IMI Norgren Limited
PO BOX 22
Eastern Avenue
Lichfield
Staffordshire WS13 6SB

Headquarters
T 01543 265 000
F 01543 265 811

www.norgren.com/uk

Customer Service Centres
Lichfield
T 0800 056 1472
Manchester
T 0800 056 0260

Technical Sales Centres
Lichfield
T 0800 056 1475
Manchester
T 0800 056 0301

Certificate Number FM 20822
ISO 9001 / QS-9000

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PNEUMATICS

NORGREN

IMI Norgren Ltd.
137 Slaney Close,
Dublin Industrial Estate
Glasnevin, Dublin 11
T ++353 1 8300 288
F ++353 1 8300 082

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All staff at our Customer Service Centres and Distributor outlets have extensive product knowledge and pneumatics experience. They can advise on all aspects of product selection, circuit design and applications.

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Delivery

Order any stocked product between 7.00 am and 5.00 pm Monday to Friday and your order will leave the same day.
Normal – Next day delivery before 5pm.
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A two year warranty applies to all Norgren products.
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Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under **'Technical Data'**.

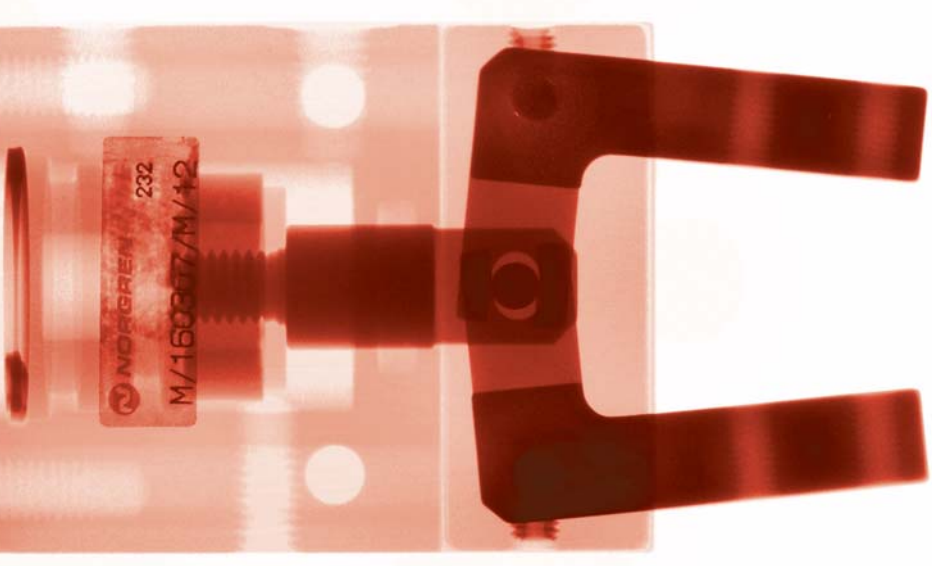
Before using these products with fluids other than those specified, for non-industrial applications, life- support systems, or other applications not within published specifications, consult **NORGREN.**

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.

Our policy is one of continuous research and development. We therefore reserve the right to amend without notice the specifications given in this document.



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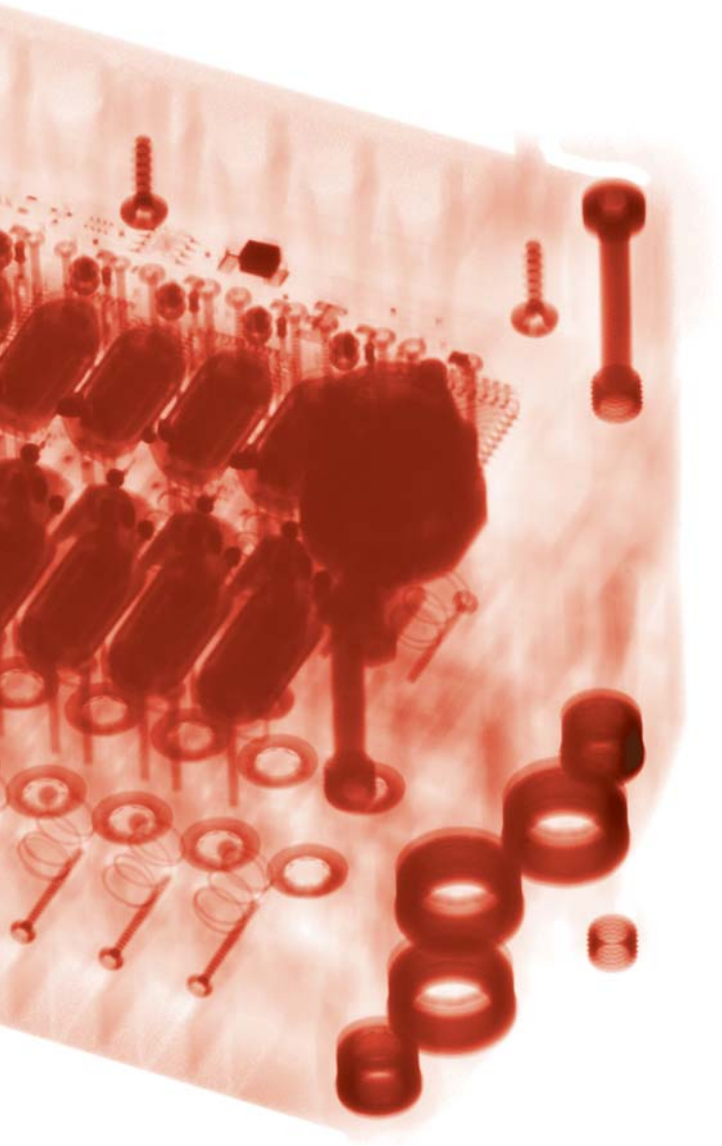

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Norgren's active new product development programme brings constant improvements in new technology, quality and performance – helping you to optimise machine effectiveness and increase competitive edge. In this catalogue we've added more than 20 new innovations to our existing range of reliable, proven pneumatic products. Take a look at our new, compact, high-performance solutions - see page VI for details.

- Linear slide tables
- Angular & parallel grippers
- LINTRA® Compact M/44000/M rodless cylinders
- Miniature & compact rotary actuators
- Miniature roundline cylinders
- Guide blocks QA/8000/81 & QA/8000/85
- VM10 valve islands
- V60-63 series valves
- VP22 3-way proportional pressure control valve
- 40D vacuum & pressure sensor
- 18S all fluid pressure sensor
- Smart FRL
- VMAA Series Smart Pump

CREATING COMPETITIVE ADVANTAGE FOR OUR CUSTOMERS




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Our knowledge means we can understand your needs and speak your language - in every sense of the word. It means that we're able to offer the right products and proven solutions through knowledgeable, responsive people. And you can rely on our proven ability to deliver the consistent, effective results that you need.

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We are committed to helping you find ways to improve your overall profitability and cost-effectiveness:

Increased revenue

- Improved machine performance
- Added value solutions and sub-assemblies
- Faster to market
- Market share growth

Lower costs

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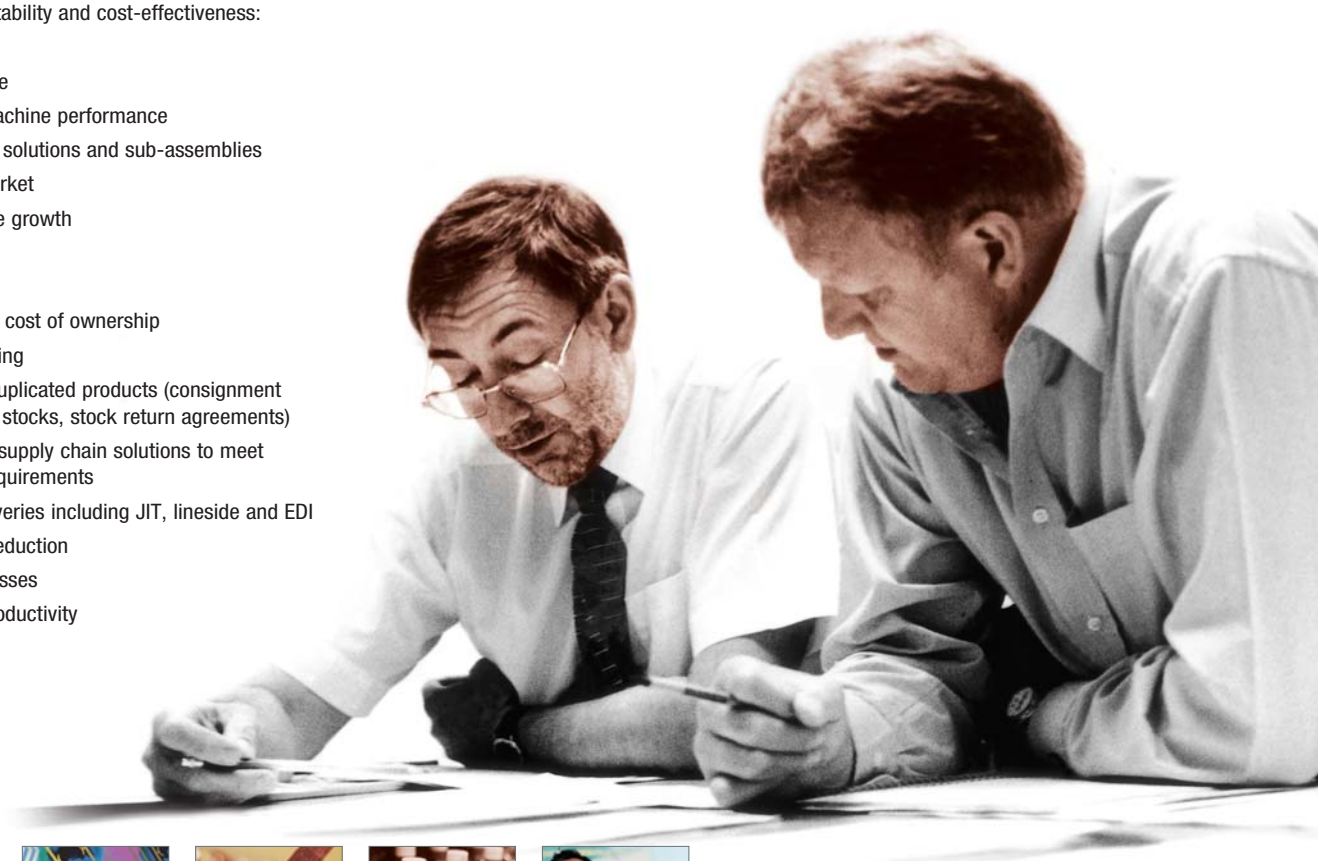
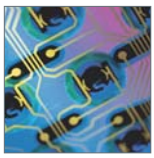
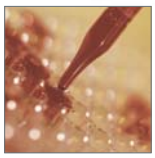
- Single sourcing
- Identifying duplicated products (consignment and security stocks, stock return agreements)
- Customised supply chain solutions to meet individual requirements
- Flexible deliveries including JIT, lineside and EDI
- Stock cost reduction
- Faster processes
- Improved productivity







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SOMEONE TO TALK TO SOMEONE WHO ADDS VALUE

When you choose Norgren, you can tap into an unrivalled range of added value services:

- help with product selection - including limiting variations, converting engineering drawings and sourcing products where necessary.
- customized and special product development
- circuit and control system design
- configured systems, machine kits and sub-assemblies
- expert technical advice on applications and problem solving
- flexible supply chain and delivery arrangements to meet individual needs
- advice on current and impending legislation
- customized training
- energy audits

Norgren people focus on finding answers to technically challenging problems, as well as thinking of more efficient ways to approach existing applications.

Get Norgren know-how working for you – and free up time to concentrate on your core business operations.

QUALITY THAT'S ENGINEERED

Norgren's advance quality planning means quality assurance in all manufacturing and assembly processes. Norgren's primary manufacturing sites are certified to ISO9001 quality standards and committed to ISO14000.

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If you're involved in export markets or multi-site operations, Norgren has the global reach and capabilities to match your needs. We offer product availability and local support anywhere in the world, via our global service network of Norgren Sales Companies and independent distributors covering 72 countries – see page xvi for details.

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NEW PRODUCTS

LINEAR SLIDE TABLES

Our new linear slide tables transport and position loads securely and accurately over short distances.

Our new range includes individual products to suit virtually any application making it one of the most comprehensive linear slide table families in the world.

Whether you are an OEM or end user each series has features that can benefit your business - high operating speeds and cycle rates coupled with a long service life can optimise your machine or process output, a variety of product options can reduce purchasing costs through product rationalisation and a range of compact units means minimal installation space can be achieved - helping to reduce machine cost.

M/261000/M compact precision & M/261100/M precision

These families are ideal for applications demanding precise movement.
The M/261000/M is particularly suited to operating within confined spaces.

M/261200/M low profile

A slim but robust construction makes this series an ideal choice for moving relatively heavy loads within vertically confined spaces.

M/261300/M compact

These products are recommended for many general purpose applications such as clamping and positioning due to their short, smooth, low friction movement within a compact envelope.

M/261400/M synchronous

Ideal for use as escapements or grippers these units provide precise synchronous double slide table motion.

M/61200/M adjustable & M/61200/MR precision

These families offer our largest size and stroke length combinations. The M/61200/M features adjustable external guiding; the M/61200/MR features precision linear ball bearings for applications demanding accurate motion.

NEW PRODUCTS

ANGULAR & PARALLEL GRIPPERS M/160000 SERIES

A comprehensive new range of angular and parallel grippers including 180°, precision, low profile, three jaw and long stroke options. Low weight, compact size and smooth, accurate movement make these units ideal for a wide range of automation applications requiring fast and precise component handling. Integral magnets provide positional feedback. Mechanical service life of 5 million cycles.

LINTRA® COMPACT M/44000/M

Double acting rodless cylinder with internal guiding and full machined end caps.

M/60210/M MINIATURE & M/60270/M COMPACT ROTARY ACTUATORS

A new range of compact, lightweight units available in six sizes - delivering high torque levels and a consistently smooth, accurate, cushioned movement. Ideal for many automation applications, with easy adjustment to provide bespoke angles of rotation. Mechanical service life of 3 million cycles.

MINIATURE ROUNDLINE CYLINDERS RM/59100/C

Just 2.5mm and 4mm in diameter, these miniature cylinders are ideal for very light load applications and fast, repetitive actions such as function testing mobile phones and keypads. Low friction characteristics deliver high speeds.

No fittings required - just one integral barbed air connection.

GUIDE BLOCKS QA/8000/81 & QA/8000/85

Guide blocks for ISO/VDMA cylinders with plain bearing and strong guide rods

NEW PRODUCTS

VM10 VALVE ISLANDS

Introducing Norgren's new flagship system valve range – delivering a high flow rate of 430 litres/minute from a 10mm valve. Options include Multipole, individually wired and Fieldbus with interchangeable protocols.
Save space with a high performance, compact unit.
Save on assembly and installation with pre-configured and pre-tested valve islands, ready to plug and play in seconds.
Save downtime with quick and easy valve replacement (no tie rods).
Save time with Norgren's simple on-line valve configurator and downloadable CAD drawings.

V60-63 SERIES

Solenoid and pilot actuated in-line valves. Available in all sizes (1/8" to 1/2"). Stainless steel spools and static seals increase flow rates (up to 4,200 litres/min with the new 1/2" ported version) and cycle life (> 10 million operations). Innovations include two 3/2 valves in one body, a new twin pilot system and a flexible manifold system for easy assembly.

VP22 3-WAY PROPORTIONAL PRESSURE CONTROL VALVE

Direct operated poppet valve with integrated electronic pressure control. Suitable for high accuracy and speed applications. Nominal diameter 2 with flow up to 400 l/min. New designed flange version with 1/8" thread.

40D VACUUM & PRESSURE SENSOR

An electronic pressure switch/sensor for positive pressure and vacuum control – with easy calibration and programming of set points. A built-in electronic processor ensures high accuracy. Neat, space-saving design and revolving display for clear visibility.

NEW PRODUCTS

18S ALL FLUID PRESSURE SENSOR

Analogue pressure sensors for all fluid and hydraulic applications, with pressure range of 0 to 800 bar. Choice of two wire (4...20 mA) and three wire (0...10V) technologies. Robust design and excellent long-term stability.

SMART FRL

Air preparation assemblies with system diagnostics to help you optimise machine performance. Continual monitoring displays data and advice on filter element replacement, lubrication, pressure, scheduled maintenance etc. Reduce energy, maintenance and purchasing costs, and increase machine uptime and productivity.

VMAA SERIES SMART PUMP

The VMAA Smart Pump is a single channel vacuum generator that offers intelligent interface. The VMAA Smart Pump eliminates the need for valves, gauges, sensors, proximity switches, silencers, and excess cables. The VMAA Smart Pump offers energy efficient vacuum management, intelligent part present, and an automatic blow-off mode.

GOLDEN RULES, SIZING AND VALCULATIONS IN PNEUMATICS

Design and sizing in pneumatics is often based upon experience coupled with an element of fear of under specifying crucial equipment. In an attempt to ensure enough power, engineers may select over sized cylinders and then select over sized valves to supply them with enough air. The same uncertainty can also lead to over sized specification of air line equipment, fittings and tubing.

The outcome is components larger than necessary that use too much compressed air and waste energy and money.

However when following some well proven golden rules and a few laws of pneumatics it is easy to achieve correctly sized pneumatic installations.

BASICS TO CONSIDER

The cylinder: The force required, the pressure available, the speed of movement and air consumption. ISO and VDMA standard or compact style also cushioning and sensors.

The valve: Flow to achieve the time for the cylinder movement. Solenoid, air pilot, manual or mechanical operator. In line, manifold or sub-base mounting or tailor made valve island. Solenoid individually wired or with multipole or fieldbus.

Air line: Flow rating and micrometre size of the filter element. Automatic or manual drain, piping away the condensate. Source pressure and optimal working pressure. Pressure regulator for standard or precision regulation. Lubrication, Oil-fog or Micro-fog.

Fittings and tubing: Compression, push-on or push-in fittings. Metal, nylon or soft polyurethane tubing. Correct sizing of fittings and tubing combination according to flow requirements.

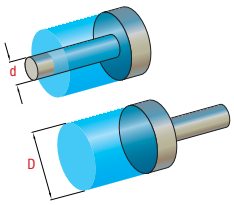
General: Temperature and environmental conditions.

THE CYLINDER

Correct sizing is based upon the required force and applied pressure.

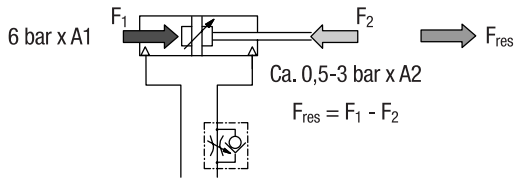
At page xii the tables show the theoretical thrust (outstroke) and theoretical pull (instroke) expressed in Newtons for single and double acting cylinders. This is calculated by multiplying the effective area of the piston in mm^2, by the working pressure in bar gauge, divided by 10 (10 bar =1 N/mm^2).

Piston and rod diameters



For piston rod cylinders the effective area of the rod side is the piston area minus the area of the piston rod, (if not a rodless cylinder).

To ensure smooth, controllable and problem free movement, a cylinder should be selected that has a theoretical force of 25 - 50% more than the force required at the application. This allowance compensates for internal and external friction and loss of pressure differential across the piston due to back pressure and flow pressure-drop. The allowance will vary according to the application. For clamping work only a small allowance is required but for controlled low speed a high allowance is required. Flow pressure drop can result in 10% – 20% less pressure acting on the piston



Golden rule: The theoretical force of the cylinder should be 25% extra for high speed, 50% extra for low speed and 100% extra for ultra low speed (positioning) applications.

A table of air consumption figures for cylinders can be found on page xii. These are shown for the thrust stroke, the pull stroke and the two combined to give one cycle. This is expressed in dm^3/mm of stroke (l/mm) for a working pressure of 6 bar (gauge). This is calculated by multiplying the effective piston area in mm^2 by the absolute pressure in bar multiplied by 10^{-6}. The absolute pressure is the working pressure in bar (gauge) plus the atmosphere pressure (assumed to be 1bar). To find the consumption for one cycle multiply the combined figure by the stroke of the cylinder in mm. These are theoretical figures based on swept volume. Additional volumes such as cavities in piston and end covers, tubing, fittings and control valves represent an additional 5% -10%. Over-sizing of tubing and fittings and long distances between cylinder and control valve gives larger losses and could slow the repeat cycle rate.

Golden rule: Correctly sized fittings and tube-bore and shortest possible tube length will give the highest repeat cycling rate and saves energy.

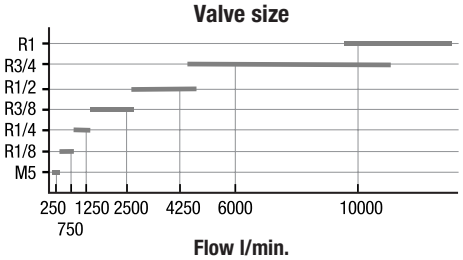
THE VALVE

Developments in valve technology have given higher flow in smaller valve envelope sizes, eg. the flow from a traditional 42 mm wide ISO #1 valve is about 1250 l/min, a modern valve that can deliver the same flow is only 20 mm wide.

The old rule, sometimes used, of selecting a control valve with the same port size as the cylinder has a number of drawbacks. Firstly the cylinder port may not have a full through bore and secondly the cylinder may not be required for anything near it's maximum potential speed. Far better is to match valve flow to the flow requirement of the cylinder for a particular application.

Golden rule: Calculate the greatest instantaneous flow required by the cylinder. This is the flow rate required during the fastest stroke. Do not use l/min average values.

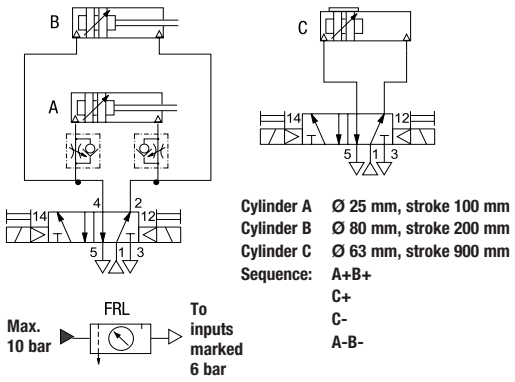
The graph gives a guide to the typical flow ranges appropriate to different nominal valve sizes. The flow values indicated by the vertical lines are at 6 bar, with 1bar pressure drop.



IN PRACTICE

Let us assume we have three cylinders working in a sequence.

Cylinder A:	Ø 25 mm, stroke length 100 mm
Cylinder B:	Ø 80 mm, stroke length 200 mm
Cylinder C:	Ø 63 mm, stroke length 900 mm
Sequence:	A+, B+
	C+
	C-
	A-, B-
Cycling time:	5 seconds



From the table at page xii you will find the following air consumption at 6 bar working pressure (gauge):

Cylinder A:	VA+ = 0,00344 x 100		= 0,334 l
	VA- = 0,00289 x 100		= 0,289 l
	VA	Total	= 0,623 l
Cylinder B:	VB		= 13,750 l
Cylinder C:	VC		= 39,28 l

The total air consumption for a cycle time of 5 seconds can now be calculated:

Q = (VA + VB + VC) + 5% / Cycle time = 11,27 l/sec = 676 l/min

Instantaneous air consumption when cylinder C is doing a cycle at 2 seconds is 1237 l/min and if A and B are running their cycle at 3 seconds they need 302 l/min.

From the valve size/flow figure we can see that cylinder A and B need one 1/8" valve and C needs a 1/4" valve, this despite the port size for A is 1/8", B is 3/8" and C is 1/2".

If you do not want to calculate use the golden rule table:

Valve size	Flow l/min	Tube Ø mm	Cylinder max Ø mm
M5	250	6/4	40
1/8"	750	8/6	63
1/4"	1250	10/7	80
3/8"	2500	12/8,5	125
1/2"	4250	16/12	160
3/4"	6000	22/17	250
1"	10000	26/18	320

Based on cylinder speed of 500 mm/sec, 50% loaded, cylinder pressure 5 bar, 1 metre tube length and two fittings per tube,

FILTRATION, LUBRICATION AND WORKING TEMPERATURE

In general, pneumatics are designed for working in a wide temperature range from -20°C up to +80°C. Electrical parts like solenoids are limited to +50°C, but specific figures can be found in the catalogue.

For filtration and dew point the following apply: 5°C to 50°C ambient temperature, 40 micron filtration and a dew point of 10°C lower than the ambient temperature is recommended.

Below 5°C and above 50°C, 25 or 5 micron filtration is recommended and below 5°C a dew point 5°C lower than the ambient temperature isrecommended.

Valves and cylinders are greased on assembly and operate under normal conditions without additional lubrication. However using a lubricator will extend the life of these products.

Golden rule: always lubricate when: Valve frequency is >3 Hz.

Cylinder speed is high.

Ambient temperature is below freezing point or above 50°C.

There is a combination of the conditions above.

If possible always lubricate and if you start to lubricate then continue to do so. Use micro-fog lubricators for cylinders and oil-fog lubricators for air tools.

FITTINGS AND TUBING

Rule number one is use as few fittings as possible. Tubing should be as short as practical and be related to port thread sizes. e.g. Ø 8/6 mm for G1/4. Banjo type fittings and quick connection couplings can be restrictive to flow. Minimise the use of elbows, Y 's and tee connectors. For use below freezing or when exposed to sunlight use black plastic tubing.

BEST PRACTICE

Compressed air is not free and must be used with consideration. Compression from 7 -10 bar has the same cost as compression from 0 - 7 bar, this means that pressure should be as low as possible. Use pressure regulators where possible. Cylinders and valves should be correctly sized. Tubing that is unnecessarily long or large in diameter will waste energy and adversely influence response times. Locally placed valve islands will use shorter tube lengths than valves in centrally placed control cabinets. If you are in doubt or just need good advice Norgren will always be pleased to help you. We have decades of experience in pneumatic control, design and sizing.

TABLES AND CONVERSION FACTORS IN PNEUMATICS

Frequently asked questions in pneumatics typically concern: air quality, cylinder forces loading and bending, air consumption plus valve flow and lubrication.

The tables on this page can be used in combination with the guidance and golden rules for sizing cylinders and valves stated on the previous page x.

AIR QUALITY

ISO 8573-1 specifies quality classes for compressed air. A class number is made up from the individual maximum allowable contents of solid particles, water and oil in air and can be used to specify air quality for use with valves and other pneumatic applications.

Class	Solids		Water	Oil
	particle size max µm	concentration maximum mg/m³	Max. Pressure Dew Point °C	concentration mg/m³
1	0,1	0,1	-70	0,01
2	1	1	-40	0,1
3	5	5	-20	1
4	15	8	+3	5
5	40	10	+7	25
6	–	–	+10	–

For general applications where ambient temperature is between +5 and +35 °C, air quality to ISO8573-1 class 5.6.4 is normally sufficient. This is 40 µm filtration, +10 °C maximum pressure dew point and 5 mg/m³ maximum oil content. Pressure dew point is the temperature to which compressed air must be cooled before water vapour in the air starts to condense into water particles.

Bore mm	Rod mm	Push stroke consumption dm³/mm of stroke at 6 bar	Pull stroke consumption dm³/mm of stroke at 6 bar	Combined consumption dm³/mm of stroke/cycle
10	4	0,00054	0,00046	0,00100
12	6	0,00079	0,00065	0,00144
16	6	0,00141	0,00121	0,00262
20	8	0,00220	0,00185	0,00405
25	10	0,00344	0,00289	0,00633
32	12	0,00563	0,00484	0,01047
40	16	0,00880	0,00739	0,01619
50	20	0,01374	0,01155	0,02529
63	20	0,02182	0,01962	0,04144
80	25	0,03519	0,03175	0,06694
100	25	0,05498	0,05154	0,10652
125	32	0,08590	0,08027	0,16617
160	40	0,14074	0,13195	0,27269
200	40	0,21991	0,21112	0,43103
250	50	0,34361	0,32987	0,67348

Table of air consumption

AIR CONSUMPTION

For cylinders with the bore and rod sizes shown, the values of consumption are for an inlet pressure of 6 bar and only 1mm of stroke. To find the consumption for a single stroke or one complete cycle take the value from the appropriate column and multiply by the cylinder stroke length in mm. To adjust the value for a different inlet pressure divide by 7 and multiply by the required (absolute) pressure. i.e. gauge pressure in bar +1.

CYLINDER FORCES

The theoretical thrust and pull is related to the effective piston area and the pressure. The tables show the theoretical forces in Newton for single and double acting cylinders at 6 bar inlet to the cylinder. For forces at other pressures divide the figures by 6 and multiply by the required pressure in bar gauge.

Cylinder bore mm	Thrust N at 6 bar	Min pull of spring N
10	37	3
12	59	4
16	105	7
20	165	14
25	258	23
32	438	27
40	699	39
50	1102	48
63	1760	67
80	2892	86
100	4583	99

Table of thrust and pulls, single acting cylinders

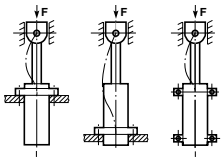
Cylinder bore mm (inches)	Piston rod diameter mm (inches)	Thrust N at 6 bar	Pull N at 6 bar
8	3	30	25
10	4	47	39
12	6	67	50
16	6	120	103
20	8	188	158
25	10	294	246
32	12	482	414
40	16	753	633
44,45 (1,75)	16	931	810
50	20	1178	989
63	20	1870	1681
76,2 (3)	25	2736	2441
80	25	3015	2721
100	25	4712	4418
125	32	7363	6881
152,4 (6)	(1½)	10944	10260
160	40	12063	11309
200	40	18849	18095
250	50	29452	28274
304,8 (12)	(2¼)	43779	42240
320	63	48254	46384
355,6 (14)	(2¼)	59588	58049

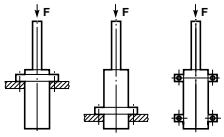
Table of thrust and pulls, double acting cylinders

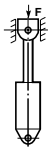
LOAD AND BUCKLING

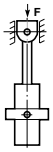
For applications with high side loading, use pneumatic slide actuators or standard cylinders fitted with guide units. Alternatively external guide bearings should be installed.

When a long stroke length is specified, care must be taken to ensure the rod length is within the limits for prevention of buckling. The table shows the maximum stroke length for a variety of installation arrangements.

1) 

2) 

3) 

4) 

Cylinder Ø mm (inch)	Piston rod Ø mm (inch)	Load case 1 Pressure (bar)				Load case 2 Pressure (bar)				Load case 3 Pressure (bar)				Load case 4 Pressure (bar)			
		4	6	10	16	4	6	10	16	4	6	10	16	4	6	10	16
8	3	270	220	170	130	130	100	80	60	170	130	100	80	190	160	120	90
10	4	380	300	230	170	170	140	100	70	230	180	130	100	260	210	160	120
12	4	310	250	180	140	140	110	80	50	180	140	100	80	220	170	120	90
	6	730	590	450	350	350	280	210	160	450	360	270	210	520	420	320	240
16	6	540	440	330	250	250	200	150	110	330	260	190	150	380	300	230	240
	8	980	790	600	470	470	370	280	210	600	480	360	280	700	560	430	330
20	8	780	620	470	370	370	290	220	160	470	380	280	210	550	440	330	250
	10	1200	1000	760	590	590	470	350	270	760	610	460	350	880	710	540	410
25	10	970	790	600	460	460	370	270	200	600	480	360	270	690	560	420	320
	12	1400	1100	880	680	680	550	410	310	870	700	530	410	1000	820	620	480
31,75 (1,25)	12	1100	890	680	520	520	420	310	230	680	540	410	310	790	630	480	360
32	12	1100	860	650	500	500	390	290	210	650	520	380	290	760	600	450	340
	16	2000	1600	1200	960	960	770	580	450	1200	990	750	580	1400	1100	870	680
40	14	1200	960	730	570	570	450	340	250	730	580	440	330	850	680	510	390
	16	1600	1200	950	730	730	580	430	320	940	750	560	430	1100	880	660	500
44,45 (1,75)	16	1400	1100	870	670	670	540	400	300	860	690	520	400	1000	810	610	470
50	20	2000	1600	1200	930	930	740	550	420	1200	960	720	550	1400	1100	840	640
50,8 (2)	20	1900	1600	1200	930	930	740	550	420	1200	960	720	550	1400	1100	840	640
63	20	1500	1200	930	720	720	570	420	310	930	740	550	420	1100	860	650	490
63,5 (2,5)	25	2400	2000	1500	1200	1200	930	700	530	1500	1200	900	690	1700	1400	1100	810
76,2 (3)	25	2000	1600	1200	950	950	760	560	420	1200	980	740	560	1400	1100	860	660
80	25	1900	1500	1100	880	880	700	510	380	1100	910	680	510	1300	1100	800	600
100	25	1500	1200	880	670	670	520	380	270	880	690	510	370	1000	820	600	450
101,6 (4')	32	2400	2000	1500	1100	1100	910	670	500	1500	1200	890	670	1700	1400	1000	790
125	32	2000	1600	1200	910	910	710	520	380	1200	940	690	520	1400	1100	820	620
127 (5')	38,1 (1,5)	2800	2200	1700	1300	1300	1000	760	570	1700	1300	1000	760	2000	1600	1200	900
152,4 (6')	38,1 (1,5)	2300	1800	1400	1100	1100	830	610	440	1400	1100	810	600	1600	1300	950	720
160	40	2400	1900	1500	1100	1100	880	640	480	1400	1200	860	640	1700	1400	1000	760
200	40	1900	1500	1100	860	860	670	480	350	1100	890	650	480	1300	1000	770	580
203,2 (8)	44,45 (1,75)	2300	1900	1400	1100	1100	840	610	440	1400	1100	810	600	1600	1300	960	720
250	50	2400	1900	1400	1100	1100	850	620	440	1400	1100	830	610	1700	1300	980	730
254 (10)	57,15 (2,25)	3100	2500	1900	1400	1400	1100	840	620	1900	1500	1100	830	2200	1700	1300	990
304,8 (12)	57,15 (2,25)	2500	2000	1500	1200	1200	920	660	480	1500	1200	890	660	1800	1400	1100	790
320	63	3000	2400	1800	1400	1400	1100	780	570	1800	1400	1000	780	2100	1700	1200	930
355,6(14)	57,15 (2,25)	2100	1700	1300	970	970	760	540	380	1300	1000	730	540	1500	1200	870	650

VALVE FLOW

There are a variety of standards and methods for the measurement and display of valve flow performance. These can give rise to confusion and difficulty when comparing the published performance of different valves. The table below provides conversion factors as a guide to expressing valve performance in different units.

FLOW FACTOR CONVERSION TABLE

	Factors			Flow *		Orifice Size	
	Cv	Kv	C	m^3/h	l/min	A	S
† Cv	1	0,869	4,08	59,1	985	16,3	21,5
Kv	1,15	1	4,69	67,9	1132	18,7	24,7
C	0,245	0,213	1	14,5	241	4,11	5,27
M3/h	0,017	0,015	0,069	1	16,67	0,276	0,364
l/min	0,001	0,0088	0,0041	0,06	1	0,016	0,022
A	0,061	0,053	0,243	3,62	60,4	1	1,31
S	0,046	0,040	0,189	2,75	45,8	0,761	1

* Flow parameters are 6 bar inlet and 5 bar outlet at 20°C, 1013 mbar and 65% humidity.

HOW TO USE:

Select the unit of measurement that is known in the left hand column and multiply by the factor given in the column of the required unit of measurement.

'Cv' is specified by ANSI/NFPA

'Kv' used in Germany and based on water flow.

'C' sonic conductance in $dm^3/s/bar$ specified by ISO 6358

'A' effective area in mm^2. specified by ISO 6358

'S' effective area in mm^2. according to the Japanese standard JIS B 8375

A further measurement is the NW value. This gives the equivalent diameter in mm^2 of the smallest path through a valve. This is non-comparable and not in the table.

LUBRICANTS

When to lubricate, via an oil-fog or micro-fog lubricator, is generally explained in this catalogue. However the oil recommended is very much dependant on the local conditions and not least availability of various brands and labels.

In each country Norgren can recommend equivalent products, based on the information from the suppliers.

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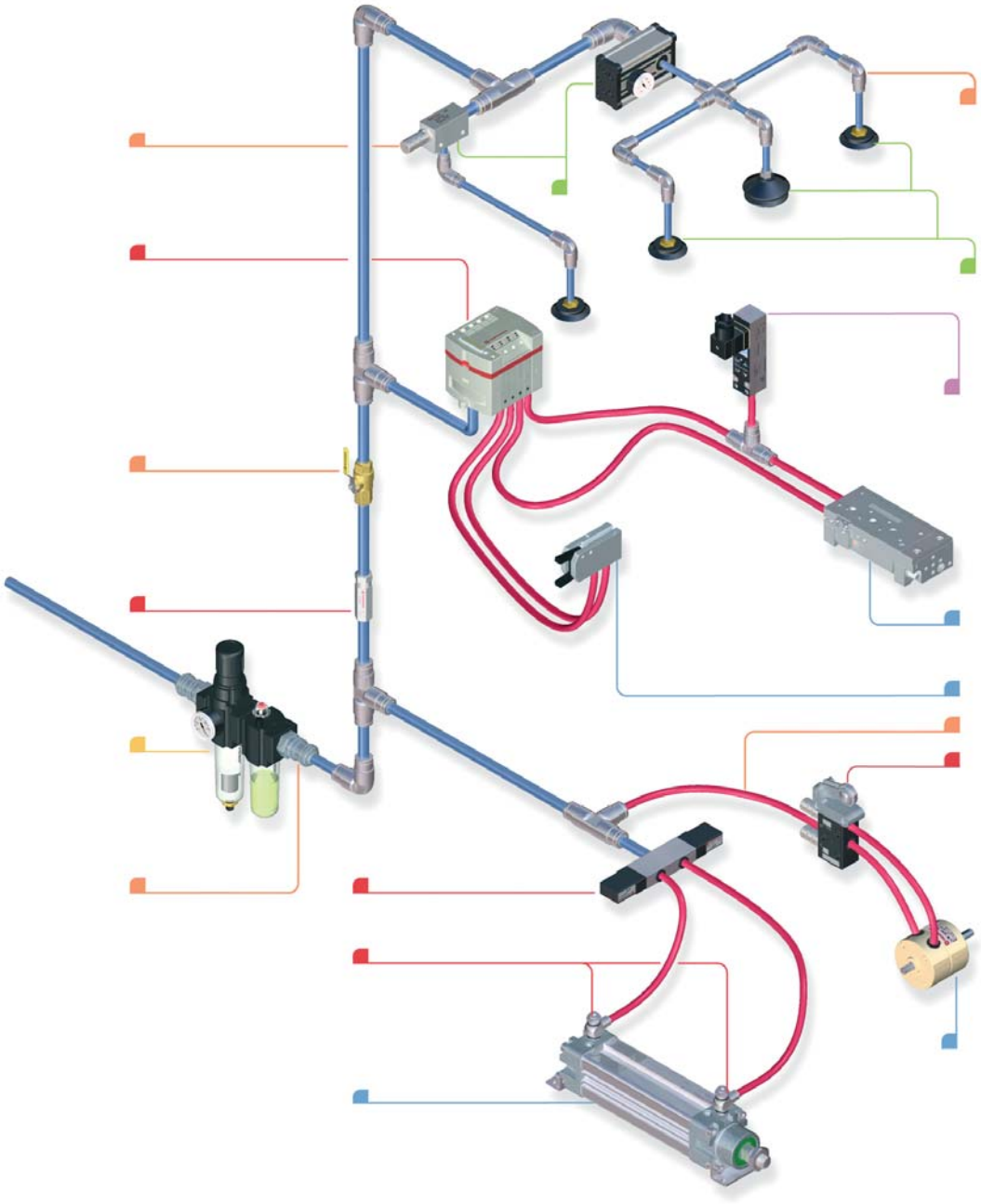

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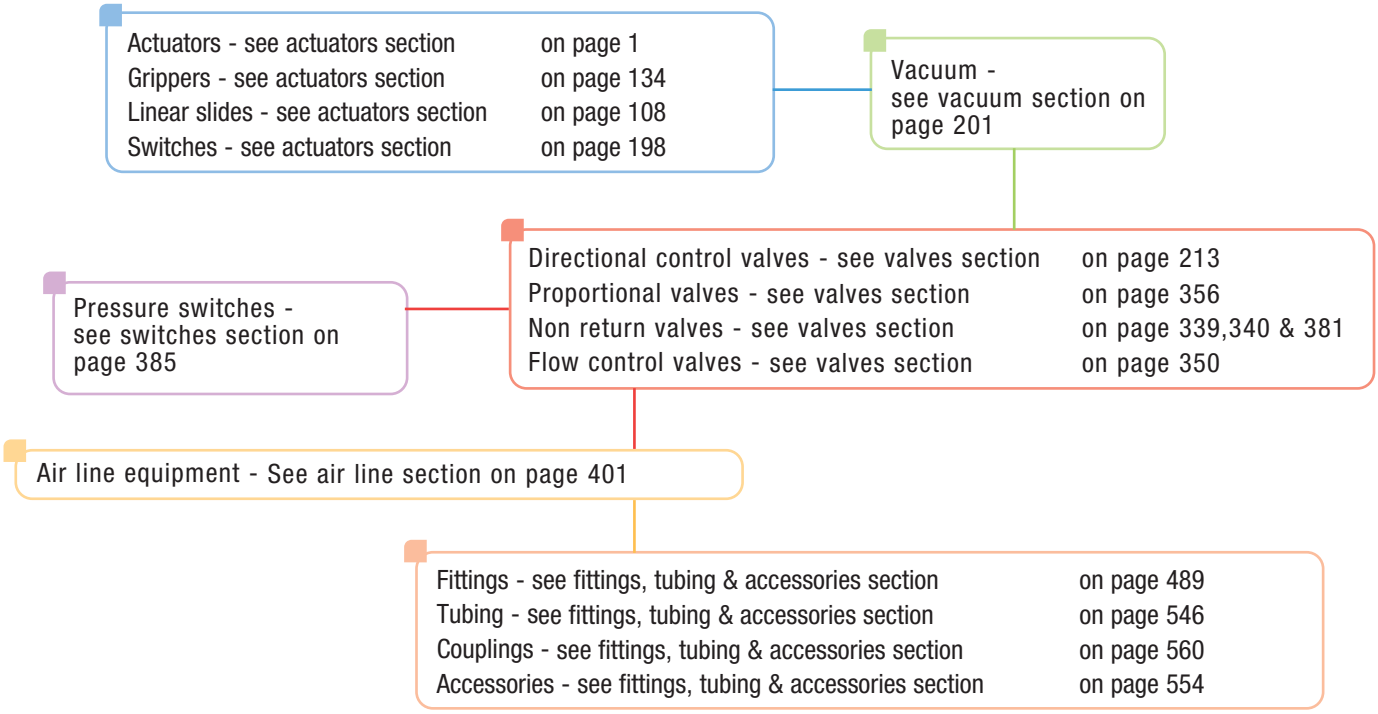

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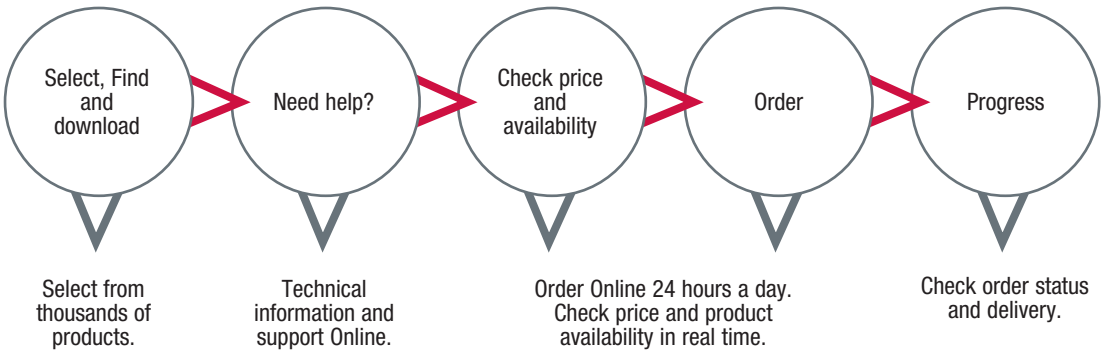

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Seawall Road, Tremorfa Industrial Estate, Cardiff CF24 5XG
Tel: 02920 436400, Fax: 02920 489910
E-mail: cardiff@monks-crane.com

FLINTSHIRE

D.R.B. Power Transmission Limited,
First Avenue, Deeside Industrial Park, Deeside CH5 2QR
Tel: 01244 280280, Fax: 01244 288367
E-mail: drb@drbgroup.co.uk

SCOTLAND

ABERDEEN

Hydrasun Ltd
Hydrasun House, 392 King Street, Aberdeen AB24 3BU
Tel: 01224 618618, Fax: 01224 618701
E-mail: info@hydrasun.co.uk

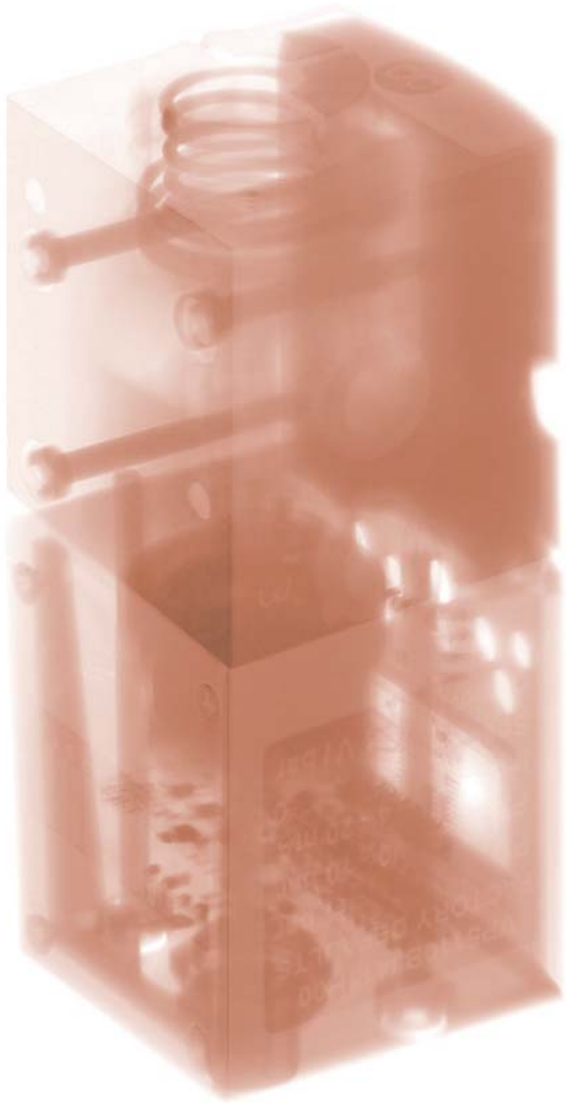
MB Air Systems Ltd
Wellheads Road, Fairburn Industrial Estate, Dyce,
Aberdeen, AB21 7HG
Tel: 01224 723434, Fax: 01224 723545
E-mail: sales@mbasdyce.co.uk

Edinburgh

Forth Engineering Services Ltd
Unit 8, West Shore Business Centre, Granton, Edinburgh EH5 1QT
Tel: 0131 551 5300, Fax: 0131 5516610
E-mail: sales@forthengineering.co.uk

Wishaw

MB Air Systems Ltd
149 Glasgow Road, Wishaw, ML2 7QQ
Tel: 01698 355711, Fax: 01698 359299
E-mail: wishaw@mbairsystems.co.uk



The powerful resources and services that are hidden behind Norgren's product range are key to its strong and honest partnership with customers.

You may not realise how much Norgren has to offer as the new product development programme constantly brings new innovations to our existing ranges. From local stock availability to global product support, from circuit design to e-commerce expertise, Norgren offers a proven, reliable service.

Norgren continually invests in new technology, quality and performance, optimising manufacturing techniques and assembly processes. As a result, Norgren is exceptionally well placed to help customers improve their profitability and cost effectiveness.

TECHNICAL CENTRE

"Product development to maximise benefit to customer"

- UK one of 3 Regional Technical Centres
- 270 Engineers
- Teams of experts working on customer focussed products
- Research and development on latest technologies
- Industry and sector knowledge shared across borders
- Global engineering force

TECHNICAL SUPPORT

"I need specialist technical advice"

- Technically trained sales force
- Application engineers
- Electro-pneumatic specialists
- Dedicated sector teams
- Special project design engineers

IMAGINATIVE THINKING, TECHNICAL EXPERTISE, PROVEN SOLUTIONS




E-COMMERCE

"www.norgren.com/uk"

- Totally interactive website
- Stock availability check
- On-line ordering and order tracking
- Next day delivery
- Technical support 24 hours a day / 365 days a year
- Downloadable support material

QUALITY AND WARRANTY

"Product quality must be guaranteed"

- ISO 9001 & ISO 14001 certified
- QS9000 certification on Fittings manufacture
- Advanced product quality planning
- Failure mode and effect analysis

SUPPORT MATERIALS

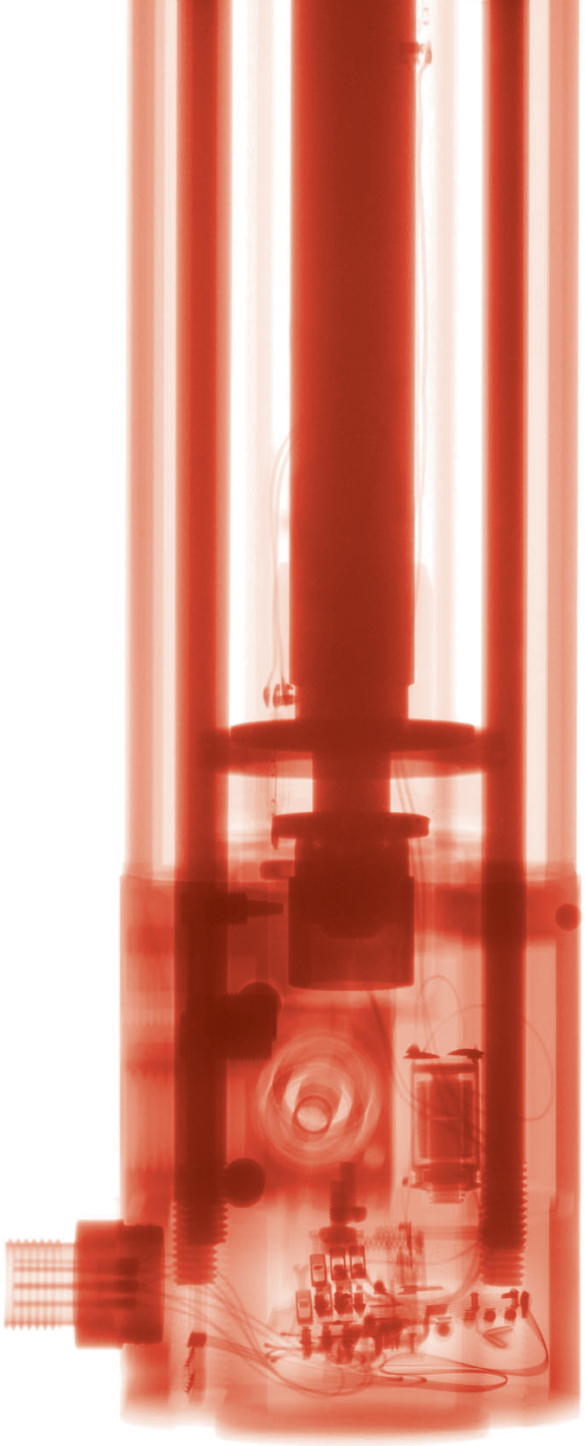
"I need CAD drawings – now!"

- CAD downloads on-line
- Technical data sheets available on-line, e-mail or fax
- Colour brochures on all new product ranges
- Training modules available to download
- Installation and maintenance sheets on-line

VALVE ISLAND CONFIGURATORS

"I need an easy way to configure a valve island"

- On-line and CD configurators
- Saves time configuring valve islands
- View downloadable 2D and 3D CAD drawings
- Download technical and dimensional information
- Automatic calculation of list price



SAME DAY ACTUATORS

"My production line has stopped – I need a new actuator – today"

- VDMA cylinders manufactured by one of our Principal Distributors to Norgren quality standards
- A range of cylinder switches and mountings plus a wide range of other pneumatic equipment available from stock
- Emergency repairs undertaken to most cylinders
- Call GCE Fluid Power on 0121 356 5727

LINESIDE

“I want my pneumatic components delivered just-in-time.”

- Customised stock and delivery service
- Instant stock availability
- Delivery direct to point of use
- Reduced ordering and handling costs
- Call 01543 265000 for details

SPECIALS AND KITTING

“I want components kitted to match my machine build.”

- Customised products made to order
- Tailored kits of components
- Design team to give you application specific solutions

CREATING COMPETITIVE ADVANTAGE FOR OUR CUSTOMERS




The following table gives conversions of imperial and discontinued metric units into preferred SI units and other acceptable units. For most practical purposes the approximate conversion will prove adequate but for more critical use the second set of conversion factors should be used.

From Old Unit	To SI Unit	Approximate conversion	Accuracy	Conversion for greater accuracy
Length				
Inch (in)	millimetres (mm)	÷4 then x100	1,6%	x25,4
Foot (ft)	metre (m)	÷3	1,6%	x0,305
Yard (yd)	metre (m)	x1	9%	x12 then ÷13
n/16 inch	millimetres (mm)	'n' x3 then ÷2	5,5%	x1,6
n/1000 inch	millimetres (mm)	'n' ÷ 4 then ÷10	1,6%	x0,0254
Miile (mi)	kilometre (km)	x1,5	6,8%	x1,609
Mass				
Pound (lb)	kilogramme (kg)	÷2	10%	x0,45
Pound (lb)	gramme (g)	x1000 then ÷2	10%	x454
Ounce (oz)	gramme (g)	x30	6%	x28,4
Long Ton (UK)	tonne (t)	x1	1,6%	x1,02
Short Ton (USA)	tonne (t)	x9 then –10	0,8%	x0,91
Force (weight)				
Pound-force (lbf)	newton (N)	x4	10%	x9 then ÷2
Kilopond (kp)	newton (N)	x10	2%	x9,8
Torque				
Pound-force foot (lbf ft)	newton-metre (N m)	x3 then ÷2	10%	x1,36
Pound-force inches (lbf in)	newton-metre (N m)	÷10	11%	x0,11
Pressure				
lbf/in^2 (psig)	bar	x7 then ÷100	1,5%	÷14,5
lbf/in^2 (psig)	N/m^2	x7000	1,5%	x6895
lbf/in^2 (psig)	kilopascal (kPa)	x7	1,5%	x6,9
lbf/in^2 (psig)	megapascal (MPa)	x7 then ÷1000	1,5%	x6,9 then ÷1000
kgf/cm^2* or kp/cm^2	bar	x1	2,0%	x0,98
kgf/cm^2* or kp/cm^2	N/m^2	x100000	2,0%	x98070
kgf/cm^2* or kp/cm^2	kilopascal (kPa)	x100	2,0%	x98
kgf/cm^2* or kp/cm^2	megapascal (MPa)	÷10	2,0%	x0,098
Atmosphere (standard)	bar	x1	1,3%	x1,013
Atmosphere (standard)	N/m^2	x100000	1,3%	x101300
Atmosphere (standard)	kilopascal (kPa)	x100	1,3%	x101,3
Atmosphere (standard)	megapascal (MPa)	÷10	1,3%	x0,101
Inches Water Gauge (inH_2O)	millibar (mbar)	x10 then ÷4	0,6%	x2,49
Millimetres Water Gauge (mmH_2O)	millibar (mbar)	÷10	2,0%	x0,098
Millimetres of Mercury (mmHg)	millibar (mbar)	x9 then ÷7	0,04%	x1,33
Torr	millibar (mbar)	x9 then ÷7	0,04%	x1,33
Tons/in^2	bar	x1000 then ÷7	7,5%	x154
Tons/ft^2	bar	x1	1,5%	x1,07
*Also known as a 'technical' atmosphere				
Volume				
Gallon (UK) (gal)	litre (L)	x5	10%	x4,54
Gallon (USA) (gal)	litre (L)	x4	5,7%	x3,79
Pint (UK) (pt)	litre (L)	x6 then ÷10	5,6%	x0,57
Pint (USA) (pt)	litre (L)	÷2	5,7%	x0,47
Fluid ounce (UK) (fl oz)	cubic centimetre (cm^3)	x30	5,6%	x28,4
Fluid ounce (USA) (fl oz)	cubic centimetre (cm^3)	x30	1,4%	x29,6
Flow				
Cubic feet per minute (cfm)	cubic decimetres/second (dm^3/s)**	÷2	5,9%	x0,472
Cubic feet per minute (cfm)	cubic metres/second (m^3/s)	÷2 then ÷1000	5,9%	x0,472 then ÷1000
Cubic feet per hour	cubic decimetres/second (dm^3/s)**	x8 then ÷1000	1,7%	x7,9 then ÷1000
Litres/minute (L/m)	cubic decimetres/second (dm^3/s)**	x2 then ÷100	20%	÷60
Cubic metres/hour (m^3/h)	cubic decimetres/second (dm^3/s)**	÷4	10%	x0,28
**The litre is equal to 1 cubic decimetre (dm^3) within 28 parts per million and for most practical purposes can be considered to be the same. For more precise work, increase the volume in litres by 1 part in 36000 to find the volume in dm^3.				
Power				
Horsepower (hp)	watt (W)	x3 then ÷4 then x1000	0,6%	x746
Horsepower (hp)	kilowatt (kW)	x3 then ÷4	0,6%	x0,746
Energy, work				
Foot-pound-force (ft lbf)	joule (J)	x9 then ÷7	5,5%	x1,35
Kilogramme-force metres (kgf m)	joule (J)	x10	1,3%	x9,807
British thermal unit (Btu)	joule (J)	x1000	5,5%	x1055
Tempreture				
Fahrenheit (°F)	Celsius (°C)	–32 then ÷2	10% between 0°F and 400°F	+40 then x5 then ÷9 then –40

INSTALLATION AND OPERATION OF PNEUMATIC EQUIPMENT

Safety
Compressed air in its basic state or in its more sophisticated applied forms can result in accidents if its not properly used. We therefore draw your attention to the following paragraphs *: The Health and Safety at Work Act (1974) makes specific requirements on suppliers and users. To conform with these requirements IMI Norgren Limited has, so far as it is reasonably practicable, designed, constructed and tested its products so as to be safe when properly used. Many of our customers, being suppliers as well as users, are reminded of the imposed duties of the above Act and when expediting these duties our technical staff will be pleased to advise. We cannot accept responsibility for the design of plant which might use our equipment and would recommend the use of European Norm (EN) standards and BS 4575:Part 3 (1988) "Fluid Power Transmission and Control Systems", which we have found to be an invaluable aid in designing control systems requested by customers. (Note compliance with these standards does not in itself confer immunity from legal obligation).

We also suggest guidance booklet by the Health and Safety Executive HS(G) 39 "Compressed Air Safety" that offers advice on the safe use of compressed air.

Application
Take note of any existing standards and regulations which must be adhered to in respect of particular classes of equipment. Particular attention is drawn to regulations concerning the use and testing of items such as hoists, presses and impact presses, also pressure vessels or receivers.
In cases of doubt consult your local Factory Inspector. Note that all equipment should only be used within the published operating limits for pressure and temperature. Care should be taken to guard against accidental valve operation either by the operator or a third party, e.g. cover for a foot-operated valve.
Where a valve, or other component, performs a critical function in a system, it should be used in such a manner that any failure in the component will cause the circuit to revert to a safe condition.
For specific advice on circuit safety requirements consult our Technical Service.

Installation
Check that all cylinder tie-rods and mountings are firmly fixed. End cover screws, valve mechanisms, piston rod nuts etc. must be fully tightened before pressure is applied to any components.
It is important that all plastic and other types of port dust caps, fitted for transportation purposes, are removed prior to connecting the units to the air supply. Ensure that all air connections are mechanically tight. Loose pipework can be dangerous. Double check that all pipe connections have been made to the correct ports.
Take great care when connecting electrical wiring to solenoid valves and pressure switches that the equipment is properly installed. Make sure that all electrical devices are suitable fused, insulated and earthed.
When checking the installation make sure that this is done under fully safe conditions, i.e. with any guards and other safety arrangements in operation.
If checking cylinder movements for mechanical alignment, whether under pressure or not, make sure that hands, fingers and other parts of the body cannot be trapped.
If the machine design allows it, pressure should first be introduced slowly into the system. A manually operated pressure regulator or smooth start valve will prove useful in these circumstances.

Operation
On no account must the human body ever be subjected to compressed air, e.g. do not attempt to occlude exhausting orifices by hand. Especial care should be taken where compressed air is used for 'blow gun' applications. We recommend either the use of a Safety Blow Gun or the fitting of a 'Norgren' type R16 Safety Blow Gun Regulator in the air supply. We draw your attention to a booklet entitled "Compressed Air Safety Code" by the British Safety Council.
Take care when making operating adjustments to flow regulators, cushion screws etc., that threaded components do not blow out under pressure.
Silencers, exhaust port filters and other types of port fittings should not be removed whilst the system is pressurised.

IMPORTANT
Before commencing any maintenance, shut off and lockout the air supply and exhaust downstream pressure, this can be done with an exhaust type ball valve. Switch off the electrical current.

* Machinery manufacturers must acquaint themselves with the requirements of the Supply of Machinery (Safety) Regulations 1994. Employers and users should follow the Provision and Use of Work Equipment Regulations 1992 (PUWER).

OPERATING PARAMETERS FOR NORGREN PNEUMATIC EQUIPMENT

Pressure
Generally Norgren equipment is designed for use in COMPRESSED AIR SYSTEMS ONLY, up 10 bar which is in excess of the normal factory air supply of 6 to 8 bar. Walter glandless valves can be offered for use from 0.9 bar up to + 16 bar.
The pressure range for each product is shown in the relevant catalogue section. If the product is to be used on liquids or gases other than compressed air THEN WE MUST BE CONSULTED.

Temperature
Generally Norgren equipment will operate with air temperatures between -20^{0}C and +80^{0}C. (ambient air temperatures of +70^{0}C) optimum life being at +20^{0}C.
If temperatures below +2^{0}C are envisaged then ice formation could cause mechanical damage to the components and in such circumstances equipment must be installed to eliminate ice passing into the valves and cylinders. We say +2C because the air temperature can be reduced to 0C on being passed through products. In sub-zero conditions it is absolutely essential that the air supply be 100% dry. Special low temperature lubricants may be required and some form of heating may be necessary. If temperatures above +60C are envisaged, check with Norgren Technical Service to ensure product suitability.
Performance characteristics, where quoted, are those obtainable at +20C and may vary at other temperatures. The time interval and number of operating cycles between servicing periods may be appreciably reduced at the extremes of the standard temperature range. Standard equipment can also be used intermittently outside these limitations and for these requirements Norgren Technical Service should be consulted. For continuous duty outside these limitations, specially adapted equipment can be supplied. Excessive water vapour in the air supply can lead to rapid deterioration in performance, lubricants will be washed out of the equipment and corrosion can take place. The compressor supplier should be contacted for advice on how to reduce the dew point condition prevailing, by the use of suitable aftercoolers and/or dryers.

Filtration
To ensure long life of equipment we generally recommend a 40 micrometer filter element is used to remove the particles of dirt and that an automatic drain is employed to remove collected liquids from the system. Certain items require finer filtration and this is indicated where appropriate. Filters for use with vacuum supplies are also available.

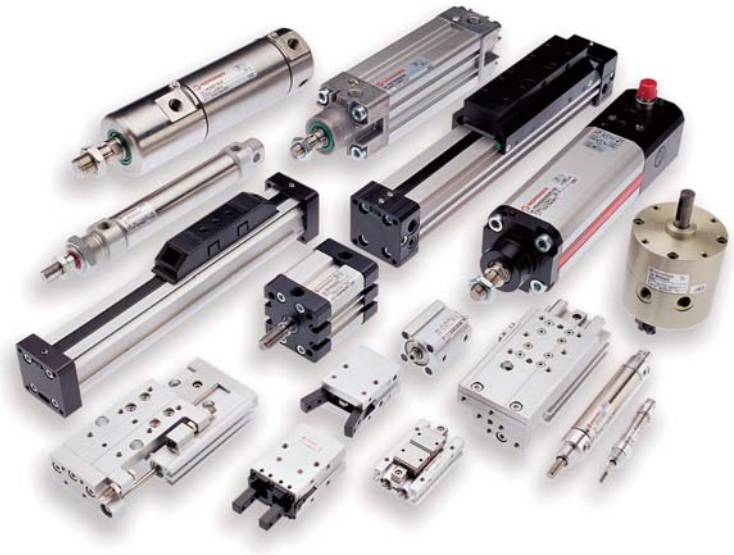
Lubrication
Norgren valves and cylinders should be lubricated to give the best possible life and performance. Most products are greased on assembly and when used with dry air can give in excess of 1,000,000 cycles service depending on the application.
Norgren valves and cylinders are assembled using Gulflex MOLY or Energol LS2 grease. Walter glandless valves will operate in lubricated or non-lubricated, filtered air in excess of 200,000,000 cycles. For special application consult Norgren Technical Service.

Sensitive valves
Optimum life is obtained by supplying clean dry unlubricated air to the servo pilot and lubricated air to the main body of the valve.
Corrosion resistance and other environmental hazards.
The materials of construction of Norgren equipment are generally suitable for every-day use in normal factory and workshop conditions. Corrosion resistant materials are incorporated in mechanisms wherever it is felt that they may be generally affected by damp conditions. Our Technical Services will suggest models for particularly corrosive or arduous environments.

Polycarbonate bowls
Where transparent plastic bowls are fitted to air-line equipment these should not be exposed to harmful solvents or their fumes. To clean bowls wash in SOAPY WATER ONLY. Attention is drawn to BS 6005: 1981 Appendix A giving additional important guidance on use, installation and maintenance.

Maintenance
Routing planned maintenance of any form of mechanical equipment is always desirable and our products are no exception.
Servicing is normally restricted to changing a few flexible seals or a bearing except in the case of certain low cost items where it will be more economical to replace the whole unit. Standard spares kits are readily available and ordering information appears in the relevant order table.
The use of sub-base mounted valves and plug -in compressed air processing equipment speeds installation and maintenance and should be investigated when selecting equipment. Ensure that air-line filters are drained regularly and that filter elements are clean. Keep lubricator bowls topped up with oil.

Contact Norgren worldwide on: **enquiry@norgren**.com



Product selector table 2
Single acting cylinders
- Miniature roundline cylinders (Ø 2,5 & 4 mm) 9
- ISO Roundline (Ø 10 to 25 mm) 10

Roundline (Ø 8 to 40 mm) 20
- VDMA compact (Ø 20 to 63 mm) 32
- Short stroke (Ø 12 to 63 mm) 40
- Clamping (Ø 8 to 63 mm) 46
- ISO/VDMA Profile (Ø 32 to 100 mm) 50
- ISO/VDMA Tie-rod (Ø 32 to 100 mm) 56

Double acting cylinders
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- Roundline (Ø 8 to 63 mm) 22
- Roundline (Ø 32 to 100 mm) 26
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- VDMA compact (Ø 20 to 125 mm) 36
- Short stroke (Ø 12 to 100 mm) 42
- Clamping (Ø 8 to 63 mm) 48
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Roundline cylinders
(including cylinders conforming to Standard ISO 6432)

RM/59100/C
Ø 2,5 ... 4 mm

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RM/28000/M
ISO 6432
Ø 10 ... 25 mm

Page 10

RT/57100/M, RT/57300/M
Ø 8 ... 40 mm

Page 20

RM/8000/M
ISO 6432
Ø 10 ... 25 mm

Page 12

RT/57200/M
Ø 8 ... 63 mm

Page 22

RM/55401/M
Ø 32 ... 100 mm

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Compact cylinders
(including cylinders conforming to Standards ISO 6431 – pitch dimensions VDMA 24562 – pitch dimensions)

RM/191000/M, RM/193000/M
ISO 6431, VDMA 24562
Ø 20 ... 63 mm

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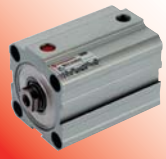
RM/91000/M, RM/93000/M
Ø 12 ... 63 mm

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M/50100
Ø 8 ... 63 mm

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RM/192000/M
ISO 6431, VDMA 24562
Ø 20 ... 125 mm

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RM/92000/M
Ø 12 ... 100 mm

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M/50200
Ø 8 ... 63 mm

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Profile cylinders
Tie-rod cylinders
(all conforming to Standards ISO 6431 VDMA 24562 NFE 49 003-1)

PRA/181000,../M, PRA/183000,../M
ISO, VDMA, NFE
Ø 32 ... 100 mm

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RA/28000,../M, RA/28300,../M
ISO, VDMA, NFE
Ø 32 ... 100 mm

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PRA/282000
Cylinder with integrated valve and positon sensor
Ø 32 ... 100 mm

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PRA/182000,../M
ISO, VDMA, NFE
Ø 32 ... 125 mm

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RA/8000,../M
ISO, VDMA, NFE
Ø 32 ... 320 mm

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PRA/282000/M/P
Airmotor (Oscillator)
Ø 50 ... 100 mm

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Foxboro/Siemens positioner
Ø 63 ... 320 mm

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PSA/182000/F1
Positioner
Ø 40 ... 125 mm

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QA/8000
Guide blocks for RA/8000, PRA/182000
Ø 32 ... 100 mm

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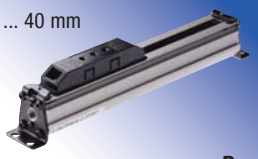
Single acting

Double acting

LINTRA®
Pneumatic rodless cylinders

A44000
LINTRA-LITE
Ø 25 ... 40 mm

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M/44000
LINTRA-Compact
Ø 25 ... 40 mm

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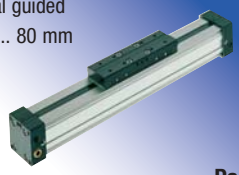
M/46000,../M
Internal guided
Ø 16 ... 80 mm

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M/46000/L
Internal guided with brake
Ø 25 ... 63 mm

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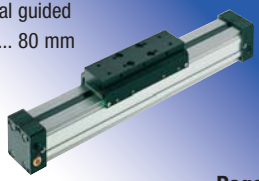
M/46100,../M
External guided
Ø 16 ... 80 mm

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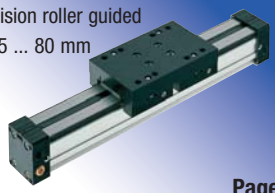
M/46200,../M
Precision roller guided
Ø 25 ... 80 mm

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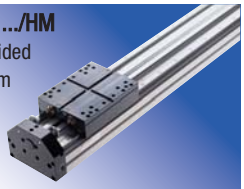
M/46800/M, .../HM
Heavy duty guided
Ø 20 ... 40 mm

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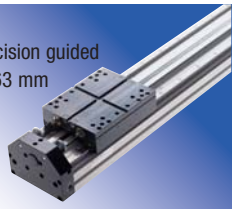
M/46800/PM
Heavy duty precision guided
Ø 16, 25, 40, 63 mm

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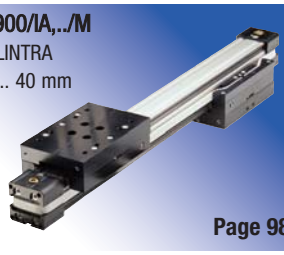
M/46900/lA,../M
TWIN-LINTRA
Ø 25 ... 40 mm

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LINTRA®
Electric linear actuators

M/49000
Internal guided
Ø 32, 40, 63 mm

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M/49100
External guided
Ø 25 ... 63 mm

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M/49200
Precision roller guided
Ø 25 ... 63 mm

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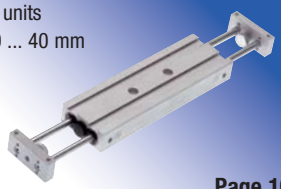
Cylinders with guiding

M/60100/M
Slide units
Ø 10 ... 40 mm

Page 104

M/61000/M,../MR
Guiding and stopper cylinders
Ø 32 ... 100 mm

Page 106

RM/192000/N6
Compact slides
Ø 25, 32 mm

Page 36

Slide tables

M/61200/M,../MR
Slide tables
Ø 16 ... 32 mm

Page 130

M/261000/...
Compact precision linear slide tables
Ø 6 ... 16 mm

Page 108

M/261100/...
Precision linear slide tables
Ø 10, 12 mm

Page 114

M/261200/...
Low profile linear slide tables
Ø 8 ... 20 mm

Page 118

M/261300/...
Compact linear slide tables
Ø 10, 16 mm

Page 122

M/261400/...
Synchronous linear slide tables
Ø 6 mm

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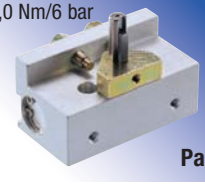
Single acting

Double acting

Rotary actuators

(including actuators conforming to Standards
ISO 6431 – pitch dimensions
VDMA 24562 – pitch dimensions)

M/60210/M
Miniature rotary actuators
0,23 ... 1,0 Nm/6 bar

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M/60270/M
Compact rotary actuators
1,5 ... 7,4 Nm/6 bar

Page 160

M/60280 ..., M/60284,../TI
Mini vane type
0,2 ... 9,3 Nm/6 bar

Page 162

M/60281/IE ..., M/60284/IE,../TE
Mini vane type
0,35 ... 9,3 Nm/6 bar

Page 162

M/60285 ..., M/60288
Vane type
5,8 ... 242 Nm/6 bar

Page 162

M/162000,../M
Rack & pinion type, ISO, VDMA,
7,2 ... 306 Nm/6 bar

Page 168

Grippers

M/160300/M/11
Angular grippers
Ø 8 ... 25 mm

Page 134

M/160340/M/11
M/160350/M/11
Parallel grippers
Ø 8 ... 25 mm

Page 140 & 144

M/160300/M/12
M/160330/M/12
Angular grippers
Ø 8 ... 25 mm

Page 136 & 138

M/160340/M/12
M/160350/M/12
M/160360/M/12
M/160380/M/12
M/160390/M/12
Parallel grippers
Ø 8 ... 50 mm

Page 142, 148 ... 156

Stainless steel

Stainless steel materials:
AISI 303
AISI 304
AISI 316

Clean line

Corrosion resistant cylinders

KM/8000/M
Stainless steel, ISO 6432
Ø 12 ... 25 mm

Page 174

KM/55001/M
Stainless steel, ISO 6431
Ø 32 ... 125 mm

Page 176

KA/8000,../M
Stainless steel, ISO 6431, VDMA 24562
Ø 32 ... 200 mm

Page 180

KM/31000
Stainless steel, air bellows, serviceable
Ø 220 ... 400 mm

Page 184

PVA/8000/M
Clean line profile, ISO 6431, VDMA 24562
Ø 32 ... 100 mm

Page 186

VM/46000,.../M, VM/46100,.../M
Corrosion resistant rodless cylinders
Internal and external guided
Ø 20 ... 80 mm

Page 182

Norgren In-house cylinders

Single acting

Double acting

Series CP/Ø
CNOMO cylinders
Ø 32 ... 200 mm

Page 188

RM/900,../M
Imperial cylinders
Ø 1¼ ... 14"

Page 196

M/1000
Heavy duty cylinders
Ø 2½ ... 12"

Page 196

Special products

PM/31000
Compact air bellows
Ø 80 ... 325 mm

Page 192

M/31000
Air bellows, serviceable
Ø 175 ... 700 mm

Page 194

VSM/55600/N2
Hollow piston rod cylinders
Ø 25 & 40 mm

Page 30

Additional ranges

LSE, LSE H
Clamping units
1:8, 1:11, 1:17

Page 197

M/3000
Impact cylinders
Ø 2 ... 6"

Page 196

Shock absorbers
0,9 ... 27200 kg

Page 197

M/55900
Air/oil converters
0,24 ... 5 dm³

Page 197

M/1428, M/1429, M/163, M/164
Air reservoirs
0,1dm³ ... 2,0 dm³

Page 197

M/1525, M/1540
In-line positioner
Ø 2½ & 4"

Page 170

Vacuum products

M/58300, M/58400
Flat and bellows cups
Ø 6 ... 150 mm

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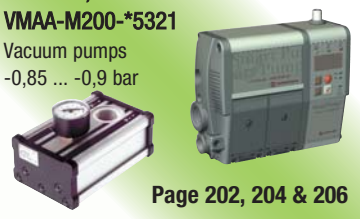
M/58102, M/58112
VMAA-M200-*5321
Vacuum pumps
-0,85 ... -0,9 bar

Page 202, 204 & 206

M/58028 (Pneumatic)
M/58024 (Electrical)
M/58027 (Electronic)
Vacuum switches

Page 210

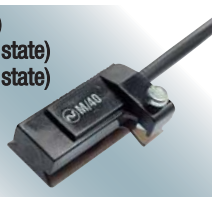
Switches
(Reed and solid state)

M/50, M/369, M/370 (Reed)
M/50, M/418, M/419,
M/420, M/421,
M/344,
M/345, M/346
(Solid state)

Page 198

QM/32 (Reed)
QM/132 (Solid state)
TQM/31 (Reed)
TQM/33 (Reed)

Page 199

M/40 (Reed)
M/41 (Solid state)
M/42 (Solid state)

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Banjo-flow regulators

10K51 ....
Banjo-flow regulators
Pneufit push-in fittings
Ø 4 ... 12 mm
M5, G ½

Page 351

10TA0....
Banjo-flow regulators
Pneufit push-in fittings
Ø 4 ... 12 mm
G⅛ ... G½

Page 351

16K51 ....
Banjo-flow regulators
Female thread
Male thread
G ⅛ ... G ½

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Single acting | Double acting | Vacuum | Switches | Flow regulators

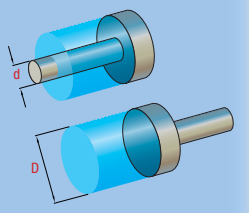
Cylinder sizing and speed

CYLINDER SIZING FOR THRUST

The theoretical thrust (outstroke) or pull (instroke) of a cylinder is calculated by multiplying the effective area of the piston by the working pressure. The effective area for thrust is the full area of the cylinder bore. The effective area for pull is reduced by the cross section area of the piston rod.

Current practice specifies bore (D) and piston rod diameter (d) in millimetres and working pressure (P) in bar gauge. In the formula, P is divided by 10 to express pressure in Newtons per square millimetre (1 bar = 0,1 N/mm^2)

Piston and rod diameters



The theoretical force (F) is given by

$$Thrust\ F = \frac{\pi D^2 P}{40}\ N$$

$$Pull\ F = \frac{\pi (D^2 - d^2) P}{40}\ N$$

Where

D = Cylinder bore in millimetres
d = Piston rod diameter in millimetres
P = Pressure in bar
F = Thrust or Pull in Newtons

Example:

Find the theoretical thrust and pull of a 50 mm bore cylinder supplied with a pressure of 8 bar

$$Thrust\ F = \frac{\pi\ 50^2.8}{40} = 1571\ N$$

$$Pull\ F = \frac{\pi (50^2 - 20^2).8}{40} = 1319\ N$$

Table of consumption

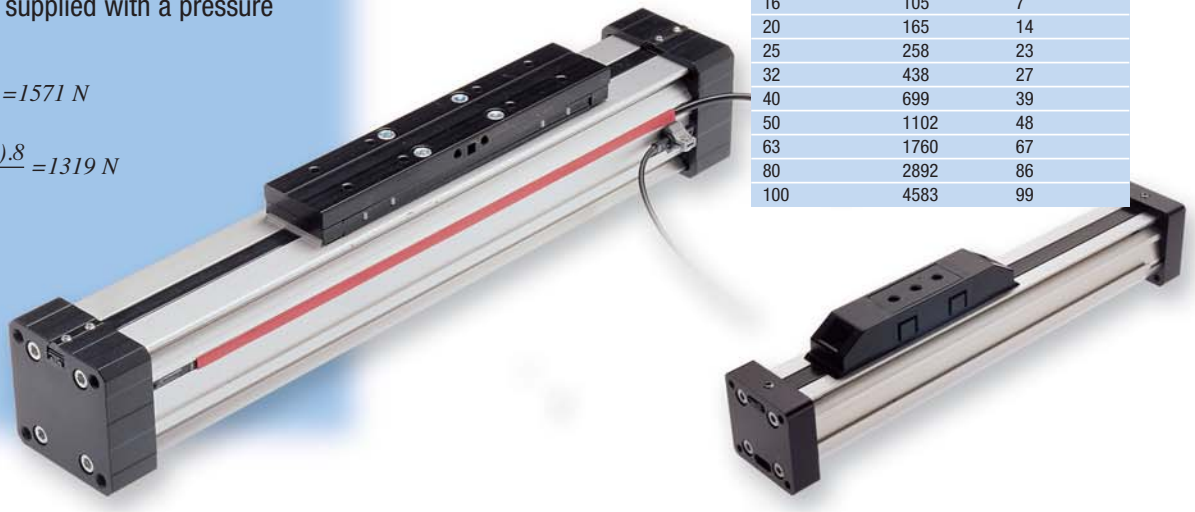
Bore mm	Rod mm	Push stroke consumption dm^3/mm of stroke at 6 bar	Pull stroke consumption dm^3/mm of stroke at 6 bar	Combined consumption dm^3/mm of stroke/cycle
10	4	0,00054	0,00046	0,00100
12	6	0,00079	0,00065	0,00144
16	6	0,00141	0,00121	0,00262
20	8	0,00220	0,00185	0,00405
25	10	0,00344	0,00289	0,00633
32	12	0,00563	0,00484	0,01047
40	16	0,00880	0,00739	0,01619
50	20	0,01374	0,01155	0,02529
63	20	0,02182	0,01962	0,04144
80	25	0,03519	0,03175	0,06694
100	25	0,05498	0,05154	0,10652
125	32	0,08590	0,08027	0,16617
160	40	0,14074	0,13195	0,27269
200	40	0,21991	0,21112	0,43103
250	50	0,34361	0,32987	0,67348

Table of thrust and pulls, double acting cylinders

Cylinder bore mm (inches)	Piston rod diameter mm (inches)	Thrust N at 6 bar	Pull N at 6 bar
8	3	30	25
10	4	47	39
12	6	67	50
16	6	120	103
20	8	188	158
25	10	294	246
32	12	482	414
40	16	753	633
44,45 (1,75)	16	931	810
50	20	1178	989
63	20	1870	1681
76,2 (3)	25	2736	2441
80	25	3015	2721
100	25	4712	4418
125	32	7363	6881
152,4 (6)	(11/2)	10944	10260
160	40	12063	11309
200	40	18849	18095
250	50	29452	28274
304,8 (12)	(21/4)	43779	42240
320	63	48254	46384
355,6 (14)	(21/4)	59588	58049

Table of thrust and pulls, single acting cylinders

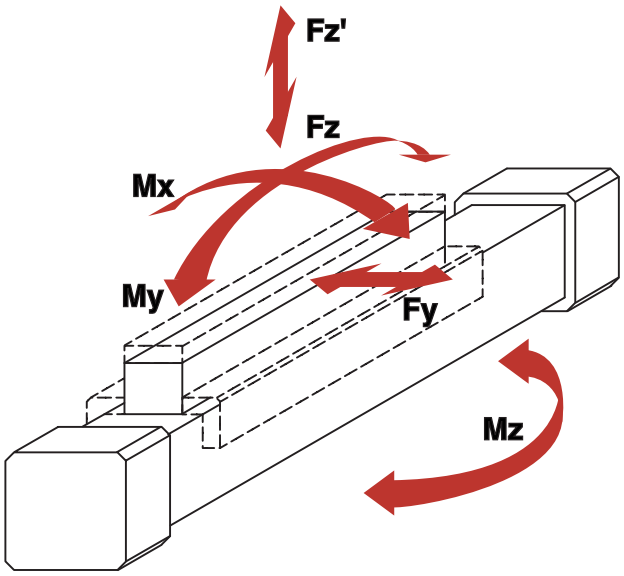
Cylinder bore mm	Thrust N at 6 bar	Min pull of spring N
10	37	3
12	59	4
16	105	7
20	165	14
25	258	23
32	438	27
40	699	39
50	1102	48
63	1760	67
80	2892	86
100	4583	99



offer optimum guiding

Loading values for LINTRA® cylinders

For speeds up to 2 m/s please use our calculation programme PNEUCALC, available on request. PNEUCALC is suitable for all PC's having MS-Windows 95 or higher.



A44000, M/44000
Internal guiding system

Ø mm	Fy (N)	Fz (N)	Mx (Nm)	My (Nm)	Mz (Nm)
16	–	–	–	–	–
20	–	–	–	–	–
25	90	280	1	13	4
32	120	370	2	21	6
40	240	720	4	56	16
50	–	–	–	–	–
63	–	–	–	–	–
80	–	–	–	–	–

M/46000
Internal guiding system

Ø mm	Fy (N)	Fz (N)	Mx (Nm)	My (Nm)	Mz (Nm)
16	40	120	0,3	3,8	1,1
20	90	280	0,9	12	3,6
25	110	350	1,3	19	5,6
32	150	460	2,5	30	8,9
40	300	900	5,8	77	22
50	400	1200	9,8	110	32
63	640	1900	18	240	70
80	780	2300	27	360	100

M/46100
External adjustable guiding system

Fy (N)	Fz (N)	Mx (Nm)	My (Nm)	Mz (Nm)
200	200	2	5,5	5,5
470	470	6	18	18
590	590	9	28	28
780	780	17	43	43
1600	1600	39	110	110
2000	2000	65	160	160
3200	3200	120	350	350
3900	3900	180	520	520

M/46200
Precision roller guiding system

Fy (N)	Fz (N)	Mx (Nm)	My (Nm)	Mz (Nm)	Ø mm
–	–	–	–	–	16
–	–	–	–	–	20
590	1180	13	42	42	25
780	1560	25	64	64	32
1500	3000	58	160	160	40
2000	4000	97	240	240	50
3200	6400	180	520	520	63
–	–	–	–	–	80

M/46800/M
Heavy duty guiding system 1

Ø mm	Fy (N)	Fz (N)	Fz[1] (N)	Mx (Nm)	My (Nm)	Mz (Nm)
16	–	–	–	–	–	–
20	4500	5000	4500	350	410	370
25	4500	5000	4500	350	410	370
32	–	–	–	–	–	–
40	–	–	–	–	–	–
50	–	–	–	–	–	–
63	–	–	–	–	–	–
80	–	–	–	–	–	–

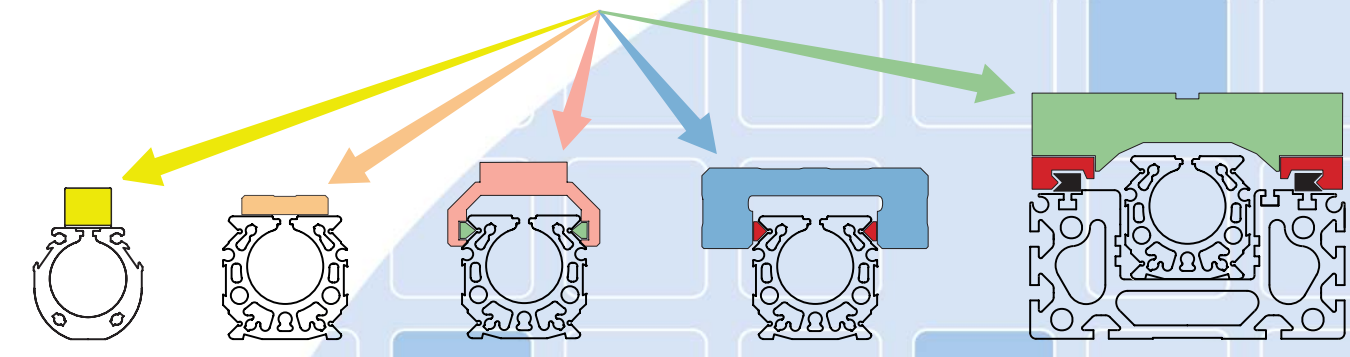
M/46800/HM
Heavy duty guiding system 2

Fy (N)	Fz (N)	Fz[1] (N)	Mx (Nm)	My (Nm)	Mz (Nm)
–	–	–	–	–	–
–	–	–	–	–	–
4500	5000	4500	450	620	580
4500	5000	4500	450	620	580
4500	5000	4500	450	620	580
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–

M/46800/PM
Heavy duty guiding system

Fy (N)	Fz (N)	Fz[1] (N)	Mx (Nm)	My (Nm)	Mz (Nm)	Ø mm
3000	3000	3000	100	300	300	16
–	–	–	–	–	–	20
4200	5000	4200	250	500	500	25
–	–	–	–	–	–	32
7200	8500	7200	600	1200	1200	40
–	–	–	–	–	–	50
10000	12000	10000	1200	2400	2400	63
–	–	–	–	–	–	80

The LINTRA® guiding systems



A44000, M/44000
Internal guiding

M/46000
Internal guiding

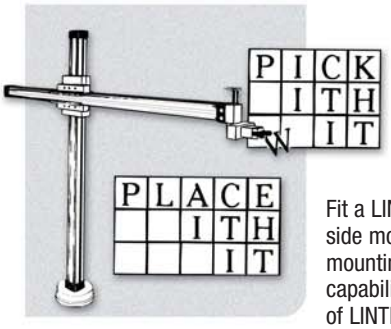
M/46100
External adjustable guiding

M/46200
Precision roller guiding

M/46800
Heavy duty guiding

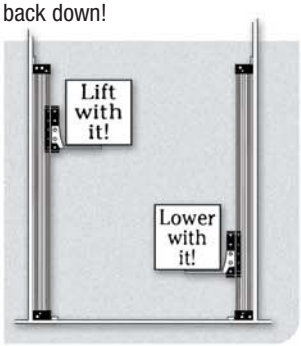
LINTRA proven technology

Start something with LINTRA rodless cylinders from Norgren. When your application requires movement, especially linear movement, think LINTRA. Consider the many possibilities available when you choose LINTRA. Shown here are some proven applications, discover your own.



Fit a LINTRA cylinder with a secondary carriage and side mounting plate. Not only do you have a new mounting configuration but a 50% increase in loading capability. The side mounting plate takes advantage of LINTRA's integrally guided carriage.

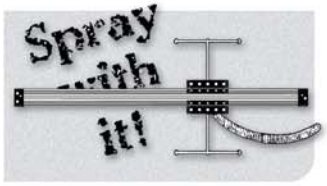
What goes up...can readily be brought back down!

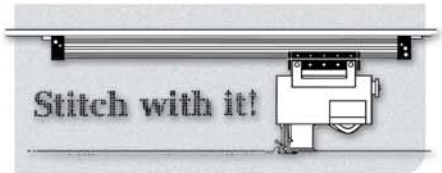


Sturdy LINTRA cylinders bear the load without the need for external guiding.

Attach a shelf to the carriage of a vertical LINTRA cylinder and you have a lift ready for action. With stroke lengths up to 28 feet (see page 86), a 2-storey or 2' lift can be created.

Mount a paint spray nozzle onto a LINTRA carriage and you have an inexpensive automated paint sprayer with excellent repeatability. LINTRA doesn't get tired.





A manufacturer of custom drapery glides a sewing machine down the length of stitching stations attached to LINTRA cylinders. The result is a smooth, even line delivered with precision.

Miniature roundline cylinders

RM/59100/C

Single acting

Ø 2,5 and 4 mm

Ideal for very light load applications such as function testing mobile phones and keyboards

Low friction characteristics mean high speeds

No fittings required - all types feature one integral push on barbed connector

Long service life and corrosion resistant materials mean low cost of ownership

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operating pressure:

3,5 to 7 bar

Operating temperature:

0°C to +60°C

* Air supply must be dry enough to avoid ice formation at temperatures below +2°C

Cylinder diameters:

2,5 & 4 mm

Strokes:

5, 10 mm Ø 2,5 mm

5, 10, 15, 20 mm Ø 4 mm

Materials

Barrel: stainless steel

End caps: aluminium alloy

Piston rod: stainless steel

Elastomers: nitrile

Model	Ø mm	Theoretical forces (N) at 6 bar Outstroke	F1
RM/59102/C/*	2,5	2,9	0,7
RM/59104/C/*	4	7,6	1,2

F1 = Return force of spring (N)

* Insert stroke length in mm from table below.

Standard strokes

Ø	5	10	15	20
2,5	❍	❍		
4	❍	❍	❍	❍

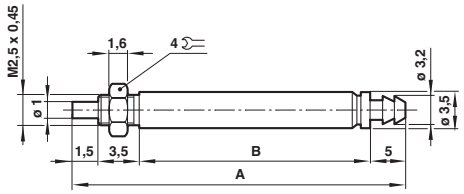
Options selector

RM/591★★/C/★★

Strokes (mm)
Standard strokes only - see 'Standard strokes'

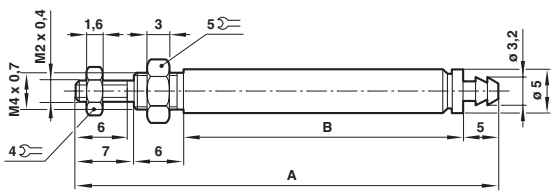
Ø	Substitute
2,5	02
4	04

RM/59102/C



	Ø	A	B
RM/59102/C/5	2,5	26,5	16,5
RM/59102/C/10	2,5	35,5	25,5
RM/59104/C/5	4	37	19
RM/59104/C/10	4	46	28
RM/59104/C/15	4	55	37
RM/59104/C/20	4	64	46

RM/59104/C



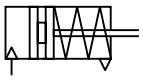
Note: push-on connector is suitable for 4 mm O/D, 2,5 mm I/D polyurethane tubing

Roundline cylinders (ISO)

RM/28000

Single acting, ISO 6432

Ø 10 to 25 mm



Magnetic piston as standard
Generally conforms to ISO 6432
High strength, double crimped end cap design
Corrosion resistant
Nose mounting nut and piston rod locknut as standard
Optional port arrangement for compact installation

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Single acting (sprung in), magnetic piston, buffer cushioning

Operating pressure:
2 to 10 bar

Operating temperature:
-10°C to +80°C max.
Consult our Technical Service for use below +2°C

Strokes:
Standard, see table
Non-standard up to 50 mm maximum

Materials

Barrel: stainless steel (Austenitic)
End covers: clear anodised aluminium alloy
Piston rod: stainless steel (Austenitic)
Buffer: polyurethane
Seals: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Magnetic
10	4	M5	RM/28010/M/*
12	6	M5	RM/28012/M/*
16	6	M5	RM/28016/M/*
20	8	G1/8	RM/28020/M/*
25	10	G1/8	RM/28025/M/*

* Insert stroke length in mm

Ø	Theoretical forces (N) at 6 bar Outstroke	Instroke F1 (spring force)
10	40,7	3,70
12	57,7	4,80
16	102	10,50
20	165	16,10
25	260	21,60

Cylinder sizing and speed control see page 6.

Standard strokes

Ø	10	25	50
10	❍	❍	❍
12	❍	❍	❍
16	❍	❍	❍
20	❍	❍	❍
25	❍	❍	❍

● Indicates stocked stroke lengths of standard models.

Options selector

RM/28★★★/★★/★★

Cylinder diameters (mm)	Substitute
10	010
12	012
16	016
20	020
25	025

Strokes (mm)
50 max.

Variants	Substitute
Standard with integral eye mounting	M
Central rear port	MC
Flat rear cover	MF
Extended piston rod	MU
RM/28***/MU/**/** → Extension (mm)	

Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

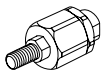
Roundline cylinders (ISO)

RM/28000

Single acting, ISO 6432

Ø 10 to 25 mm

Mountings

Ø	AK	B, G	C	F	FH	L	L2
							
10	QM/8010/38	M/P19407	**M/P19369**	**QM/8010/25**	–	**QM/947**	**QM/8010/44**
12	QM/8012/38	M/P19408	**M/P19389**	**QM/8012/25**	**QM/8012/34**	**QM/8012/24**	**QM/8012/44**
16	QM/8012/38	M/P19408	**M/P19389**	**QM/8012/25**	**QM/8012/34**	**QM/8012/24**	**QM/8012/44**
20	QM/8020/38	M/P19409	**M/P19406**	**QM/8020/25**	**QM/8020/34**	**QM/8020/24**	**QM/8020/44**
25	QM/8025/38	M/P19409	**M/P19406**	**QM/8025/25**	**QM/8020/34**	**QM/8020/24**	**QM/8020/44**

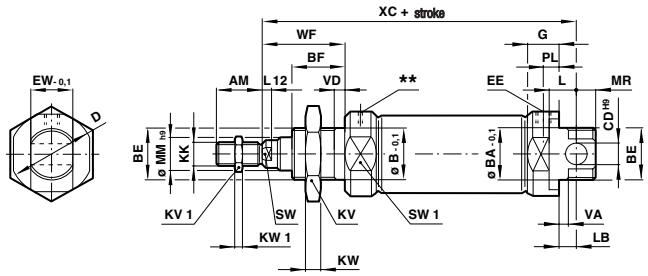
Ø	N	UF	Switch mounting brackets # ⩾ 15 mm stroke	Switch mounting brackets # < 15 mm stroke
				
10	**M/P1501/90**	**QM/8010/32**	**QM/33/010/22**	**QM/33/010/23**
12	**M/P13834**	**QM/8012/32**	**QM/33/012/22**	**QM/33/010/23**
16	**M/P13834**	**QM/8012/32**	**QM/33/016/22**	**QM/33/016/23**
20	**M/P13615**	**QM/8020/32**	**QM/33/020/22**	**QM/33/020/23**
25	**M/P13615**	**QM/8025/32**	**QM/33/025/22**	**QM/33/025/23**

For details of mountings please see page 18

For use with switches M/50, see page 198

Standard cylinders

RM/28000/M



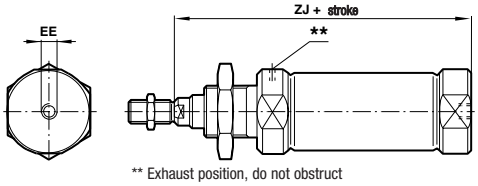
** Exhaust position, do not obstruct

Ø	AM	Ø B/BA -0,1	BE	BF	Ø CD H9	Ø D	EE	EW -0,1	G	KK	KV (A/F)	KV1 (A/F)	KW	KW1
10	12	12	M12x1,25	12	4	16,5	M5	7,9	9	M4	19	7	6	2
12	16	16	M16x1,5	17	6	21	M5	11,9	9,5	M6	22	10	5	3
16	16	16	M16x1,5	17	6	21	M5	11,9	9,5	M6	22	10	5	3
20	20	22	M22x1,5	20	8	30	G1/8	15,9	15	M8	27	13	8	4
25	22	22	M22x1,5	22	8	30	G1/8	15,9	15	M10x1,25	27	17	8	5

Ø	L	L12	LB	Ø MM h9	MR	PL	SW (A/F)	SW1 (A/F)	WF	VA/VD	XC	kg at 0 mm	kg per 25 mm
10	6	—	2	4	8	5,5	–	14	16	1,5	64	0,034	0,007
12	9	3	3	6	8	5,5	5	19	22	2	75	0,058	0,011
16	9	3	4	6	7	5,5	5	19	22	2	82	0,070	0,012
20	12	3	3	8	11	8	7	27	24	2	95	0,145	0,018
25	12	4	7	10	9	8	9	27	28	2	104	0,200	0,028

Cylinder variants

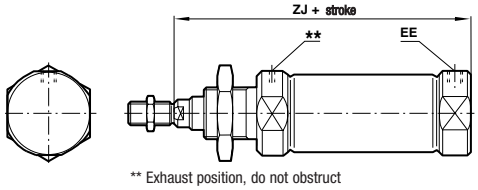
RM/28000/MC – Cylinders with central rear port



** Exhaust position, do not obstruct

Ø	EE	ZJ	kg at 0 mm	kg per 25 mm
10	M5	62	0,031	0,007
12	M5	72	0,052	0,011
16	M5	78	0,064	0,012
20	G1/8	92	0,130	0,018
25	G1/8	97	0,185	0,028

RM/28000/MF – Cylinders with flat rear cover



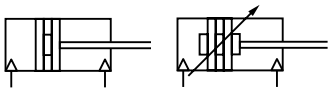
** Exhaust position, do not obstruct

Roundline cylinders (ISO)

RM/8000

Double acting, ISO 6432

Ø 10 to 25 mm



Magnetic piston as standard
Conforms to ISO 6432
High strength, double crimped end cap design
Corrosion resistant
Buffer or adjustable cushioning
Nose mounting nut and piston rod locknut as standard
Optional port arrangement for compact installation

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting, magnetic piston with buffer or adjustable cushioning

Operating pressure:
1 to 10 bar

Operating temperature:
-10°C to +80°C max.
Consult our Technical Service for use below +2°C

Strokes:
Standard, see table
Non-standard up to 500 mm max.

Materials

Barrel: stainless steel (Austenitic)
End covers: clear anodised aluminium alloy
Piston rod: stainless steel (Austenitic)
Buffer: polyurethane
Wiper: polyurethane
Seals: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Magnetic
10	4	M5	**RM/8010/M/***
12	6	M5	**RM/8012/M/***
16	6	M5	**RM/8016/M/***
20	8	G1/8	**RM/8020/M/***
25	10	G1/8	**RM/8025/M/***

* Insert stroke length in mm. Cylinder sizing and speed control see page 6

Standard strokes

(buffer cushioning)

Ø	10	25	40	50	80	100	125	160	200	250
10	❍	●	❍	●	●	●				
12	❍	●	❍	●	●	●	❍	❍	❍	
16	❍	●	❍	●	●	●	❍	❍	❍	
20	❍	●	❍	●	●	●	❍	❍	❍	❍
25	❍	●	❍	●	●	●	❍	❍	❍	❍

● Indicates stocked stroke lengths of standard models.

Standard strokes

(adjustable cushioning)

Ø	25	40	50	80	100	125	160	200	250
16	❍	❍	❍	❍	❍	❍	❍	❍	
20	❍	❍	❍	❍	❍	❍	❍	❍	❍
25	❍	❍	❍	❍	❍	❍	❍	❍	❍

Options selector

★RM/8★★★/★★/★★★

Special variants #	Substitute
Heat resistant seals, 150°C max.	T

Cylinder diameters (mm) Variants with buffer cushioning	Substitute
10	010
12	012
16	016
20	020
25	025

Cylinder diameters (mm) Variants with adjustable cushioning	Substitute
16	017
20	021
25	026

Strokes (mm)
500 max.

Variants ##	Substitute
Standard	M
Central rear port	MC
Flat rear cover	MF
Non-rotating piston rod	N2
Double ended piston rod	JM
Locking unit	L4
Extended piston rod	MU
RM/8***/MU/***/*** → Extension (mm)	

Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.
For magnetic piston

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	**M/50/LSU/*V**	**M/50/LSU/CP**	**M/P73001/5 (5 m)**
Solid state	**M/50/EAP/*V**	**M/50/EAP/CP**	**M/P73001/5 (5 m)**

*Insert cable length – 2, 5 or 10 m. For details see page 198

www.norgren.com/info/en012

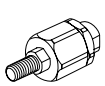
Roundline cylinders (ISO)

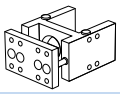
RM/8000

Double acting, ISO 6432

Ø 10 to 25 mm

Mountings

	AK	B, G	C	F	FH	L	L2
							
10	QM/8010/38	M/P19407	**M/P19369**	**QM/8010/25**	–	**QM/947**	**QM/8010/44**
12	QM/8012/38	M/P19408	**M/P19389**	**QM/8012/25**	**QM/8012/34**	**QM/8012/24**	**QM/8012/44**
16	QM/8012/38	M/P19408	**M/P19389**	**QM/8012/25**	**QM/8012/34**	**QM/8012/24**	**QM/8012/44**
20	QM/8020/38	M/P19409	**M/P19406**	**QM/8020/25**	**QM/8020/34**	**QM/8020/24**	**QM/8020/44**
25	QM/8025/38	M/P19409	**M/P19406**	**QM/8025/25**	**QM/8020/34**	**QM/8020/24**	**QM/8020/44**

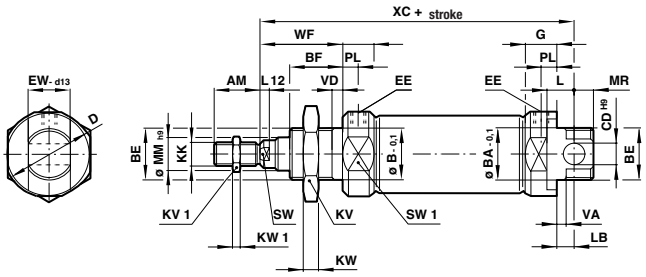
	N	UF	Guide block	Locking units (passive)	Switch mounting brackets # ⩾ 15 mm stroke	Switch mounting brackets # < 15 mm stroke
						
10	**M/P1501/90**	**QM/8010/32**	–	–	**QM/33/010/22**	**QM/33/010/23**
12	**M/P13834**	**QM/8012/32**	QM/8012/61/*	QM/8012/59	**QM/33/012/22**	**QM/33/010/23**
16	**M/P13834**	**QM/8012/32**	QM/8012/61/*	QM/8012/59	**QM/33/016/22**	**QM/33/016/23**
20	**M/P13615**	**QM/8020/32**	QM/8020/61/*	QM/8020/59	**QM/33/020/22**	**QM/33/020/23**
25	**M/P13615**	**QM/8025/32**	QM/8025/61/*	QM/8025/59	**QM/33/025/22**	**QM/33/025/23**

Please see page 18 for details of mountings.

For use with switches M/50, see page 198. Refer to page 16 for details of piston rod guide blocks and page 15 for passive locking units.

Standard cylinders

RM/8000/M

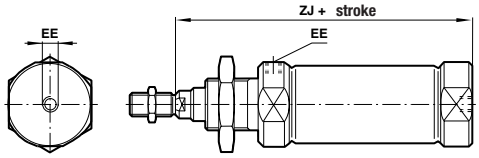


Ø	AM	Ø B/BA -0,1	BE	BF	Ø CD H9	Ø D	EE	EW -0,1	G	KK	KV (A/F)	KV1 (A/F)	KW	KW1
10	12	12	M12x1,25	12	4	16,5	M5	7,9	9	M4	19	7	6	2
12	16	16	M16x1,5	17	6	21	M5	11,9	9,5	M6	22	10	5	3
16	16	16	M16x1,5	17	6	21	M5	11,9	9,5	M6	22	10	5	3
20	20	22	M22x1,5	20	8	30	G1/8	15,9	15	M8	27	13	8	4
25	22	22	M22x1,5	22	8	30	G1/8	15,9	15	M10x1,25	27	17	8	5

Ø	L	L12	LB	Ø MM h9	MR	PL	SW (A/F)	SW1 (A/F)	WF	VA/VD	XC	kg at 0 mm	kg per 100 mm
10	6	–	2	4	8	5,5	–	14	16	1,5	64	0,034	0,007
12	9	3	3	6	8	5,5	5	19	22	2	75	0,058	0,011
16	9	3	4	6	7	5,5	5	19	22	2	82	0,070	0,012
20	12	3	3	8	11	8	7	27	24	2	95	0,145	0,018
25	12	4	7	10	9	8	9	27	28	2	104	0,200	0,028

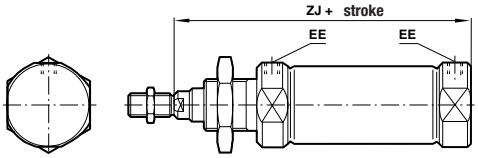
Cylinder variants

RM/8000/MC – Cylinders with central rear port



Ø	EE	ZJ	kg at 0 mm	kg per 100 mm
10	M5	62	0,031	0,007
12	M5	72	0,052	0,011
16	M5	78	0,064	0,012
20	G1/8	92	0,130	0,018
25	G1/8	97	0,185	0,028

RM/8000/MF – Cylinders with flat rear cover



Roundline cylinders (ISO)

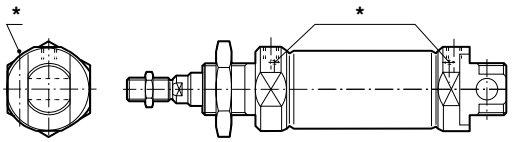
RM/8000

Double acting, ISO 6432

Ø 10 to 25 mm

Cylinder variants

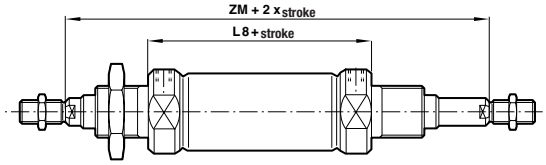
RM/8017/M, RM/8021/M, RM/8026/M
Cylinders with adjustable cushioning



* Cushion screws

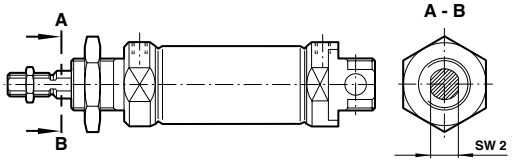
Ø	kg at 0 mm	kg per 100 mm
16	0,070	0,012
20	0,145	0,018
25	0,195	0,028

RM/8000/JM – Cylinders with double ended piston rod



Ø	L8	ZM	kg at 0 mm	kg per 100 mm
16	56	100	0,080	0,017
20	68	116	0,165	0,028
25	69	125	0,250	0,043

RM/8000/N2 – Cylinders with non-rotating piston rod

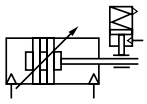


Ø	SW2 (A/F)	Torque max. (Nm)	kg at 0 mm	kg per 100 mm
12	5	0,04	0,058	0,011
16	5	0,04	0,070	0,012
20	6	0,15	0,145	0,018
25	8	0,25	0,200	0,028

Cylinders with piston rod locking unit (ISO)

RM/8000/L4

Ø 12 to 25 mm



Passive

Magnetic piston as standard conforms to ISO 6432

Secure locking of piston rod in any position

Passive locking model

Aids compliance with the Machinery Directive and PUWER regulations

Fast, reliable operation

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated.

Operating pressure:
4 to 10 bar

Operating temperature:
-10°C to +80°C max.
Consult our Technical Service for use below +2°C

Materials

Body: hard anodised diecast aluminium
Seals: polyurethane
Cartridge body: anodised aluminium
Cartridge locking wedges: hardened steel
Cartridge seals: nitrile rubber

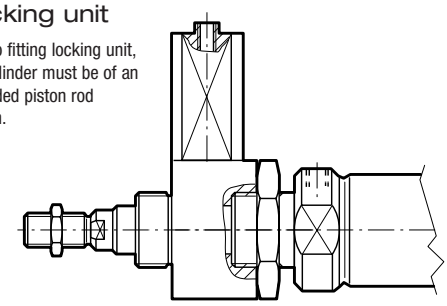
Standard models

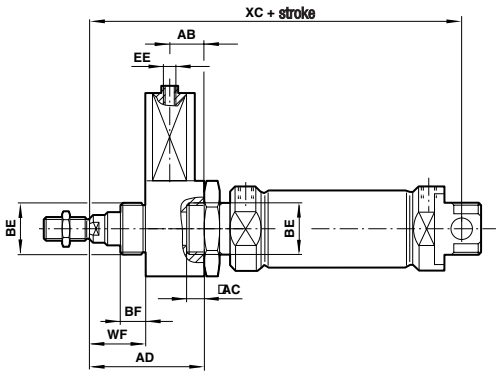
	Complete magnetic cylinder Buffer cushion	Passive locking unit only
12	RM/8012/L4/*	QM/8012/59
16	RM/8016/L4/*	QM/8012/59
20	RM/8020/L4/*	QM/8020/59
25	RM/8025/L4/*	QM/8025/59

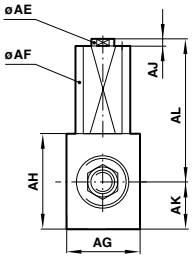
* Insert stroke length in mm.
Locking unit includes cartridge.
For all applications please consult our Technical Service.

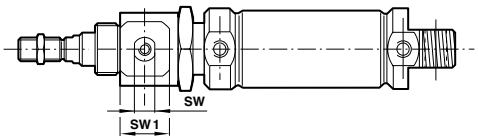
Locking unit

If retro fitting locking unit, the cylinder must be of an extended piston rod design.









Ø	AB	AC	AD	ØAE	ØAF	AG	AH	AJ	AL	AK
12	21	13	47	8,5	20	20	20	4	55,5	10
16	21	13	47	8,5	20	20	20	4	55,5	10
20	24	14	62	9	22	27	38	4,5	60	19
25	24	14	64	9	22	27	38	4,5	60	19

Ø	BE	BF	EE	SW (A/F)	SW1 (A/F)	WF	XC	kg at 0 mm	kg per 25 mm
12	M16x1,5	12	M5	8	18,5	17	108	0,130	0,011
16	M16x1,5	12	M5	8	18,5	17	115	0,140	0,012
20	M22x1,5	23	M5	8	20,5	27	142,5	0,300	0,018
25	M22x1,5	23	M5	8	20,5	29	151,5	0,360	0,028

Lock retention forces

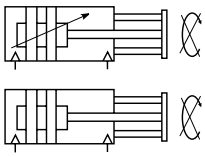
Ø	Retention force (N)
12	180 N
16	180 N
20	350 N
25	350 N

Cylinder sizing and speed control see page 6

Guide blocks with roller bearings for RM/8000/M (ISO)

QM/8000/61

Ø 12 to 25 mm



Conforms to ISO 6432

Allows high axial loads to be applied to the end of the piston rod

Accurate piston rod guidance

Supplied complete with centering sleeves

Technical data

Operating temperature:
0°C to +80°C maximum
Consult our Technical Service for use below +2°C

Materials

Body, front plate & mounting plate: anodised aluminium
Guide rods: steel inductive hardened
Wiper and seals: nitrile rubber

Standard models

Ø	Piston rod Ø	Model
12	6	QM/8012/61/*
16	6	QM/8012/61/*
20	8	QM/8020/61/*
25	10	QM/8025/61/*

* Insert stroke length in mm from table below.
For all applications please consult our Technical Service.

Standard strokes

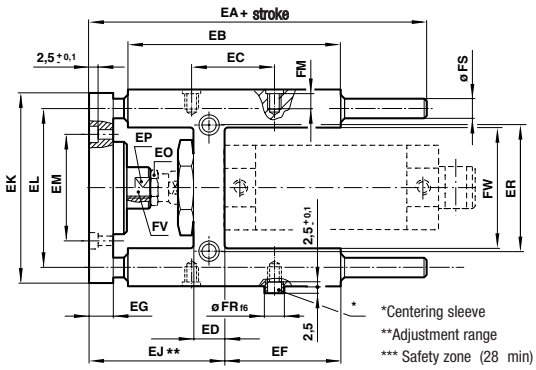
Ø	50	100	160	200	250	320	400	500
12	❍	❍	❍	❍	❍			
16	❍	❍	❍	❍	❍	❍	❍	❍
20	❍	❍	❍	❍	❍	❍	❍	❍
25	❍	❍	❍	❍	❍	❍	❍	❍

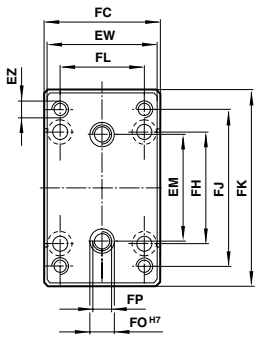
Other stroke lengths are not available, use nearest standard stroke.

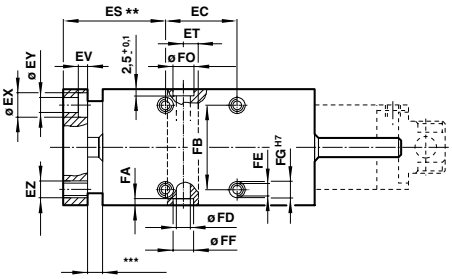
Guide blocks with roller bearings for RM/8000/M (ISO)

QM/8000/61

Ø 12 to 25 mm





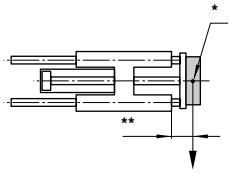


Ø	EA	EB	EC	ED	EF	EG	EJ	EK	EL	EM	EO	EP	ER	ES	ET	EV	EW	Ø EX	Ø EY	EZ
12 & 16	132	75	32,5	19	37	10	76	63	46	24	10	8	24	65	6,5	4,6	27	8	4,5	M4
20	160	108	32,5	24	58	12	90	76	58	38	13	13	38	75	8,5	5,7	32	10	5,5	M5
25	160	108	32,5	24	58	12	90	76	58	38	17	13	38	75	8,5	5,7	32	10	5,5	M5

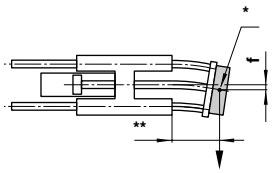
Ø	FA	FB	FC	ØFD	FE	FF	ØFG H7	FH	FJ	FK	FL	FM	ØFO H7	FP	ØFR f6	ØFS	FV	FW	kg at 0 mm	kg per 100 mm
12 & 16	5,5	22	30	5,5	M 4	9	6	32	54	65	15	10	9	M 5	6	8	M 6	27	0,40	0,04
20	6,5	23	34	6,6	M 6	11	9	40	68	79	20	14	9	M 6	9	10	M 8	37	0,65	0,06
25	6,5	23	34	6,6	M 6	11	9	40	68	79	20	14	9	M 6	9	10	M 10 x 1,25	37	0,65	0,06

Note: supplied complete with cylinder mounting screws and two centering sleeves.

Maximum load for QM/8000/61/*



*Centre of gravity
**Outstroke

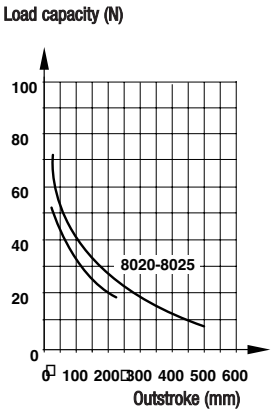


*Centre of gravity of load capacity
**Outstroke

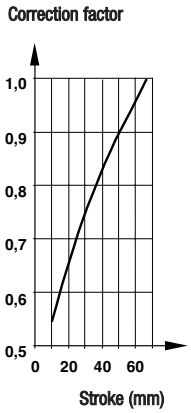
Maximum load capacity is dependent on the outstroke of a horizontally installed guide unit. In the case of short stroke operation, the load capacity figures taken from the diagram must be multiplied by the correction factor (diagram 2). In the load capacity graph (diagram 1), the short stroke corrections have already been taken into account for an outstroke > 60 mm.

The total deflection of guide rods will be determined by the addition of that due to own weight (diagram 3) and that due to load capacity (diagram 4).

Maximum load capacity depending on outstroke (diagram 1)

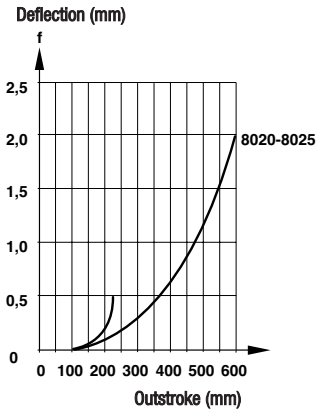


(diagram 2)

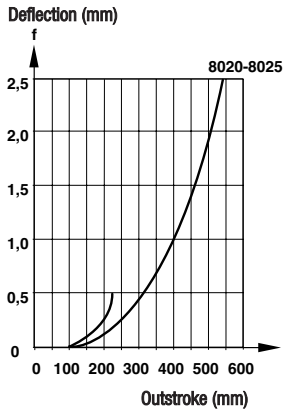


Reduction of load capacity for short stroke operation

Deflection caused by own weight (diagram 3)



Deflection caused by a load of 10 N (diagram 4)

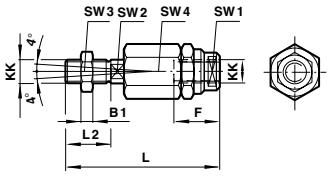


In the case of shock load applications, the figures given in the diagrams above must be reduced by a factor of 2.

Roundline cylinder mountings

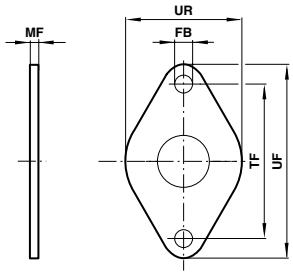
For RM/28000/M, RM/8000/M and KM/8000/M (ISO)

Piston rod swivel – AK
ISO 8139



KK	B1	F	L	L2	SW1	SW2	SW3	SW4	kg
M 4	2	12,5	33	8	11	3,2	7	11	0,01
M 6	3	14	39	12	7	5	10	13	0,02
M 8	4	18	55	16	10	7	13	17	0,05
M 10 x 1,25	5	26	73	20	19	12	17	30	0,20

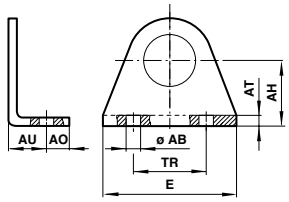
Front flange – G
Rear flange – B
ISO 6432



Ø	Ø FB	MF	TF	UF	UR	kg
10	4,5	3	30	40	22	0,02
12 + 16	5,5	4	40	51 (52)	28 (30)	0,03
20 + 25	6,6	5	50	63 (66)	38 (40)	0,05

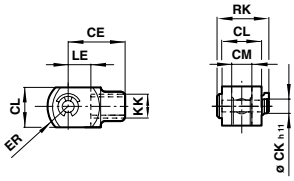
( ) stainless steel version

Foot – C
ISO 6432



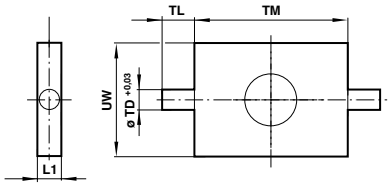
Ø	Ø AB	AH	AO	AT	AU	E	TR	kg
10	4,5	16	6	2	10	35	25	0,02
12 + 16	5,5	20	6	3	13	43	32	0,03
20 + 25	6,6	25	7,5	4	16	53	40	0,06

Piston rod clevis - F
ISO 8140



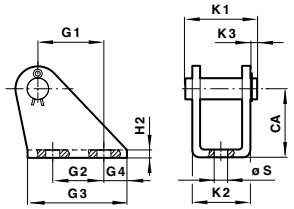
Thread KK	CE	Ø CK h11	CL	CM	ER	LE	RK	kg
M4	16	4	8	4	6,5	8	11,5	0,01
M6	24	6	12	6	9,5	12	17,5	0,02
M8	32	8	16	8	13	16	22	0,06
M10 x1,25	40	10	20	10	16	20	28	0,10

Front or rear detachable trunnion – FH



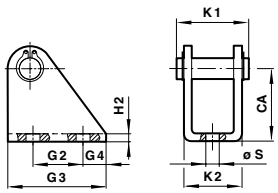
Ø	L1	Ø TD +0,03	TL	TM	UW	kg
12 + 16	8	6	10	38	25	0,05
20 + 25	8	6	10	46	30	0,07

Rear hinge – L



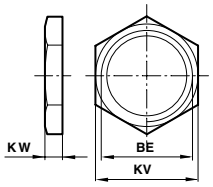
Ø	CA	G1	G2	G3	G4	H2	K1	K2	K3	Ø S	kg
10	12	6,5	–	15	6	1	13,5	10,5	2	4,8	0,01
12	20	18,5	15	30	8	1,5	20	15	3	5,5	0,02
16	20	18,5	15	30	8	1,5	20	15	3	5,5	0,02
20	25	20	15	35	10	2	25	20,5	3	6,6	0,04
25	25	20	15	35	10	2	25	20,5	3	6,6	0,04

Rear hinge – L2



Ø	CA	G1	G2	G3	G4	H2	K1	K2	Ø S	kg
10	24	11	12,5	20	4	2,5	17,5	13	4,5	0,018
12	27	13	15	25	5	3	23	18	5,5	0,035
16	27	13	15	25	5	3	23	18	5,5	0,035
20	30	16	20	32	6	4	29,5	24	6,6	0,077
25	30	16	20	32	6	4	29,5	24	6,6	0,077

Nose nut - N

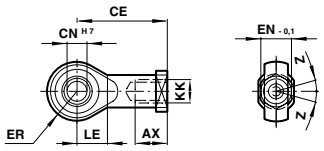


Ø	BE	KV (AF)	KW	kg
10	M12x1,25	19	6	0,01
12 + 16	M16x1,5	22	5	0,009
20 + 25	M22x1,5	27	8	0,02

Roundline cylinder mountings

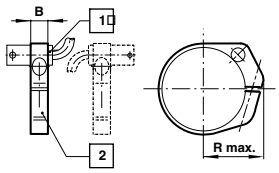
For RM/28000/M, RM/8000/M and KM/8000/M (ISO)

Universal piston rod eye – UF



Thread KK	AX	CE	Ø CN H7	EN -0,1	ER	LE	Z	kg
M4	14	27	5	8	8	10	5°	0,02
M6	14	30	6	9	9	11	5°	0,02
M8	16	36	8	12	11	13	5°	0,05
M10x1,25	25	42	10	14	14	15	5°	0,08

Brackets ⩾ 15 mm stroke

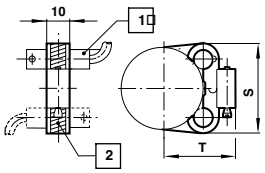


* Magnetically operated switch
**Switch mounting bracket

For switches M/50, QM/34, QM/134 (Ø 8 mm)

Ø	B	R max.	kg
10	8	16	0,01
12	8	18	0,01
16	10	20	0,01
20	10	22	0,01
25	10	24	0,01

Brackets < 15 mm stroke



* Magnetically operated switch
**Switch mounting bracket

For switches M/50, QM/34, QM/134 (Ø 8 mm)

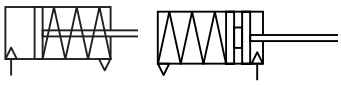
Ø	S	T	kg
10	27,5	19,5	0,01
12	28,5	21,5	0,01
16	29,5	23,5	0,01
20	29,5	26	0,01
25	31,5	28,5	0,01

Roundline cylinders

RT/57100/M

Single acting

Ø 8 to 40 mm



One fifth shorter than the basic length of a corresponding ISO/VDMA cylinder

Low friction, long life seals

High strength, double crimped end cap design

Standard magnetic piston for full control system versatility

Non-lube operation

Choice of porting option for compact installation

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

RT/57100/M Single acting, sprung in

RT/57300/M Single acting, sprung out

Operating pressure:

2 to 10 bar (Ø 8 mm: 3 to 10 bar)

Operating temperature:

-5°C to +80°C max.

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Non-standard 150 mm max.

Materials

Piston rod: stainless steel (Ø 8 to 16 mm Martensitic, Ø 20 to 40 mm Austenitic)

Barrel: stainless steel (Austenitic)

End covers: aluminium

Wiper: polyurethane

Seals & O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Side port, integral eye mounting		Central rear port	
			Sprung in	Sprung out	Sprung in	Sprung out
8	3	M 3	RT/57108/M/*	RT/57308/M/*	RT/57108/MC/*	RT/57308/MC/*
10	4	M 5	RT/57110/M/*	RT/57310/M/*	RT/57110/MC/*	RT/57310/MC/*
12	4	M 5	RT/57112/M/*	RT/57312/M/*	RT/57112/MC/*	RT/57312/MC/*
16	6	M 5	RT/57116/M/*	RT/57316/M/*	RT/57116/MC/*	RT/57316/MC/*
20	8	Rc 1/8	RT/57120/M/*	RT/57320/M/*	RT/57120/MC/*	RT/57320/MC/*
25	10	Rc 1/8	RT/57125/M/*	RT/57325/M/*	RT/57125/MC/*	RT/57325/MC/*
32	12	Rc 1/8	RT/57132/M/*	RT/57332/M/*	RT/57132/MC/*	RT/57332/MC/*
40	14	Rc 1/8	RT/57140/M/*	RT/57340/M/*	RT/57140/MC/*	RT/57340/MC/*

*Insert stroke length in mm.

Service kits are not available for these cylinders.

Ø	RT/57100 Theoretical forces (N) at 6 bar		RT/57300 Theoretical forces (N) at 6 bar	
	Outstroke	F1	Instroke	F1
8	22,7	3,6	18,6	3,6
10	38,2	4,6	30,8	4,6
12	56,2	6,1	48,4	6,1
16	101	10,5	84,5	10,5
20	161	14,5	131	14,5
25	264	20	217	20
32	432	32	364	32
40	687	44	594	44

F1 = Return force of spring (N) Cylinder sizing and speed control see page 6

Standard strokes

Ø	10	25	50
8	❍	❍	
10	❍	❍	❍
12	❍	❍	❍
16	❍	❍	❍
20	❍	❍	❍
25	❍	❍	❍
32		❍	❍
40		❍	❍

● Indicates stocked stroke lengths of standard models highlighted in table above.

Options selector

RT/57★★★/★★/★★★

Operating	Substitute
Sprung in	1
Sprung out	3

Strokes (mm)
150 max.

Variants	Substitute
Standard	M
Central rear port	MC

Cylinder diameters (mm)
08, 10, 12, 16, 20, 25, 32, 40

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

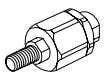
Roundline cylinders

RT/57100/M

Single acting

Ø 8 to 40 mm

Mountings

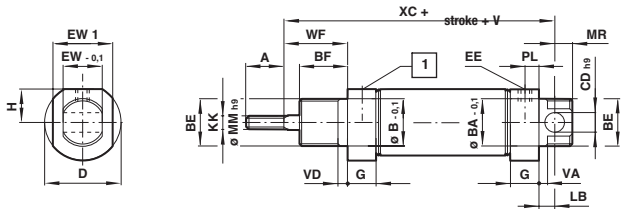
Ø	AK	C	F	L	M	N	N2	UF	Switch mounting brackets
									
8	–	M/P71273/1	QM/57008/25	**QM/57008/24**	QM/57008/26	**M/P71364**	**M/P1500/111**	–	
10	QM/8010/38	M/P71273/2	**QM/8010/25**	**QM/947**	QM/57010/26	**M/P71364**	**M/P1501/80**	**QM/8010/32**	**QM/33/010/22 #**
12	QM/8010/38	M/P71273/2	**QM/8010/25**	**QM/947**	QM/57010/26	**M/P71364**	**M/P1501/80**	**QM/8010/32**	**QM/33/012/22 #**
16	QM/8012/38	**M/P19369**	**QM/57016/25**	**QM/946**	QM/57016/26	**M/P1501/90**	**M/P1501/79**	**QM/8012/32**	**QM/33/016/22 #**
20	QM/8020/38	**M/P19389**	**QM/57020/25**	**QM/8012/24**	QM/57020/26	**M/P13834**	**M/P1501/60**	**QM/8020/32**	**QM/33/020/22 #**
25	**QM/8025/38**	**M/P40381**	**QM/57025/25**	**QM/57025/24**	QM/57025/26	**M/P13607**	**M/P1501/89**	**QM/8025/32**	**QM/33/025/22 #**
32	**QM/8025/38**	**M/P19406**	**QM/57032/25**	**QM/8020/24**	QM/57032/26	**M/P13615**	**M/P1501/89**	**QM/8025/32**	**QM/33/032/22 #**
40	QM/8040/38	**M/P71273/3**	**QM/57040/25**	**QM/57040/24**	**QM/57040/26**	**M/P29254**	**M/P1501/90**	**QM/8040/32**	**QM/33/040/22 #**

Please see page 24 for details of mountings.

Mountings are for use with switches M/50, see page 198

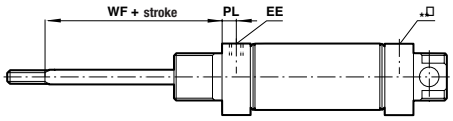
Standard cylinders

RT/57100/M - sprung in
(Ø 8 ... 12 mm)



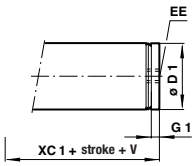
** Filtered exhaust position, do not obstruct

RT/57300/M - sprung out
(Ø 8 ... 12 mm)

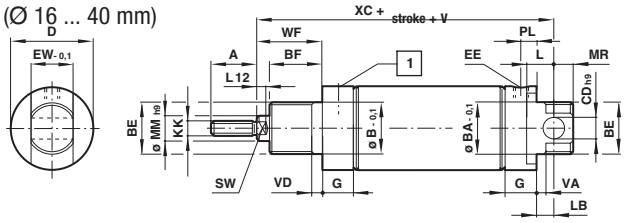


Cylinder variants

RT/57100/MC, RT/57300/MC
(Ø 8 ... 12 mm) - Central rear ports

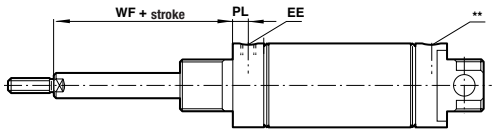


(Ø 16 ... 40 mm)

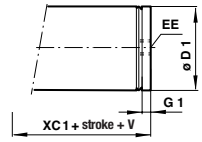


** Filtered exhaust position, do not obstruct

(Ø 16 ... 40 mm)



(Ø 16 ... 40 mm)



Ø	A	Ø B/Ø BA	BE	BF	Ø CD h9	Ø D	Ø D1	EE	EW -0,1	EW1	G	G1	H	KK	L
8	8	10	M10 x 1	7,5	3	12	9,5	M3	6	10	7,5	3	5	M3	–
10	9	10	M10 x 1	8	4	15	11,5	M5	8	12,5	9,5	4,5	6,5	M4	–
12	9	10	M10 x 1	8	4	15	13	M5	8	–	9,5	4,5	6,5	M4	–
16	12	12	M12 x 1,25	10	5	17,5	17,5	M5	10	–	11,5	4	–	M6	–
20	14	16	M16 x 1,5	12	6	22	21,5	Rc 1/8	12	–	15,5	8	–	M8	–
25	16	18	M18 x 1,5	12	8	26,5	26,5	Rc 1/8	14	–	15,5	8	–	M10 x 1,25	–
32	22	22	M22 x 1,5	15	8	33,5	33,5	Rc 1/8	16	–	17,5	5,5	–	M10 x 1,25	12
40	23	30	M30 x 1,5	15	10	41,5	41,5	Rc 1/8	20	–	18	5,5	–	M12 x 1,25	14

Ø	LB	L12	Ø MM h9	MR	PL	SW (A/F)	V*	V**	VA/VD	WF	XC	XC1	57100 kg <25 mm	57300 kg <25 mm	kg per extra 25 mm
8	4,5	–	3	3	4	–	17	34	1,5	8,5	48	39	0,017	0,02	0,01
10	5	–	4	4	5,5	–	14	28	1,5	10	54	44	0,025	0,02	0,01
12	5	–	4	4	5,5	–	14	28	1,5	10	54	44	0,027	0,03	0,01
16	7	5	6	5	5,5	5	15	30	2	13,5	64,5	50	0,053	0,05	0,01
20	7	5	8	6	9	7	17	34	3	15,5	75,5	61	0,095	0,09	0,02
25	9	5	10	8	9	9	18	36	3	16,5	78,5	62	0,15	0,14	0,03
32	7	5	12	8	9	10	19	38	3	23	93	74	0,26	0,25	0,04
40	5	6	14	10	10	12	20	40	3	24	96	78,5	0,5	0,38	0,05

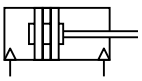
* For 10 & 25 mm stroke ** For 50 mm stroke

Roundline cylinders

RT/57200

Double acting

Ø 8 to 63 mm



One fifth shorter than the basic length of a corresponding ISO cylinder

Low friction, long life seals

High strength, double crimped end cap design

Standard magnetic piston for full control system versatility

Non-lube operation

Choice of porting option for compact installation

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting, buffer cushioning
RT/57200/M
Side port, integral eye mounting (Ø 8 to 40 mm), fixing holes in the end cover (Ø 50 and 63 mm)
RT/57200/MC
Central rear port (Ø 8 to 40 mm)
RT/57200/MF
Flat rear cover (Ø 8 to 40 mm)

Operating pressure:
1 to 10 bar

Operating temperature:
-10°C to +80°C
Consult our Technical Service for use below +2°C

Strokes:
Standard, see table
Non-standard 500 mm max.

Materials

Piston rod: stainless steel (8 to 16 mm bore Austenitic, 20 to 63 mm bore Martensitic)
Barrel: stainless steel (Austenitic)
End covers: aluminium
Wiper: polyurethane
Seals & 'O'-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Side port, integral eye mounting	Central rear port Flat end	Side port Flat end
8	3	M 3	RT/57208/M/*	RT/57208/MC/*	RT/57208/MF/*
10	4	M 5	RT/57210/M/*	RT/57210/MC/*	RT/57210/MF/*
12	4	M 5	RT/57212/M/*	RT/57212/MC/*	RT/57212/MF/*
16	6	M 5	**RT/57216/M/***	RT/57216/MC/*	RT/57216/MF/*
20	8	Rc 1/8	**RT/57220/M/***	RT/57220/MC/*	RT/57220/MF/*
25	10	Rc 1/8	**RT/57225/M/***	RT/57225/MC/*	RT/57225/MF/*
32	12	Rc 1/8	**RT/57232/M/***	RT/57232/MC/*	RT/57232/MF/*
40	14	Rc 1/8	**RT/57240/M/***	RT/57240/MC/*	RT/57240/MF/*
50	16	Rc 1/4**	**RT/57250/M/***	–	–
63	20	Rc 1/4**	**RT/57263/M/***	–	–

* Insert stroke length in mm. Cylinder sizing and speed control see page 6 Service kits are not available for these cylinders.
** These models do not have rear eye.

Standard strokes

Ø	10	25	40	50	80	100	125	160	200	250	320
8	❍	❍	❍	❍	❍	❍					
10	❍	❍	❍	❍	❍	❍					
12	❍	❍	❍	❍	❍	❍	❍	❍	❍		
16	❍	❍	❍	●	●	❍	❍	❍	❍		
20	❍	●	❍	●	●	●	❍	❍	❍	❍	❍
25	❍	●	❍	●	●	●	❍	❍	❍	❍	❍
32	❍	●	❍	●	●	●	❍	●	❍	❍	❍
40	❍	●	❍	●	●	●	❍	❍	❍	❍	❍
50	❍	❍	❍	●	●	❍	❍	❍	❍	❍	❍
63	❍	❍	❍	❍	●	❍	❍	❍	❍	❍	❍

● Indicates stocked stroke lengths of standard models highlighted in table above.

Options selector

RT/572★★/★★/★★★

Cylinder diameters (mm)
08, 10, 12, 16, 20, 25, 32, 40, 50, 63

Strokes (mm)
500 max

Variants	Substitute
Standard	M
Central rear port	MC
Side port, flat end	MF
Double ended piston rod	JM

Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	**M/50/LSU/*V**	**M/50/LSU/CP**	**M/P73001/5 (5 m)**
Solid state	**M/50/EAP/*V**	**M/50/EAP/CP**	**M/P73001/5 (5 m)**

*Insert cable length – 2, 5 or 10 m. For details see page 198

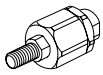
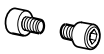
Roundline cylinders

RT/57200

Double acting

Ø 8 to 63 mm

Mountings

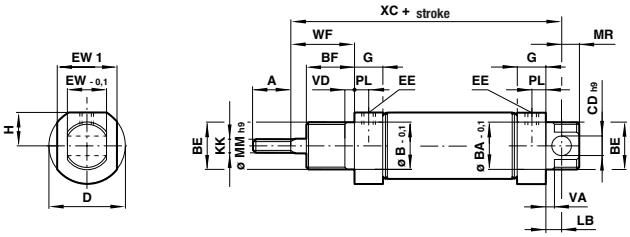
Ø	AK	C	F	H	L	M	N	UF	Piston rod lock nut	Switch mounting brackets
										
8	–	M/P71273/1	**QM/57008/25**	–	QM/57008/24	QM/57008/26	**M/P71364**	–	**M/P1500/111**	
10	QM/8010/38	M/P71273/2	**QM/8010/25**	–	QM/947	QM/57010/26	**M/P71364**	**QM/8010/32**	**M/P1501/80**	**QM/33/010/22#**
12	QM/8010/38	M/P71273/2	**QM/8010/25**	–	QM/947	QM/57010/26	**M/P71364**	**QM/8010/32**	**M/P1501/80**	**QM/33/012/22#**
16	QM/8012/38	**M/P19369**	**QM/57016/25**	–	QM/946	QM/57016/26	**M/P1501/90**	**QM/8012/32**	**M/P1501/79**	**QM/33/016/22#**
20	QM/8020/38	**M/P19389**	**QM/57020/25**	–	QM/8012/24	QM/57020/26	**M/P13834**	**QM/8020/32**	**M/P1501/60**	**QM/33/020/22#**
25	**QM/8025/38**	**M/P40381**	**QM/57025/25**	–	QM/57025/24	QM/57025/26	**M/P13607**	**QM/8025/32**	**M/P1501/89**	**QM/33/025/22#**
32	**QM/8025/38**	**M/P19406**	**QM/57032/25**	–	QM/8020/24	QM/57032/26	**M/P13615**	**QM/8025/32**	**M/P1501/89**	**QM/33/032/22#**
40	QM/8040/38	**M/P71273/3**	**QM/57040/25**	–	**QM/57040/24**	QM/57040/26	**M/P29254**	**QM/8040/32**	**M/P1501/90**	**QM/33/040/22#**
50	QM/8040/38	QM/57050/21	**QM/57040/25**	QM/55240/28	**QM/57050/24**	QM/57050/26	–	**QM/8040/32**	**M/P1501/90**	**QM/33/050/22#**
63	**QM/8050/38**	**QM/57063/21**	**QM/57063/25**	QM/55250/28	QM/57063/24	QM/57063/26	–	QM/8050/32	**M/P1501/91**	**QM/33/063/22#**

Please see page 24 for details of mountings.

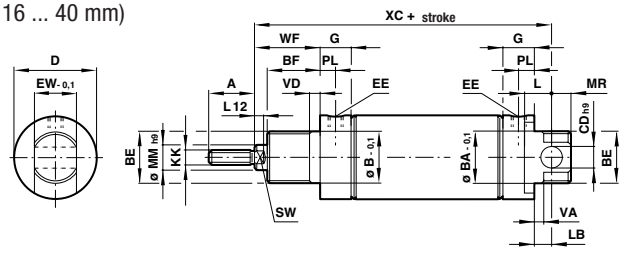
Standard cylinders

RT/57200/M

(Ø 8 ... 12 mm)



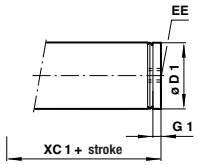
(Ø 16 ... 40 mm)



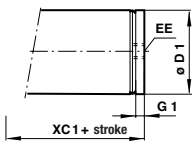
Cylinder variants

RT/57200/MC - Central rear port

(Ø 8 ... 12 mm)

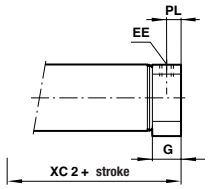


(Ø 16 ... 40 mm)

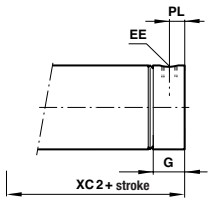


RT/57200/MF - Side port, flat end

(Ø 8 ... 12 mm)



(Ø 16 ... 40 mm)



Ø	A	Ø B/BA	BE	BF	Ø CD h9	Ø D	Ø D1	EE	EW-0,1	EW1	G	G1	H
8	8	10	M 10 x 1	7,5	3	12	9,5	M 3	6	10	7,5	3	5
10	9	10	M 10 x 1	8	4	15	11,5	M 5	8	12,5	9,5	4,5	6,5
12	9	10	M 10 x 1	8	4	15	13	M 5	8	–	9,5	4,5	6,5
16	12	12	M 12 x 1,25	10	5	17,5	17,5	M 5	10	–	11,5	4	–
20	14	16	M 16 x 1,5	12	6	22	21,5	Rc 1/8	12	–	15,5	8	–
25	16	18	M 18 x 1,5	12	8	26,5	26,5	Rc 1/8	14	–	15,5	8	–
32	22	22	M 22 x 1,5	15	8	33,5	33,5	Rc 1/8	16	–	17,5	5,5	–
40	23	30	M 30 x 1,5	15	10	41,5	41,5	Rc 1/8	20	–	18	5,5	–

Ø	KK	L	LB	L12	Ø MMh9	MR	PL	SW	VA/VD	WF	XC	XC1	XC2	kg at 0 mm	kg per 100 mm
8	M 3	–	4,5	3	3	3	4	–	1,5	8,5	48	39	43,5	0,02	0,02
10	M 4	–	5	4	4	4	5,5	–	1,5	10	54	44	49	0,02	0,03
12	M 4	–	5	4	4	4	5,5	–	1,5	10	54	44	49	0,02	0,03
16	M 6	–	7	6	6	5	5,5	5	2	13,5	64,5	50	57,5	0,04	0,05
20	M 8	–	7	8	8	6	9	7	3	15,5	75,5	61	68,5	0,08	0,07
25	M 10 x 1,25	–	9	10	10	8	9	9	3	16,5	78,5	62	69,5	0,12	0,11
32	M 10 x 1,25	12	7	12	12	8	9	10	3	23	93	74	86	0,21	0,16
40	M 12 x 1,25	14	5	14	14	10	10	12	3	24	96	78,5	91	0,33	0,20

For use with switches M/50, see page 198

Roundline cylinders

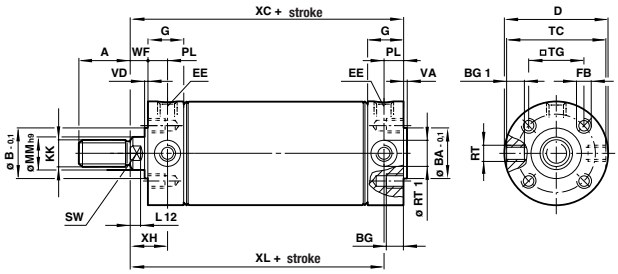
RT/57200

Double acting

Ø 8 to 63 mm

Standard cylinders

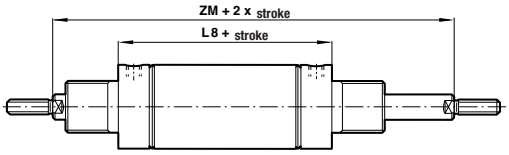
RT/57200/M
(Ø 50 & 63 mm)



Ø	A	Ø B/ Ø BA	BG	BG1	Ø D	EE	FB	G	KK	L12	Ø MM h9	PL	RT	RT1	SW	TC	TG	VA/ VD	WF	XC	XH	XL	kg at 0 mm	kg per 100 mm
50	23	28	12	8	52,5	Rc1/4	M6	22	M12x1,25	7	16	13	M10x1	13	13	49	28,5	2	13	97	26	84	0,55	0,31
63	30	35	12	9,5	65,5	Rc1/4	M8	22	M16x1,5	7	20	13	M12x1,5	15	17	62	35,5	2	13	99	26	86	0,89	0,44

Cylinder variants

RT/57200/JM - Cylinder with double ended piston rod

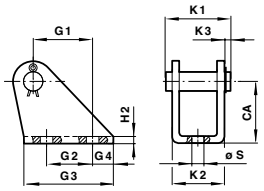


Ø	L8	ZM
16	44	71
20	53	84
25	53	86
32	63	109
40	67	115
50	84	110
63	86	112

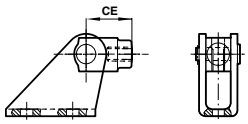
Roundline cylinder mountings

for RT/57100/M, RT/57200/M, RT/57300/M

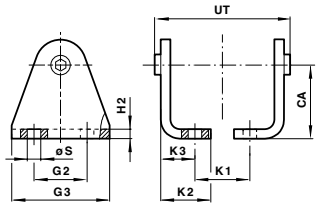
Rear hinge – L
(Ø 8 ... 40 mm)



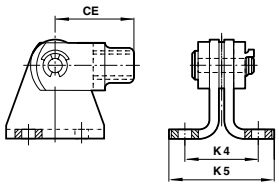
Front hinge – M
(Ø 8 ... 40 mm)



Rear hinge – L
(Ø 50 & 63 mm)



Front hinge – M
(Ø 50 & 63 mm)

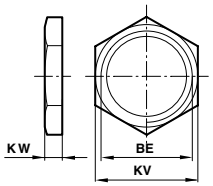


Ø	CA	G1	G2	G3	G4	H2	K1	K2	K3	Ø S	UT	kg
8	10	9	7	14	3,5	1	–	8	–	3,5	–	0,01
10	12	6,5	–	15	6	1	–	10,5	–	4,8	–	0,01
12	12	6,5	–	15	6	1	–	10,5	–	4,8	–	0,01
16	16	13	10	22	6	1,5	–	12,5	–	4,8	–	0,02
20	20	18,5	15	30	8	1,5	–	15	–	5,5	–	0,02
25	22	20	15	33	9	2	–	18	–	6,6	–	0,04
32	25	20	15	35	10	2	–	20,5	–	6,6	–	0,04
40	28	25	20	42	11	3	–	26	–	7	–	0,09
50	40	–	30	54	–	4	30,5	24	15	9	68	0,20
63	47	–	40	64	–	5	40,5	26,5	17,5	9	84	0,32

Ø	CA	CE	K4	K5	Ø S	kg
8	10	11	–	–	3,5	0,02
10	12	16	–	–	4,8	0,02
12	12	16	–	–	4,8	0,02
16	16	20	–	–	4,8	0,03
20	20	24	–	–	5,5	0,04
25	22	26	–	–	6,6	0,08
32	25	32	–	–	6,6	0,09
40	28	40	–	–	7	0,18
50	40	48	34	52	9	0,33
63	47	56	39	57	9	0,54

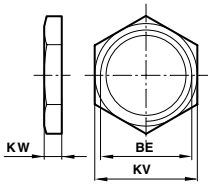
Includes pivot nuts on Ø 50 and Ø 63 mm.

Nose nut – N



Ø	BE	KV	KW	kg
8	M10x1	14	4	0,01
10	M10x1	14	4	0,01
12	M10x1	14	4	0,01
16	M12x1,25	19	6	0,01
20	M16x1,5	22	5	0,01
25	M18x1,5	24	5	0,01
32	M22x1,5	27	8	0,02
40	M30x1,5	36	8	0,03

Piston rod lock nut

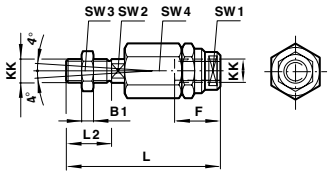


Ø	BE	KV	KW	kg
8	M3	6	2	0,01
10	M4	7	2	0,01
12	M4	7	2	0,01
16	M8	10	3	0,01
20	M8	13	4	0,01
25	M10x1,25	17	5	0,01
32	M10x1,25	17	5	0,01
40	M12x1,25	19	6	0,01
50	M12x1,25	19	6	0,01
63	M16x1,5	24	8	0,02

Roundline cylinder mountings

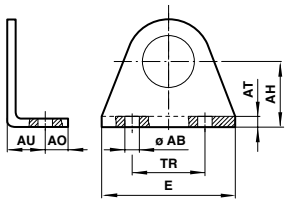
For RT/57100/M, RT/57200/M, RT/57300/M

Piston rod swivel – AK



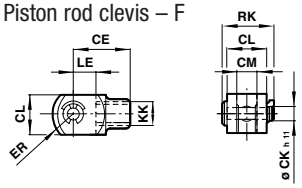
Ø	B1	F	KK	L	L2	SW1 (A/F)	SW2 (A/F)	SW3 (A/F)	SW4 (A/F)	kg
10	2	12,5	M4	33	8	11	3,2	7	11	0,01
12	2	12,5	M4	33	8	11	3,2	7	11	0,01
16	3	14	M6	39	12	7	5	10	13	0,02
20	4	18	M8	55	16	10	7	13	17	0,05
25	5	26	M10x1,25	73	20	19	12	17	30	0,20
32	5	26	M10x1,25	73	20	19	12	17	30	0,20
40	6	26	M12x1,25	77	24	19	12	19	30	0,20
50	6	26	M12x1,25	77	24	19	12	19	30	0,20
63	8	34	M16x1,5	106	32	30	19	24	42	0,65

Foot – C



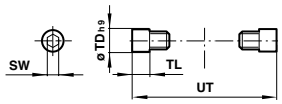
Ø	Ø AB	AH	AO	AT	AU	E	TR	kg
8	3,8	10	3,5	1,5	7,5	25	18	0,01
10	5	12	4,5	1,5	7,5	30	20	0,01
12	5	12	4,5	1,5	7,5	30	20	0,01
16	4,5	16	6	2	10	35	25	0,02
20	5,5	20	6	3	13	43	32	0,03
25	6,6	22	8	3	12,5	49	38	0,04
32	6,6	25	7,5	4	16	53	40	0,06
40	7	28	7	4	16	66	52	0,08
50	9	40	10	4	17	52	36	0,18
63	9	47	10	5	19	61	45	0,3

Piston rod clevis – F



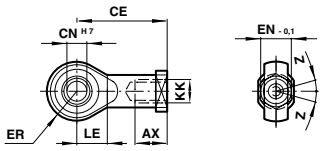
Ø	CE	ØCK h11	CL	CM B12	ER	KK	LE	RK	kg
8	11	3 h9	6	3	4,5	M3	5	10,5	0,01
10	16	4	8	4	6,5	M4	8	11,5	0,01
12	16	4	8	4	6,5	M4	8	11,5	0,01
16	20	5	10	5	8	M6	10	14,5	0,01
20	24	6	12	6	9,5	M8	12	17,5	0,02
25	26	8	14	7	11,5	M10x1,25	12	20,5	0,04
32	32	8	16	8	13	M10x1,25	16	22,5	0,05
40	40	10	20	10	16	M12x1,25	20	29	0,09
50	48	12	24	12	19	M12x1,25	24	33	0,13
63	56	14	27	14	21	M16x1,5	28	36,5	0,22

End cover trunnion – H



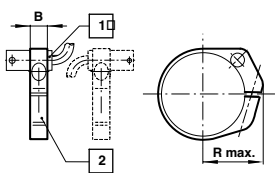
Ø	SW	Ø TD h9	TL	UT	kg
50	6	12	9,5	68	0,05
63	6	14	11	84	0,07

Universal piston rod eye – UF



Ø	AX	CE1	Ø CN H7	EN	ER1	LE1	KK	kg
10	14	27	5	8	8	10	M4	0,02
12	14	27	55	8	8	10	M4	0,02
16	14	30	6	9	9	11	M6	0,02
20	16	36	8	12	11	13	M8	0,05
25	20	43	10	14	14	15	M10x1,25	0,08
32	20	43	10	14	14	15	M10x1,25	0,08
40	22	50	12	16	16	17	M12x1,25	0,12
50	22	50	12	16	16	17	M12x1,25	0,15
63	28	64	16	21	21	22	M16x1,5	0,15

Brackets for switches M/50, QM/34, or QM/134



* Bracket

**Magnetically operated switches

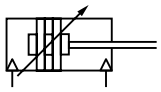
Ø	B	R max.	kg
10	8	14	0,01
12	8	15	0,01
16	10	18	0,01
20	10	20	0,01
25	10	22,5	0,01
32	10	29	0,01
40	10	32	0,01
50	10	38	0,01
63	10	46	0,01

Roundline cylinders

RM/55401

Double acting

Ø 32 to 100 mm



Clean line design

Low friction, long life seals

Standard magnetic piston for full control system versatility

Non-lube operation

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting, magnetic piston, adjustable cushioning

Operating pressure:
1 to 10 bar

Operating temperature:
-20°C to +80°C.
Consult our Technical Service for use below +2°C

Strokes:
Standard, see table
Non-standard strokes 300 mm maximum

Materials

Piston rod: stainless steel (Martensitic)
Barrel & end covers: anodised aluminium
Seals & O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Magnetic	Service kit
32	12	G1/8	RM/55433/M/*	QM/55433/00
40	16	G1/4	RM/55441/M/*	QM/55441/00
50	20	G1/4	RM/55451/M/*	QM/55451/00
63	20	G3/8	RM/55464/M/*	QM/55464/00
80	25	G3/8	RM/55481/M/*	QM/55481/00
100	25	G1/2	RM/55411/M/*	QM/55411/00

* Insert stroke length in mm. Cylinder sizing and speed control see page 6

Standard strokes

Ø	25	50	80	100	125	160	200	250	300
32	❍	❍	❍	❍	❍	❍	❍	❍	❍
40	❍	❍	❍	❍	❍	❍	❍	❍	❍
50	❍	❍	❍	❍	❍	❍	❍	❍	❍
63	❍	❍	❍	❍	❍	❍	❍	❍	❍
80	❍	❍	❍	❍	❍	❍	❍	❍	❍
100	❍	❍	❍	❍	❍	❍	❍	❍	❍

Options selector

★M/554★★/★★/★★★

Piston rod material	Substitute
Stainless steel (Martensitic)	R
Hard chromium plated	C
Stainless steel (Austenitic)	S

Cylinder diameters (mm)	Substitute
32	33
40	41
50	51
63	64
80	81
100	11

Strokes (mm)
300 max.

Variants	Substitute
Standard	M
Extreme duty wiper/seal	W2
Double ended piston rod	JM
Double ended piston rod extreme duty wiper/seal	W4
Extended piston rod	MU
RM/554**/MU/***/*** → Extension (mm)	

Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

i PDF CAD
www.norgren.com/info/en026

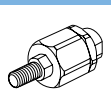
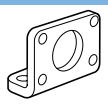
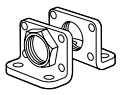
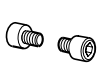
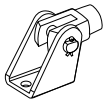
Roundline cylinders

RM/55401

Double acting

Ø 32 to 100 mm

Mountings

Ø	AK	BG	C	F	H	L	M	N	UF	Switch mounting brackets ##
										
32	**QM/8025/38**	QM/55232/22	QM/55232/21	**QM/8025/25**	QM/55232/28	QM/55232/24	QM/55432/26	**M/P29254**	**QM/8025/32**	QM/33/432/22
40	QM/8040/38	QM/55240/22	QM/55240/21	**QM/8040/25**	QM/55240/28	QM/55240/24	QM/55440/26	M/P29255	**QM/8040/32**	**QM/33/440/22**
50	**QM/8050/38**	QM/55250/22	QM/55250/21	**QM/8050/25**	QM/55250/28	QM/55250/24	QM/55450/26	M/P29256	**QM/8050/32**	QM/33/450/22
63	QM/8050/38	QM/55263/22	QM/55263/21	**QM/8050/25**	QM/55263/28	QM/55263/24	QM/55463/26	M/P29256	**QM/8050/32**	QM/33/463/22
80	QM/8080/38	QM/55480/22	QM/55480/21	QM/8080/25	QM/55480/28	QM/55480/24	QM/55480/26	M/P34806	**QM/8080/32**	QM/33/480/22
100	QM/8080/38	QM/55410/22	QM/55410/21	QM/8080/25	QM/55410/28	QM/55410/24	QM/55410/26	M/P34806	**QM/8080/32**	QM/33/410/22

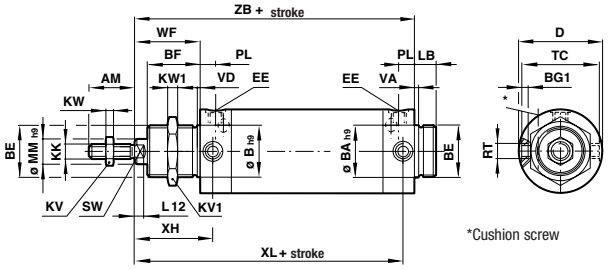
Please see next page details of mountings.

For use with switches M/50, QM/34 or QM/134 see pages 198 & 199

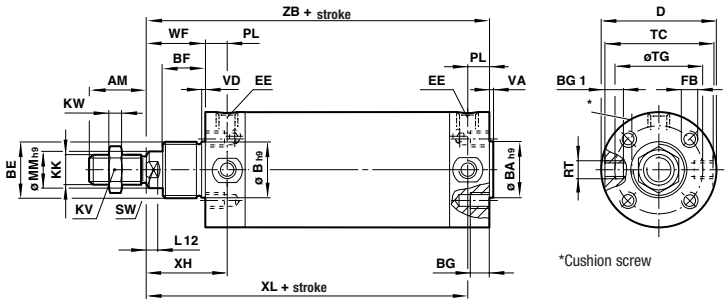
Standard cylinders

RM/55401/M

(Ø 32 ... 63 mm)



(Ø 80 & 100 mm)

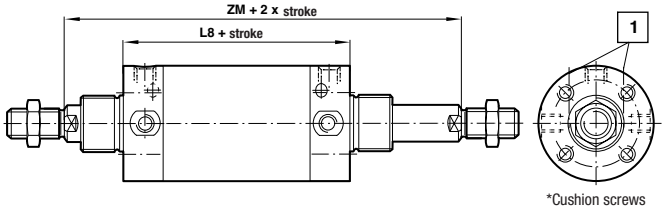


Ø	AM	Ø B/BA h9	BE	BF	BG	BG1	D	EE	FB	KK	KV (A/F)	KV1 (A/F)	KW	KW1	LB
32	22	30	M 30 x 1,5	30	–	6	36,5	G 1/8	–	M 10 x 1,25	17	36	5	8	14
40	24	38	M 38 x 1,5	35	–	8	45,5	G 1/4	–	M 12 x 1,25	19	46	6	10	16
50	32	45	M 45 x 1,5	38	–	9,5	55,5	G 1/4	–	M 16 x 1,5	24	55	8	10	18
63	32	45	M 45 x 1,5	38	–	10	69,5	G 3/8	–	M 16 x 1,5	24	55	8	10	18
80	40	55	M 55 x 1,5	45	14	17,5	87,5	G 3/8	M8	M 20 x 1,5	30	–	10	–	–
100	40	55	M 55 x 1,5	45	14	21,5	107,5	G 1/2	M10	M 20 x 1,5	30	–	10	–	–

Ø	L12	Ø MM h9	PL	RT	SW (A/F)	Ø TC	TG	VA/VD	WF	XH	XL	ZB	kg at 0 mm	kg per 100 mm
32	5,5	12	9	M 8 x 1	10	35	–	3	38	47	123	132	0,40	0,14
40	7,5	16	12	M 10 x 1	13	44	–	3	45	57	142	154	0,83	0,27
50	8,5	20	12	M 12 x 1,5	17	54	–	3	50	62	152	164	1,30	0,32
63	8,5	20	13	M 14 x 1,5	17	67	–	3	51	64	159	172	1,60	0,38
80	11,5	25	15	M 16 x 1,5	22	85,5	70	5	61	76	196	211	3,10	0,59
100	11,5	25	18,5	M 20 x 1,5	22	105,5	80	5	61	79,5	200,5	219	4,60	0,68

Cylinder variants

RM/55401/JM – Cylinders with double ended piston rod

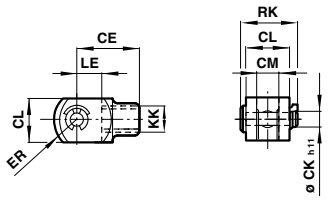


Ø	L8	ZM
32	94	170
40	109	199
50	114	214
63	121	223
80	150	272
100	158	280

Roundline cylinder mountings

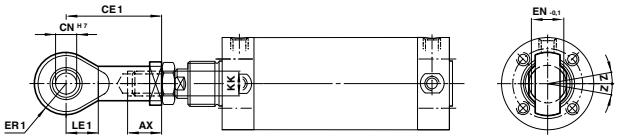
For RM/55401/M

Piston rod clevis – F
Corresponds to DIN ISO 8140



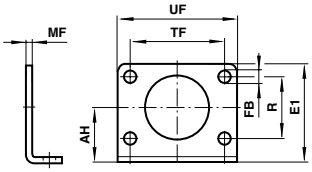
Ø	CE	Ø CK h11	CL	CM	ER	KK	LE	RK	kg
32	40	10	20	10	16	M10 x 1,25	20	28	0,09
40	48	12	24	12	19	M12 x 1,25	24	32	0,13
50	64	16	32	16	25	M16 x 1,5	32	41,5	0,33
63	64	16	32	16	25	M16 x 1,5	32	41,5	0,33
80	80	20	40	20	32	M20 x 1,5	40	58	0,67
100	80	20	40	20	32	M20 x 1,5	40	58	0,67

Universal piston rod eye mounting - UF
Corresponds to DIN ISO 8139



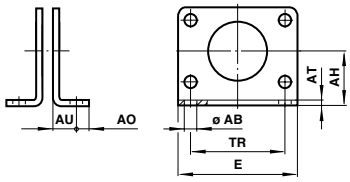
Ø	AX	CE1	ØCNh7	ER1	LE1
32	20	43	10	14	15
40	22	50	12	16	17
50	28	64	16	21	22
63	28	64	16	21	22
80	33	77	20	25	26
100	33	77	20	25	26

Front flange – G, B



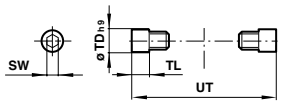
Ø	AH	E1	Ø FB	MF	R	TF	UF	kg
32	28	49	7	4	28	52	66	0,11
40	33	58	9	5	30	60	80	0,19
50	40	70	9	5	40	70	90	0,25
63	45	80	9	5	50	76	96	0,33
80	56	100	12	8	–	120	150	0,81
100	66	120	14	8	–	130	170	1,10

Foot – C



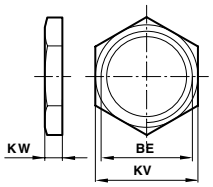
Ø	Ø AB	AH	AO	AT	AU	E	TR	kg
32	7	28	7	4	14	66	52	0,25
40	9	33	10	5	20	80	60	0,44
50	9	40	10	5	20	90	70	0,59
63	9	45	10	5	20	96	76	0,73
80	12	56	15	5	45	90	63	0,67
100	14	66	20	5	45	113	75	1,00

Central trunnion – H



Ø	Ø TD h9	TL	UT	kg
32	10	8	51	0,02
40	12	9,5	63	0,03
50	14	11	76	0,05
63	16	13	93	0,07
80	18	13	111,5	0,09
100	20	13	131,5	0,25

Lock nut – N

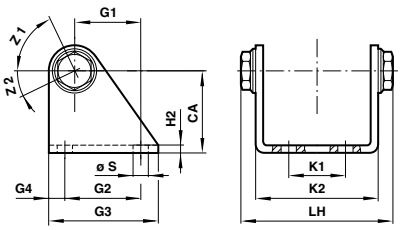


Ø	BE	KV	KW	kg
32	M30 x 1,5	36	8	0,03
40	M38 x 1,5	46	10	0,06
50	M45 x 1,5	55	10	0,08
63	M45 x 1,5	55	10	0,08
80	M55 x 1,5	60	13	0,25
100	M55 x 1,5	80	13	0,25

Roundline cylinder mountings

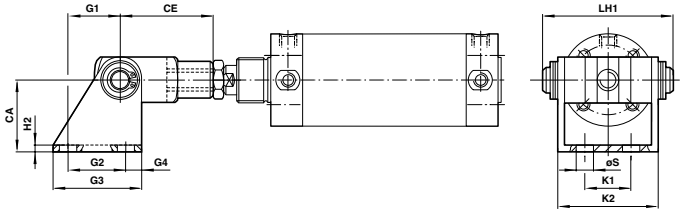
For RM/55401/M

Rear hinge – L



Ø	CA	G1	G2	G3	G4	Ø S	H2	K1	K2	LH	Z1	Z2
32	35	20	24	40	8	7	4	20	46,5	59,5	65°	36°
40	40	27	30	50	10	9	5	28	56,5	71	55°	32°
50	45	30	34	54	10	9	5	36	68,5	83	60°	30°
63	50	34	35	65	15	9	5	42	82,5	99	189°	25°
80	65	47,5	55	80	12,5	11	6	55	102,5	125,5	193°	27°
100	77	63	70	100	15	11	6	70	122,5	145,5	191°	25°

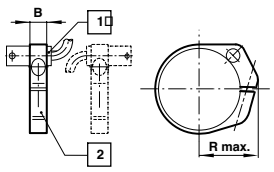
Front hinge mounting – M



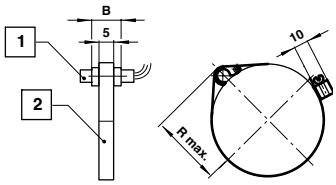
Ø	CA	CE	G1	G2	G3	G4	H2
32	35	40	20	24	40	8	4
40	40	48	27	30	50	10	5
50	45	64	30	34	54	10	5
63	50	64	30	34	54	10	5
80	65	80	47,5	55	80	12,5	6
100	77	80	63	70	100	15	6

QM/33/4 .. 22 – Switch mounting bracket

Ø 32 ... 80 mm



Ø 100 mm



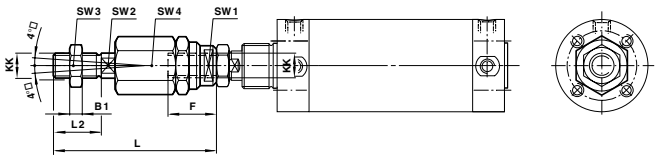
* Magnetically operated switches

** Bracket

For switches M/50, QM/34, QM/134 (Ø 8 mm)

Ø	B	R max.
32	10	29
40	10	32
50	10	38
63	10	46
80	12	54
100	10	59

QM/8000/38 — Piston rod swivel mounting – AK



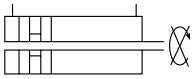
Ø	B1	F	KK	L	L2	SW1(A/F)	SW2(A/F)	SW3(A/F)	SW4(A/F)
32	5	26	M10x1,25	73	20	19	12	17	30
40	6	26	M12x1,25	77	24	19	12	19	30
50	8	34	M16x1,5	106	32	30	19	24	42
63	8	34	M16x1,5	106	32	30	19	24	42
80	10	42	M20x1,5	122	40	30	19	30	42
100	10	42	M20x1,5	122	40	30	19	30	42

Hollow piston rod cylinders

VSM/55600

Double acting

Ø 25 and 40 mm



Ideally suited for vacuum selected liquid transfer applications through the piston rod

Non-rotating and telescopic piston rod provides accurate, repeatable component orientation

Non-corrosive specification

Magnetic piston as standard

Buffer cushioning

Direct attachment of vacuum pumps and suction cups

Technical data

Medium:
Compressed air, filtered, lubricated and non-lubricated

Standard:
Ø 25: ISO 6432 (except piston rod)

Operation:
Double acting with buffer cushioning

Operating pressure:
1 to 10 bar

Operating temperature:
+80°C max.
Consult our Technical Service for use below +2°C

Cylinder diameters:
25 and 40 mm

Strokes:
Non-standard strokes up to 500 mm max. available:

Materials

Barrel:
Ø 25: stainless steel (Austenitic)
Ø 40: clear anodised aluminium alloy
End covers: clear anodised aluminium alloy
Piston rod: stainless steel (Austenitic)
Buffer: polyurethane
Wiper: polyurethane
Piston seals:
Ø 25: nitrile rubber
Ø 40: polyurethane
'0'-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model
25	12	G1/8	VSM/55625/N2
40	16	G1/4	VSM/55640/N2

Options selector

VSM/556★★/N2/★★★

Cylinder diameters (mm)	Strokes (mm)
25, 40	500 max.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

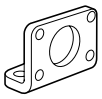
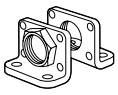
Hollow piston rod cylinders

VSM/55600

Double acting

Ø 25 and 40 mm

Mountings

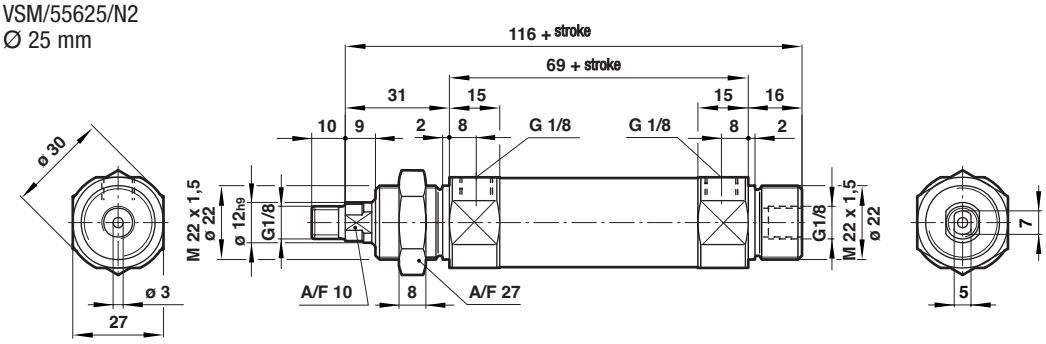
Ø	BG	C	FH	N	Switch mounting brackets # < 15 mm stroke	Switch mounting brackets # ⩾ 15 mm stroke	Switch mounting brackets ##
							
25	M/P19409	M/P19406	QM/8020/34	M/P13615	QM/33/025/23	QM/33/025/22	QM/140/10/22
Ø	**BG**	**C**	**H**	**N**	**L**	**Switch mounting brackets #**	**Switch mounting brackets ##**
							
40	QM/55240/22	QM/55240/21	QM/55240/28	M/P29255	QM/55240/24	QM/33/440/22	QM/140/010/22

Please see page 76 for details of mountings.

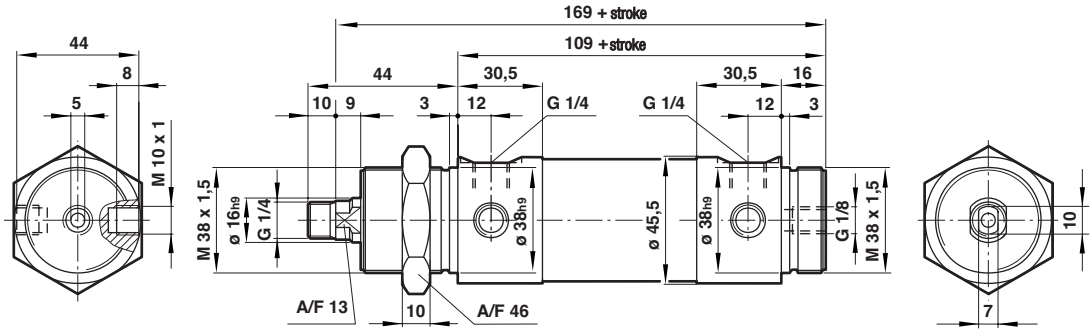
For use with switches M/50, QM/34 or QM/134 see pages 198 & 199

For use with Pneumatic switch QM/140.

VSM/55625/N2
Ø 25 mm



VSM/55640/N2
Ø 40 mm

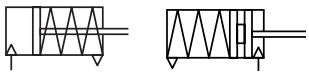


VDMA Compact cylinders

RM/191000/MX,.../M; RM/193000/MX

Single acting

Ø 20 to 63 mm



Pitch and mountings to VDMA 24562

Magnetic piston as standard

Seals ensure low friction operation and long life

Switches can be mounted flush with the profile

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
See Options selector

Operating pressure:
2 to 10 bar

Operating temperature:
-10°C to +80°C
Consult our Technical Service for use below +2°C

Strokes:
Standard: 10 and 25 mm
Non-standard strokes available (50 mm max.)

Materials

Profile barrel: anodised aluminium
End covers: anodised aluminium
Piston rod: stainless steel (Martensitic)
Piston rod seals: polyurethane
Piston seals: nitrile rubber
O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Female thread Sprung in	Female thread Sprung out	Male thread Sprung in	Male thread Sprung out	Service kit
20	10	M5	RM/191020/MX/*	RM/193020/MX/*	RM/191020/M/*	RM/193020/M/*	QM/192020/00
25	10	M5	RM/191025/MX/*	RM/193025/MX/*	RM/191025/M/*	RM/193025/M/*	QM/192025/00
32	12	G1/8	RM/191032/MX/*	RM/193032/MX/*	RM/191032/M/*	RM/193032/M/*	QM/192032/00
40	16	G1/8	RM/191040/MX/*	RM/193040/MX/*	RM/191040/M/*	RM/193040/M/*	QM/192040/00
50	20	G1/8	RM/191050/MX/*	RM/193050/MX/*	RM/191050/M/*	RM/193050/M/*	QM/192050/00
63	20	G1/8	RM/191063/MX/*	RM/193063/MX/*	RM/191063/M/*	RM/193063/M/*	QM/192063/00

*Insert stroke length in mm.

Ø	RM/191000/M Theoretical forces (N) at 6 bar Outstroke	F1	RM/193000/M Theoretical forces (N) at 6 bar Instroke	F1
20	161	14,5	119	14,5
25	264	20	197	20
32	432	32	311	32
40	687	44	566	44
50	1043	56,5	906	56,5
63	1770	74,5	1582	74,5

F1 = return force of spring (N)

Cylinder sizing and speed control see page 6

Standard strokes

Ø	5	10	25
20	❍	❍	
25	❍	❍	
32		❍	❍
40		❍	❍
50		❍	❍
63		❍	❍

Options selector

RM/19★★★★/★★★/★★

Operation	Substitute
Sprung in	1
Sprung out	3

Cylinder diameters (mm)	Substitute
20	020
25	025
32	032
40	040
50	050
63	063

Strokes (mm)
50 max

Piston rod thread	Substitute
Female	X
Male	None

Variants (magnetic piston)	Substitute
Standard	M
Non-rotating piston rod	N2
Extended piston rod	MU

RM/19****/MU*/**/*** → Extension (mm)

Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

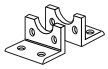
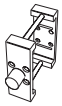
VDMA Compact cylinders

RM/191000/MX,.../M; RM/193000/MX

Single acting

Ø 20 to 63 mm

Mountings

Ø	B, G	C	D	D2	FH	R	L2	
								
20	QM/192020/22	QM/192020/21	–	–	–	QM/192020/27	QM/8020/44	
25	QM/192025/22	QM/192025/21	–	–	–	QM/192025/27	QM/8020/44	
32	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QA/8032/34	–	–	
40	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QA/8040/34	QA/8040/27	–	
50	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QA/8050/34	QA/8050/27	–	
63	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QA/8063/34	QA/8063/27	–	
Ø	**S**	**SS**	**SW**	**UH**	**UR**	**US**	**A**	**Groove key**
								
20	–	–	–	–	–	–	–	M/P72816
25	–	–	–	–	–	–	–	M/P72816
32	QA/8032/41	M/P19931	M/P19493	PQA/182032/40	QA/8032/33	M/P40310	QM/8032/35	M/P72816
40	QA/8040/41	M/P19932	M/P19494	PQA/182040/40	QA/8040/33	M/P40311	QM/8032/35	M/P72816
50	QA/8040/41	M/P19933	M/P19495	PQA/182050/40	QA/8050/33	M/P40312	QM/8050/35	M/P72816
63	QA/8063/41	M/P19934	M/P19496	PQA/182063/40	QA/8063/33	M/P40313	QM/8050/35	M/P72816

Please see page 76 for details of mountings.

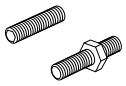
For use with switches M/50 see page 198

For cylinders with male piston rod threads (/M)

	AK	F	N2	UF
				
20	QM/8025/38	QM/8025/25	M/P1501/89	QM/8025/32
25	QM/8025/38	QM/8025/25	M/P1501/89	QM/8025/32
32	QM/8025/38	QM/8025/25	M/P1501/89	QM/8025/32
40	QM/8040/38	QM/8040/25	M/P1501/90	QM/8040/32
50	QM/8050/38	QM/8050/25	M/P1501/91	QM/8050/32
63	QM/8050/38	QM/8050/25	M/P1501/91	QM/8050/32

Please see page 76 for details of mountings.

For cylinders with female piston rod threads (/MX)

F	N	Adapter
		
QM/57016/25	M/P1501/79	M/P1710/21
QM/57016/25	M/P1501/79	M/P1710/21
QM/57020/25	M/P1501/60	M/P1710/21
QM/57020/25	M/P1501/60	M/P1710/21
QM/57025/25	–	M/P71470/1
QM/57040/25	–	M/P71470/2

For details see page 77.

For use with switches M/50 see page 198

VDMA Compact cylinders

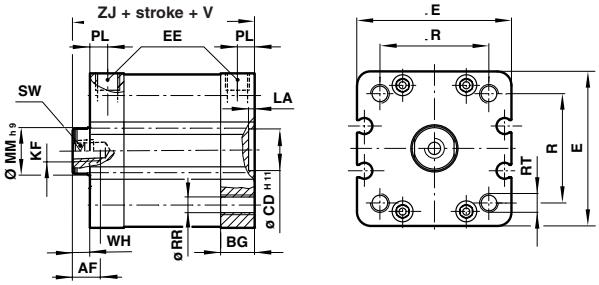
RM/191000/MX,.../M; RM/193000/MX

Single acting

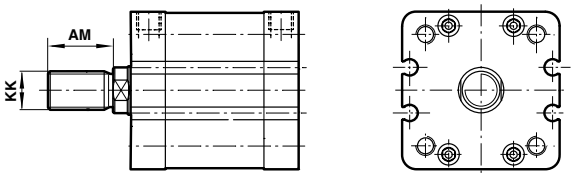
Ø 20 to 63 mm

Standard cylinders

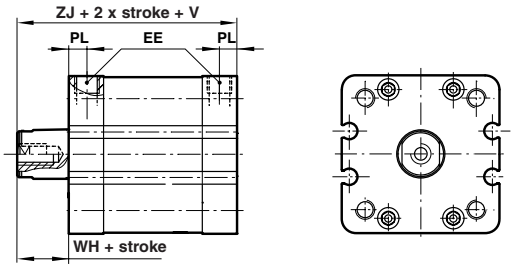
RM/191000/MX – Sprung in with female piston rod thread



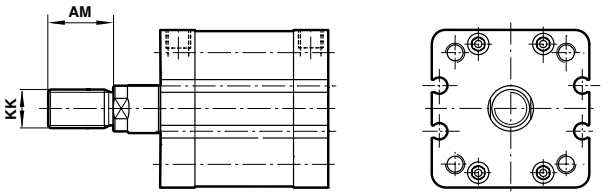
RM/191000/M – Sprung in with male piston rod thread



RM/193000/MX – Sprung out with female piston rod thread



RM/193000/M – Sprung out with male piston rod thread



Ø	AF	AM	BG	Ø CD H11	❑ E	EE	KF	KK	LA	Ø MM h9	PL	❑ R
20	10	22	12	12	36	M 5	M 6	M10 x 1,25	2,5	10	7,5	22
25	10	22	13	12	40	M 5	M 6	M10 x 1,25	2,5	10	7,5	26
32	12	22	14,5	14	47	G 1/8	M 8	M10 x 1,25	2,5	12	7,5	32,5
40	12	24	14,5	14	53	G 1/8	M 8	M12 x 1,25	2,5	16	7,5	38
50	14	32	14,5	18	65,5	G 1/8	M 10	M16 x 1,5	2,5	20	7,5	46,5
63	16	32	14,5	18	75	G 1/8	M 12	M16 x 1,5	2,5	20	7,5	56,5

Ø	Ø RR	RT	SW	V		WH	ZJ	RM/191000/MX		RM/193000/MX	
				0 ... 25 mm	26 ... 50 mm			kg at 0 mm	kg per 5 mm	kg at 0 mm	kg per 5 mm
20	4,3	M 5	8	17	34	6	43	0,17	0,01	0,17	0,01
25	4,3	M 5	8	18	36	6	45	0,20	0,01	0,20	0,01
32	5,3	M 6	10	19	38	7	51	0,30	0,02	0,30	0,02
40	5,3	M 6	13	20	40	7	52	0,40	0,02	0,40	0,02
50	6,8	M 8	17	30	60	8	53	0,65	0,03	0,65	0,03
63	6,8	M 8	17	30	60	8	58	0,90	0,03	0,90	0,03

VDMA Compact cylinders

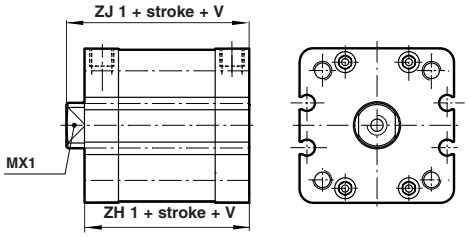
RM/191000/MX,.../M; RM/193000/MX

Single acting

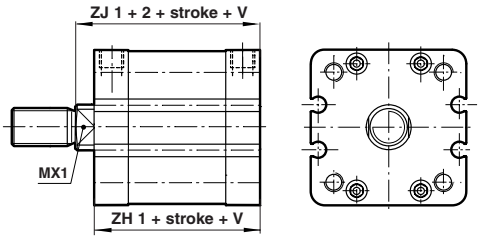
Ø 20 to 63 mm

Cylinder variants

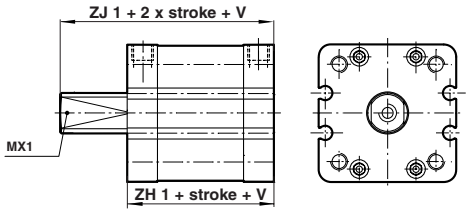
RM/191000/N2X — Cylinder with non-rotating piston rod
Sprung in with female piston rod thread



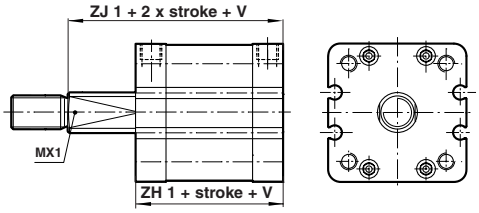
RM/191000/N2 — Cylinder with non-rotating piston rod
Sprung in with male piston rod thread



RM/193000/N2X — Cylinder with non-rotating piston rod
Sprung out with female piston rod thread



RM/193000/N2 — Cylinder with non-rotating piston rod
Sprung out with male piston rod thread



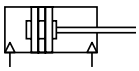
Ø	MX1	V 0 ... 25 mm	 26 ... 50 mm	ZH1	ZJ1
20	8	17	34	47	53
25	8	18	36	49	55
32	10	19	38	54	61
40	13	20	40	55	62
50	16	30	60	55	63
63	16	30	60	60	68

VDMA Compact cylinders

RM/192000/MX, .../M

Double acting

Ø 20 to 125 mm



Pitch and mountings to VDMA 24562

Magnetic piston as standard

Seals ensure low friction operation and long life

Switches can be mounted flush with the profile

RM/192000/M

RM/192000/N6

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
RM/192000/M
Double acting, magnetic piston, male piston rod thread, buffer cushioning
RM/192000/MX
Double acting, magnetic piston, female piston rod thread, buffer cushioning

Operating pressure:
1 to 10 bar

Operating temperature:
-10°C to +80°C max.
Consult our Technical Service for use below +2°C

Strokes:
See table

Materials

Profile barrel: anodised aluminium
End covers: anodised aluminium
Piston rod: stainless steel (Martensitic)
Piston rod seals: polyurethane
Piston seals: nitrile rubber
O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Female thread	Male thread	Service kit
20	10	M5	RM/192020/MX/*	RM/192020/M/*	QM/192020/00
25	10	M5	RM/192025/MX/*	RM/192025/M/*	QM/192025/00
32	12	G1/8	RM/192032/MX/*	RM/192032/M/*	QM/192032/00
40	16	G1/8	RM/192040/MX/*	RM/192040/M/*	QM/192040/00
50	20	G1/8	RM/192050/MX/*	RM/192050/M/*	QM/192050/00
63	20	G1/8	RM/192063/MX/*	RM/192063/M/*	QM/192063/00
80	25	G1/8	RM/192080/MX/*	RM/192080/M/*	QM/192080/00
100	25	G1/4	RM/192100/MX/*	RM/192100/M/*	QM/192100/00
125	32	G1/4	RM/192125/MX/*	RM/192125/M/*	QM/192125/00

*Insert stroke length in mm. Cylinder sizing and speed control see page 6

Standard strokes

Ø	5	10	15	20	25	30	40	50	60	80	100
20	❍	❍	❍	❍	❍	❍	❍	❍			
25	❍	❍	❍	❍	❍	❍	❍	❍			
32	●	●	●	●	●	●	●	●	●	●	❍
40	❍	●	●	●	●	●	❍	●	❍	❍	❍
50		●	●	●	●	❍	❍	●	❍	●	❍
63		❍	❍	❍	❍	❍	❍	●	❍	●	❍
80			❍	❍	●	❍	❍	●	❍	❍	❍
100			❍	❍	❍	❍	❍	●	❍	❍	❍
125			❍	❍	❍	❍	❍	❍	❍	❍	❍

Options selector

RM/192★★★/★★★/★★★

Cylinder diameters (mm)	Substitute
20	020
25	025
32	032
40	040
50	050
63	063
80	080
100	100
125	125

Strokes (mm)		
Ø 20 ... 25	min 5	max.200
Ø 32 ... 40	min 5	max. 300
Ø 50 ... 63	min 10	max. 400
Ø 80 ... 125	min 15	max. 500

Piston rod thread	Substitute
Female	X
Male	None

Variants (magnetic piston)	Substitute
Standard	M
Double ended piston rod	JM
Non-rotating piston rod	N2
Guided piston rod	N4
Extended piston rod	MU
External guiding available for Ø 25 or 32 mm	N6

RM/192***/MU*/***/*** → Extension (mm)

Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

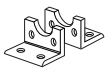
VDMA Compact cylinders

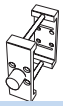
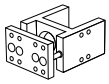
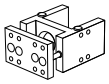
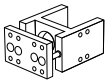
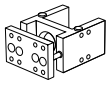
RM/192000/MX, .../M

Double acting

Ø 20 to 125 mm

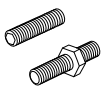
Mountings

Ø	B, G	C	D	D2	FH	R	S	L2	
									
20	QA/192020/22	QM/192020/21	–	–	–	QM/192020/27	–	QM/8020/44	
25	QA/192025/22	QM/192025/21	–	–	–	QM/192025/27	–	QM/8020/44	
32	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QA/8032/34	QA/8032/27	QA/8032/41		
40	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QA/8040/34	QA/8040/27	QA/8040/41		
50	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QA/8050/34	QA/8050/27	QA/8040/41		
63	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QA/8063/34	QA/8063/27	QA/8063/41		
80	QA/8080/22	QA/8080/21	QA/8080/23	QA/8080/42	QA/8080/34	QA/8080/27	QA/8063/41		
100	QA/8100/22	QA/8100/21	QA/8100/23	QA/8100/42	QA/8100/34	QA/8100/27	QA/8100/41		
125	QM/8125/22	QM/8125/21	QM/8125/23	QA/8125/42	QA/8125/34	QM/8125/27	QA/8100/41		

Ø	SS	SW	UH	UR	US	Guide block	Guide block	Guide block	Guide block
									
20	–	–	–	–	–	–	–	–	–
25	–	–	–	–	–	–	–	–	–
32	M/P19931	M/P19493	PQA/182032/40	QA/8032/33	M/P40310	QA/8032/*/51	QA/8032/*/61	QA/8032/*/81	QA/8032/*/85
40	M/P19932	M/P19494	PQA/182040/40	QA/8040/33	M/P40311	QA/8040/*/51	QA/8040/*/61	QA/8040/*/81	QA/8040/*/85
50	M/P19933	M/P19495	PQA/182050/40	QA/8050/33	M/P40312	QA/8050/*/51	QA/8050/*/61	QA/8050/*/81	QA/8050/*/85
63	M/P19934	M/P19496	PQA/182063/40	QA/8063/33	M/P40313	QA/8063/*/51	QA/8063/*/61	QA/8063/*/81	QA/8063/*/85
80	M/P19935	M/P19497	PQA/182080/40	QA/8080/33	M/P40314	QA/8080/*/51	QA/8080/*/61	QA/8080/*/81	QA/8080/*/85
100	M/P19936	M/P19498	PQA/182100/40	QA/8100/33	M/P40315	QA/8100/*/51	QA/8100/*/61	QA/8100/*/81	QA/8100/*/85
125	M/P19937	M/P19499	PQA/182125/40	QM/8125/33	M/P71355	–	–	–	–

For cylinders with male piston rod threads (/M)

For cylinders with female piston rod threads (/MX)

Ø	A	Groove key	AK	F	N2	UF	F	N	Adapter
									
20	–	M/P72816	QM/8025/38	QM/8025/25	M/P1501/89	QM/8025/32	QM/57016/25	M/P1501/79	M/P1710/21
25	–	M/P72816	QM/8025/38	QM/8025/25	M/P1501/89	QM/8025/32	QM/57016/25	M/P1501/79	M/P1710/21
32	QM/8032/35	M/P72816	QM/8025/38	QM/8025/25	M/P1501/89	QM/8025/32	QM/57020/25	M/P1501/60	M/P1710/22
40	QM/8032/35	M/P72816	QM/8040/38	QM/8040/25	M/P1501/90	QM/8040/32	QM/57020/25	M/P1501/60	M/P1710/22
50	QM/8050/35	M/P72816	QM/8050/38	QM/8050/25	M/P1501/91	QM/8050/32	QM/57025/25	–	M/P71470/1
63	QM/8050/35	M/P72816	QM/8050/38	QM/8050/25	M/P1501/91	QM/8050/32	QM/57040/25	–	M/P71470/2
80	QM/8080/35	M/P72816	QM/8080/38	QM/8080/25	M/P1501/92	QM/8080/32	QM/57063/25	–	M/P71470/3
100	QM/8080/35	M/P72816	QM/8080/38	QM/8080/25	M/P1501/92	QM/8080/32	QM/57063/25	–	M/P71470/3
125	QM/8125/35	M/P72816	QM/8125/38	QM/8125/25	M/P1501/105	QM/8125/32	–	–	–

Please see page 76 for details of mountings.

For use with switches M/50 see page 198.

VDMA Compact cylinders

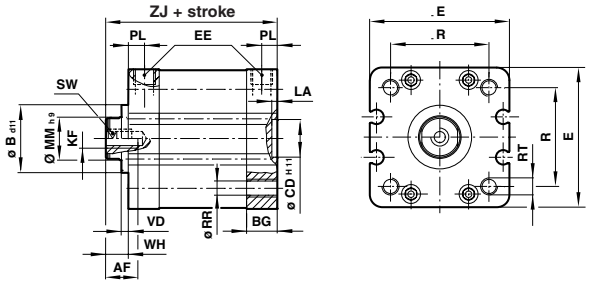
RM/192000/MX, .../M

Double acting

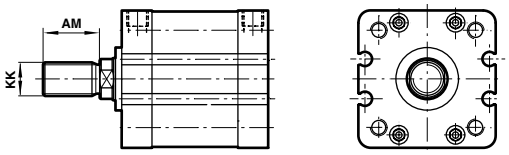
Ø 20 to 125 mm

Standard cylinders

RM/192000/MX – with female piston rod thread



RM/192000/M – with male piston rod thread

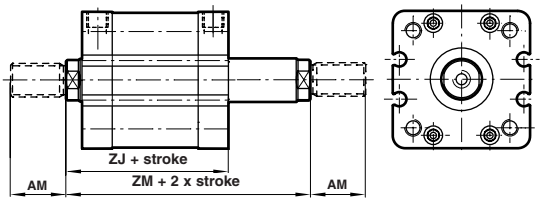


Ø	AF	AM	Ø B d11	BG	Ø CD H11	❑ E	EE	KF	KK	LA	Ø MM h9
20	10	22	–	12	12	36	M5	M6	M10 x 1,25	2,5	10
25	10	22	–	13	12	40	M5	M6	M10 x 1,25	2,5	10
32	12	22	–	14,5	14	47	G 1/8	M 8	M10 x 1,25	2,5	12
40	12	24	–	14,5	14	53	G 1/8	M 8	M12 x 1,25	2,5	16
50	14	32	–	14,5	18	65,5	G 1/8	M 10	M16 x 1,5	2,5	20
63	16	32	–	14,5	18	75	G 1/8	M 12	M16 x 1,5	2,5	20
80	22	40	–	16,5	23	95	G 1/8	M 16	M20 x 1,5	3	25
100	22	40	–	21,5	28	116	G 1/4	M 16	M20 x 1,5	3	25
125	30	54	60	20,5	28	140	G 1/4	M 20	M27 x 2	3	32

Ø	PL	❑ R	Ø RR	RT	SW	VD	WH	ZJ	kg at 0 mm	kg per 5 mm
20	7,5	22	4,3	M5	8	–	6	43	0,12	0,01
25	7,5	26	4,3	M5	8	–	6	45	0,15	0,01
32	7,5	32,5	5,3	M 6	10	–	7	51	0,23	0,02
40	7,5	38	5,3	M 6	13	–	7	52	0,30	0,02
50	7,5	46,5	6,8	M 8	17	–	8	53	0,46	0,03
63	7,5	56,5	6,8	M 8	17	–	8	58	0,70	0,03
80	8,5	72	8,6	M 10	22	–	10	65	1,23	0,04
100	10,5	89	8,6	M 10	22	–	10	77	2,20	0,05
125	10,5	110	10,6	M 12	27	4	18	89	3,60	0,07

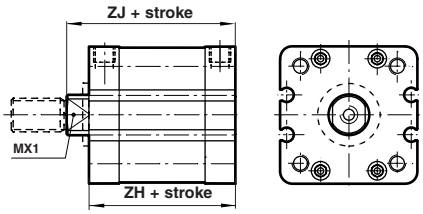
Cylinder variants

Cylinder with double ended piston rod
RM/192000/JMX – with female piston rod thread
RM/192000/JM – with male piston rod thread



Ø	AM	ZJ	ZM
20	22	43	49
25	22	45	51
32	22	51	58
40	24	52	59
50	32	53	61
63	32	58	66
80	40	65	75
100	40	77	87
125	54	89	107

Cylinder with non-rotating piston rod
RM/192000/N2X – with female piston rod thread
RM/192000/N2 – with male piston rod thread



Ø	MX1	ZH	ZJ	Torque max. (Nm)
20	8	47	53	0,15
25	8	49	55	0,25
32	10	54	61	0,40
40	13	55	62	0,40
50	16	55	63	1,50
63	16	60	68	1,50
80	21	65	75	2,50
100	21	77	87	2,50

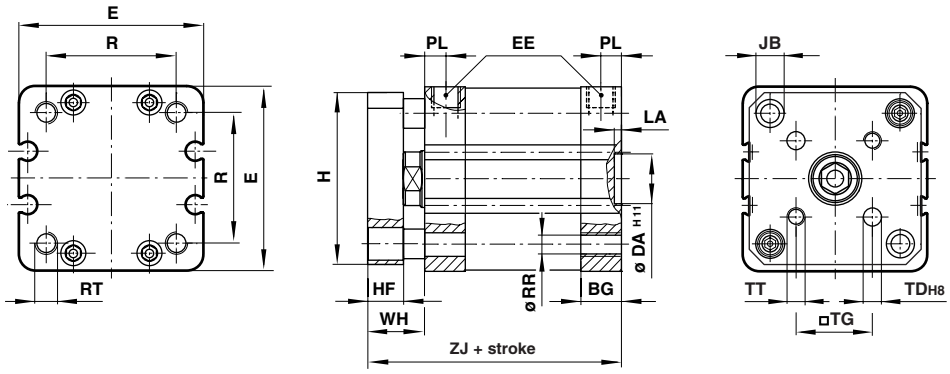
VDMA Compact cylinders

RM/192000/MX, .../M

Double acting

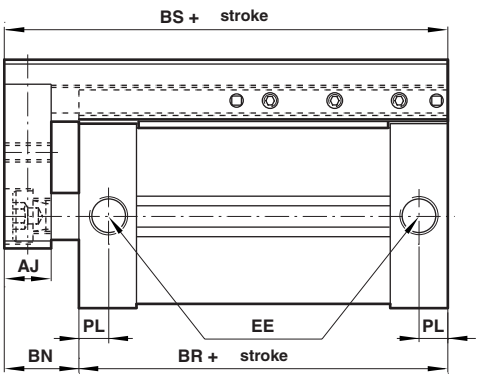
Ø 20 to 125 mm

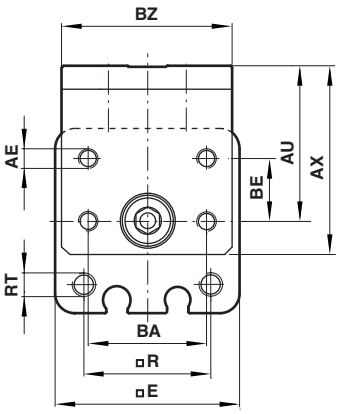
RM/192000/N4 – Cylinder with guided piston rod

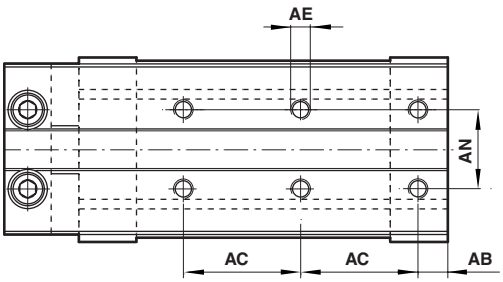


Ø	BG	Ø DA H11	❑ E	EE	❑ H	HF	Ø JB	LA	PL	R	Ø RR	RT	Ø TD H8	❑ TG	TT	WH	ZJ
20	12	12	36	M5	34	8	7,5	2,5	7,5	22	4,3	M5	4	12	M4	14	51
25	13	12	40	M5	38	8	7,5	2,5	7,5	26	4,3	M5	5	15,6	M5	14	53
32	14,5	14	47	G1/8	45	10	9	2,5	7,5	32,5	5,3	M6	5	19,8	M5	17	61
40	14,5	14	53	G1/8	51	10	9	2,5	7,5	38	5,3	M6	5	23,3	M5	17	62
50	14,5	18	65,5	G1/8	62,5	12	11	2,5	7,5	46,5	6,8	M8	6	29,7	M6	20	65
63	14,5	18	75	G1/8	72	12	11	2,5	7,5	56,5	6,8	M8	6	35,4	M6	20	70
80	16,5	23	95	G1/8	92	15	15	3	8,5	72	8,6	M10	8	46	M8	25	80
100	21,5	28	116	G1/4	112	15	15	3	10,5	89	8,6	M10	10	56,5	M10	25	92

RM/192000/N6 - (cylinder with external guiding)
Ø 25 and 32 mm







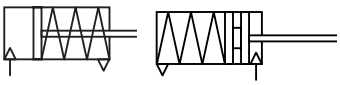
Ø	AB	AC	AE	AJ	AN	AU	AX	BA	BE	BN	BR	BS	BZ	E	EF	R	RT	PL
25	7,5	30	M5	12	20	37,5	44	30	16	19	39	57	43,5	40	M5	26	M5	7,5
32	7,5	30	M5	12	20	40,5	48,5	30	16	19	44	63	43,5	47	G⅛	32,5	M6	7,5

Short stroke cylinders

RM/91000

Single acting

Ø 12 to 63 mm



One third the basic length of a corresponding ISO/VDMA model

Low friction, long life seal design

Fully non-corrodible specification

Non-lube operation

Optional non-rotating piston rod

Standard magnetic piston for full control system versatility

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
RM/91000/M
Single acting, non-cushioned, magnetic piston sprung in

RM/93000/M
Single acting, non-cushioned, magnetic piston sprung out

Operating pressure:
2 to 10 bar

Operating temperature:
-10°C to +80°C.
Consult our Technical Service for use below +2°C

Strokes:
Standard, see table
Non-standard strokes 50 mm maximum

Materials

Barrel & end caps: anodised aluminium alloy
Piston rod: stainless steel
(Ø 12 to 40 mm Austenitic,
Ø 50 and 63 mm Martensitic)
Seals: polyurethane and/or nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Sprung in	Sprung out	Service kit	Model, non-rotating Sprung in	Sprung out	Service kit
12	6	M5	RM/91012/M/*	RM/93012/M/*	–	–	–	–
16	8	M5	RM/91016/M/*	RM/93016/M/*	–	RM/91016/N2/*	RM/93016/N2/*	–
20	10	M5	RM/91020/M/*	RM/93020/M/*	–	RM/91020/N2/*	RM/93020/N2/*	–
25	12	M5	RM/91025/M/*	RM/93025/M/*	–	RM/91025/N2/*	RM/93025/N2/*	–
32	16	G1/8	RM/91032/M/*	RM/93032/M/*	–	RM/91032/N2/*	RM/93032/N2/*	–
40	16	G1/8	RM/91040/M/*	RM/93040/M/*	–	RM/91040/N2/*	RM/93040/N2/*	–
50	20	G1/8	RM/91050/M/*	RM/93050/M/*	QM/92050/00	RM/91050/N2/*	RM/93050/N2/*	QM/92050/N2/00
63	20	G1/4	RM/91063/M/*	RM/93063/M/*	QM/92063/00	RM/91063/N2/*	RM/93063/N2/*	QM/92063/N2/00

* Insert stroke length in mm.

Order magnetically operated switches separately, see page 199

Ø	RM/91000/M Theoretical forces (N) at 6 bar Outstroke	F1	RM/93000/M Theoretical forces (N) at 6 bar Instroke	F1
12	57	7	40	7
16	103	12,5	72	12,5
20	161	14,5	119	14,5
25	264	20	197	20
32	432	32	311	32
40	687	44	566	44
50	1094	56,5	906	56,5
63	1770	74,5	1582	74,5

F1 = Return force of spring (N).

Cylinder sizing and speed control see page 6

Standard strokes

Ø	5	10	25
12	❍	❍	
16	❍	❍	
20	❍	❍	
25	❍	❍	
32		❍	❍
40		❍	❍
50		❍	❍
63		❍	❍

Options selector

RM/9★★★★/★★/★★

Operating	Substitute
Sprung in	1
Sprung out	3

Cylinder diameters (mm)	Substitute
12	012
16	016
20	020
25	025
32	032
40	040
50	050
63	063

Strokes (mm)
50 max.

Variants	Substitute
Standard	M
Non-rotating piston rod	N2

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

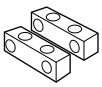
Short stroke cylinders

RM/91000

Single acting

Ø 12 to 63 mm

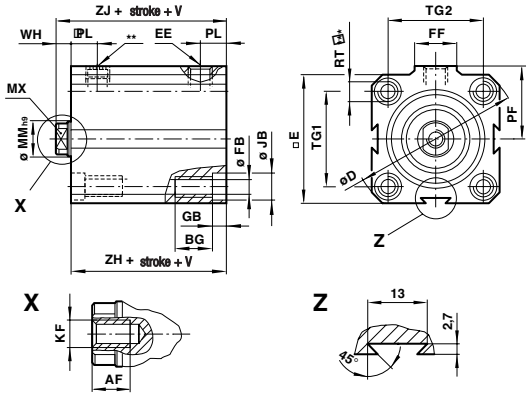
Mountings

Ø	B & G	C	F	Nut	Stud*	Adapter*	Assembly kit
							
12	QM/90012/22	QM/90012/21	QM/57008/25	M/P1500/111	M/P1710/18	–	QM/92012/55
16	QM/90016/22	QM/90016/21	QM/8010/25	M/P1501/80	M/P1710/19	–	QM/92016/55
20	QM/90020/22	QM/90020/21	QM/92020/25	M/P1501/109	M/P1710/20	–	QM/92020/55
25	QM/90025/22	QM/90025/21	QM/57016/25	M/P1501/79	M/P1710/21	–	QM/92025/55
32	QM/90032/22	QM/90032/21	QM/57020/25	M/P1501/60	M/P1710/22	–	QM/92032/55
40	QM/90040/22	QM/90040/21	QM/57020/25	M/P1501/60	M/P1710/22	–	QM/92040/55
50	QM/90050/22	QM/90050/21	QM/57025/25	–	–	M/P71470/1	QM/92050/55
63	QM/90063/22	QM/90063/21	QM/57040/25	–	–	M/P71470/2	QM/92063/55

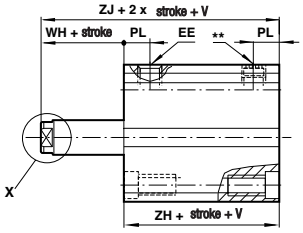
*For attaching F mounting to female piston rod thread. Please see page 45 for details of mountings

Standard cylinders

RM/91000/M (sprung in)



RM/93000/M (sprung out)



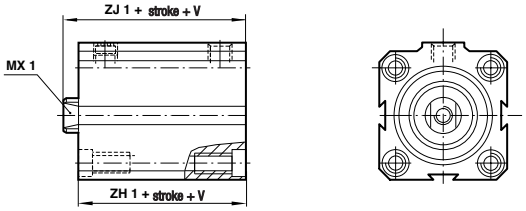
** Port thread with inserted filter, do not obstruct

*** Only the 4 front holes are tapped on stroke lengths of less than:
Ø 25 and 32 mm: 5 mm, Ø 40 and 63 mm: 15 mm (.../N2: 5 mm),
Ø 50 mm: 10 mm

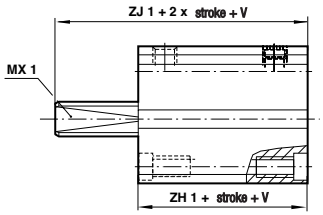
Note: Ø 12 to 20 mm feature only two side dovetails.

Cylinder variants

RM/91000/N2 – Cylinders with non–rotating piston rod – sprung in



RM/93000/N2 – Cylinders with non–rotating piston rod – sprung out



Ø	AF	BG	Ø D	□ E	EE	Ø FB	FF	GB	Ø JB	KF	Ø MM h9	MX (A/F)	MX1 (A/F)	PF
12	6	9	32,5	25	M 5	3,3	10	3,5	6	M 3	6	5	–	15
16	7	9	36,5	28	M 5	3,3	10	3,5	6	M 4	8	6	6	17
20	8	9	41,5	32	M 5	3,3	10	3,5	6	M 5	10	8	8	19,5
25	9	12	48	37	M 5	4,2	10	4,5	7,5	M 6	12	10	10	22
32	12	12	58	45	G 1/8	4,2	18	4,5	7,5	M 8	16	13	13	27,5
40	12	16	71,5	55	G 1/8	6,8	18	6,5	10,5	M 8	16	13	13	31,5
50	14	16	81	63	G 1/8	6,8	18	6,5	10,5	M 10	20	17	16	37
63	16	20	104	80	G 1/4	8,5	22	8,5	13,5	M 12	20	17	16	48

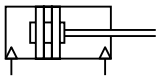
Ø	PL	RT	TG 1	TG 2	V stroke 0 ... 25 mm	V stroke 26 ... 50 mm	WH	ZH	ZH 1	ZJ	ZJ 1	kg at 0 mm	kg per 5 mm
12	7	M 4	17	13	14	–	4,5	24	–	28,5	–	0,07	0,02
16	7,5	M 4	20	20	15	–	5,5	24,5	34,5	30	40	0,09	0,02
20	7,5	M 4	23	23	17	34	6	26	36	32	42	0,12	0,02
25	8	M 5	27	27	18	36	6,5	28,5	38,5	35	45	0,17	0,03
32	9	M 5	33	33	19	38	6,5	29	39	35,5	45,5	0,28	0,05
40	10	M 8	41	41	20	40	6,5	31,5	41,5	38	48	0,44	0,06
50	10,5	M 8	48	48	30	60	8	35	45	43	53	0,50	0,08
63	13	M 10	61	61	30	60	8	42,5	52,5	50,5	60,5	0,90	0,11

Short stroke cylinders

RM/92000/M

Double acting

Ø 12 to 100 mm



One third the basic length of a corresponding ISO/VDMA model

Low friction, long life seal design

Fully non-corrodible specification

Non-lube operation

Optional non-rotating or guided piston rod

Standard magnetic piston for full control system versatility

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, magnetic piston buffer cushioning

Operating pressure:

1 to 10 bar

Operating temperature:

-10°C to +80°C

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Non-standard up to

Ø 16 to 25 mm : 200 mm

Ø 32 and 40 mm : 250 mm

Ø 50 to 100 mm : 300 mm

Materials

Barrel & end caps: anodised aluminium alloy

Piston rod: stainless steel

(Ø 12 to 40 mm Austenitic,

Ø 50 to 100 mm Martensitic)

Seals: polyurethane and/or nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Magnetic Standard	Guided	Service kit	Magnetic Non-rotating	Service kit
12	6	M5	RM/92012/M/*	–	–	–	–
16	8	M5	RM/92016/M/*	RM/92016/N4/*	–	RM/92016/N2/*	–
20	10	M5	RM/92020/M/*	RM/92020/N4/*	–	RM/92020/N2/*	–
25	12	M5	RM/92025/M/*	RM/92025/N4/*	–	RM/92025/N2/*	–
32	16	G1/8	RM/92032/M/*	RM/92032/N4/*	–	RM/92032/N2/*	–
40	16	G1/8	RM/92040/M/*	RM/92040/N4/*	–	RM/92040/N2/*	–
50	20	G1/8	RM/92050/M/*	RM/92050/N4/*	QM/92050/00	RM/92050/N2/*	QM/92050/N2/00
63	20	G1/4	RM/92063/M/*	RM/92063/N4/*	QM/92063/00	RM/92063/N2/*	QM/92063/N2/00
80	25	G1/4	RM/92080/M/*	RM/92080/N4/*	QM/92080/00	RM/92080/N2/*	QM/92080/N2/00
100	25	G1/4	RM/92100/M/*	RM/92100/N4/*	QM/92100/00	RM/92100/N2/*	QM/92100/N2/00

*Insert stroke length in mm.

Order magnetically operated switches separately, see page 199

Cylinder sizing and speed control see page 6

Standard strokes

Ø	5	10	15	20	25	30	40	50	60	80	100
12	❍	❍	❍	❍	❍	❍					
16	❍	❍	●	❍	●	❍					
20	❍	●	❍	●	●	❍	❍	❍			
25	❍	●	●	●	●	❍	❍	●			
32	❍	●	●	●	●	●	❍	●	●	❍	
40	●	●	●	❍	●	❍	❍	●	❍	❍	
50	❍	❍	❍	❍	●	●	❍	●	❍	●	❍
63	❍	❍	❍	❍	●	❍	❍	●	❍	❍	❍
80			❍	❍	❍	❍	❍	❍	❍	●	❍
100			❍	❍	❍	●	❍	❍	❍	❍	❍

● Indicates stocked stroke lengths of standard models highlighted in table above.

Options selector

★RM/92★★★/★★/★★★

Special variants #	Substitute
Heat resistant seals, 150°C max.	T

#Ø 32 to 100 mm bore.

Cylinder diameters (mm)	Substitute
12	012
16	016
20	020
25	025
32	032
40	040
50	050
63	063
80	080
100	100

Strokes (mm)	
Ø 16 ... 25 mm	max. 200
Ø 32 ... 40 mm	max. 250
Ø 50 ... 100 mm	max. 300

Variants (magnetic piston)	Substitute
Standard	M
Non rotating piston rod	N2
Guided piston rod	N4
Double ended piston rod	JM
Extended piston rod	MU
RM/92***/MU/***/*** → Extension (mm)	

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

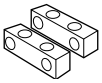
Short stroke cylinders

RM/92000/M

Double acting

Ø 12 to 100 mm

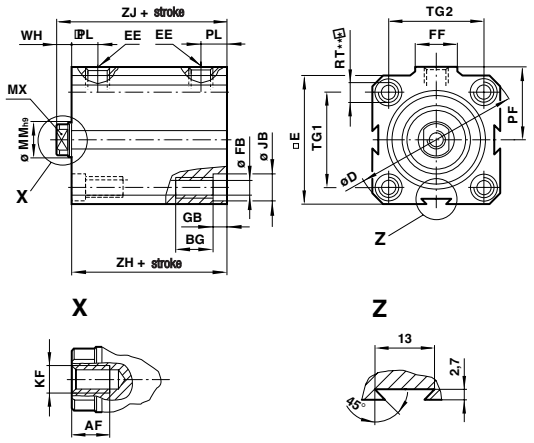
Mountings

Ø	B & G	C	F	Nut	Stud*	Adapter*	Assembly kit
							
12	QM/90012/22	QM/90012/21	QM/57008/25	M/P1500/111	M/P1710/18	–	QM/92012/55
16	QM/90016/22	QM/90016/21	QM/8010/25	M/P1501/80	M/P1710/19	–	QM/92016/55
20	QM/90020/22	QM/90020/21	QM/92020/25	M/P1501/109	M/P1710/20	–	QM/92020/55
25	QM/90025/22	QM/90025/21	QM/57016/25	M/P1501/79	M/P1710/21	–	QM/92025/55
32	QM/90032/22	QM/90032/21	QM/57020/25	M/P1501/60	M/P1710/22	–	QM/92032/55
40	QM/90040/22	QM/90040/21	QM/57020/25	M/P1501/60	M/P1710/22	–	QM/92040/55
50	QM/90050/22	QM/90050/21	QM/57025/25	–	–	M/P71470/1	QM/92050/55
63	QM/90063/22	QM/90063/21	QM/57040/25	–	–	M/P71470/2	QM/92063/55
80	QM/90080/22	QM/90080/21	QM/57063/25	–	–	M/P71470/3	QM/92080/55
100	QM/90100/22	QM/90100/21	QM/57063/25	–	–	M/P71470/3	QM/92100/55

* For attaching F mounting to female piston rod thread. Please see page 45 for details of mountings.

Standard cylinders

RM/92000/M



*** Only the 4 front holes are tapped on stroke lengths of less than:
Ø 25 and 32 mm: 5 mm, Ø 40 and 63 mm: 15 mm (.../N2: 5 mm),
Ø 50 and 80 mm: 10 mm, Ø 100 mm: 25 mm (.../N2: 15 mm).
Note: Ø 12 to 20 mm feature only two side dovetails.

Ø	AF	BG	Ø D	□ E	EE	Ø FB	FF	GB	Ø JB	KF	Ø MM h9	MX (AF)
12	6	9	32,5	25	M 5	3,3	10	3,5	6	M 3	6	5
16	7	9	36,5	28	M 5	3,3	10	3,5	6	M 4	8	6
20	8	9	41,5	32	M 5	3,3	10	3,5	6	M 5	10	8
25	9	12	48	37	M 5	4,2	10	4,5	7,5	M 6	12	10
32	12	12	58	45	G 1/8	4,2	18	4,5	7,5	M 8	16	13
40	12	16	71,5	55	G 1/8	6,8	18	6,5	10,5	M 8	16	13
50	14	16	81	63	G 1/8	6,8	18	6,5	10,5	M 10	20	17
63	16	20	104	80	G 1/4	8,5	22	8,5	13,5	M 12	20	17
80	22	20	120	94	G 1/4	8,5	22	8,5	13,5	M 16	25	22
100	22	25	148,5	116,5	G 1/4	10,2	22	10,5	16,5	M 16	25	22

Ø	MX1 (AF)	PF	PL	RT	TG1	TG2	WH	ZH	ZJ	kg at 0 mm	kg per 2,5 mm
12	–	15	7	M 4	17	13	4,5	24 (34)	28,5 (38,5)	0,06	0,04
16	6	17	7,5	M 4	20	20	5,5	24,5 (34,5)	30 (40)	0,08	0,04
20	8	19,5	7,5	M 4	23	23	6	26 (36)	32 (42)	0,10	0,06
25	10	22	8	M 5	27	27	6,5	28,5 (38,5)	35 (45)	0,15	0,07
32	13	27,5	9	M 5	33	33	6,5	29 (39)	35,5 (45,5)	0,25	0,12
40	13	31,5	10	M 8	41	41	6,5	31,5 (41,5)	38 (48)	0,38	0,15
50	16	37	10,5	M 8	48	48	8	35 (45)	43 (53)	0,45	0,18
63	16	48	13	M 10	61	61	8	42,5 (52,5)	50,5 (60,5)	0,82	0,26
80	21	57	14,5	M 10	73	73	9	47 (57)	56 (66)	1,20	0,33
100	21	67	16	M 12	90,5	90,5	10	48,5 (58,5)	58,5 (68,5)	1,83	0,42

( ) = for stroke > 50 mm.

