplus	Air service units	40-43
N171BB…B	Airplus	Air service units	40-43
N171BB…C	Airplus	Air service units	40-43
N171BB…D	Airplus	Air service units	40-43
N171BDA…	Airplus	Air service units	10-13
N171BE…	Airplus	Air service units	22-27
N171BF…	Airplus	Air service units	6-9
N171BL…	Airplus	Air service units	48-51
N171BM…A	Airplus	Air service units	40-43
N171BM…B	Airplus	Air service units	40-43
N171BM…C	Airplus	Air service units	40-43
N171BM…D	Airplus	Air service units	40-43
N171BP…	Airplus	Air service units	61-63
N171BP…A	Airplus	Air service units	40-43
N171BP…B	Airplus	Air service units	40-43
N171BP…C	Airplus	Air service units	40-43
N171BP…D	Airplus	Air service units	40-43
N171BPA	Airplus	Air service units	57-58
N171BPP…	Airplus	Air service units	59-60
N171BR…	Airplus	Air service units	30-33
N171BV…	Airplus	Air service units	52-54
N171CAP…	Airplus	Air service units	55-56
N171CB…A	Airplus	Air service units	40-43
N171CB…B	Airplus	Air service units	40-43
N171CB…C	Airplus	Air service units	40-43
N171CB…D	Airplus	Air service units	40-43
N171CDA…	Airplus	Air service units	10-13
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N171CL…	Airplus	Air service units	48-51
N171CM…A	Airplus	Air service units	40-43
N171CM…B	Airplus	Air service units	40-43
N171CM…C	Airplus	Air service units	40-43
N171CM…D	Airplus	Air service units	40-43
N171CP…	Airplus	Air service units	61-63
N171CP…A	Airplus	Air service units	40-43
N171CP…B	Airplus	Air service units	40-43
N171CP…C	Airplus	Air service units	40-43
N171CP…D	Airplus	Air service units	40-43
N171CPA	Airplus	Air service units	57-58
N171CPP…	Airplus	Air service units	59-60
N171CR…	Airplus	Air service units	30-33
N171CV…	Airplus	Air service units	52-54
N171X	Airplus	Air service units	77
N171Y	Airplus	Air service units	77
N171YP	Airplus	Air service units	46
N172AAP…	Airplus	Air service units	55-56
N172ADA…	Airplus	Air service units	10-13
N172AE…	Airplus	Air service units	22-27
N172AF…	Airplus	Air service units	6-9
N172AL…	Airplus	Air service units	48-51
N172AP…	Airplus	Air service units	61-63
N172APA	Airplus	Air service units	57-58
N172APP…	Airplus	Air service units	59-60
N172AR…	Airplus	Air service units	30-33
N172AV…	Airplus	Air service units	52-54
N172BAP…	Airplus	Air service units	55-56
N172BDA…	Airplus	Air service units	10-13
N172BE…	Airplus	Air service units	22-27
N172BF…	Airplus	Air service units	6-9
N172BL…	Airplus	Air service units	48-51
N172BP…	Airplus	Air service units	61-63
N172BPA	Airplus	Air service units	57-58
N172BPP…	Airplus	Air service units	59-60
N172BR…	Airplus	Air service units	30-33
N172BV…	Airplus	Air service units	52-54