Short stroke cylinders

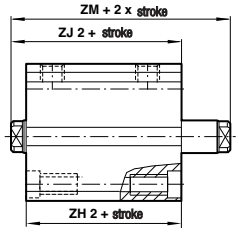
RM/92000/M

Double acting

Ø 12 to 100 mm

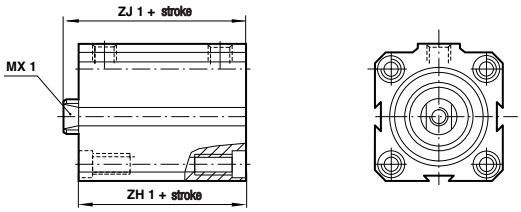
Cylinder variants

RM/92000/JM – Cylinders with double ended piston rod



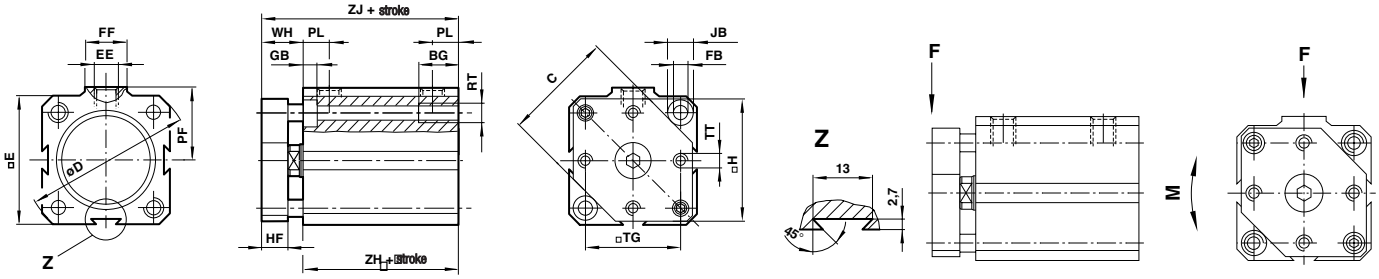
Ø	ZH2	ZJ2	ZM
16	29,5	35	41
20	31,5	37,5	44
25	34,5	41	48
32	36,5	43	50
40	39,5	46	53
50	42	50	59
63	52	60	69
80	56	65	74
100	58	68	78

RM/92000/N2 – Cylinders with non-rotating piston rod

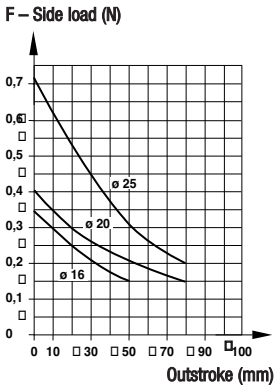


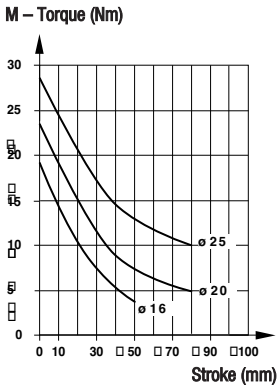
Ø	MX1 (A/F)	ZH1	ZJ1	Torque max. (Nm)
16	6	34,5	40	0,15
20	8	36	42	0,25
25	10	38	45	0,40
32	13	39	45,5	0,75
40	13	41,5	48	0,75
50	16	45	53	1,50
63	16	52,5	60,5	1,50
80	21	57	66	2,50
100	21	58,5	68,5	2,50

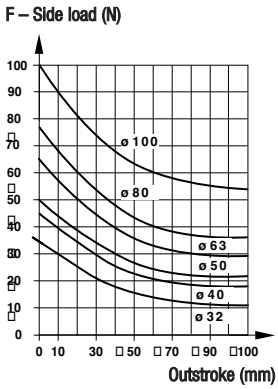
RM/92000/N4 – Cylinders with guided piston rod

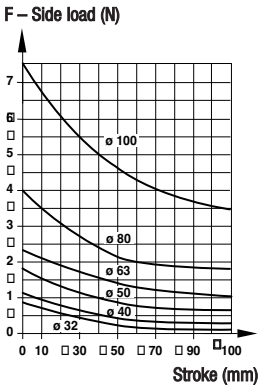


Permissible load and torque









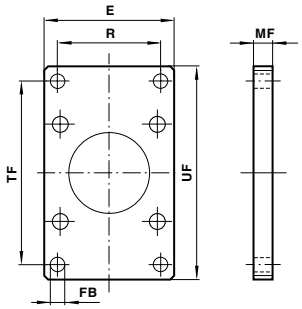
Ø	BG	C	Ø D	□E	EE	Ø FB	FF	GB	□H	HF	Ø JB	PF	PL	RT	TG	TT	WH	ZH	ZJ
16	9	21	36,5	28	M 5	3,3	10	3,5	26,5	6	6	17	7,5	M 4	20	M 3	11,5	24,5	36
20	9	25	41,5	32	M 5	3,3	10	3,5	30	8	6	19,5	7,5	M 4	23	M 3	14	26 (36)	40 (50)
25	12	29,5	48	37	M 5	4,2	10	4,5	35	8	7,5	22	8	M 5	27	M 4	14,5	28,5 (38,5)	43 (53)
32	12	38	58	45	G 1/8	4,2	18	4,5	43	10	7,5	27,5	9	M 5	33	M 4	16,5	29 (39)	45,5 (55,5)
40	16	46,5	71,5	55	G 1/8	6,8	18	6,5	52	10	10,5	31,5	10	M 8	41	M 5	16,5	31,5 (41,5)	48 (58)
50	16	56,5	81	63	G 1/8	6,8	18	6,5	60	12	10,5	37	10,5	M 8	48	M 6	20	35 (45)	55 (65)
63	20	71	104	80	G 1/4	8,5	22	8,5	76	12	13,5	48	13	M 10	61	M 8	20	42,5 (52,5)	62,5 (72,5)
80	20	89	120	94	G 1/4	8,5	22	8,5	90	16	13,5	57	14,5	M 10	73	M 10	25	47 (57)	72 (82)
100	25	110	148,5	116,5	G 1/4	10,2	22	10,5	113	20	16,5	67	16	M 12	90,5	M 12	30	48,5 (58,5)	78,5 (88,5)

( ) = for stroke > 50 mm.

Short stroke cylinder mountings

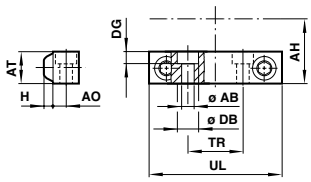
For RM/91000/M, RM/92000/M, RM/93000/M

Front flange – G
Rear flange – B



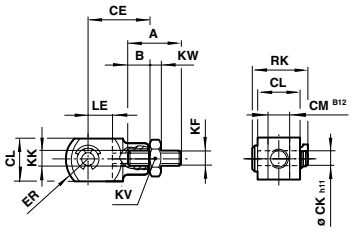
Ø	E	R	Ø FB	MF	TF	UF	kg
12	26	18	3,5	5	38	46	0,02
16	30	22	3,5	5	42	50	0,02
20	33	25	3,5	5	48	56	0,02
25	38	28	4,5	6,5	54	64	0,04
32	46	36	4,5	6,5	66	76	0,06
40	57	43	6,5	9,5	78	92	0,15
50	64	50	6,5	9,5	90	104	0,17
63	81	63	9,5	12,5	110	128	0,33
80	95	77	8,5	12,5	128	146	0,41
100	118	98	11	12,5	156	176	0,72

Foot – C



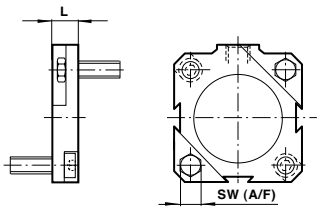
Ø	Ø AB	AH	AO	AT	H	Ø DB	DG	TR	UL	kg
12	3,4	13,5	4	9,5	2	6	3,5	25	33	0,02
16	3,4	15	4	9,5	2	6	3,5	32	40	0,02
20	3,4	16,5	4	9,5	2	6	3,5	35	43	0,02
25	4,3	20	5	12,5	3	7,5	4,5	41	51	0,04
32	4,3	23	5	12,5	3	7,5	4,5	19	46	0,04
40	6,4	28,5	6,5	16	4,5	10,5	6,5	21	56	0,10
50	6,4	32	6,5	16	4,5	10,5	6,5	27	64	0,11
63	8,4	41,5	8	22	5,5	13,5	8,5	34	81	0,13
80	8,4	49	8	25,5	5,5	13,5	8,5	44	95	0,18
100	10,5	59,5	9,	28,5	6,5	16,5	10,5	56	118	0,48

Piston rod clevis – F



Ø	A	B	CE	Ø CK h11	❑ CL	CM B12	ER	KF	KK	KV (A/F)	KW	LE	RK	kg- F	kg - Nut	kg - Stud
12	12	–	11	3 h9	6	3	4,5	M3	M3	6	2	5	10	0,01	0,01	0,01
16	16	–	16	4	8	4	6,5	M4	M4	7	2	8	11,5	0,01	0,01	0,01
20	20	–	20	5	10	5	8	M5	M5	8	2,5	10	14,5	0,01	0,01	0,01
25	25	–	20	5	10	5	8	M6	M6	10	3	10	14,5	0,01	0,01	0,01
32 & 40	25	–	24	6	12	6	9,5	M8	M8	13	4	12	17,5	0,02	0,01	0,01
50	29	12	26	8	14	7	11,5	M10	M10x1,25	12	5	12	20,5	0,04	–	0,02
63	35	15	40	10	20	10	16	M12	M12x1,25	13	5	20	29	0,09	–	0,04
80 &100	45	20	56	14	27	14	21	M16	M16x1,5	17	5	28	36,5	0,22	–	0,08

Assembly kit



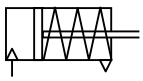
Ø	L	SW (A/F)
12	10	7
16	10	7
20	10	7
25	10	8
32	10	8
40	15	13
50	15	13
63	20	17
80	20	17
100	25	19

Clamping cylinders

M/50100

Single acting

Ø 8 to 63 mm



Enable high thrusts to be achieved in restricted space

Neat, clean appearance

One-piece body construction

Technical data

Medium:
Compressed air, filtered and lubricated

Operation:
Single acting

Operating pressure:
2 to 10 bar

Operating temperature:
-10°C to +70°C
Consult our Technical Service for use below +2°C

Strokes:
Standard, see table

Materials

Piston rod: stainless steel (Austenitic)
Body: anodised aluminium
Seals: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Non-magnetic
8	4	M5	M/50108/*
12	6	M5	M/50112/*
20	10	M5	M/50120/*
32	16	G1/8	M/50132/*
50	20	G1/4	M/50150/*
63	20	G1/4	M/50163/*

* Insert stroke length in mm from table on right.

Ø	Theoretical forces (N) at 6 bar Outstroke	F1 at stroke (mm) 4	5	10	25
8	25	3,4	–	–	–
12	55	5,6	–	5,4	–
20	165	13,2	–	9,6	–
32	445	–	25,2	22,3	13,7
50	1100	–	–	36,3	25,5
63	1760	–	–	52,5	41,1

Standard strokes

Ø	4	5	10	25
8	❍			
12	●		❍	
20	●		❍	
32		❍	●	❍
50			●	❍
63			❍	❍

Other stroke lengths are not available.

● Indicates stocked stroke lengths of standard models highlighted in table on left.

Options selector

M/501★★/★★

Strokes (mm)
Standard only

Cylinder diameters (mm)	Substitute
8	08
12	12
20	20
32	32
50	50
63	63

Clamping cylinders

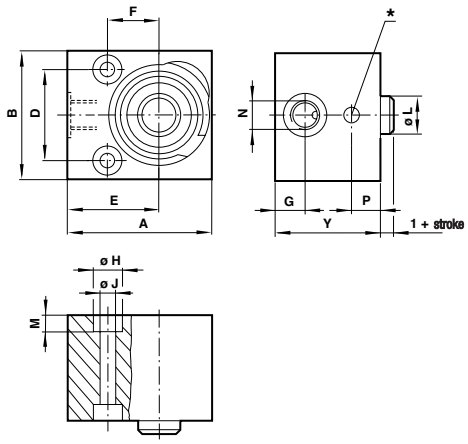
M/50100

Single acting

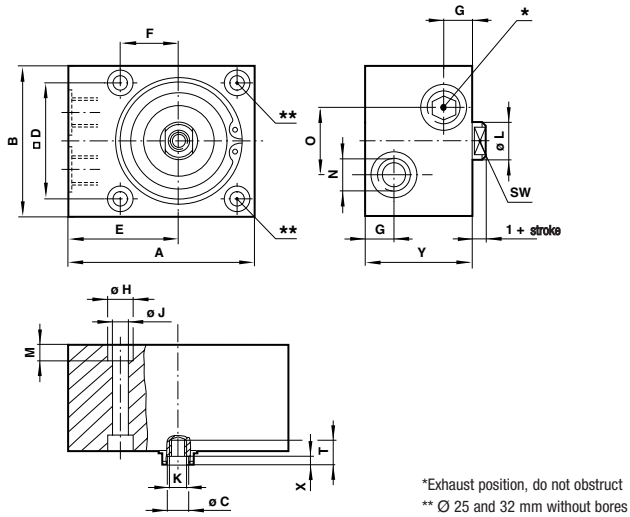
Ø 8 to 63 mm

Standard cylinders

M/50108 to M/50112



M/50120 to M/50163



*Exhaust position, do not obstruct
** Ø 25 and 32 mm without bores

Ø	A	B	Ø C	D	E	F	G	Ø H	Ø J	K	Ø L	M	N	O	P	SW (A/F)	T	X
8	20	18	–	11	13,5	8	5	6	3,4	–	4	3,2	M 5	–	5	–	–	–
12	25	20	–	13	16	9	5	6	3,4	–	5	3,4	M 5	–	4,5	–	–	–
20	40	32	5,3	20	24	15	5	10	5,5	M 5	10	5,5	M 5	–	4,5	8	8	2
32	55	45	6,4	32	32	18	10	10	5,5	M 6	12	5,5	G 1/8	20	–	10	14,5	2,5
50	80	65	8,4	50	47,5	25	12	11	6,6	M 8	16	6,8	G 1/4	30	–	13	15	3
63	90	80	8,4	62	50	31	12	15	9	M 8	16	9	G 1/4	30	–	13	15	3

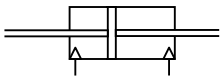
Ø	Standard strokes	Y	kg
8	4	15	0,02
12	4	15	0,03
	10	23	0,04
20	4	20	0,10
	10	26	0,10
32	5	26	0,22
	10	31	0,25
	25	46	0,31
50	10	30	0,50
	25	45	0,60
63	10	35	0,80
	25	50	1,05

Clamping cylinders

M/50200

Double acting

Ø 8 to 63 mm



Enable high thrusts to be achieved in restricted space

Neat, clean appearance

Double ended piston rod

Technical data

Medium:
Compressed air, filtered and lubricated

Operation:
Double acting

Operating pressure:
1,5 to 10 bar

Operating temperature:
-10°C to +70°C
Consult our Technical Service for use below +2°C

Strokes:
Standard, see table

Materials

Piston rod: stainless steel (Austenitic)
Body: anodised aluminium
Seals: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Non-magnetic
8	4	M5	M/50208/*
12	5	M5	M/50212/*
20	10	M5	M/50220/*
32	12	G1/8	M/50232/*
50	16	G1/4	M/50250/*
63	16	G1/4	M/50263/*

* Insert stroke length in mm.
Cylinder sizing and speed control see page 6

Standard strokes

Ø	4	5	10	25
8	❍		❍	
12	❍		❍	
20	❍		❍	
32		❍	❍	❍
50			❍	❍
63			❍	❍

Other stroke lengths are not available.

● Indicates stocked stroke lengths of standard models highlighted in table on left.

Options selector

M/502★★/★★

Strokes (mm)
Standard only

Cylinder diameters (mm)	Substitute
8	08
12	12
20	20
32	32
50	50
63	63

Clamping cylinders

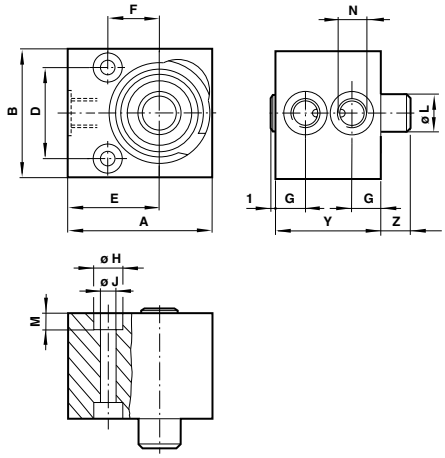
M/50200

Double acting

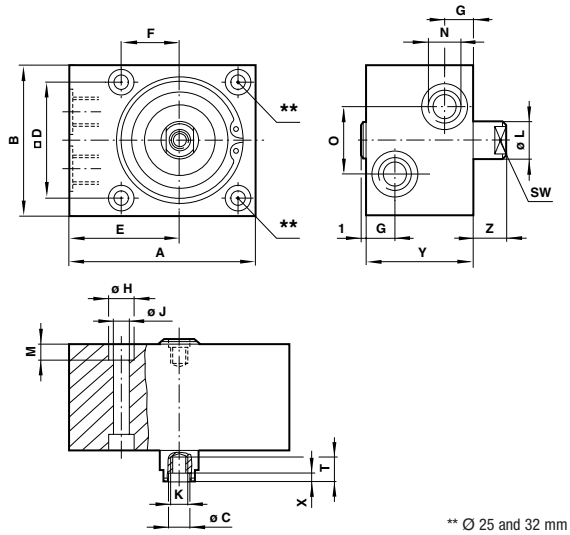
Ø 8 to 63 mm

Standard cylinders

M/50208 to M/50212



M/50220 to M/50263



** Ø 25 and 32 mm without bores

Ø	A	B	Ø C	D	E	F	G	Ø H	Ø J	K	Ø L	M	N	O	SW (A/F)	T	X
8	20	18	–	11	13,5	8	5	6	3,4	–	4	3,2	M 5	–	–	–	–
12	25	20	–	13	16	9	5	6	3,4	–	5	3,4	M 5	–	–	–	–
20	40	32	5,3	20	24	15	5	10	5,5	M 5	10	5,5	M 5	–	8	8	2
32	55	45	6,4	32	32	18	10	10	5,5	M 6	12	5,5	G 1/8	20	10	14,5	2,5
50	80	65	8,4	50	47,5	–	12	11	6,6	M 8	16	6,8	G 1/4	30	13	15	3
63	90	80	8,4	62	50	–	12	15	9	M 8	16	9	G 1/4	30	13	15	3

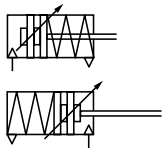
Model	Standard strokes	Y	Z	kg
50208	4	22	5	0,03
	10	28	11	0,03
50212	4	24	5	0,04
	10	30	11	0,05
50220	4	25	8	0,10
	10	31	14	0,11
50232	5	33,5	10	0,25
	10	38,5	15	0,30
	25	53,5	30	0,42
50250	10	36,5	15	0,60
	25	51,5	30	0,68
50263	10	41,5	15	0,90
	25	56,5	30	1,16

ISO/VDMA Profile cylinders

PRA/181000,.../M, PRA/183000,.../M

Single acting

Ø 32 to 100 mm



Conforms to ISO 6431, VDMA 24562 and NFE 49-003-1

Profile barrel with concealed tie rods

Polyurethane seals ensure efficient low friction operation and long life

Switches can be mounted flush with the profile barrel

Comprehensive range of standard mountings

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

PRA/181000: Sprung in, adjustable cushioning

PRA/181000/M: Sprung in, magnetic piston, adjustable cushioning

PRA/183000: Sprung out, adjustable cushioning

PRA/183000/M: Sprung out, magnetic piston, adjustable cushioning

Operating pressure:

2 to 10 bar

Operating temperature:

-20°C to +80°C max.

Consult our Technical Service for use below +2°C

Strokes:

Standard: see table

Non-standard strokes available (250 mm max.)

Materials

Profile barrel: anodised aluminium

End covers: pressure diecast aluminium

Piston rod: stainless steel (Martensitic)

Piston rod seals: polyurethane

Piston seals: polyurethane

O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Magnetic Sprung in	Sprung out	Non-magnetic Sprung in	Sprung out	Service kit
32	12	G1/8	PRA/181032/M/*	PRA/183032/M/*	PRA/181032/*	PRA/183032/*	QA/8032/00
40	16	G1/4	PRA/181040/M/*	PRA/183040/M/*	PRA/181040/*	PRA/183040/*	QA/8040/00
50	20	G1/4	PRA/181050/M/*	PRA/183050/M/*	PRA/181050/*	PRA/183050/*	QA/8050/00
63	20	G3/8	PRA/181063/M/*	PRA/183063/M/*	PRA/181063/*	PRA/183063/*	QA/8063/00
80	25	G3/8	PRA/181080/M/*	PRA/183080/M/*	PRA/181080/*	PRA/183080/*	QA/8080/00
100	25	G1/2	PRA/181100/M/*	PRA/183100/M/*	PRA/181100/*	PRA/183100/*	QA/8100/00

* Insert stroke length in mm.

Ø	PRA/181000/M Theoretical forces (N) at 6 bar Outstroke	F1	PRA/183000/M Theoretical forces (N) at 6 bar Instroke	F1
32	392	50	324	50
40	648	60	528	60
50	1043	75	854	75
63	1735	75	1546	75
80	2795	130	2501	130
100	4492	130	4197	130

F1 = Return force of spring (N) Cylinder sizing and speed control see page 6

Standard strokes

Ø	25	50	80	100
32	❍	❍	❍	❍
40	❍	❍	❍	❍
50	❍	❍	❍	❍
63	❍	❍	❍	❍
80	❍	❍	❍	❍
100	❍	❍	❍	❍

Options selector

P★A/18★★★★/★★/★★★

Piston rod material	Substitute
Stainless steel (Martensitic)	R
Hard chromium plated	C
Stainless steel (Austenitic)	S

Operation	Substitute
Sprung in	1
Sprung out	3

Cylinder diameters (mm)	Substitute
32	032
40	040
50	050
63	063
80	080
100	100

Strokes (mm)
250 max.

Variants (magnetic piston)	Substitute
Standard	M
Non-rotating piston rod	N2
Special wiper/seal	W2
Extended piston rod	MU
Extended piston rod & special wiper/seal	W6

P*A/18****/MU/ ***/ *** /W6/ → Extension (mm)

Variants (non-magnetic piston)	Substitute
Standard	None
Non-rotating piston rod	N1
Special wiper/seal	W1
Extended piston rod	IU
Extended piston rod & special wiper/seal	W5

P*A/18 **** /IU/ *** / *** /W5/ → Extension (mm)

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

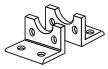
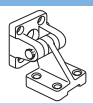
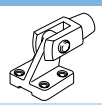
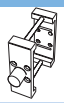
ISO/VDMA Profile cylinders

PRA/181000,.../M, PRA/183000,.../M

Single acting

Ø 32 to 100 mm

Mountings

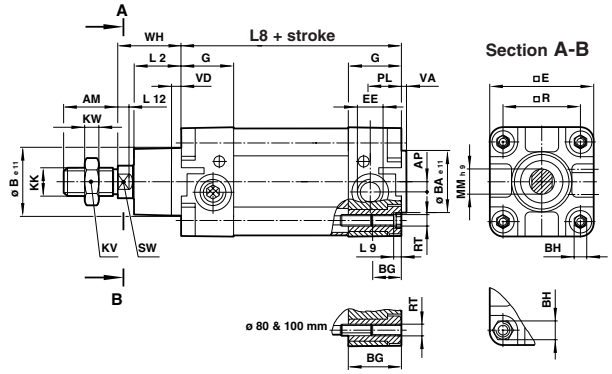
Ø	A	AK	B, G	C	D	D2	F	FH	L	M
										
32	QM/8032/35	QM/8025/38	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QM/8025/25	QA/8032/34	QA/8032/24	QM/8032/26
40	QM/8032/35	QM/8040/38	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QM/8040/25	QA/8040/34	QA/8040/24	QM/8040/26
50	QM/8050/35	QM/8050/38	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QM/8050/25	QA/8050/34	QA/8050/24	QM/8050/26
63	QM/8050/35	QM/8050/38	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QM/8050/25	QA/8063/34	QA/8063/24	QM/8063/26
80	QM/8080/35	QM/8080/38	QA/8080/22	QA/8080/21	QA/8080/23	QA/8080/42	QM/8080/25	QA/8080/34	QA/8080/24	QM/8080/26
100	QM/8080/35	QM/8080/38	QA/8100/22	QA/8100/21	QA/8100/23	QA/8100/42	QM/8080/25	QA/8100/34	QA/8100/24	QM/8100/26
Ø	**R**	**S**	**SS**	**SW**	**UF**	**UH**	**UL**	**UR**	**US**	**Groove key**
										
32	QA/8032/27	QA/8032/41	M/P19931	M/P19493	QM/8025/32	PQA/182032/40	QA/8032/43	QA/8032/33	M/P40310	M/P72816
40	QA/8040/27	QA/8040/41	M/P19932	M/P19494	QM/8040/32	PQA/182040/40	QA/8040/43	QA/8040/33	M/P40311	M/P72816
50	QA/8050/27	QA/8040/41	M/P19933	M/P19495	QM/8050/32	PQA/182050/40	QA/8050/43	QA/8050/33	M/P40312	M/P72816
63	QA/8063/27	QA/8063/41	M/P19934	M/P19496	QM/8050/32	PQA/182063/40	QA/8063/43	QA/8063/33	M/P40313	M/P72816
80	QA/8080/27	QA/8063/41	M/P19935	M/P19497	QM/8080/32	PQA/182080/40	QA/8080/43	QA/8080/33	M/P40314	M/P72816
100	QA/8100/27	QA/8100/41	M/P19936	M/P19498	QM/8080/32	PQA/182100/40	QA/8100/43	QA/8100/33	M/P40315	M/P72816

Please see page 76 for details of mountings.

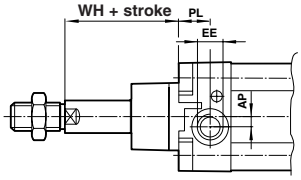
For switches M/50 see page 198.

Standard cylinders

PRA/181000,.../M - sprung in



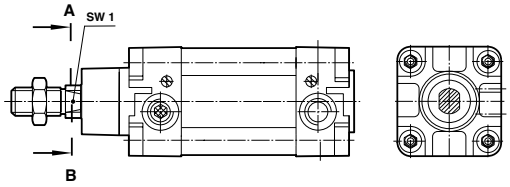
PRA/183000,.../M - sprung out



Cylinder variants

PRA/18100/N1, PRA/183000/N1, PRA/18100/N2, PRA/183000/N2

Cylinders with non rotating piston rod



Model	181032, 183032		181040,183040		181050, 183050		181063, 183063		181080, 183080		181100, 183100	
Standard strokes	25, 50	80, 100	25, 50	80, 100	25, 50	80, 100	25, 50	80, 100	25, 50	80, 100	25, 50	80, 100
L8	119	147	130	158	131	159	146	174	153	181	163	191
Non-standard strokes	250 mm max.		250 mm max.		250 mm max.		250 mm max.		250 mm max.		250 mm max.	
L8	119 + (N * x 28)		130 + (N * x 28)		131 + (N * x 28)		146 + (N * x 28)		153 + (N * x 28)		163 + (N * x 28)	

* Stroke Ø 50 mm ➔ N = 0; Stroke > 50 mm ➔ N = $\frac{\text{Stroke}}{50}$ –1 (round up to integer)

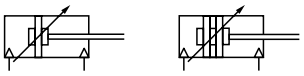
Ø	AM	AP	Ø B e11	Ø BA e11	BG	BH (A/F)	□E	EE	G	KK	KV (A/F)	KW	L2
32	22	3,5	30	30	18	6	47	G 1/8	27,5	M10x1,25	17	5	20
40	24	4,5	35	35	18	6	53	G 1/4	32	M12x1,25	19	6	22
50	32	6	40	40	18	8	65	G 1/4	31	M16x1,5	24	8	27
63	32	10	45	45	17,5	8	75	G 3/8	33	M16x1,5	24	8	29
80	40	8,5	45	45	21,5	19	95	G 3/8	33	M20x1,5	30	10	33
100	40	9	55	55	21,5	19	115	G 1/2	37	M20x1,5	30	10	36
Ø	**L9**	**L12**	**Ø MM h9**	**PL**	**□R**	**RT**	**SW (A/F)**	**SW1 (A/F)**	**VA**	**VD**	**WH**	**kg at 0 mm**	**kg per 25 mm**
32	4	6	12	13	32,5	M 6	10	10	3	6	26	0,51	0,06
40	4	6,5	16	15	38	M 6	13	13	3,5	6	30	0,80	0,08
50	5	8	20	18,5	46.5	M 8	17	16	3,5	6	37	1,33	0,12
63	5	8	20	19	56,5	M 8	17	16	4	6	37	1,80	0,13
80	–	10	25	19	72	M 10	22	21	4	6	46	3,25	0,20
100	–	10	25	18	89	M 10	22	21	4	6	51	4,81	0,23

ISO/VDMA Profile cylinders

PRA/182000, PRA/182000/M

Double acting

Ø 32 to 125 mm



Conforms to ISO 6431, VDMA 24562 and NFE 49-003-1

Profile barrel with concealed tie rods

High performance, stability and reliability

Polyurethane seals ensure efficient low friction operation and long life

Switches can be mounted flush with the profile barrel

Comprehensive range of standard mountings

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

PRA/182000: Adjustable cushioning

PRA/182000/M: Magnetic piston, adjustable cushioning

Operating pressure:

1 to 16 bar

Operating temperature:

-20°C to +80°C max.

High temperature versions: 150°C max.

Consult our Technical Service for use below +2°C

Strokes:

Standard: see next page

Non-standard strokes available (10 to 3000 mm)

Materials

Profile barrel: anodised aluminium

End covers: pressure diecast aluminium

Piston rod: stainless steel (Martensitic)

Piston rod seals: polyurethane

Piston seals: polyurethane

O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model (Magnetic) Standard	Non-rotating	Model (Non-magnetic) Standard	Non-rotating	Service kit Standard	Non-rotating
32	12	G1/8	PRA/182032/M/*	PRA/182032/N2/*	PRA/182032/*	PRA/182032/N1/*	QA/8032/00	QA/8032/N1/00
40	16	G1/4	PRA/182040/M/*	PRA/182040/N2/*	PRA/182040/*	PRA/182040/N1/*	QA/8040/00	QA/8040/N1/00
50	20	G1/4	PRA/182050/M/*	PRA/182050/N2/*	PRA/182050/*	PRA/182050/N1/*	QA/8050/00	QA/8050/N1/00
63	20	G3/8	PRA/182063/M/*	PRA/182063/N2/*	PRA/182063/*	PRA/182063/N1/*	QA/8063/00	QA/8063/N1/00
80	25	G3/8	PRA/182080/M/*	PRA/182080/N2/*	PRA/182080/*	PRA/182080/N1/*	QA/8080/00	QA/8080/N1/00
100	25	G1/2	PRA/182100/M/*	PRA/182100/N2/*	PRA/182100/*	PRA/182100/N1/*	QA/8100/00	QA/8100/N1/00
125	32	G1/2	PRA/182125/M/*	–	PRA/182125/*	–	QA/8125/00	–

*Insert stroke length in mm.

Options selector

★P★A/182★★★/★★/★★★★

Special variants	Substitute
Heat resistant seals, 150°C max.	T
Hydraulic	H

Piston rod material	Substitute
Stainless steel (Martensitic)	R
Hard chromium plated	C
Stainless steel (Austenitic)	S

Cylinder diameters (mm)	Substitute
032, 040, 050, 063, 080, 100, 125	

Variants (magnetic piston)	Substitute
Standard	M
Special wiper/seal	W2
Low friction	X2
Piston rod bellow	MG
Without cushioning	MW
Without cushioning, low friction	X4
Double ended piston rod	JM
Double ended piston rod & special wiper/seal	W4
Four-position	MT
Non-rotating piston rod	N2
Locking unit	L4
Barrel turned at 90° for use with guide blocks	MIL
Extended piston rod	MU
Extended piston rod & special wiper/seal	W6

P*A/182***/MU/****/***
/W6/ → Extension (mm)

Strokes (mm)
3000 max.

Variants (non-magnetic piston)	Substitute
Standard	None
Special wiper/seal	W1
Low friction	X1
Piston rod bellow	G
Without cushioning	W
Without cushioning, low friction	X3
Double ended piston rod	J
Double ended piston rod, special wiper/seal	W3
Four-position	IT
Non-rotating piston rod	N1
Locking unit	L2
Barrel turned at 90° for use with guide blocks QA/8000/61/*	IIL
Feedback	F1
Extended piston rod	IU
Extended piston rod, special wiper/seal	W5

P*A/182***/IU/****/***
/W5/ → Extension (mm)

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

ISO/VDMA Profile cylinders

PRA/182000, PRA/182000/M

Double acting

Ø 32 to 125 mm

Standard strokes

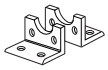
Ø	25	50	80	100	125	160	200	250	320	400	500
32	●	●	●	●	●	●	●	●	❍	❍	❍
40	●	●	●	●	●	●	●	●	●	❍	❍
50	●	●	●	●	●	●	●	●	●	❍	❍
63	●	●	●	●	●	●	●	●	●	❍	❍
80	●	●	●	●	●	●	●	●	●	❍	❍
100	●	●	●	●	●	●	●	●	●	❍	❍
125	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

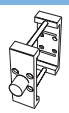
● Indicates stocked stroke lengths of standard models highlighted in table.

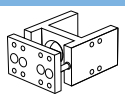
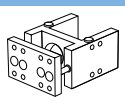
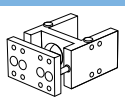
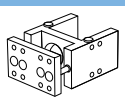
Ø	Theoretical forces (N) at 6 bar Outstroke	Instroke
32	482	414
40	754	633
50	1178	990
63	1870	1680
80	3016	2722
100	4710	4416
125	7363	6882

Cylinder sizing and speed control see page 6

Mountings

Ø	A	AK	B, G	C	D	D2	F	FH	L
									
32	QM/8032/35	QM/8025/38	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QM/8025/25	QA/8032/34	QA/8032/24
40	QM/8032/35	QM/8040/38	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QM/8040/25	QA/8040/34	QA/8040/24
50	QM/8050/35	QM/8050/38	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QM/8050/25	QA/8050/34	QA/8050/24
63	QM/8050/35	QM/8050/38	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QM/8050/25	QA/8063/34	QA/8063/24
80	QM/8080/35	QM/8080/38	QA/8080/22	QA/8080/21	QA/8080/23	QA/8080/42	QM/8080/25	QA/8080/34	QA/8080/24
100	QM/8080/35	QM/8080/38	QA/8100/22	QA/8100/21	QA/8100/23	QA/8100/42	QM/8080/25	QA/8100/34	QA/8100/24
125	QM/8125/35	QM/8125/38	QM/8125/22	QM/8125/21	QM/8125/23	QA/8125/42	QM/8125/25	QA/8125/34	QM/8125/24

Ø	M	R	S	SS	SW	UF	UH	UL	UR
									
32	QM/8032/26	QA/8032/27	QA/8032/41	M/P19931	M/P19493	QM/8025/32	PQA/182032/40	QA/8032/43	QA/8032/33
40	QM/8040/26	QA/8040/27	QA/8040/41	M/P19932	M/P19494	QM/8040/32	PQA/182040/40	QA/8040/43	QA/8040/33
50	QM/8050/26	QA/8050/27	QA/8040/41	M/P19933	M/P19495	QM/8050/32	PQA/182050/40	QA/8050/43	QA/8050/33
63	QM/8063/26	QA/8063/27	QA/8063/41	M/P19934	M/P19496	QM/8050/32	PQA/182063/40	QA/8063/43	QA/8063/33
80	QM/8080/26	QA/8080/27	QA/8063/41	M/P19935	M/P19497	QM/8080/32	PQA/182080/40	QA/8080/43	QA/8080/33
100	QM/8100/26	QA/8100/27	QA/8100/41	M/P19936	M/P19498	QM/8080/32	PQA/182100/40	QA/8100/43	QA/8100/33
125	QM/8125/26	QM/8125/27	QA/8100/41	M/P19937	M/P19499	QM/8125/32	PQA/182125/40	QA/8125/43	QM/8125/33

Ø	US	Guide block*	Guide block*	Guide block *	Guide block*	Locking units (passive)	Groove key
							
32	M/P40310	QA/8032/51/*	QA/8032/61/*	QA/8032/*/81	QA/8032/*/85	QA/8032/59	M/P72816
40	M/P40311	QA/8040/51/*	QA/8040/61/*	QA/8040/*/81	QA/8040/*/85	QA/8040/59	M/P72816
50	M/P40312	QA/8050/51/*	QA/8050/61/*	QA/8050/*/81	QA/8050/*/85	QA/8050/59	M/P72816
63	M/P40313	QA/8063/51/*	QA/8063/61/*	QA/8063/*/81	QA/8063/*/85	QA/8063/59	M/P72816
80	M/P40314	QA/8080/51/*	QA/8080/61/*	QA/8080/*/81	QA/8080/*/85	QA/8080/59	M/P72816
100	M/P40315	QA/8100/51/*	QA/8100/61/*	QA/80100/*/81	QA/80100/*/85	QA/8100/59	M/P72816
125	M/P71355	–	–	–	–	QA/8125/59	

Please see page 76 for details of mountings.

For switches M/50 see page 198.

*Please see page 70 for details of piston rod guide blocks and page 68 for locking units.

ISO/VDMA Profile cylinders

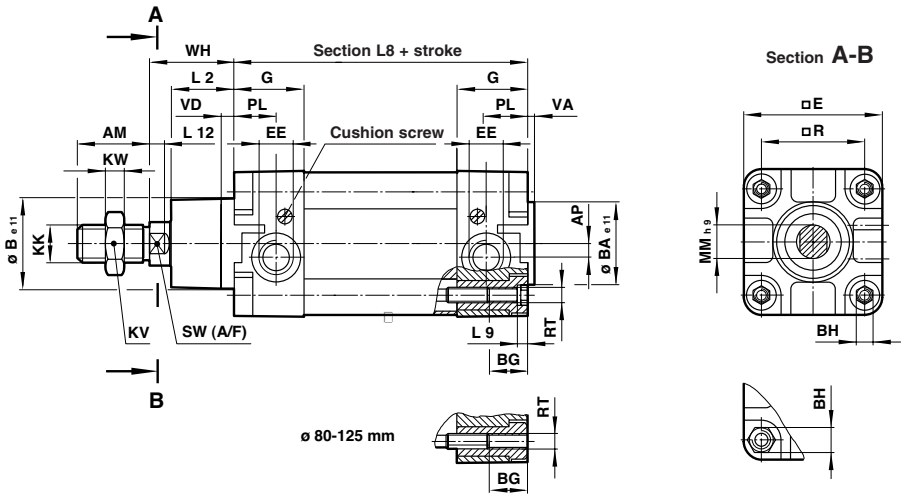
PRA/182000, PRA/182000/M

Double acting

Ø 32 to 125 mm

Standard cylinders

PRA/182000, PRA/182000/M



Ø	AM	AP	Ø B e11	Ø BA e11	BG	BH (A/F)	❑ E	EE	G	KK	KV (A/F)	KW	L2
32	22	3,5	30	30	18	6	47	G 1/8	27,5	M10 x 1,25	17	5	20
40	24	4,5	35	35	18	6	53	G 1/4	32	M12 x 1,25	19	6	22
50	32	6	40	40	18	8	65	G 1/4	31	M16 x 1,5	24	8	27
63	32	10	45	45	17,5	8	75	G 3/8	33	M16 x 1,5	24	8	29
80	40	8,5	45	45	21,5	19	95	G 3/8	33	M20 x 1,5	30	10	33
100	40	9	55	55	21,5	19	115	G 1/2	37	M20 x 1,5	30	10	36
125	54	10	60	60	32	24	140	G 1/2	46	M27 x 2	41	13,5	41

Ø	L8	L9	L12	Ø MM h9	PL	❑ R	RT	SW (A/F)	VA	VD	WH	kg at 0 mm	kg per 25 mm
32	94	4	6	12	13	32,5	M 6	10	3	6	26	0,51	0,06
40	105	4	6,5	16	15	38	M 6	13	3,5	6	30	0,80	0,08
50	106	5	8	20	18,5	46,5	M 8	17	3,5	6	37	1,33	0,12
63	121	5	8	20	19	56,5	M 8	17	4	6	37	1,80	0,13
80	128	–	10	25	19	72	M 10	22	4	6	46	3,25	0,20
100	138	–	10	25	18	89	M 10	22	4	6	51	4,81	0,23
125	160	–	13	32	22,5	110	M 12	27	6	15,5	65	8,00	0,33

ISO/VDMA Profile cylinders

PRA/182000, PRA/182000/M

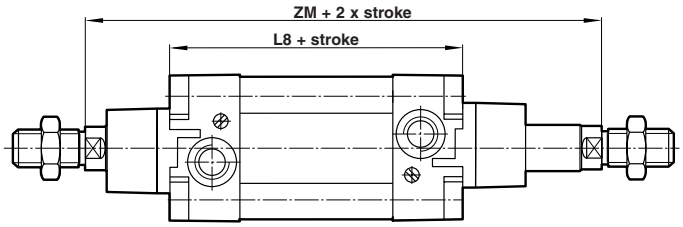
Double acting

Ø 32 to 125 mm

Cylinder variants

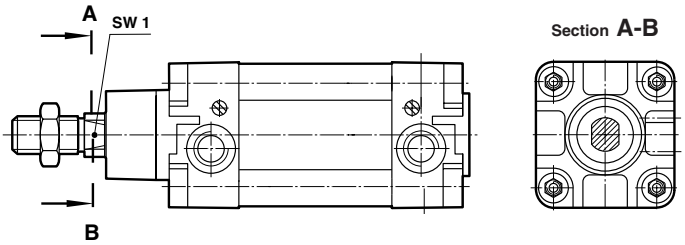
PRA/182000/J, PRA/182000/JM — Cylinders with double ended piston rod

Ø	ZM	L8
32	146	94
40	165	105
50	180	106
63	195	121
80	220	128
100	240	138
125	290	160



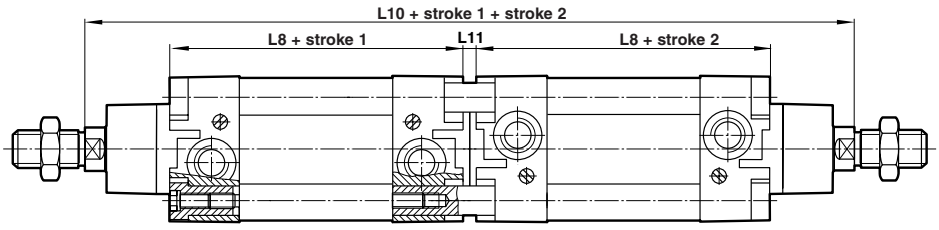
PRA/182000/N1, PRA/182000/N2 — Cylinders with non-rotating piston rod

Ø	SW1 (A/F)
32	10
40	13
50	16
63	16
80	21
100	21



PRA/182000/IT, PRA/182000/MT – Four-position cylinders

Ø	L 8	L 10	L 11
32	94	247	7
40	105	278	8
50	106	294	8
63	121	325	9
80	128	357	9
100	138	387	9
125	160	462	12

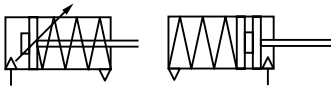


ISO/VDMA Cylinders

RA/28000/M, RA/28300/M

Single acting

Ø 32 to 100 mm



Generally conforms to ISO 6431, VDMA 24562 and NFE 49-003-1

Polyurethane seals ensure efficient low friction operation and long life

Comprehensive range of standard mountings

Magnet piston models for full control system versatility

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

RA/28000 Single acting

RA/28000/M Single acting with magnetic piston

Operating pressure:

2 to 10 bar

Operating temperature:

-20°C to +80°C max.

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Non-standard strokes up to 250 mm maximum

Materials

Barrel: anodised aluminium

End covers: diecast aluminium

Piston rod: stainless steel (Martensitic)

Piston & piston rod seals: polyurethane

O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Magnetic Sprung in	Sprung out	Non-magnetic Sprung in	Sprung out	Service kit
32	12	G1/8	RA/28032/M/*	RA/28032/*	RA/28332/M/*	RA/28332/*	QA/8032/00
40	16	G1/4	RA/28040/M/*	RA/28040/*	RA/28340/M/*	RA/28340/*	QA/8040/00
50	20	G1/4	RA/28050/M/*	RA/28050/*	RA/28350/M/*	RA/28350/*	QA/8050/00
63	20	G3/8	RA/28063/M/*	RA/28063/*	RA/28363/M/*	RA/28363/*	QA/8063/00
80	25	G3/8	RA/28080/M/*	RA/28080/*	RA/28380/M/*	RA/28380/*	QA/8080/00
100	25	G1/2	RA/28100/M/*	RA/28100/*	RA/28310/M/*	RA/28310/*	QA/8100/00

* Insert stroke length in mm.

Ø	RA/28000 Theoretical forces (N) at 6 bar Outstroke	F1	RA/28300 Theoretical forces (N) at 6 bar Instroke	F1
32	392	50	324	50
40	648	60	528	60
50	1043	75	854	75
63	1735	75	1546	75
80	2795	130	2501	130
100	4492	130	4197	130

F1 = Return force of spring (N)

Standard strokes

Ø	25	50	80	100
32	❍	❍	❍	❍
40	❍	❍	❍	❍
50	❍	❍	❍	❍
63	❍	❍	❍	❍
80	❍	❍	❍	❍
100	❍	❍	❍	❍

Options selector

★A/28★★★/★★/★★★

Piston rod material	Substitute
Stainless steel (Martensitic)	R
Hard chromium plated	C
Stainless steel (Austenitic)	S

Operation		Substitute
Sprung in	(Ø 32 to 80 mm)	0
	(Ø 100 mm)	1
Sprung out		3

Cylinder diameters (mm)	Substitute
32	32
40	40
50	50
63	63
80	80
100 (sprung in)	00
100 (sprung out)	10

Strokes (mm)
250 max.

Variants (non-magnetic piston)	Substitute
Standard	None
Special wiper/seal	W1
Non-rotating piston rod	N1
Extended piston rod	IU
RA/28***/IU/***/*** → Extension (mm)	

Variants (magnetic piston)	Substitute
Standard	M
Special wiper/seal	W2
Non-rotating piston rod	N2
Extended piston rod	MU
RA/28***/MU/***/*** → Extension (mm)	

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

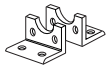
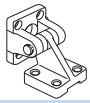
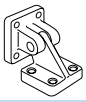
ISO/VDMA Cylinders

RA/28000/M, RA/28300/M

Single acting

Ø 32 to 100 mm

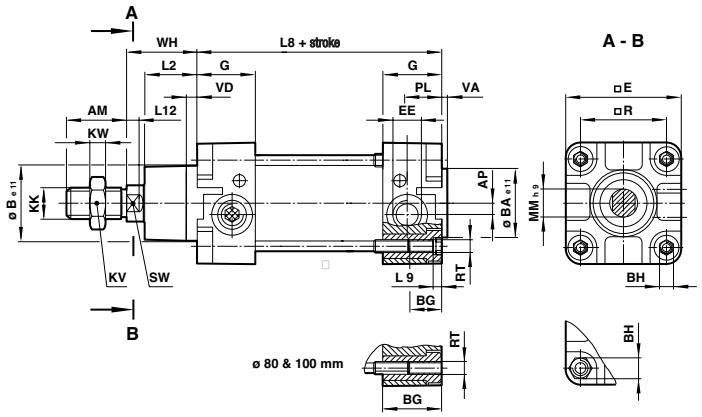
Mountings

Ø	A	AK	B, G	C	D	D2	F	FH	L	M
										
32	QM/8032/35	QM/8025/38	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QM/8025/25	QA/8032/34	QA/8032/24	QM/8032/26
40	QM/8032/35	QM/8040/38	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QM/8040/25	QA/8040/34	QA/8040/24	QM/8040/26
50	QM/8050/35	QM/8050/38	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QM/8050/25	QA/8050/34	QA/8050/24	QM/8050/26
63	QM/8050/35	QM/8050/38	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QM/8050/25	QA/8063/34	QA/8063/24	QM/8063/26
80	QM/8080/35	QM/8080/38	QA/8080/22	QA/8080/21	QA/8080/23	QA/8080/42	QM/8080/25	QA/8080/34	QA/8080/24	QM/8080/26
100	QM/8080/35	QM/8080/38	QA/8100/22	QA/8100/21	QA/8100/23	QA/8100/42	QM/8080/25	QA/8100/34	QA/8100/24	QM/8100/26
Ø	**R**	**S**	**SS**	**SW**	**UF**	**UH**	**UL**	**UR**	**US**	**Switch mounting brackets #**
										
32	QA/8032/27	QA/8032/41	M/P19931	M/P19493	QM/8025/32	QA/8032/40	QA/8032/43	QA/8032/33	M/P40310	QM/27/2/1
40	QA/8040/27	QA/8040/41	M/P19932	M/P19494	QM/8040/32	QA/8040/40	QA/8040/43	QA/8040/33	M/P40311	QM/27/2/1
50	QA/8050/27	QA/8040/41	M/P19933	M/P19495	QM/8050/32	QA/8050/40	QA/8050/43	QA/8050/33	M/P40312	QM/27/2/1
63	QA/8063/27	QA/8063/41	M/P19934	M/P19496	QM/8050/32	QA/8063/40	QA/8063/43	QA/8063/33	M/P40313	QM/27/2/1
80	QA/8080/27	QA/8063/41	M/P19935	M/P19497	QM/8080/32	QA/8080/40	QA/8080/43	QA/8080/33	M/P40314	QM/27/2/1
100	QA/8100/27	QA/8100/41	M/P19936	M/P19498	QM/8080/32	QA/8100/40	QA/8100/43	QA/8100/33	M/P40315	QM/27/2/1

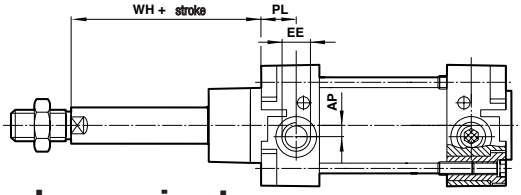
Please see page 76 for details of mountings.

Standard cylinders

RA/28000, RA/28000/M - sprung in



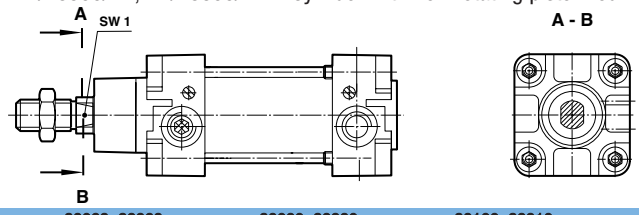
RA/28300, RA/28300/M - sprung out



Cylinder variants

RA/28000/N1, RA/28000/N2 – Cylinder with non-rotating piston rod

RA/28300/N1, RA/28300/N2 – Cylinder with non-rotating piston rod



Model	28032, 28332		28040, 28340		28050, 28350		28063, 28363		28080, 28380		28100, 28310	
Standard strokes	25, 50	80, 100	25, 50	80, 100	25, 50	80, 100	25, 50	80, 100	25, 50	80, 100	25, 50	80, 100
L8	119	147	130	158	131	159	146	174	153	181	163	191
Non-standard strokes	250 mm max.		250 mm max.		250 mm max.		250 mm max.		250 mm max.		250 mm max.	
L8	119 + (N * x 28)		130 + (N * x 28)		131 + (N * x 28)		146 + (N * x 28)		153 + (N * x 28)		163 + (N * x 28)	

* Stroke < 50 mm ➔ N = 0, Stroke > 50 mm ➔ N = $\frac{\text{Stroke}}{50}$ –1 (round up to integer)

Ø	AM	AP	Ø B e11	BA e11	BG	BH (A/F)	□E	EE	G	KK	KV (A/F)	KW	L2
32	22	3,5	30	30	18	6	47	G1/8	27,5	M 10 x 1,25	17	5	20
40	24	4,5	35	35	18	6	53	G1/4	32	M 12 x 1,25	19	6	22
50	32	6	40	40	18	8	65	G1/4	31	M 16 x 1,5	24	8	27
63	32	10	45	45	17,5	8	75	G3/8	33	M 16 x 1,5	24	8	29
80	40	8,5	45	45	21,5	19	95	G3/8	33	M 20 x 1,5	30	10	33
100	40	9	55	55	21,5	19	115	G1/2	37	M 20 x 1,5	30	10	36
Ø	**L9**	**L12**	**Ø MM h9**	**PL**	**□R**	**RT**	**SW (A/F)**	**SW1 (A/F)**	**VA**	**VD**	**WH**	**kg at 0 mm**	**kg per 25 mm**
32	4	6	12	13	32,5	M 6	10	10	3	6	26	0,71	0,09
40	4	6,5	16	15	38	M 6	13	13	3,5	6	30	1,09	0,11
50	5	8	20	18,5	46,5	M 8	17	16	3,5	6	37	1,77	0,19
63	5	8	20	19	56,5	M 8	17	16	4	6	37	2,34	0,22
80	0	10	25	19	72	M 10	22	21	4	6	46	3,93	0,31
100	0	10	25	18	89	M 10	22	21	4	6	51	5,63	0,35

Switch mounting brackets

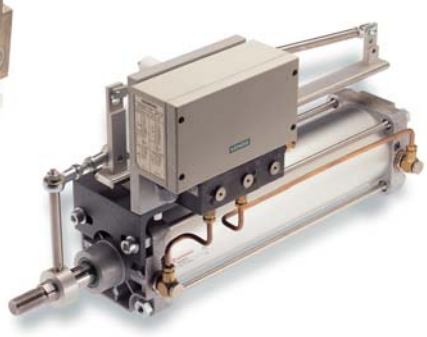
For use with switches M/50, see page 198

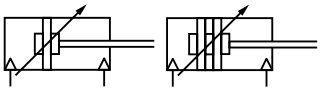
ISO/VDMA Cylinders

RA/8000/M

Double acting

Ø 32 to 320 mm





Conforms to ISO 6431, VDMA 24562 and NFE 49-003-1

High performance, ruggedness and reliability

Extensive range of mountings

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Standard:

ISO 6431, VDMA 24562, NFE 49-003-1 and corresponding BS

Operation:

RA/8000 double acting, adjustable cushioning

RA/8000/M double acting, magnetic piston, adjustable cushioning

Operating pressure:

1 to 16 bar (1 to 10 bar for Ø 250 and 320 mm)

Operating temperature:

-20°C to +80°C max.

(-10°C to +80°C max. for Ø 125 to 320 mm)

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Non-standard strokes up to 3000 mm maximum

Materials

Barrel: anodised aluminium

End covers: pressure diecast aluminium (Ø 200 to 320 mm gravity cast aluminium)

Piston rod: stainless steel (Martensitic)

Piston rod seals: polyurethane (Ø 125 to 320 mm nitrile rubber)

Piston seals: polyurethane (Ø 125 to 320 mm nitrile rubber)

O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Non-magnetic	Magnetic	Service kit
32	12	G1/8	RA/8032/*	RA/8032/M/*	QA/8032/00
40	16	G1/4	RA/8040/*	RA/8040/M/*	QA/8040/00
50	20	G1/4	RA/8050/*	RA/8050/M/*	QA/8050/00
63	20	G3/8	RA/8063/*	RA/8063/M/*	QA/8063/00
80	25	G3/8	RA/8080/*	RA/8080/M/*	QA/8080/00
100	25	G1/2	RA/8100/*	RA/8100/M/*	QA/8100/00
125	32	G1/2	RA/8125/*	RA/8125/M/*	QA/8125/00
160	40	G3/4	RA/8160/*	RA/8160/M/*	QA/8160/00
200	40	G3/4	RA/8200/*	RA/8200/M/*	QA/8200/00
250	50	G1	RA/8250/*	RA/8250/M/*	QA/8250/00
320	63	G1	RA/8320/*	RA/8320/M/*	QA/8320/00

* Insert stroke length in mm. Cylinder sizing and speed control see page 6

Standard strokes

Ø	25	50	80	100	125	160	200	250	320	400	500
32	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
40	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
50	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
63	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
80	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
125	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
160	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
200	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
250	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
320	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Options selector

★★A/8★★★/★★/★★★★

Special variants	Substitute
Heat resistant seals, 150°C max.	T

Piston rod material	Substitute
Stainless steel (Martensitic)	R
Hard chromium plated	C
Stainless steel (Austenitic)	S

Threads	Substitute
Metric Ports: ISO 228 (G 1/8 to G 1)	A

Series	Substitute
8000	8

Cylinder diameters (mm)	Substitute
032, 040, 050, 063, 080, 100, 125, 160, 200, 250, 320	

Variants (magnetic piston)	Substitute
Standard	M
Special wiper/seal	W2
Low friction	X2
Piston rod bellow	MG
Without cushioning	MW
Without cushioning, low friction	X4
Double ended piston rod	JM
Double ended piston rod, special wiper/seal	W4
Four position	MT
Non-rotating piston rod	N2
Locking unit	L4
Extended piston rod	MU
Extended piston rod, special wiper/seal	W6

A/8000/MU//***/*** /W6/ → Extension (mm)

Note: If option is not required, disregard option position within part number eg. RA/8100/100

For combinations of cylinder variants consult our Technical Service.

Strokes (mm)
3000 max.

Variants (non-magnetic piston)	Substitute
Standard	None
Special wiper/seal	W1
Low friction	X1
Piston rod bellow	G
Without cushioning	W
Without cushioning, low friction	X3
Double ended piston rod	J
Double ended piston rod, special wiper/seal	W3
Four position	IT
Non-rotating piston rod	N1
Locking unit	L2
Cylinder with Foxboro Positioner, left hand#	P1
Cylinder with Foxboro Positioner, left hand##	P2
Cylinder with Foxboro Positioner, right hand#	P3
Cylinder with Foxboro Positioner, right hand##	P4
Cylinder with Siemens Positioner, left hand#	P5
Cylinder with Siemens Positioner, left hand##	P6
Cylinder with Siemens Positioner, right hand#	P7
Cylinder with Siemens Positioner, right hand##	P8
Extended piston rod	IU
Extended piston rod, special wiper/seal	W5

A/8000/IU//***/*** /W5/ → Extension (mm)

Direct acting, ## Reverse acting.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

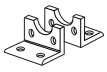
ISO/VDMA Cylinders

RA/8000/M

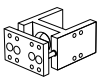
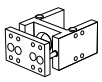
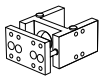
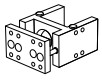
Double acting

Ø 32 to 320 mm

Mountings

Ø	A	AK	B, G	C	D	D2	F	FH	H	L
										
32	QM/8032/35	QM/8025/38	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QM/8025/25	QA/8032/34	QM/8032/28	QA/8032/24
40	QM/8032/35	QM/8040/38	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QM/8040/25	QA/8040/34	QM/8040/28	QA/8040/24
50	QM/8050/35	QM/8050/38	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QM/8050/25	QA/8050/34	QM/8050/28	QA/8050/24
63	QM/8050/35	QM/8050/38	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QM/8050/25	QA/8063/34	QM/8063/28	QA/8063/24
80	QM/8080/35	QM/8080/38	QA/8080/22	QA/8080/21	QA/8080/23	QA/8080/42	QM/8080/25	QA/8080/34	QM/8080/28	QA/8080/24
100	QM/8080/35	QM/8080/38	QA/8100/22	QA/8100/21	QA/8100/23	QA/8100/42	QM/8080/25	QA/8100/34	QM/8100/28	QA/8100/24
125	QM/8125/35	QM/8125/38	QM/8125/22	QM/8125/21	QM/8125/23	QA/8125/42	QM/8125/25	QA/8125/34	QM/8125/285	QM/8125/24
160	QM/8160/35	QM/8160/38	QM/8160/22	QM/8160/21	QM/8160/23	QA/8160/42	QM/8160/25	–	QM/8160/28	QM/8160/24
200	QM/8160/35	QM/8160/38	QM/8200/22	QM/8200/21	QM/8200/23	QA/8200/42	QM/8160/25	–	QM/8200/28	QM/8200/24
250	QM/8250/35	–	QM/8250/22	QM/8250/21	QM/8250/23	–	QM/8250/25	–	QM/8250/28	QM/8250/24
320	QM/8320/35	–	QM/8320/22	QM/8320/21	QM/8320/23	–	QM/8320/25	–	QM/8320/28	QM/8320/24

Ø	M	R	S	SS	SW	UF	UH	UL	UR	US
										
32	QM/8032/26	QA/8032/27	QA/8032/41	M/P19931	M/P19493	QM/8025/32	QA/8032/40	QA/8032/43	QA/8032/33	M/P40310
40	QM/8040/26	QA/8040/27	QA/8040/41	M/P19932	M/P19494	QM/8040/32	QA/8040/40	QA/8040/43	QA/8040/33	M/P40311
50	QM/8050/26	QA/8050/27	QA/8040/41	M/P19933	M/P19495	QM/8050/32	QA/8050/40	QA/8050/43	QA/8050/33	M/P40312
63	QM/8063/26	QA/8063/27	QA/8063/41	M/P19934	M/P19496	QM/8050/32	QA/8063/40	QA/8063/43	QA/8063/33	M/P40313
80	QM/8080/26	QA/8080/27	QA/8063/41	M/P19935	M/P19497	QM/8080/32	QA/8080/40	QA/8080/43	QA/8080/33	M/P40314
100	QM/8100/26	QA/8100/27	QA/8100/41	M/P19936	M/P19498	QM/8080/32	QA/8100/40	QA/8100/43	QA/8100/33	M/P40315
12	QM/8125/26	QM/8125/27	QA/8100/41	M/P19937	M/P19499	QM/8125/32	QA/8125/40	QA/8125/43	QM/8125/33	M/P71355
160	QM/8160/26	QM/8160/27	QM/8160/41	M/P19938	M/P19679	QM/8160/32	QA/8160/40	QM/8160/43	QM/8160/33	M/P71356
200	QM/8200/26	QM/8200/27	QM/8160/41	M/P19939	M/P19683	QM/8160/32	QA/8200/40	QM/8200/43	QM/8200/33	M/P71357
250	–	–	–	–	M/P19446	QM/8250/32	–	–	–	–
320	–	–	–	–	M/P19447	QM/8320/32	–	–	–	–

Ø	Guide block	Guide block	Guide block	Guide block	Locking units (passive)	Switch mounting brackets #	Switch mounting brackets ##	Switch mounting brackets ##
								
32	QA/8032/51/*	QA/8032/61/*	QA/8032/81/*	QA/8032/85/*	QA/8032/59	QM/27/2/1	QM/31/032/22	QM/140/010/22
40	QA/8040/51/*	QA/8040/61/*	QA/8040/81/*	QA/8040/85/*	QA/8040/59	QM/27/2/1	QM/31/032/22	QM/140/010/22
50	QA/8050/51/*	QA/8050/61/*	QA/8050/81/*	QA/8050/85/*	QA/8050/59	QM/27/2/1	QM/31/032/22	QM/140/010/22
63	QA/8063/51/*	QA/8063/61/*	QA/8063/81/*	QA/8063/85/*	QA/8063/59	QM/27/2/1	QM/31/032/22	QM/140/010/22
80	QA/8080/51/*	QA/8080/61/*	QA/8080/81/*	QA/8080/85/*	QA/8080/59	QM/27/2/1	QM/31/080/22	QM/140/010/22
100	QA/8100/51/*	QA/8100/61/*	QA/8100/81/*	QA/8100/85/*	QA/8100/59	QM/27/2/1	QM/31/080/22	QM/140/010/22
125	–	–			QA/8125/59	QM/27/2/1	QM/31/080/22	–
160	–	–			–	–	QM/31/160/22	–
200	–	–			–	–	QM/31/160/22	–
250	–	–			–	–	QM/31/250/22	–
320	–	–			–	–	QM/31/320/22	–

Please see page 76 for details of mountings.

*Refer to page 70 for details of piston rod guide blocks and page 68 for locking units.
Consult our Technical Service for stroke lengths above 500 mm.

For use with switches M/50, see page 198

For use with switches QM/32 or QM/132 see page 199

For use with Pneumatic switches.

ISO/VDMA Cylinders

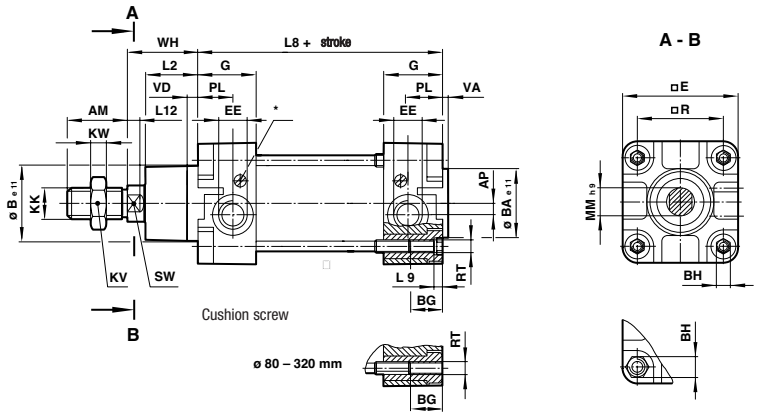
RA/8000/M

Double acting

Ø 32 to 320 mm

Standard cylinders

RA/8000, RA/8000/M

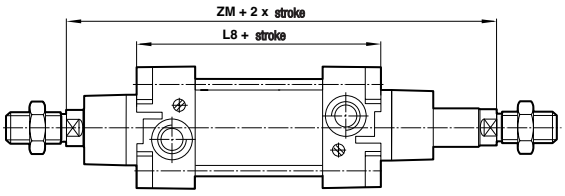


Ø	AM	AP	Ø B e11	Ø BA e11	BG	BH (A/F)	□ E	EE	G	KK	KV (A/F)	KW	L2
32	22	3,5	30	30	18	6	47	G1/8	27,5	M10x1,25	17	5	20
40	24	4,5	35	35	18	6	53	G1/4	32	M12x1,25	19	6	22
50	32	6	40	40	18	8	65	G1/4	31	M16x1,5	24	8	27
63	32	10	45	45	17,5	8	75	G3/8	33	M16x1,5	24	8	29
80	40	8,5	45	45	21,5	19	95	G3/8	33	M20x1,5	30	10	33
100	40	9	55	55	21,5	19	115	G1/2	37	M20x1,5	30	10	36
125	54	10	60	60	32	24	140	G1/2	46	M27x2	41	13,5	45
160	72	18	65	65	28,5	32	183,5	G3/4	50	M36x2	55	18	58
200	72	18	75	75	28,5	32	224	G3/4	50	M36x2	55	18	67
250	84	22,5	90	90	35	36	280	G1	58	M42x2	65	21	80
320	96	22,5	110	110	30	46	350	G1	60	M48x2	75	24	90

Ø	L8	L9	L12	Ø MM h9	PL	□ R	RT	SW (A/F)	VA	VD	WH	kg at 0 mm	kg per 25 mm
32	94	4	6	12	13	32,5	M 6	10	3	6	26	0,51	0,06
40	105	4	6,5	16	15	38	M 6	13	3,5	6	30	0,80	0,08
50	106	5	8	20	18,5	46,5	M 8	17	3,5	6	37	1,33	0,12
63	121	5	8	20	19	56,5	M 8	17	4	6	37	1,80	0,13
80	128	–	10	25	19	72	M 10	22	4	6	46	3,25	0,20
100	138	–	10	25	18	89	M 10	22	4	6	51	4,81	0,23
125	160	–	13	32	20	110	M 12	27	6	15,5	65	8,00	0,33
160	180	–	16	40	21	140	M 16	36	4	15	80	14,9	0,55
200	180	–	16	40	21	175	M 16	36	5	15	95	21,7	0,60
250	200	–	20	50	29	220	M 20	41	7	13	105	32,6	0,92
320	220	–	24	63	30	270	M 24	55	7	13	120	59,8	1,46

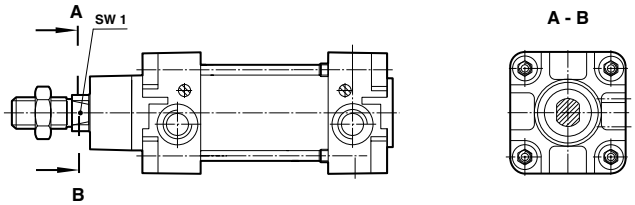
Cylinder variants

RA/8000/J, RA/8000/JM – Cylinders with double ended piston rod



Ø	ZM	L8
32	146	94
40	165	105
50	180	106
63	195	121
80	220	128
100	240	138
125	290	160
160	340	180
200	370	180

RA/8000/N1, RA/8000/N2 – Cylinders with non-rotating piston rod



Ø	SW1 (A/F)
32	10
40	13
50	16
63	16
80	21
100	21

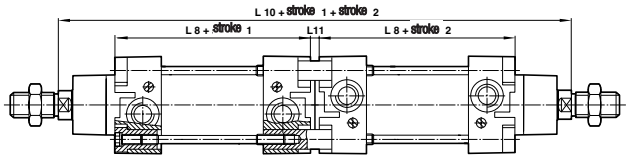
ISO/VDMA Cylinders

RA/8000/M

Double acting

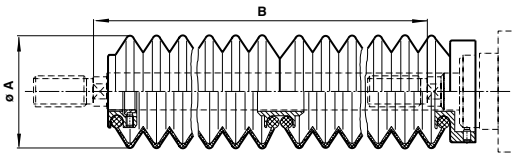
Ø 32 to 320 mm

RA/8000/IT, RA/8000/MT – Four position cylinders



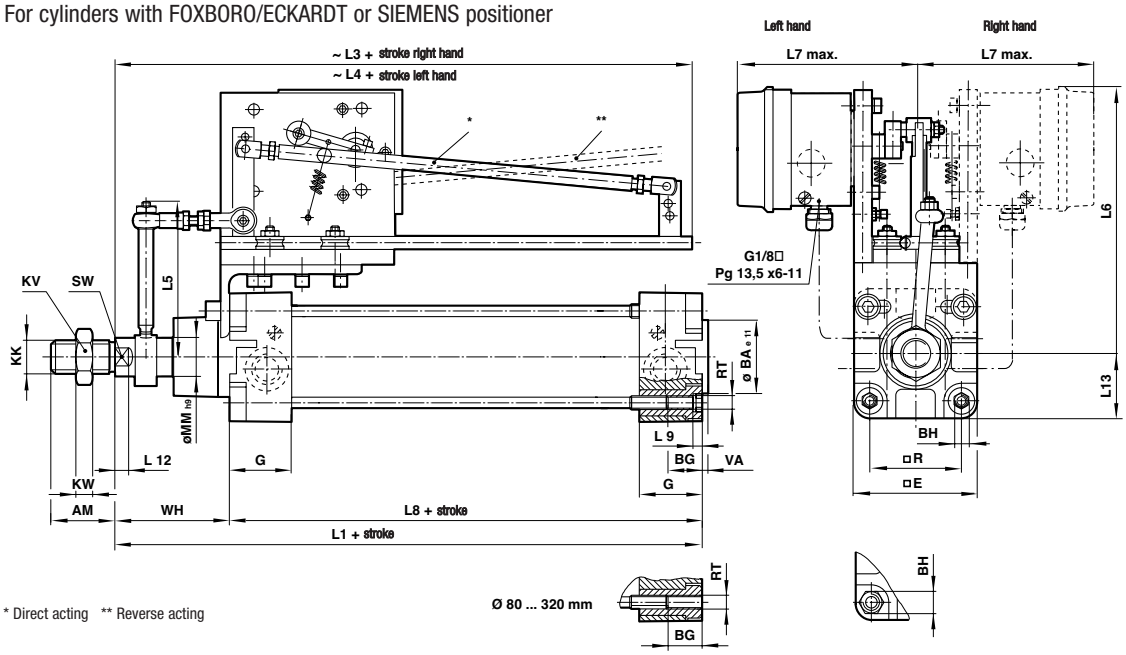
Ø	L 8	L 10	L 11
32	94	247	7
40	105	278	8
50	106	294	8
63	121	325	9
80	128	357	9
100	138	387	9
125	160	462	12
160	180	530	10
200	180	560	10

RA/8000/G, RA/8000/MG – Cylinders with piston rod gaiter



Ø	Ø A	Maximum stroke per gaiter	Piston rod extension B First gaiter	Further gaiter
32	40	60	30	25
40	63	145	50	32
50	63	145	40	32
63	63	145	40	32
80	80	250	50	45
100	80	250	50	45
125	80	250	50	45
160	116	350	70	60
200	116	350	70	60
250	116	350	70	60
320	143	500	110	100

RA/8000/P1 to RA/8000/P8
For cylinders with FOXBORO/ECKARDT or SIEMENS positioner



* Direct acting ** Reverse acting

Ø	AM	Ø B e11	BG	BH (AF)	□ E	G	KK	KV (AF)	KW	L1	L3	L4	
63	32	45	17,5	8	75	33	M 16 x 1,5	24	8	218	235	245	
80	40	45	21,5	19	95	33	M 20 x 1,5	30	10	229	240	250	
100	40	55	21,5	19	115	37	M 20 x 1,5	30	10	239	240	250	
125	54	60	32	24	140	46	M 27 x 2	41	13.5	275	253	263	
160	72	65	28,5	32	180	50	M 36 x 2	55	18	300	258	268	
200	72	75	28,5	32	220	50	M 36 x 2	55	18	310	265	275	
250	84	90	35	36	280	58	M 42 x 2	65	21	365	300	310	
320	96	110	30	46	350	60	M 48 x 2	75	24	380	295	305	
Ø	**L5**	**L6**	**L7 (max.)**	**L8**	**L9**	**L12**	**L13**	**Ø MM h9**	**□ R**	**RT**	**SW (A/F)**	**VA**	**WH**
63	132,5	232	219	121	5	8	37,5	20	56,5	M 8	17	4	97
80	134,5	239	219	128	–	10	47,5	25	72	M 10	22	4	101
100	144,5	248	219	138	–	10	57,5	25	89	M 10	22	4	101
125	159	262	219	160	–	13	70	32	110	M 12	27	6	115
160	174	277	219	180	–	16	90	40	140	M 16	36	4	120
200	202	305	248	180	–	16	110	40	175	M 16	36	5	130
250	228	327	274	200	–	20	140	50	220	M 20	41	7	165
320	265	357	309	220	–	24	175	63	270	M 24	55	7	160

Cylinder with integrated valve and position sensor

PRA/282000

Double acting

Ø 32 to 100 mm

- Conforms to ISO 6431 and VDMA 24562
- Complete functional unit with LED display
- Integrated AS-i Bus or multipole connector
- Integrated 5/2 or 5/3 valve with different functions
- Flow regulator for speed control as standard
- Integrated reed or solid state switch
- Profile with concealed tie rods
- Comprehensive range of standard VDMA mountings

Technical data

Medium:
Compressed air, filtered,lubricated or non-lubricated

Standard:
ISO 6431, VDMA 24562

Operating pressure:
2 to 8 bar

Operating temperature:
-5°C to + 50°C
Consult our Technical Service for use below +2°C

Strokes:
Up to 1000 mm max.

Speed:
Ø 32 to 80 mm: max 1,5 m/s
Ø 100 mm: max 1,0 m/s

Protection rating :
IP 65, IP 67 on request

Materials

Profile barrel: anodised aluminium
End covers: anodised aluminium
Piston rod: stainless steel (Martensitic)
Piston rod seals: polyurethane
Piston seals and O-rings: nitrile rubber
Spool and sleeve: anodised aluminium with special coating

Standard models

Ø	Piston rod Ø	Port size	Model AS-i Bus	Multipole	Service kit
32	12	G1/8	PRA/282032/MIR/A1/*	PRA/282032/MIR/M1/*	QA/282032/00
40	16	G1/4	PRA/282040/MIR/A1/*	PRA/282040/MIR/M1/*	QA/282040/00
50	20	G1/4	PRA/282050/MIR/A1/*	PRA/282050/MIR/M1/*	QA/282050/00
63	20	G3/8	PRA/282063/MIR/A1/*	PRA/282063/MIR/M1/*	QA/282063/00
80	25	G3/8	PRA/282080/MIR/A1/*	PRA/282080/MIR/M1/*	QA/282080/00
100	25	G1/2	PRA/282100/MIR/A1/*	PRA/282100/MIR/M1/*	QA/282100/00

Options selector

P★A/282★★★/★★★/★★/★★★★

Piston rod material	Substitute
Stainless steel (Martensitic)	R
Hard chromium plated	C
Stainless steel (Austenitic)	S

Cylinder diameters (mm)	Substitute
032, 040, 050, 063, 080, 100	

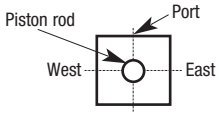
Pneumatic variants	Substitute
Standard	MI
Piston rod bellow	MG
Locking unit	L4
Extended piston rod	MU
P*A/282***/***/MU*/****/*** → Extension (mm)	

Valve variants	Substitute
5/2 Sol/spring; (cylinder instroke)	R
5/2 Sol/spring; (cylinder outstroke)	E
5/2 Sol/sol (bistable)	B
5/3 Sol/sol (APB)	A
5/3 Sol/sol (COE)	C

APB = All Ports Blocked
COE = Centre Open Exhaust

Strokes (mm)
1000 max

Electric variants	Substitute
AS-i Bus, Reed switch M/50/LSU (east)	A1
AS-i Bus, Solid state M/50/EAP (east)	A2
AS-i Bus, Reed switch M/50/LSU (west)	A3
AS-i Bus, Solid state M/50/EAP (west)	A4
AS-i Bus, external power, reed switch M/50/LSU (east)	B1
AS-i Bus, external power, solid state M/50/EAP (east)	B2
AS-i Bus, external power, reed switch M/50/LSU (west)	B3
AS-i Bus, external power, solid state M/50/EAP (west)	B4
Basic version, cable length 5 m (PVC), without switches, without suppressions	C
Basic version, M12x1, 4 pin, without switches, without suppressions	M0
Multipole connector, reed switch M/50/LSU (east)	M1
Multipole connector, solid state M/50/EAP (east)	M2
Multipole connector, reed switch M/50/LSU (west)	M3
Multipole connector, solid state M/50/EAP (west)	M4
Airmotor (oscillator)	P



Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.

Technical support:
e-mail: SMART-ZYLINDER@Norgren-Herion.de

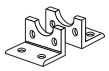
Cylinder with integrated valve and position sensor

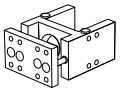
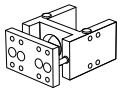
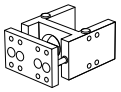
PRA/282000

Double acting

Ø 32 to 100 mm

Mountings

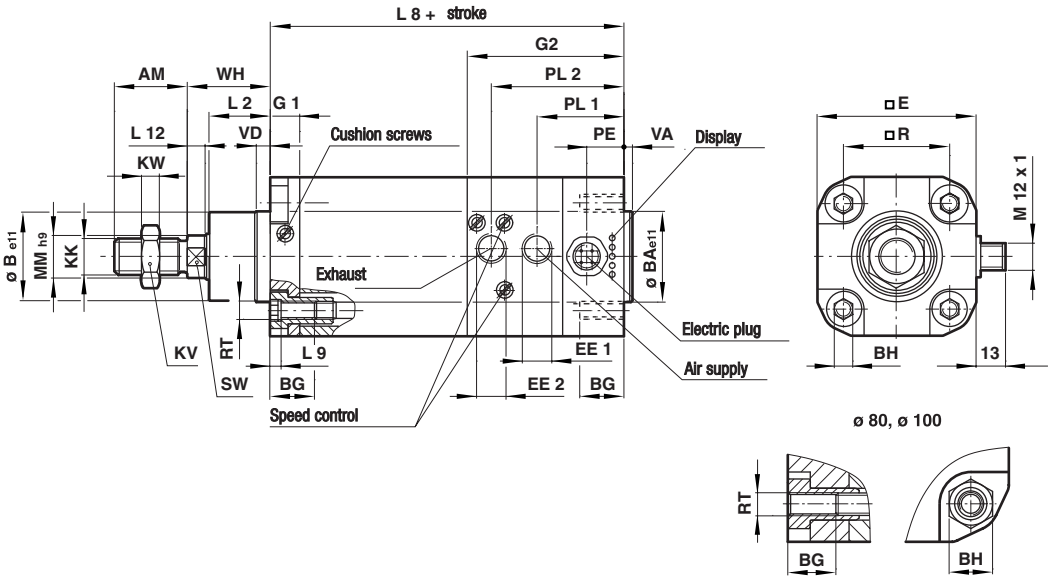
Ø	A	AK	B, G	C	D	D2	F	FH	R	S
										
32	QM/8032/35	QM/8025/38	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QM/8025/25	QA/8032/34	QA/8032/27	QA/8032/41
40	QM/8032/35	QM/8040/38	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QM/8040/25	QA/8040/34	QA/8040/27	QA/8040/41
50	QM/8050/35	QM/8050/38	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QM/8050/25	QA/8050/34	QA/8050/27	QA/8040/41
63	QM/8050/35	QM/8050/38	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QM/8050/25	QA/8063/34	QA/8063/27	QA/8063/41
80	QM/8080/35	QM/8080/38	QA/8080/22	QA/8080/21	QA/8080/23	QA/8080/42	QM/8080/25	QA/8080/34	QA/8080/270	QA/8063/41
100	QM/8080/35	QM/8080/38	QA/8100/22	QA/8100/21	QA/8100/23	QA/8100/42	QM/8080/25	QA/8100/34	QA/8100/27	QA/8100/41

Ø	SS	SW	UF	UR	US	Guide block	Guide block	Guide block	Locking unit (passive)
									
32	M/P19931	M/P19493	QM/8025/32	QA/8032/33	M/P40310	QA/8032/61/*	QA/8032/81/*	QA/8032/85/*	QA/8032/59
40	M/P19932	M/P19494	QM/8040/32	QA/8040/33	M/P40311	QA/8040/61/*	QA/8040/81/*	QA/8040/85/*	QA/8040/59
50	M/P19933	M/P19495	QM/8050/32	QA/8050/33	M/P40312	QA/8050/61/*	QA/8050/81/*	QA/8050/85/*	QA/8050/59
63	M/P19934	M/P19496	QM/8050/32	QA/8063/33	M/P40313	QA/8063/61/*	QA/8063/81/*	QA/8063/85/*	QA/8063/59
8	M/P19935	M/P19497	QM/8080/32	QA/8080/33	M/P40314	QA/8080/61/*	QA/8080/81/*	QA/8080/85/*	QA/8080/59
100	M/P19936	M/P19498	QM/8080/32	QA/8100/33	M/P40315	QA/8100/61/*	QA/8100/81/*	QA/8100/85/*	QA/8100/59

Please see page 76 for details of mountings.

*Refer to page 70 for details of piston rod guide blocks and page 68 for locking units.

Consult our Technical Service for stroke lengths above 500 mm



Ø	AM	Ø B e11	Ø BA e11	BG min	BH	E	EE1	EE2	G1	G2	KK	KV	KW	L2	L8
32	22	30	30	16	6	50	G 1/8	G 1/8	10,5	61	M10x1,25	17	5	20	94
40	24	35	35	16	6	58	G 1/4	G 1/8	12	67	M12x1,25	19	6	22	105
50	32	40	40	16	8	70	G 1/4	G 1/4	13	69	M16x1,5	24	8	28	106
63	32	45	45	16	8	85	G 3/8	G 3/8	13,5	76,5	M16x1,5	24	8	28	121
80	40	45	45	16	19	105	G 3/8	G 3/8	15	82	M20x1,5	30	10	33	128
100	40	55	55	16	19	130	G 1/2	G 3/8	19	88	M20x1,5	30	10	36	138

Ø	L9	L12	Ø MM h9	PE	PL1	PL2	R	RT	SW	VA	VD	WH	kg at 0 mm	kg per 25 mm
32	4	5	12	16,5	36,5	53,5	32,5	M6	10	3	6	26	0,66	0,07
40	4	5	16	16,5	36,5	53,5	38	M6	13	3,5	6	30	1,03	0,11
50	5	6,5	20	16,5	38,5	59	46,5	M8	17	3,5	6	37	1,58	0,18
63	5	6,5	20	16,5	39,5	64,5	56,5	M8	17	4	6	37	2,42	0,19
80	-	10	25	16,5	39	67	72	M10	22	4	6	46	4,12	0,29
100	-	10	25	16,5	43,5	73,5	89	M10	22	4	6	51	6,34	0,35

Cylinder with AS-Interface bus system

PRA/282000

Double acting

Ø 32 to 100 mm

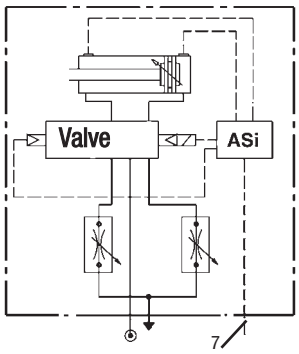
Complete functional unit with LED display and integrated AS-i Bus

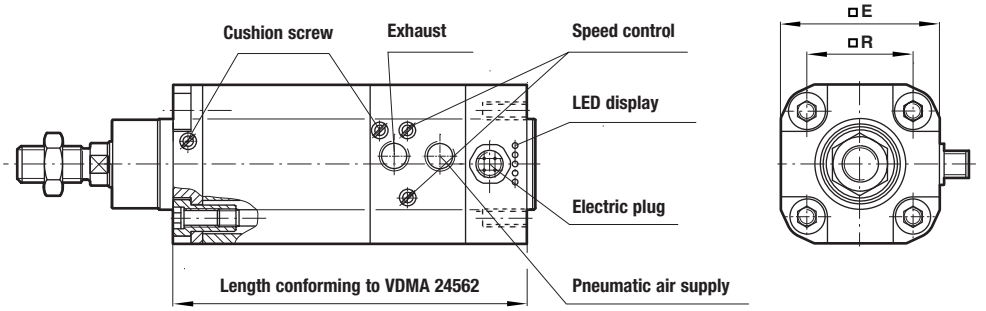
Conforms to ISO 6431 and VDMA 24562

Flexible open system

Hand held function available

Easy installation: Only 1 pneumatic and 1 electric connection





Pitch "R" and outside Dimension "E"= conforming to ISO 6431 and VDMA 24562

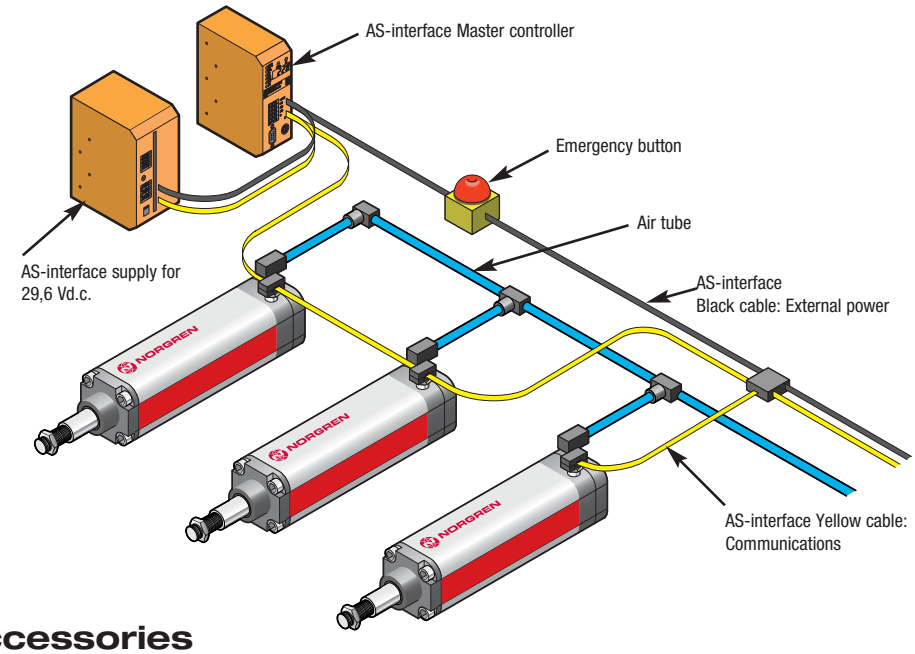
Technical data

Supply voltage:
24 V d.c.

AS-i connection:
M12 male 4 pin

Cable type:
AS-i
Yellow: Communications
Black: External power (optional)

A typical configuration



Accessories

Description	Model
Hand held function	01 020 07 0000 000 00
AS-i plug for external power supply	M/P73202
AS-i plug	VE1ASCN1-M1200

Cylinder with multipole system

PRA/282000

Double acting

Ø 32 to 100 mm

Complete functional unit with LED display and multipole connection

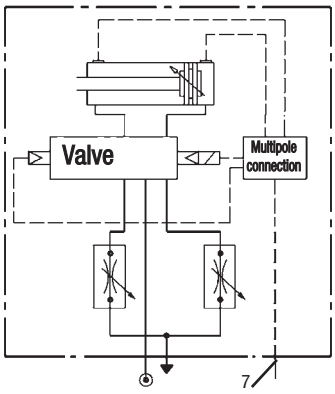
Conforms to ISO 6431 and VDMA 24562

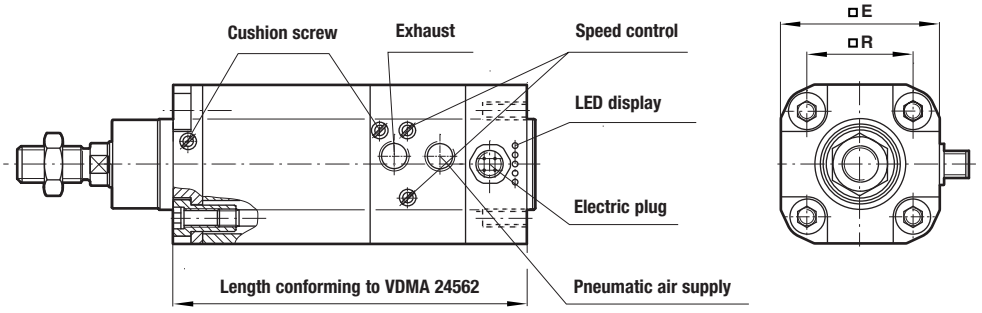
Fieldbus compatible 24 V d.c.

Hand held function available

Quick and easy installation

Intergrated PCB with suppressions





Pitch "R" and outside Dimension "E"= conforming to ISO 6431 and VDMA 24562

Technical data

Supply voltage (Ub):
24 V d.c.

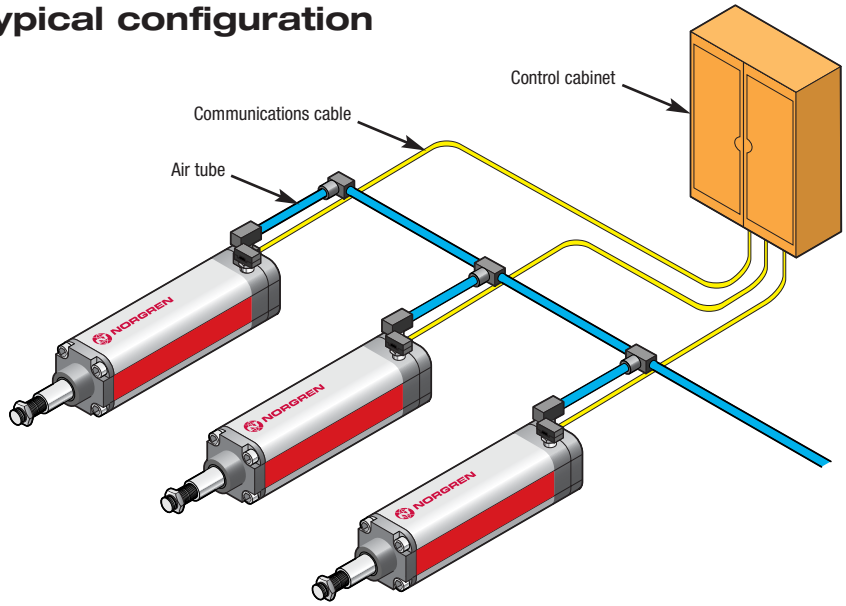
Multipole connection:
M12 male 8 pin

Max. power consumption:
1 W per coil

Rating:
100 % E.D.

Protection rating:
Fly-wheel diode

A typical configuration



Accessories

Description	Model
Hand held function	01 020 07 0000 000 00
Cable connector M12 female 8 pin, 2 m	M/P73200/2
Cable connector M12 female 8 pin, 5 m	M/P73200/5
Cable connector M12 female 8 pin, 10 m	M/P73200/10
Y- splitter M12 female 8 pin - 2 x M12 male 4 pin	M/P73201

Airmotor (Oscillator)

PRA/282000/M/P

Double acting

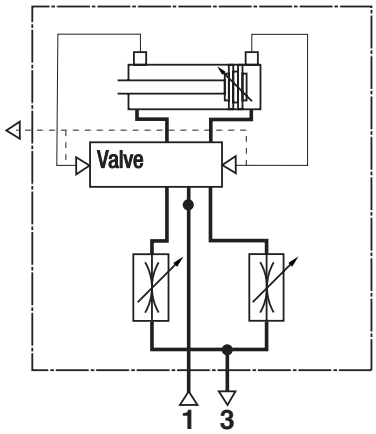
Ø 50 to 100 mm

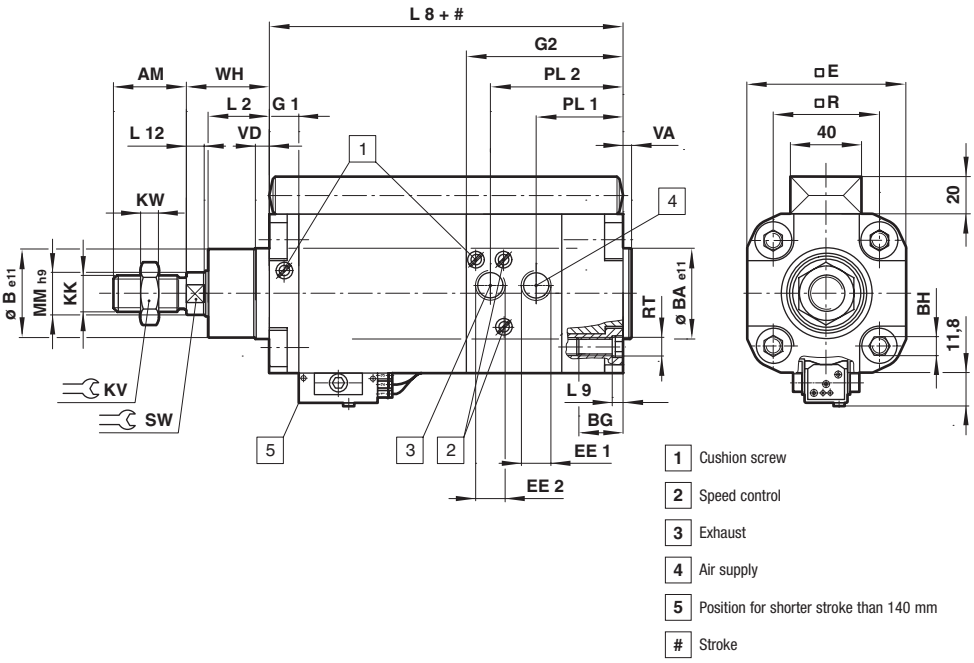
Complete functional unit for oscillating movement

Conforms to ISO 6431 and VDMA 24562

Integrated 5/2 valve

Frequency and speed adjustable





1 Cushion screw
2 Speed control
3 Exhaust
4 Air supply
5 Position for shorter stroke than 140 mm
Stroke

Technical data

Medium:

Compressed air, filtered to 40 µm, non-lubrricated

Standard:

ISO 6431, VDMA 24562 and NFE 49-003-1

Operation:

Oscillating, adjustable cushing speed and frequency with magnetic piston and flow regulator

Operation pressure:

2 to 6 bar

Operation temperature:

-5°C to +60°C max.

Consult our Technical Service for use below +2°C

Cylinder diameters:

50, 63, 80 and 100 mm

Strokes:

Ø 50 : 30 to 1000 mm

Ø 63, 80,100 : 25 to 1000 mm:

Materials

Profile barrel: anodised aluminium
End covers: anodised aluminium
Piston rod: stainless steel (Martensitic)
Piston rod seals: polyurethane
Piston seals and O-rings: nitrile rubber
Spool and sleeve: anodised aluminium with special coating
Tubes: PVC

Ø	AM	Ø Be 11	Ø BA 11	BG min.	BH	□ E	EE 1	EE 2	G 1	G 2
50	32	40	40	16	8	70	G1/4	G1/4	13	69
63	32	45	45	16	8	85	G3/8	G3/8	13,5	76,5
80	40	45	45	16	19	105	G3/8	G3/8	15	82
100	40	55	55	16	19	130	G1/2	G3/8	19	88
Ø	**KK**	**KV**	**KW**	**L2**	**L8**	**L9**	**L12**	**Ø MM h9**	**PE**	**PL1**
50	M16x1,5	24	8	28	111	5	6,5	20	16,5	38,5
63	M16x1,5	24	8	28	126	5	6,5	20	16,5	39,5
80	M20x1,5	30	10	33	133	-	10	25	16,5	39
100	M20x1,5	30	10	36	138	-	10	25	16,5	43,5
Ø	**PL2**	**□ R**	**RT**	**SW**	**VA**	**VD**	**WH**	**kg at 0 mm**		**kg per 25 mm**
50	59	46,5	M 8	17	3,5	6	37	1,58		0,18
63	64,5	56,5	M 8	17	4	6	37	2,42		0,19
80	67	72	M 10	22	4	6	46	4,12		0,29
100	73,5	89	M 10	22	4	6	51	6,34		0,35

Cylinder with integrated

conforms to ISO 6431, VDMA 24562 and NFE 49-003-1

Basic version

- Complete functional unit with LED display and multipole connection
- Available with cable or M12x1 connector, without switches
- Quick and simple installation
- Compact space saving unit
- Reduces machine design time
- One part number – simpler logistics

Multipole version

- Fieldbus compatible 24 V d.c.
- Hand held function available
- Quick and easy installation
- Integrated PCB with suppression

AS-Interface version

- Flexible open system
- Hand held function available
- Easy installation: Only 1 pneumatic and 1 electrical connection

Reciprocating version (air motor)

- Complete functional unit
- Integrated 5/2 valve
- Adjustable frequency and speed

Plug and work!

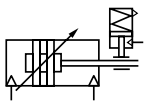
www.norgren.com

Cylinders with piston rod locking units (ISO/VDMA/NFE)

PRA/182000/..., RA/8000/L2 & L4

Double acting

Ø 32 to 125 mm



Passive

Magnetic and non-magnetic piston conforms to ISO 6431, VDMA 24562 and NFE 49-003-1

Secure locking of piston rod in any position

Passive locking models

Compact, maintenance-free design

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Passive model – pressure applied to release

Operating pressure:

4 to 10 bar

Operating temperature:

0°C to +80°C

Consult our Technical Service for use below +2°C

Materials

Body: hard anodised diecast aluminium

Seals: polyurethane & nitrile

Cartridge: anodised aluminium body

Locking wedges: hardened steel

Ø	Magnetic ISO/VDMA/NFE Profile cylinder	ISO/VDMA/NFE Tie-rod cylinder	Non-magnetic ISO/VDMA/NFE Profile cylinder	ISO/VDMA/NFE Tie-rod cylinder
32	PRA/182032/L4/*	RA/8032/L4/*	PRA/182032/L2/*	RA/8032/L2/*
40	PRA/182040/L4/*	RA/8040/L4/*	PRA/182040/L2/*	RA/8040/L2/*
50	PRA/182050/L4/*	RA/8050/L4/*	PRA/182050/L2/*	RA/8050/L2/*
63	PRA/182063/L4/*	RA/8063/L4/*	PRA/182063/L2/*	RA/8063/L2/*
80	PRA/182080/L4/*	RA/8080/L4/*	PRA/182080/L2/*	RA/8080/L2/*
100	PRA/182100/L4/*	RA/8100/L4/*	PRA/182100/L2/*	RA/8100/L2/*
125	PRA/182125/L4/*	RA/8125/L4/*	PRA/182125/L2/*	RA/8125/L2/*

* Insert stroke length in mm.

Locking unit includes cartridge

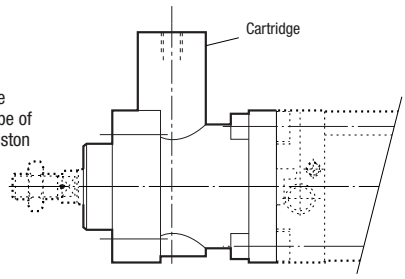
For non-magnetic versions substitute L2 for L4.

For all applications please consult our Technical Service.

Ø	Locking unit (passive)	Spare cartridge only Passive
32	QA/8032/59	QA/8032/63
40	QA/8040/59	QA/8040/63
50	QA/8050/59	QA/8050/63
63	QA/8063/59	QA/8063/63
80	QA/8080/59	QA/8100/63
100	QA/8100/59	QA/8100/63
125	QA/8125/59	QA/8125/63

Locking unit

If retro fitting locking unit the cylinder must be of an extended piston rod design.



Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

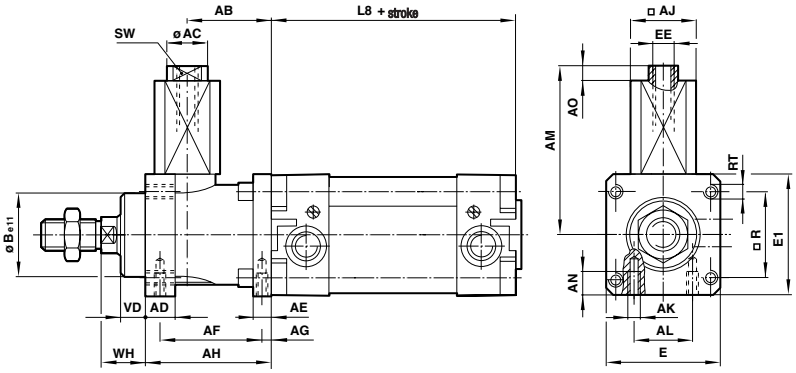
*Insert cable length – 2, 5 or 10 m. For details see page 198

Cylinders with piston rod locking units (ISO/VDMA/NFE)

PRA/182000/L2 & L4, RA/8000/L2 &

Double acting

Ø 32 to 125 mm



Ø	AB	Ø AC	AD	AE	AF	AG	AH	❑ AJ	AK	AL	AM	AN
32	32	10	12	8	40	4	48	22,5	M 5	20	71	8
40	35,5	10	12	10	46	4,5	55	27,5	M 5	24	74,5	10
50	49	15	16	15	54	11,5	70	32,5	M 6	30	91,5	12
63	49	15	15	15	55	7,5	70	41	M 8	38	108,5	12
80	62	19	16	16	70	10	90	53	M 8	48	141,5	16
100	65	19	18	16	70	10	92	53	M 8	48	141,5	16
125	85	19	27	25	95	11	122	65	M 10	65	152	20

Ø	AO	Ø B e11	E	E 1	EE	L 8	❑ R	RT	SW (A/F)	VD	WH
32	4	30	48	50	M 5	94	32,5	M 6	8	10	16
40	4	35	56	58	M 5	105	38	M 6	8	10	18
50	4	40	68	70	G 1/8	106	46,5	M 8	13	12	22
63	4	45	82	85	G 1/8	121	56,5	M 8	13	12	20
80	4	45	100	105	G 1/8	128	72	M 10	17	20	33
100	4	55	120	130	G 1/8	138	89	M 10	17	23	38
125	4	60	140	150	G 1/8	160	110	M 12	17	32	65

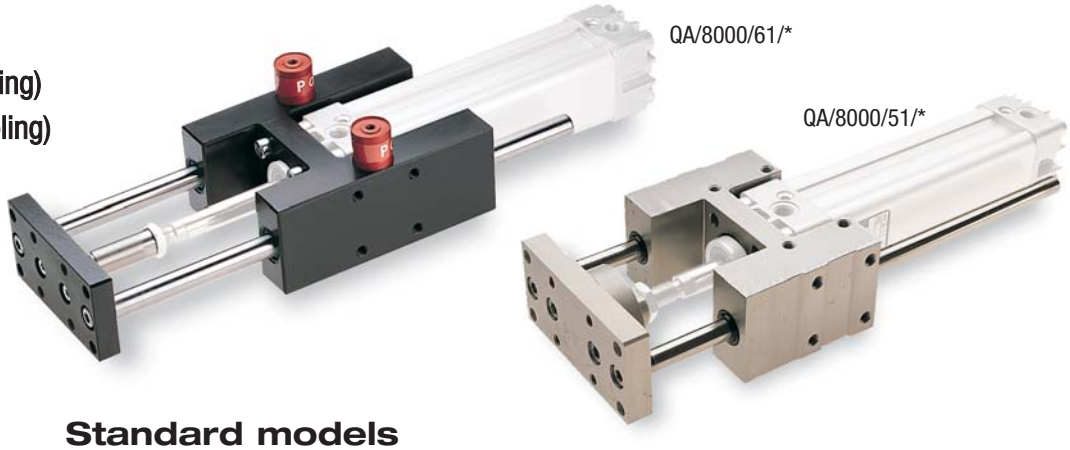
Lock retention forces

Ø	Locking force (N)
32	600
40	1000
50	1500
63	2200
80	5000
100	5000
125	7000

Cylinder sizing and speed control see page 6

Guide blocks for ISO/VDMA cylinders

QA/8000/51/*
QA/8000/61/*
QA/8000/81/* (long coupling)
QA/8000/85/* (short coupling)
Ø 32 to 100 mm



Conforms to ISO 6431, VDMA 24562 and NFE 49 003 1

Ensures protection against external rotary and bending forces

Guide rods run through bearings protected by wiper rings

Provides accurate guidance for unsupported loads

Technical data

Operating temperature:
0°C to +80°C maximum
Consult our Technical Service for use below +2°C

Materials

Guide block, nut & mounting plate: anodised aluminium
Plain bearings:
Sintered bronze (/51/*), (/81/*), (/85/*)
Steel roller bearing (/61/*)
Rods: Stainless steel
Wiper rings: nitrile rubber

Standard models

QA/8000/51/* (plain bearing)

Ø	Piston rod Ø	Model	Suitable for cylinders Magnetic	Non-magnetic
32	12	QA/8032/51/*	RA/8032/M, PRA/182032/M	RA/8032, PRA/182032
40	16	QA/8040/51/*	RA/8040/M, PRA/182040/M	RA/8040, PRA/182040
50	20	QA/8050/51/*	RA/8050/M, PRA/182050/M	RA/8050, PRA/182050
63	20	QA/8063/51/*	RA/8063/M, PRA/182063/M	RA/8063, PRA/182063
80	25	QA/8080/51/*	RA/8080/M, PRA/182080/M	RA/8080, PRA/182080
100	25	QA/8100/51/*	RA/8100/M, PRA/182100/M	RA/8100, PRA/182100

* Insert stroke length in mm from table below.

QA/8000/61/* (roller bearing)

Ø	Piston rod Ø	Model	Passive locking cartridge	Locking force (N)	Suitable for cylinders Magnetic #	Non-magnetic #
32	12	QA/8032/61/*	QA/8032/63	600	RA/8032/M, PRA/182032/MIL #	RA/8032, PRA/182032/IIL #
40	16	QA/8040/61/*	QA/8040/63	1000	RA/8040/M, PRA/182040/MIL #	RA/8040, PRA/182040/IIL #
50	20	QA/8050/61/*	QA/8050/63	1500	RA/8050/M, PRA/182050/MIL #	RA/8050, PRA/182050/IIL #
63	20	QA/8063/61/*	QA/8050/63	1500	RA/8063/M, PRA/182063/MIL #	RA/8063, PRA/182063/IIL #
80	25	QA/8080/61/*	QA/8080/63	3000	RA/8080/M, PRA/182080/MIL #	RA/8080, PRA/182080/IIL #
100	25	QA/8100/61/*	QA/8080/63	3000	RA/8100/M, PRA/182100/MIL #	RA/8100, PRA/182100/IIL #

* Insert stroke length in mm from table below.
Locking cartridges should be ordered separately. Active – pressure applied to lock, passive – pressure released to lock. 2 required per guide block.

Note: For all applications please consult our Technical Service
When using guide blocks (QA/8000/61) for profile cylinders PRA/182000 you have to order a model with a barrel which is turned at 90° so that the port threads are in line with the two switch grooves.

QA/8000/81/* (plain bearing, long coupling)

Ø	Piston rod Ø	Model	Suitable for cylinders Magnetic	Non-magnetic
32	12	QA/8032/81/*	RA/8032/M, PRA/182032/M	RA/8032, PRA/182032
40	16	QA/8040/81/*	RA/8040/M, PRA/182040/M	RA/8040, PRA/182040
50	20	QA/8050/81/*	RA/8050/M, PRA/182050/M	RA/8050, PRA/182050
63	20	QA/8063/81/*	RA/8063/M, PRA/182063/M	RA/8063, PRA/182063
80	25	QA/8080/81/*	RA/8080/M, PRA/182080/M	RA/8080, PRA/182080
100	25	QA/8100/81/*	RA/8100/M, PRA/182100/M	RA/8100, PRA/182100

* Insert stroke length in mm from table below.

QA/8000/85/* (plain bearing, short coupling)

Ø	Piston rod Ø	Model	Suitable for cylinders Magnetic	Non-magnetic
32	12	QA/8032/85/*	RA/8032/M, PRA/182032/M	RA/8032, PRA/182032
40	16	QA/8040/85/*	RA/8040/M, PRA/182040/M	RA/8040, PRA/182040
50	20	QA/8050/85/*	RA/8050/M, PRA/182050/M	RA/8050, PRA/182050
63	20	QA/8063/85/*	RA/8063/M, PRA/182063/M	RA/8063, PRA/182063
80	25	QA/8080/85/*	RA/8080/M, PRA/182080/M	RA/8080, PRA/182080
100	25	QA/8100/85/*	RA/8100/M, PRA/182100/M	RA/8100, PRA/182100

* Insert stroke length in mm from table below.

Standard strokes

Ø	50	100	160	200	250	320	400	500
32	❍	❍	❍	❍	❍	❍	❍	❍
40	❍	❍	❍	❍	❍	❍	❍	❍
50	❍	❍	❍	❍	❍	❍	❍	❍
63	❍	❍	❍	❍	❍	❍	❍	❍
80	❍	❍	❍	❍	❍	❍	❍	❍
100	❍	❍	❍	❍	❍	❍	❍	❍

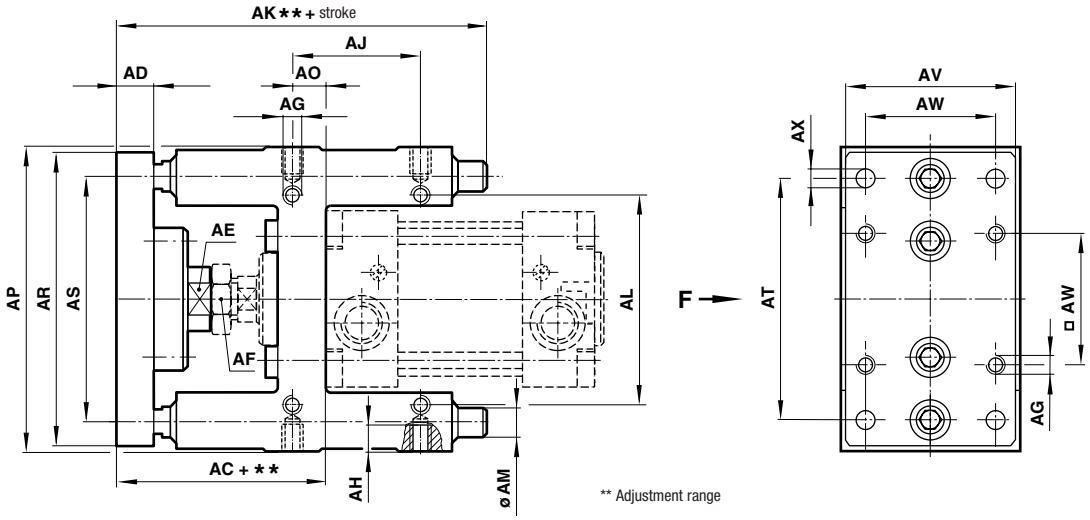
Other stroke lengths are not available, use nearest standard stroke.
Maximum stroke 500 mm.

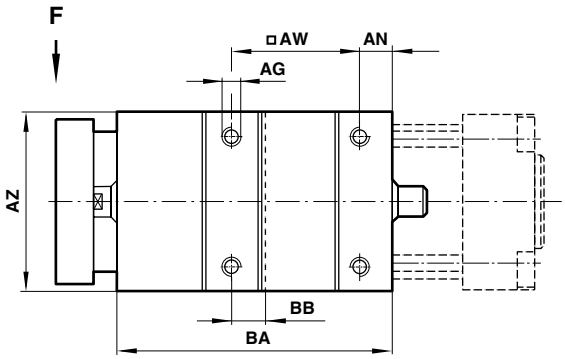
Guide blocks with plain bearings

QA/8000/51/*

Ø 32 to 100 mm

QA/8000/51/* – Guide blocks (plain bearing)



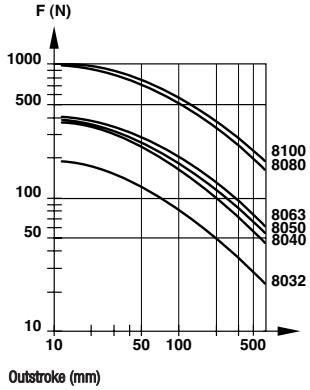


Ø	AC + **	AD	AE (A/F)	AF (A/F)	AG	AH	AJ	AK**	AL	Ø AM	AN	AO
32	69 + 2	12	15	17	M 6	10	32,5	110	58	10	6	9
40	74 + 2	12	15	19	M 6	10	38	122	64	12	6	11
50	91,5 + 4	15	22	24	M 8	12	46,5	135	80	12	6	19
63	92 + 4	15	22	24	M 8	12	56,5	153	95	12	7	15
80	106 + 6	15	27	30	M 10	15	50	180	130	16	9	14
100	111 + 6	15	27	30	M 10	17	70	199	150	16	9	19

Ø	AP	AR	AS	AT	AV	❑ AW	Ø AX	AZ	BA	BB	kg at 0 mm	kg per 100 mm
32	100	90	74	78	45	32,5	6,6	48	76	9	1,00	0,06
40	106	100	80	84	50	38	6,6	56	85	11	1,20	0,09
50	125	120	96	100	60	46,5	9	66	99	19	1,80	0,09
63	132	125	104	105	70	56,5	9	76	114	15	2,20	0,09
80	165	155	130	130	90	72	11	98	134,5	25	4,10	0,16
100	185	175	150	150	110	89	11	118	153,5	28,5	5,80	0,16

** Adjustment ranges

Note: Supplied complete with mounting screws for cylinder.



Please see page 76 for details of mountings.

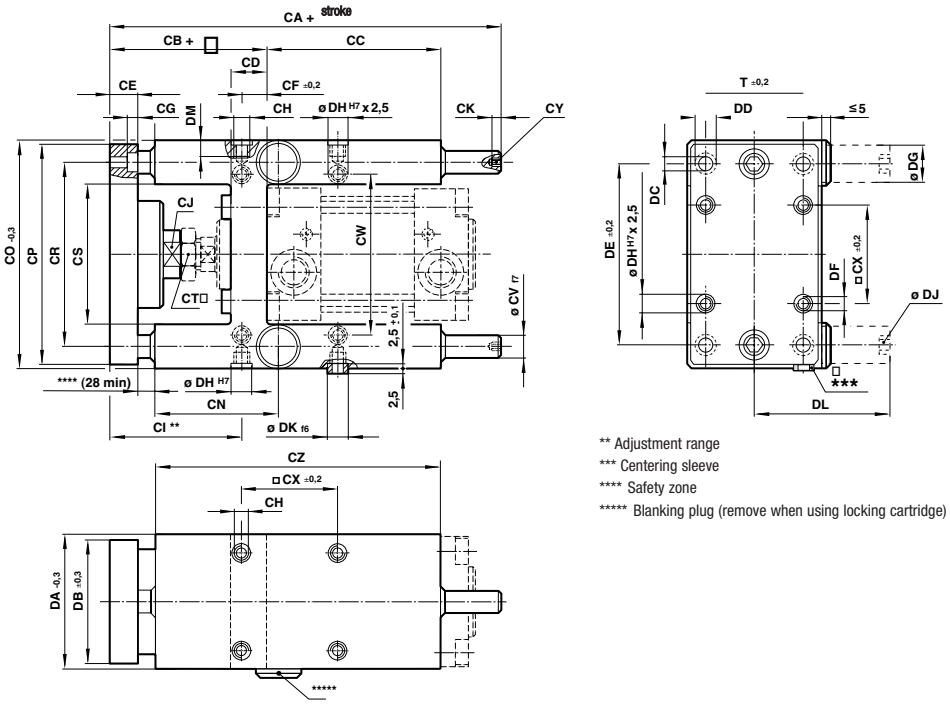
*Refer to page 70 for details of piston rod guide blocks and page 68 for locking units.
Consult our Technical Service for stroke lengths above 500 mm.

Guide blocks with roller bearings

QA/8000/61/*

Ø 32 to 100 mm

QA/8000/61/* – Guide blocks (roller bearing)



** Adjustment range
*** Centering sleeve
**** Safety zone
***** Blanking plug (remove when using locking cartridge)

Ø	CA**	CB + **	CC	CD	CE	CF ±0,2	CG	CH	CI**	CJ (A/F)	CK	CN
32	177	100 + 5	65	28	12	15,3	6,5	M 6	84,5	13	5	61
40	192	111 + 5	69	33	12	23	6,5	M 6	88	15	6	67
50	237	128 + 10	65	40	15	33,8	9	M 8	94	22	6	75,5
63	237	128 + 10	97	40	15	29,3	9	M 8	98,5	22	6	80
80	280	151 + 10	112	50	20	37	11	M 10	114	27	7	92
100	280	156 + 10	112	55	20	40,5	11	M 10	115,5	27	7	93

Ø	CO -0,3	CP	CR	CS	CT (A/F)	Ø CV f7	CW	❑ CX ±0,2	CY (A/F)	CZ	DA -0,3	DB ±0,3
32	97	90	74	50,5	17	12	61	32,5	5	125	50	45
40	115	110	87	58,5	19	16	69	38	6	140	58	54
50	137	130	104	70,5	24	20	85	46,5	6	150	70	63
63	152	145	119	85,5	24	20	100	56,5	6	182	85	80
80	189	180	148	105,5	30	25	130	72	8	215	105	100
100	213	200	172	130,5	30	25	150	89	8	220	130	120

Ø	C	Ø DD	DE ±0,2	DF	Ø DG	Ø DH H7	DJ	Ø DK f6	DL	DM	T	kg at 0 mm	kg per 100 mm
32	6,6	11	78	M 6	20	9	M 5	9	45	14	32,5	1,20	0,18
40	6,6	11	84	M 6	24	9	G 1/8	9	61,5	14	38,0	2,20	0,32
50	9	15	100	M 8	30	11	G 1/8	11	76,5	16	46,5	3,60	0,49
63	9	15	105	M 8	30	11	G 1/8	11	76,5	16	56,5	4,60	0,49
80	11	18	130	M 10	48	13	G 1/8	13	119	20	72,0	8,70	0,77
100	11	18	150	M 10	48	13	G 1/8	13	119	20	87,0	11,0	0,77

** Adjustment range

Note: Supplied complete with mounting screws for cylinders and two centering sleeves.

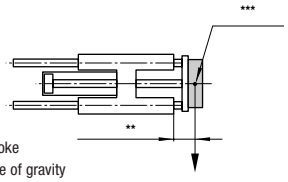
Attention

When using guide blocks (QA/8000/61) for profile cylinders PRA/182000 you have to order a model with a barrel which is turned at 90° (PRA/182000/IIL, .../MIL) so that the port threads are in line with the two switch grooves.

Guide blocks with roller bearings

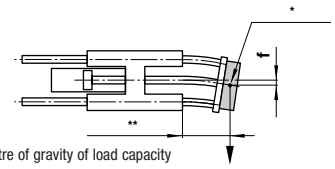
QA/8000/61/*

Ø 32 to 100 mm



** Outstroke
*** Centre of gravity

Maximum load capacity is dependent on the outstroke of a horizontally installed guide unit. In the case of short stroke operation, the load capacity figures taken from the diagram must be multiplied by the correction factor (diagram 2). In the curves of load capacity (diagram 1), the short stroke corrections have already been taken into account for an outstroke > 60 mm.

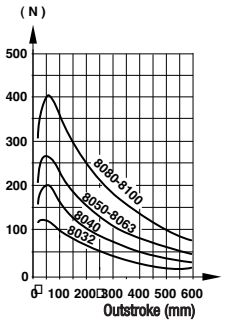


* Centre of gravity of load capacity
** Outstroke

The total deflection of guide rods will be determined by the addition of that due to own weight (diagram 3) and that due to load capacity (diagram 4).

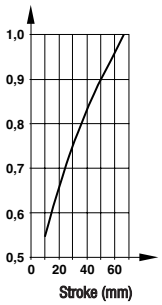
Maximum load capacity depending on outstroke (diagram 1)

Load capacity



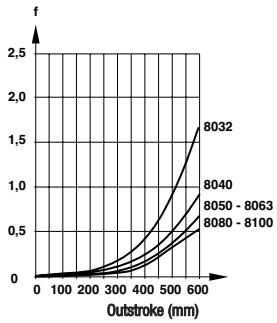
(diagram 2)

Correction factor



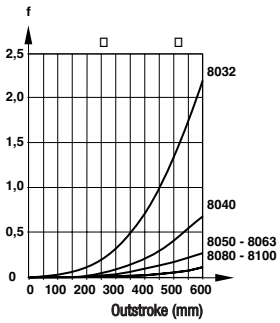
Deflection caused by own weight (diagram 3)

Deflection (mm)



Deflection caused by a load of 10 N (diagram 4)

Deflection (mm)



In the case of shock load applications, the figures given in the diagrams above must be reduced by a factor of 2.

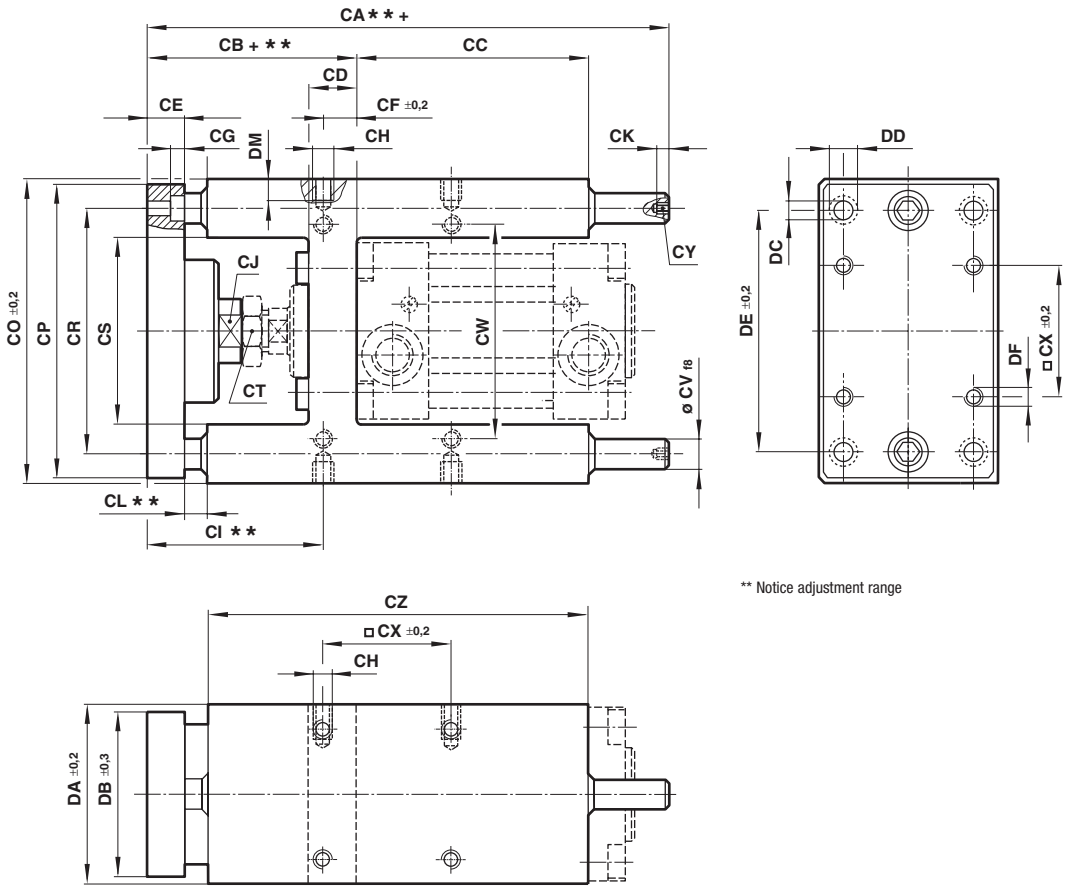
Guide blocks with plain bearings (long coupling)
Guide blocks with plain bearings (short coupling)

QA/8000/81/*

QA/8000/85/*

Ø 32 to 100 mm

QA/8000/81/* – Guide blocks (long coupling)



Ø	CA**/81	CA**/85	CB + **/81	CB + **/85	CC	CD	CE	CF ±0,2	CG	CH	CI**/81	CI**/85
32	174	149	89 + 5	64 + 5	75	24	12	4,3	6,5	M 6	84,7	59,7
40	189	164	99 + 5	74 + 5	80	28	12	11	6,5	M 6	88	63
50	210	181	113 + 10	88 + 10	78	34	15	18, 8	8,5	M 8	94,2	69,2
63	235	210	114 + 10	89 + 10	106	34	15	15,3	9	M 8	98,7	73,7
80	265	240	139 + 10	114 + 10	111	50	20	25	11	M 10	114	89
100	288	265	145 + 10	120 + 10	128	55	20	30	11	M 10	115	90
Ø	**CJ**	**CK**	**CL/81**	**CL/85**	**CO ±0,2**	**CP**	**CR**	**CS**	**CT**	**Ø CV f8**	**CW**	**□ CX ±0,2**
32	15	5	27	2	97	93	74	51	17	12	61	32,5
40	15	6	27	2	115	112	87	58,2	19	16	69	38
50	20	6	28	3	137	134	104	70,2	24	20	85	46,5
63	20	6	27	2	152	147	119	85,2	24	20	100	56,5
80	26	7	35	10	189	180	148	105,5	30	25	130	72
100	26	7	35	10	213	206	173	130,5	30	25	150	89
Ø	**CY**	**CZ**	**DA ±0,2**	**DB ±0,3**	**Ø DC**	**Ø DD**	**DE ±0,2**	**DF**	**DM**	**kg at 0 mm/81**	**kg at 0 mm/85**	**kg per 100 mm**
32	5	125	49	45	6,6	11	78	M 6	12	1,20	1,15	0,18
40	6	140	58	55	6,6	11	84	M 6	12	2,20	2,15	0,32
50	6	148	70	65	9	15	100	M 8	16	3,60	3,55	0,49
63	6	178	85	80	9	15	105	M 8	16	4,60	4,55	0,49
80	8	195	105	100	11	18	130	M 10	20	8,70	8,65	0,77
100	8	218	130	120	11	18	150	M 10	20	11,0	10,95	0,77

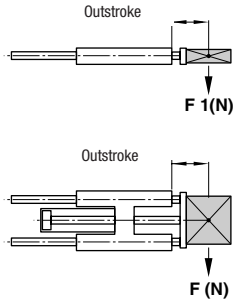
** Adjustment ranges

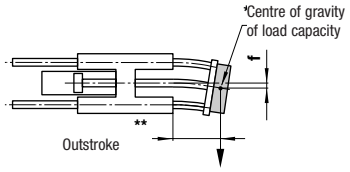
Note: Supplied complete with mounting screws for cylinder.

Guide blocks with plain bearings (long coupling)
Guide blocks with plain bearings (short coupling)

QA/8000/81/*
QA/8000/85/*
Ø 32 to 100 mm

Maximum load for QA/8000/81/* and /85/*





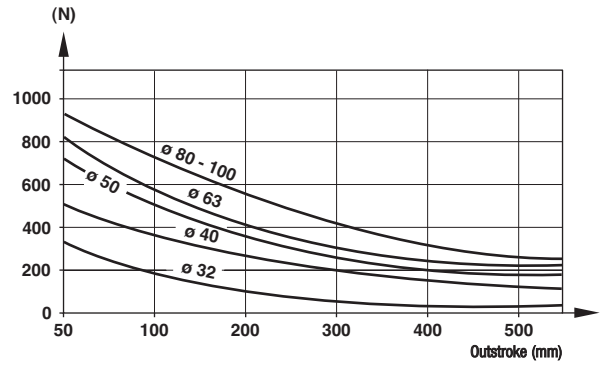
F 1= F x 0,9
Static force : F 2 = F x 2

Max. load capacity (diagram 1) is dependent on the outstroke of a horizontally installed guide unit.

The total deflection of guide rods will be determined by the addition of the amount of deflection caused by own weight (according to diagram 2) plus the amount of deflection due to load capacity (according to diagram 3).

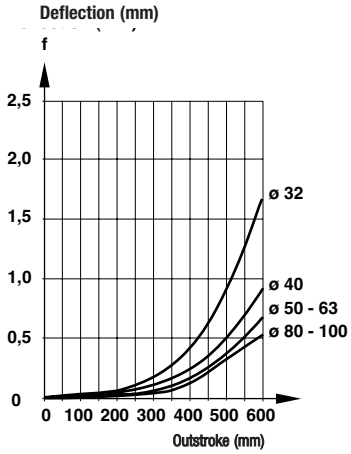
Maximum load capacity depending on outstroke (diagram 1)

Load capacity



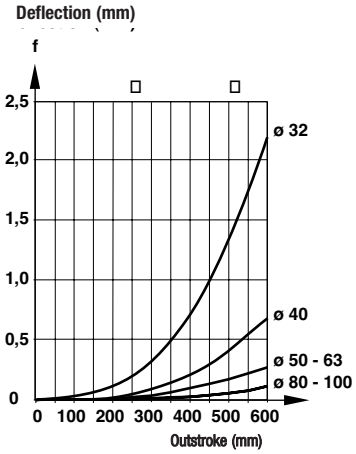
Deflection caused by own weight (diagram 2)

Deflection (mm)



Deflection caused by a load of 10 N (diagram 3)

Deflection (mm)

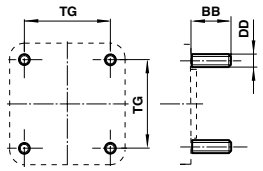


In the case of shock load applications, the figures given in the diagrams above must be reduced by a factor of 2.

ISO/VDMA Cylinder mountings

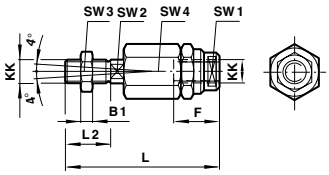
For PRA/181000,.../M; PRA/182000,.../M; PRA/183000,.../M
RA/28000,.../M; RA/28300,.../M; RA/8000,.../M; KA/8000,.../M
RM/191000,.../M; RM/192000,.../M; RM/193000,.../M; PVA/8000/M

Front or rear stud – A
ISO 6431



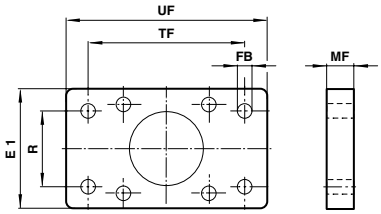
Ø	BB	DD	TG	kg
32	17	M6	32,5	0,02
40	17	M6	38	0,02
50	23	M8	46,5	0,05
63	23	M8	56,5	0,05
80	28	M10	72	0,08
100	28	M10	89	0,08
125	34	M12	110	0,14
160	42	M16	140	0,31
200	42	M16	175	0,31
250	50	M20	220	0,92
320	60	M24	270	1,46

Piston rod swivel – AK



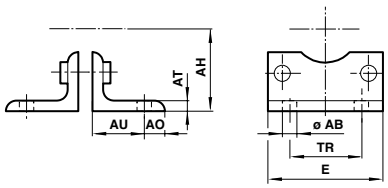
Thread KK	B1	F	L	L2	SW1	SW2	SW3	SW4	kg
M10x1,25	5	26	73	20	19	12	17	30	0,20
M12x1,25	6	26	77	24	19	12	19	30	0,20
M16x1,5	8	34	106	32	30	19	24	42	0,65
M20x1,5	10	42	122	40	30	19	30	42	0,72
M27x2	13,5	40	147	54	40	24	41	55	1,70
M36x2	18	78	251	72	50	36	55	75	5,40

Rear flange – B
Front flange – G
ISO 6431 and
VDMA 24562 Part 2



Ø	E1	Ø FB	MF	R	TF	UF	kg
20	36	6,6	10	0	55	70	0,16
25	40	6,6	10	0	60	76	0,20
32	50	7	10	32	64	80	0,25
40	55	9	10	36	72	90	0,35
50	65	9	12	45	90	110	0,70
63	75	9	12	50	100	125	0,80
80	100	12	16	63	126	154	1,35
100	120	14	16	75	150	186	2,20
125	140	16	20	90	180	224	1,70
160	180	18	20	115	230	280	3,10
200	220	22	25	135	270	320	4,60
250	280	26	25	165	330	395	7,40
320	350	33	30	200	400	475	13,6

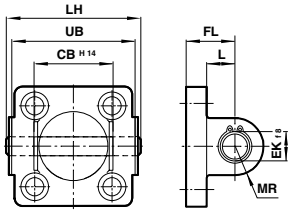
Foot – C
ISO 6431 and
VDMA 24562 Part 2



Ø	Ø AB	AH	AO	AT	AU	E	TR	kg
20	6,6	27	6	4	16	36	22	0,03
25	6,6	30	7	4	16	40	26	0,04
32	7	32	8 (11)	4	24	48	32	0,15
40	9	36	9 (12)	4 (5)	28	53	36	0,18
50	9	45	10 (13)	5	32	64	45	0,30
63	9	50	12 (13)	5	32	74	50	0,39
80	12	63	19	5 (6)	41	98	63	0,80
100	14	71	19	5 (6)	41	115	75	0,95
125	16	90	20 (25)	9 (7)	45	140	90	2,40
160	18	115	20	8	60	180	115	3,50
200	22	135	30	9	70	220	135	5,25
250	26	165	35	10	75	280	165	9,50
320	33	200	45	16	85	350	200	22,0

( ) stainless steel, weight on request

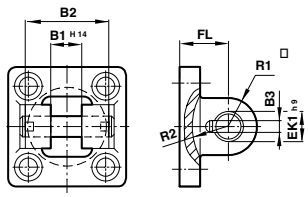
Rear clevis – D
ISO 6431 and
VDMA 24562 Part 2



Ø	CB H14	Ø EK f8	FL	L	LH	MR	UB	kg
32	26	10	22	13	52	9	45	0,11
40	28	12	25	16	60	12	52	0,16
50	32	12	27	17	68	12	60	0,22
63	40	16	32	22	79	15	70	0,34
80	50	16	36	22	99	15	90	0,54
100	60	20	41	27	119	20	110	0,90
125	70	25	50	31	139 (140)	25	130	2,70
160	90	30	55	35,5	181	30	170	4,30
200	90	30	60	36	181	30	170	6,10
250	110	40	70	45	218	40	200	1,90
320	120	45	80	50	238	45	220	30,5

( ) Stainless steel, weight on request

Rear clevis – D2
VDMA 24562 Part 2

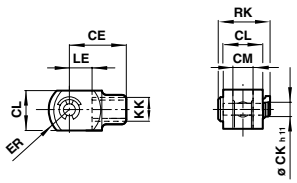


Ø	B1 H14	B2	B3	Ø EK h9	FL	R1	R2	kg
32	14	34	3,3	10	22	11	17	0,20
40	16	40	4,3	12	25	12	20	0,23
50	21	45	4,3	16	27	14,5	22	0,36
63	21	51	4,3	16	32	18	25	0,55
80	25	65	4,3	20	36	22	30	0,90
100	25	75	6,3	20	41	22	32	1,45
125	37	97	6,3	30	50	30	42	2,70
160	43	122	6,3	35	55	36	46	4,30
200	43	122	6,3	35	60	38	49	6,10

ISO/VDMA Cylinder mountings

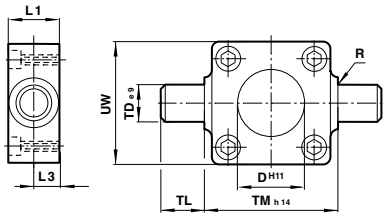
For PRA/181000,.../M; PRA/182000,.../M; PRA/183000,.../M
RA/28000,.../M; RA/28300,.../M; RA/8000,.../M; KA/8000,.../M
RM/191000,.../M; RM/192000,.../M; RM/193000,.../M; PVA/8000/M

Piston rod clevis – F



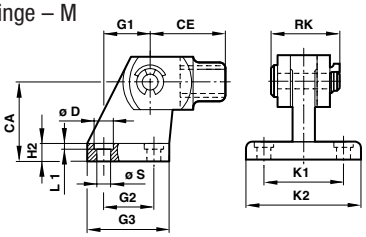
Thread KK	CE	Ø CK h11	CL	CM	ER	LE	RK	kg
M10x1,25	40	10	20	10	16	20	28	0,09
M12x1,25	48	12	24	12	19	24	32	0,13
M16x1,5	64	16	32	16	25	32	41,5	0,33
M20x1,5	80	20	40	20	32	40	50	0,67
M27x2	110	30	55	30	45	54	62	1,35
M36x2	144	35	70	35	57	72	95	3,00
M42x2	168	40	85	40	68	84	106	6,40
M48x2	192	50	96	50	85	96	121	8,70

Front or rear detachable trunnion – FH



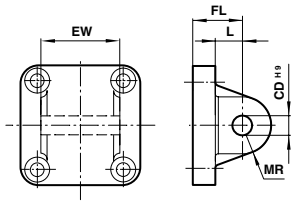
Ø	Ø D H11	L1	L3	R	ØTD ø9	TL	TM h14	UW1	kg
32	30	16	8	1	12	12	50	50	0,20
40	35	20	10	1,6	16	16	63	55	0,38
50	40	24	12	1,6	16	16	75	65	0,60
63	45	24	12	1,6	20	20	90	75	1,10
80	45	28	14	1,6	20	20	110	100	1,90
100	55	38	19	2	25	25	132	120	3,50
125	60	50	25	2	25	25	160	145	6,50

Front hinge – M



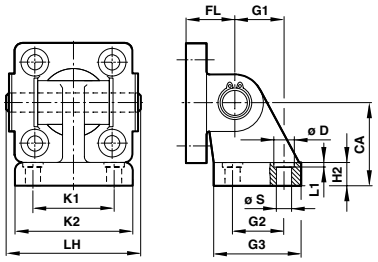
Thread KK	Ø	CA	CE	Ø D	G1	G2	G3	H2	K1	K2	L1	RK	Ø S	kg
M10x1,25	32	32	40	11	21	18	31	8	38	51	1,6	28	6,6	0,24
M12x1,25	40	36	48	11	24	22	35	10	41	54	1,6	32	6,6	0,33
M16x1,5	50	45	64	15	33	30	45	12	50	65	1,6	41,5	9	0,81
M16x1,5	63	50	64	15	37	35	50	12	52	67	1,6	41,5	9	0,83
M20x1,5	80	63	80	18	47	40	60	14	66	86	2,5	50	11	1,42
M20x1,5	100	71	80	18	55	50	70	15	76	96	2,5	50	11	1,87
M27x2	125	90	110	20	70	60	90	20	94	124	3,2	62	14	3,85
M36x2	160	115	144	20	97	88	126	25	118	156	4	95	14	9,00
M36x2	200	135	144	24	105	90	130	30	122	162	4	95	16	10,6

Rear eye – R
ISO 6431 and
VDMA 24562
Part 2

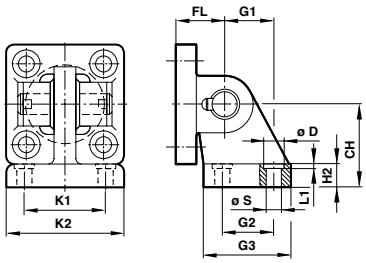


Ø	Ø CD H9	EW	FL	L	MR	kg
20	8	15,8	20	14	8	0,02
25	8	15,8	20	14	8	0,03
32	10	25,8	22	13	9	0,09
40	12	27,8	25	16	12	0,11
50	12	31,7	27	17	12	0,17
63	16	39,7	32	22	15	0,24
80	16	49,7	36	22	15	0,37
100	20	59,7	41	27	20	0,59
125	25	69,7	50	33	25	3,20
160	30	89,7	55	35,5	30	6,10
200	30	89,7	60	37	30	6,80

Rear hinge – L



Rear hinge – UL
VDMA 24562
Part 2



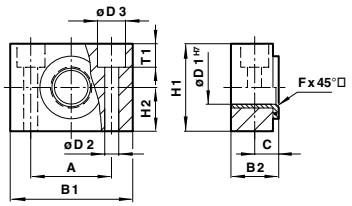
Ø	CA	CH	Ø D	FL	G1	G2	G3	H2	K1	K2	L1	LH	Ø S	L–kg	UL–kg
32	32	32	11	22	21	18	31	8	38	51	1,6	52	6,6	0,16	2,39
40	36	36	11	25	24	22	35	10	41	54	1,6	60	6,6	0,23	0,47
50	45	45	15	27	33	30	45	12	50	65	1,6	68	9	0,36	0,82
63	50	50	15	32	37	35	50	12	52	67	1,6	79	9	0,52	1,14
80	63	63	18	36	47	40	60	14	66	86	2,5	99	11	0,82	1,93
100	71	71	18	41	55	50	70	15	76	96	2,5	119	11	1,32	2,85
125	90	90	20	50	70	60	90	20	94	124	3,2	139	14	5,40	5,80
160	115	115	20	55	97	88	126	25	118	156	4	181	14	10,6	10,7
200	135	135	24	60	105	90	130	30	122	162	4	181	18	14,1	15,2
250*	165	–	33	70	128	110	160	35	150	200	2	218	22	32,4	–
320*	200	–	40	80	150	122	186	40	170	234	2	238	26	52,5	–

* Stainless steel, weight on request

ISO/VDMA Cylinder mountings

For PRA/181000,.../M; PRA/182000,.../M; PRA/183000,.../M
RA/28000,.../M; RA/28300,.../M; RA/8000,.../M; KA/8000,.../M
RM/191000,.../M; RM/192000,.../M; RM/193000,.../M; PVA/8000/M

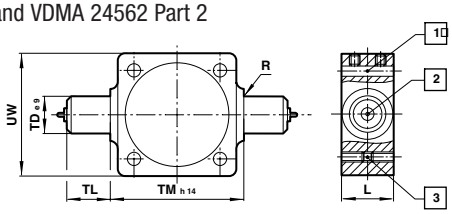
Trunnion support – S
VDMA 24562
Part 2



Ø	A	B1	B2	C	Ø H7	Ø D2	Ø D3	fx45°	H1	H2	T1	kg
32	32	46	18	10,5	12	6,6	11	1	30	15	6,8	0,10
40	36	55	21	12	16	9	15	1,6	36	18	9	0,14
50	36	55	21	12	16	9	15	1,6	36	18	9	0,14
63	42	65	23	13	20	11	18	1,6	40	20	11	0,19
80	42	65	23	13	20	11	18	1,6	40	20	11	0,19
100	50	75	28,5	16	25	14	20	2	50	25	13	0,34
125	50	75	28,5	16	25	14	20	2	50	25	13	0,34
160	60	92	39	21,5	32	18	26	2,5	60	25	15,5	1,90
200	60	92	39	21,5	32	18	26	2,5	60	25	15,5	1,90

For use with mountings style H, FH and UH. Stainless steel, weight on request.

Centre trunnion – H (for tie rod types)
ISO 6431 and VDMA 24562 Part 2



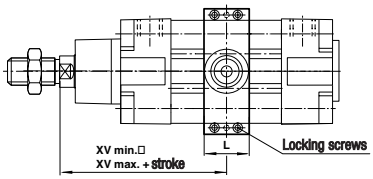
*Type – UH ***Type – H
**Grease nipple up to Ø 125 mm

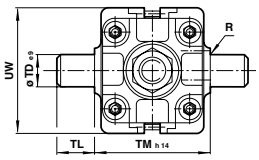
Ø	L	R	Ø TD e9	TL	TM h14	UW	XV min.	XV max.	kg	Torque max. (Nm)
32	20	1	12	12	50	50	66	80	0,16	6
40	24	1,6	16	16	63	58	76	89	0,35	6
50	28	1,6	16	16	75	70	82	98	0,65	10
63	28	1,6	20	20	90	80	88	107	0,85	10
80	28	1,6	20	20	110	100	97	123	1,20	15
100	38	2	25	25	132	126	112	128	2,30	15
125	50	2	25	25	160	152	136	154	3,30	25
160	50	2,5	32	32	200	192	155	185	5,30	40
200	50	2,5	32	32	250	240	170	200	9,40	40
250	60	3,2	40	40	320	318	193	217	18,0	–
320	70	3,2	50	50	400	400	215	245	30,0	–

Note: Style 'H': These mountings are only supplied assembled complete with the cylinder. Unless otherwise specified, units will be supplied with dimension 'XV' plus half the stroke length. 'XV' = Distance from the piston rod shoulder to the centre of the mounting.

Style 'UH': It is most important that the locking screws which secure the mounting to the tie rod are tightened to the torque figures shown in the table below. For maximum energy input, consult our Technical Service.

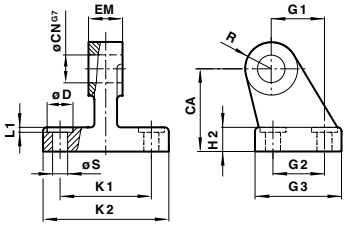
Adjustable centre trunnion – UH (for profile types)



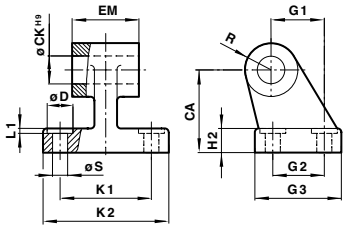


Ø	L	R	Ø TD e9	TL	TM h14	UW	kg	Torque max. (Nm)
32	25	1	12	12	50	58	0,35	2,0
40	28	1,6	16	16	63	65	0,50	3,5
50	28	1,6	16	16	75	80	0,80	3,5
63	36	1,6	20	20	90	96	1,40	5,0
80	36	1,6	20	20	110	116	1,90	6,0
100	48	2	25	25	132	140	2,30	6,0
125	50	2	25	25	160	163	3,30	6,0

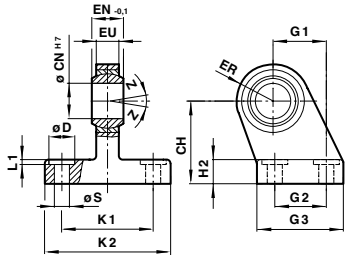
Narrow hinge – SS



Wide hinge – SW



Swivel hinge – US

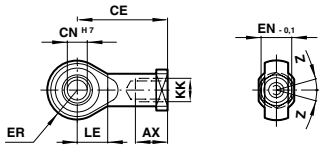


Ø	CA	CH CN H7	Ø CK H9	Ø D	H2	EM	EM1	EN-0,1	ER	EU	G1	G2	G3	H6	K1	K2	L1	R1	Ø S	Z	SW kg	SS kg	US kg
32	32	10	10	11	8	26	10	14	16	10,5	21	18	31	8	38	51	1,6	10	6,6	13°	0,05	0,15	0,19
40	36	12	12	11	10	28	12	16	18	12	24	22	35	10	41	54	1,6	11	6,6	13°	0,07	0,20	0,24
50	45	16	12	15	12	32	16	21	21	15	33	30	45	10	50	65	1,6	13	9	13°	0,14	0,48	0,46
63	50	16	16	15	12	40	16	21	23	15	37	35	50	12	52	67	1,6	15	9	15°	0,18	0,50	0,59
80	63	20	16	18	14	50	20	25	28	18	47	40	60	14	66	86	2,5	15	11	15°	0,28	0,75	1,03
100	71	20	20	18	15	60	20	25	30	18	55	50	70	15	76	96	2,5	19	11	15°	1,42	1,20	1,40
125	90	30	25	20	20	70	30	37	40	25	70	60	90	20	94	124	–	22	14	15°	2,70	2,50	3,10
160	–	–	–	–	–	90	35	43	44	28	97	88	126	25	118	156	4	31	14	15°	6,30	6,00	6,40
200	–	–	–	–	–	90	35	43	47	28	105	90	130	30	122	162	4	31	16	15°	8,00	7,60	9,10
250	–	–	–	–	–	110	–	–	–	–	128	110	160	35	150	200	2	40	22	–	13,4	–	–
320	–	–	–	–	–	120	–	–	–	–	150	122	186	40	170	234	2	45	26	–	22,0	–	–

ISO/VDMA Cylinder mountings

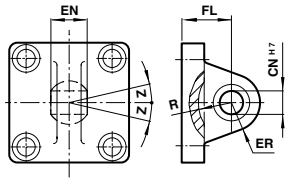
For PRA/181000,.../M; PRA/182000,.../M; PRA/183000,.../M
RA/28000,.../M; RA/28300,.../M; RA/8000,.../M; KA/8000,.../M
RM/191000,.../M; RM/192000,.../M; RM/193000,.../M; PVA/8000/M

Universal piston rod eye – UF
DIN ISO 8139



Thread KK	AX	CE	Ø CN H7	EN -0,1	ER	LE	Z	kg
M10x1,25	20	43	10	14	14	15	13°	0,09
M12x1,25	22	50	12	16	16	17	13°	0,13
M16x1,5	28	64	16	21	21	22	15°	0,33
M20x1,5	33	77	20	25	25	26	15°	0,67
M27x2	51	110	30	37	35	36	15°	1,35
M36x2	56	125	35	43	40	41	16°	3,00
M42x2	60	142	40	49	45	46	17°	6,40
M48x2	65	160	50	60	58	59	12°	8,70

Universal rear eye – UR

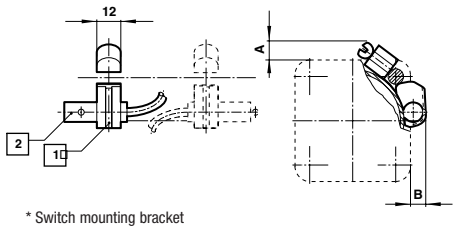


Ø	Ø CN H7	EN	ER	FL	R	Z	kg
32	10	14	16	22	14,5	13°	0,15
40	12	16	19	25	18	13°	0,25
50	16	21	21	27	19	13°	0,4
63	16	21	24	32	24	15°	0,55
80	20	25	28	36	24	15°	0,9
100	20	25	30	41	29	15°	1,5
125	30	37	40	50	36	15°	2,7
160	35	43	44	55	41	16°	4,6
200	35	43	48	60	42	16°	7,3

QM/27/2/1 – Switch mounting brackets

Ø	A	B	kg
32	9	7	0,01
40	8	8	0,01
50	7	5	0,01
63	7	7	0,01
80	7	4	0,01
100	2	2	0,01
125	-4	-3	0,01
160	-10	-9	0,01
200	-17	-14	0,01

Switches: M/50, QM/34 and QM/134 (Ø 8 mm)

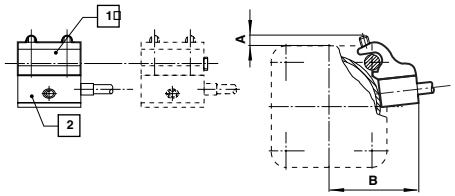


* Switch mounting bracket
** Magnetically operated switch

QM/31/000/22 – Switch mounting brackets

Ø	A	B	kg
32	4,5	38	0,03
40	5,5	43	0,03
50	4,5	48	0,03
63	4,5	53	0,03
80	1,5	61	0,03
100	0,5	68	0,03
125	-1	79	0,03
160	0	91,5	0,03
200	-4	106	0,03
250	-3	138	0,04
320	-21	154	0,08

Switches: QM/31, QM/32 and QM/132

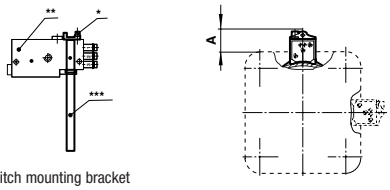


* Switch mounting bracket
** Magnetically operated switch

QM/140/010/22 – Bracket with holding strap

Ø	A	kg
32	31,5	0,02
40	30,5	0,02
50	31,5	0,02
63	29,5	0,02
80	30,5	0,02
100	30	0,02

Switch: QM/140



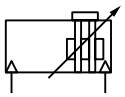
* Switch mounting bracket
** Pneumatic switch
***Holding strap

LINTRA® Rodless cylinders

M/44000/M

Double acting

Ø 25 to 40 mm



New compact, space-saving design
Proven sealing system
Integral switch mounting
Adjustable cushioning
Magentic piston as standard

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting
Magnetic piston

Operating pressure:
1 to 8 bar

Operating temperature:
-30°C to +80°C max.
Consult our Technical Service for use below +2°C

Cylinder diameters:
25, 32, 40 mm

Strokes:
5000 mm or 196 inches max.
Longer strokes on request

Materials

Barrel: anodised aluminium alloy
End covers: aluminium alloy
Yoke: anodised aluminium alloy
Cover and pistons: plastic
Sealing strip: polyurethane
Cover strip: polyamide
Seals: nitrile rubber & polyurethane

Standard models

Ø	Port size	Model
25	G1/8	M/44025/M/*
32	G1/8	M/44032/M/*
40	G1/4	M/44040/M/*

* Insert stroke length
Note: When specifying NPT ports the stroke should be given in inches

Options selector

★/440★★/M/★★★★

Porting	Substitute
ISO G-thread	M
NPT-thread	C

Guiding system	Substitute
Internal	0

Cylinder diameters (mm)	Substitute
25	025
32	032
40	040

Note: When specifying NPT ports the stroke should be given in inches

Stroke length in mm for ISO G-thread
5000 max.

★★★

Stroke length in full inches for NPT-thread
196 max.

★

Fractional increments of stroke (inches)					
Substitute		Substitute		Substitute	
0	A	3/8	G	3/4	P
1/16	B	7/16	H	13/16	R
1/8	C	1/2	J	7/8	S
3/16	D	9/16	K	15/16	T
1/4	E	5/8	M	Special	X
5/16	F	11/16	N		

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

LINTRA® Rodless cylinders

M/44000/M

Double acting

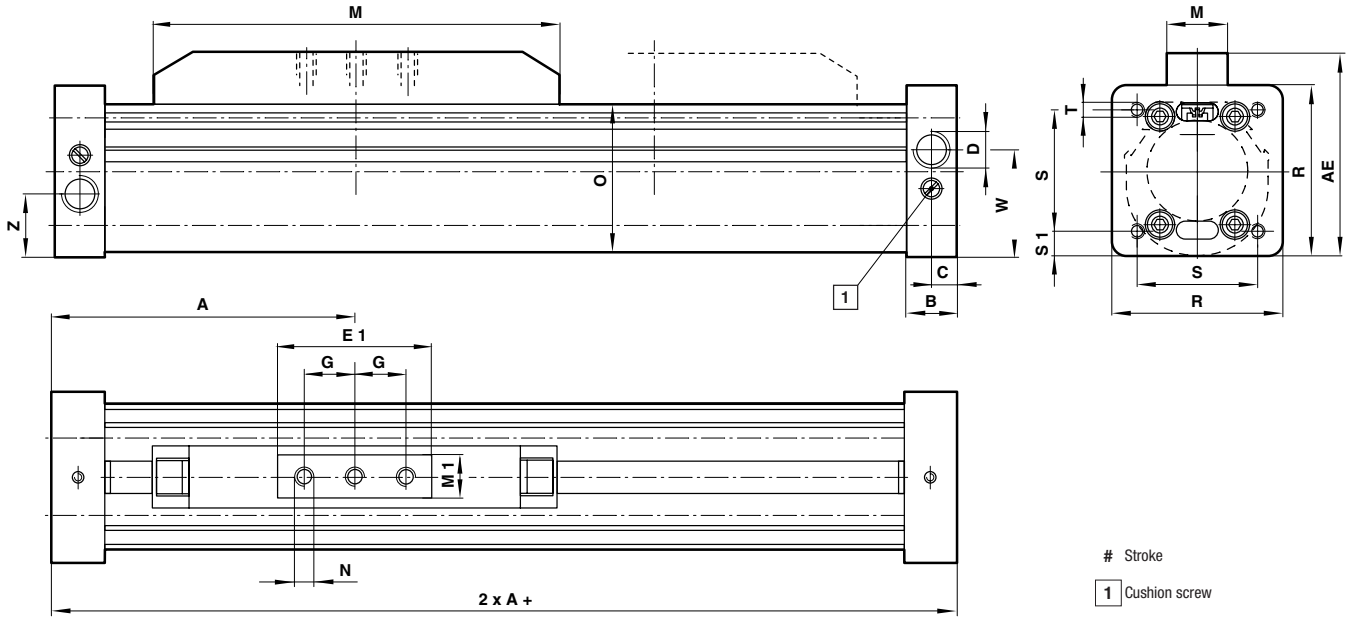
Ø 25 to 40 mm

Mountings

Ø	C	V	S	Switch mounting brackets
				
25	QM/44025/21	Q44025AAAAAM332	Q44025AAAAAM337	M/P72487
32	QM/44032/21	Q44032AAAAAM332	Q44032AAAAAM337	M/P72487
40	QM/44040/21	Q44040AAAAAM332	Q44040AAAAAM337	M/P72487

Standard cylinders

M/44000/M/...



Ø	A	AE	B	C	D (Port threads)*		E	E1	G	M	M1
25	72,5	53,2	13,5	7	G 1/8	1/8 NPT	100	40	12,5	22	18
32	82,5	67,8	13,5	7	G 1/8	1/8 NPT	120	50	15	24	20
40	112,5	79,3	19	9,5	G 1/4	1/8 NPT	165	60	20	24	20
Ø	**N**	**O**	**R**	**S**	**S1**	**T**	**W**	**Z**	**kg at 0 mm**	**kg per 100 mm**	
25	M5-7 deep	35	42	33	4,5	M4-13,5	25,6	16,4	0,60	0,15	
32	M6-10 deep	46,5	53	41	6	M6-13,5	33,5	19,5	0,90	0,25	
40	M6-10 deep	58	65,5	48	8,75	M6-19	40,8	24,8	1,40	0,35	

* Optional ISO G or NPT-thread

LINTRA® Rodless cylinders

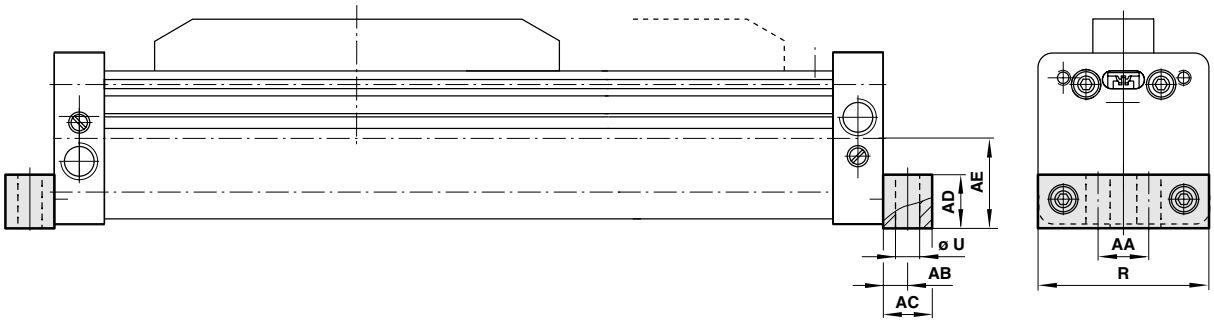
M/44000/M

Double acting

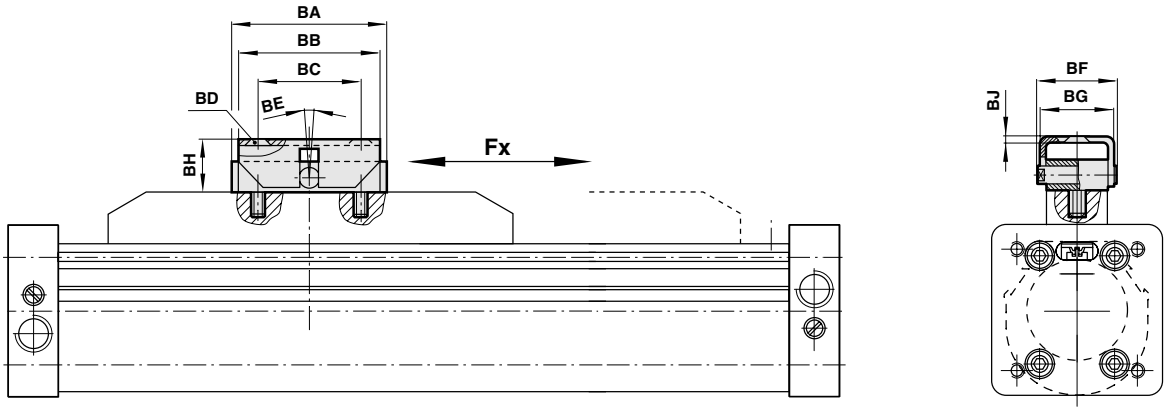
Ø 25 to 40 mm

Mountings

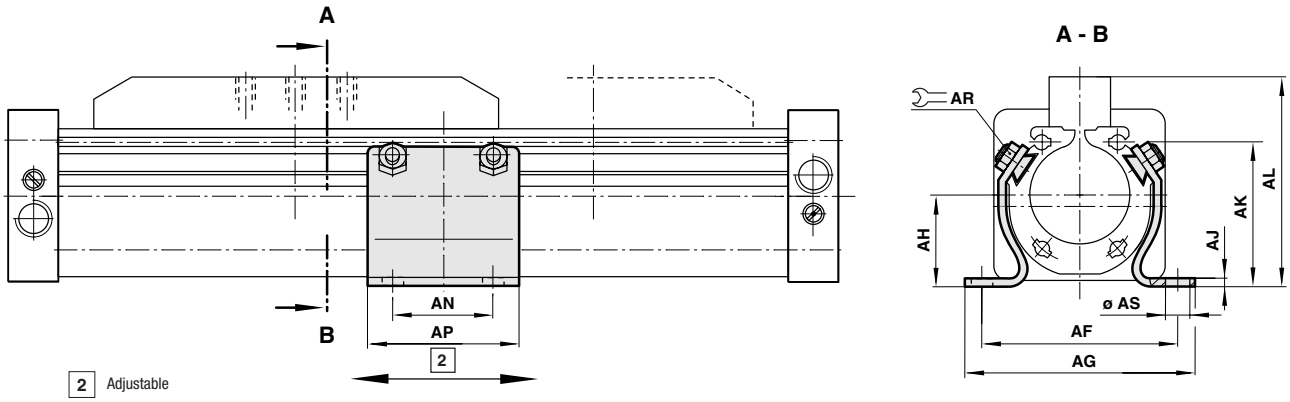
QM/44000/21 – Foot mounting style 'C'



QM44000AAAAAM337 – Swinging bridge mounting style 'S'



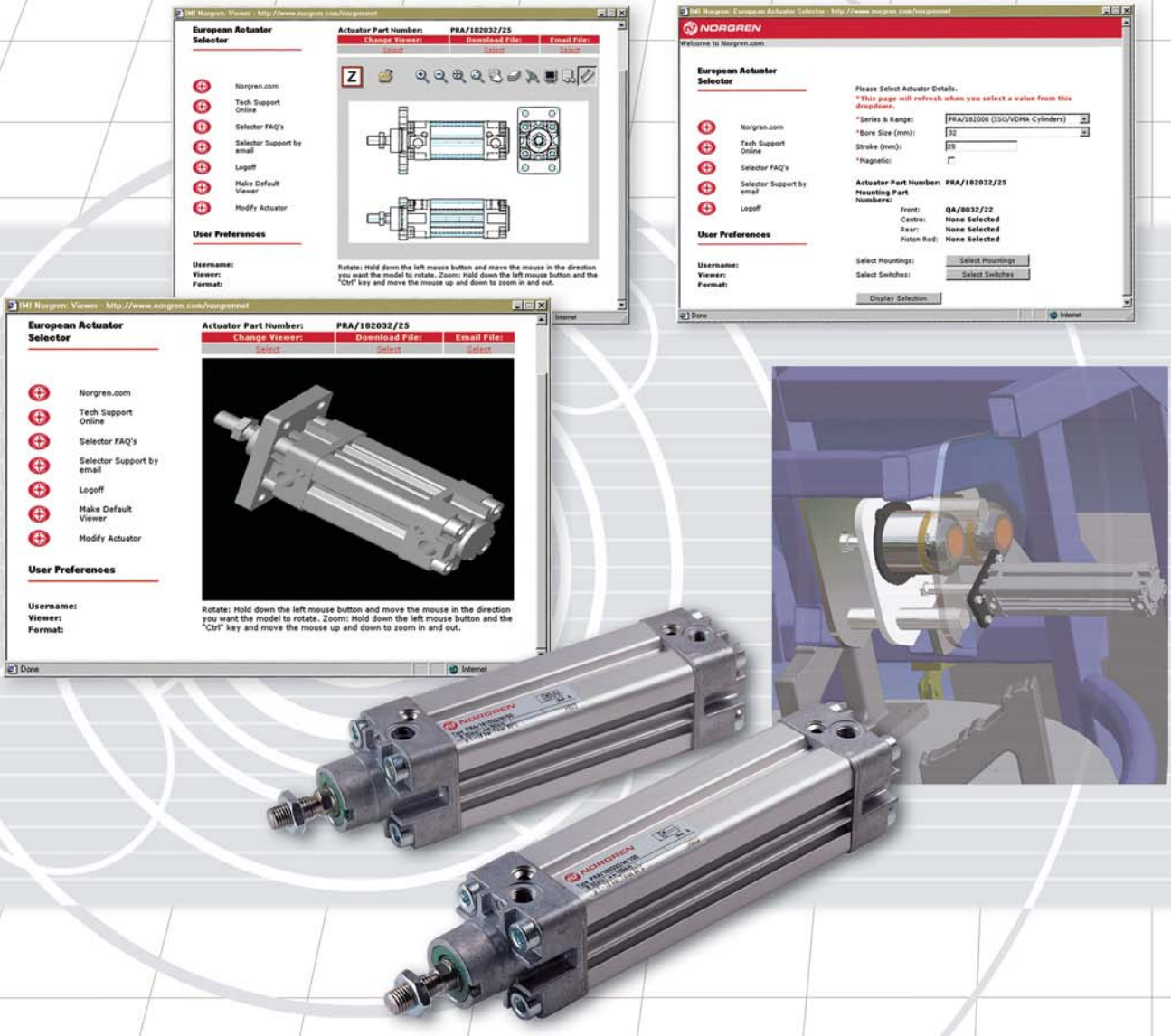
QM44000AAAAAM332 – Centre support mounting style 'V'



2 Adjustable

Ø	AA	AB	AC	AD	AE	AF	AG	AH	AJ	AK	AL	AN	AP	AR	Ø AS
25	18,5	5	10	10	21,5	58	70	21,5	3	31	53,5	25	40	10	6,6
32	20	8	16	16	28,5	70	83	28,5	3	43	70	30	50	10	9
40	27	7,5	15	22	35	79	92	35	3	55	81,5	40	60	10	9

Ø	BA	BB	BC	BD (DIN74)	BE	BF	BG	BH	BJ	Fx	R	Ø U	Style C	Style S	Style V
25	40	40	28	BM 5	± 8	29	28	15 +5	2	250 N	42	5,5	0,04 kg	0,15 kg	0,07 kg
32	50	55	40	BM 6	± 8	31	30	17,5 + 5	2	410 N	53	9	0,09 kg	0,20 kg	0,15 kg
40	60	55	40	BM 6	± 8	31	30	18 + 5	2	640 N	65,5	9	0,13 kg	0,25 kg	0,25 kg



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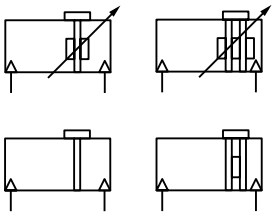
LINTRA-LITE® Rodless cylinders

A44000

Double acting

Ø 25 to 40 mm



New compact, space-saving design

Proven sealing system

Integral switch mounting

Buffer or adjustable cushioning

Standard foot mountings

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, buffer or adjustable cushioning, magnetic or non-magnetic piston

Operating pressure:

1 to 8 bar

Operating temperature:

-30°C to +80°C max.

Consult our Technical Service for use below +2°C

Strokes:

Made to order

maximum 5500 mm

Materials

Barrel: anodised aluminium alloy

End covers: zinc plated steel/aluminium

Yoke: anodised aluminium alloy

Pistons: plastic

Cover: plastic

Sealing strip: polyurethane

Cover strip: polyamide

Seals: nitrile rubber & polyurethane

Standard models

Ø	Non-magnetic Buffer cushion	Adjustable cushion	Magnetic Buffer cushion	Adjustable cushion
25	A44025AAAAA*	A44025AACAA*	A44025AABAA*	A44025AADAA*
32	A44032AAAAA*	A44032AACAA*	A44032AABAA*	A44032AADAA*
40	A44040AAAAA*	A44040AACAA*	A44040AABAA*	A44040AADAA*

* Insert stroke length in mm.

Note: Service kits are available in 1000 mm stroke multiples e.g. QM/44032AACAAT788**1000**, QM/44032AACAAT788**2000** etc.

Order magnetically operated switches separately, see page 199

Cylinder sizing and speed control see page 6.

Options selector

A44★★★AA★AA★★★★

Cylinder diameters (mm)	Substitute
25	025
32	032
40	040

Strokes (mm)
5500 max.

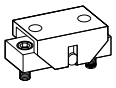
Variants (magnetic piston)	Substitute
Buffer cushioning	B
Adjustable cushioning	D

Variants (non-magnetic piston)	Substitute
Buffer cushioning	A
Adjustable cushioning	C

Note: Part number must contain the given number of digits e.g. A44025AACAA0800 (stroke 800 mm)

NPT ported models are also available, consult our Technical Service.

Mountings

Ø	S	V
		
25	Q44025AAAAAM337	Q44025AAAAAM332
32	Q44032AAAAAM337	Q44032AAAAAM332
40	Q44040AAAAAM337	Q44040AAAAAM332

LINTRA-LITE® Rodless cylinders

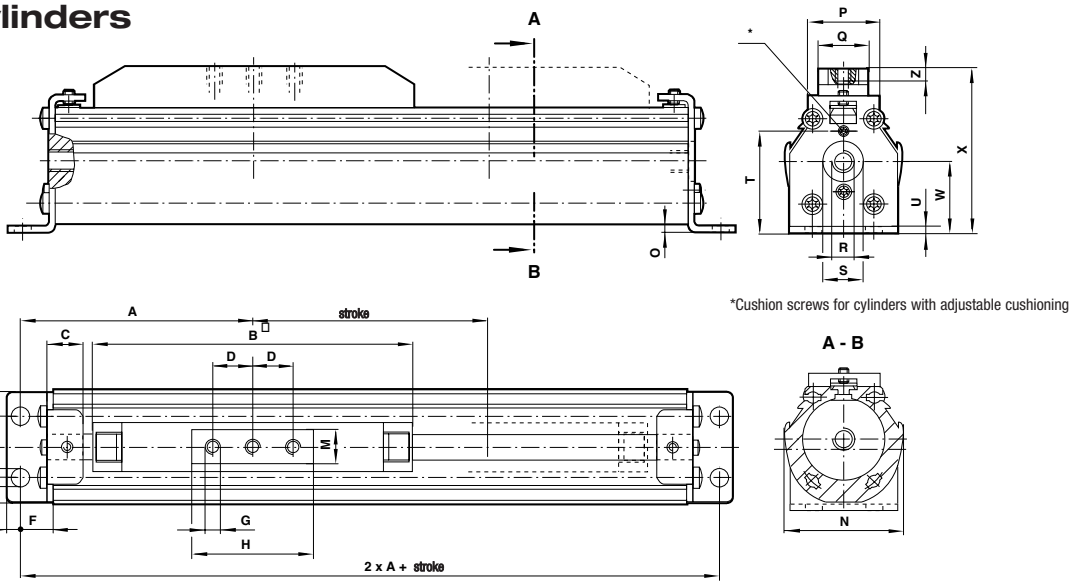
A44000

Double acting

Ø 25 to 40 mm

Standard cylinders

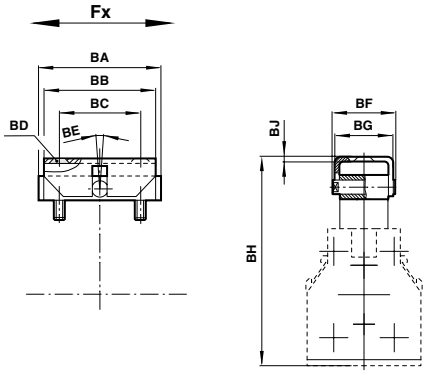
A44000



Ø	A	B	C	D	E	F	G	H	J	K	Ø L	M
25	77	100	12	12,5	5	12	M5	40	36	18	7	18
32	93	120	18	15	7	15	M6	50	48	26	9	20
40	117,5	165	18	20	7	17	M6	60	54	30	9	20

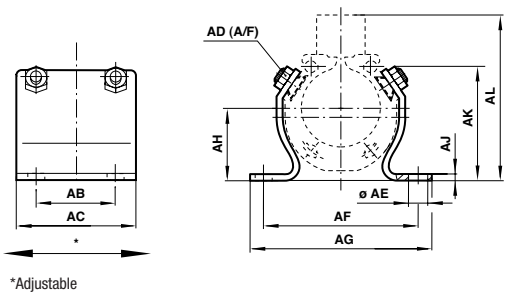
Ø	N	O	P	Q	R (port threads)	Ø S	T	U	W	X	Z max.	kg at 10 mm	kg per 100 mm
25	40	2,5	28	22	G1/8	12	30,5	2	21,5	53,5	7	0,50	0,15
32	49,5	2,5	32	24	G1/8	17	40	3	28,5	70	10	0,80	0,25
40	57	3,5	36	24	G1/4	20	49,5	3	35	81,5	10	1,30	0,35

Swinging bridge – S



Ø	BB	BC	BD (DIN74)	BE	BF	BG	BH	BJ	Fx S	kg
25	40	28	BM5	±8	27	26	68,5 +5	2	250N	0,15
32	55	40	BM5	±8	29	28	87,5 +5	2	410N	0,20
40	55	40	BM6	±8	29	28	99,5 +5	2	640N	0,25

Centre support – V



*Adjustable

Ø	AB	AC	AD (A/F)	Ø AE	AF	AG	AH	AJ	AK	AL	BA	kg
25	25	40	10	6,6	58	70	21,5	3	31	53,5	40	0,07
32	30	50	10	9	70	83	28,5	3	43	70	50	0,15
40	40	60	10	9	79	92	35	3	55	81,5	60	0,25

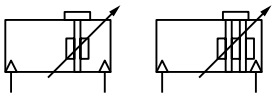
LINTRA® Rodless cylinders

M/46000, .../M, M/46100, .../M, M/46200,.../M

Internal, external and precision roller guided

Double acting

Ø 16 to 80 mm



Well proven, long life sealing technology

Lightweight design extrusion with integral switch mounting slots

Capable of withstanding large bending moments and lateral forces

Non-lube operation

Wide range of variants

Technical data

Medium:

Compressed air, filtered and lubricated or non-lubricated

Operation:

M/46000, M/46100, M/46200

Double acting, adjustable cushioning, non-magnetic piston

M/46000/M, M/46100/M, M/46200/M

Double acting, adjustable cushioning, magnetic piston

Operating pressure:

1 to 10 bar

(1,5 to 10 bar for Ø 16 mm)

Operating temperature:

-30°C to +80°C.

Consult our Technical Service for use below +2°C

Strokes:

Made to order

Ø 16 to 40 mm: 8500 mm

Ø 50 and 63 mm: 7000 mm

Ø 80: 5500 mm

Materials

End covers: plastic (Ø 16) or anodised aluminium (Ø 20 to 80)

Yoke: plastic (Ø 16 and 20), anodised aluminium (Ø 25 to 80)

Cylinder barrel: extruded anodised aluminium alloy

Sealing strip & piston seals: polyurethane

Cover strip: polyamide

Seals: nitrile rubber

Standard models

Ø	Piston rod Ø	Internal guide Non-magnetic	Internal guide Magnetic	Precision roller guide Non-magnetic	Precision roller guide Magnetic
16	M 5	M/46016/*	–	–	
20	G1/8	M/46020/*	M/46020/M/*	–	–
25	G1/8	M/46025/*	M/46025/M/*	M/46225/*	M/46225/M/*
32	G1/4	M/46032/*	M/46032/M/*	M/46232/*	M/46232/M/*
40	G1/4	M/46040/*	M/46040/M/*	M/46240/*	M/46240/M/*
50	G3/8	M/46050/*	M/46050/M/*	M/46250/*	M/46250/M/*
63	G1/2	M/46063/*	M/46063/M/*	M/46263/*	M/46263/M/*
80	G1/2	M/46080/*	M/46080/M/*	–	–

Ø	Piston rod Ø	External guide Non-magnetic	External guide Magnetic	Service kit
16	M5	M/46116/*	M/46116/M/*	QM/46116/*/88
20	G1/8	M/46120/*	M/46120/M/*	QM/46120/*/88
25	G1/8	M/46125/*	M/46125/M/*	QM/46125/*/88
32	G1/4	M/46132/*	M/46132/M/*	QM/46132/*/88
40	G1/4	M/46140/*	M/46140/M/*	QM/46140/*/88
50	G3/8	M/46150/*	M/46150/M/*	QM/46150/*/88
63	G1/2	M/46163/*	M/46163/M/*	QM/46163/*/88
80	G1/2	M/46180/*	M/46180/M/*	QM/46180/*/88

* Insert stroke length in mm. Cylinder sizing and speed control see page 6.

Note: Service kits are available in 1000 mm stroke multiples e.g. QM/46025/**1000**/88, QM/46025/**2000**/88 etc.

Options selector

★★M/46 ★★★/★★/★★★★

Variants	Substitute
Valve adaptors & alternative ports	EQ

Guiding system	Substitute
Internal	0
External	1
Roller	2

Cylinder diameters mm
16, 20, 25, 32, 40, 50, 63, 80

Strokes (mm)
Made to order

Variants (non-magnetic piston)	Substitute
Standard	None
Alternative ports	IC
Active brake	L1
Passive brake	L2
Double carriages	ID
M/46***/ID/****/**** → Distance between carriage centres	

Variants (magnetic piston)	Substitute
Standard	M
Alternative ports	MC
Active brake	L3
Passive brake	L4
Double carriages	MD
M/46***/MD/****/**** → Distance between carriage centres	

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

LINTRA® Rodless cylinders

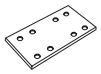
M/46000, .../M, M/46100, .../M, M/46200, .../M

Internal, external and precision roller guided

Double acting

Ø 16 to 80 mm

Mountings

Ø	C	S*	UV*	V	W***	UW ***	Assembly kit for shock absorbers#	Plate for shock absorbers	Groove key
									
16	QM/46016/21	QM/46016/37	QM/46016/34	QM/46016/32	QM/46116/35	–	–	–	M/P72816
20	QM/46020/21	QM/46020/37	QM/46020/34	QM/46020/32	QM/46120/35	QM/46120/36	–	–	M/P72816
25	QM/46025/21	QM/46025/37	QM/46025/34	QM/46025/32	QM/46125/35	QM/46125/36	QM/46125/67	–	M/P72816
32	QM/46032/21	QM/46032/37	QM/46032/34	QM/46032/32	QM/46132/35	QM/46132/36	QM/46132/67	–	M/P72816
40	QM/46040/21	QM/46032/37	QM/46040/34	QM/46040/32	QM/46140/35	QM/46140/36	QM/46140/67	M/P41434	M/P72816
50	QM/46050/21	QM/46050/37	QM/46050/34	QM/46050/32	QM/46150/35	QM/46150/36	QM/46150/67	M/P41435	M/P72816
63	QM/46063/21	QM/46050/37	QM/46063/34	QM/46063/32	QM/46163/35	QM/46163/36	QM/46163/67	M/P41436	M/P72816
80	QM/46080/21	QM/46080/37	QM/46080/34	QM/46080/32	QM/46180/35	–	QM/46180/67	–	M/P72816

Please see page 93 for details of mountings.

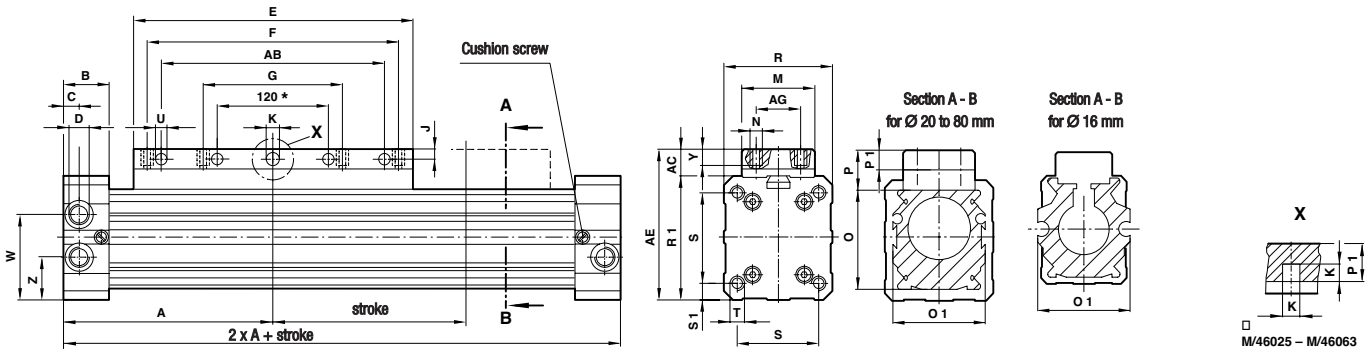
For use with switches M/50, see page 198

* Suitable for internally guided models only, ** Insert stroke length (mm), *** Suitable for external guided models only.

Suitable for external and precision roller guided models only.

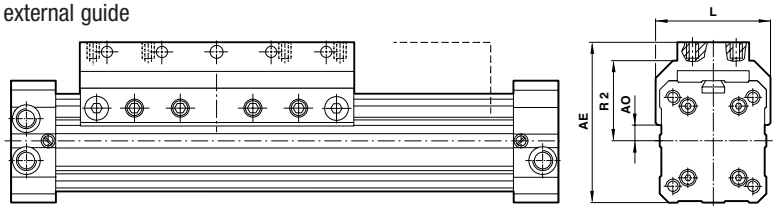
Standard cylinders

M/46000, M/46000/M – Cylinders with internal guide



*For cylinder Ø 80 mm

M/46100, M/46100/M – Cylinders with external guide



Ø	A	AB	AC	AE	AG	AO	B	C	D	E	F	G	J	K	L	M	N
16	62,5	–	7,0	38	8	(7,5)	17,5	8	M5	80	60	–	2,5 (–)	Ø 3 G7	31	18	M3
20	85	– (60)	14 (–)	54 (59)	18	(6,5)	23	8	G1/8	110	80	40	3,5 (7,5)	Ø 4,2H9	42	27 (Ø 5,5)	M5
25	100	– (70)	12 (–)	60 (67,5)	20	(9,5)	23	14,5	G1/8	130	90	45	– (5)	❑ 4,5	52	32 (Ø 5,5)	M5
32	120	– (90)	16 (–)	76 (82)	25	(15,5)	27	10,5	G1/4	160	120	60	– (5)	❑ 6	64	45 (Ø 5,5)	M5
40	150	– (120)	15 (–)	90 (97,5)	25	(16,5)	30	11,5	G1/4	215	160	80	– (5)	❑ 6	79	45 (Ø 6,6)	M6
50	180	– (160)	20 (–)	110 (117)	25	(24)	35	14	G3/8	250	190	95	– (6,5)	❑ 8	92	50 (Ø 9)	M8
63	215	– (190)	20 (–)	125 (137)	25	(25,5)	40	17	G1/2	320	240	120	– (7,5)	❑ 8	110	50 (Ø 9)	M8
80	260	240	24 (–)	154 (165)	25	(38)	45	17	G1/2	390	300	150	9 (10)	Ø 12G7	130	50	M10

Ø	O	O1	P	P1	R	R1	R2	S	S1	T	Ø U	W	Y	Z	kg at 0 mm	kg per 100 mm
16	25	32	12 (–)	–	27	31	(18,5)	16	5,5	M3x5 deep	–	–	4 (5)	16,5	0,16	0,10
20	32	38	18,5 (–)	–	40	40	(24)	32	4	M5x12 deep	–	–	12	21,5	0,50	0,15
25	40	45	16 (–)	7,5	48	48	(34)	37	5,5	M5x13 deep	–	33	7 (12)	17	0,80	0,20
32	52	52	20 (–)	10	60	60	(42,5)	47	6,5	M6x17 deep	–	40	8 (12)	20	1,60	0,35
40	65	65	20 (–)	10	75	75	(49,5)	58	8,5	M8x20 deep	–	50	8 (12)	25	2,70	0,50
50	80	80	25 (–)	13	90	90	(58,5)	70	10	M8x18 deep	–	60	11 (17)	30	4,80	0,75
63	95	95	25 (–)	14	105	105	(68)	84	10,5	M10x25 deep	–	70	11 (20)	35	7,20	1,00
80	120	120	29 (–)	–	130	130	(81)	100	15	M12x26 deep	11	90	15 (25)	40	13,2	1,50

( ) for external guided

LINTRA® Rodless cylinders

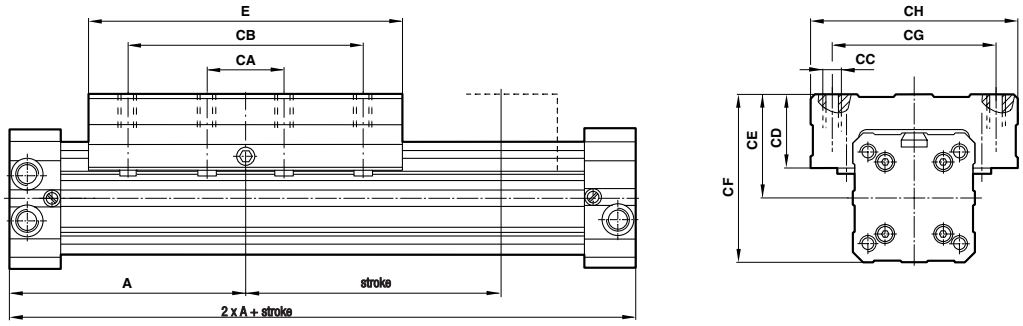
M/46000, .../M, M/46100, .../M, M/46200, .../M

Internal, external and precision roller guided

Double acting

Ø 16 to 80 mm

M/46200, M/46200/M – Cylinders with precision roller guide

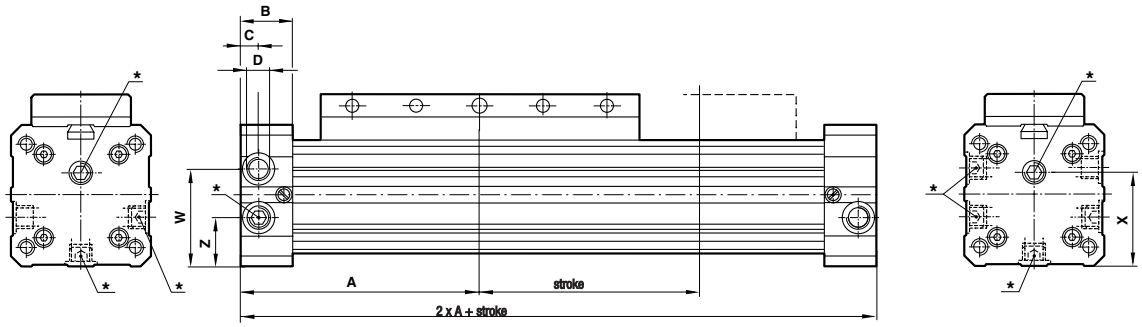


Ø	A1	CA	CB	CC	CD	CE	CF	CG	CH	E	kg at 0 mm	kg per 100 mm
25	100	45	90	M6x14 deep	36	42	66	60	85	150	1,70	0,20
32	120	60	120	M8x16 deep	38	50	80	75	98	180	3,10	0,35
40	150	80	150	M8x16 deep	42	57,5	95	92	118	215	5,00	0,50
50	180	90	180	M10x20 deep	44	67	112	100	132	250	9,10	0,75
63	215	120	240	M10x20 deep	47	74,5	127	110	140	320	13,9	1,00

For full cylinder dimensions refer to page. 87

Cylinder variants

M/46000/IC, M/46000/MC, M/46100/IC, M/46100/MC, M/46200/IC, M/46200/MC – Cylinders with alternative ports



* Alternative ports with inserted plugs.

Ø	A	B	C	D	W	X	Z
25	100	23	14,5	G 1/8	33	33	17
32	120	27	10,5	G 1/4	40	34,5	20
40	150	30	11,5	G 1/4	50	43,5	25
50	180	35	14	G 3/8	60	53,5	30
63	215	40	17	G 1/2	70	61,5	35

For full cylinder dimensions refer to page. 87

LINTRA® Rodless cylinders

M/46000, .../M, M/46100, .../M, M/46200, .../M

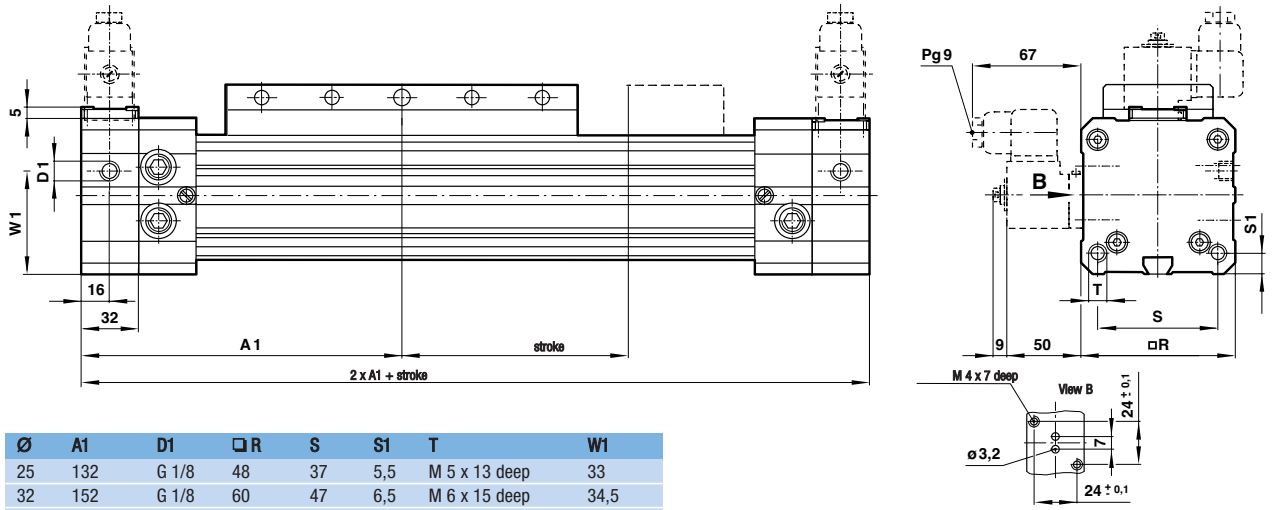
Internal, external and precision roller guided

Double acting

Ø 16 to 80 mm

EQM/46000, EQM/46000/M, EQM/46100, EQM/46100/M, EQM/46200, EQM/46200/M – Cylinders with valve adaptors and alternative ports

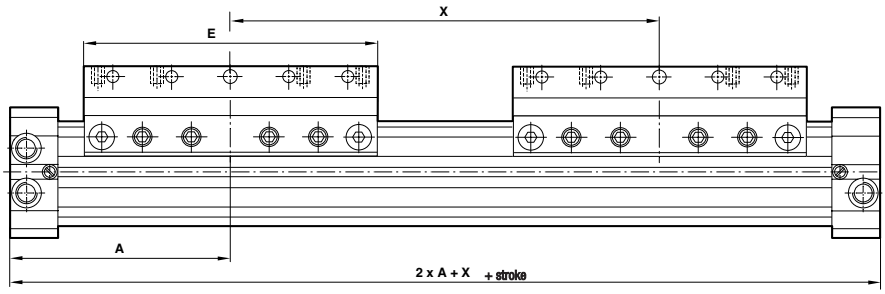
(Order the Excel valves, model V05X486M-B63*A, see page 310)



Ø	A1	D1	□R	S	S1	T	W1
25	132	G 1/8	48	37	5,5	M 5 x 13 deep	33
32	152	G 1/8	60	47	6,5	M 6 x 15 deep	34,5
40	182	G 1/8	75	58	8,5	M 8 x 20 deep	43,5
50	212	G 1/8	90	70	10	M 8 x 25 deep	53,5
63	247	G 1/8	105	84	10,5	M 10 x 25 deep	61,5

For full cylinder dimensions refer to page 87

M/46100/ID, M/46100/MD – Cylinders with external guide and double carriage



Ø	A	E	X min.	X max.
16	62,5	80	80	500
20	85	110	110	500
25	100	130	130	500
32	120	160	160	500
40	150	215	215	500
50	180	250	250	500
63	215	320	320	500
80	260	390	390	500

To order an externally guided cylinder with double carriages, Ø 50 mm and 500 mm stroke, non-magnetic, dimension 'X' = 200 mm. Quote: M/46150/ID/500/200

For full cylinder dimensions refer to page. 87

LINTRA® Rodless cylinders

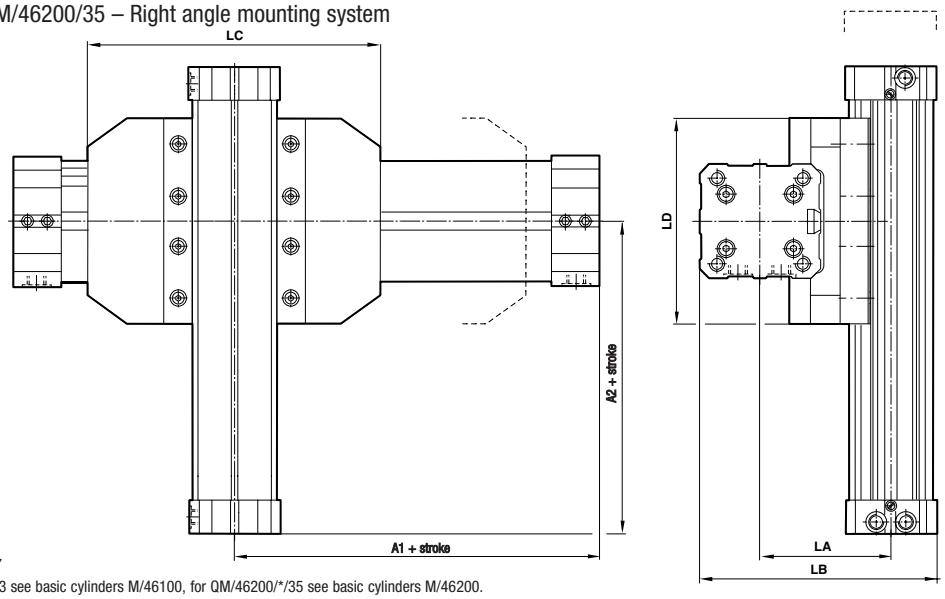
M/46000, .../M, M/46100, .../M, M/46200, .../M

Internal, external and precision roller guided

Double acting

Ø 16 to 80 mm

QM/46100/33 and QM/46200/35 – Right angle mounting system



For full dimensions see page 87

Load values: For QM/46000/*/33 see basic cylinders M/46100, for QM/46200/*/35 see basic cylinders M/46200.

Right angle mounting system externally guided

Ø	Model (Non-magnetic)	Model (Magnetic)	Right angle adaptor	A1 + stroke	A2 + stroke	LA	LB	LC	LD
25	QM/46025/*/33	QM/46025/M/*/33	QM/46125/25/33	100	100	69	117	130	130
25	QM/46025/*/33	QM/46025/M/*/33							
32	QM/46032/*/33	QM/46032/M/*/33	QM/46132/32/33	120	120	84	144	160	160
32	QM/46032/*/33	QM/46032/M/*/33							
40	QM/46040/*/33	QM/46040/M/*/33	QM/46140/40/33	150	150	97	172	215	215
40	QM/46040/*/33	QM/46040/M/*/33							
50	QM/46050/*/33	QM/46050/M/*/33	QM/46150/50/33	180	180	116	206	250	250
50	QM/46050/*/33	QM/46050/M/*/33							

* Insert stroke length. To order right angle mounting system for same size cylinders, style 'X', order two cylinders of the same bore size together with one right angle adaptor, e.g. 2 off QM/46040/*/33 and 1 off QM/46140/40/33.

Same size cylinder system style 'X'

Ø	Model (Non-magnetic)	Model (Magnetic)	Right angle adaptor	A1 + stroke	A2 + stroke	LA	LB	LC	LD
25	QM/46025/*/33	QM/46025/M/*/33	QM/46125/20/33	100	85	62	105,5	130	110
20	QM/46020/*/33	QM/46020/M/*/33							
32	QM/46032/*/33	QM/46032/M/*/33	QM/46132/25/33	120	100	76,5	130,5	160	130
25	QM/46025/*/33	QM/46025/M/*/33							

* Insert stroke length. To order a 1st reduction right angle mounting system for cylinders of the next bore size smaller, style 'X1', order two cylinders of successive bore sizes together with one right angle adaptor, e.g. 1 off QM/46025/*/33, 1 off QM/46020/*/33 and 1 off QM/46125/20/33.

1st Reduction system style 'X1'

Ø	Model (Non-magnetic)	Model (Magnetic)	Right angle adaptor	A1 + stroke	A2 + stroke	LA	LB	LC	LD
40	QM/46040/*/33	QM/46040/M/*/33	QM/46140/25/33	150	100	77	138,5	215	130
25	QM/46025/*/33	QM/46025/M/*/33							
50	QM/46050/*/33	QM/46050/M/*/33	QM/46150/32/33	180	120	94	169	250	160
32	QM/46032/*/33	QM/46032/M/*/33							
63	QM/46063/*/33	QM/46063/M/*/33	QM/46163/40/33	215	150	108	198	320	215
40	QM/46040/*/33	QM/46040/M/*/33							

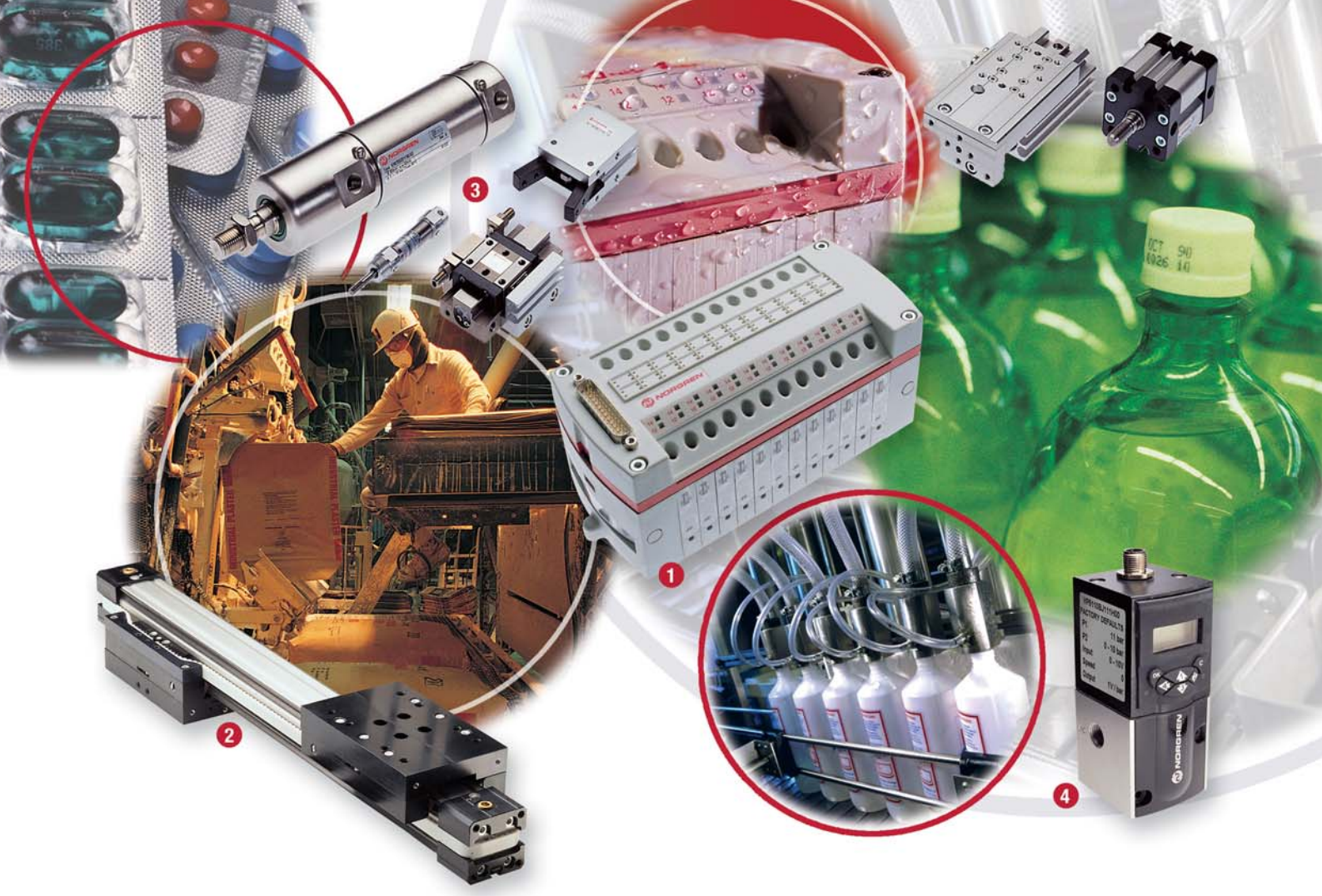
* Insert stroke length. To order a 2nd reduction right angle mounting system for cylinders two bore sizes smaller, style 'X2', order two cylinders of successive bore sizes together with one right angle adaptor, e.g. 1 off QM/46040/*/33, 1 off QM/46025/*/33 and 1 off QM/46140/25/33.

Right angle mounting system precision roller guided

2nd Reduction system style 'X2'

Ø	Model (Non-magnetic)	Model (Magnetic)	Right angle adaptor	A1 + stroke	A2 + stroke	LA	LB	LC	LD
40	QM/46240/*/35	QM/46240/M/*/35	QM/46240/25/35	150	100	80	141,5	215	130
25	QM/46225/*/35	QM/46225/M/*/35							
63	QM/46263/*/35	QM/46263/M/*/35	QM/46263/40/35	215	150	108	198	320	215
40	QM/46240/*/35	QM/46240/M/*/35							

* Insert stroke length. To order a 2nd reduction right angle mounting system for cylinders two bore sizes smaller, style 'X2', order two cylinders of successive bore sizes together with one right angle adaptor, e.g. 1 off QM/46240/*/35, 1 off QM/46225/*/35 and 1 off QM/46240/25/35.



Norgren in the packaging

Norgren is a leading global supplier to the packaging industry, offering a comprehensive range of proven and reliable products which enhance machine performance.

OEMs and end users also benefit from our advanced customised design capabilities and integrated system solutions.

VM10

1] The VM10 has been designed and engineered to make life as easy as possible for Norgren customers and is specially suitable for packaging machinery with IP65 protection rating as standard for washdown applications. See page 218

Twin LINTRA

2] This cylinder provides minimal envelope dimensions, and delivers twice the stroke length and twice the speed of conventional cylinders. See page 98

Wide range of actuators

3]
- A range of grippers to handle any component
- Miniature roundline cylinders ideal for many packaging applications
- Customised cylinders for the packaging industry
- Seven families of linear slides to suit any application

Expertise in PET bottling

Norgren have established a leading position in the highly specialised PET bottling sector with dedicated engineers and a unique development and testing facility for high pressure components.

VP51 programmable proportional valve

4]
- Ideal for many applications in the packaging industry thanks to his precision, flexibility and reliability.
- In addition Norgren can offer a comprehensive range of proportional valves – see page 355 for more information

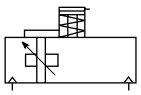
LINTRA® Rodless cylinders

M/46000/L

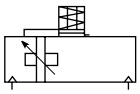
Internal guide with brake

Double acting

Ø 25 to 63 mm



Active



Passive

Integral pneumatically actuated brakes – 'active' (L1, L3) and 'passive' (L2, L4)

Air supply to brake can be connected to either bottom or side

Asbestos free brake lining – safer working environment

Technical data

Medium:

Compressed air, filtered and lubricated.

Pressure (brake):

2 to 10 bar - active

4 to 10 bar - passive

Operating temperature:

+5°C to +70°C

Consult our Technical Service for use below +2°C

Active brake:

Pressure applied to obtain brake action

Passive brake:

Pressure released to obtain brake action

Materials

Cylinder barrel: anodised aluminium alloy

End covers, yoke & carriage: anodised aluminium

Brake strip: stainless steel

Brake liner: non-asbestos

Sealing strip & piston seals: polyurethane

Cover strip: polyamide

Seals: nitrile rubber

Standard models

Ø	Port size	Non-magnetic Active brake	Non-magnetic Passive brake	Magnetic Active brake	Magnetic Passive brake	Service kit
25	G1/8	M/46025/L1/*	M/46025/L2/*	M/46025/L3/*	M/46025/L4/*	QM/46025/*/88
32	G1/4	M/46032/L1/*	M/46032/L2/*	M/46032/L3/*	M/46032/L4/*	QM/46032/*/88
40	G1/4	M/46040/L1/*	M/46040/L2/*	M/46040/L3/*	M/46040/L4/*	QM/46040/*/88
50	G3/8	M/46050/L1/*	M/46050/L2/*	M/46050/L3/*	M/46050/L4/*	QM/46050/*/88
63	G1/2	M/46063/L1/*	M/46063/L2/*	M/46063/L3/*	M/46063/L4/*	QM/46063/*/88

*Insert stroke length in mm.

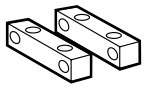
Note: Service kits are available in 1000 mm stroke multiples e.g. QM/46025/**1000**/88, QM/46025/**2000**/88 etc.

For full cylinder dimensions see page 87

Cylinder sizing and speed control see page 6

Order magnetically operated switches M/50 separately, see page 198

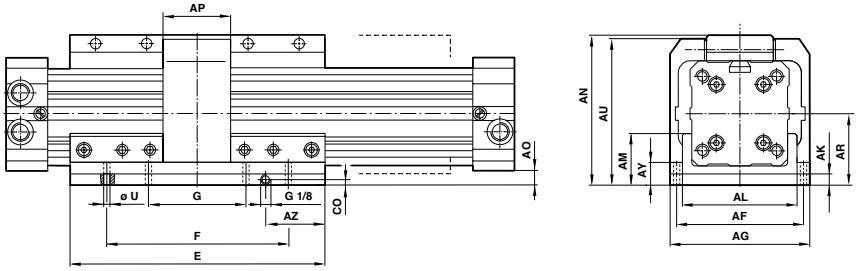
Mountings



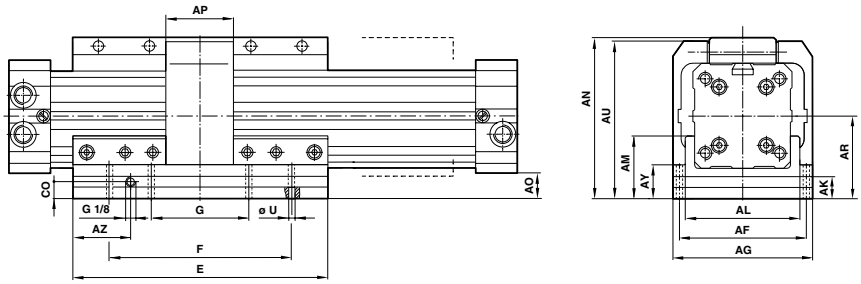
Ø	Foot mounting
25	QM/46025/21
32	QM/46032/21
40	QM/46040/21
50	QM/46050/21
63	QM/46063/21

Please see opposite for details of mountings.

M/46000/L1 and M/46000/L3 – Cylinders with active holding brake



M/46000/L2 and M/46000/L4 – Cylinders with passive holding brake



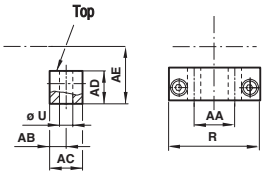
Model		Ø	AF	AG	AK	AL	AM	AN	AO	AP	AR	AU	AY	AZ	CO	E	F	G	Ø U
M/46025/L1	M/46025/L3	25	62	75	12	52	28,5	73,5	13,5	45	37,5	73	16,5	30	6	130	90	45	6,6
M/46025/L2	M/46025/L4	25	62	75	22	52	38,5	83,5	23,5	45	47,5	83	26,5	30	16	130	90	45	6,6
M/46032/L1	M/46032/L3	32	78	92	12	64	29	90	14	55	44	89,5	17,5	32,5	6	160	120	60	9
M/46032/L2	M/46032/L4	32	78	92	24	64	41	102	26	55	56	101,5	29,5	32,5	18	160	120	60	9
M/46040/L1	M/46040/L3	40	94	112	12	81	34,5	103,5	13,5	65	51	103	18	52,5	6	215	160	80	9
M/46040/L2	M/46040/L4	40	94	112	24	81	46,5	115,5	25,5	65	63	115	30	52,5	18	215	160	80	9
M/46050/L1	M/46050/L3	50	112	132	12	94	35,5	124,5	14,5	75	59,5	124	18,5	65	6	250	190	95	11
M/46050/L2	M/46050/L4	50	112	132	30	94	53,5	142,5	32,5	75	77,5	142	36,5	65	24	250	190	95	11
M/46063/L1	M/46063/L3	63	132	150	12	112	42,5	140,5	15,5	90	68	140	20,5	115	6	320	240	120	13
M/46063/L2	M/46063/L4	63	132	150	30	112	60,5	158,5	33,5	90	86	158	38,5	115	24	320	240	120	13

For full dimensions see page 87

LINTRA® Rodless cylinder mountings

For M/46000, .../M, M/46100, .../M, M/46200, .../M

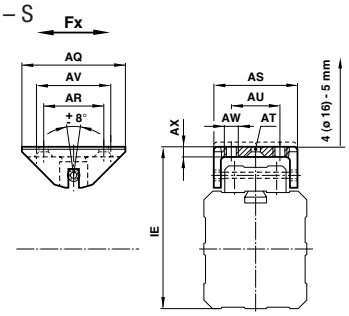
Foot mounting – C



Ø	AA	AB	AC	AD	AE	R	ØU	kg
16	16	10	15	3	16	27	5,5	0,01
20	17	5	10	10	21,5	40	5,5	0,03
25	18	7	15	13,5	24	48	7	0,01
32	26	11	22	16,5	30,5	60	9	0,1
40	30	11	22	19,5	37,5	75	9	0,2
50	42	12	25	24	45	90	11	0,3
63	48	13	25	27,5	54	105	13	0,4
80	64	12,5	25	35	70	130	14	0,4

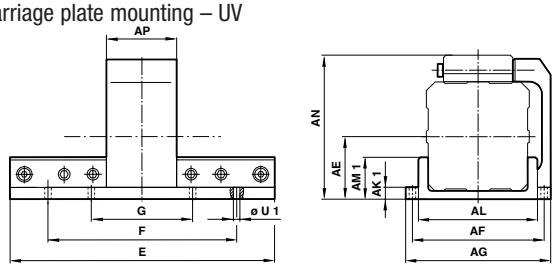
End cover mounts for cylinders Ø 25 to 80mm can be attached to give different distances AE. When used together with a centre support mounting the word 'TOP' should be visible on the top face of the mount.

Swinging bridge – S



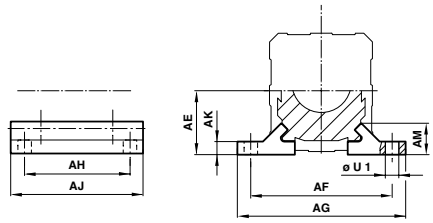
Ø	AQ	AR	AS	AT	AU	AV	AW	AX	IE	Fx (N)	kg
16	40	–	26	–	12	30	M4	4	48 +4	100	0,02
20	50	35	38	DIN74-Bm5	20	40	M5	5	65,5 +5	150	0,10
25	60	40	44	DIN74-Bm5	20	45	M5	5	70 +5	250	0,20
32	80	50	59	DIN74-Bm6	30	60	M6	5,5	88,5 +5	410	0,30
40	80	50	59	DIN74-Bm6	30	60	M6	5,5	102,5 +5	640	0,30
50	100	60	65	DIN74-Bm8	40	80	M8	6,5	124 +5	1000	0,50
63	100	60	65	DIN74-Bm8	40	80	M8	6,5	139 +5	1500	0,50
80	100	60	65	DIN74-Bm8	40	80	M8	6,5	168,5 +5	2400	0,50

Carriage plate mounting – UV



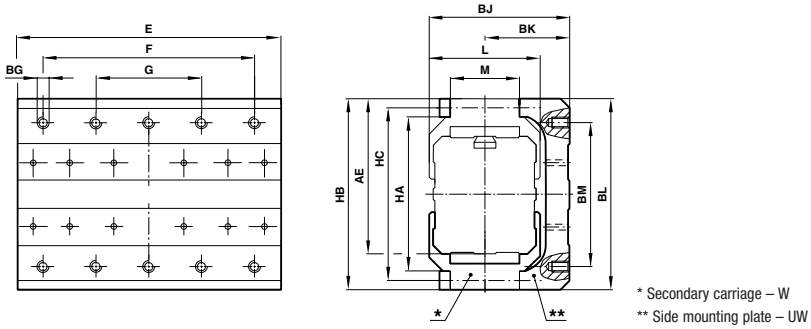
Ø	AE	AF	AG	AK1	AL	AM1	AN	AP	E	F	G	Ø U1	kg
16	16	40	50	3,5	31	8,5	40,5	30	80	60	–	5,5	0,10
20	21,5	52	62	5,5	42	14,5	56	36	110	80	40	5,5	0,20
25	26,5	62	75	5,5	52	17,5	62,5	45	130	90	45	6,6	0,30
32	33	78	92	6,5	64	18	79	55	160	120	60	9	0,40
40	40,5	94	112	7,5	81	24	93	65	215	160	80	9	0,80
50	49	112	132	8	94	25	114	75	250	190	95	11	1,20
63	57,5	132	150	10	112	32	130	90	320	240	120	13	2,00
80	70	155	180	10	132	32	159	100	390	300	150	14	2,90

Centre support – V



Ø	AE	AF	AG	AH	AJ	AK	AM	Ø U1	kg
16	16	40	50	20	30	3,5	9	5,5	0,01
20	21,5	52	62	45	60	4,5	12	5,5	0,03
25	24	60	72	60	80	5,5	13	6,6	0,04
32	30,5	76	92	70	100	6,5	18,5	9	0,07
40	37,5	92	108	90	120	7,5	18,5	9	0,2
50	45	110	128	110	140	7,5	18,5	11	0,2
63	54	132	154	120	160	9	25	13	0,3
80	70	155	180	140	180	12	28,5	14	0,4

Secondary carriage – W
Side mounting plate – UW



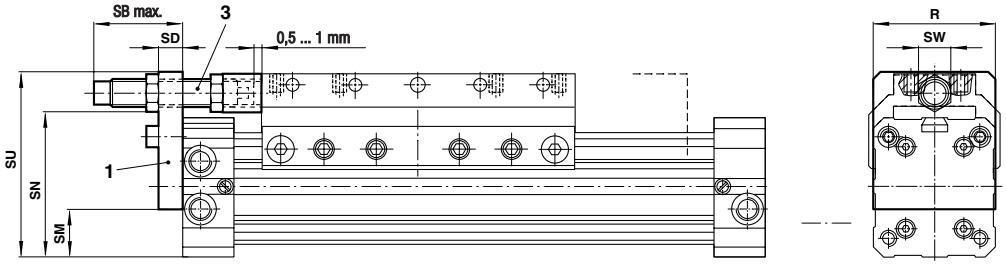
* Secondary carriage – W
** Side mounting plate – UW

Ø	AE	BG	BJ	BK	BL	BM	E	F	G	HA	HB	HC	L	M	kg-W	kg-UW
16	38	–	–	–	–	–	80	–	–	–	49	–	–	18	0,04	–
20	59	M 5 x 10 deep	54	33	78	55	110	80	40	64	79	64	42	27	0,19	0,25
25	67,5	M 5 x 10 deep	63	37	86	65	130	90	45	77	87	77	52	32	0,27	0,33
32	82	M 5 x 12 deep	77	45	103	80	160	120	60	94	104	94	64	45	0,50	0,50
40	97,5	M 6 x 12 deep	98	58,5	119	90	215	160	80	110	120	110	79	45	0,65	1,08
50	117	M 6 x 15 deep	117,5	71,5	143	120	250	190	95	131	144	131	92	50	1,10	1,85
63	137	M 8 x 20 deep	139,5	84,5	168	140	320	240	120	153	169	154	110	50	1,90	3,46
80	165	–	–	–	–	–	390	240	–	–	200	–	–	50	2,50	–

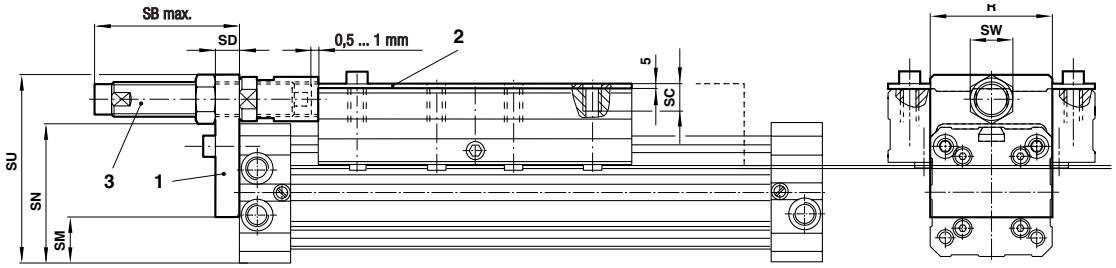
LINTRA® Rodless cylinder mountings

For M/46000, .../M, M/46100, .../M, M/46200, .../M

Assembly kit shock absorbers (order plate and shock absorbers separately)
For cylinders M/46100, M/46100/M



For cylinders M/46200, M/46200/M



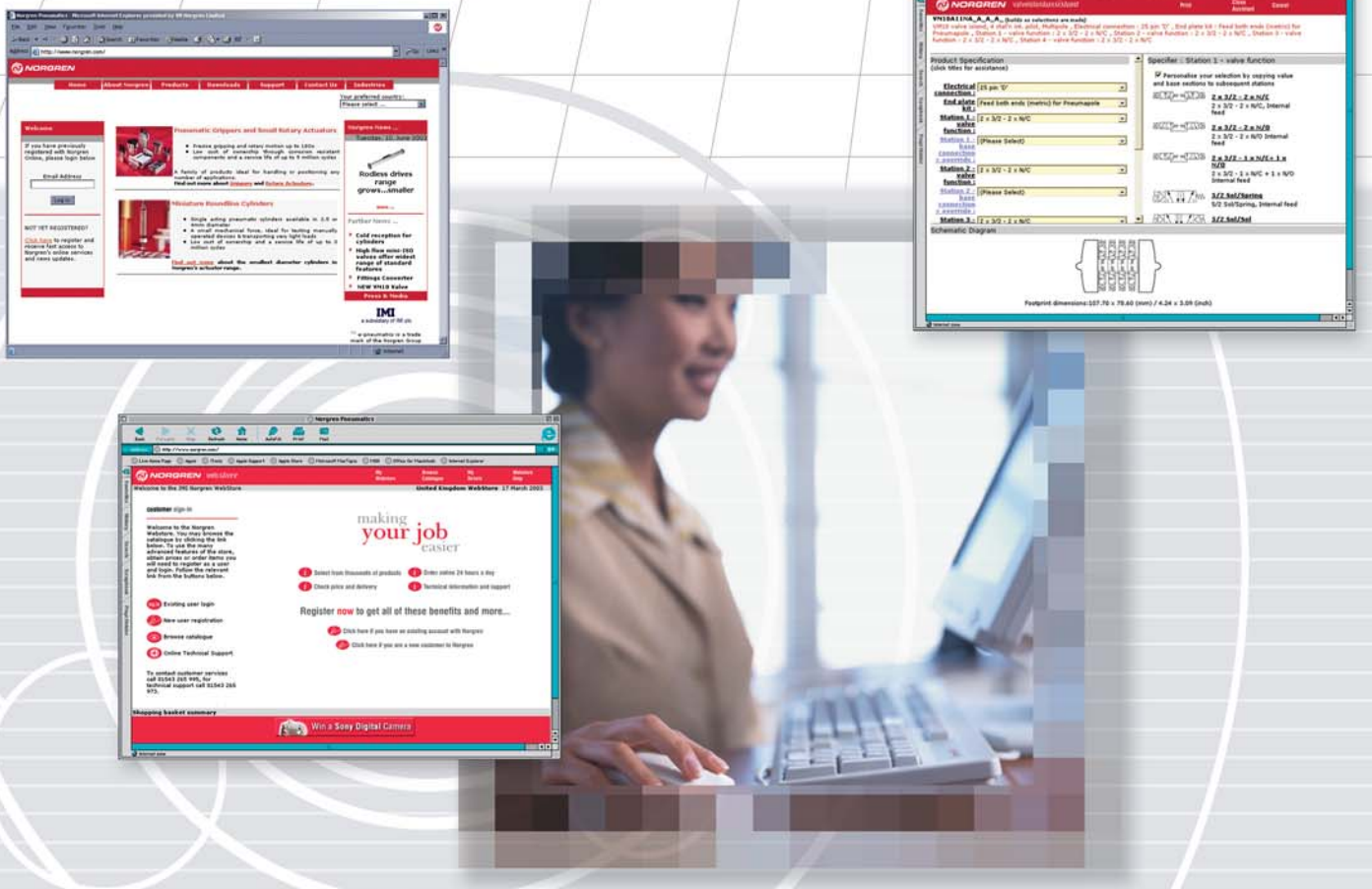
1 = Mounting
2 = Plate
3 = Shock absorbers

Model	Ø	Assembly kit for shock absorbers Item 1	Plate for shock absorbers Item 2	R	SB	SD	SC	SM	SN	SU	SW
M/46125	25	QM/46125/67	–	48	45,5	12	–	19	49	69,5	17
M/46132	32	QM/46132/67	–	60	40,5	12	–	24	61	81,5	17
M/46140	40	QM/46140/67	–	75	81,5	15	–	29	74	109,5	30
M/46150	50	QM/46150/67	–	90	69	15	–	33	91	127,5	30
M/46163	63	QM/46163/67	–	105	69	15	–	41	105,5	141,5	30
M/46180	80	QM/46180/67	–	130	85	20	–	53	130,5	173,5	Ø 40
M/46225	25	QM/46125/67	–	48	45,5	12	–	19	49	69,5	17
M/46232	32	QM/46132/67	–	60	40,5	12	–	24	61	81,5	17
M/46240	40	QM/46140/67	M/P41434	75	81,5	15	31	29	74	109,5	30
M/46250	50	QM/46150/67	M/P41435	105	69	15	36	33	91	127,5	30
M/46263	63	QM/46163/67	M/P41436	130	69	15	35	41	105,5	141,5	30

Order plate and shock absorbers separately

Note: Formulas and calculations see page 7

Attention: When using M/46200 cylinders (Ø 40 to 63 mm) an extra lop plate must be mounted onto the carriage as the centre line of the shock absorbers has to be within the surface of the carriage



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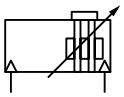
- Downloadable 2D and 3D CAD files with on-line viewing and selectable file formats
- Easy access to details of Norgren contacts with specialised electronics experience

Heavy duty LINTRA® rodless cylinders

M/46800/M, M46800/HM, M/46800/PM

Double acting

Ø 16 to 63 mm



External guides for heavy loads over long distances

Rigid, reinforced aluminium profile provides greater load support

T-slots in the outer profile enable individual mounting options

Precision guidance with ball bearings on hardened guides

Low rolling resistance

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting, magnetic piston, adjustable cushioning

Operating pressure:
1,5 to 10 bar

Operating temperature:
-30°C to +80°C max.
Consult our Technical Service for use below +2°C

Strokes:
Made to order (5700 mm max.)

Materials

Carriage & end covers: anodised aluminium

Cylinder extrusion: special anodised aluminium alloy

Sealing strip & piston seals: polyurethane

Cover strips: polyamide

Seals: nitrile rubber

Standard models

Ø	Port size	Model	Service kit
20	G1/8	M/46820/M/*	QM/46820/*/88
25	G1/8	M/46825/M/*	QM/46825/*/88
25	G1/4	M/46825/HM/*	QM/46825/*/88
32	G1/4	M/46832/HM/*	QM/46832/*/88
40	G1/4	M/46840/HM/*	QM/46840/*/88
16	G1/8	M/46816/PM/*	–
25	G1/8	M/46825/PM/*	–
40	G1/4	M/46840/PM/*	–
63	G1/2	M/46863/PM/*	–

* Insert stroke length in mm. Cylinder sizing and speed control see page 6.

Note: Service kits are available in 1000 mm stroke multiples e.g. QM/46825/**1000**/88, QM/46825/**2000**/88 etc.

Order magnetically operated switches (QM/134) separately, see page 199

Options selector

M/468★★/★★/★★★★

Cylinder diameters (mm)	Substitute
16	16
20	20
25	25
32	32
40	40

Variants	Substitute
System 1	M
System 2	HM
Precision roller guiding	PM

Strokes (mm)	
M, HM	max. 4500 mm
PM (Ø 16, 25)	max. 5700 mm
PM (Ø 40)	max. 5600 mm
PM (Ø 63)	max. 4000 mm

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Heavy duty LINTRA® rodless cylinders

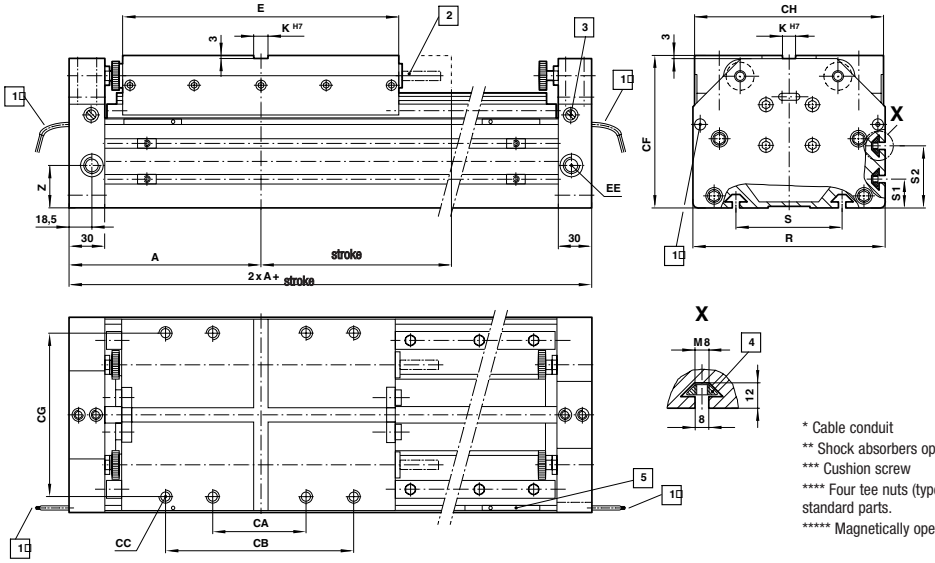
M/46800/M, M46800/HM, M/46800/PM

Double acting

Ø 16 to 63 mm

Standard cylinders

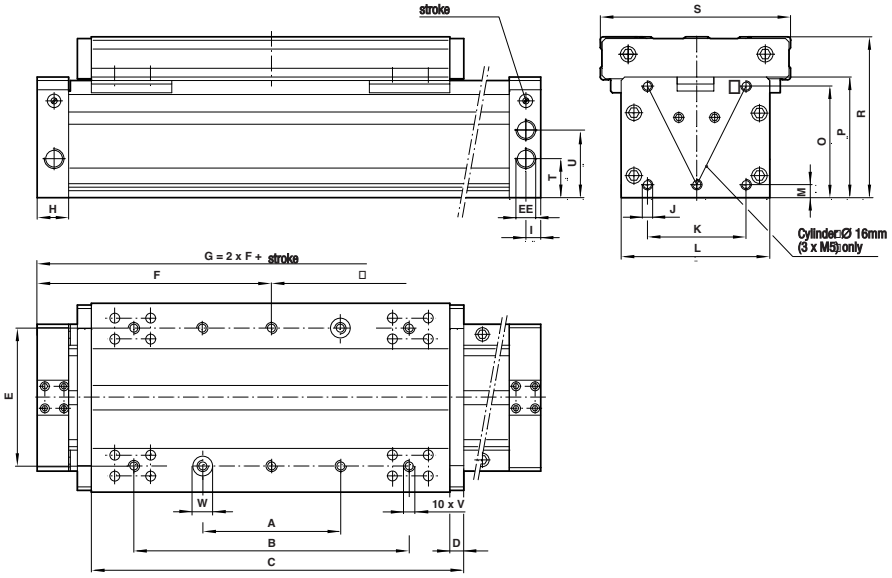
M/46800/M - System 1, M/46800/HM - System 2



* Cable conduit
** Shock absorbers optional, see page 197
*** Cushion screw
**** Four tee nuts (type M/P41858) supplied as standard parts.
***** Magnetically operated switch (type QM/134).

Ø	System	Type	A	CA	CB	CC	CF	CG	CH	E	EE	K H7	R	S	S1	S2	Z	kg at 0 mm	kg per 100 mm
20	1	M	130	30	112	M8x25	100	112	132	170	G1/8	8	134	66	26,5	–	25,5	6,9	1,49
25	1	M	130	30	112	M8x25	100	112	132	170	G1/8	8	134	66	26,5	–	25,5	7,2	1,54
25	2	HM	162,5	80	160	M8x33	128	136	162	235	G1/4	12	164	90	24	52	35	11,2	1,95
32	2	HM	162,5	80	160	M8x33	128	136	162	235	G1/4	12	164	90	24	52	35	12,0	2,10
40	2	HM	162,5	86	160	M8x33	128	136	162	235	G1/4	12	164	90	24	52	35	13,1	2,25

M/46800/PM - Precision roller guiding



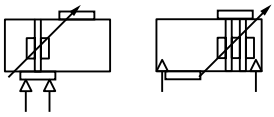
Model	Ø	A	B	C	D	E	EE	F	H	I	J	K	L	M	O	P	R	S	T	U	V	W H7	kg at 0 mm	kg per 100 mm
M/46816/PM	16	60	120	180	8	60	G 1/8	128	20	10	M5	37	72	7,5	50	58	75	85	16	37,5	M6x10 deep	12x32 deep	2,9	0,65
M/46825/PM	25	90	180	240	10	90	G 1/8	165	25	12,5	M6	64	96	11	75	82,5	105	125	30	47	M 8x12 deep	15x32 deep	6,0	1,08
M/46840/PM	40	120	240	320	12	120	G 1/4	210	30	15	M8	80	130	17	97	107	140	170	35	58,5	M 10x15 deep	18x32 deep	14,0	1,95
M/46863/PM	63	154	308	400	15	154	G 1/2	260	35	17,5	M10	110	165	15	125	136,5	180	210	44	76	M 12x18 deep	22x32 deep	27,7	3,14

TWIN-LINTRA® Rodless cylinders

M/46900/IA, M/46900/M

Double acting

Ø 25 & 40 mm



Double stroke compared with conventional cylinders.

Patented design.

Maximum stroke length from minimal envelope dimensions.

Internal air supply on M/46900/IA models.

Two synchronous carriage movements on M/46900/M models.

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, adjustable cushioning

M/46900/IA Air connections in the fixed carriage

M/46900/M Air connections in the end covers with magnetic piston

Operating pressure:

1,5 to 10 bar

Operating temperature:

-30°C to +80°C max.

Consult our Technical Service for use below +2°C

Strokes:

Made to order

M/46900/IA	2000 mm max.
M/46900/M	3000 mm max.

Materials

End covers, carriages & yoke: anodised aluminium

Cylinder barrel: special anodised extruded aluminium alloy

Sealing strip, toothed belt & piston seals: polyurethane

Cover strip: polyamide Seals: nitrile rubber

Standard models

Ø	Port size	Model Fixed carriage mounting	Fixed end cover mounting
25	M5	M/46925/IA/*	M/46925/M/*
40	G1/8	M/46940/IA/*	M/46940/M/*

* Insert stroke length in mm.

For details of service kits contact our Technical Service.

Cylinder sizing and speed control see page 6

Order magnetically operated switches (QM/45) separately, please consult our Technical Service.

Options selector

M/469★★/★★/★★★★

Cylinder diameters (mm)	Substitute
25	25
40	40

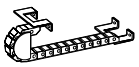
Strokes (mm)	
Made to order	
M/46900/IA	max. 2000
M/46900/M	max. 3000

Variants	Substitute
Air connections in the fixed carriage	IA
Air connections in the end covers with magnetic piston	M

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Mountings

Ø	C (M/46900/M)	Power supply chain (M/46900/IA)	Kit for switches# (M/46900/IA)	Kit for switches# (M/46900/M)
				
25	QM/46025/21	QM/46925/IA/80	QM/46925/IA/22/64	QM/46925/22/64
40	QM/46040/21	QM/46940/IA/80	QM/46940/IA/22/64	QM/46940/22/64

Order one kit for each switch to be mounted. Use QM/45 switch range. Please consult our Technical Service for details.

TWIN-LINTRA® Rodless cylinders

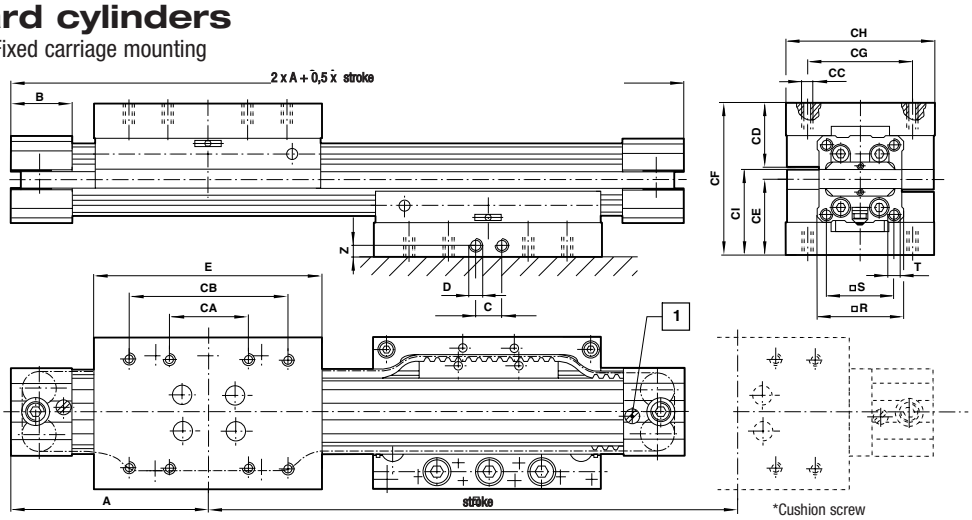
M/46900/IA, M/46900/M

Double acting

Ø 25 & 40 mm

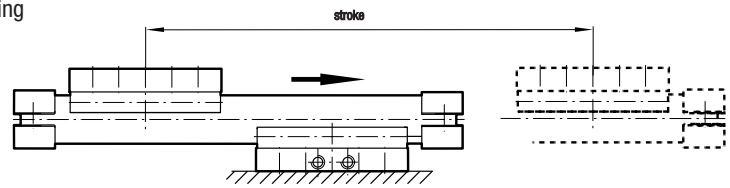
Standard cylinders

M/46900/IA - Fixed carriage mounting



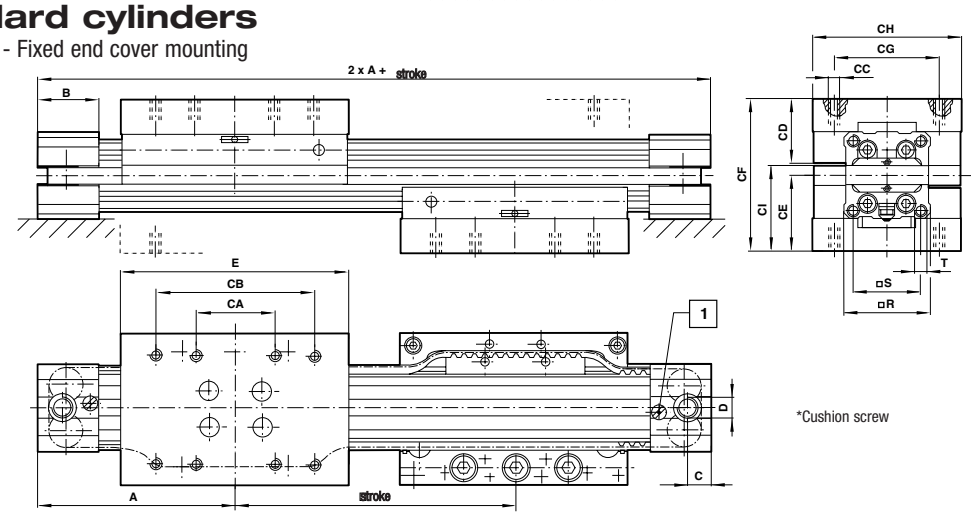
Model	Ø	A	B	C	CA	CB	CC	CD	CE	CF	CG	CH	CI	D	E	R	S	T	Z	kg at 0 mm	kg per 100 mm
M/46925/IA	25	112	35	15	45	90	M 6 x 14 deep	36	42	84	60	85	47	M 5	130	48	37	M 5 x 13 deep	6,5	2,6	0,125
M/46940/IA	40	174	54	22	80	150	M 8 x 16 deep	42	57,5	115	92	118	67,5	G 1/8	215	75	58	M 8 x 20 deep	9,5	8,0	1,290

Double acting, adjustable cushioning



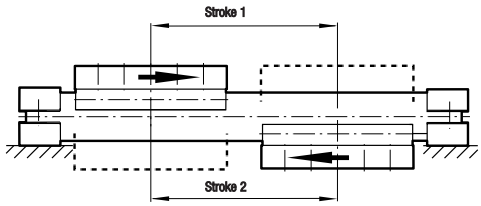
Standard cylinders

M/46900/M - Fixed end cover mounting



Model	Ø	A	B	C	CA	CB	CC	CD	CE	CF	CG	CH	CI	D	E	R	S	T	kg at 0 mm	kg per 100 mm
M/46925/M	25	112	35	15	45	90	M 6 x 14 deep	36	42	84	60	85	47	G 1/8	130	48	37	M 5 x 13 deep	2,6	0,250
M/46940/M	40	174	54	29	80	150	M 8 x 16 deep	42	57,5	115	92	118	67,5	G 1/4	215	75	58	M 8 x 20 deep	8,0	0,580

Operation and mounting



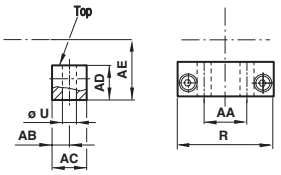
TWIN-LINTRA® Rodless cylinders

M/46900/IA, M/46900/M

Double acting

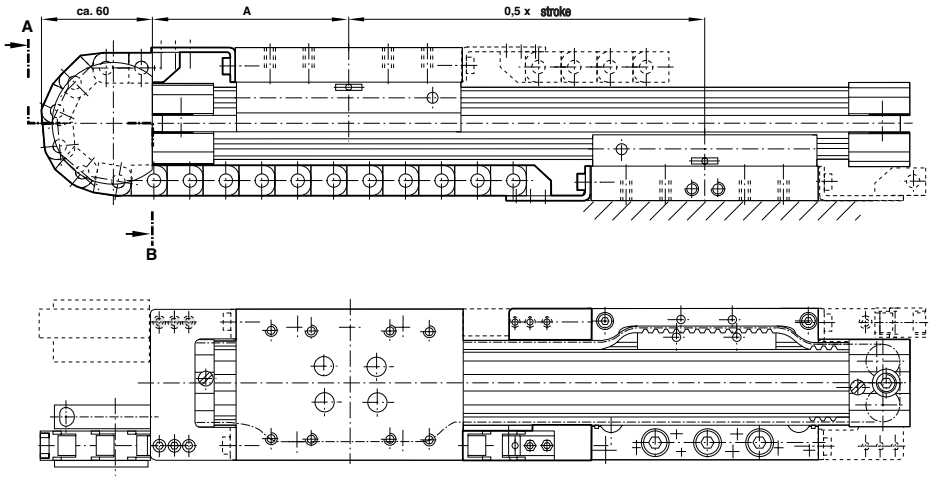
Ø 25 & 40 mm

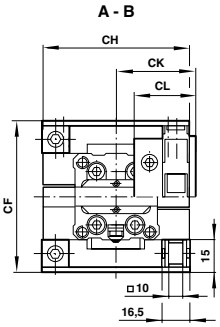
Foot mounting style
'C' (for M/46900/M)



Model	Ø	AA	AB	AC	AD	AE	R	Ø U
QM/46025/21	25	18	7	15	13,5	24	48	7
QM/46040/21	40	30	11	22	19,5	37,5	75	9

Kit: Power supply chain (for cylinders M/46900/IA)

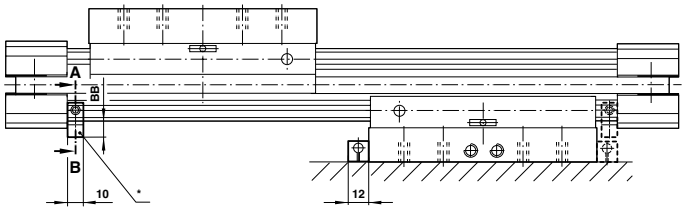


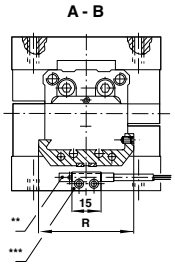


Model	Ø	CF	CH	CK	CL
QM/46925/IA/80	25	84	85	45	32
QM/46940/IA/80	40	115	118	58	38

This kit includes a power supply chain for 2000mm stroke, which has to be shortened to suit.

Kit for switches (for cylinders M/46900/IA)
(Comprising magnet mounting bracket and switch mounting bracket)



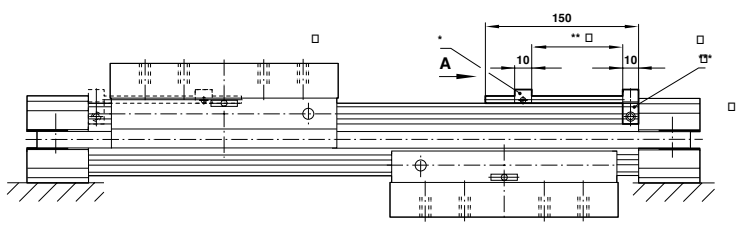


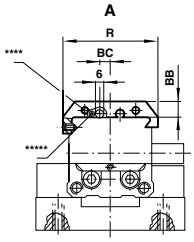
*Mounting bracket with inserted magnets. **Magnetically operated switch. ***Switch mounting bracket

Model	Ø	BB	R
QM/46925/22/64	25	8,5	48
QM/46940/22/64	40	9,5	75

Order switches separately. One kit per switch.
Use QM/45 switch range

Kit for switches (for cylinders M/46900/M)
(Comprise: Bracket, switch mounting bracket and rod)





*Switch mounting bracket **Adjustable ***Cable conduit ****Bracket *****Magnetically operated switch

Model	Ø	BB	BC	R
QM/46925/22/64	25	8,5	0	48
QM/46940/22/64	40	9,5	10	75

Order switches separately. One kit per switch.
Use QM/45 switch range

The biggest range of corrosion resistant pneumatic products

VM/46000 series

Corrosion resistant LINTRA® rodless cylinders, internal and external guided.
Ø 20 to 80 mm. Strokes up to 3500 mm.
For details see page 182

S0 Series

Stainless steel push-in fittings.
4 to 12 mm tube, thread sizes R1/8 to R1/2, G1/8 to G1/2.
For details see page 510

The Norgren range of corrosion resistant products is the most extensive of any pneumatic manufacturer.

This includes a complete range of stainless steel push-in fittings and even corrosion resistant bellows for aggressive environments.

As one of the world's first suppliers of pneumatic equipment we continue to develop products to suit new demands.

This means that corrosion resistant products can be supplied and serviced worldwide. Norgren Sales and Service centres across the globe are ready to assist you in any specific field.

KM/55001/M

Stainless steel Clean line double acting ISO cylinders. Clean line Ø 32 to 125 mm.
Strokes up to 1600 mm.
For details see page 176

KM/8000/M

Stainless steel (ISO) roundline cylinders
Ø 12 to 25 mm - strokes up to 500 mm
For details see page 174

KM/31000

Stainless steel air bellows with 1, 2 and 3 convolutions.
Ø 220 to 390 mm.
For details see page 184

F22, R22, L22

Stainless steel air line equipment
Meets NACE recommendations.
For details see page 484

KA/8000/M

Stainless steel ISO/VDMA tie rod cylinders
Ø 32 to 200 mm, stroke up to 250 mm
For details see page 180

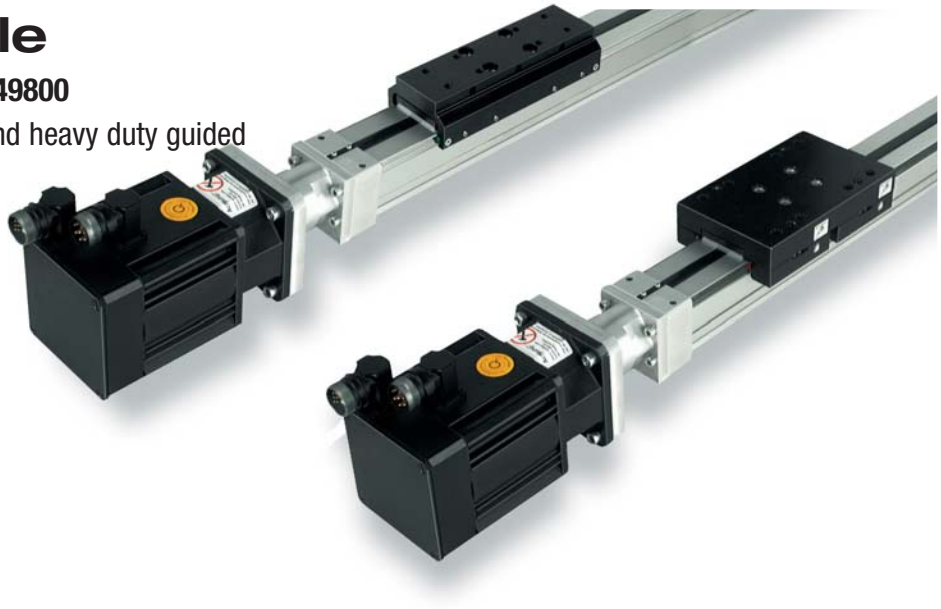
Contact our Technical Service for further details

LINTRA® Spindle

M/49000, M/49100, M/49200, M/49800

Internal, external, precision roller and heavy duty guided

Ø 25 to 63 mm



High forces

Precise positioning

High repeatability

Constant, defined high and low speed operation

Proven LINTRA® guiding systems

Interchangeable with LINTRA® pneumatic cylinders series M/46000

Technical data

Operation:

Electric spindle drive

Operating temperature:

-20° to +80°C max.

Consult our Technical Service for use below +2°C

Cylinder diameters:

Ø 25, 32, 40, 50, 63 mm

Strokes:

Ø 25 mm: 1250 mm max.

Ø 32, 40, 50, 63 mm: 5000 mm max.

Speed:

2,5 m/s max.

Forces:

500 to 6000 N

Repeatability:

+/-0,05 mm (Single nut)

+/-0,01 mm (Double nut)

Materials

End covers, yoke, carriage, cover and barrel: anodised aluminium

Cover strip: polyamide

Options selector

M/49★★★/★★/★★★/★★★★

Guiding system	Substitute
Internal	0
External adjustable	1
Precision roller	2
Heavy duty	8

Cylinder diameters (mm)	Substitute
25	25
32	32
40	40
50	50
63	63

Spindle types	Substitute
Ball screw	B
Lead screw	L

Ball screw-sizes (mm)	Strokes (mm)
Ø 25	max. 1250
Ø 32, 40, 50, 63	max. 5000
Lead screw-sizes (mm)	**Strokes (mm)**
Ø 25, 32	max. 2700
Ø 40, 50, 63	max. 2500
Heavy duty -sizes (mm)	**Strokes (mm)**
Ø 40 - Ball screw type	max. 4000
Ø 40 - Lead screw type	max. 2500

Number of spindle supports
0, 2, 4, 6

Thread pitch (mm)
02 to 50

Spindle nuts	Substitute
Single nut (standard)	S
Double nut (on request)	D

Inductive proximity sensors

Model	Voltage V d.c.	Current max.	Temperature °C	LED	Output	Cable length	Cable type
SPC/008001/2	10 ... 30	200 mA	-30 ... +70	●	Normally closed	2 m	PVC 3x0,14
SPC/008002/2	10 ... 30	200 mA	-30 ... +70	●	Normally open	2 m	PVC 3x0,14

For information on sensors (technical data, cable material, dimensions, etc.) please consult our Technical Service

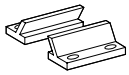
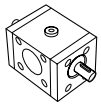
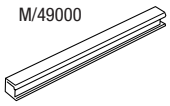
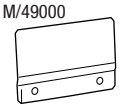
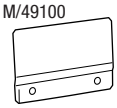
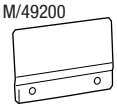
LINTRA® Spindle

M/49000, M/49100, M/49200, M/49800

Internal, external, precision roller and heavy duty guided

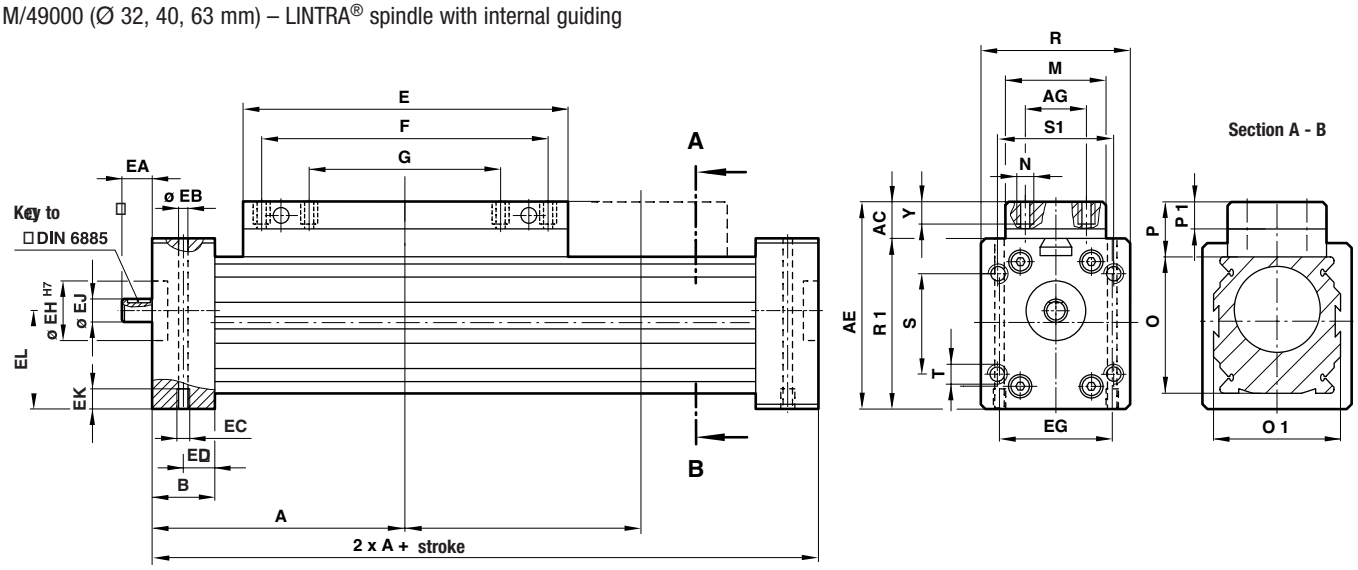
Ø 25 to 63 mm

Mountings

Ø	V	Bevel gear	Sensor bracket	Sensor activator	Sensor activator	Sensor activator
			M/49000 	M/49000 	M/49100 	M/49200 
25	QM/46025/32	SPC/Q008003/20	SPC/Q008003/22	–	SPC/Q008009/21	SPC/Q008014/21
32	QM/46032/32	On request	SPC/Q008004/22	SPC/Q008004/21	SPC/Q008010/21	SPC/Q008015/21
40	QM/46040/32	SPC/Q008005/20	SPC/Q008004/22	SPC/Q008005/21	SPC/Q008011/21	SPC/Q008016/21
50	QM/46050/32	SPC/Q008006/20	SPC/Q008004/22	–	SPC/Q008012/21	SPC/Q008017/21
63	QM/46063/32	SPC/Q008007/20	SPC/Q008004/22	SPC/Q008007/21	SPC/Q008013/21	SPC/Q008018/21

Motor adaptors for motor couplings and motors available on request

M/49000 (Ø 32, 40, 63 mm) – LINTRA® spindle with internal guiding



Ø	A	AC	AE	AG	B	E	EA	EB	EC	ED	EF	EG	EH	EJ	EK	F	G	M
25	–	–	–	20	23	180	20	5,6	M6	11,5	4	35	22	9	12	90	45	–
32	120	16	76	25	27	160	20	5,6	M6	13,5	4	45	28	10	12	120	60	45
40	150	15	90	25	30	215	25	6,8	M8	15	3	52	38	12	12	160	80	45
50	–	–	–	25	35	250	32	8,5	M10	17,5	5	64	47	17	20	190	95	–
63	215	20	125	25	40	320	40	8,5	M10	20	4	75	52	20	20	240	120	50

Ø	N	O	O1	P	P1	R	R1	S	S1	T	W	X	Y	Z	kg at 0 mm	kg per 100 mm
25	M5	40	40	–	–	48	48	22	38	M5x13 deep	33	28	7	17	1,8	0,27
32	M5	52	52	20	10	60	60	27,5	47,6	M6x15 deep	40	34,5	8	20	2,5	0,47
40	M6	65	65	20	10	75	75	50,9	50,9	M8x20 deep	50	43,5	8	25	3,4	0,70
50	M8	80	80	–	–	90	90	62,2	62,2	M8x25 deep	60	53,5	11	30	6,1	1,18
63	M8	95	95	25	14	105	105	74,25	74,25	M10x25 deep	70	61,5	11	35	10,5	1,6

Attention: when using spindle supports (SA) the total length of the spindle actuator is increased by 40 mm per two SAs.

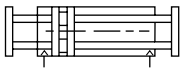
M/49100 (Ø25,32,40,50,63mm) - LINTRA® spindle with external guiding
M/49200 (Ø25,32,40,50,63mm) - LINTRA® spindle with precision roller guiding
M/49800 (Ø40mm) - LINTRA® spindle with heavy duty guiding
Technical information on request

Slide units

M/60100/M

Double acting

Ø 10 to 40 mm



High quality sliding bearings ensure long durable life and high guidance performance

Double piston rod provides high bending and torsional rigidity

Magnetic piston as standard – reduces costs and provides easy installation

Alternative port connections and mounting options

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting with magnetic piston and buffer cushioning

Operating pressure:

1 to 8 bar

Operating temperature:

0°C to +80°C.

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Materials

Piston rod: hard chromed steel

Body & end covers: anodised aluminium

Seals: nitrile rubber

Standard models

Ø	Port size	Model	Service kit
10	M5	M/60111/M/*	QM/60111/M/00
16	M5	M/60116/M/*	QM/60116/M/00
25	M5	M/60125/M/*	QM/60125/M/00
32	M5/G1/8	M/60132/M/*	QM/60132/M/00
40	G1/8	M/60140/M/*	QM/60140/M/00

* Insert stroke length in mm.

Order optional shock absorbers separately. See page 197

Order magnetically operated switches separately, see page 199

Cylinder sizing and speed control see page 6

Standard strokes

Ø	25	50	75	100	125	150	175	200	225
10		❍	❍	❍					
16	❍	❍	❍	❍	❍	❍			
25		❍	❍	❍	❍	❍	❍		
32			❍	❍	❍	❍	❍	❍	
40				❍	❍	❍	❍	❍	❍

Other stroke lengths are not available, use intermediate stroke adjustment screws (see table below)

Model	Screw adjustment range (mm)				
	5	10	15	20	25
M/60111/M	M/P70870/1	M/P70870/2	M/P70870/3	M/P70870/4	M/P70870/5
M/60116/M	M/P70870/1	M/P70870/2	M/P70870/3	M/P70870/4	M/P70870/5
M/60125/M	M/P70870/1	M/P70870/2	M/P70870/3	M/P70870/4	M/P70870/5
M/60132/M	M/P70870/6	M/P70870/7	M/P70870/8	M/P70870/9	M/P70870/10
M/60140/M	M/P70870/6	M/P70870/7	M/P70870/8	M/P70870/9	M/P70870/10

Options selector

M/601★★/M/★★★

Cylinder diameters (mm)	Substitute
10	11
16	16
25	25
32	32
40	40

Strokes (mm)
Standard only

Slide units

M/60100/M

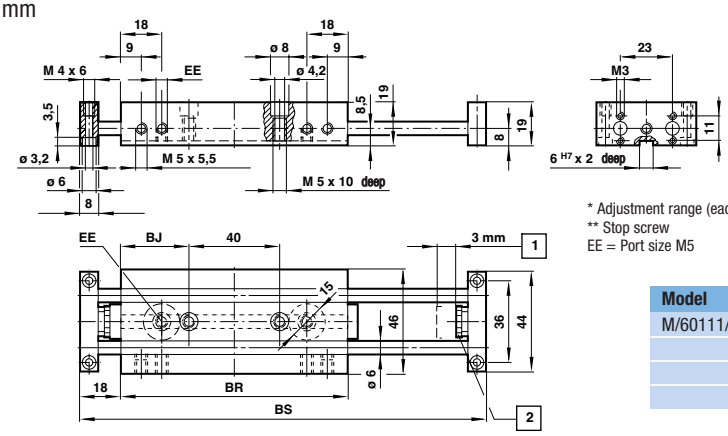
Double acting

Ø 10 to 40 mm

Standard cylinders

M/60111/M - Slide unit

Ø 10 mm

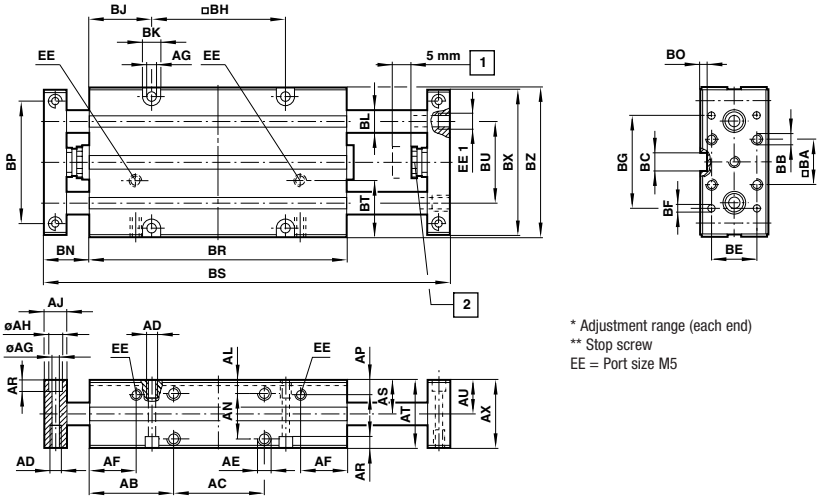


* Adjustment range (each end)
** Stop screw
EE = Port size M5

Model	Strokes	BJ	BR	BS
M/60111/M	-/25	30	100	161
	-/50	30	100	186
	-/75	55	150	261
	-/100	55	150	286

M/60116/M-M/60140/M - Slide unit

Ø 16, 25, 32, 40 mm



* Adjustment range (each end)
** Stop screw
EE = Port size M5

	AB	AC	AD	AE	AF	AG	AH	AJ	AL	AN	AP	AR	AS	AT	AU	AX	BA	BB
M/60116/M	37	40	M5 x 8 deep	M5 x 7 deep	20,5	4,2	8	10	6	20	6,5	5	16	30	15	30	20	M5
M/60125/M	46	60	M6 x 12 deep	M6 x 8 deep	22,5	5,3	10	12	9,5	24	7,5	6	21,5	40	20,5	40	30	M5
M/60132/M	55	80	M8 x 16 deep	M8 x 10 deep	33	6,8	12	15	12,5	30	10	7	27,5	50	26,5	50	36	M6
M/60140/M	68,5	100	M10 x 18 deep	M10 x 12 deep	36	8,5	15	20	14,5	36	11	9	32,5	60	31,5	60	40	M8

	BC	BD	BE	BF	BG	BH	BJ	BK	BL	BN	BP	BT	BU	BX	BZ	EE
M/60116/M	8 H7	3	16	3,2	40	59	27,5	8	10	20	54	25	36	64	66	M 5
M/60125/M	8 H7	3	30	5,3	59	82	35	10	16	22	76	35	48	90	92	M 5
M/60132/M	12 +0,12	5	36	6,4	82	104	43	11	20	28	102	46	62	116	118	G 1/8
M/60140/M	12 +0,12	5	40	8,4	104	128	54,5	15	25	31	126	57	74,5	144	146	G 1/8

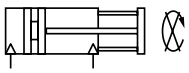
	BR-/25	BR-/50	BR-/75	BR-/100	BR-/125	BR-/150	BR-/175	BR-/200	BR-/225	BS-/25	BS-/50	BS-/75	BS-/100	BS-/125	BS-/150	BS-/175	BS-/200	BS-/225
M/60116/M	113,5	113,5	163,5	163,5	213,5	213,5	–	–	–	179	204	279	304	379	404	–	–	–
M/60125/M	–	152	152	152	202	202	252	–	–	–	246	271	346	371	446	471	–	–
M/60132/M	–	–	190	190	240	240	290	290	–	–	–	321	346	421	446	521	546	–
M/60140/M	–	–	–	236,5	236,5	286,5	286,5	336,5	336,5	–	–	–	398	423	498	523	598	623

Guiding and stopper cylinder

M/61000/M, M/61000/MR

Double acting

Ø 32 to 100 mm



Guiding accuracy ± 0,02 mm
Non-rotation accuracy ± 0,02°
Integrated strong guide rods
Variant with 4 ball bearings for precision linear guiding
Variant with 4 plain bearings to absorb high side loads
Easy installation
Magnetic piston as standard
Buffer pad for noise reduction

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operating pressure:
1 to 10 bar

Operating temperature:
-10°C to +80 °C
Consult our Technical Service for use below +2°C

Cylinder diameters:
32, 40, 50, 63, 80 (Cylinder with plain bearings)
32, 40, 50, 63, 80, 100 (Cylinder with ball bearings)

Strokes:
25, 50, 75, 100 mm
* Non standard strokes available (100 mm max.) They have the dimensions of the next longer standard stroke

Materials

Profile barrel: anodised aluminium
Piston rod: stainless steel (Martensitic)
Guide rod: stainless steel (Martensitic cylinder with plain bearings), hardened steel, hard-chrome plated (cylinder with ball bearings)
Slide bearings: solid bronze (cylinder with plain bearings), steel roller bearings (cylinder with ball bearings)
Mounting plate: stainless steel (austenitic)
Piston rod seals: polyurethane
Piston seals: nitrile rubber
'O'-rings: nitrile rubber
Buffer: polyurethane

Standard models

Ø	Piston rod Ø	Port size	Model Plain bearings	Ø	Piston rod Ø	Port size	Model Ball bearings
32	20	G1/8	M/61032/M/*	32	16	G1/8	M/61032/MR
40	20	G1/8	M/61040/M/*	40	16	G1/8	M/61040/MR
50	25	G1/4	M/61050/M/*	50	20	G1/4	M/61050/MR
63	25	G1/4	M/61063/M/*	63	20	G1/4	M/61063/MR
80	30	G1/4	M/61080/M/*	80	25	G1/4	M/61080/MR
				100	30	G1/4	M/610100/MR

* Insert stroke length in mm.
Order optional shock absorbers separately. See page 197
Order magnetically operated switches separately, see page 199
Cylinder sizing and speed control see page 6

M/61★★★/★★★/★★★

Cylinder diameters (mm)	Substitute
32	032
40	040
50	050
63	063
80	080
100	100

Strokes (mm)	Substitute
25	25
50	50
75	75
100	100

Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.

Variants (magnetic piston)	Substitute
Plain bearings (Ø 32 to 80 mm)	M
Ball bearings (Ø 32 to 100 mm)	MR
Ball bearings and special wipers (Ø 32 to 100 mm)	W2R

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

Guiding and stopper cylinder

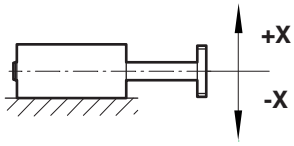
M/61000, M/61200/MR

Double acting

Ø 32 to 100 mm

Guiding accuracy

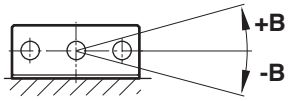
Deflection of the mounting plate X (mm) at instroke and outstroke position without load



Ø	32		40		50		63		80		100	
	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke
Position												
Cylinder with plain bearings	± 0,06	± 0,11	± 0,06	± 0,11	± 0,06	± 0,11	± 0,06	± 0,11	± 0,07	± 0.11	–	–
Cylinder with ball bearings	± 0,02	± 0,04	± 0,02	± 0,04	± 0,03	± 0,05	± 0,03	± 0,05	± 0,03	± 0,05	± 0,03	± 0,05

Non-rotation accuracy

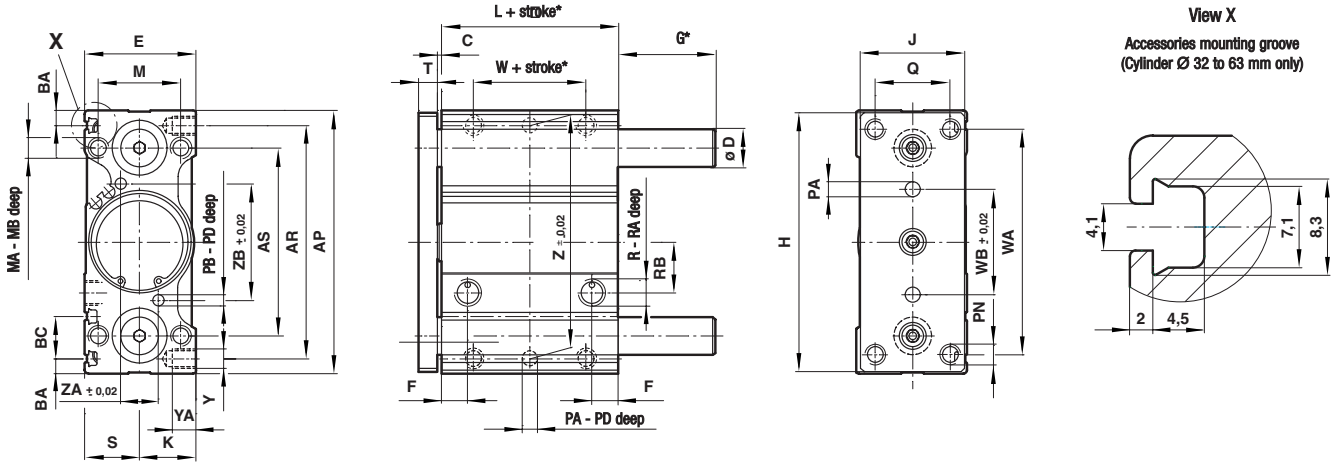
Deflection of the mounting plate B (°) at instroke position without load



Ø	32	40	50	63	80	100
Cylinder with plain bearings	± 0,06	± 0,06	± 0,05	± 0,05	± 0,04	–
Cylinder with ball bearings	± 0,03	± 0,03	± 0,03	± 0,03	± 0,02	± 0,02

Standard cylinders

M/61000/M, M/61000/MR



Ø	AP	AR	AS	BA	BC	C	D (1)	D (2)	E	F	G*	H	J	K	L*	M	MA	MB	PA
32	114	100	80	7	22	1,5	16	20	51	11,5	8,5	112	48	26	38	38	M8 x 1,25	20	6H7
40	124	110	90	7	22	2	16	20	51	13,5	2	122	48	26	44	38	M8 x 1,25	20	6H7
50	140	124	100	8	22,5	2	20	25	25	14	7	138	56	30	44	44	M10 x 1,5	25	8H7
63	150	132	110	8	22,5	2	20	25	72	25	2	148	69	36,5	49	44	M10 x 1,5	25	8H7
80	188	166	140	–	–	1,5	25	30	92	17,5	2	185	88	46,5	57	56	M12 x 1,75	30	10H7
100	224	200	170	–	–	2	30	-	112	21	2	221	108	56,5	66	62	M14 x 2	35	10H7

Ø	PB	PD	PN	Q	R	RA	RB	S	T	W*	WA	WB	Z	Y	YA	ZA	ZB
32	6H7	8	M8 x 1,25	30	G1/8	7,5	15	25	8	5	96	46	100	M8 x 1,25	11	14	44
40	6H7	8	M8 x 1,25	30	G1/8	7,5	21	25	8	10	106	50	110	M8 x 1,25	12,5	14	54
50	6H7	11	M10 x 1,5	40	G1/4	11	27	29	10	10	120	56	124	M10 x 1,5	12,5	20	62
63	8H7	11	M10 x 1,5	50	G1/4	11	33	35,5	10	10	130	66	132	M10 x 1,5	15	30	74
80	10H7	13	M12 x 1,75	60	G1/4	11	37	45,5	16	15	160	84	166	M12 x 1,75	18	36	94
100	10H7	13	M14 x 2	80	G1/4	11	40	55,5	16	15	190	110	200	M14 x 2	21	40	116

D (1) = M/61000/MR Cylinder with ball bearings

D (2) = M/61000/M Cylinder with plain bearings

* The dimensions of M/61100 with 25 mm of stroke are identical with 50 mm of stroke

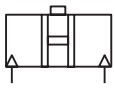
Cylinders with non-standard strokes have the dimensions of the cylinder with the next longest standard stroke.

Compact precision linear slide tables

M/261000/M

Double acting

Ø 6 to 16 mm



Ideal for applications demanding precise movement within a confined space

Light weight

Magnetic switching for positional feedback

Excellent service life

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting precision slide table with linear guide

Operating pressure:

1,5 to 7 bar

(2,5 to 7 bar for Ø 8 mm models with shock absorbers)

(2 to 7 bar for Ø 10 mm models with shock absorbers)

Operating temperature:

+5°C to +60°C

Consult our Technical Service for use below +2°C

Cylinder diameters:

6, 8, 10, 12 and 16 mm

Strokes:

5, 10 mm (Ø 6 mm)

10, 20 mm (Ø 8 and 10 mm)

15, 25 mm (Ø 12 mm)

20, 30 mm (Ø 16 mm)

Speed:

120 cycles/min. maximum

45 cycles/min. maximum for Ø 8, 10 and 12 mm models with shock absorbers

60 cycles/min. maximum for Ø 16 mm models with shock absorbers

Materials

Slide table: stainless steel, synthetic resin and synthetic rubber

Body: stainless steel

Stopper: nickel coated steel

Stroke adjustment bolts and nuts: nickel plated steel

Stroke adjustment bolts with rubber stops: stainless steel and rubber

Stroke adjustment block: nickel coated carbon steel

Shock absorber: nickel coated copper alloy (Ø8, 10 and 12 mm); nickel coated carbon steel (Ø 16 mm)

Elastomers: synthetic rubber

Standard models

Ø	Port size	Model (Magnetic)** Stroke adjustment (rubber stops)	Service kit
6	M3	M/261006/IR5/IP/*	QM/261006/00
8	M5	M/261008/MR6/IP/*	QM/261008/00
10	M5	M/261010/MR6/IP/*	QM/261010/00
12	M5	M/261012/MR6/IP/*	QM/261012/00
16	M5	M/261016/MR6/IP/*	QM/261016/00

* Insert stroke length in mm.

** Ø 6 mm - non-magnetic only.

Standard strokes

Ø (mm)	5	10	15	20	25	30
6	●	●				
8		●		●		
10		●		●		
12			●		●	
16				●		●

Options selector

M/2610★★/★R★/★★/★★

Piston diameter (mm)	Substitute
6	06
8	08
10	10
12	12
16	16

Type	Substitute
Magnetic*	M
Non-magnetic	I

* Available for Ø 8, 10, 12 and 16 mm models only

Stroke adjustment	Substitute
No stroke adjustment	1
Single side adjustment, metal stop*	2
In and outstroke adjustment, metal stops**	3
In and outstroke adjustment, shock absorbers**#	4
Single side adjustment, rubber stop*	5
In and outstroke adjustment, rubber stops**	6

* Available for Ø 6 mm models only

** Available for Ø 8, 10, 12 and 16 mm models only

Not available on symmetric models

Standard stroke lengths (mm)
5 and 10 mm (Ø 6 mm)
10 and 20 mm (Ø 8 and 10 mm)
15 and 25 mm (Ø 12 mm)
20 and 30 mm (Ø 16 mm)

Port location	Substitute
Side ported	P
Base mounted	B

Location of switch rail and stroke adjusters	Substitute
Standard	I
Symmetric*	S

* Available for Ø 8, 10 and 12 mm models only. Ø 16 mm standard models can be converted into symmetric types by repositioning the blanking plugs to the opposite face.

Switches with LED indication

Reed In-line cable	Reed 90° cable	Solid state In-line cable	Solid state 90° cable
			
M/369/LSU/1	M/370/LSU/1	M/418/EAU/1	M/419/EAU/1
M/369/LSU/3	M/370/LSU/3	M/418/EAU/3	M/419/EAU/3
		M/420/EAN/1	M/421/EAN/1
		M/420/EAN/3	M/421/EAN/3

PDF CAD
www.norgren.com/info/en108

Compact precision linear slide tables

M/261000/M

Double acting

Ø 6 to 16 mm

Mountings and accessories

Model	Ø (mm)	Stroke adjustment assembly (metal stop)	Stroke adjustment assembly (rubber stop)	Stroke adjustment assembly (shock absorbers)	Shock absorber	Switch rail	Magnet (with fixing screws)	Base mount O-rings (pack of 10)
								
M/261006/*R*/**/**	6	–	–	–	–	–	–	QM/261000/00
M/261008/*R*/**/**	8	QM/261008/3/*	QM/261008/6/*	QM/261008/4/*	M/P73454/1	M/P73428/1/*	M/P73431/5	QM/261000/00
M/261010/*R*/**/**	10	QM/261010/3/*	QM/261010/6/*	QM/261010/4/*	M/P73454/1	M/P73428/2/*	M/P73431/4	QM/261000/00
M/261012/*R*/**/**	12	QM/261012/3/*	QM/261012/6/*	QM/261012/4/*	M/P73454/1	M/P73428/3/*	M/P73431/4	QM/261000/00
M/261016/*R*/**/**	16	QM/261016/3/*	QM/261016/6/*	QM/261016/4/*	M/P73454/2	M/P73428/4/*	M/P73431/4	QM/261000/00

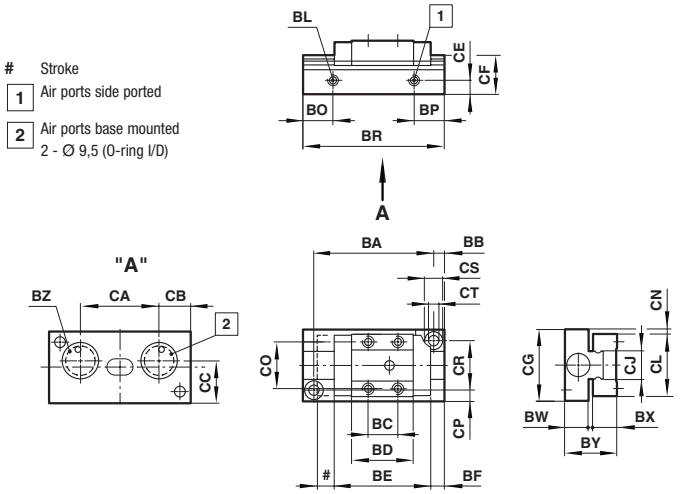
Model	Ø (mm)	Stroke adjustment bolt (metal stop) and nut 5 mm stroke	10 mm stroke	15 mm stroke	20 mm stroke	25 mm stroke	30 mm stroke
							
M/261006/*R*/**/**	6	M/P73424/2	M/P73424/3	–	–	–	–
M/261008/*R*/**/**	8	–	M/P73424/1	–	M/P73424/1	–	–
M/261010/*R*/**/**	10		M/P73424/1		M/P73424/2	–	–
M/261012/*R*/**/**	12	–	–	M/P73424/4	–	M/P73424/5	–
M/261016/*R*/**/**	16	–	–	–	M/P73424/7	–	M/P73424/7

Model	Ø (mm)	Stroke adjustment bolt (rubber stop) and nut 5 mm stroke	10 mm stroke	15 mm stroke	20 mm stroke	25 mm stroke	30 mm stroke
							
M/261006/*R*/**/**	6	M/P73425/2	M/P73425/3	–	–	–	–
M/261008/*R*/**/**	8	–	M/P73425/1	–	M/P73425/1	–	–
M/261010/*R*/**/**	10		M/P73425/1		M/P73425/2	–	–
M/261012/*R*/**/**	12	–	–	M/P73425/4	–	M/P73425/5	–
M/261016/*R*/**/**	16	–	–	–	M/P73425/7	–	M/P73425/7

* Insert stroke length (10, 15, 20, 25, or 30 mm)

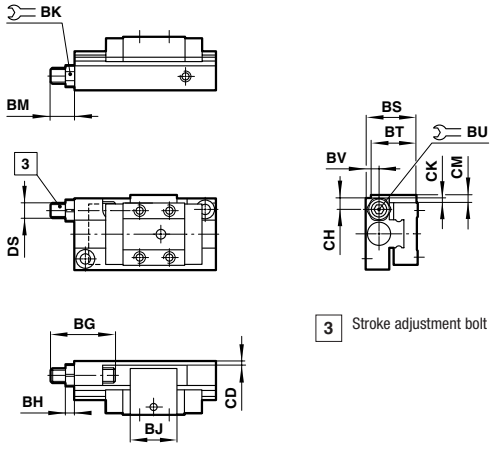
M/261006/IR1/I*/**

Standard compact precision slide table, no stroke adjustment



M/261006/IR2/I*/**, M/261006/IR5/I*/**

Compact precision slide table with single side stroke adjustment



Model	Ø	BC	BD	BE	BH	BJ	BK	BL	BO	BP	BS	BT	BU
M/261006/IR*/**/**	6	10	19,8	31	4	15	7	M3	9,7	5,7	16,7	14,2	2,5
Model	**Ø**	**BV**	**BW**	**BX**	**BY ±0,05**	**Ø BZ**	**CB**	**CC**	**CD**	**CE**	**CF**	**CG -0,2**	**CH**
M/261006/IR*/**/**	6	4,5	7,8	7,8	17	9,5	8	14,5	1,8	5	12,5	23	4
Model	**Ø**	**CJ**	**CK ±0,1**	**CL -0,05**	**CM**	**CN ±0,1**	**CO**	**CP**	**CR**	**CS**	**CT**	**DS**	
M/261006/IR*/**/**	6	9	1,5	20	2,5	1,5	15	3,5	16	Ø 6	Ø 3,3	M5	
Model	**Ø**	**Stroke**	**BA**	**BB**	**BF**	**BG**	**BM**	**BR**	**CA**	**kg**			
M/261006/IR*/**/5	6	5	38	3,5	4,5	22	max. 9,5	45	25	0,080			
M/261006/IR*/**/10	6	10	52	4	9,5	30	max. 12,5	60	40	0,100			

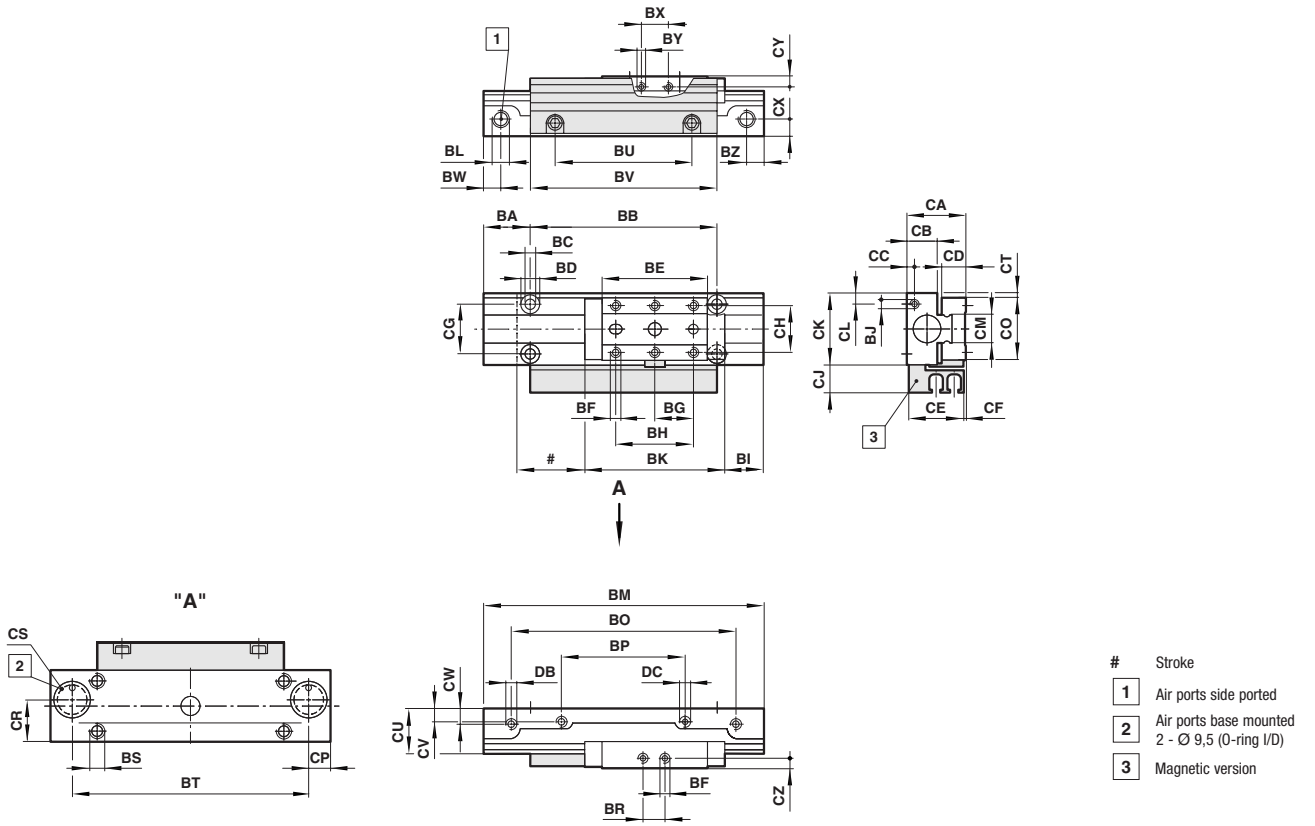
Compact precision linear slide tables

M/261000/M

Double acting

Ø 6 to 16 mm

M/2610**/*R1/I*/** Standard compact precision slide table, no stroke adjustment (Ø 8 to 12 mm)
M/2610**/*R1/S*/** Symmetric compact precision slide table, no stroke adjustment (Ø 8 to 12 mm)



\# Stroke
1 Air ports side ported
2 Air ports base mounted 2 - Ø 9,5 (0-ring I/D)
3 Magnetic version

Model	Ø	BA	Ø BC	Ø BD	BF	BJ*	BL	BS	BW	BZ	CA	CB	CC
M/261008/*R1/**/**	8	14	3,3	6	M3x3 deep	–	M5	M4x5 deep	5,5	5,5	19 ±0,05	9,8	–
M/261010/*R1/**/**	10	14	3,3	6	M3x3 deep	M3x5 deep	M5	M4x5 deep	6	6	20 ±0,02	9,5	4
M/261012/*R1/**/**	12	15	4,2	8	M3x4 deep	M3x5 deep	M5	M5x4,5 deep	6	6	22 ±0,02	9,5	5,5
Model	**Ø**	**CD**	**CE**	**CF**	**CG**	**CH**	**CJ**	**CK**	**CL**	**CM**	**CO**	**CP**	**CR**
M/261008/*R1/**/**	8	7,8	18	0,5	16	15	9	23 -0,2	–	9	20 -0,05	7	13,5
M/261010/*R1/**/**	10	10	19	0,5	21	20	10	28 ±0,2	5	12	27 ±0,2	7,5	17,5
M/261012/*R1/**/**	12	12	19	1	24	25	10	33 ±0,2	6,5	15	32 ±0,2	8	21
Model	**Ø**	**Ø CS**	**CT**	**CU**	**CV**	**CW**	**CX**	**CY**	**CZ**				
M/261008/*R1/**/**	8	9,5	1,5 ± 0,1	14,5	3,5	4,5	5,5	3	3				
M/261010/*R1/**/**	10	9,5	0,5 ± 0,025	15,5	4	5,5	5,5	4	4				
M/261012/*R1/**/**	12	9,5	0,5 ± 0,025	17	5,5	5,5	5,5	4,5	4,5				

Model	Ø	Stroke	BB	BE	BG	BH	BI	BK	BM	BO	BP
M/261008/*R1/**/10	8	10	32	19,8	–	15	9,5	31	60	53	21
M/261008/*R1/**/20	8	20	60	33,8	–	16	12,5	45	90	72	40
M/261010/*R1/**/10	10	10	32	21	–	15	8	34	60	48	20
M/261010/*R1/**/20	10	20	62	36	15	30	10,5	49	90	78	50
M/261012/*R1/**/15	12	15	46	26,8	–	20	9,5	42	76	64	30
M/261012/*R1/**/25	12	25	76	47,5	20	40	9,15	62,7	106	94	60
Model	**Ø**	**BR**	**BT**	**BU**	**BV**	**BX**	**BY**	**DB**	**DC**	**kg**	**kg (Magnet)**
M/261008/*R1/**/10	8	6,5	46	21	38	6,5	M3x3 deep	M3x4 deep	M3x4 deep	0,1	0,010
M/261008/*R1/**/20	8	6,5	76	40	60	6,5	M3x3 deep	M3x4 deep	M3x4 deep	0,16	0,015
M/261010/*R1/**/10	10	8	45	20	36	10	M2x3 deep	–	M3x5 deep	0,135	0,015
M/261010/*R1/**/20	10	8	75	50	66	10	M2x3 deep	–	M3x5 deep	0,210	0,020
M/261012/*R1/**/15	12	12	60	30	46	10	M3x5 deep	–	M3x5 deep	0,215	0,015
M/261012/*R1/**/25	12	12	90	60	76	10	M3x5 deep	–	M3x5 deep	0,320	0,025

* Applicable to Ø 10 and 12 models with stroke lengths ⩾ 10mm

Note: drawing shows standard model. For symmetric model see data sheet page no. 2.3.001.11

Compact precision linear slide tables

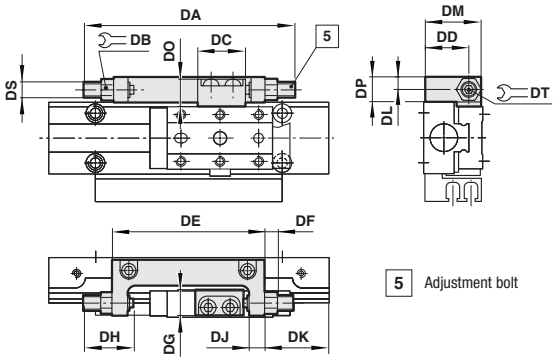
M/261000/M

Double acting

Ø 6 to 16 mm

M/2610**/*R3/**/** Standard compact precision slide tables with stroke adjustment (metal stops, Ø 8 to 12 mm)

M/2610**/*R6/**/** Standard compact precision slide tables with stroke adjustment (rubber stops, Ø 8 to 12 mm)

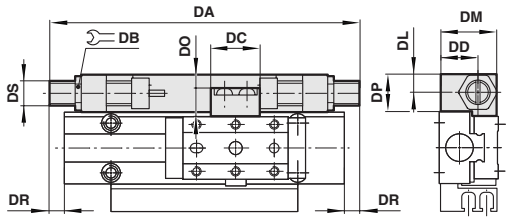


5 Adjustment bolt

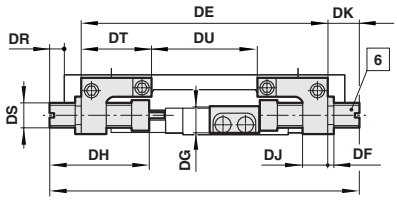
Model	Ø	DB	DC	DD	DF	DG	DL
M/261008/*R*/**/**	8	7	15,5	14,5	4	8	4
M/261010/*R*/**/**	10	7	16	15	4	8	4
M/261012/*R*/**/**	12	8	20	15,5	5	10	5
Model	**Ø**	**DM**	**DO**	**DP**	**DS**	**DT**	
M/261008/*R*/**/**	8	18,5	8	8	M5	2,5	
M/261010/*R*/**/**	10	19,5	8	8	M5	2,5	
M/261012/*R*/**/**	12	21,5	10	10	M6	3	

Model	Ø	Stroke	DA max.	DE	DH	DJ	DK	kg Basic model +
M/261008/*R*/**/10	8	10	57,5	38	16	4,5	11	0,035
M/261008/*R*/**/20	8	20	67,5	49	16	5	20,5	0,045
M/261010/*R*/**/10	10	10	58	37	16	4,5	11,5	0,040
M/261010/*R*/**/20	10	20	80	66	22	10	16	0,060
M/261012/*R*/**/15	12	15	71	50	18	6	13	0,070
M/261012/*R*/**/25	12	25	89	68	22	10	19	0,090

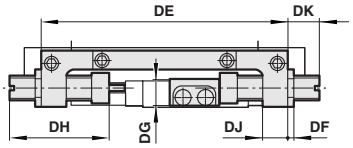
M/2610**/*R4/**/** Standard compact precision slide tables with stroke adjustment (shock absorbers, Ø 8 to 12 mm)



Ø 8 mm



Ø 10 & 12 mm



6 Shock absorber

Model	Ø	DB	DC	DD	DF	DG	DH	DJ
M/261008/*R4/**/**	8	11	15,5	12,5	2	8	32	8
M/261010/*R4/**/**	10	11	16	13,5	2	8	32	5
M/261012/*R4/**/**	12	11	20	15,5	2	10	32	6
Model	**Ø**	**DL**	**DM**	**DO**	**DP**			
M/261008/*R4/**/**	8	6	18	8	12			
M/261010/*R4/**/**	10	6	19	8	12			
M/261012/*R4/**/**	12	6	21	10	12			

Model	Ø	Stroke	DA	DE	DJ	DK max.	DR max.	kg Basic model +
M/261008/*R4/**/10	8	10	89,5	60	8	15	15	0,065
M/261008/*R4/**/20	8	20	99,5	79	8	10,5	5	0,065
M/261010/*R4/**/10	10	10	90	60	5	15	15	0,070
M/261010/*R4/**/20	10	20	100	60	5	20	5	0,070
M/261012/*R4/**/15	12	15	99	71	6	13,5	11,5	0,090
M/261012/*R4/**/25	12	25	109	71	10	17,5	1,5	0,090

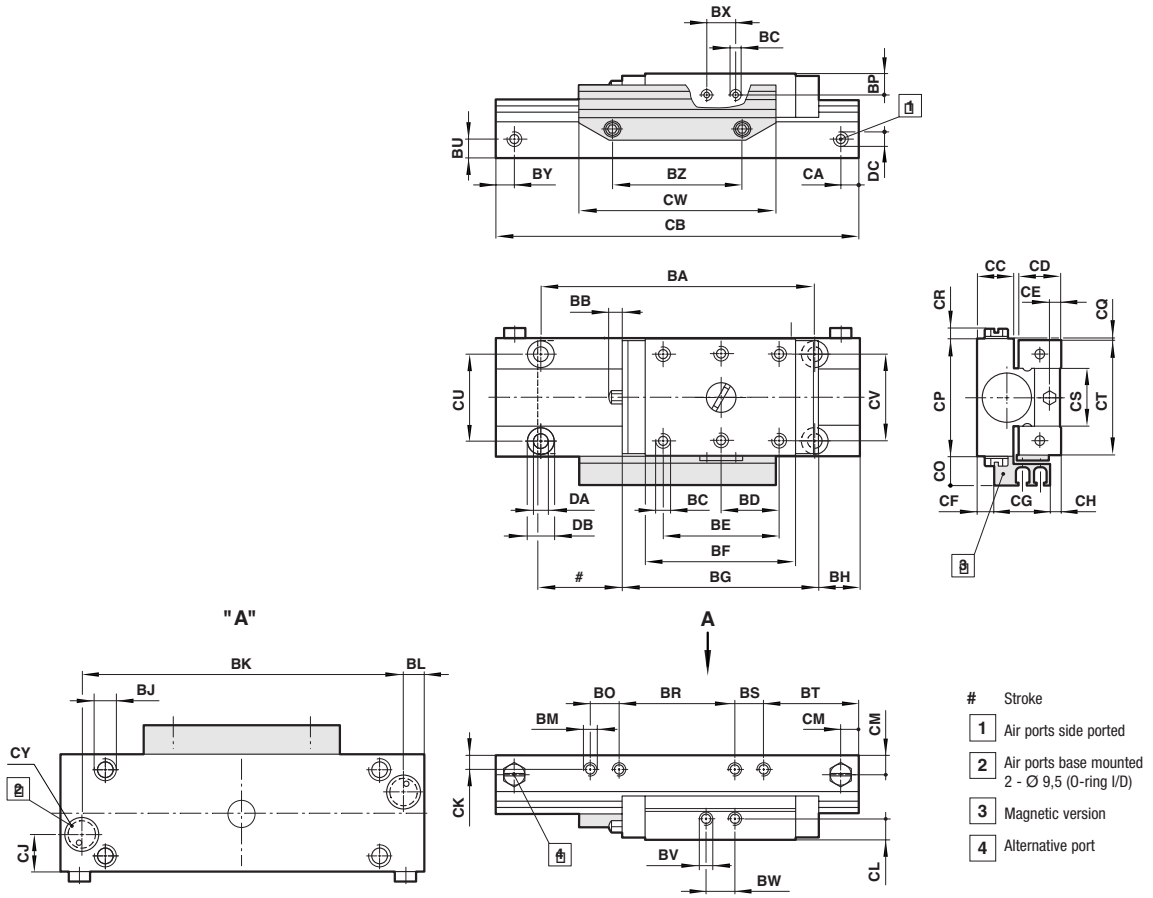
Compact precision linear slide tables

M/261000/M

Double acting

Ø 6 to 16 mm

M/2610**/*R1/I*/** Standard compact precision slide table, no stroke adjustment (Ø 16 mm)



Model	Ø	BB	BC	BJ	BL	BM	BO	BP	BS	BU	BV	BW	BX
M/261016/*R1/I*/**	16	4,5	M4x6 deep	M6x6 deep	7,5	M4x7 deep	10	7	10	6,5	M4x7 deep	10	10
Model	**Ø**	**BY**	**CA**	**CC**	**CD**	**CE**	**CF**	**CG**	**CH**	**CJ**	**CK**	**CL**	**CM**
M/261016/*R1/I*/**	16	6,5	6,5	12,5	15	4,2	6,2	19	3,8	13	5	7	6,5
Model	**Ø**	**CO**	**CP**	**CQ**	**CR**	**CS**	**CT**	**CU**	**CV**	**Ø DA**	**Ø DB**	**DC**	
M/261016/*R1/I*/**	16	10	41 ± 0,2	0,5	3,5	20	40 ±0,2	30	30	5,3	9,5x6,5 deep	M5	

Model	Ø	Stroke	BA	BD	BE	BF	BG	BH	BK	BR	BT	BZ	CB	CW	kg	kg (Magnet)
M/261016/*R1/I*/20	16	20	65	–	25	34,6	50	13	81	30	23	34	96	57	0,445	0,015
M/261016/*R1/I*/30	16	30	95	20	40	52,3	68	14	111	40	33	45	126	68	0,610	0,020

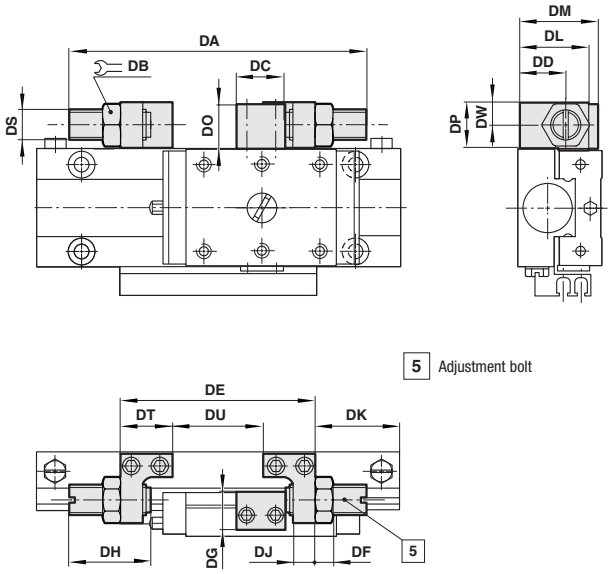
Compact precision linear slide tables

M/261000/M

Double acting

Ø 6 to 16 mm

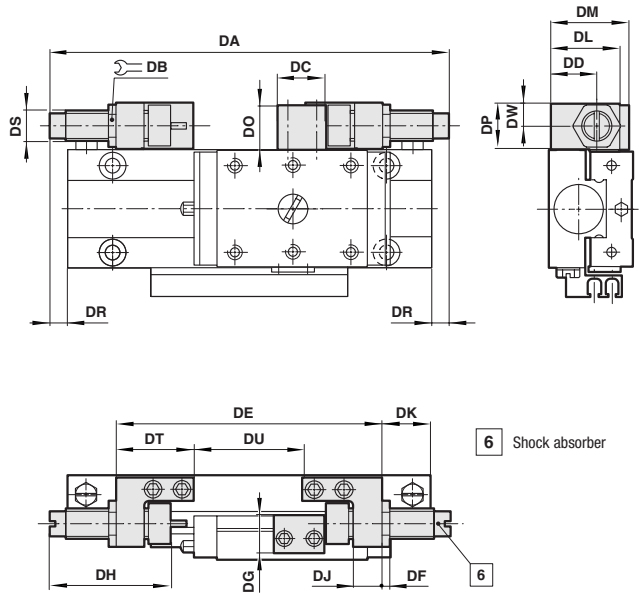
M/261016/*R3/**/** Standard compact precision slide table with stroke adjustment (metal stops, Ø 16 mm)
M/261016/*R6/**/** Standard compact precision slide table with stroke adjustment (rubber stops, Ø 16 mm)



Model	Ø	DB	DC	DD	DF	DG	DH	DJ
M/261016/*R*/**/**	16	10	20	18	5,5	14	25	8
Model	**Ø**	**DL**	**DM**	**DO**	**DP**	**DS**	**DT**	**DW**
M/261016/*R*/**/**	16	24	27,5	12	12	M8	20	6

Model	Ø	Stroke	DA max.	DE	DK	DU	kg Basic model +
M/261016/*R*/**/20	16	20	90	60	18	20	0,100
M/261016/*R*/**/30	16	30	100	70	28	30	0,100

M/261016/*R4/**/** Standard compact precision slide table with stroke adjustment (shock absorbers, Ø 16 mm)



Model	Ø	DB	DC	DD	DF	DG	DH	DJ
M/261016/*R4/**/**	16	13	20	19	3	14	50	7
Model	**Ø**	**DL**	**DM**	**DO**	**DP**	**DS**	**DT**	**DW**
M/261016/*R4/**/**	16	26,5	27,5	12	15	M10	25	7,5

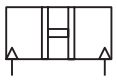
Model	Ø	Stroke	DA max.	DE	DK	DR max.	DU	kg Basic model +
M/261016/*R4/**/20	16	20	140	70	13	22	20	0,145
M/261016/*R4/**/30	16	30	150	80	23	12	30	0,145

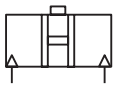
Precision linear slide tables

M/261100/M

Double acting

Ø 10 and 12 mm





Ideal for applications demanding precise movement

Light weight

Magnetic switching for positional feedback

Excellent service life

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting precision slide table with external guide

Operating pressure:

1,5 to 7 bar (2 to 7 bar for models with shock absorbers)

Operating temperature:

+ 5°C to + 60°C

Consult our Technical Service for use below +2°C

Cylinder diameters:

10 and 12 mm

Strokes:

15, 30, 45 mm (Ø 10 mm)

20, 30, 45, 60 mm (Ø 12 mm)

Speed:

400 mm/s maximum

Materials

Slide table: stainless steel

Body: stainless steel

End plate: nickel plated carbon steel

Piston rod: stainless steel

External nuts and bolts: nickel plated carbon steel

Stroke adjustment bolts and blocks: nickel plated steel

Stroke adjustment bolts with rubber stops: stainless steel and synthetic rubber

Shock absorbers: brass alloy

Elastomers: synthetic rubber

Standard models

Ø	Port size	Model (Magnetic) Stroke adjustment (rubber stops)
10	M5	M/261110/MR6/IP/**
12	M5	M/261112/MR6/IP/**

* Insert stroke length in mm.

Standard strokes

Ø (mm)	15	20	30	45	60
10	●		●	●	
12		●	●	●	●

Options selector

M/2611★★/★R★/★P/★★

Piston diameter (mm)	Substitute
10	10
12	12

Piston	Substitute
Magnetic*	M
Non-magnetic	I

Stroke adjustment	Substitute
No stroke adjustment	1
In and outstroke adjustment with metal stops	3
In and outstroke adjustment with shock absorbers	4
Out stroke adjustment with rubber stop	5
In and outstroke adjustment with rubber stops	6
Out stroke adjustment with metal stop	7
Out stroke adjustment with shock absorber	8

Stroke length (mm)
60 mm max.

Location of switch rail and stroke adjusters	Substitute
Standard	I
Symmetric	S

Switches with LED indication

Reed In-line cable	Reed 90° cable	Solid state In-line cable	Solid state 90° cable
			
M/369/LSU/1	M/370/LSU/1	M/418/EAU/1	M/419/EAU/1
M/369/LSU/3	M/370/LSU/3	M/418/EAU/3	M/419/EAU/3
		M/420/EAN/1	M/421/EAN/1
		M/420/EAN/3	M/421/EAN/3

Precision linear slide tables

M/261100/M

Double acting

Ø 10 and 12 mm

Accessories

Ø	Stroke adjustment bolt (metal stop) Pull side	Stroke adjustment bolt (metal stop) Push side	Stroke adjustment bolt (rubber stop) Pull side	Stroke adjustment bolt (rubber stop) Push side	Push side stroke adjustment assembly (metal stop) Standard	Push side stroke adjustment assembly (metal stop) Symmetric
						
10	M/P73424/3	M/P73424/2	M/P73425/3	M/P73425/2	QM/261110/I7/*	QM/261110/S7/*
12	M/P73424/6	M/P73424/5	M/P73425/6	M/P73425/5	QM/261112/I7/*	QM/261112/S7/*

Ø	Push side stroke adjustment assembly (rubber stop) Standard	Push side stroke adjustment assembly (rubber stop) Symmetric	Push side stroke adjustment assembly (shock absorber) Standard	Push side stroke adjustment assembly (shock absorber) Symmetric	Switch rail Standard	Switch rail Symmetric
						
10	QM/261110/I5/*	QM/261110/S5/*	QM/261110/I8/*	QM/261110/S8/*	M/P73430/2/*	M/P73429/2/*
12	QM/261112/I5/*	QM/261112/S5/*	QM/261112/I8/*	QM/261112/S8/*	M/P73430/3/*	M/P73429/3/*

Ø	Push and pull side stroke adjustment assembly (rubber stop)	Push and pull side stroke adjustment assembly (metal stop)	Push and pull side stroke adjustment assembly (shock absorber)	Shock absorber	Magnet
					
10	QM/261110/6/*	QM/261110/3/*	QM/261110/4/*	M/P73454/1	M/P73431/3
12	QM/261112/6/*	QM/261112/3/*	QM/261112/4/*	M/P73454/1	M/P73431/3

* Insert standard stroke length (Ø 10 mm: 15, 30 and 45 mm; Ø 12 mm: 20, 30, 45 and 60 mm)

Precision linear slide tables

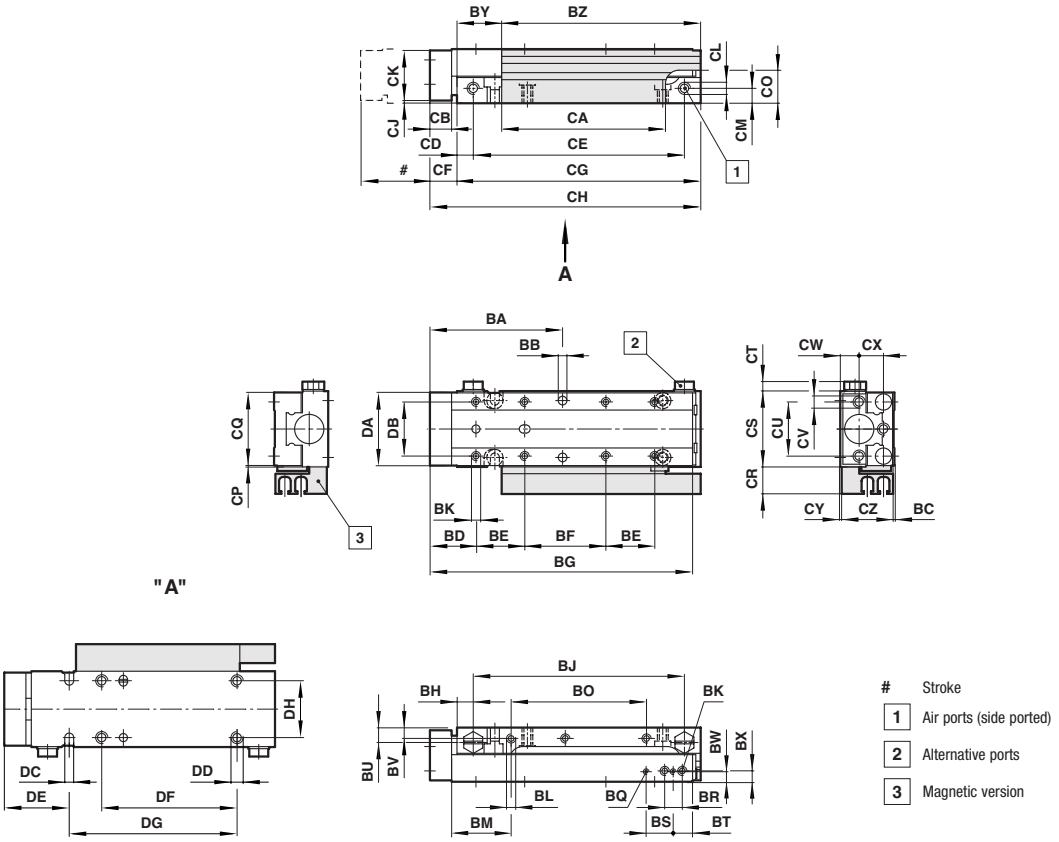
M/261100/M

Double acting

Ø 10 and 12 mm

M/26111*/*R1/IP/** Standard slide tables (Ø 10 and 12 mm)

M/26111*/*R1/SP/** Symmetric slide tables (Ø 10 and 12 mm)



Model	Ø	ØBB	BC	BD	BH	BK	BL	BM	BQ	BR	BS	BT	BU
M/261110/*R1/*P/**	10	3,2	0,5	17	6	M3 x 3 deep	M3 x 5 deep	20	M2 x 3 deep	6,5	10	7,2	5,5
M/261112/*R1/*P/**	12	4	1	20	6	M3 x 4 deep	M3 x 5 deep	23	M2 x 3 deep	6,5	10	8,1	5,5

Model	Ø	BV	BW	BX	BY	CB	CD	CF	CJ	CK	CL	CM	CO	CP	CQ	CR
M/261110/*R1/*P/**	10	4	3,7	4	16,5	8	6	10	1	18,5	M5	5,5	12,2	0,5 ±0,025	27±0,2	10
M/261112/*R1/*P/**	12	5,5	4,2	4,5	18,5	8	6	10	1	20,5	M5	5,5	13,7	0,5 ±0,025	32±0,2	10

Model	Ø	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DE	DH
M/261110/*R1/*P/**	10	28±0,2	3,5	20	M4 x 8 deep	7	9	0,5	19	27	21	3,3	24	21
M/261112/*R1/*P/**	12	33±0,2	3,5	24	M4 x 8 deep	8	9	2	19	32	25	4,4	25	24

Model	Stroke	BA	BE	BF	BG	BJ	BO	BZ	CA	CE	CG	CH	DF	DG	kg	kg (Magnet)
M/261110/*R1/*P/15	15	39	18	–	67	48	20	43,5	30,5	48	60	70	20	32	0,230	0,015
M/261110/*R1/*P/30	30	44	18	15	82	63	35	58,5	45,5	63	75	85	35	47	0,270	0,020
M/261110/*R1/*P/45	45	49	18	30	97	78	50	73,5	60,5	78	90	100	50	62	0,320	0,025
M/261112/*R1/*P/20	20	45	20	–	75	54	20	47,5	34,5	54	66	76	20	36	0,320	0,017
M/261112/*R1/*P/30	30	53	25	–	85	64	30	57,5	44,5	64	76	86	30	46	0,370	0,020
M/261112/*R1/*P/45	45	53	25	15	100	79	45	72,5	59,5	79	91	101	45	61	0,425	0,025
M/261112/*R1/*P/60	60	53	25	30	115	94	60	87,5	74,5	94	106	116	60	76	0,495	0,030

Note: drawing shows standard model. For symmetric model see data sheet page no. 2.3.003.09

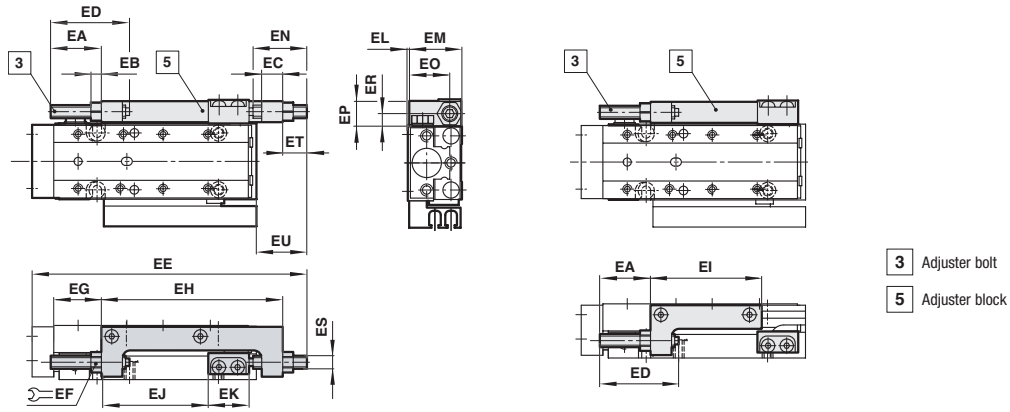
Precision linear slide tables

M/261100/M

Double acting

Ø 10 and 12 mm

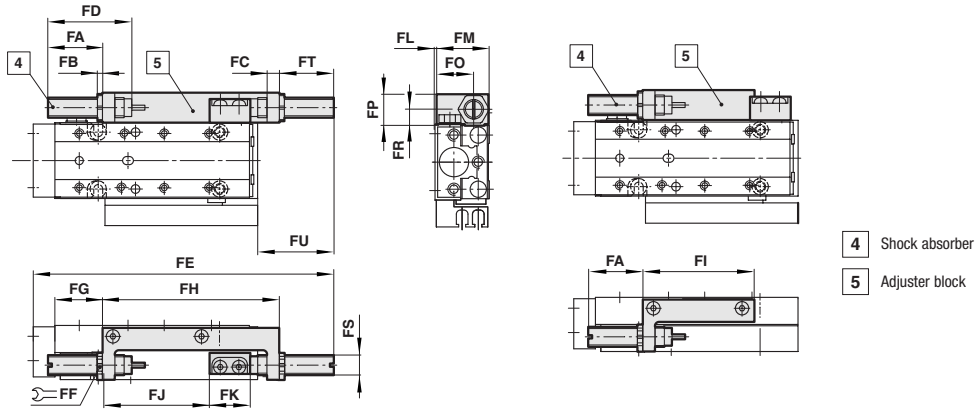
M/26111*/*R3/*P/** Standard precision linear slide table with push and pull side stroke adjustment, metal stops
M/26111*/*R6/*P/** Standard precision linear slide table with push and pull side stroke adjustment, rubber stops
M/26111*/*R7/*P/** Standard precision linear slide table with push side stroke adjustment, metal stop
M/26111*/*R5/*P/** Standard precision linear slide table with push side stroke adjustment, rubber stop



Model	EA	EB	EC	ED	EF	EG	EK	EL	EM	EN	EO	EP	ER	ES	ET	EU
M/261110/*R*/*P/**	max. 19,3	4	8	30	7	16,5	15,5	0,5	19	22	13,5	8	4	M5	max. 9,2	19,7
M/261112/*R*/*P/**	max. 19,8	5	7,5	30	8	19	15,5	0,5	21	22	15,5	10	5	M6	max. 9,7	20,7

Model	Stroke	EE	EH	EI	EJ	kg Slide table	kg Push side stroke adjuster Basic model +	kg Push and pull side stroke adjuster Basic model +
M/261110/*R*/*P/15	15	max. 89,7	54	27	25,7	0,230	0,035	0,055
M/261110/*R*/*P/30	30	max. 104,7	69	42	40,7	0,270	0,045	0,065
M/261110/*R*/*P/45	45	max. 119,7	84	57	55,7	0,320	0,055	0,075
M/261112/*R*/*P/20	20	max. 96,7	58	28	30,2	0,320	0,045	0,080
M/261112/*R*/*P/30	30	max. 106,7	68	38	40,2	0,370	0,055	0,090
M/261112/*R*/*P/45	45	max. 121,7	83	53	55,2	0,425	0,070	0,105
M/261112/*R*/*P/60	60	max. 136,7	98	68	70,2	0,495	0,085	0,120

M/26111*/*R4/*P/** Standard precision linear slide table with push and pull side stroke adjustment, shock absorbers
M/26111*/*R8/*P/** Standard precision linear slide table with push side stroke adjustment, shock absorber



Model	FA	FB	FC	FD	FF	FG	FK	FL	FM	FO	FP	FR	FS	FT	FU
M/261110/*R4/*P/**	max. 21,3	2	4,2	32	11	16,5	15,5	0,5	19	13	12	6	M8	max. 18,2	max. 29,7
M/261112/*R4/*P/**	max. 20,8	2	4,7	32	11	18	15,5	0,5	21	15	12	6	M8	max. 18,7	max. 30,7

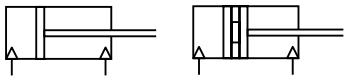
Model	Stroke	FE	FH	FI	FJ	kg Slide table	kg Push side stroke adjuster Basic model +	kg Push and pull side stroke adjuster Basic model +
M/261110/*R4/*P/15	15	max, 99,7	55	max. 27	25,7	0,230	0,045	0,075
M/261110/*R4/*P/30	30	max. 114,7	70	max. 42	40,7	0,270	0,055	0,085
M/261110/*R4/*P/45	45	max. 129,7	85	max. 57	55,7	0,320	0,065	0,095
M/261112/*R4/*P/20	20	max. 106,7	60	max. 29	31,2	0,320	0,055	0,095
M/261112/*R4/*P/30	30	max. 116,7	70	max. 39	41,2	0,370	0,065	0,105
M/261112/*R4/*P/45	45	max. 131,7	85	max. 54	56,2	0,425	0,075	0,115
M/261112/*R4/*P/60	60	max. 146,7	100	max. 69	71,2	0,495	0,090	0,130

Low profile linear slide tables

M/261200/M

Double acting

Ø 8 to 20 mm



Slim but robust construction make these units ideal for moving relatively heavy loads within a confined space

Light weight

Magnetic switching for positional feedback

Excellent service life

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting with linear guide

Operating pressure:

2 to 7 bar

Operating temperature:

+5°C to +60°C

Consult our Technical Service for use below +2°C

Cylinder diameters:

8, 10, 15, 20 mm

Strokes:

30, 45, 60 mm (Ø 8 & 10 mm)

30, 45, 60, 80, 100 mm (Ø 15 & 20 mm)

Speed:

300 mm/s maximum

Materials

Slide table, body and end plates: aluminium alloy

Piston rod: stainless steel

Linear guide: stainless steel

Stroke adjustment bolts and nuts: nickel plated carbon steel

Elastomers: synthetic rubber

Standard models

Ø	Port size	Model (Magnetic) Stroke adjustment (rubber stops)
8	M5	M/261208/MR/I/**
10	M5	M/261210/MR/I/**
15	M5	M/261215/MR/I/**
20	M5	M/261220/MR/I/**

* Insert stroke length in mm.

Standard strokes

Ø	30	45	60	80	100
8	●	●	●		
10	●	●	●		
15	●	●	●	●	●
20	●	●	●	●	●

Options selector

M/2612★★/★R/★/★★★

Piston diameter (mm)	Substitute
8	08
10	10
15	15
20	20

Piston type	Substitute
Magnetic	M
Non-magnetic	I

Standard stroke length (mm)
30, 45 & 60 mm (Ø 8 & 10 mm)
30, 45, 60, 80 & 100 mm (Ø 15 & 20 mm)

Location of switch rail and stroke adjusters	Substitute
Standard	I
Symmetric	S

Switches with LED indication

Reed In-line cable	Reed 90° cable	Solid state In-line cable	Solid state 90° cable
			
M/369/LSU/1	M/370/LSU/1	M/418/EAU/1	M/419/EAU/1
M/369/LSU/3	M/370/LSU/3	M/418/EAU/3	M/419/EAU/3
		M/420/EAN/1	M/421/EAN/1
		M/420/EAN/3	M/421/EAN/3

Low profile linear slide tables

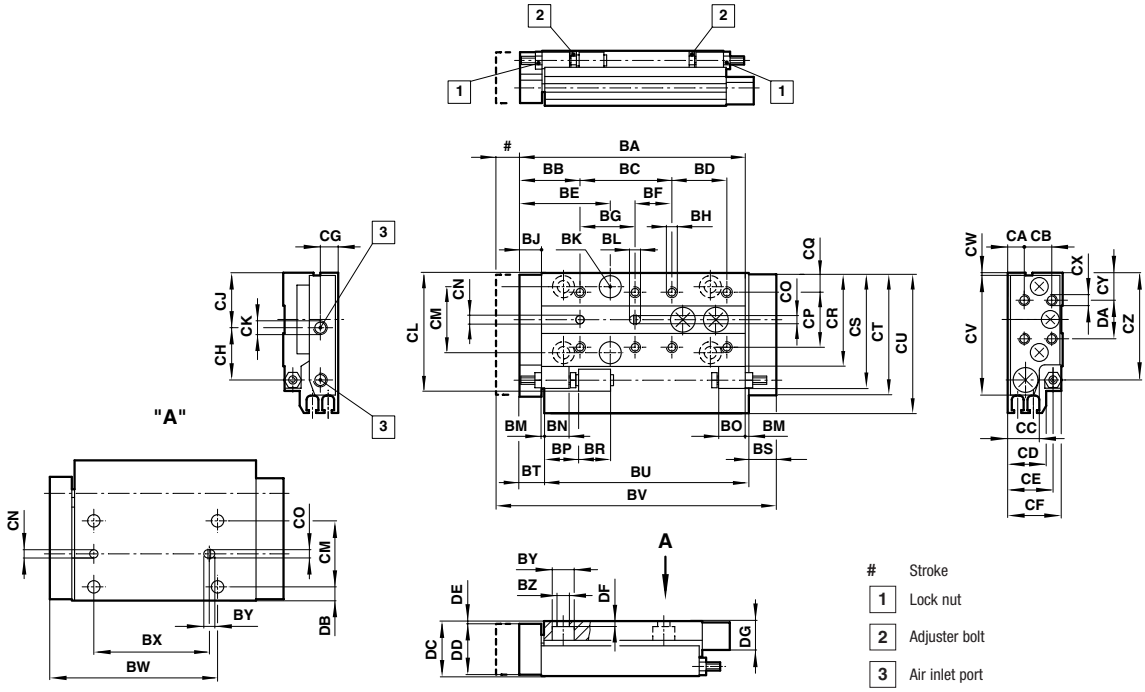
M/261200/M

Double acting

Ø 8 to 20 mm

M/2612**/*R/I/** Standard slide tables (Ø 8 & 10 mm)

M/2612**/*R/S/** Symmetric slide tables (Ø 8 & 10 mm)



Model	Ø	BB	BD	BH	BJ	Ø BK	BL	BM	BN	BO	BP	BR	BS	BT	ØBY	BZ
M/261208/*R/*/***	8	22	20	M4 x 4 deep	8	8	4	1	9	10	12,5	9	10	9	8	4,5
M/261210/*R/*/***	10	26	25	M4 x 4 deep	10	8	4	1	9	10	14	14	10	11	8	4,5

Model	Ø	CA	CB	CC	CD	CE	CF	CG	CH	CJ	CK	CL	CM	ØCN H9	ØCO H9	CP
M/261208/*R/*/***	8	6	10	11,5	14	16,5	19,5	6,5	19	20	M5	43	24	3 x 3 deep	3 x 3 deep	20
M/261210/*R/*/***	10	6	12	12,5	15	18,5	22,5	7	20	27	M5	52	30	3 x 3 deep	3 x 3 deep	25

Model	Ø	CR	CS	CT	CU	CV	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG
M/261208/*R/*/***	8	34	42	44,5	51	44	M4 x 6 deep	10	39	14	5	20	18,5	1	2	10,5
M/261210/*R/*/***	10	40	51	53,5	60,5	53	M4 x 8 deep	12	47	16	5	23	21,5	1	4	11,5

Model	Ø	Stroke	BA	BC	BE	BF	BG	BU	BV	BW	BX	CW	kg	kg (Magnet)
M/261208/*R/*/30	8	30	74	25	33	–	–	66	85	61	42	0,5	0,196	0,002
M/261208/*R/*/45	8	45	89	40	33	20	20	81	100	76	57	0,5	0,231	0,002
M/261208/*R/*/60	8	60	89	40	33	35	20	96	115	91	72	0,5	0,266	0,002
M/261210/*R/*/30	10	30	84	25	38	–	–	74	95	69	44	0,5	0,390	0,003
M/261210/*R/*/45	10	45	99	40	38	15	25	89	110	84	59	0,5	0,405	0,003
M/261210/*R/*/60	10	60	114	55	38	30	25	104	125	99	74	0,5	0,420	0,003

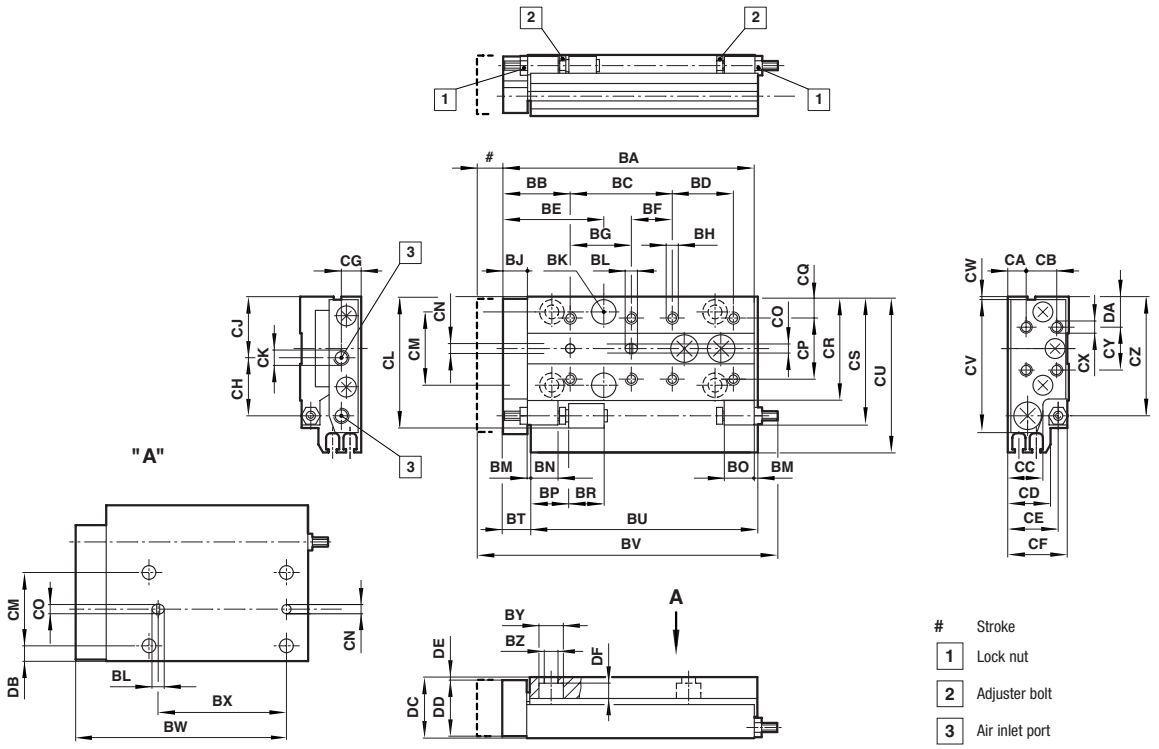
Low profile linear slide tables

M/261200/M

Double acting

Ø 8 to 20 mm

M/2612**/*R/I/** Standard slide tables (Ø 15 & 20 mm)
M/2612**/*R/S/** Symmetric slide tables (Ø 15 & 20 mm)

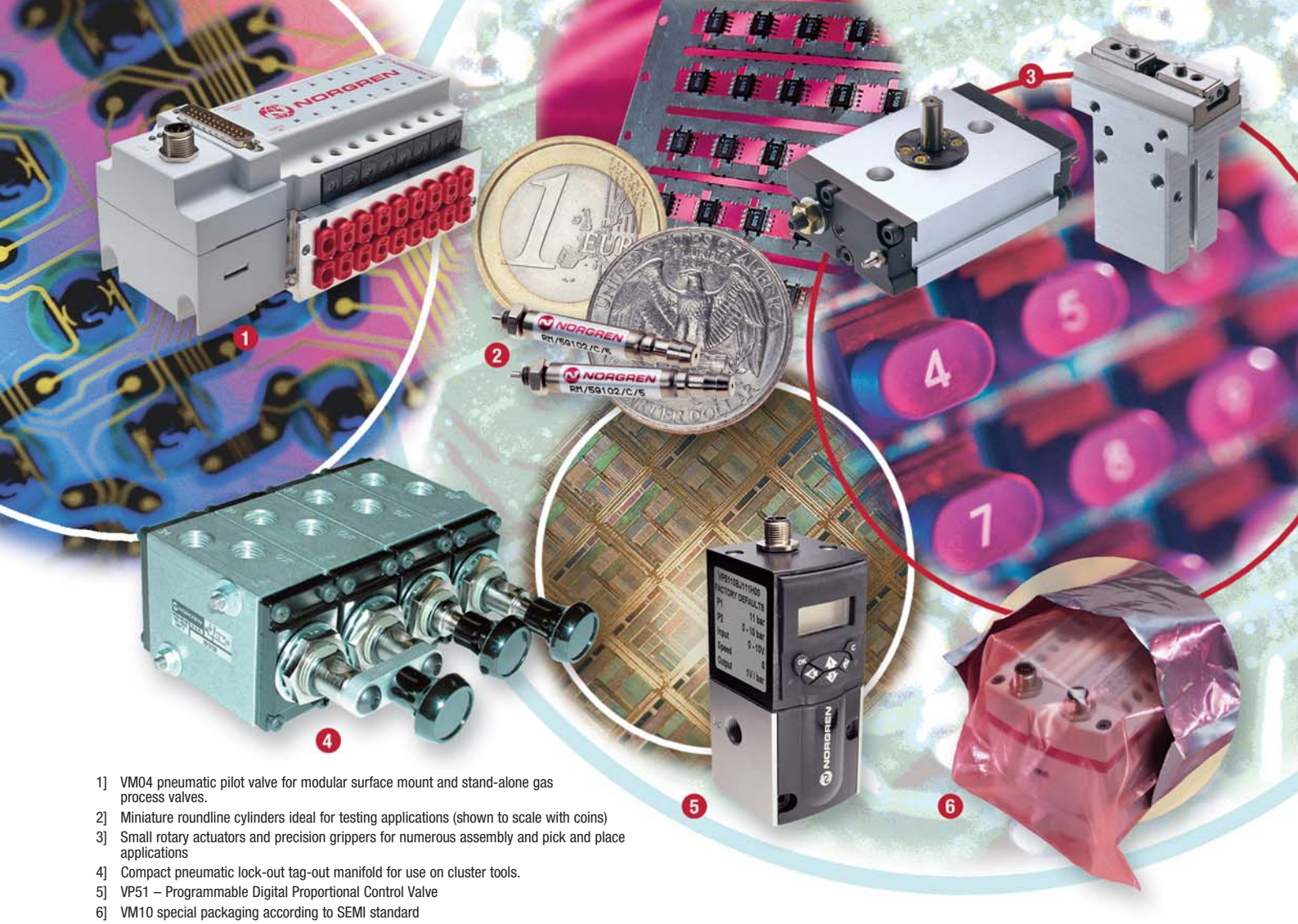


Model	Ø	BB	BD	BH	BJ	Ø BK	BL	BM	BN	BO	BP	BR	BS	BT	ØBY	ØBZ
M/261215/*R/*/***	15	26	35	M5 x 6 deep	12	10	5	1	13	14	18,5	14	12	13	10	5,5
M/261220/*R/*/***	20	26	40	M6 x 10 deep	14	13	7	1	19	20	25,5	14	–	15	13	6,5

Model	Ø	CA	CB	CC	CD	CE	CF	CG	CH	CJ	CK	CL	CM	ØCN H9	ØCO H9	CP
M/261215/*R/*/***	15	8	15	18	20	25	29,5	6,5	52	6	M5	64,5	36	4 x 4 deep	4 x 4 deep	35
M/261220/*R/*/***	20	9	20	20,5	25	32	37,5	6,5	77	8	M5	94	58	6 x 5 deep	6 x 5 deep	60

Model	Ø	CR	CS	CT	CU	CV	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG
M/261215/*R/*/***	15	50	63	–	75,5	68	M5 x 10 deep	20	58	15	7	30	28,5	1	6,5	
M/261220/*R/*/***	20	74	91	–	104	95	M6 x 12 deep	30	85	22	8	38	36,5	1	5	

Model	Ø	Stroke	BA	BC	BE	BF	BG	BU	BV	BW	BX	CW	kg	kg (Magnet)
M/261215/*R/*/30	15	30	95	25	41	–	–	83	105	77	43	0,5	0,857	0,006
M/261215/*R/*/45	15	45	110	40	45	–	–	98	120	92	58	0,5	0,880	0,006
M/261215/*R/*/60	15	60	125	55	45	20	35	113	135	107	73	0,5	0,903	0,006
M/261215/*R/*/80	15	80	145	75	45	40	35	133	155	127	93	0,5	0,933	0,006
M/261215/*R/*/100	15	100	165	95	45	60	35	153	175	147	113	0,5	0,963	0,006
M/261220/*R/*/30	20	30	111	35	46,5	–	–	97	124,5	90	65	0,5	1,230	0,007
M/261220/*R/*/45	20	45	126	50	52,5	–	–	112	139,5	105	80	0,5	1,378	0,007
M/261220/*R/*/60	20	60	141	65	52,5	25	40	127	154,5	120	95	0,5	1,533	0,007
M/261220/*R/*/80	20	80	161	85	52,5	45	40	147	174,5	140	115	0,5	1,736	0,007
M/261220/*R/*/100	20	100	181	105	52,5	65	40	167	194,5	160	135	0,5	1,939	0,007



1] VM04 pneumatic pilot valve for modular surface mount and stand-alone gas process valves.
2] Miniature roundline cylinders ideal for testing applications (shown to scale with coins)
3] Small rotary actuators and precision grippers for numerous assembly and pick and place applications
4] Compact pneumatic lock-out tag-out manifold for use on cluster tools.
5] VP51 – Programmable Digital Proportional Control Valve
6] VM10 special packaging according to SEMI standard

Norgren in the electronics industry

Norgren is a leading global supplier of pneumatic and electro-pneumatic solutions, with many years of specialised experience and applications expertise in the electronics industry. Our comprehensive product portfolio is ideal to meet the needs of front and back end semiconductor processing, passive component manufacture, PCB production and assembly.

Norgren delivers far more, however, than just the right products. By developing and delivering a value package that is customised to your specific requirements, we address all of the elements which make up your total cost of ownership.

Wafer fabrication facility

Norgren brings to semiconductor OEMs and wafer fabrication facilities the capability to provide integrated solutions that can enhance your technological processes and streamline your supply chain.

Gas distribution systems

Norgren offers a complete package of products and design configurations for your pneumatic piloting applications. From flying leads to fieldbus, we can satisfy all of your requirements. Our unique valve configurator makes the process simple.

Assembly & test

Our expertise in pick and place applications and custom engineering makes Norgren your perfect partner for all back end processes, test handling, and packaging of IC's. Norgren solutions ensure throughput, productivity, and ROI in machine development, ramp-up, and high volume manufacturing.

Etching & deposition

Norgren's extensive range of intelligent solenoid valves offer process tool manufacturers and chip makers state-of-the-art diagnostics and fail-safe reliability ensuring maximum yield for wet or dry processes.

Planarization

Proportional pressure control is critical to maximising yield and minimising defects during CMP. The VP51 offers high flow, fast response times (<100ms), excellent repeatability and low power consumption (<1W) guaranteeing yield and wafer throughput.

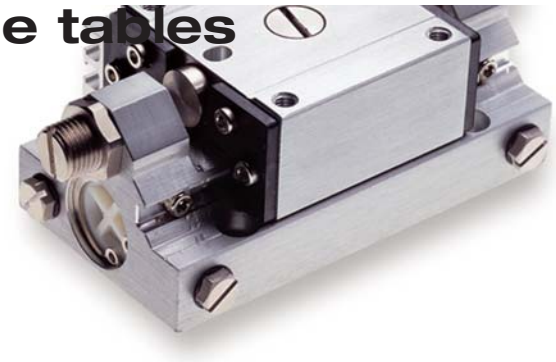
www.norgren.com/electronics

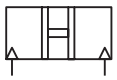
Compact linear slide tables

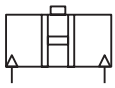
M/261300/M

Double acting

Ø 10 & 16 mm







Short, smooth, low friction movement within a set envelope make these units ideal for many applications such as clamping and positioning

Light weight

Magnetic switching for positional feedback

Excellent service life

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting compact slide table with external guide

Operating pressure:

1 to 7 bar

Operating temperature:

+5°C to +60°C

Consult our Technical Service for use below +2°C

Cylinder diameters:

10 & 16 mm

Strokes:

10, 20, 30 mm

Speed:

400 mm/s maximum (10 or 20 mm stroke)

350 mm/s maximum (30 mm stroke)

Materials

Body: aluminium

Slide table: aluminium (stoppers: nickel plated hardened steel; dust seals: nitrile rubber; Allen bolts: nickel plated steel)

Stroke adjustment bolts (rubber stop): stainless steel, rubber Stroke adjustment bolt nuts: nickel plated carbon steel

End covers: synthetic resin

End cover circlips: nickel plated steel

Shock absorbers: nickel plated copper alloy (Ø 16 mm nickel plated carbon steel)

Elastomers: synthetic rubber

Standard models

Ø	Port size	Model (Magnetic) Stroke adjustment (rubber stops)	Service kit
10	M5	M/261310/MR6/IP/**	QM/261310/00
16	M5	M/261316/MR6/IP/**	QM/261316/00

* Insert stroke length in mm.

Standard strokes

Ø	10	20	30
10	●	●	●
16	●	●	●

Options selector

M/2613★★/★R★/IP/★★

Piston diameter (mm)	Substitute
10	10
16	16

Type	Substitute
Magnetic	M
Non-magnetic	I

Stroke lengths (mm)	Substitute
10	10
20	20
30	30

Stroke adjustment	Substitute
In and outstroke adjustment, rubber stops	6
In and outstroke adjustment, shock absorbers	9

Switches with LED indication

Reed In-line cable	Reed 90° cable	Solid state In-line cable	Solid state 90° cable
			
M/369/LSU/1	M/370/LSU/1	M/418/EAU/1	M/419/EAU/1
M/369/LSU/3	M/370/LSU/3	M/418/EAU/3	M/419/EAU/3
		M/420/EAN/1	M/421/EAN/1
		M/420/EAN/3	M/421/EAN/3

Accessories

Model	Ø (mm)	Stroke adjustment bolt (rubber stop)	Shock absorber	Magnet	Switch rail 10 mm stroke	20 mm stroke	30 mm stroke
							
M/261310/*R*/IP/**	10	M/P73425/8	M/P73454/1	M/P73431/1	M/P73427/3	M/P73427/4	M/P73427/5
M/261316/*R*/IP/**	16	M/P73425/9	M/P73454/2	M/P73431/1	M/P73427/6	M/P73427/7	M/P73427/8

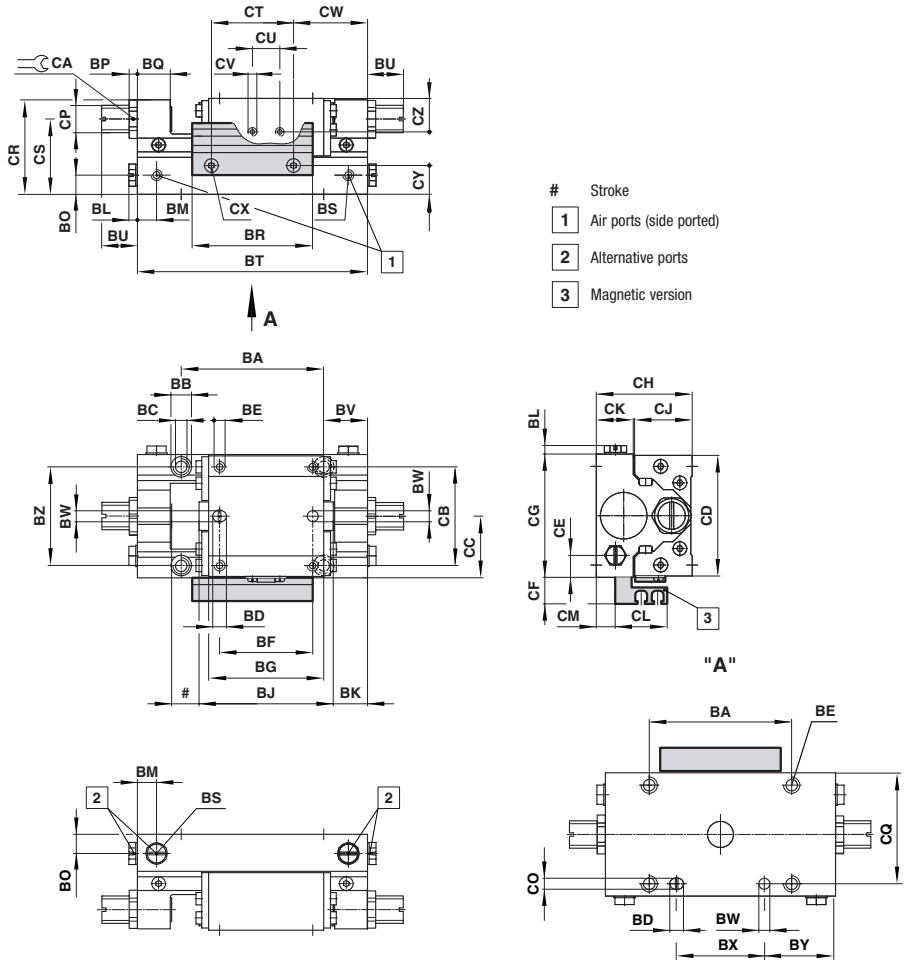
Compact linear slide tables

M/261300/M

Double acting

Ø 10 & 16 mm

M/2613**/*R*/IP/** Standard slide tables (Ø 10 & 16 mm)



Model	Ø	Ø BB	Ø BC	BD	BE	BK	BL	BM	BO	BP	BQ	BS	
M/261310/*R*/IP/**	10	6 x 3,5 deep	3,3	4	M4 x 6 deep	10,5	3,1	6,5	5,5	2	10	M5	
M/261316/*R*/IP/**	16	7,5 x 4,5 deep	4,3	5	M5 x 9 deep	12,5	3,1	7	7	3	12	M5	
Model	**Ø**	**BU**	**BW**	**BZ**	**CA**	**CB**	**CC**	**CD**	**CE**	**CF**	**CG**	**CH**	**CJ**	**CK**
M/261310/*R*/IP/**	10	max. 9,5	3 x 3 deep	26	11	25	16,5	33 ±0,2	7	8,5	34 ±0,2	28	18	9,5
M/261316/*R*/IP/**	16	max. 9,5	4	36	13	36	22	44 ±0,2	8	8,5	45 ±0,2	35	21	13,5
Model	**Ø**	**CL**	**CM**	**CO**	**CP**	**CQ**	**CR**	**CS**	**CU**	**CV**	**CX**	**CY**	**CZ**	
M/261310/*R*/IP/**	10	19	3	3*	M8	30 ±0,1	27,5	21,5	10	M2	M3	6,5	9,2	
M/261316/*R*/IP/**	16	19	7	4*	M10 x 1	40,5 ±0,1	34,5	27,5	10	M2	M3	10,5	12,2	

* +0,06 +0,012

Model	Ø	Stroke	BA	BF	BG	BJ	BR	BT	BX	BY	CT	CW	kg	kg (Magnet)
M/261310/*R*/IP/10	10	10	44	26	35	41	44	72	24	24	30	21	0,16	0,02
M/261310/*R*/IP/20	10	20	68	40	49	55	54	96	48	24	40	28	0,21	0,02
M/261310/*R*/IP/30	10	30	96	60	68	74	64	125	76	24,5	50	37,5	0,27	0,03
M/261316/*R*/IP/10	16	10	52	34	42	49	44	84	32	26	30	27	0,28	0,02
M/261316/*R*/IP/20	16	20	72	44	52	59	54	104	52	26	40	32	0,34	0,02
M/261316/*R*/IP/30	16	30	100	62	70	77	64	132	80	26	50	41	0,41	0,03

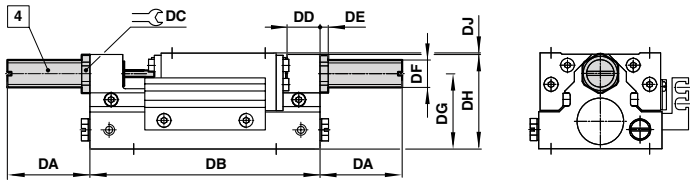
Compact linear slide tables

M/261300/M

Double acting

Ø 10 & 16 mm

M/2613**/*R9/IP/** Slide table with shock absorbers (Ø 10 & 16 mm)



4 Shock absorber

	Ø	DA	DC	DD	DE	DF	DG	DH	DJ
M/261310/*R9/IP/**	10	max. 21,5	11	10	2	M8	21,5	27,5	-
M/261316/*R9/IP/**	16	max. 37,5	13	12	3	M10	27,5	34,5	0,1

Model	Ø	Stroke	DB	kg	kg (Magnet)
M/261310/*R9/IP/10	10	10	72	0,17	0,02
M/261310/*R9/IP/20	10	20	96	0,22	0,02
M/261310/*R9/IP/30	10	30	125	0,28	0,03
M/261316/*R9/IP/10	16	10	84	0,32	0,02
M/261316/*R9/IP/20	16	20	104	0,39	0,02
M/261316/*R9/IP/30	16	30	132	0,45	0,03

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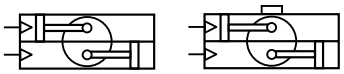
Synchronous linear slide tables

M/261400/M

Double acting

Ø 6 mm



Precise synchronous slide table movement makes these units ideal for use as escapements or grippers

Compact envelope dimensions

High cycle rate – 120 cycles/minute

Light weight

Magnetic switching for positional feedback

Excellent service life

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting with synchronous slide table movement

Operating pressure:

3 to 7 bar

Operating temperature:

+5°C to +60°C

Consult our Technical Service for use below +2°C

Cylinder diameters:

6 mm

Strokes:

5, 10 mm

Speed:

120 cycles/minute maximum

Materials

Slide tables: stainless steel
Guide rail: stainless steel
Side plates: nickel plated aluminium alloy and nickel plated steel
Piston rods: nickel plated aluminium alloy
Hexagon socket bolts: nickel plated steel
Stroke adjustment bolts: nickel plated steel
Stroke adjustment bolts with rubber stops: stainless steel and urethane rubber
Locknuts: nickel plated steel
Elastomers: nitrile rubber

Standard models

Ø	Port size	Model (Magnetic)	Service kit
6	M3	M/261406/MR1/I/**	QM/261406/00

* Insert stroke length in mm.

Standard strokes

Ø	5	10
6	●	●

Options selector

M/261406/★R★/★/★★

Type	Substitute
Magnetic	M
Non-magnetic	I

Stroke adjustment	Substitute
No stroke adjustment	1
Stroke adjustment, metal stops	3
Stroke adjustment, rubber stops	6

Standard stroke lengths
5 and 10 mm

Location of switch rail and stroke adjusters	Substitute
Standard (right side of ports)	I
Alternative (left side of ports)	S

Switches with LED indication

Reed In-line cable	Reed 90° cable	Solid state In-line cable	Solid state 90° cable
			
M/369/LSU/1	M/370/LSU/1	M/418/EAU/1	M/419/EAU/1
M/369/LSU/3	M/370/LSU/3	M/418/EAU/3	M/419/EAU/3
		M/420/EAN/1	M/421/EAN/1
		M/420/EAN/3	M/421/EAN/3

Mountings and accessories

Stroke	Stroke adjustment bolt (metal stop) and nut	Stroke adjustment bolt (rubber stop) and nut	Mounting bracket with fixing bolts	Magnet (with fixing screws)	Switch rail
					
5	M/P73424/1	M/P73425/1	QM/261406/5/22	M/P73431	M/P73427/1
10	M/P73424/1	M/P73425/1	QM/261406/10/22	M/P73431	M/P73427/1

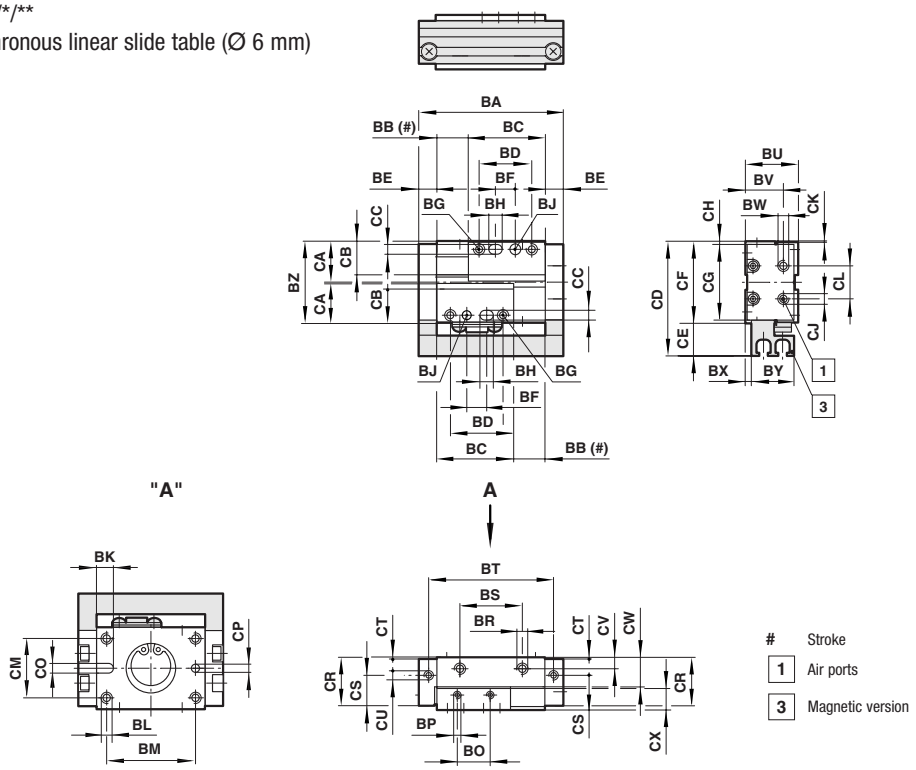
Synchronous linear slide tables

M/261400/M

Double acting

Ø 6 mm

M/261406/*R1/*/**
Standard synchronous linear slide table (Ø 6 mm)



Model	Ø	BC	BD	BE	BF	BG	BH	Ø BJ	BK	BL	BO
M/261406/*R1/*/**	6	22,4 -0,1	16	5,5	6	M3 x 3 deep	4	3 x 2,5 deep	5	M3 x 3 deep	10

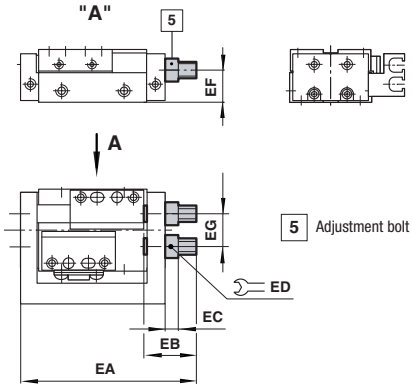
Model	Ø	P	BR	BU	BV	BX	BY	BZ	CA	CB
M/261406/*R1/*/**	6	M2 x 2,5 deep	M3 x 3 deep	16 ±0,05	11,5	1,8	13	24,4 ±0,05	12	10 -0,1

Model	Ø	CC	CD	CE	CF	CG	CH	CJ	CK	CL	CM
M/261406/*R1/*/**	6	3 x 2,5 deep	35	10	25 -0,1	23	1	M3	0,3 ±0,1	10	18

Model	Ø	CO	CP	CR	CS	CT	CU	CV	CW	CX
M/261406/*R1/*/**	6	3 x 3 deep	Ø 3 x 3 deep	14,7	9,2	0,5	M 2,5 x 3 deep	3,5	9	6,5

Model	Ø	Stroke	BA	BB	BM	BS	BT	kg	kg (Magnet)
M/261406/*R1/*/5	6	5	39	5 +0 -0,7	22	14	33	0,070	0,008
M/261406/*R1/*/10	6	10	44	10 +0 -0,7	27	19	38	0,075	0,008

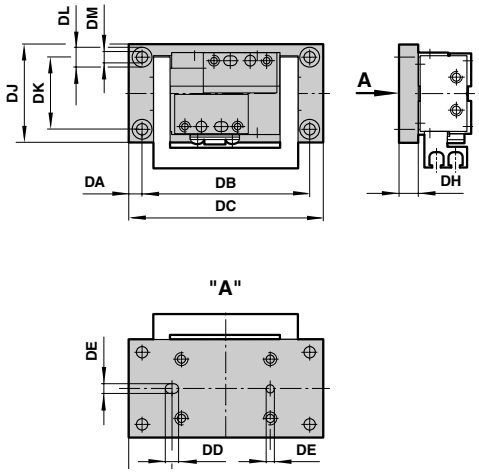
M/261406/*R3/*/** Synchronous linear slide table with metal stops (Ø 6 mm)
M/261406/*R6/*/** Synchronous linear slide table with rubber stops (Ø 6 mm)



Model	Ø	EB	EC	ED	EF	EG
M/261406/*R*/*/**	6	16	4	7	10,5	10

Model	Ø	Stroke	EA max.	kg Basic model +
M/261406/*R*/*/5	6	5	49,5	0,005
M/261406/*R*/*/10	6	10	54,5	0,005

QM/261406/*/22 Mounting bracket



Ø	DA	DD	Ø DE +0,05	DF	DH	DJ	DK	Ø DL	DM
6	4	4	3 x 3 deep	10	6	30	22	6 x 3,2 deep	Ø 3,5

Ø	Stroke (max.)	DB	DC	kg
6	5	46	54	0,027
6	10	51	59	0,030

Linear slide tables

Norgren linear slide tables are ideal for transporting loads over short distances solving such applications as picking and placing components, fluid dispensing and product testing. They can be widely applied within many industry sectors and are ideal for OEMs, end users and automation specialists alike.

As well as the information within this section detailing individual families, the following technical data will help in ensuring the most appropriate linear slide table is chosen. Please refer to catalogue data sheets for full specification details.

Theoretical forces

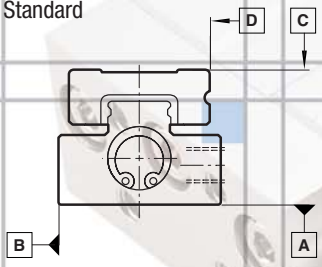
Ø	Theoretical forces (N) at 6 bar
6	17 10,8 (M/261400)
8	30
10	47
12	68
15	106
16	120
20	188
25	294
32	482

Stroke adjustment range

Range	Ø	Stroke length (mm)	Metal or rubber stoppers	Shock absorber
M/261000	6	All	-5 mm both sides	–
	8	10	-5 mm both sides	-10 mm both sides
		20	-5 mm both sides	-7 mm both sides
	10	10	-6 mm both sides	-10 mm both sides
		20	-7 mm both sides	-15 mm both sides
	12	15	-5 mm both sides	-10 mm both sides
		25	-5 mm both sides	-15 mm both sides
	16	All	-5 mm both sides	-15 mm both sides
M/261100	10	All	-15 mm push side	-19 mm push side
			-5 mm pull side	-16 mm pull side
	12	All	-15 mm push side	-18 mm push side
			-5 mm pull side	-16 mm pull side
M/261200	All	All	-5 mm both sides	-5 mm both sides
M/261300	10	All	-7 mm both sides	-19 mm both sides
	16	All	-6 mm both sides	-30 mm both sides
M/261400	6	All	-5 mm	–
M/61200	All	All	-5 mm both sides	–

Accuracy

Standard



M/261000

Ø	Parallelism Plane C with respect to plane A	Parallelism Plane D with respect to plane B	Running parallelism Plane C with respect to plane A	Running parallelism Plane D with respect to plane B
6	0,03	0,03	0,005	0,005
8	0,03	0,03	0,005	0,005
10	0,02	0,02	0,004	0,004
12	0,02	0,02	0,004	0,004
16	0,02	0,02	0,003	0,003

M/261100

Ø	Stroke length (mm)	Parallelism Plane C with respect to plane A	Parallelism Plane D with respect to plane B	Running parallelism Plane C with respect to plane A	Running parallelism Plane D with respect to plane B
10	15	0,02	0,02	0,004	0,004
10	30	0,02	0,02	0,004	0,004
10	45	0,02	0,02	0,004	0,004
12	20	0,02	0,02	0,004	0,004
12	30	0,02	0,02	0,004	0,004
12	45	0,02	0,02	0,004	0,004
12	60	0,02	0,02	0,006	0,006

All values in mm.

Maximum loads

Range	Ø	Stroke length (mm)	Maximum load (kg) No stroke adjustment	Metal stoppers	Rubber stoppers	Shock absorber
M/261000	6	All	0,3	0,15	0,2	–
	8	All	0,3	0,25	0,5	1,0
	10	All	0,8	0,4	0,8	1,6
	12	All	1,2	0,6	1,2	2,0
	16	All	2,0	1,0	2,0	4,0
M/261100	10	All	0,8	0,3	0,8	1,6
	12	All	1,2	0,5	1,2	2,0
M/261200	8	All	–	1,5	1,5	–
	10	All	–	2,0	2,0	–
	15	All	–	4,0	4,0	–
	20	All	–	8,0	8,0	–

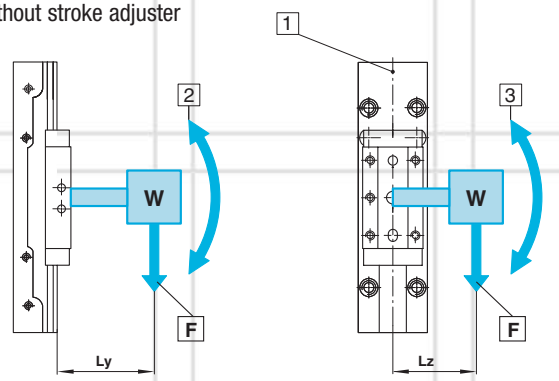
Range	Ø	Stroke length (mm)	Maximum load (kg) No stroke adjustment	Metal stoppers	Rubber stoppers	Shock absorber
M/261300	10	All	–	–	0,8*	1,6*
	16	All	–	–	2,0*	4,0*
M/261400	6	All	–	0,1	0,1	–
M/61200	16	All	–	–	2,0	–
	20	All	–	–	4,0	–
	25	All	–	–	6,0	–
	32	All	–	–	9,0	–

Theoretical moments

Range	Ø	Stroke length (mm)	Theoretical moments (Nm) Mx	My	Mz
M/261000	6	5	0,87	0,42	0,42
	6	10	0,87	0,42	0,42
	8	10	0,87	0,42	0,42
	8	20	1,8	1,7	1,7
	10	10	2,3	1,2	1,4
	10	20	3,3	2,8	3,1
	12	15	4,7	2,4	2,9
	12	25	7,3	6,5	7,7
	16	20	7,5	4,3	3,8
	16	30	9,6	7,5	6,6
M/26110	10	All	1,9	1,8	2,0
	12	All	3,8	3,0	3,4
M/261200	8	All	1,3	0,45	0,45
	10	All	2,1	0,79	0,88
	15	All	4,5	1,6	1,7
	20	All	13	3,6	3,4
M/261300	10	10	1,2	0,6	0,6
	10	20	1,4	0,9	0,9
	10	30	1,8	1,3	1,3
	16	10	2,7	1,2	1,2
	16	20	2,8	1,4	1,4
	16	30	3,6	1,9	1,9
M/261400	6	All	0,54	0,29	0,29

Range	Ø	Stroke length (mm)	Theoretical moments (Nm) Mx	My	Mz
M/61200/M	16	All	10,0	14,0	14,0
	20	25, 50	14,0	14,0	14,0
		75	20,0	20,0	20,0
		100, 150	28,0	28,0	28,0
	25	25, 50	26,0	20,0	20,0
		75, 100, 150	52,0	40,0	40,0
	32	25, 50	32,0	20,0	20,0
		75, 100, 150	64,0	40,0	40,0
M/61200/MR	16	All	24,0	14,0	14,0
	20	20	26,0	10,0	10,0
	25	20	66,0	34,0	34,0
	32	20	120,0	48,0	48,0

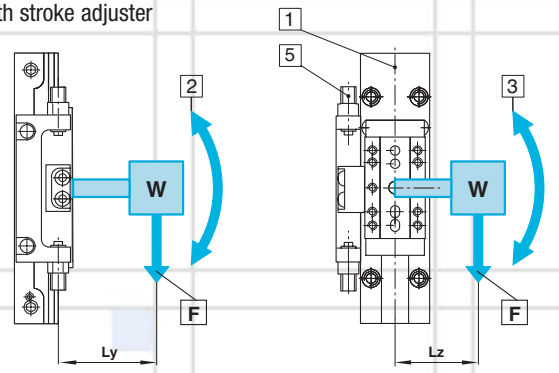
Without stroke adjuster



1 Guide centre line
2 Moment My
3 Moment Mz
4 Moment Mx
5 Stroke adjuster

$F_{[N]} = 9,8 \times W_{[kg]}$

With stroke adjuster



$F_{[N]} = 9,8 \times W_{[kg]}$

W(kg): mass of a loaded work

F(N): gravity acting on a loaded work

Lx, Ly, and Lz (m): distance between the centre line of the guide and the centre of gravity of the loaded work

To calculate theoretical moments use the following formula -

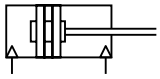
Gravity acting on load (9,8) x mass of load (kg) x distance between the centre line of the guide and the centre of gravity of the loaded work (m). Calculated values should not exceed those in the 'Theoretical moments' table.

Slide tables

M/61200/M, M/61200/MR

Double acting

Ø 16 to 32 mm



M/61200/M: Slide table with adjustable guide

M/61200/MR: Slide table with precision linear ball bearing

Stroke adjustable at each endposition

High repeatability

Compact design

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

M/61200/M Double acting with adjustable guide

M/61200/MR Double acting with precision linear ball bearing

Operating pressure:

1 to 10 bar

Operating temperature:

0°C to +80 °C

Consult our Technical Service for use below +2°C

Cylinder diameters:

16, 20, 25, 32 mm

Strokes:

25, 50, 75, 100 (Ø 16 mm)

25, 50, 75, 100, 150 (Ø 20, 25, 32 mm)

Materials

Body: anodised aluminium

Carriage: anodised aluminium

End covers: anodised aluminium

Piston rod: stainless steel (Martensitic)

Seals: nitrile rubber, polyurethane

Linear guide: stainless steel

Guide rail: plastic

Buffer: elastomer

Standard models

Ø	Port size	Model Adjustable guide	Precision linear ball bearings
16	M5	M/61216/M	M/61216/MR
20	M5	M/61220/M	M/61220/MR
25	M5	M/61225/M	M/61225/MR
32	G1/8	M/61230/M	M/61230/MR

* Insert stroke length in mm.

Order optional shock absorbers separately. See page 197

Order magnetically operated switches separately, see page 199

Cylinder sizing and speed control see page 6

Options selector

M/612★★/★★/★★★

Cylinder diameters (mm)	Substitute
16	16
20	20
25	25
32	32

Stroke length in mm
150 max.

Variants	Substitute
Magnetic piston, adjustable guide	M
Magnetic piston, precision linear ball bearing	MR
Magnetic piston, adjustable cushioning, adjustable guide or linear roller bearing	on request

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

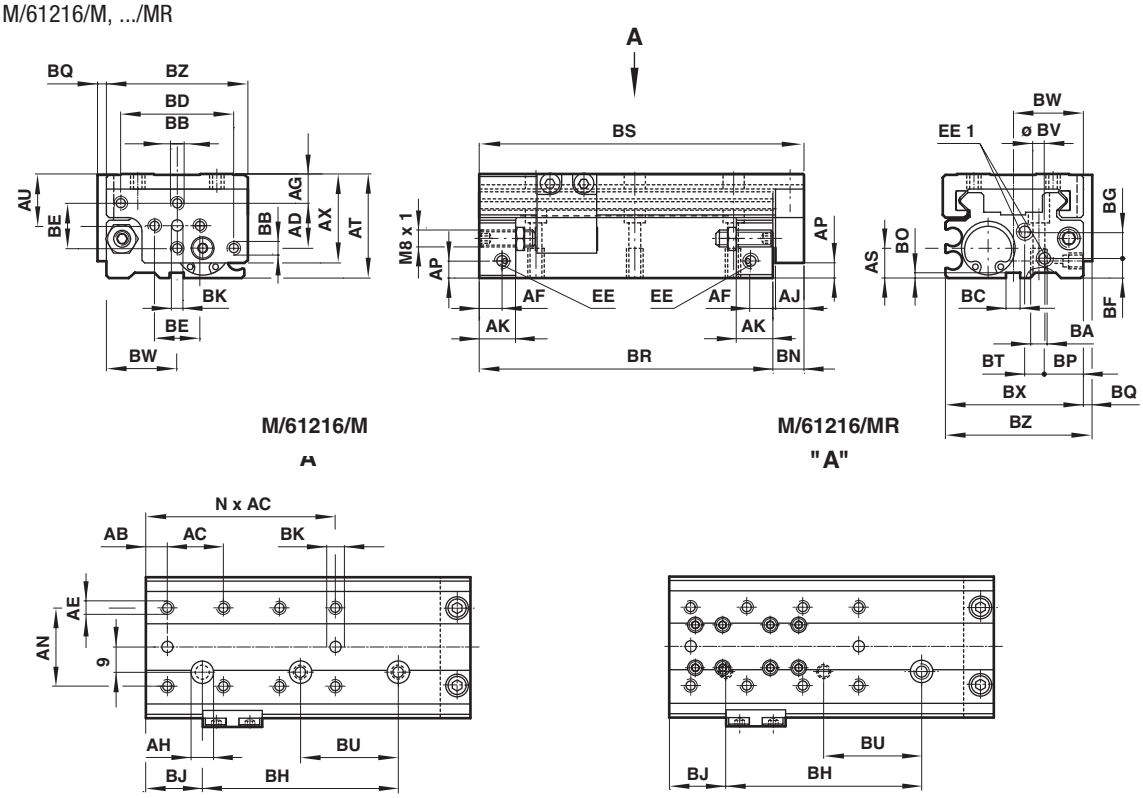
Slide tables

M/61200/M, M/61200/MR

Double acting

Ø 16 to 32 mm

M/61216/M, .../MR



Ø	AB	AC	AD	AE	AG	Ø AH	AJ	AN	AP	AS	AT	AU	AX	BA	BB	Ø BC H7
16	7,5	20	16	M4 – 5,5 deep	10,5	8	10	28	6	10,5	37	18,5	31,5	M5 – 8 deep	M4	5
Ø	**BD**	**BE**	**BF**	**BG**	**Ø BK H7**	**BN**	**BO**	**BP**	**BQ**	**BT**	**Ø BV**	**BW**	**BX**	**BZ**	**EE**	**EE 1**
16	40	16	7	9,3	4	11	2	14	2,5	6,6	4,2	25	49	50	M5 – 5,5 deep	M5 – 7 deep

Ø 16 mm

Model	Stroke	AF	AK	BH	BJ	BR	BS	BU	N	kg
M/61216/M/25	25	8	14	40	20	81	92	–	2	0,28
M/61216/MR/25	25	8	14	40	20	81	92	–	2	0,34
M/61216/M/50	50	8	14	70	20	106	117	35	3	0,35
M/61216/MR/50	50	8	14	70	20	106	117	35	3	0,41
M/61216/M/75	75	8	14	80	20	131	142	40	4	0,45
M/61216/MR/75	75	8	14	80	20	131	142	40	4	0,54
M/61216/M/100	100	8	14	120	20	156	167	60	5	0,52
M/61216/MR/100	100	8	14	120	20	156	167	60	5	0,62

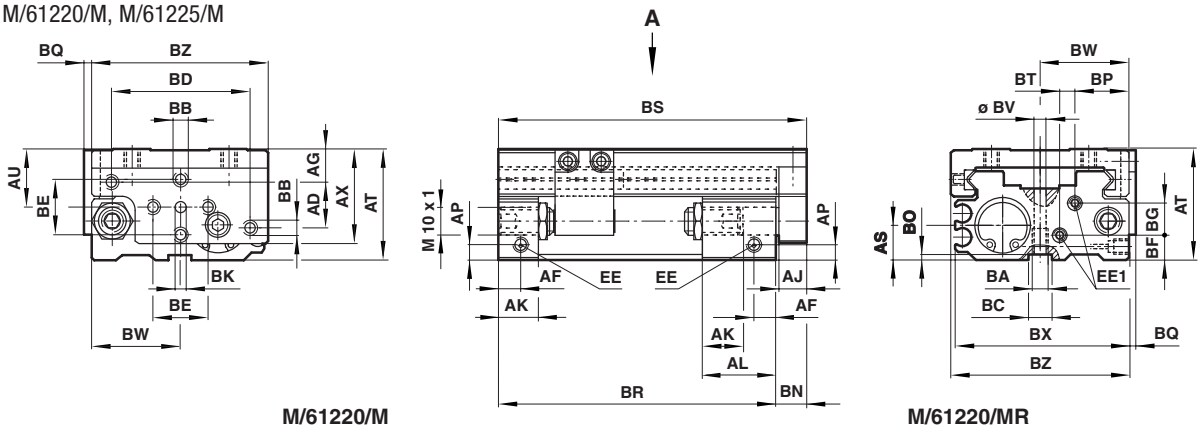
Slide tables

M/61200/M, M/61200/MR

Double acting

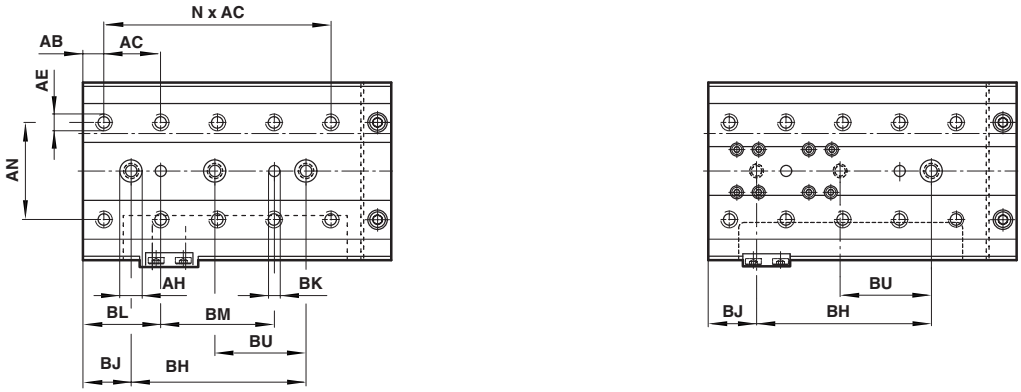
Ø 16 to 32 mm

M/61220/M, M/61225/M



M/61220/M "A"

M/61220/MR "A"



Ø	AB	AC	AD	AE	AG	Ø AH	AJ	AN	AP	AS	AT	AU	AX	BA	BB	Ø BCH7
20	7,5	25	16,5	M5 – 6,5 deep	12	8	10	35	5,5	12,5	40	20	34	M5 – 10 deep	M5	10
25	7,5	25	20	M5 – 8,0 deep	14	9	12	40	7	15	48	24	40	M6 – 10 deep	M5	10

Ø	BD	BE	BF	BG	Ø BKH7	BN	BO	BP	BQ	BT	Ø BV	BW	BX	BZ	EE	EE 1
20	50	20	9	11,5	4	11	2	19,5	2,5	5,5	4,2	32	62,5	64	M5 – 5,5 deep	M5 – 7 deep
25	65	22	12	11,5	4	13	2	19,5	3,5	12	5,1	39,5	76,2	79	M5 – 5,5 deep	M5 – 7 deep

M/61220/M, .../MR

Model	Stroke	AF	AK	AL	BH	BJ	BL	BM	BR	BS	BU	N	kg
M/61220/M/25	25	9	13,5	13,5	25	22,5	7,5	25	75	86	–	2	0,41
M/61220/MR/25	25	9	14,5	26,5	50	22,5	7,5	50	100	111	25	2	0,50
M/61220/M/50	50	9	13,5	13,5	50	22,5	7,5	50	100	111	25	3	0,53
M/61220/MR/50	50	9	14,5	26,5	75	22,5	32,5	50	125	136	37,5	3	0,62
M/61220/M/75	75	9	14,5	14,5	100	22,5	32,5	75	145	156	50	4	0,66
M/61220/MR/75	75	9	14,5	21,5	100	22,5	32,5	75	145	156	50	4	0,79
M/61220/M/100	100	9	14,5	14,5	100	22,5	32,5	100	180	191	50	5	0,78
M/61220/MR/100	100	9	14,5	31,5	100	22,5	32,5	100	180	191	50	5	0,94
M/61220/M/150	150	9	14,5	14,5	150	22,5	32,5	100	240	251	75	5	1,03
M/61220/MR/150	150	9	14,5	41,5	150	22,5	32,5	100	240	251	75	5	1,24

M/61225/M, .../MR

Model	Stroke	AF	AK	AL	BH	BJ	BL	BM	BR	BS	BU	N	kg
M/61225/M/25	25	9,5	14,5	14,5	50	17,5	7,5	50	85	98	25	2	0,65
M/61225/MR/25	25	9,5	14,5	41,5	75	22,5	32,5	50	115	128	37,5	3	0,78
M/61225/M/50	50	9,5	14,5	14,5	75	20	32,5	50	115	128	37,5	3	0,85
M/61225/MR/50	50	9,5	14,5	41,5	100	22,5	32,5	75	140	153	50	4	0,92
M/61225/M/75	75	9,5	14,5	14,5	100	22,5	32,5	100	165	178	50	5	1,05
M/61225/MR/75	75	9,5	14,5	41,5	100	22,5	32,5	100	165	178	50	5	1,26
M/61225/M/100	100	9,5	14,5	14,5	150	22,5	32,5	125	190	203	75	6	1,20
M/61225/MR/100	100	9,5	14,5	41,5	150	22,5	32,5	125	190	203	75	6	1,20
M/61225/M/150	150	9,5	14,5	14,5	150	22,5	32,5	125	240	253	75	6	1,60
M/61225/MR/150	150	9,5	14,5	41,5	150	22,5	32,5	125	240	253	75	6	1,60

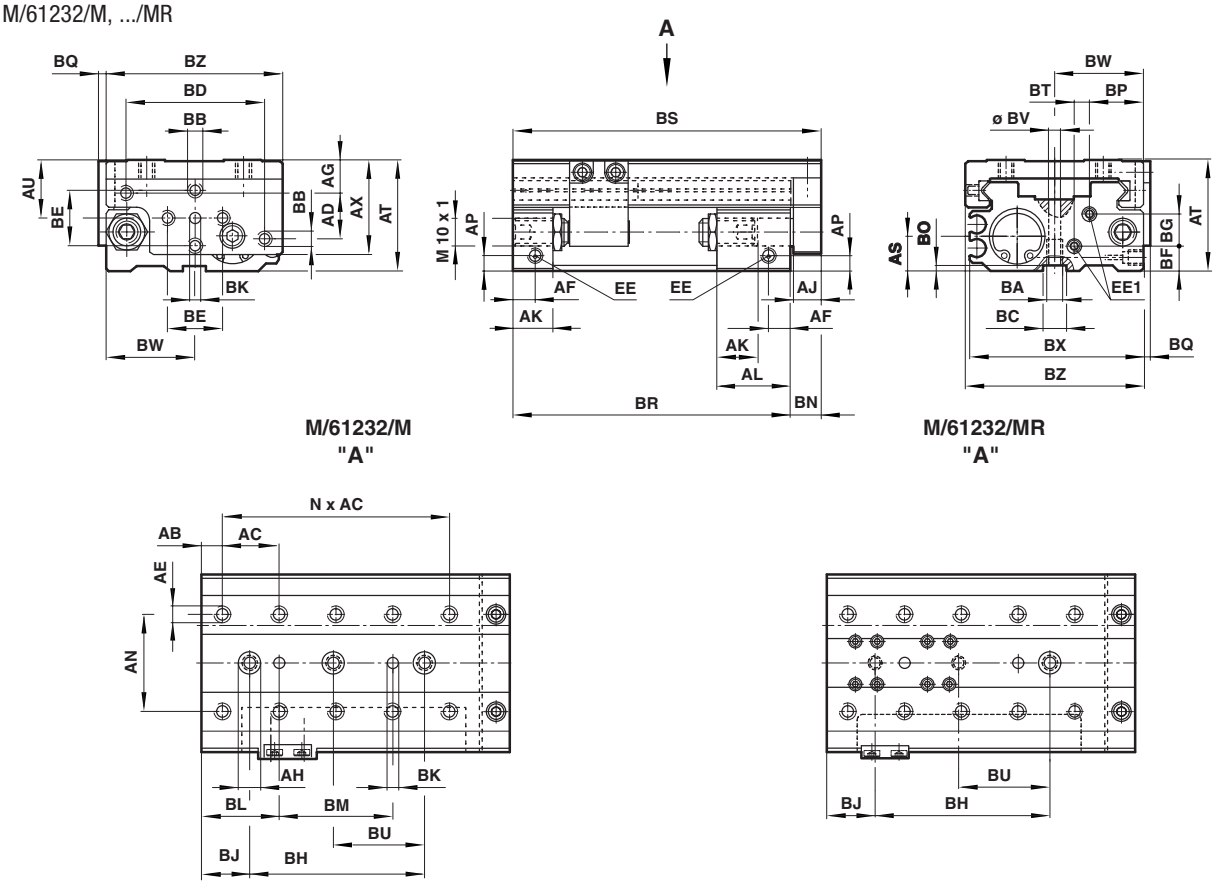
Slide tables

M/61200/M, M/61200/MR

Double acting

Ø 16 to 32 mm

M/61232/M, .../MR



Ø	AB	AC	AD	AE	AG	Ø AH	AJ	AN	AP	AS	AT	AU	AX	BA	BB	Ø BCH7
32	7,5	30	26	M6 – 8,5 deep	15	11	12	50	10	19	57	28	48	M8 – 14 deep	M6	10
Ø	**BD**	**BE**	**BF**	**BG**	**Ø BK^{H7}**	**BN**	**BO**	**BP**	**BQ**	**BT**	**Ø BV**	**BW**	**BX**	**BZ**	**EE**	**EE 1**
32	75	28	17,5	13,5	5	13	2	24,5	3,5	12	6,6	46	90,5	92	G1/8 – 10 deep	G1/8 – 10 deep

Model	Stroke	AF	AK	AL	BH	BJ	BL	BM	BR	BS	BU	N	kg
M/61232/M/25	25	8	16	16	50	20	7,5	50	90	103	25	2	1,00
M/61232/MR/25	25	8	19	43	75	22,5	37,5	50	120	133	37,5	3	1,20
M/61232/M/50	50	11	19	43	90	30	40	60	145	158	45	3	1,32
M/61232/MR/50	50	11	19	43	90	30	37,5	60	145	158	45	3	1,70
M/61232/M/75	75	11	19	43	120	30	40	90	170	183	50	4	1,63
M/61232/MR/75	75	11	19	43	120	30	37,5	90	170	183	50	4	1,96
M/61232/M/100	100	11	19	43	130	30	40	100	195	208	60	5	1,86
M/61232/MR/100	100	11	19	43	130	30	37,5	100	195	208	60	5	2,23
M/61232/M/150	150	11	19	43	150	30	40	120	245	258	75	5	2,48
M/61232/MR/150	150	11	19	43	150	30	37,5	120	245	258	75	5	2,98

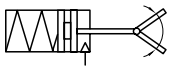
Angular grippers

M/160300/M/11

Single acting

Magnetic piston

Ø 8 to 25 mm



Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Single acting, angular, magnetic piston

Operating pressure:
2 to 7 bar
(Ø 8 mm 3,6 to 7 bar
Ø 10 mm 3 to 7 bar)

Operating temperature:
0°C to +60°C
Consult our Technical Service for use below +2°C

Mountings:
Mounting holes on three faces

Mechanical life:
~ 5 million cycles before maintenance may be necessary

Operating frequency:
180 cycles per minute maximum

Materials

Body: aluminium alloy
Fingers: carbon steel
Elastomers: nitrile

Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar*	
			Opening	Closing
M/160305/M/11	8	M3 x 0,5	0,6	1,0
M/160306/M/11	10	M3 x 0,5	1,0	1,4
M/160307/M/11	16	M5 x 0,8	2,8	10
M/160308/M/11	20	M5 x 0,8	6	18
M/160309/M/11	25	M5 x 0,8	10	38

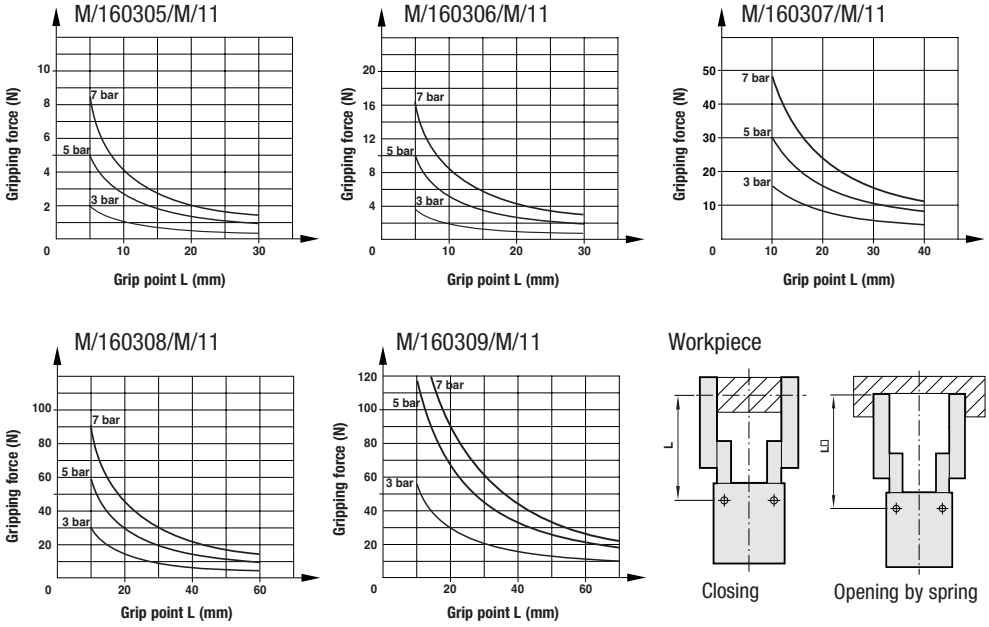
* Grip point L = 30 mm
** per cycle

Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

* Insert cable length - 1 or 3 m.

Theoretical closing gripping forces

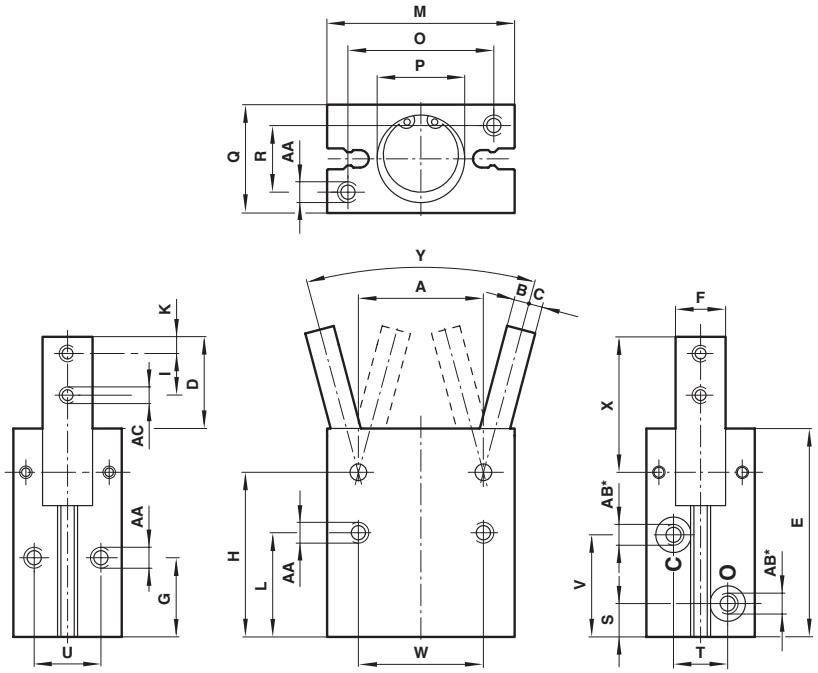


Effective closing gripping forces = Theoretical closing gripping force x 0,85

Angular grippers

M/160300/M/11

Single acting
Magnetic piston
Ø 8 to 25 mm



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160305/M/11	8	12	1,5	2,0	12,5	29	5,5 -0,03	13	24	5,5	2,5
M/160306/M/11	10	14	1,5	2,5	14,5	36	7 -0,03	16	30	6	3
M/160307/M/11	16	24	3	3	17,5	42,5	9 -0,03	18	35	8	3
M/160308/M/11	20	30	3,5	3,5	22	50	12 -0,03	19	39,5	10	4
M/160309/M/11	25	36	4	5	26	58	14 -0,03	21,5	45,5	12	5

Model	Ø	L	M	O	P	Q	R	S	T	U	V
M/160305/M/11	8	18,5	20	15	Ø 9 +0,05 deep 1	13	9	4,5	-	-	14,5
M/160306/M/11	10	20	23	17	Ø 11 +0,05 deep 1,5	16	10	7,5	10	10	19
M/160307/M/11	16	22,5	34	26	Ø 17 +0,05 deep 1,5	22	14	7,5	12	14	22
M/160308/M/11	20	25	45	35	Ø 21 +0,05 deep 1,5	26	16	8	13	16	24,5
M/160309/M/11	25	28,5	52	40	Ø 26 +0,05 deep 1,5	32	20	9	18	20	28

Model	Ø	W	X	Y	AA	AB	AC	kg
M/160305/M/11	8	15	17,5	30° -10°	M2,5 x 0,45 deep 4,5 (base); M3 x 0,5 deep 3,5 (side); Ø 3,2 (front)	M3 x 0,5	M2,5 x 0,45	0,02
M/160306/M/11	10	18	20,5	30° -10°	M3 x 0,5 deep 5	M3 x 0,5	M3 x 0,5	0,04
M/160307/M/11	16	24	25	30° -10°	M4 x 0,7 deep 7	M5 x 0,8	M3 x 0,5	0,10
M/160308/M/11	20	30	32,5	30° -10°	M5 x 0,8 deep 8	M5 x 0,8	M4 x 0,7	0,18
M/160309/M/11	25	36	38.5	30° -10°	M6 x 1 deep 10	M5 x 0,8	M5 x 0,8	0,31

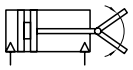
Angular grippers

M/160300/M/12

Double acting

Magnetic piston

Ø 8 to 25 mm



Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, angular, magnetic piston

Operating pressure:

1 to 7 bar

(Ø 8 mm, 2,2 to 7 bar)

Operating temperature:

0°C to +60°C

Consult our Technical Service for use below +2°C

Mountings:

Mounting holes on three faces

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Operating frequency:

180 cycles per minute maximum

Materials

Body: aluminium alloy

Fingers: carbon steel

Elastomers: nitrile

Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar* Opening	Closing
M/160305/M/12	8	M3 x 0,5	2,6	1,6
M/160306/M/12	10	M3 x 0,5	3,8	2,5
M/160307/M/12	16	M5 x 0,8	17,0	12,8
M/160308/M/12	20	M5 x 0,8	32,0	24,0
M/160309/M/12	25	M5 x 0,8	62,0	48,0

* Grip point L = 30 mm

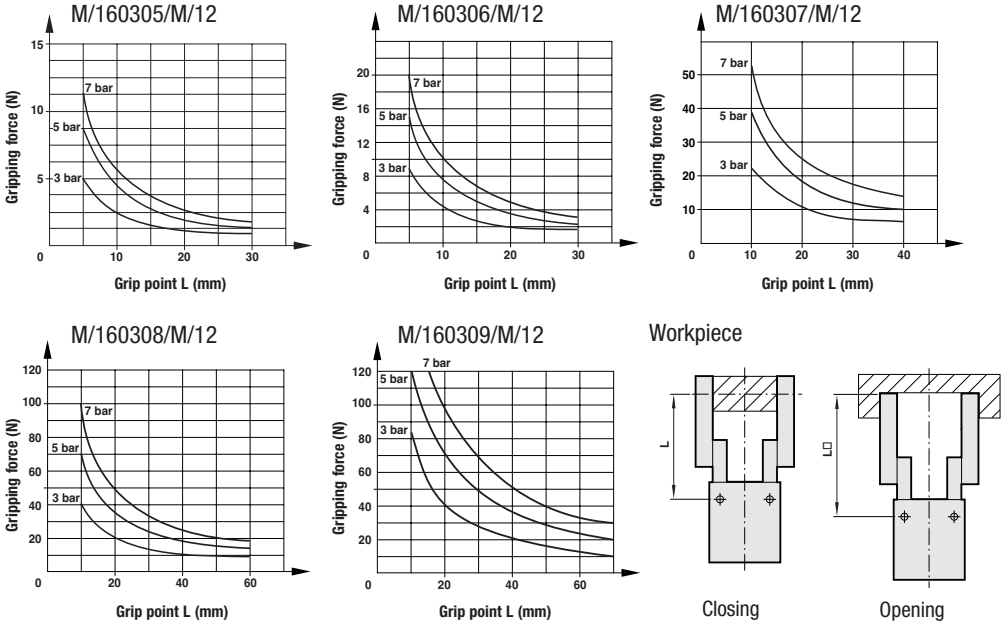
** per cycle

Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

* Insert cable length - 1 or 3 m.

Effective closing gripping forces

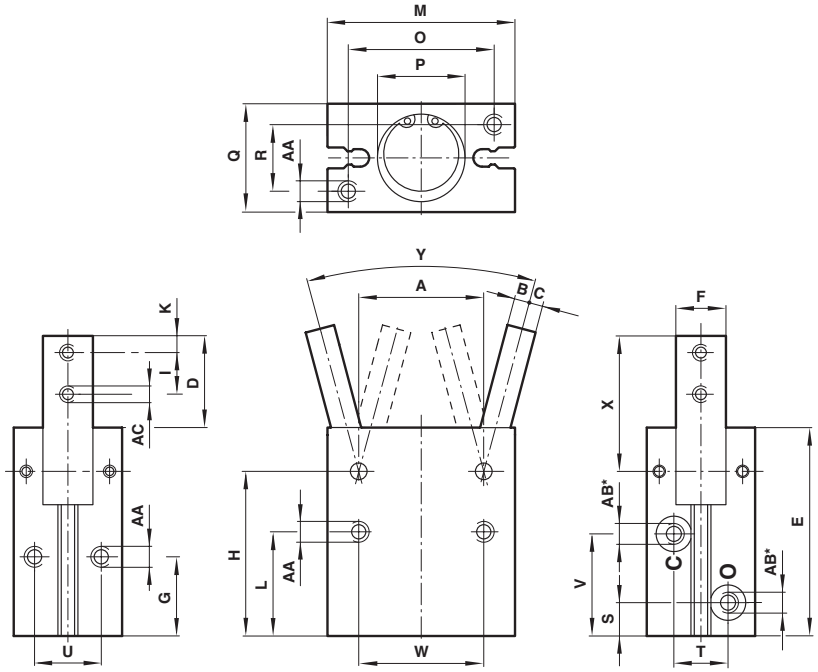


Effective closing gripping forces = Theoretical closing gripping force x 0,85

Angular grippers

M/160300/M/12

Double acting
Magnetic piston
Ø 8 to 25 mm



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160305/M/12	8	12	1,5	2,0	12,5	29	5,5 -0,03	13	24	5,5	2,5
M/160306/M/12	10	14	1,5	2,5	14,5	36	7 -0,03	16	30	6	3
M/160307/M/12	16	24	3	3	17,5	42,5	9 -0,03	18	35	8	3
M/160308/M/12	20	30	3,5	3,5	22	50	12 -0,03	19	39,5	10	4
M/160309/M/12	25	36	4	5	26	58	14 -0,03	21,5	45,5	12	5

Model	Ø	L	M	O	P	Q	R	S	T	U	V
M/160305/M/12	8	18,5	20	15	Ø 9 +0,05 deep 1	13	9	4,5	-	-	14,5
M/160306/M/12	10	20	23	17	Ø 11 +0,05 deep 1,5	16	10	7,5	10	10	19
M/160307/M/12	16	22,5	34	26	Ø 17 +0,05 deep 1,5	22	14	7,5	12	14	22
M/160308/M/12	20	25	45	35	Ø 21 +0,05 deep 1,5	26	16	8	13	16	24,5
M/160309/M/12	25	28,5	52	40	Ø 26 +0,05 deep 1,5	32	20	9	18	20	28

Model	Ø	W	X	Y	AA	AB	AC	kg
M/160305/M/12	8	15	17,5	30° -10°	M2,5 x 0,45 deep 4,5 (base); M3 x 0,5 deep 3,5 (side); Ø3,2 (front)	M3 x 0,5	M2,5 x 0,45	0,02
M/160306/M/12	10	18	20,5	30° -10°	M3 x 0,5 deep 5	M3 x 0,5	M3 x 0,5	0,04
M/160307/M/12	16	24	25	30° -10°	M4 x 0,7 deep 7	M5 x 0,8	M3 x 0,5	0,10
M/160308/M/12	20	30	32,5	30° -10°	M5 x 0,8 deep 8	M5 x 0,8	M4 x 0,7	0,18
M/160309/M/12	25	36	38.5	30° -10°	M6 x 1 deep 10	M5 x 0,8	M5 x 0,8	0,31

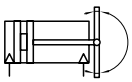
180° Angular grippers

M/160330/M

Double acting

Magnetic piston

Ø 16 to 20 mm



Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, angular, magnetic piston

Operating pressure:

2 to 7 bar

Operating temperature:

0°C to + 60°C

Consult our Technical Service for use below +2°C

Mountings:

Mounting holes on three surfaces

Mechanical life:

~ 3 million cycles before maintenance may be necessary

Operating frequency:

100 cycles per minute maximum

Materials

Body: aluminium alloy

Fingers: carbon steel

Slide plate: carbon steel

Elastomers: nitrile

Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar * Opening	Closing
M/160335/M/12	16	M5 x 0,8	64/L	55/L
M/160336/M/12	20	M5 x 0,8	134/L	113/L

* Example - calculating the effective closing gripping force (N) at 5 bar for the M/160335/M/12
Establish the approximate grip point in cm (not mm), example 4 cm
Calculation = 55 / L
= 55 / 4
Effective closing gripping force = 13,75N. Use the graphs below for cross-reference.

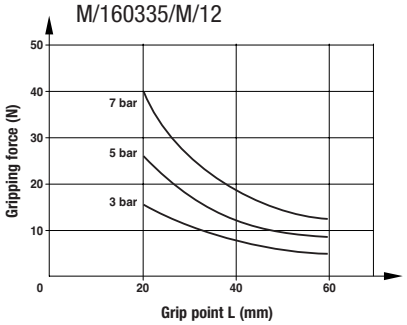
Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

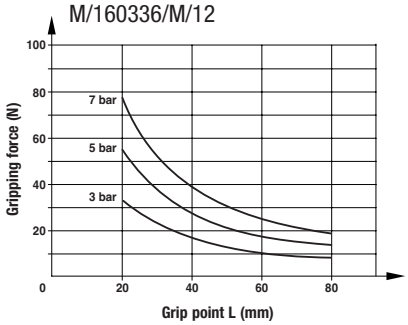
* Insert cable length - 1 or 3 m.

Theoretical closing gripping forces

M/160335/M/12

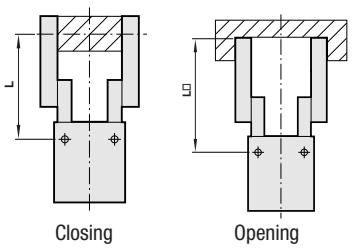


M/160336/M/12



Effective closing gripping forces = Theoretical closing gripping force x 0,85

Workpiece



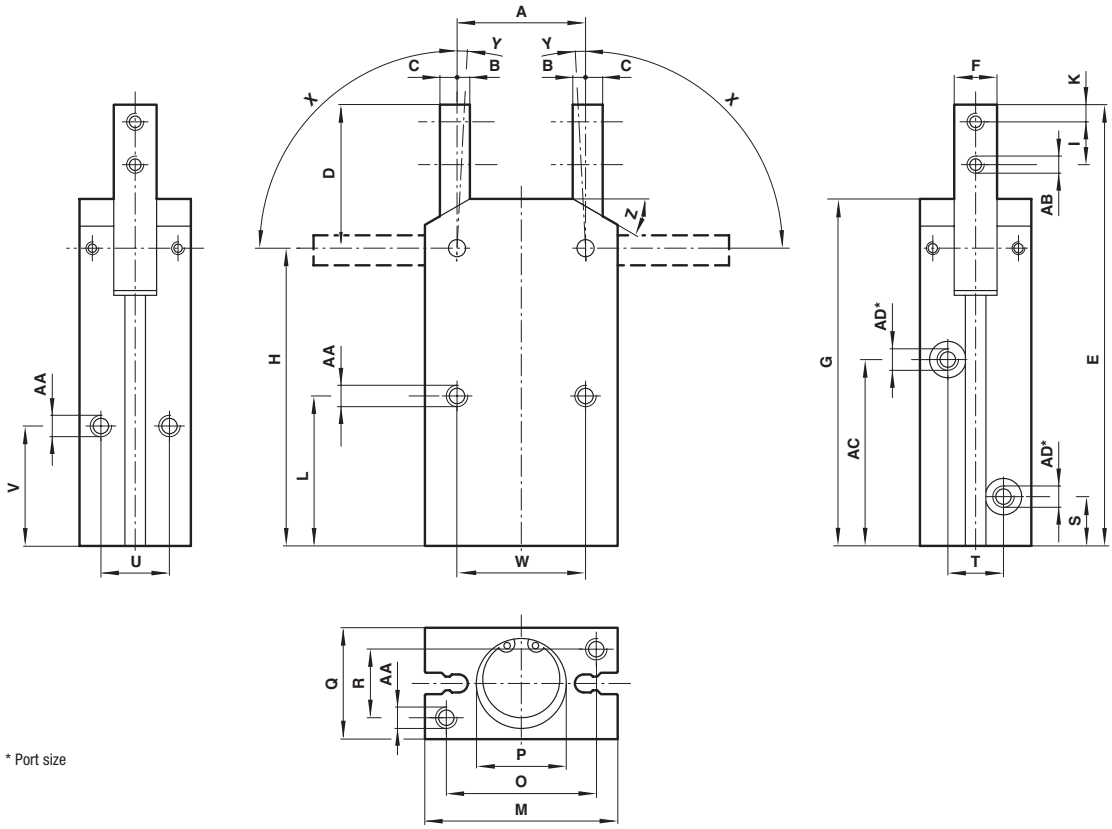
180° Angular grippers

M/160330/M

Double acting

Magnetic piston

Ø 16 to 20 mm



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160335/M/12	16	24	3	2,5	28,5	87,5	8 - 0,03	69	59	8	4
M/160336/M/12	20	30	4	3	33,5	103	10 - 0,03	81	69,5	10	4

Model	Ø	L	M	O	P	Q	R	S	T	U	V
M/160335/M/12	16	30	34	26	Ø 17 + 0,05 deep 1,5	22	14	10,5	12	14	25
M/160336/M/12	20	35	45	35	Ø 21 + 0,05 deep 1,5	26	16	11,5	13	16	28

Model	Ø	W	X	Y	Z	AA	AB	AC	AD	kg
M/160335/M/12	16	24	90°	3°	30°	M4 x 0,7 deep 7	M3 x 0,5	37,5	M5 x 0,8	0,15
M/160336/M/12	20	30	90°	3°	30°	M5 x 0,8 deep 8	M4 x 0,7	43,5	M5 x 0,8	0,28

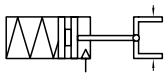
Parallel grippers

M/160340/M/11

Single acting

Magnetic piston

Ø 10 to 25 mm



Ideal for general purpose gripping applications
Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Single acting, parallel, magnetic piston

Operating pressure:
2,5 to 7 bar
(Ø 10 mm 3,5 to 7 bar)

Operating temperature:
0°C to +60°C
Consult our Technical Service for use below +2°C

Mountings:
Mounting holes on three faces

Gripping repeatability:
+/- 0,01 mm

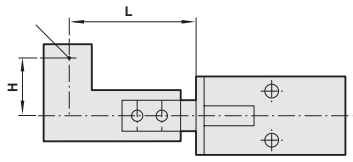
Mechanical life:
~ 5 million cycles before maintenance may be necessary

Operating frequency:
200 cycles per minute maximum

Materials

Body: aluminium alloy
Top plate: carbon steel
Fingers: carbon steel
External screws: carbon steel
Elastomers: nitrile

Workpiece grip point



Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar* Opening	Closing
M/160343/M/11	10	M3 x 0,5	2	4,9
M/160344/M/11	16	M5 x 0,8	3,9	21
M/160345/M/11	20	M5 x 0,8	6,9	36,4
M/160346/M/11	25	M5 x 0,8	13,7	54

* Grip point L = 30 mm

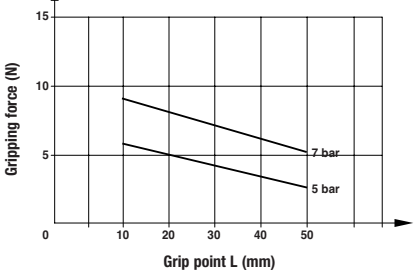
Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

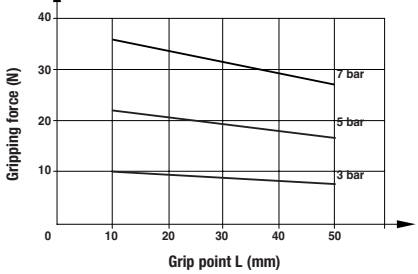
* Insert cable length - 1 or 3 m.

Theoretical closing gripping forces

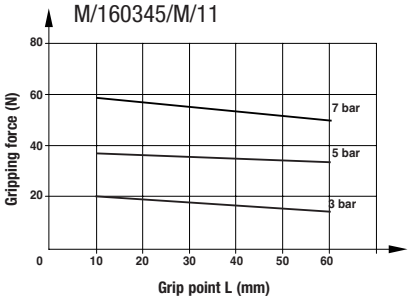
M/160343/M/11



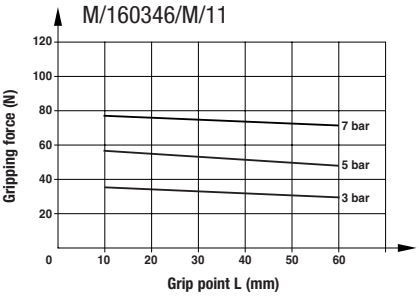
M/160344/M/11



M/160345/M/11



M/160346/M/11



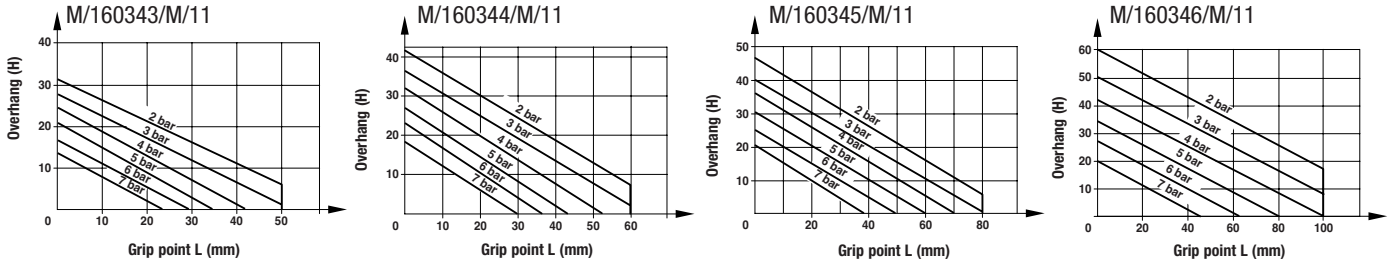
Effective closing gripping forces = Theoretical closing gripping force x 0,85

Parallel grippers

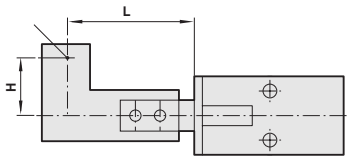
M/160340/M/11

Single acting
Magnetic piston
Ø 10 to 25 mm

Grip point limitation range

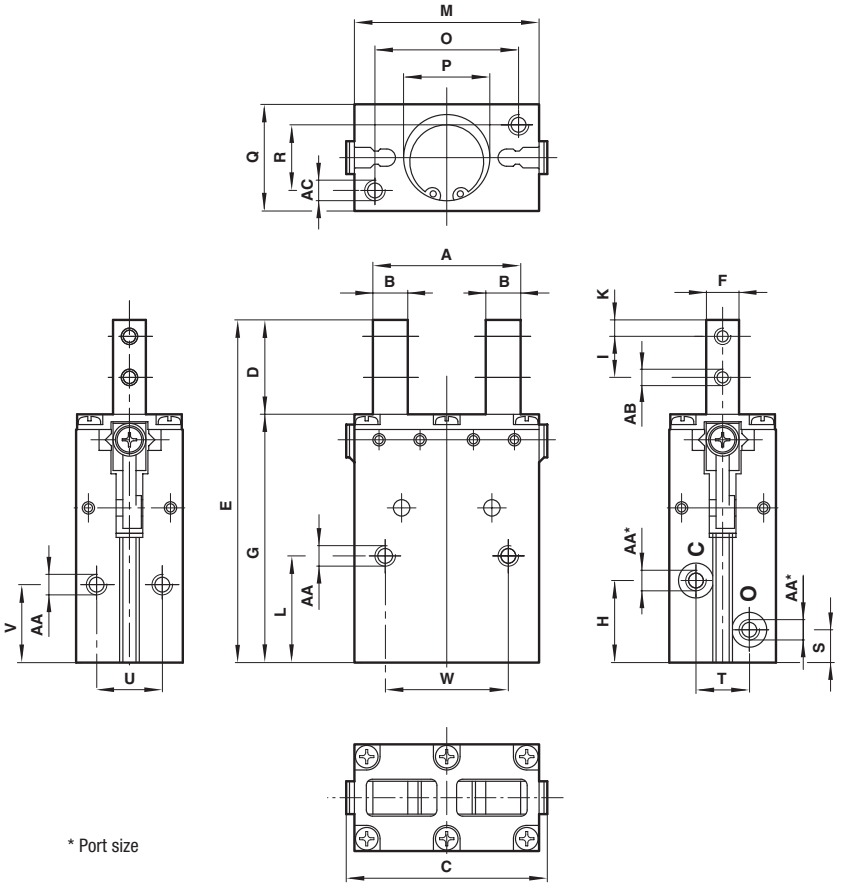


Workpiece grip point



Criteria of workpiece weight

When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.
When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore, workpiece weight should be less than the above mentioned value. (Reference value is 1/30-1/50)
Weight depends on the operational condition, such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160343/M/11	10	17 + 1,6/-0,2 (open) 13 ± 0,4 (closed)	4,5	25 max.	16,5	59,5	5,5 - 0,03	43	15	6	3
M/160344/M/11	16	26 + 2,3 (open) 18 + 0,6/-0,2 (closed)	6,5	37,5 max	19	71	7 - 0,03	52	17,5	8	3
M/160345/M/11	20	36 + 1,5/-0,9 (open) 24 + 0,1/-0,9 (closed)	8,5	49 max	23	83,5	8 - 0,04	60,5	20	10	4
M/160346/M/11	25	42 + 1,0/-0,7 (open) 28 ± 0,4 (closed)	10	57,5 max	27	95	10 - 0,03	68	23	12	5

Model	Ø	L	M	O	P	Q	R	S	T	U	V	W	AA	AB	AC	kg
M/160343/M/11	10	20	23	17	Ø 11 + 0,05 deep 1,5	16	10	7,5	10	10	16	18	M3 x 0,5	M3 x 0,5 deep 5	M3 x 0,5	0,05
M/160344/M/11	16	23	34	26	Ø 17 + 0,05 deep 1,5	22	14	7,5	12	14	18	24	M5 x 0,8	M4 x 0,7 deep 7	M3 x 0,5	0,12
M/160345/M/11	20	26	45	35	Ø 21 + 0,05 deep 1,5	26	16	8	13	16	19	30	M5 x 0,8	M5 x 0,8 deep 8	M4 x 0,7	0,22
M/160346/M/11	25	30	52	40	Ø 26 + 0,05 deep 1,5	32	20	9	18	20	22	36	M5 x 0,8	M6 x 1,0 deep 10	M5 x 0,8	0,37

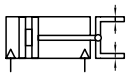
Parallel grippers

M/160340/M/12

Double acting

Magnetic piston

Ø 10 to 25 mm



Ideal for general purpose gripping applications
Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting, parallel, magnetic piston

Operating pressure:
1 to 7 bar
(Ø 10 mm 1,8 to 7 bar, Ø 16 mm 1,2 to 7 bar)

Operating temperature:
0°C to +60°C
Consult our Technical Service for use below +2°C

Mountings:
Mounting holes on three faces

Gripping repeatability:
+/- 0,01 mm

Mechanical life:
~ 5 million cycles before maintenance may be necessary

Materials

Body: aluminium alloy
Top plate: carbon steel
Fingers: carbon steel
External screws: carbon steel
Elastomers: nitrile

Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar* Opening	Closing
M/160343/M/12	10	M3 x 0,5	14,6	9,4
M/160344/M/12	16	M5 x 0,8	34,0	25,5
M/160345/M/12	20	M5 x 0,8	60,9	45,7
M/160346/M/12	25	M5 x 0,8	87	67

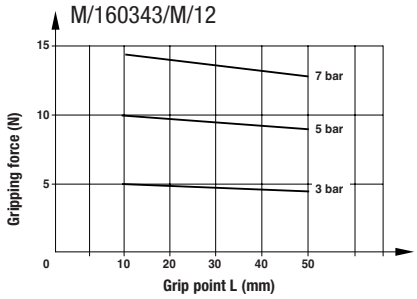
* Grip point L = 30 mm

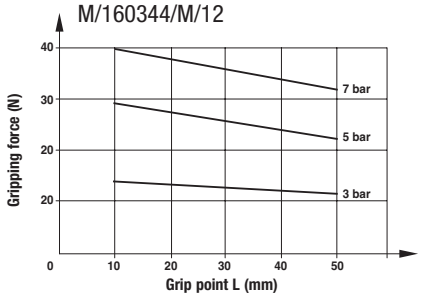
Switches with LED indication

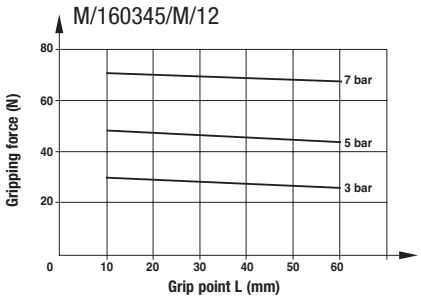
Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

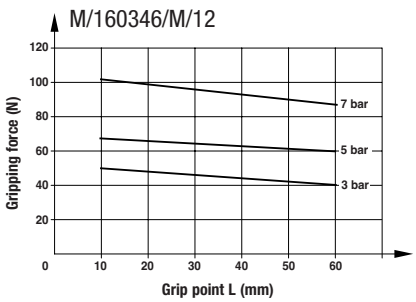
* Insert cable length - 1 or 3 m.

Theoretical closing gripping forces

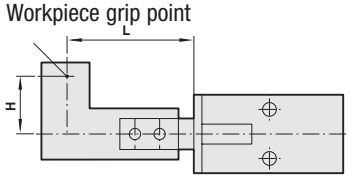








Effective closing gripping forces = Theoretical closing gripping force x 0,85

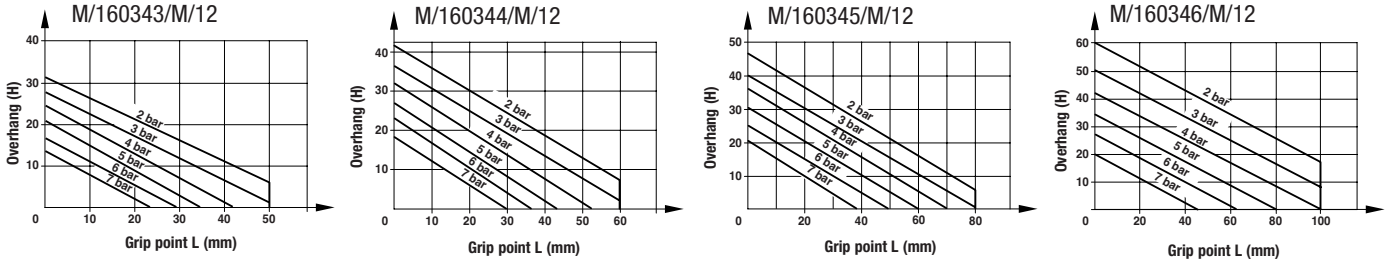


Parallel grippers

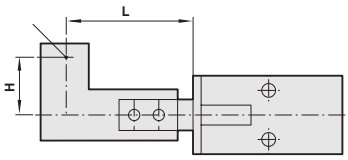
M/160340/M/12

Double acting
Magnetic piston
Ø 10 to 25 mm

Grip point limitation range

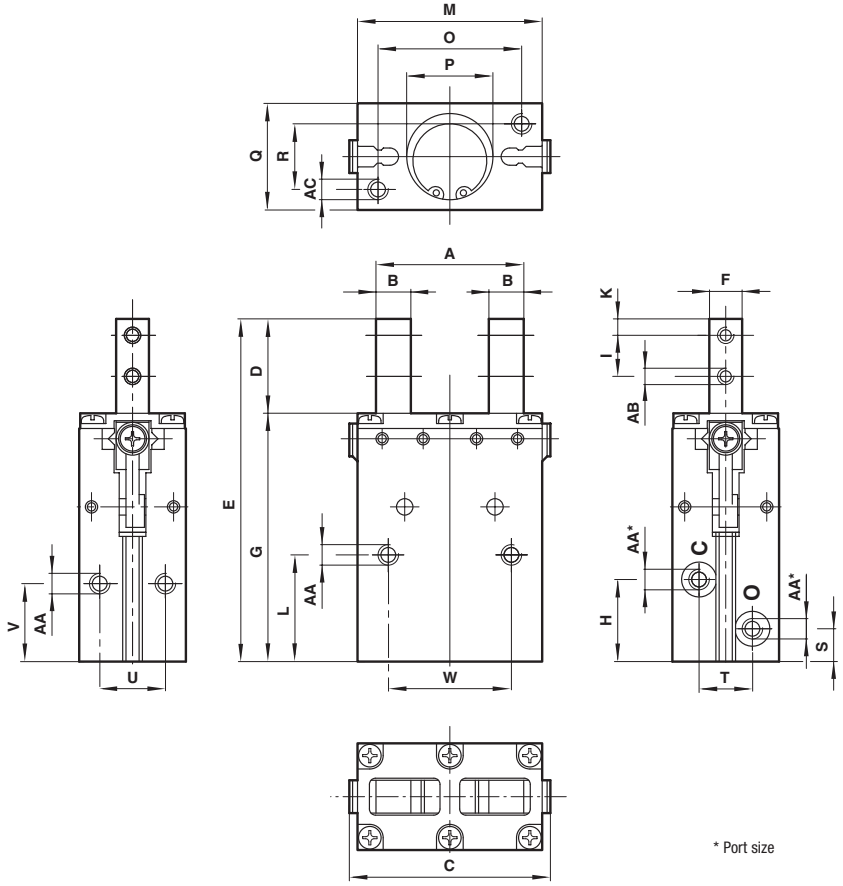


Workpiece grip point



Criteria of workpiece weight

When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.
When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore, workpiece weight should be less than the above mentioned value. (Reference value is 1/30-1/50)
Weight depends on the operational condition, such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160343/M/12	10	17 + 1,6 / -0,2 (open) 13 ± 0,4 (closed)	4,5	25 max	16,5	59,5	5,5 - 0,03	43	15	6	3
M/160344/M/12	16	26 + 2,3 (open) 18 + 0,6 / -0,2 (closed)	6,5	37,5 max	19	71	7 - 0,03	52	17,5	8	3
M/160345/M/12	20	36 + 1,5 / -0,9 (open) 24 + 0,1 / -0,9 (closed)	8,5	49 max	23	83,5	8 - 0,04	60,5	20	10	4
M/160346/M/12	25	42 + 1,0 / -0,7 (open) 28 ± 0,4 (closed)	10	57,5 max	27	95	10 - 0,03	68	23	12	5

Model	Ø	L	M	O	P	Q	R	S	T	U	V
M/160343/M/12	10	20	23	17	Ø 11 + 0,05 deep 1,5	16	10	7,5	10	10	16
M/160344/M/12	16	23	34	26	Ø 17 + 0,05 deep 1,5	22	14	7,5	12	14	18
M/160345/M/12	20	26	45	35	Ø 21 + 0,05 deep 1,5	26	16	8	13	16	19
M/160346/M/12	25	30	52	40	Ø 26 + 0,05 deep 1,5	32	20	9	18	20	22

Model	Ø	W	AA	AB	AC	kg
M/160343/M/12	10	18	M3 x 0,5	M3 x 0,5 deep 5	M3 x 0,5	0,05
M/160344/M/12	16	24	M5 x 0,8	M4 x 0,7 deep 7	M3 x 0,5	0,12
M/160345/M/12	20	30	M5 x 0,8	M5 x 0,8 deep 8	M4 x 0,7	0,22
M/160346/M/12	25	36	M5 x 0,8	M6 x 1,0 deep 10	M5 x 0,8	0,37

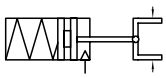
Parallel grippers - precision

M/160350/M/11

Single acting

Magnetic piston

Ø 8 to 20 mm



Ideal for applications demanding accuracy and precise repeatability

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Single acting, parallel, magnetic piston

Operating pressure:

7 bar maximum

Operating temperature:

+0°C to +60°C

Consult our Technical Service for use below +2°C

Mountings:

Mounting holes on three faces

Gripping repeatability:

+/- 0,01 mm

Accuracy to centre:

+/- 0,07 mm

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Operating frequency:

120 cycles per minute max.

Materials

Body: aluminium alloy

Fingers: stainless steel

Guide rail: stainless steel

Elastomers: nitrile

Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar*		Minimum operating pressure (bar)
			Opening	Closing	
M/160354/M/11	8	M3 x 0,5	2,7	4,1	4,0
M/160355/M/11	10	M3 x 0,5	2,4	6,8	3,5
M/160356/M/11	16	M5 x 0,8	5,4	20,0	2,5
M/160357/M/11	20	M5 x 0,8	7,3	34,0	2,5

* Grip point L = 30 mm

Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

* Insert cable length - 1 or 3 m.

Parallel grippers - precision

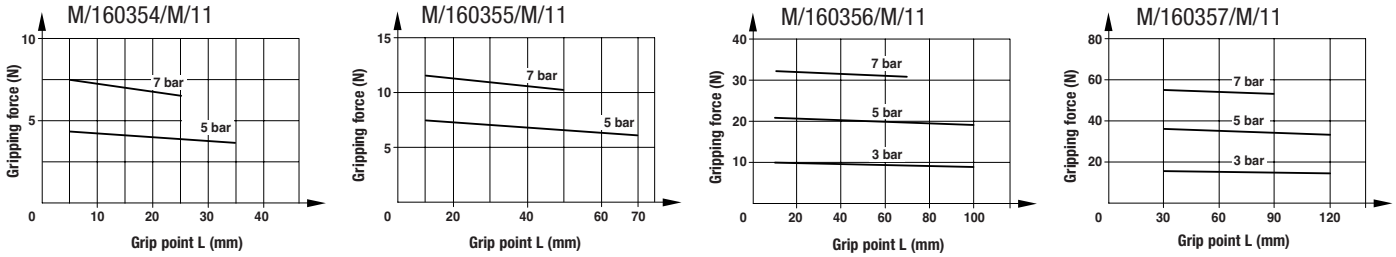
M/160350/M/11

Single acting

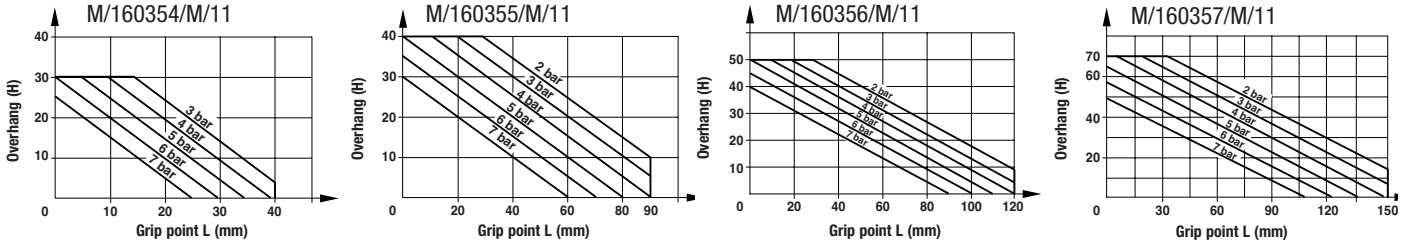
Magnetic piston

Ø 8 to 20 mm

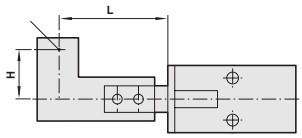
Theoretical closing gripping forces



Grip point limitation range

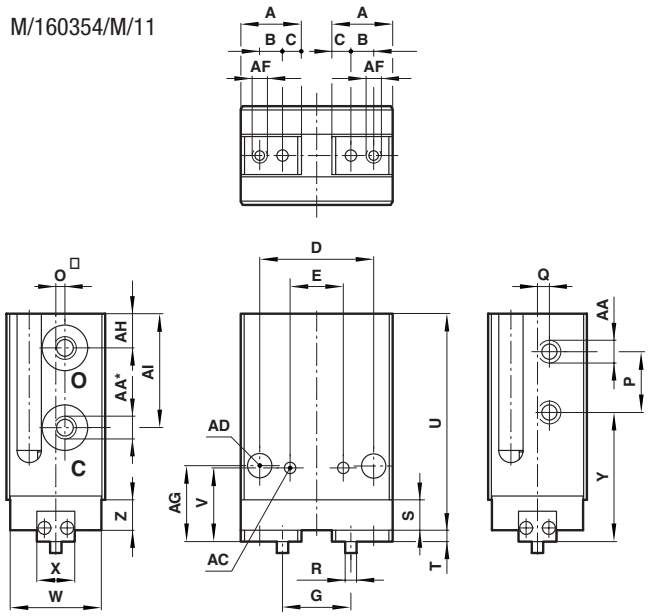


Workpiece



Effective closing gripping forces = Theoretical closing gripping force x 0,85

M/160354/M/11

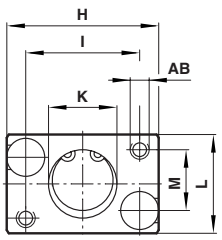


Model	Ø	A	B	C	D	E	G	H	I	K
M/160354/M/11	8	8	3	2,5	15	7 ± 0,03	9 + 1,5 (open) 5 + 0,5 (closed)	20	15	Ø9 + 0,05 deep 1

Model	Ø	L	M	O	P	Q	R	S	T	U
M/160354/M/11	8	13 ± 0,05	9	1,2	8	1,5	Ø 1,5 -0,03	4	1,5	28,5

Model	Ø	V	W	X	Y	Z	AA	AB	AC	AD
M/160354/M/11	8	9,7	12	5 ± 0,025	17	4	M3 x 0,5	M2,5 x 0,45 deep 4	Ø 1,5 + 0,02 deep 1	Ø 3,2

Model	Ø	AF	AG	AH	AI	AL	kg
M/160354/M/11	8	M2 x 0,4 deep 3,5	10	4,5	15	M3 x 0,5 deep 3	0,02



* Port size

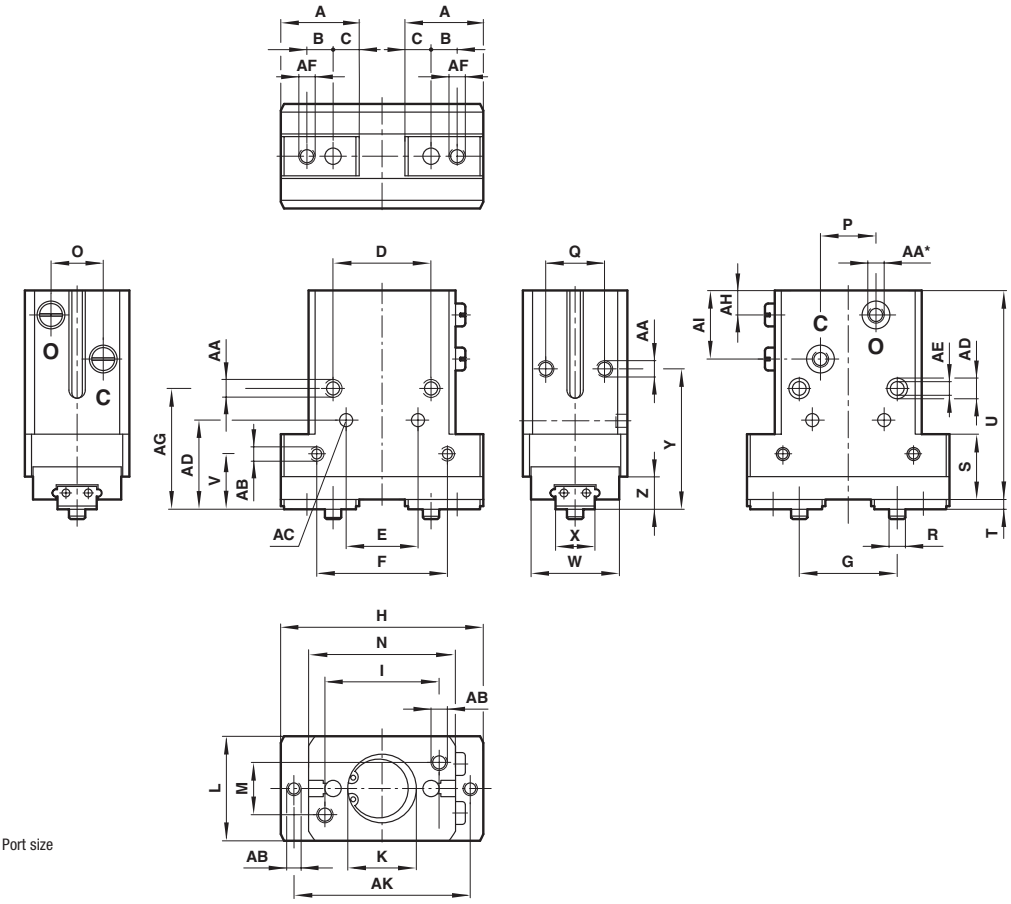
Parallel grippers - precision

M/160350/M/11

Single acting

Magnetic piston

Ø 8 to 20 mm



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160355/M/11	10	14,7	5	4,5	17	12 ± 0,03	20	15,5 + 1,5 (open) 9 + 0,5 (closed)	36	17	Ø 11 + 0,05 deep 1,5
M/160356/M/11	16	20	8	6	24	16 ± 0,03	30	22 + 1,8 (open) 12 + 1,3 (closed)	50	26	Ø 17 + 0,05 deep 1,5
M/160357/M/11	20	24	8	8	30	22 ± 0,03	40	30 + 2,4/-0,5 (open) 16 + 1,4 (closed)	62	35	Ø 21 + 0,05 deep 1,5

Model	Ø	L	M	N	O	P	Q	R	S	T	U
M/160355/M/11	10	20 ± 0,05	10	23	9	7	12	Ø 3 - 0,03	12,5	1,5	47,5
M/160356/M/11	16	25 ± 0,05	14	34	12	15	15	Ø 4 - 0,03	15	2	54
M/160357/M/11	20	32 ± 0,05	16	45	16	17	18	Ø 5 - 0,03	20	3	64

Model	Ø	V	W	X	Y	Z	AA	AB	AC	AD	AE
M/160355/M/11	10	11	17	7 ± 0,025	29	6	M3 x 0,5	M3 x 0,5 deep 4,5	Ø2,5 + 0,02 deep 2,5	M4 x 0,7 deep 6	Ø 3,4
M/160356/M/11	16	14	20	9 ± 0,025	36	8	M5 x 0,8	M4 x 0,7 deep 5	Ø3 + 0,02 deep 3	M4 x 0,7 deep 6	Ø 3,4
M/160357/M/11	20	17	27	12 ± 0,025	43	8	M5 x 0,8	M4 x 0,7 deep 7	Ø4 + 0,02 deep 3,5	M5 x 0,8 deep 8	Ø 4,2

Model	Ø	AF	AG	AH	AI	AK	AL	AM	AN	AO	kg
M/160355/M/11	10	M3 x 0,5 deep 4	24	7,5	17	30	M3 x 0,5 deep 5	M3 x 0,5 deep 6	16	M3 x 0,5 deep 5	0,08
M/160356/M/11	16	M4 x 0,7 deep 5	31	7,5	19	42	M4 x 0,7 deep 6	M4 x 0,7 deep 7	21	M3 x 0,5 deep 5	0,16
M/160357/M/11	20	M5 x 0,8 deep 7	37	7,5	21	54	M5 x 0,8 deep 8	M5 x 0,8 deep 9	27,3	M4 x 0,7 deep 6	0,33

Norgren in the medical industry

Adding value through integrated design solutions for fluid and motion control

Norgren proven solutions for the medical industry are widely accepted by leading manufacturers worldwide – and are consistently delivering the performance and results they need.

The winning combination of Norgren and KIP expertise and technology brings you all the benefits of 20 years specialized experience and understanding of a wide range of medical applications from respiration, dialysis and dental to high volume laboratory automation.

At the heart of this is the capability to design and engineer added-value, integrated solutions to answer the most demanding application challenges.

- Integrated solutions
- Technical expertise
- Specialised engineering
- International manufacturing
- Quality assurance
- Flexible deliveries
- Global service network

www.norgren.com/medical

Clinical chemistry

Norgren valve systems can help end users and manufacturers in areas such as biochemistry, haematology, speciality testing and high volume laboratory testing to eliminate contamination carry over, reduce space, accuracy, speed and modularised solutions.

Laboratory automation

Norgren offers a wide range of automation solutions to enhance speed and provide optimum flexibility to help with the increasing and demanding test requirements.

Respiration

Norgren has a proven ability to manage compressed air as well as gases such as O_2, CO_2 and N_2O

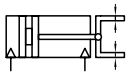
Parallel grippers - precision

M/160350/M/12

Double acting

Magnetic piston

Ø 8 to 50 mm



Ideal for applications demanding accuracy and precise repeatability

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, parallel, magnetic piston

Operating pressure:

7 bar maximum

Operating temperature:

+0°C to +60°C

Consult our Technical Service for use below +2°C

Mountings:

Mounting holes on three faces

Gripping repeatability:

+/- 0,01 mm

Accuracy to centre:

+/- 0,07 mm

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Operating frequency:

120 cycles per minute maximum

Materials

Body: aluminium alloy

Fingers: stainless steel

Guide rail: stainless steel

Elastomers: nitrile

Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar* Opening	Closing	Minimum operating pressure (bar)
M/160354/M/12	8	M3 x 0,5	9,9	5,8	2,2
M/160355/M/12	10	M3 x 0,5	15	9,4	2,0
M/160356/M/12	16	M5 x 0,8	39	26	1,2
M/160357/M/12	20	M5 x 0,8	60	45	1,0
M/160358/M/12	32	M5 x 0,8	176	157	1,0
M/160359/M/12	50	Rc1/8	414	347	1,0

* Grip point L = 30 mm

Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

* Insert cable length - 1 or 3 m.