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N172CE…	Airplus	Air service units	22-27
N172CF…	Airplus	Air service units	6-9
N172CL…	Airplus	Air service units	48-51
N172CP…	Airplus	Air service units	61-63
N172CPA	Airplus	Air service units	57-58
N172CPP…	Airplus	Air service units	59-60
N172CR…	Airplus	Air service units	30-33
N172CV…	Airplus	Air service units	52-54
N172X	Airplus	Air service units	77
N172Y	Airplus	Air service units	77
N173AAP…	Airplus	Air service units	55-56
N173ADA…	Airplus	Air service units	10-13
N173ADBV…	Airplus	Air service units	14-17
N173ADD…	Airplus	Air service units	18-21
N173AE…	Airplus	Air service units	22-27
N173AF…	Airplus	Air service units	6-9
N173AL…	Airplus	Air service units	48-51
N173AP…	Airplus	Air service units	61-63
N173APA	Airplus	Air service units	57-58
N173APP…	Airplus	Air service units	59-60
N173AR…	Airplus	Air service units	30-33
N173AV…	Airplus	Air service units	52-54
N173BAP…	Airplus	Air service units	55-56
N173BDA…	Airplus	Air service units	10-13
N173BDBV…	Airplus	Air service units	14-17
N173BDCV…	Airplus	Air service units	14-17
N173BDD…	Airplus	Air service units	18-21
N173BE…	Airplus	Air service units	22-27
N173BF…	Airplus	Air service units	6-9
N173BL…	Airplus	Air service units	48-51
N173BP…	Airplus	Air service units	61-63
N173BPA	Airplus	Air service units	57-58
N173BPP…	Airplus	Air service units	59-60
N173BR…	Airplus	Air service units	30-33
N173BV…	Airplus	Air service units	52-54
N173BV2S…	Airplus	Air service units	65-71
N173BVS…	Airplus	Air service units	65-71
N173CAP…	Airplus	Air service units	55-56
N173CDA…	Airplus	Air service units	10-13
N173CDBV…	Airplus	Air service units	14-17
N173CDD…	Airplus	Air service units	18-21
N173CE…	Airplus	Air service units	22-27
N173CF…	Airplus	Air service units	6-9
N173CL…	Airplus	Air service units	48-51
N173CP…	Airplus	Air service units	61-63
N173CPA	Airplus	Air service units	57-58
N173CPP…	Airplus	Air service units	59-60
N173CR…	Airplus	Air service units	30-33
N173CV…	Airplus	Air service units	52-54
N173X	Airplus	Air service units	77
N173Y	Airplus	Air service units	77
N174BAP…	Airplus	Air service units	55-56
N174BDA…	Airplus	Air service units	10-13
N174BDAV…	Airplus	Air service units	14-17
N174BDD…	Airplus	Air service units	18-21
N174BE…	Airplus	Air service units	22-27
N174BF…	Airplus	Air service units	6-9
N174BL…	Airplus	Air service units	48-51
N174BP…	Airplus	Air service units	61-63
N174BPA	Airplus	Air service units	57-58
N174BPP…	Airplus	Air service units	59-60
N174BR…	Airplus	Air service units	30-33
N174BV…	Airplus	Air service units	52-54
N174CE…	Airplus	Air service units	22-27
N174CF…	Airplus	Air service units	6-9
N174CR…	Airplus	Air service units	30-33
N174X	Airplus	Air service units	77
N174Y	Airplus	Air service units	77
P171AAP…	Airplus	Air service units	55-56
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P171AL…	Airplus	Air service units	48-51
P171AP…	Airplus	Air service units	61-63
P171APA	Airplus	Air service units	57-58
P171APP…	Airplus	Air service units	59-60
P171AR…	Airplus	Air service units	30-33
P171AV…	Airplus	Air service units	52-54
P171BAP…	Airplus	Air service units	55-56
P171BDA…	Airplus	Air service units	10-13
P171BE…	Airplus	Air service units	22-27
P171BF…	Airplus	Air service units	6-9
P171BL…	Airplus	Air service units	48-51
P171BP…	Airplus	Air service units	61-63
P171BPA	Airplus	Air service units	57-58
P171BPP…	Airplus	Air service units	59-60
P171BR…	Airplus	Air service units	30-33
P171BV…	Airplus	Air service units	52-54
P171CAP…	Airplus	Air service units	55-56
P171CDA…	Airplus	Air service units	10-13
P171CE…	Airplus	Air service units	22-27
P171CF…	Airplus	Air service units	6-9
P171CL…	Airplus	Air service units	48-51
P171CP…	Airplus	Air service units	61-63
P171CPA	Airplus	Air service units	57-58
P171CPP…	Airplus	Air service units	59-60
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P171CV…	Airplus	Air service units	52-54
P172AAP…	Airplus	Air service units	55-56
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P172AE…	Airplus	Air service units	22-27
P172AF…	Airplus	Air service units	6-9
P172AL…	Airplus	Air service units	48-51
P172AP…	Airplus	Air service units	61-63
P172APA	Airplus	Air service units	57-58
P172APP…	Airplus	Air service units	59-60
P172AR…	Airplus	Air service units	30-33
P172AV…	Airplus	Air service units	52-54
P172BAP…	Airplus	Air service units	55-56
P172BDA…	Airplus	Air service units	10-13
P172BE…	Airplus	Air service units	22-27
P172BF…	Airplus	Air service units	6-9
P172BL…	Airplus	Air service units	48-51
P172BP…	Airplus	Air service units	61-63
P172BPA	Airplus	Air service units	57-58
P172BPP…	Airplus	Air service units	59-60
P172BR…	Airplus	Air service units	30-33
P172BV…	Airplus	Air service units	52-54
P172CAP…	Airplus	Air service units	55-56
P172CDA…	Airplus	Air service units	10-13
P172CE…	Airplus	Air service units	22-27
P172CF…	Airplus	Air service units	6-9
P172CL…	Airplus	Air service units	48-51
P172CP…	Airplus	Air service units	61-63
P172CPA	Airplus	Air service units	57-58
P172CPP…	Airplus	Air service units	59-60
P172CR…	Airplus	Air service units	30-33
P172CV…	Airplus	Air service units	52-54
P173AAP…	Airplus	Air service units	55-56