Parallel grippers - precision

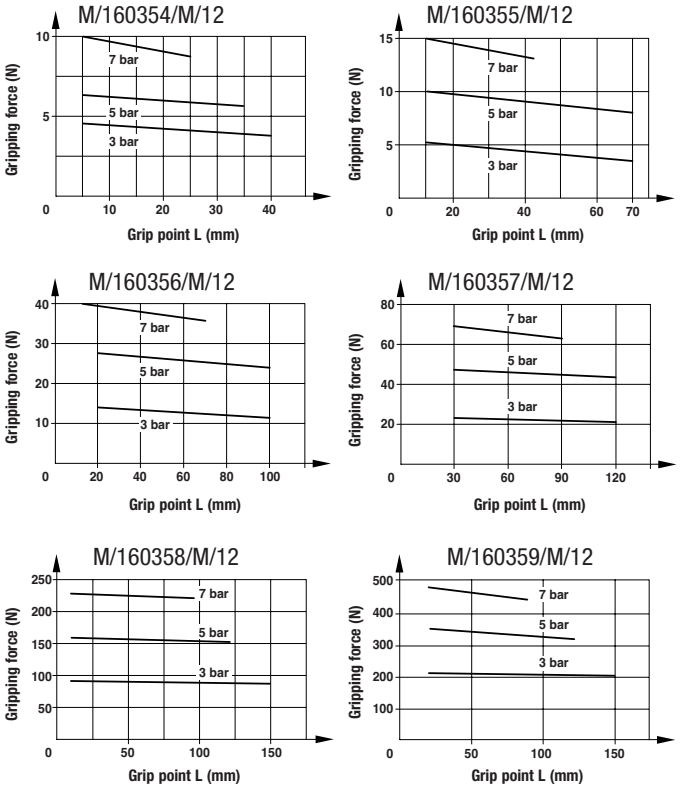
M/160350/M/12

Double acting

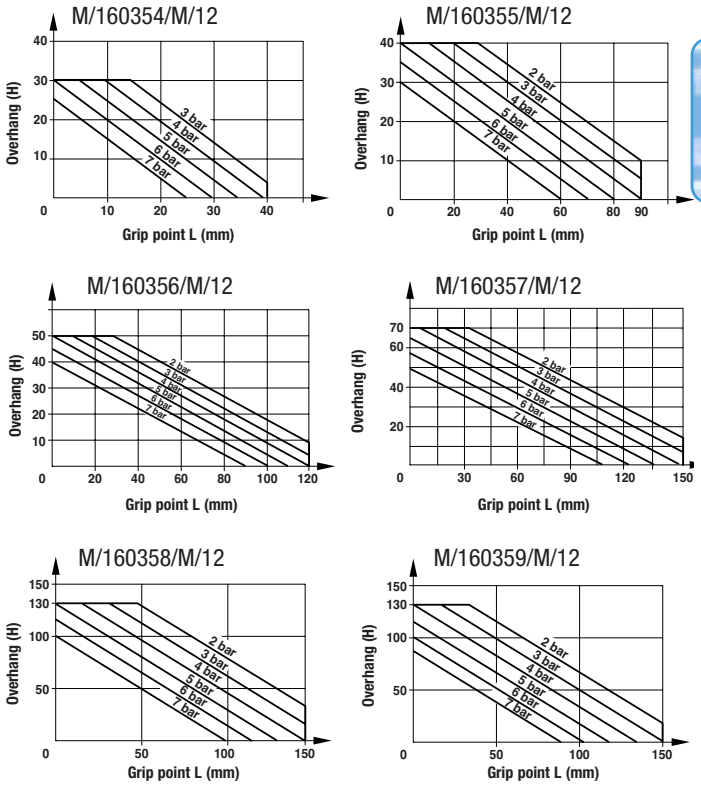
Magnetic piston

Ø 8 to 50 mm

Theoretical closing gripping forces

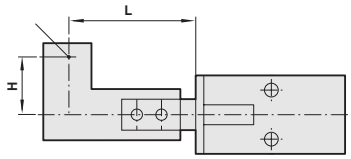


Grip point limitation range

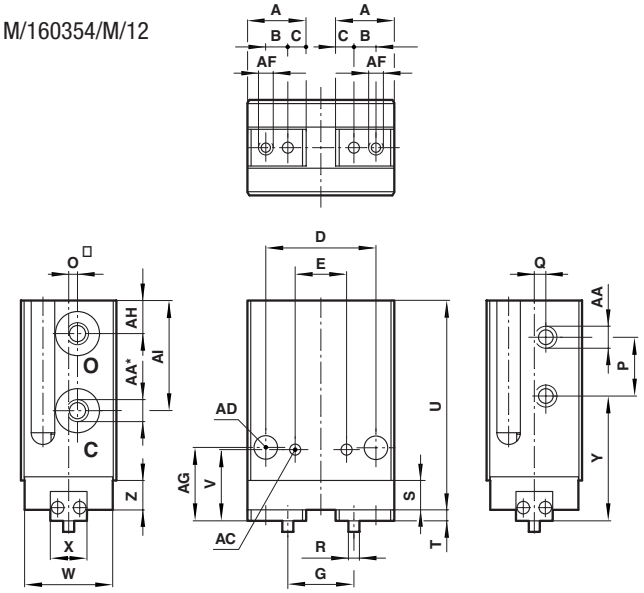


Effective closing gripping forces = Theoretical closing gripping force x 0,85

Workpiece



M/160354/M/12

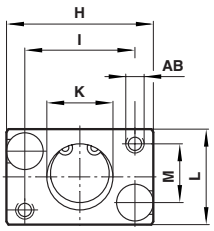


Model	Ø	A	B	C	D	E	G	H	I	K
M/160354/M/12	8	8	3	2,5	15	7 ± 0,03	9 +1,5 (open) 5 + 0,5 (closed)	20	15	Ø 9 + 0,05 deep 1

Model	Ø	L	M	N	O	P	Q	R	S	T	U
M/160354/M/12	8	13 ± 0,05	9	-	1,2	8	1,5	Ø 1,5 - 0,03	4	1,5	28,5

Model	Ø	V	W	X	Y	Z	AA	AB	AC	AD
M/160354/M/12	8	9,7	12	5 ± 0,025	17	4	M3 x 0,5	M2,5 x 0,45 deep 4	Ø 1,5 + 0,02 deep 1	Ø 3,2

Model	Ø	AF	AG	AH	AI	AL	kg
M/160354/M/12	8	M2 x 0,4 deep 3,5	10	4,5	15	M3 x 0,5 deep 3	0,02



* Port size

Parallel grippers - precision

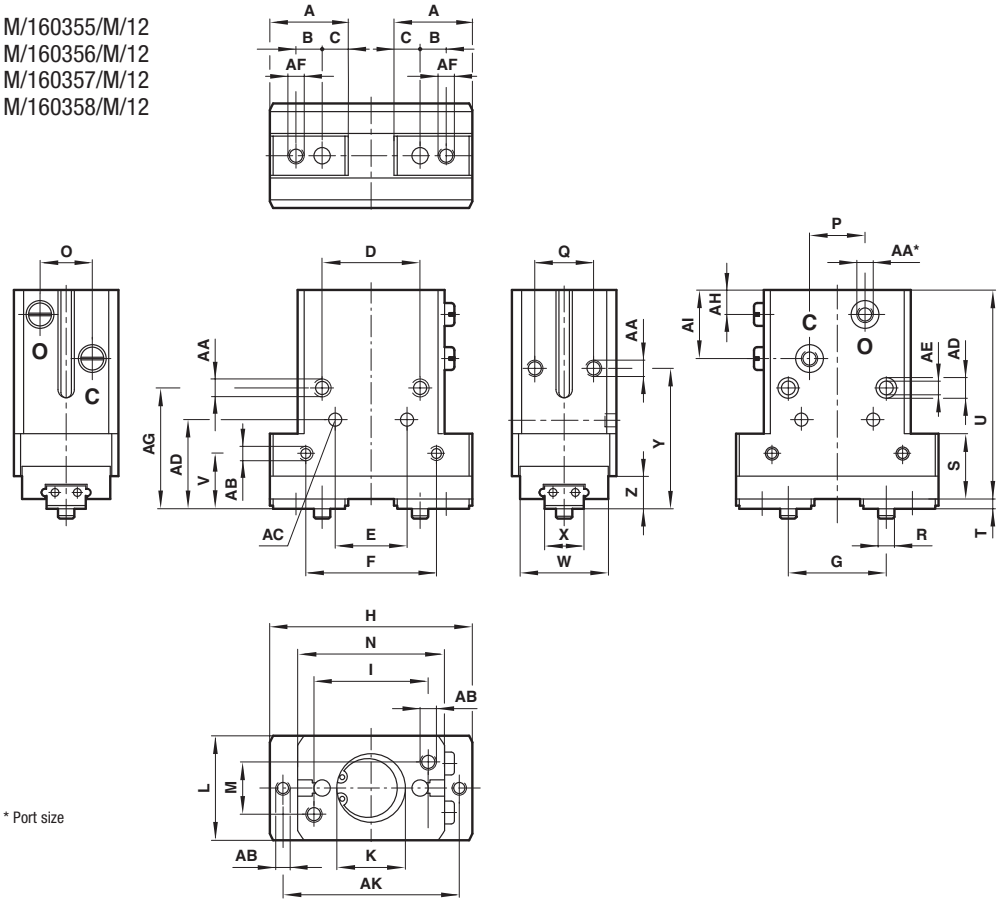
M/160350/M/12

Double acting

Magnetic piston

Ø 8 to 50 mm

M/160355/M/12
M/160356/M/12
M/160357/M/12
M/160358/M/12



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160355/M/12	10	14,7	5	4,5	17	12 ± 0,03	20	15,5 + 1,5 (open) 9 + 0,5 (closed)	36	17	Ø 11 + 0,05 deep 1,5
M/160356/M/12	16	20	8	6	24	16 ± 0,03	30	22 + 1,8 (open) 12 + 1,3 (closed)	50	26	Ø 17 + 0,05 deep 1,5
M/160357/M/12	20	24	8	8	30	22 ± 0,03	40	30 + 2,4/-0,5 (open) 16 + 1,4 (closed)	62	35	Ø 21 + 0,05 deep 1,5
M/160358/M/12	32	31	14	9,5	30	30 ± 0,03	50	41 + 1,80 (open) 19 + 1,30 (closed)	85	40	Ø 34 + 0,050 deep 2

Model	Ø	L	M	N	O	P	Q	R	S	T	U
M/160355/M/12	10	20 ± 0,05	10	23	9	7	12	Ø 3 - 0,03	12,5	1,5	47,5
M/160356/M/12	16	25 ± 0,05	14	34	12	15	15	Ø 4 - 0,03	15	2	54
M/160357/M/12	20	32 ± 0,05	16	45	16	17	18	Ø 5 - 0,03	20	3	64
M/160358/M/12	32	40 ± 0,05	30	52	20	20	20	Ø 6 - 0,03	31	4	79

Model	Ø	V	W	X	Y	Z	AA	AB	AC	AD	AE
M/160355/M/12	10	11	17	7 ± 0,025	29	6	M3 x 0,5	M3 x 0,5 deep 4,5	Ø 2,5 + 0,02 deep 2,5	M4 x 0,7 deep 6	Ø 3,4
M/160356/M/12	16	14	20	9 ± 0,025	36	8	M5 x 0,8	M4 x 0,7 deep 5	Ø 3 + 0,02 deep 3	M4 x 0,7 deep 6	Ø 3,4
M/160357/M/12	20	17	27	12 ± 0,025	43	8	M5 x 0,8	M4 x 0,7 deep 7	Ø 4 + 0,02 deep 3,5	M5 x 0,8 deep 8	Ø 4,2
M/160358/M/12	32	20	32	15 ± 0,025	53	13	M5 x 0,8	M8 x 1 deep 9	Ø 5 + 0,03 deep 4	M6 x 1 deep 9	Ø 5,2

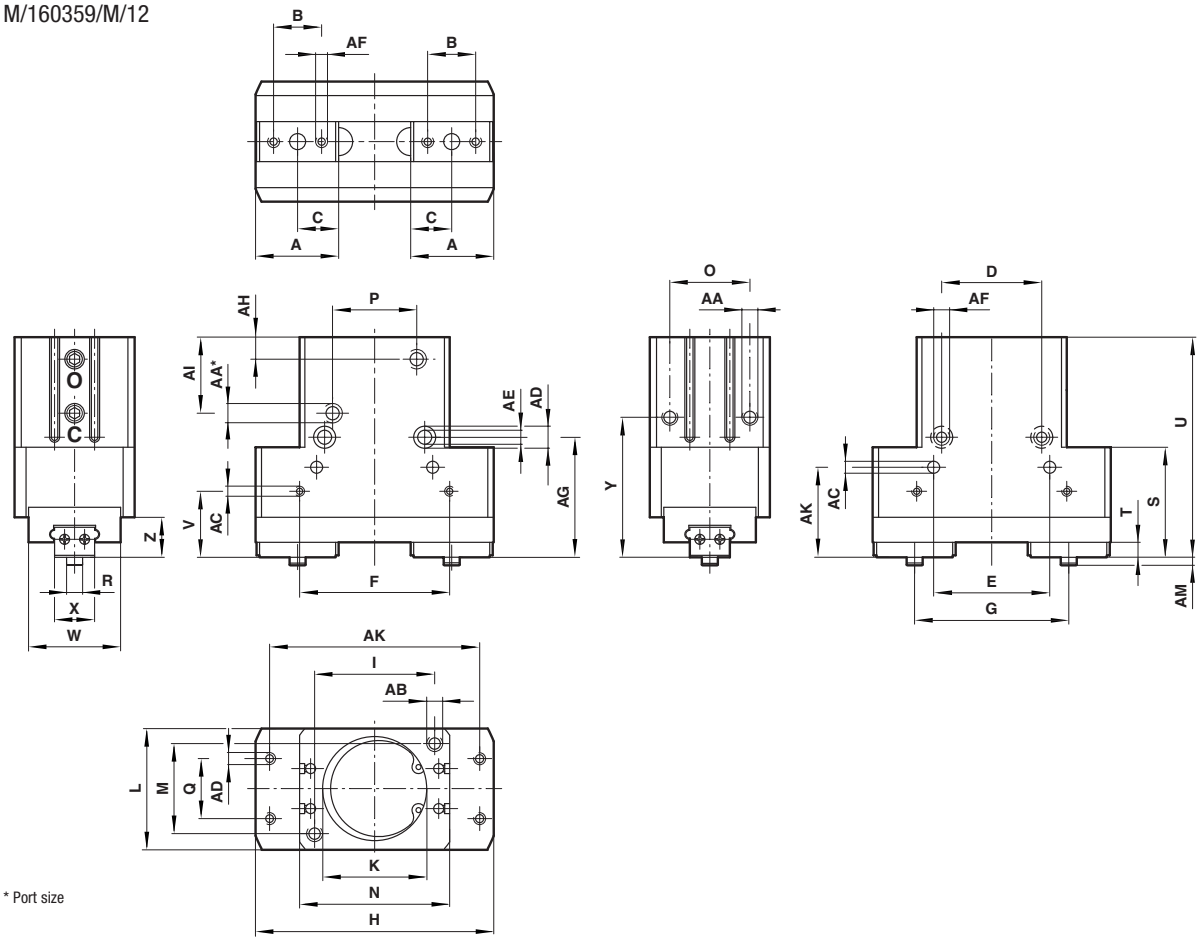
Model	Ø	AF	AG	AH	AI	AK	AL	AM	AN	AO	kg
M/160355/M/12	10	M3 x 0,5 deep 4	24	7,5	17	30	M3 x 0,5 deep 5	M3 x 0,5 deep 6	16	M3 x 0,5 deep 5	0,08
M/160356/M/12	16	M4 x 0,7 deep 5	31	7,5	19	42	M4 x 0,7 deep 6	M4 x 0,7 deep 7	21	M3 x 0,5 deep 5	0,16
M/160357/M/12	20	M5 x 0,8 deep 7	37	7,5	21	54	M5 x 0,8 deep 8	M5 x 0,8 deep 9	27,3	M4 x 0,7 deep 6	0,33
M/160358/M/12	32	M6 x 1 deep 9	46	9	28,5	70	M6 x 1 deep 8	M6 x 1 deep 9	31	M5 x 0,8 deep 8	0,66

Parallel grippers - precision

M/160350/M/12

Double acting
Magnetic piston
Ø 8 to 50 mm

M/160359/M/12



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160359/M/12	50	41	24	20,5	50	58 ± 0,03	75	77 + 1,8/-0,2 (open) 41 + 0,4 (closed)	119	60	Ø 52 + 0,05 deep 3

Model	Ø	L	M	N	O	P	Q	R	S	T	U
M/160359/M/12	50	60 ± 0,05	45	75	40	42	30	Ø 8 - 0,02	55	7,5	110

Model	Ø	V	W	X	Y	Z	AA	AB	AC	AD	AE
M/160359/M/12	50	33	46	20 -0,025	70	20	Rc1/8	M6 x 1 deep 12	Ø 6 + 0,03 deep 7	M8 x 1,25 deep 12	Ø 11 deep 6,5

Model	Ø	AF	AG	AH	AI	AK	AL	AM	AN	AO	AP	kg
M/160359/M/12	50	M6 x 1 deep 12	60	11	38	105	M8 x 1,25 deep 12	4	45	M5 x 0,8 deep 8	M8 x 1,25 deep 15	1,85

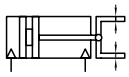
Parallel grippers - low profile

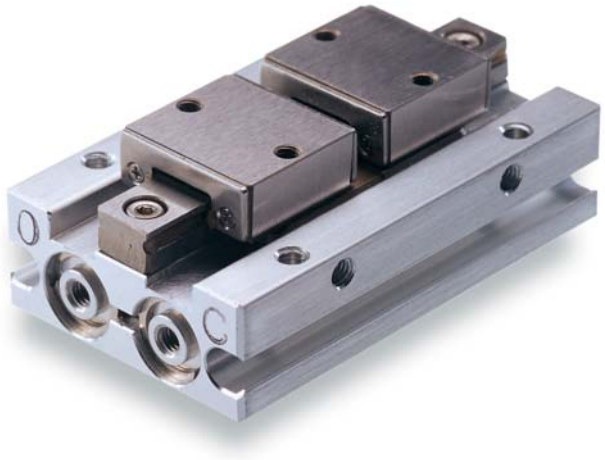
M/160360/M

Double acting

Magnetic piston

Ø 8 to 12 mm





Ideal for applications where operating space is restricted

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operating pressure:

M/160364/M/12: 2 to 7 bar

M/160365/M/12: 1,5 to 7 bar

Operating temperature:

0°C to +60°C

Consult our Technical Service for use below +2°C

Mountings:

Mounting holes on three faces

Gripping repeatability:

+/- 0,07 mm

Accuracy to centre:

+/- 0,1 mm

Materials

Body: aluminium alloy

Fingers: carbon steel

Bearings: stainless steel

Elastomers: nitrile

Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar* Opening	Closing
M/160364/M/12	8	M3 x 0,5	16,7	16,7
M/160365/M/12	12	M5 x 0,8	44	44

* Grip point L = 30 mm

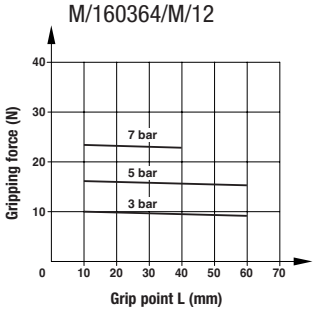
Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

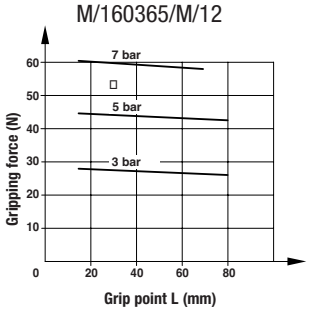
* Insert cable length - 1 or 3 m.

Theoretical gripping forces

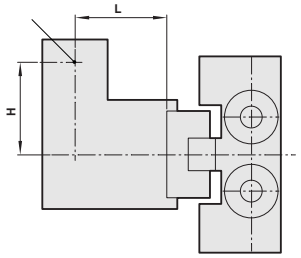
M/160364/M/12



M/160365/M/12

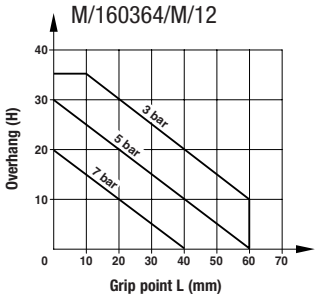


Workpiece grip point

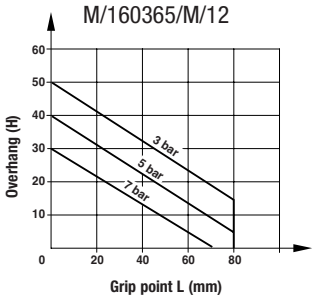


Grip point limitation range

M/160364/M/12



M/160365/M/12



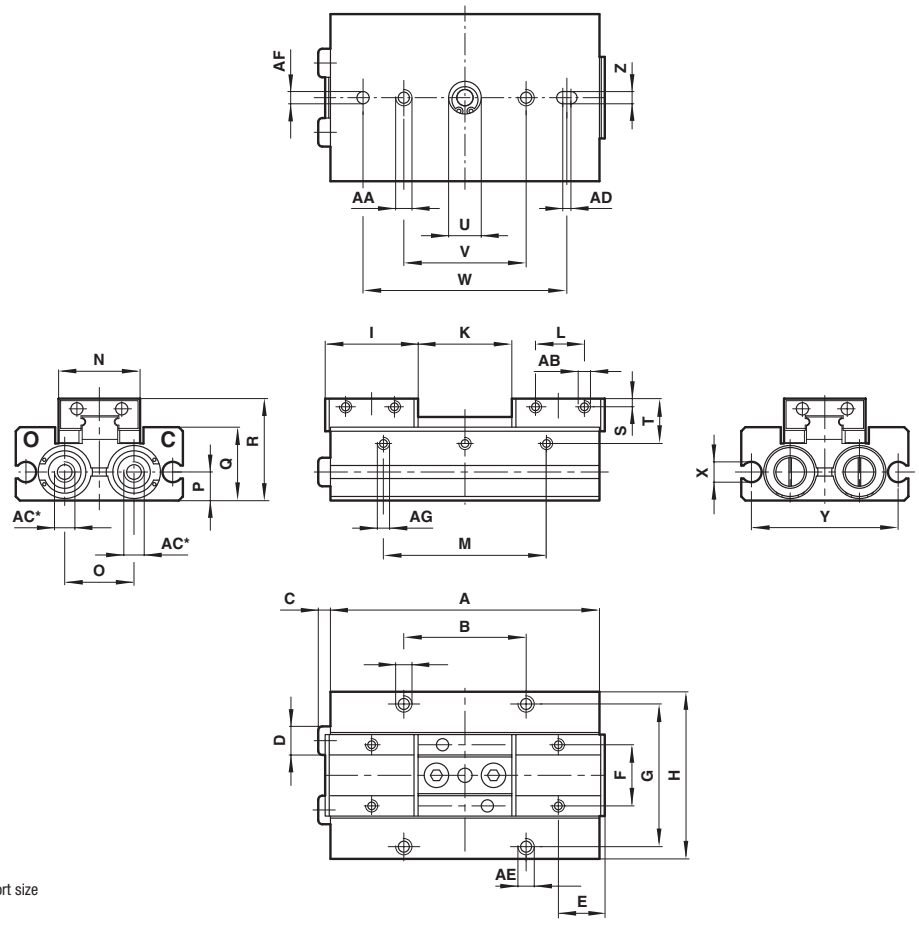
Parallel grippers - low profile

M/160360/M

Double acting

Magnetic piston

Ø 8 to 12 mm



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160364/M/12	8	52	32	2,5	Ø 5	8,1	13	26	32	16,2	17 +1,7/-0,5 (open) 1 +0,7/-1,0 (closed)
M/160365/M/12	12	66	30	3	Ø 7	11,4	15	35	41	22,8	23 +1,9/-0,5 (open) 1 +0,9/-1,0 (closed)

Model	Ø	L	M	N	O	P	Q	R	S	T	U
M/160364/M/12	8	10	24	17	12	5	13	19	2	8,5	Ø 8 + 0,05 deep 1
M/160365/M/12	12	12	40	20	17	7	18	25	2	11	Ø 8 + 0,05 deep 1

Model	Ø	V	W	X	Y	Z	AA	AB	AC	AD	AE
M/160364/M/12	8	24	40	Ø 5	27	2,5 + 0,03 deep 2,5	M3 x 0,5 deep 5	M2,5 x 0,45 deep 3	M3 x 0,5	2	M3 x 0,5 deep 5
M/160365/M/12	12	30	50	Ø 5	36	3 + 0,03 deep 3	M4 x 0,7 deep 8	M3 x 0,5 deep 3	M5 x 0,8	2	M4 x 0,7 deep 6

Model	Ø	AF	AG	kg
M/160364/M/12	8	Ø 2,5 + 0,03 deep 2,5	M3 x 0,5 deep 5	0,09
M/160365/M/12	12	Ø 3 + 0,03 deep 3	M3 x 0,5 deep 5	0,2

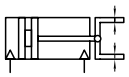
Parallel grippers - three jaw

M/160380/M

Double acting

Magnetic piston

Ø 16 to 20 mm



Ideal for gripping spheres or components with circular faces

Smooth, accurate movement

Long, uninterrupted service life

Low weight

Compact size

Integral magnets for positional feedback

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, three jaw parallel, magnetic piston

Operating pressure:

2 to 7 bar

1,5 to 7 bar M/160386/M/12

Operating temperature:

+0°C to +60°

Consult our Technical Service for use below +2°C

Mountings:

Mounting holes on base

Gripping repeatability:

+/- 0,01 mm

Mechanical life:

~ 5 million cycles before maintenance may be necessary

Operating frequency:

200 cycles per minute max.

Materials

Body: aluminium alloy

Top plate: carbon steel

Fingers: carbon steel

External screws: carbon steel

Elastomers: nitrile

Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar*	
			Opening	Closing
M/160385/M/12	16	M5 x 0,8	27	20
M/160386/M/12	20	M5 x 0,8	36	27

* Grip point L = 30 mm

Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

* Insert cable length - 1 or 3 m.

Parallel grippers - three jaw

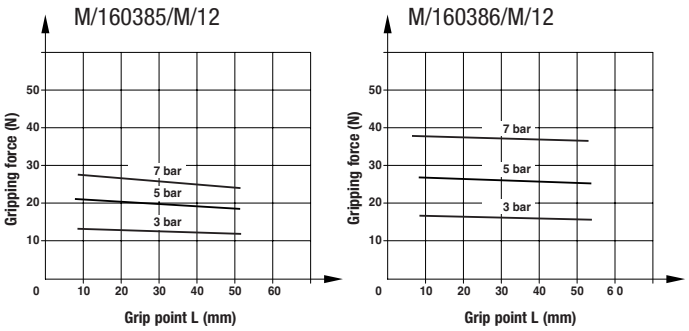
M/160380/M

Double acting

Magnetic piston

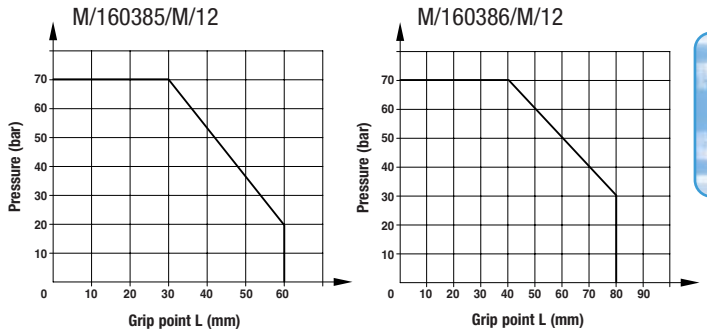
Ø 16 to 20 mm

Theoretical closing gripping forces

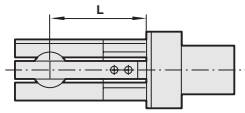


Effective closing gripping forces = Theoretical closing gripping force x 0,85

Grip point limitation range

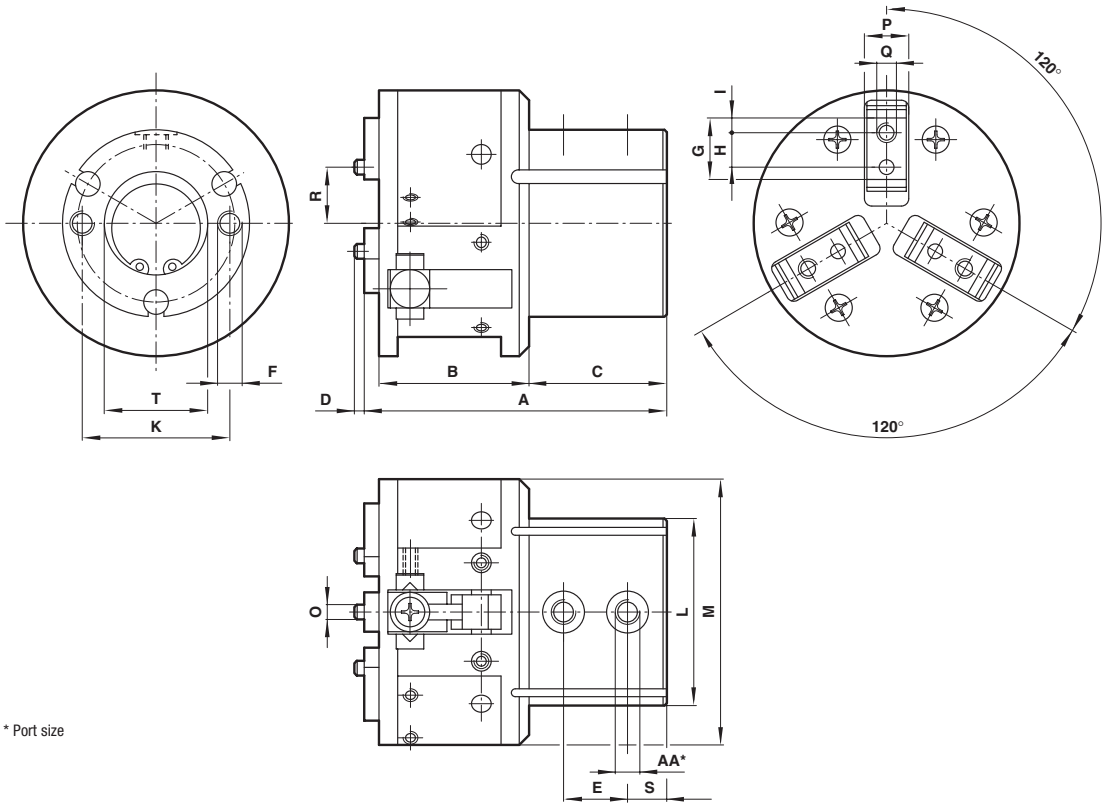


Workpiece grip point



Criteria of workpiece weight

When chucking a workpiece, weight should be within the range between 1/10 and 1/20 of the above gripping force.
When chucking and then moving a workpiece, the workpiece may protrude or drop. Therefore, workpiece weight should be less than the above mentioned value. (Reference value is 1/30-1/50)
Weight depends on the operational condition, such as material and shape of workpiece or claw, speed and direction of moving workpiece (straight advance, rotation or swing, etc.)



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160385/M/12	16	53	23	27	2	12,5	M4 x 0,7 deep 7	10	5	2,5	24
M/160386/M/12	20	61,5	30,5	28	2	13	M5 x 0,8 deep 8	12,5	7	3,0	30

Model	Ø	L	M	O	P	Q	R	S	T	AA	kg
M/160385/M/12	16	Ø 32	Ø 42	Ø 3 - 0,005	7 - 0,03	M3 x 0,5	9,5 + 0,9/-0,4 (open) 5,5 + 0,9/-0,4 (closed)	7,5	Ø 17 + 0,05 deep 1,5	M5 x 0,8	0,16
M/160386/M/12	20	Ø 38	Ø 54	Ø 3 - 0,005	8 - 0,04	M4 x 0,7	13 + 1,6/-0,4 (open) 7 + 1,2/-0,4 (closed)	8	Ø 21 + 0,05 deep 1,5	M5 x 0,8	0,28

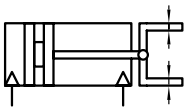
Parallel grippers - long stroke

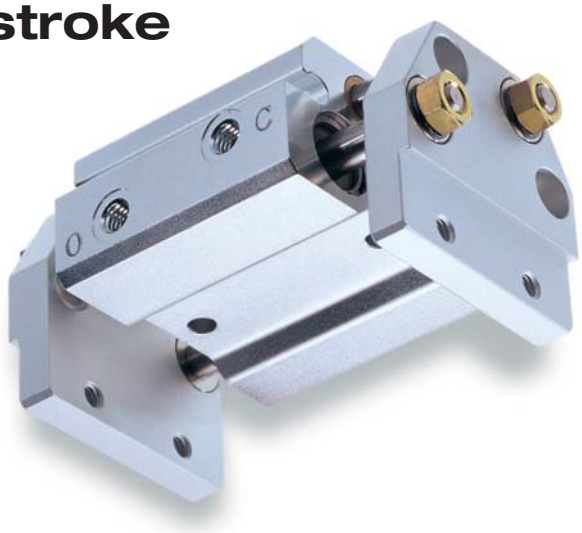
M/160390/M

Double acting

Magnetic piston

Ø 12 to 25 mm





Ideal for handling wide components
Smooth, accurate movement
Long, uninterrupted service life
Low weight
Compact size
Integral magnets for positional feedback

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operating pressure:
2 to 7 bar

Operating temperature:
0°C to +60°C
Consult our Technical Service for use below +2°C

Mounting:
Mounting holes on two faces

Materials

Body: aluminium alloy
Piston rods: stainless steel
External nuts: carbon steel
Elastomers: nitrile

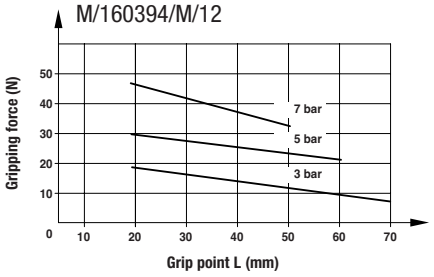
Standard models

Model	Ø	Port size	Effective gripping force (N) at 5 bar* Opening	Closing
M/160394/M/12	12	M5 x 0,8	27	27
M/160395/M/12	16	M5 x 0,8	55	55
M/160396/M/12	20	M5 x 0,8	85	85
M/160397/M/12	25	M5 x 0,8	135	135

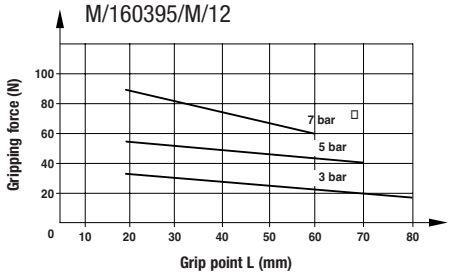
* Grip point L = 30 mm

Effective gripping forces

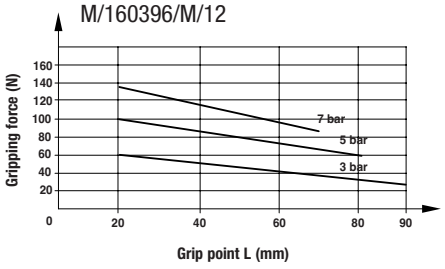
M/160394/M/12



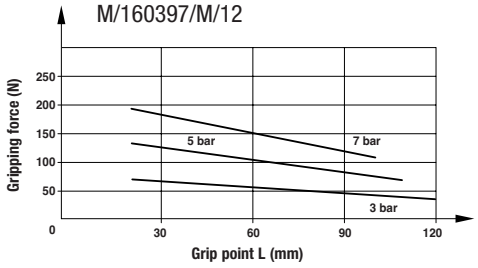
M/160395/M/12

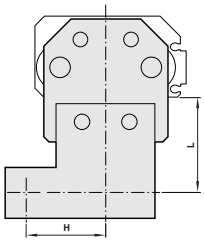


M/160396/M/12



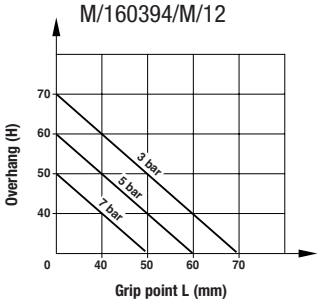
M/160397/M/12



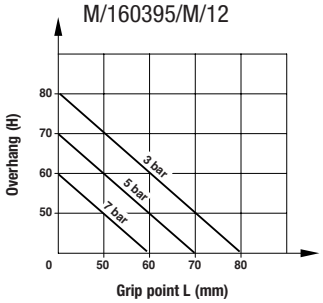


Grip point limitation range

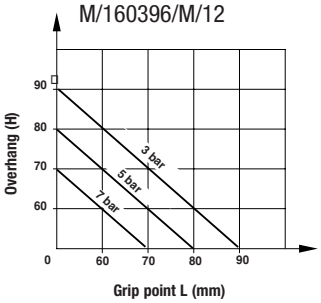
M/160394/M/12



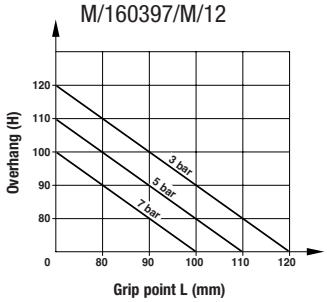
M/160395/M/12



M/160396/M/12



M/160397/M/12



Parallel grippers - long stroke

M/160390/M

Double acting

Magnetic piston

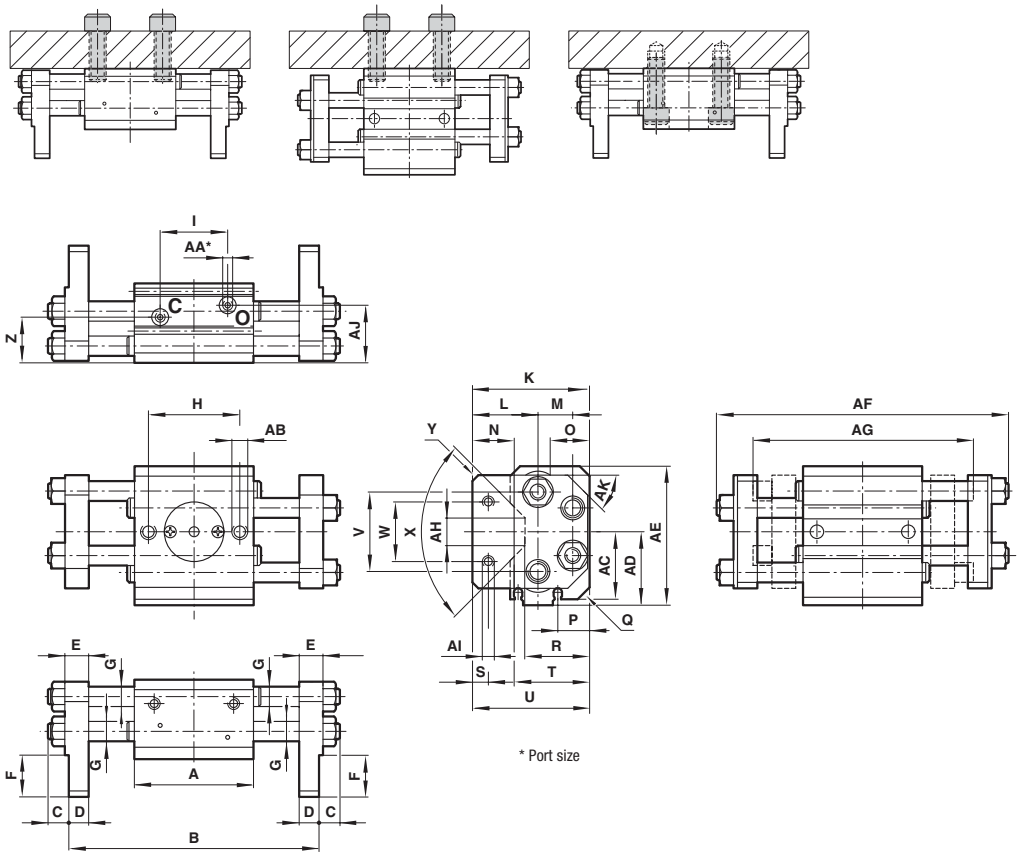
Ø 12 to 25 mm

Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/344/EAU/*PV	M/344/EAU/*APV	2-wire solid state
M/344/EAN/*PV	M/344/EAN/*APV	3-wire solid state

* Insert cable length - 1 or 3 m.

Mounting examples



* Port size

Model	Ø	A	B	C	D	E	F	G	H	I	K
M/160394/M/12	12	44	84,4 + 1,4/-1,0 (open) 60 + 1,0/-0,9 (closed)	6,5	6	8	12	Ø 6	34	21	38,5
M/160395/M/12	16	50	102,4 + 1,4/-1,0 (open) 70 + 1,0/-1,8 (closed)	8	8	10	13,5	Ø 8	38	28	43,5
M/160396/M/12	20	60	124,4 + 1,5/-1,1 (open) 84 + 1,1/-1,9 (closed)	10,5	10	12	21	Ø 10	46	34	58
M/160397/M/12	25	66	145 + 1,5/-1,1 (open) 94,6 + 1,1/-1,9 (closed)	11	12	14	26	Ø 10 & Ø 12	52	39	67,5

Model	Ø	L	M	O	P	Q	R	S	T	U	V
M/160394/M/12	12	21	11,5	15	9,5	3,5	24	4	27	39	29
M/160395/M/12	16	23,5	14	15	11	3,5	27	5	32	45	34
M/160396/M/12	20	33	17,5	-	16	5	32,5	8	40	59	40
M/160397/M/12	25	41	18,5	-	16,5	10	35,5	10	44	69	49

Model	Ø	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
M/160394/M/12	12	20	90°	1	16	M5 x 0,8	M5 x 0,8	22,7	27	50	99	76	16
M/160395/M/12	16	20	90°	1	19,5	M5 x 0,8	M6 x 1	27,5	32,5	60	123	93	9,5
M/160396/M/12	20	30	90°	3	23	M5 x 0,8	M8 x 1,25	34	37	70	147	112	14
M/160397/M/12	25	30	90°	3	25	M5 x 0,8	M10 x 1,5	40,5	44	84	169	124	14

Model	Ø	AI	AJ	AK	kg
M/160394/M/12	12	M4 x 0,7	20	30°	0,23
M/160395/M/12	16	M5 x 0,8	23,5	30°	0,40
M/160396/M/12	20	M6 x 1	29	45°	0,76
M/160397/M/12	25	M8 x 1,25	31	45°	1,10

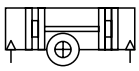
Miniature rotary actuators

M/60210/M

Double acting

Magnetic piston

Ø 12 & 20 mm



Smooth operation with zero backlash

Lightweight

Compact envelope dimensions

Integral magnets for positional feedback

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operating pressure:
1 to 7 bar

Operating temperature:
+ 5°C to + 60°C
Consult our Technical Service for use below +2°C

Mounting:
Mounting holes in body

Rotation angle:
90°, 180°
Adjustable ± 5°

Materials

Body: aluminium alloy
End covers: aluminium alloy
Shaft: carbon steel
External stop: carbon steel
External nuts: mild steel
External screws: chrome molybdenum steel
Elastomers: nitrile

Standard models

Model	Effective torque (Nm) at 6 bar	Angle of rotation
M/60215/M/90	0,23	90°
M/60215/M/180	0,23	180°
M/60216/M/90	1,0	90°
M/60216/M/180	1,0	180°

Switches with LED indication

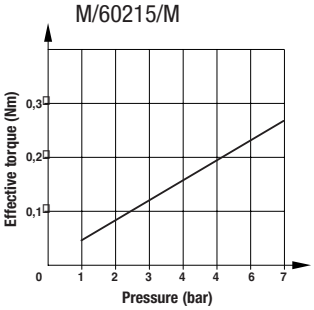
Straight cable connection	90° elbow cable connection	Description
M/346/LAU/*PV	–	Reed
M/345/EAU/**PV	M/346/EAU/*APV	2-wire solid state
M/345/EAN/**PV		3-wire solid state

* Insert cable length - 1 or 5 m.

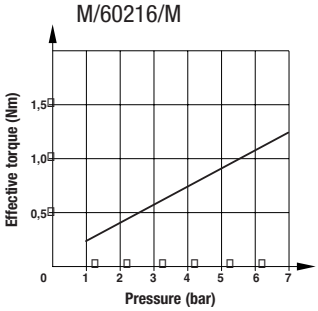
** Insert cable length - 1 or 3 m.

Effective torque

M/60215/M



M/60216/M



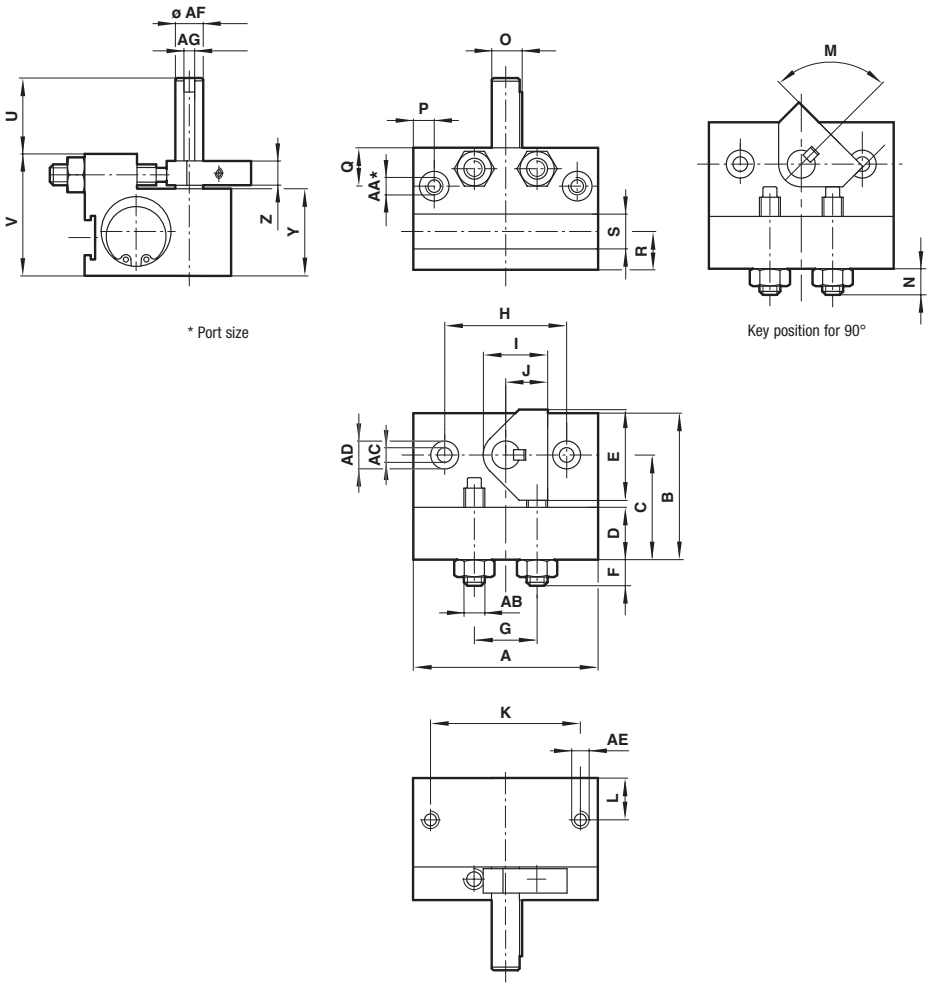
Miniature rotary actuators

M/60210/M

Double acting

Magnetic piston

Ø 12 & 20 mm



Model	Ø	A	B	C	D	E	F	G	H	I	J	K	L	M	N
M/60215/M/90	12	42	30	20	7,5	22	6	14	24	15,3	10	34	8	90°	5,5
M/60215/M/180	12	55	30	20	7,5	22	6	14	24	15,3	10	34	8	90°	5,5
M/60216/M/90	20	53	42	30	15	26	8	18	35	18,5	12	43	12	90°	6,5
M/60216/M/180	20	20	72	42	30	15	26	8	18	35	18,5	12	43	12	90°

Model	Ø	O	P	Q	R	S	U	V	Y	Z	AA	AB	AC
M/60215/M/90	12	7,2	6	10,5	8	10	15	28	20	7	M5 x 0,8	M5 x 0,8	Ø 3,3
M/60215/M/180	12	7,2	6	8	8	10	15	28	20	7	M5 x 0,8	M5 x 0,8	Ø 3,3
M/60216/M/90	20	9,2	6	11	11	10	20	35	25,5	7	M5 x 0,8	M6 x 1	Ø 4,2
M/60216/M/180	20	9,2	6	11	11	10	20	35	25,5	7	M5 x 0,8	M6 x 1	Ø 4,2

Model	Ø	AD	AE	AF	AG	kg
M/60215/M/90	12	Ø 6,5 deep 3,5 (M4 x 0,7 deep 10 on rear face)	M4 x 0,7 deep 8	Ø 6 + 0,01/- 0,03	3 - 0,025	0,11
M/60215/M/180	12	Ø 6,5 deep 3,5 (M4 x 0,7 deep 10 on rear face)	M4 x 0,7 deep 8	Ø 6 + 0,01/- 0,03	3 - 0,025	0,14
M/60216/M/90	20	Ø 8 deep 3,5 (M5 x 0,8 deep 15 on rear face)	M5 x 0,8 deep 10	Ø 8 + 0,01/- 0,03	3 + 0,03	0,25
M/60216/M/180	20	Ø 8 deep 3,5 (M5 x 0,8 deep 15 on rear face)	M5 x 0,8 deep 10	Ø 8 + 0,01/- 0,03	3 + 0,03	0,32

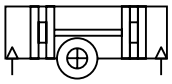
Compact rotary actuators

M/60270/M

Double acting

Magnetic piston

Ø 14 to 22 mm



High torque levels from a compact product

Minimal radial or thrust shudder means smooth operation

Adjustable angle of rotation

Integral magnets for positional feedback

Technical data

Medium:

Compressed air filtered,lubricated or non-lubricated

Operating pressure:

1 to 7 bar

Operating temperature:

+ 5°C to + 60°C

Consult our Technical Service for use below +2°C

Mounting:

Mounting holes on three faces

Rotation angle:

90°, 180°

Adjustable ± see table

Materials

Body: aluminium alloy

End covers: aluminium alloy

Shaft: carbon steel

External shaft cover and screws: mild steel

External nuts: mild steel

External screws: chrome molybdenum steel

Standard models

Model	Effective torque (Nm) at 6 bar	Angle of rotation	Angle adjustment range
M/60270/M/90	1,5	90°	70° ... 95°
M/60270/M/180	1,5	180°	160° ... 185°
M/60271/M/90	2,6	90°	70° ... 95°
M/60271/M/180	2,6	180°	160° ... 185°
M/60272/M/90	4,6	90°	70° ... 95°
M/60272/M/180	4,6	180°	160° ... 185°
M/60273/M/90	7,4	90°	70° ... 95°
M/60273/M/180	7,4	180°	160° ... 185°

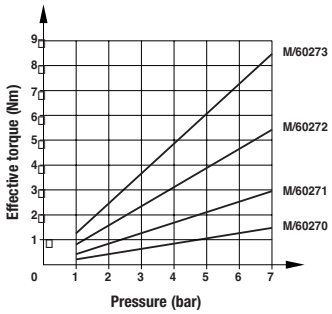
Switches with LED indication

Straight cable connection	90° elbow cable connection	Description
M/346/LAU/*PV	–	Reed
M/345/EAU/**PV	M/346/EAU/*APV	2-wire solid state
M/345/EAN/**PV		3-wire solid state

* Insert cable length - 1 or 5 m.

** Insert cable length - 1 or 3 m.

Effective torque



Compact rotary actuators

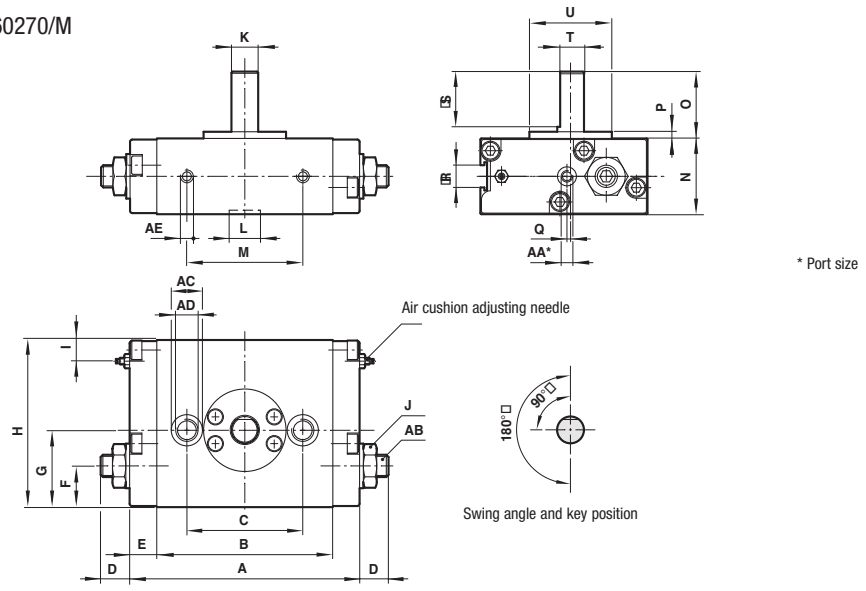
M/60270/M

Double acting

Magnetic piston

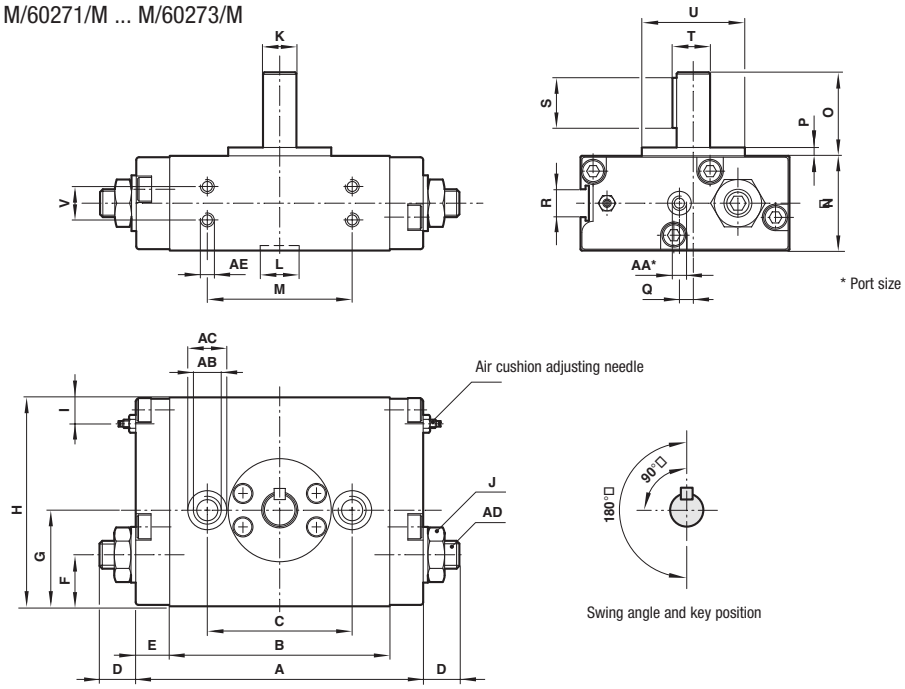
Ø 14 to 22 mm

M/60270/M



Model	Ø	A	B	C	D	E	F	G	H	I	J	K	L			
M/60270/M/*	14	88	68	48	11	10	17	29	60	8	10 A/F	Ø 8h7 - 0,015	Ø 10 + 0,05 deep 1,5			
Model	**Ø**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**AA**	**AB**	**AC**	**AD**	**AE**	**kg**
M/60270/M/*	14	45	28	20	2	1,5	10	16	7	Ø 26 - 0,05	M5 x 0,8	M6 x 1	Ø 9,5 deep 5,5	M6 x 1	M5 x0,8 deep 6	0,46

M/60271/M ... M/60273/M



Model	Ø	A	B	C	D	E	F	G	H	I	J	K	L	M	N
M/60271/M/90	16	98	74	45	14	12	17,5	31	68	9,5	13 A/F	Ø 10h7 - 0,015	Ø 12 + 0,05 deep 2	45	32
M/60271/M/180	16	111	87	45	14	12	17,5	31	68	9,5	13 A/F	Ø 10h7 - 0,015	Ø 12 + 0,05 deep 2	45	32
M/60272/M/90	18	103	79	52	14	12	18,5	34,5	75	9,5	17 A/F	Ø 12h7 - 0,018	Ø 14 + 0,05 deep 1,8	52	34
M/60272/M/180	18	135	111	52	14	12	18,5	34,5	75	9,5	17 A/F	Ø 12h7 - 0,018	Ø 14 + 0,05 deep 1,8	52	34
M/60273/M/90	22	115	87	60	15	14	22	41	87,5	10	17 A/F	Ø 15h7 - 0,018	Ø 17 + 0,05 deep 2	60	39
M/60273/M/180	22	158	130	60	15	14	22	41	87,5	10	17 A/F	Ø 15h7 - 0,018	Ø 17 + 0,05 deep 2	60	39

Model	Ø	O	P	Q	R	S	T	U	V	AA	AB	AC	AD	AE	kg
M/60271/M/90	16	25	2,5	2	10	18	11,5	Ø 32 - 0,05	10	M5 x 0,8	M8 x 1,25	Ø 11 deep 6,5	M8 x 1,25	M4 X 0,7 deep 6	0,7
M/60271/M/180	16	25	2,5	2	10	18	11,5	Ø 32 - 0,05	10	M5 x 0,8	M8 x 1,25	Ø 11 deep 6,5	M8 x 1,25	M4 X 0,7 deep 6	0,8
M/60272/M/90	18	30	3	5	10	18	13,5	Ø 37 - 0,05	12	M5 x 0,8	M10 x 1,5	Ø 14 deep 8,5	M10 x 1,5	M5 X 0,8 deep 7	1,0
M/60272/M/180	18	30	3	5	10	18	13,5	Ø 37 - 0,05	12	M5 x 0,8	M10 x 1,5	Ø 14 deep 8,5	M10 x 1,5	M5 X 0,8 deep 7	1,2
M/60273/M/90	22	35	3	5	10	20	17	Ø 44 - 0,05	14	M5 x 0,8	M10 x 1,5	Ø 14 deep 8,5	M10 x 1,5	M6 X 1 deep 8	1,6
M/60273/M/180	22	35	3	5	10	20	17	Ø 44 - 0,05	14	M5 x 0,8	M10 x 1,5	Ø 14 deep 8,5	M10 x 1,5	M6 X 1 deep 8	1,8

Rotary vane actuators

M/60280

Double acting

30° to 270° rotation angles

Modern, compact design.

Suitable for torques from 0,058 to 402,46 Nm.

Fixed and adjustable rotation angles.

Single and double vane construction.

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting rotary vane with buffer cushioning

M/60280 – M/60288 and IE models – single vane

M/60284/TI – M/60288/TI and TE models – double vane

Operating pressure:

2 to 10 bar

3 to 7 bar (M/60280, M/60281, M/60281/IE)

2 to 7 bar (M/60282, M/60283, M/60282/IE,)

Operating temperature:

+5°C to +60°C

Consult our Technical Service for use below +2°C

Rotation angle:

See tables

Rotation tolerance:

0° to +4°: M/60280 - M/60283

0° to +3°: M/60284 - M/60288, M/60284/TI – M/60288/TI

-9° to +3°: M/60281/IE – M/60284/IE, M/60284/TE

Other features:

Featherkey supplied as standard for M/60283 to M/60288, M/60284/TI to M/60288/TI, M/60283/IE to M/60284/IE and M/60284/TE

Materials

Body: cast aluminium

Shaft: steel

Shaft bearing: sintered bronze

Seals: nitrile rubber

Standard models

Mini rotary vane actuators

Models with fixed or adjustable rotation angles

Model	Service kit	Torque at 6 bar (Nm)**	Single vane	Double vane	Rotation angle: 90°	180°	270°
M/60280/*	QM/60280/00	0,13	❍		❍	❍	
M/60281/*	QM/60281/00	0,35	❍		❍	❍	
M/60281/IE	QM/60281/00	0,35	❍			❍ (Adjustable from 30° to 180°)	
M/60282/*	QM/60282/00	1,04	❍		❍	❍	
M/60282/IE	QM/60282/00	1,04	❍			❍ (Adjustable from 30° to 180°)	
M/60283/*	QM/60283/00	1,91	❍		❍	❍	
M/60283/IE	QM/60283/00	1,91	❍			❍ (Adjustable from 30° to 180°)	
M/60284/*	QM/60284/00	4,02	❍		❍	❍	❍
M/60284/IE	QM/60284/00	4,02	❍			(Adjustable from 30° to 270°)	❍
M/60284/TI	QM/60284/TI/00	9,31		❍	❍		
M/60284/TE	QM/60284/TI/00	9,31		❍	❍ (Adjustable from 30° to 90°)		

* Insert rotation angle in degrees.

**Theoretical torque.

Rotary vane actuators

Models with fixed rotation angles

Model	Service kit	Torque at 6 bar (Nm)**	Single vane	Double vane	Rotation angle: 90°	180°	270°
M/60285/*	QM/60285/00	5,78	❍		❍	❍	❍
M/60285/TI	QM/60285/TI/00	12,55		❍	❍		
M/60286/*	QM/60286/00	17,65	❍		❍	❍	❍
M/60286/TI	QM/60286/TI/00	40,69		❍	❍		
M/60287/*	QM/60287/00	33,83	❍		❍	❍	❍
M/60287/TI	QM/60287/TI/00	87,39		❍	❍		
M/60288/*	QM/60288/00	120,91	❍		❍	❍	❍
M/60288/TI	QM/60288/TI/00	241,73		❍	❍		

* Insert rotation angle in degrees.

**Theoretical torque.

Options selector

M/6028★/★★/★★★

Size
0,1, 2, 3, 4, 5, 6, 7, 8

Rotation (°)	
Standard only	See tables

Variants	Substitute
Single vane	None
Single vane	IE
Double vane	TI
Double vane	TE

Note: Disregard option positions not used.

End position detection and hydro-cushion kits are available – see page.167

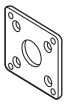
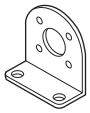
Rotary vane actuators

M/60280

Double acting

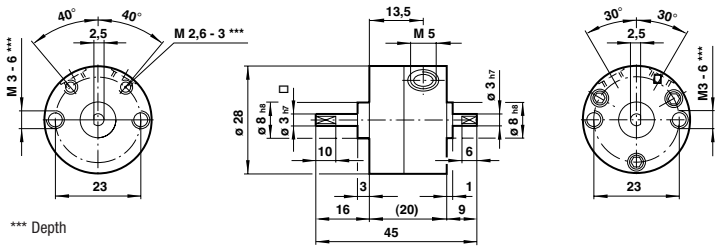
30° to 270° rotation angles

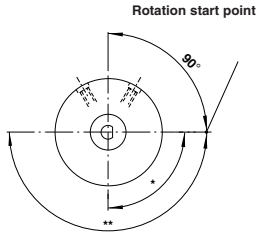
Mountings

Ø	B & G	C
		
M/60280	QM/60280/22	QM/60280/21
M/60281, .../IE	QM/60281/22	QM/60281/21
M/60282, .../IE	QM/60282/22	QM/60282/21
M/60283, .../IE	QM/60283/22	QM/60283/21
M/60284, .../IE, .../TI, ...TE	QM/60284/22	QM/60284/21
M/60285, .../TI	QM/60285/22	QM/60285/21
M/60286, .../TI	QM/60286/22	QM/60286/21
M/60287, .../TI	–	QM/60287/21
M/60288, .../TI	–	QM/60288/21

Standard mini rotary vane actuators

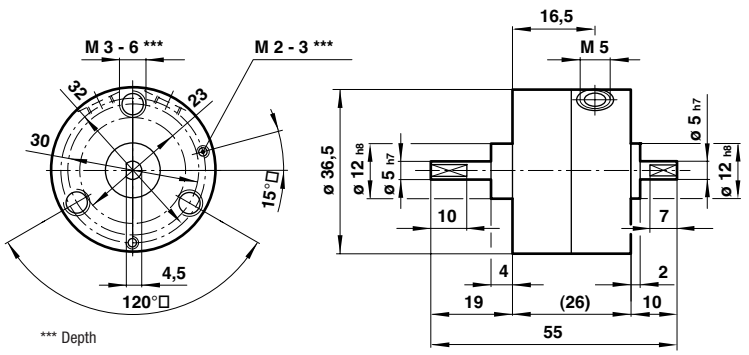
M/60280 - Mini rotary vane - angle of rotation: 90°, 180°

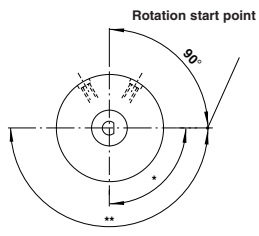




* Angle of rotation 90° (+4°)
** Angle of rotation 180° (+4°)

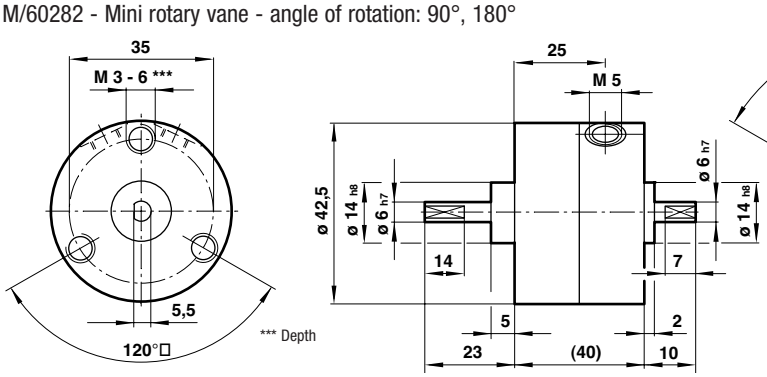
M/60281 - Mini rotary vane - angle of rotation: 90°, 180°

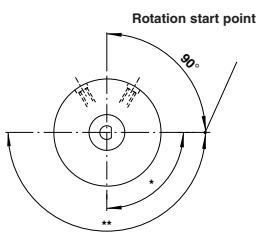




* Angle of rotation 90° (+4°)
** Angle of rotation 180° (+4°)

M/60282 - Mini rotary vane - angle of rotation: 90°, 180°





* Angle of rotation 90° (+4°)
** Angle of rotation 180° (+4°)

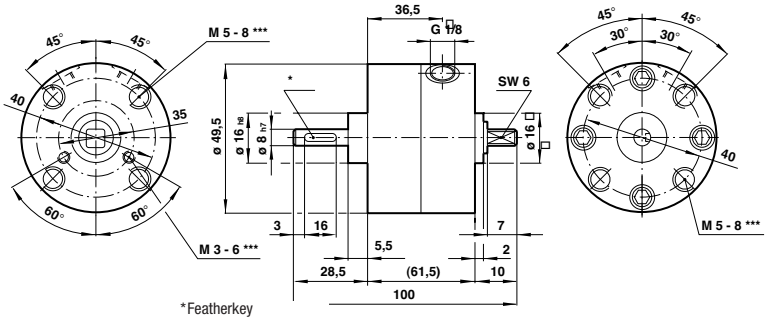
Rotary vane actuators

M/60280

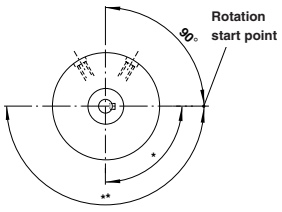
Double acting

30° to 270° rotation angles

M/60283 - Mini rotary vane - angle of rotation 90°, 180°



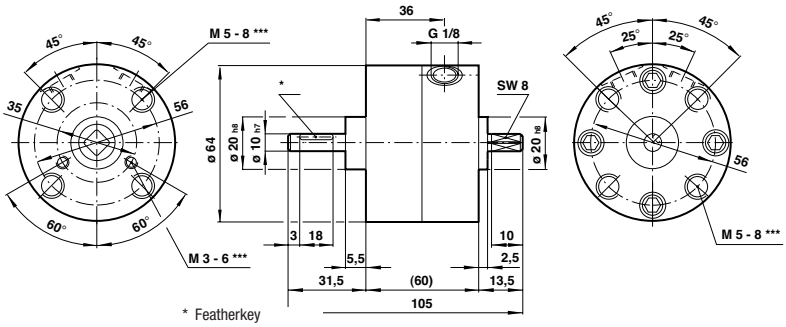
*Featherkey
*** Depth



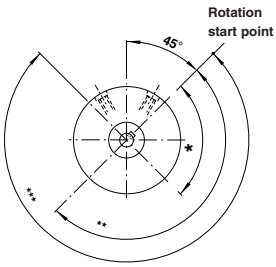
* Angle of rotation 90° (+3°)
** Angle of rotation 180° (+3°)

M/60284 - Mini rotary vane - angle of rotation 90°, 180°, 270°
M/60284/TI - Mini rotary vane - angle of rotation 90°

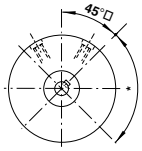
M/60284/TI



* Featherkey
*** Depth

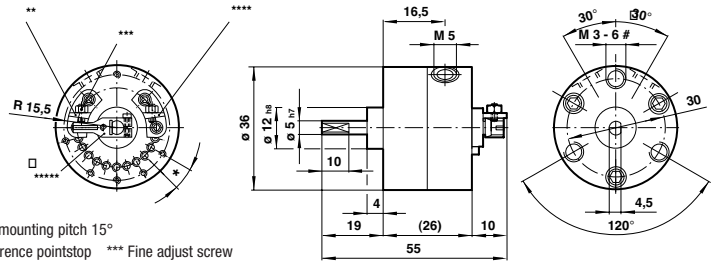


* Angle of rotation 90° (+3°)
** Angle of rotation 180° (+3°)
*** Angle of rotation 270° (+3°)

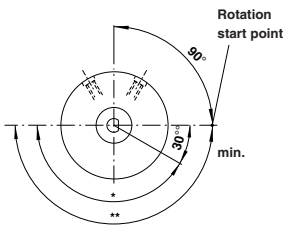


* Angle of rotation 90° (+3°)

M/60281/IE - Mini rotary vane - angle of rotation 30° to 180°

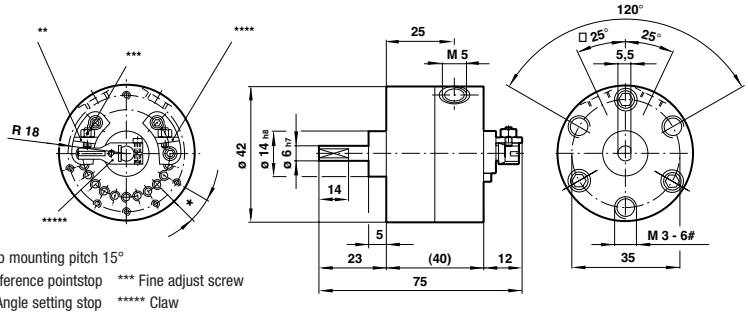


* Stop mounting pitch 15°
** Reference pointstop *** Fine adjust screw
**** Angle setting stop ***** Claw
# Depth

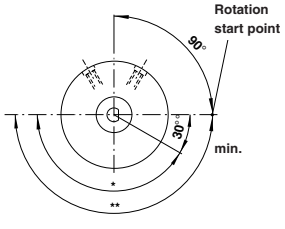


** Max. angle of rotation 180° (+4°)

M/60282/IE - Mini rotary vane - Angle of rotation 30° to 180°



* Stop mounting pitch 15°
** Reference pointstop *** Fine adjust screw
**** Angle setting stop ***** Claw
****** Featherkey # Depth



** Max. angle of rotation 180° (+4°)

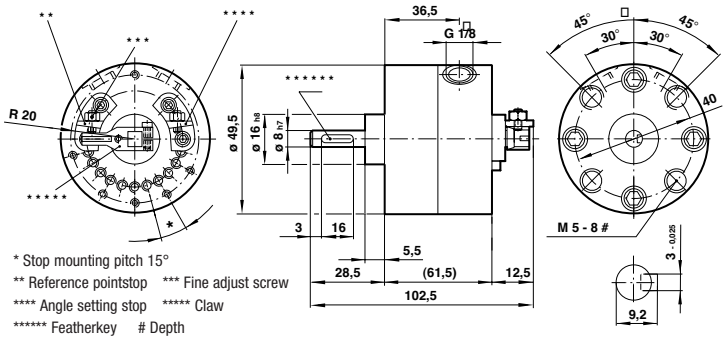
Rotary vane actuators

M/60280

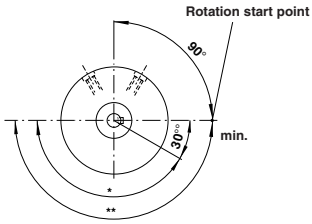
Double acting

30° to 270° rotation angles

M/60283/IE - Mini rotary vane - angle of rotation 30° to 180°



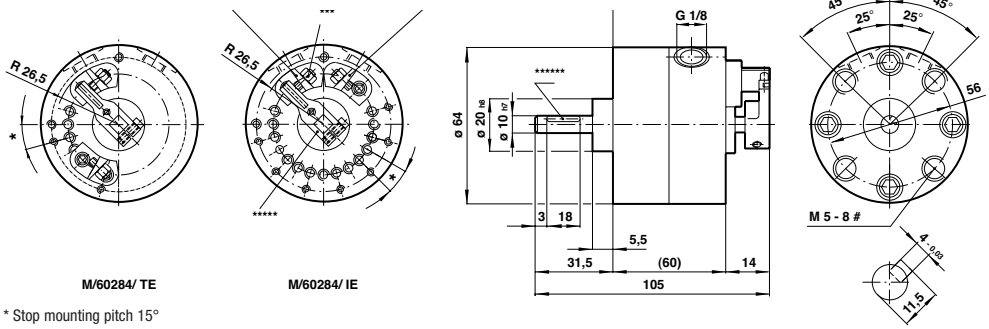
* Stop mounting pitch 15°
** Reference pointstop *** Fine adjust screw
**** Angle setting stop ***** Claw
****** Featherkey # Depth



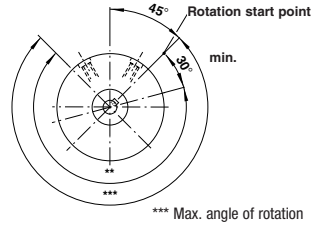
** Max. angle of rotation 180° (+4°)

M/60284/IE

M/60284/IE - Mini rotary vane - angle of rotation 30° to 270°
M/60284/TE - Mini rotary vane - angle of rotation 30° to 90°

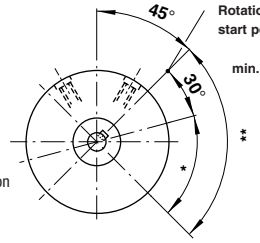


* Stop mounting pitch 15°
** Reference pointstop *** Fine adjust screw
**** Angle setting stop ***** Claw
****** Featherkey # Depth



*** Max. angle of rotation 270° (+3°)

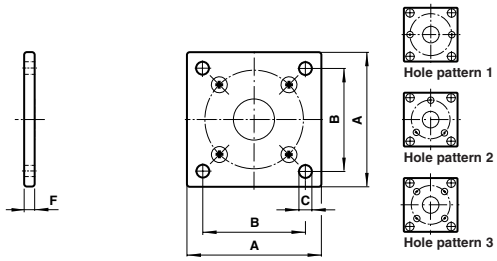
M/60284/TE



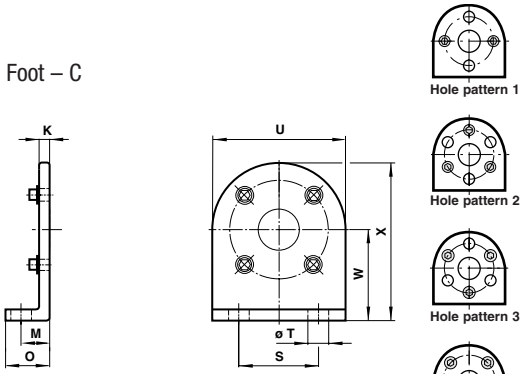
* Angle of rotation setting range 60°
** Max. angle of rotation 90° (+3°)

Mountings

Flange – G



Foot – C



Model	A	B	Ø C	F	Hole pattern	Rotation angle*	kg
M/60280	30	24	3,4	2	1	180°	0,04
M/60281	37	30	3,4	2,5	2	120°	0,07
M/60282	42	34	3,5	3,2	2	120°	0,14
M/60283	50	41	5,5	3,6	3	90°	0,36
M/60284	64	52	5,5	3,6	3	90°	0,47

Model	K	M	O	S	Ø T	U	W	X	Hole pattern	Rotation angle*	kg
M/60280	2	110	5	20	4,8	30	22	37	1	90°	0,04
M/60281	2,6	11	7	26	4,8	36	25	43	2	60°	0,05
M/60282	3,2	12	8	30	5,8	42	30	51	3	60°	0,09
M/60283	3,6	15	10	36	7	49	34	58,5	4	90°	0,20
M/60284	4,5	18	12	48	6,5	66	42	75	4	90°	0,20

Rotary vane actuators

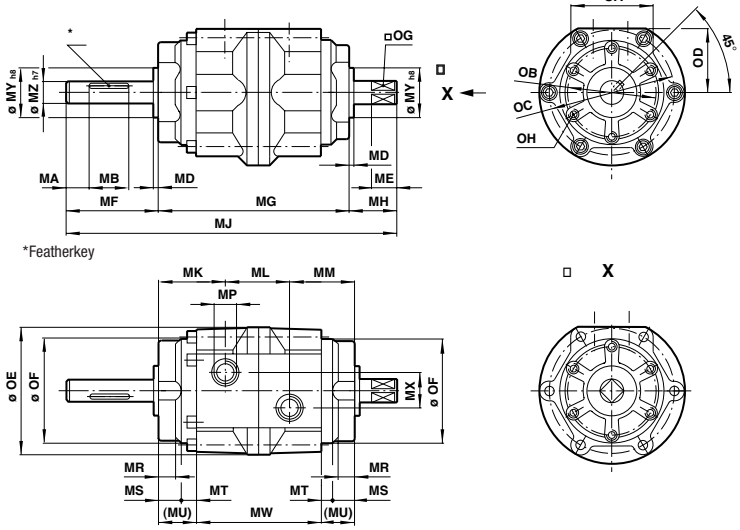
M/60280

Double acting

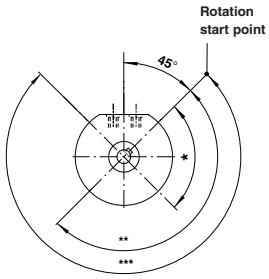
30° to 270° rotation angles

Standard rotary vane actuators

M/60285, M/60286, M/60287, M/60288 - angle of rotation: 90°, 180°, 270°
M/60285/TI, M/60286/TI, M/60287/TI, M/60288/TI - angle of rotation: 90°



*Featherkey



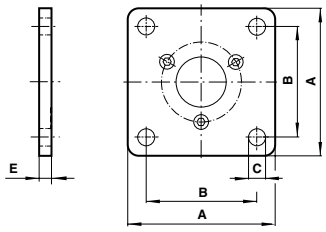
*Angle of rotation 90° (+3°)
**Angle of rotation 180° (+3°)
***Angle of rotation 270° (+3°)

Model	MA	MB	MD	ME	MF	MG	MH	MJ	MK	ML	MM	MP	MR	MS	MT	MU
M/60285/*	5	20	2,5	13	39,5	86	19,5	145	29	28	29	G1/8	11	14	6	20
M/60286/*	5	36	3	16	53,5	103	23,5	180	34,5	34	34,5	G1/4	10,5	15,5	8	23,5
M/60287/*	5	40	3,5	22	65	125	30	220	41,5	42	41,5	G3/8	13	17,5	10	27,5
M/60288/*	10	40	4,5	35	69,5	171	44,5	285	53,5	64	53,5	G1/2	14,5	21,1	11,4	32,5

Model	MW	MX	Ø MY h8	Ø MZ h7	OA	Ø OB	ØOC	OD	Ø OE	Ø OF	OG -0,1	OH	Keyway	kg
M/60285/*	46	16	25	12	44	45	68	36	79	58	10	M6x9 deep	4-0,03-2,5+0,1 deep	0,82
M/60286/*	56	24	30	17	61	70	97	51	110	85,2	13	M8x12 deep	5-0,03-3+0,1 deep	2,0
M/60287/*	70	32	45	25	78	80	125	66	141,5	110	19	M10x15 deep	7-0,038-4+0,2 deep	4,3
M/60288/*	106	44	70	40	110	120	173	90	196	152	32	M12x18 deep	12-0,043-5+0,2 deep	12,7

Mountings

Flange – B, G



Model	A	B	Ø C	E	Rotation angle*	kg
M/60285, .../TI	80	64	7	4,5	60°	0,20
M/60286	110	88	9	6	60°	0,51

* The B and G mountings can be rotated through the angle shown.

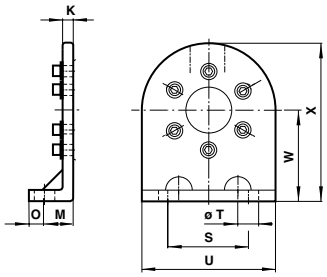
Rotary vane actuators

M/60280

Double acting

30° to 270° rotation angles

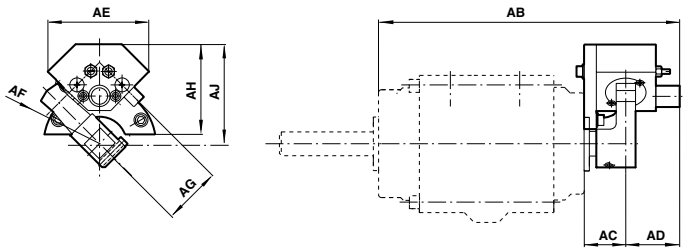
Foot – C



Model	K	M	O	S	ØT	U	W	X	Rotation angle*	kg
M/60285, .../TI	4,5	25	10	55	11	75	45	82,5	60˚	0,26
M/60286, .../TI	10	28	12	80	13	110	65	115	60˚	1,14
M/60287, .../TI	12	32	13	100	15	140	80	135	60˚	1,24
M/60288, .../TI	15	35	15	140	15	200	110	185	60˚	4,45

* The C mounting can be rotated through the angle shown.

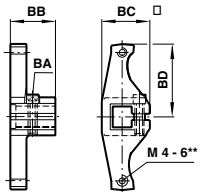
Hydro-cushion kit



Model	AB	AC	AD	AE	AF	AG	AH	AJ
QM/60285/60	136,5	20,5	30	56	38	34	50	54
QM/60286/60	159,5	22,5	34	80	51	46	62	71,5
QM/60287/60	187,5	25,5	37	95	68	62	87	95

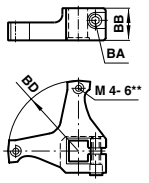
Claw

Angle of rotation 90°



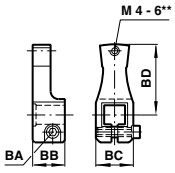
** Depth

Angle of rotation 180°



** Depth

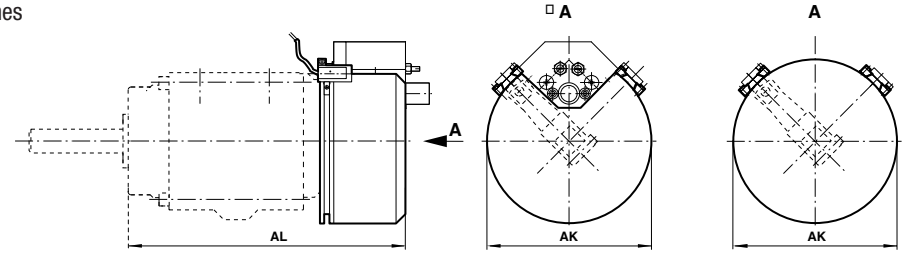
Angle of rotation 270°



** Depth

Model				Actuator	BA (A/F)	BB	BC	BD
M/P70088	(90°)	M/P70089 (180°)	M/P70090 (270°)	M/60285	4	18	23	38
M/P70091	(90°)	M/P70092 (180°)	M/P70093 (270°)	M/60286	5	20	28	51
M/P70094	(90°)	M/P70095 (180°)	M/P70096 (270°)	M/60287	6	23,5	40	68

Mounting kit for switches



Mounting kit for 2 switches (without hydro-cushion)	Mounting kit for 2 switches (with hydro-cushion)	Ø AK	AL
QM/60285/22/64	QM/60285/23/64	85	123
QM/60286/22/64	QM/60286/23/64	111	143
QM/60287/22/64	QM/60287/23/64	145	169

Switches M/40, M/41 or M/42 see page 199

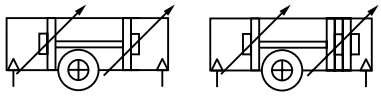
Rotary cylinders

Rack & pinion version

M/162000, .../M

Double acting

Ø 32 to 125 mm



Suitable torques from 1,2 to 51,0 Nm/bar

Rotation angles 90°, 180°, 270°, 360°

Adjustable cushioning

Male and female pinion available

Switches can be mounted flush with the profile

VDMA 24562 pitch to use standard VDMA mountings

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

M/162000

Double acting, non-magnetic piston adjustable cushioning

M/162000/M

Double acting, magnetic piston, adjustable cushioning

Operating pressure:

1,5 to 10 bar

Operating temperature:

-5°C to +80°C max.

Consult our Technical Service for use below +2°C

Rotation angles:

90, 180, 270, 360°

Fixed up to +8°

Adjustable ±5°

Additional angles on request

Materials

Profile barrel: anodised aluminium

End covers: pressure diecast aluminium

Central body: anodised aluminium

Rack: normalized steel

Pinion: surface hardened high strength steel

Pinion bearings: ball bearings (Ø 32 teflon bronze bearings)

Rack guide shoe: acetal resin

Piston seals: polyurethane O-rings: nitrile rubber

Options selector

M/162★★★/★★★/★★★

Cylinder diameters (mm)	Substitute
32	032
40	040
50	050
63	063
80	080
100	100
125	125

Cylinder variants	Substitute
Non-magnetic piston	I
Magnetic piston	M

Standard rotation angle	Substitute
90°	90
180°	180
270°	270
360°	360

Pinion variants	Substitute
Male pinion	None
Female pinion	X

Tolerances of rotation angle	Substitute
Adjustable ± 5°	E
Fixed up to +8°	I

Note: If option is not required, disregard option position within part number eg. M/162100/ME/90.

Theoretical torque & cushioning

Ø	Theoretical torque (Nm) at 1 bar	Cushion length (mm)	Initial cushion volume (cm^3)
32	1,2	19	12,3
40	2,3	22	20,7
50	3,9	24	36
63	7,3	24	64
80	15,7	27	116
100	26,3	34	242
125	51,0	41	451

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

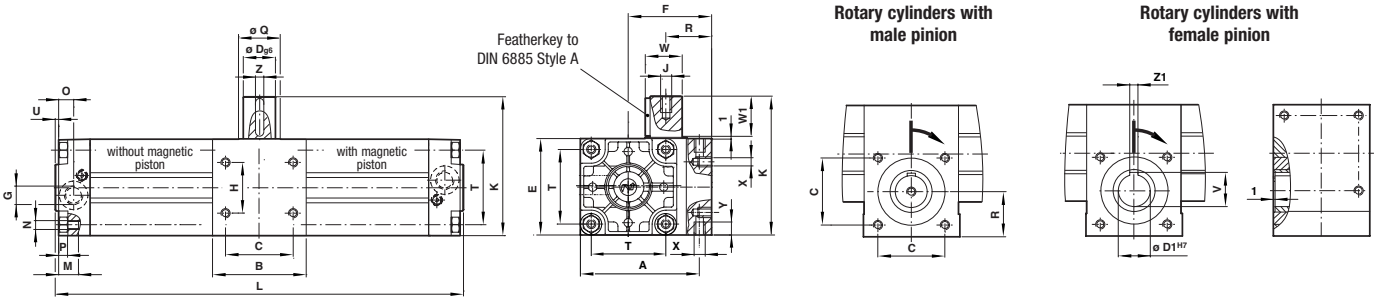
*Insert cable length – 2, 5 or 10 m. For details see page 198

Rotary cylinders
Rack & pinion version
M/162000, .../M

Double acting

Ø 32 to 125 mm

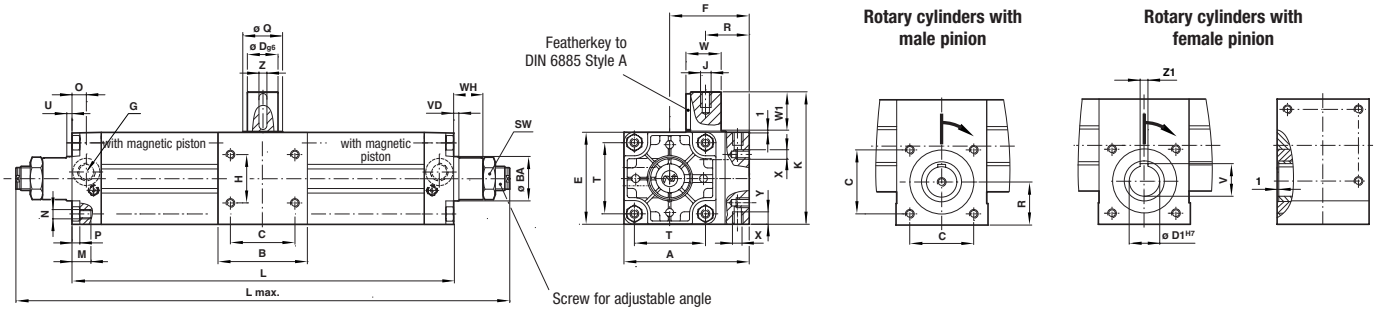
Standard cylinders
M/162000/★I★/Angle – Rotary cylinders with fixed angle (up to +8°)



Ø	A	B	C	Ø D	Ø D1	E	F	G	H	J	K	L (90°)	L (180°)	L (270°)	L (360°)	M	N
32	71,5	50	33	14	14	50	46,5	G 1/8	18	M 5	81	227	274	321	368,5	18	M 6
40	82	60	40	14	14	60	54,5	G 1/4	22	M 5	91	266	323	379,5	436	18	M 6
50	94	70	50	19	19	65	60,5	G1/4	25	M 6	106	282	345	408	471	18	M 8
63	110	75	60	24	19	75	71	G3/8	35	M 8	116	331	406	480,5	555	17,5	M 8
80	142	99	80	28	24	99	93,5	G3/8	50	M 8	150	396	495	594	693	21,5	M 10
100	156,5	115	80	38	28	115	99	G 1/2	60	M 10	166	414	521	628	735	21,5	M 10
125	188	125	90	38	28	140	118	G 1/2	70	M 10	191	483,5	615,5	747,5	879,5	32	M 12

Ø	O	P	Ø Q	R	T	U	V	W	W1	X	Y	Z	Z1
32	13	4	25	25	32,5	3	16,3	16	30	M 6	10	5	5
40	15	4	25	30	38	3,5	16,3	16	30	M 6	10	5	5
50	18,5	5	30	32,5	46.5	3,5	21,8	21,5	40	M 8	13	6	6
63	19	5	30	37	56.5	4	21,8	27	40	M 8	13	8	6
80	19	–	45	50	72	4	27,3	31	50	M 10	16	8	8
100	18	–	50	54	89	4	31,3	41	50	M 10	16	10	8
125	20	–	60	60	110	6	31,3	41	50	M 12	20	10	8

M/162000/★E★/Angle – Rotary cylinders with adjustable angle (±5°)



Ø	A	B	Ø BA	C	Ø D	Ø D1	E	F	G	H	J	K	L (90°)	L (180°)	L (270°)	L (360°)	L max. (90°)	L max. (180°)	L max. (270°)	L max. (360°)	M	N	O
32	71,5	50	30	33	14	14	50	46,5	G 1/8	18	M 5	81	221	268	315	362,5	303	350	397	444,5	18	M 6	13
40	82	60	35	40	14	14	60	54,5	G 1/4	22	M 5	91	259	316	372,5	429	350	407	463,5	519	18	M 6	15
50	94	70	40	50	19	19	65	60,5	G 1/4	25	M 6	106	275	338	401	464	379	442	505	568	18	M 8	18,5
63	110	75	45	60	24	19	75	71	G 3/8	35	M 8	116	323	398	472,5	555	431	506	580,5	655	17,5	M 8	19
80	142	99	45	80	28	24	99	93,5	G 3/8	50	M 8	150	388	487	586	685	514	613	712	811	21,5	M 10	19
100	156,5	115	55	80	38	28	115	99	G 1/2	60	M 10	166	406	513	620	727	540	647	754	861	21,5	M 10	18
125	188	125	60	90	38	28	140	118	G 1/2	70	M 10	191	471,5	603,5	735,5	867,5	631,5	763,5	895,5	1027,5	32	M 12	20

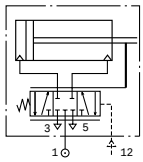
Ø	P	Ø Q	R	SW	SW1	T	V	VD	W	W1	WH	X	Y	Z	Z1
32	4	25	25	30	17	32,5	16,3	6	16	30	20	M 6	10	5	5
40	4	25	30	32	19	38	16,3	6	16	30	22	M 6	10	5	5
50	5	30	32,5	41	24	46,5	21,8	6	21,5	40	27	M 8	13	6	6
63	5	30	37	41	24	56,5	21,8	6	27	40	29	M 8	13	8	6
80	-	45	50	46	27	72	27,3	6	31	50	33	M 10	16	8	8
100	-	50	54	46	27	89	31,3	6	41	50	36	M 10	16	10	8
125	-	60	60	55	32	110	31,3	15,5	41	50	45	M 12	20	10	8

In-line positioner cylinders

M/1525, M/1540

Double acting

Ø 2½" & 4"



Position directly proportional to input signal

High speeds with good repeatability

Vibration resistant – can be used in adverse conditions

Fail instroke on signal failure

Technical data

Medium:

Compressed air, filtered, non-lubricated.

Response time:

10 secs max. for 200 mm stroke

Steady state air consumption:

Less than 0,35 dm^3/sec.

Installation:

Air supply must incorporate a pre-filter and a high efficiency 5 µm filter

Operating pressure:

2 to 10 bar pneumatic models

Control pressure:

0,2 to 1,0 bar

Operating temperature:

-20°C to +80°C

Consult our Technical Service for use below +2°C

Sensitivity:

Within 0,007 bar

Repeatability:

Within 0,075% full stroke

Materials

Piston rod & valve spool: stainless steel

Piston rod end & zero adjuster: zinc plated steel

Valve bush: brass

Cylinder barrel, piston & valve body: aluminium alloy

Standard models

Ø	Useful force at 7 bar	Port size	Model
2½"	1222 N	G1/4	M/1525/*
4"	3118 N	G1/4	M/1540/*

* Insert stroke length in mm.

Standard strokes

Ø	75	125	160	200	250	320
2½"	❍	❍	❍	❍	❍	❍
4"	❍	❍	❍	❍	❍	❍

Other stroke lengths for all models are available in 50 mm increments up to a maximum of 320 mm.

Options selector

M/15★★/★★★

Cylinder diameters (inch)	Substitute
2½	25
4	40

Strokes (mm)
320 max

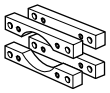
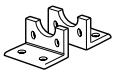
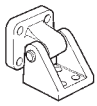
In-line positioner cylinders

M/1525, M/1540

Double acting

Ø 2½ & 4

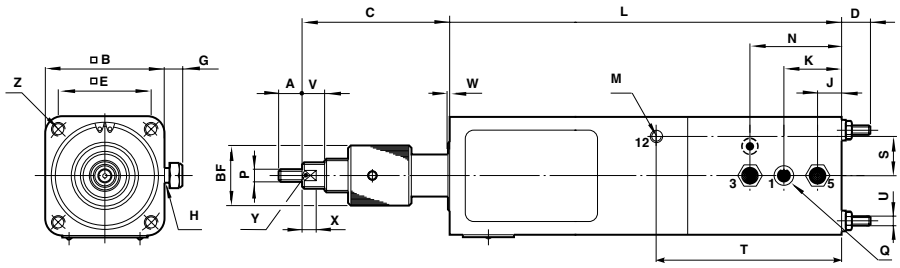
Mountings

Ø	B	BG	C	D	G	L	R	UF	UR
									
2½	QM/1063	QM/1065	QM/1066	QM/1067	QM/1064	QM/1069	QM/1086	QM/1073	QM/1074
4	QM/1075	QM/1077	QM/1078	QM/1079	QM/1076	QM/1084	QM/1087	QM/1073	QM/1085

Please see next page for details of mountings.

Standard cylinders

M/1525, M/1540



Ø	Stroke	A	B	C	D	E	F	G	H	J	K	L	M	N	P
2½"	75	15	76,8	93	17,5	55,9	38	11	G1/8 x 13 deep	16,5	38	288	G1/8	59	M10 x 1,5
2½"	125	15	76,8	93	17,5	55,9	38	11	G1/8 x 13 deep	16,5	38	338	G1/8	59	M10 x 1,5
2½"	200	15	76,8	93	17,5	55,9	38	11	G1/8 x 13 deep	16,5	38	413	G1/8	59	M10 x 1,5
4"	75	15	115	84,4	30,5	89	38	15	G1/4 x 20 deep	16,5	37,6	298,5	G1/8	59	M10 x 1,5
4"	125	15	115	84,4	30,5	89	38	15	G1/4 x 20 deep	16,5	37,6	348,5	G1/8	59	M10 x 1,5
4"	200	15	115	84,4	30,5	89	38	15	G1/4 x 20 deep	16,5	37,6	423,5	G1/8	59	M10 x 1,5

Ø	Q	R	S	U	V	W max.	X	Y A/F	Z	AA	BB	CC	EE	DD	kg
2½"	G1/4	38,4	23	M6 x 1	15	0,36	8	17	M6 x 1 x 22 deep	13	136,3	18,5	80	163	4,5
2½"	G1/4	38,4	23	M6 x 1	15	0,36	8	17	M6 x 1 x 22 deep	13	136,3	18,5	80	163	5,1
2½"	G1/4	38,4	23	M6 x 1	15	0,36	8	17	M6 x 1 x 22 deep	13	136,3	18,5	80	163	5,8
4"	G1/4	57,5	34	M8 x 1,25	15	1,1	8	17	M8 x 1,25 x 22 deep	13	174,5	18,6	80	163	9,2
4"	G1/4	57,5	34	M8 x 1,25	15	1,1	8	17	M8 x 1,25 x 22 deep	13	174,5	18,6	80	163	10,2
4"	G1/4	57,5	34	M8 x 1,25	15	1,1	8	17	M8 x 1,25 x 22 deep	13	174,5	18,6	80	163	11,3

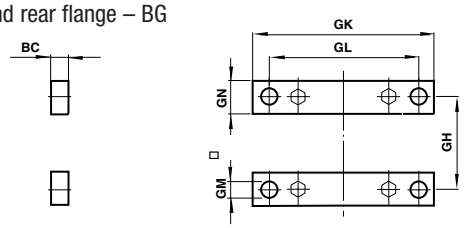
For piped exhaust discard exhaust filters fitted to threads 'H'.

In-line positioner cylinder mountings

For M/1525, M/1540

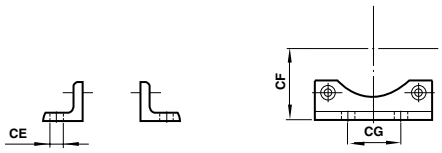
Mountings

Rear flange – B
Front flange – G
Front and rear flange – BG



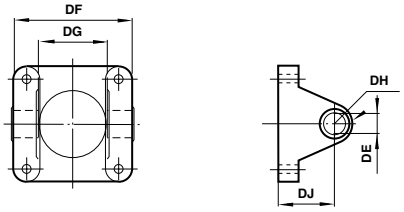
Ø	BC	GH	GK	GL	Ø GM	GN	kg
2½	10	56	113	93,5	8,7	20	0,25
4	16	89	178	146	13,5	32	1,0

Foot – C



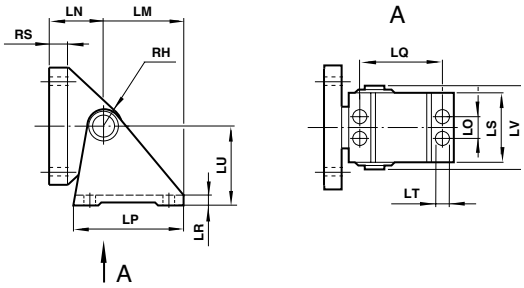
Ø	Ø CE	CF	CG	kg
2½	8,7	47	55,6	0,25
4	13,5	70	50,8	0,50

Rear clevis – D



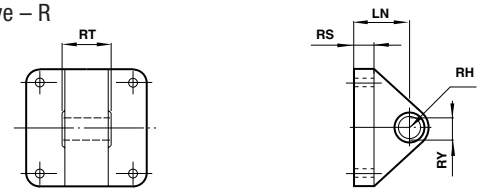
Ø	DE	DF	DG	DH	DJ	kg
2½	16	74	42,9	13	28,5	0,25
4	22	117,5	69,8	19	57	1,25

Rear hinge – L



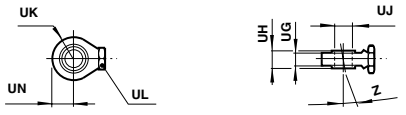
Ø	LM	LN	LP	LQ	LR	LO	LS	Ø LT	LU	LV	RH	RS	kg
2½	51	35	67	47,5	8	19	68,5	8,3	47,5	73	14,5	9,5	1,25
4	78	51	102	76	9,5	22	70	11,9	74,5	82,5	21	21	3,5

Rear eye – R



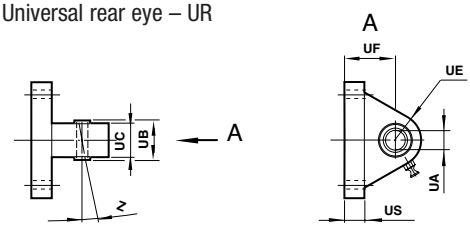
Ø	LN	RH	RS	RT	RY	kg
2½	35	14,5	9,5	38,1	16	0,80
4	51	21	21	44,5	18	2,60

Universal piston rod eye – UF

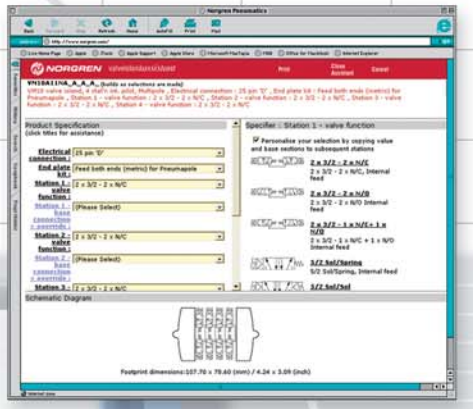


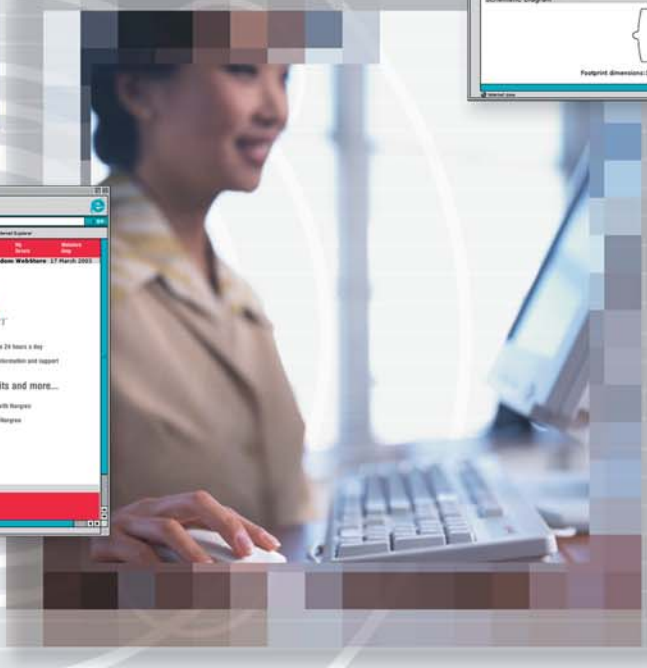
Ø	UG	UH	UJ	UK	UL (A/F)	UN	Z	kg
2½	14	10,5	10	15	17	15	10°	0,07
4	14	10,5	10	15	17	15	10°	0,07

Universal rear eye – UR



Ø	UA	UB	UC	UE	UF	US	Z	kg
2½	14	19	15	26	35	9	10°	0,6
4	14	19	15	26	50,8	21	10°	2,4





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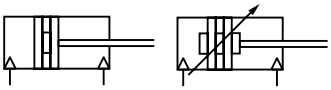
Stainless steel roundline cylinders (ISO)

KM/8000/M

Double acting, ISO 6432

Ø 12 to 25 mm



High corrosion and acid resistance

New magnetic piston as standard

Conforms to ISO 6432

Suitable for applications in the food industry

Buffer or adjustable cushioning

Nose mounting nut and piston rod locknut as standard

Optional port arrangement for compact installation

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting, magnetic piston with buffer or adjustable cushioning

Operating pressure:

1 to 10 bar

Operating temperature:

-10°C to +80°C max.

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Non-standard up to 500 mm maximum

Materials

Barrel: X5 Cr Ni 18 10 (1.4301; AISI 304)

End covers: X10 Cr Ni S 18 9 (1.4305; AISI 303)

Piston rod: X10 Cr Ni S 18 9 (1.4305; AISI 303)

Piston: POM

Buffer: polyurethane

Piston rod seal: polyurethane

Piston and cushion seal: nitrile rubber

O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Magnetic	Service kit
12	6	M5	KM/8012/M/*	KQM/8012/00
16	6	M5	KM/8016/M/*	KQM/8016/00
20	8	G1/8	KM/8020/M/*	KQM/8020/00
25	10	G1/8	KM/8025/M/*	KQM/8025/00

* Insert stroke length in mm. Cylinder sizing and speed control see page 6

Standard strokes

(buffer cushioning)

Ø	10	25	40	50	80	100	125	160	200	250
12	❍	❍	❍	❍	❍	❍	❍	❍	❍	
16	❍	❍	❍	❍	❍	❍	❍	❍	❍	
20	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
25	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Standard strokes

(adjustable cushioning)

Ø	25	40	50	80	100	125	160	200	250
20	❍	❍	❍	❍	❍	❍	❍	❍	❍
25	❍	❍	❍	❍	❍	❍	❍	❍	❍

Options selector

KM/8/★★★/★★/★★★

Cylinder diameters (mm) Variants with buffer cushioning	Substitute
12	012
16	016
20	020
25	025

Cylinder diameters (mm) Variants with adjustable cushioning	Substitute
20	021
25	026

Strokes (mm)
500 max.

Variants	Substitute
Standard	M
Flat rear cover	MF
Double ended piston rod	JM
Extended piston rod	MU
KM/8***/MU/***/*** → Extension (mm)	

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

Stainless steel roundline cylinders (ISO)

KM/8000/M

Double acting, ISO 6432

Ø 12 to 25 mm

Mountings

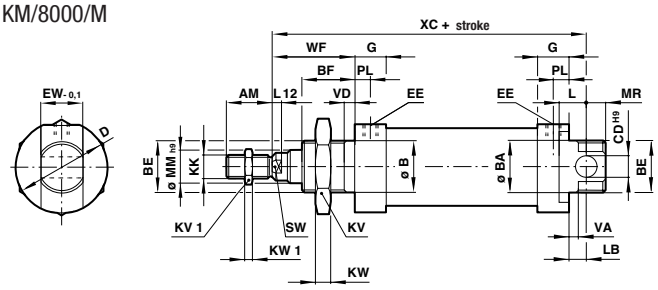
Ø	B, G	C	F	L	N	Switch mounting brackets # > 15 mm stroke	Switch mounting brackets # < 15 mm stroke
							
12	M/P72405	M/P72403	KQM/8012/25	KQM/8012/24	M/P72398	QM/33/012/22	QM/33/010/23
16	M/P72405	M/P72403	KQM/8012/25	KQM/8012/24	M/P72398	QM/33/016/22	QM/33/016/23
20	M/P72406	M/P72404	KQM/8020/25	KQM/8020/24	M/P72399	QM/33/020/22	QM/33/020/23
25	M/P72406	M/P72404	KQM/55433/25	KQM/8020/24	M/P72399	QM/33/025/22	QM/33/025/23

Please see page 18 for details of mountings.

For use with switches M/50, see page 198.

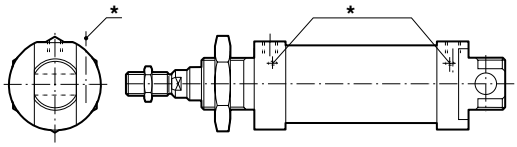
Standard cylinders

KM/8000/M



Cylinder variants

KM/8021/M, KM/8026/M – Cylinders with adjustable cushioning

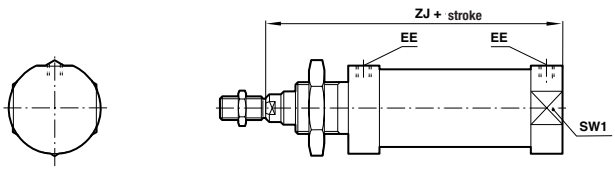


* Cushion screws

Ø	AM	Ø B/BA	BE	BF	Ø CD H9	Ø D	EE	EW -0,1	G	KK	KV (A/F)	KV1 (A/F)	KW
12	16	16	M16x1,5	17	6	20	M5	11,9	9,5	M6	22	10	5
16	16	16	M16x1,5	17	6	20	M5	11,9	9,5	M6	22	10	5
20	20	22	M22x1,5	20	8	30	G1/8	15,9	15	M8	27	13	8
25	20	22	M22x1,5	22	8	30	G1/8	15,9	15	M10x1,25	27	17	8
Ø	**KW1**	**L**	**L12**	**LB**	**Ø MM h9**	**MR**	**PL**	**SW (A/F)**	**WF**	**VA/VD**	**XC**	**kg at 0 mm**	**kg per 25 mm**
12	3	9	3	3	6	8	5,5	5	22	2	75	0,116	0,011
16	3	9	3	4	6	7	5,5	5	22	2	82	0,137	0,012
20	4	12	3	3	8	11	8	7	24	2	95	0,306	0,018
25	5	12	4	7	10	9	8	9	28	2	104	0,383	0,028

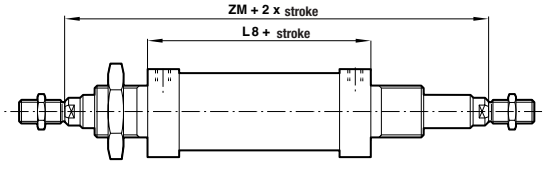
Cylinder variants

KM/8000/MF – Cylinders with flat rear cover



Ø	EE	ZJ	SW1 (A/F)
12	M5	72	17
16	M5	78	17
20	G1/8	92	27
25	G1/8	97	27

KM/8000/JM – Cylinders with double ended piston rod



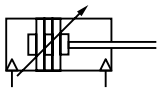
Ø	L8	ZM
16	56	100
20	68	116
25	69	125

Stainless steel (Clean line) roundline cylinders (ISO)

KM/55001/M

Double acting, ISO 6431

Ø 32 to 125 mm



Clean line design
High corrosion and acid resistance
Magnetic piston as standard
Conforms to ISO 6431
Suitable for applications in the food industry
Adjustable cushioning
Nose mounting nut and piston rod lock nut as standard
Special wiper/seal as standard

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated

Operation:
Double acting with magnetic piston, adjustable cushioning

Operating pressure:
1 to 10 bar

Operating temperature:
-20°C to +80°C
Maximum 150°C with heat resistant seals
Consult our Technical Service for use below +2°C

Strokes:
Non-standard strokes (1600 mm max.) available.

Materials

Barrel: X5 Cr Ni 18 10 (1.4301, AISI 304)
End covers: X10 Cr Ni S 18 9 (1.4305, AISI 303)
Piston rod: X10 Cr Ni 18 9 (1.4305, AISI 303)
O-rings: FPM
Piston seals: polyurethane
Cushion seals: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Magnetic	Service kit
32	12	G1/8	KM/55033/M/*	KQM/55032/00
40	16	G1/4	KM/55041/M/*	KQM/55040/00
50	20	G1/4	KM/55051/M/*	KQM/55050/00
63	20	G3/8	KM/55064/M/*	KQM/55063/00
80	25	G3/8	KM/55081/M/*	KQM/55080/00
100	25	G1/2	KM/55101/M/*	KQM/55100/00
125	32	G1/2	KM/55126/M/*	KQM/55125/00

* Insert stroke length in mm Cylinder sizing and speed control see page 6

Options selector

★KM/55★★★/★★/★★★★

Special variants	Substitute
Heat-resistant seals, 150°C max.	T

Strokes (mm)
1600 max.

Cylinder diameter (mm)	Substitute
32	033
40	041
50	051
63	064
80	081
100	101
125	126

Variants	Substitute
Standard	M
Threaded front end cover	MF
Double ended piston rod	JM
Extended piston rod	MU
*KM/55***/MU/***/*** → Extension (mm)	

Note: Disregard option positions not used.
For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

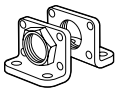
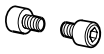
Stainless steel (Clean line) roundline cylinders (ISO)

KM/55001/M

Double acting, ISO 6431

Ø 32 to 125 mm

Mountings

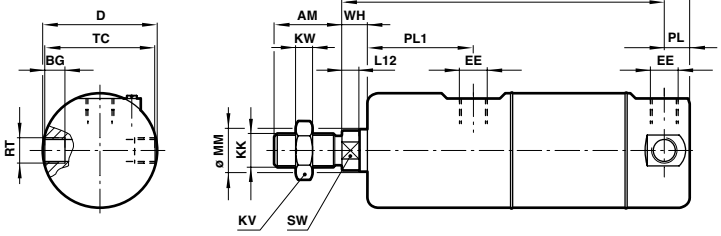
Ø	C	F	G	H	L	N	Switch mounting brackets #
							
32	KQM/55433/21	KQM/55433/25	M/P34297	QM/55232/28	KQM/55032/24	M/P34276	QM/33/432/22
40	KQM/55441/21	KQM/55441/25	M/P34298	QM/55240/28	KQM/55040/24	M/P34277	QM/33/440/22
50	KQM/55451/21	KQM/55451/25	M/P34299	QM/55250/28	KQM/55050/24	M/P34278	QM/33/450/22
63	KQM/55464/21	KQM/55451/25	M/P34300	QM/55263/28	KQM/55063/24	M/P34278	QM/33/463/22
80	–	KQA/8080/25	–	QM/55480/28	KQM/55080/24	–	QM/33/480/22
100	–	KQA/8080/25	–	QM/55410/28	KQM/55100/24	–	QM/33/100/22
125	–	KQA/8125/25	–	QM/55125/28	KQM/55125/24	–	QM/33/125/22

Please see next page for details of mountings.

For switches M/50, see page. 198

Standard cylinders

KM/55001/M



Ø	AM	BG	Ø D	EE	KK	KV (A/F)	KW	L12	Ø MM	PL
32	22	6	36	G 1/8	M10 x 1,25	17	5	6	12	9
40	24	8	44	G 1/4	M12 x 1,25	19	6	6,5	16	15
50	32	9,5	54	G 1/4	M16 x 1,5	24	8	8	20	12
63	32	10	68	G 3/8	M16 x 1,5	24	8	8	20	13
80	40	18	86	G 3/8	M20 x 1,5	30	10	10	25	16
100	40	22	106	G 1/2	M20 x 1,5	30	10	10	25	19
125	54	29	133	G 1/2	M27 x 2	41	13,5	13	32	17,5

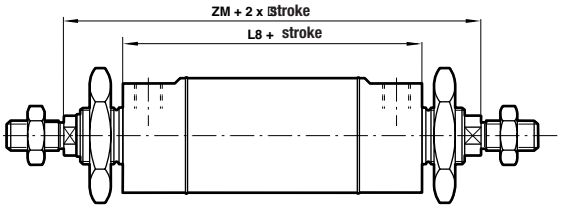
Ø	PL1	RT	SW	TC	WH	XL	ZB	kg at 0 mm	kg per 25 mm
32	39	M8 x 1	10	34,5	8	124,5	132	0,78	0,06
40	50	M10 x 1	13	42	10	142	154	1,36	0,09
50	50	M12 x 1,5	17	52	12	152	164	2,25	0,13
63	51	M14 x 1,5	17	66	13	159	172	3,78	0,16
80	47	M16 x 1,5	22	83,5	13	160	176	5,99	0,25
100	47	M20 x 1,5	22	102,5	15	178	197	10,36	0,29
125	62,5	M24 x 1,5	27	128,5	20	207,5	225	22,97	0,48

Stainless steel (Clean line)
Roundline cylinders (ISO)

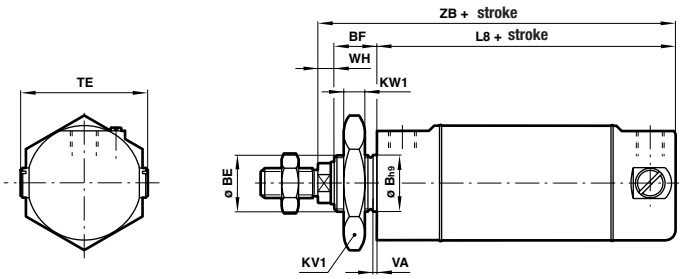
KM/55001/M

Cylinder variants

KM/55001/JM – Cylinder with double-ended piston rod

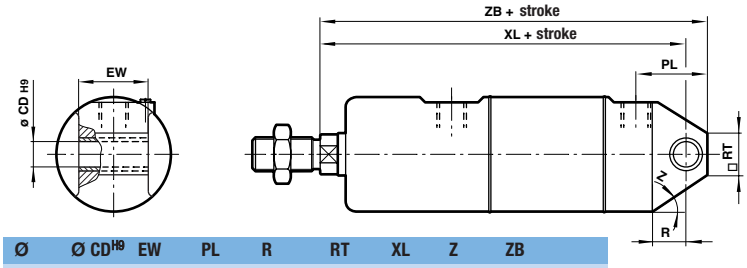


KM/55001/MF – Cylinder with threaded front end cover



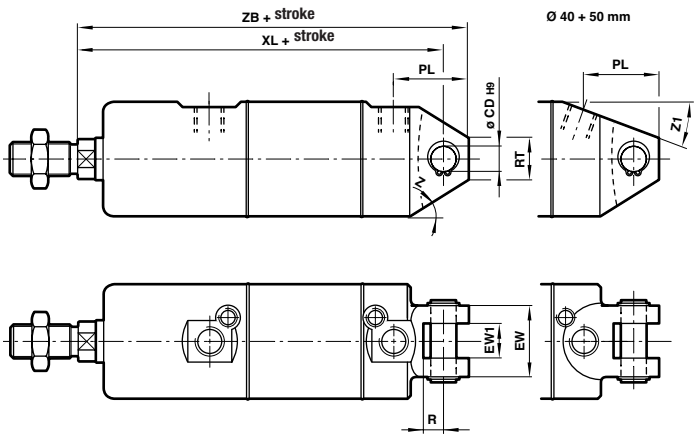
Ø	BE	BF	KV1	KW1	L8	TE	VA	ZM
32	M30 x 1,5	30	36	8	94	42,5	3	170
40	M38 x 1,5	35	46	10	109	50	3	199
50	M45 x 1,5	38	55	10	114	60	3	214
63	M45 x 1,5	38	55	10	121	74	3	223

KM/55001/M/R – Cylinder with rear eye mounting



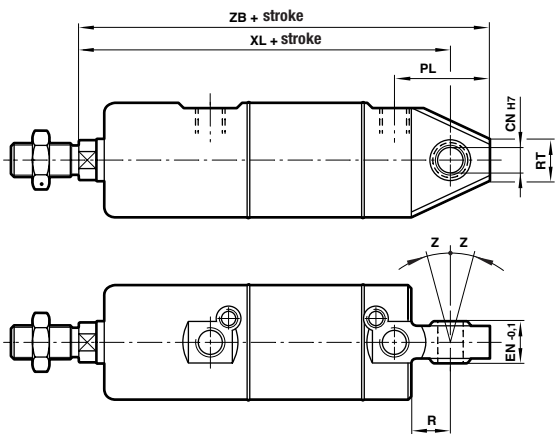
Ø	Ø CD H9	EW	PL	R	RT	XL	Z	ZB
32	10	25,8	29	14,5	19	142	20°	151
40	12	27,8	34	16	18	160	25°	172
50	12	31,7	33,5	19	24	170	30°	182
63	16	39,7	46	22	25,5	190	30°	205
80	16	49,7	65	24	41	210	30°	225
100	20	59,7	71	27	51	230	30°	250

M/55001/M/D2 – Cylinder with rear clevis mounting



Ø	Ø CD H9	EW	EW1 +0,2	PL	R	RT	XL	Z	Z1	ZB
32	10	26	14	30,5	16,5	19	142	20°	–	151
40	12	32	16	36,5	19,5	18	160	25°	15°	172
50	12	41	21	36,5	21,5	24	170	30°	20°	182
63	16	41	21	46	23,5	25,5	190	30°	–	205

M/55001/M/UR – Cylinder with universal rear eye mounting

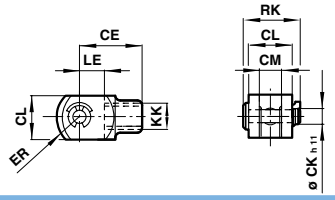


Ø	Ø CN H7	EN -0,1	PL	R	RT	XL	Z	ZB
32	10	14	36	14,5	17,5	142	13°	158
40	12	16	41	16	28,5	160	13°	178
50	16	21	42,5	19	34	170	13°	191
63	16	21	55	22	35,5	190	15°	213
80	20	25	78	24	37,5	210	15°	238
100	20	25	81	27	40,5	230	15°	260

Stainless steel (Clean line)
Roundline cylinders (ISO)
KM/55001/M

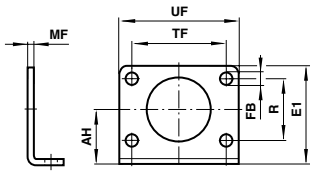
Mountings

Piston rod clevis – F
Corresponds to DIN ISO 8140



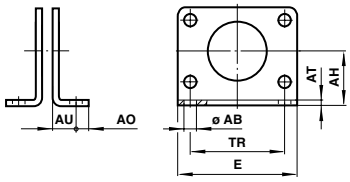
Ø	CE	Ø CK h11	CL	CM	ER	KK	LE	RK	kg
32	40	10	20	10	16	M10 x 1,25	20	28	0,09
40	48	12	24	12	19	M12 x 1,25	24	32	0,13
50	64	16	32	16	25	M16 x 1,5	32	41,5	0,33
63	64	16	32	16	25	M16 x 1,5	32	41,5	0,33
80	80	20	40	20	32	M20 x 1,5	40	58	0,67
100	80	20	40	20	32	M20 x 1,5	40	58	0,67
125	110	30	55	30	45	M27 x 2	54	72	1,35

Front flange – G, B



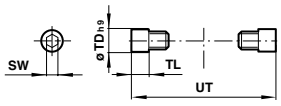
Ø	AH	E1	Ø FB	MF	R	TF	UF	kg
32	28	49	7	4	28	52	66	0,11
40	33	58	9	5	30	60	80	0,19
50	40	70	9	5	40	70	90	0,25
63	45	80	9	5	50	76	96	0,33

Foot – C



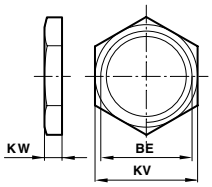
Ø	Ø AB	AH	AO	AT	AU	E	TR	kg
32	7	28	7	4	14	66	52	0,25
40	9	33	10	5	20	80	60	0,44
50	9	40	10	5	20	90	70	0,59
63	9	45	10	5	20	96	76	0,73

Central trunnion – H



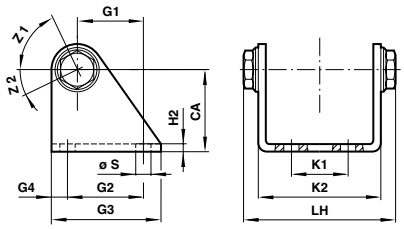
Ø	Ø TD h9	TL	UT	kg
32	10	8	51	0,02
40	12	9,5	63	0,03
50	14	11	76	0,05
63	16	13	93	0,07
80	18	13	111,5	0,09
100	20	13	131,5	0,25
125	25	20	168,5	0,32

Lock nut – N



Ø	BE	KV	KW	kg
32	M30 x 1,5	36	8	0,03
40	M38 x 1,5	46	10	0,06
50	M45 x 1,5	55	10	0,08
63	M45 x 1,5	55	10	0,08
80	M55 x 1,5	60	13	0,25
100	M55 x 1,5	80	13	0,25

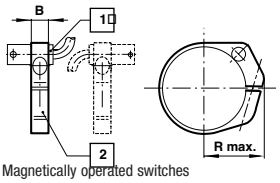
Rear hinge – L



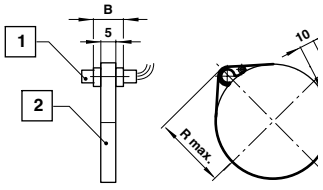
Ø	CA	G1	G2	G3	G4	Ø S	H2	K1	K2	LH	Z1	Z2
32	35	20	24	40	8	7	4	20	46,5	59,5	65°	36°
40	40	27	30	50	10	9	5	28	56,5	71	55°	32°
50	45	30	34	54	10	9	5	36	68,5	83	60°	30°
63	50	34	35	65	15	9	5	42	82,5	99	189°	25°
80	65	47,5	55	80	12,5	11	6	55	102,5	125,5	193°	27°
100	77	63	70	100	15	11	6	70	122,5	145,5	191°	25°
125	90	82,5	90	125	17,5	13,5	8	90	152,5	175,5	188°	22°

QM/33/***/22 – Switch mounting bracket

Ø 32 ... 80 mm



Ø 100 mm



* Magnetically operated switches
** Bracket

For switches M/50, QM/34, QM/134 (Ø 8 mm)

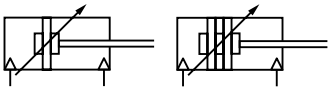
Ø	B	R max.
32	10	29
40	10	32
50	10	38
63	10	46
80	12	54
100	10	59
125	10	72,5

Stainless steel tie-rod cylinders (ISO/VDMA)

KA/8000, .../M

Double acting

Ø 32 to 200 mm



High corrosion and acid resistance

Conforms to ISO 6431, VDMA 24562 and NFE 49-003-1

Ideal for applications in the food industry

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Standard:

ISO 6431, VDMA 24562, NFE 49-003-1 and corresponding BS

Operation:

KA/8000 Double acting, adjustable cushioning

KA/8000/M Double acting, magnetic piston, adjustable cushioning

Operating pressure:

1 to 16 bar

Operating temperature:

-10°C to +80°C max.

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Non-standard strokes up to 2500 mm maximum

Materials

Barrel: X5 Cr Ni 18 10 (1.4301; AISI 304)

End covers and piston rod: X10 Cr Ni S 18 9 (1.4305; AISI 303)

Nuts and screws: X10 Cr Ni S 18 9 (1.4305; AISI 303)

Tie rods: X5 Cr Ni Mo 17 12 2 (1.4401; AISI 316)

Piston: aluminium

Cushion sleeve: POM

Piston rod seal and O-rings: FPM

Piston seals: polyurethane (Ø 32 to 100 mm) nitrile rubber (Ø 125 to 200 mm)

Cushion seals: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Magnetic	Non-magnetic	Service kit
32	12	G1/8	KA/8032/M/*	KA/8032/*	KQA/8032/00
40	16	G1/4	KA/8040/M/*	KA/8040/*	KQA/8040/00
50	20	G1/4	KA/8050/M/*	KA/8050/*	KQA/8050/00
63	20	G3/8	KA/8063/M/*	KA/8063/*	KQA/8063/00
80	25	G3/8	KA/8080/M/*	KA/8080/*	KQA/8080/00
100	25	G1/2	KA/8100/M/*	KA/8100/*	KQA/8100/00
125	32	G1/2	KA/8125/M/*	KA/8125/*	KQA/8125/00
160	40	G3/4	KA/8160/M/*	KA/8160/*	KQA/8160/00
200	40	G3/4	KA/8200/M/*	KA/8200/*	KQA/8200/00

* Insert stroke length in mm.

Cylinder sizing and speed control see page 6

Standard strokes

Ø	25	50	80	100	125	160	200	250	320	400	500
32	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
40	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
50	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
63	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
80	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
125	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
160	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
200	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Options selector

★KA/8★★★/★★/★★★★

Special variants	Substitute
Heat resistant seals, 150°C max.	T

Strokes (mm)
2500 max.

Cylinder diameters (mm)
032, 040, 050, 063, 080
100, 125, 160, 200

Variants (magnetic piston)	Substitute
Standard	M
Extreme duty wiper/seal	W2
Without cushioning	MW
Double ended piston rod	JM
Extreme duty wiper/seal, double ended piston rod	W4
Extended piston rod KA/8***/MU/***/*** → Extension (mm)	MU

Variants (non-magnetic piston)	Substitute
Standard	None
Extreme duty wiper/seal	W1
Without cushioning	W
Double ended piston rod	J
Extreme duty wiper/seal, double ended piston rod	W3
Extended piston rod KA/8***/IU/***/*** → Extension (mm)	IU

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

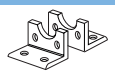
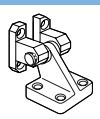
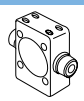
Stainless steel tie-rod cylinders (ISO/VDMA)

KA/8000, .../M

Double acting

Ø 32 to 200 mm

Mounting

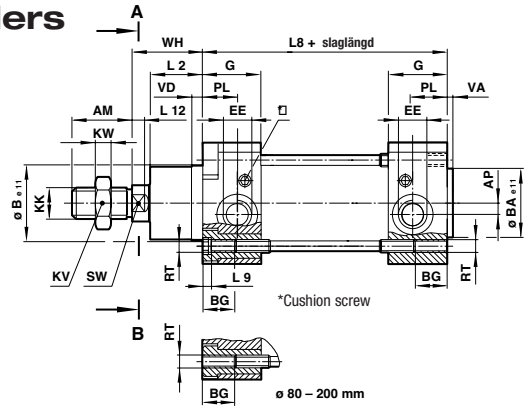
Ø	B, G	C	D	F	L	R	S	SW	UH	UR	Bracket for switches #
											
32	KQA/8032/22	KQA/8032/21	KQA/8032/23	KQM/55433/25	KQA/8032/24	QA/8032/27	KQA/8032/41	M/P72288	KQA/8032/40	QA/8032/33	QM/27/2/1
40	KQA/8040/22	KQA/8040/21	KQA/8040/23	KQM/55441/25	KQA/8040/24	QA/8040/27	KQA/8040/41	M/P72289	KQA/8040/40	QA/8040/33	QM/27/2/1
50	KQA/8050/22	KQA/8050/21	KQA/8050/23	KQM/55451/25	KQA/8050/24	QA/8050/27	KQA/8040/41	M/P72290	KQA/8050/40	QA/8050/33	QM/27/2/1
63	KQA/8063/22	KQA/8063/21	KQA/8063/23	KQM/55451/25	KQA/8063/24	QA/8063/27	KQA/8063/41	M/P72291	KQA/8063/40	QA/8063/33	QM/27/2/1
80	KQA/8080/22	KQA/8080/21	KQA/8080/23	KQA/8080/25	KQA/8080/24	QA/8080/27	KQA/8063/41	M/P72292	KQA/8080/40	QA/8080/33	QM/27/2/1
100	KQA/8100/22	KQA/8100/21	KQA/8100/23	KQA/8080/25	KQA/8100/24	QA/8100/27	KQA/8100/41	M/P72293	KQA/8100/40	QA/8100/33	QM/27/2/1
125	KQA/8125/22	KQA/8125/21	KQA/8125/23	KQA/8125/25	KQA/8125/24	–	KQA/8100/41	M/P72432	KQA/8125/40	–	QM/27/2/1
160	–	–	–	–	–	–	–	–	–	–	QM/27/2/1
200	–	–	–	–	–	–	–	–	–	–	QM/27/2/1

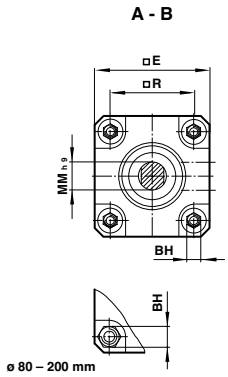
Please see page 33 for details of mountings.

For use with switches M/50, see page 198

Standard cylinders

KA/8000, KA/8000/M



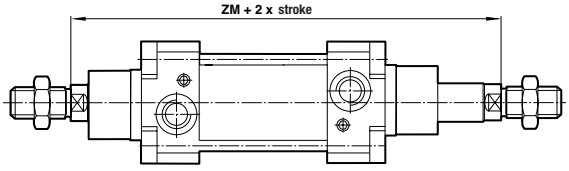


Ø	AM	AP	Ø B e11	Ø BA e11	BG	BH (A/F)	□ E	EE	G	KK	KV (A/F)	KW	L2
32	22	3,5	30	30	18	6	47	G 1/8	27,5	M10x1,25	17	5	20
40	24	4,5	35	35	18	6	53	G 1/4	32	M12x1,25	19	6	22
50	32	6	40	40	18	8	65	G 1/4	31	M16x1,5	24	8	27
63	32	10	45	45	17,5	8	75	G 3/8	33	M16x1,5	24	8	29
80	40	8,5	45	45	21,5	19	95	G 3/8	33	M20x1,5	30	10	33
100	40	9	55	55	21,5	19	115	G 1/2	37	M20x1,5	30	10	36
125	54	10	60	60	32	24	140	G 1/2	46	M27x2	41	13,5	45
160	72	18	65	65	28,5	32	180	G 3/4	50	M36x2	55	18	58
200	72	18	75	75	28,5	32	220	G 3/4	50	M36x2	55	18	67

Ø	L8	L9	L12	Ø MM h9	PL	□ R	RT	SW (A/F)	VA	VD	WH	kg at 0 mm	kg per 25 mm
32	94	4	6	12	13	32,5	M 6	10	3	6	26	1,12	0,06
40	105	4	6,5	16	15	38	M 6	13	3,5	6	30	1,65	0,08
50	106	5	8	20	18,5	46,5	M 8	17	3,5	6	37	2,57	0,13
63	121	5	8	20	19	56,5	M 8	17	4	6	37	3,95	0,14
80	128	–	10	25	19	72	M 10	22	4	6	46	6,64	0,30
100	138	–	10	25	20,5	89	M 10	22	4	6	51	10,67	0,34
125	160	–	13	32	20,5	110	M 12	27	6	15,5	65	20,82	0,51
160	180	–	16	40	21	140	M 16	36	4	15	80	37,3	0,88
200	180	–	16	40	21	175	M 16	36	5	15	95	59,0	1,14

Cylinder variants

KA/8000/JM – Cylinders with double ended piston rod



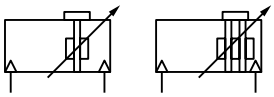
Ø	ZM	kg at 0 mm	kg per 25 mm
32	146	1,17	0,08
40	165	1,80	0,12
50	180	2,81	0,19
63	195	4,22	0,20
80	220	7,18	0,40
100	240	11,21	0,44
125	290	21,94	0,67
160	340	39,54	1,13
200	370	61,39	1,39

LINTRA® Corrosion-resistant rodless cylinders

VM/46000

Double acting

Ø 20 to 80 mm



New lightweight design extrusion with integral slots for switch mounting

Capable of withstanding large bending moments and lateral forces

Built-in guidance with internal and adjustable external options

Technical data

Medium:

Compressed air, filtered and lubricated or non-lubricated

Operation:

VM/46000, VM/46100:

Double acting, adjustable cushioning

VM/46000/M, VM/46100/M:

Double acting, adjustable cushioning, magnetic piston

Operating pressure:

1 to 10 bar

Operating temperature:

-30°C to +80°C

Consult our Technical Service for use below +2°C

Strokes:

Made to order, 3500 mm max.

Materials

End covers: aluminium (HCR® coated*)

Carriage: aluminium (HCR® coated*)

Yoke: moulded plastic – Ø 20 mm, aluminium (HCR® coated*) – Ø 25 to 80 mm

Barrel: extruded aluminium alloy (HCR® coated*)

Sealing strip & piston seals: polyurethane

Cover strip: polyamide

Seals: nitrile rubber

*HCR®: High Technology Synergistitic Coating

Standard models

Ø	Port size	Internal guide Non-magnetic	Magnetic	Service kit	External guide Non-magnetic	Magnetic	Service kit
20	G1/8	VM/46020/*	VM/46020/M/*	QM/46020/*/88	VM/46120/*	VM/46120/M/*	QM/46120/*/88
25	G1/8	VM/46025/*	VM/46025/M/*	QM/46025/*/88	VM/46125/*	VM/46125/M/*	QM/46125/*/88
32	G1/4	VM/46032/*	VM/46032/M/*	QM/46032/*/88	VM/46132/*	VM/46132/M/*	QM/46132/*/88
40	G1/4	VM/46040/*	VM/46040/M/*	QM/46040/*/88	VM/46140/*	VM/46140/M/*	QM/46140/*/88
50	G3/8	VM/46050/*	VM/46050/M/*	QM/46050/*/88	VM/46150/*	VM/46150/M/*	QM/46150/*/88
63	G1/2	VM/46063/*	VM/46063/M/*	QM/46063/*/88	VM/46163/*	VM/46163/M/*	QM/46163/*/88
80	G1/2	VM/46080/*	VM/46080/M/*	QM/46080/*/88	VM/46180/*	VM/46180/M/*	QM/46180/*/88

* Insert stroke length in mm. Cylinder sizing and speed control see page 6.

Note: Service kits are available in 1000 mm stroke multiples e.g. QM/46025/**1000**/88, QM/46025/**2000**/88 etc.

Options selector

VM/46★★★/★/★★★★

Guiding system	Substitute
Internal	0
External	1

Cylinder diameters (mm)	Substitute
20	20
25	25
32	32
40	40
50	50
63	63
80	80

Piston type	Substitute
Magnetic	M
Non-magnetic	None

Strokes (mm)
3500 max.

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Mounting

Ø	C	V
		
20	VQM/46020/21	VQM/46020/32
25	VQM/46025/21	VQM/46025/32
32	VQM/46032/21	VQM/46032/32
40	VQM/46040/21	VQM/46040/32
50	VQM/46050/21	VQM/46050/32
63	VQM/46063/21	VQM/46063/32
80	VQM/46080/21	VQM/46080/32

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable	Groove cover
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)	M/P72725/1000
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)	

*Insert cable length – 2, 5 or 10 m. For details see page 198

LINTRA® Corrosion-resistant rodless cylinders

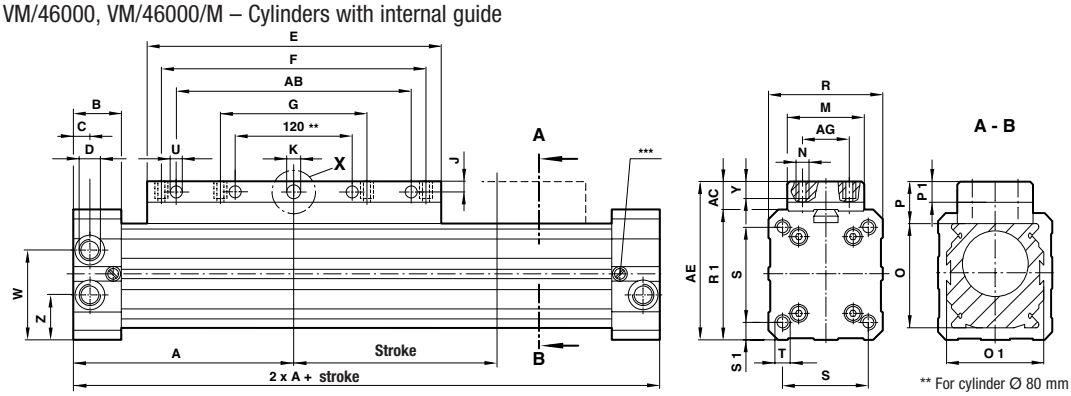
VM/46000

Double acting

Ø 20 to 80 mm

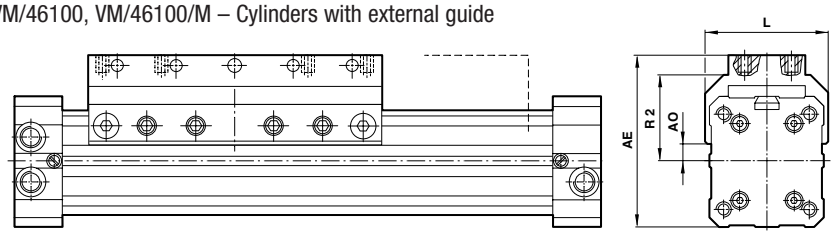
Standard cylinders

VM/46000, VM/46000/M – Cylinders with internal guide



** For cylinder Ø 80 mm
*** Cushion screw

VM/46100, VM/46100/M – Cylinders with external guide



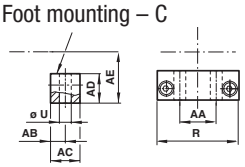
Ø	A	AB		AC	AE		AG	AO	B	C	D	E	F	G	J		K	M		N
20	85	–	(60)	14	54	(59)	18	(6,5)	23	8	G1/8	110	80	40	3,5	(7,5)	Ø4,2 D7	27	(5,5)	M5
25	100	–	(70)	12	60	(67,5)	20	(9,5)	23	14,5	G1/8	130	90	45	–	(5)	❑ 4,5	32	(5,5)	M5
32	120	–	(90)	16	76	(82)	25	(15,5)	27	10,5	G1/4	160	120	60	–	(5)	❑ 6	45	(5,5)	M5
40	150	–	(120)	15	90	(97,5)	25	(16,5)	30	11,5	G1/4	215	160	80	–	(5)	❑ 6	45	(6,6)	M6
50	180	–	(160)	20	110	(117)	25	(24)	35	14	G3/8	250	190	95	–	(6,5)	❑ 8	50	(9)	M8
63	215	–	(190)	20	125	(137)	25	(25,5)	40	17	G1/2	320	240	120	–	(7,5)	❑ 8	50	(9)	M8
80	260	240	(240)	24	154	(165)	25	(38)	45	17	G1/2	390	300	150	9	(10)	Ø12 E7	50	(12)	M10

Ø	O	O1	P	P1	R	R1	R2	S	S1	T	Ø U	W	Y	Z	kg at 0 mm	kg per 100 mm
20	32	32	18,5	–	40	40	(24)	32	4	M5-12 deep	–	– (12)	12	21,5	0,50	0,15
25	40	40	16	7,5	48	48	(34)	37	5,5	M5-13 deep	–	33 (12)	7	17	0,80	0,20
32	52	52	20	10	60	60	(42,5)	47	6,5	M6-17 deep	–	40 (12)	8	20	1,60	0,35
40	65	65	20	10	75	75	(49,5)	58	8,5	M8-20 deep	–	50 (12)	8	25	2,70	0,50
50	80	80	25	13	90	90	(58,5)	70	10	M8-18 deep	–	60 (17)	11	30	4,80	0,75
63	95	95	25	14	105	105	(68)	84	10,5	M10-24 deep	–	70 (20)	11	35	7,20	1,00
80	120	120	29	–	130	130	(81)	100	15	M12-26 deep	11	90 (25)	15	40	13,20	1,50

( ) for external guided.

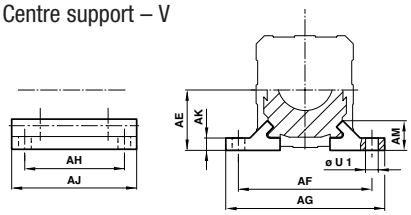
Mounting

Foot mounting – C



Ø	AA	AB	AC	AD	AE	R	ØU	kg
20	17	5	10	10	21,5	40	5,5	0,03
25	18	7	15	13,5	24	48	7	0,01
32	26	11	22	16,5	30,5	60	9	0,1
40	30	11	22	19,5	37,5	75	9	0,2
50	42	12	25	24	45	90	11	0,3
63	48	13	25	27,5	54	105	13	0,4
80	64	12,5	25	35	70	130	14	0,4

Centre support – V



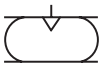
Ø	AE	AF	AG	AH	AJ	AK	AM	Ø U1	kg
20	21,5	52	62	45	60	4,5	12	5,5	0,03
25	24	60	72	60	80	5,5	13	6,6	0,04
32	30,5	76	92	70	100	6,5	18,5	9	0,07
40	37,5	92	108	90	120	7,5	18,5	9	0,2
50	45	110	128	110	140	7,5	18,5	11	0,2
63	54	132	154	120	160	9	25	13	0,3
80	70	155	180	140	180	12	28,5	14	0,4

Serviceable air bellows Stainless steel

KM/31000

Single acting

Ø 8 to 14½"



High corrosion and acid resistant materials

Frictionless operation

No maintenance or lubrication

Ideal for short stroke, high-force applications

High isolation level for vibrating machines

Very easy to install – no alignment problems

Technical data

Medium:

Compressed air, non-lubricated

Operation:

Single acting

Operating pressure:

8 bar max.

Operating temperature:

-40°C to +70°C for KM/31000 (Standard)

-25°C to +90°C for TKM/31000 (Butyl)

-20°C to +115°C for EKM/31000 (Epichlore)

Consult our Technical Service for use below +2°C

Strokes:

80 to 380 mm max., depending on diameter and number of convolutions.

Materials

End plates, fixing studs and central ring: stainless steel 1.4301

Rubber part: fabric reinforced NR-, SBR- and BR compound rubber (KM/31000), fabric reinforced butyl (TKM/31000), fabric reinforced Epichlore (EKM/31000)

Important note: The design of these air bellows allows an operation at an angle of 5° to 25°. The top and bottom plate can be out of alignment, depending on the height of the air bellow and the number of convolutions. To avoid damage, mechanical stops at both end positions have to be used. To return air bellows to their minimum height an external return force must be used. The thrust depends directly on the height of the air bellow: when height increases, the thrust decreases. As the outside diameter varies in operation there must be enough clearance around the air bellow.

Standard models

Model	Nominal Ø (inch) x convolutions	Maximum stroke (mm)	Port size
KM/31081	8 x 1	80	G1/2
KM/31082	8 x 2	175	G1/2
KM/31101	10 x 1	100	G1/2
KM/31102	10 x 2	225	G1/2
KM/31103	10 x 3	330	G1/2
KM/31121	12 x 1	100	G1/2
KM/31122	12 x 2	225	G1/2
KM/31123	12 x 3	330	G1/2
KM/31141	14½ x 1	125	G1/2
KM/31142	14½ x 2	265	G1/2
KM/31143	14½ x 3	380	G1/2

Options selector

★KM/31★★★

Air bellow materials	Substitute
High temperature (Butyl)	T
Extreme temperature (Epichlore)	E

No. of convolutions	Substitute
1	1
2	2
3	3

Nominal diameter (inch)	Substitute
8	08
10	10
12	12
14½	14

Note: disregard option positions not used.

Safety note: These actuators must not be pressurised when unrestrained.
For exact calculation for compact air bellows please contact our Technical Service.

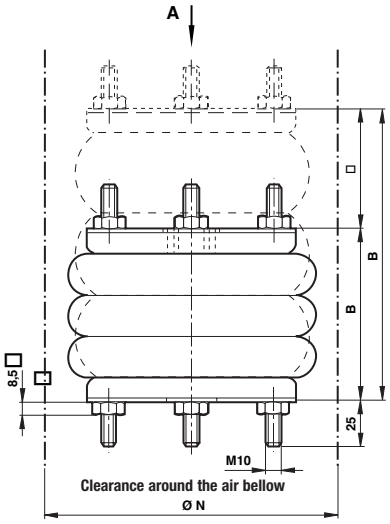
Serviceable air bellows
Stainless steel

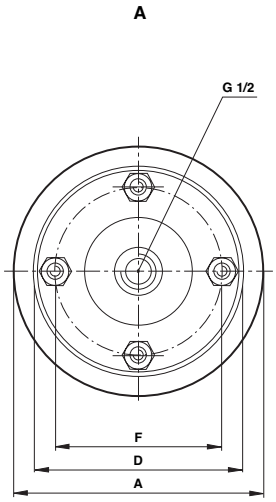
KM/31000

Single acting

Ø 8 to 14½"

KM/31000 Stainless steel – standard serviceable air bellows





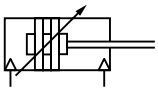
Model	Installation height B min. (mm)	B max. (mm)	Ø A	Ø D	Ø F	Ø N	kg
KM/31081	50	130	230	184	155,5	245	6,4
KM/31082	75	250	220	184	155,5	245	7,3
KM/31101	50	150	280	210	181	300	8,5
KM/31102	75	300	270	210	181	300	9,7
KM/31103	100	430	270	210	181	300	10,9
KM/31121	50	150	330	260	232	350	13,2
KM/31122	75	300	325	260	232	350	14,8
KM/31123	100	430	325	260	232	350	16,3
KM/31141	50	175	395	310	282,5	425	18,6
KM/31142	75	340	400	310	282,5	425	19,6
KM/31143	100	480	400	310	282,5	425	20,5

Clean line profile cylinders (ISO/VDMA)

PVA/8000/M

Double acting

Ø 32 to 100 mm



Conforms to ISO 6431, VDMA 24562 and NFE 49-003-1

Clean line profile design with concealed tie rods

New polyurethane seals ensure efficient low friction operation and long life

Food industry acceptable

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Standard:

ISO 6431, VDMA 24562, NFE 49-003-1 and corresponding BS and CETOP

Operation:

Double acting with magnetic piston and adjustable cushioning

Operating pressure:

1 to 16 bar

Operating temperature:

-20°C to +80°C max.

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Non-standard strokes up to 3000 mm maximum

Materials

Profile barrel: clear anodised aluminium

End covers: black anodised aluminium

Piston rod: stainless steel

Tie rod: stainless steel

Tie rods nuts: steel with certified protection for the food industry

Piston rod nuts: stainless steel

Cushion screws: stainless steel

Piston and piston rod seals: polyurethane

O-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Model Magnetic	Service kit
32	12	G1/8	PVA/8032/M/*	QA/8032/00
40	16	G1/4	PVA/8040/M/*	QA/8040/00
50	20	G1/4	PVA/8050/M/*	QA/8050/00
63	20	G3/8	PVA/8063/M/*	QA/8063/00
80	25	G3/8	PVA/8080/M/*	QA/8080/00
100	25	G1/2	PVA/8100/M/*	QA/8100/00

* Insert stroke length in mm. Cylinder sizing and speed control see page 6

Options selector

★PVA/8★★★/★★/★★★★

Special variants	Substitute
Heat resistant seals, 150°C max.	T
Hydraulic	H

Cylinder diameters (mm)
032, 040, 050, 063, 080, 100

Strokes (mm)
3000 max.

Variants (magnetic piston)	Substitute
Standard	M
Special wiper/seal	W2
Double ended piston rod	JM
Double ended piston rod, special wiper/seal	W4
Four position	MT
Extended piston rod	MU
PVA/8***/MU/***/*** → Extension (mm)	

Note: Disregard option positions not used.

For combinations of cylinder variants consult our Technical Service.

Standard strokes

Ø	25	50	80	100	125	160	200	250	320	400	500
32	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
40	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
50	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
63	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
80	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
100	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

Switches

With integral cable

With plug-in cable

	Model		Plug-in cable
Reed	M/50/LSU/*V	M/50/LSU/CP	M/P73001/5 (5 m)
Solid state	M/50/EAP/*V	M/50/EAP/CP	M/P73001/5 (5 m)

*Insert cable length – 2, 5 or 10 m. For details see page 198

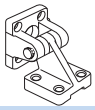
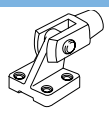
Clean line profile cylinders (ISO/VDMA)

PVA/8000/M

Double acting

Ø 32 to 100 mm

Mountings

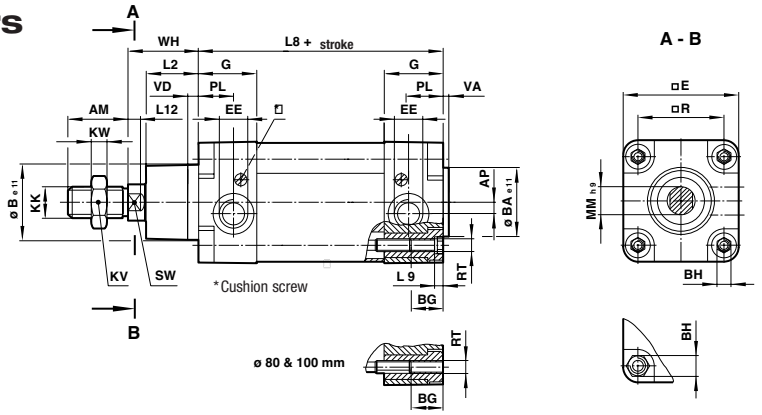
Ø	B, G	D	F	L	M	R	SW	UF	UR	Bracket for switches#
										
32	PVQA/8032/22	PVQA/8032/23	PVQM/8032/25	PVQA/8032/24	PVQM/8032/26	PVQA/8032/27	M/P40459	PVQM/8032/32	PVQA/8032/33	QM/33/P32/22
40	PVQA/8040/22	PVQA/8040/23	PVQM/8040/25	PVQA/8040/24	PVQM/8040/26	PVQA/8040/27	M/P40460	PVQM/8040/32	PVQA/8040/33	QM/33/P32/22
50	PVQA/8050/22	PVQA/8050/23	PVQM/8050/25	PVQA/8050/24	PVQM/8050/26	PVQA/8050/27	M/P40461	PVQM/8050/32	PVQA/8050/33	QM/33/P32/22
63	PVQA/8063/22	PVQA/8063/23	PVQM/8050/25	PVQA/8063/24	PVQM/8063/26	PVQA/8063/27	M/P40462	PVQM/8050/32	PVQA/8063/33	QM/33/P32/22
80	PVQA/8080/22	PVQA/8080/23	PVQM/8080/25	PVQA/8080/24	PVQM/8080/26	PVQA/8080/27	M/P40463	PVQM/8080/32	PVQA/8080/33	QM/33/P32/22
100	PVQA/8100/22	PVQA/8100/23	PVQM/8080/25	PVQA/8100/24	PVQM/8100/26	PVQA/8100/27	M/P40464	PVQM/8080/32	PVQA/8100/33	QM/33/P32/22

Please see page 76 for details of mountings.

For use with switches M/50 see page.198

Standard cylinders

PVA/8000/M

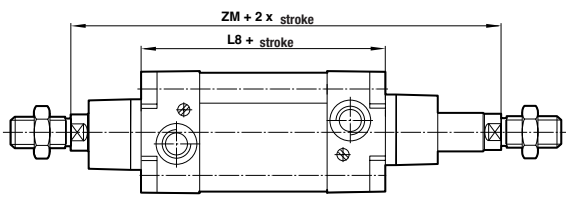


Ø	AM	AP	Ø B e11	Ø BA e11	BG	BH (A/F)	❑ E	EE	G	KK	KV (A/F)	KW	L2
32	22	3,5	30	30	18	6	47	G1/8	27,5	M10x1,25	17	5	20
40	24	4,5	35	35	18	6	53	G1/4	32	M12x1,25	19	6	22
50	32	6	40	40	18	8	65	G1/4	31	M16x1,5	24	8	27
63	32	10	45	45	17,5	8	75	G3/8	33	M16x1,5	24	8	29
80	40	8,5	45	45	21,5	19	95	G3/8	33	M20x1,5	30	10	33
100	40	9	55	55	21,5	19	115	G1/2	37	M20x1,5	30	10	36

Ø	L8	L9	L12	MM h9	PL	❑ R	RT	SW (A/F)	VA	VD	WH	kg at 0 mm	kg per 25 mm
32	94	4	6	12	13	32,5	M 6	10	3	6	26	0,64	0,06
40	105	4	6,5	16	15	38	M 6	13	3,5	6	30	0,95	0,08
50	106	5	8	20	18,5	46,5	M 8	17	3,5	6	37	1,51	0,12
63	121	5	8	20	19	56,5	M 8	17	4	6	37	2,10	0,13
80	128	-	10	25	19	72	M 10	22	4	6	46	3,75	0,20
100	138	-	10	25	18	89	M 10	22	4	6	51	5,61	0,23

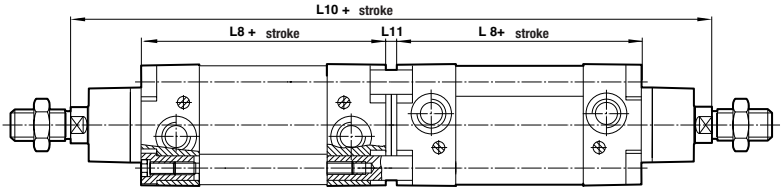
Cylinder variants

PVA/8000/JM – Cylinders with double ended piston rod



Ø	ZM	L8
32	146	94
40	165	105
50	180	106
63	195	121
80	220	128
100	240	138
125	290	160

PVA/8000/MT – Four position cylinders



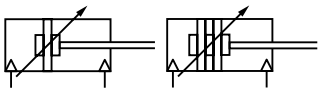
Ø	L 8	L 10	L 11
32	94	247	7
40	105	278	8
50	106	294	8
63	121	325	9
80	128	357	9
100	138	387	9

CNOMO Cylinders

CCN/032/... - CCN/200/...

Double acting

Ø 32 to 200 mm



Conform to CNOMO and AFNOR NF 49000

Ideal for a wide variety of industrial applications

Adjustable cushioning

Extensive choice of mountings

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated.

Operation:

CCN/000 Double acting, adjustable cushioning

CCN/000/W without cushioning,

CCN/000/M Double acting, adjustable cushioning, magnetic piston

Operating pressure:

1 to 12 bar

Operating temperature:

-20°C to + 80°C

Consult our Technical Service for use below +2°C

Strokes:

Standard, see table

Materials

Barrel: anodised aluminium

End covers: Ø 32 aluminium,

Ø 40-100 pressure diecast aluminium

Ø 125-200 gravity cast aluminium

Piston rod: chrome plated steel

Tie rods: zinc plated or stainless steel (CCN/032/M)

'O'-rings: nitrile rubber

Standard models

Ø	Piston rod Ø	Port size	Non-magnetic	Magnetic
32	12	G1/8	CCN/032/*	CCN/032/M/*
40	18	G1/4	CCN/040/*	CCN/040/M/*
50	18	G1/4	CCN/050/*	CCN/050/M/*
63	22	G3/8	CCN/063/*	CCN/063/M/*
80	22	G3/8	CCN/080/*	CCN/080/M/*
100	30	G1/2	CCN/100/*	CCN/100/M/*
125	30	G1/2	CCN/125/*	
160	40	G3/4	CCN/160/*	
200	40	G3/4	CCN/200/*	

*Insert stroke length in mm.

Standard strokes

Ø	25	50	75	100	150	200	250	300
32	❍	❍	❍	❍	❍	❍	❍	
40	❍	❍	❍	❍	❍	❍	❍	❍
50	❍	❍	❍	❍	❍	❍	❍	❍
63		❍	❍	❍	❍	❍	❍	❍
80		❍	❍	❍	❍	❍	❍	❍
100			❍	❍	❍	❍	❍	❍

Non-standard strokes available.

Options selector

★CN/★★★/★★/★★★★/★

Piston rod material	Substitute
Chrome plated steel (standard)	C
Stainless steel (Martensitic)	R
Stainless steel (Austenitic)	S

Cylinder diameter (mm)	Substitute
32	032
40	040
50	050
63	063
80	080
100	100
125	125
160	160
200	200

Centre trunnion	Substitute
Without centre trunnion	None
With centre trunnion	H

Strokes (mm)
3000 mm max

Variants (magnetic piston)	Substitute
Standard	M
Double ended piston rod	JM
Without cushioning	WM
Extended piston rod	MU
*CN/***/MU/****/*** → Extension (mm)	

Variants (non magnetic piston)	Substitute
Standard	None
Double ended piston rod	J
Without cushioning	W
Extended piston rod	IU
*CN/***/IU/****/*** → Extension (mm)	

Note: Disregard option positions not used.

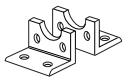
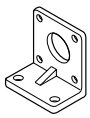
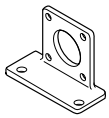
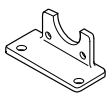
CNOMO Cylinders

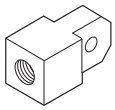
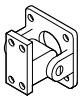
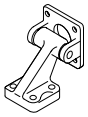
CCN/032/... - CCN/200/...

Double acting

Ø 32 to 200 mm

Mountings

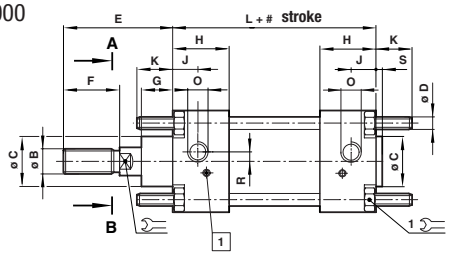
Ø	B, G	C	EN	EL	EBL	D, K (Bolt)	F (Bolt)
							
32	710386101	710385101	On request	On request	On request	710387101 + 401055101	710000039 + 401047101
40	710386102	710385102	On request	On request	On request	710387102 + 401055102	710000040 + 401047102
50	710386103	710385103	On request	On request	On request	710387103 + 401055103	710000040 + 401047102
63	710386104	710385104	On request	On request	On request	710387104 + 401055104	710000041 + 401047103
80	710386105	710385105	On request	On request	On request	710387105 + 401055105	710000041 + 401047103
100	710386106	710385106	On request	On request	On request	710387106 + 401055106	710000042 + 401047104
125	710386107	710385107	On request	On request	On request	710387107 + 401055107	710000042 + 401047104
160	710386108	710385108	On request	On request	On request	710387108 + 401055108	710000043 + 401047105
200	710386109	710385109	On request	On request	On request	710387109 + 401055109	710000043 + 401047105

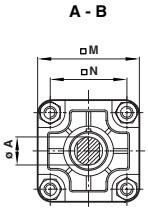
Ø	EM	H	UH	D + R	D + SW	Bracket for switches#	Bracket for switches##
							
32	401845101	Supplied assembled	On request	710387101 + 710000060	710387101 + 710000051	QM/27/2/1	QM/31/032/22
40	401845102	Supplied assembled	On request	710387102 + 710000071	710387102 + 710000052	QM/27/2/1	QM/31/032/22
50	401845102	Supplied assembled	On request	710387103 + 710000072	710387103 + 710000053	QM/27/2/1	QM/31/080/22
63	401845103	Supplied assembled	On request	710387104 + 710000073	710387104 + 710000054	QM/27/2/1	QM/31/080/22
80	401845103	Supplied assembled	On request	710387105 + 710000074	710387105 + 710000055	QM/27/2/1	QM/31/080/22
100	401845104	Supplied assembled	–	710387106 + 710000075	710387106 + 710000056	QM/27/2/1	QM/31/080/22
125	401845104	Supplied assembled	–	710387107 + 710000076	710387107 + 710000057	–	–
160	401845105	Supplied assembled	–	710387108 + 710000077	710387108 + 710000058	–	–
200	401845105	Supplied assembled	–	710387109 + 710000078	710387109 + 710000059	–	–

For use with switches M/50, see page 198.

Standard cylinders

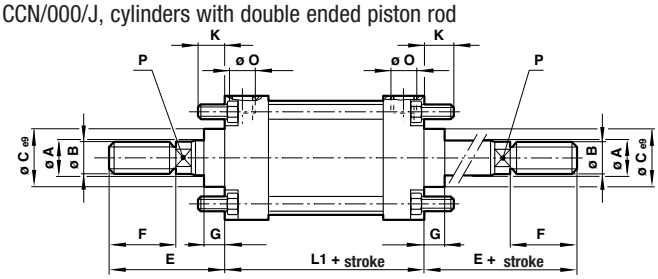
CCN/000

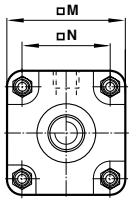




Cylinder variants

CCN/000/J, cylinders with double ended piston rod





Ø	A	B	C	D	E	F	G	K	L	L1	M	N	O	S	P (A/F)
32	12	M10x1,5	25	M6	45	20	15	17	80	90	45	33	G1/8	4	8
40	18	M16x1,5	32	M6	70	36	15	17	110	129	55	40	G1/4	4	13
50	18	M16x1,5	32	M8	70	36	15	23	110	129	65	49	G1/4	4	13
63	22	M20x1,5	45	M8	85	46	20	23	125	143	78	59	G3/8	4	17
80	22	M20x1,5	45	M10	85	46	20	28	125	143	95	75	G3/8	4	17
100	30	M27x2	55	M10	110	63	20	28	145	164	115	90	G1/2	4	22
125	30	M27x2	55	M12	110	63	20	34	145	164	140	110	G1/2	6	22
160	40	M36x2	65	M16	135	85	25	42	180	200	180	140	G3/4	3	32
200	40	M36x2	65	M16	135	85	25	42	180	200	220	175	G3/4	6	32

Bracket for switches##

Bracket for switches#

D + SW

D + R

UH

H

EM

F (Bolt)

D, K (Bolt)

EBL

EL

EN

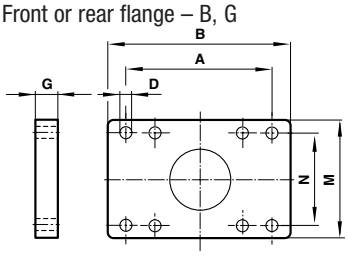
C

B, G

CNOMO Cylinder mountings

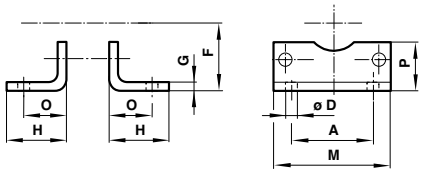
For CCN/032/... - CCN/200/...

Front or rear flange – B, G



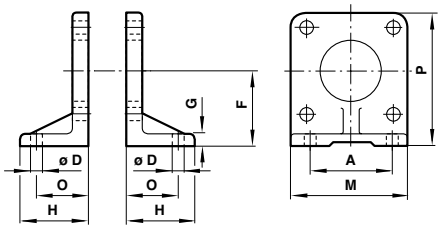
Ø	A	B	Ø D	G	M	N
32	68	80	9	8	45	33
40	78	90	9	8	52	40
50	94	110	11	10	65	49
63	104	120	11	10	75	59
80	130	150	14	12	95	75
100	150	170	14	12	115	90
125	180	205	18	16	140	110
160	228	260	22	20	180	140
200	268	300	22	20	220	175

Foot (low model) – C



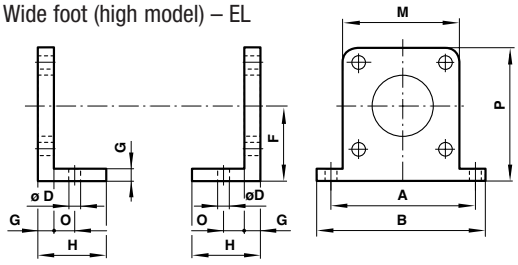
Ø	A	Ø D	F	G	H	M	O	P
32	28	9	32	4	37	45	27	29
40	36	9	36	4	37	52	27	32
50	45	11	45	6	45	65	35	36
63	55	11	50	6	45	75	35	37
80	70	14	63	8	57	95	43	46
100	90	14	73	8	58	115	43	52
125	100	18	91	8	71	140	52	67
160	130	22	115	10	83	180	62	74
200	170	22	135	10	83	220	62	78

Foot (high model) – EN



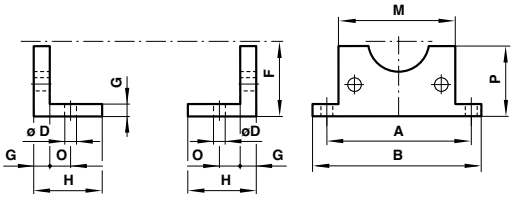
Ø	A	D	F	G	H	M	O	P
32	28	9	32	9	36	47	27	55,5
40	36	9	36	9	36	52	27	62
50	45	11	45	10	45	65	35	77
63	55	11	50	10	45	75	35	87
80	70	14	53	12	55	95	43	110
100	90	14	73	12	55	115	43	130
125	100	18	91	16	68	140	52	161
160	130	22	115	20	80	180	62	205
200	170	22	135	20	80	220	62	245

Wide foot (high model) – EL



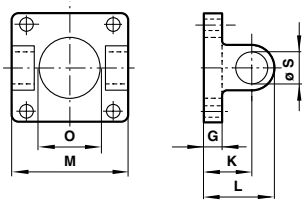
Ø	A	B	Ø D	F	G	H	M	O	P
32	65	82	9	32	8	35	45	10	54
40	72	90	9	36	8	35	52	10	62
50	90	110	11	45	10	45	65	12	77
63	100	120	11	50	10	45	75	12	87
80	126	155	14	63	12	55	95	16	110
100	148	180	14	73	12	55	115	16	130
125	180	215	18	91	16	68	140	16	161
160	230	275	22	115	20	80	180	20	205
200	270	315	22	135	20	80	220	20	245

Wide foot (low model) – EBL



Ø	A	B	Ø D	F	G	H	M	O	P
32	65	82	9	32	5	35	45	10	35
40	72	90	9	36	5	35	52	10	35
50	90	110	11	45	6	45	65	12	45
63	100	120	11	50	6	45	75	12	45
80	126	155	14	63	7	60	95	16	40
100	148	180	14	73	7	60	115	16	40
125	180	215	18	91	8	70	140	16	50
160	230	275	22	115	10	80	180	20	80
200	270	315	22	135	10	80	220	20	80

Rear or front clevis – D, K

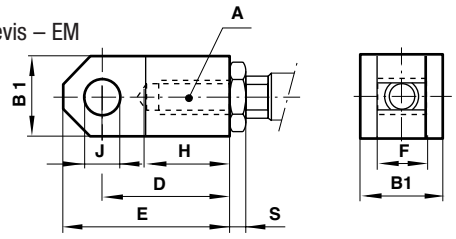


Ø	G	K	L	M	O	Ø S
32	8	18	26	45	26	8
40	8	24	36	52	33	12
50	10	26	38	65	33	12
63	10	30	46	75	47	16
80	12	32	48	95	47	16
100	12	37	57	115	57	20
125	16	41	61	140	57	20
160	20	55	80	180	72	25
200	20	55	80	220	72	25

CNOMO Cylinder mountings

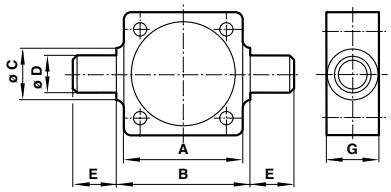
For CCN/032/... - CCN/200/...

Piston rod clevis – F
CNOMO 06-07-14
Male piston rod clevis – EM
CNOMO 06-07-15



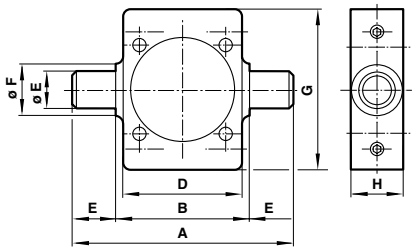
Ø	A	B	B1	D	E	F	H	J	S
32	M10x1,5	22	22	36	45	11	25	8	5
40	M16x1,5	26	32	51	64	18	34	12	8
50	M16x1,5	26	32	51	64	18	34	12	8
63	M20x1,5	34	36	63	80	22	41	16	9
80	M20x1,5	34	36	63	80	22	41	16	9
100	M27x1,5	42	45	85	105	30	58	20	12
125	M27x1,5	42	45	85	105	30	58	20	12
160	M36x2	50	63	115	140	40	81	25	14
200	M36x2	50	63	115	140	40	81	25	14

Centre trunnion – H
CNOMO 06-07-12



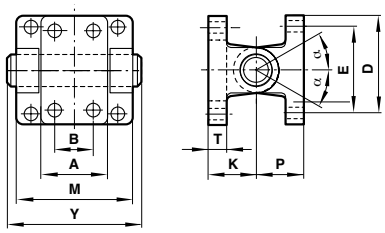
Ø	A	B	C	D	E	G
32	46	50	20	12	12	22
40	58	63	25	16	16	30
50	68	73	25	16	16	30
63	84	90	30	20	20	35
80	102	108	30	20	20	35
100	124	121	36	25	25	40
125	152	159	36	25	25	40
160	190	198	45	32	32	50
200	240	284	45	32	32	50

Adjustable trunnion – UH



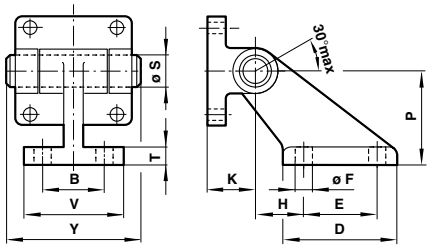
Ø	A	B	C	D	E	F	G	H
32	74	50	12	46	12	20	60	22
40	95	63	16	68	16	25	68	30
50	105	73	16	68	16	25	82	30
63	130	90	20	84	20	30	95	35
80	148	108	20	102	20	30	115	35

Rear straight hinge – D + R



Ø	A	B	D	E	Ø F	K	M	P	Ø S	T	Y	A
32	25	–	40	28	7	18	45	18	8	8	52	30°
40	32	16	52	38	9	24	52	26	12	10	60	25°
50	32	16	52	38	9	26	65	26	12	10	72,5	30°
63	46	25	75	54	11	30	75	34	16	12	84,4	30°
80	46	25	75	54	11	32	95	34	16	12	104,5	30°
100	56	32	115	90	14	37	115	41	20	16	125	30°
125	56	32	115	90	14	41	140	41	20	16	150	30°
160	71	43	180	150	18	55	180	55	25	20	190	30°
200	71	43	180	150	18	55	220	55	25	20	230	30°

Rear hinge – D + SW



Ø	B	D	E	F	H	K	P	S	T	V	Y
32	25	37	20	7	18	18	32	8	8	41	52
40	32	54	32	9	25	24	45	12	10	52	60
50	32	54	32	9	25	26	45	12	10	52	72,5
63	40	75	50	11	32	30	63	16	12	63	54,5
80	40	75	50	11	32	32	63	16	12	63	104,5
100	50	103	70	14	40	37	90	20	16	80	125
125	50	103	70	14	40	41	90	20	16	80	150
160	63	154	110	18	50	55	140	25	20	103	190
200	63	154	110	18	50	55	140	25	20	103	230

Compact air bellows

PM/31000

Single acting

Ø 2¾ to 12"

Frictionless operation
No maintenance or lubrication
Ideal for short stroke, high-force applications
High vibration isolation level
Easy, compact installation

Technical data

Medium:
Compressed air, non-lubricated

Operation:
Single acting

Operating pressure:
8 bar maximum

Operating temperature:
-40°C to + 70°C for PM/31000 (Standard)
-25°C to + 90°C for TPM/31000 (Butyl)
-20°C to + 115°C for EPM/31000 (Epichlore)
Consult our Technical Service for use below +2°C

Strokes:
From 20 to 315 mm max., depending on diameters and number of convolutions

Materials

End plates: plastic (Ø 2¾, 6") aluminium (Ø 4") zinc-chromated steel (Ø 8, 9¼, 12")
Central ring: plastic, aluminium or zinc-chromated steel
Rubber part: PM/31000: fabric reinforced NR-, SBR-, BR-compound rubber, TPM/31000: fabric reinforced Butyl EPM/31000: fabric reinforced Epichlore

Standard models

Model	Nominal Ø (inch) x convolutions	Maximum stroke (mm)	Port size
PM/31021	2¾" x 1	20	G1/4
PM/31022	2¾" x 2	45	G1/4
PM/31023	2¾" x 3	65	G1/4
PM/31041	4½" x 1	40	G3/8
PM/31042	4½" x 2	80	G3/8
PM/31061	6" x 1	55	G1/2
PM/31062	6" x 2	115	G1/2
PM/31081	8" x 1	95	G3/4
PM/31082	8" x 2	185	G3/4
PM/31091	9¼" x 1	105	G3/4
PM/31092	9¼" x 2	230	G3/4
PM/31121	12" x 1	105	G3/4
PM/31122	12" x 2	215	G3/4
PM/31123	12" x 3	315	G3/4

Options selector

★PM/31★★★

Air bellow materials	Substitute
High temperature (Butyl)	T
Extreme temperature (Epichlore)	E

Number of convolutions	Substitute
1	1
2	2
3	3

Nominal diameter (inches)	Substitute
2¾	02
4½	04
6	06
8	08
9¼	09
12	12

Note: Disregard option positions not used.

Safety note: These actuators must not be pressurised when unrestrained.
For exact calculation for compact air bellows please contact our Technical Service.

Compact air bellows

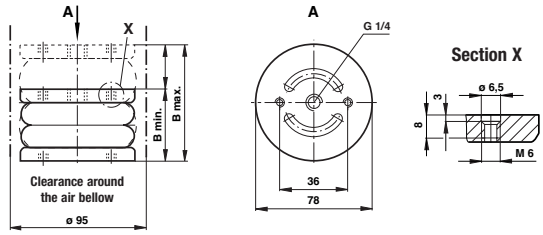
PM/31000

Single acting

Ø 2¾ to 12"

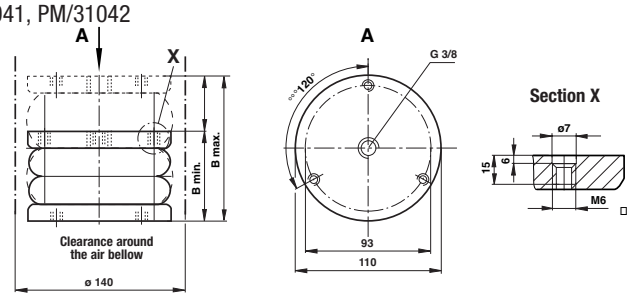
Standard air bellows

PM/31021 to PM/31023

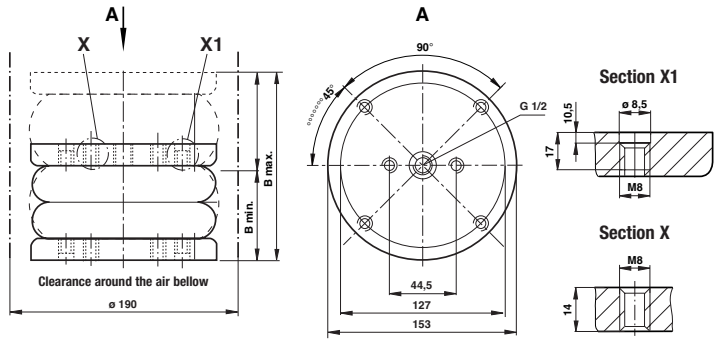


Model	Nominal Ø (inch) x convolutions	Strokes (mm)	Installation height B min. (mm)	Installation height B max. (mm)	kg
PM/31021	2 ¾ x 1	20	50	70	0,21
PM/31022	2 ¾ x 2	45	65	110	0,26
PM/31023	2 ¾ x 3	65	80	145	0,30
PM/31041	4 ½ x 1	40	50	90	0,73
PM/31042	4 ½ x 2	80	65	145	0,91

PM/31041, PM/31042

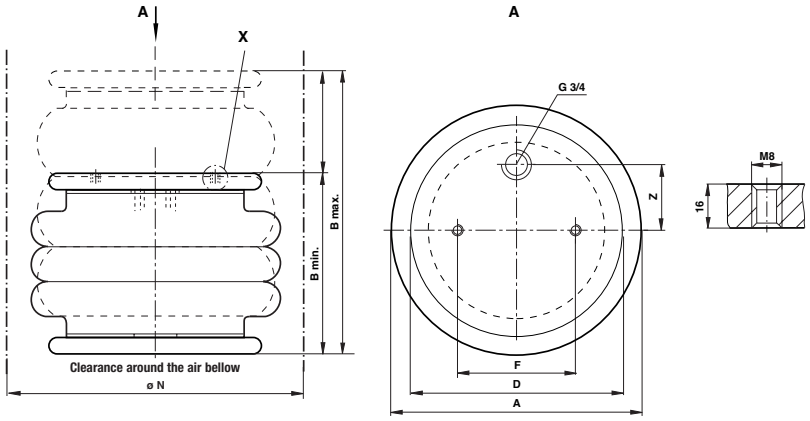


PM/31061, PM/31062



Model	Nominal Ø (inch) x convolutions	Strokes (mm)	Installation height B min. (mm)	Installation height B max. (mm)	kg
PM/31061	6 x 1	55	55	110	0,97
PM/31062	6 x 2	115	80	195	1,30

PM/31081, PM/31123



Model	Nominal Ø (inch) x convolutions	Strokes (mm)	Installation height B min. (mm)	Installation height B max. (mm)
PM/31081	8 x 1	95	55	150
PM/31082	8 x 2	185	80	265
PM/31091	9 ¼ x 1	105	55	160
PM/31092	9 ¼ x 2	230	80	310
PM/31121	12 x 1	105	60	165
PM/31122	12 x 2	215	85	300
PM/31123	12 x 3	315	120	435

Ø A	Ø D	Ø F	Ø N	Z	kg
225	135	70	240	Centric	1,80
220	135	70	240	Centric	2,30
255	160	89	275	38	2,30
255	160	89	275	38	3,10
335	228	157,5	360	73	3,80
325	228	157,5	350	73	5,20
325	228	157,5	350	73	7,00

Serviceable air bellows

M/31000

Single acting

Ø 6" to 26"

Frictionless operation
No maintenance or lubrication
Ideal for short stroke, high-force applications
High vibration isolation level
Simple to install

Technical data

Medium:
Compressed air, non-lubricated

Operation:
Single acting

Operating pressure:
8 bar maximum

Operating temperature:
-40°C to + 70°C for M/31000 (Standard)
-25°C to + 90°C for TM/31000 (Butyl)
-20°C to + 115°C for EM/31000 (Epichlore)
Consult our Technical Service for use below +2°C

Strokes:
From 55 to 430 mm max., dependant on model

Materials

End plates: zinc-chromated steel (21" = aluminium)
Fixing studs: zinc-chromated steel
Central ring: aluminium or zinc-chromated steel
Rubber part:
M/31000: fabric reinforced
NR-, SBR-, BR- compound rubber
TM/31000: fabric reinforced butyl
EM/31000: fabric reinforced Epichlore

Standard models

Model	Nominal Ø (inch) x convolutions	Maximum stroke (mm)	Port size
M/31061	6" x 1	55	G1/2
M/31062	6" x 2	115	G1/2
M/31081	8" x 1	80	G1/2
M/31082	8" x 2	175	G1/2
M/31101	10 x 1	100	G1/2
M/31102	10 x 2	225	G1/2
M/31103	10 x 3	330	G1/2
M/31121	12 x 1	100	G1/2
M/31122	12 x 2	225	G1/2
M/31123	12 x 3	330	G1/2
M/31141	14½ x 1	125	G1/2
M/31142	14½ x 2	265	G1/2
M/31143	14½ x 3	380	G1/2
M/31162	16 x 2	315	G1/2
M/31163	16 x 3	430	G1/2
M/31212	21 x 2	280	G3/4
M/31262	26 x 2	410	G3/4

Options selector

★M/31★★★

Air bellow materials	Substitute
High temperature (Butyl)	T
Extreme temperature (Epichlore)	E

Number of convolutions	Substitute
1	1
2	2
3	3

Nominal diameter (inches)	Substitute
6	06
8	08
10	10
12	12
14½	14
16	16
21	21
26	26

Note: Disregard option positions not used.

Safety note: These actuators must not be pressurised when unrestrained.
For exact calculation for compact air bellows please contact our Technical Service.

Serviceable air bellows

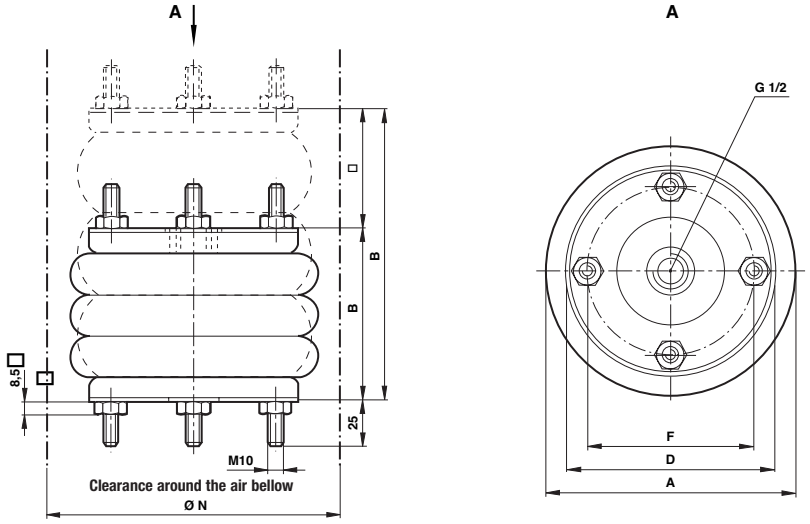
M/31000

Single acting

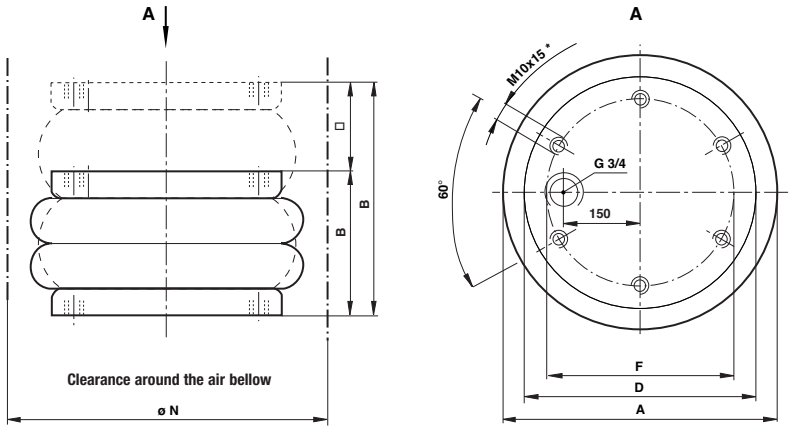
Ø 6" to 26"

Standard air bellows

M/31061 to M/31163



M/31212, M/31262



Model	Nominal Ø (inch) x convolutions	Strokes (mm)	Installation height B min. (mm)	B max. (mm)	Ø A	Ø D	Ø F	Ø N	kg
M/31061	6 x 1	55	50	105	175	153	127	190	2,3
M/31062	6 x 2	115	75	190	175	153	127	190	2,6
M/31081	8 x 1	80	50	130	230	184	155,5	245	3,0
M/31082	8 x 2	175	75	250	220	184	155,5	245	3,7
M/31101	10 x 1	100	G1/2	150	280	210	181	300	3,9
M/31102	10 x 2	225	G1/2	300	270	210	181	300	5,0
M/31103	10 x 3	330	G1/2	430	270	210	181	300	5,6
M/31121	12 x 1	100	G1/2	150	330	260	232	350	5,2
M/31122	12 x 2	225	G1/2	300	325	260	232	350	6,7
M/31123	12 x 3	330	G1/2	430	325	260	232	350	8,1
M/31141	14½ x 1	125	G1/2	175	395	310	282,5	425	6,9
M/31142	14½ x 2	265	G1/2	340	400	310	282,5	425	9,1
M/31143	14½ x 3	380	G1/2	480	400	310	282,5	425	10,7
M/31162	16 x 2	315	G1/2	390	440	310	282,5	460	9,7
M/31163	16 x 3	430	G1/2	550	425	310	282,5	450	12,9
M/31212	21 x 2	280	G3/4	370	580	498	470	630	20,6
M/31262	26 x 2	410	G3/4	500	700	498	470	750	23,0

Additional ranges

Imperial cylinders

- Large range of bore sizes – ideal for a wide variety of industrial applications
- Long established design – proven ruggedness and reliability
- Extensive choice of mountings
- Adjustable cushioning
- Magnetic and non-magnetic piston

Ø	Piston rod Ø	Port size	Model Magnetic	Non-magnetic	Service kit
1,25	12 mm	G 1/8	RM/9125	RM/9125/M/*	QM/9125/00
1,75	16 mm	G 1/4	RM/9175	RM/9175/M/*	QM/9175/00
2	20 mm	G 1/4	RM/920	RM/920/M/*	QM/920/00
2,5	25 mm	G 3/8	RM/925	RM/925/M/*	QM/925/00
3	25 mm	G 3/8	RM/930	RM/930/M/*	QM/930/00
4	32 mm	G 3/8	RM/940	RM/940/M/*	QM/940/00
5	1½"	G 1/2	RM/950	–	QM/950/00
6	1½"	G 1/2	RM/960	–	QM/960/00
8	1¾"	G 3/4	RM/980	–	QM/980/00
10	2¼"	G 1	RM/9100	–	QM/9100/00
12	2¼"	G 1	RM/9120	–	QM/9120/00
14	2¼"	G 1	RM/9140	–	QM/9140/00

Heavy duty cylinders

- Extremely rugged heavy duty construction – ideal for use in the most arduous conditions
- Long, adjustable cushioning
- Large range of bore sizes – ideal for a wide variety of industrial applications
- Extensive choice of mountings

Ø	Piston rod Ø	Port size	Model	Service kit
2	1	G1/4	M/1020/*	QM/1020/00
2½	1¼	G3/8	M/1026/*	QM/1026/00
3	1¼	G1/2	M/1031/*	QM/1031/00
4	1½	G1/2	M/1041/*	QM/1041/00
5	1¾	G1/25	M/1051/*	QM/1051/00
6	2¼	G3/4	M/1061/*	QM/1061/00
8	2¼	G1	M/1081/*	QM/1081/00
10	3	G1	M/1101/*	QM/1101/00
12	3	G1	M/1121/*	QM/1121/00

* Insert stroke length in mm.

Impact cylinders

- High energy output
- Ideally suited to a wide range of marking, piercing and light presswork applications
- Rugged, corrosion-resistant construction

Ø	Model
2"	M/3020
3"	M/3030
4"	M/3040
6"	M/3060

Additional ranges

Hydraulic shock absorbers

High efficiency industrial units for a wide variety of applications

Boosts actuator cushioning capacity

Optimum deceleration of masses from 0,9 to 27200 kg

Reduces installation vibration

Cushion range	Model
0,9 ... 1130 kg (self adjustable)	M/59600
5 ... 27200 kg	C/59000 & M/59800

Air/oil pressure converters

Converts pneumatic pressure into hydraulic pressure

Easy installation

Corrosion-resistant construction

Integrated oil level indicator

Model	Converter volume (dm^3)	kg	Service kit
M/55903	0,25	1,10	QM/55901/00
M/55905	0,50	1,28	QM/55901/00
M/55908	0,75	1,46	QM/55901/00
M/55910	1,00	1,64	QM/55901/00
M/55915	1,50	2,00	QM/55901/00
M/55920	2,00	2,36	QM/55901/00
M/55930	3,00	4,36	QM/55902/00
M/55940	4,00	5,04	QM/55902/00
M/55950	5,00	5,72	QM/55902/00

Note: The volume of the pressure converter must be at least 50% bigger than the volume of the cylinder it operates.

Air reservoirs

Robust construction

Volume	Model
0,10 dm^3	M/1428
0,16 dm^3	M/1429
0,15 dm^3	M/163/15
1,00 dm^3	M/163/100
2,00 dm^3	M/164/200

Clamping units

Clamping units series LSE are single acting pneumatic units with integrated hydraulic intensifiers. This principle offers high forces compared to usual pneumatic units.

Round, compact design.

All materials are corrosion resistant. Clamping force at 6 bar 2.4 to 18 KN

Type	Description	Pressure transmission
LSE	Standard	1:8, 1:11, 1:17
LSE H	High pressure version	1:8, 1:11, 1:17

Magnetically operated switches

For roundline, ISO/VDMA, VDMA compact and LINTRA® rodless cylinders

These switches are delivered with an adaptor as standard. This combination allows you to use M/50 switches instead of QM/33, QM/34 and QM/134

IP 66

IP 66 with plug-in cable

Model Reed	Solid state	Voltage V a.c.	V d.c.	Current max.	Temperature °C	Function NO	LED	Features	Output	Cable length	Cable type
M/50/LSU/*V		10 ... 240	10 ... 170	180 mA	-20° ... +80°	●	●	–	–	2, 5, 10 m	PVC 2 x 0,25
M/50/LSU/5U		10 ... 240	10 ... 170	180 mA	-20° ... +80°	●	●	–	–	5 m	PUR 2 x 0,25
TM/50/RAU/2S		10 ... 240	10 ... 170	180 mA	-20° ... +150°	●	–	High temperature	–	2 m	Silicon 2 x 0,25
M/50/RAC/5V		10 ... 240	10 ... 170	180 mA	-20° ... +80°	–	–	Changeover	–	5 m	PVC 3 x 0,25
	M/50/EAP/*V	–	10 ... 30	150 mA	-20° ... +80°	●	●	–	PNP	2, 5, 10 m	PVC 3 x 0,25
	M/50/EAN/*V	–	10 ... 30	150 mA	-20° ... +80°	●	●	–	NPN	2, 5, 10 m	PVC 3 x 0,25
M/50/LSU/CP		10 ... 60	10 ... 75	180 mA	-20° ... +80°	●	●	–	Plug M8x1	5 m	PVC 3 x 0,25
	M/50/EAP/CP	–	10 ... 30	150 mA	-20° ... +80°	●	●	–	PNP, plug M8x1	5 m	PVC 3 x 0,25
	M/50/EAN/CP	–	10 ... 30	150 mA	-20° ... +80°	●	●	–	NPN, plug M8x1	5 m	PVC 3 x 0,25

Direct mounted switches






Ø 32 ... 125 mm	Ø 20 ... 125 mm	Ø 32 ... 80 mm	Ø 32 ... 125 mm	Ø 32 ... 100 mm	Groove cover
PRA/180000/M	RM/191000/M	M/46000/M	M/162000	M/61000	M/P72725/1000
	RM/192000/M	M/46100/M			
		M/46200/M			
		VM/46000/M			
		VM/46100/M			

Bracket mounted switches






Ø 32 ... 200 mm	Ø 32 ... 100 mm	Ø 32 ... 100 mm	Ø 32 ... 125 mm	Ø 32 ... 63 mm	Ø 10 ... 25 mm
RA/8000/M	PVA/8000/M	RM/55401/M	KM/55001/M	RT/57100/M	RM/8000/M
KA/8000/M				RT/57200/M	RM/28000/M
RA/28000/M				RT/57300/M	KM/8000/M
RA/28300/M					







Ø 32 ... 200 mm		Ø 32 ... 100 mm		Ø 32 ... 100 mm		Ø 32 ... 125 mm		Ø10 .... 63 mm		Ø10 .... 25 mm Stroke length >=15 mm		Ø10 .... 25 mm Stroke length <15 mm	
Ø32	QM/27/2/1	Ø32	QM/33/P32/22	Ø32	QM/33/432/22	Ø32	QM/33/432/22	Ø10	QM/33/010/22	Ø10	QM/33/010/22	Ø10	QM/33/010/23
Ø40	QM/27/2/1	Ø40	QM/33/P32/22	Ø40	QM/33/440/22	Ø40	QM/33/440/22	Ø12	QM/33/012/22	Ø12	QM/33/012/22	Ø12	QM/33/016/23
Ø50	QM/27/2/1	Ø50	QM/33/P32/22	Ø50	QM/33/450/22	Ø50	QM/33/450/22	Ø16	QM/33/016/22	Ø16	QM/33/016/22	Ø16	QM/33/016/23
Ø63	QM/27/2/1	Ø63	QM/33/P32/22	Ø63	QM/33/463/22	Ø63	QM/33/463/22	Ø20	QM/33/020/22	Ø20	QM/33/020/22	Ø20	QM/33/020/23
Ø80	QM/27/2/1	Ø80	QM/33/P32/22	Ø80	QM/33/480/22	Ø80	QM/33/480/22	Ø25	QM/33/025/22	Ø25	QM/33/025/22	Ø25	QM/33/025/23
Ø100	QM/27/2/1	Ø100	QM/33/P32/22	Ø100	QM/33/410/22	Ø100	QM/33/100/22	Ø32	QM/33/032/22				
Ø125	QM/27/2/1					Ø125	QM/33/125/22	Ø40	QM/33/040/22				
Ø160	QM/27/2/1							Ø50	QM/33/050/22				
Ø200	QM/27/2/1							Ø63	QM/33/063/22				

Magnetically operated switches

For rotary vane actuators, slide units, compact, LINTRA®-LITE and tie rod cylinders

Switch type numbers: M/40, 41, 42, QM/31, 32, 132, QM/34, 134, TQM/31, 33

	Model Reed	Solid state	Cylinder	Voltage V a.c.	V d.c.	Current max.	Features	Output	Cable length
To IP 66 with integral cable 	M/40		M/60285 	10 ... 240	10 ... 170	180 mA	–	–	2 m
	M/40/C		M/60286	110 max	10 ... 175	250 mA	Changeover	–	2 m
	TM/40/2		M/60287	110 max	110 max.	250 mA	High temp.	–	2 m
		M/41		–	10 ... 30	200 mA	–	NPN	2 m
		M/42		–	10 ... 30	200 mA	–	PNP	2 m
			M/60100 						
To IP 66 with integral cable 	M/40/P			60 max.	75 max.	180 mA	–	–	5 m
		M/42/P		–	10 ... 28	300 mA	–	PNP	5 m
			Ø 12 ... 100 mm RM/91000/M RM/92000/M RM/93000/M 						
Switches mounted directly onto the cylinder			Ø 25 ... 40 mm A44000 						
To IP 66 with integral cable 	QM/33/C/*		RA/8000/M (Ø 32 ... 320mm)	10 ... 110	10 ... 175	250 mA	Changeover	–	5 m
	TQM/33/*		KA/8000/M (Ø 32 ... 200mm)	10 ... 30	10 ... 30	1,5 A	High temp.	–	5 m
	QM/34/*		RA/28000/M (Ø 32 ... 100mm)	–	10 ... 30	1 A	–	Positive	2, 5, 10 m
	QM/34/*/PU			–	10 ... 30	1 A	–	Positive	2 m
	QM/34/S/*			10 ... 240	10 ... 240	500 mA	–	–	2, 5, 10 m
	QM/34/S/*/PU			10 ... 240	10 ... 240	500 mA	–	–	2 m
	QM/34/N/*			–	10 ... 30	1 A	–	Negative	2, 5 m
	QM/34/N/*/PU			–	10 ... 30	1 A	–	Negative	2 m
		QM/134/*		–	10 ... 30	200 mA	–	PNP	5 m
		QM/134/*/PU		–	10 ... 30	200 mA	–	PNP	5 m
		QM/134/N/*		–	10 ... 30	200 mA	–	NPN	5 m
		QM/134/N/*/PU		–	10 ... 30	200 mA	–	NPN	5 m
		QM/132/E/*		-	10 ... 30	200 mA	Pulse stretcher	PNP	5
		QM/134/X/*		8.2	2.2 mA	DIN19234	NAMUR	Positive	5 m
To IP 66 with plug-in cable 	QM/34/P		Ø 1¼ ... 4" RM/900/M 	–	10 ... 30	1 A	–	Positive	5 m
		QM/134/P		–	10 ... 30	200 mA	–	PNP	5 m
		QM/134/N/P		–	10 ... 30	200 mA	–	NPN	5 m
Switches mounted with bracket QM/27/2/1 (see page 198)									
To IP 66 with integral cable 	TQM/31/*		Ø 32 ... 200mm CP/... 	10 ... 240	10 ... 240	2 A	–	–	5 m
		QM/32/*		10 ... 240	10 ... 240	1 A	–	–	2 m
		QM/132/*			10 ... 30	200 mA	–	PNP	5 m
		QM/132/E/*		-	10 ... 30	200 mA	Pulse stretcher	PNP	5 m
		QM/132/S/*		20 ... 250	-	300 mA	–	PNP	5 m

Switch mounted with bracket QM/31/XXX/22

Ø	Bracket type
32, 40, 50, 63	QM/31/032/22
80, 100, 125	QM/31/080/22
160, 200	QM/31/160/22
250	QM/31/250/22
320	QM/31/320/22

Magnetically operated switches

For linear slide tables

Model Reed	Solid state	Voltage V d.c.	Current max.	Temperature °C	Output	Protection rating	Cable wire, material	Cable type	Cable length
M/369/LSU/1		12 ... 24	24 mA	+5 ... +60	–	IP 67	PVC 2 x 0,18	In-line	1 m
M/369/LSU/3		12 ... 24	24 mA	+5 ... +60	–	IP 67	PVC 2 x 0,18	In-line	3 m
M/370/LSU/1		12 ... 24	24 mA	+5 ... +60	–	IP 67	PVC 2 x 0,18	90°	1 m
M/370/LSU/3		12 ... 24	24 mA	+5 ... +60	–	IP 67	PVC 2 x 0,18	90°	3 m
	M/418/EAU/1	12 ... 24	40 mA	+5 ... +60	PNP	IP 67	PVC 2 x 0,15	In-line	1 m
	M/418/EAU/3	12 ... 24	40 mA	+5 ... +60	PNP	IP 67	PVC 2 x 0,15	In-line	3 m
	M/419/EAU/1	12 ... 24	40 mA	+5 ... +60	PNP	IP 67	PVC 2 x 0,15	90°	1 m
	M/419/EAU/3	12 ... 24	40 mA	+5 ... +60	PNP	IP 67	PVC 2 x 0,15	90°	3 m
	M/420/EAN/1	5 ... 24	50 mA	+5 ... +60	NPN	IP 67	PVC 3 x 0,18	In-line	1 m
	M/420/EAN/3	5 ... 24	50 mA	+5 ... +60	NPN	IP 67	PVC 3 x 0,18	In-line	3 m
	M/421/EAN/1	5 ... 24	50 mA	+5 ... +60	NPN	IP 67	PVC 3 x 0,18	90°	1 m
	M/421/EAN/3	5 ... 24	50 mA	+5 ... +60	NPN	IP 67	PVC 3 x 0,18	90°	3 m

Direct mounted switches





Ø 6 ... 16 mm	Ø 10, 12 mm	Ø 8 ... 20 mm	Ø 10, 16 mm	Ø 6 mm
M/261000	M/261100	M/261200	M/261300	M/261400

For grippers

Model 2-wire solid state	3-wire solid state	Voltage V d.c.	Current max.	Temperature °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/344/EAU/1APV		10 ... 28	20 mA	0° ... +60°	●	-	1 m	PVC	–	●
M/344/EAU/1PV		10 ... 28	20 mA	0° ... +60°	●	-	1 m	PVC	●	–
M/344/EAU/3APV		10 ... 28	20 mA	0° ... +60°	●	-	3 m	PVC	–	●
M/344/EAU/3PV		10 ... 28	20 mA	0° ... +60°	●	-	3 m	PVC	●	–
	M/344/EAN/1APV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	1 m	PVC	–	●
	M/344/EAN/1PV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	1 m	PVC	●	–
	M/344/EAN/3APV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	3 m	PVC	–	●
	M/344/EAN/3PV	4,5 ... 28	50 mA	0° ... +60°	●	NPN	3 m	PVC	●	–

For miniature and compact rotary actuators

Model Reed	2-wire solid state	3-wire solid state	Voltage V d.c.	V a.c.	Current max.	Temperature °C	LED	Features	Cable length	Cable type	Straight cable connection	90° elbow cable connection
M/346/LAU/1PV			12 ... 100	12 ... 125	50 mA	0° ... +60°	●	–	1,5 m	PVC	●	–
M/346/LAU/5PV			12 ... 100	12 ... 125	50 mA	0° ... +60°	●	–	5 m	PVC	●	–
	M/346/EAU/1APV		10 ... 28	–	70 mA	0° ... +60°	●	–	1,5 m	PVC	–	●
	M/346/EAU/5APV		10 ... 28	–	70 mA	0° ... +60°	●	–	5 m	PVC	–	●
	M/345/EAU/1PV		10 ... 28	–	40 mA	0° ... +60°	●	–	1 m	PVC	●	–
	M/345/EAU/3PV		10 ... 28	–	40 mA	0° ... +60°	●	–	3 m	PVC	●	–
		M/345/EAN/1PV	4,5 ... 28	–	100 mA	0° ... +60°	●	NPN	1 m	PVC	●	–
		M/345/EAN/3PV	4,5 ... 28	–	100 mA	0° ... +60°	●	NPN	3 m	PVC	●	–

Direct mounted switches







Ø 16 ... 50 mm	Ø 16 ... 50 mm	Ø 8 ... 12 mm	Ø 12 ... 25 mm	Ø 16 ... 20 mm	Ø 12 & 20 mm	Ø 14 ... 22 mm
M/1603**/M/11	M/1603**/M/12	M/160360/M/12	M/160390/M/12	M/160380/M/12	M/60210/M	M/60270/M

For further details, please consult our Technical Service

Vacuum pumps.....202, 204 & 206
Suction cups.....208
Vacuum switches.....210
Additional products.....212

VMAA Series Smart Pump®

Dual module vacuum generator

VMAA-M200-25321, 35321, 45321

- **High vacuum flow**
- **Low air consumption**
- **Wide operating pressure range**
- **Modular construction provides application flexibility**
- **Reduced installation, and maintenance**
- **Intuitive programming interface available on 45321/45311**
- **Automatic blow-off function available on 45321/45311**
- **Air conservation**

Technical data

Medium:
Lubricated or non-lubricated air filtered to 40 micron

Vacuum level range:
0 to 86 kPa
Maximum vacuum level attained at 5 bar

Vacuum flow:
425 l/m @ 5 bar

Response time:
(at sea level)
Evacuates 28 litres to 50,8 -kPa in 3,3 seconds at 6 bar)

Supply pressure:
Minimum 2,4 bar
Maximum 6,9 bar

Supply requirements:
280 l/m @ 5 bar

Vacuum filter:
180 micron

Operating temperature:
0 to 50°C
Consult our Technical Service for use below +2°C

Air consumption:
444 l/m @ 4 bar
534 l/m @ 5 bar
630 l/m @ 6 bar

Mounting:
Integral bracket provided for preferred vertical mounting

Electrical connections:
5 pin M12, male, single key micro connector

Pneumatic connections:
(1) Vacuum port: 3/4 NPT or ISO 'G'
(1) Pressure inlet: 3/8 NPT or ISO 'G'
(1) Gauge port: 1/8 NPT

Sound level:
82 dBA

Materials

Body: aluminum and zinc die-casting
Jet housing: polycarbonate
Seals: Viton®, polyurethane, Buna-N
Weatherproofing: NEMA 4X, IP66:

Options selector

VMAA-M200-★★★★★

Product series
Single channel, modular vacuum generator

Size/flow of pump
M200 = 2 jet module

Variants	Substitute
Solenoid controlled vacuum and blow-off	253
Solenoid controlled vacuum and blow-off	353
w/4-20 mA sensor feedback output	
Fully programmable digital unit	453

Ports	Substitute
NPT threaded ports	21
ISO G threaded ports	11

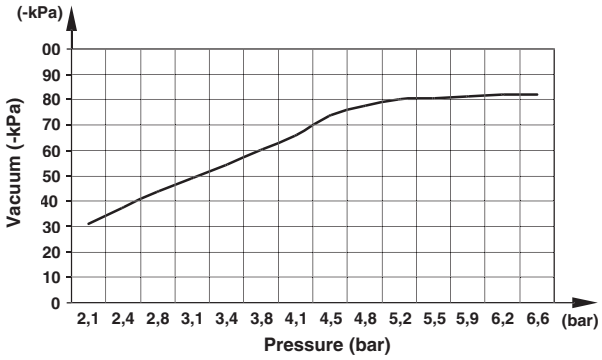
VMAA Series Smart Pump®

Dual module vacuum generator

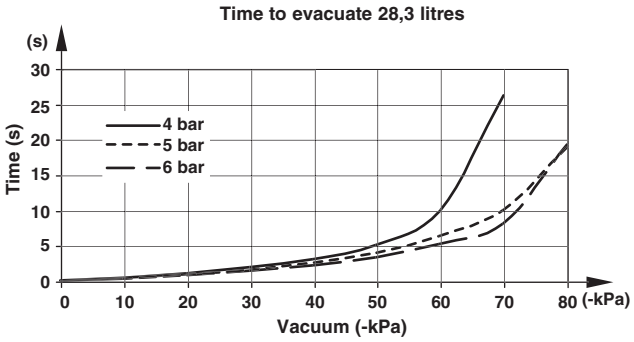
VMAA-M200-25321, 35321, 45321

Performance data

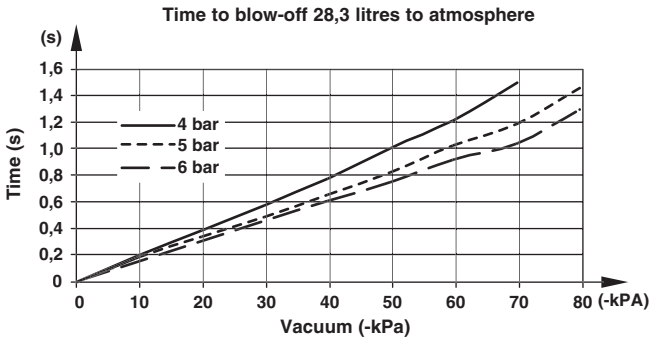
VMAA-M200-353★★



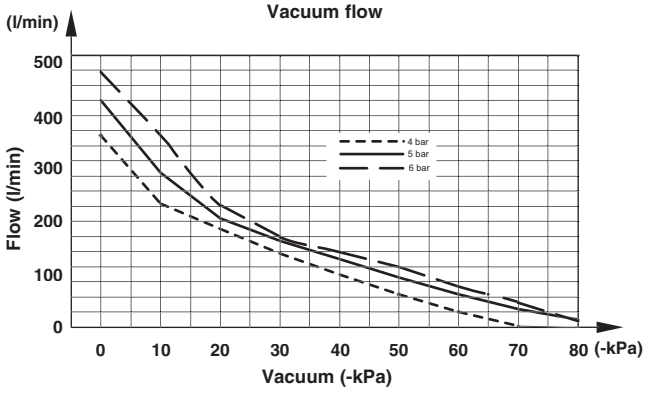
VMAA-M200-353★★

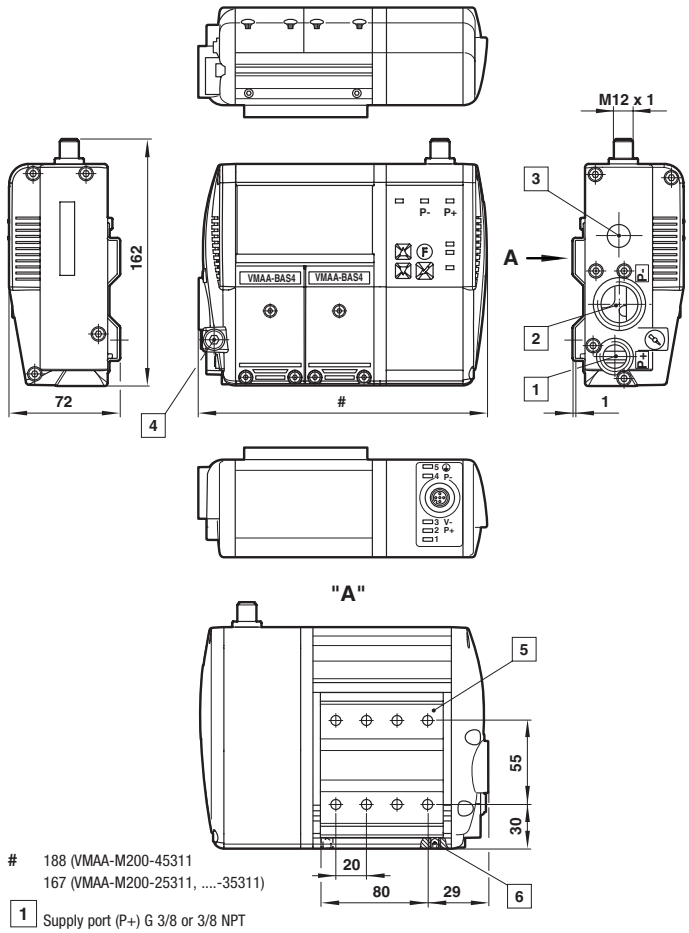


VMAA-M200-353★★



VMAA-M200-353★★





\# 188 (VMAA-M200-45311
167 (VMAA-M200-25311, ...-35311)

1 Supply port (P+) G 3/8 or 3/8 NPT

2 Vacuum port (P-) G 3/4 or 3/4 NPT

3 Exhaust

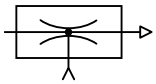
4 Vacuum gauge 1/8 NPT

5 Mounting bracket

6 Locking screw

Single stage vacuum pumps

M/58112



- **Very high induced air capacity**
- **14% lower air consumption than comparable single stage units**
- **No wearing parts**
- **Compatible with a wide range of vacuum line contaminants**
- **Allows direct connection of suction cups and piped exhaust facility**

Technical data

Medium:
Compressed air, filtered and non-lubricated

Operating pressure:
5 bar optimum
8 bar maximum

Operating temperature:
-20° to +150°C
Consult our Technical Service for use below +2°C

Vacuum:
-0,85 bar maximum (M/58112/09)
-0,90 bar maximum (M/58112/11)

Weight:
0,054 kg (M/58112/09)
0,157 kg (M/58112/11)

Sound level:
66/74 dB (A) vacuum port closed/open (M/58112/09)
71/82 dB (A) vacuum port closed/open (M/58112/11)

Materials

Housing: anodised aluminium
Nozzles: brass

Induced air (Nl/min), free air

Model	0 bar	- 0,1 bar	- 0,2 bar	- 0,3 bar	- 0,4 bar	- 0,5 bar	- 0,6 bar	- 0,7 bar	- 0,8 bar
M/58112/09	28	24	18	14	11	8	5,5	3	1
M/58112/11	55	47	36	28	23	17	12	6	2,5

Time (sec) for evacuation of 1 litre volume to vacuum

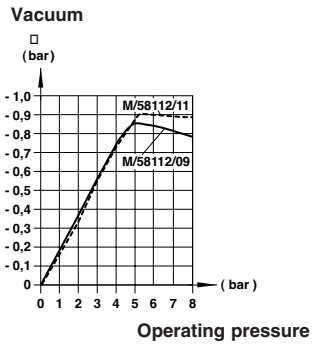
Model	- 0,1 bar	- 0,2 bar	- 0,3 bar	- 0,4 bar	- 0,5 bar	- 0,6 bar	- 0,7 bar	- 0,8 bar	-0,85 bar	-0,9 bar
M/58112/09	0,27	0,56	0,89	1,44	2,00	2,88	4,31	7,97	14,36	–
M/58112/11	0,15	0,31	0,49	0,72	1,00	1,41	2,08	3,71	5,60	8,11

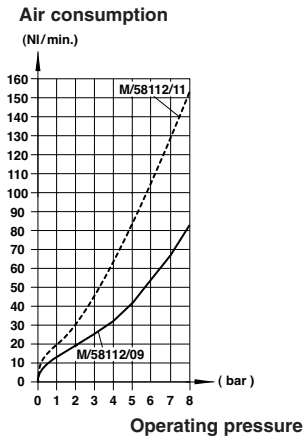
Note: Values given in the tables are theoretical and apply to an operating pressure of 5 bar.

Recommended tube dimensions (internal diameter)

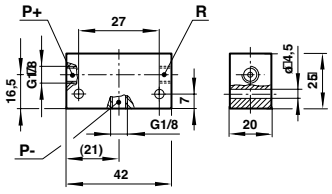
Model	Compressed air	Vacuum	Exhaust
M/58112/09	> Ø 3	> Ø 5	> Ø 6
M/58112/11	> Ø 3	> Ø 7	> Ø 9

Operating characteristics

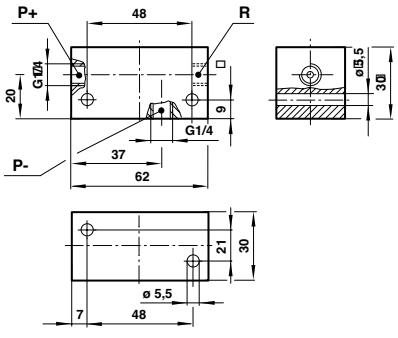




M/58112/09



M/58112/11



Pressure sensor technology

Norgren leads the international market in pressure sensor with a comprehensive range of electronic and electrical products for the most demanding conditions, covering both high technology and everyday applications.

Pneumatics/vacuum/allfluid

Comprehensive range of pressure sensors.

Superior design for greater reliability

Wide choice of sensors.

Advanced pressure monitoring.

- Specialist solutions to customer requirements
- Monitoring vacuum to 800 bar
- Neutral and aggressive measuring fluids
- Electro-mechanical and electronic signal processing

18D

Standard switch for series application
Compact design
Competitive price
Microswitch with gold plated contacts
Fluid connection in thread and flange available
Accuracy ±3%
ATEX approval

18S - Allfluid

Allfluid analogue sensor
Slim and robust stainless steel sensor for all kinds of industrial applications and working fluids up to 800 bar.
Versions with 4 ... 20 mA or 0 ... 10 V ouput signal are available

18S - Pneumatics

Temperature compensated
Vacuum and overpressure
Robust design for pneumatic and industrial applications
Electronic pressure sensors are components which are usually positioned next to the point of measurement. The fluidic signal is converted into a standard pressure proportional analogue output signal of 4 ... 20 mA by means of a piezo-resistant sensor and an electronic circuit, which amplifies, linearises and temperature compensates the signal

33D

Display of system pressure and unit (pressure unit programmable)
Compact and robust design
Easy programming of set points and additional functions
Transistor output signals 1 x PNP/2 x PNP/1 x PNP + 4 to 20 mA
Electronic lock
Switching status indicated by LED
Standard M12x1 electrical connection (IP 65)
For pneumatic, all fluid and hydraulic applications

20D

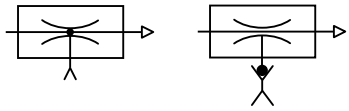
Gold-plated contacts
Weatherproof (silver-plated contacts)
For pneumatic, allfluid and hydraulic applications
ATEX approval

40D

Space saving design
Easy programming of set points
Design with display
Special functions selectable
Analogue (1 to 5V) and digital outputs, as NO/NC programmable
Revolving display

Multi stage vacuum pumps

M/58102



- Fast response
- Compact, lightweight
- Low sound level
- Compressed air driven
- Simple installation
- Standard and non-return valve types

Technical data

Medium:
Compressed air, filtered and non-lubricated

Operation:
Multi ejector system

Operating pressure:
6 bar maximum

Operating temperature:
-20°C to +80°C for M/58102/10 to M/58102/30
-20°C to +60°C for M/58102/60 to M/58102/120
Consult our Technical Service for use below +2°C

Vacuum:
-0,87 bar maximum

Materials

M/58102/10 to M/58102/30
ABS vacuum chips with 30% glass filling
Sub-base: aluminium
Seals: nitrile rubber

M/58102/60 to M/58102/120
Case: aluminium
End caps: ABS
Mountings: steel
Seals: nitrile rubber or polyurethane

Model	Type	Silencer**	Induced air (Nl/min)*	Air consumption (Nl/min)*	kg
M/58102/10	Standard	Ported	80	49	0,080
M/58102/20	Standard	Ported	160	98	0,095
M/58102/30	Standard	Ported	240	144	0,110
M/58102/60	Standard	Integral	480	285	0,855
M/58102/90	Standard	Integral	708	471	1,105
M/58102/120	Standard	Integral	910	528	1,150
M/58102/N/10	Non-return valve	Ported	80	49	0,080
M/58102/N/20	Non-return valve	Ported	160	98	0,095
M/58102/N/30	Non-return valve	Ported	240	144	0,110
M/58102/N/60	Non-return valve	Integral	480	285	0,855
M/58102/N/90	Non-return valve	Integral	708	471	1,105
M/58102/N/120	Non-return valve	Integral	910	528	1,150

*Values given are theoretical and apply to an operating pressure of 6 bar.
**For models with ported silencer, use silencer number M/58019, for model with integral silencer use gauge M/58080

Characteristics

Induced air (Nl/min), free air

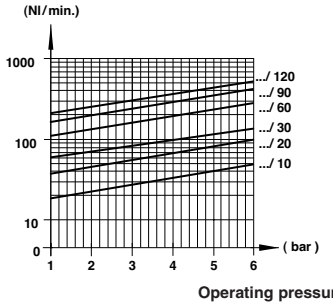
Model	0 bar	-0,1 bar	-0,2 bar	-0,3 bar	-0,4 bar	-0,5 bar	-0,6 bar	-0,7 bar	-0,8 bar
M/58102/10	80	55	32	28	25	18	13	5	1,5
M/58102/20	160	110	64	56	50	36	26	10	3
M/58102/30	240	165	96	84	75	54	39	15	4,5
M/58102/60	480	270	182	168	150	108	78	30	9
M/58102/90	708	427	273	252	225	162	117	45	13,5
M/58102/120	910	568	355	336	300	216	156	60	18

Time (sec) for evacuation of 1 litre volume to vacuum

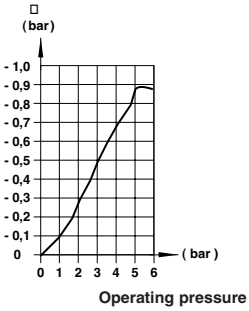
Model	-0,1 bar	-0,2 bar	-0,3 bar	-0,4 bar	-0,5 bar	-0,6 bar	-0,7 bar	-0,8 bar	-0,85 bar
M/58102/10	0,070	0,200	0,450	0,750	1,150	1,730	2,610	4,130	5,820
M/58102/20	0,035	0,100	0,230	0,370	0,570	0,860	1,320	2,070	2,920
M/58102/30	0,023	0,070	0,150	0,250	0,380	0,580	0,870	1,380	1,940
M/58102/60	0,012	0,034	0,080	0,120	0,190	0,290	0,440	0,690	0,970
M/58102/90	0,007	0,023	0,050	0,080	0,130	0,190	0,290	0,460	0,650
M/58102/120	0,006	0,017	0,040	0,060	0,100	0,150	0,220	0,350	0,490

Note: Values given in the tables are theoretical and apply to an operating pressure of 6 bar.

Air consumption



Vacuum



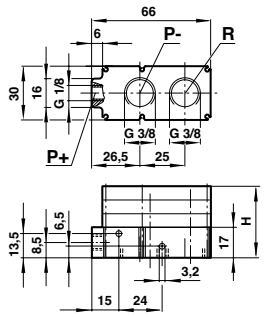
Multi stage vacuum pumps

M/58102

Recommended tube dimensions (internal diameter)

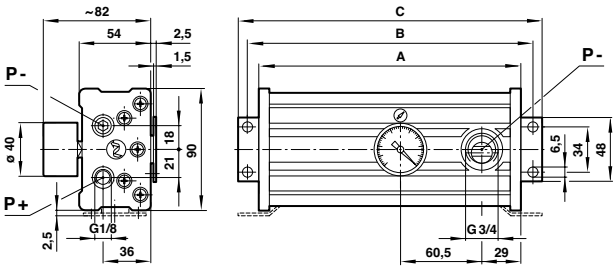
Model	Compressed air	Vacuum	Exhaust
M/58102/10	> Ø 3	> Ø 7	> Ø 9
M/58102/20	> Ø 3	> Ø 7	> Ø 9
M/58102/30	> Ø 4	> Ø 9	> Ø 9
M/58102/60	> Ø 4	> Ø 19	–
M/58102/90	> Ø 5	> Ø 19	–
M/58102/120	> Ø 5	> Ø 22	–

M/58102/10, M/58102/20, M/58102/30
M/58102/N/10, M/58102/N/20, M/58102/N/30



	H
M/58102/10	24,5
M/58102/20	32
M/58102/30	39,5

M/58102/60, M/58102/90, M/58102/120
M/58102/N/60, M/58102/N/90, M/58102/N/120



	A	B	C
M/58102/60	136	154	168
M/58102/90	196	214	228
M/58102/120	196	214	228

Suction cups

M/58300

Ø 6 to 150 mm

Wide variety of cup sizes

Choice of cup designs and material type

Flat cups ideal where minimal movement is required for pliable materials

Bellows cups ideal where level compensation is required

Technical data

Medium:
Vacuum

Operating temperature:
-10°C to +70°C for nitrile rubber cups
-30°C to +200°C for silicone cups
Consult our Technical Service for use below +2°C

Materials

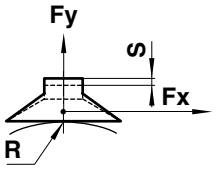
M/58000/01
Cups: nitrile rubber
Connection fittings: aluminium

M/58000/02
Cups: silicone
Connection fittings: aluminium

Model	Ø	Fy (N)			R	S	V	
Flat	mm	-0,2 bar	-0,6 bar	-0,9 bar	(mm)	(mm)	(cm^3)	kg
M/58301/*	6	0,5	1,5	2,3	5	1,5	0,017	0,001
M/58302/*	8	1	2,5	3,5	7	1,5	0,041	0,001
M/58303/*	10	1,5	4	6	9	2	0,065	0,001
M/58304/*	15	2,7	8	12	12	4	0,330	0,001
M/58305/*	20	5	15,5	23	13	2	0,500	0,008
M/58306/*	25	9	26,5	40	17,5	2,5	0,750	0,010
M/58307/*	30	11	34	51	26	2,5	1,3	0,012
M/58308/*	40	19	57,5	86	37	3,5	3	0,011
M/58309/*	50	30	91	135	41	4	4,2	0,016
M/58310/*	80	86	260	390	100	6	21	0,058
M/58311/*	120	180	540	810	365	6	82	0,359
M/58312/*	150	280	842	1250	380	9	177	0,59
Bellows								
M/58403/*	10	1,5	3,5	5	3	4	0,225	0,003
M/58404/*	15	3	6	8	5	6	0,750	0,004
M/58405/*	20	6	10	14	8	5	1,40	0,005
M/58407/*	30	12	22	28	15	12	4,75	0,013
M/58408/*	40	22	40	50	30	10	9,25	0,017
M/58409/*	50	34	66	84	40	15	26,25	0,026
M/58410/*	75	75	170	230	70	14	76	0,075
M/58411/*	110	140	350	460	85	36	111	0,386
M/58412/*	150	300	700	900	250	38	260	0,918

*Insert material code. nitrile: 01, silicone: 02

Note: Theoretical values are given in this table. Always allow a safety factor of > 2.



Fx = μ x Fy
where μ is the frictional coefficient of the material being handled.
An approximate guide:
Plastic μ = 0,4 to 0,5
Steel, oiled μ = 0,1 to 0,3
Glass μ = 0,3 to 0,5

Material characteristics

	Nitrile rubber	Silicone
Wear resistance	Good	Fair
Oil resistance	Excellent	Fair
Weather resistance	Good	Excellent
Ozone resistance	Fair	Excellent

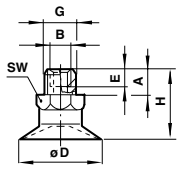
Suction cups

M/58300

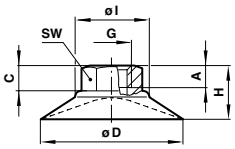
Ø 6 to 150 mm

Flat cups

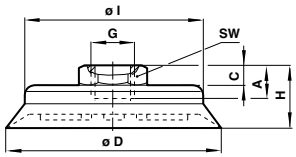
Ø 6 ... 30



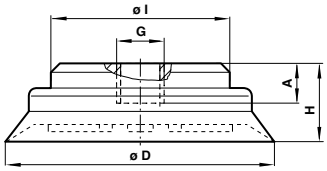
Ø 40 & 50



Ø 80



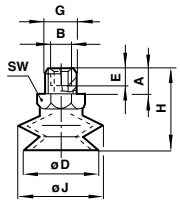
Ø 120 & 150



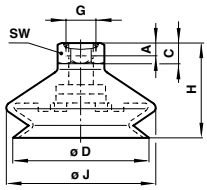
Model	Ø D	A	B	C	E	G	H	Ø I	SW (A/F)
M/58301	6	4,5	–	–	–	M 5	15	–	8
M/58302	8	4,5	–	–	–	M 5	16	–	8
M/58303	10	4,5	–	–	–	M 5	20	–	8
M/58304	15	4,5	–	–	–	M 5	21	–	8
M/58305	20	8	M5	–	7	G1/8 A	19,5	–	14
M/58306	25	8	M5	–	7	G1/8 A	20	–	14
M/58307	30	8	M5	–	7	G1/8 A	20,5	–	14
M/58308	40	6	–	9	–	G1/8	23	24	14
M/58309	50	6	–	11	–	G1/8	26	26	14
M/58310	80	13	–	3,5	–	G1/8	21,5	53	19
M/58311	120	9,5	–	–	–	G1/2	34,5	65	–
M/58312	150	9,5	–	–	–	G1/2	41,5	65	–

Bellows cups

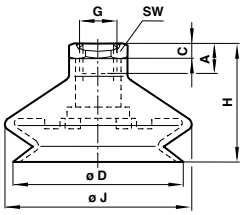
Ø 10 ... 30



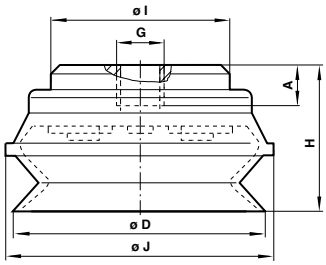
Ø 40 & 50



Ø 75



Ø 110 & 150



Model	Ø	A	B	C	Ø D	E	G	H	Ø I	Ø J	SW (A/F)
M/58403	10	5	–	–	11	–	M 5	26	–	12	7
M/58404	15	5	–	–	16	–	M 5	29	–	17	7
M/58405	20	7,5	M5	–	22	7	G1/8 A	30,5	–	24	14
M/58407	30	7,5	M5	–	33	7	G1/8 A	39	–	36	17
M/58408	40	6	–	9	43	–	G1/8	37	–	46	17
M/58409	50	6	–	9	53	–	G1/8	43	–	59	17
M/58410	75	12	–	4	78	–	G1/8	50	–	83	21
M/58411	110	9,5	–	–	110	–	G1/2	66,5	65	122	–
M/58412	150	9,5	–	–	150	–	G1/2	85,5	65	167	–

Vacuum switches

M/58028/VB, .../VF (Pneumatic)
M/58027/VAP/P, .../VAN/P (Electronic)
M/58024/VB, .../VF (Electrical)

Quick easy installation.
Converts vacuum signal into pneumatic, electronic or electrical output
Fully adjustable switching points
Digital and analogue output on electronic type

Technical data

Medium:
Vacuum (M/58027, M/58024)
Compressed air filtered and non-lubricated (M/58028/VB, M/58028/VF)
See individual technical details

Materials

Pneumatic
Body: polyacetal

Electronic
Housing: zinc
End caps: polycarbonate

Electrical
Body: zinc plated
Diaphragm: silicone

Technical data (pneumatic)

Operation:
M/58028/VB Normally open
M/58028/VF Normally closed

Operating pressure:
2 to 6 bar (pressure valve)

Adjustment :
-0,3 to -0,85 bar

Operating temperature:
-10°C to +80°C
Consult our Technical Service for use below +2°C

Tube:
Ø 4 mm

Model	Type	Function	kg
M/58028/VB	Pneumatic	Normally open	0,032
M/58028/VF	Pneumatic	Normally closed	0,032
M/58027/VAN/P	Electronic	NPN + LED	0,028
M/58027/VAP/P	Electronic	PNP + LED	0,028
M/58024/VB	Electrical	Normally open	0,090
M/58024/VF	Electrical	Normally closed	0,090

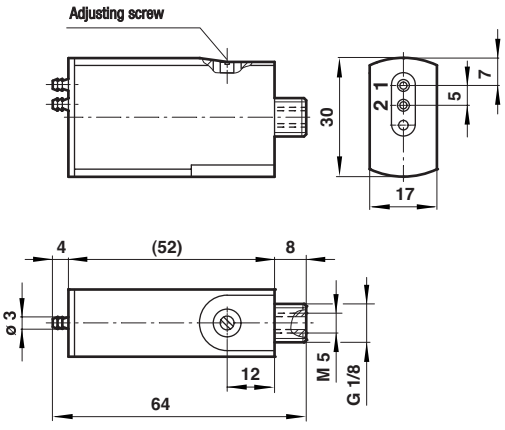
Accessories for electronic switch

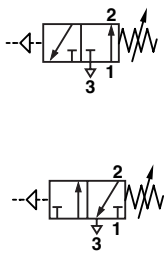
Plug in cable

M/P72014/5

5 m cable length.

M/58028/VB, M/58028/VF





Vacuum switches

M/58028/VB, .../VF (Pneumatic)
M/58027/VAP/P, .../VAN/P (Electronic)
M/58024/VB, .../VF (Electrical)

Technical data (electronic)

Operation:
M/58027/VAP/P PNP with LED
M/58027/VAN/P NPN with LED

Supply voltage (Ub):
10,8 to 30 V d.c.
(reverse polarity protection)

Switching voltage:
(Ub) -0,7 V

Quiescent current consumption:
25 mA

Digital output:
Normally open, 125 mA max.

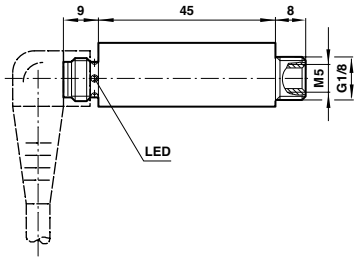
Switching point:
Adjustable between 0 and -1 bar
Analogue output (0 to -1 bar):
1 to 5V d.c. (± 0,004V)

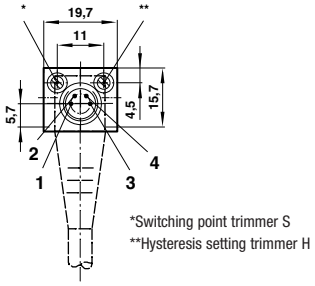
Response time:
< 5 ms

Protection rating:
IP 65 (DIN40050) when fitted with connector

Operating temperature:
+50°C max.
Consult our Technical Service for use below +2°C

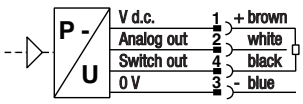
M/58027/VAN/P, M/58027/VAP/P



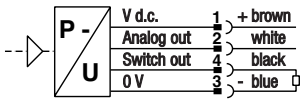


*Switching point trimmer S
**Hysteresis setting trimmer H

M/58027/VAN/P



M/58027/VAP/P



Technical data (electrical)

Operation:
M/58024/VB Normally open
M/58024/VF Normally closed

Switching voltage:
250 V d.c./a.c.

Switching current:
2 A max.

Adjustment:
-0,2 to -1 bar

Repeatability:
± 0,1 bar

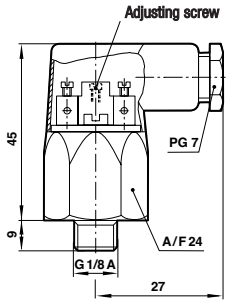
Differential reset pressure:
Up to 0,2 bar

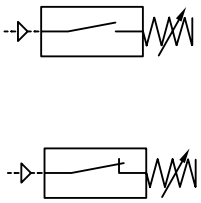
Switching frequency:
200/min.

Protection rating:
IP 55 (DIN40050)

Operating temperature:
-20°C to +80°C
Consult our Technical Service for use below +2°C

M/58024/VB, M/58024/VF





Additional products

Olympian Plus and ported vacuum filters

Idea for removing dirt, dust and free moisture from vacuum systems

G¼ to G1½ port sizes

Size	Bowl	Model
G1/4	Transparent	F73G-2GN-ET2
G1/4	Metal	F73G-2GN-ED2
G3/8	Transparent	F73G-3GN-ET2
G3/8	Metal	F73G-3GN-ED2
G1/2	Metal	F74G-4GN-ED2
G3/4	Metal	F17-600-M3HD
G1	Metal	F17-800-M3HD
G1¼	Metal	F68G-AGN-EC2
G1½	Metal	F68G-BGN-EC2

25 µm element units, ideal for the general protection of vacuum systems. Replacement 25 µm or 5 µm elements and mounting brackets available.

Flexible connectors for suction cups

For use where a vertical offset motion is involved on curved surfaces

Simple to install

Model	Type	Size
M/58001	Flexible connector	G1/8
M/58002	Flexible connector	G1/2

Level compensators for suction cups

Allows for variations in product positioning

For use with uneven product forms

Model	Type	Size
M/58007	Level compensator	M5
M/58008	Level compensator	G1/8
M/58009	Level compensator	G1/2

Vacuum gauges

0 to -1 bar calibration

Accurate vacuum level indication

Range	Model
0 ... -1 bar	M/58080

Silencers

Compact

Optimum air silencing characteristics

Range	Model
G3/8	M/58019

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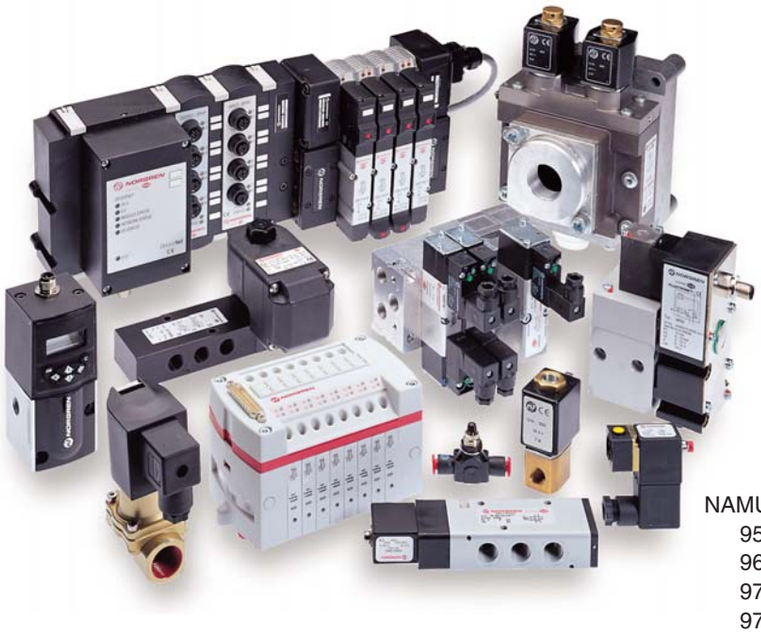

Valve islands with single electrical connector
- VM10 Series....218
- V20 Series....228
- V22 Series....230
- V09 - Nugget 40....234
- V14 - Nugget 120....236

Fieldbus systems
- General Fieldbus systems....238
- AS-Interface bus systems....243

Manifold and sub-base valves
- V08 - Nugget 40....244
- V09 - Nugget 40....246
- V14 - Nugget 120....248
- V40/V41 Series....252
- V44/V45 Series....260
- Mini ISO (M12x1 connector)....270
- SXE MIDI★STAR....272
- SXE/P ISO★STAR....276

Solenoid valves
- V60-63 Series (pilot valve)....282
- 80200 Series....294
- Prospector® (pilot valve)....296
- Excel 15....304
- Excel 22....305
- Excel 22 CNOMO....306
- Excel 32....308
- 80000 Series....318
- 70300 Series....322
- 95000 Series....324
- 96000 Series....326

(Other solenoid and pilot valves under additional ranges)

NAMUR/Process industry valves
- 95000 Series....324
- 96000 Series....326
- 97100 Series....328
- 97105 Series....330
- 97105 50 mW....332
- 82400 Series Click-on®....336
- 84500 Series....337
- 84520 Series....338

Manual valves
- Super X....298

(Other manual valves under additional ranges)

Proportional valves
- VP10....356
- VP21....358
- VP22....364
- VP40....368
- VP50....372
- VP51....374

Special valves
- Twin Excel 22....310
- XSz Press safety valve....312
- XSz 10 V Press safety valve....314
- Two-hand control unit....317
- Soft start SE9300....320

Flow control valves
- T15 Series....350
- Pneufit banjo....351
- T1000 Series....352
- T1100 Series....353
- M/800, C/800 Heavy duty....354
- T20/0405....347

Other valves
- T55/T56 non-return valves....339
- T51, T52, T53 non-return valves....340
- Blocking, pressure reducing & sensor....342
- Air fuses....344
- T70, S/510 exhaust valves....348

(Other products under additional ranges)

Additional valve ranges....376

Valves plug selector....382

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Valve islands with single electrical connector

3/2, 5/2, 5/3
430 l/min

VM10
10 mm body
Multipole/Fieldbus
Page 218

3/2, 5/2, 5/3
453 l/min

V20 Series
17 mm body
Multipole
Page 228

3/2, 5/2, 5/3
453 l/min

V09 Nugget 40
17 mm body
Sub-base
Page 234

3/2, 5/2, 5/3
1152 l/min

V22 Series
19 mm body
Multipole
Page 230

5/2, 5/3
1152 l/min

V14 Nugget 120
19 mm body
Sub-base
Page 236

Manifold and sub-base valves – solenoid and pilot actuated

5/2, 5/3
344 l/min

V08 Nugget 40
M5, 4, 6 mm
Solenoid & pilot
Page 244

3/2, 5/2, 5/3
453 l/min

V09 Nugget 40
G⅛
Solenoid & pilot
Page 246

2 x 3/2, 5/2, 5/3
680 l/min

V40/V41 Series
18 mm Mini ISO
Solenoid & pilot
Page 252

5/2, 5/3
750 l/min

SXE MIDI★STAR
G⅛ glandless
Solenoid & pilot
Page 272

5/2, 5/3
900 l/min

Mini ISO valves
M12x1 single connector
Solenoid
Page 270

5/2. 5/3
1152 l/min

V14 Nugget 120
G¼
Solenoid & pilot
Page 248

Solenoid valves

3/2
16 l/min

Excel 15
M5
Page 304

3/2
36 l/min

Excel 22
M5 & G⅛
Page 305

3/2
77 l/min

Excel 22 CNOMO
1,0 & 1,6 mm
Page 306

2/2, 3/2
240 l/min

Cartridge
Page 379

2/2, 3/2
275 l/min

Excel 32
G⅛ , G¼ & CNOMO
Page 308

5/2
394 l/min

V10 Nugget 40
6 mm PIF
Page 376

3/2
450 l/min

96000
G¼, ¼ NPT
Page 326

5/2, 5/3
742 l/min

V19 Nugget 70
G⅛
Page 377

5/2, 5/3
1085 l/min

V12 Nugget 120
G¼
Page 377

4/2
1400 l/min

26220
G⅛, G¼
Page 378

2/2
1700 l/min

95000
G¼, G½, ¼ NPT
Page 324

3/2, 4/2, 5/2
3000 l/min

80100, 26230
G¼, G½
Page 378

3/2, 5/2, 5/3
4200 l/min

V60-V63 Series
G⅛ to G½
Page 282

2/2, 3/2
15180 l/min

Prospector®
G⅜ to G1
Page 296

2/2
29400 l/min

70300
G½ to G2
Page 322

3/2
35000 l/min

80200
G½ to G2
Page 294

3/2
283000 l/min

80000
Flange DIN 2501
Page 318

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Fieldbus systems

Centralised

InterBus-S, PROFIBUS-DP, DeviceNet, CANOpen
Page 238

Distributed

AS-Interface
Page 243

2x3/2, 5/2, 5/3 1200 l/min

V44/V45 Series
26 mm mini ISO
Solenoid & pilot
Page 260

5/2, 5/3 4000 l/min

SXE/P ISO★STAR
ISO#1 to #3 glandless
Solenoid & pilot
Page 276

Pilot valves

5/2, 5/3 742 l/min

V19 Nugget 70
G⅛
Page 377

3/2, 5/2, 5/3 965 l/min

Super X
G⅛, G¼
Page 376

5/2, 5/3 1085 l/min

V12 Nugget 120
G¼
Page 377

3/2, 5/2 3000 l/min

40200, 40300
G¼, G½
Page 379

3/2, 5/2, 5/3 4200 l/min

V60-V63 Series
G⅛ to G½
Page 282

2/2, 3/2 15180 l/min

Prospector®
G⅜ to G1
Page 296

Options selector (V09, V14, V20, V22)

★★★★★★★A-★★★★A

Valve series
V09, V14, V20, V22

Normal size	Substitute
G1/8 or M5	5
G1/8 or 6mm	6
G1/4 BSP parallel	B

Function	Substitute
3/2 Normally closed	4
5/2	5
5/3 Normally closed, APB	6
5/3 Normally open, COE	7
5/3 2 + 4, COP	8
2 x 3/2 Normally closed	A
2 x 3/2 Normally open	B
2 x 3/2 Normally open/closed	C

Operation/reset	Substitute
Solenoid (internal)	1
Solenoid (external)	2
Air pilot	3
Spring/air	6
Spring	7

Voltage code	Substitute
6 V d.c.	1
12 V d.c.	2
24 V d.c.	3
24 V a.c.	4
48 V a.c.	6
110 V a.c.	8
240 V a.c.	9

Design	Substitute
Power 1,5 W	1

Emergency manual operation	Substitute
No manual override	1
Push turn & lock/bi-stable	2
Push button/mono-stable	3

Option	Substitute
Valve	B
Sub-assembly	Q

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NAMUR/Process industry valves

3/2 450 l/min

96000
G¼, ¼ NPT
Page 326

3/2, 5/2, 5/3 750 l/min

97100
G¼, ¼ NPT
Page 328

3/2, 5/2, 5/3 1300 l/min

97105
G¼, ¼ NPT
Page 330

3/2, 5/2, 5/3 1300 l/min

97105 50 mW
G¼, ¼ NPT
Page 332

2/2 1700 l/min

95000
G¼, G½, ¼ NPT
Page 324

2/2 41884 l/min

84500 Angle seat
G½ to G2
Page 337

Flow control valves

Ø 3 ... 12 mm ⅛ ... ½"

T15
Page 350

Ø 4 ... 14 mm O/D tube

Pneufit banjo
Page 351

M5, G⅛ ... G½

T1000 Uni-directional
Page 352

G⅛, G¼

T1100 Bi-directional
Page 353

⅛, ¼, ½, ¾, 1"

M/800, C/800
Page 354

M5, ⅛ ... ½ BSP

T20 & 0405
Page 347

Other valves

Ø 4 ... 12 mm 5/32 ... ½"

T51, T52, T53 Non-return
Page 340

Ø 4 ... 12 mm O/D ⅛ ... ½" BSP

Blocking, pressure reducing & sensor – Page 342

⅛ ... ½ BSP

T70, S/510 Exhaust valves
Page 348

G¼ ... G1½

T60 Air fuses
Page 344

G⅛ ... G1

S/520 Non-return
Page 381

Ø 4 ... 12 mm 5/32 ... ½" BSP

T50 Non-return
Page 381

Proportional valves

≤ 8 bar 300 l/min

VP10
G¼
Page 356

400 l/min

VP22
G⅛, 6 mm
Page 364

≤ 10 bar 1200 l/min

VP50
G¼
Page 372

≤ 10 bar 1200 l/min

VP51
G¼, ¼ NPT
Page 374

≤ 20 bar 1900 l/min

VP40
G⅛ , G¼, G⅜
Page 368

≤ 16 bar 15000 l/min

VP21
G⅛ to G¾
Page 358

Special valves

3/2 29 l/min

Twin Excel 22
6 mm, 4 mm Push-in
Page 310

3/2 4775 l/min

V18 Monitored dump valve
G½
Page 379

3/2 4900 l/min

Soft start SE 9300
ISO#1 to #3
Page 320

3/2

XSz Press safety valve
G¼ to G2
Page 312

5/2

XSz 10 V Press safety valve
G½
Page 314

XSz Silencer
Flange
Page 316

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Manual/mechanical valves

2/2
41884 l/min

84520 Angle seat
G½ to G2
Page 338

2/2
46412 l/min

82400 Click-on
G¼ to G2
Page 336

3/2, 5/2, 5/3
965 l/min

Super X
G⅛, G¼
Page 298

24900 l/min

T-Lockout
G½, G1
Page 380

System components

G ⅛ ... G½

S/636
Page 381

G ⅛

Impulse generator
Page 380

M5, ⅛, ¼, ⅜, ½"

T55/T56 Non-return
Page 339

G ⅛ ... G½

M/7200 Sleeve valves
Page 380

G ⅛, G¼

T65 Shuttle
Page 381

2/2

XSz Damping – Soft start
Flange
Page 316

2/2

XSz Damping – Soft stop
Flange
Page 316

XSz Failure indication element
Flange
Page 316

Two-hand control unit
G⅛
Page 317

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VM10 Series valve islands

Valve slices 2 x 3/2, 5/2 and 5/3 with integral push-in fittings

Ø 3 mm, 4 mm, 6 mm

Multipole or individually wired for installation flexibility

Interchangeable Fieldbus compatible modules

Compact and lightweight

Standard or checked exhaust paths

Quick disconnect base (Pneumapole)

High flow from 10 mm valve width

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated

Operation:

Spool valve indirectly actuated

Port sizes:

Ø 3 mm, 4 mm, 6 mm Push-in fittings

Operating pressure:

Maximum 8 bar

Flow:

Function	'C'	b'	'A'	l/min	Cv	Kv
5/2 port 1 to 2 & 4						
	1,77	0,48	7,10	430	0,44	0,36
5/2 ports 2 to 3 & 4 to 5						
	1,65	0,45	6,61	400	0,41	0,34
3/2 ports 1 to 2 & 1 to 4						
	1,44	0,39	5,78	350	0,36	0,29
3/2 ports 2 to 3 & 4 to 5						
	1,44	0,39	5,78	350	0,36	0,29
5/3 ports 1 to 2 & 4						
	1,44	0,39	5,78	350	0,36	0,29
5/3 ports 2 to 3 & 4 to 5						
	1,44	0,39	5,78	350	0,36	0,29

Degree of protection:

IP65

Ambient temperature:

-20°C to +50°C

Consult our Technical Service for use below +2°C.

Materials

Aluminium spool with nitrile rubber seals

Body, end plates: engineered PPA co-polymer

2 x 3/2 Double solenoid actuated valves

Model	Manual override	Function 2 x 3/2	Pilot supply	Actuation	Operating pressure (bar)	Pilot pressure (bar)	kg
VM10*A11*B213B	Turn & lock	NC	Internal	Sol/Spring	3 ... 8	–	0,054
VM10*A11*B313B	Push only	NC	Internal	Sol/Spring	3 ... 8	–	0,054
VM10*A22*B213B	Turn & lock	NC	External	Sol/Spring	-0,9 ... 8	3 ... 8	0,054
VM10*A22*B313B	Push only	NC	External	Sol/Spring	-0,9 ... 8	3 ... 8	0,054
VM10*B11*B213B	Turn & lock	NO	Internal	Sol/Spring	3 ... 8	–	0,054
VM10*B11*B313B	Push only	NO	Internal	Sol/Spring	3 ... 8	–	0,054
VM10*B22*B213B	Turn & lock	NO	External	Sol/Spring	-0,9 ... 8	3 ... 8	0,054
VM10*B22*B313B	Push only	NO	External	Sol/Spring	-0,9 ... 8	3 ... 8	0,054
VM10*C11*B213B	Turn & lock	NC/NO	Internal	Sol/Spring	3 ... 8	–	0,054
VM10*C11*B313B	Push only	NC/NO	Internal	Sol/Spring	3 ... 8	–	0,054
VM10*C22*B213B	Turn & lock	NC/NO	External	Sol/Spring	-0,9 ... 8	3 ... 8	0,054
VM10*C22*B313B	Push only	NC/NO	External	Sol/Spring	-0,9 ... 8	3 ... 8	0,054

5/2 Single and double solenoid actuated valves

Model	Manual override	Function	Pilot supply	Actuation	Operating pressure (bar)	Pilot pressure (bar)	kg
VM10*517*B213B	Turn & lock	5/2	Internal	Sol/Spring	3 ... 8	–	0,044
VM10*517*B313B	Push only	5/2	Internal	Sol/Spring	3 ... 8	–	0,044
VM10*527*B213B	Turn & lock	5/2	External	Sol/Spring	-0,9 ... 8	3 ... 8	0,044
VM10*527*B313B	Push only	5/2	External	Sol/Spring	-0,9 ... 8	3 ... 8	0,044
VM10*511*B213B	Turn & lock	5/2	Internal	Sol/Sol	2 ... 8	–	0,054
VM10*511*B313B	Push only	5/2	Internal	Sol/Sol	2 ... 8	–	0,054
VM10*522*B213B	Turn & lock	5/2	External	Sol/Sol	-0,9 ... 8	2 ... 8	0,054
VM10*522*B313B	Push only	5/2	External	Sol/Sol	-0,9 ... 8	2 ... 8	0,054

5/3 Double solenoid actuated valves

Model	Manual override	Function	Pilot supply	Actuation	Operating pressure (bar)	Pilot pressure (bar)	kg
VM10*611*B213B	Turn & lock	5/3 APB	Internal	Sol/Sol	3 ... 8	–	0,055
VM10*611*B313B	Push only	5/3 APB	Internal	Sol/Sol	3 ... 8	–	0,055
VM10*622*B213B	Turn & lock	5/3 APB	External	Sol/Sol	-0,9 ... 8	3 ... 8	0,055
VM10*622*B313B	Push only	5/3 APB	External	Sol/Sol	-0,9 ... 8	3 ... 8	0,055

Note: For 5/3 COE please use 2 x 3/2 NC. For 5/3 COP please use 2 x 3/2 NO

APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

Note: * For selecting port sizes, standard or checked exhaust paths please see page 219

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VM10 Series valve islands

Valve slices 2 x 3/2, 5/2 and 5/3 with integral push-in fittings

Ø 3 mm, 4 mm, 6 mm

Options selector

VM10★★★★★B★13B

Tube size	Substitute
3 mm PIF	3
4 mm PIF	4
6 mm PIF	6
No PIF (for use with Pneumapole)	7

Valve function	Substitute
5/2	5
5/3 APB	6
2 x 3/2 NC and 5/3 COE	A
2 x 3/2 NO and 5/3 COP	B
2 x 3/2 NC and NO	C

Manual override	Substitute
Turn to lock manual overide	2
Push only manual overide	3

Exhaust	Substitute
Standard open exhaust	A
Checked exhaust (integral non return valve)*	U

Actuation/pilot supply	Substitute
Solenoid/solenoid internal pilot	11
Solenoid/spring internal pilot **	17
Solenoid/solenoid external pilot	22
Solenoid/spring external pilot **	27

Note: For 5/3 COE and COP use 2 x 3/2

APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

For valve island specification see fax-back form after page 232

Use our configurator under http://www.norgren.com (also available on CD)

* Requires Pneumapole sub-base

** Can only be used with 5/2 valve

Electrical details

Voltage:	24 V d.c. 0,6 W
Surge suppression:	Flywheel diode
Indication:	Yellow LED

Solenoids

Voltage tolerance:	± 10%
Rating:	100% ED

Accessories for individually wired and multipole valve islands

D Sub-connector 25 pin

V11569-E01	1 m	**L1**	V11570-E01	1 m	**M1**	V11556-E10	1 m	**K2**	VM106517AQ0300	**21**	VM106517AQ0301 Port 1 blanked **31**
V11569-E03	3 m	**L2**	V11570-E03	3 m	**M2**	V11556-E03	0,3 m	**K1**			VM106517AQ0302 Ports 3 & 5 blanked **41**
V11569-E05	5 m	**L3**	V11570-E05	5 m	**M3**						VM106517AQ0303 Ports 1, 3 & 5 blanked **51**

Pressure switch

VM106517AQ0804	4 mm	**7A**	V10009-C00	1 m	**A17**	V11554-K30		**8D**	V11574-K30	Push only	**N1** For part numbers and dimensional details
VM106517AQ0806	6 mm	**7B**									see page 225*

Stem silencer**

T45P0004	4 mm
T45P0006	6 mm
T45P0008	8 mm
T45P0010	10 mm
T45P0012	12 mm

* Currently under development, consult our Technical Service

** For more information, please see page 575

N2 = Short order code

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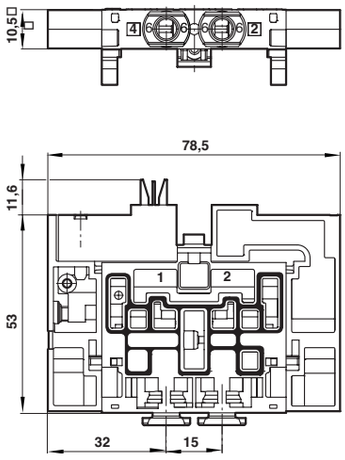
VM10 Series valve islands

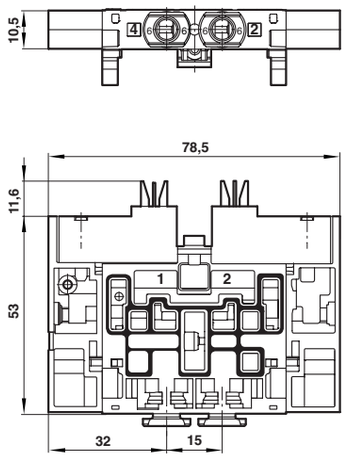
Valve slices 2 x 3/2, 5/2 and 5/3 with integral push-in fittings

Ø 3 mm, 4 mm, 6 mm

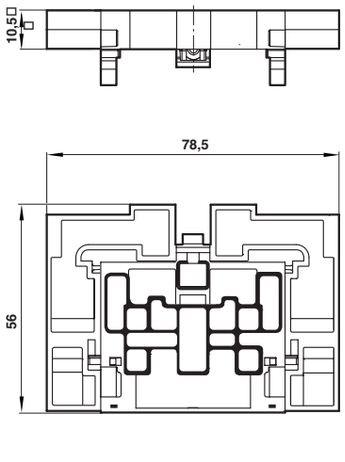
Single solenoid



Double solenoid

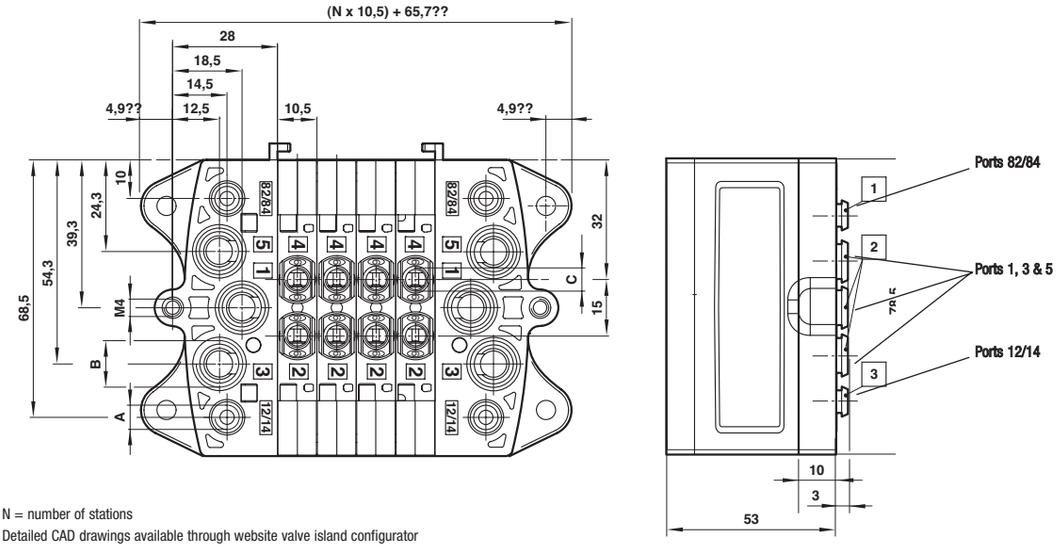


Blanking plates



Valve blanking station	Short code	Port blanking station		Short code	kg
VM106517AQ0300	21	VM106517AQ0301	Port 1 blanked	31	0,028
		VM106517AQ0302	Ports 3 & 5 blanked	41	0,028
		VM106517AQ0303	Ports 1, 3 & 5 blanked	51	0,028

Port connections



N = number of stations

Detailed CAD drawings available through website valve island configurator

Model	Description	B Ports 1 ,3 & 5	A Ports 12/14 & 82/84	D Ports 2 & 4	Short code	kg
VM106517AQ010Y	End plate kit - feed both ends	10 mm	6 mm	6 mm	1A	0,170
VM106517AQ0108	End plate kit - feed both ends	8 mm	4 mm	4 mm	1B	0,170
VM106517AQ011Y	End plate kit - feed left, right blocked	10 mm	6 mm	6 mm	1C	0,170
VM106517AQ0118	End plate kit - feed left, right blocked	8 mm	4 mm	4 mm	1D	0,170
VM106517AQ012Y	End plate kit - feed right, left blocked	10 mm	6 mm	6 mm	1E	0,170
VM106517AQ0128	End plate kit - feed right, left blocked	8 mm	4 mm	4 mm	1F	0,170
VM106517AQ0131	End plate kit - feed both ends	no PIF *	no PIF *	no PIF *	1N	0,170
VM106517AQ0132	End plate kit - feed left, right blocked	no PIF *	no PIF *	no PIF *	1P	0,170
VM106517AQ0133	End plate kit - feed right, left blocked	no PIF *	no PIF *	no PIF *	1R	0,170

Available valve port sizes – Ø 3 mm, 4 mm and 6 mm

* No push in fitting for use with pneumapole sub-base

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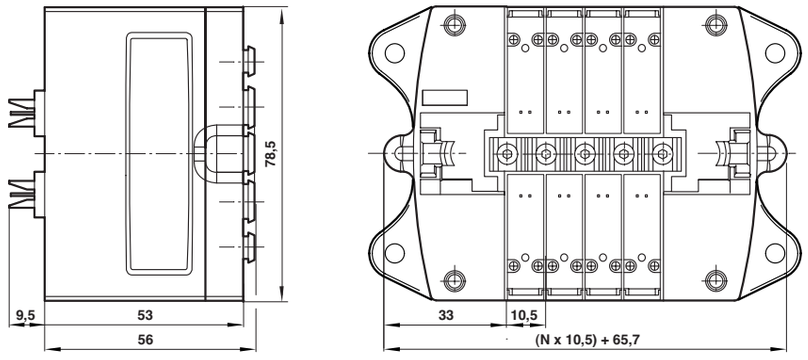
Modular assembly

Individually wired IP40

Individually wired	No. stations	Max. no. coils	kg*
2 Pin connector	2 to 20	40	0,170

* kg + valves weight

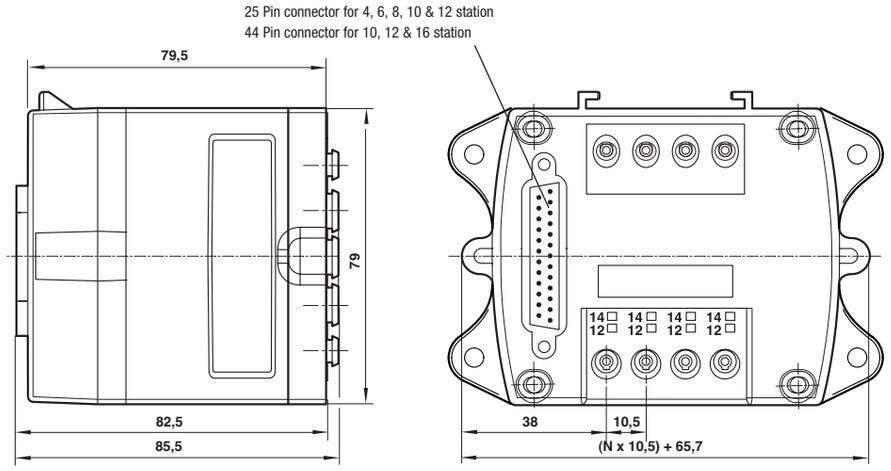


N = number of stations

Multipole IP65

Multipole	No. stations	Model	Max. no. coils	Short code	kg
25 Pin connector	4	VM106517AQ0404	8	A1	0,116
25 Pin connector	6	VM106517AQ0406	12	A2	0,122
25 Pin connector	8	VM106517AQ0408	16	A3	0,128
25 Pin connector	10	VM106517AQ0410	20	A4	0,134
25 Pin connector	12	VM106517AQ0412	24	A5	0,140
44 Pin connector	10	VM106517AQ0510	20	B1	0,138
44 Pin connector	12	VM106517AQ0512	24	B2	0,144
44 Pin connector	16	VM106517AQ0516	32	B3	0,160

For common +ve, change 11th digit to R e.g. VM106517AQ**R**404



N = number of stations

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VM10 Series valve islands

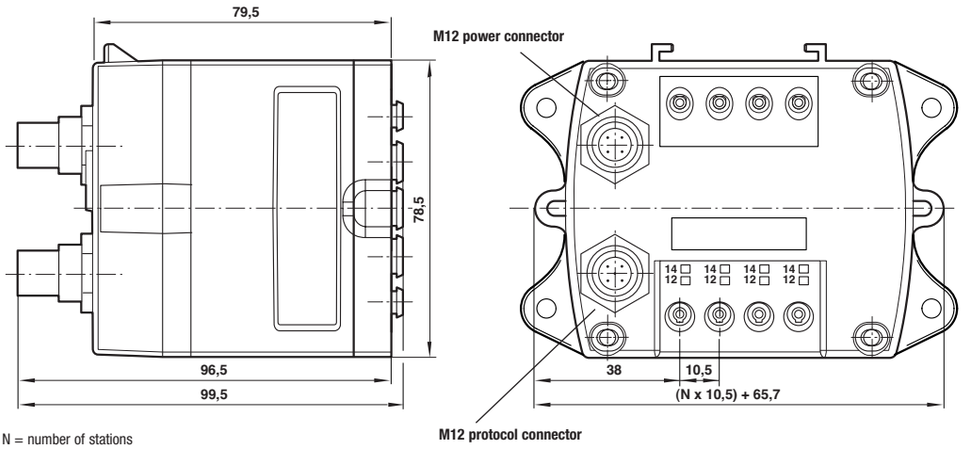
Valve slices 2 x 3/2, 5/2 and 5/3 with integral push-in fittings

Ø 3 mm, 4 mm, 6 mm

Fieldbus connections (M12 connector types) IP65

Standard Fieldbus - available protocols	No. stations	Model	Max. no. coils	Short code	kg
DeviceNet	8	VM10DNFNB-00080	16	C1	0,138
DeviceNet	10	VM10DNFNB-00100	20	C2	0,144
DeviceNet	12	VM10DNFNB-00120	24	C3	0,150
DeviceNet	16	VM10DNFNB-00160	32	C4	0,170
CANopen	08	VM10CAFNB-00080	16	D1	0,138
CANopen	10	VM10CAFNB-00100	20	D2	0,144
CANopen	12	VM10CAFNB-00120	24	D3	0,150
CANopen	16	VM10CAFNB-00160	32	D4	0,170
AS-interface	4*	VM10AS10A-00410	4	J1	0,138
AS-interface**	8*	VM10AS10A-00810	8	J2	0,144
AS-interface**	4*	VM10AS10A-00820	8	J3	0,150
AS-interface**	6*	VM10AS10A-00830	8	J4	0,170

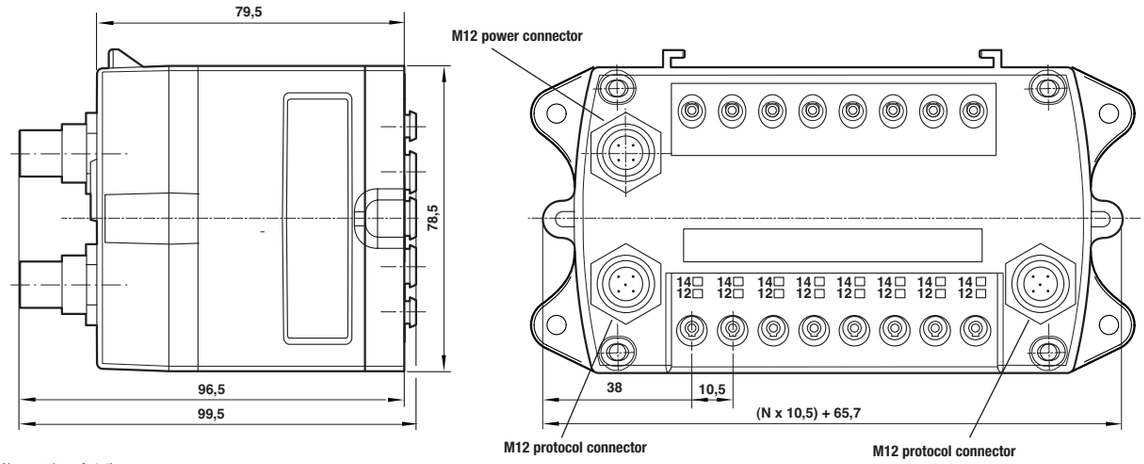
* Number of stations = 4 (4 x sol/spring), 8 (8 x sol/spring), 4 (4 x sol/sol), 6 (4 x sol/spring, 2 x sol/sol). ** Use 2 x M12 protocol connectors



N = number of stations

Fieldbus connections (M12 connector types) IP65

Standard Fieldbus - available protocols	No. of stations	Model	Max. no. coils	Short code	kg
Profibus-DP	8	VM10DPFNB-00080	16	E1	0,138
Profibus-DP	10	VM10DPFNB-00100	20	E2	0,144
Profibus-DP	12	VM10DPFNB-00120	24	E3	0,150
Profibus-DP	16	VM10DPFNB-00160	32	E4	0,170
AB RIO	8	VM10RIFNB-00080	16	G1	0,138
AB RIO	10	VM10RIFNB-00100	20	G2	0,144
AB RIO	12	VM10RIFNB-00120	24	G3	0,150
AB RIO	16	VM10RIFNB-00160	32	G4	0,170



N = number of stations

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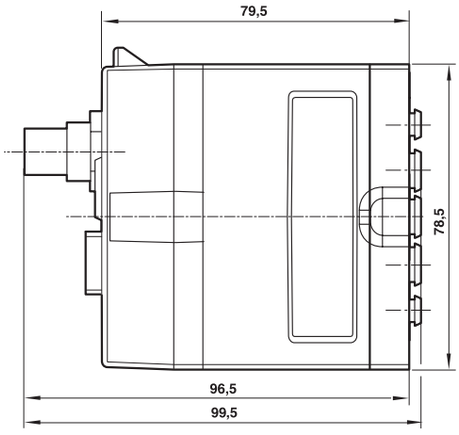
VM10 Series valve islands

Valve slices 2 x 3/2, 5/2 and 5/3 with integral push-in fittings

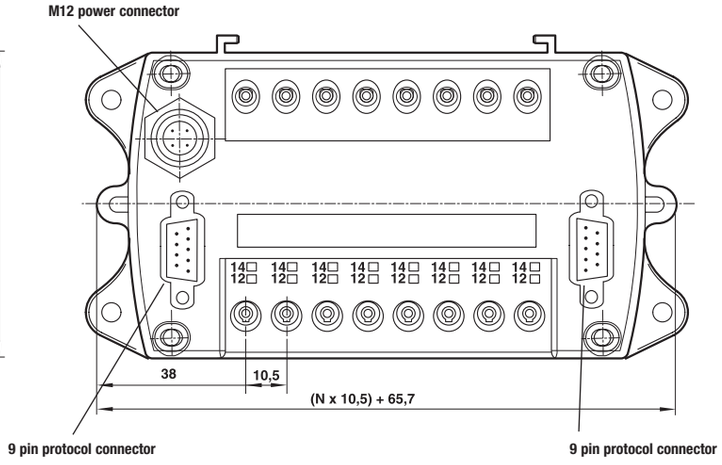
Ø 3 mm, 4 mm, 6 mm

Fieldbus connections - (9 pin D-type connector) IP65

Standard Fieldbus - available protocols	No. of stations	Model	Max. no. coils	Short code	kg
Interbus-S	8	VM10IBFNB-00080	16	F1	0,138
Interbus-S	10	VM10IBFNB-00100	20	F2	0,144
Interbus-S	12	VM10IBFNB-00120	24	F3	0,150
Interbus-S	16	VM10IBFNB-00160	32	F4	0,170

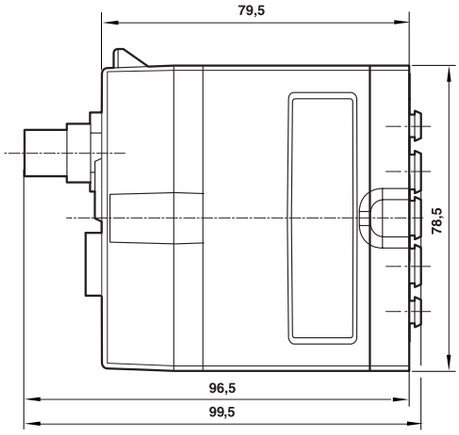


N = number of stations

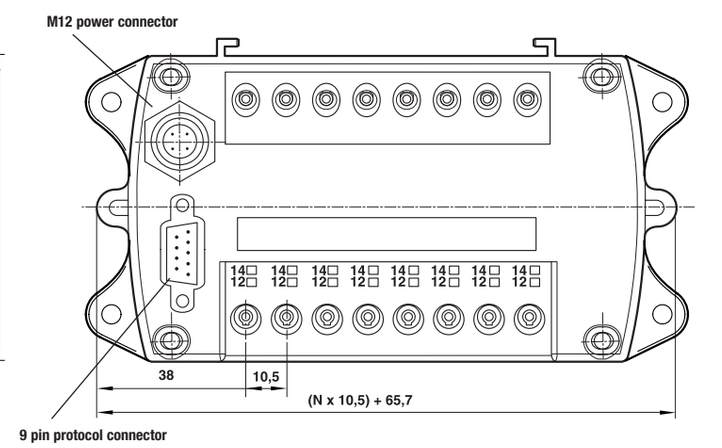


Fieldbus connections - (9 pin D-type connector) IP40

Standard Fieldbus - available protocols	No. of stations	Model	Max. no. coils	Short code	kg
Profibus-DP	8	VM10DPFNB-00081	16	E5	0,138
Profibus-DP	10	VM10DPFNB-00101	20	E6	0,144
Profibus-DP	12	VM10DPFNB-00121	24	E7	0,150
Profibus-DP	16	VM10DPFNB-00161	32	E8	0,170



N = number of stations



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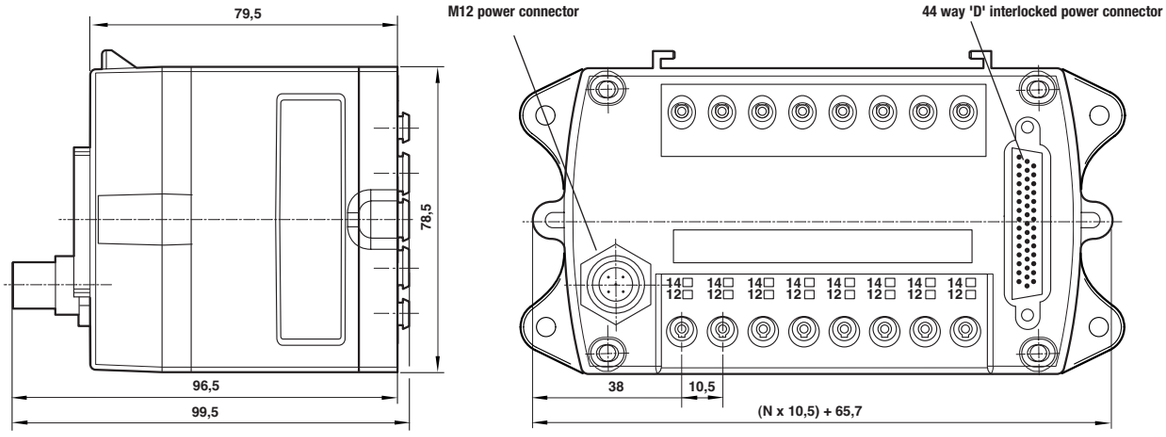
VM10 Series valve islands

Valve slices 2 x 3/2, 5/2 and 5/3 with integral push-in fittings

Ø 3 mm, 4 mm, 6 mm

Fieldbus connections with interlocks IP65

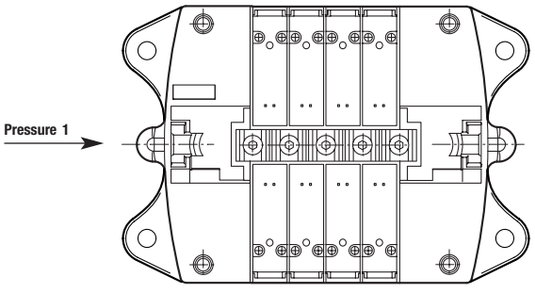
Standard Fieldbus - available protocols	No. of stations	Model	Max. no. coils	Short code	kg
DeviceNet	8	VM10DNFNB-00081	16	C5	0,138
DeviceNet	10	VM10DNFNB-00101	20	C6	0,144
DeviceNet	12	VM10DNFNB-00121	24	C7	0,150
DeviceNet	16	VM10DNFNB-00161	32	C8	0,170
CANopen	8	VM10CAFNB-00081	16	D5	0,138
CANopen	10	VM10CAFNB-00101	20	D6	0,144
CANopen	12	VM10CAFNB-00121	24	D7	0,150
CANopen	16	VM10CAFNB-00161	32	D8	0,170



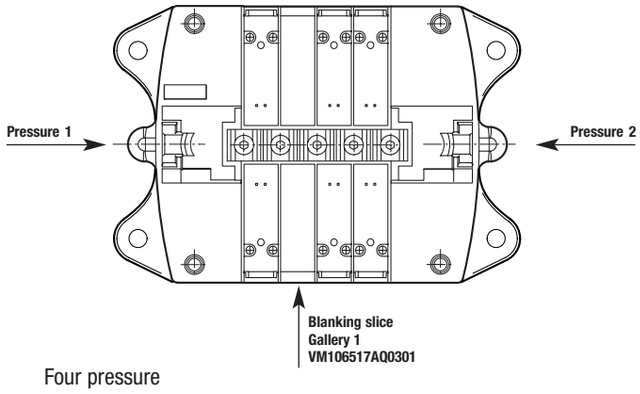
N = number of stations

Multi-pressure options

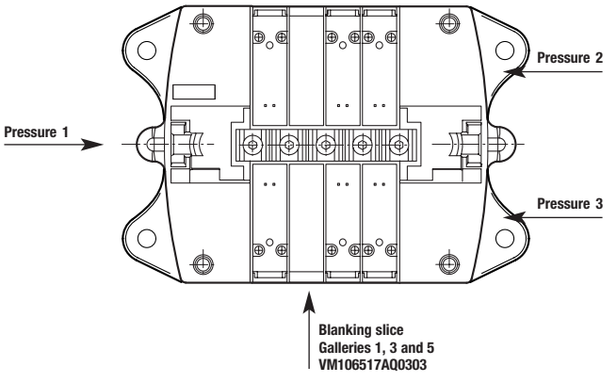
Single pressure



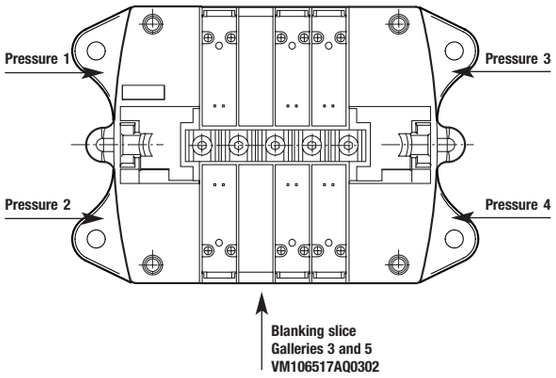
Dual pressure



Three pressure



Four pressure



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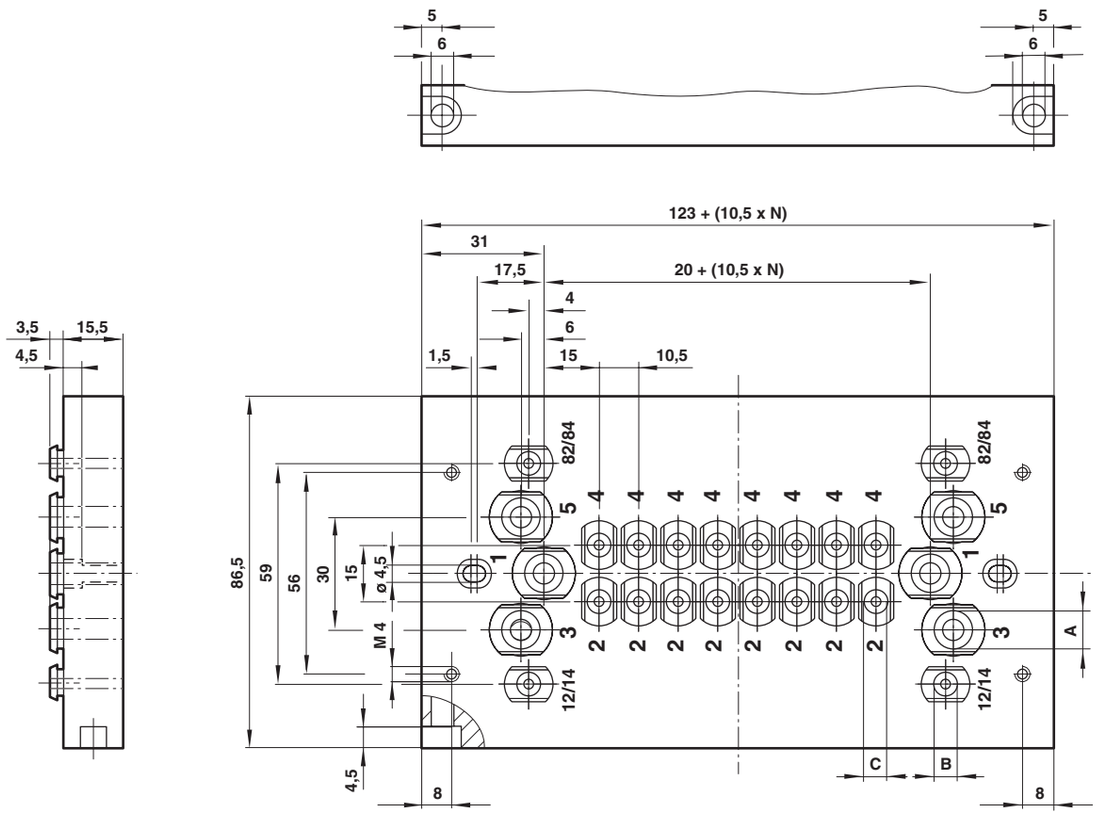
VM10 Series valve islands

Valve slices 2 x 3/2, 5/2 and 5/3 with integral push-in fittings

Ø 3 mm, 4 mm, 6 mm

Pneumapole sub-base *



Model	Description	A Ports 1 ,3 & 5	B Ports 12/14 & 82/84	C Ports 2 & 4	Exhaust type	Short code
VM106517AQ6604	4 station Pneumapole	10 mm	6 mm	6 mm	Standard	3C
VM106517AQ6606	6 station Pneumapole	10 mm	6 mm	6 mm	Standard	3F
VM106517AQ6608	8 station Pneumapole	10 mm	6 mm	6 mm	Standard	3J
VM106517AQ6610	10 station Pneumapole	10 mm	6 mm	6 mm	Standard	3M
VM106517AQ6612 *	12 station Pneumapole	10 mm	6 mm	6 mm	Standard	3Q
VM106517AQ6616 *	16 station Pneumapole	10 mm	6 mm	6 mm	Standard	3T
VM106517UQ6804 *	4 station Pneumapole	10 mm	6 mm	6 mm	Checked exhaust	5C
VM106517UQ6806 *	6 station Pneumapole	10 mm	6 mm	6 mm	Checked exhaust	5F
VM106517UQ6808 *	8 station Pneumapole	10 mm	6 mm	6 mm	Checked exhaust	5J
VM106517UQ6810 *	10 station Pneumapole	10 mm	6 mm	6 mm	Checked exhaust	5M
VM106517UQ6812 *	12 station Pneumapole	10 mm	6 mm	6 mm	Checked exhaust	5Q
VM106517UQ6816 *	16 station Pneumapole	10 mm	6 mm	6 mm	Checked exhaust	5T

* Currently under development, consult our Technical Service

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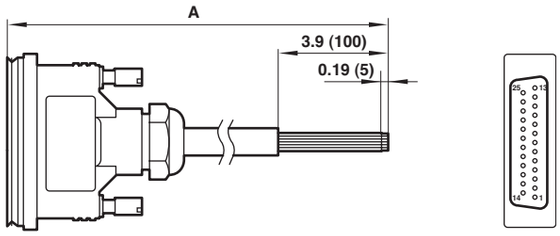
VM10 Series valve islands

Valve slices 2 x 3/2, 5/2 and 5/3 with integral push-in fittings

Ø 3 mm, 4 mm, 6 mm

25 pin D sub-connector



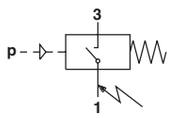
Model	A	Short code	kg
V11569-E01	1 m	L1	0,276
V11569-E03	3 m	L2	0,676
V11569-E05	5 m	L3	1,076

PIN No.	Wire colour	Socket	Pilot	Station
1	White	Solenoid 1–a	14	1
2	Brown	Solenoid 2–a	14	2
3	Green	Solenoid 3–a	14	3
4	Yellow	Solenoid 4–a	14	4
5	Grey	Solenoid 5–a	14	5
6	Pink	Solenoid 6–a	14	6
7	Blue	Solenoid 7–a	14	7
8	Red	Solenoid 8–a	14	8
9	Black	Solenoid 9–a	14	9
10	Violet	Solenoid 10–a	14	10
11	Grey/Pink	Solenoid 11–a	14	11
12	Red/Blue	Solenoid 12–a	14	12
13	White/Green	Common-Ve		–
14	Brown/Green	Solenoid 1–b	12	1
15	White/Yellow	Solenoid 2–b	12	2
16	Yellow/Brown	Solenoid 3–b	12	3
17	White/Grey	Solenoid 4–b	12	4
18	Grey/Brown	Solenoid 5–b	12	5
19	White/Pink	Solenoid 6–b	12	6
20	Pink/Brown	Solenoid 7–b	12	7
21	White/Blue	Solenoid 8–b	12	8
22	Brown/Blue	Solenoid 9–b	12	9
23	White/Red	Solenoid 10–b	12	10
24	Brown/Red	Solenoid 11–b	12	11
25	White/Black	Solenoid 12–b	12	12

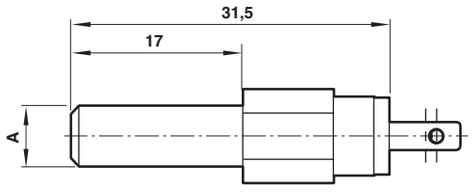
Note: Conforms to DIN 47100

Pressure switch

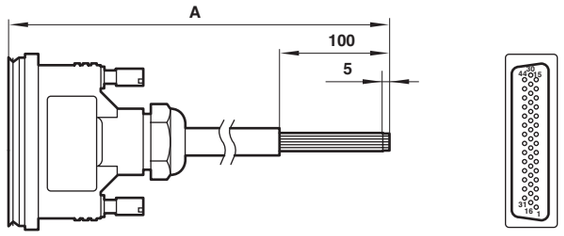
Model	A	Short code	kg
VM106517AQ0804	4	7A	0,004
VM106517AQ0806	6	7B	0,004



AMP E–terminals 2,8 x 0,8
Degree of protection: IP 00
Non adjustable
Pressure range: 0 to 10 bar
Switching point rising pressure: 3,0 to 5,0
Switch point falling pressure: 2,5 to 3,7 bar



44 pin D Sub-connector



Model	A	Short code	kg
V11570-E01	1 m	M1	0,280
V11570-E03	3 m	M2	0,680
V11570-E05	5 m	M3	1,080

PIN No.	Wire colour	Socket	Pilot	Station
1	White	Solenoid 1–a	14	1
2	Brown	Solenoid 2–a	14	2
3	Green	Solenoid 3–a	14	3
4	Yellow	Solenoid 4–a	14	4
5	Grey	Solenoid 5–a	14	5
6	Pink	Solenoid 6–a	14	6
7	Blue	Solenoid 7–a	14	7
8	Red	Solenoid 8–a	14	8
9	Black	Solenoid 9–a	14	9
10	Violet	Solenoid 10–a	14	10
11	Grey/Pink	Solenoid 11–a	14	11
12	Red/Blue	Solenoid 12–a	14	12
13	White/Green	Solenoid 13–a	14	13
14	Brown/Green	Solenoid 14–a	14	14
15	White/Yellow	Solenoid 15–a	14	15
16	Yellow/Brown	Solenoid 1–b	12	1
17	White/Grey	Solenoid 2–b	12	2
18	Grey/Brown	Solenoid 3–b	12	3
19	White/Pink	Solenoid 4–b	12	4
20	Pink/Brown	Solenoid 5–b	12	5
21	White/Blue	Solenoid 6–b	12	6
22	Brown/Blue	Solenoid 7–b	12	7
23	White/Red	Solenoid 8–b	12	8
24	Brown/Red	Solenoid 9–b	12	9
25	White/Black	Solenoid 10–b	12	10
26	Brown/Black	Solenoid 11–b	12	11
27	Grey/Green	Solenoid 12–b	12	12
28	Yellow/Grey	Solenoid 13–b	12	13
29	Pink/Green	Solenoid 14–b	12	14
30	Yellow/Pink	Solenoid 15–b	12	15
31	Green/Blue	Solenoid 16–a	14	16
32	Yellow/Blue	Solenoid 16–b	12	16
33	-	NOT USED	-	-
34	-	NOT USED	-	-
35	-	NOT USED	-	-
36	-	NOT USED	-	-
37	-	NOT USED	-	-
38	-	NOT USED	-	-
39	-	NOT USED	-	-
40	-	NOT USED	-	-
41	-	NOT USED	-	-
42	-	NOT USED	-	-
43	-	NOT USED	-	-
44	Red/Black Yellow/Black	Common -Ve	-	-

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Fieldbus accessories

Symbol	Description	Connection	Cable length	Model	Short code
Fieldbus power connector					
	DeviceNet (4 pin, female)	M12	Wireable	V11588-E01	R1
	CANopen (4 pin, female)				
	AB RIO (4 pin, female)				
	Profibus-DP (4 pin, female)				
	Interbus-S (4 pin, female)				
Interlock power connector					
	DeviceNet or CANopen (44 pin, female)	D-Sub	1 m	V11570-E01	M1
			3 m	V11570-E03	M2
			5 m	V11570-E05	M3
Communication cable and connector					
	DeviceNet (5 pin, female)	M12	Wireable	V11589-E01	R2
	CANopen (5 pin, female)				
	AB RIO (5 pin, female)				
	Profibus-DP, reverse keyway	M12	Wireable	V11590-E01	R3
	(5 pin, male)				
	Profibus-DP, reverse keyway	M12	Wireable	V11591-E01	R4
	(5 pin female)				
	Profibus-DP connector	D-Sub	Wireable	V11654-E01	R0
	(9 pin, male) with terminating resistor	IP40			
	Profibus - DP terminating resistor	M12	–	V11592-E01	R6
	AS-interface power or communications	M12	Wireable	VE1ASCN1-M1200	R5
	(4 pin)				
	Interbus-S (9 pin)	D-Sub	1 m	VE2FBC9P-9S010	F21
			3 m	VE2FBC9P-9S030	F22
			5 m	VE2FBC9P-9S050	F23
	Interbus-S (9 pin, male)	D-Sub	Wireable	VE2FBC9P-00000	F24
	Interbus-S (9 pin, female)	D-Sub	Wireable	VE2FBC9S-00000	F25
	Interbus-S terminating connector	D-Sub	–	V11340-E03	R9
	(9 pin male)				

For pin information on wiring connections please refer to Fieldbus manual

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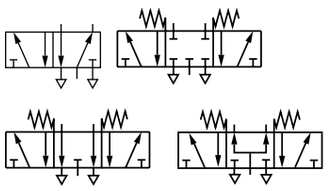
V20 Series valve islands

Solenoid actuated spool valves

Modular sub-base with wireway

2 x 3/2, 5/2 & 5/3, Ø 4, Ø 6 mm, G⅛



Multipole design for easy installation

IP 40, IP 65 and NEMA 4 conduit entry models

Fieldbus II compatible

24 V d.c. or 24 V a.c. options

Dedicated AS-interface modules

Technical data

Medium:

Compressed air, filtered to 40 µm lubricated and non-lubricated

Flow:

Size	Function	l/min
G1/8	5/2	452
Ø 6mm	2 x 3/2	220
Ø 6mm	5/3	274

Ambient temperature:

-20°C to +50°C solenoid models

For use below +2°C consult our Technical Service.

Suppression:

Flywheel diode

Indication:

Amber LED electrical signal

Degree of protection:

IP 40 'D' sub-connector

IP 65 'D' sub-connector with hood

IP 65 Round type plug

IP 65 and NEMA 4 conduit entry type

Materials

Valves

Body: aluminium alloy

End caps: glass filled co-polymer

Spool: aluminium

Seals: nitrile rubber

Wireway

Body, sub-base and end plates: die-cast aluminium

End covers & solenoids: glass-filled co-polymer

Model	Function		Actuation	Mid position	Pilot supply	Manual override	Operating pressure (bar)	kg
V206A11A-B213R	2x3/2	NC	Sol/spring	–	Internal	Turn & lock	2,2 ... 8	0,135
V206A11A-B313R	2x3/2	NC	Sol/spring	–	Internal	Push only	2,2 ... 8	0,135
V206B11A-B213R	2x3/2	NO	Sol/spring	–	Internal	Turn & lock	2,2 ... 8	0,135
V206B11A-B313R	2x3/2	NO	Sol/spring	–	Internal	Push only	2,2 ... 8	0,135
V206A22A-B213R	2x3/2	NC	Sol/spring	–	External	Turn & lock	-0,9 ... 10	0,135
V206A22A-B313R	2x3/2	NC	Sol/spring	–	External	Push only	-0,9 ... 10	0,135
V206B22A-B213R	2x3/2	NO	Sol/spring	–	External	Turn & lock	-0,9 ... 10	0,135
V206B22A-B313R	2x3/2	NO	Sol/spring	–	External	Push only	-0,9 ... 10	0,135
V206C11A-B213R	2x3/2	NO/NC	Sol/spring	–	Internal	Turn & lock	2,2 ... 8	0,135
V206C11A-B313R	2x3/2	NO/NC	Sol/spring	–	Internal	Push only	2,2 ... 8	0,135
V206C22A-B213R	2x3/2	NO/NC	Sol/spring	–	External	Turn & lock	-0,9 ... 10	0,135
V206C22A-B313R	2x3/2	NO/NC	Sol/spring	–	External	Push only	-0,9 ... 10	0,135
V206517A-B213R	5/2		Sol/Spring	–	Internal	Turn & lock	1,8 ... 8	0,110
V206517A-B313R	5/2		Sol/Spring	–	Internal	Push only	1,8 ... 8	0,110
V206527A-B213R	5/2		Sol/Spring	–	External	Turn & lock	-0,9 ... 10	0,110
V206527A-B313R	5/2		Sol/Spring	–	External	Push only	-0,9 ... 10	0,110
V206513A-B213R	5/2		Sol/Air spring	–	Internal	Turn & lock	1,5 ... 8	0,110
V206513A-B313R	5/2		Sol/Air spring	–	Internal	Push only	1,5 ... 8	0,110
V206523A-B213R	5/2		Sol/Air spring	–	External	Turn & lock	-0,9 ... 10	0,110
V206523A-B313R	5/2		Sol/Air spring	–	External	Push only	-0,9 ... 10	0,110
V206511A-B213R	5/2		Sol/Sol	–	Internal	Turn & lock	1,2 ... 8	0,125
V206511A-B313R	5/2		Sol/Sol	–	Internal	Push only	1,2 ... 8	0,125
V206522A-B213R	5/2		Sol/Sol	–	External	Turn & lock	-0,9 ... 10	0,125
V206522A-B313R	5/2		Sol/Sol	–	External	Push only	-0,9 ... 10	0,125
V206611A-B213R	5/3		Sol/sol	APB	Internal	Turn & lock	2,2 ... 8	0,135
V206611A-B313R	5/3		Sol/sol	APB	Internal	Push only	2,2 ... 8	0,135
V206622A-B213R	5/3		Sol/sol	APB	External	Turn & lock	-0,9 ... 10	0,135
V206622A-B313R	5/3		Sol/sol	APB	External	Push only	-0,9 ... 10	0,135
V206711A-B213R	5/3		Sol/sol	COE	Internal	Turn & lock	2,2 ... 8	0,135
V206711A-B313R	5/3		Sol/sol	COE	Internal	Push only	2,2 ... 8	0,135
V206722A-B213R	5/3		Sol/sol	COE	External	Turn & lock	-0,9 ... 10	0,135
V206722A-B313R	5/3		Sol/sol	COE	External	Push only	-0,9 ... 10	0,135
V206811A-B213R	5/3		Sol/sol	COP	Internal	Turn & lock	2,2 ... 8	0,135
V206811A-B313R	5/3		Sol/sol	COP	Internal	Push only	2,2 ... 8	0,135
V206822A-B213R	5/3		Sol/sol	COP	External	Turn & lock	-0,9 ... 10	0,135
V206822A-B313R	5/3		Sol/sol	COP	External	Push only	-0,9 ... 10	0,135

*To order a valve without manual override substitute 1 at the 10th digit e.g.V206523A-B**1**13R

APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

To comply with the Machinery Directive push only manual override should be selected.

Wireway

Voltage:	24V d.c. 1,5W
Surge suppression:	Flywheel diode
Indication:	Amber LED

Solenoids

Voltage tolerance:	±10%
Rating:	100% E.D.

Valve selection

To specify/configure a valve island, please use either the short order codes on page 233 to complete the Valve island specification fax-back form, or visit our website at www.norgren.com

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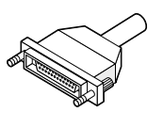
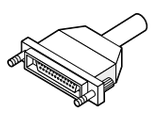
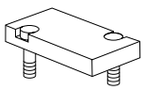
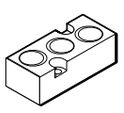
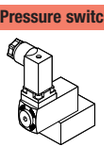
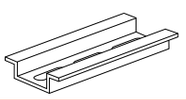
V20 Series valve islands

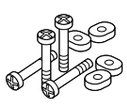
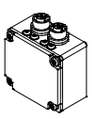
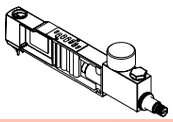
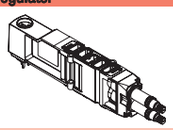
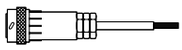
Solenoid actuated spool valves

Modular sub-base with wireway

2 x 3/2, 5/2 & 5/3, Ø 4, Ø 6 mm, G⅛

Accessories

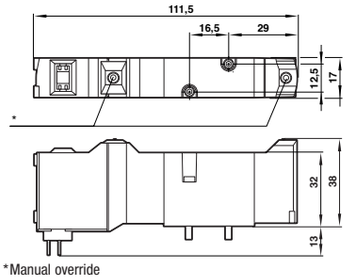
D sub-connector IP40	D sub-connector IP65 with seal	Blanking plate	Intermediate supply/exhaust plate	Pressure switch	DIN Rail
					
V10020-E01 1 m **A1**	V11063-E01 1 m **A4**	V095516A-Q1100 **2P**	V095516A-Q160G **VP**	V095516A-Q1700 **WP**	V10009–C00 1 m **A10**
V10020-E03 3 m **A2**	V11063-E03 3 m **A5**				
V10020-E05 5 m **A3**	V11063-E05 5 m **A6**				

DIN-rail mounting kit	Blanking disk set	Remote output module	Port 1 Sandwich pressure regulator	Port 3 & 5 Sandwich flow regulator	Sandwich regulator dual mounting kit	IP 65 Round connector
						
V10920-K01 **1H**	V095516A-Q1900 **A18**	VE1MP09B-00400	V11270-K02* **P**	V11274-K01 **F**	V11649-K01	V10021-E01 1 m **A24**
			V11270-K03** **R**			V10021-E03 3 m **A25**
						V10021-E05 5 m **A26**

A1 = Short order code

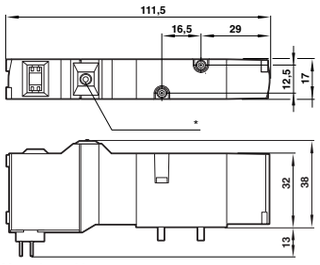
* Gauge mounted inboard ** Gauge mounted outboard. Gauges should be mounted alternately.

2 x 3/2 & 5/2 Double solenoid actuated valves



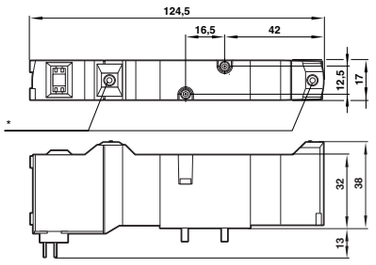
*Manual override

5/2 Solenoid/spring actuated valves



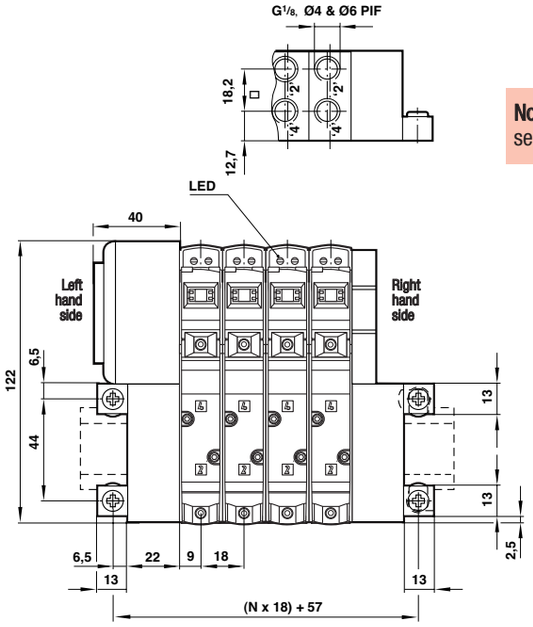
*Manual override

5/3 Double solenoid actuated valves

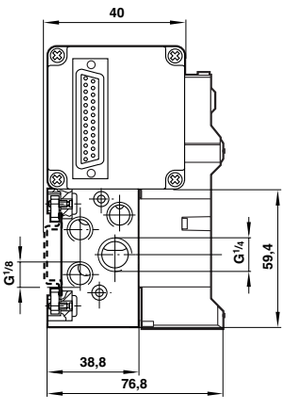


*Manual override

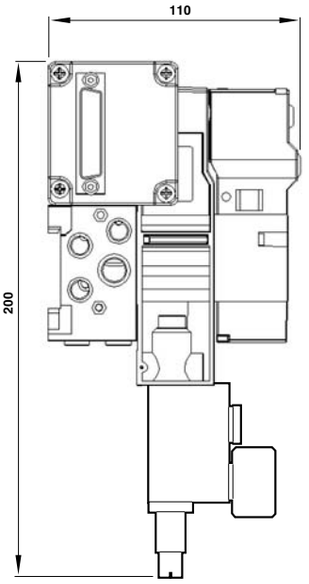
Modular sub-base assembly dimensions



Note: For electrical connection options see page 232



Side view with port 1 pressure regulator and gauge



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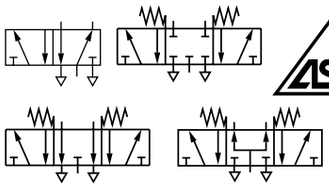
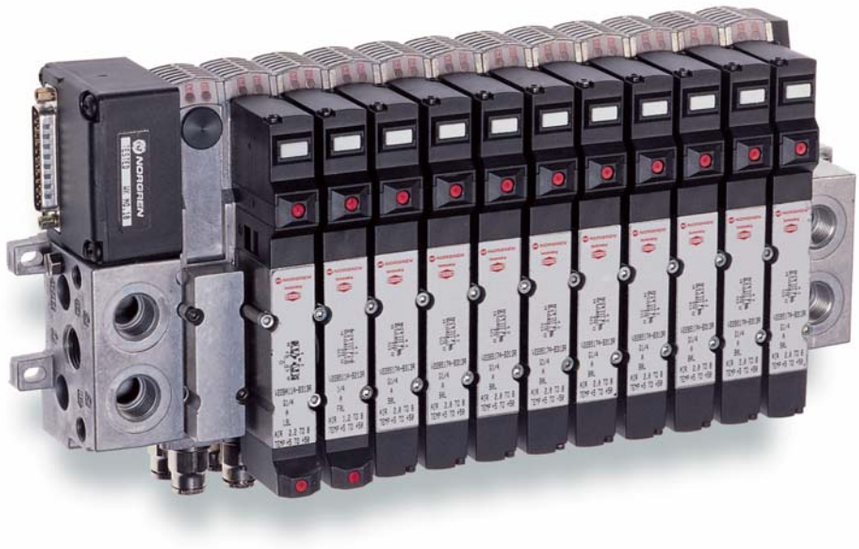
V22 Series valve islands

Solenoid actuated spool valves

Modular sub-base with wireway

2 x 3/2, 5/2 & 5/3, Ø 8 mm, G¼





Multipole design for easy installation

IP 40, IP 65 and NEMA 4 conduit entry models

Fieldbus compatible

24 V d.c. or 24 V a.c. options

Dedicated AS-interface modules

Technical data

Medium:

Compressed air, filtered to 40 µm lubricated or non-lubricated

Flow:

Function	l/min
5/2	1152
2 x 3/2	550
5/3	1014

Ambient temperature:

-20°C to +50°C

Consult our Technical Service for use below +2°C.

Suppression:

Flywheel diode

Indication:

Amber LED electrical signal

Degree of protection:

IP 40 D sub-connector

IP 65 D sub-connector with sheath

IP 65 Round type plug

IP 65 and NEMA 4 conduit entry type

Materials

Valves

Body: aluminium alloy

End caps: glass filled nylon

Solenoid adaptors: glass filled PBT

Pistons & spool: aluminium alloy

Seals: nitrile rubber

Wireway

Body, sub-base and end plates: die-cast aluminium

End covers & solenoids: glass filled co-polymer

Model	Function	Actuation	Mid position	Pilot supply	Manual override	Operating pressure (bar)	kg
V22BA11A-B213R	2 x 3/2 NC	Sol/spring		Internal	Turn & lock	2,2 ... 8	0,160
V22BA11A-B313R	2 x 3/2 NC	Sol/spring		Internal	Push only	2,2 ... 8	0,160
V22BB11A-B213R	2 x 3/2 NO	Sol/spring		Internal	Turn & lock	2,2 ... 8	0,160
V22BB11A-B313R	2 x 3/2 NO	Sol/spring		Internal	Push only	2,2 ... 8	0,160
V22BA22A-B213R	2 x 3/2 NC	Sol/spring		External	Turn & lock	-0,9 ... 10	0,160
V22BA22A-B313R	2 x 3/2 NC	Sol/spring		External	Push only	-0,9 ... 10	0,160
V22BB22A-B213R	2 x 3/2 NO	Sol/spring		External	Turn & lock	-0,9 ... 10	0,160
V22BB22A-B313R	2 x 3/2 NO	Sol/spring		External	Push only	-0,9 ... 10	0,160
V22BC11A-B213R	2 x 3/2 NO/NC	Sol/spring		Internal	Turn & lock	2,2 ... 8	0,160
V22BC11A-B313R	2 x 3/2 NO/NC	Sol/spring		Internal	Push only	2,2 ... 8	0,160
V22BC22A-B213R	2 x 3/2 NO/NC	Sol/spring		External	Turn & lock	-0,9 ... 10	0,160
V22BC22A-B313R	2 x 3/2 NO/NC	Sol/spring		External	Push only	-0,9 ... 10	0,160
V22B517A-B213R	5/2	Sol/spring		Internal	Turn & lock	1,8 ... 8	0,135
V22B517A-B313R	5/2	Sol/spring		Internal	Push only	1,8 ... 8	0,135
V22B527A-B213R	5/2	Sol/spring		External	Turn & lock	-0,9 ... 10	0,135
V22B527A-B313R	5/2	Sol/spring		External	Push only	-0,9 ... 10	0,135
V22B513A-B213R	5/2	Sol/air		Internal	Turn & lock	1,5 ... 8	0,135
V22B513A-B313R	5/2	Sol/air		Internal	Push only	1,5 ... 8	0,135
V22B523A-B213R	5/2	Sol/air		External	Turn & lock	-0,9 ... 10	0,135
V22B523A-B313R	5/2	Sol/air		External	Push only	-0,9 ... 10	0,135
V22B511A-B213R	5/2	Sol/sol		Internal	Turn & lock	1,2 ... 8	0,150
V22B511A-B313R	5/2	Sol/sol		Internal	Push only	1,2 ... 8	0,150
V22B522A-B213R	5/2	Sol/sol		External	Turn & lock	-0,9 ... 10	0,150
V22B522A-B313R	5/2	Sol/sol		External	Push only	-0,9 ... 10	0,150
V22B611A-B213R	5/3	Sol/sol	APB	Internal	Turn & lock	2,2 ... 8	0,160
V22B611A-B313R	5/3	Sol/sol	APB	Internal	Push only	2,2 ... 8	0,160
V22B622A-B213R	5/3	Sol/sol	APB	External	Turn & lock	-0,9 ... 10	0,160
V22B622A-B313R	5/3	Sol/sol	APB	External	Push only	-0,9 ... 10	0,160
V22B711A-B213R	5/3	Sol/sol	COE	Internal	Turn & lock	2,2 ... 8	0,160
V22B711A-B313R	5/3	Sol/sol	COE	Internal	Push only	2,2 ... 8	0,160
V22B722A-B213R	5/3	Sol/sol	COE	External	Turn & lock	-0,9 ... 10	0,160
V22B722A-B313R	5/3	Sol/sol	COE	External	Push only	-0,9 ... 10	0,160
V22B811A-B213R	5/3	Sol/sol	COP	Internal	Turn & lock	2,2 ... 8	0,160
V22B811A-B313R	5/3	Sol/sol	COP	Internal	Push only	2,2 ... 8	0,160
V22B822A-B213R	5/3	Sol/sol	COP	External	Turn & lock	-0,9 ... 10	0,160
V22B822A-B313R	5/3	Sol/sol	COP	External	Push only	-0,9 ... 10	0,160

*To order a valve without manual override substitute 1 at the 10th digit e.g. V22B611A-B**1**13R

APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

To comply with the Machinery Directive push only manual override should be selected.

Wireway

Voltage:	24V d.c. 1,5W
Surge suppression:	Flywheel diode
Indication:	Amber LED

Solenoids

Voltage tolerance:	±10%
Rating:	100% E.D.

Valve selection

To specify/configure a valve island, please use either the short order codes on page 233 to complete the Valve island specification fax-back form, or visit our website at www.norgren.com

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NORGREN

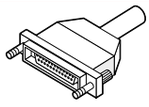
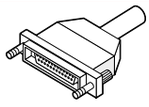
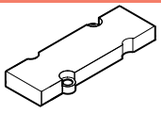
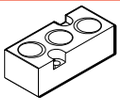
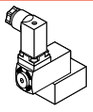
V22 Series valve islands

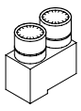
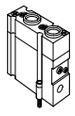
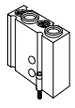
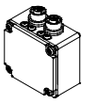
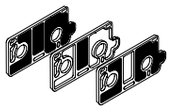
Solenoid actuated spool valves

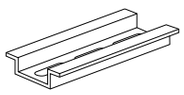
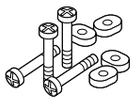
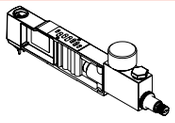
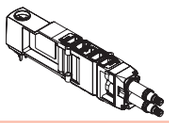
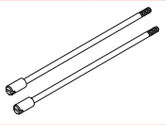
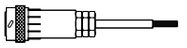
Modular sub-base with wireway

2 x 3/2, 5/2 & 5/3, Ø 8 mm, G¼

Accessories

D sub-connector IP40	D sub-connector IP65 with seal	Blanking plate	Intermediate supply/exhaust plate	Pressure switch
				
V10020-E01 1 m **A1**	V11063-E01 1 m **A4**	V14B517A-Q2700 **2P**	V14B517A-Q240G **VP**	V14B517A-Q1700 **WP**
V10020-E03 3 m **A2**	V11063-E03 3 m **A5**			
V10020-E05 5 m **A3**	V11063-E05 5 m **A6**			

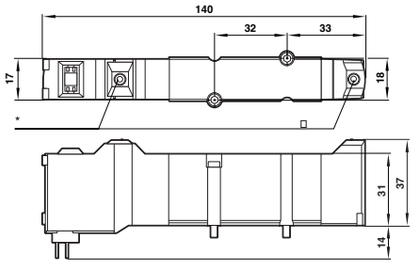
Pressure gauge kit	Pressure regulator block	Flow regulator block	Remote output module	Blanking gasket set
				
V14B517A-Q2120 Dual **A16**	V14B517A-Q2103 Dual **A12**	V14B517A-Q2201 **A15**	VE1MP09B-00400	V10040-K96 Set
V14B517A-Q2121 Mono **A17**	V14B517A-Q2106 Mono port 2 **A13**			V10040-C97 Supply G1 **A20**
	V14B517A-Q2109 Mono port 4 **A14**			V10040-C96 Exhaust G3 **A19**
				V10040-C98 Supply & exhaust G5 **A21**

DIN Rail	DIN-rail mounting kit	Port 1 Sandwich pressure regulator	Port 3 & 5 Sandwich flow regulator	Sandwich regulator dual mounting kit	IP 65 Round connector
					
V10009–C00 1 m **A10**	V10319-K30 **1H**	V11271-K02* **P**	V11275-K01 **F**	V11650-K01	V10021-E01 1 m **A24**
		V11271-K03** **R**			V10021-E03 3 m **A25**
					V10021-E05 5 m **A26**

A1 = Short order code

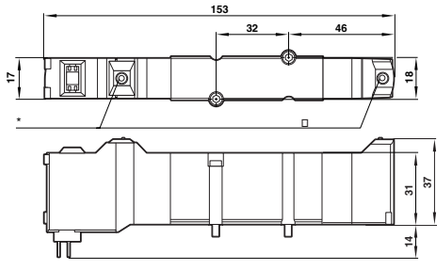
* Gauge mounted inboard ** Gauge mounted outboard. Gauges should be mounted alternately.

2x3/2 and 5/2 Double solenoid actuated valves



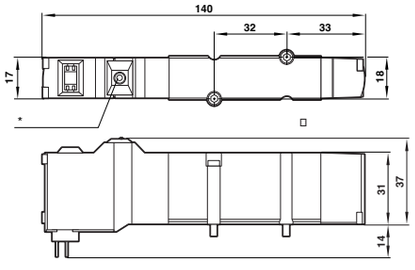
*Manual override

5/3 Double solenoid actuated valves



*Manual override

5/2 Solenoid/spring actuated valves



*Manual override

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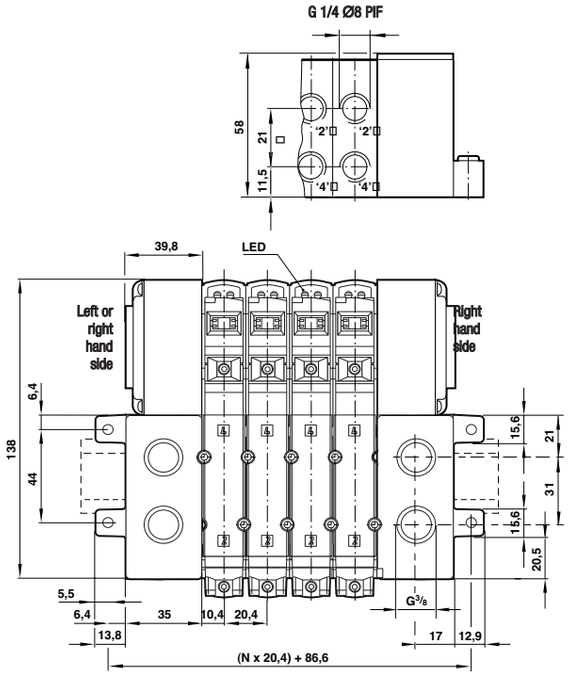
V22 Series valve islands

Solenoid actuated spool valves

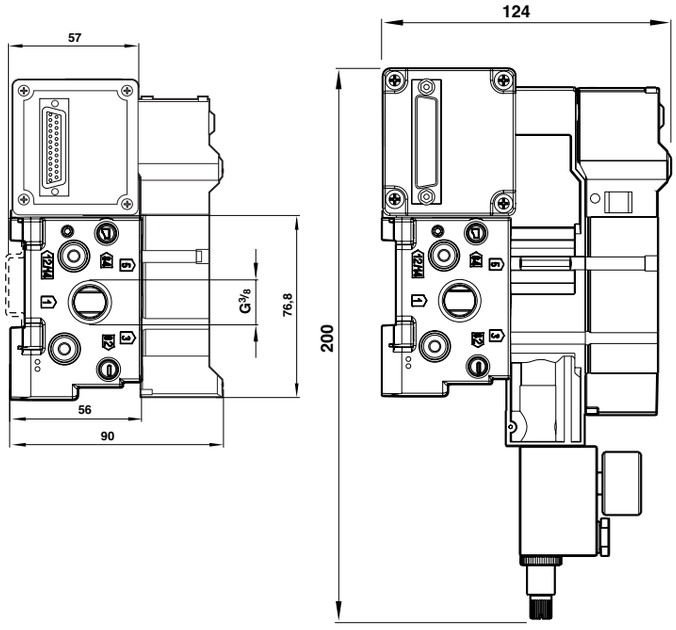
Modular sub-base with wireway

2 x 3/2, 5/2 & 5/3, Ø 8 mm, G¼

Modular sub-base assembly dimensions

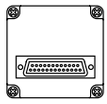


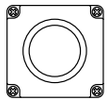
Side view with port 1 pressure regulator and gauge

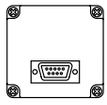


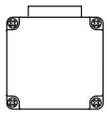
Electrical connection options

Left or right hand side


25 pin
'D' Sub connector

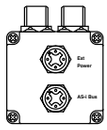

1" & M25
Conduit entry type

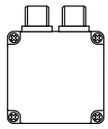

9 pin Fieldbus
(Local bus)


Top mounted 25 pin
'D' connector (left hand only)


AS-interface (4 output)


IP 65 Round connector (left hand only)


AS-interface (2 output, 2 input)


Remote output
(right hand only)

V20/V22 Series valve islands

Short order code for manual configurator

V20/V22 Valve short codes

Description	Short code
2 x 3/2 - 2 x N/C, Internal feed, turn + lock override	AT
2 x 3/2 - 2 x N/C, Internal feed, push override	AP
2 x 3/2 - 2 x N/O, Internal feed, turn + lock override	BT
2 x 3/2 - 2 x N/O, Internal feed, push override	BP
2 x 3/2 - 1 x N/C + 1 x N/O, Internal feed, turn + lock override	CT
2 x 3/2 - 1 x N/C + 1 x N/O, Internal feed, push override	CP
2 x 3/2 - 2 x N/C, External feed, turn + lock override	DT
2 x 3/2 - 2 x N/C, External feed, push override	DP
2 x 3/2 - 2 x N/O, External feed, turn + lock override	ET
2 x 3/2 - 2 x N/O, External feed, push override	EP
2 x 3/2 - 1 x N/C + 1 x N/O, External feed, turn + lock override	FT
2 x 3/2 - 1 x N/C + 1 x N/O, External feed, push override	FP
5/2 Sol/Spring, Internal feed, turn + lock override	GT
5/2 Sol/Spring, Internal feed, push override	GP
5/2 Sol/Spring, External feed turn + lock override	HT
5/2 Sol/Spring, External feed push override	HP
5/2 Sol/Air spring, Internal feed, turn + lock override	NT
5/2 Sol/Air spring, Internal feed, push override	NP
5/2 Sol/Air spring, External feed, turn + lock override	PT
5/2 Sol/Air spring, External feed, push override	PP

Description	Short code
5/2 Sol/Sol, Internal feed, turn + lock override	JT
5/2 Sol/Sol, Internal feed, push override	JP
5/2 Sol/Sol, External feed, turn + lock override	KT
5/2 Sol/Sol, External feed, push override	KP
5/3 APB Sol/Sol, Internal feed, turn + lock override	LT
5/3 APB Sol/Sol, Internal feed, push override	LP
5/3 APB Sol/Sol, External feed, turn + lock override	MT
5/3 APB Sol/Sol, External feed, push override	MP
5/3 COE Sol/Sol, Internal feed, turn + lock override	QT
5/3 COE Sol/Sol, Internal feed, push override	QP
5/3 COE Sol/Sol, External feed, turn + lock override	RT
5/3 COE Sol/Sol, External feed, push override	RP
5/3 COP Sol/Sol, Internal feed, turn + lock override	ST
5/3 COP Sol/Sol, Internal feed, push override	SP
5/3 COP Sol/Sol, External feed, turn + lock override	TT
5/3 COP Sol/Sol, External feed, push override	TP
Pressure switch	WP
Blanking plate	2P
ISEM	VP

V20 Base short codes

Description	Short code
4mm base, all ports open	2A
4mm base, port 1 blocked	2B
4mm base, ports 1 + 3 blocked	2C
4mm base, ports 1, 3 + 5 blocked	2D
4mm base, all ports open + sandwich pressure regulator	2E
4mm base, port 1 blocked + sandwich pressure regulator	2F
4mm base, ports 1 + 3 blocked + sandwich pressure regulator	2G
4mm base, ports 1, 3 + 5 blocked + sandwich pressure regulator	2H
4mm base, all ports open + sandwich flow regulator	2J
4mm base, port 1 blocked + sandwich flow regulator	2K
4mm base, ports 1 + 3 blocked + sandwich flow regulator	2L
4mm base, ports 1, 3 + 5 blocked + sandwich flow regulator	2M
6mm base, all ports open	3A
6mm base, port 1 blocked	3B
6mm base, ports 1 + 3 blocked	3C
6mm base, ports 1, 3 + 5 blocked	3D
6mm base, all ports open + sandwich pressure regulator	3E
6mm base, port 1 blocked + sandwich pressure regulator	3F
6mm base, ports 1 + 3 blocked + sandwich pressure regulator	3G
6mm base, ports 1, 3 + 5 blocked + sandwich pressure regulator	3H
6mm base, all ports open + sandwich flow regulator	3J
6mm base, port 1 blocked + sandwich flow regulator	3K
6mm base, ports 1 + 3 blocked + sandwich flow regulator	3L
6mm base, ports 1, 3 + 5 blocked + sandwich flow regulator	3M
G1/8 base, all ports open	5A
G1/8 base, port 1 blocked	5B
G1/8 base, ports 1 + 3 blocked	5C
G1/8 base, ports 1, 3 + 5 blocked	5D
G1/8 base, all ports open + sandwich pressure regulator	5E
G1/8 base, port 1 blocked + sandwich pressure regulator	5F
G1/8 base, ports 1 + 3 blocked + sandwich pressure regulator	5G
G1/8 base, ports 1, 3 + 5 blocked + sandwich pressure regulator	5H
G1/8 base, all ports open + sandwich flow regulator	5J
G1/8 base, port 1 blocked + sandwich flow regulator	5K
G1/8 base, ports 1 + 3 blocked + sandwich flow regulator	5L
G1/8 base, ports 1, 3 + 5 blocked + sandwich flow regulator	5M
1/8 NPT base, all ports open	7A
1/8 NPT base, port 1 blocked	7B
1/8 NPT base, ports 1 + 3 blocked	7C
1/8 NPT base, ports 1, 3 + 5 blocked	7D
1/8 NPT base, all ports open + sandwich pressure regulator	7E
1/8 NPT base, port 1 blocked + sandwich pressure regulator	7F
1/8 NPT base, ports 1 + 3 blocked + sandwich pressure regulator	7G
1/8 NPT base, ports 1, 3 + 5 blocked + sandwich pressure regulator	7H
1/8 NPT base, all ports open + sandwich flow regulator	7J
1/8 NPT base, port 1 blocked + sandwich flow regulator	7K
1/8 NPT base, ports 1 + 3 blocked + sandwich flow regulator	7L
1/8 NPT base, ports 1, 3 + 5 blocked + sandwich flow regulator	7M

V22 Base short codes

Description	Short code
8mm base, all ports open	4A
8mm base, port 1 blocked	4B
8mm base, ports 1 + 3 blocked	4C
8mm base, ports 1, 3 + 5 blocked	4D
8mm base, all ports open + sandwich pressure regulator	4E
8mm base, port 1 blocked + sandwich pressure regulator	4F
8mm base, ports 1 + 3 blocked + sandwich pressure regulator	4G
8mm base, ports 1, 3 + 5 blocked + sandwich pressure regulator	4H
8mm base, all ports open + sandwich flow regulator	4J
8mm base, port 1 blocked + sandwich flow regulator	4K
8mm base, ports 1 + 3 blocked + sandwich flow regulator	4L
8mm base, ports 1, 3 + 5 blocked + sandwich flow regulator	4M
G1/4 base, all ports open	6A
G1/4 base, port 1 blocked	6B
G1/4 base, ports 1 + 3 blocked	6C
G1/4 base, ports 1, 3 + 5 blocked	6D
G1/4 base, all ports open + sandwich pressure regulator	6E
G1/4 base, port 1 blocked + sandwich pressure regulator	6F
G1/4 base, ports 1 + 3 blocked + sandwich pressure regulator	6G
G1/4 base, ports 1, 3 + 5 blocked + sandwich pressure regulator	6H
G1/4 base, all ports open + sandwich flow regulator	6J
G1/4 base, port 1 blocked + sandwich flow regulator	6K
G1/4 base, ports 1 + 3 blocked + sandwich flow regulator	6L
G1/4 base, ports 1, 3 + 5 blocked + sandwich flow regulator	6M
1/4 NPT base, all ports open	9A
1/4 NPT base, port 1 blocked	9B
1/4 NPT base, ports 1 + 3 blocked	9C
1/4 NPT base, ports 1, 3 + 5 blocked	9D
1/4 NPT base, all ports open + sandwich pressure regulator	9E
1/4 NPT base, port 1 blocked + sandwich pressure regulator	9F
1/4 NPT base, ports 1 + 3 blocked + sandwich pressure regulator	9G
1/4 NPT base, ports 1, 3 + 5 blocked + sandwich pressure regulator	9H
1/4 NPT base, all ports open + sandwich flow regulator	9J
1/4 NPT base, port 1 blocked + sandwich flow regulator	9K
1/4 NPT base, ports 1 + 3 blocked + sandwich flow regulator	9L
1/4 NPT base, ports 1, 3 + 5 blocked + sandwich flow regulator	9M

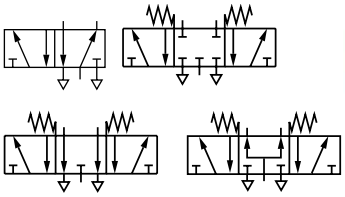
Please see valve island configurator fax-back form

V09 – Nugget 40 valve islands

Solenoid actuated spool valves

Modular sub-base with wireway

3/2, 5/2, 5/3, Ø 6 mm, G⅛



Multipole and electrical wireway for easy installation

IP 40, IP 65 and conduit entry models

24 V d.c. diagnostic with power saving circuits

Indicators and surge suppression as standard

From 12 V up to 240 V supply

Technical data

Indication:

By red LED (d.c.) or neon (a.c.)

Suppression:

By flywheel diode (d.c.) or VDR (a.c.)

Diagnostic:

Red LED: correct movement of armature

Orange LED: failed operation

50% power saving following correct armature movement.

Valve terminal pins to DIN 43650 table C

Ambient temperature:

-20°C to +50°C.

Consult our Technical Service for use below +2°C.

Connector types

D sub-connector (IP 40)

Round type plug (IP 65)

Conduit entry type (IP 65)

Materials

Wireway housings: glass fibre reinforced co-polymer mouldings

Conduit end caps: zinc pressure die-cast

End plates: aluminium

Sub-base modules: zinc pressure die-cast

Valve selection

Please see Options selector on page 215 for instructions on how to order a Nugget series valve

General information – valves

Function	Actuation	Pilot supply	Manual override	Mid position	Operating pressure (bar)	kg	Model	Service kit	Short code
3/2	Sol/Spring & air	Internal	Turn & lock	–	3 ... 10	0,140	V095416R-B200A	V10034–K04	01
3/2	Sol/Spring & air	Internal	Push only	–	3 ... 10	0,140	V095416R-B300A	V10034–K04	02
3/2	Sol/Spring & air	External	Turn & lock	–	-0,9 ... 10	0,140	V095426R-B200A	V10034–K04	05
3/2	Sol/Spring & air	External	Push only	–	-0,9 ... 10	0,140	V095426R-B300A	V10034–K04	06
5/2	Sol/Spring & air	Internal	Turn & lock	–	3 ... 10	0,155	V096516A-B21*A	V10034–K00	13
5/2	Sol/Spring & air	Internal	Push only	–	3 ... 10	0,155	V096516A-B31*A	V10034–K04	14
5/2	Sol/Air	Internal	Turn & lock	–	1,5 ... 10	0,155	V096513A-B21*A	V10034–K00	17
5/2	Sol/Air	Internal	Push only	–	1,5 ... 10	0,155	V096513A-B31*A	V10034–K00	18
5/2	Sol/sol	Internal	Turn & lock	–	2 ... 10	0,315	V096511P-B21*A	V10034-K00	21
5/2	Sol/sol	Internal	Push only	–	2 ... 10	0,315	V096511P-B31*A	V10034-K00	22
5/2	Sol/sol	External	Turn & lock	–	2 ... 10	0,315	V096522P-B21*A	V10034–K00	23
5/2	Sol/sol	External	Push only	–	2 ... 10	0,315	V096522P-B31*A	V10034–K00	24
5/3	Sol/sol	Internal	Turn & lock	APB	2 ... 10	0,264	V096611P-B21*A	V10034-K01	25
5/3	Sol/sol	Internal	Push only	APB	2 ... 10	0,264	V096611P-B31*A	V10034-K01	26
5/3	Sol/sol	External	Turn & lock	APB	0,9 ... 10	0,264	V096622P-B21*A	V10034-K01	27
5/3	Sol/sol	External	Push only	APB	0,9 ... 10	0,264	V096622P-B31*A	V10034-K01	28
5/3	Sol/sol	Internal	Turn & lock	COE	2 ... 10	0,264	V096711P-B21*A	V10034-K02	29
5/3	Sol/sol	Internal	Push only	COE	2 ... 10	0,264	V096711P-B31*A	V10034-K02	30
5/3	Sol/sol	External	Turn & lock	COE	0,9 ... 10	0,264	V096722P-B21*A	V10034-K02	31
5/3	Sol/sol	External	Push only	COE	0,9 ... 10	0,264	V096722P-B31*A	V10034-K02	32
5/3	Sol/sol	Internal	Turn & lock	COP	2 ... 10	0,264	V096811P-B21*A	V10034-K03	33
5/3	Sol/sol	Internal	Push only	COP	2 ... 10	0,264	V096811P-B31*A	V10034-K03	34
5/3	Sol/sol	External	Turn & lock	COP	0,9 ... 10	0,264	V096822P-B21*A	V10034-K03	35
5/3	Sol/sol	External	Push only	COP	0,9 ... 10	0,264	V096822P-B31*A	V10034-K03	36

*Insert voltage code from table below. APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

Alternative valves with no visual indicators are available. Contact our Technical Service.

Voltage codes & spare coils

Voltage	Code	Power inrush/hold	Coil
6 V d.c.	1	1,5 W	V10025-A11
12 V d.c.	2	1,7 W	V10025-A12
24 V d.c.	3	1,7 W	V10025-A13
12 V 50/60 Hz	1	4,1/2,9 VA	V10025-A11
24 V 50/60 Hz	4	4,1/2,9 VA	V10025-A14
48 V 50/60 Hz	6	4,1/2,9 VA	V10025-A16
110 V 50/60 Hz	8	3,5/2,5 VA	V10025-A18
240 V 50/60 Hz	9	3,5/2,5 VA	V10025-A19

Electrical details for solenoid operators

Voltage tolerances:	±10%
Rating:	100% E.D.
Inlet orifice:	0,8 mm
Electrical connection:	DIN 43650 Table “C”
Protection class:	IP65 (DIN 40050)

For details of connector plugs and light emitting seals see page 382

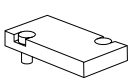
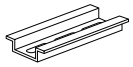
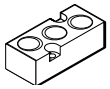
Electrical details for wireway

Voltage	Features	Indicator	Code	Colour
12 ... 24 V d.c.	Surge suppression	LED (red)	3	Green
24 V d.c.	Surge suppression, diagnostic with power saver	See right	3	Red
24 ... 48 V 50/60Hz	Surge suppression	Neon	6	Blue
110 ... 120 V 50/60Hz	Surge suppression	Neon	8	Yellow
220 ... 240 V 50/60Hz	Surge suppression	Neon	9	Orange

Diagnostic with power saver

Voltage	24V d.c.
Suppression:	Flywheel diode
Diagnostic indication:	Red LED correct armature movement
	Orange LED failed armature movement
Power saving:	50% after armature has moved

Accessories

Blanking plate	DIN Rail	Intermediate supply/exhaust plate	Pressure switch
			
V095516A–Q1100 A7	V10009–C00 1 m **A10**	V095516A-Q160G **A8**	V095516A-Q1700 **A9**

Dual pressure blanking disc set reference V095516A-Q1900. Blanking plug (pack of 10), reference V10018-K00 for multipole module.

Coil seal (pack of 10), reference V10024-K00 for coil terminal pins to multipole module.

Identification kits – letters or numbers, reference V10022-K0* for multipole module. * Insert letter or number, A-Z, 0... 9. **A7** = Short order code

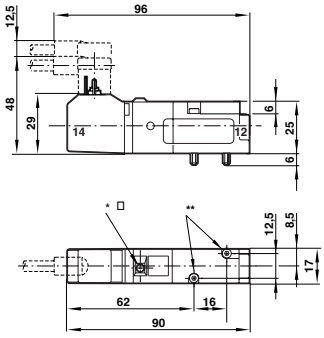
V09 – Nugget 40 valve islands

Solenoid actuated spool valves

Modular sub-base with wireway

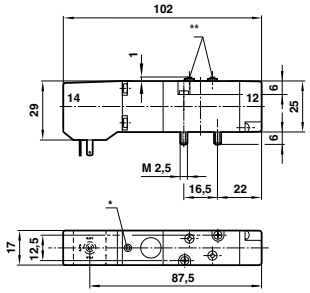
3/2, 5/2, 5/3, Ø 6 mm, G⅛

3/2 Single solenoid valves V0954**R



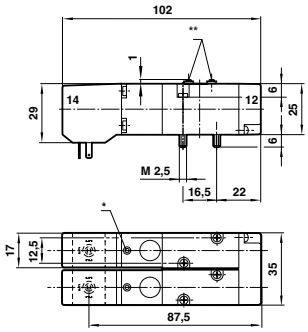
*Manual override
**2 fixing screws M2,5 x 0,45

5/2 Single solenoid valves V096516A



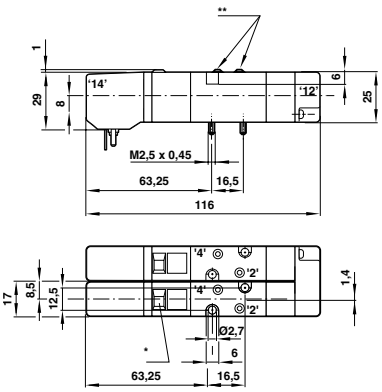
*Manual override
**Position indicators (optional)

5/2 Double solenoid valves V096511P



*Manual override
**Position indicators (optional)
Note: two stations needed

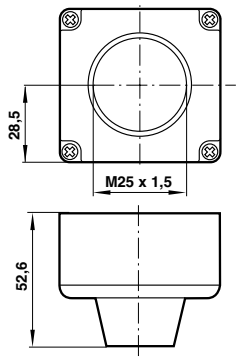
5/3 Double solenoid valves V096***P



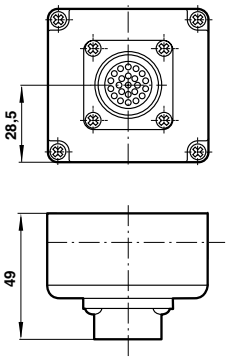
*Manual override
**Position indicators (optional)
Note: two stations needed

Modular sub-base with wireway for V09 valves

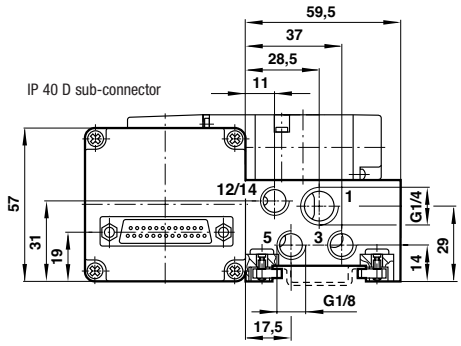
IP 65 conduit entry



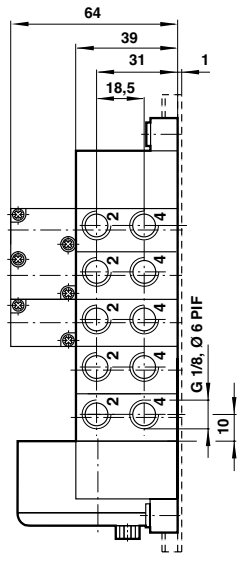
IP 65 round connector

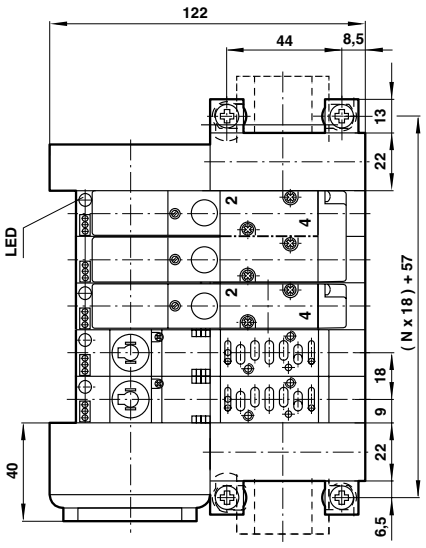


IP 40 D sub-connector



Please see the valve island specification form at the front of the catalogue for modular sub-base configurations.
N = no. of stations



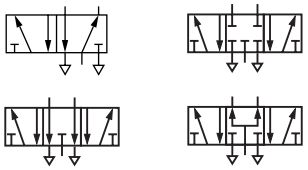


V14 – Nugget 120 valve islands

Solenoid actuated spool valves

Modular sub-base with wireway

5/2 & 5/3, 8 mm, G¼



Multipole for easy installation
IP 40, IP 65 and conduit entry models
Power saving and diagnostic features
Indicators and surge suppression as standard

Technical data

Indication:
By red LED (d.c.) or neon (a.c.)

Suppression:
By diode (d.c.) or VDR (a.c.)

Diagnostic:
Red LED = correct movement of armature. Orange LED = failed operation. 50% power saving following correct armature movement.

Ambient temperature:
-20°C to +50°C

Consult our Technical Service for use below +2°C.

Connector types
D-sub connector (IP 40)
Round type plug (IP 65)
Conduit entry type (IP 65/ NEMA 4)
Valve terminal pins to DIN 43 650 table C.

Materials
For valve materials see page 248
Wireway housings: glass fibre reinforced co-polymer moulded
Conduit end caps: zinc pressure die-cast
Manifolds: glass fibre reinforced co-polymer
End plates: aluminium alloy
Sub-base modules: aluminium alloy pressure die-cast

Function	Actuation	Pilot supply	Mid position	Operating pressure (bar)	Pilot pressure (bar)	kg	Model	Service kit	Short code
5/2	Sol/Spring	Internal	–	1,8 ... 10	–	0,155	V14B517A-B21*A	V10316-K30	13
5/2	Sol/Spring	External	–	-0,9 ... 10	1,8 ... 10	0,155	V14B527A-B21*A	V10316-K30	15
5/2	Solenoid/Solenoid	Internal	–	1,2 ... 10	–	0,325	V14B511P-B21*A	V10316-K30	21
5/2	Solenoid/Solenoid	External	–	-0,9 ... 10	1,2 ... 10	0,325	V14B522P-B21*A	V10316-K30	23
5/3	Solenoid/Solenoid	Internal	APB	2,2 ... 10	–	0,345	V14B611P-B21*A	V10317-K30	25
5/3	Solenoid/Solenoid	External	APB	-0,9 ... 10	2,2 ... 10	0,345	V14B622P-B21*A	V10317-K30	27
5/3	Solenoid/Solenoid	Internal	COE	2,2 ... 10	–	0,345	V14B711P-B21*A	V10318-K30	29
5/3	Solenoid/Solenoid	External	COE	-0,9 ... 10	2,2 ... 10	0,345	V14B722P-B21*A	V10318-K30	31
5/3	Solenoid/Solenoid	Internal	COP	2,2 ... 10	–	0,345	V14B811P-B21*A	V10347-K30	33
5/3	Solenoid/Solenoid	External	COP	-0,9 ... 10	2,2 ... 10	0,345	V14B822P-B21*A	V10347-K30	35

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure.
* Insert voltage code from table below. Turn & lock manual override as standard.
For push only manual override substitute 10th digit with 3 eg. V14B517A-B**3**1*A.

Voltage codes & spare coils

Voltage	Code	Power inrush/hold	Coil
6 V d.c.	1	1,5 W	V10025-A11
12 V d.c.	2	1,7 W	V10025-A12
24 V d.c.	3	1,7 W	V10025-A13
24 V 50/60 Hz	4	4,1/2,9 VA	V10025-A14
48 V 50/60 Hz	6	4,1/2,9 VA	V10025-A16
110 V 50/60 Hz	8	3,5/2,5 VA	V10025-A18
240 V 50/60 Hz	9	3,5/2,5 VA	V10025-A19

Electrical details for solenoid operators

Voltage tolerances:	±10%
Rating:	100% E.D.
Inlet orifice:	0,8 mm
Electrical connection:	DIN 43 650 Table “C”
Protection class:	IP65 (DIN 40 050)

For details of connector plugs and light emitting seals see page 382

Electrical details for wireway

Voltage	Features	Indicator	Code	Colour
12 ... 24 V d.c.	Surge suppression	LED (red)	3	Green
24 V d.c.	Surge suppression, diagnostic with power saver	See right	3	Red
24 ... 48 V 50/60Hz	Surge suppression	Neon	6	Blue
110 ... 120 V 50/60Hz	Surge suppression	Neon	8	Yellow
220 ... 240 V 50/60Hz	Surge suppression	Neon	9	Orange

Diagnostic with power saver

Voltage	24V d.c.
Suppression:	Flywheel diode
Diagnostic indication:	Red LED correct armature movement
	Orange LED failed armature movement
Power saving:	50% after armature has moved

Valve selection
Please see Options selector on page 215 for instructions on how to order a Nugget series valve

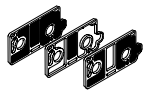
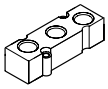
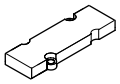
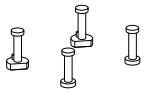
V14 – Nugget 120 valve islands

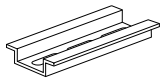
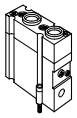
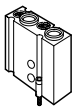
Solenoid actuated spool valves

Modular sub-base with wireway

5/2 & 5/3, 8 mm, G¼

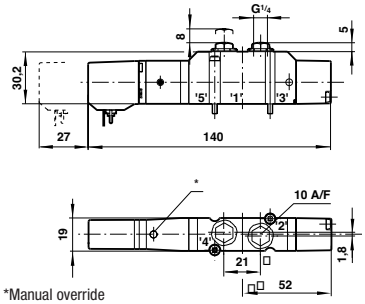
Accessories

Blanking gasket set	Intermediate supply/exhaust plate	Blanking plate	Pressure indicator	DIN-rail mounting kit
				
V10040-K96 Set	V14B517A-Q240G **A8**	V14B517A-Q2700 **A7**	V14B517A-Q2800	V10319-K30 **A11**
V10040-C97 Supply G1 **A20**				
V10040-C96 Exhaust G3 **A19**				
V10040-C98 Supply & exhaust G5 **A21**				

DIN Rail (1 m)	Pressure regulator block	Pressure gauge kit	Flow regulator block	Pressure switch
				
V10009-C00 **A10**	V14B517A-Q2103 Dual port 2 & 4 **A12**	V14B517A-Q2120 Dual **A16**	V14B517A-Q2201 **A15**	V14B517A-Q1700 **A9**
	V14B517A-Q2106 Mono port 2 **A13**	V14B517A-Q2121 Mono **A17**		
	V14B517A-Q2109 Mono port 4 **A14**			

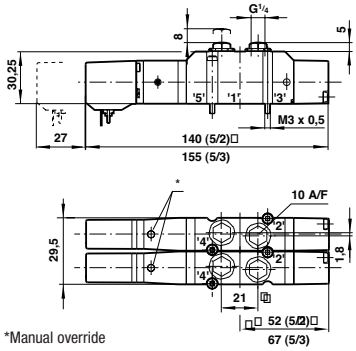
Identification kits – letters or numbers, reference V10022-K0* for multipole module. *Insert letter or number, A-Z, 0-9. Blanking plugs for multipole module V10018-K00 for sealing coil connection orifice on unwanted multipole module. **A8** = Short order code

Single solenoid valves
V14B5*7A



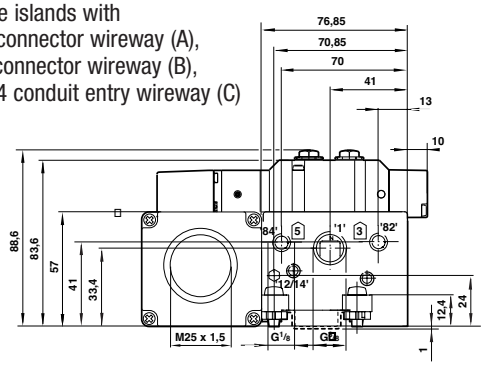
*Manual override

5/2 and 5/3 Double solenoid valves
V14R***P

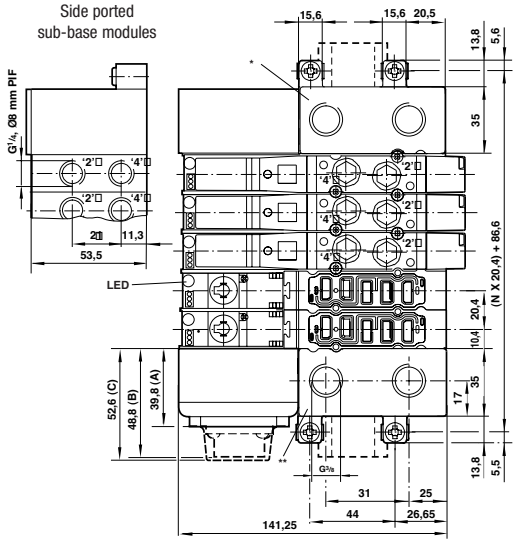


*Manual override
Note: Occupies 2 stations

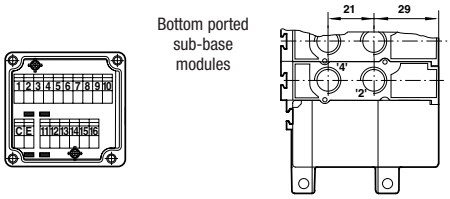
Modular valve islands with
IP 40 D sub-connector wireway (A),
IP 65 round connector wireway (B),
IP 65/NEMA 4 conduit entry wireway (C)



Side ported sub-base modules



Bottom ported sub-base modules



Bottom view

N = number of stations
*Right hand end **Left hand end

Modular valve islands are configured to customers' individual requirements. Contact our Technical Service for details.

Fieldbus II (VE2) Systems

PROFIBUS-DP, INTERBUS-S, DeviceNet, CANOpen

The V20 and V22 series valves can be directly coupled to Fieldbus II to form an IP65 network that can be used to centralise or distribute valve islands and input control.

Norgren also offer two types of fieldbus system to operate with the customer's choice of protocol. The first is our standard low-cost digital network which maximises the node input/output capabilities. The second is our full diagnostic digital system which enables customers to control and use data being stored by the valves and fieldbus node.

Modular system clips together
64 inputs and 64 outputs per node
Distributed configuration option
Interchangeable protocols
Standard fieldbus control
Advanced diagnostic features

Protocol	Connector type(s)	Node part number	Communication	Max Baud rate
Profibus-DP	Coninver (IP65)	VE2DPFNB-64640	RS485	12Mb/s
Interbus-S	Coninver (IP65)	VE2IBFNC-64640	RS422	500Kb/s
Devicenet	Micro-Change (IP65)	VE2DNFNB-64640	CAN	500Kb/s
CANopen	Micro-Change (IP65)	VE2CAFNB-64640	CAN	1Mb/s
Profibus-DP	D-Type (IP40)	VE2DPFND-64640	RS485	12Mb/s
Interbus-S	D-Type (IP40)	VE2IBFNE-64640	RS422	500Kb/s

A typical distributed system

Technical data

Ambient temperature:
0°C to 50°C
Consult our Technical Service for use below +2°C.

Vibration tests:
To IEC 68-2-6

Degree of protection:
IP 65

EMC standards:
Generic emission standard EN50081-2
Generic immunity standard EN50082-2

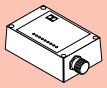
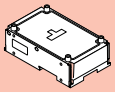
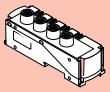
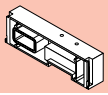
Materials

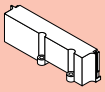
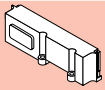
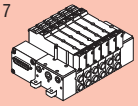
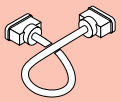
Main enclosure mouldings: glass fibre reinforced polyester
Clips: acetal copolymer

Valve selection
Please see the Fieldbus specification form to specify/configure a fieldbus system using the short order codes provided

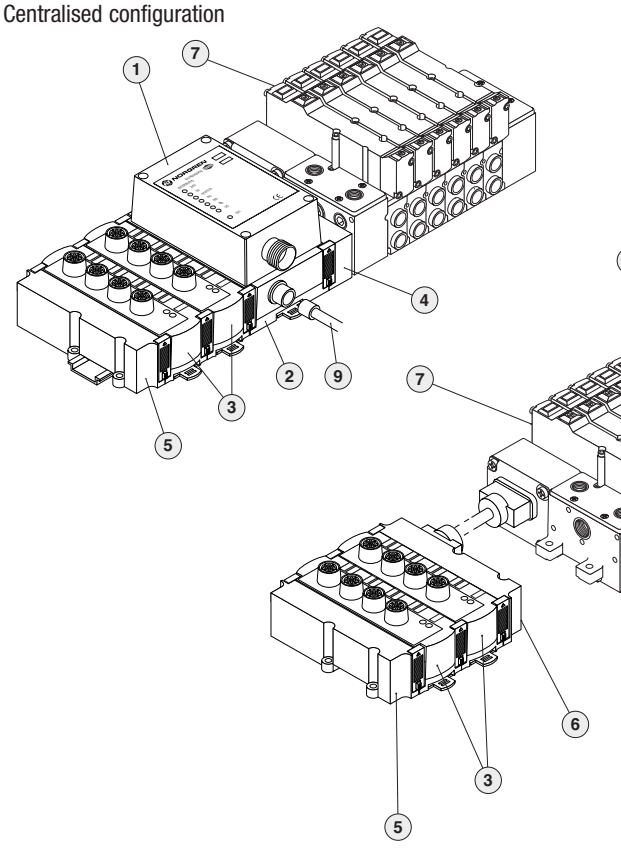
Fieldbus II (VE2) Systems

PROFIBUS-DP, INTERBUS-S, DeviceNet, CANOpen

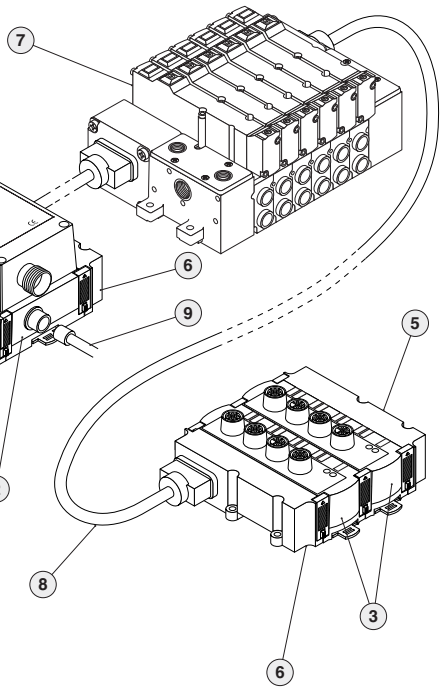
		Description	Model	Short code
1		Fieldbus node Profibus-DP Coninver connector	VE2DPFNB-64640	P1
		Profibus DP D-type connector	VE2DPFND-64640	P2
		Profibus DP M12 connector	VE2DPFNR-64640	P3
		Profibus DP 2xM12 connector	VE2DPFNT-64640	P4
		Interbus-S Coninver connector	VE2IBFNC-64640	S1
		Interbus-S D-type connector	VE2IBFND-64640	S2
		Devicenet M12 micro connector	VE2DNFNB-64640	D1
		CANOpen M12 micro connector	VE2CAFNB-64640	C1
2		Common node sub-base		
		Sub-base plastic connector	VE2FBSBA-00000	PB
		Sub-base metal connector	VE2FBSBA-00000M	MB
3		Input/output modules		
		4 outputs	VE2FBOMA-00040	4O
		8 outputs	VE2FBOMA-00080	8O
		4 NPN inputs	VE2FBIMF-04000	4N
		8 NPN inputs	VE2FBIMG-04000	8N
		4 PNP inputs	VE2FBIMF-08000	4P
		8 PNP inputs	VE2FBIMG-08000	8P
4		Valve island interface plates (for Fieldbus node or input/output modules)		
		Left hand side	VE2FBVPL-00000	F12
		Right hand side	VE2FBVPR-00000	F13
		Additional V20 kit	V10075-K32	F14

		Description	Model	Short code
5		End cover (for Fieldbus node or input/output modules)		
		Left hand side	VE2FBECL-00000	F15
		Right hand side	VE2FBECR-00000	F16
6		IP 65 9-pin cable interface plate (for Fieldbus node or input/output modules)		
		Left hand side	VE2FBCPL-00000	F17
		Right hand side	VE2FBCPR-00000	F18
7		Valve island	V20	See page 233
			V22	See page 233
		Note: Fieldbus valve islands must use the 9 pin 'D' connector interface		
8		Cable with 9-pin D-type connectors		
		1 metre length	VE2FBC9P-9S010	F21
		3 metre length	VE2FBC9P-9S030	F22
		5 metre length	VE2FBC9P-9S050	F23
		Wireable 9-pin D-type connector (male)	VE2FBC9P-00000	F24
		Wireable 9-pin D-type resistor plug (male)	V11340-E04	F24R
		Wireable 9-pin D-type connector (female)	VE2FBC9S-00000	F25
		Wireable 9-pin D-type resistor plug (female)	V11340-E05	F25R
9		Power cable and connector		
		1 metre length	VE2FBCPS-M1810	F26
		3 metre length	VE2FBCPS-M1830	F27
		5 metre length	VE2FBCPS-M1850	F28
		Wireable power connector (plastic)	VE2FBCPS-M1800	F29
		Wireable power connector (metal)	V11156-E02	F29M
		Crimp kit (for wireable metal connector)	V11361-E01	F29C

Centralised configuration



Distributed configuration

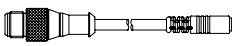
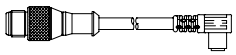
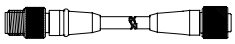
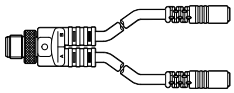


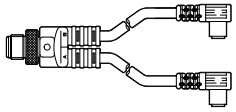
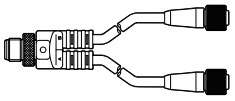
Fieldbus II (VE2) Systems

PROFIBUS-DP, INTERBUS-S, DeviceNet, CANOpen

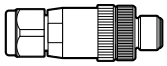
Accessories

Input M12 connecting plug and cable assemblies for sensors

3 pin plug to 3 pin socket	3 pin plug to 3 pin socket	4 pin plug to 4 pin socket	3 pin plug to 2 x 3 pin socket
			
VE1FBC8S-M1210 1 m **F30**	VE1FBC8E-M1210 1 m **F33**	VE1FBC0S-M1210 1 m **F36**	VE1FBC8S-M121D 1 m **F39**
VE1FBC8S-M1230 3 m **F31**	VE1FBC8E-M1230 3 m **F34**	VE1FBC0S-M1230 3 m **F37**	VE1FBC8S-M123D 3 m **F40**
VE1FBC8S-M1250 5 m **F32**	VE1FBC8E-M1250 5 m **F35**	VE1FBC0S-M1250 5 m **F38**	VE1FBC8S-M125D 5 m **F41**

3 pin plug to 2 x 3 pin socket	4 pin plug to 2 x 4 pin socket
	
VE1FBC8E-M121D 1 m **F42**	VE1FBC0S-M121D 1 m **F45**
VE1FBC8E-M123D 3 m **F43**	VE1FBC0S-M123D 3 m **F46**
VE1FBC8E-M125D 5 m **F44**	VE1FBC0S-M125D 5 m **F47**

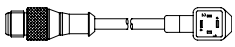
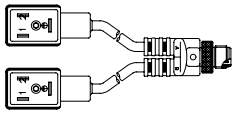
Input or output M12 plug

Wireable 5 pin male – screw termination

VE1FBCRS-M125P **F48**

Wireable communication cable connectors

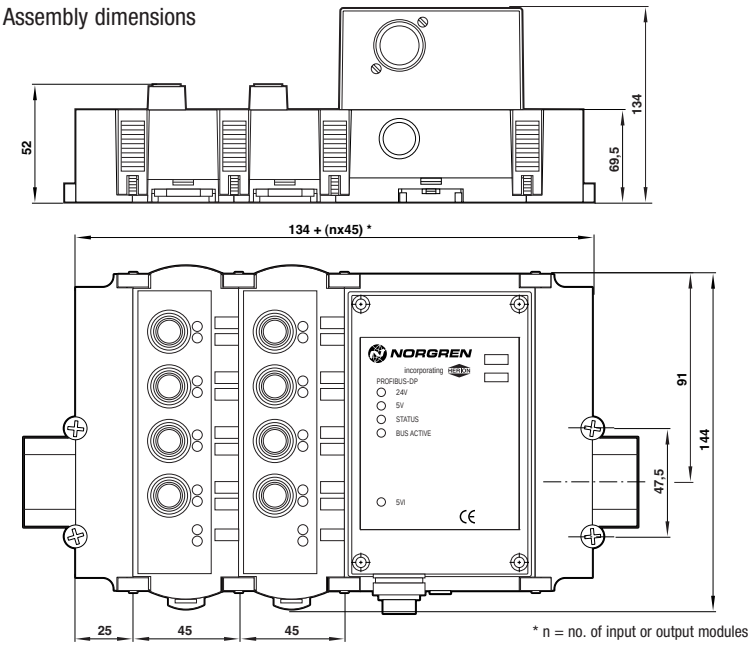
Description	Model	
		
Profibus-DP Coninver plug	VE1DPCRS-CN12P	**F61**
Interbus-S Coninver plug	VE1IBCRS-CN09P	**F62**
Interbus-S Coninver socket	VE1IBCRS-CN09S	**F63**
DeviceNet		
M12 micro-connector socket	VE2DNCRS-CN05S	**F64**

Output M12 plug and connecting cables for solenoid coils

5 pin plug to valve connection			5 pin plug to 2 valve connections		
					
VE1FBCSC-M1203	Type C (15 mm coil)	0,3 m **F49**	VE1FBCTC-M1203	Type C (15 mm coil)	0,3 m **F55**
VE1FBCSC-M1210	Type C (15 mm coil)	1,0 m **F50**	VE1FBCTC-M1210	Type C (15 mm coil)	1,0 m **F56**
VE1FBCSB-M1203	Industrial (22 mm coil)	0,3 m **F51**	VE1FBCTB-M1203	Industrial (22 mm coil)	0,3 m **F57**
VE1FBCSB-M1210	Industrial (22 mm coil)	1,0 m **F52**	VE1FBCTB-M1210	Industrial (22 mm coil)	1,0 m **F58**
VE1FBCSA-M1203	Type A (32 mm coil)	0,3 m **F53**	VE1FBCTA-M1203	Type A (32 mm coil)	0,3 m **F59**
VE1FBCSA-M1210	Type A (32 mm coil)	1,0 m **F54**	VE1FBCTA-M1210	Type A (32 mm coil)	1,0 m **F60**

Each coil plug has LED and suppression as standard. **F30** = Short order code

Assembly dimensions

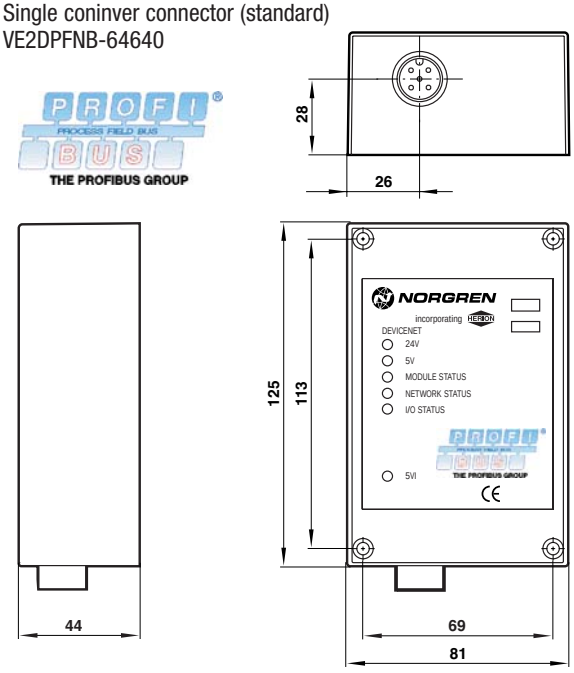


* n = no. of input or output modules

Fieldbus II (VE2) Systems

PROFIBUS-DP, INTERBUS-S, DeviceNet, CANOpen

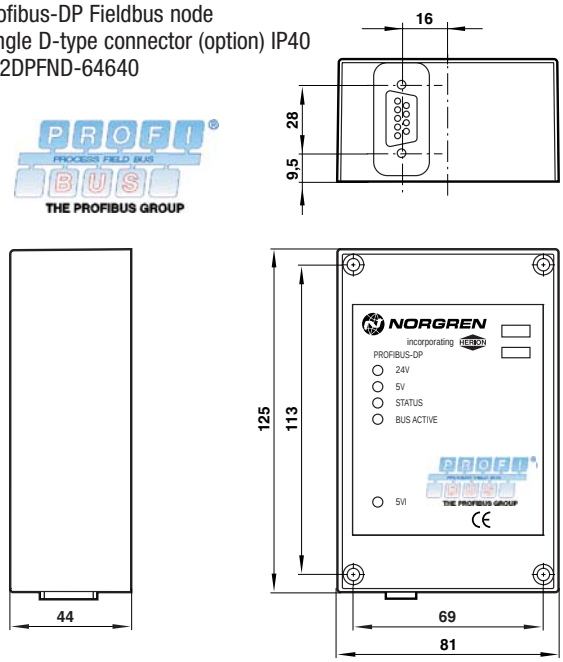
Profibus-DP Fieldbus node
Single coninver connector (standard)
VE2DPFNB-64640



Profibus node accessories

Model	Description	Type
VE1DPCRS-CN12P	Wireable12 pin coninver type connector (IP 65)	Male

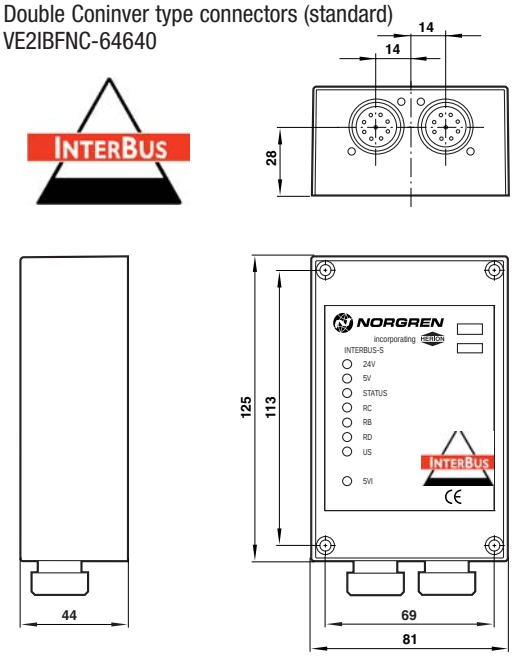
Profibus-DP Fieldbus node
Single D-type connector (option) IP40
VE2DPFND-64640



Profibus node accessories

Model	Description	Type
VE2FBC9P-00000	Wireable 9 pin D-type connector (IP 65)	Male

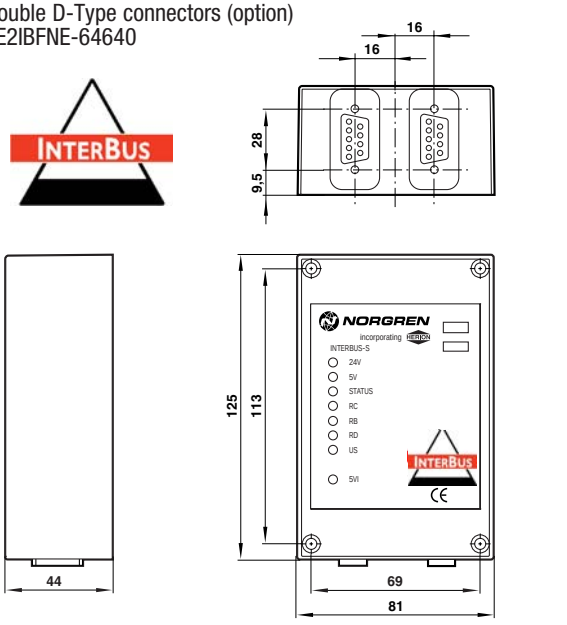
Interbus-S Fieldbus node
Double Coninver type connectors (standard)
VE2IBFNC-64640



Interbus-S node accessories

Model	Description	Type
VE1IBCRS-CN09P	Wireable Interbus-S 9-pin connector	Male
VE1IBCRS-CN09S	Wireable Interbus-S 9-pin connector	Female

Interbus-S Fieldbus node
Double D-Type connectors (option)
VE2IBFNE-64640



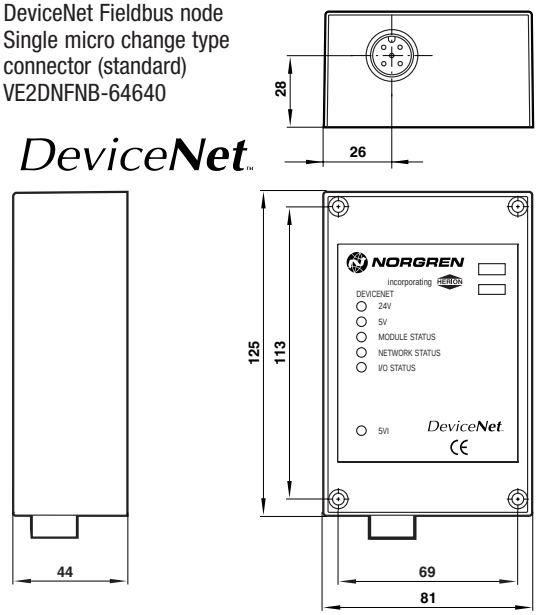
Interbus-S node accessories

Model	Description	Type
VE2FBC9P-00000	Wireable D-type IP 65 connector	Male
VE2FBC9S-00000	Wireable D-type IP 65 connector	Female

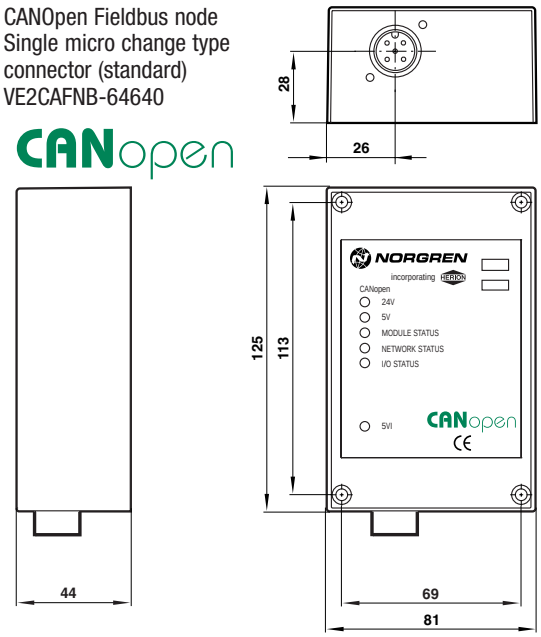
Fieldbus II (VE2) Systems

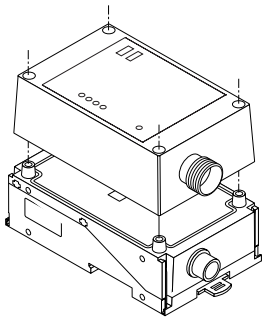
PROFIBUS-DP, INTERBUS-S, DeviceNet, CANOpen

DeviceNet Fieldbus node
Single micro change type connector (standard)
VE2DNFNB-64640

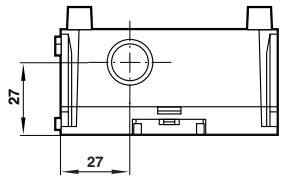


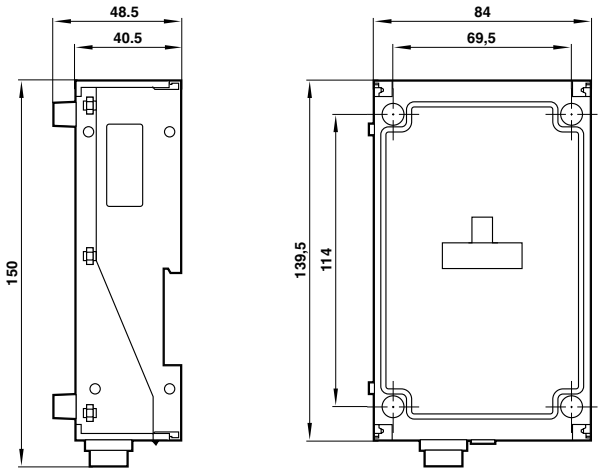
CANOpen Fieldbus node
Single micro change type connector (standard)
VE2CAFNB-64640



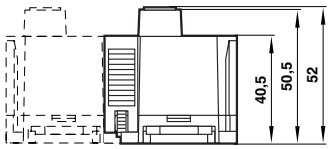


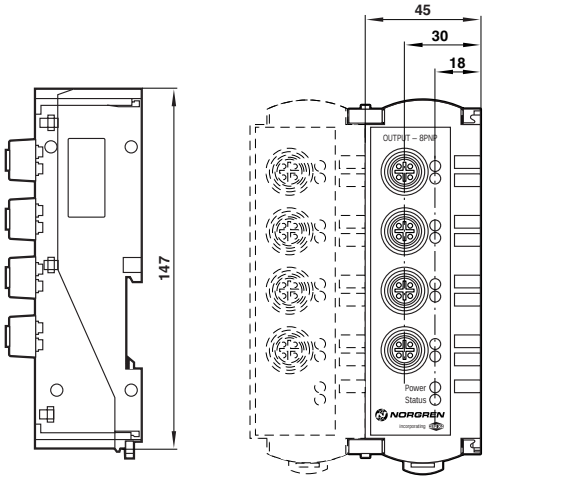
Common node sub-base
VE2FBSBA-00000 (plastic connector)
VE2FBSBA-0000M (metal connector)





Input and output modules





Common node accessories

Description	Length	Model
Power cable with 4 pole female connector and hood	1 metre	VE2FBCPS-M1810
Power cable with 4 pole female connector and hood	3 metres	VE2FBCPS-M1830
Power cable with 4 pole female connector and hood	5 metres	VE2FBCPS-M1850
Wireable 4 pole female connector (plastic)	–	VE2FBCPS-M1800
Wireable 4 pole female connector (metal)	–	V11156-E02
Crimp kit (for wireable metal connector)	–	V11361-E01

Input and output modules

Description	Model
4 Inputs NPN	VE2FBIMF-04000
4 Inputs PNP	VE2FBIMG-04000
8 Inputs NPN	VE2FBIMF-08000
8 Inputs PNP	VE2FBIMG-08000
4 Outputs	VE2FBOMA-00040
8 Outputs	VE2FBOMA-00080

AS-Interface Bus system

For V20 & V22 series valve islands

Flexible open system
Low cost solution
Simple design and programming
Quick and easy installation
Ideal for distributed sensors and actuators
Machine mountable systems (IP 65)
Full range of products for complete AS-interface solutions

Technical data

Connector types:

AS-interface valve islands
AS-interface bus M12 male 4 pin
24 V supply M12 male 4 pin
Inputs M12 female 4 pin

Cable:

AS-interface
Yellow Communications
Black External power

Ambient temperature:

-25°C to +80°C (modules)
0°C to +50°C (AS-interface valve islands)
Consult our Technical Service for use below +2°C.

EMC standards:

EN50081-2
EN50082-2

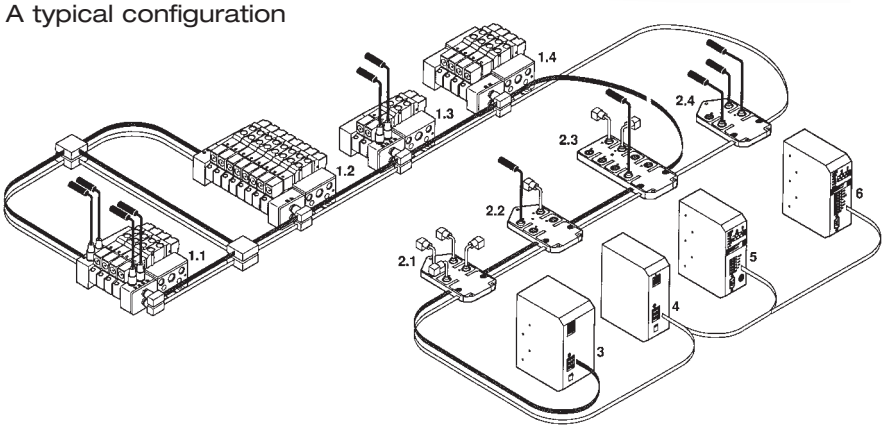
Alternative models

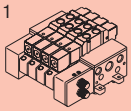
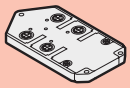
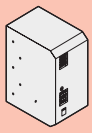
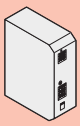
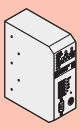
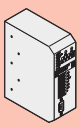
DeviceNet
INTERBUS-S
PROFIBUS-DP
JETWay-R
PROFIBUS-FMS
SYSMAC Bus
See page 238

Valve island details

V20 – see page 228
V22 – see page 230

A typical configuration



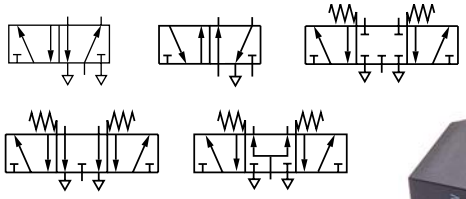
		Description		Model
1		Valve islands with integral AS-interface modules	1.1 4 input & 4 output valve island	V20 & V22 valve islands
			1.2 8 output valve island	
			1.3 2 input & 2 output valve island	See pages 228 & 230
			1.4 4 output valve island	
2		Input/output modules	2.1 4 output module	VE1AS001-00400
			2.2 2 input + 2 output module	VE1AS001-20200
			2.3 4 input + 4 output module	VE1AS001-40400
			2.4 4 input module	VE1AS001-40000
3		Power supply for 24 V d.c.	115/230 V a.c. to 24 V d.c. (2,5A)	VE1ASPS2-06019
			115/230 V a.c. to 24 V d.c. (5A)	VE1ASPS2-12019
			115/230 V a.c. to 24 V d.c. (10A)	VE1ASPS2-24019
4		AS-interface supply for 29,6 V d.c (communication)		
			115/230 V a.c. to 29,6 V d.c. (85 W)	VE1ASPS1-08519
			24 V d.c to 29,6 V d.c. (85 W)	VE1ASPS1-08513
			115/230 V a.c. to 29,6 V d.c. (180 W)	VE1ASPS1-18109
			115/230 V a.c. to 29,6 V d.c. + 24 V d.c (180 W combined)	VE1ASPS3-18019
5		Gateway/controller	PROFIBUS-DP	
			1 Master card (31 slaves)	VA1ASCTP-DP000
			PROFIBUS-DP	
			2 Master cards (62 slaves)	VA1ASCT2-DP000
			DeviceNet	
			1 Master card (31 slaves)	VA1ASCT1-DNT00
			INTERBUS-S	
			1 Master card (31 slaves)	VE1ASCT1-IBS00
6		Master controller	1 Master card (31 slaves)	VE1ASCT1-RS232
			2 Master cards (62 slaves)	VE1ASCT2-RS232

V08 – Nugget 40

Solenoid & pilot actuated spool valves

Fixed length manifold

5/2, 5/3, M5, Ø 4 mm, Ø 6 mm



High flow from 17 mm body width

Low power solenoids with a range of voltages

Use valves singly or with low profile fixed length manifold

In-line or manifold

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated.

Operating pressure:

Maximum 10 bar

See table for individual details.

Flow:

Size	l/min
M5	256
Ø 4 mm	226
Ø 6 mm	344
Ø 6 mm 5/3	296

Ambient temperature:

-20°C to +80°C pilot models

-20°C to +50°C solenoid models.

Consult our Technical Service for use below +2°C.

Materials

Body: zinc alloy

End caps: glass filled nylon

Spool & manifold: aluminium

Seals: nitrile

Alternative models

1/8, Ø 6 mm sub-base version – see page 246

Valve islands – see page 234

Function	Actuation	Pilot supply	Manual override	Mid position	Operating pressure (bar)	Pilot pressure (bar)	kg	Model	Service kit
5/2	Sol/Spring & air	Internal	Turn & lock		3 ... 10	–	0,155	V085516A-B21*A	V10034–K00
5/2	Sol /Spring & air	Internal	Push only		3 ... 10	-	0,155	V085516A-B31*A	V10034–K00
5/2	Sol/Sol	Internal	Turn & lock		2 ... 10	–	0,198	V085511A-B21*A	V10034–K00
5/2	Sol /Sol	Internal	Push only		2 ... 10	-	0,198	V085511A-B31*A	V10034–K00
5/2	Pilot/Spring & air	–	–		2 ... 10	1,5+0,5 x supply	0,152	V085536A-X0130	V10034-K00
5/2	Pilot/Pressure	–	–		1 ... 10	2 ... 10	0,141	V085533A-X0020	V10034-K00
5/2	Pilot priority/Pilot	–	–		1 ... 10	2 ... 10	0,119	V085533A-X0060	V10034-K00
5/3	Solenoid	Internal	Turn & lock	APB	2 ... 10	–	0,158	V085611A-B21*A	V10034–K01
5/3	Solenoid	Internal	Push only	APB	2 ... 10	–	0,158	V085611A-B31*A	V10034–K01
5/3	Solenoid	Internal	Turn & lock	COE	2 ... 10	–	0,158	V085711A-B21*A	V10034–K02
5/3	Solenoid	Internal	Push only	COE	2 ... 10	–	0,158	V085711A-B31*A	V10034–K02
5/3	Solenoid	Internal	Turn & lock	COP	2 ... 10	–	0,158	V085811A-B21*A	V10034–K03
5/3	Solenoid	Internal	Push only	COP	2 ... 10	–	0,158	V085811A-B31*A	V10034–K03
5/3	Pressure	–	–	APB	1 ... 10	2 ... 10	0,119	V085633A-X0020	V10034-K01
5/3	Pressure	–	–	COE	1 ... 10	2 ... 10	0,119	V085733A-X0020	V10034-K02
5/3	Pressure	–	–	COP	1 ... 10	2 ... 10	0,119	V085833A-X0020	V10034-K03

* Insert voltage code from table below. Order connector plugs separately. For integral flying lead coil substitute 14th digit with S e.g. V085516A-B21***S**

APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

Voltage codes & spare coils

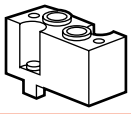
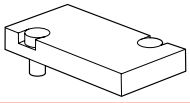
Voltage	Code	Power inrush/hold	Coil
6 V d.c.	1	1,5 W	V10025-A11
12 V d.c.	2	1,7 W	V10025-A12
24 V d.c.	3	1,7 W	V10025-A13
12 V 50/60 Hz	1	4,1/2,9 VA	V10025-A11
24 V 50/60 Hz	4	4,1/2,9 VA	V10025-A14
48 V 50/60 Hz	6	4,1/2,9 VA	V10025-A16
110 V 50/60 Hz	8	3,5/2,5 VA	V10025-A18
240 V 50/60 Hz	9	3,5/2,5 VA	V10025-A19

Electrical details for solenoid operators

Voltage tolerances:	±10%
Rating:	100% E.D.
Inlet orifice:	0,8 mm
Electrical connection:	DIN 43650 table 'C'
Protection class:	IP 65 (DIN 40050)

For details of connector plugs and light emitting seals see page 382

Accessories

Optional port connector blocks	Blanking plate
	
V085516A–Q0404, Ø 4 mm	V085516A-Q1100
V085516A–Q0406, Ø 6 mm	

Additional accessories include fixed length manifold V10026–G**. See facing page.

Dual pressure blanking disc set V095516A–Q1900 is available to allow supply of two different inlet pressures simultaneously

Integral flying lead coils (300 mm)

Voltage	Code	Power	Coil
12 V d.c.	B*12G	2,0 W	V10617-A12
24 V d.c.	B*13G	2,0 W	V10617-A13

* Insert valve manual override code – 2 = turn & lock, 3 = push only

Valve selection

Please see Options selector on page 215 for instructions on how to order a Nugget series valve

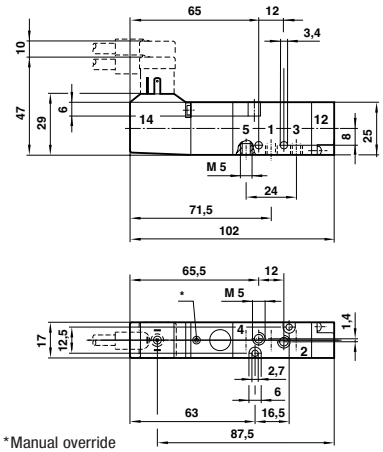
V08 – Nugget 40

Indirect solenoid & pilot actuated spool valve

Fixed length manifold

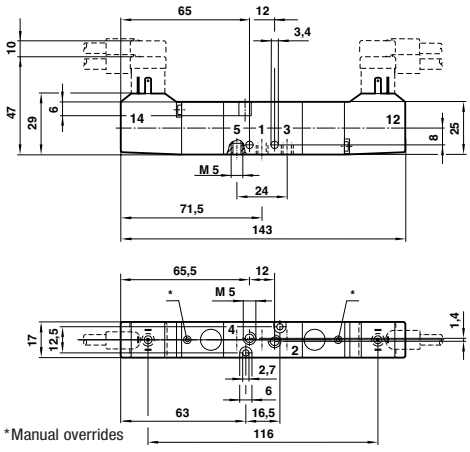
5/2, 5/3, M5, Ø 4 mm, Ø 6 mm

V085516A Models
5/2 Single solenoid valves



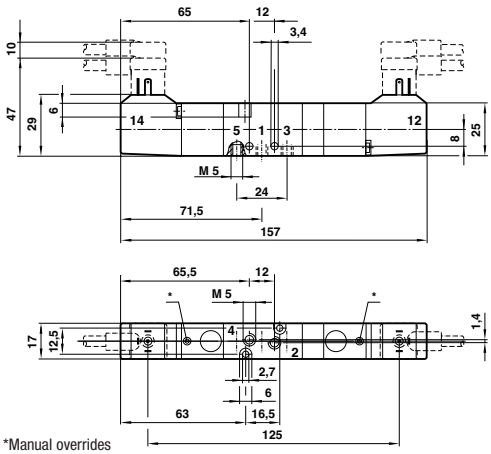
*Manual override

V085511A Models
5/2 Double solenoid valves



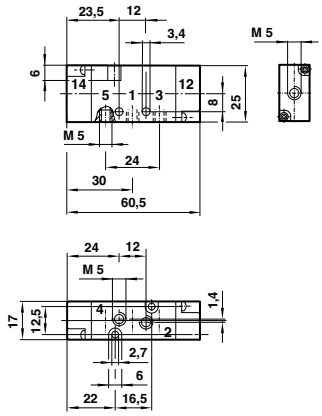
*Manual overrides

V085*11A-B21*A Model
5/3 Double solenoid valves

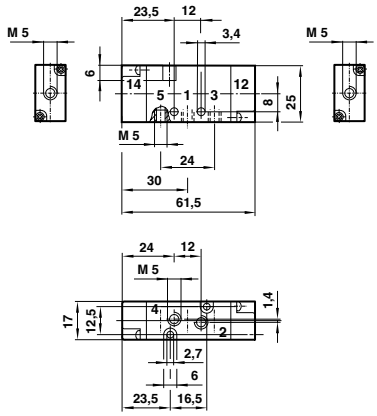


*Manual overrides

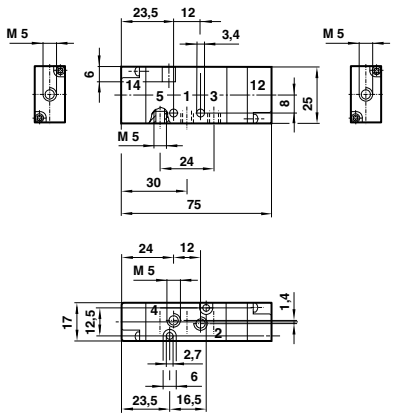
V085536A–X0130 Model
5/2 Single pilot valves



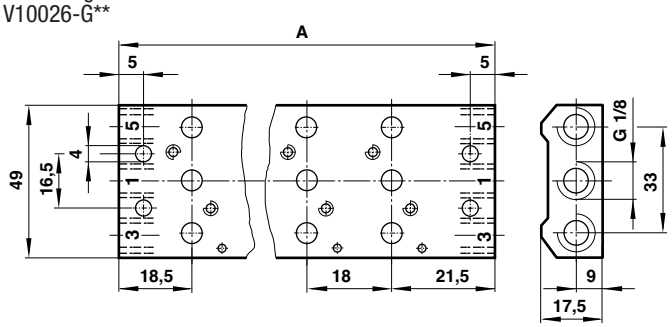
V085533A–X0020 and V085533A–X0060
5/2 Double pilot valves



V085*33A-X0020 Model
5/3 Double pilot valves



Fixed length manifold
V10026-G**



No. of stations	A	Model
2	58	V10026-G02
4	94	V10026-G04
6	130	V10026-G06
8	166	V10026-G08
10	202	V10026-G10
12	238	V10026-G12

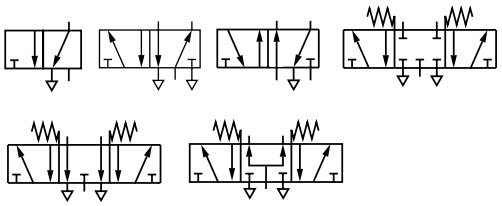
Note: Gaskets and valve fixing screws are supplied with these manifolds.

V09 – Nugget 40

Solenoid & pilot actuated spool valves

Modular & fixed length sub-base

3/2, 5/2, 5/3, Ø 6 mm, G⅛



High flow from 17 mm body width
Compact, sub-base mounted valves
Low power solenoid models
with a range of voltages
Surface or DIN rail mounting
Wide range of sub-bases for up to 16 stations

Technical data

Medium

Compressed air, filtered, lubricated and non-lubricated.

Type

Spool valve, indirectly actuated.

Mounting

Through-holes in sub-base and manifold, threaded.

Operating pressure

Maximum 10 bar
See individual details.

Flow

Size	l/min
G1/8	453
Ø 6 mm	394
Ø 6 mm, 5/3	274

Ambient temperature

-20°C to +80°C pilot models
-20°C to +50°C solenoid models.
Consult our Technical Service for use below +2°C.

Materials

Body: zinc alloy
End caps: glass filled co-polymer and zinc alloy
Spool: aluminium
Seals: nitrile
Fixed length sub bases: aluminium

Function	Actuation	Pilot supply	Mid position	Manual override	Operating pressure (bar)	Pilot pressure (bar)	kg	Model	Service kit	Mounting
3/2	Sol/Spring & air	Internal	–	Turn & lock	3 ... 10	–	0,140	V095416R-B200A	V10034–K04	Sub-base
3/2	Sol/Spring & air	Internal	–	Push only	3 ... 10	–	0,140	V095416R-B300A	V10034–K04	Sub-base
3/2	Sol/Spring & air	External	–	Turn & lock	-0,9 ... 10	1,5+0,5xsupply	0,140	V095426R-B200A	V10034–K04	Sub-base
3/2	Sol/Spring & air	External	–	Push only	-0,9 ... 10	1,5+0,5xsupply	0,140	V095426R-B300A	V10034–K04	Sub-base
5/2	Sol/Spring & air	Internal	–	Turn & lock	3 ... 10	–	0,155	V096516A-B21*A	V10034–K00	All bases
5/2	Sol/Spring & air	Internal	–	Push only	3 ... 10	–	0,155	V096516A-B31*A	V10034–K04	All bases
5/2	Sol/Spring & air	External	–	Turn & lock	1 ... 10	1,5+0,5xsupply	0,155	V096526A-B21*A	V10034–K00	Single & mod.
5/2	Sol/Spring & air	External	–	Push only	1 ... 10	1,5+0,5xsupply	0,155	V096526A-B31*A	V10034–K00	Single & mod.
5/2	Sol/Sol	Internal	–	Turn & lock	2 ... 10	–	0,198	V096511A-B21*A	V10034–K00	All bases
5/2	Sol/Sol	Internal	–	Push only	2 ... 10	–	0,198	V096511A-B31*A	V10034–K00	All bases
5/2	Sol/Sol	External	–	Turn & lock	1 ... 10	2 ... 10	0,198	V096522A-B21*A	V10034–K00	Single & mod.
5/2	Sol/Sol	External	–	Push only	1 ... 10	2 ... 10	0,198	V096522A-B31*A	V10034–K00	Single & mod.
5/2	Sol/Air/Air	Internal	–	Turn & lock	1,5 ... 10	–	0,155	V096513A-B21*A	V10034–K00	All bases
5/2	Sol/Air/Air	Internal	–	Push only	1,5 ... 10	–	0,155	V096513A-B31*A	V10034–K00	All bases
5/2	Pilot/Spring & air	–	–	–	2 ... 10	1,5+0,5xsupply	0,116	V096536A-X0130	V10034-K00	All Bases
5/2	Pilot/Pilot	–	–	–	1 ... 10	2 ... 10	0,141	V096533A-X0020	V10034-K00	All Bases
5/2	Pilotpriority/Pilot	–	–	–	1 ... 10	2 ... 10	0,141	V096533A-X0060	V10034-K00	All Bases
5/3	Sol/Sol	Internal	APB	Turn & lock	-0,9 ... 10	–	0,205	V096611A-B21*A	V10034-K01	All Bases
5/3	Sol/Sol	–	–	Push only	-0,9 ... 10	–	0,205	V096611A-B31*A	V10034-K01	All Bases
5/3	Sol/Sol	External	APB	Turn & lock	-0,9 ... 10	1,2 ... 10	0,205	V096622A-B21*A	V10034-K01	Sub-base
5/3	Sol/Sol	–	–	Push only	-0,9 ... 10	1,2 ... 10	0,205	V096622A-B31*A	V10034-K01	Sub-base
5/3	Sol/Sol	Internal	COE	Turn & lock	-0,9 ... 10	–	0,205	V096711A-B21*A	V10034-K02	All Bases
5/3	Sol/Sol	–	–	Push only	-0,9 ... 10	–	0,205	V096711A-B31*A	V10034-K02	All Bases
5/3	Sol/Sol	External	COE	Turn & lock	-0,9 ... 10	1,2 ... 10	0,205	V096722A-B21*A	V10034-K02	Sub-base
5/3	Sol/Sol	–	–	Push only	-0,9 ... 10	1,2 ... 10	0,205	V096722A-B31*A	V10034-K02	Sub-base
5/3	Sol/Sol	Internal	COP	Turn & lock	-0,9 ... 10	–	0,205	V096811A-B21*A	V10034-K03	All Bases
5/3	Sol/Sol	–	–	Push only	-0,9 ... 10	–	0,205	V096811A-B31*A	V10034-K03	All Bases
5/3	Sol/Sol	External	COP	Turn & lock	-0,9 ... 10	1,2 ... 10	0,205	V096822A-B21*A	V10034-K03	Sub-base
5/3	Sol/Sol	–	–	Push only	-0,9 ... 10	1,2 ... 10	0,205	V096822A-B31*A	V10034-K03	Sub-base
5/3	Pilot/Pilot	–	APB	–	1 ... 10	2 ... 10	0,148	V096633A-X0020	V10034-K01	All Bases
5/3	Pilot/Pilot	–	COE	–	1 ... 10	2 ... 10	0,148	V096733A-X0020	V10034-K02	All Bases
5/3	Pilot/Pilot	–	COP	–	1 ... 10	2 ... 10	0,148	V096833A-X0020	V10034-K03	All Bases

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure.. * Insert voltage code from table below. Order connector plugs separately.
Single = single station sub-base. Mod. = modular sub-base

Voltage codes & spare coils

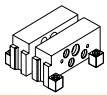
Voltage	Code	Power inrush/hold	Coil
6 V d.c.	1	1,5 W	V10025-A11
12 V d.c.	2	1,7 W	V10025-A12
24 V d.c.	3	1,7 W	V10025-A13
12 V 50/60 Hz	1	4,1/2,9 VA	V10025-A11
24 V 50/60 Hz	4	4,1/2,9 VA	V10025-A14
48 V 50/60 Hz	6	4,1/2,9 VA	V10025-A16
110 V 50/60 Hz	8	3,5/2,5 VA	V10025-A18
240 V 50/60 Hz	9	3,5/2,5 VA	V10025-A19

Electrical details for solenoid operators

Voltage tolerances:	±10%
Rating:	100% E.D.
Inlet orifice:	0,8 mm
Electrical connection:	DIN 43650 Table “C”
Protection class:	IP65 (DIN 40050)

For details of connector plugs and light emitting seals see page 382

Bases

Modular base G1/8	Modular base Ø 6	End plate kit
		
V095516A–Q130G	V095516R–Q1306	V095516A–Q140G

Valve selection

Please see Options selector on page 215 for instructions on how to order a Nugget series valve

Integral flying lead coils (300 mm)

Voltage	Code	Power	Coil
12 V d.c.	B*12G	2,0 W	V10617-A12
24 V d.c.	B*13G	2,0 W	V10617-A13

* Insert valve manual override code – 2 = turn & lock, 3 = push only

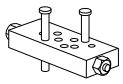
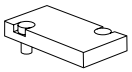
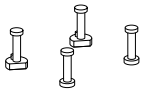
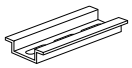
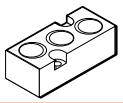
V09 – Nugget 40

Solenoid & pilot actuated spool valves

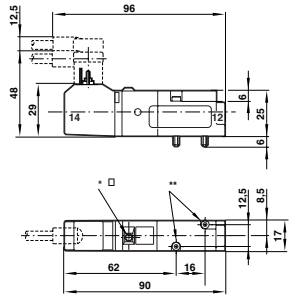
Modular & fixed length sub-base

3/2, 5/2, 5/3, Ø 6 mm, G⅛

Accessories

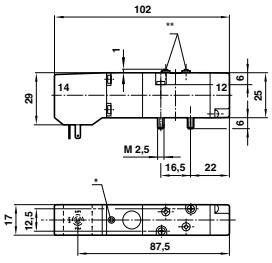
Sandwich plate flow regulator	Blanking plate	Optional tie rod kit	DIN-rail mounting kit	DIN Rail	Blanking plug	Intermediate supply/exhaust plate	Pressure switch
							
V095516A–Q1200	V095516A–Q1100	V085516A–Q0302 to 16	V10007–K00 for V10006–G** bases	V10009–C00 1 m	V10511-K01	V095516A-Q160G	V095516A-Q1700

3/2 Single solenoid valves
V0954**R



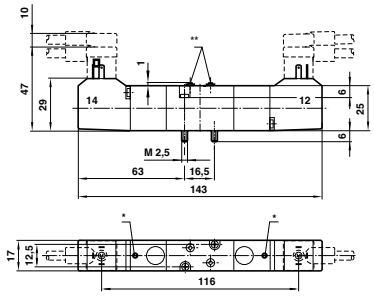
*Manual override
**2 fixing screws M2,5 x 0,45

5/2 Single solenoid valves
V096516A and V096526A



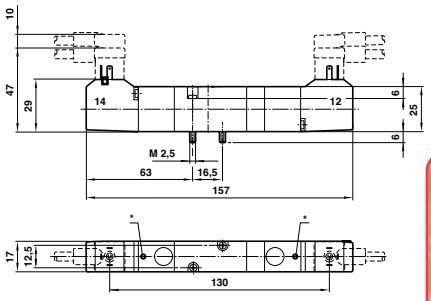
*Manual override
**Position indicators

5/2 Double solenoid valves
V096511A and V096522A



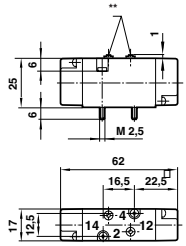
*Manual override **Position indicators

5/3 Double solenoid valve
V096***A



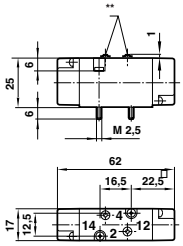
*Manual override

5/2 Single pilot and priority pilot valves
V096536A-X0130 and
V096533A-X0060



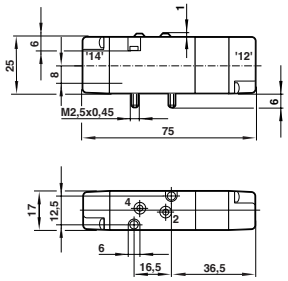
**Position indicators

Double pilot valve
V096533A-X0020

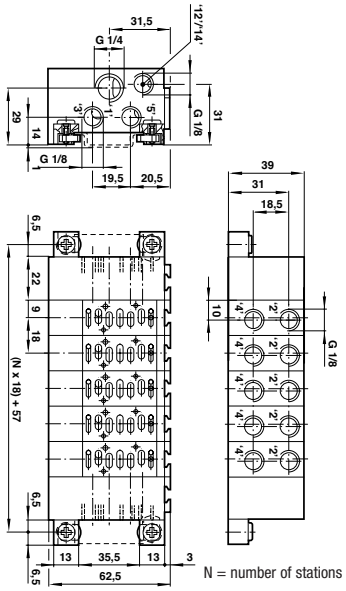


**Position indicators

5/3 Double pilot valve
V096*33A-X0020

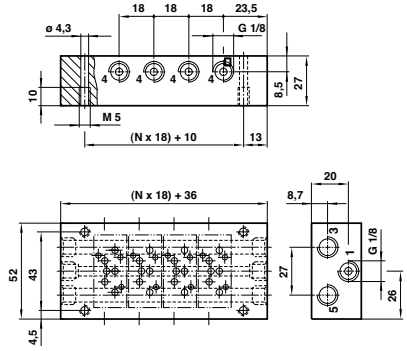


Modular sub-base assemblies for DIN rail or surface mounting



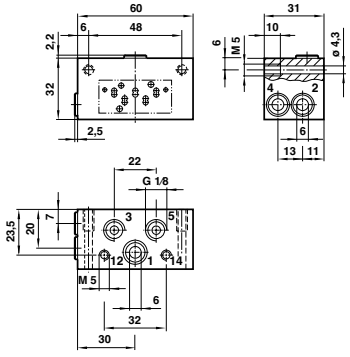
N = number of stations

Fixed length sub-base



Fixed length sub-base
Model number: V10006–G0*
* = 2, 4, 6 or 8 stations
For use with internal pilot supply solenoid valves.

Single sub-base



Side-ported sub-base
Model number: V10038–G00
Type: single station side ported sub-base

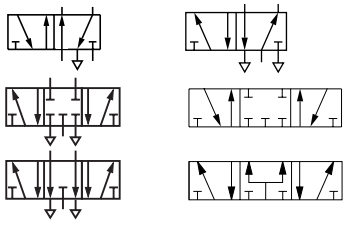
Modular sub-base assemblies
Model number: V09BAX**–XXXXX
Type: G1/8 modular sub-base assemblies for 4, 6, 8, 10 and 12 valves.
Model number: V096AX**-XXXXX
Type: Ø 6 mm modular sub-base assemblies for 4, 6, 8, 10 and 12 valves.
** = 04 to 12

V14 – Nugget 120

Solenoid & pilot actuated spool valves

Fixed length manifold, modular sub-base

5/2 & 5/3, G¼



High flow compact valves
Sub-base and low profile manifolds
Lightweight, long life corrosion resistant materials
Multipole and Fieldbus compatible
Surface or DIN rail mounting
Flexible single step expansion

Technical data

Medium:
Compressed air, filtered, lubricated and non lubricated

Operating pressure:
Maximum 10 bar. See table for individual details.

Flow:

Size	Function	l/min
G1/4	5/2	1152
G1/4	5/3	1014

Ambient temperature:
-20°C to +80°C pilot models
-20°C to +50°C solenoid models.
Consult our Technical Service for use below +2°C.

Materials

Body: aluminium alloy
Piston & spool: aluminium alloy
Sub-base & manifold: aluminium alloy
End caps: glass filled co-polymer
Seals & gaskets: nitrile

Alternative models

Valve islands – see page 236

Function	Actuation	Pilot supply	Mid position	Operating pressure (bar)	Pilot pressure (bar)	kg	Model	Service kit	Mounting
5/2	Sol/Spring	Internal	–	1,8 ... 10	–	0,155	V14B517A-B21*A	V10316-K30	All bases
5/2	Sol/Spring	External	–	-0,9 ... 10	1,8 ... 10	0,155	V14B527A-B21*A	V10316-K30	Sub bases
5/2	Sol/Spring	Int. twin	–	1,8 ... 10	–	0,155	V14B5F7A-B21*A	V10316-K30	Single & manifold
5/2	Sol/Spring	Ind. ext.	–	-0,9 ... 10	1,8 ... 10	0,165	V14B5E7A-B21*A	V10316-K30	All bases
5/2	Sol/Sol	Internal	–	1,2 ... 10	–	0,215	V14B511A-B21*A	V10316-K30	All bases
5/2	Sol/Sol	External	–	-0,9 ... 10	1,2 ... 10	0,215	V14B522A-B21*A	V10316-K30	Sub bases
5/2	Sol/Sol	Int. twin	–	1,8 ... 10	–	0,215	V14B5FFA-B21*A	V10316-K30	Single & manifold
5/2	Sol/Sol	Ind. ext.	–	-0,9 ... 10	1,2 ... 10	0,235	V14B5EEA-B21*A	V10316-K30	All bases
5/2	Pilot priority/Pilot	–	-	-0,9 ... 10	1,2 ... 10	0,100	V14B59DA-X0060	V10316-K30	All Bases
5/2	Pilot/Spring	–	-	-0,9 ... 10	1,8 ... 10	0,100	V14B5D7A-X0090	V10316-K30	All Bases
5/2	Pilot/Pilot	–	-	-0,9 ... 10	1,2 ... 10	0,100	V14B5DDA-X0020	V10316-K30	All Bases
5/3	Sol/Sol	Internal	APB	2,2 ... 10	-	0,225	V14B611A-B21*A	V10317-K30	All Bases
5/3	Sol/Sol	External	APB	-0,9 ... 10	2,2 ... 10	0,225	V14B622A-B21*A	V10317-K30	Sub-base
5/3	Sol/Sol	Int. twin	APB	2,2 ... 10	–	0,225	V14B6FFA-B21*A	V10317-K30	Sub-base & manifold
5/3	Sol/Sol	Internal	COE	2,2 ... 10	-	0,225	V14B711A-B21*A	V10318-K30	All Bases
5/3	Sol/Sol	External	COE	-0,9 ... 10	2,2 ... 10	0,225	V14B722A-B21*A	V10318-K30	Sub-base
5/3	Sol/Sol	Internal	COP	2,2 ... 10	-	0,225	V14B811A-B21*A	V10347-K30	All Bases
5/3	Sol/Sol	External	COP	-0,9 ... 10	2,2 ... 10	0,225	V14B822A-B21*A	V10347-K30	Sub-base
5/3	Pilot/Pilot	–	APB	-0,9 ... 10	2,2 ... 10	0,110	V14B6DDA-X0020	V10317-K30	All Bases
5/3	Pilot/Pilot	–	COE	-0,9 ... 10	2,2 ... 10	0,110	V14B7DDA-X0020	V10318-K30	All Bases
5/3	Pilot/Pilot	–	COP	-0,9 ... 10	2,2 ... 10	0,110	V14B8DDA-X0020	V10347-K30	All Bases

APB = All Ports Blocked, COE = Centre open Exhaust, COP = Centre open Pressure.
*Insert voltage code from table below. Turn & lock manual override as standard.
For push only manual override substitute 10th digit with 3 eg. V14B517A-B**3**1*A. Order connector plugs separately.

Voltage codes & spare coils

Voltage	Code	Power inrush/hold	Coil
6 V d.c.	1	1,5 W	V10025-A11
12 V d.c.	2	1,7 W	V10025-A12
24 V d.c.	3	1,7 W	V10025-A13
24 V 50/60 Hz	4	4,1/2,9 VA	V10025-A14
48 V 50/60 Hz	6	4,1/2,9 VA	V10025-A16
110 V 50/60 Hz	8	3,5/2,5 VA	V10025-A18
240 V 50/60 Hz	9	3,5/2,5 VA	V10025-A19

Electrical details for solenoid operators

Voltage tolerances:	±10%
Rating:	100% E.D.
Inlet orifice:	0,8 mm
Electrical connection:	DIN 43 650 Table “C”
Protection class:	IP65 (DIN 40 050)

For details of connector plugs and light emitting seals see page 382

Integral flying lead coils (300 mm)

Voltage	Code	Power	Coil
12 V d.c.	B*12G	2,0 W	V10617-A12
24 V d.c.	B*13G	2,0 W	V10617-A13

* Insert valve manual override code – 2 = turn & lock, 3 = push only

Valve selection

Please see Options selector on page 215 for instructions on how to order a Nugget series valve

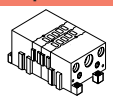
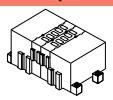
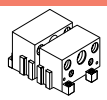
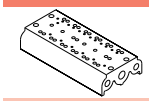
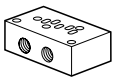
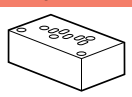
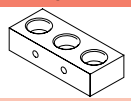
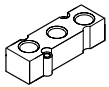
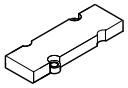
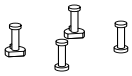
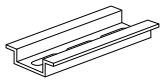
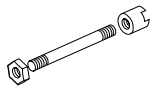
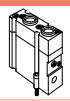
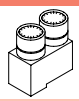
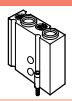
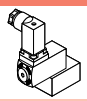
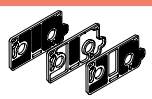
V14 – Nugget 120

Solenoid & pilot actuated spool valves

Fixed length manifold, modular sub-base

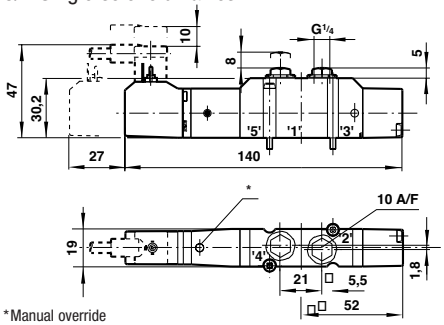
5/2 & 5/3, G¼

Bases and accessories

Sub-base assemblies Side ported		Sub-base assemblies Bottom ported		Modular sub-base		PIF Sub-base		End plate kit	
									
V14BAX**-XXXXX	Single pressure	V14BCX**-XXXXX	Single pressure	V14B517R-Q010G	Side ported	V14B517R-Q0108	Side ported	V11240-G30	Side ported
V14BAX**-**XXX	Dual pressure	V14BCX**-**XXX	Dual pressure	V14B517R-Q020G	Bottom ported	V14B517R-Q0208	Bottom ported	V14B517R-Q051G	Bottom ported
Fixed length manifold		**Single station sub-base Side ported**		**Single station sub-base Bottom ported**		**Single station sub-base Bottom ported**		**Intermediate supply/exhaust plate**	
									
V10028-G**		V10121-G01 G1/4		V10122-G01 G1/4		V10486-G01 G1/4		V14B517A-Q240G	
01, 02, 04, 06, 08, 10, 12 stations									
Blanking plate for unused station		**Pressure indicator**		**DIN-rail mounting kit**		**DIN Rail**		**Optional tie rod kit**	
									
V14B517A-Q2700		V14B517A-Q2800		V10319-K30		V10009-C00 1 m		V11072-C02 C20	Tie rod
								V00056-C01	Tie rod nut
Pressure regulator block		**Pressure gauge kit for PRV**		**Flow regulator block**		**Pressure switch**		**Blanking gasket set**	**Blanking plug for fixed length sub-base**
									
V14B517A-Q2103	Dual	V14B517A-Q2120	Dual	V14B517A-Q2201		V14B517A-Q1700		V10040-K96 Modular sub-base	V10320-K01 Manifold G3/8
V14B517A-Q2106	Mono port 2	V14B517A-Q2121	Mono	–		–		–	V10320-K02 Manifold G1/4
V14B517A-Q2109	Mono port 4								

V14B5*7A

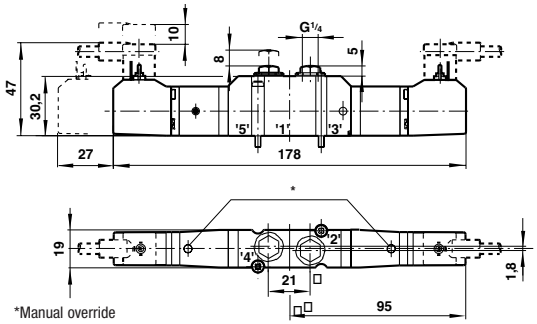
5/2 Single solenoid valves



*Manual override

V14B5**A

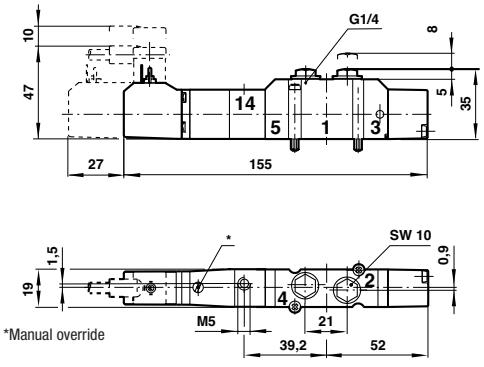
5/2 Double solenoid valves



*Manual override

V14B5E7A

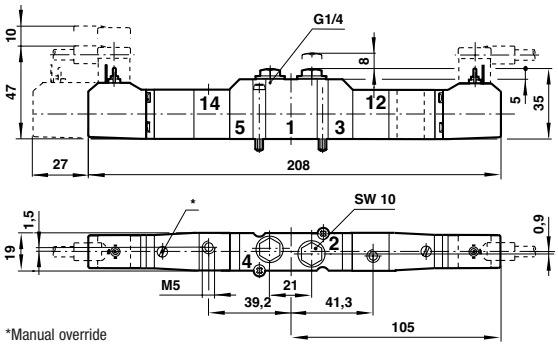
5/2 Single solenoid valves with independent external pilot supply



*Manual override

V14B5EEA

5/2 Double solenoid valves with independent external pilot supply



*Manual override

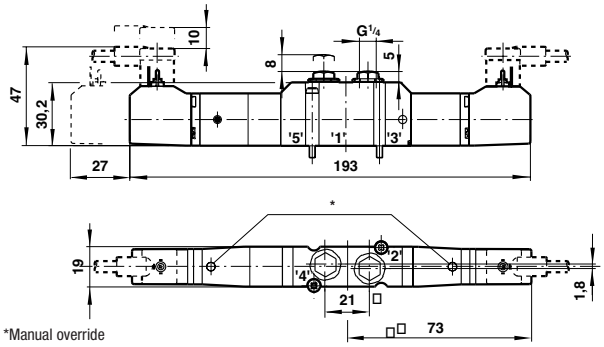
V14 – Nugget 120

Solenoid & pilot actuated spool valves

Fixed length manifold, modular sub-base

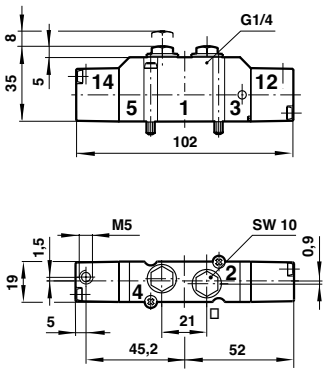
5/2 & 5/3, G¼

5/3 Double solenoid valves
V14B***A

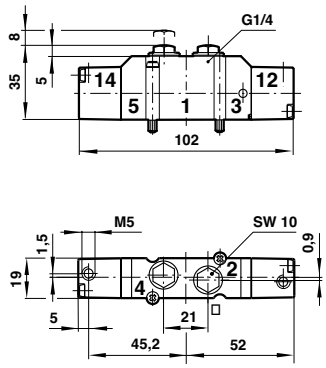


*Manual override

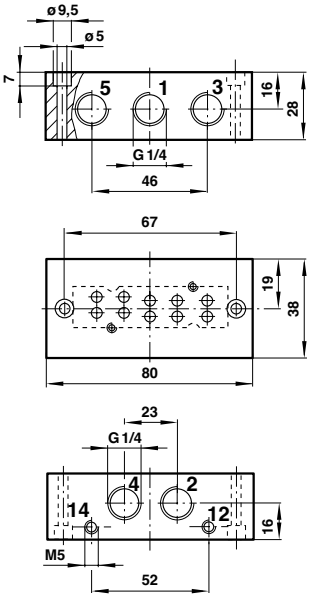
5/2 Single pilot and priority pilot valves
V1485D7A and V14B59DA



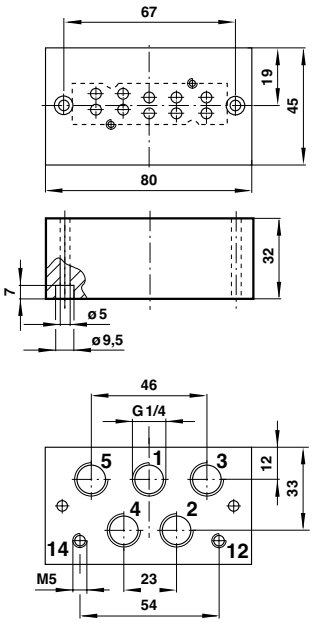
5/2 and 5/3 Double pilot valves
V14B*DDA



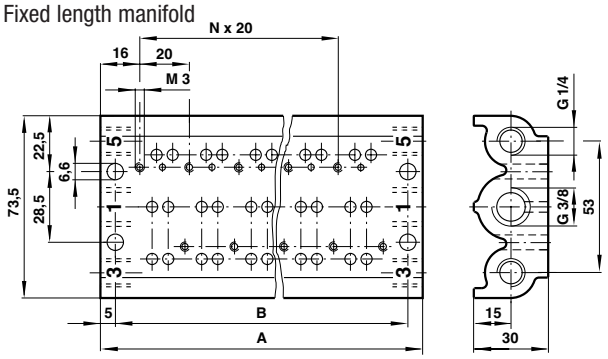
Single sub-base – side ported
V10121-G01



Single sub-base – bottom ported
V10122-G01



Fixed length manifold



N = number of stations

Model	No. of stations	A	B	kg
V10028-G01	1	48	-	0,158
V10028-G02	2	70	58	0,247
V10028-G04	4	110	98	0,398
V10028-G06	6	150	138	0,544
V10028-G08	8	190	178	0,693
V10028-G10	10	230	218	0,844
V10028-G12	12	270	258	0,997

Supplied with internal pilot supply gaskets V10238-C01. For twin supply valves, gasket V10239-C01 supplied with the valves should be used.

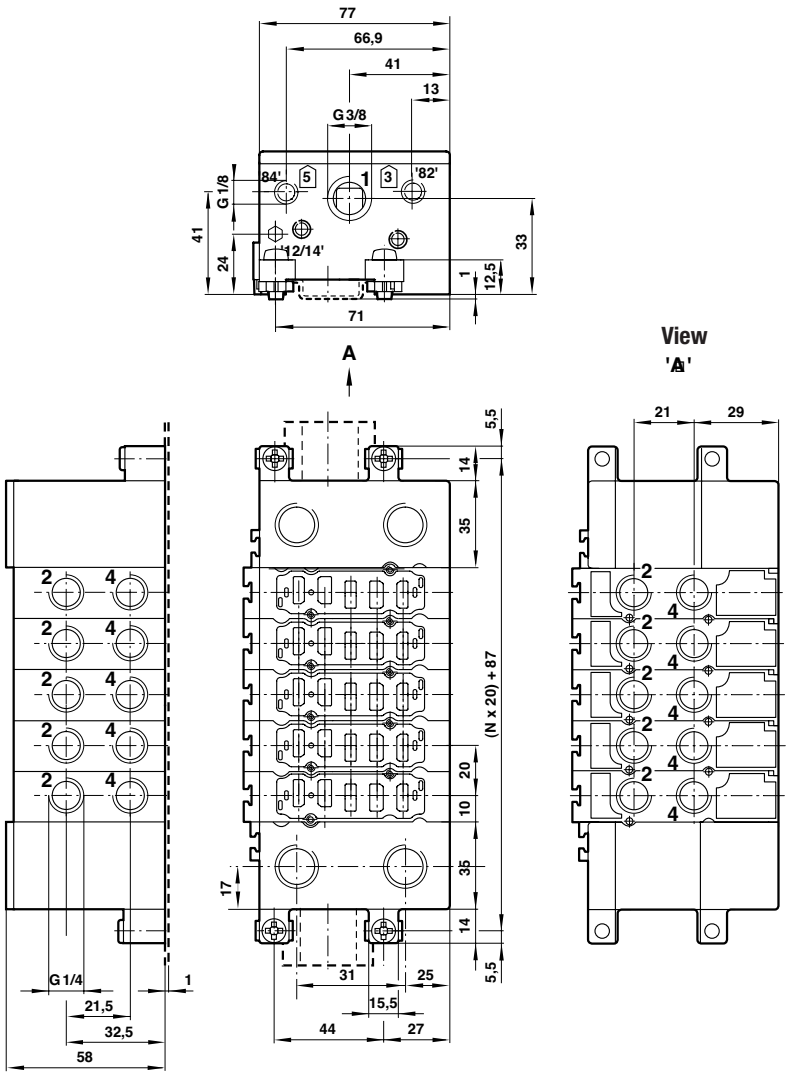
V14 – Nugget 120

Solenoid & pilot actuated spool valves

Fixed length manifold, modular sub-base

5/2 & 5/3, G¼

Modular sub-base assemblies for DIN rail or surface mounting



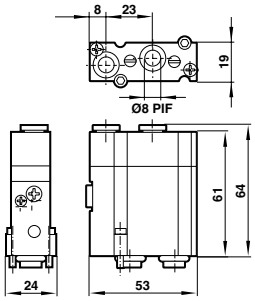
N = number of stations

Modular sub-base assemblies

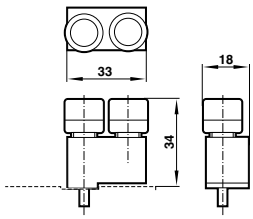
V14CAX**-XXXXX	Side ported, G1/4
V148AX**-XXXXX	Side ported, Ø 8 mm
V14CCX**-XXXXX	Bottom ported, G1/4
V148CX**-XXXXX	Bottom ported, Ø 8 mm

Pre-built side ported modular sub-base assemblies are available from stock for 4, 6, 8, 10 and 12 valves.
Specially configured assemblies are available up to 16 stations.
** = 02 to 16 stations.

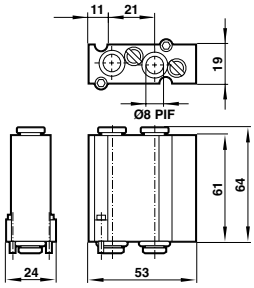
Pressure regulator block
V14B517A-Q210*



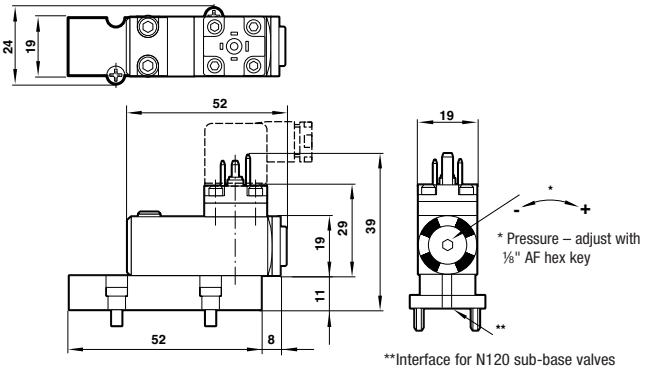
Pressure gauge kit
V14B517A-Q212*



Flow regulator block
V14B517A-Q2201



Pressure switch assembly
V14B517A-Q1700

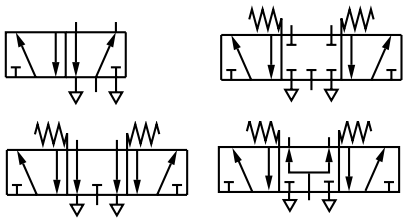


**Interface for N120 sub-base valves

V40/V41 Series

Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 18 mm



High performance, compact design
Flexible sub-base system
Multipressure system capability
Wide range of accessories
Dual spool technology
V40 Glandless spool and sleeve (long life)
V41 Softseal spool (high flow)
Collected pilot exhaust with internal pilot air supply
Easy to convert from internal to external pilot supply
Valve exchange under pressure

Technical data

Medium:

Compressed air, 40 µm filtered, lubricated or non-lubricated

Operation:

V40: Glandless spool valve, solenoid pilot or air pilot actuated

V41: Softseal spool valve, solenoid pilot or air pilot actuated

Operating pressure:

10 bar V41 models and V40 solenoid pilot actuated valves with internal pilot supply

16 bar V40 solenoid pilot actuated valves with external pilot supply and V40 air pilot actuated valves

See tables for individual details

Ambient temperature:

-15°C to +50°C V40/V41 solenoid and V41 air pilot models

-15°C to +80°C V40 air pilot models

Consult our Technical Service for use below +2°C.

Materials

Body and sub-base: aluminium alloy (V40), die-cast aluminium (V41)

Spool and sleeve: hard anodised, Teflon coated, matched aluminium (V40) or aluminium alloy spool (V41) with HNBR seals

Plastic parts: POM

Static seals: NBR

End cover and screws: zinc plated

Springs: stainless steel

2 x 3/2 Solenoid pilot actuated valves

Model	Function 2 x 3/2	Pilot supply	Pilot exhaust	Actuation 2 x 3/2	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V415A11D-*****	NC	Internal	Collected#	Sol/Spring	610	2,5 ... 10	–	0,18	V70447-K50
V415A22D-*****	NC	External	Not collected	Sol/Spring	610	0 ... 10	1,7+(0,35xop.press.)	0,18	V70447-K50
V415B11D-*****	NO	Internal	Collected#	Sol/Spring	610	2,5 ... 10	–	0,18	V70448-K50
V415B22D-*****	NO	External	Not collected	Sol/Spring	610	0 ... 10	1,7+(0,35xop.press.)	0,18	V70448-K50
V415C11D-*****	NO/NC	Internal	Collected#	Sol/Spring	610	2,5 ... 10	–	0,18	V70449-K50
V415C22D-*****	NO/NC	External	Not collected	Sol/Spring	610	0 ... 10	1,7+(0,35xop.press.)	0,18	V70449-K50

5/2 Solenoid pilot actuated valves

Model	Spool technology	Pilot supply	Pilot exhaust	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V405513D-*****	Gl	Internal	Collected#	Solenoid	Air spring	570	1 ... 10	–	0,12	V70440-K50
V415513D-*****	Ss	Internal	Collected#	Solenoid	Air spring	650	1 ... 10	–	0,13	V70442-K50
V405523D-*****	Gl	External	Not collected	Solenoid	Air spring	570	-0,9 ... 16	1 ... 10	0,12	V70440-K50
V415523D-*****	Ss	External	Not collected	Solenoid	Air spring	650	-0,9 ... 10	1 ... 10	0,13	V70442-K50
V405516D-*****	Gl	Internal	Collected#	Solenoid	Spring & air	570	1,6 ... 10	–	0,13	V70440-K50
V415517D-*****	Ss	Internal	Collected#	Solenoid	Spring	650	2 ... 10	–	0,13	V70442-K50
V405526D-*****	Gl	External	Not collected	Solenoid	Spring & air	570	-0,9 ... 16	1,6 ... 10	0,13	V70440-K50
V415527D-*****	Ss	External	Not collected	Solenoid	Spring	650	-0,9 ... 10	2 ... 10	0,13	V70442-K50
V405511D-*****	Gl	Internal	Collected#	Solenoid	Solenoid	570	2 ... 10	–	0,18	V70441-K50
V415511D-*****	Ss	Internal	Collected#	Solenoid	Solenoid	650	2 ... 10	–	0,18	V70443-K50
V405522D-*****	Gl	External	Not collected	Solenoid	Solenoid	570	-0,9 ... 16	2 ... 10	0,18	V70441-K50
V415522D-*****	Ss	External	Not collected	Solenoid	Solenoid	650	-0,9 ... 10	2 ... 10	0,18	V70443-K50
V405591D-*****	Gl	Internal	Collected#	Solenoid (priority)	Solenoid	570	2 ... 10	-	0,18	V70441-K50
V405592D-*****	Gl	External	Not collected	Solenoid (priority)	Solenoid	570	-0,9 ... 16	2 ... 10	0,18	V70441-K50

5/3 Solenoid pilot actuated valves

Model	Spool technology	Function	Pilot supply	Pilot exhaust	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V405611D-*****	Gl	APB	Internal	Collected#	Solenoid	Solenoid	610	2 ... 10	–	0,18	V70441-K50
V415611D-*****	Ss	APB	Internal	Collected#	Solenoid	Solenoid	680	2 ... 10	–	0,18	V70444-K50
V405622D-*****	Gl	APB	External	Not collected	Solenoid	Solenoid	610	-0,9 ... 16	2 ... 10	0,18	V70441-K50
V415622D-*****	Ss	APB	External	Not collected	Solenoid	Solenoid	680	-0,9 ... 10	2 ... 10	0,18	V70444-K50
V405711D-*****	Gl	COE	Internal	Collected#	Solenoid	Solenoid	610	2 ... 10	–	0,18	V70441-K50
V415711D-*****	Ss	COE	Internal	Collected#	Solenoid	Solenoid	680	2 ... 10	–	0,18	V70445-K50
V405722D-*****	Gl	COE	External	Not collected	Solenoid	Solenoid	610	-0,9 ... 16	2 ... 10	0,18	V70441-K50
V415722D-*****	Ss	COE	External	Not collected	Solenoid	Solenoid	680	-0,9 ... 10	2 ... 10	0,18	V70445-K50
V405811D-*****	Gl	COP	Internal	Collected#	Solenoid	Solenoid	610	2 ... 10	–	0,18	V70441-K50
V415811D-*****	Ss	COP	Internal	Collected#	Solenoid	Solenoid	680	2 ... 10	–	0,18	V70446-K50
V405822D-*****	Gl	COP	External	Not collected	Solenoid	Solenoid	610	-0,9 ... 16	2 ... 10	0,18	V70441-K50
V415822D-*****	Ss	COP	External	Not collected	Solenoid	Solenoid	680	-0,9 ... 10	2 ... 10	0,18	V70446-K50

***** Insert voltage code from table on page 253. # Pilot exhaust collected and exhausted via port 14

Gl = Glandless spool and sleeve Ss = Softseal spool APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

V40/V41 Series

Mini ISO Valves
2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 18 mm

2 x 3/2 Air pilot actuated valves (softseal spool)

Model	Function 2 x 3/2	Actuation 3/2	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V415A33A-X0020	NC	Air/Spring	610	0 ... 10	1,7+(0,35xop.press.)	0,12	V70447-K50
V415B33A-X0020	NO	Air/Spring	610	0 ... 10	1,7+(0,35xop.press.)	0,12	V70448-K50
V415C33A-X0020	NO/NC	Air/Spring	610/610	0 ... 10	1,7+(0,35xop.press.)	0,12	V70449-K50

5/2 Air pilot actuated valves

Model	Spool technology	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V405537A-X0090	Gl	Air	Spring	570	-0,9 ... 16	1,6 ... 16	0,11	V70440-K50
V415537A-X0090	Ss	Air	Spring	650	-0,9 ... 10	2 ... 10	0,10	V70442-K50
V405533A-X0020	Gl	Air	Air	570	-0,9 ... 16	2 ... 16	0,11	V70441-K50
V415533A-X0020	Ss	Air	Air	650	-0,9 ... 10	2 ... 10	0,11	V70443-K50
V405533A-X0070	Gl	Air priority	Air	570	-0,9 ... 16	2 ... 16	0,11	V70441-K50

5/3 Air pilot actuated valves

Model	Spool technology	Function	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V405633A-X0020	Gl	APB	Air	Air	610	-0,9 ... 16	2 ... 16	0,11	V70441-K50
V415633A-X0020	Ss	APB	Air	Air	680	-0,9 ... 10	2 ... 10	0,12	V70444-K50
V405733A-X0020	Gl	COE	Air	Air	610	-0,9 ... 16	2 ... 16	0,11	V70441-K50
V415733A-X0020	Ss	COE	Air	Air	680	-0,9 ... 10	2 ... 10	0,12	V70445-K50
V405833A-X0020	Gl	COP	Air	Air	610	-0,9 ... 16	2 ... 16	0,11	V70441-K50
V415833A-X0020	Ss	COP	Air	Air	680	-0,9 ... 10	2 ... 10	0,12	V70446-K50

Gl = Glandless spool and sleeve Ss = Softseal spool APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

Voltage codes & spare pilots

Voltage	Coil code	Power inrush/hold	Spare pilot valve
12 V d.c.	C312A	1 W	VZC7L2C1-C312A
24 V d.c.	C313A	1,2 W	VZC7L2C1-C313A
24 V 50/60 Hz.	C314A	2,1/1,5 VA	VZC7L2C1-C314A
48 V 50/60 Hz	C316A	2,1/1,5 VA	VZC7L2C1-C316A
110 V d.c.	C317A	1 W	VZC7L2C1-C317A
115 V 50/60 Hz	C318A	2,1/1,5 VA	VZC7L2C1-C318A
230 V 50/60 Hz	C319A	2,1/1,5 VA	VZC7L2C1-C319A

Other voltages available on request. Spare pilot valves are delivered with mounting screws.

Electrical details for solenoid operators

Voltage tolerances	-10%/+15%
Rating	100% E.D.
Inlet orifice	0,8 mm
Electrical connection	DIN 43 650 table 'C'
Manual override	Shrouded push button, spring return Convertible into lockable type with set-up kit, part no. V70532-K00 (see next page)
Protection class	IP 65 with sealed plug (ISO 6952) NEMA 4
Materials	PPS (body), Viton and NBR (seals)

Connector plugs to be ordered separately. See page 382. Intrinsically safe version available on request.

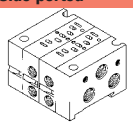
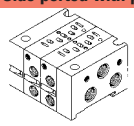
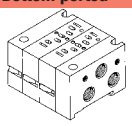
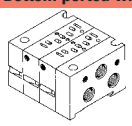
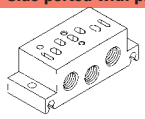
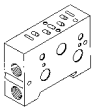
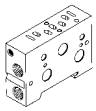
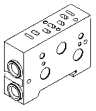
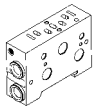
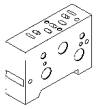
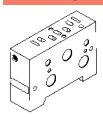
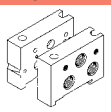
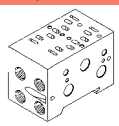
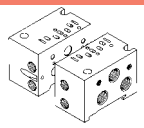
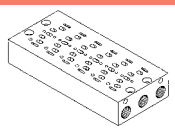
Valve selection

For instructions on how to order a Mini ISO valve please see Options selector on page 281

V40/V41 Series

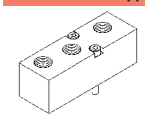
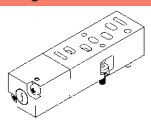
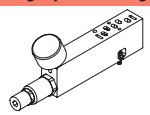
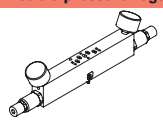
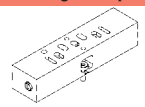
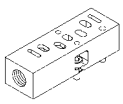
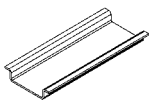
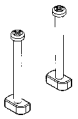
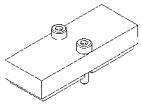
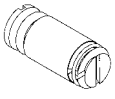
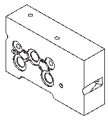
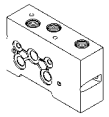
Mini ISO Valves
2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 18 mm

Bases

Sub-base assemblies Side ported		Sub-base assemblies Side ported with pilot ports		Sub-base assemblies Bottom ported		Sub-base assemblies Bottom ported with pilot ports		Single station sub-base Side ported with pilot ports	
									
V41xAX**-XXXXX	Single pressure	V41xEX**-XXXXX	Single pressure	V41ACX**-XXXXX	Single pressure	V41AFX**-XXXXX	Single pressure	V70401-A5B	(G1/8)
V41xAX**-**XXX	Dual pressure	V41xEX**-**XXX	Dual pressure	V41ACX**-**XXX	Dual pressure	V41AFX**-**XXX	Dual pressure	V70401-P5B	(1/8 NPTF)
Modular sub-base Side ported without pilot ports		**Modular sub-base Side ported with pilot ports**		**Modular sub-base Side ported (PIF) without pilot ports**		**Modular sub-base Side ported (PIF) with pilot ports**		**Modular sub-base Bottom ported without pilot ports**	
									
V70425-A5F	(G1/8)	V70426-A5F	(G1/8)	V70425-65F	(Ø 6 mm)	V70426-65F	(Ø 6 mm)	V70425-A5E	(G1/8)
V70425-P5F	(1/8 NPTF)	V70426-P5F	(1/8 NPTF)	V70425-85F	(Ø 8 mm)	V70426-85F	(Ø 8 mm)		
				V70425-15F	(Ø 1/4")	V70426-15F	(Ø 1/4")		
Modular sub-base Bottom ported with side pilot ports		**End plate kit End ported**		**Double station modular sub-base Side ported without pilot ports**		**End plate kit with 2 side ported valve stations without pilot ports**		**Fixed length sub-base Bottom ported**	
									
V70426-A5E	(G1/8)	V70424-B5C	(G1/4)	V70432-A5F	(G1/8)	V70431-A5F	(G1/4, G1/8)	V704**-A50	(G1/8)
	V70424-R5C	(1/4 NPTF)	V70432-P5F	(1/8 NPTF)	V70431-P5F	(1/4, 1/8 NPTF)	V704**-P50	(1/8 NPTF)	
						** = 02, 04, 06, 08, 10, 12 stations			

x Insert code for port type. See table on page 256. ** Insert number of valve stations in sub-base assemblies.
- Insert valve station to indicate position of dual pressure blanking disk. See page 256

Accessories

Intermediate supply/exhaust module		Single valve shut-off plate		Single pressure regulator plate		Double pressure regulator plate		Flow regulator plate	
									
V70429-A50	(G1/8)	V70430-K50	(Port 1 blocked)	V70427-K51	(Port 1 reg.)	V70427-K54	(Ports 2+4 reg.)	V70428-K50	(Ports 3+5 reg.)
V70429-P50	(1/8 NPTF)			V70427-K52	(Port 2 reg.)				
				V70427-K53	(Port 4 reg.)				
Sandwich plate with additional pressure port 1		**DIN EN 50 022 rail (1 metre)**		**DIN-rail mounting kit**		**Blanking plate for unused station**		**Blanking disk to modular sub-base**	
									
V70435-A50	(G1/8)	V10009-C00	(35 x 7,5 mm)	V70531-KA0		V70400-K50		V70422-K50	(Ports 1,3,5)
V70435-P50	(1/8 NPTF)	V10592-C01	(35 x 15 mm)					V70423-K50	(Ports 12+14)
Blanking plug for fixed length sub-base		**Manual override set-up kit**		**Transition plate #18 mm → #26 mm***		**Transition plate #18 mm → #26 mm* with supply and exhaust ports**			
									
V70421-K50	(Ports 3+5)	V70532-K00		V70436-K00		V70436-B00	(G1/4)		

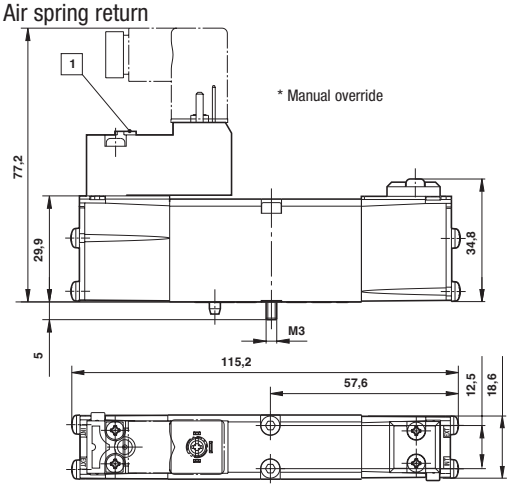
*For technical data on V44/V45 Mini ISO series size 26 mm see page 260

V40/V41 Series

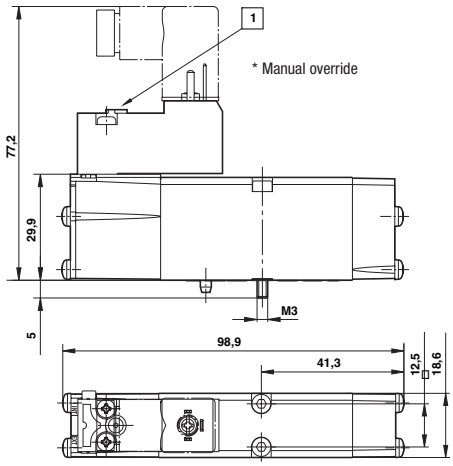
Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 18 mm

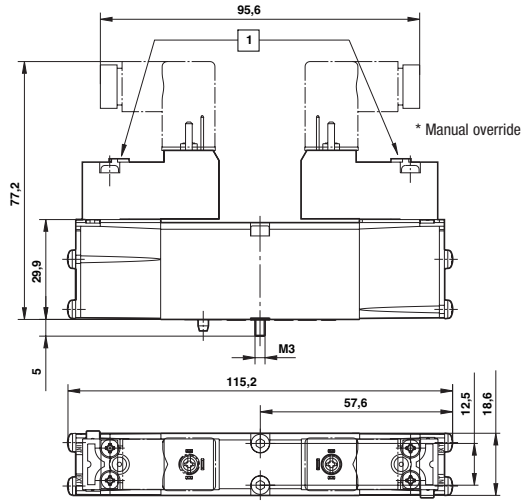
V4155*3D-C3***
5/2 Single solenoid pilot valve
Air spring return



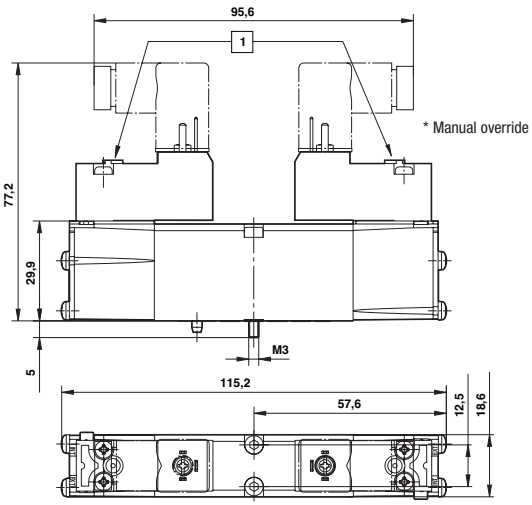
V4055**D-C3***
5/2 Single solenoid pilot valve
Mechanical (& air) spring valve



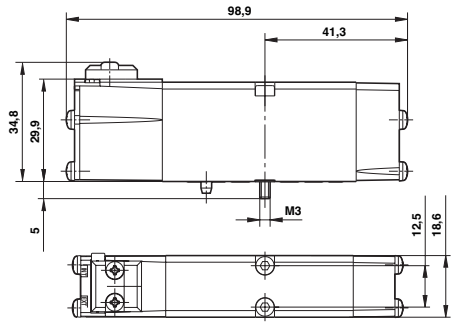
V4055**D-C3*** & V4155**D-C3***
5/2 Double solenoid pilot valve



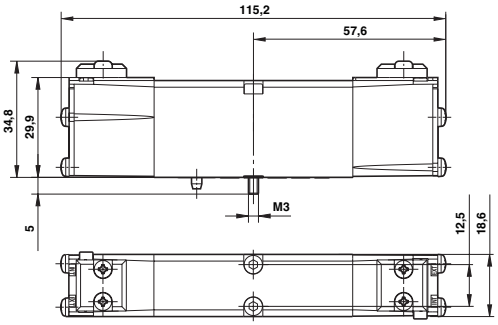
V405***D-C3*** & V415***D-C3***
2x3/2 + 5/3 Double solenoid pilot valve



V415537A-X0090
5/2 Single air pilot valve



V405537A-X0090
5/2 Single air pilot valve
V405*33A-X00*0 & V415*33A-X00*0
2x3/2, 5/2 + 5/3 Double air pilot valve



V40/V41 Series

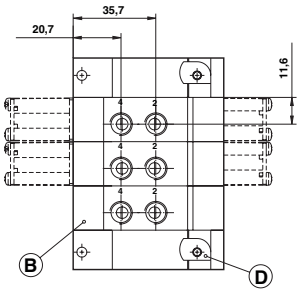
Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 18 mm

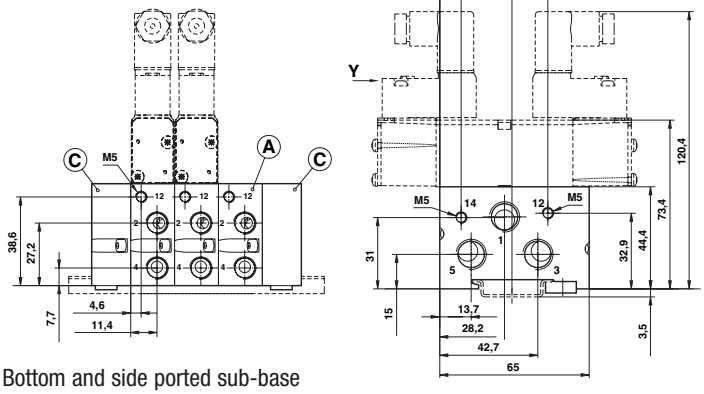
Modular sub-bases parts for DIN rail or surface mounting

Bottom ported sub-base

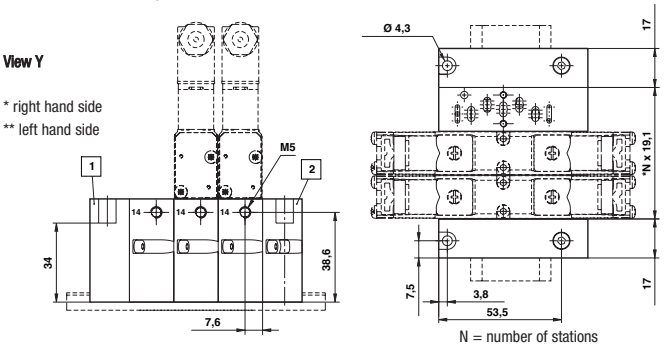
Note: Port 14 either used for external pilot air supply or for collected pilot air exhaust.
Therefore, never plug port 14 when using valves with internal pilot air supply.
Port 12 is not used, plugging not necessary.



Side ported sub-base



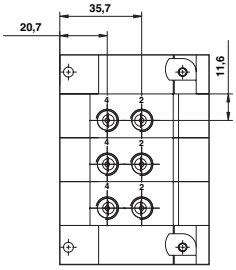
Bottom and side ported sub-base

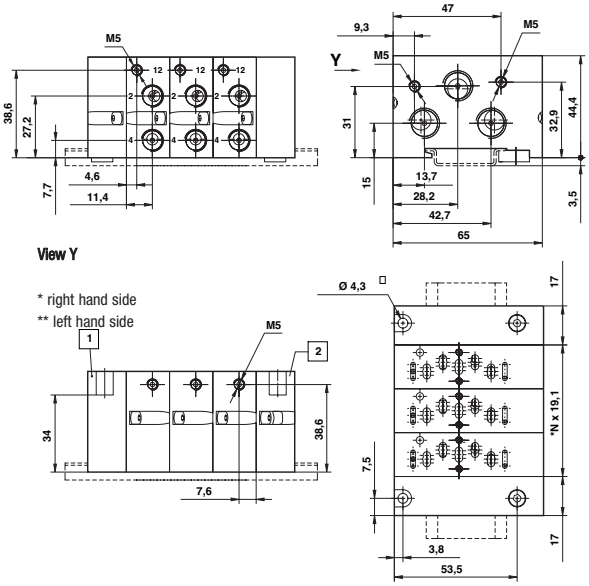


N = number of stations

Modular sub-base assemblies for DIN rail or surface mounting

Note: Port 14 either used for external pilot air supply or for collected pilot air exhaust.
Therefore, never plug port 14 when using valves with internal pilot air supply.
Port 12 is not used, plugging not necessary.





N = number of stations

Individual components

Modular sub-base (A) 0,12 kg
Ports 2+4 on side V70425-x5F

Double station modular sub-base 0,24 kg
Ports 2+4 on side V70432-y5F

Modular sub-base (A) 0,12 kg
Ports 2+4 on side
Pilot ports 12+14 on side V70426-x5F

Modular sub-base (B) 0,12 kg
Ports 2+4 on bottom V70425-A5E

Modular sub-base (B) 0,12 kg
Ports 2+4 on bottom
Pilot ports 12+14 on side V70426-A5E

End plate kit (C) 0,21 kg
End ported V70424-B5C (G1/4)
V70424-R5C (1/4NPTF)
End ported end caps
1 left hand & 1 right hand

End plate kit with valve station 0,4 kg
Ports 2+4 on side
(1/3/5 G1/4, 2/4 G1/8) V70431-A5F
(1/3/5 1/4NPTF, 2/4 1/8NPTF) V70431-P5F
End ported end caps, 1 left and 1 right

Accessories

DIN EN 50022 rail 0,31 kg
35 x 7,5 mm, 1m V10009-C00

DIN EN 50022 rail 1,02 kg
35 x 15 mm, 1m V10592-C01

DIN rail (D) 0,01 kg
Mounting kit V70531-KA0

Blanking disk to modular sub-base 0,01 kg
Ports 1, 3, 5 V70422-K50

Blanking disk to modular sub-base 0,01 kg
Ports 12+14 V70423-K50

x/y = Insert port type from table below

Code x	Code y	Ports 2+4	Ports 12+14
A	A	G1/8	M5
P	P	1/8NPTF	M5
8	–	Ø 8 mm PIF	M5
6	–	Ø 6 mm PIF	M5
1	–	Ø 1/4" PIF	M5

Modular sub-base assemblies
Side ported without pilot ports
V41xAX**-XXXXX

Modular sub-base assemblies
Side ported with pilot ports
V41xEX**-XXXXX

Modular sub-base assemblies
Bottom ported without pilot ports
V41ACX**-XXXXX

Modular sub-base with pilot ports
V41AFX**-XXXXX
** = Insert number of valve stations

Dual pressure modular sub-base assemblies
Side ported without pilot ports
V41xAX**-**XXX

Dual pressure modular sub-base assemblies
Side ported with pilot ports
V41xEX**-**XXX

Dual pressure modular sub-base assemblies
Bottom ported without pilot ports
V41ACX**-**XXX

Dual pressure modular sub-base assemblies
Bottom ported with pilot ports
V41AFX**-**XXX

- indicates position of dual pressure blanking plate e.g V41AFX03-04XXX indicates a 7 station base divided into groups of 3 and 4.