P173ADA…	Airplus	Air service units	10-13
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P173AF…	Airplus	Air service units	6-9
P173AL…	Airplus	Air service units	48-51
P173AP…	Airplus	Air service units	61-63
P173APA	Airplus	Air service units	57-58
P173APP…	Airplus	Air service units	59-60
P173AR…	Airplus	Air service units	30-33
P173AV…	Airplus	Air service units	52-54
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P173BF…	Airplus	Air service units	6-9
P173BL…	Airplus	Air service units	48-51
P173BP…	Airplus	Air service units	61-63
P173BPA	Airplus	Air service units	57-58
P173BPP…	Airplus	Air service units	59-60
P173BR…	Airplus	Air service units	30-33
P173BV…	Airplus	Air service units	52-54
P173CAP…	Airplus	Air service units	55-56
P173CDA…	Airplus	Air service units	10-13
P173CDBV…	Airplus	Air service units	14-17
P173CDD…	Airplus	Air service units	18-21
P173CE…	Airplus	Air service units	22-27
P173CF…	Airplus	Air service units	6-9
P173CL…	Airplus	Air service units	48-51
P173CP…	Airplus	Air service units	61-63
P173CPA	Airplus	Air service units	57-58
P173CPP…	Airplus	Air service units	59-60
P173CR…	Airplus	Air service units	30-33
P173CV…	Airplus	Air service units	52-54
P174BAP…	Airplus	Air service units	55-56
P174BDA…	Airplus	Air service units	10-13
P174BDAV…	Airplus	Air service units	14-17
P174BDD…	Airplus	Air service units	18-21
P174BE…	Airplus	Air service units	22-27
P174BF…	Airplus	Air service units	6-9
P174BL…	Airplus	Air service units	48-51
P174BP…	Airplus	Air service units	61-63
P174BPA	Airplus	Air service units	57-58
P174BPP…	Airplus	Air service units	59-60
P174BR…	Airplus	Air service units	30-33
P174BR…P	Airplus	Air service units	35-38
P174BV…	Airplus	Air service units	52-54
P174CDA…	Airplus	Air service units	10-13
P174CE…	Airplus	Air service units	22-27
P174CF…	Airplus	Air service units	6-9
P174CR…	Airplus	Air service units	30-33
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SS172BF…	1700 Steel line	Air service units	161-164
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SS173BF…	1700 Steel line	Air service units	161-164
SS173BR…	1700 Steel line	Air service units	165-168
SS173DE…	1700 Steel line	Air service units	169-173
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SS174AF…	1700 Steel line	Air service units	161-164
SS174AR…	1700 Steel line	Air service units	165-168
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SS174BF…	1700 Steel line	Air service units	161-164
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SS174DF…	1700 Steel line	Air service units	161-164
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T17150	Airplus	Air service units	29;34
T171AAP…	Airplus	Air service units	55-56
T171AB…A	Airplus	Air service units	40-43
T171AB…B	Airplus	Air service units	40-43
T171AB…C	Airplus	Air service units	40-43
T171AB…D	Airplus	Air service units	40-43
T171ADA…	Airplus	Air service units	10-13
T171AE…	Airplus	Air service units	22-27
T171AF…	Airplus	Air service units	6-9
T171AL…	Airplus	Air service units	48-51
T171AM…A	Airplus	Air service units	40-43
T171AM…B	Airplus	Air service units	40-43
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T171AM…D	Airplus	Air service units	40-43
T171AP…	Airplus	Air service units	61-63
T171AP…A	Airplus	Air service units	40-43
T171AP…B	Airplus	Air service units	40-43
T171AP…C	Airplus	Air service units	40-43
T171AP…D	Airplus	Air service units	40-43
T171APA	Airplus	Air service units	57-58
T171APP…	Airplus	Air service units	59-60
T171AR…	Airplus	Air service units	30-33
T171AV…	Airplus	Air service units	52-54
T171BAP…	Airplus	Air service units	55-56
T171BB…A	Airplus	Air service units	40-43
T171BB…B	Airplus	Air service units	40-43
T171BB…C	Airplus	Air service units	40-43
T171BB…D	Airplus	Air service units	40-43
T171BDA…	Airplus	Air service units	10-13

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T171BF…	Airplus	Air service units	6-9
T171BL…	Airplus	Air service units	48-51
T171BM…A	Airplus	Air service units	40-43
T171BM…B	Airplus	Air service units	40-43
T171BM…C	Airplus	Air service units	40-43
T171BM…D	Airplus	Air service units	40-43
T171BP…	Airplus	Air service units	61-63
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T172BR…	Airplus	Air service units	30-33
T172BV…	Airplus	Air service units	52-54
T172CAP…	Airplus	Air service units	55-56
T172CDA…	Airplus	Air service units	10-13
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T172CPA	Airplus	Air service units	57-58
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T174BV…	Airplus	Air service units	52-54
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T174CR…	Airplus	Air service units	30-33
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Pneumatic actuation

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CONTACTS

HEADQUARTERS

PNEUMAX S.P.A.

Via Cascina Barbellina, 10
24050 Lurano (BG) - Italia
Tel. 035/4192777
Fax 035/4192740 - 035/4192741
info@pneumaxspa.com
www.pneumaxspa.com

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PNEUMAX S.p.A.
Via Cascina Barbellina, 10
24050 Lurano (BG) - Italy
P. +39 035 41 92 777
info@pneumaxspa.com
www.pneumaxspa.com

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