Weight: (N x 0,12 kg) + 0,21 kg

x = Insert port type from table below

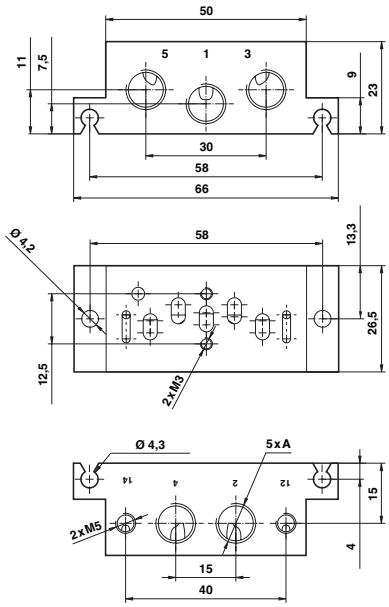
Code	Ports 2+4 Modular sub-base	Ports 2+4 Double station modular sub-base	Ports 1/3/5	Ports 12+14
A	G1/8	G1/8	G1/4	M5
P	1/8 NPTF	1/8 NPTF	1/4 NPTF	M5
8	Ø 8 mm PIF	–	G1/4	M5
6	Ø 6 mm PIF	–	G1/4	M5
1	Ø 1/4" PIF	–	1/4 NPTF	M5

V40/V41 Series

Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 18 mm

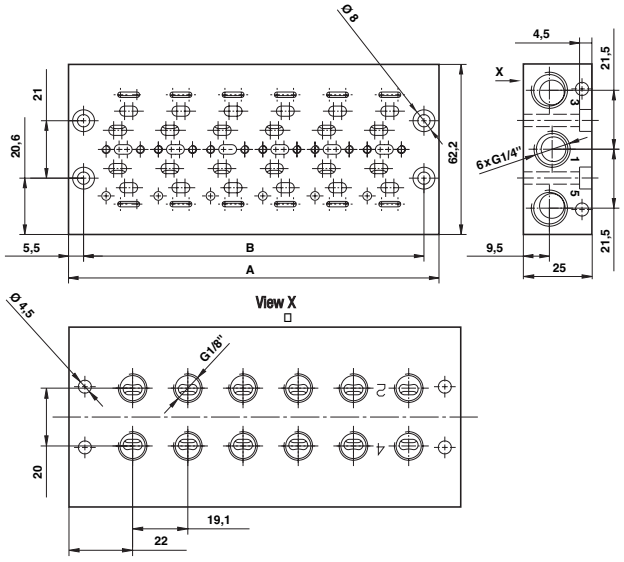
Single station sub-base – side ported with pilot ports



Model	Port size A	kg
V70401-A5B	G1/8 Side ported with pilot ports	0,08
V70401-P5B	1/8 NPTF Side ported with pilot ports	0,08

Note: pilot ports for both types = M5

Fixed length sub-base - bottom ported

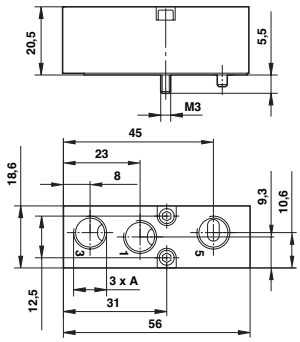


Model	No. of stations	A	B	kg
V70402-x50	2	59,1	48,1	0,18
V70404-x50	4	97,3	86,3	0,30
V70406-x50	6	135,5	124,5	0,42
V70408-x50	8	173,7	162,7	0,54
V70410-x50	10	211,9	200,9	0,66
V70412-x50	12	250,1	239,1	0,78

Note: This sub-base is suitable for solenoid pilot actuated valves with internal pilot air supply only.
x = Insert port type from table below

Code	Ports 2 + 4	Ports 1/3/5
A	G1/8	G1/4
P	1/8 NPTF	1/4 NPTF

Intermediate supply/exhaust module



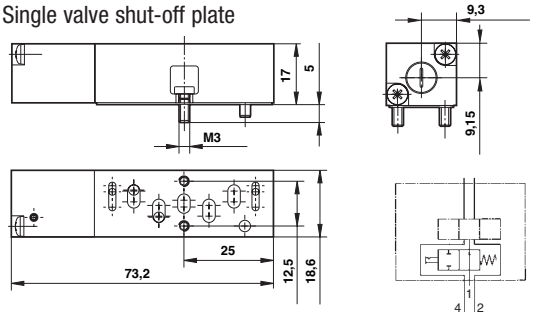
Model	Port size A	kg
V70429-A50	G1/8	0,05
V70429-P50	1/8 NPTF	0,05

Provides additional porting on modular- or fixed length sub-base.
Occupies one valve station. supplied with gasket for both sub-bases.

Can be used to:

- Improve supply flow
- Increase exhaust capacity
- Pneumatically separate valves for fail-safe emergency
- Multipressure system and system solutions

Single valve shut-off plate



Model	Description	kg
V70430-K50	Single shut-off plate supplied with gasket	0,06

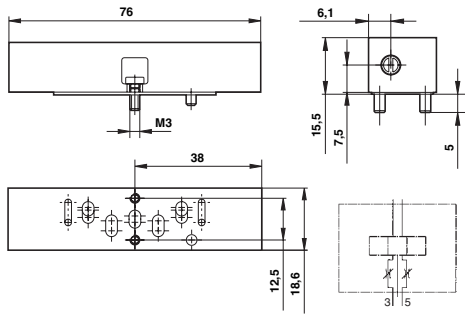
Allows individual exchange of valve, while valve island is pressurised by port 1
Note: Flow restricted to max. 240 l/min

V40/V41 Series

Mini ISO Valves

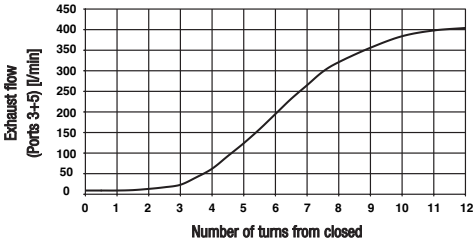
2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 18 mm

Flow regulator plate



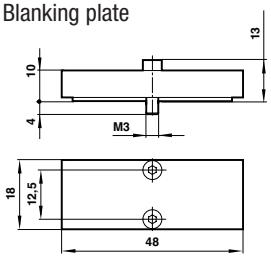
Model	Description	kg
V70428-K50	Flow regulator supplied with gasket	0,06

Dual regulation of exhaust ports 3 and 5



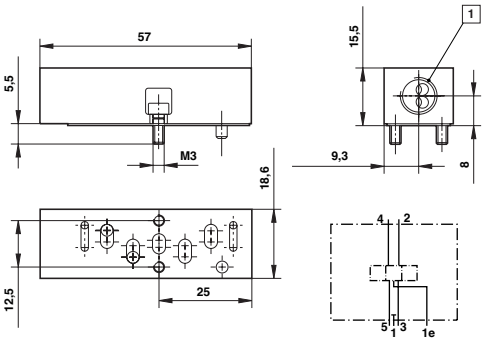
Flow: Port 1➔ 2 and 1➔ 4: remains unchanged
Flow measured at 6 bar inlet, Pressure drop 1 bar

Blanking plate



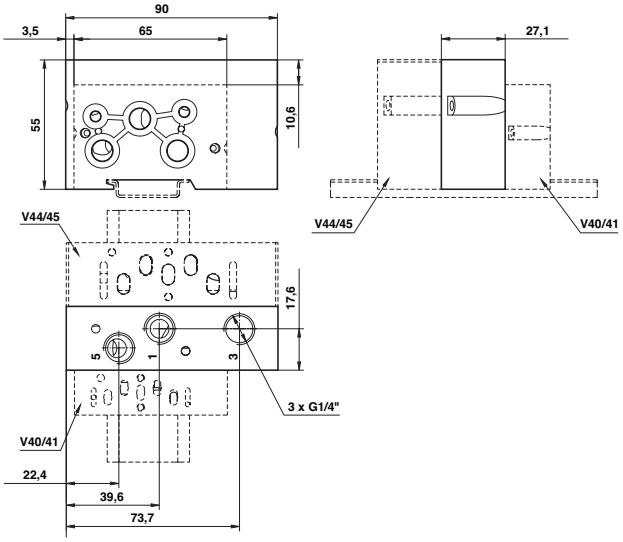
Model	Description	kg
V70400-K50	Blanking plate for blocking of unused stations (supplied with gasket)	0,02

Sandwich plate with additional pressure port 1



Model	Description	kg
V70435-A50	Sandwich plate with additional port 1 G1/8, supplied with gasket	0,04

Transition plate #18 mm ➔ #26 mm



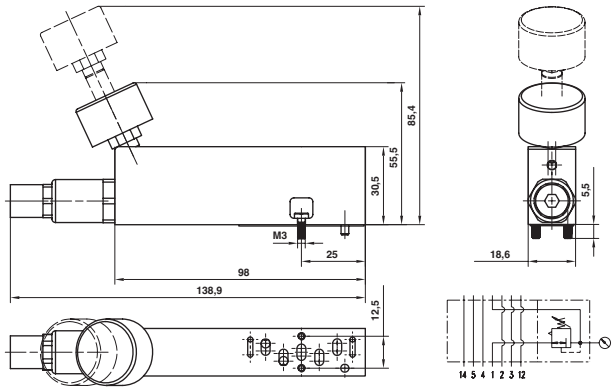
Model	Description	Ports 1/3/5	kg
V70436-K00	Transition plate #18 ➔ #26 mm	Without port 1/3/5	0,32
V70436-B00	Transition plate #18 ➔ #26 mm with supply/exhaust ports	G1/4	0,31

V40/V41 Series

Mini ISO Valves

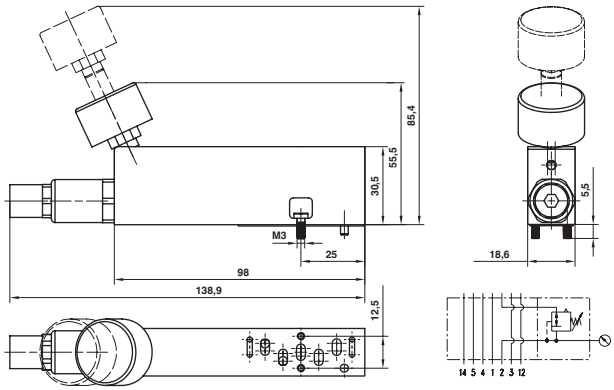
2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 18 mm

Pressure regulator plates (including gauge and adapter tube)



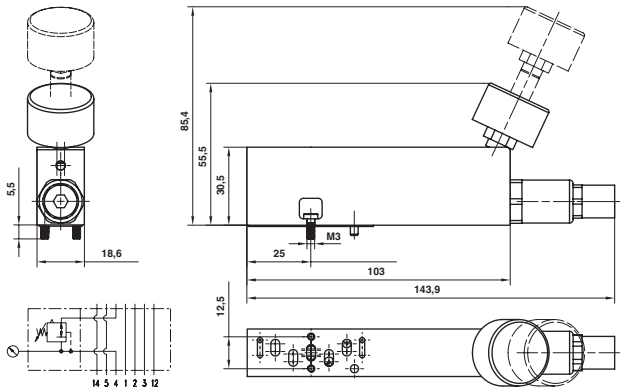
Model	Description	kg
V70427-K51	Regulation of port 1	0,21

Maximum inlet pressure 16 bar
Regulated pressure 1 to 10 bar



Model	Description	kg
V70427-K52	Regulation of port 2	0,21

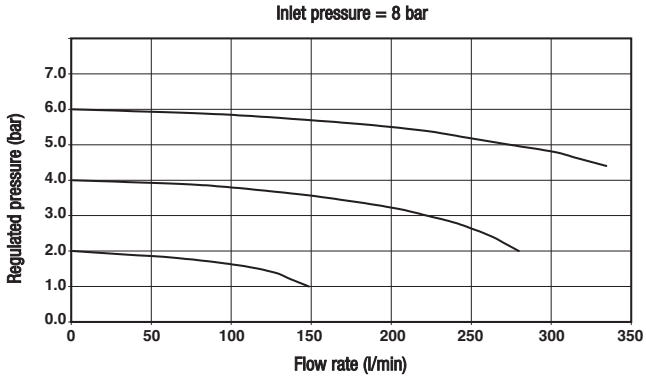
Maximum inlet pressure 16 bar
Regulated pressure 1 to 10 bar

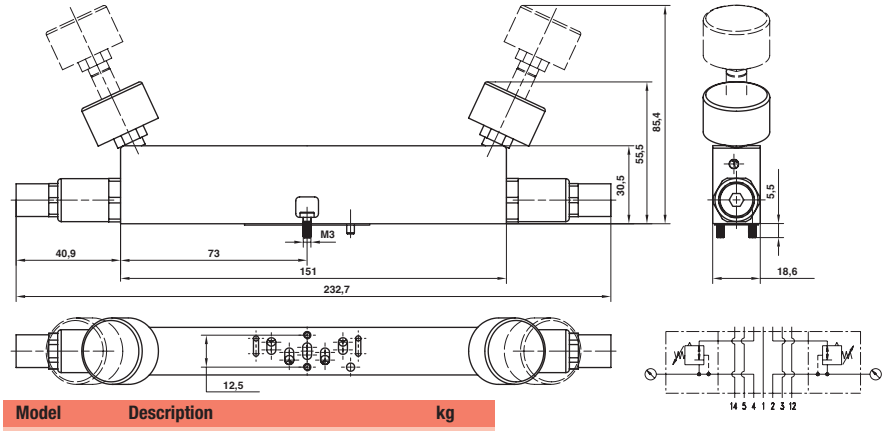


Model	Description	kg
V70427-K53	Regulation of port 4	0,21

Maximum inlet pressure 16 bar
Regulated pressure 1 to 10 bar

Flow characteristics for pressure regulator plates





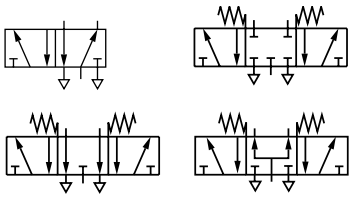
Model	Description	kg
V70427-K54	Regulation of ports 2 + 4	0,36

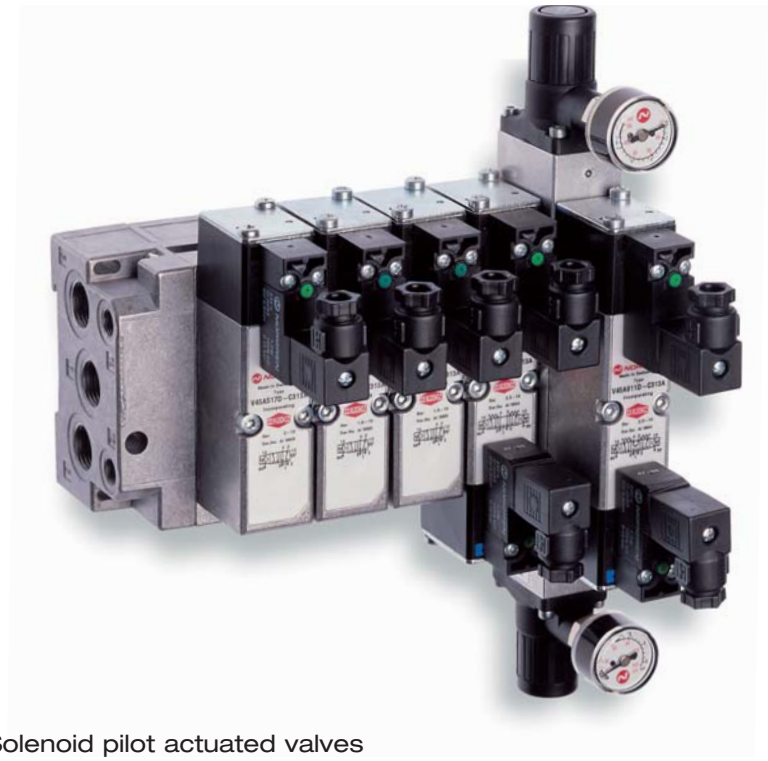
Maximum inlet pressure 16 bar
Regulated pressure 1 to 10 bar

V44/V45 Series

Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm





High performance, compact design
Flexible sub-base system
Multipressure system capability
Wide range of accessories
Dual spool technology
V44 Glandless spool and sleeve (long life)
V45 Softseal spool (high flow)
Collected pilot exhaust with internal pilot air supply
Easy to convert from internal to external pilot supply
Valve exchange under pressure

Technical data

Medium:

Compressed air, 40 µm filtered, lubricated or non-lubricated

Operation:

V44: Glandless spool valve, solenoid pilot or air pilot actuated
V45: Softseal spool valve, solenoid pilot or air pilot actuated

Operating pressure:

10 bar V45 models and V44 solenoid pilot actuated valves with internal pilot supply
16 bar V44 solenoid pilot actuated valves with external pilot supply and V44 air pilot actuated valves
See tables for individual details

Ambient temperature:

-15°C to +50°C V44/V45 solenoid and V45 air pilot models
-15°C to +80°C V44 air pilot models
Consult our Technical Service for use below +2°C

Materials

Body and sub-base: die cast aluminium
Spool and sleeve: hard anodised, Teflon coated, matched aluminium (V44); aluminium alloy spool with HNBR Seals (V45).
Plastic parts: POM
Static seals: NBR
End cover and screws: zinc plated
Springs: stainless steel

2 x 3/2 Solenoid pilot actuated valves

Model	Function 2 x 3/2	Pilot supply	Pilot exhaust	Actuation 2 x 3/2	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V45AA11D-*****	NC	Internal	Collected#	Sol/Spring	1100	3 ... 10	–	0,27	V70546-KA0
V45AA22D-*****	NC	External	Not collected	Sol/Spring	1100	0 ... 10	1,7+(0,5xop.press.)	0,27	V70546-KA0
V45AB11D-*****	NO	Internal	Collected#	Sol/Spring	1000	3 ... 10	–	0,27	V70547-KA0
V45AB22D-*****	NO	External	Not collected	Sol/Spring	1000	0 ... 10	1,7+(0,5xop.press.)	0,27	V70547-KA0
V45AC11D-*****	NO/NC	Internal	Collected#	Sol/Spring	1000/1100	3 ... 10	–	0,27	V70548-KA0
V45AC22D-*****	NO/NC	External	Not collected	Sol/Spring	1000/1100	0 ... 10	1,7+(0,5xop.press.)	0,27	V70548-KA0

5/2 Solenoid pilot actuated valves

Model	Spool technology	Pilot supply	Pilot exhaust	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V44A513D-*****	Gl	Internal	Collected#	Solenoid	Air spring	900	1 ... 10	–	0,24	V70540-KA0
V44A523D-*****	Gl	External	Not collected	Solenoid	Air spring	900	-0,9 ... 16	1 ... 10	0,24	V70540-KA0
V44A517D-*****	Gl	Internal	Collected#	Solenoid	Spring	900	1,6 ... 10	–	0,20	V70540-KA0
V45A517D-*****	Ss	Internal	Collected#	Solenoid	Spring	1200	2 ... 10	–	0,21	V70541-KA0
V44A527D-*****	Gl	External	Not collected	Solenoid	Spring	900	-0,9 ... 16	1,6 ... 10	0,20	V70540-KA0
V45A527D-*****	Ss	External	Not collected	Solenoid	Spring	1200	-0,9 ... 10	2 ... 10	0,21	V70541-KA0
V44A511D-*****	Gl	Internal	Collected#	Solenoid	Solenoid	900	2 ... 10	–	0,27	V70540-KA0
V45A511D-*****	Ss	Internal	Collected#	Solenoid	Solenoid	1200	2 ... 10	–	0,27	V70542-KA0
V44A522D-*****	Gl	External	Not collected	Solenoid	Solenoid	900	-0,9 ... 16	2 ... 10	0,27	V70540-KA0
V45A522D-*****	Ss	External	Not collected	Solenoid	Solenoid	1200	-0,9 ... 10	2 ... 10	0,27	V70542-KA0
V44A591D-*****	Gl	Internal	Collected#	Priority sol	Solenoid	900	2 ... 10	–	0,27	V70540-KA0
V44A592D-*****	Gl	External	Not collected	Priority sol	Solenoid	900	-0,9 ... 16	2 ... 10	0,27	V70540-KA0

5/3 Solenoid pilot actuated valves

Model	Spool technology	Function	Pilot supply	Pilot exhaust	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V44A611D-*****	Gl	APB	Internal	Collected#	Solenoid	Solenoid	900	2 ... 10	–	0,28	V70540-KA0
V45A611D-*****	Ss	APB	Internal	Collected#	Solenoid	Solenoid	1150	2,5 ... 10	–	0,27	V70543-KA0
V44A622D-*****	Gl	APB	External	Not collected	Solenoid	Solenoid	900	-0,9 ... 16	2 ... 10	0,28	V70540-KA0
V45A622D-*****	Ss	APB	External	Not collected	Solenoid	Solenoid	1150	-0,9 ... 10	2,5 ... 10	0,27	V70543-KA0
V44A711D-*****	Gl	COE	Internal	Collected#	Solenoid	Solenoid	900	2 ... 10	–	0,28	V70540-KA0
V45A711D-*****	Ss	COE	Internal	Collected#	Solenoid	Solenoid	1150	2,5 ... 10	–	0,27	V70544-KA0
V44A722D-*****	Gl	COE	External	Not collected	Solenoid	Solenoid	900	-0,9 ... 16	2 ... 10	0,28	V70540-KA0
V45A722D-*****	Ss	COE	External	Not collected	Solenoid	Solenoid	1150	-0,9 ... 10	2,5 ... 10	0,27	V70544-KA0
V44A811D-*****	Gl	COP	Internal	Collected#	Solenoid	Solenoid	900	2 ... 10	–	0,28	V70540-KA0
V45A811D-*****	Ss	COP	Internal	Collected#	Solenoid	Solenoid	1150	2,5 ... 10	–	0,27	V70545-KA0
V44A822D-*****	Gl	COP	External	Not collected	Solenoid	Solenoid	900	-0,9 ... 16	2 ... 10	0,28	V70540-KA0
V45A822D-*****	Ss	COP	External	Not collected	Solenoid	Solenoid	1150	-0,9 ... 10	2,5 ... 10	0,27	V70545-KA0

***** Insert voltage code from table on page 261. # Pilot exhaust collected and exhausted via port 14

Gl = Glandless Spool and Sleeve Ss = Softseal Spool APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

V44/V45 Series

Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

2 x 3/2 Air pilot actuated valves (softseal spool)

Model	Function 2 x 3/2	Actuation 2 x 3/2	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V45AA33A-X0020	NC	Air/Spring	1100	0 ... 10	1,7 + 0,5 x op.press.	0,20	V70546-KA0
V45AB33A-X0020	NC	Air/Spring	1000	0 ... 10	1,7 + 0,5 x op.press.	0,20	V70547-KA0
V45AC33A-X0020	NO/NC	Air/Spring	1000/1100	0 ... 10	1,7 + 0,5 x op.press.	0,20	V70548-KA0

5/2 Air pilot actuated valves

Model	Spool technology	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V44A537A-X0090	Ss	Air	Spring	900	-0,9 ... 16	1,6 ... 16	0,18	V70540-KA0
V45A537A-X0090	Ss	Air	Spring	1200	-0,9 ... 10	2 ... 10	0,18	V70541-KA0
V44A533A-X0020	Gl	Air	Air	900	-0,9 ... 16	2 ... 16	0,20	V70540-KA0
V45A533A-X0020	Ss	Air	Air	1200	-0,9 ... 10	2 ... 10	0,20	V70542-KA0
V44A533A-X0070	Gl	Air (Priority)	Air	900	-0,9 ... 16	2 ... 16	0,20	V70540-KA0

5/3 Air pilot actuated valves

Model	Spool technology	Function	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V44A633A-X0020	Gl	APB	Air	Air	900	-0,9 ... 16	2 ... 16	0,22	V70540-KA0
V45A633A-X0020	Ss	APB	Air	Air	1150	-0,9 ... 10	2,5 ... 10	0,21	V70543-KA0
V44A733A-X0020	Gl	COE	Air	Air	900	-0,9 ... 16	2 ... 16	0,22	V70540-KA0
V45A733A-X0020	Ss	COE	Air	Air	1150	-0,9 ... 10	2,5 ... 10	0,21	V70544-KA0
V44A833A-X0020	Gl	COP	Air	Air	900	-0,9 ... 16	2 ... 16	0,22	V70540-KA0
V45A833A-X0020	Ss	COP	Air	Air	1150	-0,9 ... 10	2,5 ... 10	0,21	V70545-KA0

Gl = Glandless Spool and Sleeve Ss = Softseal Spool
APB = All Ports Blocked COE = Centre Open Exhaust COP = Centre Open Pressure

Voltage codes & spare pilots

Voltage	Coil code	Power inrush/hold	Spare pilot valve
12 V d.c.	C312A	1 W	VZC7L2C1-C312A
24 V d.c.	C313A	1,2 W	VZC7L2C1-C313A
24 V 50/60 Hz.	C314A	2,1/1,5 VA	VZC7L2C1-C314A
48 V 50/60 Hz	C316A	2,1/1,5 VA	VZC7L2C1-C316A
110 V d.c.	C317A	1 W	VZC7L2C1-C317A
115 V 50/60 Hz	C318A	2,1/1,5 VA	VZC7L2C1-C318A
230 V 50/60 Hz	C319A	2,1/1,5 VA	VZC7L2C1-C319A

Other voltages available on request. Spare pilot valves are delivered with mounting screws.

Electrical details for solenoid operators

Voltage tolerances	-10%/+15%
Rating	100% E.D.
Inlet orifice	0,8 mm
Electrical connection	DIN 43 650 table 'C'
Manual override	Shrouded push button, spring return Convertible into lockable type with set-up kit, part no. V70532-K00 (see next page)
Protection class	IP 65 with sealed plug (ISO 6952) NEMA 4
Materials	PPS (body), Viton and NBR (seals)

Connector plugs to be ordered separately. See page 382. Intrinsically safe version available on request.

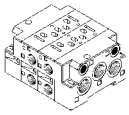
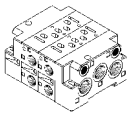
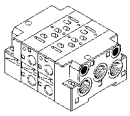
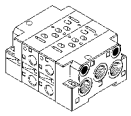
Valve selection

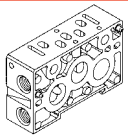
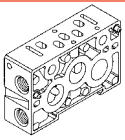
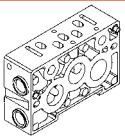
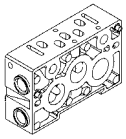
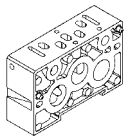
For instructions on how to order a Mini ISO valve please see Options selector on page 269

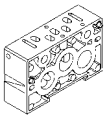
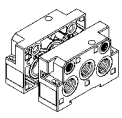
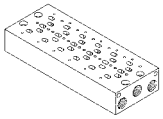
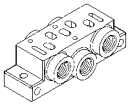
V44/V45 Series

Mini ISO Valves
2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

Bases

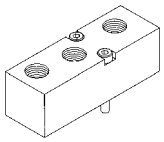
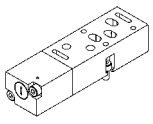
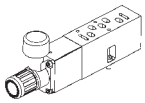
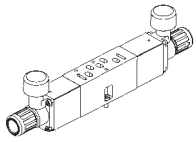
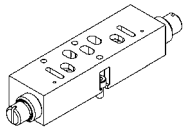
Sub-base assemblies Side ported		Sub-base assemblies Side ported with pilot ports		Sub-base assemblies Bottom ported		Sub-base assemblies Bottom ported with pilot ports	
							
V45xAX**-XXXXX	Single pressure	V45xEX**-XXXXX	Single pressure	V45BCX**-XXXXX	Single pressure	V45BFX**-XXXXX	Single pressure
V45xAX**-**XXX	Dual pressure	V45xEX**-**XXX	Dual pressure	V45BCX**-**XXX	Dual pressure	V45BFX**-**XXX	Dual pressure

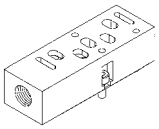
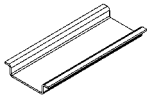
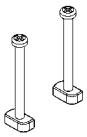
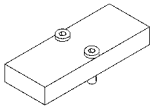
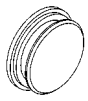
Modular sub-base Side ported without pilot ports		Modular sub-base Side ported with pilot ports		Modular sub-base Side ported (PIF) without pilot ports		Modular sub-base Side ported (PIF) with pilot ports		Modular sub-base Bottom ported (PIF) without pilot ports	
									
V70525-BAF	(G1/4)	V70526-BAF	(G1/4)	V70525-8AF	(Ø 8 mm)	V70526-8AF	(Ø 8 mm)	V70525-BAE	(G1/4)
V70525-PAF	(1/8NPTF)	V70526-PAF	(1/8NPTF)	V70525-YAF	(Ø 10 mm)	V70526-YAF	(Ø 10 mm)		
V70525-RAF	(1/4NPTF)	V70526-RAF	(1/4NPTF)	V70525-2AF	(3/8")	V70526-2AF	(3/8")		

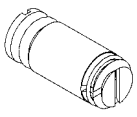
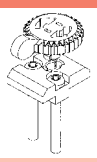
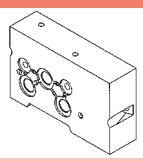
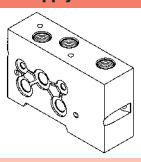
Modular sub-base Bottom ported with side pilot ports		End plate kit End ported		Fixed length sub-base Bottom ported		Single station sub-base Side ported with pilot ports	
							
V70526-BAE	(G1/4)	V70524-CAC	(G3/8)	V705**-BA0	(G1/4)	V70501-BAB	(G1/4)
V70524-SAC	(3/8NPTF)	V705**-RA0	(1/4NPTF)	V705**-RAB	(1/4NPTF)		
				** = 02,04,06,08,10,12 stations			

x Insert code for port type. See table on page 265
** Insert number of valve stations in sub-base assemblies.
- Insert valve station to indicate position of dual pressure blanking disk. See page 265

Accessories

Intermediate supply/exhaust module		Single valve shut-off plate		Single pressure regulator plate		Double pressure regulator plate		Flow regulator plate	
									
V70529-BA0	(G1/4)	V70530-KA0	(Port 1 blocked)	V70527-KA1	(Port 1 reg.)	V70527-KA4	(Ports 2+4 reg.)	V70528-KA0	(Ports 3+5 reg.)
V70529-RA0	(1/4NPTF)			V70527-KA2	(Port 2 reg.)				
				V70527-KA3	(Port 4 reg.)				

Sandwich plate with additional pressure port 1		DIN EN 50 022 rail (1 metre)		DIN-rail mounting kit	Blanking plate for unused station	Blanking disk to modular sub-base	
							
V70535-BA0	(G1/4)	V10009-C00	(35 x 7,5 mm)	V70531-KA0	V70500-KA0	V70522-K00	(Ports 1,3,5)
V70535-RA0	(1/4 NPTF)	V10592-C01	(35 x 15 mm)			V70523-K00	(Ports 12+14)

Blanking plug for fixed length sub-base		Manual override kit	Transition plate #18 mm* → #26 mm	Transition plate #18 mm* → #26 mm with supply and exhaust ports	
					
V70521-K00	(Ports 3+5)	V70532-K00	V70436-K00	V70436-B00	G1/4
V70533-K00	(Port 1)				

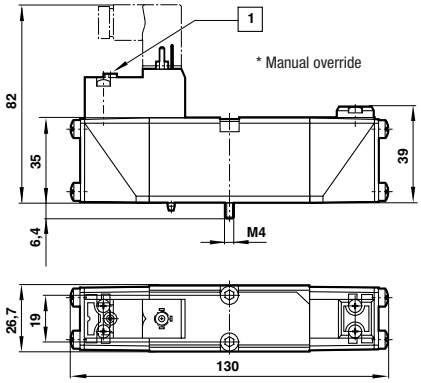
*For technical data on V40/V41 Mini ISO series size 18 mm see page 252

V44/V45 Series

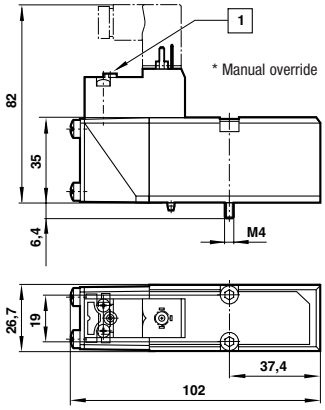
Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

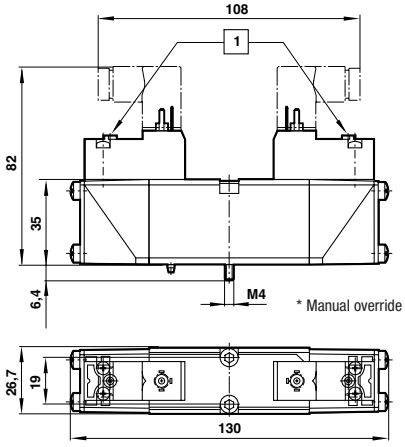
V44A5*3D-C3***
5/2 Single solenoid pilot valve
Air spring return



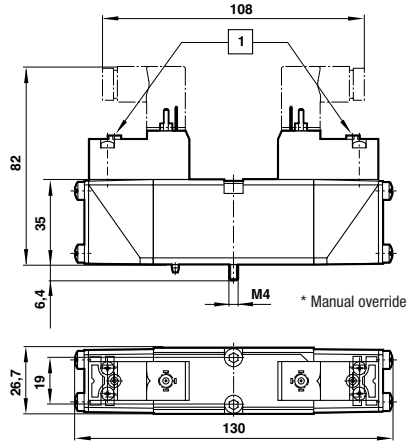
V44A5*7D-C3*** & V45A5*7D-C3***
5/2 Single solenoid pilot valve
Mechanical spring return



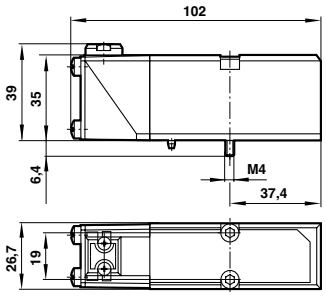
V44A5**D-C3*** & V45A5**D-C3***
5/2 Double solenoid pilot valve



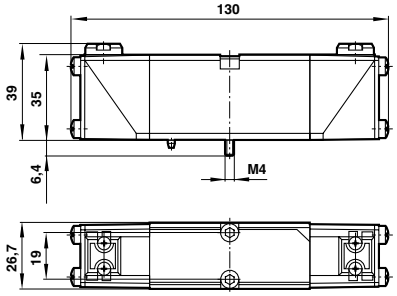
V44A***D-C3*** & V45A***D-C3***
2 x 3/2 + 5/3 Double solenoid pilot valve



V44A537A-X00*0 & V45A537A-X00*0
5/2 Single air pilot valve



V44A*33A-X00*0 & V45A*33A-X00*0
2 x 3/2, 5/2 + 5/3 Double air pilot valve



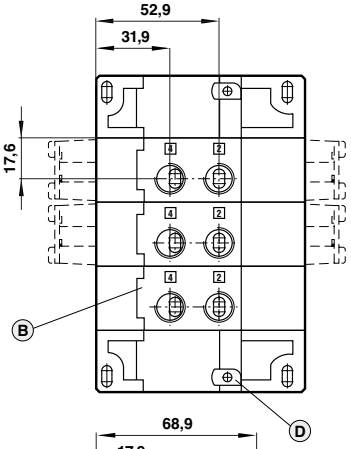
V44/V45 Series

Mini ISO Valves

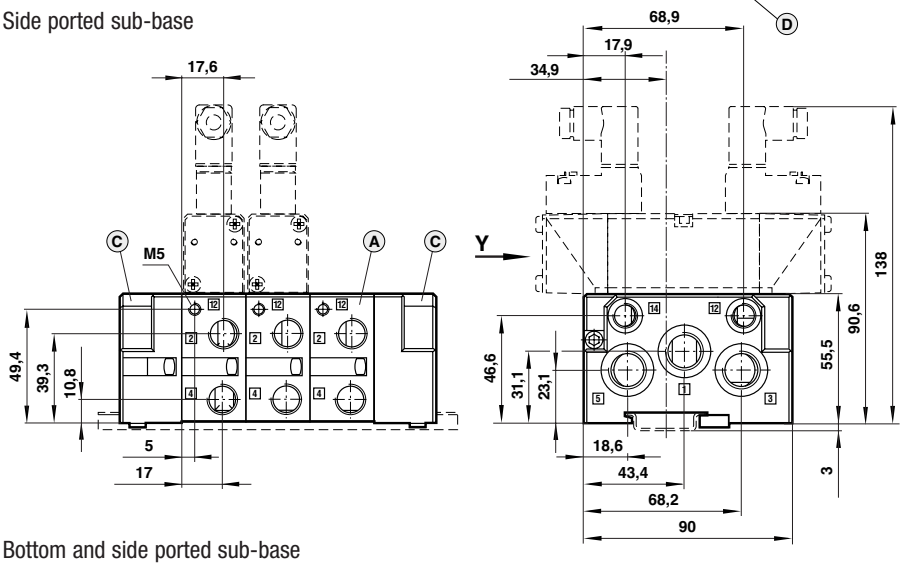
2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

Modular sub-bases parts for DIN rail or surface mounting

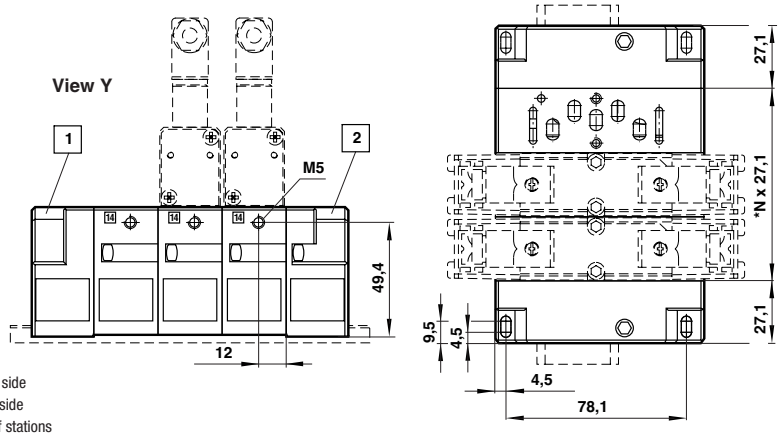
Bottom ported sub-base



Side ported sub-base



Bottom and side ported sub-base



* = right hand side
** = left hand side
N = number of stations

Note: Port 14 either used for external pilot air supply or for collected pilot air exhaust.
Therefore, never plug port 14 when using valves with internal pilot air supply.
Port 12 is not used, plugging not necessary.

Individual components

Modular sub-base (A) 0,18 kg
Ports 2+4 on side
V70525-xAF

Modular sub-base (A) 0,18 kg
Ports 2+4 on side
Pilot ports 12+14 on side
V70526-xAF

Modular sub-base (B) 0,18 kg
Ports 2+4 on bottom
V70525-BAE

Modular sub-base (B) 0,18 kg
Ports 2+4 on bottom
Pilot ports 12+14 on side
V70526-BAE

End plate kit (C) 0,36 kg
Side ported
V70524-CAC (G3/8, 12/14 G1/8)
V70524-SAC (3/8NPTF, 12/14 1/8 NPTF)
End ported end caps
1 left hand and 1 right hand

Accessories

DIN EN 50022 rail 0,31 kg
35 x 7,5 mm, 1m
V10009-C00

DIN EN 50022 rail 1,02 kg
35 x 15 mm, 1m
V10592-C01

DIN rail (D) 0,01 kg
Mounting kit
V70531-KA0

Blanking disk to modular sub-base 0,01 kg
Ports 1, 3, 5
V70522-K00

Blanking disk to modular sub-base 0,01 kg
Ports 12+14
V70523-K00

x = Insert port type from table below

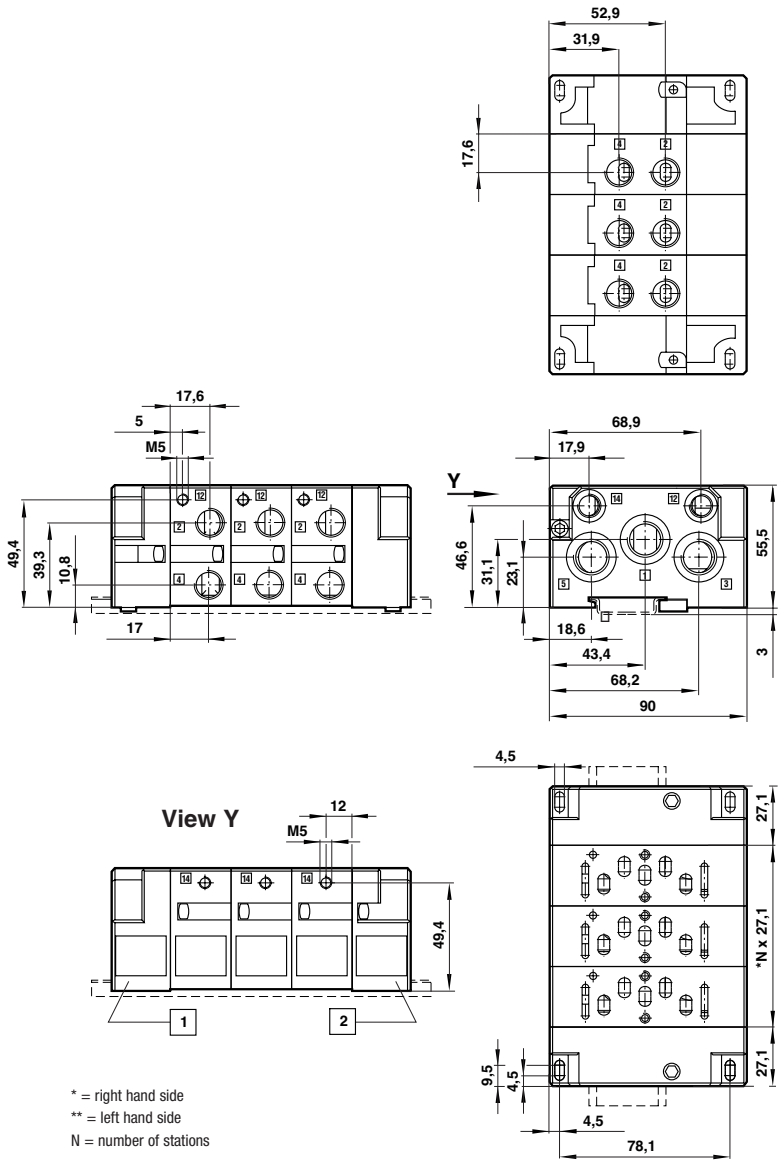
Code	Ports 2 & 4	Ports 12/14
B	G1/4	M5
P	1/8 NPTF	M5
R	1/4 NPTF	M5
8	Ø 8 mm PIF	M5
Y	Ø 10 mm PIF	M5
2	Ø 3/8" PIF	M5

V44/V45 Series

Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

Modular sub-base assemblies for DIN rail or surface mounting



* = right hand side
** = left hand side
N = number of stations

Modular sub-base assemblies
Side ported without pilot ports
V45xAX-XXXXX**

Modular sub-base assemblies
Side ported with pilot ports
V45xEX-XXXXX**

Modular sub-base assemblies
Bottom ported without pilot ports
V45BCX-XXXXX**

Modular sub-base assemblies
Bottom ported with pilot ports
V45BFX-XXXXX**
** = Insert number of valve stations

Dual pressure modular sub-base assemblies
Side ported without pilot ports
V45xAX-**XXX**

Dual pressure modular sub-base assemblies
Side ported with pilot ports
V45xEX-**XXX**

Dual pressure modular sub-base assemblies
Bottom ported without pilot ports
V45BCX-**XXX**

Dual pressure modular sub-base assemblies
Bottom ported with pilot ports
V45BFX-**XXX**

- indicates position of dual pressure blanking plate e.g V45BFX03-04XXX indicates a 7 station base divided into groups of 3 and 7.

Weight: (N x 0,18 kg) + 0,36 kg

x = Insert port type from table below

Code	Ports 2 & 4	Ports 1, 3 & 5	Ports 12/14 & 82/84
B	G1/4	G3/8	M5
P	1/8 NPTF	3/8 NPTF	M5
R	1/4 NPTF	3/8 NPTF	M5
8	Ø 8 mm PIF	G3/8	M5
Y	Ø 10 mm PIF	G3/8	M5
2	Ø 3/8" PIF	3/8 NPTF	M5

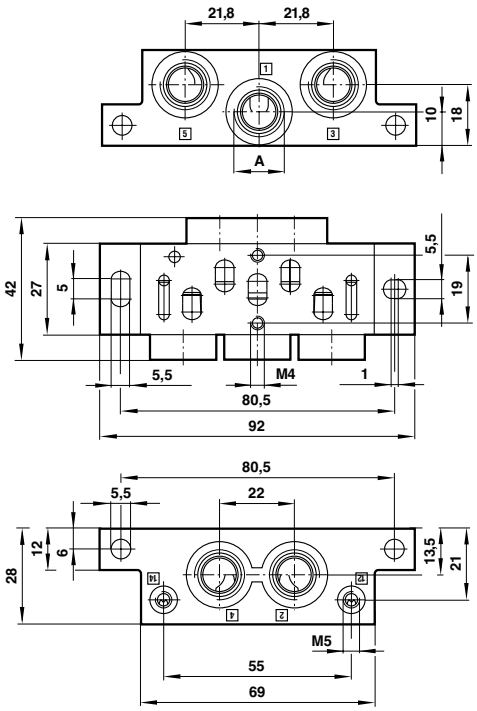
Note: Port 14 either used for external pilot air supply or for collected pilot air exhaust.
Therefore, never plug port 14 when using valves with internal pilot air supply.
Port 12 is not used, plugging not necessary.

V44/V45 Series

Mini ISO Valves

2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

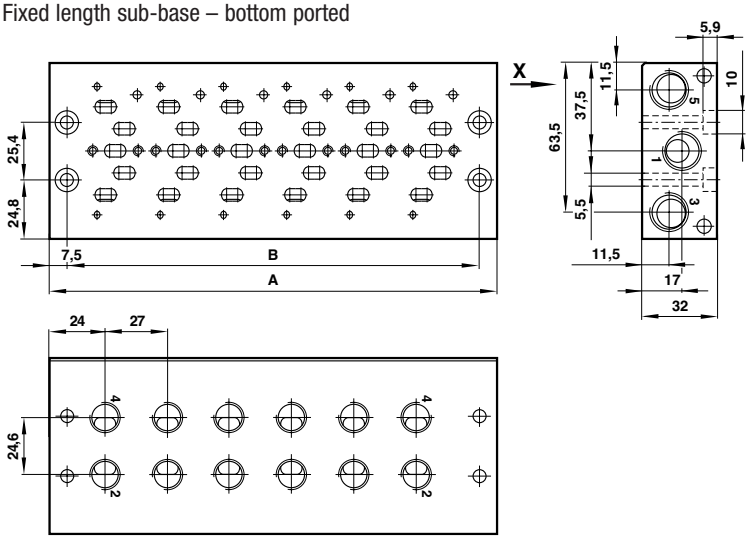
Single station sub-base – side ported with pilot ports



Model	Port size A	kg
V70501-BAB	G1/4 side ported with pilot ports	0,11
V70501-RAB	NPTF1/4 side ported with pilot ports	0,24

Note: Pilot ports for both types = M5

Fixed length sub-base – bottom ported



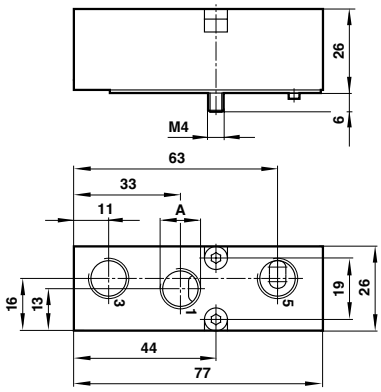
Model	No. of stations	A	B	kg
V70502-xA0	2	83	68	0,40
V70504-xA0	4	137	122	0,65
V70506-xA0	6	191	176	0,91
V70508-xA0	8	245	230	1,15
V70510-xA0	10	299	284	1,41
V70512-xA0	12	353	338	1,66

x = Insert port type from table

Code	Ports 2 & 4	Ports 1, 3 & 5
B	G1/4	G3/8
R	1/4 NPTF	3/8 NPTF

Note: This sub-base is suitable for solenoid pilot actuated valves with internal pilot air supply only.

Intermediate supply/exhaust module

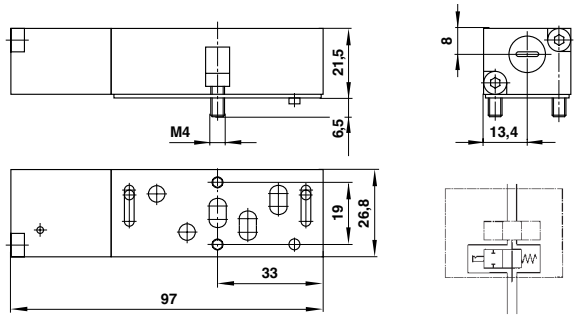


Model	Port size A	kg
V70529-BA0	G1/4	0,12
V70529-RA0	1/4 NPTF	0,12

Provides additional porting on modular- or fixed length sub-base.
Occupies one valve station.
Supplied with gasket for both sub-bases.

Can be used to: Improve supply flow
Increase exhaust capacity
Pneumatically separate valves for fail-safe emergency
Multipressure system and system solutions

Single valve shut-off plate



Model	Description	kg
V70530-KA0	Single shut-off plate supplied with gasket	0,13

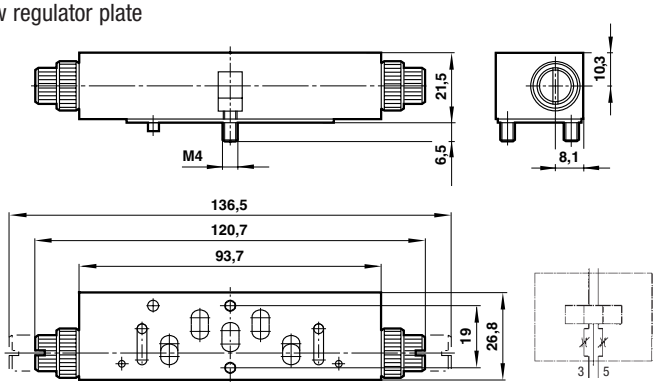
Allows individual exchange of valve, while valve island is pressurised by port 1
Note: Flow restricted to max. 500 l/min

V44/V45 Series

Mini ISO Valves

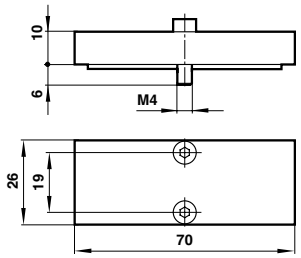
2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

Flow regulator plate



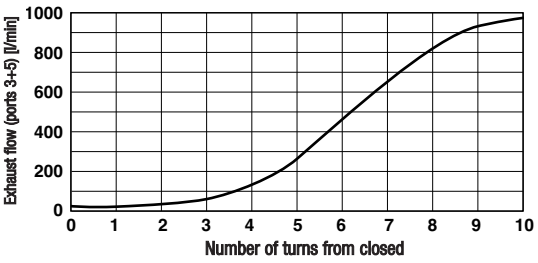
Model	Description	kg
V70528-KAO	Flow regulator supplied with gasket	0,17

Blanking plate



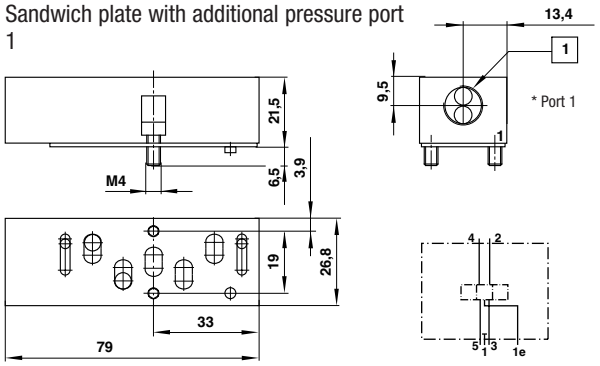
Model	Description	kg
V70500-KAO	Blanking plate for blocking of unused stations (supplied with gasket)	0,05

Dual regulation of exhaust ports 3 and 5



Flow: Port 1➔ 2 and 1➔ 4: remains unchanged
Flow measured at 6 bar inlet, pressure drop 1 bar

Sandwich plate with additional pressure port 1



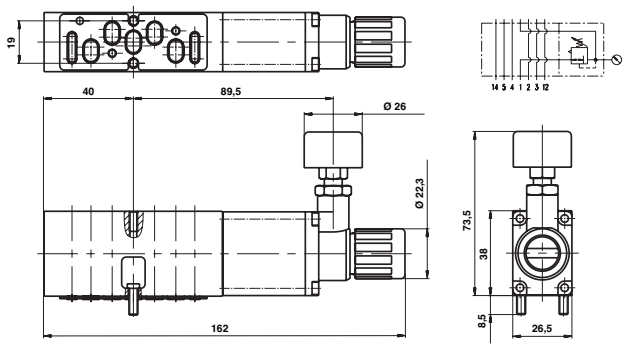
Model	Description	kg
V70535-BAO	Sandwich plate with additional port 1 G1/4, supplied with gasket	0,12
V70535-RAO	Sandwich plate with additional port 1¼ NPTF, supplied with gasket	0,12

V44/V45 Series

Mini ISO Valves

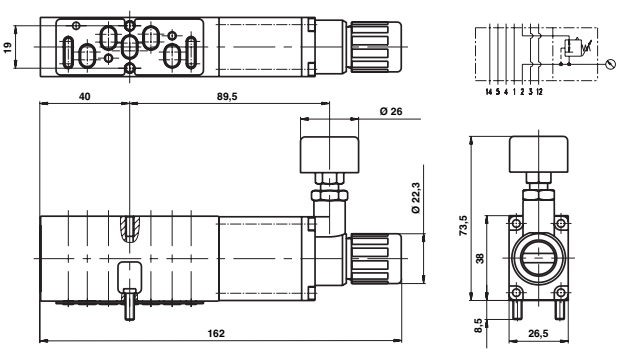
2 x 3/2, 5/2 and 5/3 Valves
Solenoid and pilot actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

Pressure regulator plates (including gauges)



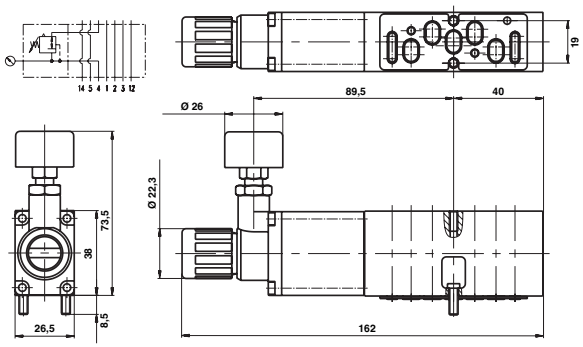
Model	Description	kg
V70527-KA1	Regulation of port 1	0,36

Maximum inlet pressure 16 bar. Regulated pressure 0,5 to 10 bar



Model	Description	kg
V70527-KA2	Regulation of port 2	0,36

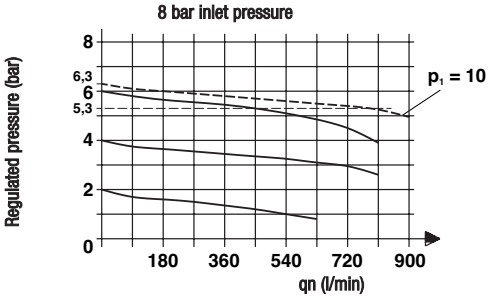
Maximum inlet pressure 16 bar. Regulated pressure 0,5 to 10 bar



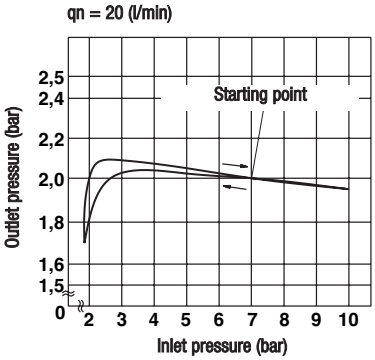
Model	Description	kg
V70527-KA3	Regulation of port 4	0,36

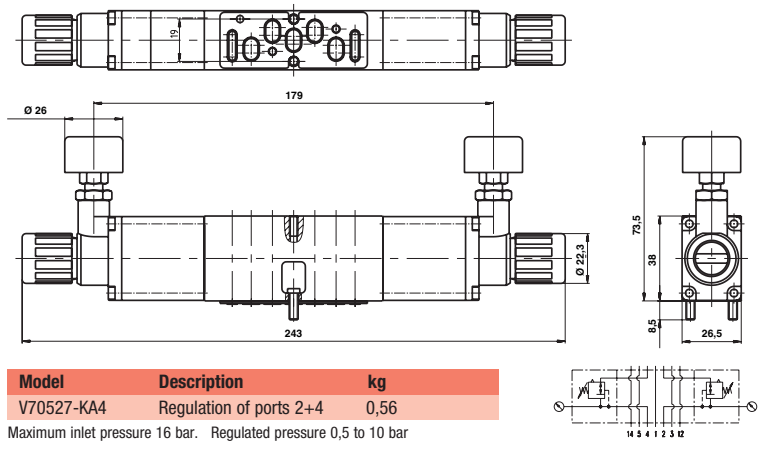
Maximum inlet pressure 16 bar. Regulated pressure 0,5 to 10 bar

Flow characteristics for pressure regulator plates



Hysteresis





Model	Description	kg
V70527-KA4	Regulation of ports 2+4	0,56

Maximum inlet pressure 16 bar. Regulated pressure 0,5 to 10 bar

V44/V45 Series
V44 Mini ISO Valves with single connector M12 x 1

Options selectors

Mini ISO 26 mm Solenoid pilot actuated valves

V ★★ A ★★★ D – C 3 ★★ A

Spool technology	Substitute
Glandless spool and sleeve	44
Softseal spool	45

Function	Substitute
2x3/2 NC*	A
2x3/2 NO*	B
2x3/2 NO/NC*	C
5/2	5
5/3 APB	6
5/3 COE	7
5/3 COP	8

* Softseal spool only
** Glandless spool and sleeve only

Voltage	Substitute
12V d.c.	12
24V d.c.	13
24V a.c.	14
48V a.c.	16
110V d.c.	17
115V a.c.	18
230V a.c.	19

Operation side 14 / Return side 12	Substitute
Solenoid/Air spring – Internal pilot supply**	13
Solenoid/Air Spring – External pilot supply**	23
Solenoid/Spring – Internal pilot supply	17
Solenoid/Spring – External pilot supply	27
Solenoid/Solenoid – Internal pilot supply	11
Solenoid/Solenoid – External pilot supply	22
Solenoid (priority side 14)/Solenoid – Internal pilot supply**	91
Solenoid (priority side 14)/Solenoid – External pilot supply**	92

Mini ISO 26 mm Air pilot actuated valves

V ★★ A ★★★ A – X ★★★ 0

Spool technology	Substitute
Glandless spool and sleeve	44
Softseal spool	45

Function	Substitute
2x3/2 NC*	A
2x3/2 NO*	B
2x3/2 NO/NC*	C
5/2	5
5/3 APB	6
5/3 COE	7
5/3 COP	8

Operation side 14 / Return side 12	Substitute
Air/Air	33
Air/Spring	37

Function code	Substitute
Air pilot actuation on ends 12 and 14; 2x3/2, 5/2 Air/Air and all 5/3 functions only (=substitute 33 on digits 6 and 7)	002
Air pilot actuation on ends 12 and 14, priority pilot end 14; V44 glandless 5/2 Air/Air only (=substitute 33 on digits 6 and 7)	007
Air pilot actuation end 14, spring return end 12 5/2 Air/spring only (=substitute 37 on digits 6 and 7)	009

* Softseal spool only

V44 Mini ISO size 26mm with single connector M12x1

V 4 4 A ★★★ A – ★ 3 1 3 T

Function	Substitute
5/2	5
5/3 APB	6
5/3 COE	7
5/3 COP	8

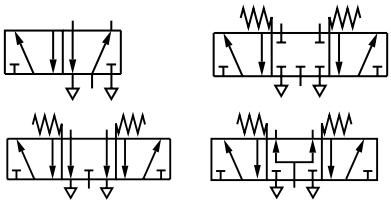
Pilot valve	Substitute
Pilot valve 24V d.c., 10 bar/1,2 W	F
Pilot valve 24V d.c., 16 bar/2 W	G

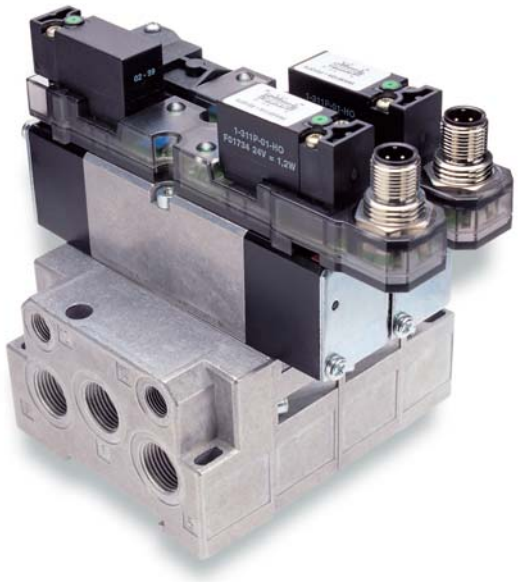
Operation side 14 / Return side 12	Substitute
Solenoid/Air spring – Internal pilot supply	13
Solenoid/Air Spring – External pilot supply	23
Solenoid/Spring – Internal pilot supply	17
Solenoid/Spring – External pilot supply	27
Solenoid/Solenoid – Internal pilot supply	11
Solenoid/Solenoid – External pilot supply	22
Solenoid (priority side 14)/Solenoid – Internal pilot supply	91
Solenoid (priority side 14)/Solenoid – External pilot supply	92

V44 Mini ISO Valves

with single connector M12 x 1

5/2 and 5/3 Valves
Solenoid actuated
ISO 15407-1/VDMA 24 563
Size 26 mm





Non corrosive glandless spool and sleeve

16 bar (2 W) and 10 bar (1,2 W) 24 V d.c. solenoids with non-locking manual override

Robust metal M12x1 connector with 4 pin

Solenoids with surge suppression and LED indicator

Compact design and high performance

Technical data

Medium:

Compressed air, filtered to 40 µm, lubricated or non-lubricated

Operation:

Glandless spool valve, solenoid pilot actuated

Mounting:

Sub-base

Operating pressure:

Maximum pressure:
10 bar solenoid pilot (1,2 W) actuated valves
16 bar solenoid pilot (2 W) actuated valves
See tables for individual details

Flow:

900 l/min

Ambient temperature:

-15°C to +50°C
Consult our Technical Service for use below +2°C.

Materials

Body and sub-base: die cast aluminium
Spool and sleeve: hard anodised, Teflon coated, matched aluminium
Plastic parts: POM and PA
Static seals: NBR
End cover and screws: zinc plated
Springs: stainless steel

5/2 Solenoid pilot actuated valves – 16 bar (2 W) models

Model	Pilot supply	Pilot exhaust	Operator 14	Operator 12	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V44A513A-G313T	Internal	Not collected	Solenoid	Air spring	1 ... 16	–	0,24	V70540-KAO
V44A523A-G313T	External	Not collected	Solenoid	Air spring	-0,9 ... 16	1 ... 16	0,24	V70540-KAO
V44A517A-G313T	Internal	Not collected	Solenoid	Spring	1,6 ... 16	–	0,20	V70540-KAO
V44A527A-G313T	External	Not collected	Solenoid	Spring	-0,9 ... 16	1,6 ... 16	0,20	V70540-KAO
V44A511A-G313T	Internal	Not collected	Solenoid	Solenoid	2 ... 16	–	0,27	V70540-KAO
V44A522A-G313T	External	Not collected	Solenoid	Solenoid	-0,9 ... 16	2 ... 16	0,27	V70540-KAO
V44A591A-G313T	Internal	Not collected	Sol (Priority)	Solenoid	2 ... 16	–	0,27	V70540-KAO
V44A592A-G313T	External	Not collected	Sol (Priority)	Solenoid	-0,9 ... 16	2 ... 16	0,27	V70540-KAO

5/3 Solenoid pilot actuated valves – 16 bar (2 W) models

Model	Function	Pilot supply	Pilot exhaust	Operator 14	Operator 12	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V44A611A-G313T	APB	Internal	Not collected	Solenoid	Solenoid	2 ... 16	–	0,28	V70540-KAO
V44A622A-G313T	APB	External	Not collected	Solenoid	Solenoid	-0,9 ... 16	2 ... 16	0,28	V70540-KAO
V44A711A-G313T	COE	Internal	Not collected	Solenoid	Solenoid	2 ... 16	–	0,28	V70540-KAO
V44A722A-G313T	COE	External	Not collected	Solenoid	Solenoid	-0,9 ... 16	2 ... 16	0,28	V70540-KAO
V44A811A-G313T	COP	Internal	Not collected	Solenoid	Solenoid	2 ... 16	–	0,28	V70540-KAO
V44A822A-G313T	COP	External	Not collected	Solenoid	Solenoid	-0,9 ... 16	2 ... 16	0,28	V70540-KAO

5/2 Solenoid pilot actuated valves – 10 bar (1,2 W) models

Model	Pilot supply	Pilot exhaust	Operator 14	Operator 12	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V44A513A-F313T	Internal	Not collected	Solenoid	Air spring	1 ... 10	–	0,24	V70540-KAO
V44A523A-F313T	External	Not collected	Solenoid	Air spring	-0,9 ... 16	1 ... 10	0,24	V70540-KAO
V44A517A-F313T	Internal	Not collected	Solenoid	Spring	1,6 ... 10	–	0,20	V70540-KAO
V44A527A-F313T	External	Not collected	Solenoid	Spring	-0,9 ... 16	1,6 ... 10	0,20	V70540-KAO
V44A511A-F313T	Internal	Not collected	Solenoid	Solenoid	2 ... 10	–	0,27	V70540-KAO
V44A522A-F313T	External	Not collected	Solenoid	Solenoid	-0,9 ... 16	2 ... 10	0,27	V70540-KAO
V44A591A-F313T	Internal	Not collected	Solenoid (Priority)	Solenoid	2 ... 10	–	0,27	V70540-KAO
V44A592A-F313T	External	Not collected	Solenoid (Priority)	Solenoid	-0,9 ... 16	2 ... 10	0,27	V70540-KAO

5/3 Solenoid pilot actuated valves – 10 bar (1,2 W) models

Model	Function	Pilot supply	Pilot exhaust	Operator 14	Operator 12	Operating pressure (bar)	Pilot pressure (bar)	kg	Spares kit
V44A611A-F313T	APB	Internal	Not collected	Solenoid	Solenoid	2 ... 10	–	0,28	V70540-KAO
V44A622A-F313T	APB	External	Not collected	Solenoid	Solenoid	-0,9 ... 16	2 ... 10	0,28	V70540-KAO
V44A711A-F313T	COE	Internal	Not collected	Solenoid	Solenoid	2 ... 10	–	0,28	V70540-KAO
V44A722A-F313T	COE	External	Not collected	Solenoid	Solenoid	-0,9 ... 16	2 ... 10	0,28	V70540-KAO
V44A811A-F313T	COP	Internal	Not collected	Solenoid	Solenoid	2 ... 10	–	0,28	V70540-KAO
V44A822A-F313T	COP	External	Not collected	Solenoid	Solenoid	-0,9 ... 16	2 ... 10	0,28	V70540-KAO

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure.

V44 Mini ISO Valves

with single connector M12 x 1

5/2 and 5/3 Valves
Solenoid actuated
ISO 15407-1/VDMA 24 563
Size 26 mm

Voltage codes & spare pilots

Type	Voltage	Power inrush/hold	Spare pilot valve
16 bar	24 V d.c.	2 W	VZC7LAC1-C333R
10 bar	24 V d.c.	1,2 W	VZC7LAC1-C313R

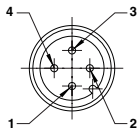
Other voltages available on request. Spare pilot valves are delivered with mounting screws.

Please see page 262 for details of accessories and sub-bases

Electrical details for solenoid operators

Voltage tolerance	±10%
Rating	100% E.D.
Surge suppression	Varistor
Indication	Green LED
Electrical connection	M12x1 with 4 pin
Pin assignment	Acc. VDMA 24571 (see drawing)
Protection class	IP 65 with sealed plug (ISO 6952)
Manual override	Push to operate spring return
Inlet orifice	0,8 mm

Pin layout (male pin shown)

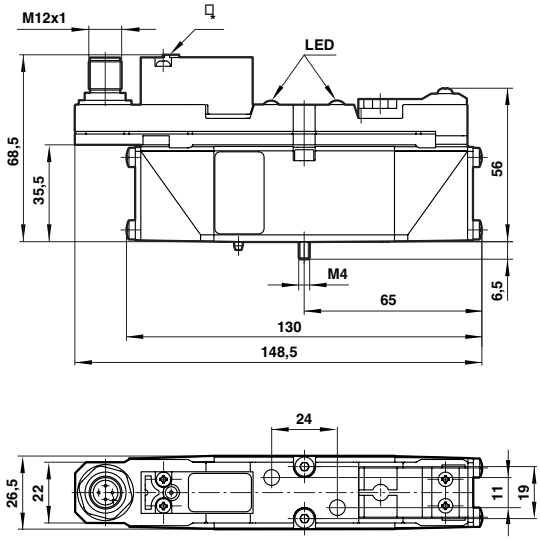


Pin	Description
1	Not used
2	+24V DC for solenoid 12
3	Common minus for solenoid 12 and 14
4	+24V DC for solenoid 14

Valve selection

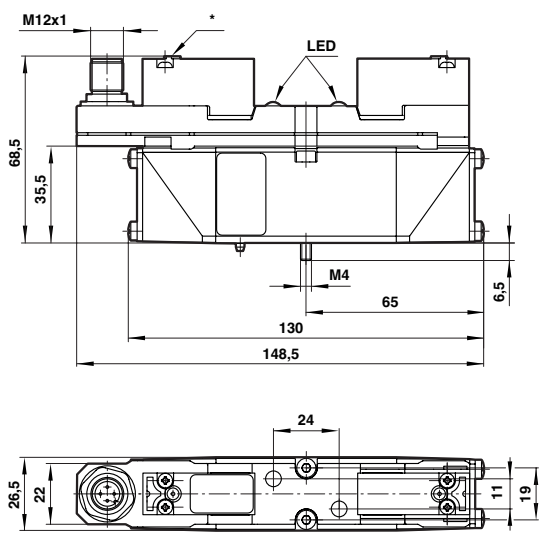
For instructions on how to order a Mini ISO valve please see Options selector on page 269

5/2 Single solenoid pilot valve
Air spring or mechanical spring return
10 bar or 16 bar models



* Manual override

5/3 Double solenoid pilot valve
10 bar or 16 bar models



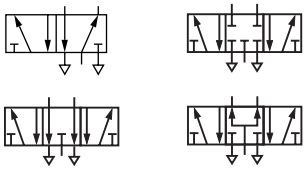
* Manual override

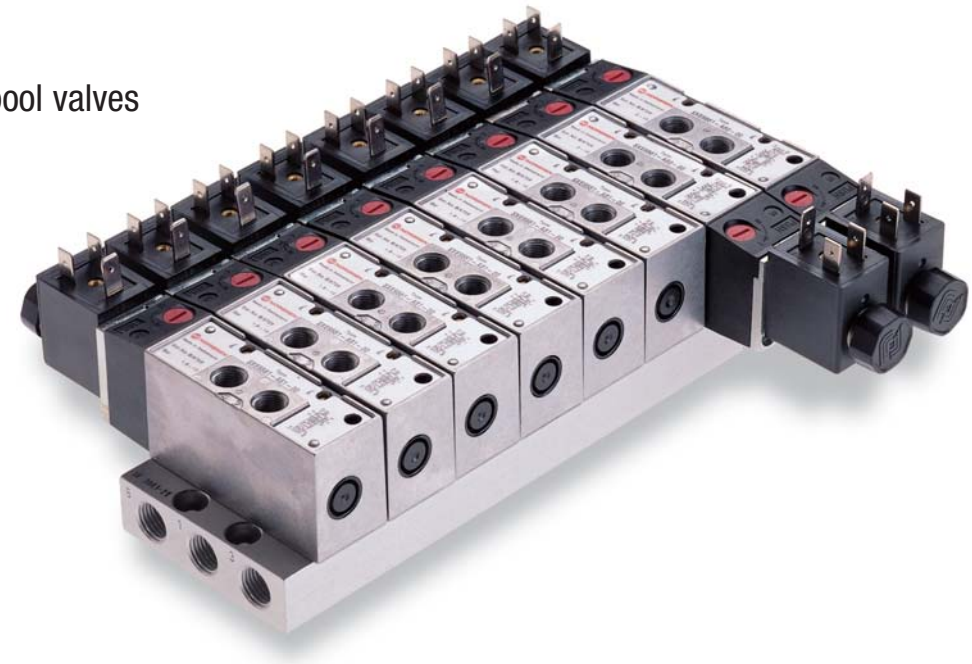
MIDI★STAR

Solenoid & pilot actuated spool valves

Sub-base & manifold

5/2 & 5/3, G⅛





Specially coated glandless spool and sleeve for long trouble-free life

Low power solenoids feature manual override as standard

Single station sub-base for 'in-line' styling and multi-station sub-bases for up to 12 stations using common inlet and exhaust ports

Integral flow regulator

Technical data

Medium:

Compressed air, filtered, lubricated and non lubricated.

Operating pressure:

1 to 10 bar single solenoid models.

2 to 10 bar double solenoid and pilot models.

Flow:

750 l/min

Ambient temperature:

-15°C to +50°C.

Consult our Technical Service for use below +2°C.

Materials

Body: die cast aluminium

Spool & sleeve: anodised aluminium with special Teflon coating

Seals: nitrile

Bases: aluminium

Alternative models

Intrinsically safe version (EEx ia IIC T6)

Contact our Technical Service for details.

Solenoid pilot actuated valves

Size	Function	Actuation	Pilot supply	Mid position	kg	Model
G1/8	5/2	Solenoid/Solenoid	Internal	–	0,40	SXE 0561-A60-00/***
G1/8	5/2	Solenoid/Solenoid	External	–	0,40	SXE 0561-A65-00/***
G1/8	5/2	Solenoid/Air spring	Internal	–	0,27	SXE 9561-A80-00/***
G1/8	5/2	Solenoid/Spring	Internal	–	0,27	SXE 9561-A81-00/***
G1/8	5/2	Solenoid/Air spring	External	–	0,27	SXE 9561-A85-00/***
G1/8	5/2	Solenoid/Spring	External	–	0,27	SXE 9561-A86-00/***
G1/8	5/3	Solenoid/Solenoid	Internal	APB	0,41	SXE 9661-A60-00/***
G1/8	5/3	Solenoid/Solenoid	External	APB	0,41	SXE 9661-A65-00/***
G1/8	5/3	Solenoid/Solenoid	Internal	COE	0,41	SXE 9761-A60-00/***
G1/8	5/3	Solenoid/Solenoid	External	COE	0,41	SXE 9761-A65-00/***
G1/8	5/3	Solenoid/Solenoid	Internal	COP	0,41	SXE 9861-A60-00/***
G1/8	5/3	Solenoid/Solenoid	External	COP	0,41	SXE 9861-A65-00/***

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure.

*** Insert voltage codes from table below. Service kits are not available for these valves. Order connector plugs separately.

Voltage codes

	22 mm Coil with connector interface acc. to Industrial Standard			22 mm Coil with connector interface acc. to DIN 43650 table B		
Voltage	Code	Power inrush/hold	Model	Code	Power inrush/hold	Model
12 V d.c.	12J	2 W	QM/48/12J/21	12L	2 W	V10626-A12L
24 V d.c.	13J	2 W	QM/48/13J/21	13L	2 W	V10626-A13L
24 V 50/60 Hz	14J	4/2,5 VA	QM/48/14J/21	14L	4/2,5 VA	V10626-A14L
110/120 V 50/60 Hz	18J	4/2,5 VA	QM/48/18J/21	18L	4/2,5 VA	V10626-A18L
220/240 V 50/60 Hz	19J	6/5 VA	QM/48/19J/21	19L	6/5 VA	V10626-A19L

Other voltages available on request.

Electrical details for solenoid operators

Voltage tolerances:	±10%
Rating:	100% E.D.
Inlet orifice:	1,0 mm
Electrical connection:	Corresponding to chosen coil, see table above
Solenoid coil:	May be rotated at 90° intervals
Protection class:	IP 65 (DIN 40 050)

For details of connector plugs and indicators see page 383

Air pilot actuated valves

Size	Function	Actuation	Mid position	kg	Model
G1/8	5/2	Pilot/Spring	–	0,16	SXP 9561-180-00
G1/8	5/2	Pilot/Pilot	–	0,16	SXP 0561-180-00
G1/8	5/3	Pilot/Spring/Pilot	APB	0,18	SXP 9661-180-00
G1/8	5/3	Pilot/Spring/Pilot	COE	0,18	SXP 9761-180-00
G1/8	5/3	Pilot/Spring/Pilot	COP	0,18	SXP 9861-180-00

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure.

Service kits are not available for these valves.

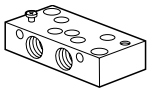
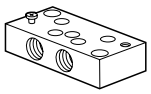
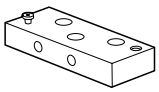
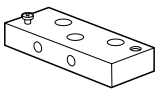
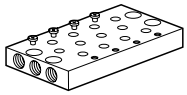
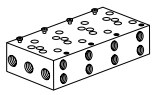
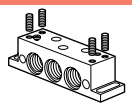
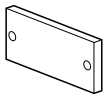
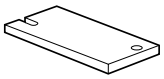
MIDI★STAR

Solenoid & pilot actuated spool valves

Sub-base & manifold

5/2 & 5/3, G⅛

Bases and accessories

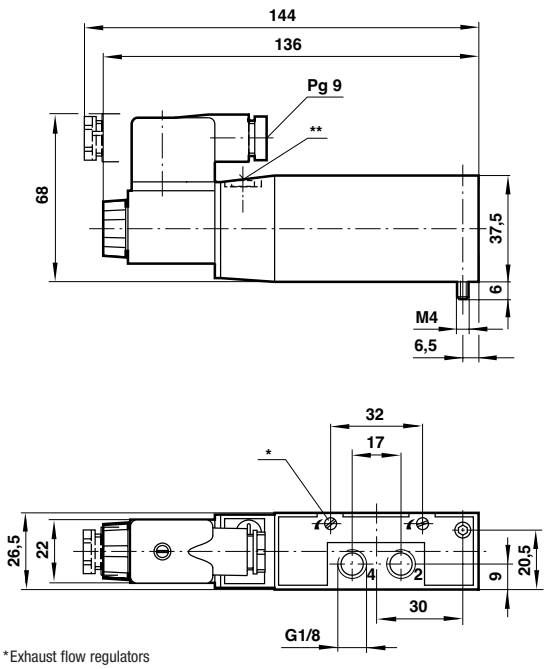
Single station sub-base Side ported with pilot ports	Single station manifold Side ported without pilot ports	Single station sub-base Bottom ported with pilot ports	Single station sub-base Bottom ported without pilot ports	Fixed length manifold
				
FP 2011-20 (G1/8)	FP 2011(G1/8)	FP 2021-20 (G1/8)	FP 2021 (G1/8)	BL 3**1-21 (G1/4)
Multi-station sub-base Side ported	**Modular manifold**	**Blanking end plate for FP2880**	**Blanking disc for FP 2880**	**Blanking plate**
				
BP 43**-13-91 (G3/8)	FP 2880	FP 2857	FP 2858	FP 2001

Blanking plug

FP 2080 (BL3000)
FP 2081 (BP4300)

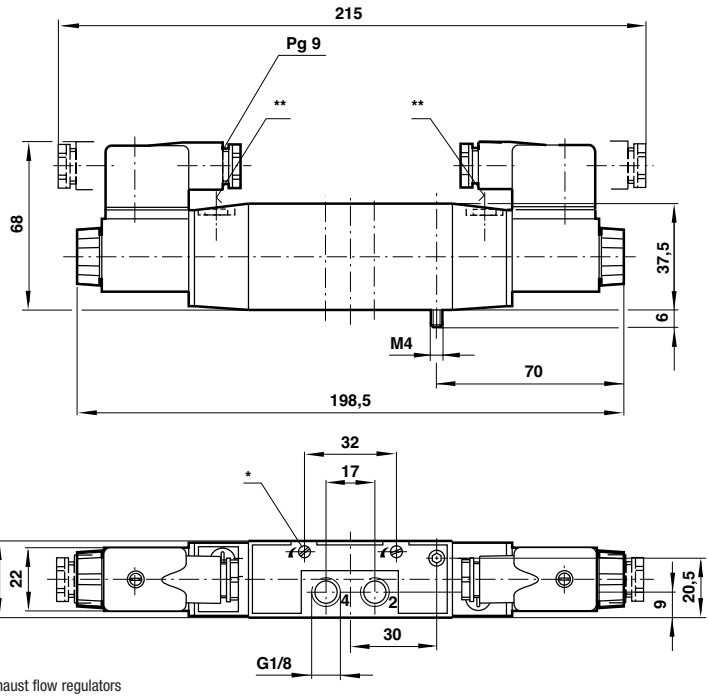
** Insert number of stations

Single solenoid models



*Exhaust flow regulators
**Manual override

Double solenoid models



*Exhaust flow regulators
**Manual override

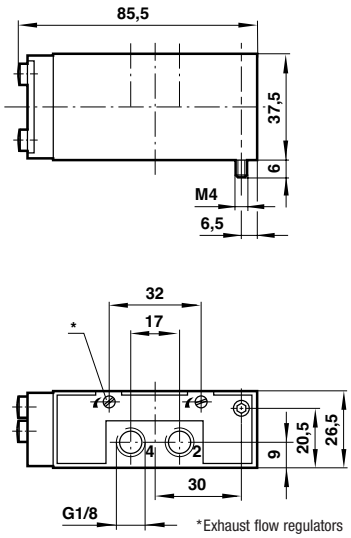
MIDI★STAR

Solenoid & pilot actuated spool valves

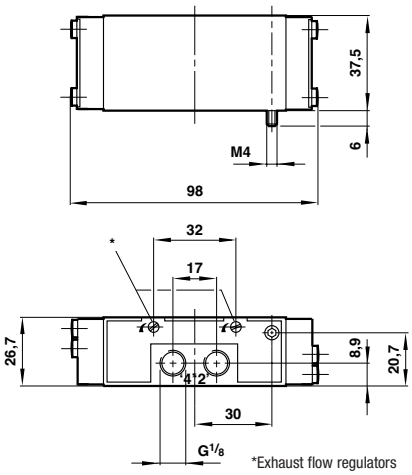
Sub-base & manifold

5/2 & 5/3, G⅛

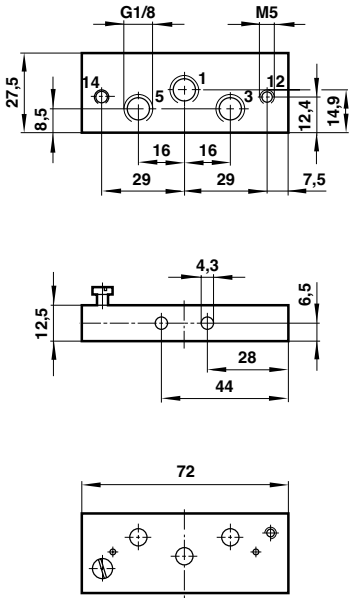
SXP *561-1 models
Single pilot valves and double pilot valves



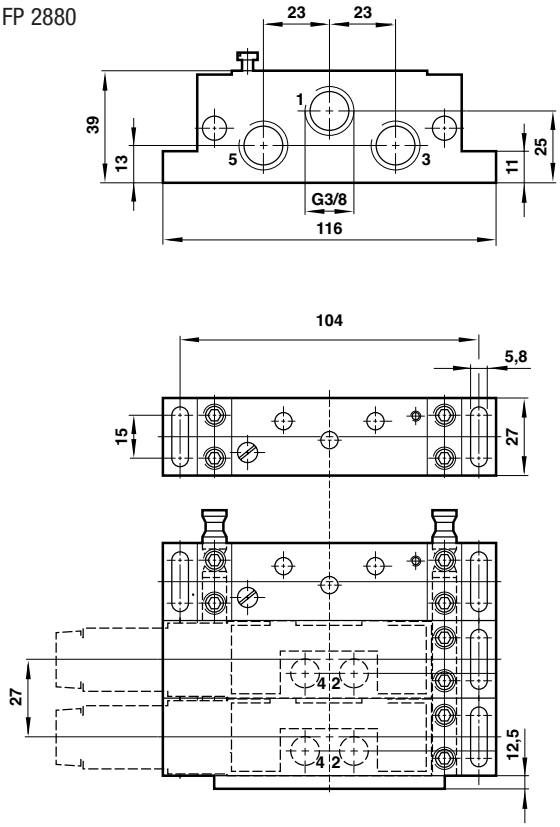
SXP 9*61-1 models
Double pilot spring centralised valves



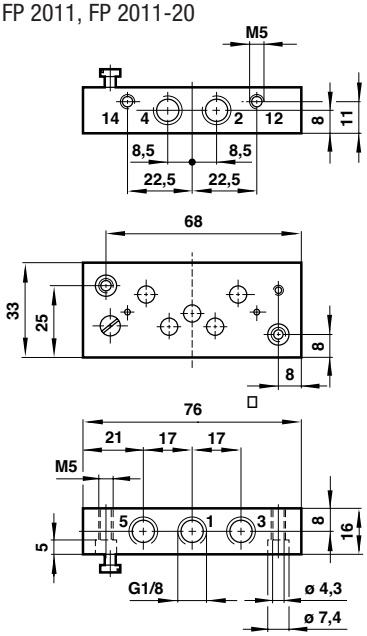
Single station manifold
FP 2021, FP 2021-20



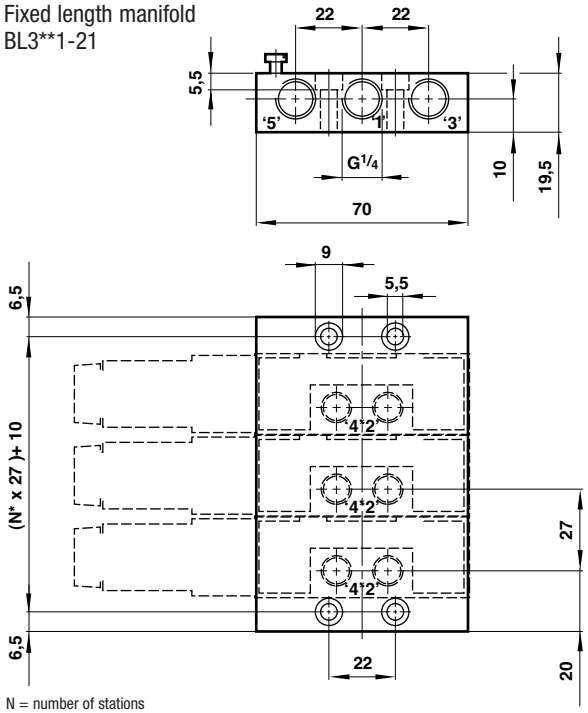
Modular manifold
FP 2880



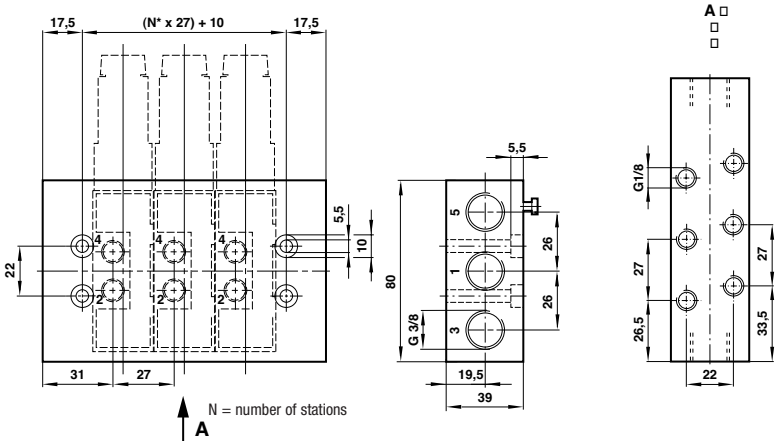
Single station sub-base
FP 2011, FP 2011-20



Fixed length manifold
BL3**1-21



Fixed length sub-base
BP43**-13-**

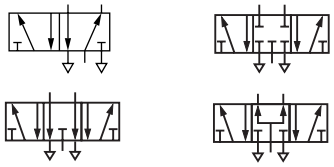


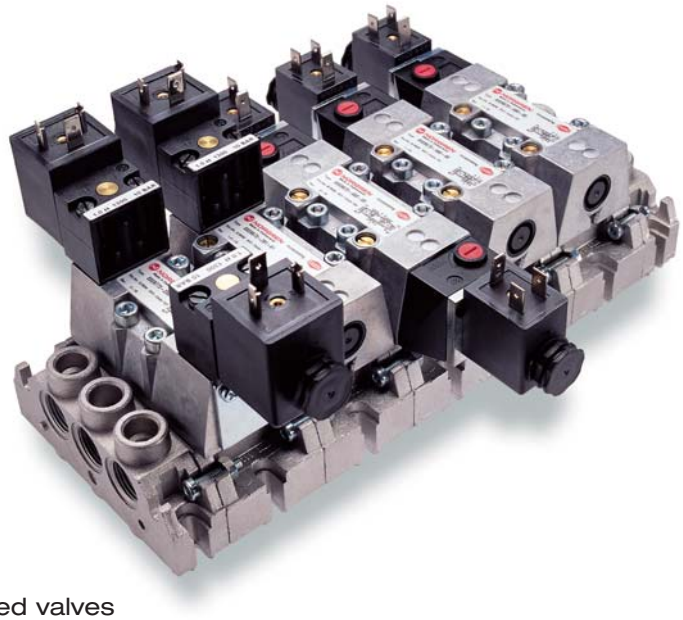
ISO★STAR

Solenoid & pilot actuated spool valves

Sub-base

5/2 & 5/3, ISO #1 to ISO #3





Specially coated glandless spool and sleeve for long trouble-free life

Integral flow regulators available on ISO #1 and #2 sizes

Low power solenoids feature manual override as standard

Wide range of sub-bases and accessories

Technical data

Medium:

Compressed air, filtered, lubricated, non lubricated and dry.

Operating pressure:

Maximum 16 bar, see table for individual details.

Flow:

ISO #1 1230 l/min

ISO #2 2450 l/min

ISO #3 4400 l/min

Ambient temperature:

-15°C to +50°C solenoid models

-15°C to +80°C pilot models.

Consult our Technical Service for use below +2°C.

Materials

Body: die-cast aluminium

Spool & sleeve: hard anodised aluminium with special Teflon coating

Seals: nitrile

Alternative models

ISO #4 models are also available – contact our Technical Service.

Central M12 x 1 connector

External pilot supply versions.

For details of ISO soft start valves see page 320

Solenoid pilot actuated valves

Size	Function	Actuation	Flow regulator	Mid position	End solenoid models Operating pressure (bar)	kg	Model	CNOMO solenoid models Operating pressure (bar)	kg	Model
ISO #1	5/2	Sol/Spring	–	–	1,8 ... 10	0,33	SXE 9573-A71-00/***	1,8 ... 16	0,33	SXE 9573-Z71-81/***
ISO #1	5/2	Sol/Spring	Built-in	–	1,8 ... 10	0,33	SXE 9573-A81-00/***	1,8 ... 16	0,33	SXE 9573-Z81-81/***
ISO #1	5/2	Sol/Air spring	–	–	1 ... 10	0,33	SXE 9573-A70-00/***	1 ... 10	0,33	SXE 9573-Z70-60/***
ISO #1	5/2	Sol/Air spring	Built-in	–	1 ... 10	0,33	SXE 9573-A80-00/***	1 ... 10	0,33	SXE 9573-Z80-60/***
ISO #1	5/2	Sol/Sol	–	–	2 ... 10	0,45	SXE 0573-A50-00/***	2 ... 16	0,45	SXE 0573-Z50-81/***
ISO #1	5/2	Sol/Sol	Built-in	–	2 ... 10	0,45	SXE 0573-A60-00/***	2 ... 16	0,45	SXE 0573-Z60-81/***
ISO #1	5/3	Sol/Sol	Built-in	APB	2 ... 10	0,45	SXE 9673-A60-00/***	2 ... 16	0,45	SXE 9673-Z60-81/***
ISO #1	5/3	Sol/Sol	Built-in	COE	2 ... 10	0,45	SXE 9773-A60-00/***	2 ... 16	0,45	SXE 9773-Z60-81/***
ISO #1	5/3	Sol/Sol	Built-in	COP	2 ... 10	0,45	SXE 9873-A60-00/***	2 ... 16	0,45	SXE 9873-Z60-81/***
ISO #2	5/2	Sol/Spring	–	–	1,8 ... 10	0,57	SXE 9574-A71-00/***	1,8 ... 16	0,57	SXE 9574-Z71-81/***
ISO #2	5/2	Sol/Spring	Built-in	–	1,8 ... 10	0,57	SXE 9574-A81-00/***	1,8 ... 16	0,57	SXE 9574-Z81-81/***
ISO #2	5/2	Sol/Air spring	–	–	1 ... 10	0,59	SXE 9574-A70-00/***	1 ... 10	0,59	SXE 9574-Z70-60/***
ISO #2	5/2	Sol/Air spring	Built-in	–	1 ... 10	0,59	SXE 9574-A80-00/***	1 ... 10	0,59	SXE 9574-Z80-60/***
ISO #2	5/2	Sol/Sol	–	–	2 ... 10	0,72	SXE 0574-A50-00/***	2 ... 16	0,72	SXE 0574-Z50-81/***
ISO #2	5/2	Sol/Sol	Built-in	–	2 ... 10	0,72	SXE 0574-A60-00/***	2 ... 16	0,72	SXE 0574-Z60-81/***
ISO #2	5/3	Sol/Sol	Built-in	APB	2 ... 10	0,72	SXE 9674-A60-00/***	2 ... 16	0,72	SXE 9674-Z60-81/***
ISO #2	5/3	Sol/Sol	Built-in	COE	2 ... 10	0,72	SXE 9774-A60-00/***	2 ... 16	0,72	SXE 9774-Z60-81/***
ISO #2	5/3	Sol/Sol	Built-in	COP	2 ... 10	0,83	SXE 9874-A60-00/***	2 ... 16	0,83	SXE 9874-Z60-81/***
ISO #3	5/2	Sol/Spring	–	–	1,8 ... 10	0,85	SXE 9575-A71-00/***	1,8 ... 16	0,85	SXE 9575-Z71-81/***
ISO #3	5/2	Sol/Air spring	–	–	1 ... 10	0,85	SXE 9575-A70-00/***	1 ... 10	0,85	SXE 9575-Z70-60/***
ISO #3	5/2	Sol/Sol	–	–	2 ... 10	0,96	SXE 0575-A50-00/***	2 ... 16	0,96	SXE 0575-Z50-81/***
ISO #3	5/3	Sol/Sol	–	APB	2 ... 10	0,96	SXE 9675-A50-00/***	2 ... 16	0,96	SXE 9675-Z50-81/***
ISO #3	5/3	Sol/Sol	–	COE	2 ... 10	0,96	SXE 9775-A50-00/***	2 ... 16	0,96	SXE 9775-Z50-81/***
ISO #3	5/3	Sol/Sol	–	COP	2 ... 10	0,96	SXE 9875-A50-00/***	2 ... 16	0,96	SXE 9875-Z50-81/***

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure. Service kits not available for these valves.
*** Insert voltage codes for standard or CNOMO model from correct table below. Order connector plugs separately.
Manual override on end solenoid models: Push to operate spring return, lockable
Manual override on CNOMO solenoid models (-60/***): Screwdriver memory type
Manual override on CNOMO solenoid models (-81/***): Push to operate spring return

Voltage codes and spare coils for 10 bar solenoid models

Voltage	22 mm Coil with connector interface acc. to Industrial Standard Code	Power inrush/hold	Model	22 mm Coil with connector interface acc. to DIN 43650 table B Code	Power inrush/hold	Model	30 mm Coil with connector interface acc. to DIN 43650 table A Code	Power inrush/hold	Model
12 V d.c.	12J	2 W	QM/48/12J/21	12L	2 W	V10626-A12L	22N	1,5 W	V10633-A22N
24 V d.c.	13J	2 W	QM/48/13J/21	13L	2 W	V10626-A13L	23N	1,5 W	V10633-A23N
24 V 50/60 Hz	14J	4/2,5 VA	QM/48/14J/21	14L	4/2,5 VA	V10626-A14L	24N	2 VA	V10633-A24N
48 V 50/60 Hz	–	–	–	–	–	–	26N	2 VA	V10633-A26N
110/120 V 50/60 Hz	18J	4/2,5 VA	QM/48/18J/21	18L	4/2,5 VA	V10626-A18L	28N	2 VA	V10633-A28N
220/240 V 50/60 Hz	19J	6/5 VA	QM/48/19J/21	19L	6/5 VA	V10626-A19L	29N	3 VA	V10633-A29N

Voltage codes and spare coils for 16 bar models (CNOMO only)

Voltage	30 mm Coil with connector interface acc. to DIN 43650 table A Code	Power inrush/hold	Model
24 V d.c.	33N	4 W	V10633-A33N
110/120 V a.c.	88N	8 VA	V10633-A88N
230 V a.c.	89N	8 VA	V10633-A89N

Electrical details for end & CNOMO solenoid operators

Voltage tolerance:	±10%
Rating:	100% E.D.
Inlet orifice:	1,0 mm
Electrical connection:	Corresponding to chosen coil. See voltage code tables
Solenoid coil	May be rotated at 90° intervals
Protection class:	IP 65 with sealed plug (ISO 6952)

For details of connector plugs and indicators see page 383

ISO★STAR

Solenoid & pilot actuated spool valves

Sub-base

5/2 & 5/3, ISO #1 ... ISO #3

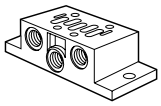
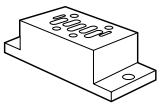
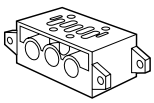
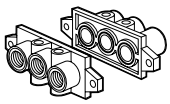
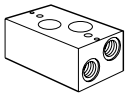
Air pilot actuated valves

Size	Function	Actuation	Flow regulator	Mid position	Operating pressure (bar)	kg	Model
ISO #1	5/2	Pilot/Spring	–	–	-0,9 ... 16	0,21	SXP 9573-170-00
ISO #1	5/2	Pilot/Spring	Built-in	–	-0,9 ... 16	0,26	SXP 9573-180-00
ISO #1	5/2	Pilot/Pilot	–	–	-0,9 ... 16	0,30	SXP 0573-170-00
ISO #1	5/2	Pilot/Pilot	Built-in	–	-0,9 ... 16	0,30	SXP 0573-180-00
ISO #1	5/3	Pilot/Pilot	Built-in	APB	-0,9 ... 16	0,25	SXP 9673-180-00
ISO #1	5/3	Pilot/Pilot	Built-in	COE	-0,9 ... 16	0,24	SXP 9773-180-00
ISO #1	5/3	Pilot/Pilot	Built-in	COP	-0,9 ... 16	0,25	SXP 9873-180-00
ISO #2	5/2	Pilot/Spring	–	–	-0,9 ... 16	0,45	SXP 9574-170-00
ISO #2	5/2	Pilot/Spring	Built-in	–	-0,9 ... 16	0,45	SXP 9574-180-00
ISO #2	5/2	Pilot/Pilot	–	–	-0,9 ... 16	0,50	SXP 0574-170-00
ISO #2	5/2	Pilot/Pilot	Built-in	–	-0,9 ... 16	0,50	SXP 0574-180-00
ISO #2	5/3	Pilot/Pilot	Built-in	APB	-0,9 ... 16	0,58	SXP 9674-180-00
ISO #2	5/3	Pilot/Pilot	Built-in	COE	-0,9 ... 16	0,58	SXP 9774-180-00
ISO #2	5/3	Pilot/Pilot	Built-in	COP	-0,9 ... 16	0,58	SXP 9874-180-00
ISO #3	5/2	Pilot/Spring	–	–	-0,9 ... 16	0,72	SXP 9575-170-00
ISO #3	5/2	Pilot/Pilot	–	–	-0,9 ... 16	0,72	SXP 0575-170-00
ISO #3	5/3	Pilot/Pilot	–	APB	-0,9 ... 16	0,80	SXP 9675-170-00
ISO #3	5/3	Pilot/Pilot	–	COE	-0,9 ... 16	0,80	SXP 9775-170-00
ISO #3	5/3	Pilot/Pilot	–	COP	-0,9 ... 16	0,80	SXP 9875-170-00

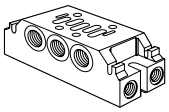
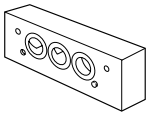
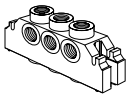
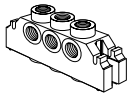
APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure. Service kits not available for these valves.

Bases

VDMA 24 345 sub-bases

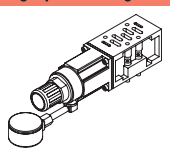
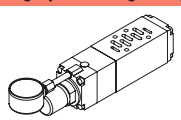
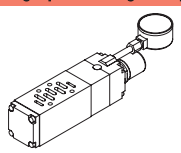
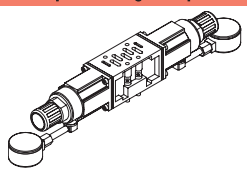
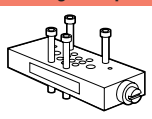
	Form A Side ported	Form B Bottom ported	Form C Manifold	Form D End plates	Form E Connecting plate	Blanking disk
						
ISO#1	M/P19126 (G1/4)	M/P19125 (G1/4)	CQM/22152/3/21	CQM/22152/3/22	FP 8361	FP 8382
ISO#2	M/P19132 (G3/8)	M/P19131 (G3/8)	CQM/22253/3/21	CQM/22253/3/22	FP 8461	FP 8482
ISO#3	M/P19138 (G1/2)	M/P19137 (G1/2)	CQM/22354/3/21	CQM/22354/3/22	FP 8561	FP 8582

Universal base options (side & bottom ported)

	Modular base	Transition plate	Blanking disc (dual supply)	End plates*	End plate, side ports open
					
ISO#1	CQM/22152/3/27 (G1/4)	CQM/22152/3/29 (#1-#2)	M/P43173	CQM/22152/3/28 (G1/4)	CQM/22152/3/31
ISO#2	CQM/22253/3/27 (G3/8)		M/P43174	CQM/22253/3/28 (G3/8)	CQM/22253/3/31

* All ports supplied blanked for optimum system configuration.

Accessories

	Single pressure regulator plate	Single pressure regulator plate	Single pressure regulator plate	Double pressure regulator plate	Flow regulator plate
					
ISO #1	V71010-KB1 Port 1 reg.	V71012-KB2 Port 2 reg.	V71012-KB3 Port 4 reg.	V71012-KB4 Ports 2+4 reg.	–
ISO #2	V71010-KC1 Port 1 reg.	V71012-KC2 Port 2 reg.	V71012-KC3 Port 4 reg.	V71012-KC4 Ports 2+4 reg.	–
ISO #3	V71010-KD1 Port 1 reg.	V71012-KD2 Port 2 reg.	V71012-KD3 Port 4 reg.	V71012-KD4 Ports 2+4 reg.	CQM/22354/3/26

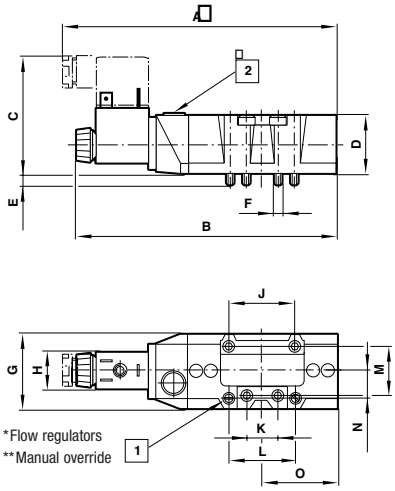
ISO★STAR

Solenoid & pilot actuated spool valves

Sub-base

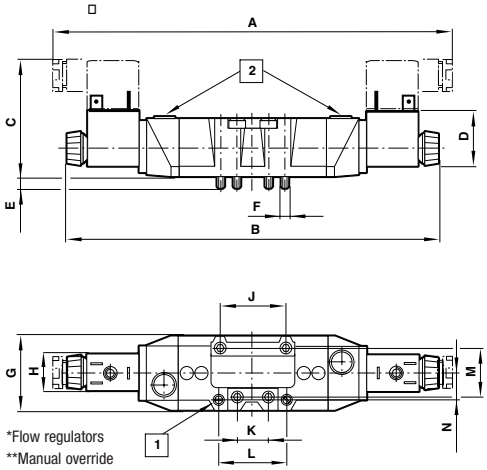
5/2 & 5/3, ISO #1 ... ISO #3

Single end solenoid models



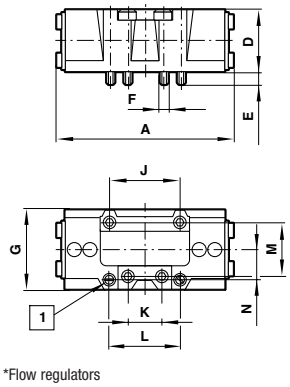
	ISO 1	ISO 2	ISO 3
A	155	183	215
B	147	175	208,5
C	66	70	74
D	33	42	47
E	7,5	8	8,5
F	M5	M6	M8
G	42	55	62,5
H	22	22	22
J	36	48	64
K	18	24	32
L	42	53	74,5
M	28	38	48

Double end solenoid models



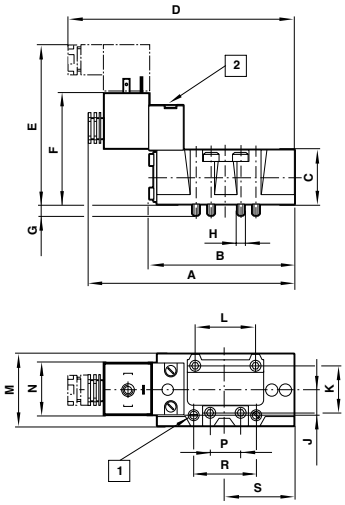
	ISO 1	ISO 2	ISO 3
A	226	259	281
B	209	243	267,5
C	66	70	74
D	33	42	47
E	7,5	8	8,5
F	M5	M6	M8
G	42	55	62,5
H	22	22	22
J	36	48	64
K	18	24	32
M	28	38	48

Single and double pilot models



	ISO 1		ISO 2		ISO 3
	Single	Double	Single	Double	
A	88,5	93	109	120	170
B	36	36	48	48	64
C	18	18	24	24	32
D	42	42	55	55	62,5
E	28	28	38	38	48
G	M5	M5	M6	M6	M8
H	33	33	42	42	47
J	7	7	8	8	8,5
L	–	–	–	–	145

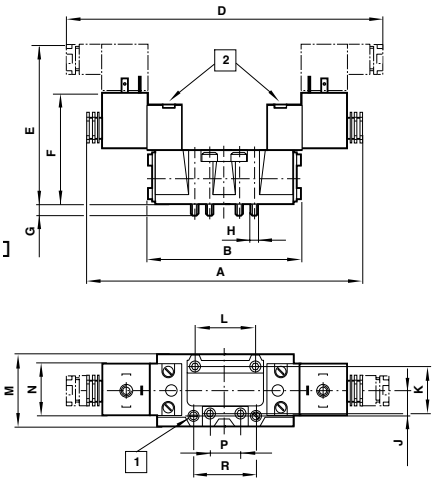
Single CNOMO solenoid valves



	ISO 1	ISO 2	ISO 3
A	146,5	166	183
B	88,4	109	153
C	33	42	48
D	155,5	175	192
E	97,5	107	122
F	69,5	79	94
G	7,5	8	8,5
H	M5	M6	M8
J	14,85	20	–
K	28	38	48
L	36	48	64
M	42	55	62,5
N	32	32	32
P	18	24	32
R	37,6	48	–
S	42	53	–

* Manual override
** Flow regulator (not on ISO #3 model)

Double CNOMO solenoid valves



	ISO 1	ISO 2	ISO 3
A	209	226	218
B	92	120	158
C	33	42	48
D	190	205	225
E	100	110	115
F	69,5	79	94
G	7,5	8	8,5
H	M5	M6	M8
J	14,85	20	–
K	28	38	48
L	36	48	64
M	42	55	62,5
N*	32	32	32
P	18	24	32
R	37,6	48	–

* Flow regulator (not on ISO #3 model)
** Manual override

ISO★STAR

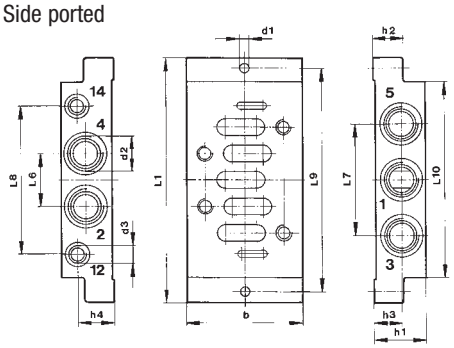
Solenoid & pilot actuated spool valves

Sub-base

5/2 & 5/3, ISO #1 ... ISO #3

VDMA 24 345 Sub-bases

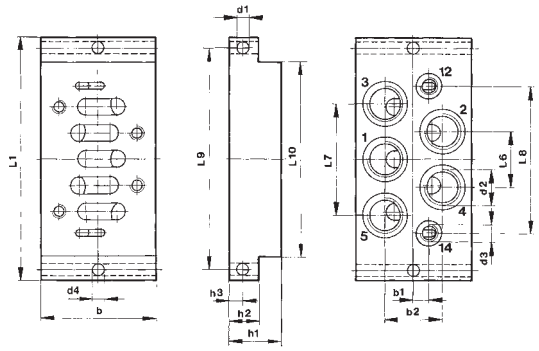
Side ported



ISO		b	d1	d2	d3	h1	h2	h3*	h4	L1	L6	L7	L8	L9	L10
1	M/P19126	48	5,5	G1/4	G1/8	32	10	10,5 (21,5)	23,5	110	24	43	58	98	84
2	M/P19132	57	6,6	G3/8	G1/8	40	13	14 (26)	30	124	30	56	74	112	95
3	M/P19138	71	6,6	G1/2	G1/8	32	18	179	22	149	32	68	90	136	119

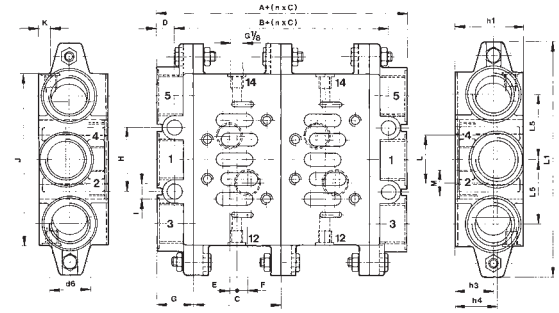
( ) Dimension for ports 3 and 5.

Bottom ported



ISO		b	b1	b2	d1	d2	d3	d4	h1	h2	h3	L1	L6	L7	L8	L9	L10
1	M/P19125	46	7	23	5,5	G1/4	G1/8	5,5	30	10	5	110	23	46	62	98	84
2	M/P19131	56	8	27	6,6	G3/8	G1/8	6,6	35	13	6,5	124	28	56	73	112	95
3	M/P19137	71	10	34	6,6	G1/2	G1/8	6,69	32	18	9	149	34	68	90	136	119

End plates and manifold

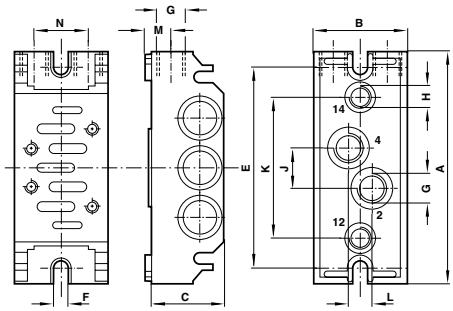


ISO	A	B	C	D	E	F	G	H	I	J	K	L	M	h1	h3	h4	L1	L5	d6
1	44	22	43	11	1,5	7,5	22	28	7	85	8,5	26	G1/4	46	21	24	110	28	G3/8
2	52	26	56	13	5	6	26	35	9	100	9	30	G3/8	47	22	24	135	34	G1/2
3	60	30	71	15	6	8	30	52	12	140	10	38	G1/2	56	31	34	190	52	G1

Maximum 12 stations.

Universal sub-base options

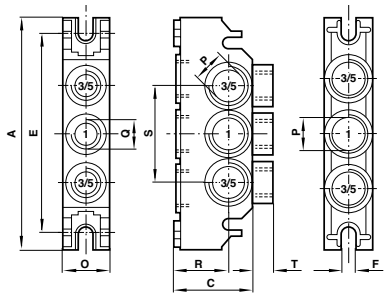
Modular base with side, end and bottom ports open
CQM/22152/3/27, CQM22253/3/27



ISO	A	B	C	E	F	G	H	J	K	L	M	N	kg
1	106	43	36	92	5,5	G1/4	G1/8	18	64	11	12	28	0,16
2	120	56	43	102	6,5	G3/8	G1/8	24	68	19	15	38	0,35

Universal end plate, all ports blocked – CQM/22152/28, CQM/22253/3/28

Universal end plate, side ports open – CQM/22152/3/31, CQM22253/3/31

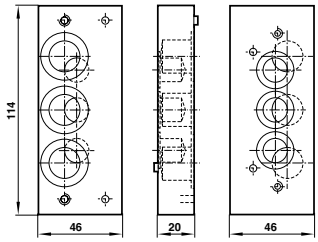


ISO	A	C	E	F	O	P	Q	R	S	T	kg
1	106	36	92	5,5	22	G3/8	G1/4	25	44	9	0,13
2	120	46	102	6,5	29	G1/2	G1/4	31	58	7	0,23

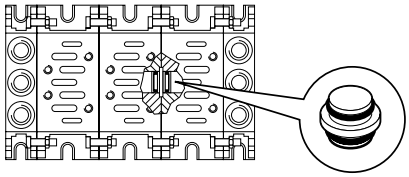
Drill dimensions for opening ports

G1/4	Ø 8
G3/8	Ø 15
G1/2	Ø 15

Transition plate from ISO #1 to ISO #2 universal sub-bases
CQM/22152/3/29



Blanking disk for ISO #1 and ISO #2 universal sub-bases
M/P43173, M/P43174



ISO★STAR

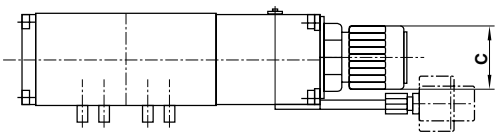
Solenoid & pilot actuated spool valves

Sub-base

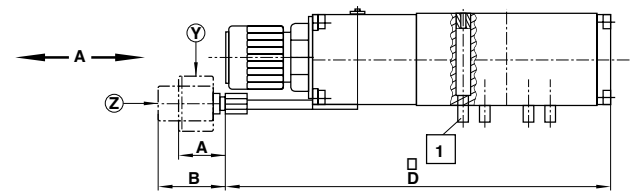
5/2 & 5/3, ISO #1 to ISO #3

Sandwich plate with pressure regulator on port 1

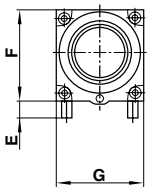
Regulator on side 12



Regulator on side 14



View A
(without gauge and tube)

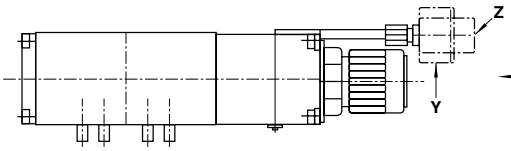


* Captive screws M5 x 20
Y = Model with centre back gauge
Z = Model with bottom gauge

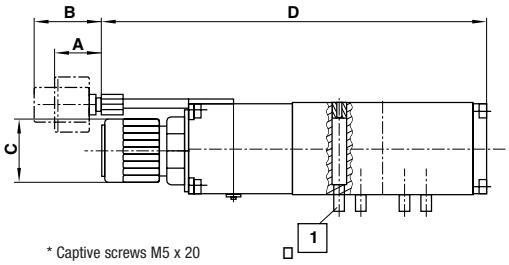
	ISO 1	ISO 2	ISO 3
A	42	42	42
B	49	49	49
C	28	38	46
D	198	256	285
E	10	12	12
F	45	60	67
G	42	54	64

Sandwich plate with pressure regulator on port 2 or port 4

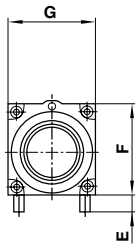
Port 2 reg.



Port 4 reg.



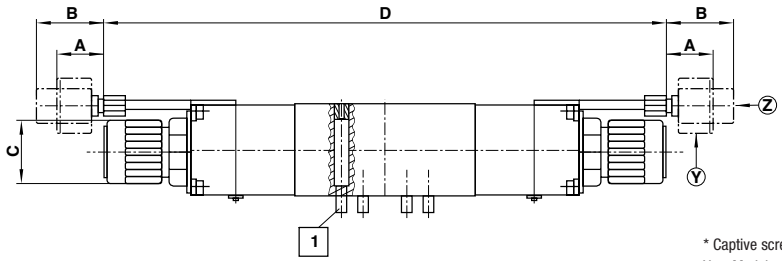
View A
(without gauge and tube)

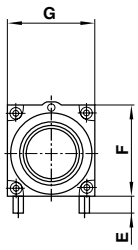


* Captive screws M5 x 20
Y = Model with centre back gauge
Z = Model with bottom gauge

	ISO 1	ISO 2	ISO 3
A	42	42	42
B	49	49	49
C	28	38	46
D	198	256	285
E	10	12	12
F	45	60	67
G	42	54	64

Sandwich plate with double pressure regulator on port 2 and 4





* Captive screws M5 x 20
Y = Model with centre back gauge
Z = Model with bottom gauge

	ISO 1	ISO 2	ISO 3
A	42	42	42
B	49	49	49
C	28	38	46
D	290	359	416
E	10	12	12
F	45	60	67
G	42	54	64

V40/V41 series

Options selectors

Mini ISO 18 mm Solenoid pilot actuated valves

V ★★ 5 ★★★ D – C 3 ★★ A

Spool technology	Substitute
Glandless spool and sleeve	40
Softseal spool	41

Function	Substitute
2x3/2 NC*	A
2x3/2 NO*	B
2x3/2 NO/NC*	C
5/2	5
5/3 APB	6
5/3 COE	7
5/3 COP	8

* Softseal spool only

** Glandless spool and sleeve only

Voltage	Substitute
12V d.c.	12
24V d.c.	13
24V a.c.	14
48V a.c.	16
110V d.c.	17
115V a.c.	18
230V a.c.	19

Operation side 14 / Return side 12	Substitute
Solenoid/Air spring –Internal pilot supply	13
Solenoid/Air spring – External pilot supply	23
Solenoid/Spring and air – Internal pilot supply**	16
Solenoid/Spring and air – External pilot supply**	26
Solenoid/Spring – Internal pilot supply*	17
Solenoid/Spring – External pilot supply*	27
Solenoid/Solenoid – Internal pilot supply	11
Solenoid/Solenoid – External pilot supply	22
Solenoid (priority side 14)/Solenoid – Internal pilot supply**	91
Solenoid (priority side 14)/Solenoid – External pilot supply**	92

Mini ISO 18 mm Air pilot actuated valves

V ★★ 5 ★★★ A – X ★★★ 0

Spool technology	Substitute
Glandless spool and sleeve	40
Softseal spool	41

Function	Substitute
2x3/2 NC*	A
2x3/2 NO*	B
2x3/2 NO/NC*	C
5/2	5
5/3 APB	6
5/3 COE	7
5/3 COP	8

Operation side 14 / Return side 12	Substitute
Air/Air	33
Air/Spring	37

Function code	Substitute
Air pilot actuation on ends 12 and 14; 2x3/2, 5/2 Air/Air and all 5/3 functions only (=substitute 33 on digits 6 and 7)	002
Air pilot actuation on ends 12 and 14, priority pilot end 14; V40 glandless 5/2 Air/Air only (=substitute 33 on digits 6 and 7)	007
Air pilot actuation end 14, spring return end 12 5/2 Air/Spring only (=substitute 37 on digits 6 and 7)	009

* Softseal spool only

V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

- **High flow rate**
- **Small volumetric size**
- **Proven sealing system**
- **Different manual override options as standard**
- **Maintenance-free**
- **Low power consumption (2 W)**
- **Application oriented pilot controls**
- **Manifold system for easy assembly**
- **Multiple pressure options**

Technical data

Medium:
Compressed air, filtered to 50 µm, lubricated* or non lubricated.

Operation:
Electromagnetically or pneumatically controlled

Mounting position:
Optional

Connection:
G1/8 up to G1/2

Operating pressure:
1,5/2 up to 8/10 bar

Flow direction:
Internal pilot supply: fixed
External pilot supply: optional

Flow:

Size	3/2, 5/2	2 x 3/2, 5/3
G1/8	750	500
G1/4	1300	950
G3/8	2600	1900
G1/2	4200	2200 (5/3)

Ambient temperature:
-10°C to +50°C

Fluid temperature:
-10°C to +50°C
Consult our Technical Service for use below +2°C.

Materials

Housing and base plate: aluminium
Spindle: stainless steel,
Piston, spacers and cover: synthetic material
Static and dynamic seals: NBR,
Screws: zinc plated
Springs: stainless steel.

Alternative models

NPT ports.

3/2 valves, solenoid actuated

Model	Function	Port size	Actuation	Pilot supply	Pilot exhaust	Solenoid variant	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Drawing no.
V60A413A-A#***	NC	G1/8	Sol/air	Internal	Not collected	1	750	2 ... 8	–	0,22	1
V60A423A-A#***	NC	G1/8	Sol/air	External	Not collected	1	750	-0,9 ... 8	3 ... 8	0,22	1
V60A417A-A#***	NC	G1/8	Sol/spring	Internal	Not collected	1	750	3 ... 8	–	0,22	28
V60A413D-C#13A	NC	G1/8	Sol/air	Internal	Collected	2	750	2 ... 10	–	0,21	4
V60A423D-C#13A	NC	G1/8	Sol/air	External	Collected	2	750	-0,9 ... 10	3 ... 10	0,21	4
V61B413A-A#***	NC	G1/4	Sol/air	Internal	Not collected	1	1300	2 ... 8	–	0,29	1
V61B423A-A#***	NC	G1/4	Sol/air	External	Not collected	1	1300	-0,9 ... 8	3 ... 8	0,29	1
V61B417A-A#***	NC	G1/4	Sol/spring	Internal	Not collected	1	1300	3 ... 8	–	0,29	28
V61B413D-C#13A	NC	G1/4	Sol/air	Internal	Collected	2	1300	2 ... 10	–	0,27	4
V61B423D-C#13A	NC	G1/4	Sol/air	External	Collected	2	1300	-0,9 ... 10	3 ... 10	0,27	4
V62C413A-A#***	NC	G3/8	Sol/air	Internal	Not collected	1	2600	2 ... 8	–	0,52	1
V62C423A-A#***	NC	G3/8	Sol/air	External	Not collected	1	2600	-0,9 ... 8	3 ... 8	0,52	1
V62C417A-A#***	NC	G3/8	Sol/spring	Internal	Not collected	1	2600	3 ... 8	–	0,52	28
V62C413D-C#13A	NC	G3/8	Sol/air	Internal	Collected	2	2600	2 ... 10	–	0,50	4
V62C423D-C#13A	NC	G3/8	Sol/air	External	Collected	2	2600	-0,9 ... 10	3 ... 10	0,50	4
V63D413A-A#***	NC	G1/2	Sol/air	Internal	Not collected	1	4200	2 ... 8	–	0,78	5
V63D423A-A#***	NC	G1/2	Sol/air	External	Not collected	1	4200	-0,9 ... 8	3 ... 8	0,78	5
V63D417A-A#***	NC	G1/2	Sol/spring	Internal	Not collected	1	4200	3 ... 8	–	0,78	31
V60A313A-A#***	NO	G1/8	Sol/air	Internal	Not collected	1	750	2 ... 8	–	0,22	2
V60A323A-A#***	NO	G1/8	Sol/air	External	Not collected	1	750	-0,9 ... 8	3 ... 8	0,22	1
V60A313D-C#13A	NO	G1/8	Sol/air	Internal	Collected	2	750	2 ... 10	–	0,21	4
V60A323D-C#13A	NO	G1/8	Sol/air	External	Collected	2	750	-0,9 ... 10	3 ... 10	0,21	4
V61B313A-A#***	NO	G1/4	Sol/air	Internal	Not collected	1	1300	2 ... 8	–	0,29	2
V61B323A-A#***	NO	G1/4	Sol/air	External	Not collected	1	1300	-0,9 ... 8	3 ... 8	0,29	1
V61B313D-C#13A	NO	G1/4	Sol/air	Internal	Collected	2	1300	2 ... 10	–	0,27	4
V61B323D-C#13A	NO	G1/4	Sol/air	External	Collected	2	1300	-0,9 ... 10	3 ... 10	0,27	4
V62C313A-A#***	NO	G3/8	Sol/air	Internal	Not collected	1	2600	2 ... 8	–	0,52	2
V62C323A-A#***	NO	G3/8	Sol/air	External	Not collected	1	2600	-0,9 ... 8	3 ... 8	0,52	1
V62C313D-C#13A	NO	G3/8	Sol/air	Internal	Collected	2	2600	2 ... 10	–	0,50	4
V62C323D-C#13A	NO	G3/8	Sol/air	External	Collected	2	2600	-0,9 ... 10	3 ... 10	0,50	4
V63D313A-A#***	NO	G1/2	Sol/air	Internal	Not collected	1	4200	2 ... 8	–	0,78	32
V63D323A-A#***	NO	G1/2	Sol/air	External	Not collected	1	4200	-0,9 ... 8	3 ... 8	0,78	5
V60A411A-A#***	–	G1/8	Sol/Sol	Internal	Not collected	1	750	1,5 ... 8	–	0,30	3
V60A422A-A#***	–	G1/8	Sol/Sol	External	Not collected	1	750	-0,9 ... 8	3 ... 8	0,30	3
V60A411D-C#13A	–	G1/8	Sol/Sol	Internal	Collected	2	750	1,5 ... 10	–	0,20	4
V60A422D-C#13A	–	G1/8	Sol/Sol	External	Collected	2	750	-0,9 ... 10	3 ... 10	0,20	4
V61B411A-A#***	–	G1/4	Sol/Sol	Internal	Not collected	1	1300	1,5 ... 8	–	0,38	3
V61B422A-A#***	–	G1/4	Sol/Sol	External	Not collected	1	1300	-0,9 ... 8	3 ... 8	0,38	3
V61B411D-C#13A	–	G1/4	Sol/Sol	Internal	Collected	2	1300	1,5 ... 10	–	0,27	4
V61B422D-C#13A	–	G1/4	Sol/Sol	External	Collected	2	1300	-0,9 ... 10	3 ... 10	0,27	4
V62C411A-A#***	–	G3/8	Sol/Sol	Internal	Not collected	1	2600	1,5 ... 8	–	0,61	3
V62C422A-A#***	–	G3/8	Sol/Sol	External	Not collected	1	2600	-0,9 ... 8	3 ... 8	0,61	3
V62C411D-C#13A	–	G3/8	Sol/Sol	Internal	Collected	2	2600	1,5 ... 10	–	0,50	4
V62C422D-C#13A	–	G3/8	Sol/Sol	External	Collected	2	2600	-0,9 ... 10	3 ... 10	0,50	4
V63D411A-A#***	–	G1/2	Sol/Sol	Internal	Not collected	1	4200	1,5 ... 8	–	0,87	6
V63D422A-A#***	–	G1/2	Sol/Sol	External	Not collected	1	4200	-0,9 ... 8	3 ... 8	0,87	6

*** Insert coil code from table below or 000 for version without solenoid. For manual override options, substitute '#' as follows:
1 = without manual override (on request), 2 = push and lock, 3 = push only. Note: Further mechanical spring return options on request
NC = Normally closed, NO = Normally open

V60-63 Series

In-line valves

Solenoid and pilot actuated

Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

2 x 3/2 valves, solenoid actuated

Model	Function	Port size	Actuation	Pilot supply	Pilot exhaust	Solenoid variant	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Dimensional drawing no.
V60AA11A-A#***	NC	G1/8	Sol/Sol	Internal	Not collected	1	500	2 ... 8	–	0,34	7
V60AA11D-C#13A	NC	G1/8	Sol/Sol	Internal	Collected	2	500	2 ... 10	–	0,24	8
V61BA11A-A#***	NC	G1/4	Sol/Sol	Internal	Not collected	1	950	2 ... 8	–	0,43	7
V61BA11D-C#13A	NC	G1/4	Sol/Sol	Internal	Collected	2	950	2 ... 10	–	0,33	8
V62CA11A-A#***	NC	G3/8	Sol/Sol	Internal	Not collected	1	1900	2 ... 8	–	0,73	7
V62CA11D-C#13A	NC	G3/8	Sol/Sol	Internal	Collected	2	1900	2 ... 10	–	0,63	8
V60AB11A-A#***	NO	G1/8	Sol/Sol	Internal	Not collected	1	500	2 ... 8	–	0,34	7
V60AB11D-C#13A	NO	G1/8	Sol/Sol	Internal	Collected	2	500	2 ... 10	–	0,24	8
V61BB11A-A#***	NO	G1/4	Sol/Sol	Internal	Not collected	1	950	2 ... 8	–	0,43	7
V61BB11D-C#13A	NO	G1/4	Sol/Sol	Internal	Collected	2	950	2 ... 10	–	0,33	8
V62CB11A-A#***	NO	G3/8	Sol/Sol	Internal	Not collected	1	1900	2 ... 8	–	0,73	7
V62CB11D-C#13A	NO	G3/8	Sol/Sol	Internal	Collected	2	1900	2 ... 10	–	0,63	8
V60AC11A-A#***	NO/NC	G1/8	Sol/Sol	Internal	Not collected	1	500	2 ... 8	–	0,34	7
V60AC11D-C#13A	NO/NC	G1/8	Sol/Sol	Internal	Collected	2	500	2 ... 10	–	0,24	8
V61BC11A-A#***	NO/NC	G1/4	Sol/Sol	Internal	Not collected	1	950	2 ... 8	–	0,43	7
V61BC11D-C#13A	NO/NC	G1/4	Sol/Sol	Internal	Collected	2	950	2 ... 10	–	0,33	8
V62CC11A-A#***	NO/NC	G3/8	Sol/Sol	Internal	Not collected	1	1900	2 ... 8	–	0,73	7
V62CC11D-C#13A	NO/NC	G3/8	Sol/Sol	Internal	Collected	2	1900	2 ... 10	–	0,63	8

*** Insert coil code from table below or 000 for version without solenoid. For manual override options, substitute '#' as follows: 1 = without manual override (on request), 2 = push and lock, 3 = push only

NC/NC = Both valves normally closed (port P) NO/NO = Both valves normally open (port P) NO/NC = 1 valve normally open, 1 valve normally closed (port P)

5/2 valves, solenoid actuated

Model	Port size	Actuation	Pilot supply	Pilot exhaust	Solenoid variant	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Dimensional drawing no.
V60A513A-A#***	G1/8	Sol/air	Internal	Not collected	1	750	2 ... 8	–	0,24	9
V60A523A-A#***	G1/8	Sol/air	External	Not collected	1	750	-0,9 ... 8	3 ... 8	0,24	9
V60A517A-A#***	G1/8	Sol/Spring	Internal	Not collected	1	750	3 ... 8	–	0,24	29
V60A527A-A#***	G1/8	Sol/Spring	External	Not collected	1	750	-0,9 ... 8	3 ... 8	0,24	29
V60A513D-C#13A	G1/8	Sol/air	Internal	Collected	2	750	2 ... 10	–	0,23	11
V60A523D-C#13A	G1/8	Sol/air	External	Collected	2	750	-0,9 ... 10	3 ... 10	0,23	11
V61B513A-A#***	G1/4	Sol/air	Internal	Not collected	1	1300	2 ... 8	–	0,33	9
V61B523A-A#***	G1/4	Sol/air	External	Not collected	1	1300	-0,9 ... 8	3 ... 8	0,33	9
V61B517A-A#***	G1/4	Sol/Spring	Internal	Not collected	1	1300	3 ... 8	–	0,33	29
V61B527A-A#***	G1/4	Sol/Spring	External	Not collected	1	1300	-0,9 ... 8	3 ... 8	0,33	29
V61B513D-C#13A	G1/4	Sol/air	Internal	Collected	2	1300	2 ... 10	–	0,32	11
V61B523D-C#13A	G1/4	Sol/air	External	Collected	2	1300	-0,9 ... 10	3 ... 10	0,32	11
V62C513A-A#***	G3/8	Sol/air	Internal	Not collected	1	2600	2 ... 8	–	0,62	9
V62C523A-A#***	G3/8	Sol/air	External	Not collected	1	2600	-0,9 ... 8	3 ... 8	0,62	9
V62C517A-A#***	G3/8	Sol/Spring	Internal	Not collected	1	2600	3 ... 8	–	0,62	29
V62C527A-A#***	G3/8	Sol/Spring	External	Not collected	1	2600	-0,9 ... 8	3 ... 8	0,62	29
V62C513D-C#13A	G3/8	Sol/air	Internal	Collected	2	2600	2 ... 10	–	0,61	11
V62C523D-C#13A	G3/8	Sol/air	External	Collected	2	2600	-0,9 ... 10	3 ... 10	0,61	11
V63D513A-A#***	G1/8	Sol/air	Internal	Not collected	1	4200	2 ... 8	–	0,96	12
V63D523A-A#***	G1/8	Sol/air	External	Not collected	1	4200	-0,9 ... 8	3 ... 8	0,96	12
V63D517A-A#***	G1/2	Sol/Spring	Internal	Not collected	1	4200	3 ... 8	–	0,96	33
V63D527A-A#***	G1/2	Sol/Spring	External	Not collected	1	4200	-0,9 ... 8	–	0,96	33
V60A511A-A#***	G1/8	Sol/Sol	Internal	Not collected	1	750	2 ... 8	–	0,33	10
V60A522A-A#***	G1/8	Sol/Sol	External	Not collected	1	750	-0,9 ... 8	3 ... 8	0,33	10
V60A511D-C#13A	G1/8	Sol/Sol	Internal	Collected	2	750	2 ... 10	–	0,23	11
V60A522D-C#13A	G1/8	Sol/Sol	External	Collected	2	750	-0,9 ... 10	3 ... 10	0,23	11
V61B511A-A#***	G1/4	Sol/Sol	Internal	Not collected	1	1300	2 ... 8	–	0,42	10
V61B522A-A#***	G1/4	Sol/Sol	External	Not collected	1	1300	-0,9 ... 8	3 ... 8	0,42	10
V61B511D-C#13A	G1/4	Sol/Sol	Internal	Collected	2	1300	2 ... 10	–	0,32	11
V61B522D-C#13A	G1/4	Sol/Sol	External	Collected	2	1300	-0,9 ... 10	3 ... 10	0,32	11
V62C511A-A#***	G3/8	Sol/Sol	Internal	Not collected	1	2600	2 ... 8	–	0,72	10
V62C522A-A#***	G3/8	Sol/Sol	External	Not collected	1	2600	-0,9 ... 8	3 ... 8	0,72	10
V62C511D-C#13A	G3/8	Sol/Sol	Internal	Collected	2	2600	2 ... 10	–	0,62	11
V62C522D-C#13A	G3/8	Sol/Sol	External	Collected	2	2600	-0,9 ... 10	3 ... 10	0,62	11
V63D511A-A#***	G1/8	Sol/Sol	Internal	Not collected	1	4200	2 ... 8	–	0,98	13
V63D522A-A#***	G1/8	Sol/Sol	External	Not collected	1	4200	-0,9 ... 8	3 ... 8	0,98	13

*** Insert coil code from table below or 000 for version without solenoid. For manual override options, substitute '#' as follows:

1 = without manual override (on request), 2 = push and lock, 3 = push only. Note: Further mechanical spring return options on request

V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

5/3 valves, solenoid actuated

Model	Function	Port size	Actuation	Pilot supply	Pilot exhaust	Solenoid variant	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Dimensional drawing no.
V60A611A-AX***	APB	G1/8	Sol/Sol	Internal	Not collected	1	500	3 ... 8	–	0,35	14
V60A622A-AX***	APB	G1/8	Sol/Sol	External	Not collected	1	500	-0,9 ... 8	3 ... 8	0,35	14
V60A611D-CX13A	APB	G1/8	Sol/Sol	Internal	Collected	2	500	3 ... 10	–	0,25	15
V60A622D-CX13A	APB	G1/8	Sol/Sol	External	Collected	2	500	-0,9 ... 10	3 ... 10	0,25	15
V61B611A-AX***	APB	G1/4	Sol/Sol	Internal	Not collected	1	950	3 ... 8	–	0,47	14
V61B622A-AX***	APB	G1/4	Sol/Sol	External	Not collected	1	950	-0,9 ... 8	3 ... 8	0,47	14
V61B611D-CX13A	APB	G1/4	Sol/Sol	Internal	Collected	2	950	3 ... 10	–	0,37	15
V61B622D-CX13A	APB	G1/4	Sol/Sol	External	Collected	2	950	-0,9 ... 10	3 ... 10	0,37	15
V62C611A-AX***	APB	G3/8	Sol/Sol	Internal	Not collected	1	1900	3 ... 8	–	0,81	14
V62C622A-AX***	APB	G3/8	Sol/Sol	External	Not collected	1	1900	-0,9 ... 8	3 ... 8	0,81	14
V62C611D-CX13A	APB	G3/8	Sol/Sol	Internal	Collected	2	1900	3 ... 10	3 ... 10	0,71	15
V62C622D-CX13A	APB	G3/8	Sol/Sol	External	Collected	2	1900	-0,9 ... 10	3 ... 10	0,71	15
V63D611A-A#***	APB	G1/2	Sol/Sol	Internal	Not collected	1	2200	2,5 8	–	1,2	30
V60A711A-AX***	COE	G1/8	Sol/Sol	Internal	Not collected	1	500	3 ... 8	–	0,35	14
V60A722A-AX***	COE	G1/8	Sol/Sol	External	Not collected	1	500	-0,9 ... 8	3 ... 8	0,35	14
V60A711D-CX13A	COE	G1/8	Sol/Sol	Internal	Collected	2	500	3 ... 10	–	0,25	15
V60A722D-CX13A	COE	G1/8	Sol/Sol	External	Collected	2	500	-0,9 ... 10	3 ... 10	0,25	15
V61B711A-AX***	COE	G1/4	Sol/Sol	Internal	Not collected	1	950	3 ... 8	–	0,47	14
V61B722A-AX***	COE	G1/4	Sol/Sol	External	Not collected	1	950	-0,9 ... 8	3 ... 8	0,47	14
V61B711D-CX13A	COE	G1/4	Sol/Sol	Internal	Collected	2	950	3 ... 10	–	0,37	15
V61B722D-CX13A	COE	G1/4	Sol/Sol	External	Collected	2	950	-0,9 ... 10	3 ... 10	0,37	15
V62C711A-AX***	COE	G3/8	Sol/Sol	Internal	Not collected	1	1900	3 ... 8	–	0,81	14
V62C722A-AX***	COE	G3/8	Sol/Sol	External	Not collected	1	1900	-0,9 ... 8	3 ... 8	0,81	14
V62C711D-CX13A	COE	G3/8	Sol/Sol	Internal	Collected	2	1900	3 ... 10	–	0,71	15
V62C722D-CX13A	COE	G3/8	Sol/Sol	External	Collected	2	1900	-0,9 ... 10	3 ... 10	0,71	15
V63D711A-A#***	COE	G1/2	Sol/Sol	Internal	Not collected	1	2200	2,5 8	–	1,2	30
V60A811A-AX***	COP	G1/8	Sol/Sol	Internal	Not collected	1	500	3 ... 8	–	0,35	14
V60A822A-AX***	COP	G1/8	Sol/Sol	External	Not collected	1	500	-0,9 ... 8	3 ... 8	0,35	14
V60A811D-CX13A	COP	G1/8	Sol/Sol	Internal	Collected	2	500	3 ... 10	–	0,25	15
V60A822D-CX13A	COP	G1/8	Sol/Sol	External	Collected	2	500	-0,9 ... 10	3 ... 10	0,25	15
V61B811A-AX***	COP	G1/4	Sol/Sol	Internal	Not collected	1	950	3 ... 8	–	0,47	14
V61B822A-AX***	COP	G1/4	Sol/Sol	External	Not collected	1	950	-0,9 ... 8	3 ... 8	0,47	14
V61B811D-CX13A	COP	G1/4	Sol/Sol	Internal	Collected	2	950	3 ... 10	–	0,37	15
V61B822D-CX13A	COP	G1/4	Sol/Sol	External	Collected	2	950	-0,9 ... 10	3 ... 10	0,37	15
V62C811A-AX***	COP	G3/8	Sol/Sol	Internal	Not collected	1	1900	3 ... 8	–	0,81	14
V62C822A-AX***	COP	G3/8	Sol/Sol	External	Not collected	1	1900	-0,9 ... 8	3 ... 8	0,81	14
V62C811D-CX13A	COP	G3/8	Sol/Sol	Internal	Collected	2	1900	3 ... 10	–	0,71	15
V62C822D-CX13A	COP	G3/8	Sol/Sol	External	Collected	2	1900	-0,9 ... 10	3 ... 10	0,71	15

*** Insert coil code from table below or 000 for version without solenoid. For manual override options, substitute '#' as follows: 1 = without manual override (on request), 2 = push and lock, 3 = push only.

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure.

Coil & voltage codes

Solenoid variant 1 (solenoid rotates 4 x 90°)

22 mm coil DIN EN 175 301-803 (DIN 43650 B)

Voltage	Coil code	Power inrush/hold	Model
12 V d.c.	12L	2 W	V10626-A12L
24 V d.c.	13L	2 W	V10626-A13L
24 V 50/60 Hz	14L	4/2,5 VA	V10626-A14L
48 V 50/60 Hz	16L	4/2,5 VA	V10626-A16L
110/120 V 50/60 Hz	18L	4/2,5 VA	V10626-A18L
220/240 V 50/60 Hz	19L	6/5 VA	V10626-A19L

22 mm coil industrial standard

Voltage	Coil code	Power inrush/hold	Model
12 V d.c.	12J	2 W	QM/48/12J/21
24 V d.c.	13J	2 W	QM/48/13J/21
24 V 50/60 Hz	14J	4/2,5 VA	QM/48/14J/21
48 V 50/60 Hz	16J	4/2,5 VA	QM/48/16J/21
110/120 V 50/60 Hz	18J	4/2,5 VA	QM/48/18J/21
220/240 V 50/60 Hz	19J	6/5 VA	QM/48/19J/21

Solenoid variant 2

Double solenoid DIN EN 175 301-803 (DIN 43650 type C) 4 pin

Voltage	Coil code	Power inrush/hold	Manual override*	Model
24 V d.c.	13 A	2 W	Push only	9031703900002400
24 V d.c.	13 A	2 W	Turn & lock	9031704900002400
24 V d.c.	13 A	2 W	Without	9031705900002400

Connector plugs must be ordered separately – see page 383

* On request

Electrical details

Voltage tolerance:	±10%
Rating:	100% E.D.
Protection class:	IP 65 with sealed plugs (ISO 6952)

Plug configuration, valve side/twin pilot

Symbol	Plug no.	Function	Actuation
	1	(+)	12 (Solenoid 2)
	2	(–)	12 + 14
	3	(+)	14 (Solenoid 1)

V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

3/2 valves, pilot actuated

Model	Function	Port size	Operator 12	Operator 10	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Dimensional drawing no.
V60A4D7A-XA090	NC	G1/8	Air	Spring	750	-0,9 ... 10	2,5 ... 10	0,13	16
V61B4D7A-XA090	NC	G1/4	Air	Spring	1300	-0,9 ... 10	2,5 ... 10	0,21	16
V62C4D7A-XA090	NC	G3/8	Air	Spring	2600	-0,9 ... 10	2,5 ... 10	0,43	16
V63D4D7A-XA090	NC	G1/2	Air	Spring	4200	-0,9 ... 16	3 ... 16	0,75	20
V60A3D7A-XA090	NO	G1/8	Spring	Air	750	-0,9 ... 10	2,5 ... 10	0,13	17
V61B3D7A-XA090	NO	G1/4	Spring	Air	1300	-0,9 ... 10	2,5 ... 10	0,21	17
V62C3D7A-XA090	NO	G3/8	Spring	Air	2600	-0,9 ... 10	2,5 ... 10	0,43	17
V63D3D7A-XA090	NO	G1/2	Spring	Air	4200	-0,9 ... 16	3 ... 16	0,75	34
V60A4DDA-XA020	–	G1/8	Air	Air	750	-0,9 ... 10	1,5 ... 10	0,13	18
V61B4DDA-XA020	–	G1/4	Air	Air	1300	-0,9 ... 10	1,5 ... 10	0,21	18
V62C4DDA-XA020	–	G3/8	Air	Air	2600	-0,9 ... 10	1,5 ... 10	0,43	18
V63D4DDA-XA020	–	G1/2	Air	Air	4200	-0,9 ... 16	1,5 ... 16	0,68	21

NC = Normally closed, NO = Normally open

2 x 3/2 valves, pilot actuated

Model	Function	Port size	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Dimensional drawing no.
V60AADDA-XA020	NC	G1/8	Air	Air	500	2 ... 10	2 ... 10	0,18	19
V61BADDA-XA020	NC	G1/4	Air	Air	950	2 ... 10	2 ... 10	0,28	19
V62CADDA-XA020	NC	G3/8	Air	Air	1900	2 ... 10	2 ... 10	0,60	19
Model	**Function**	**Port size**	**Operator 10**	**Operator 10**	**Flow (l/min)**	**Operating pressure (bar)**	**Pilot pressure (bar)**	**kg**	**Dimensional drawing no.**
V60ABDDA-XA020	NO	G1/8	Air	Air	500	2 ... 10	2 ... 10	0,18	19
V61BBDDA-XA020	NO	G1/4	Air	Air	950	2 ... 10	2 ... 10	0,28	19
V62CBDDA-XA020	NO	G3/8	Air	Air	1900	2 ... 10	2 ... 10	0,60	19
Model	**Function**	**Port size**	**Operator 10**	**Operator 12**	**Flow (l/min)**	**Operating pressure (bar)**	**Pilot pressure (bar)**	**kg**	**Dimensional drawing no.**
V60ACDDA-XA020	NO/NC	G1/8	Air	Air	500	2 ... 10	2 ... 10	0,18	19
V61BCDDA-XA020	NO/NC	G1/4	Air	Air	950	2 ... 10	2 ... 10	0,28	19
V62CCDDA-XA020	NO/NC	G3/8	Air	Air	1900	2 ... 10	2 ... 10	0,60	19

Note: Internal switching in middle position via spring.
NC/NC = Both valves normally closed (port P)
NO/NO = Both valves normally open (port P)
NO/NC = 1 valve normally open, 1 valve normally closed (port P)

5/2 valves, pilot actuated

Model	Port size	Operator 12	Operator 10	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Dimensional drawing no.
V60A5D7A-XA090	G1/8	Air	Spring	750	-0,9 ... 10	2,5 ... 10	0,16	22
V61B5D7A-XA090	G1/4	Air	Spring	1300	-0,9 ... 10	2,5 ... 10	0,26	22
V62C5D7A-XA090	G3/8	Air	Spring	2600	-0,9 ... 10	2,5 ... 10	0,56	22
V63D5D7A-XA090	G1/2	Air	Spring	4200	-0,9 ... 16	3 ... 16	0,92	25
V60A5DDA-XA020	G1/8	Air	Air	750	-0,9 ... 10	1,5 ... 10	0,17	23
V61B5DDA-XA020	G1/4	Air	Air	1300	-0,9 ... 10	1,5 ... 10	0,27	23
V62C5DDA-XA020	G3/8	Air	Air	2600	-0,9 ... 10	1,5 ... 10	0,58	23
V63D5DDA-XA020	G1/2	Air	Air	4200	-0,9 ... 16	1,5 ... 16	0,87	26

5/3 valves, pilot actuated

Model	Function	Port size	Operator 14	Operator 12	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	kg	Dimensional drawing no.
V60A6DDA-XA020	APB	G1/8	Air	Air	500	-0,9 ... 10	3 ... 10	0,2	24
V61B6DDA-XA020	APB	G1/4	Air	Air	950	-0,9 ... 10	3 ... 10	0,32	24
V62C6DDA-XA020	APB	G3/8	Air	Air	1900	-0,9 ... 10	3 ... 10	0,67	24
V63D6DDA-XA020	APB	G1/2	Air	Air	2200	-0,9 ... 10	3 ... 10	1,16	35
V60A7DDA-XA020	COE	G1/8	Air	Air	500	-0,9 ... 10	3 ... 10	0,2	24
V61B7DDA-XA020	COE	G1/4	Air	Air	950	-0,9 ... 10	3 ... 10	0,32	24
V62C7DDA-XA020	COE	G3/8	Air	Air	1900	-0,9 ... 10	3 ... 10	0,67	24
V63D7DDA-XA020	COE	G1/2	Air	Air	4200	-0,9 ... 10	3 ... 10	1,16	35
V60A8DDA-XA020	COP	G1/8	Air	Air	500	-0,9 ... 10	3 ... 10	0,2	24
V61B8DDA-XA020	COP	G1/4	Air	Air	9500	-0,9 ... 10	3 ... 10	0,32	24
V62C8DDA-XA020	COP	G3/8	Air	Air	1900	-0,9 ... 10	3 ... 10	0,67	24

Note: Internal switching in middle position via spring.

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure.

V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

Accessories

Valves

Silencer sintered bronze			Exhaust flow regulator without silencer			Exhaust flow regulator with silencer			Diffusor for pilot exhaust		Circlip for coil fixing	
												
0014400	M5	0,025 kg	4048004	G1/8	0,025 kg	4048005	G1/8	0,025 kg	81110800	0,002 kg	81021600	0,001 kg
0014510	G1/8	0,008 kg	4048104	G1/4	0,060 kg	4048105	G1/4	0,060 kg				
0014610	G1/4	0,010 kg	(G3/8 on request)			(G3/8 on request)						
0014710	G3/8	0,025 kg										
0014810	G1/2	0,060 kg										

Connectors

Industrial standard 22 mm 2-pole + PE		DIN EN 175301-803 (DIN 43650 B) 2-pole + PE		DIN EN 175301-803 (DIN 43650 C) 3-pole + PE		DIN EN 175301-803 (DIN 43650 B) with AS-i Interface		DIN EN 175301-803 (DIN 43650 B) with AS-i Interface	
									
0657868	0,005 kg	0680003	0,005 kg	0588666	0,002 kg	0101033	0,030 kg	0101032	0,030 kg
12...250 V a.c./d.c.		12...250 V a.c./d.c.		12...250 V a.c./d.c.		1 output		1 output + 2 inputs with M12 x 1	
0680000	0,005 kg	0664811	0,005 kg	0102144	0,200 kg				
15...30 V d.c.; LED, surge suppression		15...30 V d.c.; LED, surge suppression		12...250 V a.c./d.c.; cable 3 m					
0680001	0,005 kg	0664812	0,005 kg						
150...250 V a.c.; glim lamp		150...250 V a.c.; glim lamp							

Manifolds

Blanking plate			Blanking plug for 2 station and 3 station manifolds			Pressure shut-off part for 4 station up to 20 station manifolds suitable for port 1			Intermediate supply/exhaust plate (instead of a valve)			Adapter plate to connect different manifold sizes	
													
0100561	(V60)	0,050 kg	0701208	(V60)	0,006 kg	0100567	(V60)	0,010 kg	0101808	(V60)	0,110 kg	0101289	(V60➔V61)
0100563	(V61)	0,060 kg	0701209	(V61)	0,012 kg	0100569	(V61)	0,015 kg	0101797	(V61)	0,220 kg	0102160	(V61➔V62)
0100565	(V62)	0,100 kg	0701210	(V62)	0,020 kg	0100571	(V62)	0,020 kg	0101809	(V62)	0,390 kg	0102162	(V60➔V62)

Pressure switch adapter plate			DIN Rail fixing kit			Blanking plug for port 12/14 and 82/84			Blanking plug for port 1, 3, 5		
											
0102146	(V60)	0,130 kg	0101796	(V60➔V62)	0,010 kg	160050018	(V60➔V62)	0,008 kg	160050028	(V60)	0,015 kg
0102148	(V61)	0,160 kg							160050038	(V61)	0,020 kg
0102150	(V62)	0,260 kg							160050048	(V62)	0,035 kg

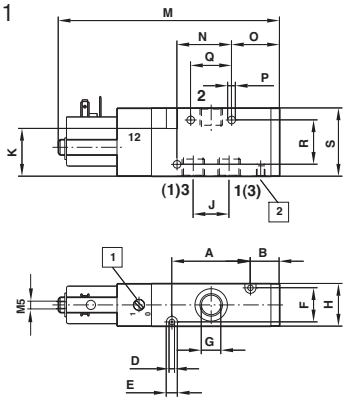
V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

1



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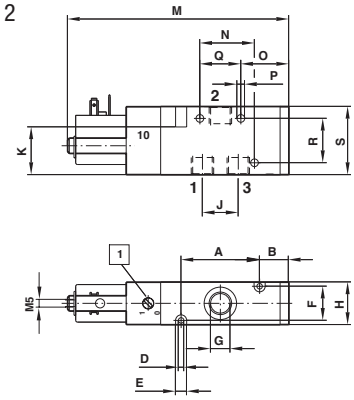

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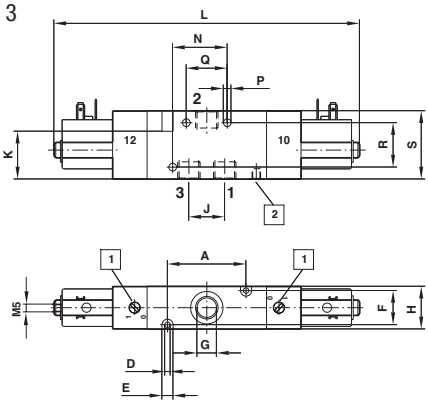
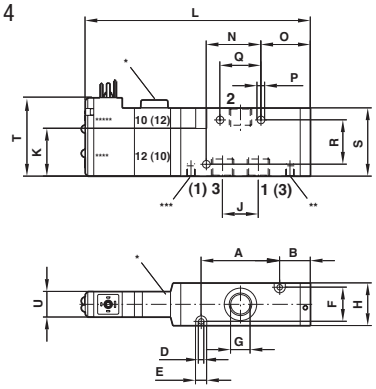


* Manual override
*** Collected pilot exhaust (M5)
**** Solenoid 1
***** Solenoid 2

4



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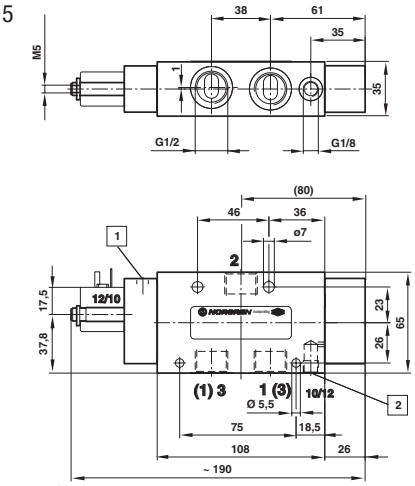

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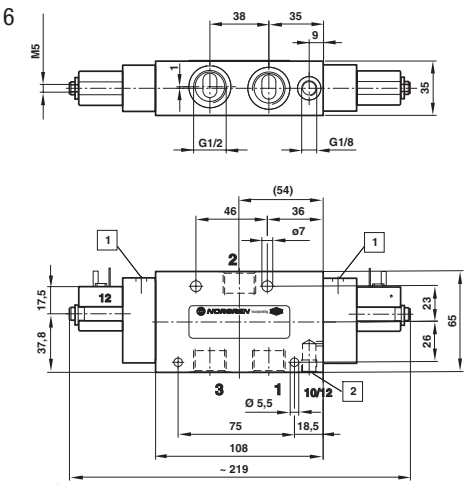


Drawing no.	Type	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
1	V60	35	17	–	3,2	6,5	17	G1/8; 8 deep	22	16,2	28	–	114	25	25	4,5	18	26	35	–	–
1	V61	46	20	–	3,2	6,5	20	G1/4; 10 deep	25	21	28	–	132,5	32	31	4,5	24	26	40	–	–
1	V62	54	21	–	4,5	8	28	G3/8; 11,5 deep	34	24,4	44	–	145	12	36	4,5	26	36	55	–	–
2	V60	35	17	–	3,2	6,5	17	G1/8; 8 deep	22	16,2	28	–	114	25	25	4,5	18	26	35	–	–
2	V61	46	20	–	3,2	6,5	20	G1/4; 10 deep	25	21	28	–	132,5	32	31	4,5	24	26	40	–	–
2	V62	54	21	–	4,5	8	28	G3/8; 11,5 deep	34	24,4	44	–	145	12	34	4,5	26	36	55	–	–
3	V60	35	–	–	3,2	6,5	17	G1/8; 8 deep	22	16,2	28	160	–	25	–	4,5	18	26	35	–	–
3	V61	46	–	–	3,2	6,5	20	G1/4; 10 deep	25	21	28	179	–	32	–	4,5	24	26	40	–	–
3	V62	54	–	–	4,5	8	28	G3/8; 11,5 deep	34	24,4	44	194	–	12	–	4,5	26	36	55	–	–
4	V60	35	17	–	3,2	6,5	17	G1/8; 8 deep	22	16,2	28	119	–	25	25	4,5	18	26	35	46	15
4	V61	46	18	–	3,2	6,5	20	G1/4; 10 deep	25	21	28	133	–	32	29	4,5	24	26	40	46	15
4	V62	54	21	–	4,5	8	28	G3/8; 11,5 deep	34	24,4	44	147	–	12	36	4,5	26	36	55	54	15

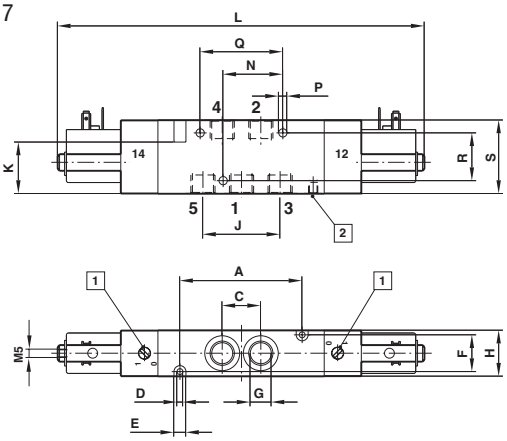
V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

7



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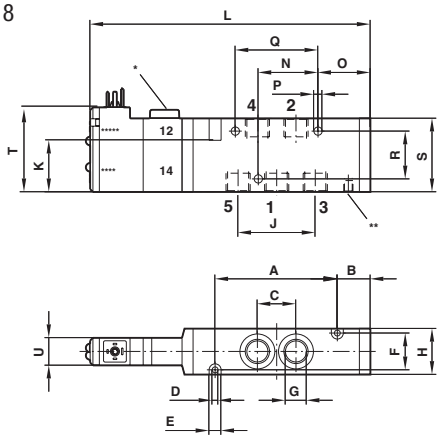
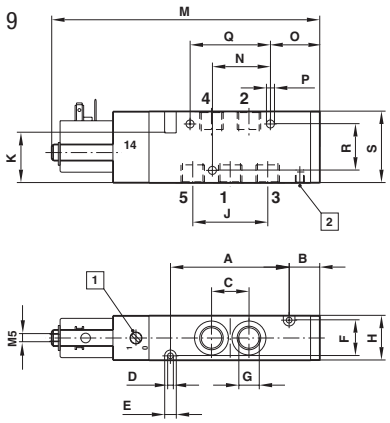


Drawing no.	Type	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
7	V60	50	–	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	175	–	25	–	4,5	33,6	26	35	–	–
7	V61	66	–	21	3,2	6,5	20	G1/4;10 deep	25	42	28	199	–	32	–	4,5	44	26	40	–	–
7	V62	78	–	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	218	–	12	–	4,5	26	36	55	–	–
8	V60	50	17	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	134	–	25	25	4,5	33,6	26	35	46	15
8	V61	66	18	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	153	–	32	29	4,5	44	26	40	46	15
8	V62	78	22	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	172	–	12	61	4,5	26	36	55	54	15

9



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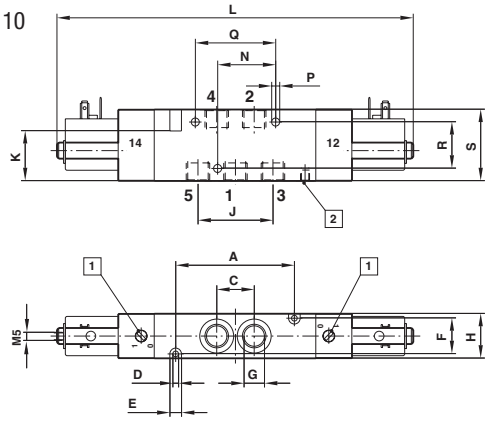

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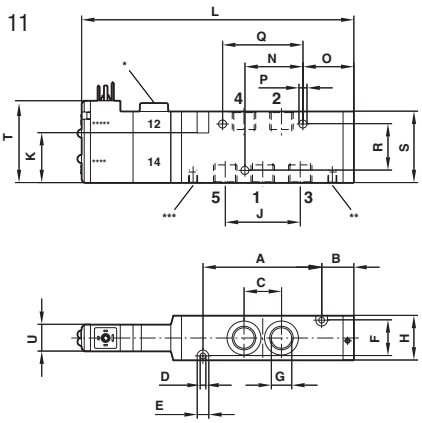


* Manual override
** External pilot supply (M5)
*** Collected pilot exhaust (M5)
**** Solenoid 1
***** Solenoid 2

Drawing no.	Type	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
9	V60	50	17	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	–	129	25	25	4,5	33,6	26	35	–	–
9	V61	66	20	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	–	152,5	32	31	4,5	44	26	40	–	–
9	V62	78	21	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	–	170	12	60	4,5	26	36	55	–	–
10	V60	50	–	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	175	–	25	–	4,5	33,6	26	35	–	–
10	V61	66	–	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	199	–	32	–	4,5	44	26	40	–	–
10	V62	78	–	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	218	–	12	–	4,5	26	36	55	–	–
11	V60	50	17	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	134	–	25	25	4,5	33,6	26	35	46	15
11	V61	66	18	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	153	–	32	29	4,5	44	26	40	46	15
11	V62	78	22	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	172	–	12	61	4,5	26	36	55	54	15

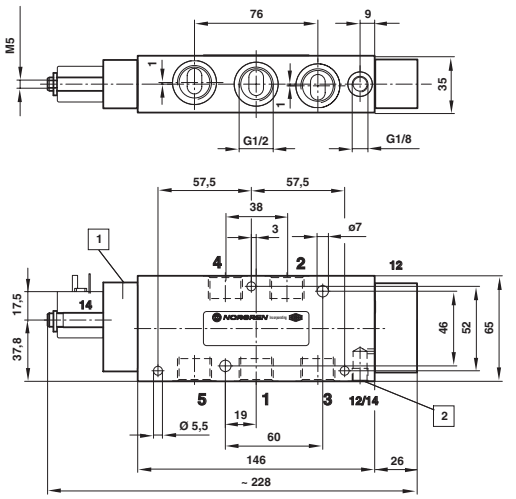
V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

12



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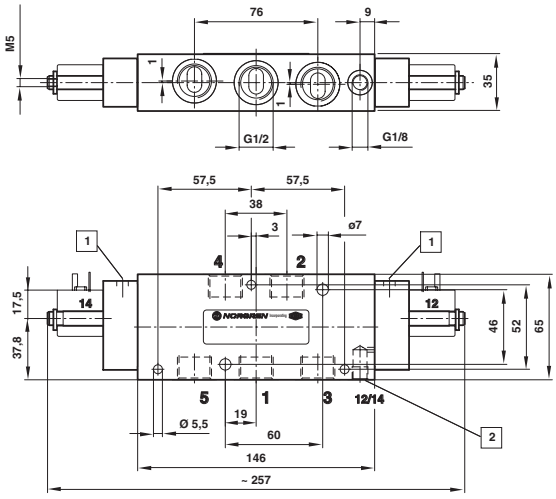

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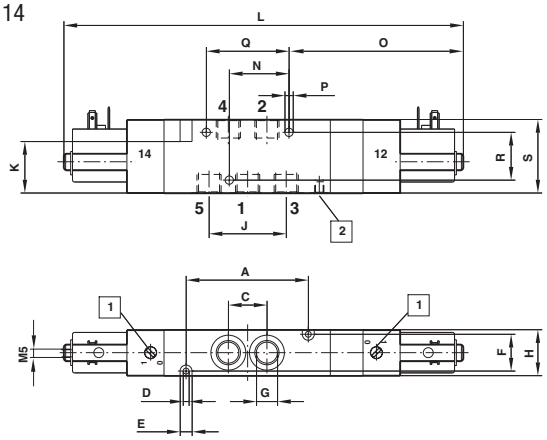

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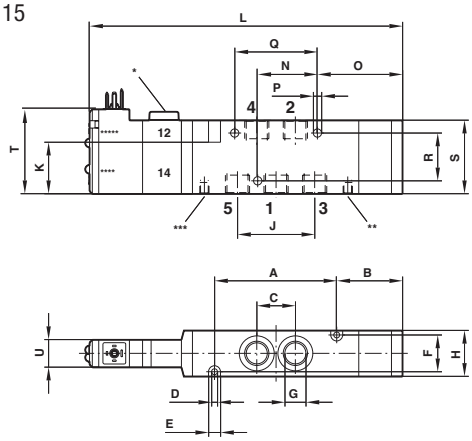


* Manual override
** External pilot supply (M5)
*** Collected pilot exhaust (M5)
**** Solenoid 1
***** Solenoid 2

Drawing no.	Type	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
14	V60	50	–	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	189	–	25	84,5	4,5	33,6	26	35	–	–
14	V61	66	–	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	217	–	32		4,5	44	26	40	–	–
14	V62	78	–	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	241	–	12	132	4,5	26	36	55	–	–
15	V60	50	31	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	148	–	25	39	4,5	33,6	26	35	46	15
15	V61	66	36	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	171	–	32	47	4,5	44	26	40	46	15
15	V62	78	44,5	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	195	–	12	84	4,5	26	36	55	54	15

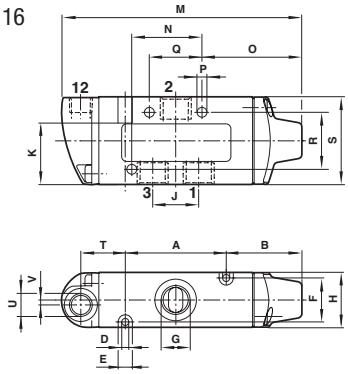
V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

16



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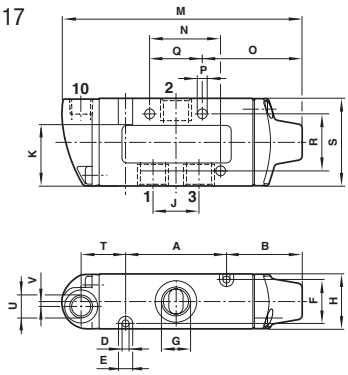

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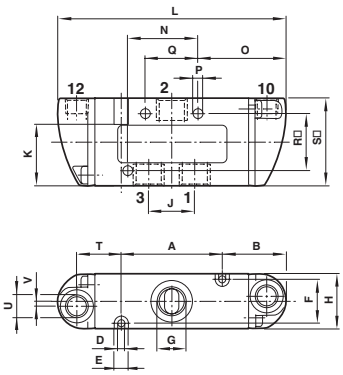

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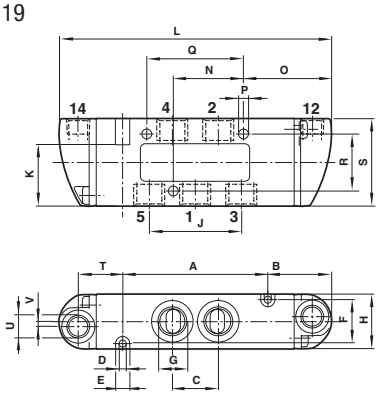

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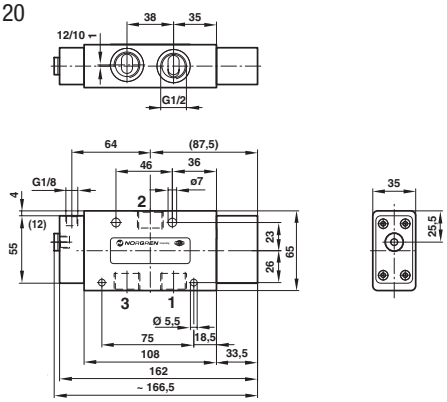

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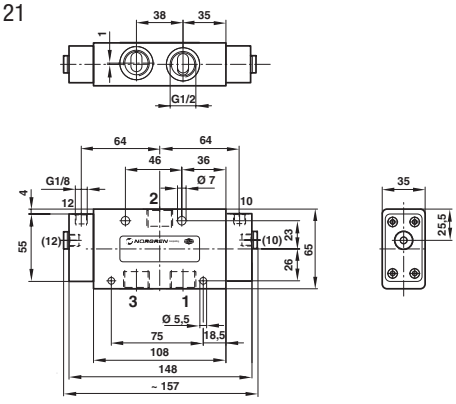


Drawing no.	Type	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
16	V60	35	27,4	–	3,2	6,5	17	G1/8; 8 deep	22	16,2	28	–	90	25	35,9	4,5	18	26	35	18,6	G1/8
16	V61	46	34,5	–	3,2	6,5	20	G1/4; 10 deep	25	21	28	–	110	32	45,5	4,5	24	26	40	20,2	G1/8
16	V62	54	43	–	4,5	8	28	G3/8; 11,5 deep	34	24,4	44	–	124	12	58	4,5	26	36	55	21	M 5
17	V60	35	27,4	–	3,2	6,5	17	G1/8; 8 deep	22	16,2	28	–	90	25	35,9	4,5	18	26	35	18,6	G1/8
17	V61	46	34,5	–	3,2	6,5	20	G1/4; 10 deep	25	21	28	–	110	32	45,5	4,5	24	26	40	20,2	G1/8
17	V62	54	43	–	4,5	8	28	G3/8; 11,5 deep	34	24,4	44	–	124	12	56	4,5	26	36	55	21	M 5
18	V60	35	27,4	–	3,2	6,5	17	G1/8; 8 deep	22	16,2	28	89	–	25	35,6	4,5	18	26	35	18,6	G1/8
18	V61	46	29	–	3,2	6,5	20	G1/4; 10 deep	25	21	28	104	–	32	40	4,5	24	26	40	20,2	G1/8
18	V62	54	27	–	4,5	8	28	G3/8; 11,5 deep	34	24,4	44	108	–	12	42	4,5	26	36	55	21	M 5
19	V60	50	27,3	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	104,5	–	25	35,5	4,5	33,6	26	35	18,7	G1/8
19	V61	66	29	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	124	–	32	40	4,5	44	26	40	20,2	G1/8
19	V62	78	27	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	132	–	12	66	4,5	26	36	55	21	M 5

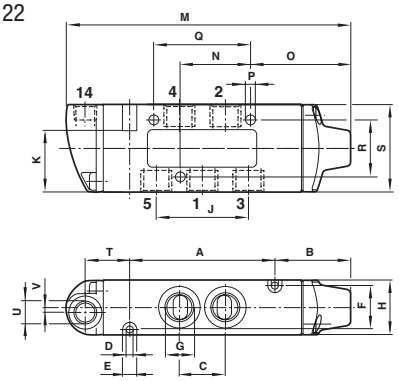
V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

22



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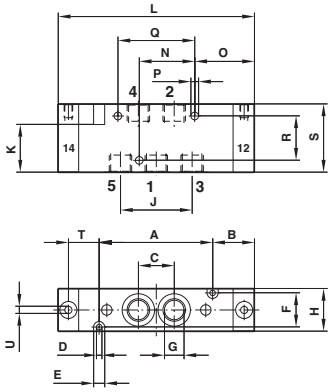

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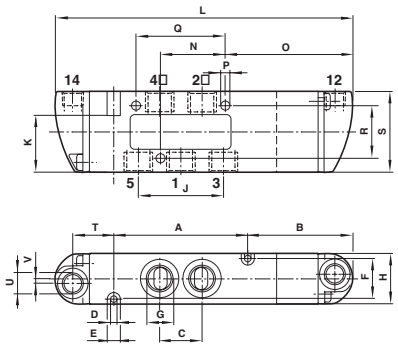

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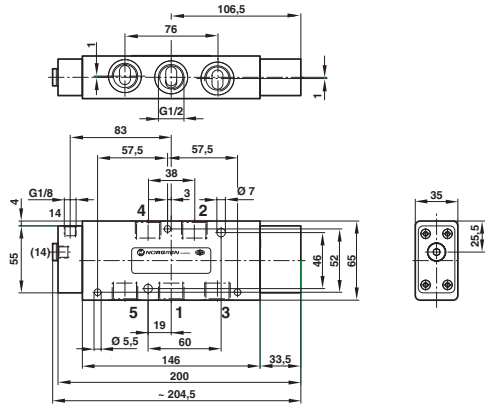

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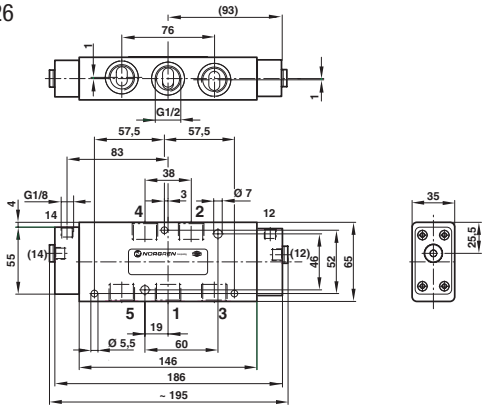

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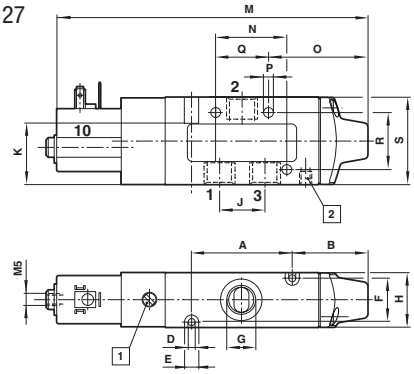

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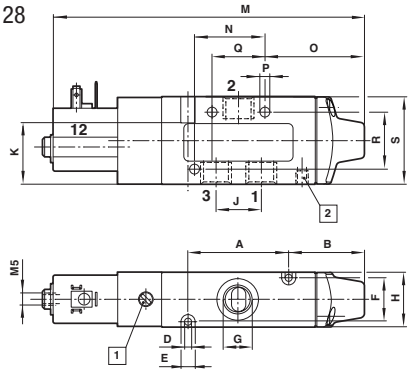

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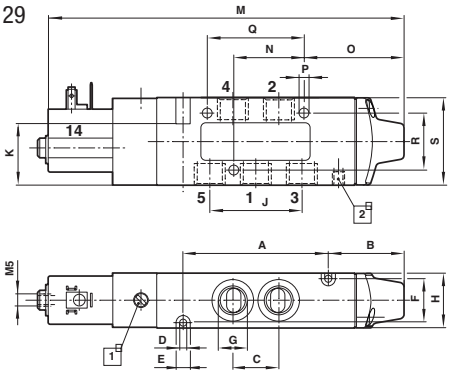

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22	V60	50	27,5	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	–	105	25	35,7	4,5	44	26	35	18,7	G1/8
22	V61	66	34,5	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	–	130	32	45,5	4,5	26	26	40	20,2	G1/8
22	V62	78	43	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	–	148	12	82	4,5	33,6	36	55	21	M 5
23	V60	50	27,3	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	104,5	–	25	35,5	4,5	44	26	35	18,7	G1/8
23	V61	66	29	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	124	–	32	40	4,5	26	26	40	20,2	G1/8
23	V62	78	27	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	132	–	12	66	4,5	33,6	36	55	21	M 5
24	V60	50	41,3	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	118,5	–	25	49,5	4,5	44	26	35	18,7	G1/8
24	V61	66	52	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	147	–	32	63	4,5	26	26	40	20,2	G1/8
24	V62	78	49,5	24,4	4,5	8	28	G3/8; 11,5 deep	34	48,8	44	154,5	–	12	88,5	4,5	33,6	36	55	21	M 5
28	V60	35	27,4	–	3,2	6,5	17	G1/8; 8 deep	22	16,2	28	–	125	25	35,9	4,5	18	26	35	–	–
28	V61	46	34,5	–	3,2	6,5	20	G1/4; 10 deep	25	21	28	–	147	32	45,5	4,5	24	26	40	–	–
29	V60	50	17	16,2	3,2	6,5	17	G1/8; 8 deep	22	32,4	28	–	140	25	35,7	4,5	33,6	26	35	–	–
29	V61	66	34,5	21	3,2	6,5	20	G1/4; 10 deep	25	42	28	–	167	32	45,5	4,5	44	26	40	–	–

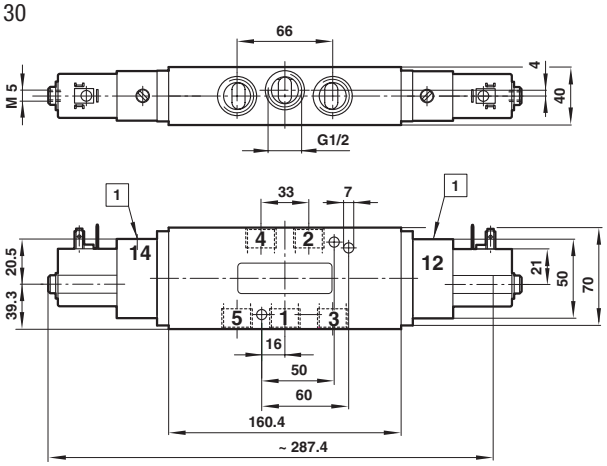
V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

3/2, 5/2, 5/3 and 2 x 3/2

30



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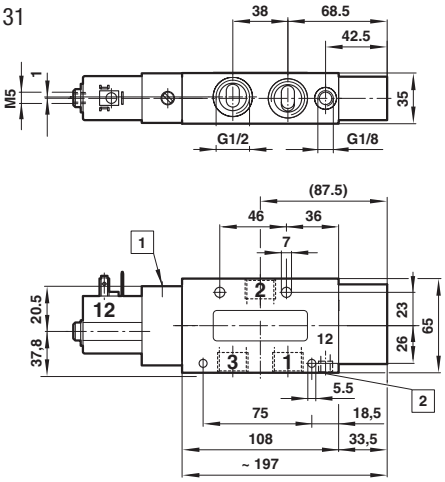

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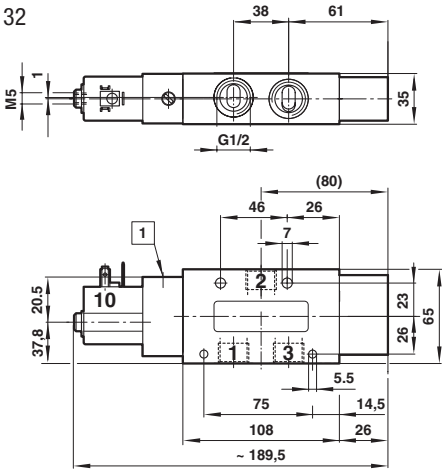

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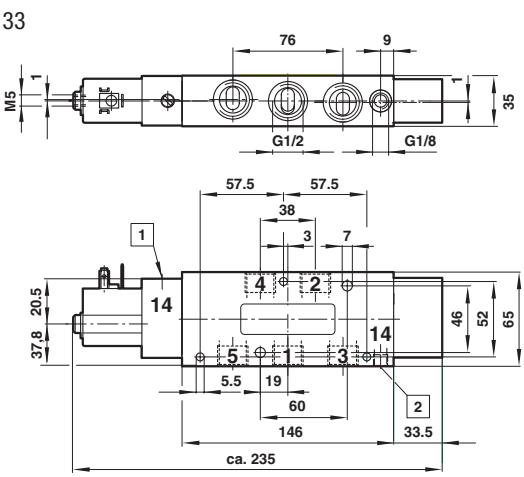

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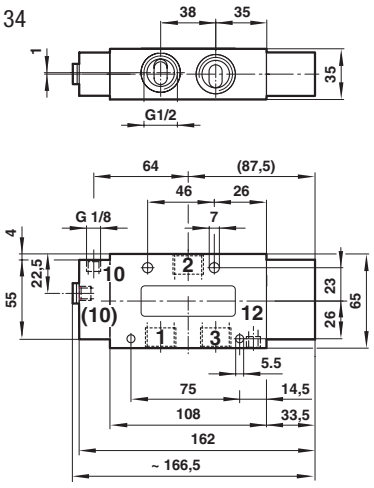

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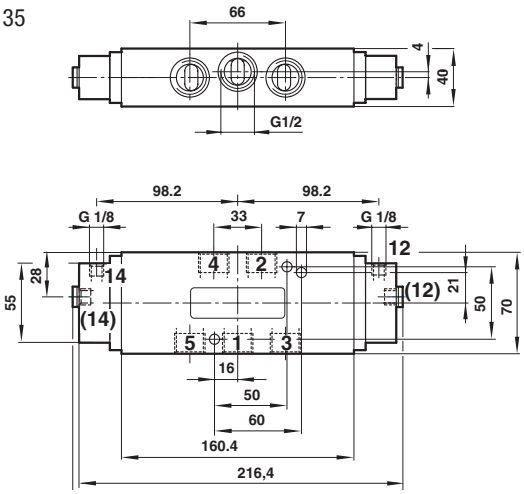


V60-63 Series

In-line valves

Solenoid and pilot actuated
Rest position and impulse versions

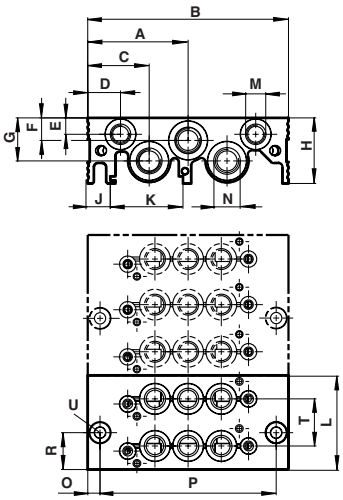
3/2, 5/2, 5/3 and 2 x 3/2

Manifold system for 2 x 3/2, 5/2, 5/3 valves, solenoid and pilot operated

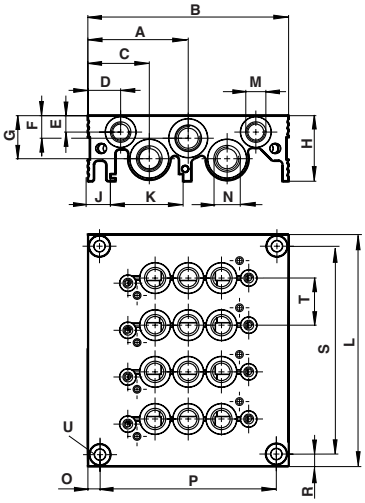
Manifold plate

Valve ports	V60 Model	kg	V61 Model	kg	V62 Model	kg
2	2221002 0000 00000	0,23	2221102 0000 00000	0,28	2221202 0000 00000	0,50
3	2221003 0000 00000	0,28	2221103 0000 00000	0,45	2221203 0000 00000	0,85
4	2221004 0000 00000	0,61	2221104 0000 00000	0,72	2221204 0000 00000	1,25
6	2221006 0000 00000	0,86	2221106 0000 00000	1,02	2221206 0000 00000	1,79
8	2221008 0000 00000	1,11	2221108 0000 00000	1,32	2221208 0000 00000	2,33
10	2221010 0000 00000	1,36	2221110 0000 00000	1,62	2221210 0000 00000	2,87
12	2221012 0000 00000	1,61	2221112 0000 00000	1,92	2221212 0000 00000	3,41
14	2221014 0000 00000	1,86	2221114 0000 00000	2,22	2221214 0000 00000	3,95
16	2221016 0000 00000	2,11	2221116 0000 00000	2,52	2221216 0000 00000	4,49
18	2221018 0000 00000	2,36	2221118 0000 00000	2,82	2221218 0000 00000	5,03
20	2221020 0000 00000	2,61	2221120 0000 00000	3,12	2221220 0000 00000	5,57

Manifold plate 2 stations + 3 stations



Manifold plate 4 stations - 20 stations



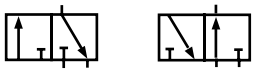
Type		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T	U
V60	2 stations	49	98	30	16	8	11	21	32	11	35,5	46	G 1/8	G 1/4	6	86	28	–	23	for M5
V60	3 stations	49	98	30	16	8	11	21	32	11	35,5	69	G 1/8	G 1/4	6	86	28	–	23	for M5
V60	4-20 stations	49	98	30	16	8	11	21	32	11	35,5	(x·23)+23	G 1/8	G 1/4	6	86	6,5	(x·23)+10	23	for M5
V61	2 stations	52	104	26	9	8	13	21	33	10	35,5	52	G 1/8	G 3/8	40	24	26	–	26	for M5
V61	3 stations	52	104	26	9	8	13	20	33	10	35,5	78	G 1/8	G 3/8	40	24	52	–	26	for M5
V61	4-20 stations	52	104	26	9	8	13	20	33	10	35,5	(x·26)+23	G 1/8	G 3/8	40	24	6,5	(x·26)+10	26	for M5
V62	2 stations	60	120	29	9	8	15	22	38	13	35,5	70	G 1/8	G 1/2	44	32	35	–	35	for M6
V62	3 stations	60	120	29	9	8	15	22	38	13	35,5	105	G 1/8	G 1/2	44	32	70	–	35	for M6
V62	4-20 stations	60	120	29	9	8	15	22	38	13	35,5	(x·35)+26	G 1/8	G 1/2	44	32	7	(x·35)+12	35	for M6

80200 Series

Indirect solenoid actuated poppet valves

15 to 50 mm orifice

3/2, G½ to G2



High flow rate

Optionally pilot-operated by external pilot source

High repeatability of switching time

Easily interchangeable solenoid system

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated

Mounting position:

Optional, preferably vertical; with strong vibration vertical to axis of vibration

Operating pressure:

10 bar maximum

Flow:

(at 6 bar Δp 1 bar)

Orifice Ø	l/min
G1/2	5000
G3/4	8000
G1	12000, 18000*
G1½	25000
G2	35000

*For 8026870 valves only

Ambient temperature:

-10°C to +60°C

Consult our Technical Service for use below +2°C.

Materials

Housing: aluminium

Seat seal: AU (polyurethane)

Inner parts: POM

Alternative models

Manual override

Direct pneumatic actuated models

Other models available, please contact our Technical Service.

Standard models

Port size 1	2	3	Orifice (mm)	Type	Operating pressure (bar)	Control pressure (bar)	Switching time (ms)	kg	Model
G1/2	G1/2	G3/4	15	NC	2 ... 10	–	10	1,3	8026570xxxx*****
G3/4	G3/4	G1	20	NC	2 ... 10	–	10	1,5	8026670xxxx*****
G1	G1	G1	25	NC	2 ... 10	–	10	1,5	8026770xxxx*****
G1	G1¼	G1¼	32	NC	2 ... 10	–	12	3,0	8026870xxxx*****
G1½	G1½	G1½	40	NC	2 ... 10	–	15	3,8	8026970xxxx*****
G2	G2	G2	50	NC	2 ... 10	–	20	6,8	8027070xxxx*****
G1/2	G1/2	G3/4	15	NO	2 ... 10	–	10	1,3	8028570xxxx*****
G3/4	G3/4	G1	20	NO	2 ... 10	–	10	1,5	8028670xxxx*****
G1	G1	G1	25	NO	2 ... 10	–	10	1,5	8028770xxxx*****
G1	G1¼	G1¼	32	NO	2 ... 10	–	12	3,0	8028870xxxx*****
G1½	G1½	G1½	40	NO	2 ... 10	–	15	3,8	8028970xxxx*****
G2	G2	G2	50	NO	2 ... 10	–	20	6,8	8029070xxxx*****
G1/2	G1/2	G3/4	15	NC	0 ... 10	2 ... 10	10	1,3	8026571xxxx*****
G3/4	G3/4	G1	20	NC	0 ... 10	2 ... 10	10	1,5	8026671xxxx*****
G1	G1	G1	25	NC	0 ... 10	2 ... 10	10	1,5	8026771xxxx*****
G1	G1¼	G1¼	32	NC	0 ... 10	2 ... 10	12	3,0	8026871xxxx*****
G1½	G1½	G1½	40	NC	0 ... 10	2 ... 10	15	3,8	8026971xxxx*****
G2	G2	G2	50	NC	0 ... 10	2 ... 10	20	6,8	8027071xxxx*****
G1/2	G1/2	G3/4	15	NO	0 ... 10	2 ... 10	10	1,3	8028571xxxx*****
G3/4	G3/4	G1	20	NO	0 ... 10	2 ... 10	10	1,5	8028671xxxx*****
G1	G1	G1	25	NO	0 ... 10	2 ... 10	10	1,5	8028771xxxx*****
G1	G1¼	G1¼	32	NO	0 ... 10	2 ... 10	12	3,0	8028871xxxx*****
G1½	G1½	G1½	40	NO	0 ... 10	2 ... 10	15	3,8	8028971xxxx*****
G2	G2	G2	50	NO	0 ... 10	2 ... 10	20	6,8	8029071xxxx*****

Vacuum models

Port size 1	2	3	Orifice (mm)	Type	Operating pressure (bar)	Control pressure (bar)	Switching time (ms)	kg	Model
G1/2	G1/2	G3/4	15	NC	0,01 ... 6	4 ... 10	20	1,3	8026572xxxx*****
G3/4	G3/4	G1	20	NC	0,01 ... 6	4 ... 10	20	1,5	8026672xxxx*****
G1	G1	G1	25	NC	0,01 ... 6	4 ... 10	20	1,5	8026772xxxx*****
G1	G1¼	G1¼	32	NC	0,01 ... 6	4 ... 10	25	3,0	8026872xxxx*****
G1½	G1½	G1½	40	NC	0,01 ... 6	4 ... 10	30	3,8	8026972xxxx*****
G2	G2	G2	50	NC	0,01 ... 6	4 ... 10	35	6,8	8027072xxxx*****

xxxx Insert solenoid code from table below ***** Insert voltage code from table below. Plugs according to DIN 43650 Form A

* Required pilot pressure ≥ operating pressure, min. 2 bar; with vacuum operating pressure + 1 bar, min. 4 bar.

Solenoid operating details

Power consumption 24 V d.c.	230 V a.c.	Protection class	Operating temperature °C Media	Ambient	Electrical connection	Solenoid code
16	27	IP 00 without connector	80	-25 ... 60		0800
11,4 W		EEx me II T4/T5	-40 ... +50/+40	-40 ... +50/+40	M20x1,5	4280
15,2 VA		EEx me II T4/T5	-40 ... +50/+40	-40 ... +50/+40	M20x1,5	4281

Voltage codes

Voltage	Code
24 V d.c.	02400
24 V a.c.	02450

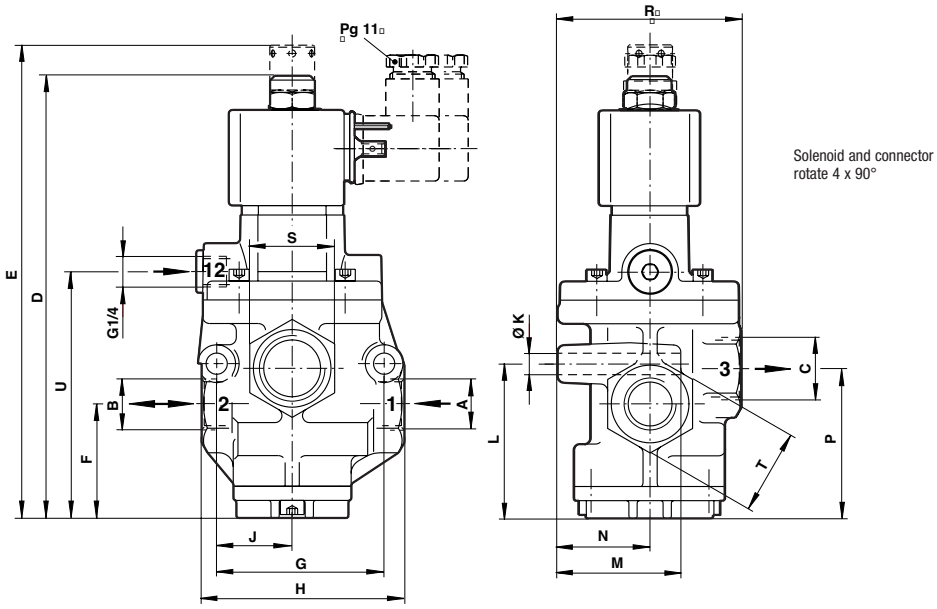
Other voltages on request.

80200 Series

Indirect solenoid actuated poppet valves

15 to 50 mm orifice

3/2, G½ to G2



Solenoid and connector rotate 4 x 90°

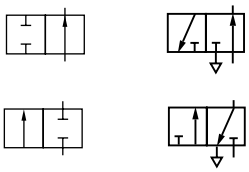
Model	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	W
80265xx	G1/2	G1/2	G3/4	187,5	–	48	71	86	32	9	65,5	52	39	63,5	78	36	36	104,5
80266xx	G3/4	G3/4	G1	197,5	–	51,5	82,5	112	39	9	74,5	54	40	73	92	46	46	114,5
80267xx	G1	G1	G1	197,5	–	51,5	82,5	112	39	9	74,5	54	40	73	92	46	46	114,5
80268xx	G1	G1¼	G1¼	239	–	70	104	142	48	11	108	64	42	98	108	60	60	148
80269xx	G1½	G1½	G1½	265	–	85	118	164	50,5	14	121,5	70	46	115,5	123	60	68	168
80270xx	G2	G2	G2	304	–	98	148	200	66	18	144	85	56	137	153	90	90	204
80285xx	G1/2	G1/2	G3/4	–	200,5	48	71	86	32	9	65,5	52	39	63,5	78	36	36	104,5
80286xx	G3/4	G3/4	G1	–	210,5	51,5	82,5	112	39	9	74,5	54	40	73	92	46	46	114,5
80287xx	G1	G1	G1	–	210,5	51,5	82,5	112	39	9	74,5	54	40	73	92	46	46	114,5
80288xx	G1	G1¼	G1¼	–	252	70	104	142	48	11	108	64	42	98	108	60	60	148
80289xx	G1½	G1½	G1½	–	279	85	118	164	50,5	14	121,5	70	46	115,5	123	60	68	168
80290xx	G2	G2	G2	–	317	98	148	200	66	18	144	85	56	137	153	90	90	204

Prospector®

Solenoid & pilot actuated poppet valves

In-line

G⅜ to G1, 2/2 & 3/2



Exceptionally high flow
High reliability
Durable
Reversible seals

Technical data

Medium

Filtered and lubricated compressed air.

Mounting

Through-holes in valve body.

Operating pressure

2 to 10 bar solenoid pilot
0 to 20 bar air pilot

Ambient temperature

Solenoid pilot: -20°C to +50°C
Air pilot: -20°C to +80°C
Consult our Technical Service for use below +2°C.

Materials

Body: aluminium alloy body, piston, poppets and sub-base
Operators: zinc or aluminium solenoid pilot operators, stainless steel or steel, reinforced polyester, brass or polyurethane, acetal, copper wire
Elastomers: nitrile rubbers seals (fluorocarbon seals optional, contact our Technical Service)

Alternative models

Vacuum service.
Fluorocarbon seals.
4/2 function.
Up to 2" ports.

Solenoid

Body size (inch)	Port size	Function	Flow (l/min)	kg	Model	Service kit
1/2	G3/8	2/2 NC	3,351	0,98	AA013C-00-CE***	53474-03
1/2	G1/2	NC	5,224	0,98	AA014C-00-CE***	53474-03
1/2	G3/4	NC	6,407	0,98	AA015C-00-CE***	53474-03
1	G1	NC	13,307	1,97	AA026C-00-CE***	53475-01
1/2	G3/8	2/2 NO	3,746	0,98	BA013C-00-CE***	53474-03
1/2	G1/2	NO	5,323	0,98	BA014C-00-CE***	53474-03
1/2	G3/4	NO	6,210	0,98	BA015C-00-CE***	53474-03
1	G1	NO	15,180	1,97	BA026C-00-CE***	53475-01
1/2	G3/8	3/2 NC	4,830	1,11	DA023C-00-CE***	53474-03
1/2	G1/2	NC	5,717	1,11	DA024C-00-CE***	53474-03
1/2	G3/4	NC	6,111	1,11	DA025C-00-CE***	53474-03
1	G1	NC	14,391	2,02	DA036C-00-CE***	53475-01
1/2	G3/8	3/2 NO	4,534	1,11	EA023C-00-CE***	53474-03
1/2	G1/2	NO	5,421	1,11	EA024C-00-CE***	53474-03
1/2	G3/4	NO	5,717	1,11	EA025C-00-CE***	53474-03
1	G1	NO	13,602	2,02	EA036C-00-CE***	53475-01

*** Insert voltage codes from table below.
NC = Normally closed, NO = Normally open

Voltage codes & spare coils

Voltage	Code	Power inrush/hold	Coil
24 V d.c.	83J	7,5 W	QM/48/83J/21
110 V a.c.	88J	12/8 VA	QM/48/88J/21
230 V a.c.	89J	12/8 VA	QM/48/89J/21

Electrical details for solenoid operators

Voltage tolerance:	+10/-15%
Rating:	100% E.D.
Inlet orifice:	1,6 mm
Electrical connection:	22 mm Industrial Standard
Manual override:	Locking
Protection class:	IP 65 (DIN 40050)

For details of connector plugs and light emitting gaskets see page 383

Pilot

Body size (inch)	Port size	Function	Flow (l/min)	kg	Model	Service kit
1/2	G3/8	2/2 NC	3,351	0,83	AA013C-AA	53474-03
1/2	G1/2	NC	5,224	0,83	AA014C-AA	53474-03
1/2	G3/4	NC	6,407	0,83	AA015C-AA	53474-03
1	G1	NC	13,307	1,82	AA026C-AA	53475-01
1/2	G3/8	2/2 NO	3,746	0,83	BA013C-AA	53474-03
1/2	G1/2	NO	5,323	0,83	BA014C-AA	53474-03
1/2	G3/4	NO	6,210	0,83	BA015C-AA	53474-03
1	G1	NO	15,180	1,82	BA026C-AA	53475-01
1/2	G3/8	3/2 NC	4,830	0,96	DA023C-AA	53474-03
1/2	G1/2	NC	5,717	0,96	DA024C-AA	53474-03
1/2	G3/4	NC	6,111	0,96	DA025C-AA	53474-03
1	G1	NC	14,391	1,86	DA036C-AA	53475-01
1/2	G3/8	3/2 NO	4,534	0,96	EA023C-AA	53474-03
1/2	G1/2	NO	5,421	0,96	EA024C-AA	53474-03
1/2	G3/4	NO	5,717	0,96	EA025C-AA	53474-03
1	G1	NO	13,602	1,86	EA036C-AA	53475-01

Prospector®

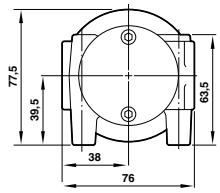
Solenoid & pilot actuated poppet valves

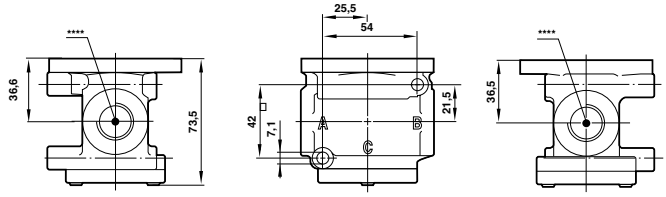
In-line

G⅜ to G1, 2/2 & 3/2

2/2 In-line

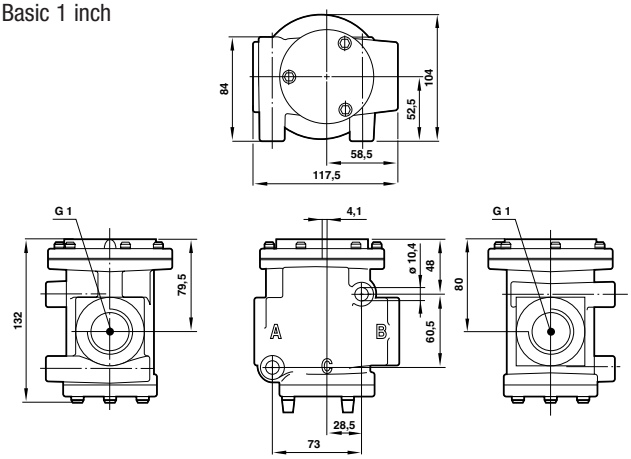
Basic 1/2 inch





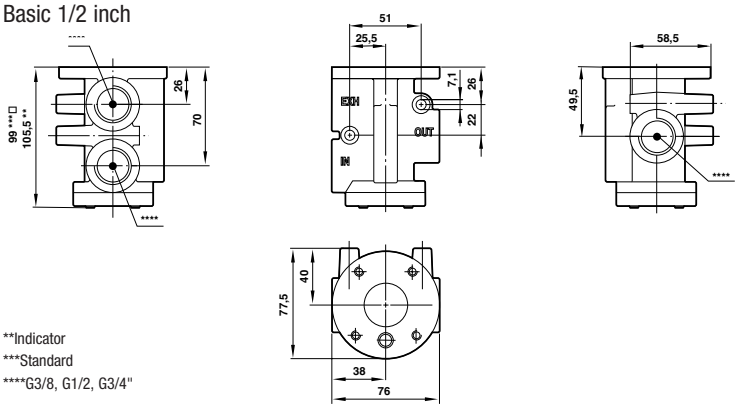
****G3/8, G1/2, G3/4"

Basic 1 inch



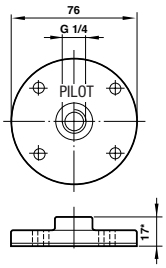
3/2 In-line

Basic 1/2 inch



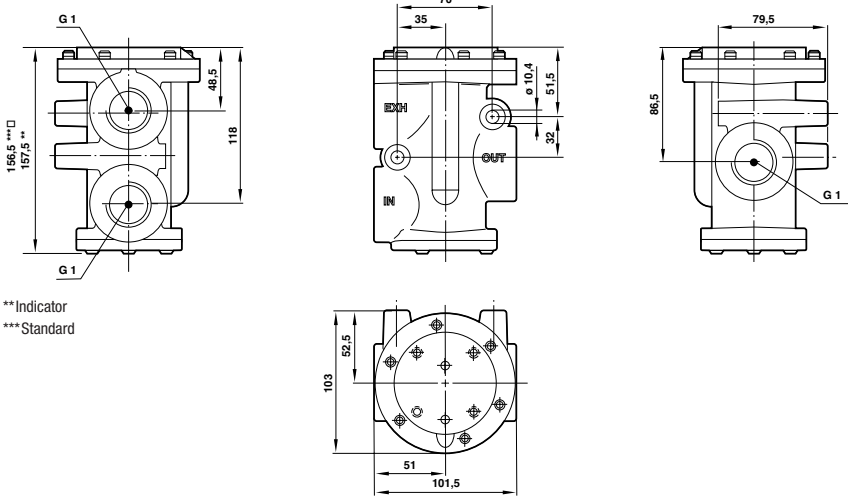
**Indicator
***Standard
****G3/8, G1/2, G3/4"

Air operators dimensions



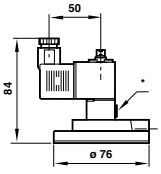
* 0,03" gasket

Basic 1 inch



**Indicator
***Standard

Solenoid operator dimensions



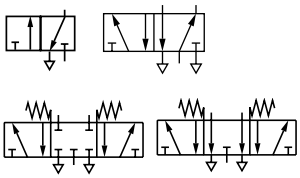
*Manual override

Super X

Manually & mechanically actuated spool valve

In-line

3/2, 5/2 & 5/3, G⅛, G¼



Wide range of operators

Suitable for multi-directional flow and dual supply applications

High flow capacity

Lightweight corrosion resistant materials

*Applies to emergency stop valves only

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated

Operating pressure:

Maximum 10 bar.

Flow:

Size	l/min
G1/8	335
G1/4	965

Ambient temperature:

0°C to +70°C.

Consult our Technical Service for use below +2°C.

Materials

Body: die-cast aluminium alloy

End cover: aluminium or glass-filled nylon

Seals: nitrile rubber

Alternative models

Solenoid and pilot operated version – see V60-63 Series, page 282

Mechanical

Port size	Function	Actuation	kg	Model	Service kit	Drawing no.
G1/8	3/2	Plunger /Spring	0,14	03 0400 02	03 8408 02	A, 1
G1/8	3/2	Plunger /Pilot	0,20	03 0417 02	03 8408 02	C, 1
G1/8	3/2	Roller /Spring	0,14	03 0402 02	03 8408 02	A, 2
G1/8	3/2	Roller lever /Spring	0,21	03 0411 02	03 8408 02	A, 4
G1/8	3/2	Roller lever (heavy duty) /Spring	0,21	03 0293 02	03 8408 02	A, 10
G1/8	3/2	Sensitve roller lever /Spring	0,25	03 0423 02	–	A, 5
G1/8	3/2	Roller /Pilot	0,18	03 0409 02	03 8408 02	C, 2
G1/8	3/2	Roller lever /Pilot	0,25	03 0427 02	03 8408 02	C, 4
G1/8	3/2	One-way trip /Spring	0,21	03 0410 02	03 8408 02	A, 7
G1/8	3/2	One-way trip (heavy duty) /Spring	0,21	03 0294 02	03 8408 02	A, 11
G1/8	3/2	Antenna /Spring	0,21	03 0432 02	–	A, 8
G1/8	5/2	Plunger /Spring	0,25	X3 0440 02	03 8408 02	E, 1
G1/8	5/2	Plunger /Pilot	0,31	X3 0457 02	03 8408 02	G, 1
G1/8	5/2	Roller /Spring	0,25	X3 0442 02	03 8408 02	E, 2
G1/8	5/2	Roller lever /Spring	0,32	X3 0451 02	03 8408 02	E, 4
G1/8	5/2	Roller lever (heavy duty) /Spring	0,29	X3 0393 02	03 8408 02	E, 10
G1/8	5/2	Sensitive roller lever /Spring	0,36	X3 0463 02	–	E, 5
G1/8	5/2	Roller /Pilot	0,29	X3 0449 02	03 8408 02	G, 2
G1/8	5/2	Roller lever /Pilot	0,36	X3 0467 02	03 8408 02	G, 4
G1/8	5/2	One-way trip /Spring	0,32	X3 0450 02	03 8408 02	E, 7
G1/8	5/2	One-way trip (heavy duty) /Spring	0,29	X3 0394 02	03 8408 02	E, 11
G1/8	5/2	Antenna /Spring	0,30	X3 0472 02	–	E, 8
G1/4	3/2	Plunger /Spring	0,34	03 0600 02	03 8602 02	B, 3
G1/4	3/2	Roller /Spring	0,34	03 0602 02	03 8602 02	B, 6
G1/4	3/2	Roller lever /Spring	0,41	03 0611 02	03 8602 02	B, 9
G1/4	3/2	Roller /Pilot	0,39	03 0609 02	03 8612 02	D, 6
G1/4	3/2	Roller lever /Pilot	0,45	03 0624 02	03 8612 02	D, 9
G1/4	5/2	Plunger /Spring	0,46	X3 0640 02	03 8602 02	F, 3
G1/4	5/2	Roller /Spring	0,46	X3 0642 02	03 8602 02	F, 6
G1/4	5/2	Roller lever /Spring	0,53	X3 0651 02	03 8602 02	F, 9
G1/4	5/2	Roller /Pilot	0,50	X3 0649 02	03 8612 02	H, 6
G1/4	5/2	Roller lever /Pilot	0,57	X3 0664 02	03 8612 02	H, 9

Super X

Manually & mechanically actuated spool valve

In-line

3/2, 5/2 & 5/3, G⅛, G¼

Manual

Port size	Function	Actuation	Mid position	Colour	kg	Model	Service kit	Drawing no.
G1/8	3/2	Button/spring	–	Black	0,15	03 0404 02	03 8408 02	A, 12
G1/8	3/2	Button/spring	–	Green	0,15	03 0405 02	03 8408 02	A, 12
G1/8	3/2	Button/spring	–	Red	0,15	03 0406 02	03 8408 02	A, 12
G1/8	3/2	Button (palm)/spring	–	Red	0,29	03 0366 02	03 8408 02	A, 15
G1/8	3/2	Button (palm)/spring	–	Green	0,29	03 0367 02	03 8408 02	A, 15
G1/8	3/2	Button (palm)/spring	–	Black	0,29	03 0368 02	03 8408 02	A, 15
G1/8	3/2	Button (shrouded)/spring	–	Black	0,21	03 0414 02	03 8408 02	A, 13
G1/8	3/2	Button (shrouded)/spring	–	Green	0,21	03 0415 02	03 8408 02	A, 13
G1/8	3/2	Button (shrouded)/spring	–	Red	0,21	03 0416 02	03 8408 02	A, 13
G1/8	3/2	Button/pilot	–	Black	0,22	03 0408 02	03 8408 02	D, 12
G1/8	3/2	Button/pilot	–	Green	0,22	03 0420 02	03 8408 02	D, 12
G1/8	3/2	Button/pilot	–	Red	0,22	03 0421 02	03 8408 02	D, 12
G1/8	3/2	Emergency stop/twist ring	–	Red	0,31	03 0428 02	03 8473 02	A, 16
G1/8	3/2	Button (palm)/key	–	Red	0,37	03 0335 02 801	03 8408 02	A, 17
G1/8	3/2	Lever/spring	–	Black	0,28	03 0438 02	03 8408 02	A, 23
G1/8	3/2	Lever knob/spring	–	Black	0,24	03 0426 02	03 8408 02	A, 19
G1/8	3/2	Lever/lever	–	Black	0,29	03 0437 02	03 8408 02	A, 23
G1/8	3/2	Toggle/toggle	–	Black	0,16	03 0403 02	03 8408 02	A, 22
G1/8	3/2	Knob/knob	–	Black	0,17	03 0425 02	03 8408 02	A, 21
G1/8	3/2	Knob/knob or pilot	–	Black	0,21	03 0424 02	03 8408 02	D, 21
G1/8	3/2	Rotary knob/rotary knob	–	Black	0,29	03 0419 02	03 8408 02	A, 27
G1/8	3/2	Key/key	–	Chrome	0,36	03 0418 02 801	03 8408 02	A, 28
G1/8	3/2	Pedal/spring	–	Black	1,03	03 0481 02	03 8408 02	29
G1/8	3/2	Pedal/pedal	–	Black	1,07	03 0483 02	03 8408 02	29
G1/8	5/2	Button/spring	–	Black	0,26	X3 0444 02	03 8408 02	E, 12
G1/8	5/2	Button/spring	–	Green	0,26	X3 0445 02	03 8408 02	E, 12
G1/8	5/2	Button/spring	–	Red	0,26	X3 0446 02	03 8408 02	E, 12
G1/8	5/2	Button (palm)/spring	–	Red	0,40	X3 0386 02	03 8408 02	E, 15
G1/8	5/2	Button (palm)/spring	–	Green	0,40	X3 0387 02	03 8408 02	E, 15
G1/8	5/2	Button (palm)/spring	–	Black	0,40	X3 0388 02	03 8408 02	E, 15
G1/8	5/2	Button (shrouded)/spring	–	Black	0,32	X3 0454 02	03 8408 02	E, 13
G1/8	5/2	Button (shrouded)/spring	–	Green	0,32	X3 0455 02	03 8408 02	E, 13
G1/8	5/2	Button (shrouded)/spring	–	Red	0,32	X3 0456 02	03 8408 02	E, 13
G1/8	5/2	Button/pilot	–	Black	0,34	X3 0448 02	03 8408 02	G, 12
G1/8	5/2	Button/pilot	–	Green	0,34	X3 0460 02	03 8408 02	G, 12
G1/8	5/2	Button/pilot	–	Red	0,34	X3 0461 02	03 8408 02	G, 12
G1/8	5/2	Knob, push/knob, pull	–	Black	0,28	X3 0465 02	03 8408 02	E, 26
G1/8	5/2	Emergency stop/twist ring	–	Red	0,54	X3 0468 02	03 8473 02	E, 16
G1/8	5/2	Button (palm)/key	–	Red	0,48	X3 0375 02 801	03 8408 02	E, 17
G1/8	5/2	Lever/spring	–	Black	0,40	X3 0478 02	03 8408 02	E, 22
G1/8	5/2	Lever knob/spring	–	Black	0,35	X3 0466 02	03 8408 02	E, 19
G1/8	5/2	Toggle/toggle	–	Black	0,27	X3 0443 02	03 8408 02	E, 24
G1/8	5/2	Lever/lever	–	Black	0,40	X3 0477 02	03 8408 02	E, 23
G1/8	5/2	Knob/knob or pilot	–	Black	0,32	X3 0464 02	03 8408 02	G, 21
G1/8	5/2	Rotary knob/rotary knob	–	Black	0,40	X3 0459 02	03 8408 02	E, 27
G1/8	5/2	Key/key	–	Chrome	0,47	X3 0458 02 801	03 8408 02	E, 28
G1/8	5/2	Pedal/spring	–	Black	1,12	X3 0482 02	03 8408 02	29
G1/8	5/2	Pedal/pedal	–	Black	1,18	X3 0484 02	03 8408 02	29
G1/8	5/3	Lever/spring/lever	APB	Black	0,85	X3 3438 02	03 8408 02	J, 32
G1/8	5/3	Lever/spring/lever	COE	Black	0,85	X3 3478 02	03 8408 02	J, 32
G1/8	5/3	Lever/lever/lever	APB	Black	0,44	X3 3437 02	03 8408 02	J, 32
G1/8	5/3	Lever/lever/lever	COE	Black	0,44	X3 3477 02	03 8408 02	J, 32
G1/4	3/2	Button/spring	–	Black	0,35	03 0604 02	03 8602 02	B, 14
G1/4	3/2	Button/pilot	–	Black	0,42	03 0608 02	03 8612 02	D, 14
G1/4	3/2	Lever/spring	–	Black	0,48	03 0638 02	03 8602 02	B, 31
G1/4	3/2	Lever/lever	–	Black	0,49	03 0637 02	03 8602 02	B, 31
G1/4	3/2	Knob/knob	–	Black	0,37	03 0625 02	03 8602 02	B, 20
G1/4	3/2	Knob/knob or pilot	–	Black	0,41	03 0627 02	03 8612 02	D, 20
G1/4	3/2	Pedal/spring	–	Black	1,23	03 0681 02	03 8602 02	29
G1/4	3/2	Pedal/pedal	–	Black	1,27	03 0683 02	03 8602 02	29
G1/4	5/2	Button/spring	–	Black	0,47	X3 0644 02	03 8602 02	F, 14
G1/4	5/2	Button/pilot	–	Black	0,54	X3 0648 02	03 8612 02	H, 14
G1/4	5/2	Lever/spring	–	Black	0,60	X3 0678 02	03 8602 02	F, 31
G1/4	5/2	Lever/lever	–	Black	0,61	X3 0677 02	03 8602 02	F, 31
G1/4	5/2	Knob/knob	–	Black	0,49	X3 0665 02	03 8602 02	29
G1/4	5/2	Pedal/spring	–	Black	1,33	X3 0682 02	03 8602 02	29
G1/4	5/2	Pedal/pedal	–	Black	1,39	X3 0684 02	03 8602 02	J, 32
G1/4	5/3	Lever/spring/lever	APB	Black	1,06	X3 3638 02	03 8602 02	J, 32
G1/4	5/3	Lever/spring/lever	COE	Black	1,06	X3 3678 02	03 8602 02	J, 32
G1/4	5/3	Lever/lever/lever	APB	Black	0,65	X3 3637 02	03 8602 02	J, 32
G1/4	5/3	Lever/lever/lever	COE	Black	0,65	X3 3677 02	03 8602 02	J, 32

APB = All Ports Blocked COE = Centre Open Exhaust

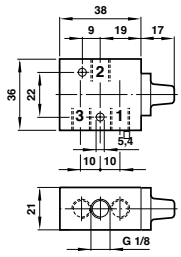
Super X

Manually & mechanically actuated spool valves

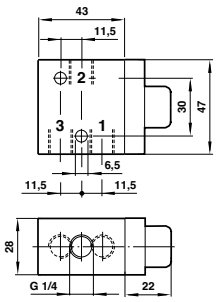
In-line

3/2, 5/2 & 5/3, G⅛, G¼

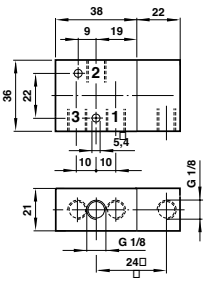
G1/8, 3/2 Spring return, basic body **A**



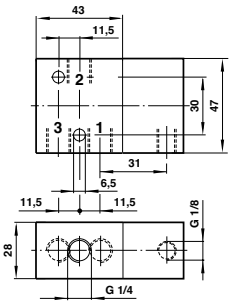
G1/4, 3/2 Spring return, basic body **B**



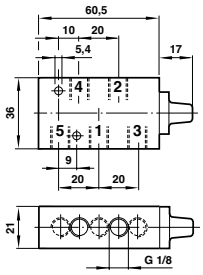
G1/8, 3/2 Pilot return, basic body **C**



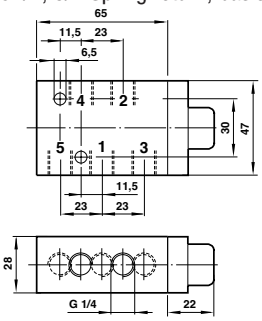
G1/4, 3/2 Pilot return, basic body **D**



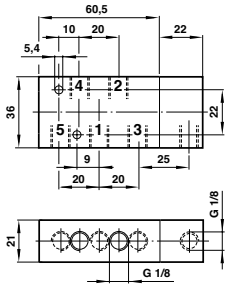
G1/8, 5/2 Spring return, basic body **E**



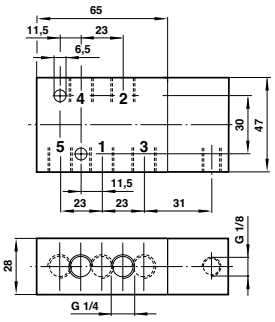
G1/4, 5/2 Spring return, basic body **F**



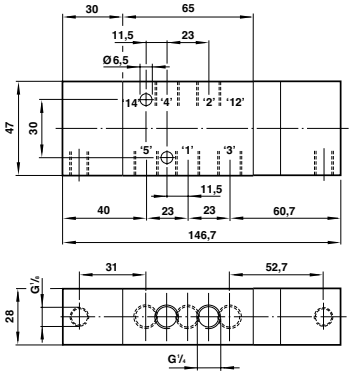
G1/8, 5/2 Pilot return, basic body **G**



G1/4, 5/2 Pilot return, basic body **H**

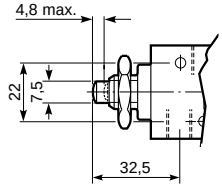


G1/4, 5/3 Spring return, basic body **J**

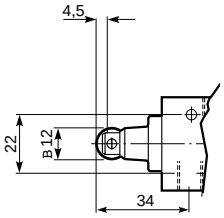


Mechanical valve actuators

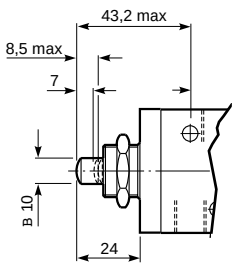
Plunger – G1/8 valves **1**



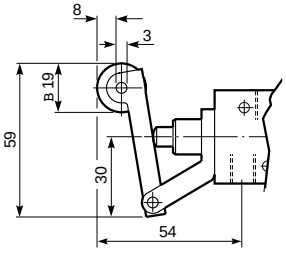
Roller – G1/8 valves **2**



Plunger – G1/4 valves **3**



Roller lever – G1/8 valves **4**



Super X

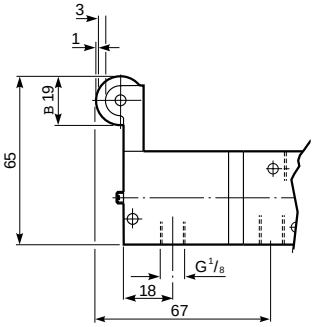
Manually & mechanically actuated spool valves

In-line

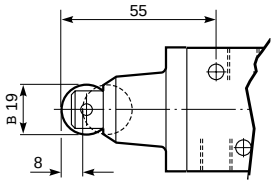
3/2, 5/2 & 5/3, G⅛, G¼

Mechanical valve actuators

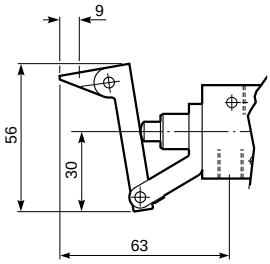
Sensitive roller lever – G1/8 valves **5**



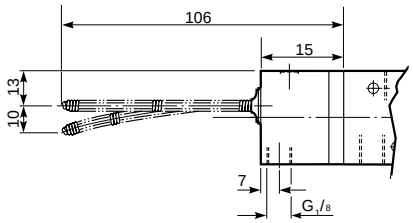
Roller – G1/4 valves **6**



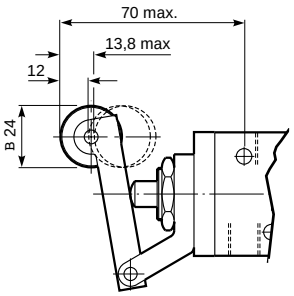
One way trip – G1/8 valves **7**



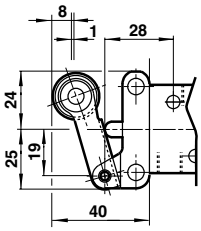
Antenna – G1/8 valves **8**



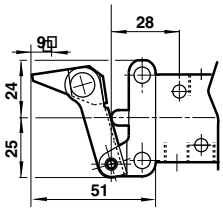
Roller lever – G1/4 valves **9**



Heavy duty roller lever – G1/8 valves **10**

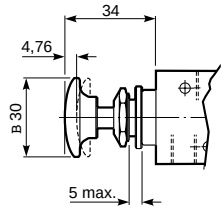


Heavy duty one-way trip – G1/8 valves **11**

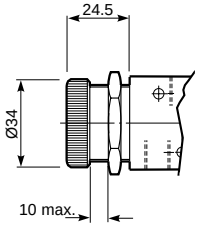


Manual valve actuators

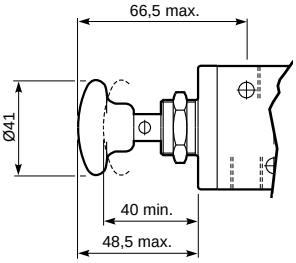
Button – G1/8 valves **12**



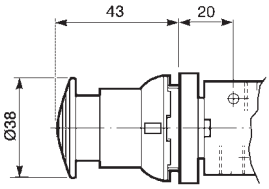
Button (shrouded) – G1/8 valves **13**



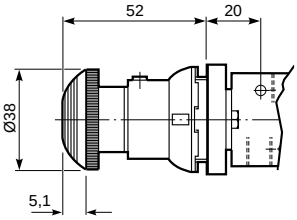
Button – G1/4 valves **14**



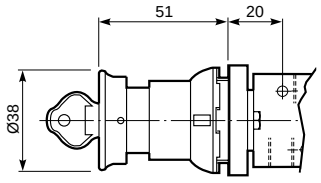
Button (palm) – G1/8 valves **15**



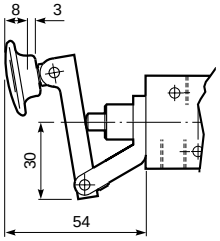
Emergency stop – G1/8 valves **16**



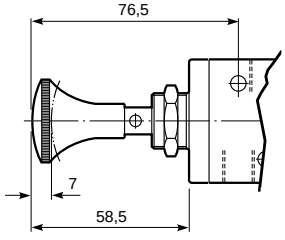
Button/key – G1/8 valves **17**



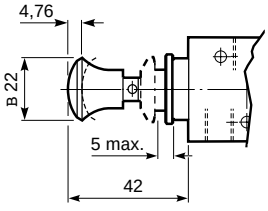
Lever/knob – G1/8 valves **19**



Knob – G1/4 valves **20**



Knob – G1/8 valves **21**



Super X

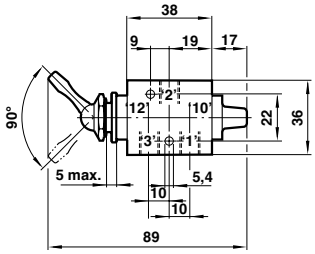
Manually & mechanically actuated spool valves

In-line

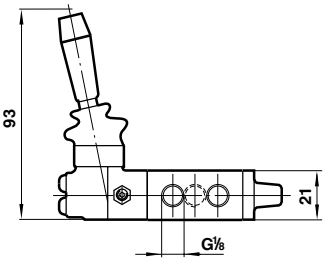
3/2, 5/2 & 5/3, G⅛, G¼

Manual valve actuators

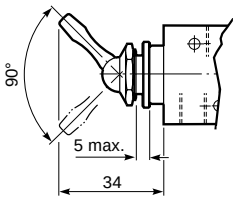
Lever operated spring return valve – G1/8 valves



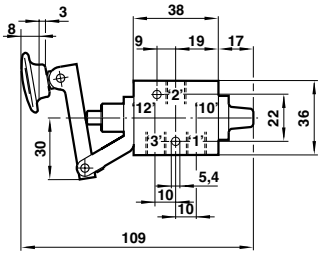
22 Lever operated spring return valve – G1/8 valves



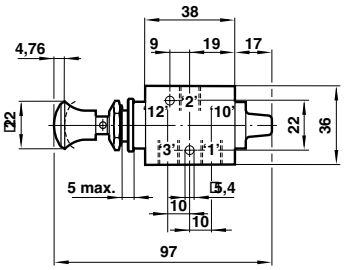
23 Switch – G1/8 valves



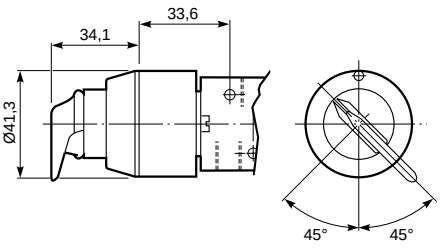
24 Lever operated spring return valve – G1/8 valves



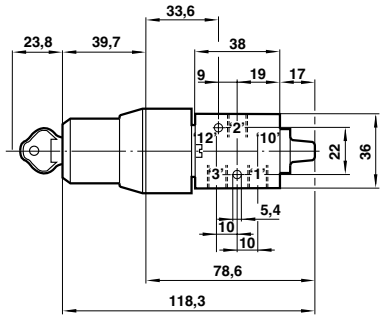
25 Knob operated knob return valve – G1/8 valves



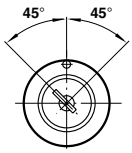
26 Rotary knob – G1/8 valves



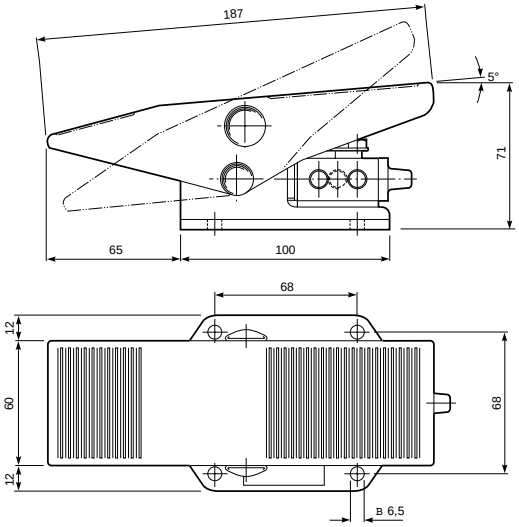
27 Key – G1/8 valves



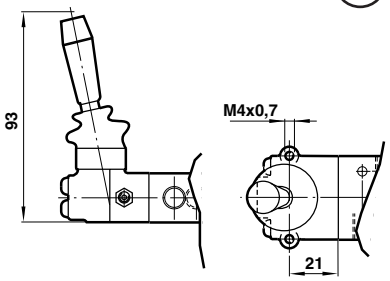
28



Pedal/treadle – G1/8-G1/4 valves

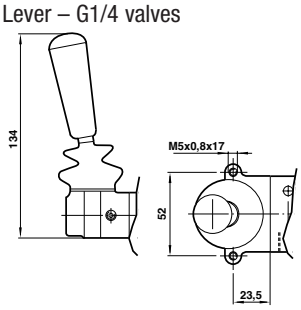


29 Lever – G1/8 valves



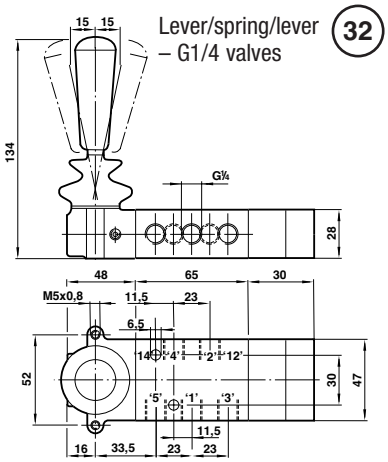
30

Lever – G1/4 valves



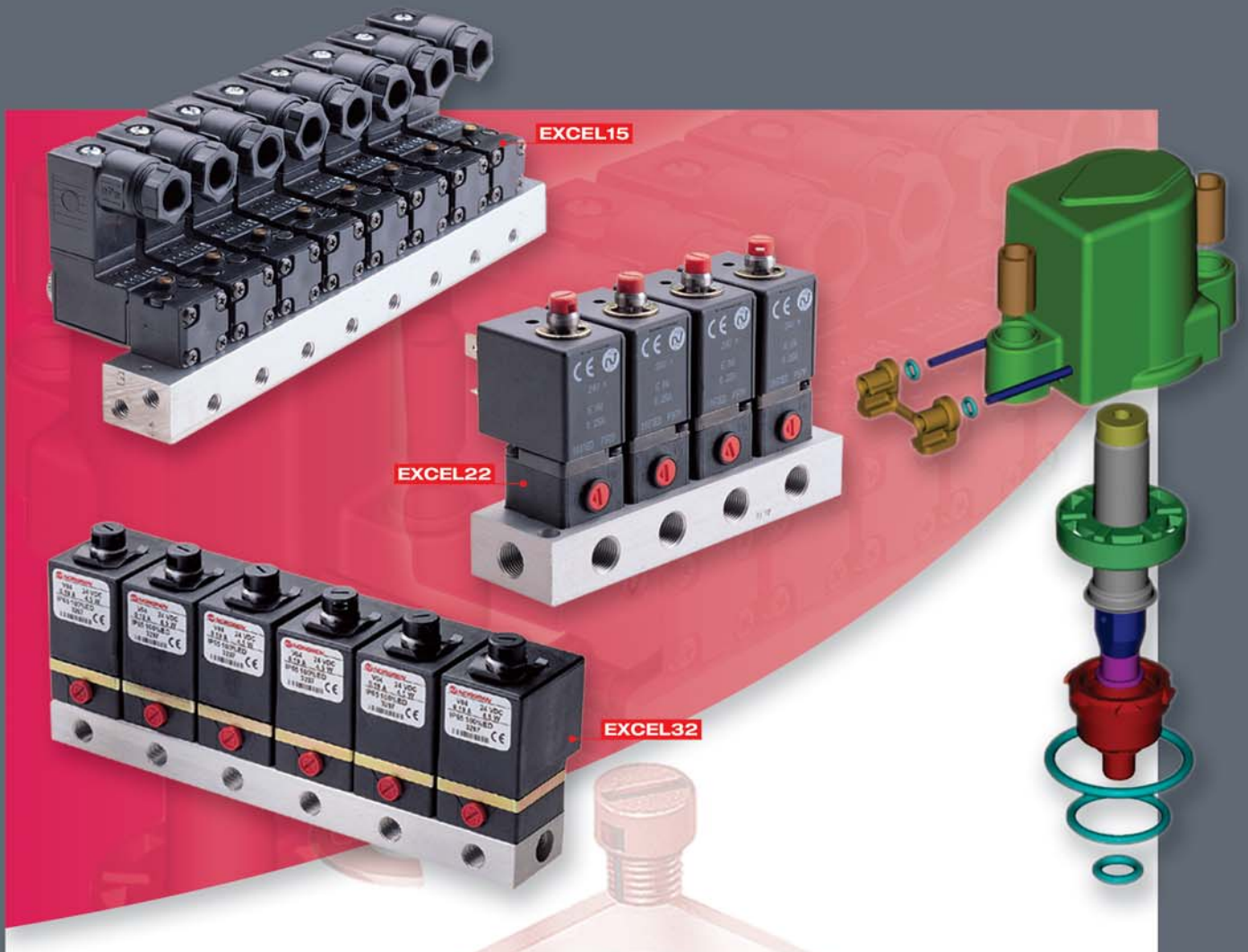
31

32 Lever/spring/lever – G1/4 valves



Operating force: 12 N (X3 3638 02 & X3 3678 02), 15 N (X3 3637 02 & X3 3677 02)

Panel hole: Ø 31 mm Panel thickness: 8 mm maximum



Solenoid valve technology

Norgren is a leading international supplier of solenoid valves for general pneumatic and industrial duties. Our range of products has been developed to meet market needs in direct consultation with the end user.

To further enhance our position we have an unrelenting commitment to quality, including a product test regime that is amongst the most stringent in the industry.

EXCEL15 - 15 mm Solenoid valve

The EXCEL15 from Norgren is the smallest valve in the EXCEL range. Its compact and convenient size make it an ideal choice for applications where space is at a premium.

EXCEL22 - 22 mm Solenoid valve

This is the best selling range of solenoid valves from Norgren. The EXCEL22 is a compact versatile valve available with standard or low power removable coils and supplied with a variety of base and connection options.

EXCEL32 - 32 mm Solenoid valve

The EXCEL32 range of valves from Norgren offers the best electropneumatic performance levels available in the industry today. An extensive range of power and orifice size options are available for pressure ratings from 0 to 16 bar. In short, a great choice of valves with exceptional flow characteristics.

Cartridge valve

Developed specifically to meet the demanding requirements of the automotive industry the Cartridge valve offers protection from the external environmental and high performance. The unique interface facilitates a greater degree of system integration than is possible with a standard solenoid valve.

Customised solutions

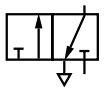
Standard valves offer the benefits of speed and convenience but are not always best suited to an application. It is here that Norgren's expertise at customised solutions offers the best of both worlds. Integrated products, tailored to meet the customer's needs but based upon proven components.

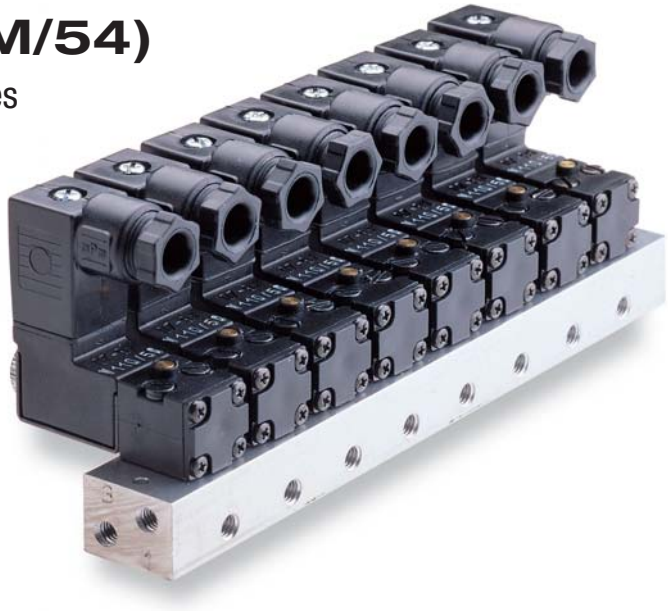
Excel 15 (M/54, DM/54)

Solenoid actuated 15 mm poppet valves

Sub-base

3/2, M5





15 mm micro solenoids normally closed

Sub-base and manifold mounted – extremely compact and convenient

Manual override as standard

Piped exhaust for clean room applications

Technical data

Medium:
Compressed air, filtered, lubricated and non lubricated.

Operating pressure:
0 to 10 bar

Flow:
16 l/min

Ambient temperature:
-20°C to +50°C.
Consult our Technical Service for use below +2°C.

Materials

Coil: epoxy encapsulated nylon
Base and end caps: acetal
Armature: stainless iron
Manifold base: aluminium
Seals: nitrile
Tube & spring: stainless steel

Alternative models

22 mm models.
32 mm models.
Contact our Technical Service for details.

Size	Function	Actuation	kg	Mounting	Model
M5	3/2 NC	Sol/spring	0,069	Single	M/54/NTZ*
M5	3/2 NC	Sol/spring	0,127 ... 0,475	Manifold	DM/54/NTZ*/T‡

Service kits are not available for these valves.
* Insert voltage code from table below.
‡ Add number of valves in manifold: 2 stations 2; 4 stations 4; 6 stations 6; 8 stations 8.

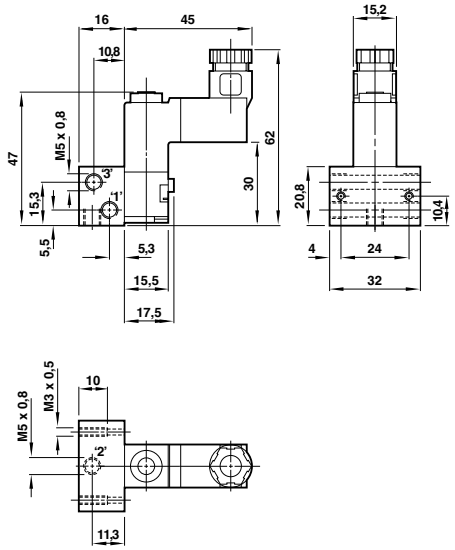
Voltage codes and spare coils

Voltage	Code	Power	Coil
12 V d.c.	12V=	1,5 W	QM/54/A12V=/21
24 V d.c.	24V=	1,5 W	QM/54/A24V=/21

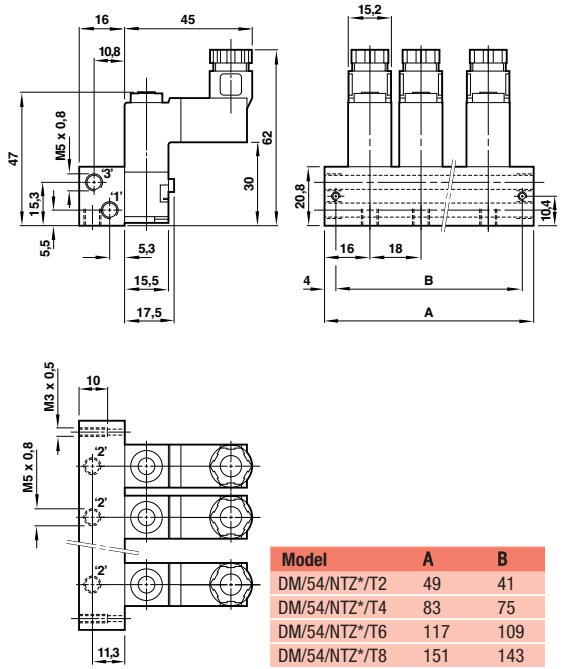
Electrical details for solenoid operators

Voltage tolerance:	±10%
Power:	1,5 W
Inlet orifice:	0,7 mm
Electrical connection:	3 pin Industrial Standard
Cable entry:	Pg 7
Protection class:	IP 65 (DIN 40 050) with plug fitted

M/54/NTZ*



DM/54/NTZ*/T‡



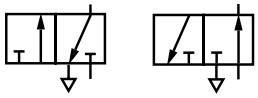
Model	A	B
DM/54/NTZ*/T2	49	41
DM/54/NTZ*/T4	83	75
DM/54/NTZ*/T6	117	109
DM/54/NTZ*/T8	151	143

Excel 22 (M/48, M/49)

Solenoid actuated 22 mm poppet valves

Sub-base

3/2, M5, G⅛



Miniature 22 mm normally open and normally closed models

Sub-base mounted and manifold mounted – compact and convenient

Manual override as standard

Technical data

Medium:
Compressed air, filtered, lubricated and non lubricated.

Operating pressure:
0 to 10 bar

Flow:

Orifice	l/min
1,0 mm	30
1,6 mm	77

Ambient temperature:
-20°C to +50°C.
Consult our Technical Service for use below +2°C.

Materials

Coil: glass reinforced thermo plastic
Manual override base: glass reinforced nylon
Armature: stainless iron
Sub-base: aluminium
Seals: nitrile
Tube & spring: stainless steel

Alternative models

2/2 N/C models
N/O models
Push button manual operators
15 mm models
32 mm models
Flying lead coils
Viton
Contact our Technical Service for details.

Size	Function	Actuation	kg	Mounting	Model 1,0 mm orifice (low power)	1,6 mm orifice
M5	3/2 NC	Sol/spring	0,13	Single	M/48/MAZ***	M/48/MDZ***
M5	3/2 NC	Sol/spring	0,31 ... 0,9	Manifold	DM/48/MAZ***/T‡	DM/48/MDZ***/T‡
G1/8	3/2 NC	Sol/spring	0,14	Single	M/49/MAZ***	M/49/MDZ***
G1/8	3/2 NC	Sol/spring	0,31 ... 0,9	Manifold	DM/49/MAZ***/T‡	DM/49/MDZ***/T‡

Service kits are not available for these valves.
*** Insert voltage codes from table below.
‡ Add number of valves in manifold up to 6 maximum.
Order connector plugs separately.

Electrical details for solenoid operators

Voltage tolerance:	±10%
Rating:	100% E.D.
Inlet orifice:	1,0 mm or 1,6 mm
Electrical connection:	22 mm Industrial Standard*
Protection class:	IP 65 (DIN 40 050) with plug fitted
Cable entry:	Pg 9
Manual override:	Screwdriver operated, memory type, standard

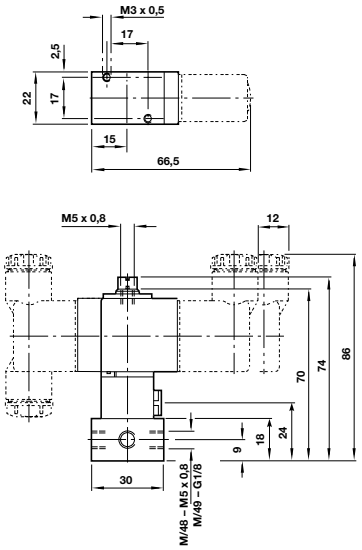
*Form B electrical connections available – please refer to data sheets.

Voltage codes

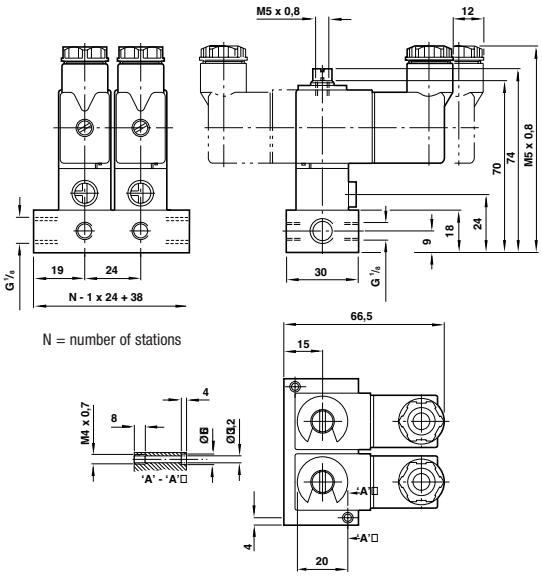
Voltage	1,0 mm orifice (low power) Code	Power	Coil	1,6 mm orifice Code	Power	Coil
12 V d.c.	12J	2 W	QM/48/12J/21	82J	7,5 W	QM/48/82J/21
24 V d.c.	13J	2 W	QM/48/13J/21	83J	6 W	QM/48/83J/21
24 V 50/60 Hz	14J	4/2,5 VA	QM/48/14J/21	84J	12/8 VA	QM/48/84J/21
110/120 V 50/60 Hz	18J	4/2,5 VA	QM/48/18J/21	88J	12/8 VA	QM/48/88J/21
220/240 V 50/60 Hz	19J	6/5 VA	QM/48/19J/21	89J	12/8 VA	QM/48/89J/21

For details of connector plugs and indicators see page 383

M/48, M/49



DM/48/*/T‡, DM/49/*T‡



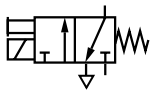
N = number of stations

Excel 22 CNOMO

Solenoid actuated 22 & 30 mm poppet valves

Sub-base

3/2, CNOMO



30 mm CNOMO interface base

Lightweight plastic material

22 mm or 30 mm low power coil options

Circlip coil retention (threaded locknut diffuser option also available)

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated

Operating pressure:

0 to 16 bar (maximum)

Flow:

Orifice Ø	l/min
1,0	30
1,6	77

Ambient temperature:

-20°C to +50°C

Consult our Technical Service for use below +2°C.

Materials

Base: acetal plastic resin
Coil: glass reinforced thermoplastic
Armature: stainless iron
Stem tube: stainless steel
Springs: stainless steel
Seals: nitrile rubber (viton top seat)

Alternative models

15 mm models
32 mm models
22 mm flying lead coils
Viton seals

3/2 Normally closed, fitted with 22 mm coils

Model	Orifice (mm)	Operating pressure (bar)	Power (W/VA)	Manual override
VSE4L4D1-A31*J	1,0	10	2 W/2,5 VA (5 VA, 230 V a.c.)	Push only
VSE4L4D1-A32*J	1,0	16	7,5 W (6 W, 24 V d.c.)/8 VA	Push only
VSE4L4D1-A61*J	1,0	10	2 W/2,5 VA (5 VA, 230 V a.c.)	Turn & lock
VSE4L4D1-A62*J	1,0	16	7,5 W (6 W, 24 V d.c.)/8 VA	Turn & lock
VSE4L4G1-A32*J	1,6	10	7,5 W (6 W, 24 V d.c.)/8 VA	Push only
VSE4L4G1-A62*J	1,6	10	7,5 W (6 W, 24 V d.c.)/8 VA	Turn & lock

3/2 Normally closed, fitted with 30 mm coils

Model	Orifice (mm)	Operating pressure (bar)	Power (W/VA)	Manual override
VSE4L4D1-A31*N	1,0	10	1,5 W/2 VA (3 VA, 230 V a.c.)	Push only
VSE4L4D1-A32*N	1,0	16	4 W/8 VA	Push only
VSE4L4D1-A61*N	1,0	10	1,5 W/2 VA (3 VA, 230 V a.c.)	Turn & lock
VSE4L4D1-A62*N	1,0	16	4 W/8 VA	Turn & lock
VSE4L4G1-A32*N	1,6	10	4 W/8 VA	Push only
VSE4L4G1-A33*N	1,6	16	7,5 d.c. only	Push only
VSE4L4G1-A62*N	1,6	10	4 W/8 VA	Turn & lock
VSE4L4G1-A63*N	1,6	16	7,5 d.c. only	Turn & lock

*Insert voltage codes from table below.

Extended push button manual override. Change 11th digit to 5 e.g. VSE4L4D1-A**5**1*J

Without manual override. Change 11th digit to 1 e.g. VSE4L4D1-A**1**1*J

Threaded locknut diffuser. Change 10th digit to E e.g. VSE4L4D1-**E**31*J

Excel 22 CNOMO

Solenoid actuated 22 & 30 mm poppet valves

Sub-base

3/2, CNOMO

Voltage codes and spare coils for 10 bar solenoid models

	22 mm Coil with connector interface acc. to Industrial Standard			22 mm Coil with connector interface acc. to DIN 43650 table B			30 mm Coil with connector interface acc. to DIN 43650 table A		
Voltage	**Code**	**Power inrush/hold**	**Model**	**Code**	**Power inrush/hold**	**Model**	**Code**	**Power inrush/hold**	**Model**
12 V d.c.	12J	2 W	QM/48/12J/21	12L	2 W	V10626-A12L	22N	1,5 W	V10633-A22N
24 V d.c.	13J	2 W	QM/48/13J/21	13L	2 W	V10626-A13L	23N	1,5 W	V10633-A23N
24 V 50/60 Hz	14J	4/2,5 VA	QM/48/14J/21	14L	4/2,5 VA	V10626-A14L	24N	2 VA	V10633-A24N
48 V 50/60 Hz	–	–	–	–	–	–	26N	2 VA	V10633-A26N
110/120 V 50/60 Hz	18J	4/2,5 VA	QM/48/18J/21	18L	4/2,5 VA	V10626-A18L	28N	2 VA	V10633-A28N
220/240 V 50/60 Hz	19J	6/5 VA	QM/48/19J/21	19L	6/5 VA	V10626-A19L	29N	3 VA	V10633-A29N

Voltage codes and spare coils for 16 bar models (CNOMO only)

Voltage	30 mm Coil with connector interface acc. to DIN 43650 table A		
	Code	**Power inrush/hold**	**Model**
24 V d.c.	33N	4 W	V10633-A33N
110/120 V a.c.	88N	8 VA	V10633-A88N
230 V a.c.	89N	8 VA	V10633-A89N

Electrical details – 22 mm coil

Voltage tolerance:	±10%
Power consumption:	2 & 7,5 W (6 W for 24 V d.c. high power coils)
Power inrush/hold:	a.c. 2,5/4, 8/12 VA
	(5/9 VA for 230V 50/60 Hz a.c. low power coils)
Electrical duty:	100% E.D.
Electrical connections:	3 flat pin (Industrial standard)*
Manual override:	Screwdriver - memory type
	Push only - non memory type
Protection class:	IP 65 (DIN 40 050) with connector plug fitted

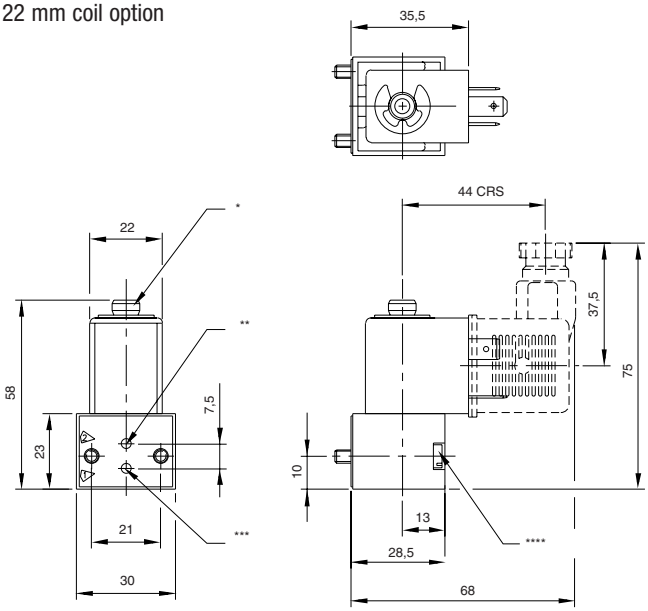
* Form B electrical connections available. Please consult our Technical Service for details.

Electrical details – 30 mm coil (low power)

Voltage tolerance:	±10%
Power consumption:	1,5 & 4 & 7,5 W
Power inrush/hold:	a.c. 2/3, 8/10 VA
	(3/4 VA for 230 V 50/60 HZ a.c. low power coils)
Electrical duty:	100 % E.D.
Electrical connections:	3 pin table A DIN 436 50
Manual override:	Screwdriver - memory type
	Push button - non memory type
Protection class:	IP 65 (DIN 40 050) with connector plug fitted

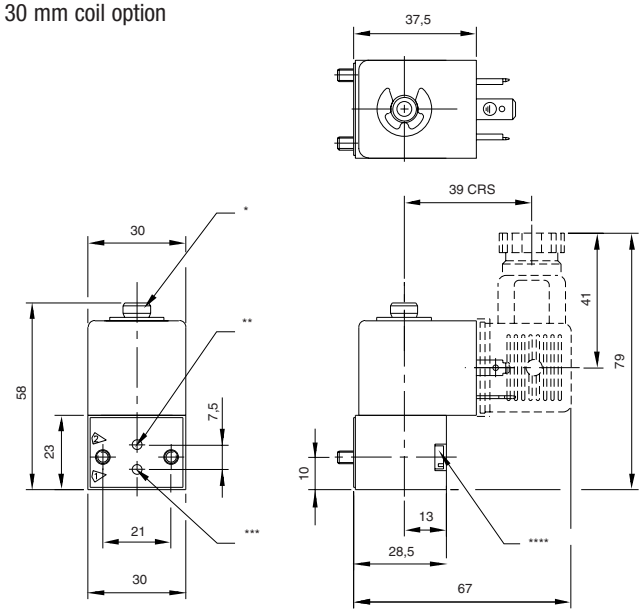
For details of connector plugs and indicators see page 384

22 mm coil option



* Port 3 (Exhaust) (M5)
** Port 2 (Outlet), Ø 3 hole
*** Port 1 (Inlet), Ø 3 hole
**** 2 M4 Fixing screws

30 mm coil option



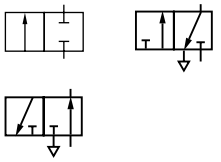
* Port 3 (Exhaust) (M5)
** Port 2 (Outlet), Ø 3 hole
*** Port 1 (Inlet), Ø 3 hole
**** 2 M4 Fixing screws

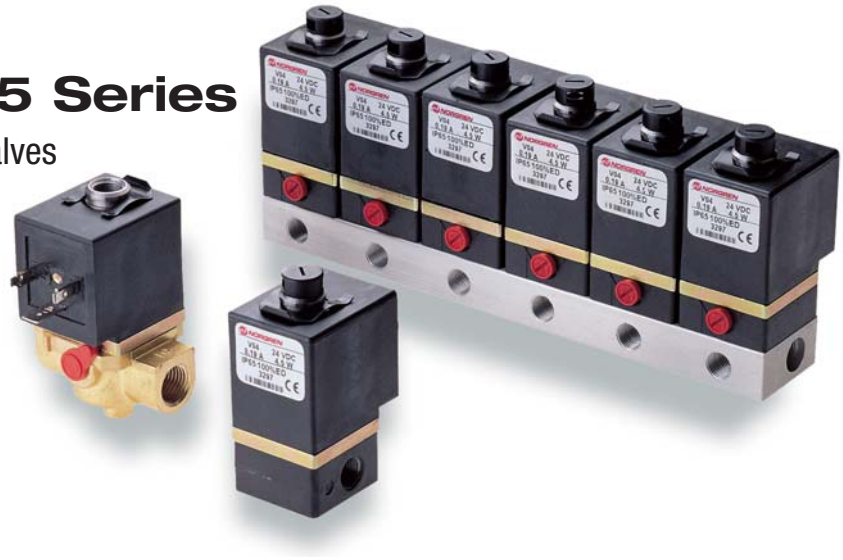
Excel 32
V03, V04 and V05 Series

Solenoid actuated 32 mm poppet valves

In-line & sub-base

2/2 & 3/2, G⅛, G¼





Extensive range of power and orifice size options

G1/8, G1/4, 7 mm interface

Compact installation

Removeable coil

Standard exhaust diffuser

Choice of manual override

Technical data

Medium:

Compressed air, filtered, lubricated and non lubricated.

Operating pressure:

Maximum 16 bar.

See individual details.

Flow:

Orifice Ø	Interface	G⅛, G¼
1,0 mm	25	30
1,5 mm	55	70
2,0 mm	95	120
2,5 mm	150	190
3,0 mm	–	260

Ambient temperature:

-20°C to +50°C.

Consult our Technical Service for use below +2°C.

Materials

Coil: glass reinforced nylon

Armature: stainless iron

Tube & spring: stainless steel

Base: zinc alloy (G1/8), brass (G1/4), polyester (interface)

Manifold: aluminium

Seals: nitrile (Viton top seat)

Alternative models

15 mm models, 22 mm models.

Viton seals

V03

Function	Orifice (mm)	Operating pressure (bar)	kg	Mounting	Model
2/2 NC	1,0	0 ... 10	0,20	Interface	V03X286J-B613A
2/2 NC	1,0	0 ... 10	0,24	G1/8	V03A286J-B613A
3/2 NC	1,0	0 ... 10	0,20	Interface	V03X486J-B613A
3/2 NC	1,0	0 ... 10	0,24	G1/8	V03A486J-B613A

V03 models are only available with 24 V d.c. coil. Spare coil part no. V03X286A-Q1213.

V04

Function	Orifice (mm)	Operating pressure (bar)	kg	Mounting	Model
2/2 NC	2,5	0 ... 10	0,20	Interface	V04X286M-B62*A
2/2 NC	2,5	0 ... 10	0,24	G1/8	V04A286M-B62*A
2/2 NC	2,5	0 ... 10	0,32	G1/4	V04B286M-B42*A
2/2 NC	3,0	0 ... 7	0,32	G1/4	V04B286N-B42*A
3/2 NC	2,0	0 ... 10	0,20	Interface	V04X486L-B62*A
3/2 NO	2,0	0 ... 10	0,20	Interface	V04X386L-B62*A
3/2 NC	2,0	0 ... 10	0,24	G1/8	V04A486L-B62*A
3/2 NO	2,0	0 ... 10	0,24	G1/8	V04A386L-B62*A

V05

Function	Orifice (mm)	Operating pressure (bar)	kg	Mounting	Model
2/2 NC	2,5	0 ... 16	0,20	Interface	V05X286M-B63*A
2/2 NC	2,5	0 ... 16	0,24	G1/8	V05A286M-B63*A
2/2 NC	2,5	0 ... 16	0,32	G1/4	V05B286M-B43*A
2/2 NC	3,0	0 ... 13	0,32	G1/4	V05B286N-B43*A
3/2 NC	2,5	0 ... 10	0,20	Interface	V05X486M-B63*A
3/2 NO	2,5	0 ... 10	0,20	Interface	V05X386M-B63*A
3/2 NC	2,5	0 ... 10	0,24	G1/8	V05A486M-B63*A
3/2 NO	2,5	0 ... 10	0,24	G1/8	V05A386M-B63*A

* Insert voltage codes from table below.

All models are available without manual override. Change 10th digit to 1 eg. V04A486L-B**1**2*A.

Other orifices are available. Contact our Technical Service for details. Service kits are not available for these valves.

Order connector plugs separately.

Voltage codes & spare coils – V04 and V05

Voltage	Code	Coil V04	V05
6 V d.c.	1	V04X286A-Q1221	V05X286A-Q1231
12 V d.c.	2	V04X286A-Q1222	V05X286A-Q1232
24 V d.c.	3	V04X286A-Q1223	V05X286A-Q1233
48 V d.c.	5	V04X286A-Q1225	V05X286A-Q1235
110 V d.c.	7	V04X286A-Q1227	V05X286A-Q1237
24 V 50/60 Hz	4	V04X286A-Q1224	V05X286A-Q1234
48 V 50/60 Hz	6	V04X286A-Q1226	V05X286A-Q1236
110 ...120 V 50/60 Hz	8	V04X286A-Q1228	V05X286A-Q1238
220 ... 240 V 50/60 Hz	9	V04X286A-Q1229	V05X286A-Q1239

Electrical details for solenoid operators

Voltage tolerance:	±10%	
Power consumption:	Excel V03	d.c. 1,0 W
Inrush/hold:	Excel V04	d.c. 4,5 W a.c. 14/10 V A
	Excel V05	d.c. 9,0 W a.c. 27/20 V A
Rating:	100% E.D.	
Electrical connection:	3 pin plug (DIN 43 650 Form A) Coil may be rotated at 90° intervals	
Manual override:	Screwdriver operated, memory type, standard	
Protection class:	IP 65 (DIN 40 050) with terminal box fitted	

For details of connector plugs and indicators see page 384

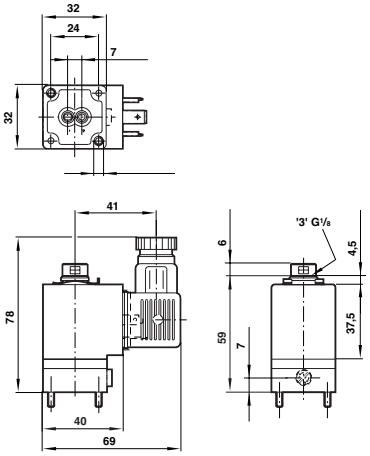
Excel 32
V03, V04 and V05 Series

Solenoid actuated 32 mm poppet valves

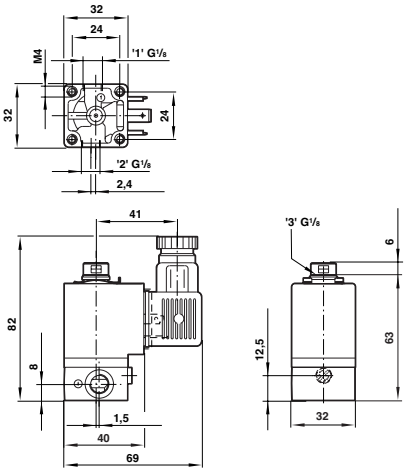
In-line & sub-base

2/2 & 3/2, G⅛, G¼

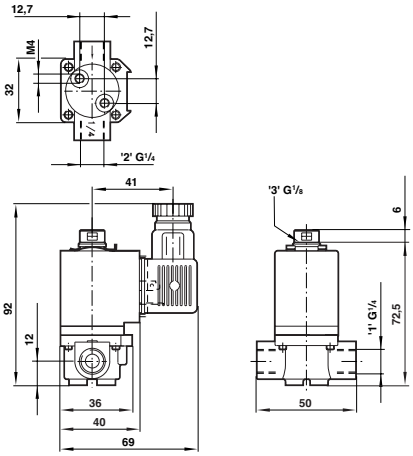
Interface mounted valves



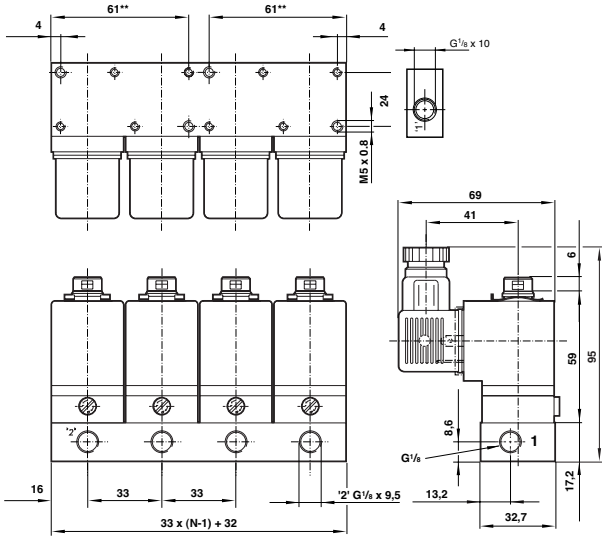
G1⁄8 Valves



G1⁄4 Valves



Manifold for use with interface valves



M/P35598/‡
‡ Indicates the number of stations: 1 to 20
N = number of stations
** Two additional holes with five or more stations.
Weight: 0,041 kg/station.

Accessories

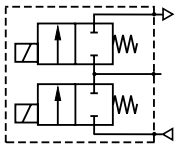
Blanking plate – QM/7600/23

Manifold assemblies are available. Contact our Technical Service for details.

Excel 22 Dual control

Twin solenoid actuated 22 mm poppet valves

4 mm, 6 mm push-in



Twin solenoid offers dual control

Two 2/2 normally closed valves combined in a single unit

Integral push in fittings for simple and rapid installation

Ideal for applications requiring inflation and deflation control

Function	Orifice (mm)	Operating pressure (bar)	Power (W/VA)	Model
2/2 NC	1,0	10	2 W	VSD2DAD1-A1***

*** Insert voltage code from table below.

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated

Operating pressure:

Up to 10 bar

Flow:

29 l/min

Ambient temperature:

-20°C to +50°C

Consult our Technical Service for use below +2°C.

Electrical details for solenoid operators

Voltage tolerance:	±10%
Power consumption:	2 W
Electrical duty:	100 % E.D.
Electrical connections:	3 flat pin (Industrial standard)
Manual override:	None
Protection class:	IP 65 (DIN 40 050) with connector plug fitted

For details of connector plugs and indicators see page 384

Voltage codes

Voltage	Code
12 V d.c.	12J
24 V d.c	13J

Materials

Base: plastic resin

Coil: glass reinforced thermoplastic

Armature: stainless iron

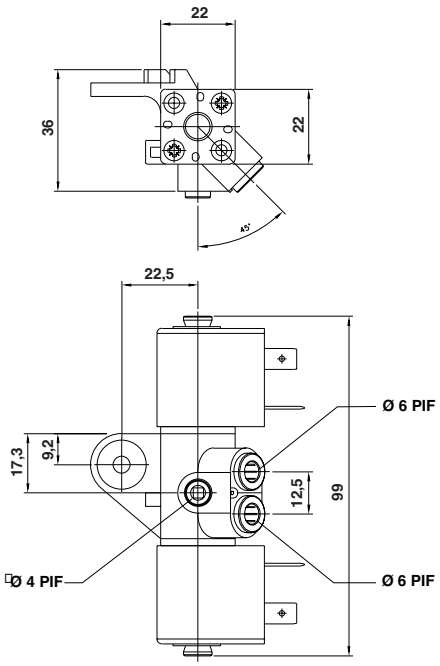
Stem tube: stainless steel

Springs: stainless steel

Seals: nitrile rubber

Alternative models

Flying lead coils



VM10 valve island - Easy to select & configure from more than 7 million possible configurations

- Save time with Norgren's unique easy-to-use valve island configurator, available either online or on CD
- Viewable/downloadable 2D and 3D CAD drawings in 14 file formats
- Downloadable multi-language technical and dimensional information
- List price automatically calculated for complete valve islands

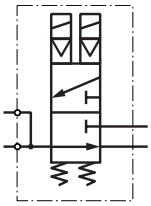
- Easy to configure up to 20 stations (40 coils) Configure the unit that exactly meets your needs from:
  - ~ 260 valve options per station,including 5/2, 5/3 and 2 x 3/2 functions
  - ~ 7 fitting sizes per valve
  - ~ Individually wired, Multipole or Fieldbus
  - ~ Internal or external pilot
  - ~ 4 inlet/exhaust fitting sizes

www.norgren.com

XSz Safety valves

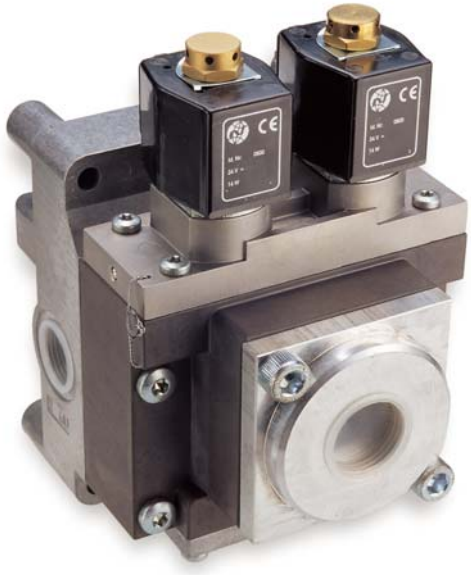
Fail-safe double valves

3/2, G¼ to G2



- **Inherently fail-safe without residual pressure**
- **Dynamic self monitoring**
- **Double valve control system**
- **For use with pneumatic clutch and brake systems and other 3-way safety functions**
- **Poppet design with feedback signal ports**
- **Fast exhaust capability**
- **Conforms to EN 692, BG, OSHA, SUWA and other approvals**
- **Improves safety and reduces downtime on mechanical power press applications**
- **Quick and easy adjustment of 'overlap' on mechanical presses**
- **No additional electrical monitoring required**
- **Easily fitted into existing systems**

XSz 8



XSz 20

Type	Voltage	Port size P	A	A1	R	Model G-thread
XSz 8*	d.c/a.c.	1/4"	1/4"	–	1/4"	24928063052*****
XSz 10**	a.c.	1/2"	1/2"	(1/2")	3/4"	24929000200*****
XSz 10**	d.c.	1/2"	1/2"	(1/2")	3/4"	24929010200*****
XSz 20**	d.c/a.c.	1/2"	3/4"	(1")	1"	24930000800*****
XSz 20**	d.c/a.c.	3/4"	3/4"	(1")	1"	24930400800*****
XSz 20**	d.c/a.c.	3/4"	(3/4")	1"	1"	24930420800*****
XSz 32	d.c./a.c.	1"	1"	–	1½"	24931300800*****
XSz 32	d.c./a.c.	1"	1"	1½"	1½"	24931340800*****
XSz 50	d.c./a.c.	1½"	2"	–	2"	24932300800*****

***** Insert voltage codes from table below.

Port sizes in brackets are plugged.

Supplied without plug. If required, select model 0570275, see page 384

* Silencer enclosed ** Valve with integrated silencer available

Voltage codes

Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated

Operating pressure:

Size 8: 3 to 10 bar

Size 10: 2 to 10 bar

Size 20/32/50: 2 to 8 bar

Ambient temperature:

-10°C to +60°C

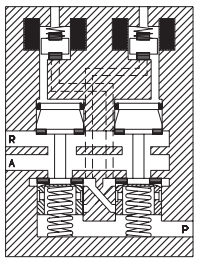
Consult our Technical Service for use below +2°C.

Materials

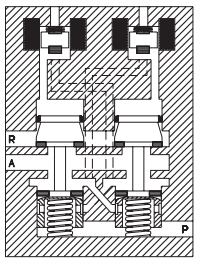
Body: aluminium

Seals: polyurethane and NBR

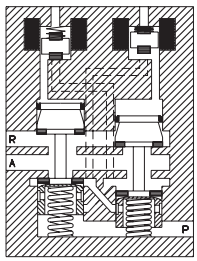
For full details of our press ancilliary equipment please contact our Technical Service.



Neutral position



Activator position



Malfunction position

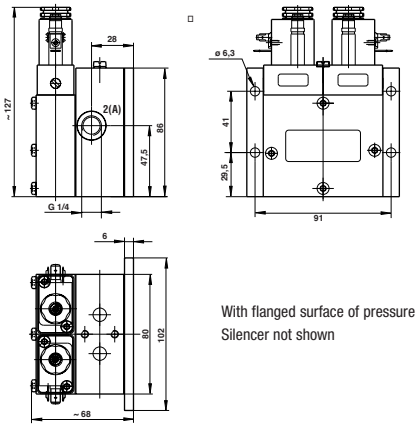
P = Air pressure port. A = Power port (clutch / brake). R = Exhaust

XSz Safety valves

Fail-safe double valves

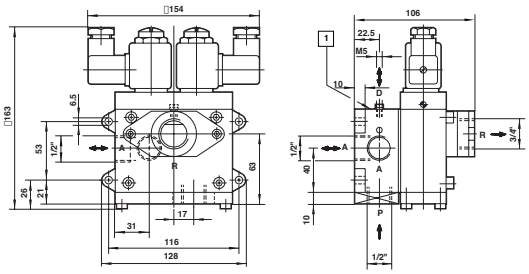
3/2, G¼ to G2

XSz 8



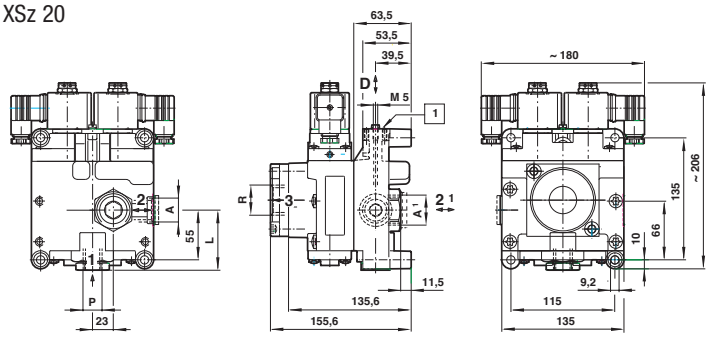
With flanged surface of pressure switch and failure indication element.
Silencer not shown

XSz 10



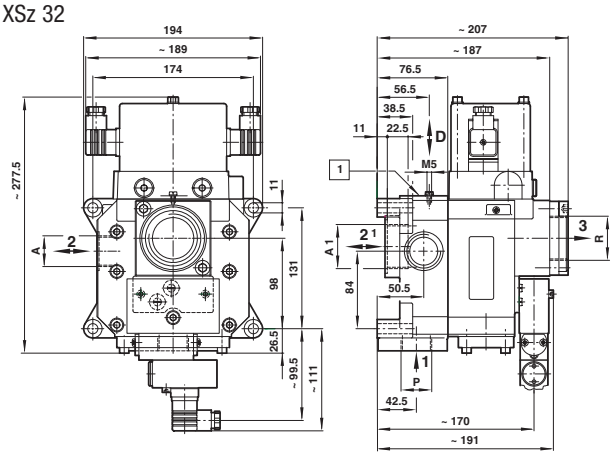
*Flanged surface of pressure switch and failure indication element.
Silencer not shown

XSz 20



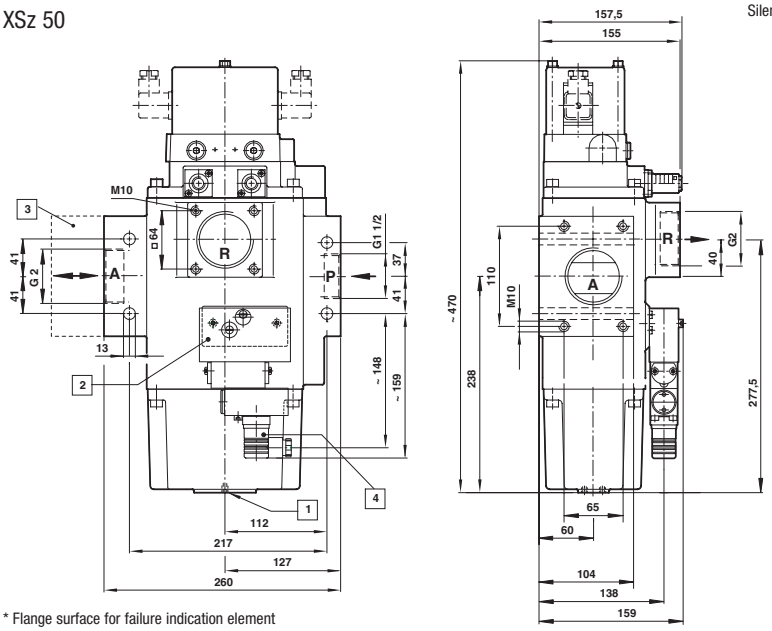
* Flange surface for failure indication element and flange surface for pressure balance.
Silencer not shown

XSz 32



* Flange surface for failure indication element and flange surface for pressure balance.
Silencer not shown

XSz 50

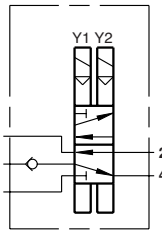


* Flange surface for failure indication element
** Flange surface for pressure balance
*** Flange surface for 18D pressure switch. Adapter flange, type 0545005
**** Piston manometer

XSz 10 V Safety valves

Fail-safe double valves

5/2, G½



Inherently fail safe without residual pressure

Dynamic self - monitoring

Double valve control system

For safety functions (double acting cylinder, rotary actuator etc.)

Technical data

Medium:
Compressed air, filtered, lubricated and non-lubricated

Operating pressure:
3 to 10 bar

Ambient temperature:
-10°C to +55°C
Consult our Technical Service for use below +2°C.

Materials

Body: aluminium
Seals: polyurethane (AU & NBR)

Alternative models

Pilot operated model

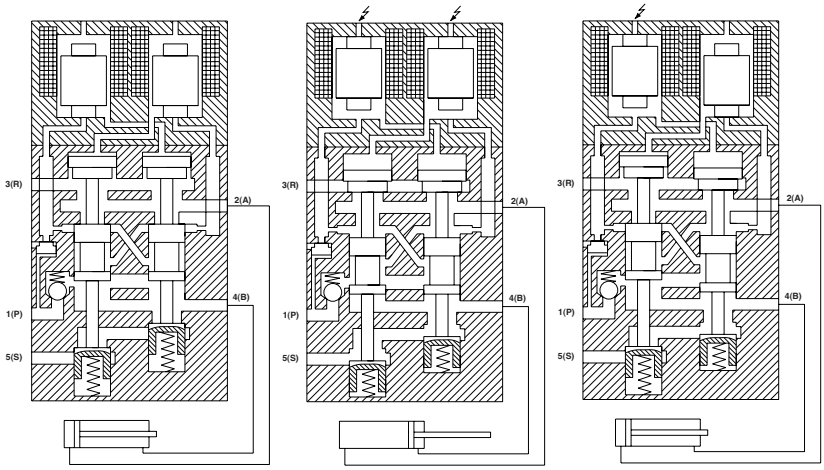
Type	Voltage	Port size P	A	A1	R	B	S	Model G-thread
XSz 10 V*	a.c.	G1/2	G1/2	G1/2	G3/4	G1/2	G1/2	24929500200*****
XSz 10 V*	d.c.	G1/2	G1/2	G1/2	G3/4	G1/2	G1/2	24929510200*****

***** Insert voltage code from table below. Supplied without plugs. If required, select model 0570275, see page 384

* With integrated silencer (not shown)

Voltage codes

Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050



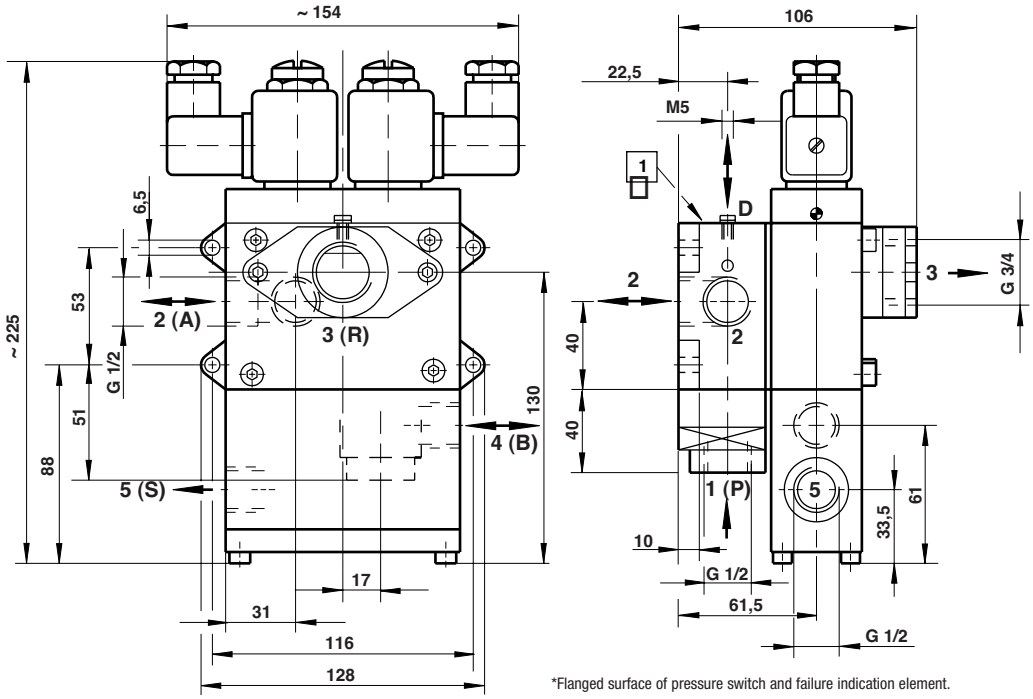
Neutral position | Activator position | Malfunction position

1 = Air pressure port. 2 & 4 = Power port 3 & 5 = Exhaust

XSz 10 V Safety valves

Fail-safe double valves

5/2, G½



*Flanged surface of pressure switch and failure indication element.
Silencer not shown

Additional ranges

XSz Safety silencer – flange connection

Can be mounted directly to the valve
Direct flange mounting
Low weight
Small size
Meets requirements contained in the safety regulations
The free passage inside the silencer eliminates possible obstruction

Type	Model
XSz 8	MB002B
XSz 10/XSz 10 V	0016422
XSz 20	0016522
XSz 32	0016622

XSz Damping module – soft start

Compact design
Simple installation
Reduction wear and tear
Noise-reduction
The soft start valve can be used for a soft engagement of the pneumatically operated clutch on presses and also for a soft pressure build-up on a machine. It can be directly flanged on port 1 (P) of the safety valve XSz 32 and with an adapter plate on the XSz 50. It has an interchangeable bypass orifice to adapt to individual operating conditions.

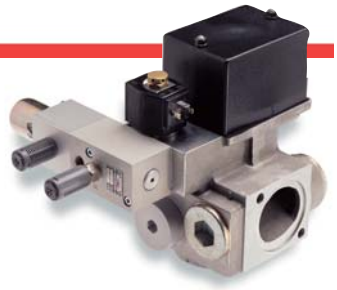
Operating pressure (bar)	Control pressure (bar)	Smooth start	Voltage	Model
0,6 ... 8	0,6 ... 8	From 2 bar	d.c.	1020113.0700
0,6 ... 8	0,6 ... 8	From 0 to 2 bar	a.c.	1020113.3703
0,6 ... 8	0,6 ... 8	From 0 to 2 bar	d.c.	1020141.0800
0,6 ... 8	0,6 ... 8	From 0 to 2 bar	a.c.	1020141.3803

Adapter plate for flanged version, type XSz 50, model 0557164
All solenoids are delivered without plugs. If required, select model 0570275, see page.384

XSz Damping module – soft stop

Compact design
Adapts easily to prevailing operating conditions
Reduction of noise, wear and tear
The soft stop valve can be used for a soft engagement of the pneumatically operated brake on presses and for a soft pressure drop on a machine. It is connected downstream of the safety valve and functions as a 2/2 directional control valve which is normally open. The switching position is monitored via a mechanical or proximity switch.
The soft stop valve can be directly flanged on port 3 (R) of the safety valves XSz 32 and XSz 50.

Control pressure (bar)	Type	Voltage	Model
2 ... 8	XSz 32	a.c./d.c.	1022023.0200
2 ... 8	XSz 50	a.c./d.c.	1022035.0800



Failure indication elements for XSz safety valves

Although the XSz safety valves do not require an external electrical monitoring to fulfil the safety function, some applications need to have a visual electrical or acoustic signalling of a malfunction. This can be achieved by failure indication elements mounted on the XSz safety valve.

Pressure switch

Failure indication module

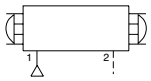
Pressure balance

Description	Model	XSz8	XSz 10	XSz 20	XSz32	XSz 50	XSz 10 V	Notes
Pressure switch	0881400	●	●	●	●	●*	●	Switches every time the valve switches, response time dependent on the valve
Failure indication	1028063	●	●	●	●	●	●	Switches only in case of malfunction
Pressure balance	1028100				●	●		For separately used clutch and brake

* Mounting only possible with flange model 0545005

Two-hand control unit

G⅛



Certificate of Conformity supplied with every unit

Notified Body Approval from BSI Testing

Meets the requirements of EN574 Class IIIB*

Both hands must be engaged simultaneously

Single fault tolerant

Protection against accidental operation

No setting or adjustment required

*The scope of the Machinery Directive encompasses safety components as well as machinery, and since two-hand control units are classed as safety components this requires the M/2720 to satisfy the essential health and safety requirements of the Directive. One method of ensuring this is to conform with published European Norm (EN) Standards. In the case of the M/2720 the main standard is EN574 Safety of Machinery – Two Hand Control Devices, Functional Aspects – Principles for Design. This standard classifies two-hand controls into various types, each requiring minimum performance and safety characteristics, such as simultaneous operation, fault tolerance, prevention of accidental operation etc. In addition, the M/2720 is dimensionally identical to the M/2710 which it directly replaces.

Technical data

Medium:

Compressed air filtered to 40 µm, lubricated or non-lubricated.

Operating pressure:

3 to 8 bar

Ambient temperature:

+5°C to +40°C.

Consult our Technical Service for use below +2°C.

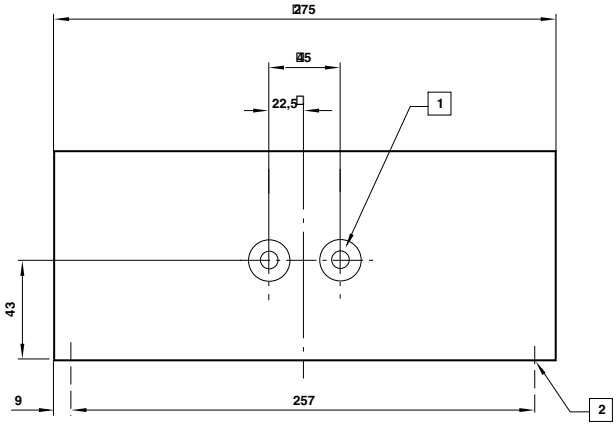
Materials

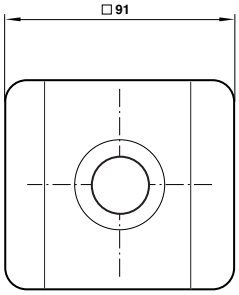
Outer cover & end plates: aluminium alloy

Buttons: plastic

Seals: nitrile

Model	Switch 'On'	Switch 'Off'	kg
M/2720	Both buttons must be operated within 0,5 secs	0,6 secs max.	1,8





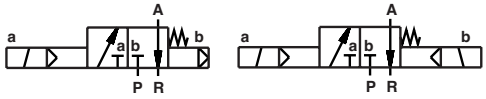
* 2 ports, G1/8 BSP ** 2 x 6,5 holes

80000 Series

Solenoid pilot actuated poppet valves

50 to 150 mm orifice

3/2, Flange



Control of single-acting cylinders

Control of die cushion on high-power presses

Standard manual override

Technical data

Medium:
Compressed air, filtered and lubricated air

Operating pressure:
0 to 20 bar

Fluid connection:
Flange DIN 2501 / PN 25/40

Ambient temperature:
-10 to + 80 °C
Consult our Technical Service for use below +2°C.

Flow direction:
Fixed

Materials

Housing: Modular graphite cast iron (GGG 50)
Seat seal: Polyurethane (AU)

Alternative models

Pressure port open in rest position
For gaseous, liquid and neutral fluids
Motor industry approved (pilot valve)
With damped switching
Flange DIN 2501, PN16

Orifice (mm)	Actuation	Pilot supply	Operating pressure (bar)	Control pressure (bar)	kv value m^3/h*	Switching time (ms)	Model
50	Solenoid/pilot	Internal	2 ... 20	–	38	175	8000171xxxx*****
65	Solenoid/pilot	Internal	2 ... 20	–	58	200	8000271xxxx*****
80	Solenoid/pilot	Internal	2 ... 20	–	90	250	8000371xxxx*****
125	Solenoid/pilot	Internal	2 ... 20	–	200	340	8000571xxxx*****
150	Solenoid/pilot	Internal	2 ... 20	–	250	400	8000671xxxx*****
50	Solenoid/pilot	External	0,5 ... 20	2 ... 20	38	175	8000172xxxx*****
65	Solenoid/pilot	External	0,5 ... 20	2 ... 20	58	200	8000272xxxx*****
80	Solenoid/pilot	External	0,5 ... 20	2 ... 20	90	250	8000372xxxx*****
125	Solenoid/pilot	External	0,5 ... 20	2 ... 20	200	340	8000572xxxx*****
150	Solenoid/pilot	External	0,5 ... 20	2 ... 20	250	400	8000672xxxx*****
80	Solenoid/solenoid	External	0,5 ... 20	2 ... 20	90	250	8002372xxxx*****
150	Solenoid/solenoid	External	0,5 ... 20	2 ... 20	250	400	8002672xxxx*****

xxxx Insert solenoid code from table below ***** Insert voltage code from table below. * Cv (US) = k_V x 1,2

Solenoid operators

Power consumption 24 V d.c.	230 V a.c.	Protection class	Operating temperature °C Media	Ambient	Electrical connection	Solenoid code
12	15	IP 00 without connector				0200
11,4 W		EEx me II T4/T5	-40 ... +50/+40	-40 ... +50/+40	M20x1,5	4230
15,2 VA		EEx me II T4/T5	-40 ... +50/+40	-40 ... +50/+40	M20x1,5	4231

For connectors and plugs, see page 384. Plugs according to DIN 43650 Form A.

Voltage codes

Voltage	Code
24 V d.c.	02400
24 V a.c.	02450

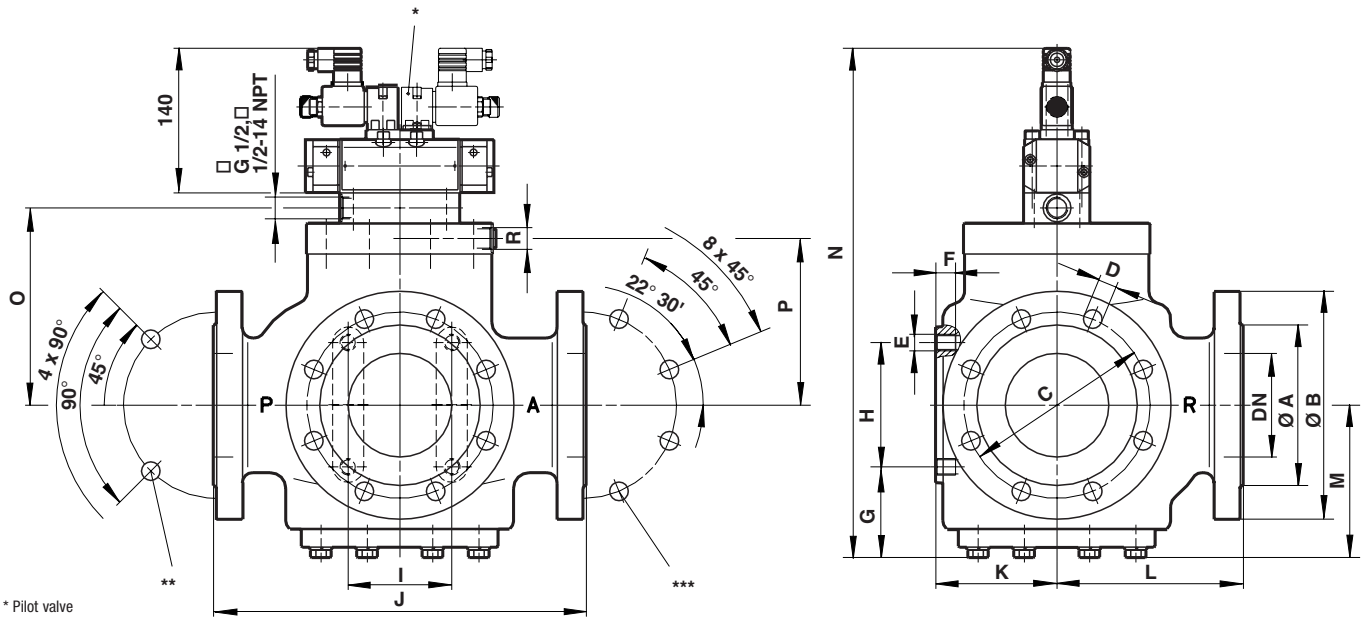
Other voltages on request.

80000 Series

Solenoid pilot actuated poppet valves

50 to 150 mm orifice

3/2, Flange



* Pilot valve
** Hole pattern for 4 bores
*** Hole pattern for 8 bores

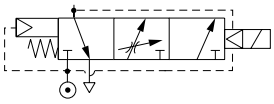
Orifice (mm)	Ø A	Ø B	C	D	No. D	E	F	G	H	I	J	K	L	M	N (ca.)	O	P	R
50	80	165	125	18	4	M14	21,5	72	80	70	230	89	115	124	427	148,5	122	G 1/4
65	120	185	145	18	8	M14	21,5	77,5	80	70	290	94	145	118	427	155	128,5	G 1/4
80	139	200	160	18	8	M16	33	89	100	100	360	122	180	155	498	188,5	159	G 1/2
100	155	235	190	22	8	M16	33	93	120	100	360	120	180	153	498	190,5	161	G 1/2
125	188	270	220	26	8	M16	33	141	180	130	400	152	200	231	655	269,5	241	G 1/2
150	212	300	250	26	8	M16	33	141	180	130	480	152	240	231	655	269,5	241	G 1/2

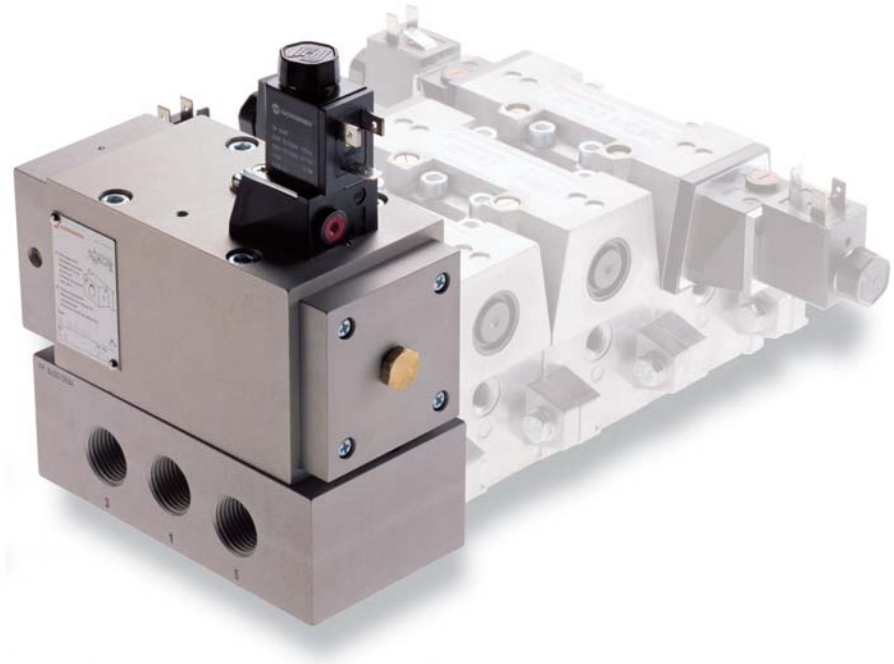
SE 9300

Soft start valves

Sub-base & in-line

ISO #1, G½





Specially coated glandless spool and sleeve for long trouble-free life

Emergency dump facility and adjustable fill rate

In-line and sub-base mounted versions

Technical data

Medium:

Compressed air, filtered, lubricated and non lubricated.

Operating pressure:

3 to 8 bar SE 9304, SE 9314

Ambient temperature:

-5°C to +50°C.

Consult our Technical Service for use below +2°C.

Pressure switch:

250 V a.c. 2A

24 V= 3A

IP 55

Materials

Body: die-cast aluminium

Spool & sleeve: anodised aluminium with special Teflon coating

Seals: nitrile

Size	Actuation	Pressure switch	Flow (l/min)	kg	Mounting	Type	Model
G1/2	Sol/Spring	External connection	1900	0,85	In-line	–	SE 9304-A08-00/***
ISO #1	Sol/Spring	External connection	1900	0,80	Sub-base	–	SE 9314-A08-00/***

ISO valves do not feature an ISO interface but are mounted onto sub-bases which can be attached to ISO sub-bases.
Service kits not available for these valves. ***Insert voltage codes from table below. Order connector plugs separately.

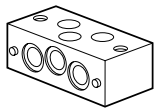
Voltage codes & spare coils

Voltage	Code	Power	Coil
12 V d.c.	12J	2 W	QM/48/12J/21
24 V d.c.	13J	2 W	QM/48/13J/21
24 V 50/60 Hz	14J	4/2,5 VA	QM/48/14J/21
110/120 V 50/60 Hz	18J	4/2,5 VA	QM/48/18J/21
220/240 V 50/60 Hz	19J	6/5 VA	QM/48/19J/21

For details of connector plugs and indicators see page 383

Sub-bases

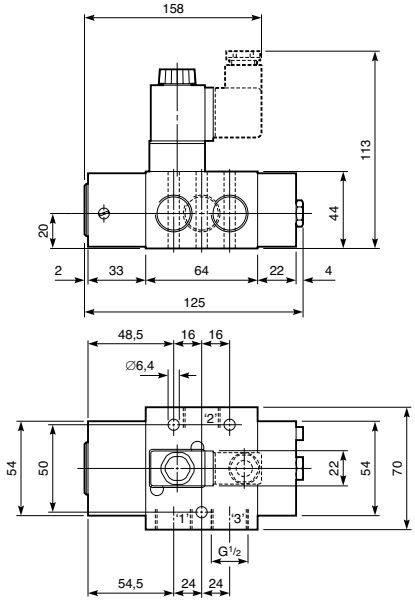
Model	Side ported for connection to ISO



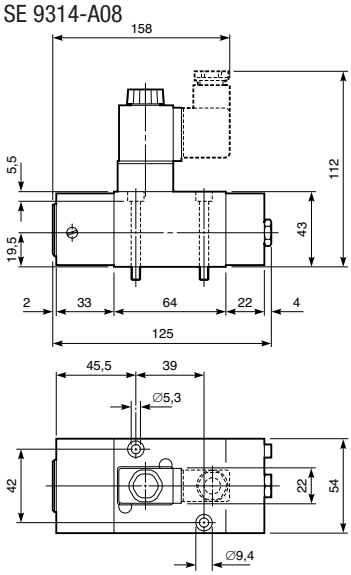
SE 9314-A08/A18	FP 8320 (G3/8 for ISO #1 manifold)

For details of base systems for ISO valves see page 277

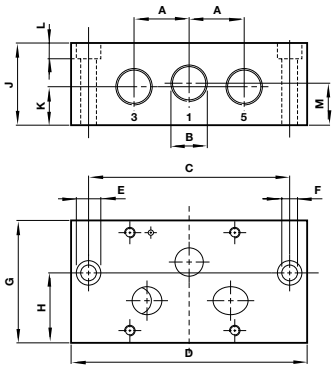
SE 9304-A08



SE 9314-A08



Modular sub-base FP 8320



FP 8320 replaces 1 Form D in VDMA 24345 base assembly.

ISO	Model	A	B	C	D	Ø E	
1	FP8320	24	G3/8	95	110	14	
ISO	Model	Ø F	G	H	J	K	L
1	FP8320	9	70	35	46	19	9

Norgren in the medical industry

Adding value through integrated design solutions for fluid and motion control

Norgren proven solutions for the medical industry are widely accepted by leading manufacturers worldwide – and are consistently delivering the performance and results they need.

The winning combination of Norgren and KIP expertise and technology brings you all the benefits of 20 years specialized experience and understanding of a wide range of medical applications from respiration, dialysis and dental to high volume laboratory automation.

At the heart of this is the capability to design and engineer added-value, integrated solutions to answer the most demanding application challenges.

- Integrated solutions
- Technical expertise
- Specialised engineering
- International manufacturing
- Quality assurance
- Flexible deliveries
- Global service network

www.norgren.com/medical

Clinical chemistry

Norgren valve systems can help end users and manufacturers in areas such as biochemistry, haematology, speciality testing and high volume laboratory testing to eliminate contamination carry over, reduce space, accuracy, speed and modularised solutions.

Laboratory automation

Norgren offers a wide range of automation solutions to enhance speed and provide optimum flexibility to help with the increasing and demanding test requirements.

Respiration

Norgren has a proven ability to manage compressed air as well as gases such as O_2, CO_2 and N_2O

70300 Series

Indirect solenoid actuated poppet valves

12 to 50 mm orifice

2/2, G½ to G2

High switching capability at low power

Interchangeable solenoid options

Manual override standard on normally closed valves

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated.

Mounting position:
Optional, preferably vertical

Operating pressure:
0 to 18 bar

Flow:

Orifice Ø	l/min
1/2"	3000
3/4 to 1"	8500
1¼"	10600
1½ to 2"	29400

Ambient temperature:
+10°C to +60°C.
Consult our Technical Service for use below +2°C.

Materials

Housing: aluminium
Seat seal: AU (polyurethane)
Inner parts: POM

Solenoid

Port size	Orifice (mm)	Type	Operating pressure (bar)	Control pressure (bar)	Switching time (ms)	kg	Model
G1/2	12	NC	1 ... 16	–	20	0,2	7030117xxxx*****
G1/2	12	NC	1 ... 18	–	20	0,2	7030119xxxx*****
G3/4	20	NC	1 ... 16	–	25	1,2	7032130xxxx*****
G1	25	NC	1 ... 16	–	25	1,2	7032230xxxx*****
G1¼	32	NC	1 ... 16	–	40	1,3	7032330xxxx*****
G1½	40	NC	1 ... 10	–	190	2,6	7032430xxxx*****
G2	50	NC	1 ... 10	–	190	2,6	7032530xxxx*****
G1/2	12	NO	1 ... 18	–	20	0,2	7030707xxxx*****
G3/4	20	NO	1 ... 15	–	25	1,2	7032630xxxx*****
G1	25	NO	1 ... 15	–	25	1,2	7032730xxxx*****
G1¼	32	NO	1 ... 15	–	40	1,3	7032830xxxx*****
G1½	40	NO	1 ... 10	–	190	2,6	7032930xxxx*****
G2	50	NO	1 ... 10	–	190	2,6	7033030xxxx*****
G3/4	20	NC	0 ... 15	1 ... 16	25	1,2	7032131xxxx*****
G1	25	NC	0 ... 15	1 ... 16	25	1,2	7032231xxxx*****
G1¼	32	NC	0 ... 15	1 ... 16	40	1,3	7032331xxxx*****
G1½	40	NC	0 ... 10	1 ... 11	190	2,6	7032431xxxx*****
G2	50	NC	0 ... 10	1 ... 11	190	2,6	7032531xxxx*****
G3/4	20	NO	0 ... 14	1 ... 15	25	1,2	7032631xxxx*****
G1	25	NO	0 ... 14	1 ... 15	25	1,2	7032731xxxx*****
G1¼	32	NO	0 ... 14	1 ... 15	40	1,3	7032831xxxx*****
G1½	40	NO	0 ... 10	1 ... 11	190	2,6	7032931xxxx*****
G2	50	NO	0 ... 10	1 ... 11	190	2,6	7033031xxxx*****

Vacuum

G1/2	12	NC	-1 ... 6	4 ... 10	20	0,55	7030118xxxx*****
G3/4	20	NC	-1 ... 6	4 ... 10	25	1,2	7032132xxxx*****
G1	25	NC	-1 ... 6	4 ... 10	25	1,2	7032232xxxx*****
G1¼	32	NC	-1 ... 6	4 ... 10	40	1,3	7032332xxxx*****
G1½	40	NC	-1 ... 6	4 ... 10	190	2,6	7032432xxxx*****
G2	50	NC	-1 ... 6	4 ... 10	190	2,6	7032532xxxx*****
G1/2	12	NO	-1 ... 6	4 ... 10	20	0,55	7030709xxxx*****
G3/4	20	NO	-1 ... 6	4 ... 10	25	1,2	7032632xxxx*****
G1	25	NO	-1 ... 6	4 ... 10	25	1,2	7032732xxxx*****
G1¼	32	NO	-1 ... 6	4 ... 10	40	1,3	7032832xxxx*****
G1½	40	NO	-1 ... 6	4 ... 10	190	2,6	7032932xxxx*****
G2	50	NO	-1 ... 6	4 ... 10	190	2,6	7033032xxxx*****

xxxx Insert solenoid code from table below. ***** Insert voltage code from table below. Plugs according to DIN 43650 Form A

Solenoid operating details

Power consumption 24 V d.c.	230 V a.c.	Protection class	Temperature °C Fluid	Ambient	Electrical connection	Solenoid code
12	15	IP 00 without connector	80	-25 ... +60		0200
11,4 W	–	EEx me II T4/T5	-40 ... +50/+40	-40 ... +50/+40	M20x1,5	4230
15,2 VA	–	EEx me II T4/T5	-40 ... +50/+40	-40 ... +50/+40	M20x1,5	4231

Voltage codes

Voltage	Code
24 V d.c.	02400
230 V a.c.	23050

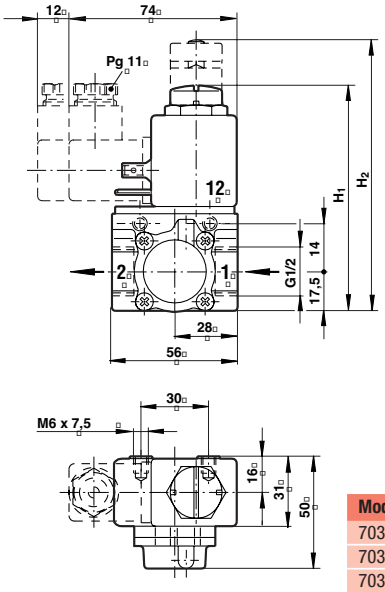
Other voltages on request.

70300 Series

Indirect solenoid actuated poppet valves

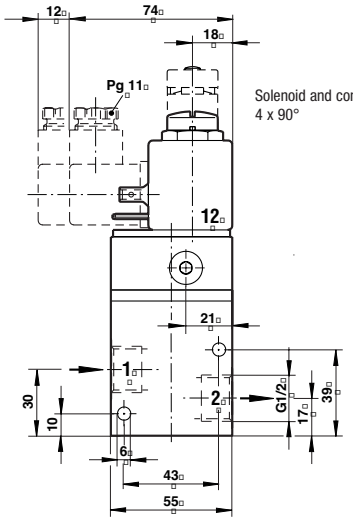
12 to 50 mm orifice

2/2, G½ to G2

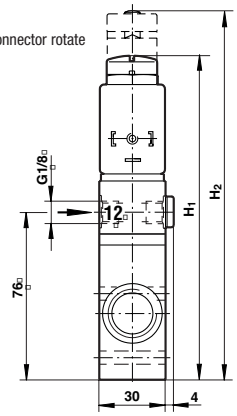


Solenoid and connector rotate 4 x 90°

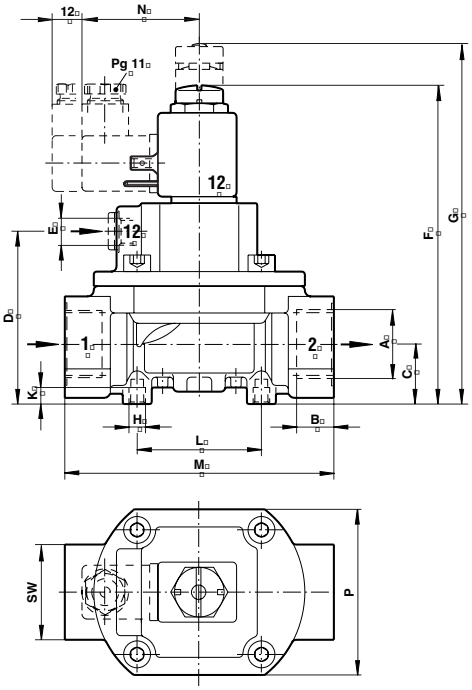
Model	H1	H2
7030117	–	121
7030119	–	121
7030707	100	–



Solenoid and connector rotate 4 x 90°



Model	H1	H2
7030118	–	167
7030709	147	–



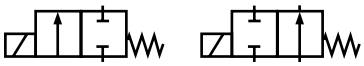
Solenoid and connector rotate 4 x 90°

Model	A	B	C	D	E	F	G	H	K	L	M	N	P	SW
703213x	G3/4	20	29	83,5	G1/4	–	174	M8	8	60	130	55	80	46
703263x	G3/4	20	29	83,5	G1/4	154	–	M8	8	60	130	55	80	46
703223x	G1	18	29	83,5	G1/4	–	174	M8	8	60	130	55	80	46
703273x	G1	18	29	83,5	G1/4	154	–	M8	8	60	130	55	80	46
703233x	G1¼	20	33	91	G1/4	–	181	M8	8	60	130	55	Ø 108	55
703283x	G1¼	20	33	91	G1/4	161	–	M8	8	60	130	55	Ø 108	55
703243x	G1½	28	45	132,5	G1/4	–	222	M8	12	90	182	55	Ø 142	75
703293x	G1½	28	45	132,5	G1/4	202	–	M8	12	90	182	55	Ø 142	75
703253x	G2	28	45	132,5	G1/4	–	222	M8	12	90	182	55	Ø 142	75
703303x	G2	28	45	132,5	G1/4	202	–	M8	12	90	182	55	Ø 142	75

95000 Series

Direct solenoid actuated poppet valves

2/2, G¼, G½, ¼ NPT



Working from 0 bar up
Suited for fine vacuum
1,33·10-3 mbar·l/s
Free of substances which can damage laquer

Technical data

Medium:
Neutral gaseous and liquid fluids

Flow direction:
Fixed

Mounting position:
Optional, preferably with solenoid on top

Operating pressure:
0 to 50 bar

Ambient temperature:
Depending on solenoid system
-25, -40 to +55, +80, +100°C

Medium temperature:
-25 to +80 °C NBR (Perbunan)
-10 to +120 °C FKM (Viton)*
-40 to +140 °C EPDM
-50 to +180 °C PTFE (Teflon)
-10 to +180 °C FFKM (Kalrez)
* For water +90°C
Consult our Technical Service for use below +2°C.

Materials

Housing: Brass
Seal: see fluid temperature
Inner parts: brass, steel 1.4104

Alternative models

Assembled oil free (for oxygen)
With DVGW approval Group A
Solenoid for higher temperatures and outdoor installation

Valves for type A solenoid

Port size	Orifice (mm)	Function	Operating pressure (bar)	Flow (l/min)	kg	Model
G1/4	1,5	NC	0 ... 40 bar	70	0,21	9500100xxxx*****
G1/4	2	NC	0 ... 35 bar	120	0,21	9500200xxxx*****
G1/4	2	NO	0 ... 20 bar	100	0,21	9502210xxxx*****
G1/4	3	NO	0 ... 10 bar	160	0,21	9502310xxxx*****
1/4 NPT	1,5	NC	0 ... 40 bar	70	0,21	9503100xxxx*****
1/4 NPT	2	NC	0 ... 35 bar	120	0,21	9503200xxxx*****
1/4 NPT	2	NO	0 ... 20 bar	100	0,21	9505210xxxx*****
1/4 NPT	3	NO	0 ... 10 bar	160	0,21	9505310xxxx*****

For seal variants, substitute at the 7th digit as follows: 0 = NBR, 1 = EPDM, 2 = FKM, 3 = PTFE, 4 = FFKM e.g. 9500100xxxx*****

Valves for type B solenoid

Port size	Orifice (mm)	Function	Operating pressure (bar)	Flow (l/min)	kg	Model
G1/4	3	NC	0 ... 10 bar	200	0,21	9500300xxxx*****
1/4 NPT	3	NC	0 ... 10 bar	200	0,21	9503300xxxx*****

Valves for type C solenoid

Port size	Orifice (mm)	Function	Operating pressure (bar)	Flow (l/min)	kg	Model
G1/4	4	NC	0 ... 12 bar	350	0,21	9500400xxxx*****
1/4 NPT	4	NC	0 ... 12 bar	350	0,21	9503400xxxx*****

Valves for types D solenoid

Port size	Orifice (mm)	Function	Operating pressure (bar)	Flow (l/min)	kg	Model
G1/4	4	NC	0 ... 14 bar	350	0,25	9501400xxxx*****
G1/4	5	NC	0 ... 7 bar	450	0,25	9501500xxxx*****
G1/4	6	NC	0 ... 5 bar	550	0,25	9501600xxxx*****
G1/2	12	NC	0 ... 1 bar	1700	0,80	9501700xxxx*****
G1/2	8	NC	0 ... 2,5 bar	1200	0,80	9501800xxxx*****
1/4 NPT	4	NC	0 ... 14 bar	350	0,25	9504400xxxx*****
1/4 NPT	5	NC	0 ... 7 bar	450	0,25	9504500xxxx*****
1/4 NPT	6	NC	0 ... 5 bar	550	0,25	9504600xxxx*****

xxxx Insert solenoid codes from table below. ***** Insert voltage codes from table (right)
For seal variants, substitute the 7th digit as follows: 0 = NBR, 1 = EPDM, 2 = FKM, 4 = FFKM e.g. 9501400xxxx*****

Solenoid operating details

Protection class	Solenoid code/power consumption							
	Group A		Group B		Group C		Group D	
	d.c.	a.c.	d.c.	a.c.	d.c.	a.c.	d.c.	a.c.
IP 00 (w/o connector)	0246	3206	0200	3204	0700	3703	0800	3803
DIN 43650 Form A	7 W	8 VA	12 W	12 VA	16 W	18 VA	16 W	18 VA
EEx m II T5*	0292	0293	0290	0291				
with cable 3 m	7 W	9 VA	11 W	13 VA				
EEx me II T5/T6*	4210	4211	4220	4221	4230	4231	4280	4281
with terminal box	4 W	5 VA	8 W	9 VA	12 W	13 VA	12 W	13 VA

* These solenoids are fitted with a fuse depending on current.
The solenoids which appear in a given column are all suitable for the specified operating pressures even if their power ratings vary.
Solenoids for a.c. with integrated rectifier. For connector plugs and accessories see page 384

Voltage codes

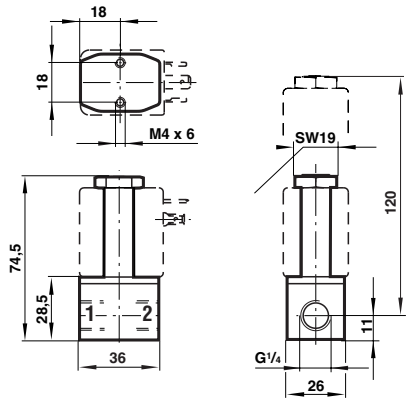
Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050

95000 Series

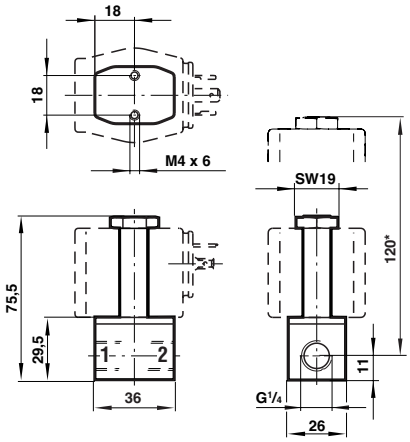
Direct solenoid actuated poppet valves

2/2, G¼, G½, ¼ NPT

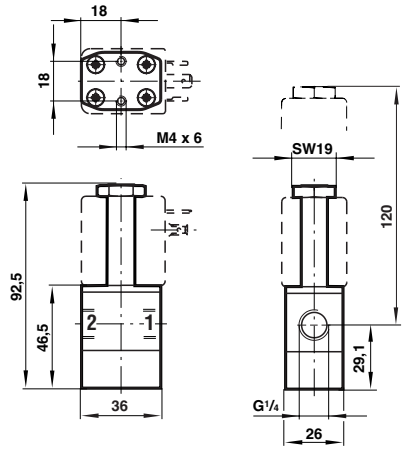
9500XXX & 9503XXX
Normally closed



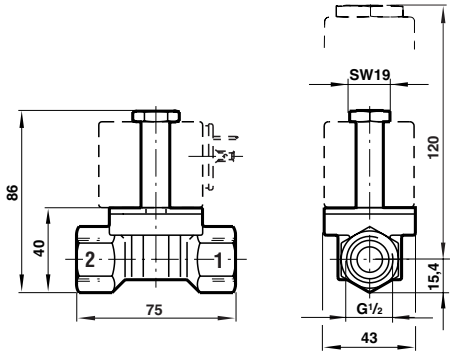
9501XXX & 9504XXX
Normally closed



9502XXX & 9505XXX
Normally open

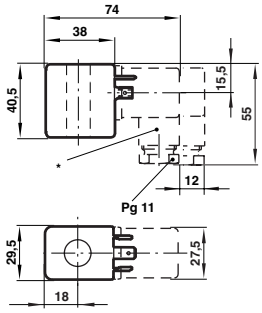


9501700 & 9501800
Normally closed



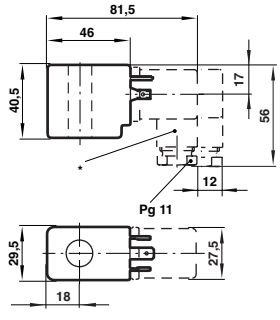
Solenoids

0200 & 0246



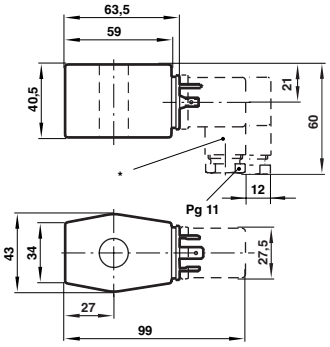
* Connector rotates 4 x 90°

3204, 3206



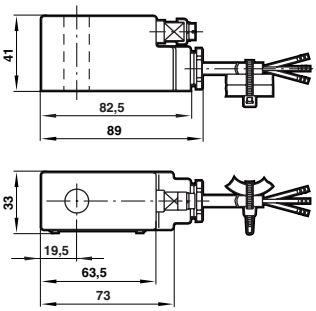
* Connector rotates 4 x 90°

3703, 3705, 3803, 3805

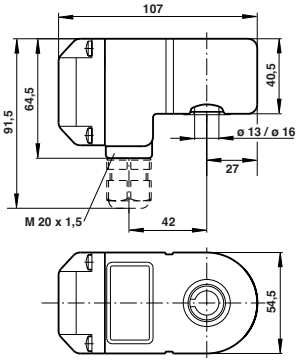


* Connector rotates 4 x 90°

0290, 0291, 0292, 0293



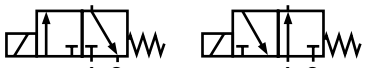
4230, 4231, 4220, 4221, 4210, 4211, 4280, 4281



96000 Series

Direct solenoid actuated poppet valves

3/2, G¼, ¼ NPT



Working from 0 bar up

Suited for fine vacuum

1,33·10-3 mbar·l/s

Free of substances which can damage laquer

Technical data

Medium:
Neutral gaseous and liquid fluids

Flow direction:
Fixed

Mounting position:
Optional, preferably with solenoid on top

Operating pressure:
0 to 18 bar

Ambient temperature:
Depending on solenoid system
-25, -40 to +55, +80, +100°C

Medium temperature:
-25 to +80 °C NBR (Perbunan)
-10 to +120 °C FKM (Viton)*
-40 to +140 °C EPDM
-10 to +180 °C FFKM (Kalrez)
* For water +90°C
Consult our Technical Service for use below +2°C.

Materials

Housing: Brass
Seal: see fluid temperature
Inner parts: brass, steel 1.4104

Alternative models

Assembled oil and grease free (for oxygen)
Solenoid for higher temperatures and outdoor installation

Valves for type A solenoid

Port size	Orifice (mm)	Function	Operating pressure (bar)	Flow (l/min)	kg	Model
G1/4	2	NC	0 ... 7	120	0,52	9600210xxxx*****
G1/4	2	NO	0 ... 9	100	0,50	9602210xxxx*****
1/4 NPT	2	Universal	0 ... 7	120	0,52	9603210xxxx*****
1/4 NPT	2	NO	0 ... 9	100	0,50	9605210xxxx*****

Valves for type B solenoid

Port size	Orifice (mm)	Function	Operating pressure (bar)	Flow (l/min)	kg	Model
G1/4	3	NC	0 ... 6	200	0,32	9600320xxxx*****
1/4 NPT	3	NC	0 ... 6	200	0,32	9603320xxxx*****

Valves for type C solenoid

Port size	Orifice (mm)	Function	Operating pressure (bar)	Flow (l/min)	kg	Model
G1/4	2	NC	0 ... 18	120	0,52	9600240xxxx*****
G1/4	3	NC	0 ... 14	200	0,52	9600340xxxx*****
G1/4	3	NO	0 ... 9	160	0,50	9602340xxxx*****
G1/4	2	NC	0 ... 7	120	0,52	9600210xxxx*****
1/4 NPT	2	NC	0 ... 18	120	0,52	9603240xxxx*****
1/4 NPT	3	NC	0 ... 14	200	0,52	9603340xxxx*****
1/4 NPT	3	NO	0 ... 9	160	0,50	9605340xxxx*****
1/4 NPT	2	Universal	0 ... 7	120	0,52	9603210xxxx*****

Valves for type D solenoid

Port size	Orifice (mm)	Function	Operating pressure (bar)	Flow (l/min)	kg	Model
G1/4	4	NC	0 ... 10	350	0,52	9601440xxxx*****
G1/4	5	NC	0 ... 7	450	0,52	9601540xxxx*****
1/4 NPT	4	NC	0 ... 10	350	0,52	9604440xxxx*****
1/4 NPT	5	NC	0 ... 7	450	0,52	9604540xxxx*****

xxxx Insert solenoid codes from table below. ***** Insert voltage codes from table (below)

For seal variants, substitute at the 7th digit as follows: 0 = NBR, 1 = EPDM, 2 = FKM, 4 = FFKM e.g. 960021**0**xxxx*****

Solenoid operating details

Protection class	Solenoid code/power consumption							
	Group A		Group B		Group C		Group D	
	d.c.	a.c.	d.c.	a.c.	d.c.	a.c.	d.c.	a.c.
IP 00 (w/o connector)	0246	3206	0200	3204	0700	3703	0800	3803
DIN 43650 Form A	7 W	8 VA	12 W	12 VA	16 W	18 VA	16 W	18 VA
EEx m II T5*	0272	0273	0270	0271				
with cable 3 m	7 W	9 VA	11 W	13 VA				
EEx me II T5/T6*	4210	4211	4220	4221	4230	4231	4280	4281
with terminal box	4 W	5 VA	8 W	9 VA	12 W	13 VA	12 W	13 VA

* These solenoids are fitted with a fuse depending on current.

The solenoids which appear in a given column are all suitable for the specified operating pressures even if their power ratings vary.
Solenoids for a.c. with integrated rectifier. For connector plugs and accessories see page 384

Voltage codes

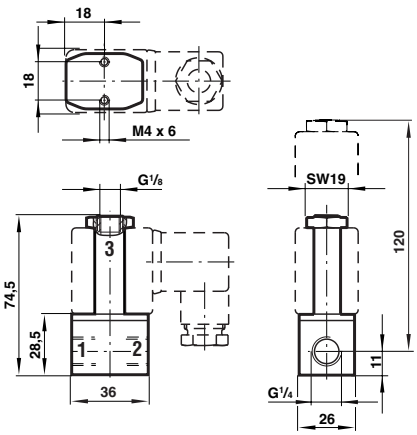
Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050

96000 Series

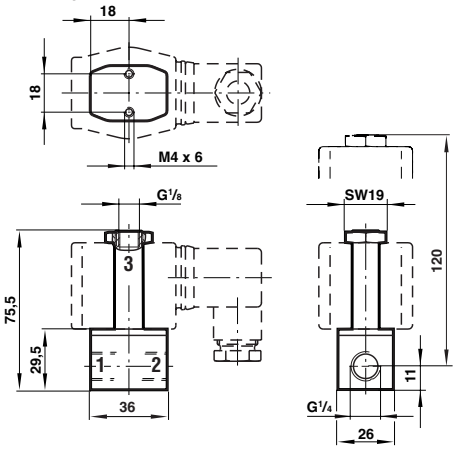
Direct solenoid actuated poppet valves

3/2, G¼, ¼ NPT

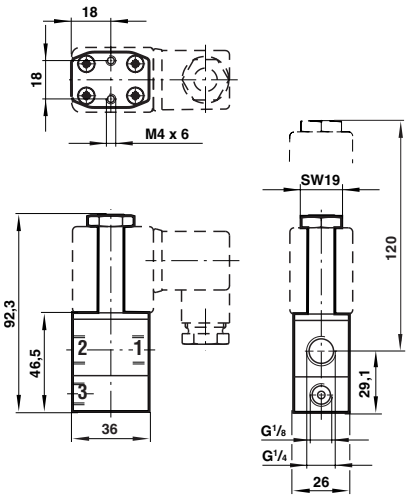
9600xxx and 9603xxx
Normally closed



9601xxx and 9604xxx
Normally closed

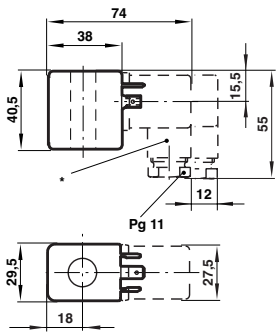


9602xxx and 9605xxx
Normally open



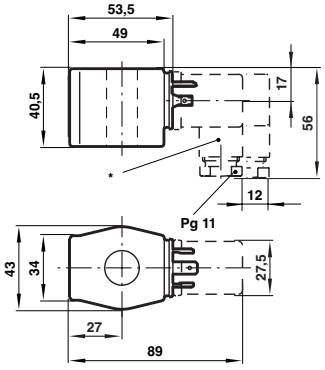
Solenoids

0200, 0246



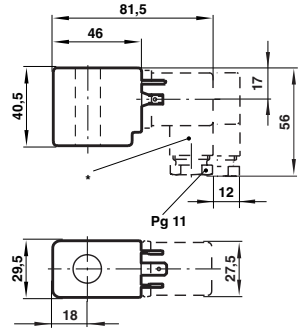
* Connector rotates 4 x 90°

0800, 0827



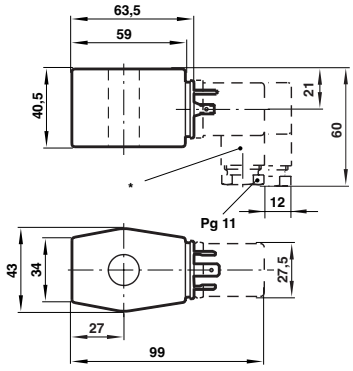
* Connector rotates 4 x 90°

3206



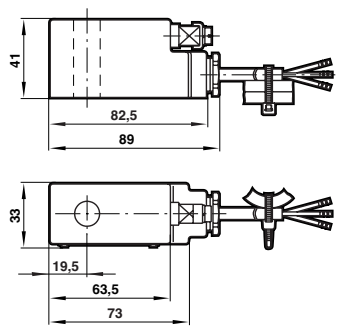
* Connector rotates 4 x 90°

3803, 3805

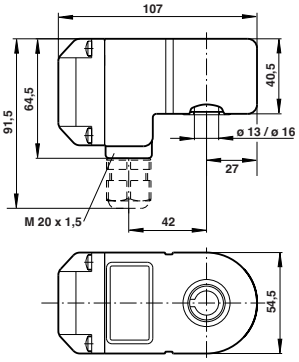


* Connector rotates 4 x 90°

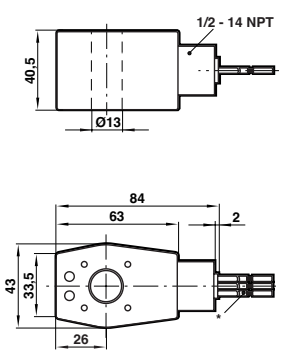
0292, 0293



4220, 4221, 4270, 4271, 4280, 4281

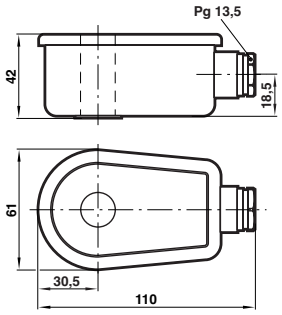


3722, 3723, 3822, 3823, 3826, 3827



*Stranded wire AWG 18 (~ 460 mm long)

4040, 4041, 4100, 4101

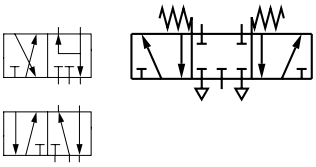


97100 Series

Indirect solenoid actuated spool valves

For single and double acting actuators with NAMUR interface

5/2, 5/3, G¼, ¼ NPT



- **Reversible seal allows 3/2 or 5/2 way function**
- **Exhaust air recirculation**
- **Crossover-free switching, switch-over function guaranteed even with small cross section air supply**
- **Safety function in the event of power failure provided by mechanical return spring (monostable design)**
- **Manual override with detent**
- **Compact design**
- **Simple design of soft seal spool system**
- **Easily interchangeable solenoid**

Technical data

Medium:
Compressed air, filtered, lubricated and non-lubricated

Flow direction:
Fixed

Mounting position:
Optional

Operating pressure:
2 to 8 bar

Temperature range:
Valve: -25°C* to +50°C
Solenoid: see solenoid table
*For temperatures below 0°C use conditioned dry air. If installed outdoors protect all connections against the penetration of moisture

Materials

Housing: aluminium anodized
Pilot flange: plastic (PTB)
Seal: NBR (Perbunan)

Valves for type A solenoid

Port size 1/3 (5)	2 (4)	Function	Actuation	Flow (l/min)	kg	Model
G¼/G⅛	Flange	5/2	Solenoid/Spring	750	0,25	9710000xxxx*****
¼ NPT/⅛ NPT	Flange	5/2	Solenoid/Spring	750	0,25	9710010xxxx*****
G¼/G⅛	Flange	5/2	Solenoid/Solenoid	750	0,35	9711000xxxx*****
¼ NPT/⅛ NPT	Flange	5/2	Solenoid/Solenoid	750	0,35	9711010xxxx*****
G¼/G⅛	Flange	5/3 NC	Solenoid/Solenoid	500	0,40	9712000xxxx*****
¼ NPT/⅛ NPT	Flange	5/3 NC	Solenoid/Solenoid	500	0,40	9712010xxxx*****

Valves for type B solenoid

Port size 1/3 (5)	2 (4)	Function	Actuation	Flow (l/min)	kg	Model
G¼/G⅛	Flange	5/2	Solenoid/Spring	750	0,25	9710002xxxx*****
¼ NPT/⅛ NPT	Flange	5/2	Solenoid/Spring	750	0,25	9710012xxxx*****
G¼/G⅛	Flange	5/2	Solenoid/Solenoid	750	0,35	9711002xxxx*****
¼ NPT/⅛ NPT	Flange	5/2	Solenoid/Solenoid	750	0,35	9711012xxxx*****
G¼/G⅛	Flange	5/3 NC	Solenoid/Solenoid	500	0,40	9712002xxxx*****
¼ NPT/⅛ NPT	Flange	5/3 NC	Solenoid/Solenoid	500	0,40	9712012xxxx*****

xxxx Insert solenoid codes from table below. ***** Insert voltage codes from table below

Type A solenoid operating details

Power consumption 24 V d.c.	230 V a.c.	Protection class	Temperature °C Fluid	Ambient	Solenoid code
1,7 W	5,6/4,3	IP 00 (without connector)	+50	-15 ... +50	3050
1,6 W	4,55/3,5	IP 00 (without connector)	+50	-15 ... +50	3036
3,3 W	–	EEx m II T6 with cable 3 m	+50	-15 ... +50	3062
–	3,3 VA	EEx m II T6 with cable 3 m	+50	-15 ... +50	3063

Type B solenoid operating details

Power consumption 24 V d.c.	230 V a.c.	Protection class	Temperature °C Fluid	Ambient	Solenoid code
0,7 W	–	IP 00 (without connector)	+50	-15 ... +50	3034
2,7 W	–	EEx m II T6 with cable 3 m	+50	-15 ... +50	3062
–	2,7 VA	EEx m II T6 with cable 3 m	+50	-15 ... +50	3063
Intrinsically safe	–	EEx ia IIC T6	+50	-15 ... +50	3039

Other solenoid operator types and voltages are available.
Requires connector plug type 0570275 for d.c., connector plug with rectifier type 0663303 for a.c. or a.c./d.c.
For connector plugs and accessories see page 384
Oil recommendation: Shell Hydrol DO 32, Esso Febis (as of July 1992) or comparable oils with DVI values < 8 (DIN 53521) and ISO viscosity class 32-46 (DIN 51519)

Voltage codes

Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050

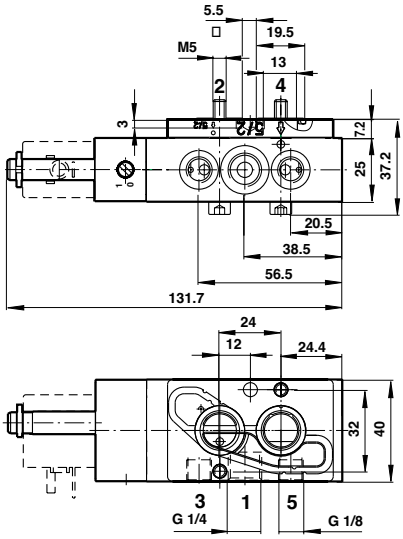
97100 Series

Indirect solenoid actuated spool valves

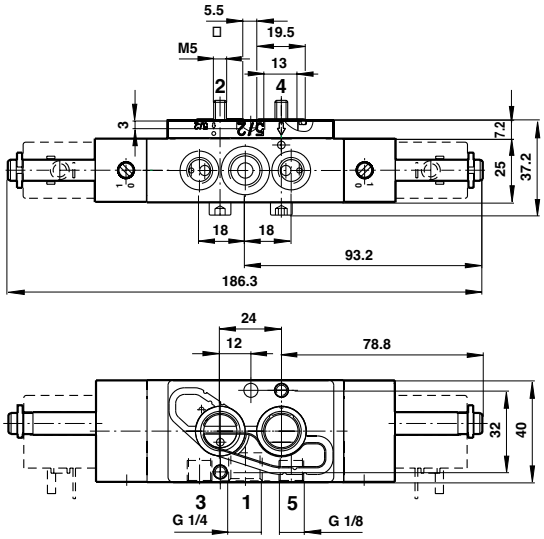
For single and double acting actuators with NAMUR interface

5/2, 5/3, G¼, ¼ NPT

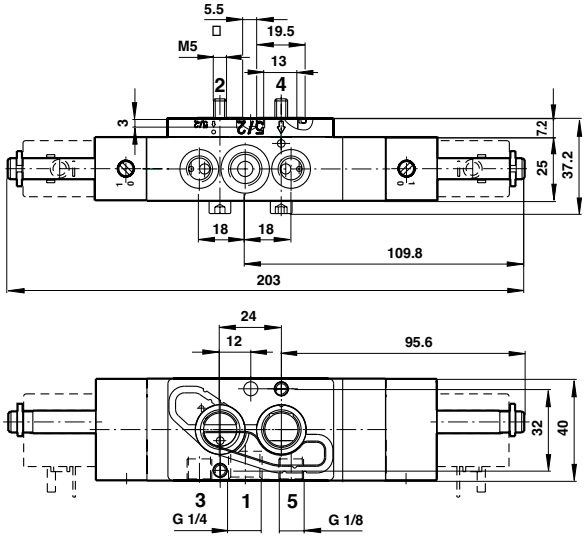
5/2 Single solenoid model



5/2 Double solenoid model

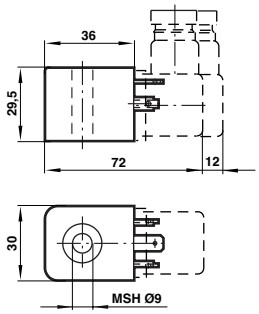


5/3 Double solenoid model

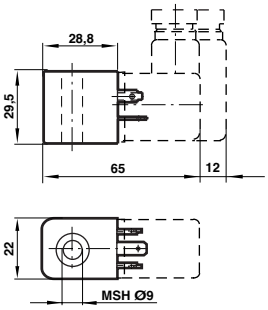


Solenoids

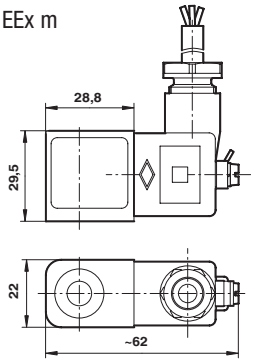
3036



3050, 3039



EEx m

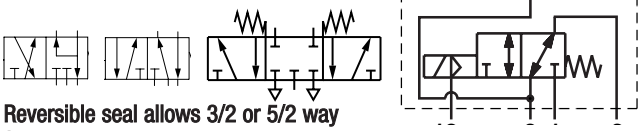


97105 Series

Indirect solenoid actuated spool valves

For single and double acting actuators with NAMUR interface

3/2, 5/2, 5/3, G¼, ¼ NPT



Reversible seal allows 3/2 or 5/2 way function
Exhaust air recirculation
Crossover-free switching, switch-over function guaranteed even with small cross section air supply
Safety function in the event of power failure provided by mechanical return spring (monostable design)
Add-on manual override
Suitable for outdoor installation if equipped with corresponding solenoid
Valves suitable for hazardous environments in combination with Ex approved solenoids (ATEX, FM)
Minimal electrical power consumption – therefore many safety ratings possible, e.g. EEx ia

Technical data

Medium:
Compressed air, filtered, lubricated and non-lubricated, instrument air, nitrogen or other neutral, dry fluids

Flow direction:
Fixed

Mounting position:
Optional

Operating pressure:
2 to 8 bar with internal air supply

Temperature range:
Valve: -40°C to +65°C
Solenoid: see solenoid table
For temperatures below 0°C use conditioned dry air. If installed outdoors protect all connections against the penetration of moisture

Materials

Housing: aluminium black anodized, brass, stainless steel 1.4305
Seal: NBR (Perbunan)

Valves for type A solenoid

Port size 1/3 (5)	2 (4)	Function	Actuation	Materials	Flow (l/min)	kg	Model
G1/4	Flange	5/2	Solenoid/Spring	Aluminium	1300	0,45	9710505xxxx*****
1/4 NPT	Flange	5/2	Solenoid/Spring	Aluminium	1300	0,45	9710515xxxx*****
G1/4	Flange	5/2	Solenoid/Solenoid	Aluminium	1300	0,65	9711505xxxx*****
1/4 NPT	Flange	5/2	Solenoid/Solenoid	Aluminium	1300	0,65	9711515xxxx*****
G1/4	Flange	5/3 NC	Solenoid/Solenoid	Aluminium	950	0,70	9712505xxxx*****
1/4 NPT	Flange	5/3 NC	Solenoid/Solenoid	Aluminium	950	0,70	9712515xxxx*****
Flange	Flange	3/2	Solenoid/Spring	Aluminium	1300	0,43	9710525xxxx*****#
G1/4	Flange	5/2	Solenoid/Spring	Brass	1300	1,00	9710605xxxx*****
1/4 NPT	Flange	5/2	Solenoid/Spring	Brass	1300	1,00	9710615xxxx*****
G1/4	Flange	5/2	Solenoid/Solenoid	Brass	1300	1,40	9711605xxxx*****
1/4 NPT	Flange	5/2	Solenoid/Solenoid	Brass	1300	1,40	9711615xxxx*****
G1/4	Flange	5/3 NC	Solenoid/Solenoid	Brass	950	1,50	9712605xxxx*****
1/4 NPT	Flange	5/3 NC	Solenoid/Solenoid	Brass	950	1,50	9712615xxxx*****
Flange	Flange	3/2	Solenoid/Spring	Brass	1300	0,90	9710625xxxx*****#
G1/4	Flange	5/2	Solenoid/Spring	Stainless steel	1300	1,00	9710705xxxx*****
1/4 NPT	Flange	5/2	Solenoid/Spring	Stainless steel	1300	1,00	9710715xxxx*****
G1/4	Flange	5/2	Solenoid/Solenoid	Stainless steel	1300	1,40	9711705xxxx*****
1/4 NPT	Flange	5/2	Solenoid/Solenoid	Stainless steel	1300	1,40	9711715xxxx*****
G1/4	Flange	5/3 NC	Solenoid/Solenoid	Stainless steel	950	1,50	9712705xxxx*****
1/4 NPT	Flange	5/3 NC	Solenoid/Solenoid	Stainless steel	950	1,50	9712715xxxx*****
Flange	Flange	3/2	Solenoid/Spring	Stainless steel	1300	0,90	9710725xxxx*****#

NAMUR interface DIN 3845/Nov. 98, port P and auxiliary supply in flange surface
xxxx Insert solenoid codes from table below. ***** Insert voltage codes from table below

Solenoid operating details

Power consumption 24 V d.c.	230 V a.c.	Protection class	Temperature °C Fluid	Ambient	Electrical connection	Solenoid code
1,6 W		IP 00 (without connector)	+80	-15 ... +50		0253
1,9 W		IP 00 (without connector)	+50	-15 ... +50		0763
3,2 W		Cat II 2 G EEx m II T5	+70	+70		0298
	3,5 VA	Cat II 2 G EEx m II T5	+70	+70		0299
0,7 W		Cat II 2 GD EEx me II T5/T6	-40 ... +80/70			4200
	1,3 VA	Cat II 2 GD EEx me II T5/T6	-40 ... +80/70			4201
0,7 W		Cat II 2 GD EEx md IIC T5/T6	-40 ... +80/70	-40 ... +80/70	1/2 NPT	4600
0,7 W		Cat II 2 GD EEx md IIC T5/T6	-40 ... +80/70	-40 ... +80/70	M20x1,5	4602
	1,3 VA	Cat II 2 GD EEx md IIC T5/T6	-40 ... +80/70	-40 ... +80/70	1/2 NPT	4601
1,3 VA		Cat II 2 GD EEx md IIC T5/T6	-40 ... +80/70	-40 ... +80/70	M20x1,5	4603
1,4 W		NEMA 4, 4X, 6, 6P, 7, 9; wire 460 mm	-20 ... +60	-20 ... +60		3720

Requires connector plug type 0570275 for d.c., connector plug with rectifier type 0663303 for a.c. or a.c./d.c. For connector plugs and accessories see page 384

Voltage codes

Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050

Solenoid actuators (ATEX) for intrinsically safe circuit Cat. II 1G EEx ia IIC T5/T6*, Cat. II 2D T 90°C

Nominal resistance RV coil	Min. required switching current	Resistance RW 60 coil	Required voltage at terminal RW 65	Solenoid code
200 Ω	33 mA	240 Ω	8 V	2050
391 Ω	24 mA	470 Ω	11 V	2051
736 Ω	17 mA	880 Ω	15 V	2052
1220 Ω	13 mA	1460 Ω	19 V	2053

When selecting an intrinsically safe power supply, the permissible maximum values according to the EC-Type Examination certificate KEMA 03 ATEX 1051X must be taken into account. The low effective inductivity and capacity can be ignored.
*Fluid and ambient temperature: -40 to +80°C (T5), -40 to +70°C (T6)

Solenoid actuators with FM approval

Intrinsically safe: IS/I, II, III/1/ABCDEFG/T6 Ta = 65 °C; I/0 AEx ia IIC/T6 Ta = 65 °C - 0588672/B; Entity
Nonincendive: NI/I/2/ABCD/T6 Ta = 65 °C; S/II,III/2/FG/T6 Ta = 65 °C; NEMA Type 4

Nominal resistance RV coil	Min. required switching current	Resistance RW 65 coil	Required voltage at terminal RW 65	Temperature °C Fluid	Ambience	Solenoid code
124 Ω	43 mA	150 Ω	6,4 V	-40 ... +65	+65	2040
159 Ω	38 mA	193 Ω	7,3 V	-40 ... +65	+65	2041
198 Ω	34 mA	240 Ω	8,2 V	-40 ... +65	+65	2042
248 Ω	30 mA	301 Ω	9,0 V	-40 ... +65	+65	2043
306 Ω	27 mA	371 Ω	10,0 V	-40 ... +65	+65	2044
378 Ω	25 mA	458 Ω	11,5 V	-40 ... +65	+65	2045
467 Ω	23 mA	566 Ω	13,0 V	-40 ... +65	+65	2046
566 Ω	21 mA	686 Ω	14,4 V	-40 ... +65	+65	2047
692 Ω	19 mA	839 Ω	15,9 V	-40 ... +65	+65	2048

When selecting an intrinsically safe power supply, the permissible maximum values according to the FM approval should be taken into account. The low effective inductivity and capacity can be ignored.

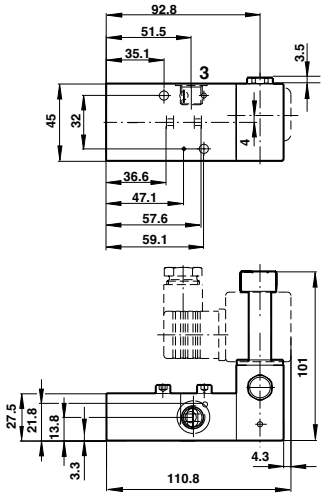
97105 Series

Indirect solenoid actuated spool valves

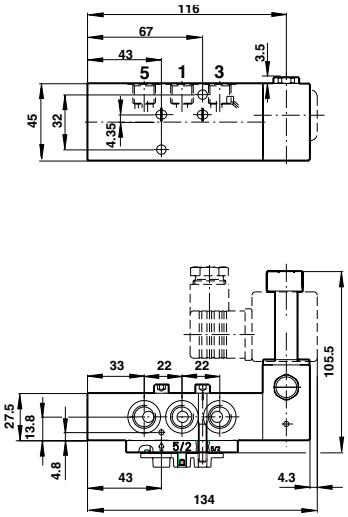
For single and double acting actuators with NAMUR interface

3/2, 5/2, 5/3, G¼, ¼ NPT

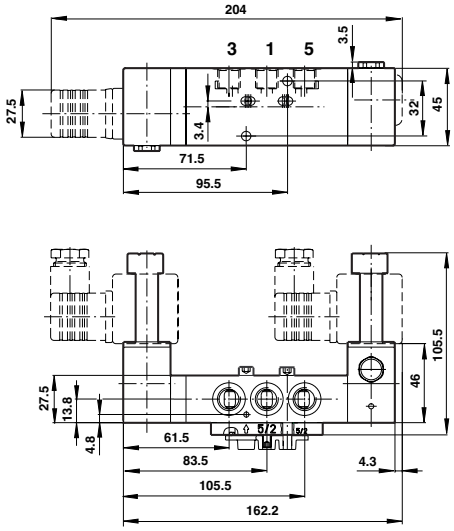
3/2 NAMUR DIN 3845/Nov. 98



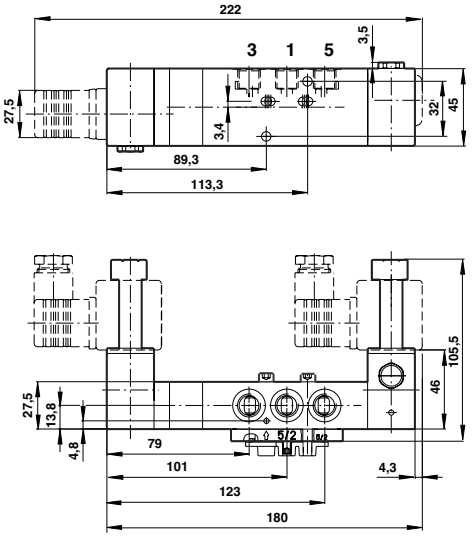
5/2 Single solenoid model



5/2 Double solenoid model

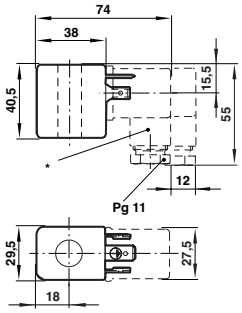


5/3 Double solenoid model



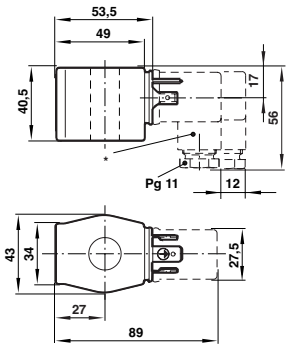
Solenoids

IP 00, 0253



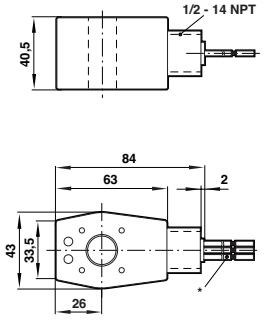
* Connector rotates 4 x 90°

IP 00, 0763



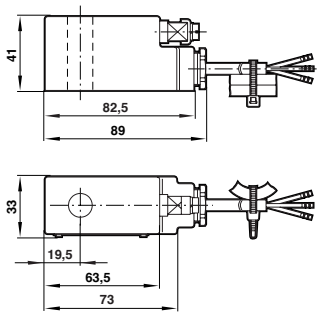
* Connector rotates 4 x 90°

NEMA

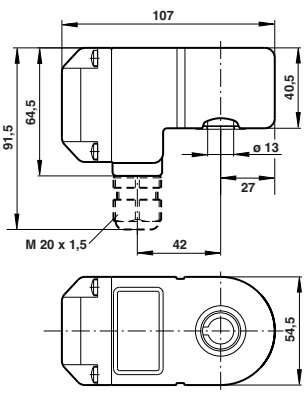


* Stranded wire AWG 18 (~460 mm length)

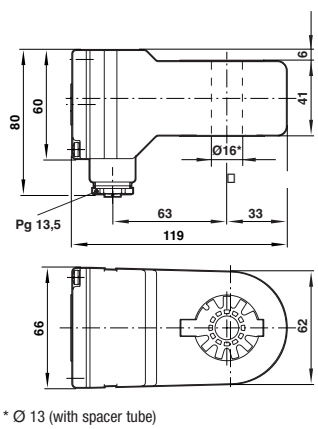
EEx m



EEx me

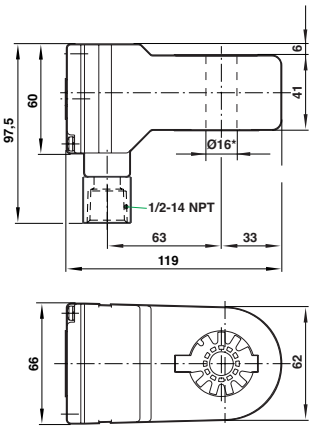


EEx ia



* Ø 13 (with spacer tube)

FM



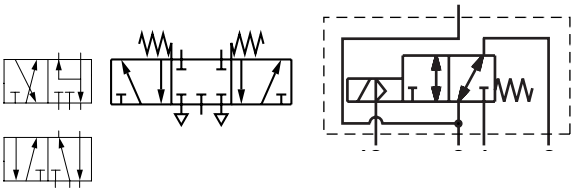
* Ø 13 (with spacer tube)

97105 Series (50 mW/5 mW)

Indirect solenoid actuated spool valves

For single and double acting actuators with NAMUR interface

3/2, 5/2, 5/3, G¼, ¼ NPT



Reversible seal allows 3/2 or 5/2 way function

Exhaust air recirculation

Crossover-free switching, switch-over function guaranteed even with small cross section air supply

Safety function in the event of power failure provided by mechanical return spring (monostable design)

Suitable for outdoor installation if equipped with corresponding solenoid

Port size 1/3 (5)	2 (4)	Function	Actuation	Flow (l/min)	kg	Model
G1/4	Flange	5/2	Solenoid/Spring	1300	0,45	9710509xxxxyyy00
1/4 NPT	Flange	5/2	Solenoid/Spring	1300	0,45	9710519xxxxyyy00
G1/4	Flange	5/2	Solenoid/Solenoid	1300	0,65	9711509xxxxyyy00
1/4 NPT	Flange	5/2	Solenoid/Solenoid	1300	0,65	9711519xxxxyyy00
G1/4	Flange	5/3 NC	Solenoid/Solenoid	950	0,70	9712509xxxxyyy00
1/4 NPT	Flange	5/3 NC	Solenoid/Solenoid	950	0,70	9712519xxxxyyy00
Flange	Flange#	3/2	Solenoid/Spring	1300	0,43	9710529xxxxyyy00

NAMUR interface DIN 3845/Nov. 98, port P and auxiliary supply in flange surface

xxxx Insert solenoid code from table below yyy Insert electrical connection code from table below

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated, instrument air, nitrogen or other neutral, dry fluids

Flow direction:

Fixed

Mounting position:

Optional

Operating pressure:

2 to 8 bar with internal air supply

Temperature range:

Valve: -40°C to +65°C

Solenoid: see solenoid table

For temperatures below 0°C use conditioned dry air. If installed outdoors protect all connections against the penetration of moisture

Solenoid operating details

Rated power PN	Voltage at terminal UN	Rated current Ion	Rated current Ioff	Resistance coil RN	Max. values EEx i Ui	Ii	Pi	Type of protection*	Ambient temperature	Solenoid code
5 mW	⩾ 5 V	⩾ 1 mA	⩽ 0,1 mA	5100 Ω	28 V	120 mA	0,75 W	EEx ia IIC T4	-40 ... +80°C	2080
					25,2 V	155 mA	0,75 W	EEx ia IIC T6	-40 ... +45°C	
					22 V	224 mA	0,75 W			
50 mW	⩾ 10 V	⩾ 2,7 mA	⩽ 1,3 mA	3700 Ω	28 V	120 mA	0,75 W	II 2G EEx ia IIC T4	-40 ... +65°C	2081
					25,2 V	155 mA	0,75 W	II 2G EEx ia IIC T6	-40 ... +45°C	
					22 V	224 mA	0,75 W			

* Category II2G, EC Type Examination Certificate No. PTB 00 ATEX 2050

Materials

Housing: aluminium black anodized, brass, stainless steel 1.4305

Seal: NBR (Perbunan)

Electrical connections

Connector	Code
M12 x 1,5	003
Round connector	004
M16 x 1,5	005

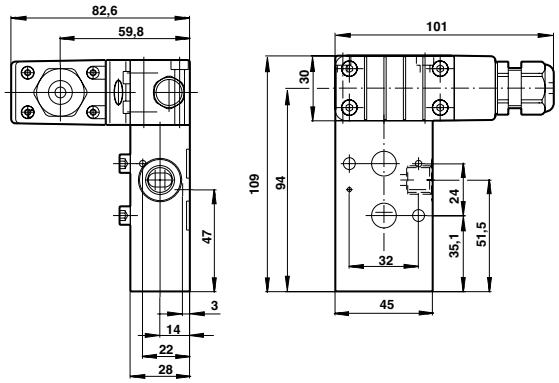
97105 Series (50 mW/5 mW)

Indirect solenoid actuated spool valves

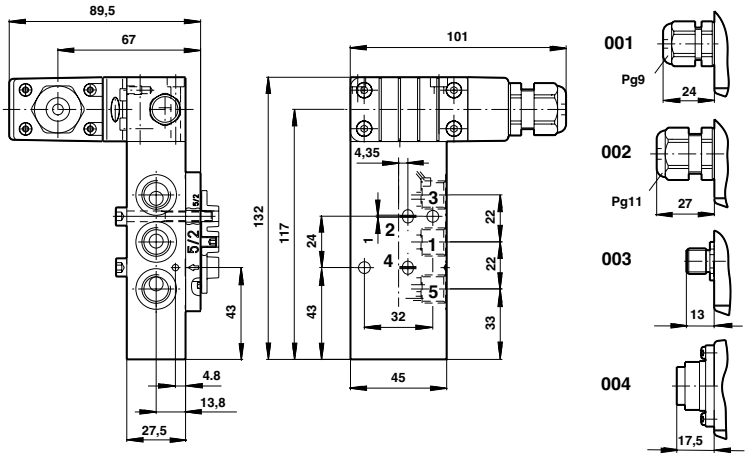
For single and double acting actuators with NAMUR interface

3/2, 5/2, 5/3, G¼, ¼ NPT

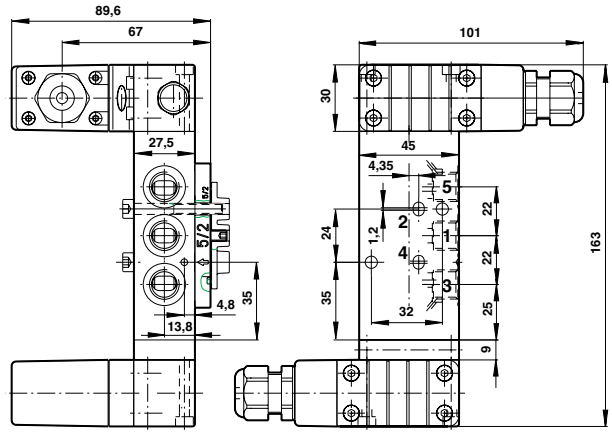
3/2 NAMUR DIN 3845/Nov. 98



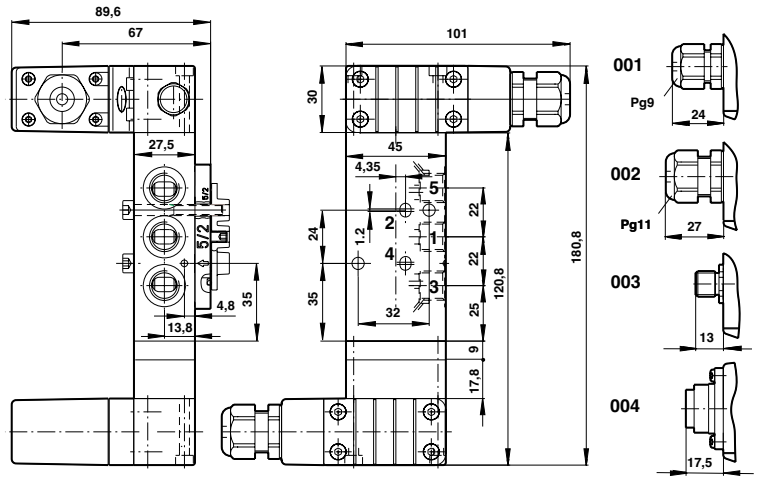
5/2 Single solenoid model

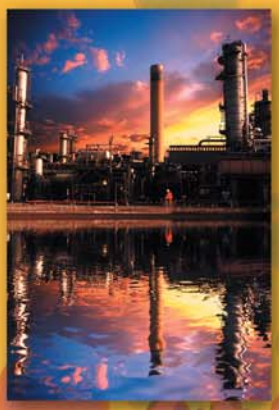


5/2 Double solenoid model



5/3 Double solenoid model





Fluid control solutions

Norgren is a leading global supplier of Fluid control solutions with proven products widely accepted by manufacturers and users worldwide.

The winning combination of Norgren, Herion and Buschjost expertise and technology brings you all the benefits of many years of specialized experience and understanding of the process industry applications.

Norgren is committed to providing added value through machine and process improvement and this is further backed by our commitment to provide an unequalled service which is customized to meet the specific needs of our individual customers.

At the heart of this service is the capability to design and engineer added-value, integrated solutions to answer the most demanding applications challenges.

A new Fluid Control catalogue will be available soon. You can visit **www.norgren.com** for more information on these products.

24011/24010 solenoid valves, Namur and Inline with TÜV Approval IEC 61508

97105 Series indirect solenoid valves, Namur and Inline for -40°C

Pressure actuated angle seat valves

Click-on® piston valves

- Control flow of air, water, oil and other fluids and gases
- 2/2 and 3/2 valves
  - ~ Diaphragm and piston seat type
  - ~ Pressure range up to 40 bar (specials up to 70 bar); medium temperature -196°C up to +200°C
  - ~ Can be operated by solenoid, by air-driven actuator and by motor drive
  - ~ In-line and Namur versions
  - ~ Threaded connections 1/4 to 3 inches (BSP or NPT) and flanged connections 1/2 to 6 inches (DIN or ANSI)
  - ~ Low power consumption options (5 mW and 50 mW)
  - ~ Bodies in brass, grey cast iron, cast and stainless steel, gun metal, plastic, anodised aluminium
- Options suitable for hazardous areas
- Models for Emergency Shut-off Applications
- Control systems
- BUS – Technology
- Valve systems (manifold or fitted with pipes)
- Customized standard products and special designs

Approvals

- TÜV approval, including risk analysis for petrochemical plants
- Ex-approvals worldwide

  Solenoids, with ATEX approval in protection classes: EEx m II T4, EEx me II T3/4, EEx de II C T4/5, EEx md, Eex na, Eexia. NI, IS, XP

Motorised valves

Dust filter valves pressure actuated

Click-on® diaphragm valve

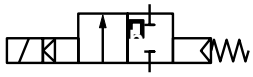
Twist-on® Dust filter valves solenoid actuated

82400 'Click-on®' series

Indirect solenoid actuated diaphragm valves

8 to 50 mm orifice

2/2, G¼ to G2



High flow rate
Damped operation
Clear compact design
Solenoid interchangeable without tools (Click-on®)

Technical data

Medium:
Neutral gases and liquid fluids

Flow direction:
Fixed

Mounting position:
Optional, preferably with solenoid upright

Ambient temperature:
+50°C max.

Medium temperature:
+90°C max.
Consult our Technical Service for use below +2°C.

Materials

Body: brass
Seat seal: NBR (Perbunan)
Internal parts: stainless steel, PVDF

Alternative models

Normally open
Manual override
Seat seal FKM, max. fluid temperature +110°C
Seat seal EPDM, for hot water, max. fluid temperature +110°C; 0,3 to 10 bar
NPT connections

Port size	Orifice (mm)	Operating pressure (bar)	kv value m^3/h‡	kg	Model
G1/4	8	0,1 ... 16	1,90	0,47	82400009101*****
G3/8	10	0,1 ... 16	3,00	0,45	82401009101*****
G1/2	12	0,1 ... 16	3,80	0,50	82402009101*****
G3/4	20	0,1 ... 16	6,10	0,65	82403009101*****
G1	25	0,1 ... 16	9,50	0,95	82404009101*****
G1¼	32	0,1 ... 10	23,00	2,73	82405009101*****
G1½	40	0,1 ... 10	25,00	2,53	82406009101*****
G2	50	0,1 ... 10	41,00	3,85	82407009101*****

* With gaseous and liquid fluids up to 25 mm^2/s (cSt) ‡ Cv (US) = k_v x 1,2 ***** Insert voltage code from table below

Voltage codes

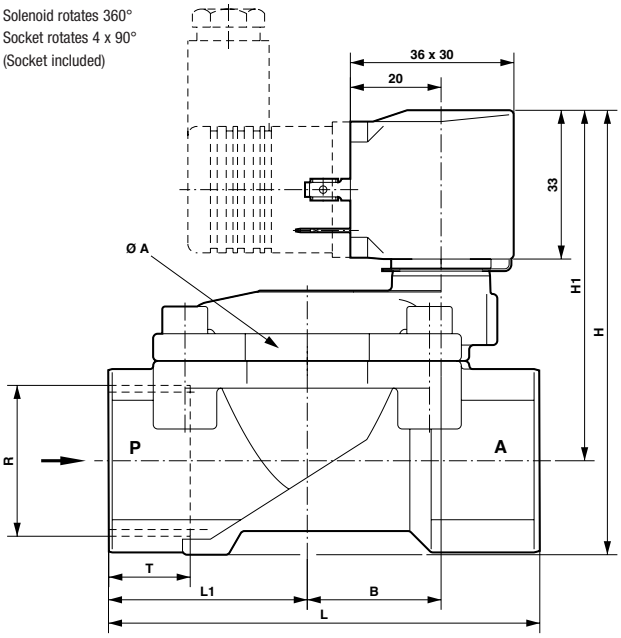
Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050

Other voltages available

Electrical details for solenoid operators

Voltage tolerance:	±10%
Power consumption:	8 W
Inrush/hold:	15 VA/12 VA/7 W
Rating:	100% E.D.
Electrical connection:	DIN 43650 Form A
Protection class:	EN 60529 IP 65

Solenoid rotates 360°
Socket rotates 4 x 90°
(Socket included)



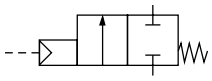
Model	Ø A	B	H	H1	L	L1	R	T
8240000.9101	44	19,5	78,5	67	60	27,5	G1/4	12,0
8240100.9101	44	19,5	78,5	67	60	27,5	G3/8	12,0
8240200.9101	44	19,5	81,0	67	67	31,0	G1/2	14,0
8240300.9101	50	24,0	88,0	71,5	80	36,5	G3/4	16,0
8240400.9101	62	29,5	97,5	77	95	44,0	G1	18,0
8240500.9101	92	44,5	124,5	95,5	132	60,0	G1¼	20,0
8240600.9101	92	44,5	124,5	95,5	132	60,0	G1½	22,0
8240700.9101	109	54,5	142,5	108,0	160	74,0	G2	24,0

84500 Series

Pressure actuated angle seat valves

15 to 50 mm orifice

2/2, G½ to G2



- **Easy rebuilding into normally open or double-acting without tools**
- **Optical position indicator is standard**
- **Damped closing (valve closes against flow direction)**
- **Suitable for contaminated flow fluid**
- **Suitable for vacuum up to max. 90%**
- **Reversed flow direction optional**
- **High flow rate**
- **Option pressure actuated by external liquid fluid**

Technical data

Medium:
Neutral gases and liquid fluids

Flow direction:
Fixed

Mounting position:
Optional

Ambient temperature:
-10°C to +60°C max.

Medium temperature:
-10°C to +180°C max.

Pilot medium temperature:
+60°C max.
Consult our Technical Service for use below +2°C.

Materials

Valve
Body: gun metal
Seat seal: PTFE
Internal parts: brass, stainless steel
Seal packing: Teflon (PTFE)/Viton (FPM)

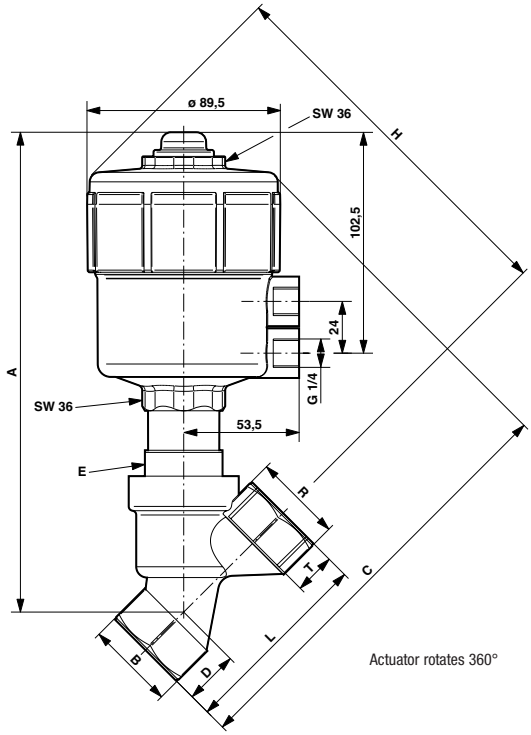
Actuator
Body: Polyamid 66 with glass fibre 30%
Seals: NBR
Internal parts: brass, stainless steel

Alternative models

Normally open, closes with pilot pressure and opens with spring force (pilot pressure 1 to 10 bar)
Double acting; 4/2 or 5/2-way-pilot valve required
Higher operating pressure
Double electrical position indicator
NAMUR interface plate
NPT connections

Port size	Orifice (mm)	Operating pressure (bar)*	Pilot pressure (bar)	kv value m^3/h ‡	kg**	Model
G1/2	15	0 ... 16,0 (25)	3,5 ... 10	4,80	1,4	8450200.0000.00000
G3/4	20	0 ... 10,0 (16)	3,5 ... 10	10,00	1,5	8450300.0000.00000
G1	25	0 ... 10,0	3,5 ... 10	14,00	1,8	8450400.0000.00000
G1¼	32	0 ... 7,0	3,5 ... 10	23,00	2,4	8450500.0000.00000
G1½	40	0 ... 4,5	3,5 ... 10	30,00	2,7	8450600.0000.00000
G2	50	0 ... 3,0	3,5 ... 10	37,00	3,9	8450700.0000.00000

* With gaseous and liquid fluids up to 600 mm^2/s (cSt) ** Without pilot valve ‡ Cv (US) = kv x 1,2



Actuator rotates 360°

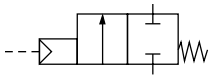
Model	A	B	C	D	E	H	L	R	T
8450200	204,5	SW 27	183,0	18,5	SW 30	164,0	65	G1/2	15,0
8450300	213,5	SW 32	189,0	21,0	SW 36	168,0	75	G3/4	16,5
8450400	221,5	SW 41	199,0	25,0	SW 36	174,0	90	G1	19,0
8450500	236,5	SW 50	212,5	28,5	SW 41	184,5	110	G1¼	21,5
8450600	238,5	SW 55	217,0	31,0	SW 41	186,0	120	G1½	21,5
8450700	250,5	SW 70	234,5	40,0	SW 41	194,5	150	G 2	26,0

84520 Series

Pressure actuated angle seat valves

15 to 50 mm orifice

2/2, G½ to G2



Easy rebuilding into normally open or double-acting without tools

Optical position indicator is standard

Damped closing (valve closes against flow direction)

Suitable for contaminated flow fluid

Suitable for vacuum up to max. 90%

Reversed flow direction optional

High flow rate

Option pressure actuated by external liquid fluid

Technical data

Medium:
Neutral gaseous liquids or aggressive fluids

Flow direction:
Fixed

Mounting position:
Optional

Ambient temperature:
-10°C to +60°C max.

Medium temperature:
-10°C to +180°C max.

Pilot medium temperature:
+60°C max.
Consult our Technical Service for use below +2°C.

Materials

Valve
Body: stainless steel
Seat seal: PTFE
Internal parts: Sandvik 1802
Seal packing: Teflon (PTFE)/Viton (FPM)

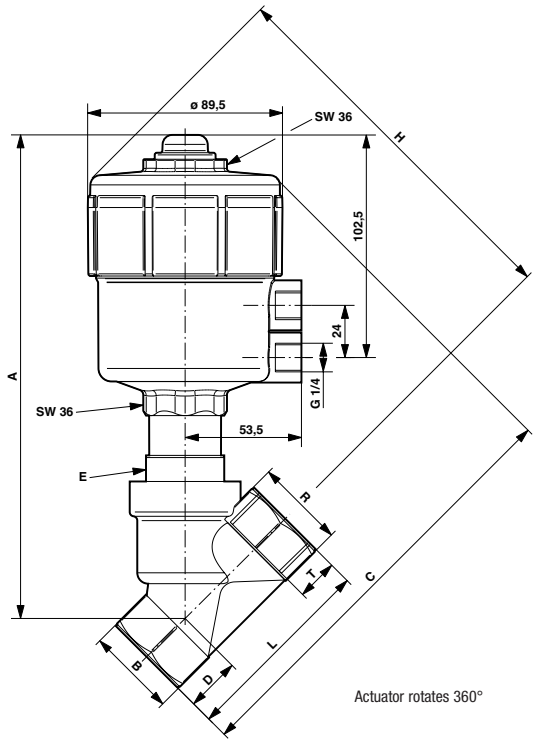
Actuator
Body: Polyamid 66 with glass fibre 30%
Seals: NBR (Perbunan)
Internal parts: brass, Sandvik 1802, stainless steel

Alternative models

Normally open, closes with pilot pressure and opens with spring force (pilot pressure 1 to 10 bar)
Double acting; 4/2 or 5/2-way-pilot valve required
NPT ports
Higher operating pressure
Double electrical position indicator
NAMUR interface plate

Port size	Orifice (mm)	Operating pressure (bar)*	Pilot pressure (bar)	kv value m³/h ‡	kg**	Model
G1/2	15	0 ... 16,0 (25)	3,5 ... 10	4,80	1,4	8452200.0000.00000
G3/4	20	0 ... 10,0 (16)	3,5 ... 10	10,00	1,5	8452300.0000.00000
G1	25	0 ... 10,0	3,5 ... 10	14,00	1,8	8452400.0000.00000
G1¼	32	0 ... 7,0	3,5 ... 10	23,00	2,4	8452500.0000.00000
G1½	40	0 ... 4,5	3,5 ... 10	30,00	2,7	8452600.0000.00000
G 2	50	0 ... 3,0	3,5 ... 10	37,00	3,9	8452700.0000.00000

* With gaseous and liquid fluids up to 600 mm²/s (cSt) ** Without pilot valve ‡ Cv (US) = kv x 1,2



Actuator rotates 360°

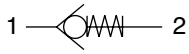
Model	A	B	C	D	E	H	L	R	T
8452200	204,5	SW 27	183,0	18,5	SW 30	164,0	65	G 1/2	15,0
8452300	213,5	SW 32	189,0	21,0	SW 36	168,0	75	G 3/4	16,5
8452400	221,5	SW 41	199,0	25,0	SW 36	174,0	90	G 1	19,0
8452500	236,5	SW 50	212,5	28,5	SW 41	184,5	110	G 1¼	21,5
8452600	238,5	SW 55	217,0	31,0	SW 41	186,0	120	G 1½	21,5
8452700	250,5	SW 70	234,5	40,0	SW 41	194,5	150	G 2	26,0

T55/T56 Series

Non-return valves

In-line

M5, ⅛, ¼, ⅜, ½" BSPP, BSPT, NPT



Permit free flow of air in one direction only

Simple, reliable design

Silicone free

Low cracking pressure

T56 male connections have an O-ring in parallel threads

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated

Operating pressure:

0,1 to 10 bar

Ambient temperature:

-20°C to +80°C

Consult our Technical Service for use below +2°C.

Materials

Body: aluminium (T55), brass (T56)

O-ring: nitrile rubber

Valve: POM

Spring: stainless steel

Note: Viton seals for high temperature version

Alternative models

T51, T52, T53 Series in-line push-in non-return valves, see page 340

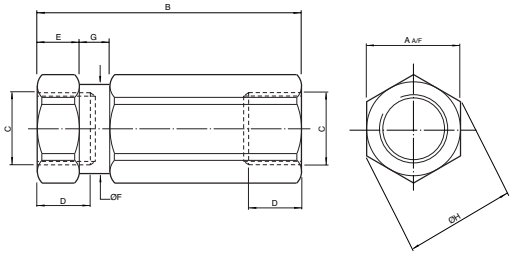
S/520 Series heavy duty non-return valves for high temperatures, see page 381

T55

Port size	Flow factor C*	Flow factor Cv	Cracking pressure (bar)	kg	Model Metric	BSPP	BSPT	NPT
M5	0,8	0,19	0,05	0,010	T55M0500			
⅛	2,4	0,59	0,05	0,015		T55C1800	T55B1800	T55A1800
¼	5,5	1,35	0,05	0,025		T55C2800	T55B2800	T55A2800
⅜	9,0	2,20	0,05	0,060		T55C3800	T55B3800	T55A3800
½	15,0	3,70	0,05	0,080		T55C4800	T55B4800	T55A4800

*C: measured in $dm^3/(s.bar)$

T55



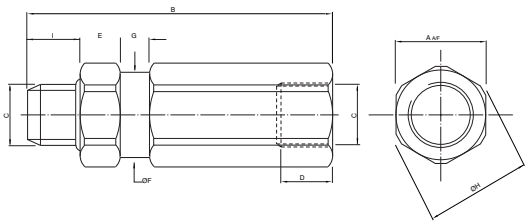
Model	A	B	C	D	E	F	G	H
T55M0500	11	27,5	M5	5	4	10,7	3	12
T55A1800	14	42,5	1/8	–	7	13,7	4	15
T55B1800	14	42,5	1/8	–	7	13,7	4	15
T55C1800	14	42,5	1/8	7	7	13,7	4	15
T55A2800	17	54	1/4	–	8	16,7	5	18,5
T55B2800	17	54	1/4	–	8	16,7	5	18,5
T55C2800	17	54	1/4	10,5	8	16,7	5	18,5
T55A3800	24	63	3/8	–	9	23,7	7	26
T55B3800	24	63	3/8	–	9	23,7	7	26
T55C3800	24	63	3/8	12	9	23,7	7	26
T55A4800	27	77	1/2	–	12	26,7	10	30
T55B4800	27	77	1/2	–	12	26,7	10	30
T55C4800	27	77	1/2	15	12	26,7	10	30

T56

Port size	Flow factor C*	Flow factor Cv	Cracking pressure (bar)	kg	Model Metric	BSPP	BSPT	NPT
M5	0,55	0,19	0,05	0,018	T56M0500			
⅛	2,4	0,59	0,05	0,045		T56C1800	T56B1800	T56A1800
¼	5,0	1,23	0,05	0,080		T56C2800	T56B2800	T56A2800

*C: measured in $dm^3/(s.bar)$

T56



Model	A	B	C	D	F	G	H	I
T56M0500	11	31,8	M5	5	10,7	3	12	4,3
T56A1800	14	49	1/8	–	13,7	4	15	9,5
T56B1800	14	49	1/8	–	13,7	4	15	9,5
T56C1800	14	45	1/8	7	13,7	4	15	5,5
T56A2800	17	62,5	1/4	–	16,7	5	18,5	14,3
T56B2800	17	59	1/4	–	16,7	5	18,5	11
T56C2800	17	56,2	1/4	10,5	16,7	5	18,5	8

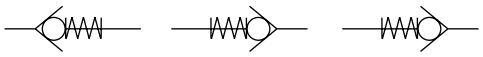
T51, T52 and T53 Series

Push-in non-return valves

In-line

Ø 4, 6, 8, 10, 12 mm O/D tube

Ø 5/32", 3/16", ¼", 5/16", ½" inch O/D tube



T53
Tube/thread

T52
Tube/thread

T51
Tube/tube

Low cracking pressure
Releasable grab ring technology combining plastic and brass components for a compact and superior non-return design
Colour coding option with tamper-resistant feature
Non-PTFE based thread sealant on tapered threads
Moulded mounting brackets on tube connector designs (PIF/PIF plastic valves)
Red release sleeve indicating metric tube sizes for grab ring connection
Grey release sleeve indicating inch tube sizes for grab ring connection
Reliable and corrosion resistant

PIF/PIF Model Inch	Metric	Tube size Inch	Metric	Flow factor C/CV*	Cracking pressure (bar)	Minimum operating pressure (bar) **	kg
T51Y0002	T51P0004	5/32"	4 mm	0,75/0,18	0,03+0,06	0,1	0,006
T51Y0003	T51P0005	3/16"	5 mm	1,16/0,28	0,03+0,06	0,1	0,018
T51Y0004	T51P0006	1/4"	6 mm	1,9/0,47	0,03+0,06	0,1	0,011
T51Y0005	T51P0008	5/16"	8 mm	3,5/0,86	0,03+0,06	0,1	0,013
T51Y0006	T51P00010	3/8"	10 mm	4,7/1,15	0,03+0,06	0,1	0,049
T51Y0007	T51P00012	1/2"	12 mm	7,5/1,84	0,03+0,06	0,1	0,066

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated, vacuum

Operating pressure:

0,1 to 10 bar (T51, T52)
0,3 to 10 bar (T53)
-0,1 to -1 bar vacuum (T51, T52)

Ambient temperature:

-20° to +80°C
Consult our Technical Service for use below +2°C.

Mounting:

Tube/tube PIF
Tube PIF/male thread
Male thread/tube PIF

PIF Male/thread, Male thread/PIF Model Inch	Inch	Metric	Metric	Port size x tube size NPTF x inch	BSPT x metric	Flow factor C/CV*	Cracking pressure (bar)	Minimum operating pressure (bar) **	kg Inch	Metric
–	–	T52M0504	T53M0504	–	M5 x 4 mm	0,55/0,13	0,03+0,06	0,1	–	0,008
T52A1802	T53A1802	T52B1804	T53B1804	1/8x5/32"	1/8x4 mm	0,75/0,18	0,03+0,06	0,1	0,015	0,015
T52A1803	T53A1803	T52B1805	T53B1805	1/8x3/16"	1/8x5 mm	1,4/0,34	0,03+0,06	0,1	0,022	0,022
T52A2803	T53A2803	T52B2805	T53B2805	1/4x3/16"	1/4x5 mm	1,4/0,34	0,03+0,06	0,1	0,032	0,027
T52A1804	T53A1804	T52B1806	T53B1806	1/8x1/4"	1/8x6 mm	1,9/0,47	0,03+0,06	0,1	0,020	0,020
T52A2804	T53A2804	T52B2806	T53B2806	1/4x1/4"	1/4x6 mm	1,9/0,47	0,03+0,06	0,1	0,030	0,028
T52A1805	T53A1805	T52B1808	T53B1808	1/8x5/16"	1/8x8 mm	3,5/0,86	0,03+0,06	0,1	0,021	0,021
T52A2805	T53A2805	T52B2808	T53B2808	1/4x5/16"	1/4x8 mm	3,5/0,86	0,03+0,06	0,1	0,030	0,026

* C measured in $dm^3/(s.bar)$
** Minimum operating pressure 0,3 bar for T53

Materials

4, 6, 8 mm, 5/32, 1/4, 5/8 inch O/D

Body: plastic PBT
Valve: plastic PBT
Release sleeve: plastic POM
Natural brass insert
Seal: silicon free nitrile
Spring: stainless steel
Grab ring: stainless steel, BS 1440 Pt 2, grade 301.S21
T52 and T53 series, nickel plated brass threads.

5, 10, 12 mm, 3/16, 3/8, 1/2 inch O/D

Collet: nickel plated brass
Body: black anodised aluminium
Valve and insert: aluminium

Alternative models

T55 aluminium female/female threaded non-return valves
T56 brass female/male threaded non-return valves
T50 aluminium and PIF nickel plated brass collet
S/520 brass threaded heavy duty non-return valves

Tube types

Nylon 11 or 12, polyurethane* and other plasticised or unplasticised tubing which conforms to the tolerances specified in DIN 73378, BS 5409/1, NFE 49-100 & 49-101, WD 16026, ISO/WD 16627

Copper and stainless steel

* Suitable for 85D, polyurethane is light-stable and has a hardness of 92 to 98 shore A.

Note: O/D 5, 10, 12 mm, 3/16, 3/8, 1/2" connections (collet instead of grab ring) are not suitable for copper or stainless steel tubes, or soft plastic tubing such as 85D

T51, T52 and T53 Series

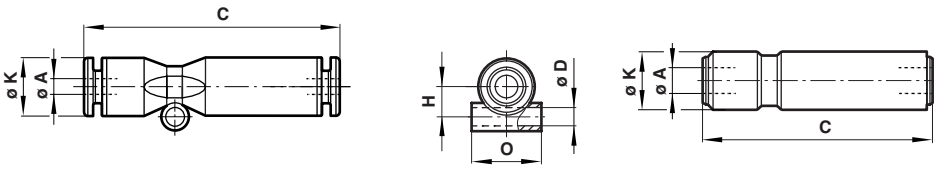
Push-in non-return valves

In-line

Ø 4, 6, 8, 10, 12 mm O/D tube

Ø 5/32", 3/16", ¼", 5/16", ½" inch O/D tube

T51

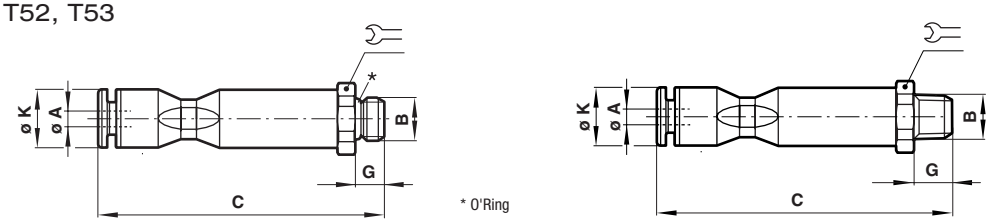


Model		A	C	D	K	H	O	A
Inch	Metric							
T51Y0002	T51P0004	5/32	49,8	4,3	10,8	5,4	11,4	4
T51Y0003*	T51P0005*	3/16	53,1	4,3	13	6,7	13,6	5
T51Y0004	T51P0006	1/4	55,3	4,3	13	6,7	13,6	6
T51Y0005	T51P0008	5/16	62,5	4,3	14,6	7,6	15,2	8
T51Y0006*	T51P0010*	3/8	77,4	–	20	–	–	10
T51Y0007*	T51P0012*	1/2	88,4	–	22	–	–	12

* Available only with collet tube connection

** C measured in $dm^3/(s.bar)$ Cv measured in US gal/min

T52, T53



Model				A	B**	C	G	K		C	G	A	B**
Inch		Metric											
		T52M0504	T53M0504	–	–	–	–	10,8	12	49,2	4,3	4	M5
T52A1802	T53A1802	T52B1804	T53B1804	5/32	1/8	54,4	9,5	10,8	12	54,4	9,5	4	1/8
T52A1803*	T53A1803*	T52B1805*	T53B1805*	3/16	1/8	57,9	9,5	13	15	57,9	9,5	5	1/8
T52A2803*	T53A2803*	T52B2805*	T53B2805*	3/16	1/4	62,7	14,3	13	15	59,4	11	5	1/4
T52A1804	T53A1804	T52B1806	T53B1806	1/4	1/8	59,2	9,5	13	15	59,2	9,5	6	1/8
T52A2804	T53A2804	T52B2806	T53B2806	1/4	1/8	64	14,3	13	15	60,7	11	6	1/4
T52A1805	T53A1805	T52B1808	T53B1808	1/8	1/8	63,7	9,3	14,6	15	63,7	9,5	8	1/8
T52A2805	T53A2805	T52B2808	T53B2808	1/4	1/4	68,5	14,3	14,6	15	62,2	11	8	1/4

**NPT according to ANSI-B1.20.1

*Available only with collet tube connection

**BSPT according to ISO 7/1

M according to ISO.DIN 13

Thread sealant is applied to the full circumference of the thread. The recommended tightening torque figures for designs with thread sealant are found in the torque table opposite

Thread (BSPT)	Tightening torque (Nm)
1/8	6,86 ... 8,82
1/4	11,76 ... 13,72
3/8	21,56 ... 25,32
1/2	27,44 ... 29,40

Blocking, pressure reducing & pneumatic sensor fittings

4 to 12 mm O/D metric tube

⅛" to ½" BSPP

Very compact units

Easy tube insertion for rapid assembly of pneumatic circuits

Positive tube anchorage

Simpler pneumatic systems

Technical data

Medium:

Compressed air

Operating pressure:

Blocking fitting:

Supply pressure 1 to 10 bar

Pilot pressure – see table

Pressure reducing fitting:

Primary pressure 1 to 10 bar max.

Secondary pressure 1 to 8 bar max.

Pneumatic sensor fitting:

Cylinder pressure (Pc) 10 bar max.

Sensor supply pressure 3 to 10 bar

Sensor switch pressure 0,6 bar typ.

Ambient temperature:

-20°C to +80°C

Consult our Technical Service for use below +2°C.

Materials

Nickel plated brass or plastic body.

Nickel plated brass collet.

Plastic sealing washer.

Nitrile and polyurethane elastomeric parts.

Zinc plated brass banjo bolts.

Alternative models

Alternative range of NPTF are available. Consult our Technical Service for details.

Tube types

Nylon 11 or 12, polyurethane and other plasticised or unplasticised tubing which conforms to the tolerances specified in BS 5409, Part 1, 1976, light and normal duty, DIN 73378, DIN 74234, NFE 49-100.

Blocking fitting

O/D Tube	Male BSPP	Pilot pressure (bar)*	Model
4	1/8	2,5	102GA0418
6	1/8	2,5	102GA0618
6	1/4	2,5	102GA0628
8	1/4	2,5	102GA0828
8	3/8	3	102GA0838
10	3/8	3	102GA1038
12	1/2	2,5	102GA1248

Pressure reducing fitting

O/D Tube	Male BSPP	Model
4	1/8	102GB0418
6	1/4	102GB0628
8	1/4	102GB0828
8	3/8	102GB0838
10	3/8	102GB1038

Pneumatic sensor fitting

O/D Tube	Male BSPP	Model
4	1/8	102GD0418
4	1/4	102GD0428

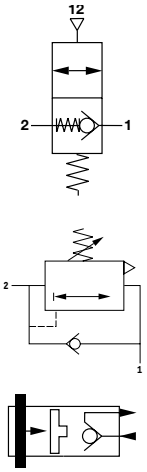
*at 6 bar supply

BLOCKING FITTING: Essentially a pilot operated check valve, a blocking fitting allows air flow in both directions if a pilot pressure is applied to port 12. When pressure to the pilot port is removed, flow occurs in one direction only, due to an integral non-return valve. When used in pairs, blocking fittings can control an actuator to give safe operation in the event of an electrical problem, air failure or tube breakage.

In order to provide a 'safe system', all possible conditions need to be considered in the event of an emergency.

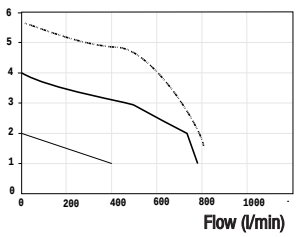
PRESSURE REDUCING FITTING: It is often necessary to provide a secondary reduced pressure to an actuator to control its operating force. A pressure reducing fitting provides this function, which can be manually adjusted to the required pressure level. The relieving function gives a safety feature satisfying EN983 (Safety of Machinery) regarding protection under external loads. This states that a means shall be provided to prevent unacceptable pressure build-up where high external loads are reflected on actuators.

PNEUMATIC SENSOR FITTING: Used to provide an air signal when a cylinder has reached the end of travel, sensor fittings operate by detecting the drop in exhaust pressure at the end of a stroke. They effectively offer an all-pneumatic option to the electrical reed switch, and can be used in 1/8 and 1/4 BSP cylinder ports.

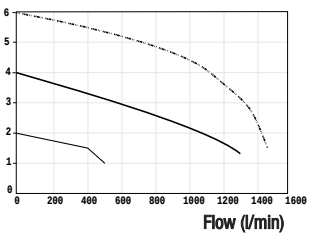


Flow characteristics for pressure reducing fitting

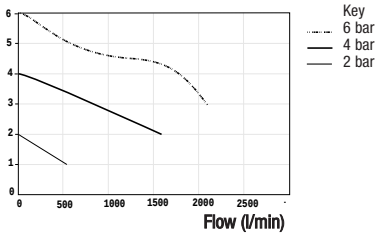
G1/8 Secondary pressure



G1/4 Secondary pressure



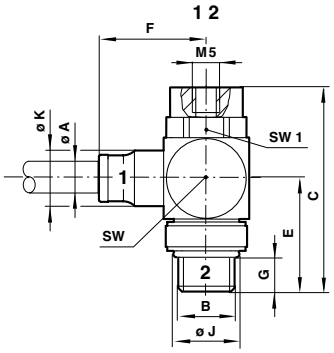
G3/8 and G1/2 Secondary pressure



Blocking, pressure reducing & pneumatic sensor fittings

4 to 12 mm O/D metric tube

⅛" to ½" BSPP



1) Inlet port
2) Outlet port
12) Pilot port

Pilot operated check valve (blocking fitting) - 102GA

Model	A O/D Tube	B BSPP Thread	C	E	F	G	J	K	SW	SW1	
102GA0418	4	1/8	41,0	19,8	22,2	6,3	12,0	10	16	13	M5
102GA0618	6	1/8	41,0	19,8	23,2	6,3	12,0	12,5	16	13	M5
102GA0628	6	1/4	48,0	25,8	25,2	10,5	15,5	13	20	17	M5
102GA0828	8	1/4	48,0	25,8	26,2	10,5	15,5	14	20	17	M5
102GA0838	8	3/8	55,0	29,0	28,2	10,8	19,5	14	24	22	M5
102GA1038	10	3/8	55,0	29,0	32,7	10,8	19,5	17	24	22	M5
102GA1248	12	1/2	65,5	36,0	39,7	12,8	24	20,5	30	27	M5

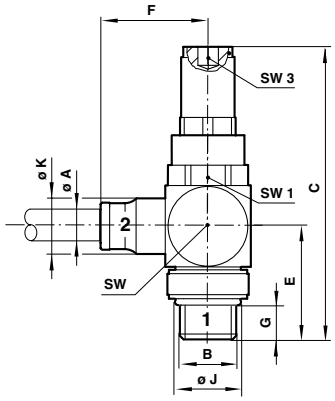
Note: For mounting in pairs on a cylinder

Pilot operated check valve (blocking fitting) - 102GA

Model	A Thread	B Thread	C	E	F	G	SW	SW1
102GA1818	1/8 BSPP	1/8	41,0	19,8	17,5	6,3	16	13
102GA1828	1/8 BSPP	1/4	48,0	25,8	17,5	10,5	20	17
102GA2828	1/4 BSPP	1/4	48,0	25,8	17,5	10,5	20	17
102GA3838	3/8 BSPP	3/8	55,0	29,0	17,5	10,8	24	22
102GA4848	1/2 BSPP	1/2	65,5	36,0	17,5	12,8	30	27

Note: For mounting in pairs on a cylinder

Pressure reducing fitting - 102GB



Model	A O/D Tube	B BSPP Thread	C	E	F	G	J	K	SW	SW1	SW3
102GB0418	4	1/8	73,0	19,8	22,5	6,5	12,0	10	16	17	5
102GB0628	6	1/4	81	25,8	25,2	10,5	15,5	13	20	17	5
102GB0828	8	1/4	81	25,8	26,2	10,5	15,5	14	20	17	5
102GB0838	8	3/8	88	29,0	28,2	10,8	19,5	14	24	22	6
102GB1038	10	3/8	88	29,0	32,7	10,8	19,5	17	24	22	6

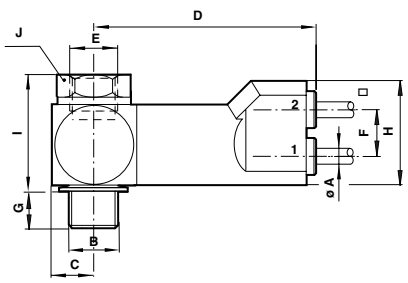
1) Inlet port
2) Outlet port
Note: For mounting in ports 2 & 4 of a control valve

Pressure reducing fitting - 102GB

Model	A Thread	B Thread	C	E	F	G	SW a/f	SW1 a/f	SW3 a/f
102GB1818	1/8 BSPP	1/8	73,0	19,8	17,5	6,3	16	17	5
102GB2828	1/4 BSPP	1/4	81,0	25,8	24,5	10,5	20	17	5
102GB3838	3/8 BSPP	3/8	88,0	29,0	27,0	10,8	24	22	6
102GB4848	1/2 BSPP	1/2	89,0	36,0	34,0	9,5	30	27	6

Note: For mounting in ports 2 & 4 of a control valve.

Pressure sensor fitting- 102GD



Model	A O/D Tube	B Thread	C	D	E Thread	F	G	H	I	J a/f
102GD0418	4	1/8	8,5	45,2	1/8	9,5	5,6	21,0	24,9	15
102GD0428	4	1/4	10,5	47,2	1/4	9,5	6,5	21,0	29,0	19

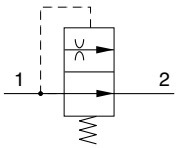
This sensor fitting produces an end of stroke signal when exhaust back pressure in a cylinder decays below a set value. It should be mounted directly on the cylinder and can be used with a flow control device mounted into the top port.

It is recommended that the sensor supply pressure to port 1 be the same as the nominal working pressure of the cylinder.

Air fuses

In-line excess flow shut-off valves

¼ to 1½" BSPP



Assists in complying with safety regulations.

Tamper proof.

Compact and safe design.

Low pressure drop.

Automatically resets after failure correction.

High corrosion resistance.

High air pressure rating.

Technical data

Medium:

Compressed air, filtered, lubricated and non lubricated inert gases

Operating pressure:

Maximum 16 bar

Minimum according to hose length

Ambient temperature:

-20°C to +80°C.

Consult our Technical Service for use below +2°C.

Mounting:

In-line two way valve. To be inserted between fixed air supply and flexible hose air line. See guidelines for typical installation.

Materials

Body: aluminium

Internal parts: brass

Spring: stainless steel

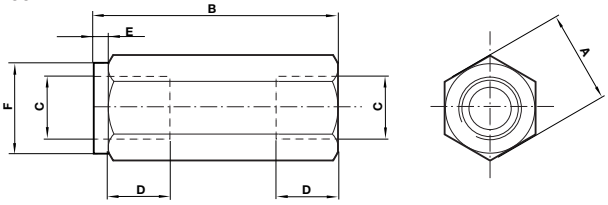
Port size BSPP	Drop pressure at shut off flow (bar)	Shut off flow rate at 7 bar (dm^3/s) ±10%	Flow at 7 bar Δ P 0,07 bar (dm^3/s)	Model	kg
1/4	0,14	8,3	6,5	T60C2890	0,041
1/4	0,3	14	6,5	T60C2891	0,041
3/8	0,14	19,4	13,5	T60C3890	0,065
3/8	0,3	32,2	13,5	T60C3891	0,065
1/2	0,14	32,2	23,2	T60C4890	0,150
1/2	0,3	48,3	23,2	T60C4891	0,150
3/4	0,14	48,3	43	T60C6890	0,130
3/4	0,3	80	43	T60C6891	0,130
1	0,14	92	68	T60C8890	0,540
1	0,3	128	68	T60C8891	0,540
1½	0,14	186	145	T60CB890	1,1
1½	0,3	268	145	T60CB891	1,1

BSPP: according to BS2779 and ISO 228/1.

Flow and pressure test conducted according to ISO 6358 test circuit. Mean measured flow values are provided at standard reference conditions.

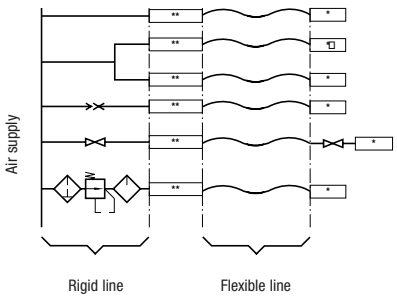
For NPT versions, substitute A at the 4th digit, e.g. T60**A**2890

T60



Ø	T60C289* BSPP	T60C389* BSPP	T60C489* BSPP	T60C689* BSPP	T60C889* BSPP	T60CB89* BSPP
A a/f	20,6	24	31,75	31,75	50,8	63,5
B	51	62	78	90	118	145
C	1/4	3/8	1/2	3/4	1	1 1/2
D	11	14	15	19	25,5	25,5
E	3	5	5	5	5	5
F	20,6	24	31,75	31,75	50,8	63,5

Guidelines for typical installation



* Tool ** Air fuse

The air fuse should be installed directly between fixed or rigid pipework and the flexible tube to protect the whole length of the flexible tube. Only tubing after the air fuse is protected. The air fuse must be installed in the correct direction for airflow. Failure to do this will render the air fuse ineffective. When a shut-off valve is located before the air fuse, the valve must be opened slowly in order to control initial air flow and avoid decompression effects which may trip the air fuse.

Air fuses

In-line excess flow shut-off valves

G¼ to G1½

How to select an air fuse

a) The port size of the air fuse should be nominally equal to that of the supply lines e.g. a 1⁄2'' (12,7mm) air fuse should be used with a 1⁄2'' (12,7mm) ID hose.

b) Always select the high flow model (91) if there is sufficient system pressure for the length of hose to be protected. See tables hose length vs minimum supply pressure.

c) If there is insufficient system pressure, or long hose lengths are to be protected, use model 90.

d) After installation always test each valve for proper function. See section how to check an air fuse below.

e) The pneumatic system must be capable of delivering the flow required to activate the air fuse.

f) For use with spring coils consult table. See table flow vs pressure supply.

How to check an air fuse

* Install air fuse following the instructions supplied
* Connect tool or complete circuit to the air line
* Switch on operation to ensure a complete cycle is performed
* If tool or complete circuit starts and runs satisfactorily, stop operation and drain air line. Disconnect hose from tool or circuit and secure hose end. Turn on air supply progressively (to avoid decompression effect). Prior to fully reaching operation conditions, the valve should suddenly activate and cut off the flow. A slight air flow will remain as part of the automatic re-set function. If the air fuse is not activated the unit should be disconnected and the lower flow range air fuse should be used.

Spring coils and air fuse minimum required pressure (bar)

Spring coils Model	Air fuse T60C2890	T60C2891	T60C3890	T60C3891	T60C4890	T60C4891
PA330600328						
PA330600428						
PA330600528						
PA330600828						
PA330601528						
PA330800328	4,1					
PA330800428	5,4					
PA330800528						
PA330800828						
PA330801528						
PA331000328	1.0	2,5	4,8			
PA331000428	1,2	3,3	6,4			
PA331000528	1,5	4,2				
PA331000828	2,2	6,2				
PA331001528	4,4					
PA331200338	0,7	0,9	1,5	4,1		
PA331200438	0,7	1,0	2,0	5,4		
PA331200538	0,7	1,3	2,4			
PA331200838	0,7	1,9	3,7			
PA331201538	1,4	3,8				
PA331500348	0,7	0,9	0,7	1,5	1,5	3,5
PA331500448	0,7	0,9	0,7	2,1	2,1	4,6
PA331500548	0,7	0,9	0,9	2,6	2,6	5,8
PA331500848	0,7	0,9	1,4	3,8	3,8	
PU310600218						
PU310600418						
PU310600618						
PU310600818						
PU310800228	5,4					
PU310800428						
PU310800628						
PU310800828						
PU311000228	1,3	3,8				
PU311000428	2,7					
PU311000628	5,0					
PU311000828	6,0					
PU311200238	0,7	1,2	2,4	6,6		
PU311200438	0,9	2,5	4,8			
PU311200638	1,3	3,7				
PU311200838	1,6	4,6				

Note: Where no figure is shown these spring coils cannot be protected by the air fuse

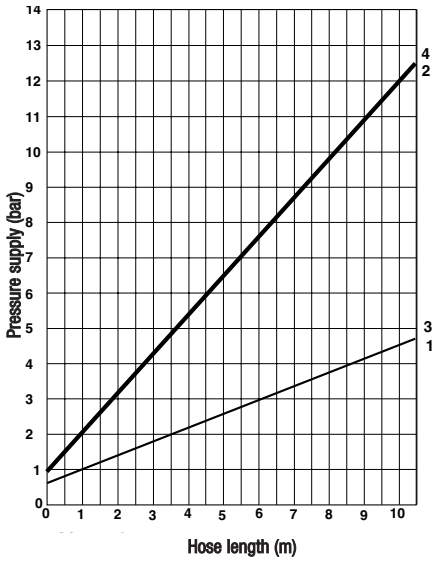
Air fuses

In-line excess flow shut-off valves

G¼ to G1½

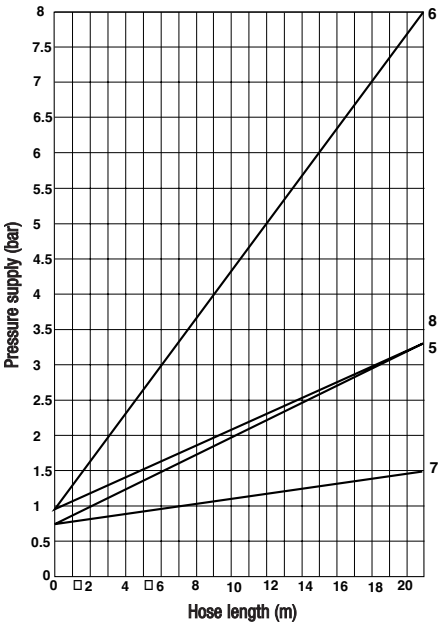
Minimum pressure required to shut off the air supply – check failure flow conditions

Hose length vs minimum pressure supply (1/4" ... 3/8")



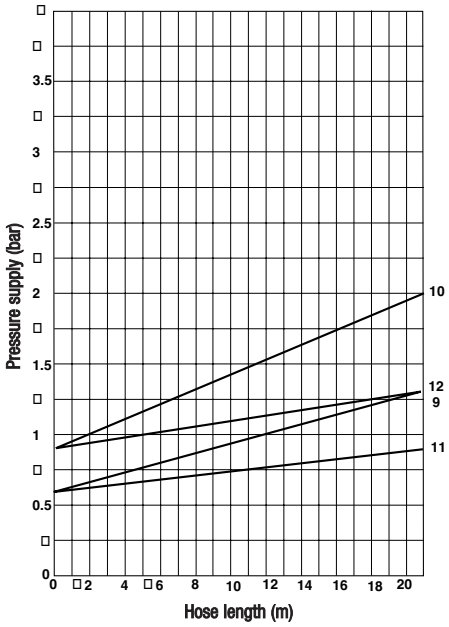
1 - T60 * 2890 (ID = 6,6mm)
2 - T60 * 2891 (ID = 6,6mm)
3 - T60 * 3890 (ID = 9,0mm)
4 - T60 * 3891 (ID = 9,0mm)

Hose length vs minimum pressure supply (1/2" ... 3/4")



5 - T60 * 4890 (ID = 13mm)
6 - T60 * 4891 (ID = 13mm)
7 - T60 * 6890 (ID = 19mm)
8 - T60 * 6891 (ID = 19mm)

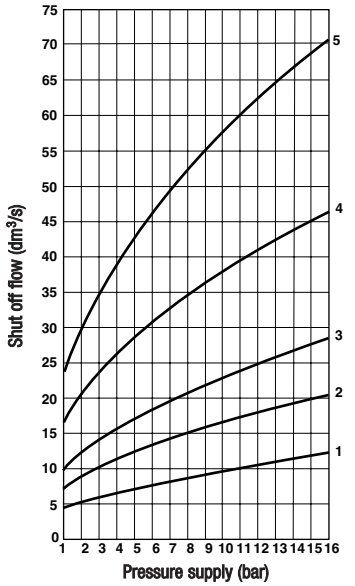
Hose length vs minimum pressure supply (1" ... 1½")



— 9 - T60 * 8890 (ID = 25,4mm)
— 10 - T60 * 8891 (ID = 25,4mm)
— 11 - T60 * B890 (ID = 38,1mm)
— 12 - T60 * B891 (ID = 38,1mm)

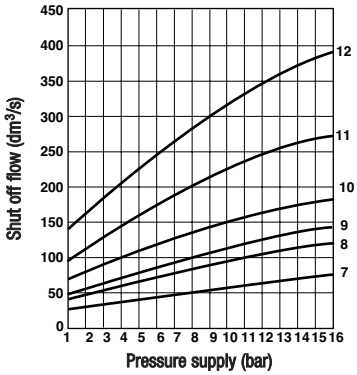
Flow required to shut off air supply – check normal flow conditions

Flow (±10%) vs pressure supply (1/4 ... 1/2")



— 1 - T60 * 2890
— 2 - T60 * 2891
— 3 - T60 * 3890
— 4 - T60 * 3891
— 5 - T60 * 4890
— 6 - T60 * 4891

Flow (±10%) vs pressure supply (3/4 ... 1½")



— 7 - T60 * 6890
— 8 - T60 * 6891
— 9 - T60 * 8890
— 10 - T60 * 8891
— 11 - T60 * B890
— 12 - T60 * B891

Measurements

Flow and pressure tests conducted according to ISO-6358 test circuit
Mean measured flow values are provided at standard reference condition (20°C, 1,01 bar)
Indicated pressure values are relative pressure in bar.

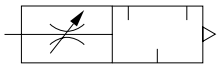
Hose lengths

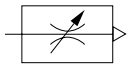
Graphs are for indicated hose internal diameter in key.
Consult our Technical Service for hose lengths and internal diameters different from the recommended one.

T20 & 0405 Series

Exhaust flow regulator/silencers

M5, ⅛" to ½" BSP





Compact, integral flow regulator and silencer units

Captive regulating needle will not blow out when unscrewed

Reduced dimensions

0405 Series – flow regulator or silencer can be ordered independently

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated, inert gases

Operating pressure:

0 to 10 bar

Ambient temperature:

-20°C to +80°C.

Consult our Technical Service for use below +2°C.

Materials

T20:

Body & washer: nylon

Silencer: porous polyethylene

Adjusting screw: high tensile zinc electroplated steel

0405:

Body & nut: brass

Needle: plastic

Silencer: sintered bronze

Mounting

Directly in the exhaust port.

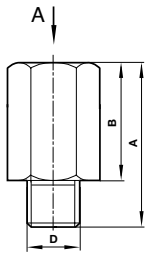
Screwdriver adjustment for flow regulation (0405)

Allen key adjustment for flow regulation (T20)

Thread	Size	Max. regulated flow factor C*	Cv	Model
Metric	M5	0,3	0,07	T20M0500
BSPP	1/8	1,6	0,4	T20C1800
BSPT	1/8	1,78	0,44	04057100
BSPT	1/8 Flow regulator only	1,78	0,44	04058100
BSPP	1/4	3,2	0,8	T20C2800
BSPT	1/4	1,78	0,44	04057200
BSPT	1/4 Flow regulator only	1,78	0,44	04058200
BSPP (female)	1/4 Silencer only	–	–	04059200
BSPP	3/8	6,9	1,7	T20C3800
BSPT	3/8	8,9	2,2	04057300
BSPT	3/8 Flow regulator only	8,9	2,2	04058300
BSPP (female)	1/2 Silencer only	–	–	04059400
BSPP	1/2	10	2,4	T20C4800
BSPT	1/2	8,9	2,2	04057400
BSPT	1/2 Flow regulator only	8,9	2,2	04058400

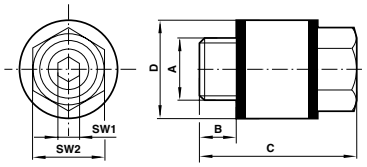
*C: measured in $dm^3/(s.bar)$

T20M0500



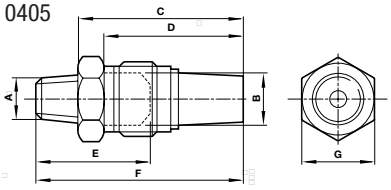
Model	A	B	D	E a/f	F a/f	G
T20M0500	16	11	M5	1,5	8	9,25

T20C*800



Model	A	B	C	Ø D	SW1	SW2
T20C1800	1/8	6	20,5	15	2,5	13
T20C2800	1/4	7	29	18	4	15
T20C3800	3/8	8	38	24	6	20
T20C4800	1/2	10	50	30	8	25

0405



Model	A*	B	C	D**	E***	F	G
04057100	1/8	1/4	35,0	27,5	26,0	44,5	15
04057200	1/4	1/4	35,5	27,5	27,5	46,0	15
04057300	3/8	1/4	55,0	45,5	34,5	67,5	24
04057400	1/2	1/4	53,5	45,5	36,5	69,5	24

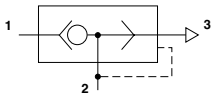
A: according to ISO – 7/1 B: according to ISO – 228/1

* BSP taper ** Flow regulator body *** Silencer body

T70, S/511, S/513, S/514 Series

Quick exhaust valves

⅛ to ½" BSPP



Enables air to be exhausted quickly from air reservoirs and cylinders.

Allows higher cylinder speeds to be achieved.

Simple, compact design and construction.

Very reliable in operation.

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated

Operating pressure:

0,5 to 10 bar (T70)

0,7 to 10 bar (S/511)

0,7 to 7 bar (S/513, S/514)

Ambient temperature:

-20°C to +80°C.

Consult our Technical Service for use below +2°C.

Materials

Body & cover: zinc alloy (T70*1800 & T70*2800, S/513), aluminium alloy (T70*3800 & T70*4800, S/511, S/514)

Seals: nitrile (T70), polyurethane (S/51*)

O-ring: nitrile

Element: porous plastic (S/513, S/514)

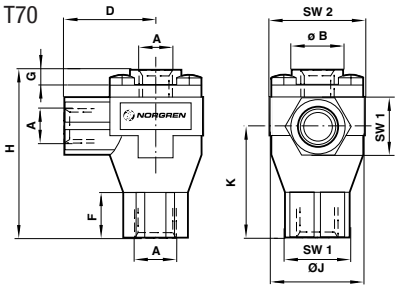
Port size BSPP	Flow (1 ... 2)*** C*	Cv	Flow (2 ... 3)** C*	Cv	kg	Model	Spares kit (seals only)
G1⁄8	3,8	0,9	7,3	1,8	0,15	T70C1800	T70C1800K0
G1⁄4	7,7	1,9	10	2,5	0,13	T70C2800	T70C2800K0
G3⁄8	15,5	3,8	22,5	5,5	0,21	T70C3800	T70C3800K0
G1⁄2	21,5	5,3	24	5,9	0,19	T70C4800	T70C4800K0
G1⁄2	5,7	1,9	44	10,8	0,31	S/511	QS/511/00‡
G1⁄4	3,9	0,8	11	2,7	0,25	S/513	QS/510/00‡
G1⁄2	5,7	1,9	32	7,8	0,35	S/514	QS/511/00‡

* C = dm^3/s.bar) ** Flow factor measured at 6 bar inlet pressure. ‡ Seals and silencer element included

For NPT versions, substitute A at the 4th digit, e.g. T70**A**1800K0

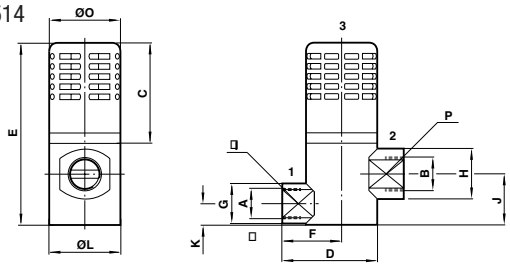
For NPT ranges, substitute C at the 1st digit e.g. **C**/511

T70



Model	A	Ø B	D	F	G	H	Ø J	K	SW1	SW2
T70C1800	G 1/8	19	28	15,5	3,5	53	29	35,5	19	30
T70C2800	G 1/4	19	28	15,5	3,5	53	29	35,5	19	30
T70C3800	G 3/8	30	40	15,5	4	73,5	46	48	30	46
T70C4800	G 1/2	30	40	15,5	4	73,5	46	48	30	46

S/513, S/514

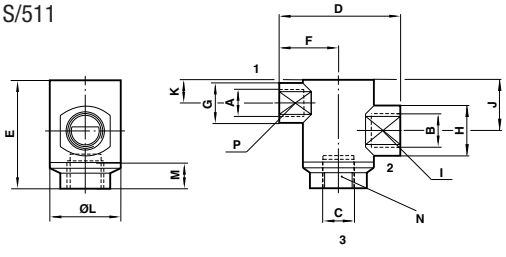


	A	B	C	D	E	F	G	H	I	J	K	ØL	ØO	P
S/513	G1/4*	G3/8	47,5	58	86,5	29	18,0	23	23	23	10	34,0	34	21
S/514	G1/2*	G3/4	63,0	100	134,0	50	28,5	35	36	48	17	47,5	59	30

* ISO 228/1

For NPT ranges, substitute C at the 1st digit e.g. **C**/513

S/511



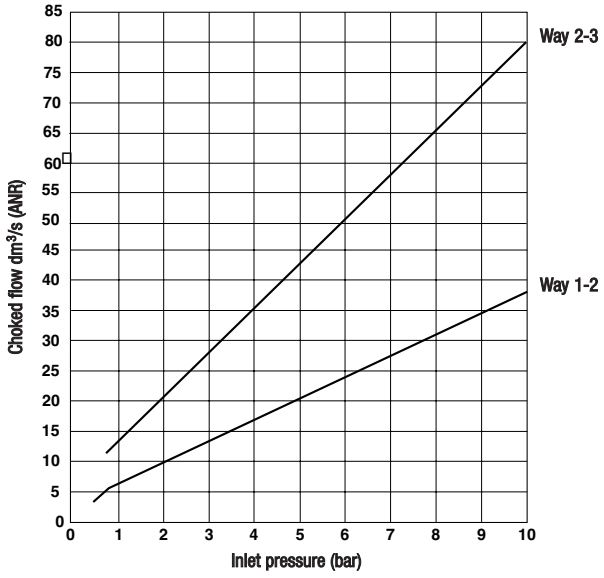
	A	B	C	D	E	F	G	H	I	J	K	ØL	M	N	P
S/511	G1/2*	G3/4	G3/4*	100	86	50	28,5	35	36	48	17	47,5	15,0	32	30x

* ISO 228/1

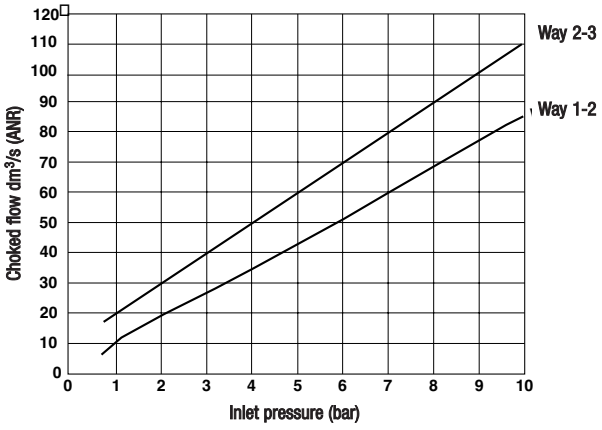
Characteristic curves

Choked flow versus inlet pressure
Way (1 - 2) + (2 - 3)

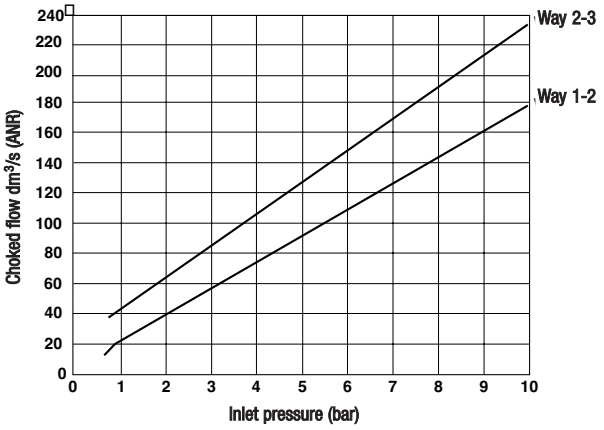
T70*1800



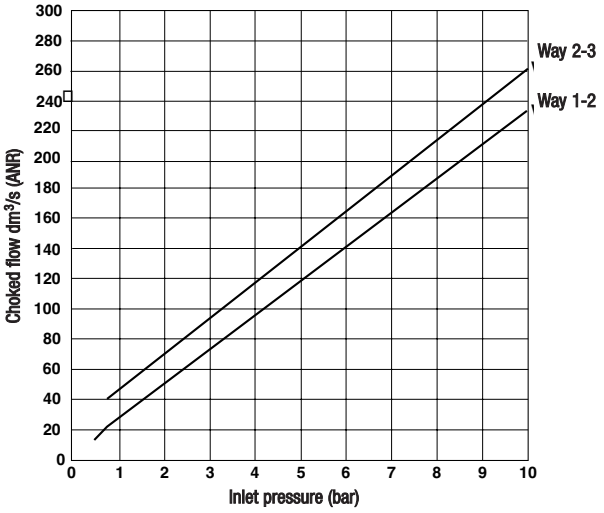
T70*2800



T70*3800



T70*4800



T15 Series

Push-in flow regulators, uni-directional

In-line

Ø 3, 4, 5, 6, 8, 10, 12 O/D metric tube

Ø ⅛, 5/32, 3/16, ¼, 5/16, ⅜, ½" O/D inch tube

High flow performance
Suitable for panel/wall mounting and manifold
Adjustment can be locked
Captive regulator needle will not blow out when unscrewed
Adjusting knob position
Releasable grab ring technology combining plastic and brass components for a compact and superior fitting design
Colour coding option with tamper-resistant feature
Red release sleeve indicating metric tube sizes
Grey release sleeve indicating inch tube sizes
Reliable and corrosion resistant

Tube size Inch	Tube size Metric	Max. regulated flow factor C/Cv**	Flow factor C/Cv**	Cracking pressure (bar)	Minimum operating pressure (bar)	kg	Model Inch	Model Metric
1/8"	3 mm	0,35/0,09	>0,35/0,09	0,1	0,1	0,013	T15Y0001	T15P0003
5/32"	4 mm	0,45/0,11	>0,45/0,11	0,1	0,1	0,013	T15Y0002	T15P0004
3/16"	5 mm	0,8/0,2	0,8/0,2	0,1	0,1	0,032	T15Y0003*	T15P0005 *
1/4"	6 mm	1,4/0,34	>1,4/0,34	0,1	0,1	0,028	T15Y0004	T15P0006
5/16"	8 mm	2,2/0,54	>2,2/0,54	0,1	0,1	0,047	T15Y0005	T15P0008
3/8"	10 mm	3,9/0,96	>3,9/0,96	0,1	0,1	0,093	T15Y0006	T15P0010
1/2"	12 mm	5,4/1,32	>5,4/1,32	0,1	0,1	0,143	T15Y0007*	T15P0012 *

* Available only as collet tube connection.

** C measured in $dm^3/(s.bar)$

Technical data

Medium:
Compressed air, filtered

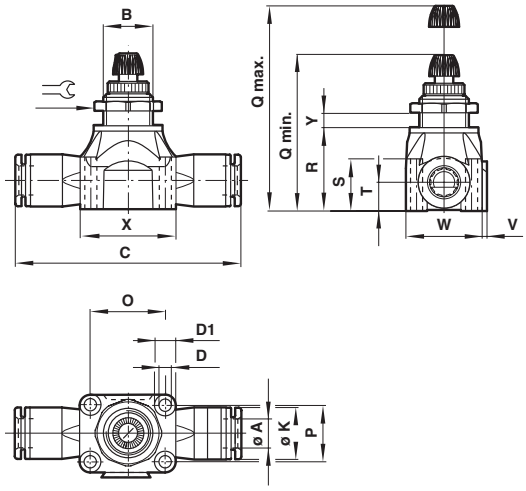
Operation:
Uni-directional

Operating pressure:
0,1 to 10 bar maximum

Ambient temperature:
-20° to +80°C

Consult our Technical Service for use below +2°C.

Mounting:
In-line. Panel mounted by hexagonal mounting nut. Wall mounted by through-holes in regulator body. Manifold by quick connection



Model Inch	A	Model Metric	A	B	C	ØD	D_1	K	O	P	Q max	Q min	R	S	T	V	W	X	Y
T15Y0001	1/8	T15P0003	3	M10x1,0	46	2,4	4,2	13	11	13	9	35	30,5	17	11,1	6,2	0,9	13	17	1,5
T15Y0002	5/32	T15P0004	4	M10x1,0	46	2,4	4,2	13	11	13	9	35	30,5	17	11,1	6,2	0,9	13	17	1,5
T15Y0003*	3/16	T15P0005*	5	M12x1	49	3,5	6,2	15	13,2	19	11	45,5	39	21	14,7	7,5	1,1	17	25	4
T15Y0004	1/4	T15P0006	6	M12x1	55	3,5	6,2	15	13,2	19	11	45,5	39	21	14,7	7,5	1,1	17	25	4
T15Y0005	5/16	T15P0008	8	M14x1,5	65,5	3,5	6,2	18	14,8	21	15,5	52	44	23,5	14,7	8,1	1,3	21,5	27	4
T15Y0006	3/8	T15P0010	10	M20x1,5	76,8	4,4	7,9	24	17,8	26,5	19	61,5	53	29	18,9	10	1,6	26,5	34	5
T15Y0007*	1/2	T15P0012*	12	M20x1,5	92,5	4,4	7,9	24	22,2	28,5	22,5	66	55,5	32	22,2	12,1	1,6	30	36	5

* Available only with collet tube connection

Materials

OD 3, 4, 6, 8, 10
OD 1/8, 5/32, 1/4, 5/16, 3/8:

Body: plastic PBT
Release sleeve, nut, knob: plastic POM
Seals: silicone free nitrile seal
External metal parts: nickel plated brass
Internal parts: brass
Spring: stainless steel
Grab ring: stainless steel, BS 1440 Pt 2, grade 301.S21

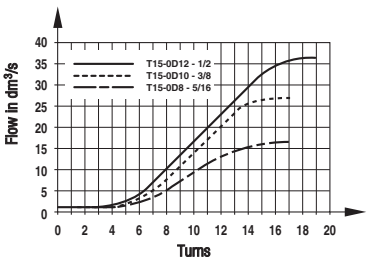
OD5, 12:

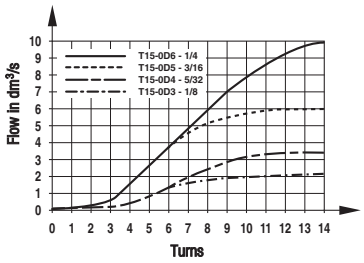
Collet: nickel plated brass

Alternative models

Block form flow regulators, T1000 series, see page 352
Heavy duty flow regulators, M/800, M/600, see pages 354 and 381
Precision flow regulators, S/636, M/637 and M/639, see page 381

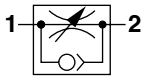
Flow vs turns at 6 bar - flow in dm^3/s ANR





Pneufit push-in elbow banjo flow regulators

Ø 4 to 12 mm O/D tube



- Very compact units featuring retained collets and positive tube anchorage
- Silicone free 'O'-ring seals
- Non-PTFE based thread sealant on all BSP taper threads
- Easy tube insertion for rapid assembly
- Internal hexagon on straight adaptors allows assembly in confined spaces
- For simple and quick assembly of pneumatic circuits
- Wide range available
- Reliable and corrosion resistant

Technical data

Medium:

Compressed air

Operating pressure:

Vacuum: -10 bar unless otherwise stated (dependant upon tubing specification).

Vacuum:

-750 mm Hg i.e. 98%

Ambient temperature:

-20°C to +80°C.

Consult our Technical Service for use below +2°C.

Materials

Body: Nickel plated brass or glass filled nylon

Collet: Nickel plated brass

'O'-ring: Silicone free nitrile rubber

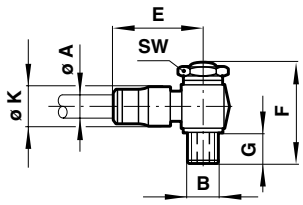
Sealing washer (parallel threads): Nitrile 'O'-ring

Thread sealant: non-PTFE

Tube types

Nylon 11 or 12, polyurethane* and other plasticised or unplasticised tubing which conforms to the tolerances specified in BS5409/1: 1976, light and normal duty, DIN 73378, DIN 74234, NFE 49-100.

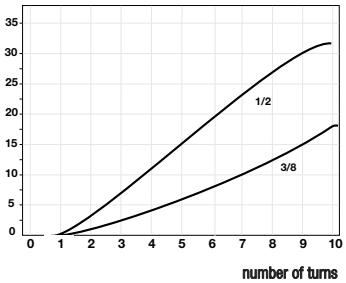
10K51
O/D tube to male parallel thread



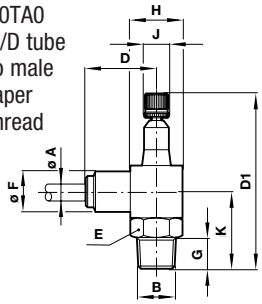
Model	A O/D Tube	B	E	F	K	G	SW (a/f)
10K510405	4	M5 x 0,8	18,7	27,0	9,5	4,4	8
10K510418	4	1⁄8	20,6	34,0	11,0	6,0	14
10K510505	5	M5 x 0,8	20,2	27,0	11,0	4,4	8
10K510518	5	1⁄8	21,7	34,0	11,5	6,0	14
10K510605	6	M5 x 0,8	22,2	27,0	12,5	4,4	8
10K510618	6	1⁄8	23,7	34,0	12,5	6,0	14
10K510628	6	1⁄4	24,2	36,5	13,0	6,0	17
10K510818	8	1⁄8	23,7	34,0	13,5	6,0	14
10K510828	8	1⁄4	24,7	36,5	14,0	6,0	17
10K510838	8	3⁄8	26,7	51,5	16,5	10,0	22
10K511028	10	1⁄4	30,2	36,5	15,7	6,0	17
10K511038	10	3⁄8	31,2	51,5	17,0	10,0	22
10K511238	12	3⁄8	33,2	51,5	17,5	10,0	22
10K511248	12	1⁄2	38,2	57,5	17,5	10,0	27

Flow of air (l/s)

Flow of air (l/s)

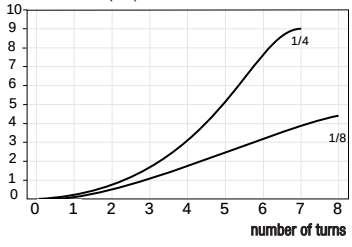


10TA0
O/D tube to male taper thread

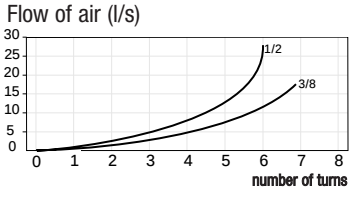


Model	A O/D tube	B	D1 Closed	D	E a/f	F	G	J	H Square	K
10TA00418	4	1⁄8	53	22,0	14	11,5	9,5	9,0	16	22,5
10TA00618	6	1⁄8	53	23,0	14	13,0	9,5	9,0	16	22,5
10TA00628	6	1⁄4	67	25,5	17	13,5	13,5	11,0	20	29,5
10TA00828	8	1⁄4	67	27,0	17	15,5	14,5	11,0	20	29,5
10TA00838	8	3⁄8	78	28,0	19	15,5	14,5	13,0	22	33,0
10TA01028	10	1⁄4	67	31,5	17	19,5	13,5	11,0	20	29,5
10TA01038	10	3⁄8	78	32,4	19	19,5	14,5	13,0	22	33,0
10TA01248	12	1⁄2	90	38,0	22	24,0	15,9	17,0	28	41,5

Flow of air (l/s)



Flow of air (l/s)



T1000 Series

Block form flow regulators

Uni-directional

M5, ⅛" to ½" BSPP

Compact size/low weight/ in-line units

High flow performance

Suitable for panel and wall mounting

Adjustment can be locked

Captive regulator needle will not blow out when unscrewed

Adjusting knob position line

Technical data

Medium:

Compressed air, filtered, lubricated or non-lubricated, inert gases

Operating pressure:

1 to 10 bar (0,3 to 10 bar for M5)

Ambient temperature:

-20°C to +80°C

Consult our Technical Service for use below +2°C.

Materials

M5:

Body: aluminium

Seals: nitrile

Needle: brass

1/8, 1/4, 3/8, 1/2:

Body: aluminium alloy

Seals: nitrile

Needle & internal parts: brass

External parts: aluminium alloy

Alternative models

M/800 heavy duty flow regulators

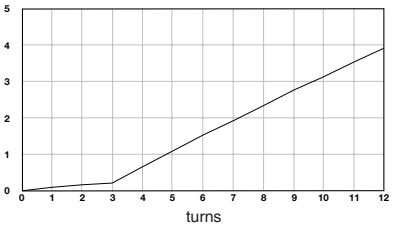
S/636, M/637, M/639 Precision flow regulators

Port size	Model	Max. regulated flow factor C*	Max. regulated flow factor Cv	Free flow factor C*	Free flow factor Cv	Opening pressure (bar)	kg
M5	T1000M0500	0,28	0,07	0,28	0,07	0,3	0,020
1/8	T1000C1800	0,57	0,14	1,50	0,37	<0,1	0,031
1/4	T1000C2800	1,30	0,32	2,80	0,69	<0,1	0,056
3/8	T1000C3800	4,80	1,17	6,70	1,64	<0,1	0,150
1/2	T1000C4800	7,50	1,84	8,30	2,00	<0,1	0,180

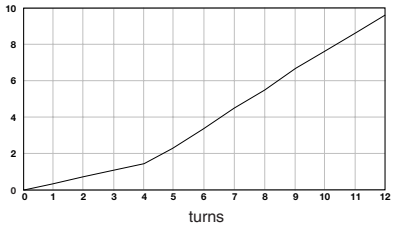
*C: measured in $dm^3/(s.bar)$

Flow vs turns at 6 bar - flow in dm^3/s ANR

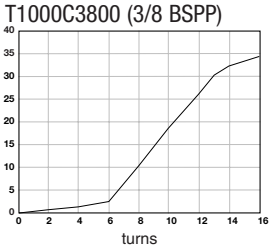
T1000C1800 (1/8 BSPP)



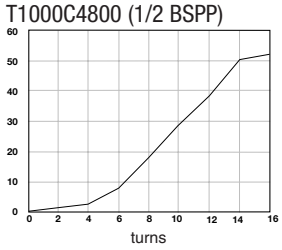
T1000C2800 (1/4 BSPP)



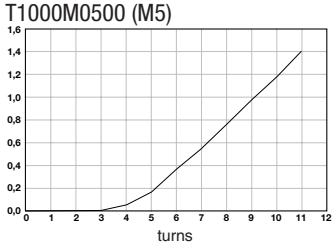
T1000C3800 (3/8 BSPP)



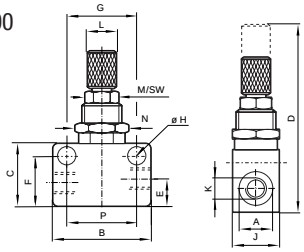
T1000C4800 (1/2 BSPP)



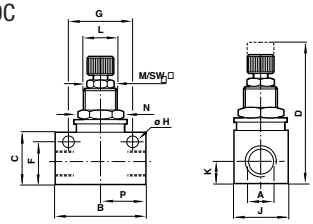
T1000M0500 (M5)



T1000M0500



T1000C



Model	A	B	C	D	E	F	G	H	J	K	L	M/SW	N (SW)	P	Panel hole	Max. panel thickness
T1000M0500	M5	25,0	15,0	45,0	6,5	12,0	18,0	4,5	12,0	5,5	M10x0,75	8	12	12,5	10,5	4,0
T1000C1800	G1/8	34,0	20,0	51,0	–	16,5	24,0	4,5	16,0	8,0	M12x1	Ø 10	14	17,0	12,5	4,0
T1000C2800	G1/4	45,0	25,5	61,5	–	21,0	32,0	4,5	19,0	9,5	M14x1	Ø 10	17	22.5	14,5	4,0
T1000C3800	G3/8	58,0	32,5	78,5	–	27,0	43,0	6,5	28,0	13,0	M20x1	14	24	29,0	20,5	4,0
T1000C4800	G1/2	65,0	36,0	82,0	–	30,5	50,0	6,5	30,0	15,0	M20x1	14	24	32.5	20,5	4,0

For NPT ranges, substitute A at the 6th digit, e.g. T1000A0500

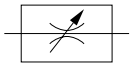
PDF CAD
www.norgren.com/info/en352

T1100 Series

Block form flow regulators

Bi-directional

⅛, ¼" BSPP



Compact size/low weight/ in-line units.

High flow performance.

Suitable for panel and wall mounting.

Two gain flow control.

Adjustment can be locked.

Captive regulator needle will not blow out when unscrewed.

Adjusting knob position line

Port size	Function	Max. regulated flow factor C*	Cv	Critical pressure ratio (b)	Min. operating pressure (bar)	kg	Model
1/8"	Bi-directional	0,57	0,14	0,2	0	0,031	T1100C1800
1/4"	Bi-directional	1,3	0,32	0,2	0	0,056	T1100C2800

*C: measured in $dm^3/(s.bar)$

Technical data

Medium:
Compressed air, filtered, lubricated or non-lubricated, inert gases

Operating pressure:
0 to 10 bar

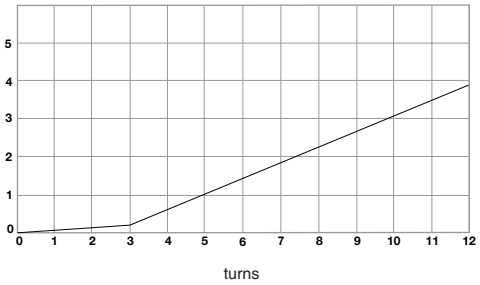
Ambient temperature:
-20°C to +80°C
Consult our Technical Service for use below +2°C.

Materials

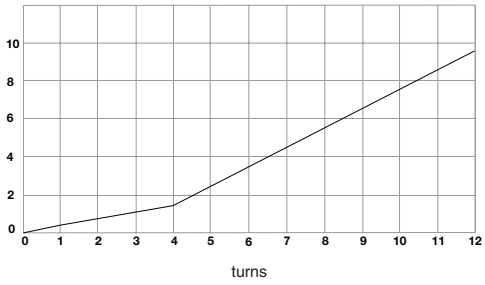
Body: aluminium alloy
Seals: nitrile
Needle & internal parts: brass
External parts: aluminium alloy

Flow vs turns at 6 bar – flow in dm^3/s ANR

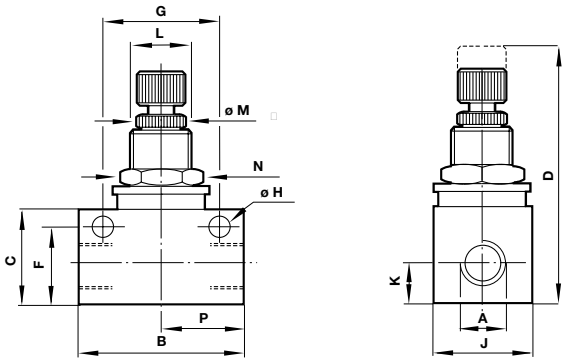
T1100C1800 (1/8 BSPP)



T1100C2800 (1/4 BSPP)



T1100



All sizes in mm.
G according to BS 2779/ISO 228/1.
Note: washer and nut for panel mounting are delivered as standard.

Model	A	B	C	D	F	G	H	J	K	L	M	N (SW)	P	Panel hole	Max. panel thickness
T1100C1800	G1⁄8	34,0	20,0	51,0	16,5	24,0	4,5	16,0	8,0	M12 x 1	Ø10	14	17,0	12,5	4,0
T1100C2800	G 1⁄4	45,0	25,4	61,5	20,8	32,0	4,5	19	9,7	M14 x 1	Ø10	17	22,5	14,5	4,0

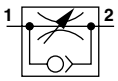
For NPT ranges, substitute A at the 6th digit, e.g. T1100A1800

M/800, C/800 Series

Heavy duty flow regulators, uni-directional

In-line

⅛, ¼, ½, ¾, 1"



Line mounted general purpose regulators

Captive regulating needle will not blow out when unscrewed

Calibrated adjusting knob, can be locked

Suitable for wall mounting

High operating pressure

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated

Operating pressure:

0,3 to 16 bar

Ambient temperature:

-20°C to + 80°C (Alternative models to 150°C)

Consult our Technical Service for use below +2°C.

Materials

S/836, M/837, M/839

Body, adjusting knob and locking ring: brass

M/840, M/855

Body, adjusting knob and locking ring: aluminium

Seals: nitrile rubber.

Alternative models

S/518 Precision flow regulators (air & hydraulic)

C/518 Precision flow regulators (air & hydraulic), NPT threads

S/636, M/637, M/639 Precision flow regulators, see page 381

T1000 range of block form flow regulators, see page 352

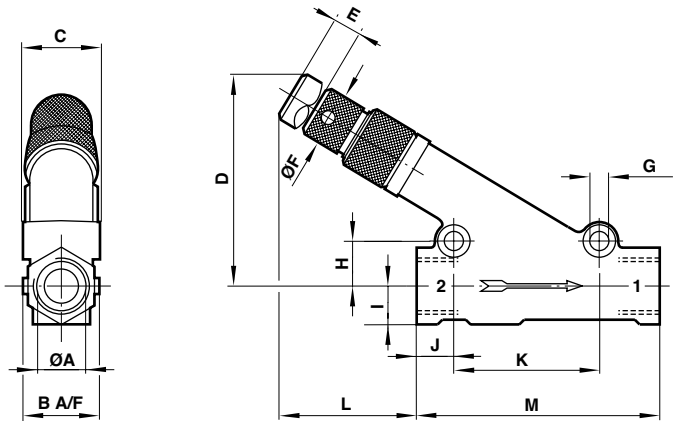
TM, TC/800 High temperature version (150°C max.).
To order spares kit for these models, insert 'T' in front of model code

T15 range In-line push-in flow regulators, see page 350

Model BSPP	NPT*	Port size	Max. regulated flow factor C**	Cv	Flow factor C**	Cv	kg	Spares kit
S/836		1/8	0,7	0,17	2,1	0,6	0,10	QS/836/00
	C/836	1/8	0,7	0,17	2,1	0,6	0,10	QC/836/00
S/837		1/4	2	0,49	4,3	1	0,15	QS/837/00
	C/837	1/4	2	0,49	4,3	1	0,15	QC/837/00
M/839		1/2	12	2,9	17	4,1	0,60	QS/839/00
	C/839	1/2	12	2,9	19	3,4	0,60	QC/839/00
M/840		3/4	18	4,4	38	9,3	1,20	QS/840/00
	C/840	3/4	18	4,4	36	8,8	1,20	QC/840/00
M/855		1	36	8,8	45	11	3,50	QS/855/00
	C/855	1	36	8,8	45	11	3,50	QC/855/00

* Products are finished with national pipe straight threads for coupling, which are specifically designed to match with NPT male threads.

** C measured in $dm^3/(s.bar)$



Model	Ø A	B A/F	C	D	E	Ø F	Ø G	H	I	J	K	L	M
S/836, C/836	1/8	13,0	17,0	38,0 max.	6,5	8,50	5,15	8,30	8,00	5,00	24,5	27,5 max.	46
M/837, C/837	1/4	16,7	22,2	37,5 max.	7,7	11,5	5,25	11,0	9,50	6,00	41,2	25,0 max.	60
M/839, C/839	1/2	27,4	28,0	80,0 max.	13	20,5	8,30	17,0	16,0	13,0	57,2	53,0 max.	95
M/840, C/840	3/4	32,0	38,0	104 max.	13	25,4	8,30	21,5	17,5	20,5	76,2	66,0 max.	118
M/855, C/855	1	48,0	52,0	147 max.	22	35,4	13,0	26,0	24,0	23,0	90,0	107 max.	150

Proportional control technology

Options...

The VP range of proportional valves is the most comprehensive range of products on offer from any pneumatic supplier. From 100 l/min to 17000 l/min; from 1 bar to 20 bar; from compact to high flow applications – the Norgren range has it all.

Choice...

Proportional technology can be used to control pressure, flow, force and position. Norgren proportional valves are used in car plants to control spot welding, paint spray or adhesive dispense; they are used in laboratories to control sensitive sampling equipment or on paper and textile machines to control the tension where high accuracy maximises system performance and end product quality.

Open loop integrated control

Open loop pressure controllers give the user basic pressure control at a minimum cost.

Closed loop control

Another level of outstanding features includes the addition of integral feedback and control electronics. Closed loop pressure control is a truly state of the art solution and all our closed loop valves incorporate leading edge technology with the features to match.

VP10 - Open loop

Accurate regulator with excellent linearity and low hysteresis, loop powered versions – ideal for low flow and low dynamic applications.

VP21 - Closed loop

The complete family with a wide range of sizes and options. The VP21 gives control up to 16 bar and 15000 l/min – suitable for nearly every application

VP22 - Closed loop

Direct acting proportional valve with high accuracy and suitable for high speed applications e.g. booster piloting

VP40 - Open loop

Flexible solution for many applications. Flow up to 1900 l/min and pressure up to 20 bar

VP50/51 - Closed loop

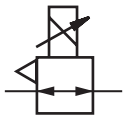
Low power technology gives efficient operation up to 10 bar at 1200 l/m. VP51 with digital paramater adjustment and display

See following pages for full product details

VP10 Series

Proportional pressure control valve

G¼



Robust proportional I/P and E/P converters
Suitable for a wide range of applications
High accuracy
High flow versions available
IP 65 protection in normal operation

Technical data

Medium:
Compressed air filtered to 5 µm, oil-free, dry

Output signal:
0,2 to 1,0 bar, 0,2 to 2,0 bar, 0,2 to 4,0 bar (2 wire version), 0,14 to 6 bar, 0,14 to 8 bar (3 wire version)

Flow:
Up to 300 l/min

Air consumption:
<4 bar: 0,85 l/min typical at 50% signal
>4 bar: 1,75 l/min typical at 50% signal

Operating pressure:
At least 0,7 bar above maximum required output pressure range

Ambient temperature:
-40°C to +85°C
Consult our Technical Service for use below +2°C.

Mounting:
Integral surface mounting bracket provided for preferred vertical mounting. 50 mm pipe mounting kit available

Response time:
<2 bar: less than 0,5 seconds
(dependent on input for 10 to 90% step change and outlet pressures)
>2 bar: 2 seconds for 10 to 90% step change

Total error:
±0,5% of span (typical, independent error includes the combined effect of non-linearity, hysteresis, deadzone and repeatability)

Temperature effect:
Average 0,1% of span/°C for span and zero over operating range

Supply sensitivity:
< 0,075% span output change per % supply pressure change

Failure mode:
Signal falls to bleed pressure when electrical supply fails

Weight:
0,825 kg

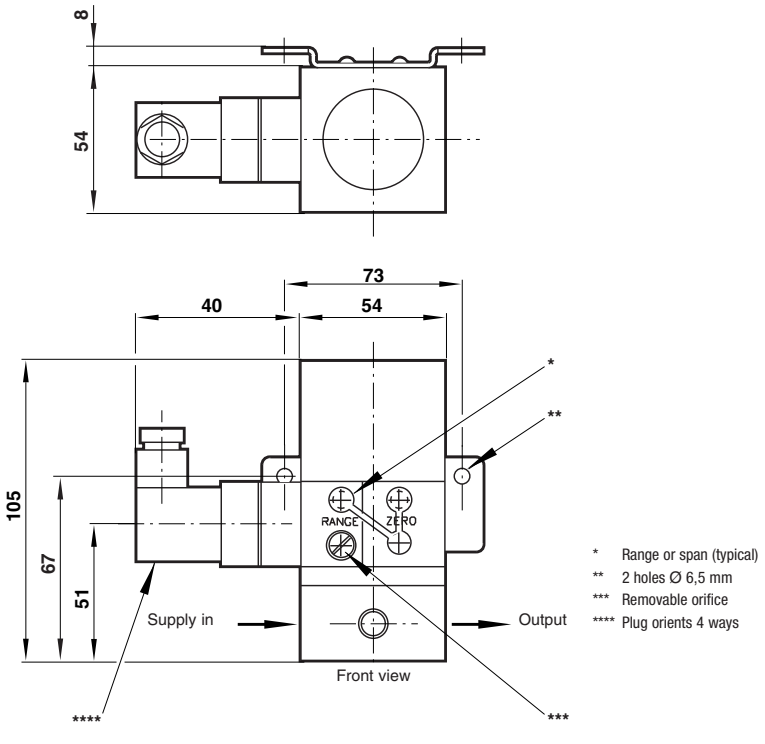
Materials

Body: passivated zinc die-casting, epoxy painted
Diaphragms: nitrile
Internal: beryllium copper/brass
Flapper nozzle and supply valve: stainless steel/nylon

Control signal	Output pressure (bar)	Model
0 ... 10 V	0,2 ... 1	VP1001BJ100A00
4 ... 20 mA	0,2 ... 1	VP1001BJ400A00
0 ... 10 V	0,2 ... 2	VP1002BJ100A00
4 ... 20 mA	0,2 ... 2	VP1002BJ400A00
0 ... 10 V	0,2 ... 4	VP1004BJ100A00
4 ... 20 mA	0,2 ... 4	VP1004BJ400A00
0 ... 10 V	0,14 ... 6	VP1006BJ101A00
4 ... 20 mA	0,14 ... 6	VP1006BJ401A00
0 ... 10 V	0,14 ... 8	VP1008BJ101A00
4 ... 20 mA	0,14 ... 8	VP1008BJ401A00

Electrical information

Electromagnetic compatibility	This is a passive electromagnetic instrument and is unaffected by interfering high frequency signals
Electrical signal	Two wire version 4 to 20 mA or 0 to 10 V Three wire version requires 12 to 24 V d.c. supply
Connections	30 mm square connector DIN 43650 provided, mountable in four directions (alternative connections available)

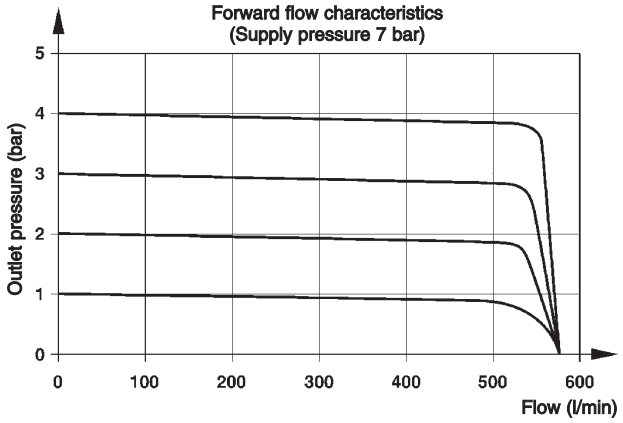


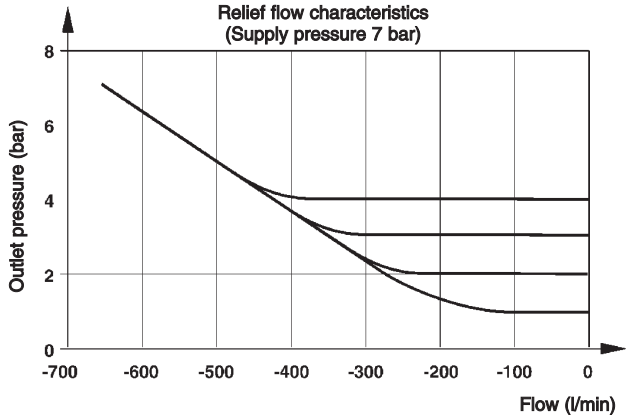
VP10 Series

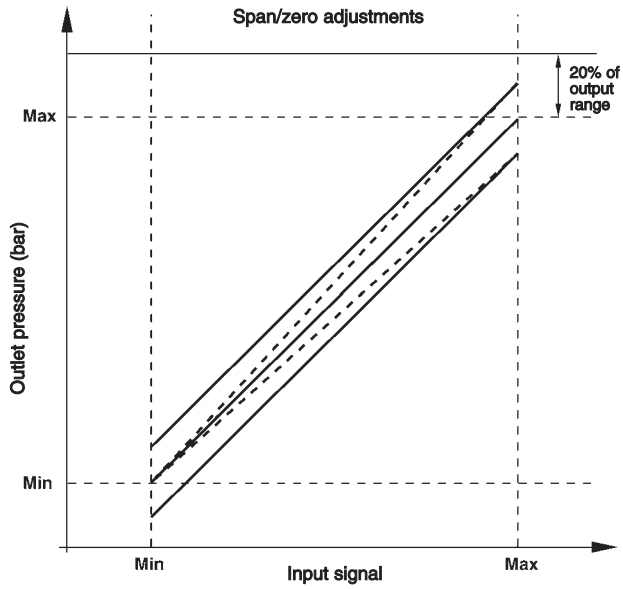
Proportional pressure control valves

G¼

Characteristic curves





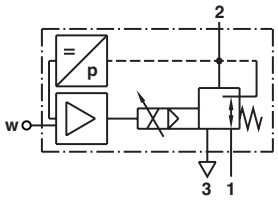


VP21 Series

Proportional pressure solenoid valves

2, 4, 8, 12, 20 mm orifice with integrated pressure control

G⅛ to G¾, Flange, subplate



Free of lacquer affecting substances
Combines valve and electronic control unit
Good linearity
Good response sensitivity
Fast response time
Adjustable amplification control
Adjustable pressure range
Threshold switch (comparator)
Valve conforms to CE

Technical data

Medium:
Filtered compressed air, lubricated or unlubricated

Filter:
50 µm

Mounting position:
Any, preferably vertical

Flow direction:
Fixed

Operating pressure p1:
7 bar, 12 bar, 16,5 bar max.

Pressure settings p2:
0 (0,03) to 2 bar, 0 (0,15) to 10 bar, 0 (0,24) to 16 bar

Ambient temperature:
0°C to +60°C
Consult our Technical Service for use below +2°C.

Hysteresis:
< 0,5 (% p2 max)

Repeatability:
< 0,5 (% p2 max)

Linearity:
< 1 (% p2 max)
Values refer to 20°C

Response sensitivity:
< 0,2 (% p2 max)

Degree of protection:
IP 65 (M12 variant)

Materials

Valve body: Aluminium alloy
Electronic body: ABS
Seals: NBR (Perbunan)

2 x M12 or 1 x M12 + 14 Pole connector

Setting pressure p2 (bar)	Operating pressure p1 (bar)	Setpoint input	Actual-value output	Pressure range adjustment	Comparator fixed	Comparator variable	Connector variant	Model
0 ... 2	7	0 ... 10 V	0 ... 10 V	●	●	–	A + B	4094X00900002400
0 ... 2	7	0 ... 20 mA	0 ... 10 V	●	●	–	A + B	4094X01900002400
0 ... 2	7	4 ... 20 mA	0 ... 10 V	●	●	–	A + B	4094X02900002400
0 ... 2	7	8 bit parallel	0 ... 10 V	●	●	–	A + D	4094X03900002400
0 ... 2	7	0 ... 10 V	0 ... 10 V	●	–	●	A + B	4094X04900002400
0 ... 2	7	0 ... 20 mA	0 ... 10 V	●	–	●	A + B	4094X05900002400
0 ... 2	7	4 ... 20 mA	0 ... 10 V	●	–	●	A + B	4094X06900002400
0 ... 2	7	0 ... 10 V	4 ... 20 mA	●	–	●	A + B	4094X07900002400
0 ... 2	7	4 ... 20 mA	4 ... 20 mA	●	–	●	A + B	4094X09900002400
0 ... 10	12	0 ... 10 V	0 ... 10 V	●	●	–	A + B	4094X10900002400
0 ... 10	12	0 ... 20 mA	0 ... 10 V	●	●	–	A + B	4094X11900002400
0 ... 10	12	4 ... 20 mA	0 ... 10 V	●	●	–	A + B	4094X12900002400
0 ... 10	12	8 bit parallel	0 ... 10 V	●	●	–	A + D	4094X13900002400
0 ... 10	12	0 ... 10 V	0 ... 10 V	●	–	●	A + B	4094X14900002400
0 ... 10	12	0 ... 20 mA	0 ... 10 V	●	–	●	A + B	4094X15900002400
0 ... 10	12	4 ... 20 mA	0 ... 10 V	●	–	●	A + B	4094X16900002400
0 ... 10	12	0 ... 10 V	4 ... 20 mA	●	–	●	A + B	4094X17900002400
0 ... 10	12	4 ... 20 mA	4 ... 20 mA	●	–	●	A + B	4094X19900002400
0 ... 16	16,5	0 ... 10 V	0 ... 10 V	●	●	–	A + B	4094X26900002400
0 ... 16	16,5	0 ... 20 mA	0 ... 10 V	●	●	–	A + B	4094X27900002400
0 ... 16	16,5	4 ... 20 mA	0 ... 10 V	●	●	–	A + B	4094X28900002400
0 ... 16	16,5	8 bit parallel	0 ... 10 V	●	●	–	A + D	4094X29900002400
0 ... 16	16,5	0 ... 10 V	0 ... 10 V	●	–	●	A + B	4094X30900002400
0 ... 16	16,5	0 ... 20 mA	0 ... 10 V	●	–	●	A + B	4094X31900002400
0 ... 16	16,5	4 ... 20 mA	0 ... 10 V	●	–	●	A + B	4094X32900002400
0 ... 16	16,5	0 ... 10 V	4 ... 20 mA	●	–	●	A + B	4094X33900002400
0 ... 16	16,5	4 ... 20 mA	4 ... 20 mA	●	–	●	A + B	4094X35900002400

1 x M12 Connector

Setting pressure p2 (bar)	Operating pressure p1 (bar)	Setpoint input	Actual-value output	Pressure range adjustment	Connector variant	Model
0 ... 2	7	0 ... 10 V	0 ... 10 V	●	C	4095X00900002400
0 ... 2	7	0 ... 20 mA	0 ... 10 V	●	C	4095X01900002400
0 ... 2	7	4 ... 20 mA	0 ... 10 V	●	C	4095X02900002400
0 ... 2	7	0 ... 10 V	4 ... 20 mA	●	C	4095X07900002400
0 ... 2	7	4 ... 20 mA	4 ... 20 mA	●	C	4095X09900002400
0 ... 10	12	0 ... 10 V	0 ... 10 V	●	C	4095X10900002400
0 ... 10	12	0 ... 20 mA	0 ... 10 V	●	C	4095X11900002400
0 ... 10	12	4 ... 20 mA	0 ... 10 V	●	C	4095X12900002400
0 ... 10	12	0 ... 10 V	4 ... 20 mA	●	C	4095X17900002400
0 ... 10	12	4 ... 20 mA	4 ... 20 mA	●	C	4095X19900002400
0 ... 16	16,5	0 ... 10 V	0 ... 10 V	●	C	4095X26900002400
0 ... 16	16,5	0 ... 20 mA	0 ... 10 V	●	C	4095X27900002400
0 ... 16	16,5	4 ... 20 mA	0 ... 10 V	●	C	4095X28900002400
0 ... 16	16,5	0 ... 10 V	4 ... 20 mA	●	C	4095X33900002400
0 ... 16	16,5	4 ... 20 mA	4 ... 20 mA	●	C	4095X35900002400

For size 2 valve, substitute 0 for letter X in the 5th position e.g. 4094**0**00 For size 4 valve, substitute 1 for letter X in the 5th position e.g. 4094**1**00
For size 8 valve, substitute 3 for letter X in the 5th position e.g. 4094**3**00 For size 12/20 valve, substitute 4 for letter X in the 5th position e.g. 4094**4**00
● Standard option

VP21 Series

Proportional pressure solenoid valves

2, 4, 8, 12, 20 mm orifice with integrated pressure control

G⅛ to G¾, Flange, subplate

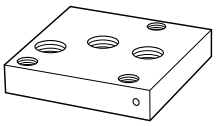
6 pole + PE Connector

Setting pressure p2 (bar)	Operating pressure p1 (bar)	Setpoint input	Actual-value output	Pressure range adjustment	Connector variant	Model
0 ... 2	7	0 ... 10 V	0 ... 10 V	●	E	4091X00900002400
0 ... 2	7	0 ... 20 mA	0 ... 10 V	●	E	4091X01900002400
0 ... 2	7	4 ... 20 mA	0 ... 10 V	●	E	4091X02900002400
0 ... 2	7	8 bit parallel	0 ... 10 V	●	F	4091X03900002400
0 ... 10	12	0 ... 10 V	0 ... 10 V	●	E	4091X10900002400
0 ... 10	12	0 ... 20 mA	0 ... 10 V	●	E	4091X11900002400
0 ... 10	12	4 ... 20 mA	0 ... 10 V	●	E	4091X12900002400
0 ... 10	12	8 bit parallel	0 ... 10 V	●	F	4091X13900002400
0 ... 16	16,5	0 ... 10 V	0 ... 10 V	●	E	4091X26900002400
0 ... 16	16,5	0 ... 20 mA	0 ... 10 V	●	E	4091X27900002400
0 ... 16	16,5	4 ... 20 mA	0 ... 10 V	●	E	4091X28900002400
0 ... 16	16,5	8 bit parallel	0 ... 10 V	●	F	4091X29900002400

For size 2 valve, substitute 0 for letter X in the 5th position e.g. 4091000 For size 4 valve, substitute 1 for letter X in the 5th position e.g. 4091100
For size 8 valve, substitute 3 for letter X in the 5th position e.g. 4091300 For size 12/20 valve, substitute 4 for letter X in the 5th position e.g. 4091400 ● Standard option
For details of pressure range adjustment, consult our Technical Service

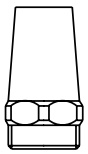
Accessories

Subplate



Orifice (mm)	Port size	Model
2	G1/8	0542845
4	G1/8	0542848
8	G1/4	0542636
8	G3/8	0543705
12	G1/2	0542814
20	G3/4	0542840

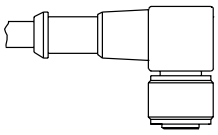
Silencer for venting port at subplate



Orifice (mm)	Port size	Model
2	G1/8	0014510
4	G1/4	0014610
8	G3/8	0014710
12	G1/2	0014810
20	G3/4	0014910

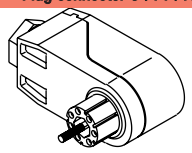
Connectors

Plug connector M12



Type	Connector variant	Model
M 12 x 1; 3 pole; 5 m 3 x 0,34 mm2	A	0250079
M 12 x 1; 4 pole; 5 m 4 x 0,34 mm2	B	0250080
M 12 x 1; 5 pole; 5 m 5 x 0,34 mm2	C	0250081
M 12 x 1; 3 pole; 10 m 3 x 0,34 mm2	A	0250470
M 12 x 1; 4 pole; 10 m 4 x 0,34 mm2	B	0250471
M 12 x 1; 5 pole; 10 m 5 x 0,34 mm2	C	0250472

Plug connector 6-/14-/15 pole



Type	Connector variant	Model
14 pole; Pg 9	D	0799847
14 pole; 2 m 14 x 0,25 mm2	D	0799857
14 pole; 5 m 14 x 0,25 mm2	D	0250082
6 pole + PE 90° plastic	E	0660689
6 pole + PE metal, Pg 13,5	E	0799695
15 pole MIL-C-26482	F	0680683

Electrical supply

Supply voltage UB (V d.c.):		18 ... 32
Residual ripple max (%):		10
Power consumption at 24 V d.c.:		
16 bar valve size 2	I_B (A)	1,8
16 bar valve size 4, 8, 12	I_B (A)	1,5
10 bar valve size 2	I_B (A)	1,2
10 bar valve size 4, 8, 12	I_B (A)	1,0
2 bar valve size 2, 4, 8, 12	I_B (A)	0,8
Stand-by operation	I_B (A)	< 0,05

Analog set points*

Voltage signal	UE (V)	0 ... 10
Input resistance	RE (k Ω)	< 500
Current signal	I_E (mA)	0 ... 20 / 4 ... 20
Load resistance	(Ω)	⩽ 135

* Valve function is activated as soon as the set point is ⩾ 1,5%. If the set point is < 1,5% the set pressure = 0 and the valve is in stand-by mode.

Digital set points

Data inputs (parallel)	(bit)	8 bit + enable
Level for logic 'L'*	(V)	0 ... 2
Level for logic 'H'	(V)	12 ... 32
Enable		Low active
Input current	(mA)	1

* Input open ≙ logic level 'L'

Outputs (signal)

Voltage signal for pneumatic output pressure	U_A (V)	0 ... 2 bar 1 V = 0,2 bar 0 ... 10 bar 1 V = 1,0 bar 0 ... 16 bar 1 V = 1,6 bar
Output current	I_A (mA)	1
Current signal for pneumatic output pressure	I_A (0 ... 20 mA)	0 ... 2 bar 1 mA = 0,1 bar 0 ... 10 bar 1 mA = 0,5 bar 0 ... 16 bar 1 mA = 0,8 bar
Current signal for pneumatic output pressure	I_A (4 ... 20 mA)	0 ... 2 bar 1,6 mA = 0,2 bar 0 ... 10 bar 1,6 mA = 1,0 bar 0 ... 16 bar 1,6 mA = 1,6 bar

Comparator (fixed) signal output 'pressure reached' (x = w)

Switching range	(% p2 max)	± 2
Voltage signal for pressure outside switching range x ≠ w	(V)	0
Pressure reached (x = w)	(V)	UB -1,5
Output current max.	(mA)	10

Comparator (variable) signal output 'pressure reached' (x = w)

Switching range	(% p2 max)	0 ... ± 20
Adjusting facility		Internal potentiometer
Factory setting	(% p2 max)	Middle position
Delay time (during pressure build-up)	(ms)	100 ... 1200
Factory setting	(ms)	1200
Voltage signal for pressure outside switching range x ≠ w	(V)	0
Pressure reached (x = w)	(V)	UB -1,5
Output current max.	(mA)	10

VP21 Series

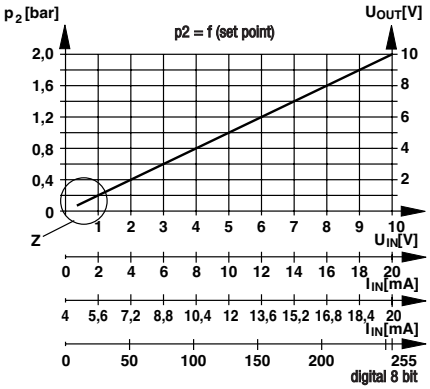
Proportional pressure solenoid valves

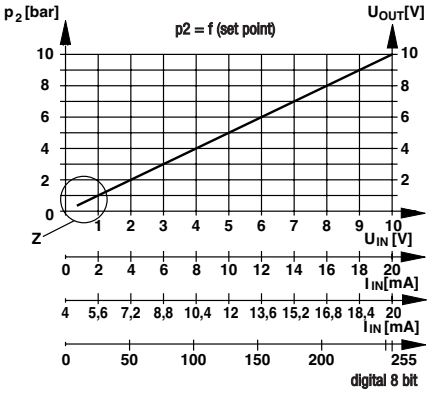
2, 4, 8, 12, 20 mm orifice with integrated pressure control

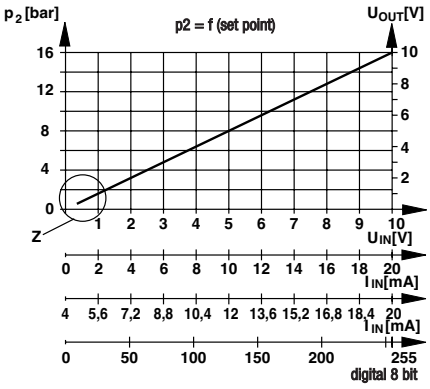
G⅛ to G¾, Flange, subplate

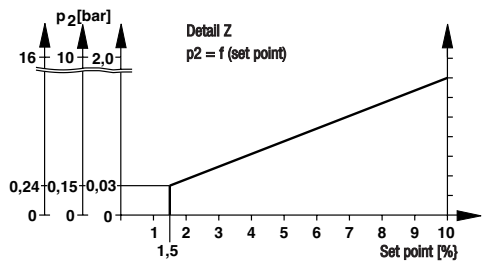
Characteristic curves

Static characteristic curves 2 ... 20 mm orifice

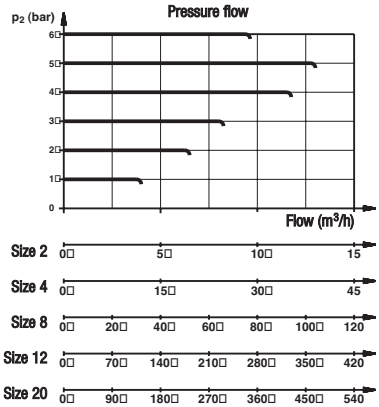




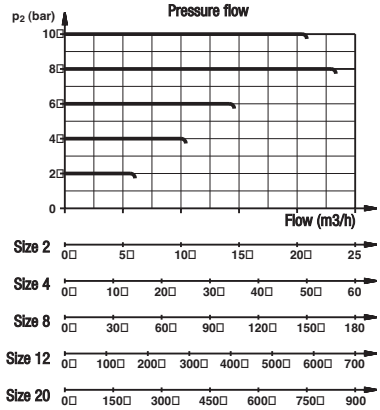




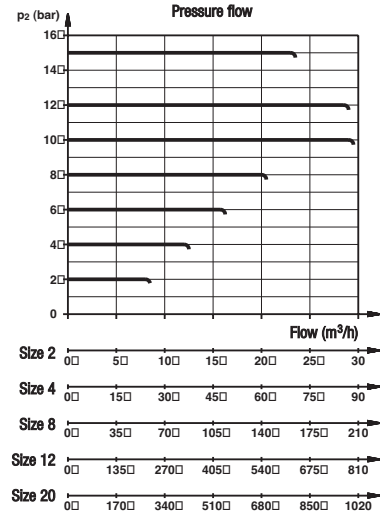
Flow characteristic with 7 bar operating pressure



Flow characteristic with 12 bar operating pressure



Flow characteristic with 16 bar operating pressure

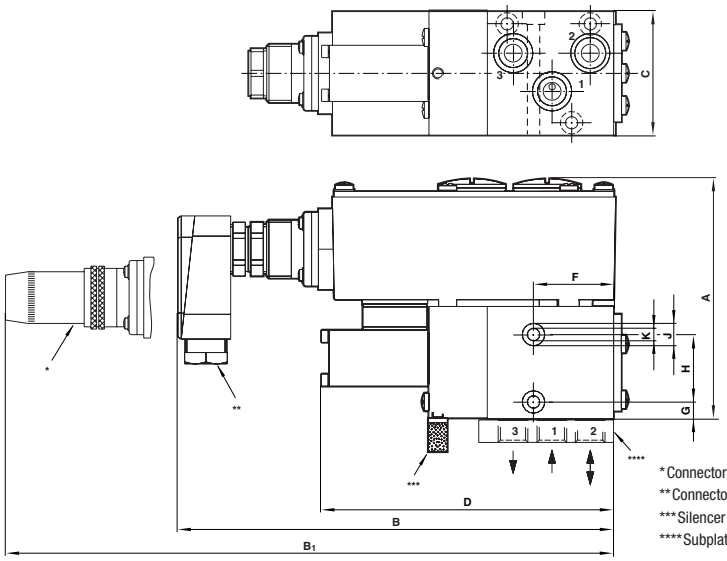


VP21 Series

Proportional pressure solenoid valves

2, 4, 8, 12, 20 mm orifice with integrated pressure control

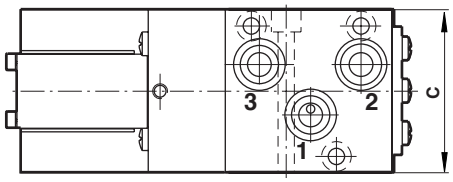
G⅛ to G¾, Flange, subplate

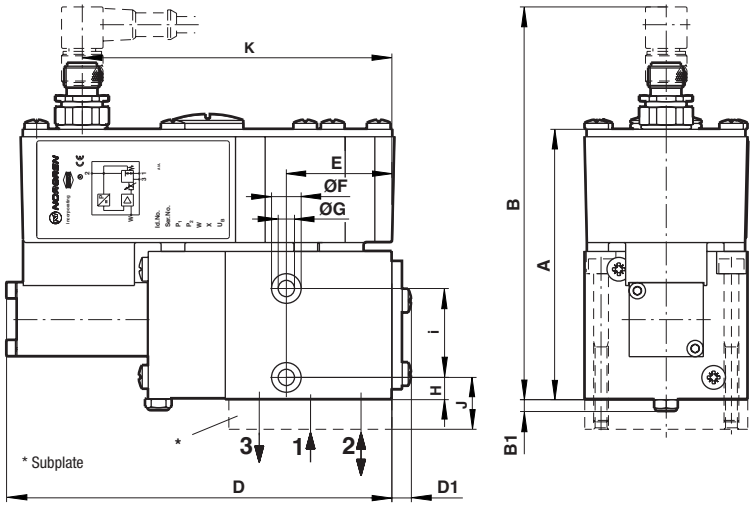


*Connector 15 pin (order separately)
**Connector 6 pin + PE (order separately)
***Silencer (Size 2 without silencer)
****Subplate (order separately)

Ø	A	B	B1	C	D	F	G	H	J	K
2	82	188	189	55	130	35,7	6,5	22	10	5,5
4	82	191	185	55	133	36,8	6,5	22	10	5,5
8	96	188	189	55	137	35,6	7,5	30	10	5,5
12	116	218	219	70	167	59	8,5	49,8	11	6,5
20	116	218	219	70	167	59	8,5	49,8	11	6,5

Option without subplate





Ø	A	B	B1	C	D	D1	E	F	G	H	I	J	K
2	77	118,5	0	55	130	0	10	35,7	5,5	6,5	22	16,5	104,5
4	77	118,5	4	55	130	3	10	36,8	5,5	6,5	22	16,5	104,5
8	91	133	4	55	130	6,6	10	35,6	5,5	7,5	30	17,5	104,5
12	111	152,5	4	70	160	7,3	11	59	6,6	8,5	49,8	28,5	134
20	111	152,5	4	70	160	7,3	11	59	6,6	8,5	49,8	28,5	134

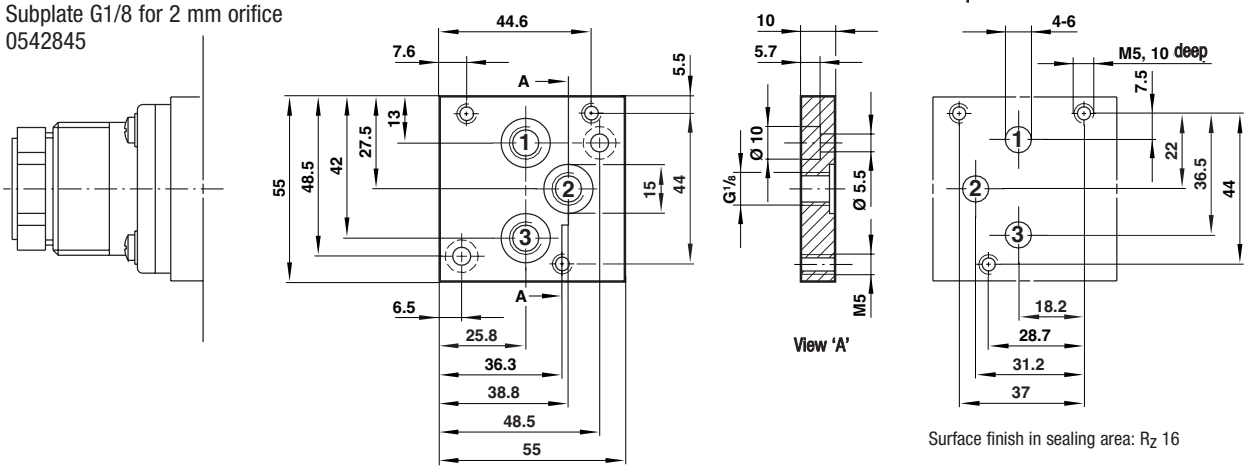
VP21 Series

Proportional pressure solenoid valves

2, 4, 8, 12, 20 mm orifice with integrated pressure control

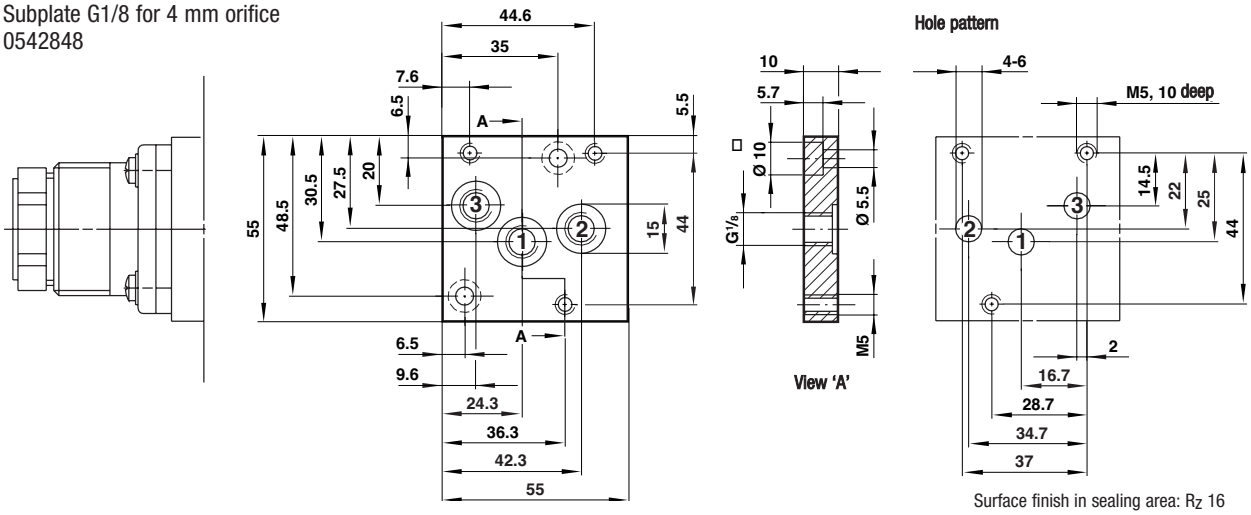
G⅛ to G¾, Flange, subplate

Subplate G1/8 for 2 mm orifice
0542845



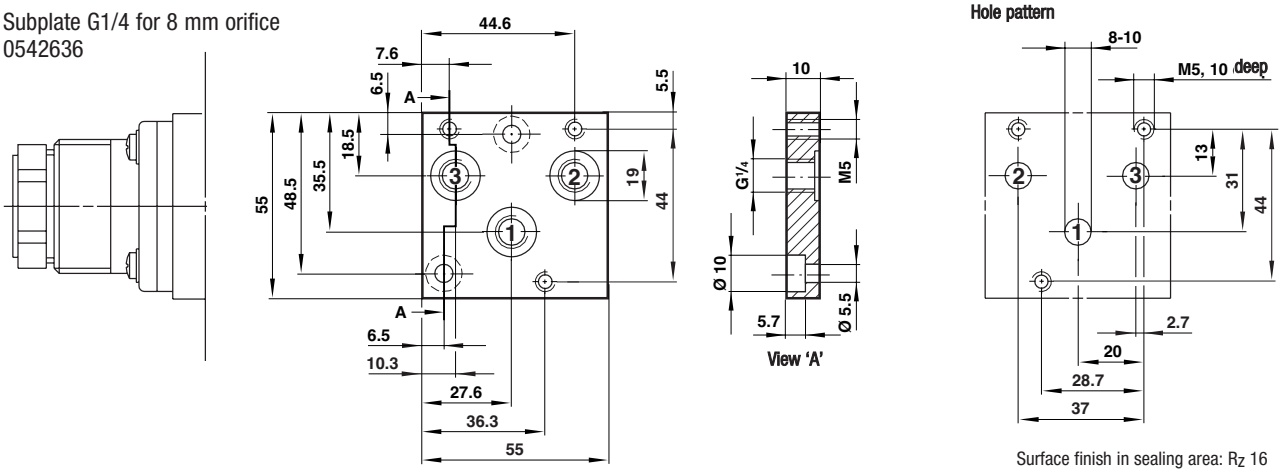
Surface finish in sealing area: R_Z 16

Subplate G1/8 for 4 mm orifice
0542848



Surface finish in sealing area: R_Z 16

Subplate G1/4 for 8 mm orifice
0542636



Surface finish in sealing area: R_Z 16

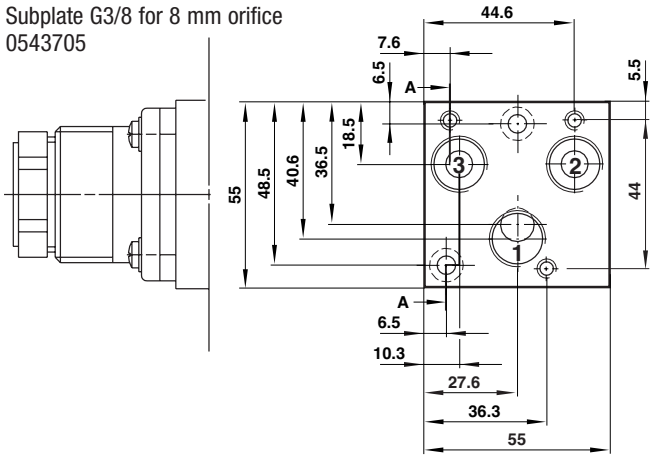
VP21 Series

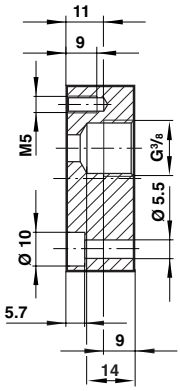
Proportional pressure solenoid valves

2, 4, 8, 12, 20 mm orifice with integrated pressure control

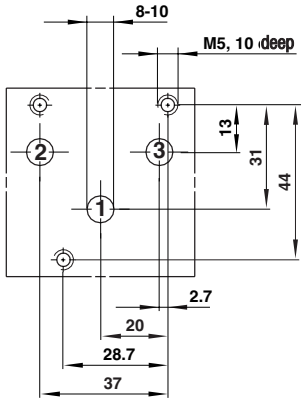
G⅛ to G¾, Flange, subplate

Subplate G3/8 for 8 mm orifice
0543705



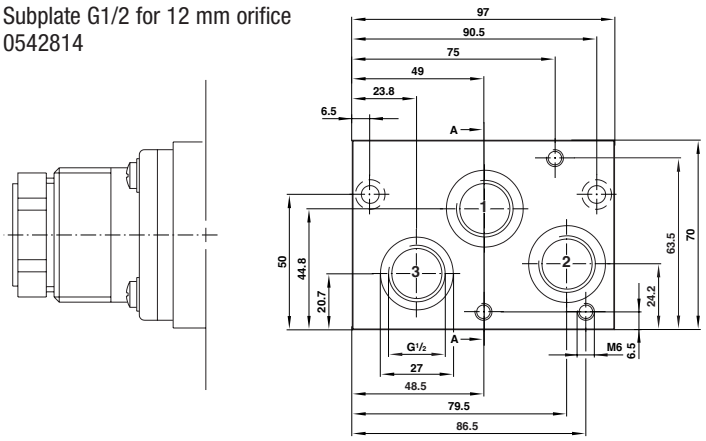


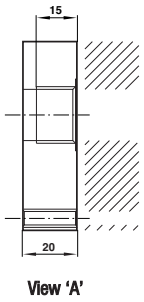
Hole pattern



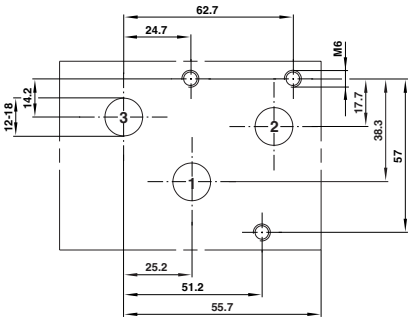
Surface finish in sealing area: R_Z 16

Subplate G1/2 for 12 mm orifice
0542814



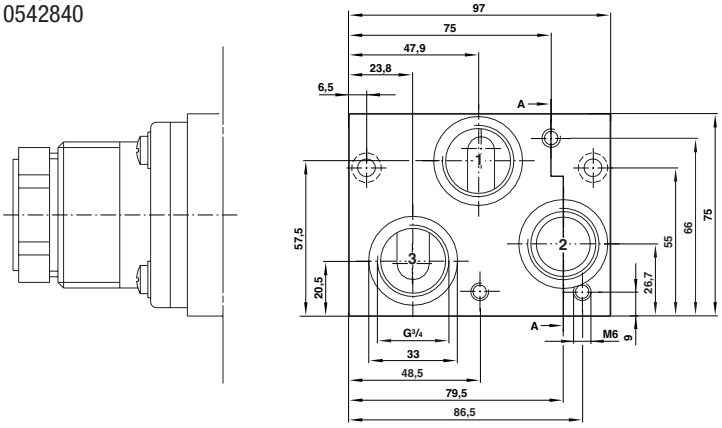


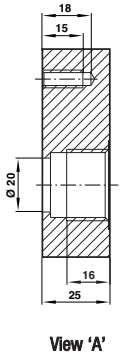
Hole pattern



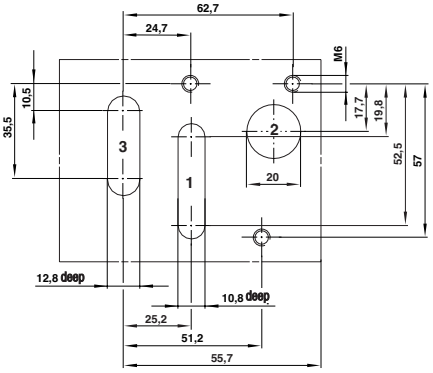
Surface finish in sealing area: R_Z 16

Subplate G3/4 for 20 mm orifice
0542840





Hole pattern

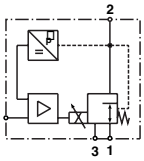


Surface finish in sealing area: R_Z 16

VP22 Series

3-way proportional pressure control valves

G⅛



Combined valve and electronic control unit

Minimal hysteresis

Good linearity and response sensitivity

Fast response time

Adjustable amplification control

Adjustable pressure range

Set-point switchable

Technical data

Medium:
Compressed air filtered to 50 µm, lubricated or unlubricated

Mounting position:
Any, preferably vertical

Flow direction:
Fixed

Operating pressure p1: :
Up to 12 bar

Pressure settings p2:
0 to 8 bar

Ambient temperature:
0°C to +50°C

Medium temperature:
-5°C to +50°C
Consult our Technical Service for use below +2°C.

Connection:
Hose Ø 6 mm

Hysteresis:
< 0,5 [% p2 max.]*

Repeatability:
< 0,5 [% p2 max.]*

Linearity:
< 1 [% p2 max.]*

Response sensitivity:
< 0,2 [% p2 max.]*
*at +20°C

Degree of protection:
IP 55

Materials

Body: PA6
Seals: NBR

Setting pressure p2 (bar)	Operating pressure p1 (bar)	Setpoint input	Actual-value output	Pressure range adjustment	Comparator fixed	Comparator variable	Drawing no.	Connector variant*	Model
0 ... 2	7	0 ... 10 V	0 ... 10 V	●	●		1	A + B	4094700.9000
0 ... 2	7	0 ... 20 mA	0 ... 10 V	●	●		1	A + B	4094701.9000
0 ... 2	7	4 ... 20 mA	0 ... 10 V	●	●		1	A + B	4094702.9000
0 ... 2	7	8 bit parallel	0 ... 10 V	●	●		3	A + D	4094703.9000
0 ... 2	7	0 ... 10 V	4 ... 20 mA	●		●	1	A + B	4094707.9000
0 ... 2	7	4 ... 20 mA	4 ... 20 mA	●		●	1	A + B	4094709.9000
0 ... 8	12	0 ... 8 V	0 ... 8 V	●	●		1	A + B	4094710.9000
0 ... 8	12	0 ... 16 mA	0 ... 8 V	●	●		1	A + B	4094711.9000
0 ... 8	12	4 ... 16,8 mA	0 ... 8 V	●	●		1	A + B	4094712.9000
0 ... 8	12	8 bit parallel	0 ... 8 V	●	●		3	A + D	4094713.9000
0 ... 8	12	0 ... 8 V	4 ... 16,8 mA	●		●	1	A + B	4094717.9000
0 ... 8	12	4 ... 16,8 mA	4 ... 16,8 mA	●		●	1	A + B	4094719.9000
0 ... 2	7	0 ... 10 V	0 ... 10 V	●	–		2	C	4095700.9000
0 ... 2	7	0 ... 20 mA	0 ... 10 V	●	–		2	C	4095701.9000
0 ... 2	7	4 ... 20 mA	0 ... 10 V	●	–		2	C	4095702.9000
0 ... 2	7	0 ... 10 V	4 ... 20 mA	●	–		2	C	4095707.9000
0 ... 2	7	4 ... 20 mA	4 ... 20 mA	●	–		2	C	4095709.9000
0 ... 8	12	0 ... 8 V	0 ... 8 V	●	–		2	C	4095710.9000
0 ... 8	12	0 ... 16 mA	0 ... 8 V	●	–		2	C	4095711.9000
0 ... 8	12	4 ... 16,8 mA	0 ... 8 V	●	–		2	C	4095712.9000
0 ... 8	12	0 ... 8 V	4 ... 16,8 mA	●	–		2	C	4095717.9000
0 ... 8	12	4 ... 16,8 mA	4 ... 16,8 mA	●	–		2	C	4095719.9000
0 ... 2	7	0 ... 10 V	0 ... 10 V	●	–		4	C	4095750.9000
0 ... 2	7	0 ... 20 mA	0 ... 10 V	●	–		4	C	4095751.9000
0 ... 2	7	4 ... 20 mA	0 ... 10 V	●	–		4	C	4095752.9000
0 ... 2	7	0 ... 10 V	4 ... 20 mA	●	–		4	C	4095757.9000
0 ... 2	7	4 ... 20 mA	4 ... 20 mA	●	–		4	C	4095759.9000
0 ... 8	12	0 ... 8 V	0 ... 8 V	●	–		4	C	4095760.9000
0 ... 8	12	0 ... 16 mA	0 ... 8 V	●	–		4	C	4095761.9000
0 ... 8	12	4 ... 16,8 mA	0 ... 8 V	●	–		4	C	4095762.9000
0 ... 8	12	0 ... 8 V	4 ... 16,8 mA	●	–		4	C	4095767.9000
0 ... 8	12	4 ... 16,8 mA	4 ... 16,8 mA	●	–		4	C	4095769.9000

*For connectors see Accessories table

Electrical information

Supply voltage		U_B[Vd.c.]	18 ... 32
Residual ripple max	.	[%]	10
Current drawn	max.	I_B[A]	0,8
	set point <1,5%	I_B[A]	<0,05

Inputs (signal)

Voltage signal	UE (V)	0 ... 10*
Input resistance	RE (k Ω)	< 500
Current signal	IE (mA)	0 ... 20 / 4 ... 20*
Load independence	(Ω)	⩽ 135

* Analogue setpoints (W) selectable

Digital set-points (W) selectable

Data inputs (parallel)	[bit]	8 bit + enable
Level for logic 'L' **	[V]	0 ... 2
Level for logic 'H'	[V]	12 ... 32
Enable		Low active
Input current	[mA]	1

* Valve function is activated as soon as the set-point is > 1,5%. If the set-point is < 1,5%, the set pressure = 0 and the valve is in standby mode. ** Input open = Logic L

Electromagnetic compatibility

Noise immunity	To DIN EN 50082, Part 2
Noise transmission	To DIN EN 50081, Part 1

Outputs (signal)

Actual value (X)

Voltage signal for pneumatic output pressure	U_A (V)	0 ... 2 bar 0 ... 8 bar	1 V = 0,2 bar 1 V = 1,0 bar
Output current	I_A (mA)	1	
Current signal for pneumatic output pressure	I_A (4 ... 20 mA)	0 ... 2 bar 0 ... 8 bar	1,6 mA = 0,2 bar 1,6 mA = 1,0 bar

Comparator (fixed)

Signal output pressure reached (X = W)

Switching range	(%p2 max)	± 2
Voltage signal for pressure outside switching range x ≠ w	(V)	0
Pressure reached (x = w)	(V)	U_B -1,5
Output current max.	(mA)	10

* UB = Supply voltage

Comparator (variable)

Signal output pressure reached (X = W)

Switching range	(%p2 max)	0 to ± 20
Adjusting facility	Internal potentiometer	
Factory setting	(%p2 max)	Mid-position
Delay time (during pressure build-up)	(ms)	100 to 1200
Factory setting	(ms)	1200
Voltage signal for pressure outside switching range x ≠ w	(V)	0
Pressure reached (x = w)	(V)	UB - 1,5
Output current max.	(mA)	10

VP22 Series

3-way proportional pressure control valves

G⅛

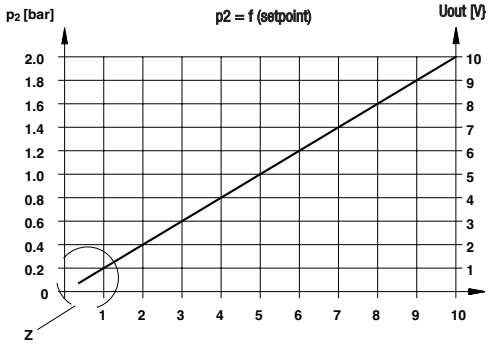
Accessories

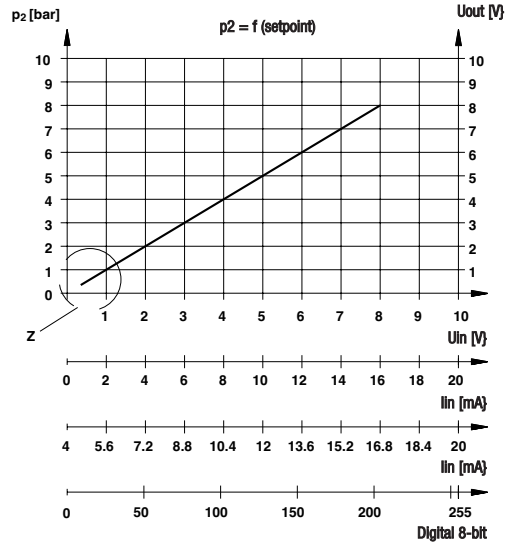
Description	Specification	Version	Model
Subplate			0250162
Tool	Disassembly of subplate		0799915
Fixing materials:	Threaded bolt M6		0681641*
	Plug-in termination G 1/8		102150618
Connectors:	M 12 x 1; 3 pin; 5 m 3 x 0,34 mm²	A	0250079
	M 12 x 1; 4 pin; 5 m 4 x 0,34 mm²	B	0250080
	M 12 x 1; 5 pin; 5 m 5 x 0,34 mm²	C	0250081
	M 12 x 1; 3 pin; 10 m 3 x 0,34 mm²	A	0250470
	M 12 x 1; 4 pin; 10 m 4 x 0,34 mm²	B	0250471
	M 12 x 1; 5 pin; 10 m 5 x 0,34 mm²	C	0250472
	14 pin; Pg 9	D	0799847
	14 pin; 2 m 14 x 0,25 mm²	D	0799857
	14 pin; 5 m 14 x 0,25 mm²	D	0250082

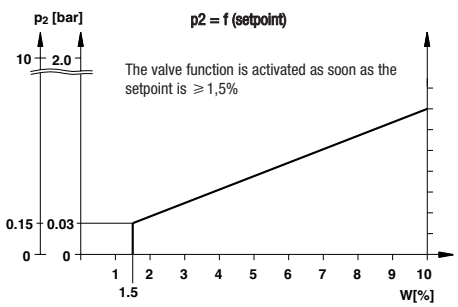
* 2 pieces are required per valve

Characteristic curves

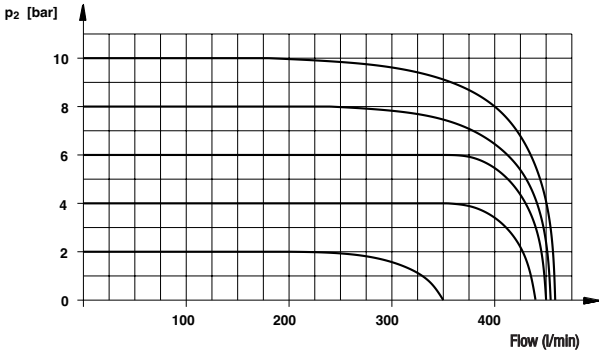
Static characteristic curves



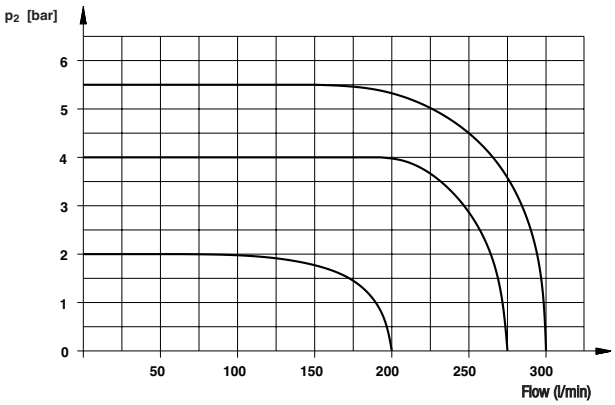




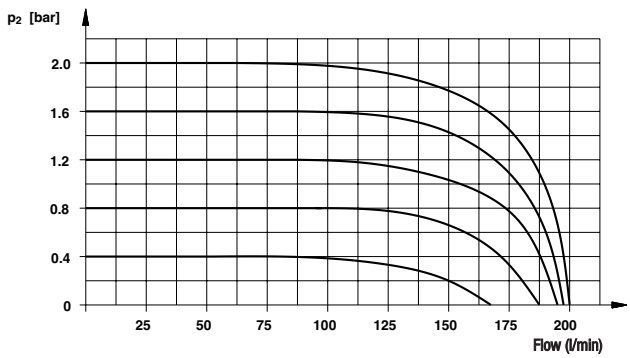
Flow characteristic curve with 12 bar operating pressure



Flow characteristic curve with 7 bar operating pressure



Flow characteristic curve with 7 bar operating pressure

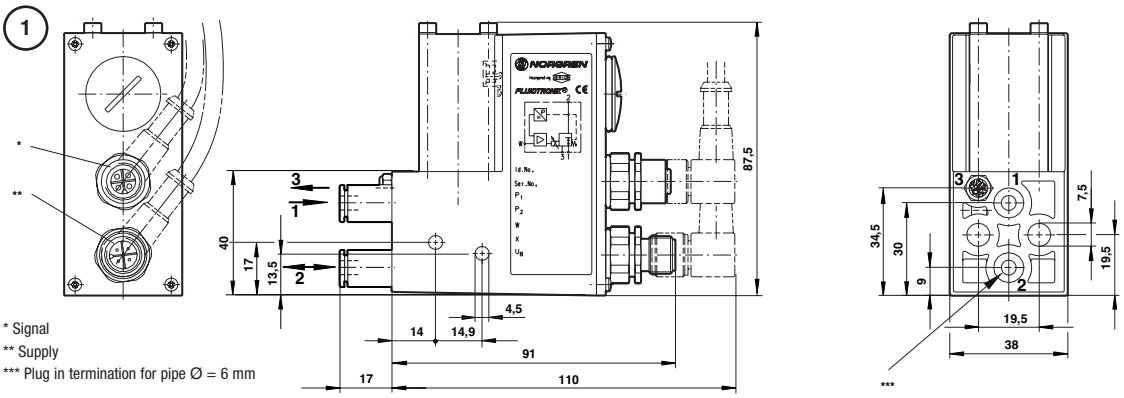


VP22 Series

3-way proportional pressure control valves

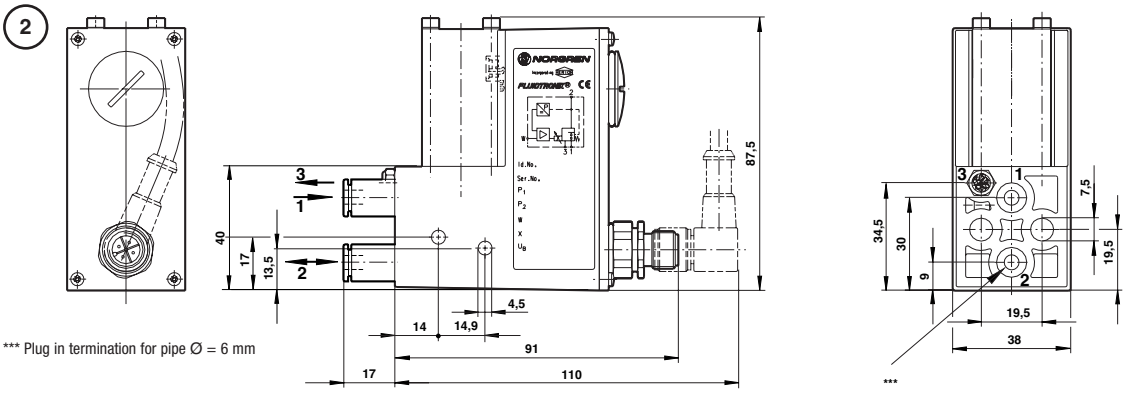
G⅛

1



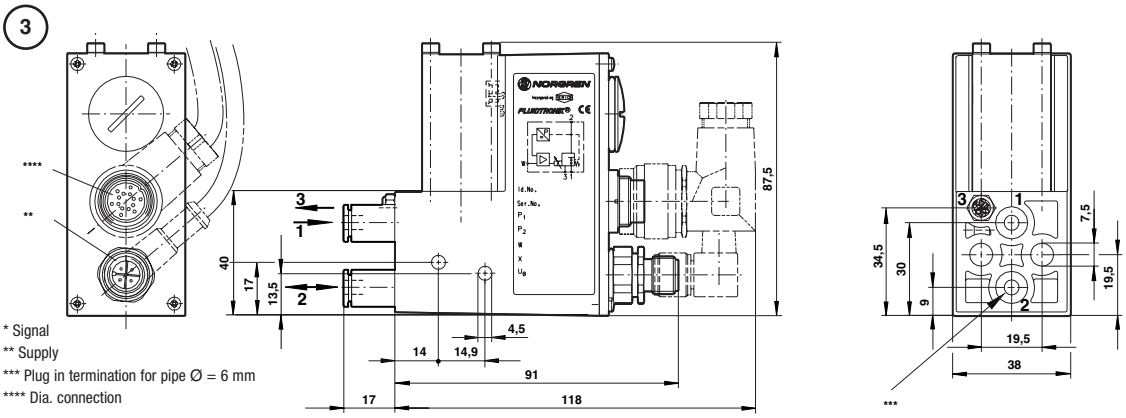
* Signal
** Supply
*** Plug in termination for pipe Ø = 6 mm

2



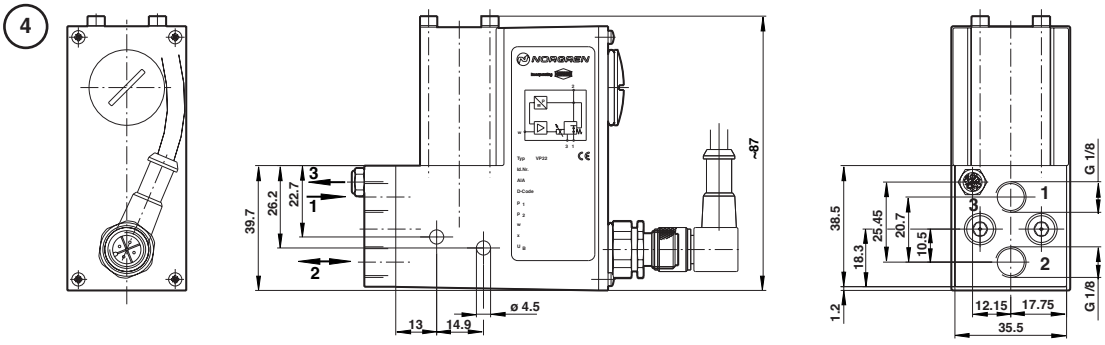
*** Plug in termination for pipe Ø = 6 mm

3



* Signal
** Supply
*** Plug in termination for pipe Ø = 6 mm
**** Dia. connection

4



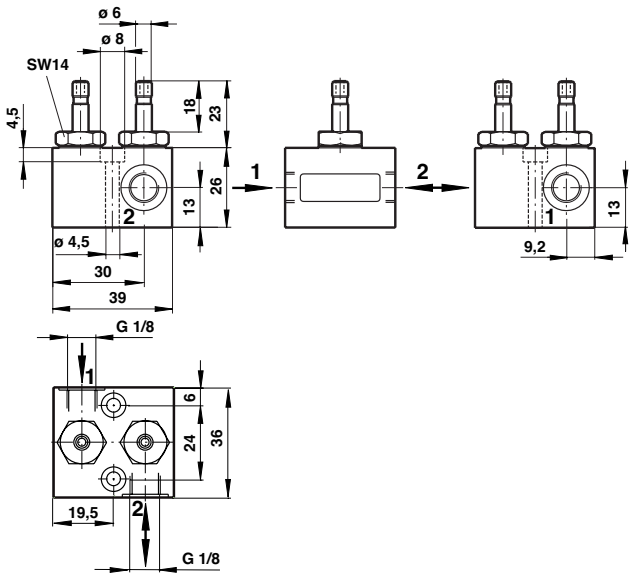
VP22 Series

3-way proportional pressure control valves

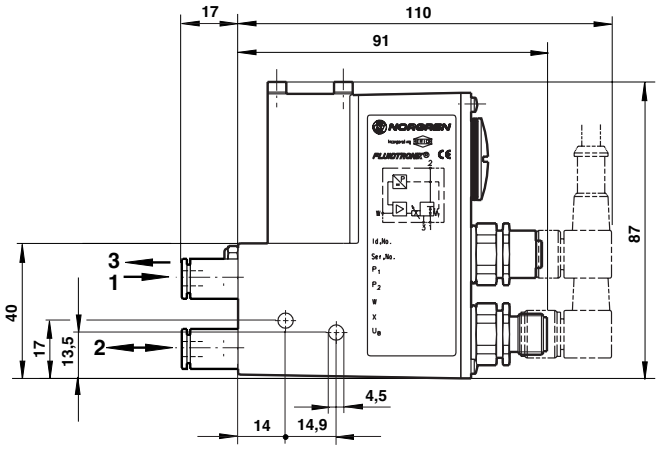
G⅛

Mountings

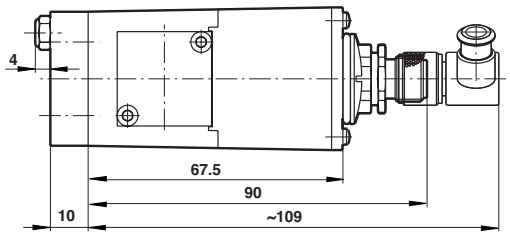
Subplate

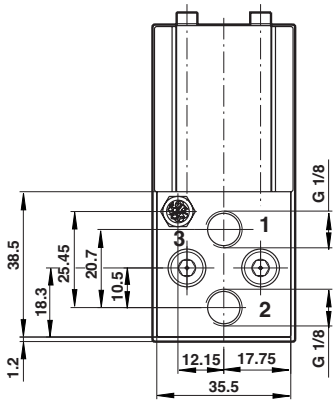


2 Mounting holes, Ø 4,5 mm

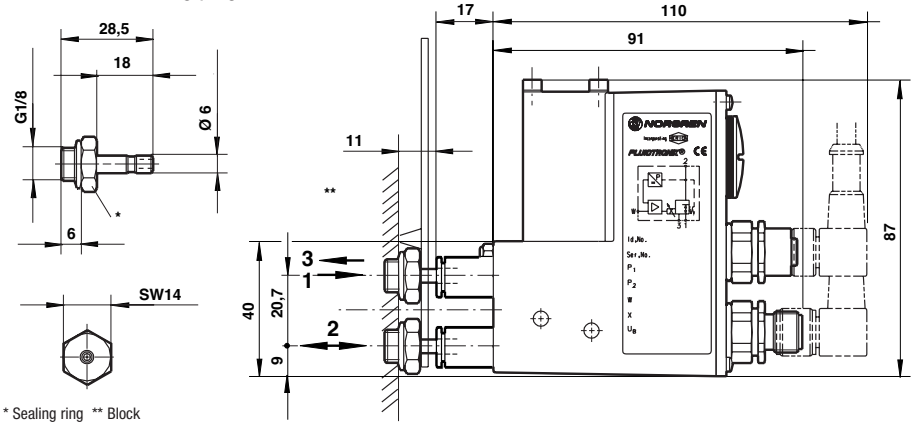


Flange





2 Threaded attaching plugs

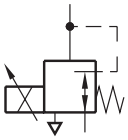


* Sealing ring ** Block

VP40 Series

3-way proportional pressure control valves

G⅛, G¼, G⅜, Flange, subplate (2 mm versions)



Low hysteresis
Good repeatability
High flow capacity at exhaust
Manifold mountable
Compact design

Technical data

Medium:
Compressed air, filtered to 40 µm, lubricated or unlubricated

Mounting position:
Any, preferably vertical

Flow direction:
Fixed

Operating pressure p1:
20 bar max. (16 bar for 2 mm versions)

Pressure settings p2:
0 to 20 bar (16 bar for 2 mm versions)

Ambient temperature:
-10°C to +40°C
Consult our Technical Service for use below +2°C.

Hysteresis:
< 3 (% IN2 max.)*

Repeatability:
< 1 (% p2 max.)*

Linearity:
See characteristic curves

Response sensitivity:
1 (% p2 max.)*
* at 20°C

Degree of protection:
IP 65 with connector

Materials

Body: aluminium alloy
Seals: NBR

Orifice (mm)	Port size	Outlet pressure P2 (bar)	Maximum inlet pressure P1 (bar)	Rated current (mA)	Model
2	Flange	0 ... 6	7	805	4090021709301200
2	Flange	0 ... 10	12	1050	4090020709301200
2	Flange	0 ... 16	16	1500	4090022709301200
4	G1/8	0 ... 10	10	0 ... 1600 (1800)	4088110705301200
4	G1/8	0 ... 20	20	0 ... 1600 (1800)	4088218707101200
6	G1/4	0 ... 2,1	7	0 ... 1600 (1800)	4088200705301200
6	G1/4	0 ... 10	12	0 ... 1600 (1800)	4088210705301200
8	G3/8	0 ... 7	10	0 ... 1600 (1800)	4088310707101200

Drive electronics pQ11

Model	Rated current mA	Type of connection	Remarks
5980081	0 ... 2400	Connector according to DIN 43651	Suitable for 4088xxx.xxxx valves
5980085	0 ... 2400	2 m cable	
5980083	0 ... 1000	Connector according to DIN 43651	Suitable for 4090020.7093 and 4090021.7093
5980087	0 ... 1000	2 m cable	
5980118	0 ... 2400	Connector according to DIN 43651	Suitable for 4090022.7093 valves
5980119	0 ... 2400	2 m cable	

Drive electronics pQ12

Model	Rated current mA	Remarks
5980126	0 ... 2400	Suitable for 4088xxx.xxxx, 4090020.7093 and 4090021.7093 valves
5980127	0 ... 1000	Suitable for 4090022.7093 valves

Electrical information for proportional solenoids

Nominal diameter	Limiting current IN	Rated power PN	Resistance R20	Duty cycle
2	1930 mA	25 W	6,3 Ω + 3%	100%
4, 6 & 8	1600 mA	22 W	6,5 Ω + 3%	100%

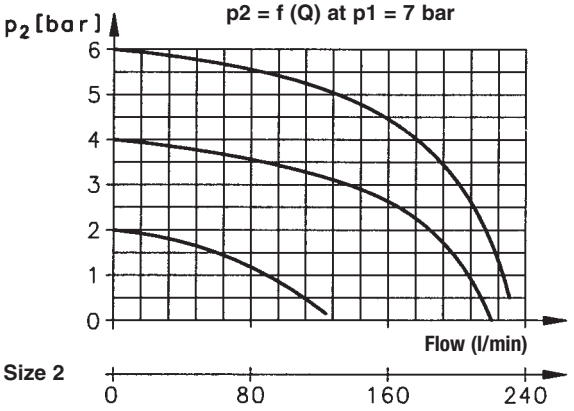
VP40 Series

3-way proportional pressure control valves

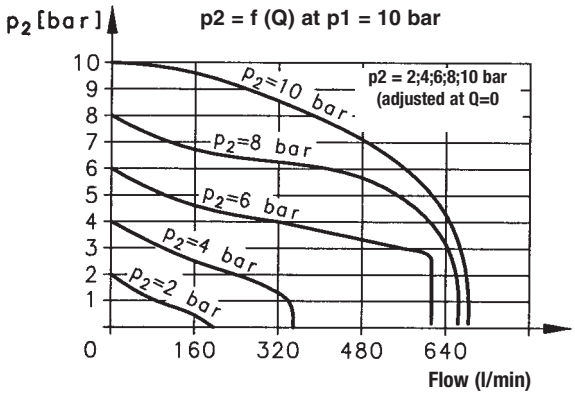
G⅛, G¼, G⅜, Flange, subplate (2 mm versions)

Characteristic curves

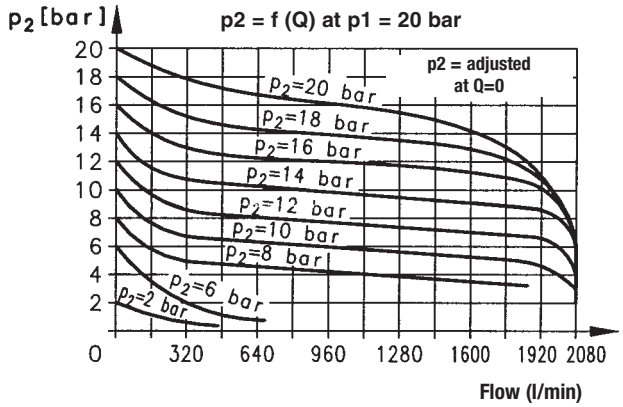
Flow characteristics for 7 bar operating pressure
For valves with 2 mm orifice



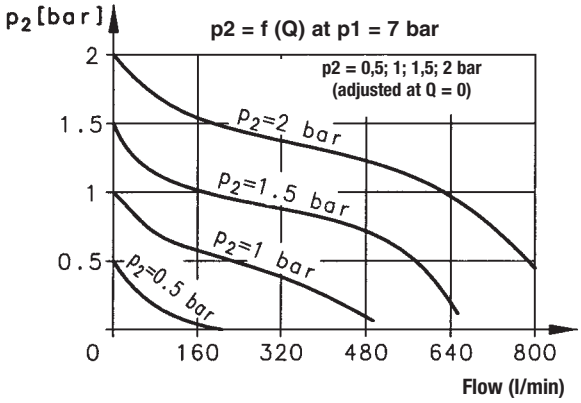
Flow characteristics for 10 bar operating pressure
For valve type 4088110



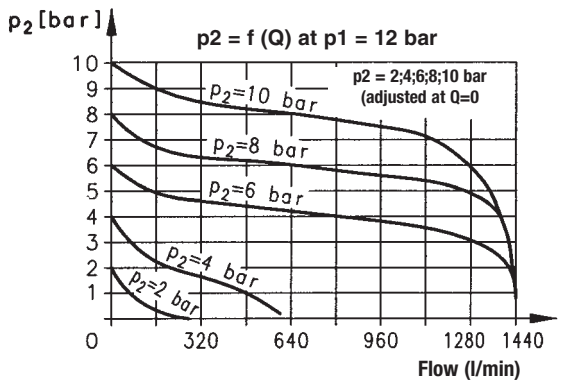
Flow characteristics for 20 bar operating pressure
For valve type 4088218



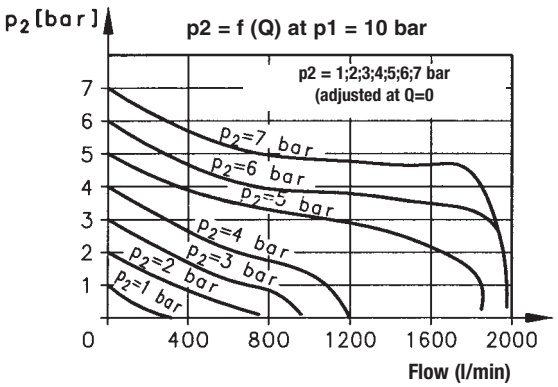
Flow characteristics for 7 bar operating pressure
For valve type 4088200



Flow characteristics for 12 bar operating pressure
For valve type 4088210



Flow characteristics for 10 bar operating pressure
For valve type 4088310

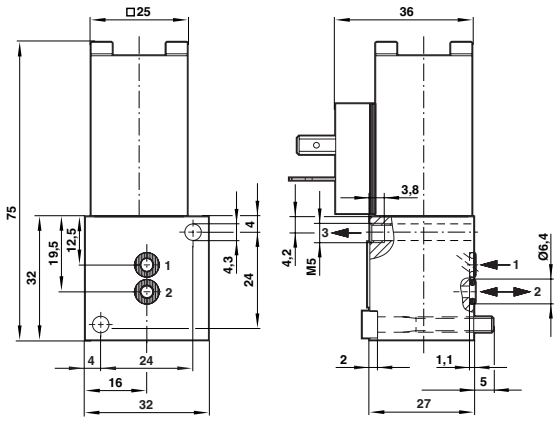


VP40 Series

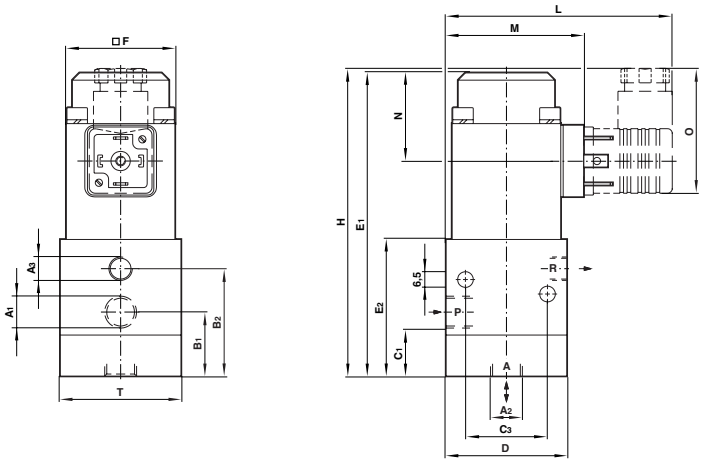
3-way proportional pressure control valves

G⅛, G¼, G⅜, Flange, subplate (2 mm versions)

For valves with 2 mm orifice



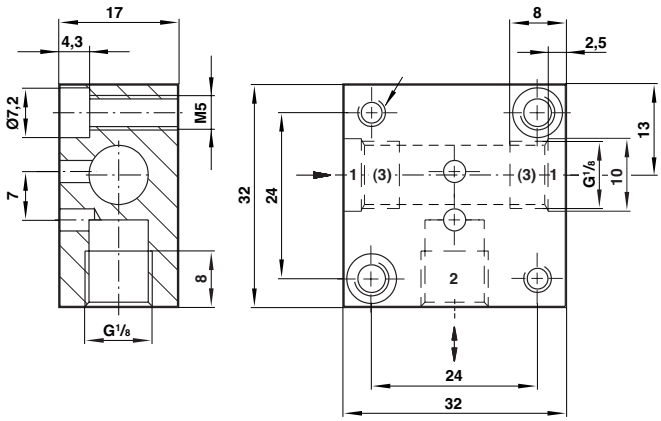
For valves with 4, 6, 8 mm orifice



Valves with 4, 6, 8 mm orifice

Model	A1	A2	A3	B1	B2	C1	C2	C3	D	E1	E2	□ F	H	L	M	N	O	T
4088110 4088119	1/8	1/8	1/8	23	50,5	36	36	34	50	121	62,5	35	131	89,2	52,5	30,9	38	50
4088218	1/4	1/4	1/8	26,5	44,5	40	34	34	50	121	56,5	45	128	93,7	57	31,5	38	50
4088200 4088201	1/4	1/4	1/4	30	50	43	38	49	60	117	58,5	35	127	94,2	57,5	30,9	38	40
4088210 4088211	1/4	1/4	1/8	26,5	44,5	40	34	34	50	115	56,5	35	125	89,2	52,5	30,9	38	50
4088310 4088311	3/8	3/8	3/8	36,5	67	52	52	50	70	142	77,5	45	149,4	103,7	67	31	38,4	55

Sub-bases and parts for valves with 2 mm orifice only



Model	Description
0601740	G1/8 subplate
0568384	Screw plug for open port

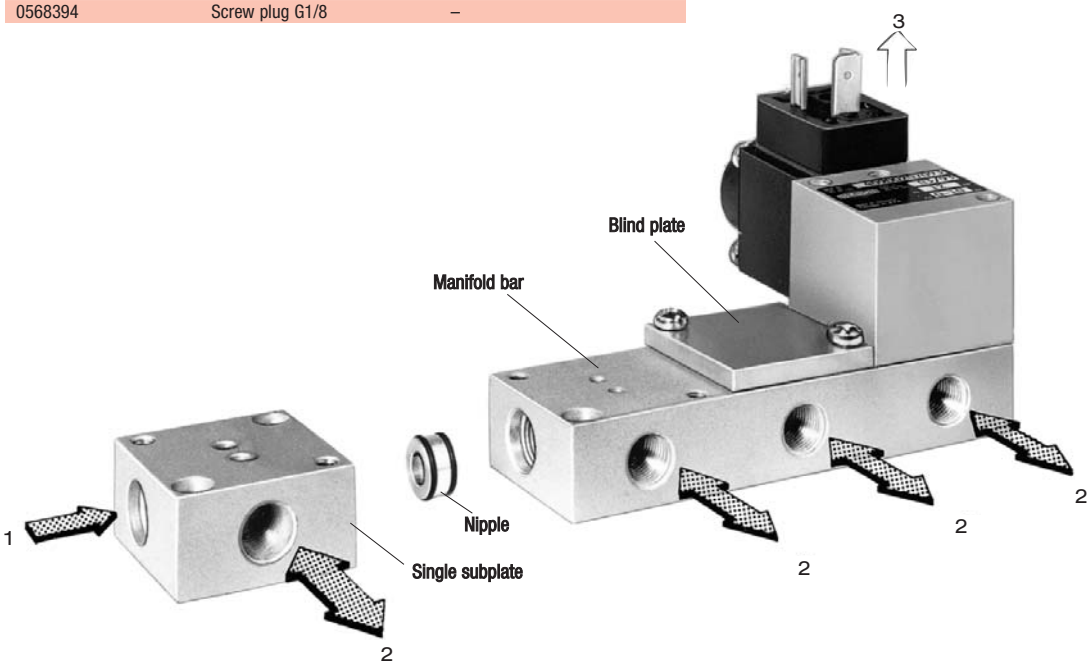
VP40 Series

3-way proportional pressure control valves

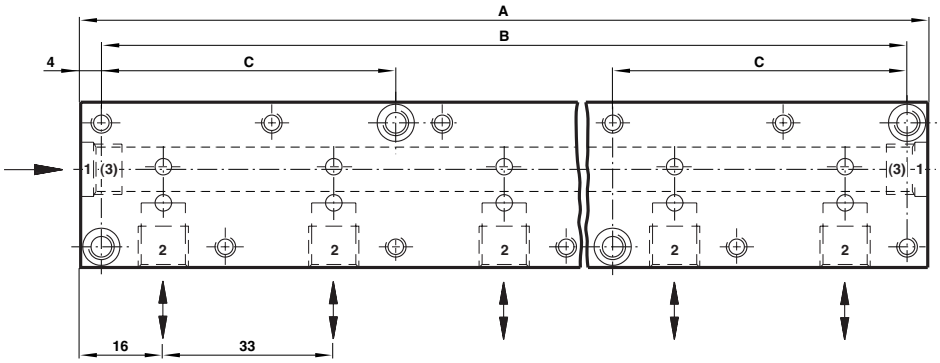
G⅛, G¼, G⅜, Flange, subplate (2 mm versions)

Optional connection to manifold system

Model	Description	kg
0601740	Single subplate assembly	0,04
0601741	Manifold bar – 2 valves	0,08
0601742	– 3 valves	0,13
0601743	– 4 valves	0,17
0601744	– 5 valves	0,21
0601745	– 6 valves	0,24
0559301	Nipple	–
0602005	Blind plate assembly	0,22
0568394	Screw plug G1/8	–



Manifold dimensions

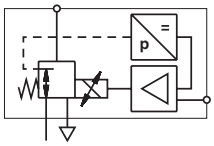


Model	No. of valve stations	A	B	C
0601741	2	65	57	-
0601742	3	98	90	-
0601743	4	131	123	-
0601744	5	164	156	57
0601745	6	197	189	57

VP50 Series

Proportional pressure control valve

G¼



Air pilot operated proportional pressure control valve

Adjustable for a wide range of applications

Fast response

Low power consumption

High flow

Technical data

Medium:

Compressed air filtered to 50 µm, non-lubricated

Supply pressure:

14 bar max.

Flow:

Up to 1200 l/min at 11 bar supply pressure

Air consumption:

<5 l/min

Ambient temperature:

-20°C to +50°C

Consult our Technical Service for use below +2°C.

Response time:

< 100 ms (from 10 to 90% of output pressure into a 0,1 litre load)

Total error:

Maximum error ±100 mbar of total span (independent error includes the combined effect of non-linearity, hysteresis, deadzone and repeatability)

Temperature effect:

Typically 3 mbar/°C for full scale and zero over operating range

Degree of protection:

IP 65 in normal operation

Supply sensitivity:

< 30 mbar/bar change in supply pressure

Vibration immunity:

<3% output shift for 2 g ~ 15 to 150 Hz

Weight:

0,8 kg

Materials

Body: aluminium

Lid and end cover: zinc diecast

Alternative models:

Alternative ambient temperature ranges

ISO 2 manifold version

Vacuum version

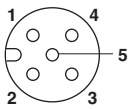
PWM controlled version

Control signal	Output pressure (bar)	Model
0 ... 10 V	0 ... 10	VP5010BJ111H00
4 ... 20 mA	0 ... 10	VP5010BJ411H00
0 ... 10 V	0 ... 6	VP5006BJ111H00
4 ... 20 mA	0 ... 6	VP5006BJ411H00
0 ... 10 V	0 ... 2	VP5002BJ111H00
4 ... 20 mA	0 ... 2	VP5002BJ411H00

Electrical information

Electromagnetic compatibility	CE marked: conforms to EC requirements EN 50081-2 (1994) and EN 50082-2 (1995)
Electrical input signal	4 to 20 mA or 0 to 10 V factory set
Electrical power input	24 V d.c. ±25% (power consumption < 1 W)
Output pressure feedback signal	0 ... 10 V full range
Connections	M12 5 pin e.g. Brad Harrison 805S00P20MXXX

Instrument pin configuration

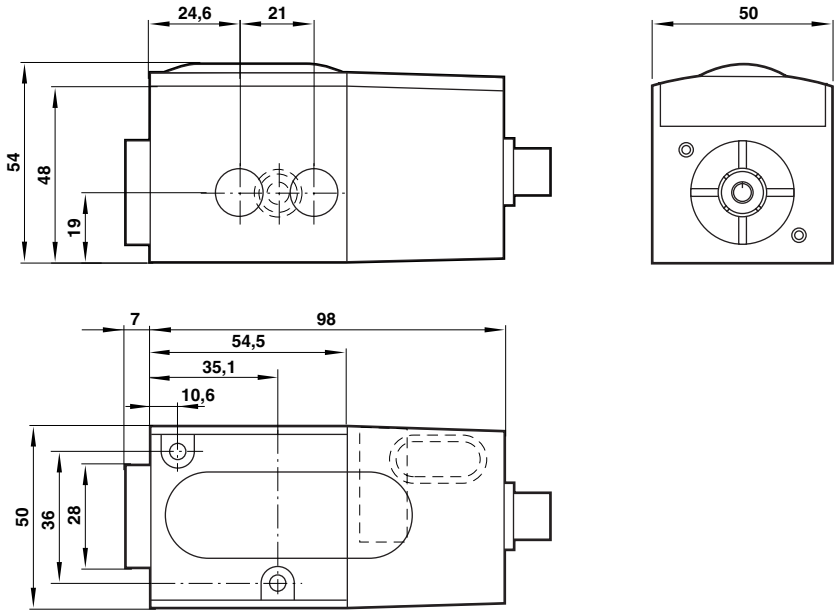


1	+24V d.c. supply
2	0 to 10 full range
3	Control signal (+ve)
4	Common (DC supply, signal and feedback return)
5	Chassis (earth)

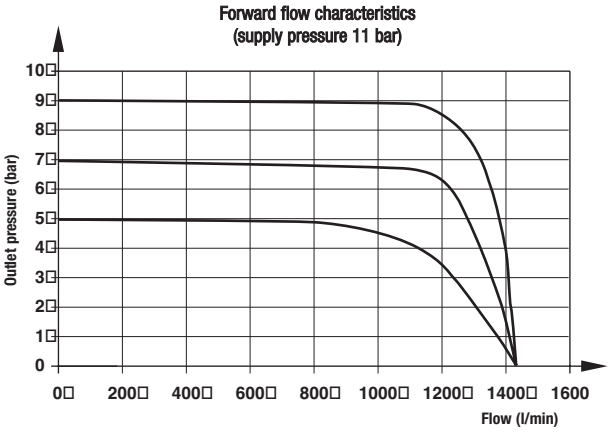
VP50 Series

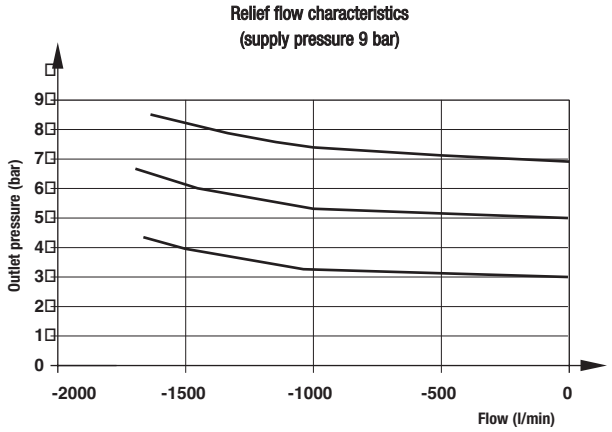
Proportional pressure control valve

G¼



Characteristic curves

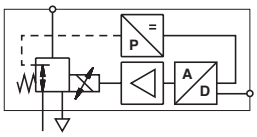




VP51 Series

Programmable proportional pressure control valve

G¼, ¼ NPT



Air piloted digital proportional control valve
Fully programmable with on-board diagnostics
Multi-language menu option
Password protection option at first level functionality
Instant LED warning functions
Application specific set-up
Pressure output display; no gauge necessary
High speed response

Technical data

Medium:
Compressed air, filtered to 50 µm, non-lubricated

Output pressure:
User adjustable up to 10 bar

Supply pressure:
14 bar max

Air consumption:
<5 l/min

Ambient temperature:
-20°C to +50°C
Consult our Technical Service for use below +2°C.

Response time:
< 1bar overshoot
10-90% <=80ms
90-10% <=100ms
100cc load

Total error:
Maximum error < ±100mbar (independent error includes the combined effect of non-linearity, hysteresis, deadzone and repeatability)

Temperature effect:
Typically better than 0,03% of span/°C for span and zero over operating range

Degree of protection:
IP 65 in normal operation

Life:
> 30 million 100% steps

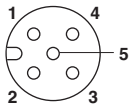
Weight:
0,8 kg approx

Materials
Body: aluminium
Lid and end cover: zinc diecast

Alternative models
DeviceNet Unit

Control signal	Output pressure (bar)	Model
0 ... 10 V	0 ... 10	VP5110BJ111H00
4 ... 20 mA	0 ... 10	VP5110BJ411H00

Instrument pin configuration



1	+24V d.c. supply
2	Monitor output
3	Control signal (+ve)
4	Common (d.c. supply, signal and feedback return)
5	Chassis (earth)

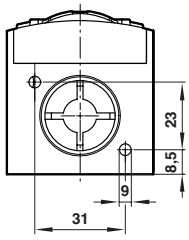
Electrical information

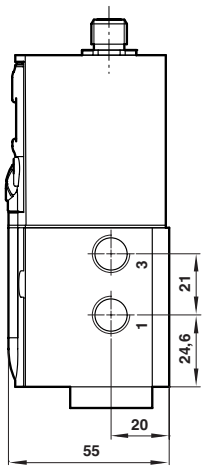
Electromagnetic compatibility	CE marked: conforms to EC requirements EN 50081-2 (1994) and EN 50082-2 (1995)
Electrical input signal	4 to 20 mA or 0 to 10 V factory set
Electrical power input	24 V d.c. ±25% (power consumption < 1 W)
Output pressure feedback signal	0 to 10 V full range or user-configurable switched output
Connections	M12 5 pin e.g. Brad Harrison 805S00P20MXXX

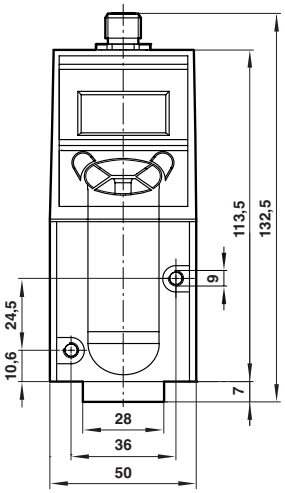
User functionality options

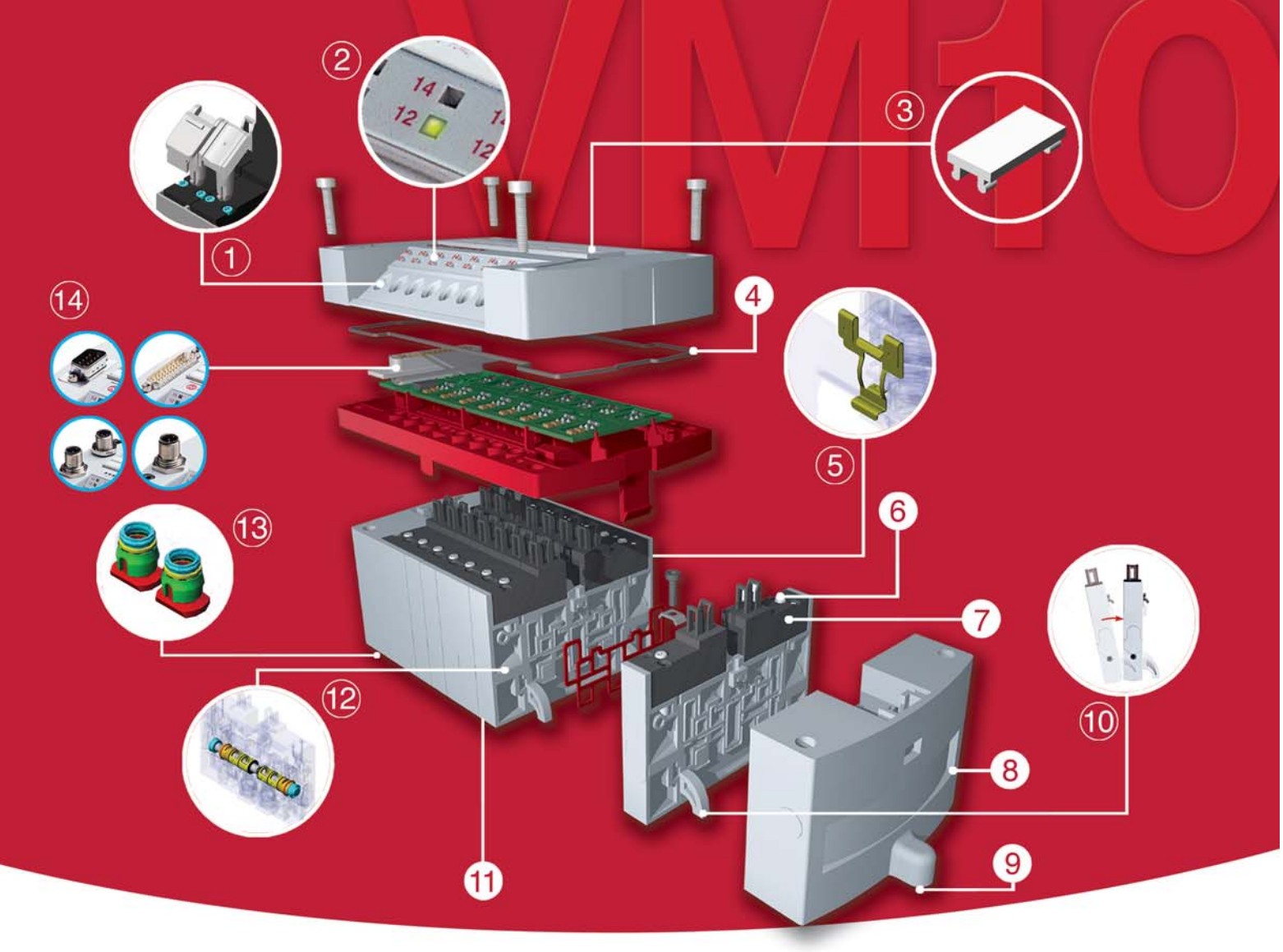
Password protection	
Display set-up	Pressure units
Offline set-up	Max./min. setpoints Speed setting (0 to 7) Dither amp (0 to 7) Proportional gain (0 to 7) Integral gain (0 to 7)
Online set-up	Max./min. setpoints
Monitor set-up	Analogue/switched LED configuration
Local control	Manual pressure control
Device database	Read only data: unit specific Tag number Change password
Factory defaults	Restore factory defaults

For characteristic flow curves, see page 373









VM10 - 10mm pneumatic system valves:

Flexible, compact and easy to use

1 **Optional push only and slide to lock manual overrides for multipole cover -** Easy access finger operated manual overrides

2 **LED indicators -** Simple valve diagnostics

3 **Murr clip retainers for optional valve labelling -** Ease of valve identification

4 **IP65 protection rating as standard -** Suitable for washdown applications

5 **Din rail mounting option -** Mounting flexibility

6 **Push only or turn to lock manual override -** Choice of overrides to suit application

7 **32 solenoids possible on one valve island -** One valve island can be supplied where two would normally be required

8 **Manufactured from an engineered polymer -** Exceptional strength and stability, suitable for washdowns

9 **Through panel mounting option -** Mounting flexibility

10 **Interlocking valve bodies -** No tie rods resulting in ease of maintenance and change of configuration

11 **Pneumapole sub-base -** Quick disconnect facility

12 **Unsurpassed flow rate for 10mm valve -** Can be used in place of larger more costly valves

13 **Integrated push in fittings -** Reduced component count resulting in installation cost savings

14 **Multipole and fieldbus connection options (field interchangeable) -** System flexibility

Additional ranges

Super X Pilot actuated

Pilot

Port size	Function	Actuation	Model	Service kit
G1/8	3/2	Pilot /Spring	03 0401 02	03 8447 02
G1/8	3/2	Pilot /Spring	03 0413 02	03 8447 02
G1/8	3/2	Pilot /Pilot	03 0407 02	03 8447 02
G1/8	3/2	Pressure priority /Pilot	03 0412 02	03 8447 02
G1/8	3/2	Pressure or vacuum/Spring	03 0370 02	03 8370 02
G1/8	3/2	Low pressure pilot /Spring	03 0434 03	03 8433 02
G1/8	3/2	Low pressure pilot /Pilot	03 0435 03	03 8433 02
G1/8	3/2	Low press. pilot /Low press. pilot	03 0433 03	03 8433 02
G1/8	5/2	Pilot /Spring	X3 0441 02	03 8447 02
G1/8	5/2	Pilot /Pilot	X3 0447 02	03 8447 02
G1/8	5/2	Pressure priority /Pilot	X3 0452 02	03 8447 02
G1/8	5/2	Pressure or vacuum /Spring	X3 0390 02	03 8370 02
G1/8	5/2	Low press. pilot/Spring	X3 0474 03	03 8433 02
G1/8	5/2	Low press. pilot/Pilot	X3 0475 03	03 8433 02
G1/8	5/2	Low press. pilot/Low press. pilot	X3 0473 03	03 8433 02
G1/4	3/2	Pilot /Spring	03 0601 02	03 8612 02
G1/4	3/2	Pilot /Spring	03 0613 02	03 8612 02
G1/4	3/2	Pilot /Pilot	03 0607 02	03 8612 02
G1/4	3/2	Pilot priority /Pilot	03 0612 02	03 8612 02
G1/4	5/2	Pilot /Spring	X3 0641 02	03 8612 02
G1/4	5/2	Pilot /Pilot	X3 0647 02	03 8612 02
G1/4	5/2	Pilot priority /Pilot	X3 0652 02	03 8612 02
G1/4	5/3	Pilot priority /Pilot	X3 3607 02	03 8612 02
G1/4	5/3	Pilot priority /Pilot	X3 3647 02	03 8612 02

- Extensive range of integrally ported pilot operated valves
- High performance from proven design
- Compact size with high flow – improves system appearance and performance
- Multi-directional flow – suitable for many applications

V10 – Nugget 40

Model	Function	Actuation	Solenoid pilot
V106516A-B21*A	5/2	Solenoid/Spring & air	Internal
V106516A-B31*A	5/2	Solenoid/Spring & air	–
V106511A-B21*A	5/2	Solenoid/Solenoid	Internal
V106511A-B31*A	5/2	Solenoid/Solenoid	–
V106536A-X0130	5/2	Pressure/Spring & air	–
V106533A-X0020	5/2	Pressure/Pressure	–

* Insert voltage codes from table below.
Order connector plugs separately.

- High flow spool technology
- Compact dimensions with integral fittings
- Low power solenoids with a range of voltages
- Suitable for non-lubricated air supplies

Voltage codes & spare coils

Voltage	Code	Power inrush/hold	Coil
6 V d.c.	1	1,5 W	V10025-A11
12 V d.c.	2	1,7 W	V10025-A12
24 V d.c.	3	1,7 W	V10025-A13
12 V 50/60 Hz	1	4,1/2,9 VA	V10025-A11
24 V 50/60 Hz	4	4,1/2,9 VA	V10025-A14
48 V 50/60 Hz	6	4,1/2,9 VA	V10025-A16
110 V 50/60 Hz	8	3,5/2,5 VA	V10025-A18
240 V 50/60 Hz	9	3,5/2,5 VA	V10025-A19

Additional ranges

V19 – Nugget 70

Model	Function	Actuation	Pilot supply	Manual override	Type
V19A517A-B21*A	5/2	Sol/spring	Internal	Turn & lock	–
V19A517A-B31*A	5/2	Sol/spring	Internal	Push only	–
V19A5F7A-B21*A	5/2	Sol/spring	Internal twin supply	Turn & lock	–
V19A5F7A-B31*A	5/2	Sol/spring	Internal twin supply	Push only	–
V19A5E7A-B21*A	5/2	Sol/spring	External	Turn & lock	–
V19A5E7A-B31*A	5/2	Sol/spring	External	Push only	–
V19A511A-B21*A	5/2	Sol/sol	Internal	Turn & lock	–
V19A511A-B31*A	5/2	Sol/sol	Internal	Push only	–
V19A5FFA-B21*A	5/2	Sol/sol	Internal twin supply	Turn & lock	–
V19A5FFA-B31*A	5/2	Sol/sol	Internal twin supply	Push only	–
V19A5EEA-B21*A	5/2	Sol/sol	External	Turn & lock	–
V19A5EEA-B31*A	5/2	Sol/sol	External	Push only	–
V19A611A-B21*A	5/3	Sol/sol	Internal	Turn & lock	APB
V19A611A-B31*A	5/3	Sol/sol	Internal	Push only	APB
V19A6FFA-B21*A	5/3	Sol/sol	Internal twin supply	Turn & lock	APB
V19A6FFA-B31*A	5/3	Sol/sol	Internal twin supply	Push only	APB
V19A711A-B21*A	5/3	Sol/sol	Internal	Turn & lock	COE
V19A711A-B31*A	5/3	Sol/sol	Internal	Push only	COE
V19A811A-B21*A	5/3	Sol/sol	Internal	Turn & lock	COP
V19A811A-B31*A	5/3	Sol/sol	Internal	Push only	COP
V19A5D7A-X0090	5/2	Pilot/spring	–	–	–
V19A5DDA-X0020	5/2	Pilot/pilot	–	–	–
V19A59DA-X0060	5/2	Diff. pilot	–	–	–
V19A6DDA-X0020	5/3	Pilot/pilot	–	–	APB
V19A7DDA-X0020	5/3	Pilot/pilot	–	–	COE
V19A8DDA-X0020	5/3	Pilot/pilot	–	–	COP

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure * Insert voltage code from table

Note: For solenoid pilot actuated models with no manual override, insert '1' in the 10th positon of the model number eg. V19B517A-B1**1***A

Disc seal spool construction
High flow compact valves
Light weight, long life corrosion resistant materials
Low power coils
Wide range of voltage and connector plug options

Voltage codes & spare coils

Voltage	Code	Power inrush/hold	Coil
6 V d.c.	1	1,5 W	V10025-A11
12 V d.c.	2	1,7 W	V10025-A12
24 V d.c.	3	1,7 W	V10025-A13
24 V 50/60 Hz	4	4,1/2,9 VA	V10025-A14
48 V 50/60 Hz	6	4,1/2,9 VA	V10025-A16
110 V 50/60 Hz	8	3,5/2,5 VA	V10025-A18
240 V 50/60 Hz	9	3,5/2,5 VA	V10025-A19

V12 – Nugget 120

Model	Function	Actuation	Pilot supply	Manual override	Type
V12B517A-B21*A	5/2	Sol/spring	Internal	Turn & lock	–
V12B517A-B31*A	5/2	Sol/spring	Internal	Push only	–
V12B5F7A-B21*A	5/2	Sol/spring	Internal twin supply	Turn & lock	–
V12B5F7A-B31*A	5/2	Sol/spring	Internal twin supply	Push only	–
V12B5E7A-B21*A	5/2	Sol/spring	External	Turn & lock	–
V12B5E7A-B31*A	5/2	Sol/spring	External	Push only	–
V12B511A-B21*A	5/2	Sol/sol	Internal	Turn & lock	–
V12B511A-B31*A	5/2	Sol/sol	Internal	Push only	–
V12B5FFA-B21*A	5/2	Sol/sol	Internal twin supply	Turn & lock	–
V12B5FFA-B31*A	5/2	Sol/sol	Internal twin supply	Push only	–
V12B5EEA-B21*A	5/2	Sol/sol	External	Turn & lock	–
V12B5EEA-B31*A	5/2	Sol/sol	External	Push only	–
V12B611A-B21*A	5/3	Sol/sol	Internal	Turn & lock	APB
V12B611A-B31*A	5/3	Sol/sol	Internal	Push only	APB
V12B6FFA-B21*A	5/3	Sol/sol	Internal twin supply	Turn & lock	APB
V12B6FFA-B31*A	5/3	Sol/sol	Internal twin supply	Push only	APB
V12B6EEA-B21*A	5/3	Sol/sol	External	Turn & lock	APB
V12B6EEA-B31*A	5/3	Sol/sol	External	Push only	APB
V12B711A-B21*A	5/3	Sol/sol	Internal	Turn & lock	COE
V12B711A-B31*A	5/3	Sol/sol	Internal	Push only	COE
V12B7EEA-B21*A	5/3	Sol/sol	External	Turn & lock	COE
V12B7EEA-B31*A	5/3	Sol/sol	External	Push only	COE
V12B811A-B21*A	5/3	Sol/sol	Internal	Turn & lock	COP
V12B811A-B31*A	5/3	Sol/sol	Internal	Push only	COP
V12B8EEA-B21*A	5/3	Sol/sol	External	Turn & lock	COP
V12B8EEA-B31*A	5/3	Sol/sol	External	Push only	COP
V12B5D7A-X0090	5/2	Pilot/spring	–	–	–
V12B5DDA-X0020	5/2	Pilot/pilot	–	–	–
V12B59DA-X0060	5/2	Diff. pilot	–	–	–
V12B6DDA-X0020	5/3	Pilot/pilot	–	–	APB
V12B7DDA-X0020	5/3	Pilot/pilot	–	–	COE
V12B8DDA-X0020	5/3	Pilot/pilot	–	–	COP

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure * Insert voltage code from table

Note: For solenoid pilot actuated models with no manual override, insert '1' in the 10th position of the model number eg. V12B517A-B1**1***A

Disc seal spool construction
High flow compact valves
Light weight, long life corrosion resistant materials
Low power coils
Wide range of voltage and connector plug options

Voltage codes & spare coils

Voltage	Code	Power inrush/hold	Coil
6 V d.c.	1	1,5 W	V10025-A11
12 V d.c.	2	1,7 W	V10025-A12
24 V d.c.	3	1,7 W	V10025-A13
24 V 50/60 Hz	4	4,1/2,9 VA	V10025-A14
48 V 50/60 Hz	6	4,1/2,9 VA	V10025-A16
110 V 50/60 Hz	8	3,5/2,5 VA	V10025-A18
240 V 50/60 Hz	9	3,5/2,5 VA	V10025-A19

Additional ranges

80100, 26230 Series

Valves for type A solenoid

Model	Port size	Function	Orifice (mm)	Actuation
8010750xxxx*****	G1/4	3/2 NC	6	Solenoid/Air spring
8010850xxxx*****	G1/2	3/2 NC	12	Solenoid/Air spring
8011750xxxx*****	G1/4	3/2	6	Solenoid/Solenoid
8011850xxxx*****	G1/2	3/2	12	Solenoid/Solenoid
8012750xxxx*****	G1/4	3/2 NO	6	Solenoid/Air spring
8012850xxxx*****	G1/2	3/2 NO	12	Solenoid/Air spring
2623000xxxx*****	G1/4	5/2	6	Solenoid/Air spring
2623500xxxx*****	G1/2	5/2	12	Solenoid/Air spring
2623100xxxx*****	G1/4	5/2	6	Solenoid/Solenoid
2623600xxxx*****	G1/2	5/2	12	Solenoid/Solenoid
2623200xxxx*****	G1/4	5/3 COE	6	Solenoid/Solenoid
2623700xxxx*****	G1/2	5/3 COE	12	Solenoid/Solenoid
2623300xxxx*****	G1/4	5/3 APB	6	Solenoid/Solenoid
2623800xxxx*****	G1/2	5/3 APB	12	Solenoid/Solenoid
2623400xxxx*****	G1/4	5/3 COP	6	Solenoid/Solenoid

Valves for type B solenoid

Model	Port size	Function	Orifice (mm)	Actuation
8010751xxxx*****	G1/4	3/2 NC	6	Solenoid/Air spring
8010851xxxx*****	G1/2	3/2 NC	12	Solenoid/Air spring
8012851xxxx*****	G1/2	3/2 NO	12	Solenoid/Air spring
2623001xxxx*****	G1/4	5/2	6	Solenoid/Air spring
2623501xxxx*****	G1/2	5/2	12	Solenoid/Air spring
2623101xxxx*****	G1/4	5/2	6	Solenoid/Solenoid
2623601xxxx*****	G1/2	5/2	12	Solenoid/Solenoid

APB = All Ports Blocked, COE = Centre Open Exhaust, COP = Centre Open Pressure

xxxx Insert solenoid codes from table below. ***** Insert voltage codes from table below

- Straight-through flow, high Cv-factor
- Maintenance-free
- Easy to service
- Easily interchangeable solenoid system
- Compact design
- Standard manual override

Voltage codes

Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050

26220 Series

Port size	Orifice (mm)	Actuation	Solenoid variant	Model
G1/8	4	Solenoid/Air spring	A	2622000xxxx*****#
G1/4	7	Solenoid/Air spring	A	2622200xxxx*****
G1/8	4	Solenoid/Air spring	B	2622001xxxx*****#
G1/4	7	Solenoid/Air spring	B	2622201xxxx*****
G1/8	4	Solenoid/Solenoid	A	2622100xxxx*****#
G1/4	7	Solenoid/Solenoid	A	2622300xxxx*****
G1/8	4	Solenoid/Solenoid	B	2622101xxxx*****#
G1/4	7	Solenoid/Solenoid	B	2622301xxxx*****

xxxx Insert solenoid code from table below

***** Insert voltage code from table below

For 4mm orifice please use DIN Form B coils.

Protection class	Solenoid/power consumption Group A d.c.	Group A a.c.	Group B d.c.	Group B a.c.
IP 00 (without connector) DIN 43650 Form A	3032 2,7 W	3032 4,9 VA	3036 1,6 W	3036 3,5 VA
IP 00 (without connector) DIN 43650 Form B	3052 4,8 W	3052 8,5 VA	3050 1,7 W	3050 4,3 VA
EEx m II T5 Form B with cable 3 m			3062 2,7 W	3063 2,7 VA

- LABS-free
- Standard manual override with detent
- Compact design
- High flow rate
- Maintenance-free
- Common exhaust line
- Easily mounting: as single unit or manifold system
- Low power consumption < 2 W and 5 W.

Voltage codes

Voltage	Code
24 V d.c.	02400
24 V a.c.	02450
110 V a.c.	11050
230 V a.c.	23050

Additional ranges

40200, 40300 Series

Port size	Function	Orifice (mm)	Actuation	Model
G1/4	3/2	6	Pressure/Air spring	4021330000000000
G1/2	3/2	12	Pressure/Air spring	4022030000000000
G1/4	3/2	6	Pressure/Pressure	4021430000000000
G1/2	3/2	12	Pressure/Pressure	4022130000000000
G1/4	3/2	6	Pressure/Spring	4021331000000000
G1/2	3/2	12	Pressure/Spring	4022031000000000
G1/4	5/2	6	Pressure/Air spring	4031330000000000
G1/2	5/2	12	Pressure/Air spring	4032030000000000
G1/4	5/2	6	Pressure/Pressure	4031430000000000
G1/2	5/2	12	Pressure/Pressure	4032130000000000
G1/4	5/2	6	Pressure/Spring	4031331000000000
G1/2	5/2	12	Pressure/Spring	4032031000000000

- High flow values
- With and without return spring
- Easy to service
- Suitable for universal connection and coarse vacuum except types 4021330, 4022030, 4031330 and 4032030

Cartridge solenoid valves

Function	Orifice (mm)	Operating pressure (bar)	Power (W)	Model
2/2 NC	1,0	10	2	VSD2CAD4-K11*K
2/2 NC	1,0	10	3,4	VSD2CAD4-K19*K
2/2 NC	1,6	4	3,4	VSD2CAG4-K19*K
2/2 NC	1,0	12	6	VSD2CAD4-K13*K
2/2 NC	1,6	11	6	VSD2CAG4-K13*K
3/2 NC	1,0	10	2	VSD7CAD4-K11*K
3/2 NC	1,0	10	3,4	VSD7CAD4-K19*K
3/2 NC	1,6	3	3,4	VSD7CAG4-K19*K
3/2 NC	1,0	12	6	VSD7CAD4-K13*K
3/2 NC	1,6	10	6	VSD7CAG4-K13*K

- Compact, fully encapsulated assembly
- 2/2 or 3/2 function with collected exhaust
- Screw mounting
- Maximum environmental protection
- Flying leads
- The valve body bolts directly into the customer's dedicated manifold or housing. The bolt-on encapsulated coil fully encloses the valve assembly providing maximum environmental protection and vibration resistance. This approach offers a flexible solution to a host of applications that require maximum system integration

V18 – Monitored dump valve

Port size	Actuation	Model
G1/2	Solenoid/spring	V18D487X-B1***

Order connector plugs separately.

***Insert voltage code from table below.

Voltage codes

Voltage	Coil code	Power inrush/hold
24 V d.c.	83J	6 W
110/120 V a.c.	88J	15/8 V A
220/240 V a.c.	89J	15/8 V A

- G1/2 porting
- 3/2 poppet valve
- Positively driven micro-switch
- Double break contacts
- Rapid dump action
- Switch flying lead

Additional ranges

Sleeve valves

Port size	Model
G1/8	M/7218
G1/4	M/7228
G3/8	M/7238
G1/2	M/7248

For NPT threads, please consult our Technical Service.

- Sliding sleeve operation
- Very compact in-line units
- Easy to install
- Very simple and reliable operation
- 3/2 function

T-Lockout

Basic size	Port size	Model
1/2"	G1/4	CR143A
1/2"	G3/8	CR143B
1/2"	G1/2	CR143C
1/2"	G3/4	CR143D
1"	G3/4	CR144A
1"	G1	CR144B
1"	G1¼	CR144C

- Fully isolates supply pressure
- Lockable
- Rapid exhaust
- Ideal for isolating supply lines during maintenance and servicing
- High flow

Impulse generator

Size	Model
G1/8	04 0431 02 000

- Eliminates unwanted signals.
- Cannot duplicate a signal.
- Simple, reliable operation.

Shuttle valves

Port size	Model
G1/8	T65C1800
G1/4	T65C2800

For NPT versions, substitute A at the 4th digit, e.g. T65**A**1800

- Allow two independent signal sources to be connected to a common pilot line
- Can be used to perform an 'OR' logic function
- Can be combined to operate from three or more sources
- Valves can be ganged together

S/520 Heavy duty non-return valves

Port size BSPP	Model	Spares kit
G1/8	S/520	QS/520/00
G1/4	S/521	QS/521/00
G3/8	S/532	QS/532/00
G1/2	S/522	QS/522/00
G3/4	S/523	QS/523/00
G1	S/524	QS/524/00

For high temperature (150°C+) versions, insert 'T' in front of model code e.g. **T**S/520
For NPT ranges, substitute C at the 1st digit e.g. **C**/520

- Allows free flow in one direction only
- Simple reliable design
- High operating pressure and temperature
- Spares kit available

T50 PIF Non-return valves

O/D tube	Model
4	T50P0004
5	T50P0005
6	T50P0006
8	T50P0008
10	T50P0010
12	T50P0012

For high temperature versions consult our Technical Service.

- Allow free flow in one direction only.
- Simple reliable design.
- Low weight.
- Low cracking pressure.
- High operating pressure.

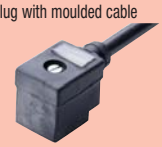
Precision flow regulators

Port size	Type	Model
G1/8	Heavy duty, panel mount	S/636
G1/4	Heavy duty, panel mount	M/637
G1/2	Heavy duty, panel mount	M/639

For NPT ranges, substitute C at the 1st digit e.g. **C**/636

- Line mounted general purpose regulators
- Captive regulating needle will not blow out when unscrewed
- Calibrated adjusting knob, can be locked
- Brass body

15 mm Plugs according to DIN 43 650 Table C

Valve type	Connector	Connector type	Cable length	Voltage a.c.	d.c.	Features	Suppression	Protection class	Gland size	Power consumption	Model
V08	 Plug with moulded cable	DIN 43 650 Form C	1000 mm	–	–	–	–	IP 65	Pg 7	–	V10013-D01
		DIN 43 650 Form C	3000 mm	–	–	–	–	IP 65	Pg 7	–	V10013-D03
V09	 Plugs with cable gland	DIN 43 650 Form C	–	–	–	–	–	IP 65	Pg 7	–	V10027-D00
		DIN 43 650 Form C*	–	–	–	–	–	IP 65	Pg 7	–	0588666
V10		DIN 43 650 Form C	3000 mm	–	–	–	–	IP 65	Pg 7	–	0102144
	Indicator plug	DIN 43 650 Form C	–	12 ... 24 V	12 ... 24 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10012-D13
		DIN 43 650 Form C	–	110 V	110 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10012-D18
V19		DIN 43 650 Form C	–	220 V	220 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10012-D19
V12											
	Indicator plug with moulded cable	DIN 43 650 Form C	1000 mm	24 V	24 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10014-D01
		DIN 43 650 Form C	3000 mm	24 V	24 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10014-D03
		DIN 43 650 Form C	1000 mm	110 V	110 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10015-D01
V14		DIN 43 650 Form C	3000 mm	110 V	110 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10015-D03
		DIN 43 650 Form C	1000 mm	220 V	220 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10016-D01
		DIN 43 650 Form C	3000 mm	220 V	220 V	LED,VDR	●	IP 65	Pg 7	0,25 W	V10016-D03
V40/V41	 Light emitting gaskets	DIN 43 650 Form C	–	12 ... 24 V	12 ... 24 V	Green LED	●	IP 65	–	0,25 W	V10037-E13
		DIN 43 650 Form C	–	110 ... 120 V	110 ... 120 V	Green LED	●	IP 65	–	1 W	V10037-E18
V44/V45		DIN 43 650 Form C	–	220 ... 240 V	220 ... 240 V	Green LED	●	IP 65	–	1 W	V10037-E19
Mini ISO											
V60-V63											

* For XF double solenoids (4 pin for XF double solenoids)

22 mm Plugs according to Industrial Standard or DIN 43 650 Table B

Valve type	Connector	Connector type	Cable length	Voltage a.c.	Voltage d.c.	Features	Suppression	Protection class	Gland size	Power consumption	Model
M48/M49	Plug with moulded cable	22 mm Industrial standard	1000 mm	–	–	–	–	IP 65	Pg 9	–	M/P43313/1
		22 mm Industrial standard	3000 mm	–	–	–	–	IP 65	Pg 9	–	M/P43313/3
V60-V63	Plug with cable gland	22 mm Industrial standard	–	–	–	–	–	IP 65	Pg 9	–	M/P19063
ISO★STAR	Indicator plug	22 mm Industrial standard	–	10 ... 50 V	10 ... 50 V	Lamp	●	IP 65	Pg 9	0,25 W	M/P24121/1
		22 mm Industrial standard	–	70 ... 110 V	70 ... 250 V	Neon	●	IP 65	Pg 9	0,25 W	M/P24121/2
		22 mm Industrial standard	–	150 ... 240 V	150 ... 240 V	Neon	●	IP 65	Pg 9	0,25 W	M/P24121/3
MIDI★STAR	Indicator plug with moulded cable	22 mm Industrial standard	1000 mm	24 V	24 V	LED,VDR	●	IP 65	Pg 9	0,25 W	M/P43314/11
		22 mm Industrial standard	3000 mm	24 V	24 V	LED,VDR	●	IP 65	Pg 9	0,25 W	M/P43314/13
		22 mm Industrial standard	1000 mm	110 V	110 V	LED,VDR	●	IP 65	Pg 9	0,25 W	M/P43314/21
		22 mm Industrial standard	3000 mm	110 V	110 V	LED,VDR	●	IP 65	Pg 9	0,25 W	M/P43314/23
		22 mm Industrial standard	1000 mm	220 V	220 V	LED,VDR	●	IP 65	Pg 9	0,25 W	M/P43314/31
SE 9300		22 mm Industrial standard	3000 mm	220 V	220 V	LED,VDR	●	IP 65	Pg 9	0,25 W	M/P43314/33
	Light emitting gasket	22 mm Industrial standard	–	12 ... 24 V	12 ... 24 V	Green LED	●	IP 65	–	0,25 W	M/P40859
		22 mm Industrial standard	–	110 ... 120 V	110 ... 120 V	Green LED	●	IP 65	–	0,25 W	M/P40886
V18		22 mm Industrial standard	–	220 ... 240 V	220 ... 240 V	Green LED	●	IP 65	–	0,25 W	M/P40860
Prospector®	Plug with cable gland	DIN43650 Form B	–	12 ... 250 V	12 ... 250 V	–	–	IP 65	Pg 9	–	0664164
		DIN43650 Form B	–	–	24 V	LED	–	IP 65	Pg 9	–	0664811
		DIN43650 Form B	–	250 V	–	LED	–	IP 65	Pg 9	–	0664812
		22 mm Industrial standard	–	–	15 V, 30 V	LED	●	IP 65	Pg 9	–	0680000
		22 mm Industrial standard	–	150 V, 250 V	–	Lamp	●	IP 65	Pg 9	–	0680001
		AS-i interface	–	–	–	1 output	–	–	–	–	0101033
VP40 (2 mm)		AS-i interface	–	–	–	1 output + 2 inputs with M12 x 1	–	–	–	–	0101032
97100											

For V60-V63 series: plugs with flat seal

30 mm Plugs according to DIN 43 650 Table A

Valve type	Connector	Cable length	Voltage a.c.	d.c.	Features	Suppression	Protection class	Gland size	Power consumption	Model
ISO★STAR  V03, V04, V05, Excel 32 	Plug with moulded cable 	1000 mm	–	–	–	–	IP 65	Pg11	–	M/P43315/1
		3000 mm	–	–	–	–	IP 65	Pg11	–	M/P43315/3
80200, 70300  XSz 	Plug with cable gland 	–	250 V	300 V	–	–	IP 65	Pg11	–	M/P15737
		–	–	240 V	–	–	IP 65	Pg11	–	M/P19117
		–	250 V	300 V	–	–	IP 65	Pg11	–	0570275
		–	250 V	300 V	–	–	IP 65	Pg11	–	0657859
		–	12 ... 250 V	12 ... 250 V	–	–	IP 65	Pg11	–	0663303
		–	12 ... 240 V	12 ... 240 V	–	–	IP 65	Pg11	–	0570110
VP10, VP40 (4, 6, 8, mm)  18D, 11D, 18S, 20D 	Indicator plug 	–	10 ... 50 V	10 ... 50 V	Lamp	●	IP 65	Pg11	0,25 W	M/P24120/1
		–	70 ... 115 V	70 ... 115 V	Neon	●	IP 65	Pg11	0,25 W	M/P24120/2
		–	150 ... 240 V	150 ... 240 V	Neon	●	IP 65	Pg11	0,25 W	M/P24120/3
95000, 96000  80000 	Indicator plug with moulded cable 	1000 mm	24 V	24 V	LED,VDR	●	IP 65	Pg11	0,25 W	M/P43316/11
		3000 mm	24 V	24 V	LED,VDR	●	IP 65	Pg11	0,25 W	M/P43316/13
		1000 mm	110 V	110 V	LED,VDR	●	IP 65	Pg11	0,25 W	M/P43316/21
		3000 mm	110 V	110 V	LED,VDR	●	IP 65	Pg11	0,25 W	M/P43316/23
		1000 mm	220 V	220 V	LED,VDR	●	IP 65	Pg11	0,25 W	M/P43316/31
		3000 mm	220 V	220 V	LED,VDR	●	IP 65	Pg11	0,25 W	M/P43316/33
97100, 97105 	Light emitting gaskets 	–	12 ... 24 V	12 ... 24 V	Green LED	●	IP 65	–	0,25 W	M/P40861
		–	110 ... 120 V	110 ... 120 V	Green LED	●	IP 65	–	0,25 W	M/P40880
		–	220 ... 240 V	220 ... 240 V	Green LED	●	IP 65	–	0,25 W	M/P40862

M12 X 1

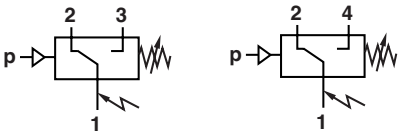
Valve type	Connector	Cable length	Voltage a.c.	d.c.	Features	Suppression	Protection class	Gland size	Power consumption	Model
18D, 18S, 33D 	Plug with cable gland 	–	–	30 V	–	–	IP 65	–	–	0523055
		2 m	–	30 V	–	–	IP 65	–	–	0523057
		5 m	–	30 V	–	–	IP 65	–	–	0523052
		–	–	30 V	–	–	IP 65	–	–	0523056
		2 m	–	30 V	–	–	IP 65	–	–	0523058
		5 m	–	30 V	–	–	IP 65	–	–	0523053

Electro-mechanical switches
18 D 386
20 D pneumatics 388
20 D allfluid 390
Electronic switches and sensors
18 S.....396
18 S allfluid 393
33 D 394
40 D 398
Additional ranges
11 D 400
Mini.....400

18 D

Pneumatic pressure switches

-1 to 30 bar



DIN 43650 M12x1

Gold-plated contacts
High cycle life
Vibration resistant to 15 g
Microswitch approved by UL and CSA
Intrinsically safe operation
Direct interface to Excelon air line units

Technical data

Medium:
Neutral, gaseous and liquid fluids

Operation:
Diaphragm

Mounting position:
Optional

Operating pressure:
-1 to 30 bar

Over pressure:
80 bar max.

Ambient temperature:
-10°C to + 80°C
Consult our Technical Service for use below +2°C.

Viscosity:
Up to 1000 mm^2/s (±450 ssu).

Fluid temperature:
-10°C to +80°C

Temperature at switching element:
+80°C max.

Repeatability:
±3%, for vacuum ±4%

Electrical connection:
DIN 43 650 or M12 x 1

Switching element:
Microswitch

Switching:
100 cyles/min

Degree of protection:
IP 65

Weight:
0,2 kg

Materials

Housing: aluminium
Seals: Perbunan, Viton
'O'-ring: NBR

Electrical connection DIN 43650*

Port size	Type	Pressure range (bar)	Switching pressure difference (bar)**	Model	Drawing no.
G1/4	Female	-1 ... 1	0,25 ... 0,35	0880110	1
G1/4	Female	-1 ... 0	0,15 ... 0,18	0880100	1
1/4 NPT	Female	-1 ... 0	0,15 ... 0,18	0880120	1
G1/4	Female	-1 ... 0	0,15 ... 0,18	0880126 #	1
–	Flange	-1 ... 0	0,15 ... 0,18	0881100	3
G1/4	Female	0,2 ... 2	0,15 ... 0,27	0880200	1
1/4 NPT	Female	0,2 ... 2	0,15 ... 0,27	0880220	1
G1/4	Female	0,2 ... 2	0,15 ... 0,27	0880226 #	1
–	Flange	0,2 ... 2	0,15 ... 0,27	0881200	3
G1/4	Female	0,5 ... 8	0,25 ... 0,65	0880300	2
1/4 NPT	Female	0,5 ... 8	0,25 ... 0,65	0880320	2
G1/4	Female	0,5 ... 8	0,25 ... 0,65	0880326 #	2
–	Flange	0,5 ... 8	0,25 ... 0,65	0881300	3
G1/4	Female	1 ... 16	0,30 ... 0,90	0880400	2
1/4 NPT	Female	1 ... 16	0,30 ... 0,90	0880420	2
G1/4	Female	1 ... 16	0,30 ... 0,90	0880426 #	2
–	Flange	1 ... 16	0,30 ... 0,90	0881400	3
G1/4	Female	1 ... 30	1,0 ... 5,00	0880600	2
1/4 NPT	Female	1 ... 30	1,0 ... 5,00	0880620	2

* Standard plug supplied (except where marked #), ** Typical values, # Free of substances that may affect paint spray applications

Electrical connection M12 x 1*

Port size	Type	Pressure range (bar)	Switching pressure difference (bar)**	Model	Drawing no.
G1/4	Female	-1 ... 0	0,15 ... 0,18	0880160 #	4
G1/4	Female	0,2 ... 2	0,15 ... 0,27	0880260 #	4
G1/4	Female	0,5 ... 8	0,25 ... 0,65	0880360 #	4
G1/4	Female	1 ... 16	0,30 ... 0,90	0880460 #	4
G1/4	Female	1 ... 30	1,00 ... 5,00	0880660 #	4
-	Flange	-1 ... 0	0,15 ... 0,18	0881160 #	5
-	Flange	0,2 ... 2	0,15 ... 0,27	0881260 #	5
-	Flange	0,5 ... 8	0,25 ... 0,65	0881360 #	5
-	Flange	1 ... 16	0,30 ... 0,90	0881460 #	5

* Max. voltage 30 V, plug M12 x 1 not supplied, if required see table opposite, ** Typical values, # Free of substances that may affect paint spray applications

Water applications, electrical connection DIN 43650*

Port size	Type	Pressure range (bar)	Switching pressure difference (bar)**	Model	Drawing no.
G1/4	Female	0,2 ... 2	0,15 ... 0,18	0880219	1
1/4 NPT	Female	0,2 ... 2	0,15 ... 0,27	0880240	1
G1/4	Female	0,5 ... 8	0,25 ... 0,65	0880323	2
1/4 NPT	Female	0,5 ... 8	0,25 ... 0,65	0880340	2

Observe switching range. Do not subject switch to maximum allowable pressure during normal operation. Even short pressure peaks must not exceed this value.
* Standard plug supplied, ** Typical values

18 D

Pneumatic pressure switches

-1 to 30 bar

Load level	Type of current	Type of load	Umin [V]	Maximum permanent current Imax [A] at U [V] 30	48	60	125	250	Contact life
Standard * (e.g. contractors, solenoids)	a.c.	Resistive load	12	5	5	5	5	5	Switching cycles
	a.c.	Inductive load, cos ≈ 0,7	12	3	3	3	3	3	$>10^7$
	d.c.	Resistive load	12	5	1,2	0,8	0,4	–	
	d.c.	Inductive load, L/R ≈ 10 ms	12	3	0,5	0,35	0,05	–	
Low ** (e.g. electronic circuits)	a.c.	Resistive load	5#	0,34	0,2	0,17	0,08	0,04	Switching cycles
	d.c.	Inductive load, L/R ≈ 10 ms	5#	0,1	0,01	–	–	–	$>10^7$

Reference number of switchings: 30/min, reference temperature: +30°C.

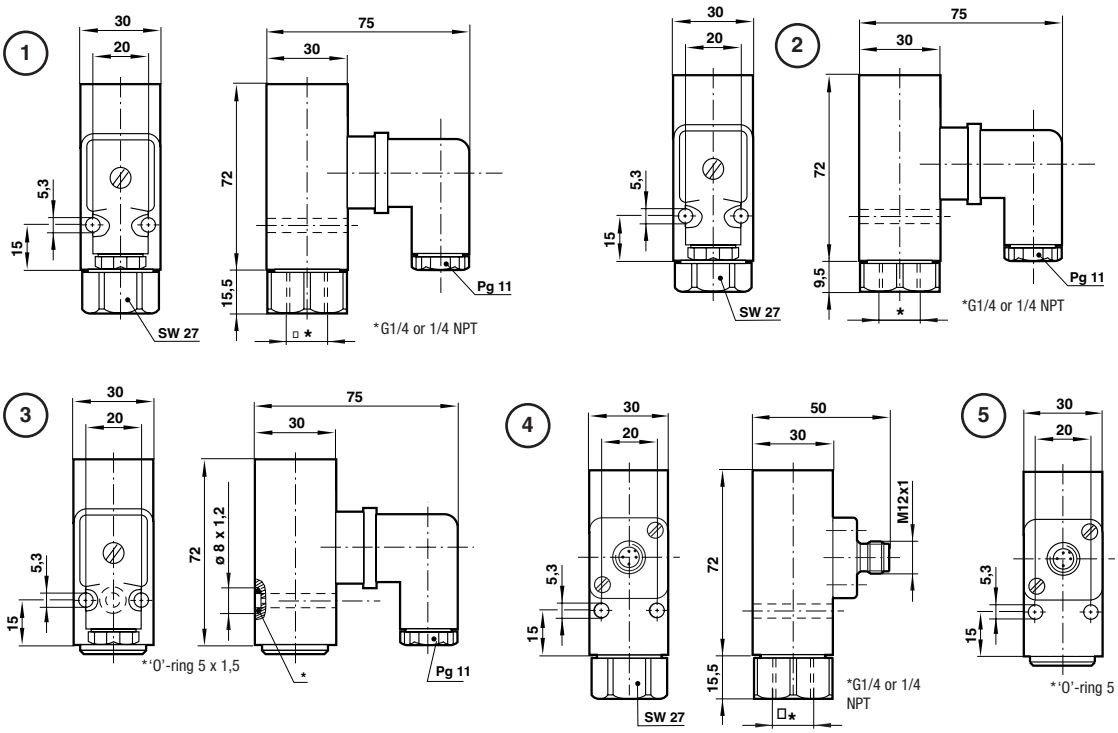
Spark quenching with diode with d.c. and inductive load: Imax = 1,5 x Imax of table Imin = 1 [mA]

Creepage and air paths correspond to insulation group B according to VDE reg. 0110 (except contact clearance of microswitch).

* Gold-plating not required as it would decay. Maximum permitted in-rush current (approximately 30 ms) a.c. make = max. 15A.

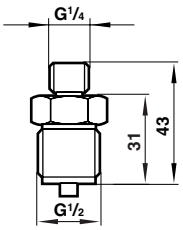
**Gold-plating required (will not decay).

Lower value of critical voltage guarantees sufficient contact safety. Lower voltages permissible under favourable conditions.

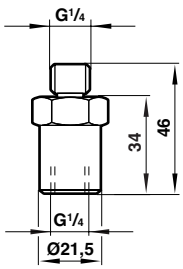


Accessories

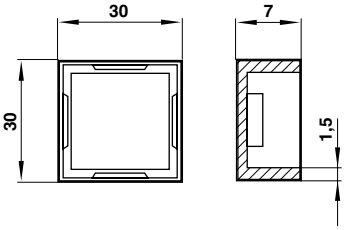
Reducer G1/2 to G1/4, external thread – 0550083



Surge damper G1/4 – 0574773

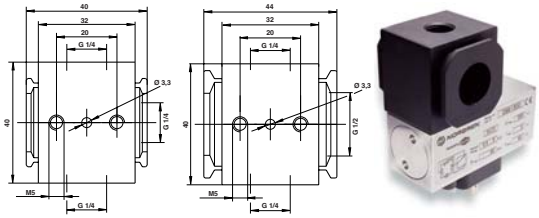


Cover – 0554737



Porting blocks

Adaptor for use with Excelon 72, 73, 74 air preparation systems



Excelon 72 0523109 Excelon 73 & 74 0523110

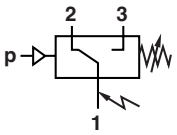
Plugs, M12 x 1

Model	Description
0523055	Straight, without cable
0523057	Straight, 2 m cable, 4-core
0523052	Straight, 5 m cable, 4-core
0523056	90° 1,5 m cable, 4-core
0523058	90° 2 m cable, 4-core
0523053	90° 5 m cable, 4-core

20 D Series

For low-pressure pneumatics

0 to 1,6 bar



High accuracy

Microswitch with gold-plated contacts (silver plated for field mounting)

Electrical connection: Connector acc. to DIN 43650 or screwed cable gland

Technical data

Medium:
Neutral gases and liquids (water, hydraulic oil, lubricants, light gas oil)

Mounting position:
Optional

Operating pressure:
0 to 16 bar

Ambient temperature:
0 °C to +60 °C

-40 °C to +80 °C (weather-proof*)

* On request

Consult our Technical Service for use below +2°C.

Viscosity:
Max. 1000 mm^2/s

Fluid temperature:
0 °C to +80 °C

Temperature at switching element:
+80 °C max.

Seal rate:
> 10-7 mbar•l•s-1

Repeatability:
±1% of final value (referred to pressure control)

Vibration immunity:
max. 5 Hz/4 g (sinosoidal)

To be avoided

Switching cycles:
max. 10/minute

Degree of protection:
IP65

Materials

Housing: aluminium die cast, aluminium die cast, tin plated (field)
Sensor: steel 1.0333, St. st. 1.4305/1.4301, brass

Sealing: Plastic diaphragm (Perbunan) or Viton (FKM)

Fixed switching pressure differences

Pressure range (bar)**	Over pressure (bar)	Switching pressure difference (bar)*** Range start	Range end	Drawing no.	Model
0 ... 0,025	0,5	0,003	0,004	1	18125YY
0 ... 0,06	0,5	0,004	0,006	1	18126YY
0 ... 0,16	0,5	0,004	0,008	1	18127YY
0 ... 0,25	0,5	0,004	0,009	1	18128YY
0,05 ... 0,6	15	0,03	0,06	2	18141YY
0,05 ... 1,6	15	0,03	0,12	2	18143YY

Adjustable switching pressure differences

Pressure range (bar)**	Over pressure (bar)	Switching pressure difference (bar)*** Range start	Range end	Max.	Drawing no.	Model
0 ... 0,025	0,5	0,008	0,011	0,025	1	18025YY
0 ... 0,06	0,5	0,009	0,015	0,04	1	18026YY
0 ... 0,16	0,5	0,011	0,023	0,12	1	18027YY
0 ... 0,25	0,5	0,011	0,028	0,2	1	18028YY
0,05 ... 0,6	15	0,09	0,16	0,5	2	18041YY
0,05 ... 1,6	15	0,13	0,25	1,2	2	18043YY

Variant codes (YY)

Code	Materials	Electrical connection	Fluid port size	Options
00	Steel/1.0333 / NBR	DIN 43650*	G1/4 female	–
05	Steel/1.0333 / NBR	M20 x 1,5	G1/4 female	–

NPTF port sizes on request

* Connector not within scope of supply. If required please order separately, part no. 0570110

** Special pressure ranges on request

*** Typical values

20 D Series

For low-pressure pneumatics

0 to 1,6 bar

Load level	Type of current	Type of load	Umin [V]	Maximum permanent current Imax [A] at U [V] 30	48	60	125	250	Contact life # electrical at Imax	mechanical at I ≈ 0
Standard * (e.g. contractors, solenoids)	a.c.	Resistive load	12	5	5	5	5	5	5×10^4 switching cycles	$>10^7$ switching cycles
	a.c.	Inductive load, cos ≈ 0,7	12	3	3	3	3	3		
	d.c.	Resistive load	12	5	1,2	0,8	0,4	–		
	d.c.	Inductive load, L/R ≈ 10 ms	12	3	0,5	0,35	0,05	–		
Low ** (e.g. electronic circuits)	a.c.	Resistive load	5‡	0,34	0,2	0,17	0,08	0,04	2×10^5 switching cycles	$> 10^7$ switching cycles
	d.c.	Inductive load, L/R ≈ 10 ms	5‡	0,1	0,01	–	–	–		

Reference number of switchings: 30/min, reference temperature: +30°C

Spark quenching with diode with d.c. and inductive load: Imax = 1.5 x Imax of table Imin = 1 [mA]

Creepage and air paths correspond to insulation group B according to VDE reg. 0110 (except contact clearance of microswitch).

* Gold-plating not required as it would decay. Maximum permitted in-rush current (approximately 30 ms) a.c. make = max. 15A.

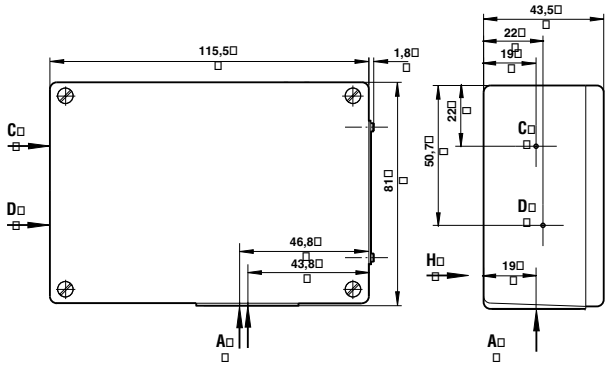
**Gold-plating required (will not decay).

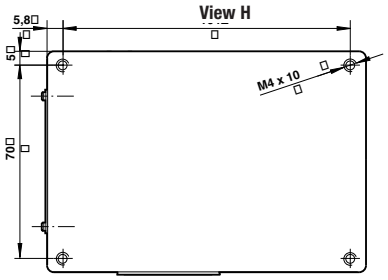
50% of the respective switching current I nearly doubles contact life. The mechanical life depends on the field of application.

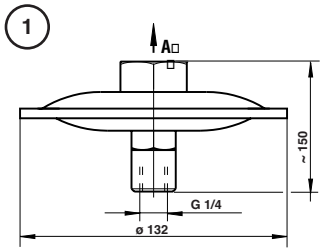
‡ Lower value of critical voltage guarantees sufficient contact safety. Lower voltages permissible under favourable conditions.

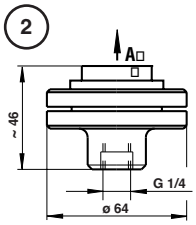
Standard housing

For electrical and pneumatic connectors see below





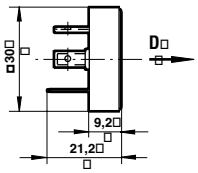




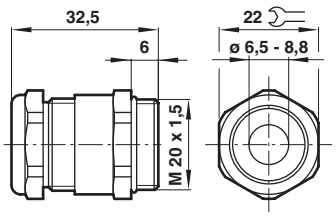
Accessories

Please see page 392 for details of plugs, brackets, surge dampers and adaptors.

Electrical connection DIN 43650



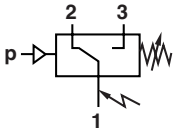
Electrical connection M20 x 1,5



20 D Series (Allfluid)

For pneumatics, aggressive gases and liquids

-1 to 100 bar



High accuracy

Gold-plated contacts

With Ex-Versions acc. to ATEX 100a

Weatherproof (silver-plated contacts)

Power supply connections: DIN 43650 plug or screwed cable gland

Technical data

Medium:

For neutral and aggressive gases and liquids

Mounting position:

Optional, preferably with pressure connection underneath

Ambient temperature:

-25°C to +80°C

-40°C to +80°C (weatherproof)

Consult our Technical Service for use below +2°C.

Viscosity:

Up to 1000 mm^2/s (±450 ssu).

Fluid temperature:

-10°C to +100°C

Temperature at switching element:

+80°C

Seal rate:

>10-7 mbar·l·s-1

Repeatability:

±1% from range end value (depending on pressure regulation)

Degree of protection:

IP 65

Materials

Brass, stainless steel: see table

Alternative models

For power plants, part no. 18XXX12 with Harting connector type HAN 7D including 47 K Ω wire breaking monitoring, G1/2 male stainless steel, Pg16

Ex-Versions acc. to ATEX 100a on request

Fixed switching pressure differences

Switching pressure range (bar)	Over pressure (bar)	Switching pressure difference (bar)*** Code 00, 10, 20 Range start	Range end	Switching pressure difference (bar)*** Code 21 Range start	Range end	Switching pressure difference (bar)*** Code 05, 15, 25 Range start	Range end	Model
-1 ... 0	10	0,06	0,07	0,02	0,03	0,06	0,07	18101YY
-1 ... 1	10	0,06	0,08	0,07	0,10	0,07	0,08	18102YY
-1 ... 2,5	10	0,08	0,12	0,09	0,12	0,09	0,12	18104YY
0,05 ... 1	10	0,06	0,08	0,07	0,08	0,07	0,08	18111YY
0,1 ... 2,5	10	0,07	0,09	0,09	0,10	0,11	0,15	18113YY
0,5 ... 4	20	0,20	0,25	0,30	0,33	0,30	0,33	18114YY
0,5 ... 6	20	0,20	0,30	0,30	0,35	0,30	0,35	18115YY
0,5 ... 10	20	0,30	0,40	0,30	0,40	0,30	0,40	18116YY
1 ... 16	50	0,60	0,80	0,70	0,80	0,70	0,80	18117YY
1 ... 25	50	0,70	0,90	0,70	0,90	0,70	0,90	18118YY
5 ... 63	85	0,90	1,50	1,00	2,00	1,00	2,00	18119YY*
5 ... 100	150	2,50	5,00	3,00	7,00	3,00	7,00	18110YY**

Adjustable switching pressure differences

Switching pressure range (bar)	Over pressure (bar)	Switching pressure difference (bar)*** Code 00, 10, 20 Range start	Range end Min.	Range end Max.	Switching pressure difference (bar)*** Code 05, 10, 15, 21, 25 Range start	Range end Min.	Range end Max.	Model
-1 ... 0	10	0,12	0,13	0,7	0,12	0,13	0,7	18001YY
-1 ... 1	10	0,13	0,14	1,00	0,19	0,21	1,00	18002YY
-1 ... 2,5	10	0,17	0,20	2,50	0,22	0,24	2,50	18004YY
0,05 ... 1	10	0,08	0,11	0,70	0,15	0,16	0,70	18011YY
0,1 ... 2,5	10	0,11	0,15	2,00	0,20	0,25	2,00	18013YY
0,5 ... 4	20	0,30	0,40	2,50	0,80	0,80	2,50	18014YY
0,5 ... 6	20	0,35	0,50	5,00	0,80	0,90	5,00	18015YY
0,5 ... 10	20	0,40	0,80	8,00	0,90	1,90	8,00	18016YY
1 ... 16	50	0,80	1,10	12,00	1,70	2,00	12,00	18017YY
1 ... 25	50	1,00	1,50	20,00	1,80	2,80	20,00	18018YY
5 ... 63	85	2,00	3,00	20,00	2,30	3,50	20,00	18019YY*
5 ... 100	150	3,50	7,00	55,00	4,00	9,00	55,00	18010YY**

* Not for pressure sensor variants 00 and 05 ** Only for pressure sensor variants 10 and 15 YY = replace with code from table below

*** Typical values

Variant codes (YY)

Code	Materials	Electrical connection	Fluid port size	Options
00	Brass/stainless steel 1.4404	DIN 43650#	G1/4 Internal thread	–
05	Brass/stainless steel 1.4404	M20 x 1,5	G1/4 Internal thread	–
10	Stainless steel 1.4305, 1.4404	DIN 43650#	G1/2 External thread	–
15	Stainless steel 1.4305, 1.4404	M20 x 1,5	G1/2 External thread	–
20	Stainless steel 1.4571	DIN 43650#	G1/2 External thread	–
21	Stainless steel 1.4571	M20 x 1,5	G1/2 External thread	Weatherproof
25	Stainless steel 1.4571	M20 x 1,5	G1/2 External thread	–

Plug not included. If required, order model 0570110, see page 384

20 D Series (Allfluid)

For pneumatics, aggressive gases and liquids

-1 to 100 bar

Load level	Type of current	Type of load	Umin [V]	Maximum permanent current Imax [A] at U [V] 30	48	60	125	250	Contact life # electrical at Imax	mechanical at I ≈ 0
Standard * (e.g. contractors, solenoids)	a.c.	Resistive load	12	5	5	5	5	5	5×10^4 switching cycles	$>10^7$ switching cycles
	a.c.	Inductive load, cos ≈ 0,7	12	3	3	3	3	3		
	d.c.	Resistive load	12	5	1,2	0,8	0,4	–		
	d.c.	Inductive load, L/R ≈ 10 ms	12	3	0,5	0,35	0,05	–		
Low ** (e.g. electronic circuits)	a.c.	Resistive load	5‡	0,34	0,2	0,17	0,08	0,04	2×10^5 switching cycles	$> 10^7$ switching cycles
	d.c.	Inductive load, L/R ≈ 10 ms	5‡	0,1	0,01	–	–	–		

Reference number of switchings: 30/min, reference temperature: +30°C

Spark quenching with diode with d.c. and inductive load: Imax = 1.5 x Imax of table Imin = 1 [mA]

Creepage and air paths correspond to insulation group B according to VDE reg. 0110 (except contact clearance of microswitch).

* Gold-plating not required as it would decay. Maximum permitted in-rush current (approximately 30 ms) a.c. make = max. 15A.

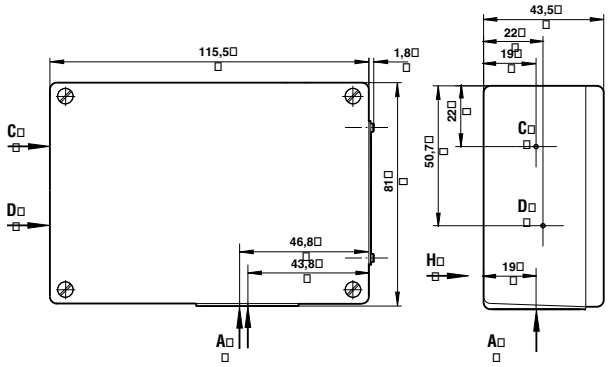
**Gold-plating required (will not decay).

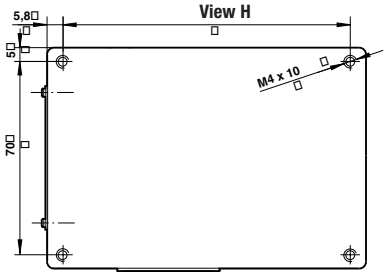
50% of the respective switching current I nearly doubles contact life. The mechanical life depends on the field of application.

‡ Lower value of critical voltage guarantees sufficient contact safety. Lower voltages permissible under favourable conditions.

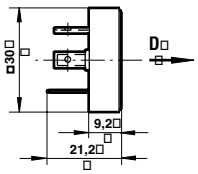
Standard housing

For electrical and pneumatic connectors see below

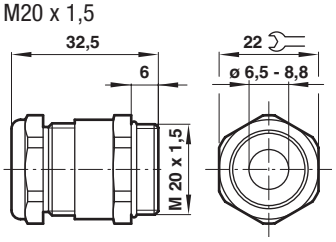




Electrical connection DIN 43650



Electrical connection M20 x 1,5

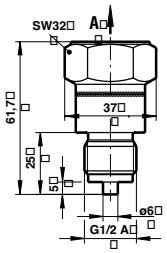


20 D Series (Allfluid)

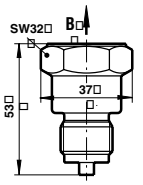
For pneumatics, aggressive gases and liquids

-1 to 100 bar

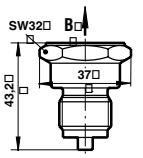
Pressure sensor variations



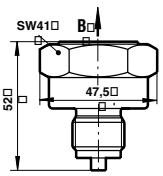
	18110YY / 18010YY
G1/2	10, 15, 20, 21, 25



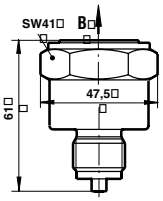
	18119YY / 18019YY
G1/2	10, 15, 20, 21, 25



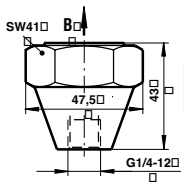
	18118YY / 18018YY 18117YY / 18117YY
G1/2	10, 15, 20, 21, 25



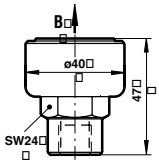
	18116YY / 18016YY 18115YY / 18115YY 18114YY / 18114YY
G1/2	10, 15, 20, 21, 25



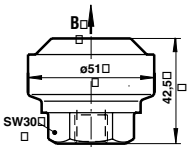
	18113YY / 18013YY 18111YY / 18011YY 18104YY / 18004YY 18102YY / 18002YY 18101YY / 18001YY
G1/2	10, 15, 20, 21, 25



	18118YY / 18018YY 18117YY / 18017YY
G1/4	00, 05



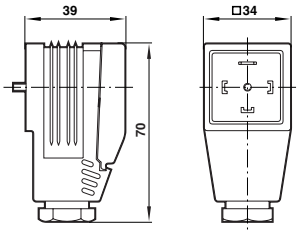
	18116YY / 18016YY 18115YY / 18015YY 18114YY / 18014YY
G1/4	00, 05



	18113YY / 18013YY 18111YY / 18011YY 18104YY / 18004YY 18102YY / 18002YY 18101YY / 18001YY
G1/4	00, 05

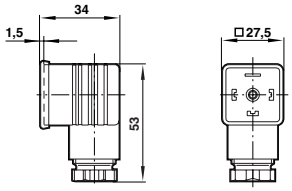
Plug (black) with LED

3 poles mains earth connector according to DIN43650 for d.c. or a.c.



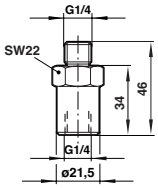
Description	Model
With LED 12 to 28 V	0585418
With fibre lamp 90 to 130 V	0585419
With fibre lamp 180 to 240 V	0585420

3 pole plug with protective earth conductor



Description	Model
DIN 43650	0570110

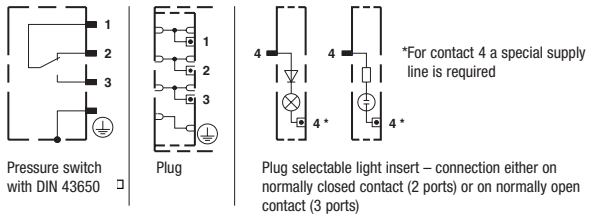
Surge damper



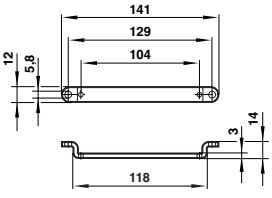
Description	Model
Stainless steel	0553258
Brass/steel	0574773

Pressure switch with indicator and light insert

The light insert shows the switching position of the connected pressure switch



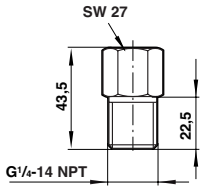
Bracket (2 clips and 4 screws)



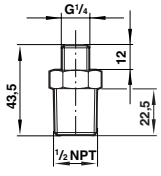
Description	Model
Steel	0574772
Stainless steel	0553908

Reducing nipple for pressure connection

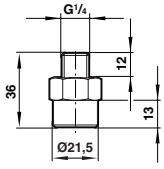
G 1/2 female, 1/2 NPT male
Stainless steel 1.4305 (AISI 303/304 S)
Type 0553831



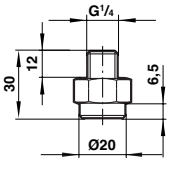
G 1/4 male - G 1/2 male
Stainless steel 1.4305 (AISI 303/304 S)
Type 0550083



G 1/4 male - G 3/8 female
Steel
Type 0574764



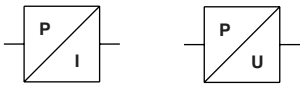
G 1/4 male - 1/4 NPT female
Brass
Type 0574765



18 S Allfluid Series

Allfluid/hydraulic applications with relative pressure

Allfluid pressure sensor analog, 0 to 800 bar



Robust sensor for hydraulic applications

Temperature compensated

3-wire technology (0 to 10 V)
2-wire technology (4 to 20 mA)

Excellent long-term stability

Stainless steel measuring element-not oil-filled

Technical data

Medium:
For neutral and aggressive gases or fluids

Fluid connection:
G1/4 male with nipple manometer connection

Mounting position:
Optional

Pressure range:
0 to 800 bar

Fluid temperature:
-20°C to +85°C
(-40°C to +120°C versions available on request)

Ambient temperature:
-20°C to +85°C
(-40°C to +120°C versions available on request)
Consult our Technical Service for use below +2°C.

Degree of protection:
IP 65 (acc. to DIN 40050)

Shock protection:
30g, xyz, to DIN EN 60068-2-27

Vibration protection:
3g, 5 to 500 Hz, xyz, DIN EN 60068-2-6

Electrical connection:
M12 x 1/cable (on request)

Supply voltage:
U_B = 12 to 30 V d.c. (current output)
U_B = 15 to 30 V d.c. (voltage output)
max. 10% residual ripple within UB

Output signal:
4 to 20 mA (Two-wire technology)
0 to 10 V (Three-wire technology)
Varying frequency output on request

Electromagnetic compatibility:
Interference immunity acc. to EN 50081. Part 1
Interference immunity acc. to EN 50082. Part 2

Load resistance:
See diagram

Polarity:
Short-circuit proof

Measuring range:
See table below

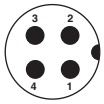
Linearity:
< ±0,5% final value

Standard versions (electrical connection M 12 x 1)*

Model	Measuring range (bar) (Relative pressure)**	Value max. (bar) (Over pressure)	Output signal
0862170	0 ... 10	40	4 ... 20 mA
0862180	0 ... 10	40	0 ... 10 V
0862370	0 ... 25	50	4 ... 20 mA
0862380	0 ... 25	50	0 ... 10 V
0862470	0 ... 100	200	4 ... 20 mA
0862480	0 ... 100	200	0 ... 10 V
0862670	0 ... 250	500	4 ... 20 mA
0862680	0 ... 250	500	0 ... 10 V
0862770	0 ... 400	750	4 ... 20 mA
0862780	0 ... 400	750	0 ... 10 V
0862970	0 ... 800	1000	4 ... 20 mA
0862980	0 ... 800	1000	0 ... 10 V

* Plug not included. Please see below.
** Other measurement ranges on request.

Electrical connection M 12 x 1



Signal	4 ... 20 mA	0 ... 10 V	Frequency*
+ UB	1	1	
GND	-	3	
Signal	4	4	

* Frequency output available on request.

Options selector

0862★★0

Measuring range relative pressure	Code
0 to 10 bar	1
0 to 25 bar	3
0 to 100 bar	4
0 to 250 bar	6
0 to 400 bar	7
0 to 800 bar	9

Output signal	Code
4 to 20 mA	7
0 to 10 V	8

Hysteresis:
< 0,15%

Temperature sensitivity (zero point):
Zero point < ± 0,4% FS/10K
Range < ± 0,2% FS/10K

Materials

Housing: stainless steel 1.4571/1.4542
Sensor: stainless steel membrane 1.4542

33 D Series

Electronic pressure switches (pneumatic/allfluid)

-1 to 630 bar

Display of system pressure and unit (pressure unit programmable)

Compact and robust design

Easy programming of set points and additional functions

Transistor output signals 1 x PNP/2 x PNP/1 x PNP + 4 to 20 mA

Electronic lock

Switching status indicated by LED

Standard M12x1 electrical connection (IP 65)

For pneumatic, all fluid and hydraulic applications

Technical data

Medium:
Filtered compressed air, lubricated or unlubricated, neutral gases

Display:
LCD 4 digits illuminated, pressure unit programmable for bar, psi, mpa
Customer-specific pressure unit available on request

Mounting position:
Optional

Operating pressure:
-1 to 16 bar (pneumatic)
0 to 630 (hydraulic/allfluid)

Temperature sensitivity (zero point):
0,4% of final value/10 K

Temperature sensitivity (range):
0,4% of final value/10 K

Ambient temperature:
-10°C to 60°C

Fluid temperature:
-10°C to 80°C
Consult our Technical Service for use below +2°C.

Switching point:
Adjustable between 0 and 100% of full scale

Reset point:
Adjustable between 0 and 100% of full scale:

Electrical connection:
M12 x 1

Linearity:
< 0,2% of final value ±1 digit

Degree of protection to DIN 40 050:
IP 65 (with mounted plug)

Materials

Housing: aluminium/stainless steel
Seal: viton O-ring (FKM)
Sensor elements:
pneumatic: silicium
hydraulic/allfluid: stainless steel 1.4571 (0 to 250 bar versions), stainless steel 1.4542 (400 to 630 bar versions)
NPT versions with integrated damping element

Electrical connection M12 x 1 (standard pneumatic models)*

Port size	Measuring range (bar)** (Relative pressure)	Value max. (bar) (Over pressure)	Output signal	Model
G1/4	-1 ... 1	10	1 x PNP	0863012
Flange	-1 ... 1	10	1 x PNP	0863016
G1/4	-1 ... 1	10	2 x PNP	0863022
Flange	-1 ... 1	10	2 x PNP	0863026
G1/4	-1 ... 1	10	1 x PNP / 4...20 mA	0863042
Flange	-1 ... 1	10	1 x PNP / 4...20 mA	0863046
G1/4	0 ... 16	30	1 x PNP	0863212
Flange	0 ... 16	30	1 x PNP	0863216
G1/4	0 ... 16	30	2 x PNP	0863222
Flange	0 ... 16	30	2 x PNP	0863226
G1/4	0 ... 16	30	1 x PNP / 4...20 mA	0863242
Flange	0 ... 16	30	1 x PNP / 4...20 mA	0863246

* M12 x 1 connector not included. Please see table on next page.

Options selector

0863★★★

Pressure range (pneumatic)	Substitute
-1 ... 1 bar	0
0 ... 16 bar	2

Pressure range (allfluid)*	Substitute
0 ... 10 bar	1
0 ... 40 bar	3
0 ... 100 bar	4
0 ... 160 bar	5
0 ... 250 bar	6
0 ... 400 bar	7
0 ... 630 bar	8

* In the case of pressure peaks, please use NPT version (with damping) or external reducer 0550083

Fluid/electrical connection	Substitute
G¼/M12 x 1	2
¼ NPT/M12 x 1	4
Flange/M12 x 1	6

Output signal	Substitute
1 digital out	1
2 digital out	2
1 digital out/4 ... 20 mA	4

33 D Series

Electronic pressure switches (pneumatic/allfluid)

-1 to 630 bar

Electrical parameters

Electrical connection:	M12 x 1
Power supply:	10 ... 32 V d.c. (polarity safe) digital models 15 ... 32 V d.c. (polarity safe) analogue models
Permissible residual ripple:	10% (within 12 to 32 V)
Current consumption:	<50 mA (plus load current)

Electromagnetic compatibility

Interference emission	Conforming to EN 50081. Part 1
Interference immunity	Conforming to EN 50082. Part 2

Electrical connection M12 x 1

Pin	Signal	Cable
1	Supply voltage	Brown
2	Out 2 (PNP) / analog 4 ... 20 mA	White
3	0 V	Blue
4	Out 1 (PNP)	Black
5	Free	Grey

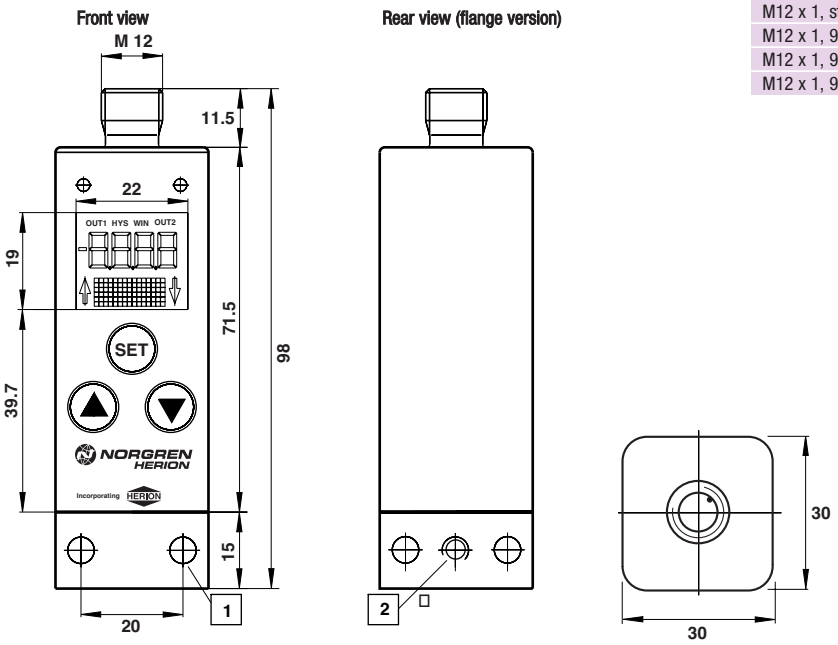
Switching output

Switching mode:	Potential-bound open collector switching to UB, suitable for inductive load
Output voltage:	Supply voltage -1,5 V
Analog output:	4 ... 20mA
Contact rating:	Imax = 500 mA (short-circuit proof)
Switching time:	< 10 ms
Damping:	5 ms ... 0,64 sec
Signal delay:	On/off 0 ... 20 sec
Service life:	min. 100 million switching cycles
Switching logic:	n.o. / n.c. programmable
Operating mode:	Standard, hysteresis and window mode Separately selectable for each output

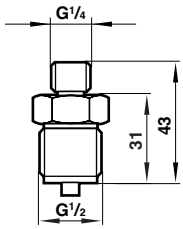
Accessories

Plugs

Description	Model
M12 x 1, straight without cable	0523055
M12 x 1, straight 2 m cable, 4-core	0523057
M12 x 1, straight 5 m cable, 4-core	0523052
M12 x 1, 90° without cable	0523056
M12 x 1, 90° 2 m cable, 4-core	0523058
M12 x 1, 90° 5 m cable, 4-core	0523053



Reducer G1/2 to G1/4, external thread – 0550083

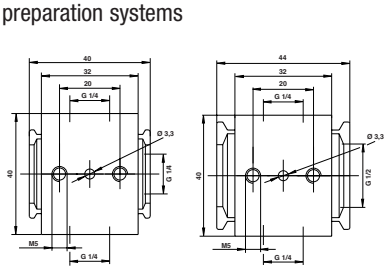


* Suitable for M 5 x 35 screws

** Flange diameter 8 x 1,2 deep, O-ring 4,47 x 1,78 (Viton 90)

Porting blocks

Adaptor for use with Excelon 72, 73, 74 air preparation systems



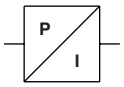
Excelon 72 0523109 Excelon 73 & 74 0523110

18 S

Pressure sensor analog

-1 to 25 bar

Temperature compensated
Vacuum and overpressure
Robust design for pneumatic and industrial applications
Electronic pressure sensors are components which are usually positioned next to the point of measurement. The fluidic signal is converted into a standard pressure proportional analogue output signal of 4 to 20 mA by means of a piezo-resistant sensor and an electronic circuit, which amplifies, linearises and temperature compensates the signal



Technical data

Medium:
Filtered compressed air, lubricated or unlubricated, neutral gases

Mounting:
Optional

Operating pressure:
-1 to 25 bar

Fluid temperature:
-10°C to +85°C

Ambient temperature:
-10°C to +85°C
Consult our Technical Service for use below +2°C.

Degree of protection:
IP 65

Electrical connection:
DIN 43 650 or M12 x 1 short-circuit protected

Output signal:
4 to 20 mA (Two-wire technology)

Linearity:
< ±0,5% final value

Hysteresis:
< 0,15%

Temperature sensitivity (zero point):
Zero point < ± 0,4% FS/10K
Range < ± 0,2% FS/10K

Weight:
0,15 kg

Materials

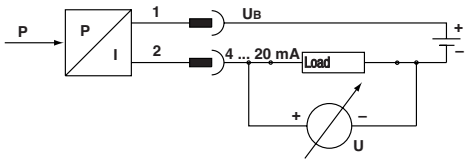
Housing: aluminium
Sensor: Silicium
O-rings: NBR

Port size	Measuring range (bar) (Relative pressure)	Value max. (bar) (Over pressure)	Model DIN 43650	Model M12x1*
G 1/4	-1 ... 1	10	0862081	0862082
Flange	-1 ... 1	10	0862085	0862086
G 1/4	0...10	30	0862181	0862182
Flange	0...10	30	0862185	0862186
G 1/4	0...25	40	0862381	0862382
Flange	0...25	40	0862385	0862386

* M12 x 1 connector not included. Please see table below.

Electrical connection

DIN 43650		M12 x 1	
Pin	Wiring	Pin	Wiring
1	+ UB	1	+ UB
2	Signal 4 ... 20 mA	4	Signal 4 ... 20 mA

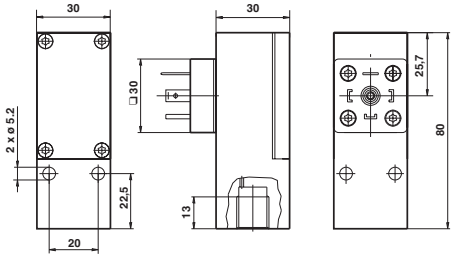


Accessories

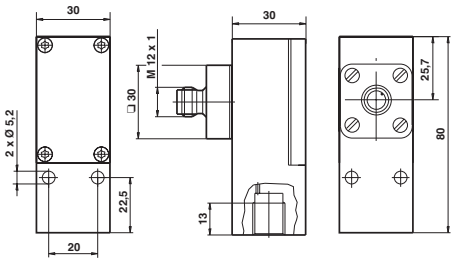
Plugs

Model	Description
0523055	Straight, without cable
0523057	Straight, 2 m cable, 4-core
0523052	Straight, 5 m cable, 4-core
0523056	90° 1,5 m cable, 4-core
0523058	90° 2 m cable, 4-core
0523053	90° 5 m cable, 4-core

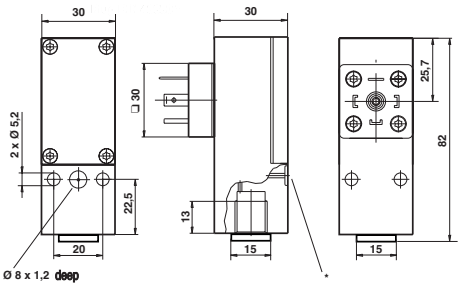
DIN 43650
G¼



M12 x 1
G¼

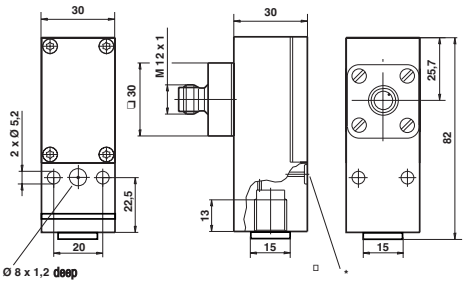


Flange



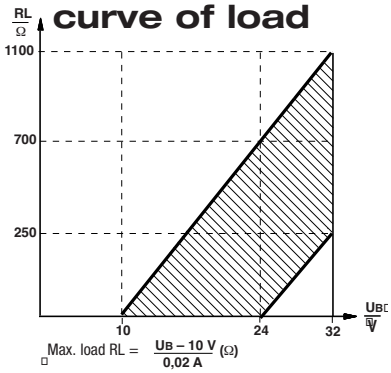
* O-ring 5 x 1,5

Flange



* O-ring 5 x 1,5

Characteristic curve of load



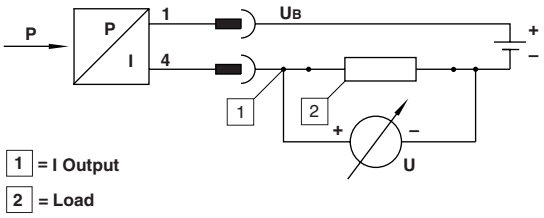
Max. load RL = $\frac{U_B - 10\ V}{0{,}02\ A}$ (Ω)

18 S

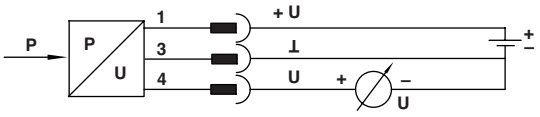
Pressure sensor analog

-1 to 25 bar

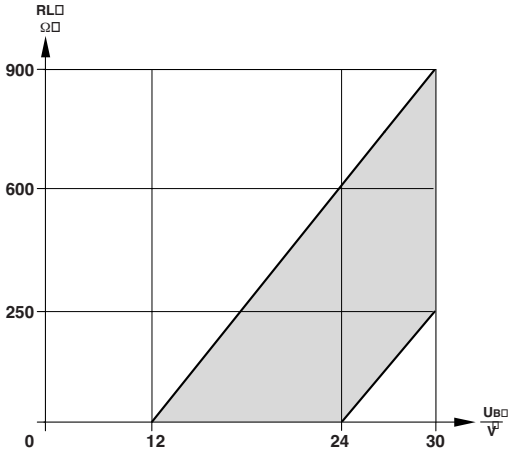
Electrical diagram for 2-wire versions 4 to 20 mA



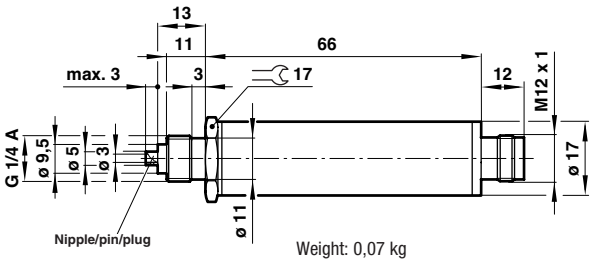
Electrical diagram for 3-wire versions 0 to 10 V



Characteristic load curve



Max. load RL = $\frac{U_B - 12\ V}{0.02\ A}$ (Ω)

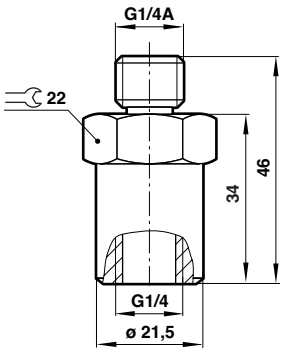


Weight: 0,07 kg

Accessories

Plug connector, M12 x 1, straight		Plug connector, M12 x 1, 90°		Surge damper (brass/steel)
				
0523055	Straight, without cable	0523056	90° 1,5 m cable, 4-core	0574773
0523057	Straight, 2 m cable, 4-core	0523058	90° 2 m cable, 4-core	
0523052	Straight, 5 m cable, 4-core	0523053	90° 5 m cable, 4-core	

Surge damper
0574773
(Brass/steel)



40D Series
Vacuum and pressure sensor

Electronic pressure switch/-sensor for positive pressure and vacuum control

-1 to 10 bar relative pressure

Space saving design
Easy programming of set points
Design with display
Special functions selectable
Analogue (1 to 5V) and digital outputs, as NO/NC programmable
Revolving display

Technical data

Medium:
For non aggressive gases and dry non lubricated compressed air

Fluid connection:
M5 female and G1/8 male

Mounting position:
Optional

Pressure range:
-1 to 0 bar/0 to 10 bar

Fluid temperature:
0°C to +50°C

Ambient temperature:
0°C to +50°C
Consult our Technical Service for use below +2°C.

Display:
7-segments-display 3 digits

Switching indication:
LED red – out 1
LED green – out 2

Power consumption:
⩽ 35 mA

Contact rating:
Imax = 250 mA

Degree of protection:
IP65 (DIN 40050)

Shock protection:
10G, XYZ

Vibration protection:
10 to 55 Hz, 1.5 mm, XYZ, 2h

Supply voltage:
UB = 10,8 to 30 VDC
max. 10% residual ripple within UB

Switching time:
< 2,5 ms

Output signal:
Digital: UB minus 1,5 V
Analogue: 1 to 5 V

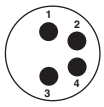
Out-/off switching delay:
Programmable 0 to 180 s

Electrical connection:
M 8 x 1 / 4 pins

Standard versions (electrical connection M8 x 1)

	Pressure range (bar)	Display	Output signal
0862440	-1 ... 0 bar	–	1 x PNP/analogue 1 ... 5 V
0862441	-1 ... 0 bar	●	2 x PNP
0862442	0 ... 10 bar	●	2 x PNP

Electrical connection M 8 x 1



PIN	Cable	Signal
1	Brown	+ UB
2	White	PNP 2/analogue 1 to 5V
3	Blue	0 V
4	Black	PNP 1

Options selector

08624★

Pressure range/output signal	Code
-1 to 0 bar/1xPNP/analogue 1 to 5 V	0
-1 to 0 bar/2xPNP	1
0 to 10 bar/2xPNP	2

Electromagnetic compatibility:
Interference immunity acc. to EN 50081. Part 1
Interference immunity acc. to EN 50082. Part 2

Linearity:
< 1% final value

Repeatability:
± 0,2 % final value

Materials

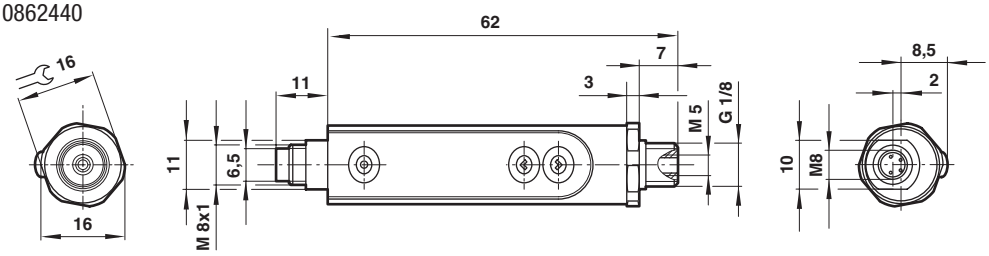
Housing: plastic ABS – PC
Fluid connection: brass tin plated

40D Series
Vacuum and pressure sensor

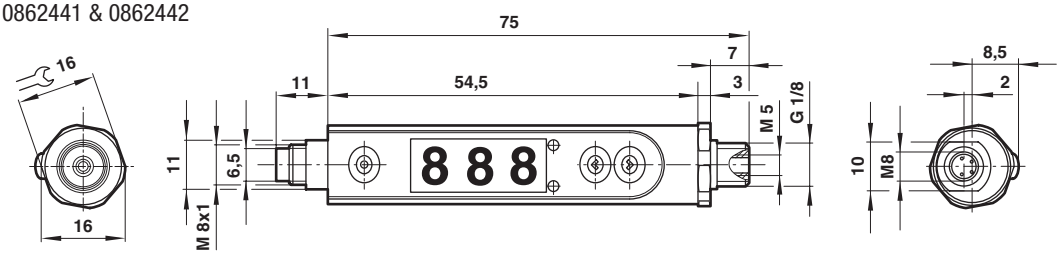
Electronic pressure switch/-sensor for positive pressure and vacuum control

-1 to 10 bar relative pressure

0862440



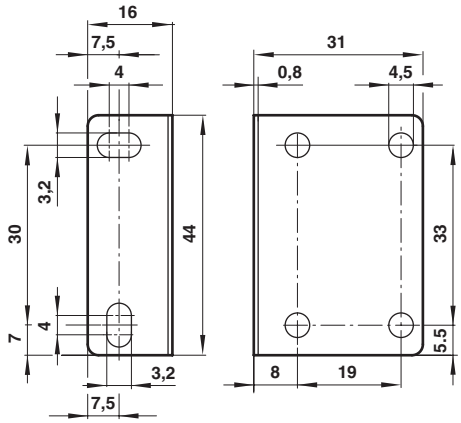
0862441 & 0862442



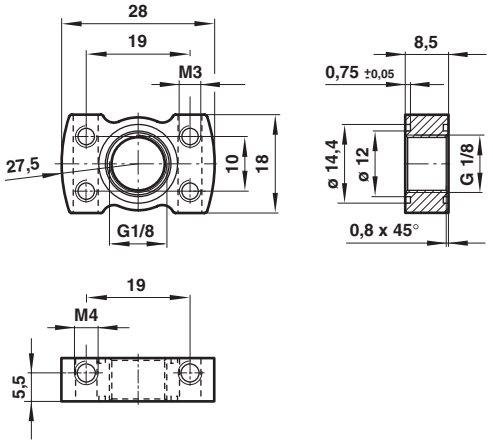
Accessories

Plug connector, M8 x 1, straight		Plug connector, M8 x 1, 90°		Mounting bracket including adaptor flange	
					
0523449	Straight, 4 pin, with 1,5 m PUR-cable	0523446	90°, 4 pin, with 1,5 m PUR-cable	0523426	Including adaptor flange, mounting screws and O-rings
0523447	Straight, 4 pin, with 5,0 m PUR-cable	0523448	90°, 4 pin, with 5,0 m PUR-cable		

Mounting bracket

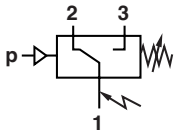


Adapter flange



Additional ranges

11 D Series



Low pressure, -0,2 to +0,25 bar
High accuracy (deviation < 1%)
Long life
Especially suited for gas
DVGW-approved

Technical data

Medium:
For air, water, hydraulic oil, lubricants, light fuel oil, gaseous and liquid fluids
Viscosity:
Up to 1000 mm^2/s
Repeatability:
± 1%
Mounting position:
Optional
Ambient temperature:
-10 to + 60 °C
Fluid temperature:
0 to + 60 °C
Consult our Technical Service for use below +2°C.
Switching element:
Microswitch with gold plated contacts with electrical connection DIN 43650
Microswitch with silver plated contacts with electrical connection Pg 13.5
Temperature at switching element:
Max. + 60 °C
Degree of protection:
IP 65
Vibration:
Should be avoided (1 g max.)

Materials

Housing: aluminium
Seals: Perbunan

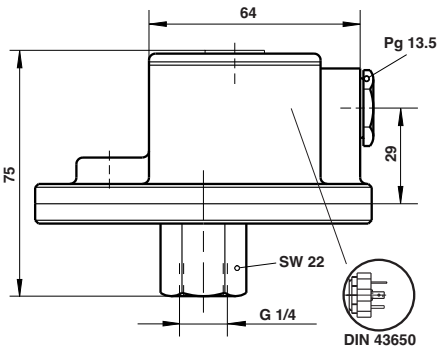
Electrical connector Pg 13,5 (silver plated)

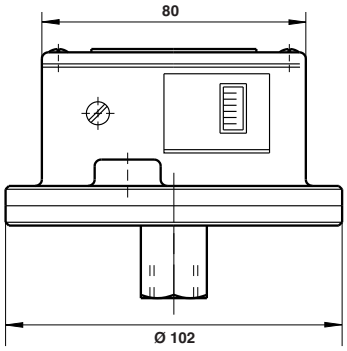
Port size	Pressure range (bar) ρvu ... ρvo*	Switching pressure difference (bar)	Max. pressure (bar)	Switching cycles (min.)	Model	kg
G1/4	-0,2 ... +0,2	0,006 ... 0,009	6	10	0823003	0,5
G1/4	0 ... +0,02	0,0008 ... 0,0009	6*	10	0823100	0,5
G1/4	0,002 ... +0,25	0,009 ... 0,009	6*	10	0823000	0,5

Electrical connector DIN 43650 (gold plated)

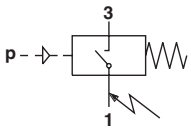
Port size	Pressure range (bar) ρvu ... ρvo*	Switching pressure difference (bar)	Max. pressure (bar)	Switching cycles (min.)	Model	kg
G1/4	-0,2 ... +0,2	0,006 ... 0,009	6	10	0823006	0,5
G1/4	0 ... +0,02	0,0008 ... 0,0009	6*	10	0823101	0,5
G1/4	0,002 ... +0,25	0,009 ... 0,009	6*	10	0823001	0,5

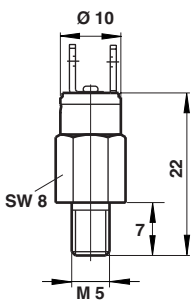
* Ref. pressure = atmospheric pressure
** Even short pressure peaks must not exceed this value during actual operation (max. value = max. testing pressure). The limiting value corresponds to the max. test pressure





Mini pressure switches





Very small construction
Screw-in type
AMP E-terminals 2,8 x 0,8

Technical data

Medium:
Lubricated air, oil and other neutral lubricated fluids
Mounting position:
Optional
Ambient temperature:
-10 to + 60 °C
Fluid temperature:
0 to + 80 °C
Consult our Technical Service for use below +2°C.
Switching element:
Switch without step
Degree of protection:
IP 00
Vibration:
Max. 4 g (sinusoidal)

Materials

Housing: steel
Seal: plastic piston

Port size	Pressure range (bar)	Contact range ρvu	ρvo	Max. pressure (bar)	Switching cycles (min.)	Model	kg
M 5	0 ... 10	1,5 ... 2,5	2,0 ... 3,5	20	20	9950501	0,004
M 5	0 ... 10	2,5 ... 3,7	3,0 ... 5	20	20	9950502	0,004

Product selector table 402
Olympian exploded view 405
Olympian Plus plug-in modular units:
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- 'Puraire®' oil removal filters 410
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Port size Maximum flow (dm^3/s)		G1/8 14,7	G1/4 38	G3/8 98	G1/2 120	G3/4 230	G1 230	G1¼ 230	G1½ 230/1000	G2 10008
 **Boxed sets**	Olympian				406		406			
	Excelon		430	430	430					
 **Filter-regulator/ lubricators**	Olympian		406	406	406	406	406	406	406	
	Excelon		430	430	430	430				
	Ported	456	456							
 **Filter/lubricators**	Olympian		406	406	406	406	406	406	406	
	Excelon		430	430	430	430				
	Ported	456	456							
 **Filter/regulators**	Olympian		416	416	416	416	416	416	416	
	Excelon		438	438	438	438				
	Ported	462								
 **Filters**	Olympian		408	408	408	408	408	408	408	
	Excelon		432	432	432	432				
	Ported	458	458			458	458		458	458
 **'Puraire®' oil removal filters**	Olympian		410	410	410	410	410			
	Excelon		434	434	434	434				
	Ported	460	460						460	460
 **'Ultraire®' oil vapour removal filters**	Olympian		412	412	412	412	412			
	Excelon		436	436	436	436				
 **Vacuum filters**	Olympian							488	488	
	Excelon		488	488	488					
	Ported					488	488			
 **Lubricators**	Olympian		420	420	420	420	420	420	420	
	Excelon		442	442	442	442				
	Ported	468	468			468	468			468
 **Pressure regulators**	Olympian		418	418	418	418	418	418	418	
	Excelon		440	440	440	440				
	Ported	464	464		464	464	464			
			474			474	474		474	474
			478	478	478	478	478	478		

Port size Maximum flow (dm^3/s)		G1/8 14,7	G1/4 38	G3/8 98	G1/2 120	G3/4 230	G1 230	G1¼ 230	G1½ 230/1000	G2 1000	1/2 PTF 57	1/4 PTF 8
Pre-set regulators	Ported		487									
Precision regulators	Ported		474 476									474
Relief valves	Olympian		422	422	422	422	422	422				
	Excelon		444	444	444	444						
	Ported	470	470			470	470					
Soft start/ dump valves	Olympian		424	424	424	424	424	424	424			
	Excelon		446	446	446	446						
Stainless steel units	Ported										482 484	480 482
Water regulators	Ported	487	487	487	487							
Drip leg drains	Ported				488							
Membrane driers	Excelon		448		448							
	Ported		448									
Smart FRL	Olympian				450							
	Excelon				450							
Control valves	Excelon		453	453	453	453						
Shut-off valves	Olympian		427	427	427	427	427	427	427			
	Excelon		453	453	453	453						

Flow figures under the following conditions:
Filters & lubricators: P1 = 6,3 bar; pressure drop = 0,5 bar. Pressure regulators & filter-regulators: P1 = 10 bar; P2 = 6,3 bar; 1 bar droop from set

e-pneumatics just gets easier!

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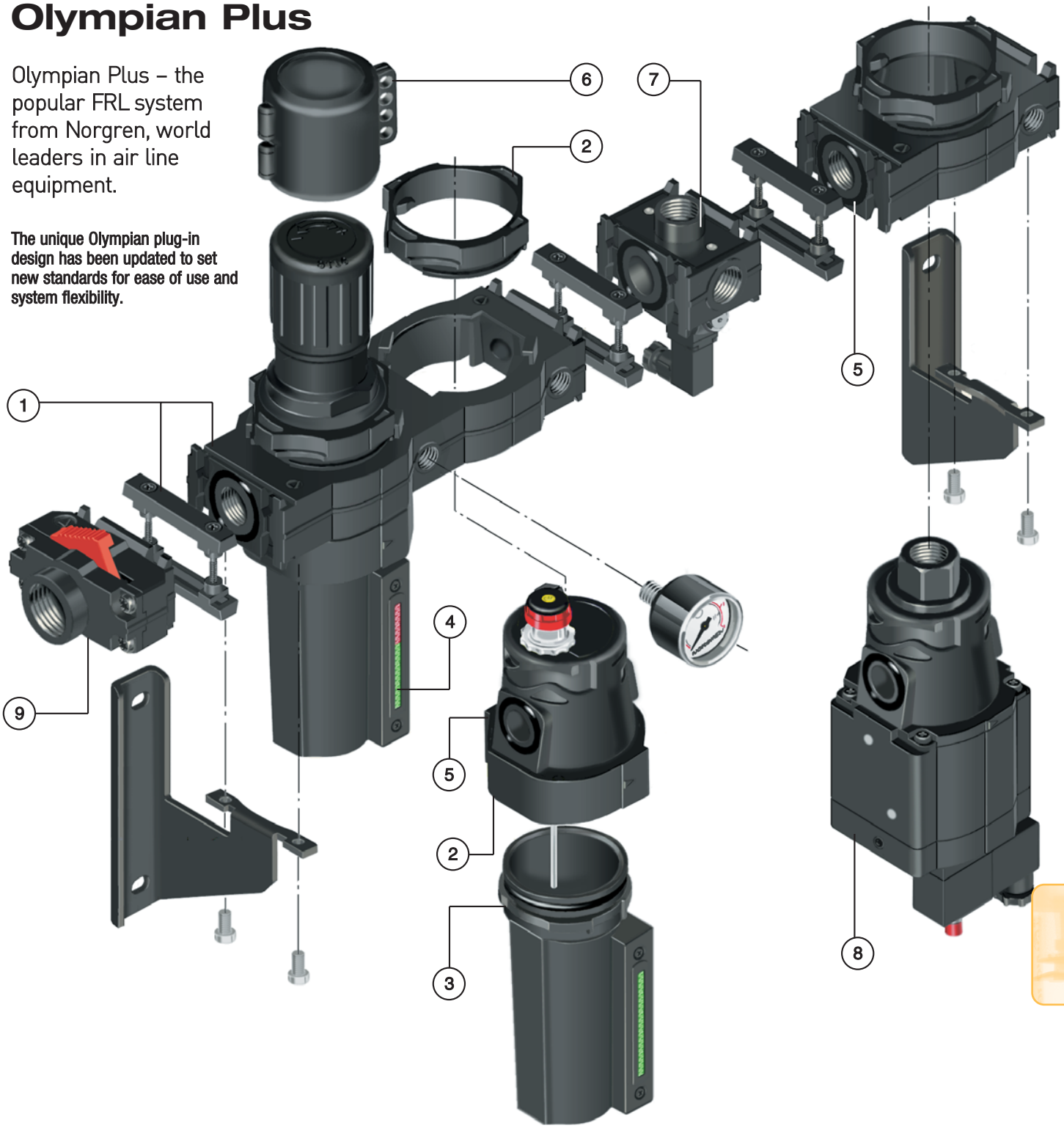
- On-line product selector and configurator
- Downloadable technical data sheets
- Downloadable 2D and 3D CAD files with on-line viewing and selectable file formats
- Real time price and availability information
- On-line technical support with 24 hour access to Norgren engineers
- Direct link to Norgren press and media area

Visit and register today at www.norgren.com

Olympian Plus

Olympian Plus – the popular FRL system from Norgren, world leaders in air line equipment.

The unique Olympian plug-in design has been updated to set new standards for ease of use and system flexibility.



1. **QUICK CONNECT YOKE SYSTEM**
   Simple, speedy assembly of accessories and combination units.
2. **PLUG IN UNITS**
   Rapid installation and maintenance. Quarter turn clamp ring graphite impregnated for easy operation. Detent action prevents removal under pressure.
3. **BAYONET BOWLS**
   Easy removal for routine maintenance. Detent action prevents removal under pressure.
4. **UNIQUE PRISMATIC SIGHT GLASS**
   High visibility of liquid level. Colour change service indication on filters and filter regulators.
5. **CAPTIVE 'O' RINGS**
   Easy to assemble with no loose parts.
6. **TAMPER RESISTANT COVER**
   Simple accessory to prevent unauthorised adjustment of regulated pressure.
7. **PORTING BLOCK MOUNTED PRESSURE SWITCH**
   Adjustable pressure switch for feedback to monitoring systems.
8. **SOFT START/DUMP VALVE**
   Provides controlled increase in pressure on system start-up. High exhaust flow capacity.
9. **3/2 SHUT OFF VALVE**
   Slide valve with lockable blade. Threaded exhaust port.

Olympian Plus plug-in system

Boxed sets and combination units

Filter/regulators and lubricators

G¼ to G1½

Complete air processing units pre-assembled, ready to install

Boxed sets include: filter/regulator and micro-fog lubricator complete with exhausting shut-off valve, pressure gauge and mounting brackets

Filter-regulator and micro-fog lubricator combinations

Filter and micro-fog lubricator combinations

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar

Ambient temperature:
-20°C to +80°C
Consult our Technical Service for use below +2°C

Materials

BL64 & FL64 models:
Body and yoke: zinc alloy
Bowl: aluminium
Element: sintered plastic
Elastomers: synthetic rubber

T8H, M8H & M8C models:
Body & bowl: aluminium
Filter element: sintered bronze or plastic
Elastomers: synthetic rubber

Alternative models

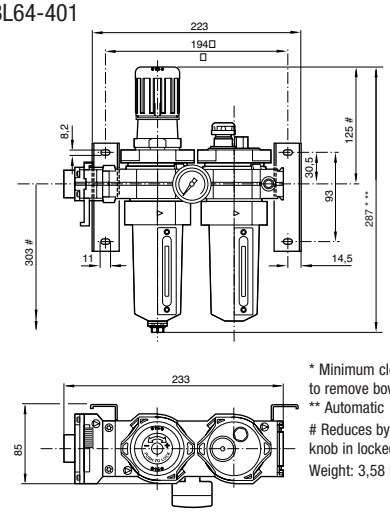
Manual drains and oil-fog lubricators also available.
Contact our Technical Service. For combinations not listed quote individual part numbers for basic units and yokes, see Olympian Accessories page 426

		Port size	Element (µm)	Bowls	Pressure range (bar)*	kg	Operation	Model Auto	Manual
Boxed sets		G1/2	40	Metal	0,3 ... 10	4,15	Relieving	BL64-401	BL64-421
		G1	40	Metal	0,4 ... 8	5,99	Relieving	BL68-801	BL68-821
Filter/regulator & lubricator combinations		G1/4	40	Metal	0,3 ... 10	3,19	Relieving	BL64-208	BL64-228
		G3/8	40	Metal	0,3 ... 10	3,19	Relieving	BL64-308	BL64-328
		G1/2	40	Metal	0,3 ... 10	2,73	Relieving	BL64-408	BL64-428
		G3/4	40	Metal	0,3 ... 10	3,56	Relieving	BL64-608	BL64-628
		G3/4	40	Metal	0,4 ... 8	4,94	Relieving	BL68-608	BL68-628
		G1	40	Metal	0,4 ... 8	5,26	Relieving	BL68-808	BL68-828
		G1¼	40	Metal	0,4 ... 8	6,50	Relieving	BL68-A08	BL68-A28
		G1½	40	Metal	0,4 ... 8	6,05	Relieving	BL68-B08	BL68-B28
Filter & lubricator combination		G1/4	40	Metal		2,50		FL64-208	FL64-228
		G3/8	40	Metal		2,52		FL64-308	FL64-328
		G1/2	40	Metal		2,43		FL64-408	FL64-428
		G3/4	40	Metal		2,91		FL64-608	FL64-628
		G3/4	40	Metal		3,90		FL68-608	FL68-628
		G1	40	Metal		3,90		FL68-808	FL68-828
		G1¼	40	Metal		4,05		FL68-A08	FL68-A28
		G1½	40	Metal		4,05		FL68-B08	FL68-B28

* Can be adjusted to zero bar outlet pressure and generally to pressures in excess of those specified. For service kit numbers refer to individual units.

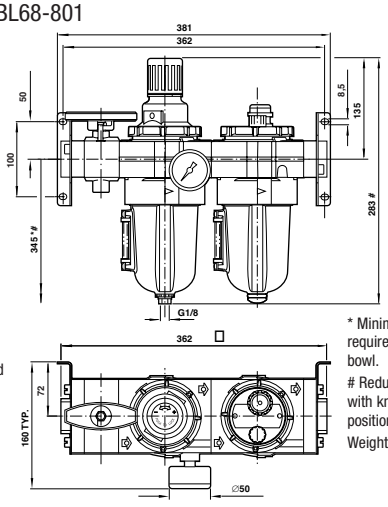
Boxed sets

BL64-401



* Minimum clearance required to remove bowl.
** Automatic
# Reduces by 4 mm with knob in locked position.
Weight: 3,58 kgm

BL68-801



* Minimum clearance required to remove bowl.
# Reduces by 4 mm with knob in locked position.
Weight: 6,69 kg

See also our Olympian Plus duplex system specifically designed for use in process plant and on main machinery installations and other equipment in continuous use where not even the shortest interruption of services is permissible – see page 427

Olympian Plus plug-in system

Boxed sets and combination units

Filter/regulators and lubricators

G¼ to G1½

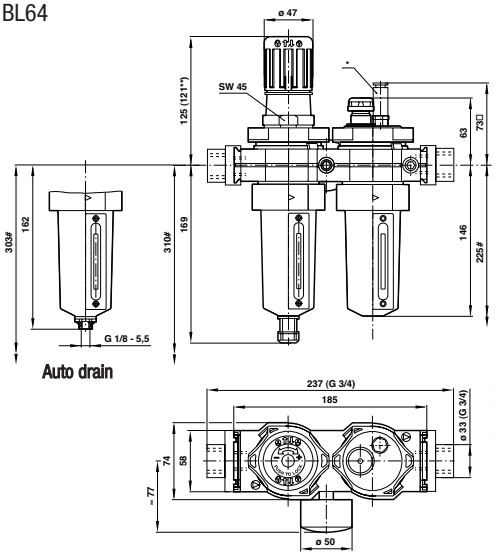
Accessories

Series	Port size	Bracket kit	Bracket kit	Gauge 0 ... 10 bar*	3/2 Shut-off valve	Tamper resistant kit	Quick fill nipple	Tamper resistant wire
								
BL64-401	G½	–	●	●	●	4355-50	18-011-024	2117-01
BL68-801	G1	●	–	●	●	4355-50	18-011-021	2117-01
BL64-208, FL64-208	G¼		74504-50	18-013-013	T64T-2GB-P1N	4355-50	18-011-024	2117-01
BL64-308, FL64-308	G⅜		74504-50	18-013-013	T64T-3GB-P1N	4355-50	18-011-024	2117-01
BL64-408, FL64-408	G½		74504-50	18-013-013	T64T-4GB-P1N	4355-50	18-011-024	2117-01
BL64-608, FL64-608	G¾		74504-50	18-013-013	T64T-6GB-P1N	4355-50	18-011-024	2117-01
BL68-608, FL68-608	G3/4	18-001-979	18-013-013	T68C-6GB-B2N	4355-50	18-011-021	2117-01	
BL68-808, FL68-808	G1	18-001-979	18-013-013	T68C-8GB-B2N	4355-50	18-011-021	2117-01	
BL68-A08, FL68-A08	G1¼	18-001-978	18-013-013	T68C-AGB-B2N	4355-50	18-011-021	2117-01	
BL68-B08, FL68-B08	G1½		18-013-013	T68C-BGB-B2N	4355-50	18-011-021	2117-01	

* Other pressure ranges available – see page 486 ● Included.

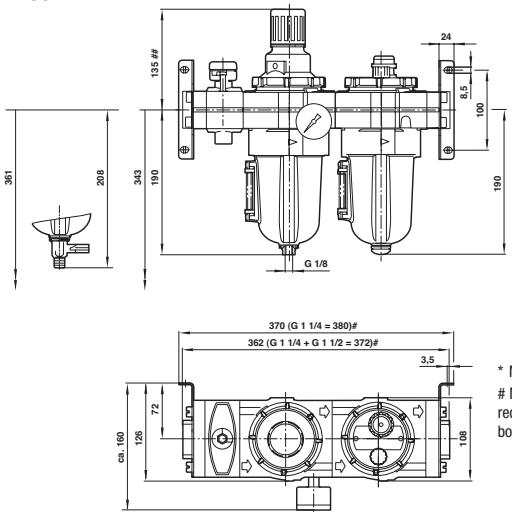
Filter/regulator & lubricator combinations

BL64



* Optional quick fill connector
** Knob in locked position
# Minimum clearance required to remove bowl.

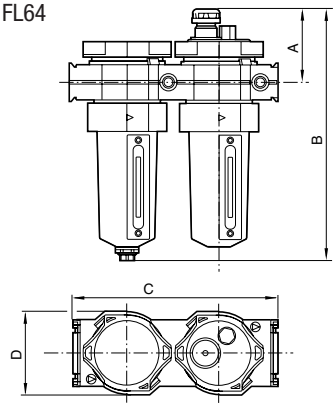
BL68



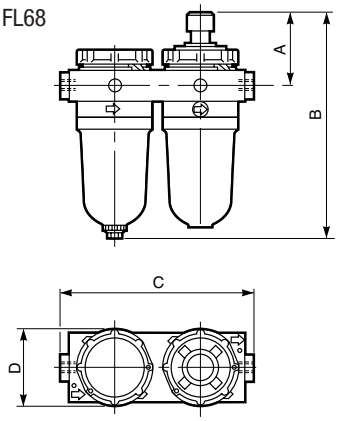
* Manual drain
# Minimum clearance required to remove bowl.

Filter/lubricator combinations

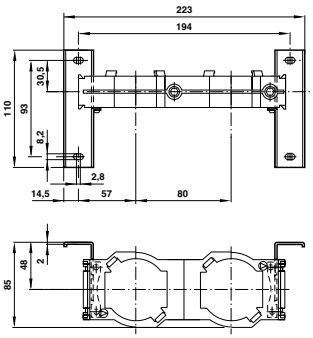
FL64



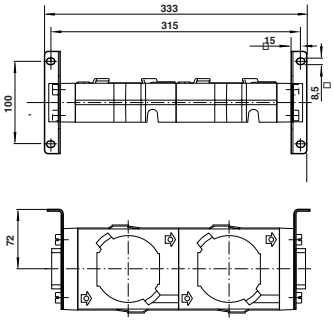
FL68



BL64 & FL64 Bracket mounting



BL68 & FL68 Bracket mounting

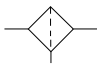


Series	Port size	A	B	C	D	kg
FL64	G1/4, G3/8, G1/2	63	227	233	74	2,99
	G3/4	63	227	262	74	2,99
FL68	G3/4, G1	75	263	315	112	4,6
	G1¼, G1½	75	263	325	112	4,6

Olympian Plus plug-in system

F64G, F68G General purpose filters

G¼ to G1½



F64G

F68G

Effective liquid removal and positive solid filtration

Large filter element area for minimum pressure drop

Standard options include element service indicator, manual drains and alternative filter elements

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar (metal bowl

Ambient temperature:
-20°C to +80°C metal bowls.
Consult our Technical Service for use below +2°C

Materials

F64G series:
Body: zinc alloy
Bowl: aluminium
Yoke: aluminium
Filter element: sintered plastic
Elastomers: synthetic rubber

F68G series:
Body & bowl: aluminium
Yoke: aluminium
Filter element: sintered bronze or plastic
Elastomers: synthetic rubber

Port size	Flow (dm^3/s)	kg	Model Auto	Manual	Service kit Auto	Manual	Element (40 µm)
G1/4	33	1,42	F64G-2GN-AD3	F64G-2GN-MD3	4380-200	4380-200	4338-02
G3/8	66	1,42	F64G-3GN-AD3	F64G-3GN-MD3	4380-200	4380-200	4338-02
G1/2	75	1,32	F64G-4GN-AD3	F64G-4GN-MD3	4380-200	4380-200	4338-02
G3/4	75	1,72	F64G-6GN-AD3	F64G-6GN-MD3	4380-200	4380-200	4338-02
G3/4	160	2,45	F68G-6GN-AR3	F68G-6GN-MR3	4380-300	4380-300	5576-99
G1	190	2,33	F68G-8GN-AR3	F68G-8GN-MR3	4380-300	4380-300	5576-99
G1¼	200	2,43	F68G-AGN-AR3	F68G-AGN-MR3	4380-300	4380-300	5576-99
G1½	200	2,30	F68G-BGN-AR3	F68G-BGN-MR3	4380-300	4380-300	5576-99

Models listed include ISO G threads, automatic drain, metal bowl, 40 µm element. Models do not include the service life indicator.
* Typical flow with a 40 µm element at 6,3 bar inlet pressure and a 0,5 bar pressure drop.
For replacement filter (without yoke) substitute 'N' at the 5th and 6th digits eg: F64G-**NN**N-AD3 (F64).
For replacement filter (without yoke) substitute 'N' at the 5th and 6th digits eg: F68G-**NN**N-AR3 (F68).

Options selector

F64G-★★★-★★★

Port size	Substitute
1/4	2
3/8	3
1/2	4
3/4	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Service life indicator	Substitute
Mechanical	D
Electrical	E
Without	N

Element	Substitute
5 µm	1
25 µm	2
40 µm	3

Bowl	Substitute
Metal with liquid level indicator	D
Transparent with guard	P
Closed bowl*	E

Drain	Substitute
Manual	M
Auto drain	A

F68G-★★★-★★★

Port size	Substitute
3/4	6
1	8
1¼	A
1½	B

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Service life indicator	Substitute
Mechanical	D
Electrical	E
Without	N

Element	Substitute
5 µm	1
25 µm	2
40 µm	3

Bowl	Substitute
1 l without liquid level indicator	C
0,5 l without liquid level indicator	M
0,5 l with liquid level indicator	R
1 l with liquid level indicator	U

Drain	Substitute
Manual	M
Auto drain	A
Closed bowl *	E

* For vacuum use.

Olympian Plus plug-in system

F64G, F68G General purpose filters

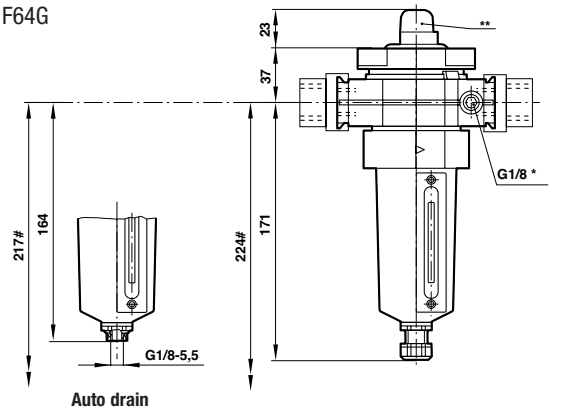
G¼ to G1½

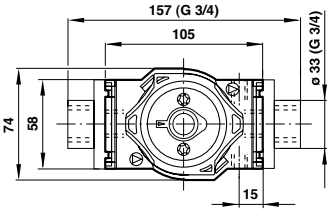
Accessories

Series	Port size	Bracket kit	Bracket kit	3/2 Shut-off valve	Service life indicator (visual) *	Service life indicator (electrical)
						
F64G	G1/4	–	74504-50	T64T-2GB-P1N	5797-50	5800-51
	G3/8	–	74504-50	T64T-3GB-P1N	5797-50	5800-51
	G1/2	–	74504-50	T64T-4GB-P1N	5797-50	5800-51
	G3/4	–	74504-50	T64T-6GB-P1N	5797-50	5800-51
F68G	G3/4	18-001-979	–	T68C-6GB-B2N	5797-50	4020-51R
	G1	18-001-979	–	T68C-8GB-B2N	5797-50	4020-51R
	G1¼	18-001-978	–	T68C-AGB-B2N	5797-50	4020-51R
	G1½	–	–	T68C-BGB-B2N	5797-50	4020-51R

* Field relpacement: cannot be retro-fitted to a standard filter

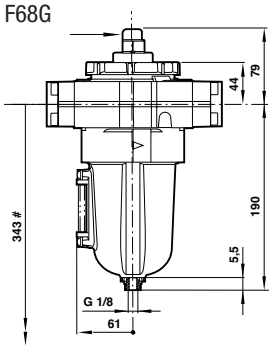
F64G

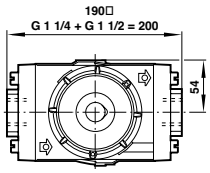




* Gauge port Rc1/8
** Optional service indicator
# Minimum clearance required to remove bowl.

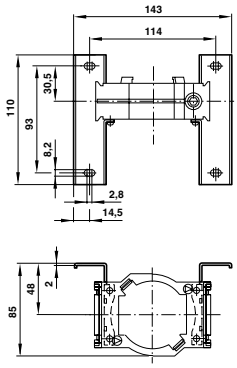
F68G



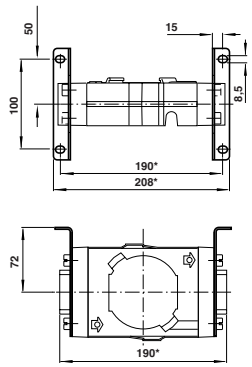


Minimum clearance required to remove bowl.
** Optional service indicator
* Manual drain
*** For 1¼" and 1½" ported yokes add 10 mm

Bracket mounting (F64G)



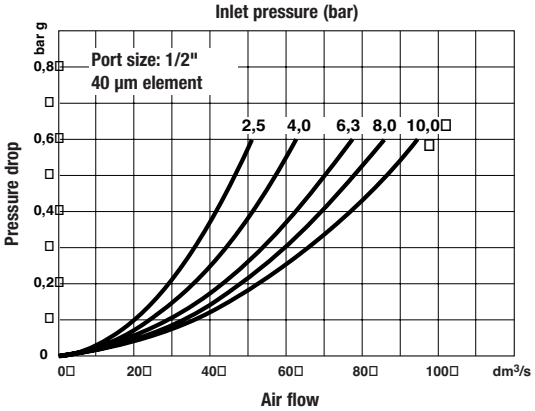
Bracket mounting (F68G)



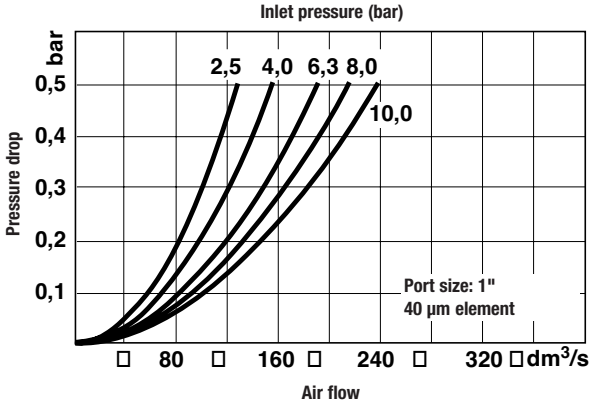
*Add 10 mm for 1¼ and 1½" models

Flow characteristics

F64G



F68G



Olympian Plus plug-in system

F64C/F64H, F68C/F68H 'Puraire'® high efficiency oil removal filters

G¼ to G1

High efficiency coalescing filters

Coalescing element removes sub-micron particles and converts oil and water mist to liquid form to drain away

Service indicator standard

F64H

F68C

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar (metal bowl)

Air quality output:
Air quality to ISO 8573-1 : Class 1.7.2.

Remaining oil content:
0,01 mg/m³ maximum at +21°C

Particle removal:
0,01 µm

Ambient temperature:
-20°C to +65°C metal bowls.
Consult our Technical Service for use below +2°C

Materials

F64C/F64H series:
Body: zinc alloy
Bowl: aluminium
Yoke: aluminium
Element: composite
Elastomers: synthetic rubber

F68C/F68H series:
Body & bowl: aluminium
Yoke: aluminium
Filter element: composite
Elastomers: synthetic rubber

Port size	Flow (dm³/s)	kg	Model Auto	Manual	Service kit	Coalescing element only
G1/4	16	1,48	F64C-2GD-AD0	F64C-2GD-MD0	4380-200	4344-01
G3/8	28	1,70	F64H-3GD-AD0	F64H-3GD-MD0	4380-200	4344-02
G1/2	28	1,67	F64H-4GD-AD0	F64H-4GD-MD0	4380-200	4344-02
G1/2	35	2,38	F68C-4GD-AR0	F68C-4GD-MR0	4380-301	5351-98
G3/4	28	2,01	F64H-6GD-AD0	F64H-6GD-MD0	4380-200	4344-02
G3/4	35	2,72	F68H-6GD-AU0	F68H-6GD-MU0	4380-301	5351-99
G1	60	2,66	F68H-8GD-AU0	F68H-8GD-MU0	4380-301	5351-99

Models listed include ISO G threads, automatic drain and metal bowl.
Maximum flow with 6,3 bar inlet pressure to maintain stated oil removal performance.
For replacement filter (without yoke or pre-filter) substitute 'N' at the 5th and 6th digits eg: F64H-**NN**D-AD0.
For replacement filter (without yoke) substitute 'N' at the 5th and 6th digits eg: F68H-**NN**D-AU0.
For optimum coalescing element life a pre-filter should be fitted to remove coarse particles, see page 408 for basic filters and page 426 for double yokes.

Options selector

F64★-★★★-★★★

Body type	Substitute
G1/4	C
G3/8, G1/2, G3/4	H

Port size	Substitute
1/4"	2
3/8"	3
1/2"	4
3/4"	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Element	Substitute
Coalescing	0

Bowl	Substitute
Metal with liquid level indicator	D
Transparent with guard	P

Drain	Substitute
Manual	M
Auto drain	A

Service life indicator	Substitute
Mechanical	D
Electrical	E
Without	N

F68★-★★★-★★★

Body type	Substitute
G1/2	C
G3/4, G1	H

Port size	Substitute
3/4"	6
1	8
1¼	A
1½	B

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Element	Substitute
Coalescing	0

Bowl	Substitute
1 l without liquid level indicator	C
0,5 l without liquid level indicator	M*
0,5 l with liquid level indicator	R*
1 l with liquid level indicator	U

*Only available with F68C

Drain	Substitute
Manual	M
Auto drain	A

Service life indicator	Substitute
Mechanical	D
Electrical	E
Without	N

Typical performance characteristics

Inlet pressure (bar)	Maximum flow dm³/s*			
	F64C	F64H	F68C	F68H
1	6,4	11,2	14	24
3	11,0	19,3	24	41
5	14,3	24,9	31	53
6,3	16,0	28,0	35	60
7	16,9	29,5	36	63
9	19,1	33,5	42	72

* Maximum flow to maintain stated oil removal performance

Olympian Plus plug-in system

F64C/F64H, F68C/F68H 'Puraire'® high efficiency oil removal filters

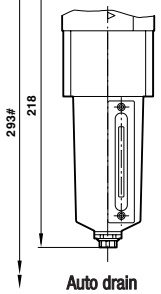
G¼ to G1

Accessories

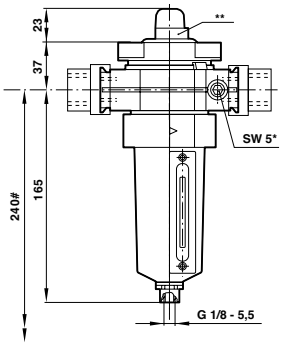
Series	Port size	Bracket kit	Bracket kit	3/2 Shut-off valve	Service life indicator (visual) *	Service life indicator (electrical)
						
F64C/F64H	G1/4	–	74504-50	T64T-2GB-P1N	5797-50	5800-51
	G3/8	–	74504-50	T64T-3GB-P1N	5797-50	5800-51
	G1/2	–	74504-50	T64T-4GB-P1N	5797-50	5800-51
	G3/4	–	74504-50	T64T-6GB-P1N	5797-50	5800-51
F68C/F68H	G1/2	18-001-979	–	T68C-4GB-B2N	5797-50	4020-51R
	G3/4	18-001-979	–	T68C-6GB-B2N	5797-50	4020-51R
	G1	18-001-979	–	T68C-8GB-B2N	5797-50	4020-51R

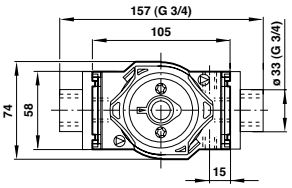
* Field relpacement: cannot be retro-fitted to a standard filter

F64H



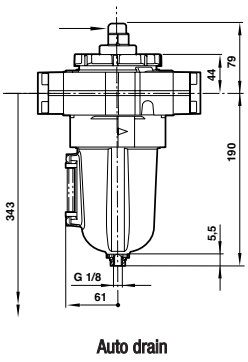
F64C



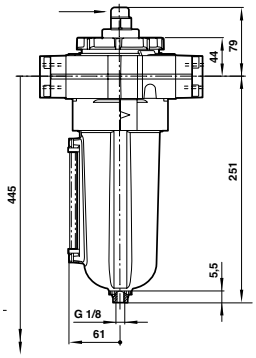


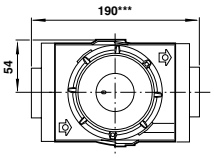
* Gauge port Rc1/8
** Standard service indicator
# Minimum clearance required to remove bowl

F68C



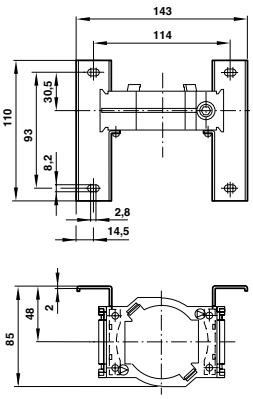
F68H



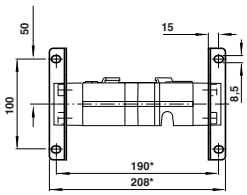


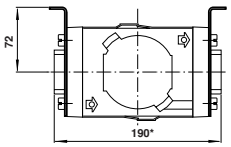
Minimum clearance required to remove bowl.
** Standard service indicator
*** For 1¼" and 1½" ported yokes add 10 mm

Bracket mounting (F64C/H)



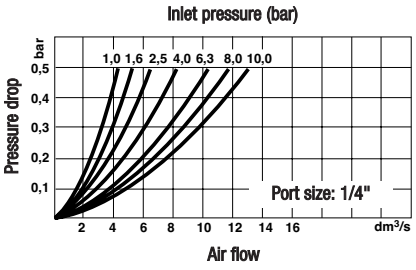
Bracket mounting (68C/H)



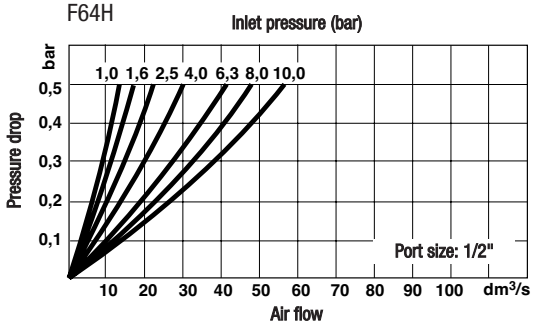


Flow characteristics

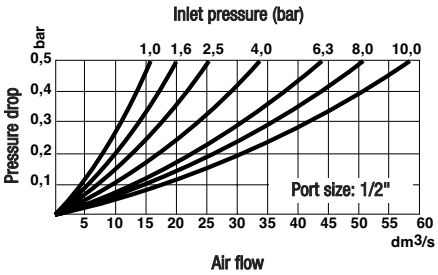
F64C



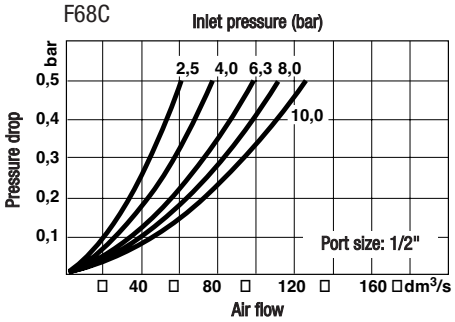
F64H



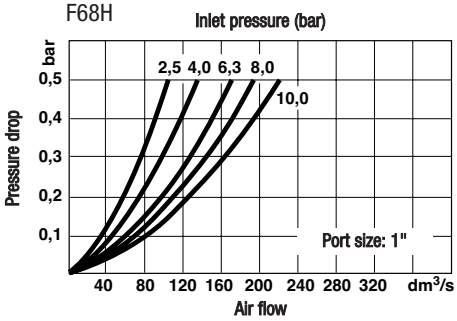
F64C



F68C



F68H



Olympian Plus plug-in system

F64B/F64L, FFV68 'Ultraire'® high efficiency oil/oil vapour removal filters

G¼ to G1

F64B/F64L are 'dual function' products incorporating an oil removal element (bottom) and an oil vapour removal element (top)

FFV68 are two separate coupled filters (F68C/H and F68V/Y)

Ultra high efficiency coalescing filters with active carbon pack

Carbon pack assists in the removal of hydro-carbon gases and odours

High intensity blue colour change indication (64 Series)

Standard options include manual drains

F64B/L

FFV68

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar metal

Air quality output:
Air quality to ISO 8573-1 : Class 1.7.1
Oil removal to within BS 4275 (1974)
Note: These units will not remove carbon monoxide, carbon dioxide or other toxic gases or fumes

Remaining oil content:
0,003 mg/m³ maximum at +21°C

Particle removal:
0,01 µm

Ambient temperature:
-20°C to +65°C metal bowls.
Consult our Technical Service for use below +2°C

Materials

F64B/F64L Series:
Bowl & body: zinc
Yoke: zinc alloy
Elastomers: synthetic rubber
Main filter element & activated carbon pack: composite materials

FFV68 Series:
Bowl & body: aluminium alloy
Yoke: aluminium alloy
Elastomers: synthetic rubber
Main filter element & activated carbon pack: composite materials

Alternative models

Breathing air sets, see page 414

Port size	Flow (dm³/s)	kg	Model Auto	Manual	Service kit	Coalescing element	Carbon pack
G1/4	7	1,83	F64B-2GN-AR0	F64B-2GN-MR0	4380-201	5350-99	5568-01
G3/8	11	2,21	F64L-3GN-AR0	F64L-3GN-MR0	4380-201	5350-98	5568-01
G1/2	11	2,50	F64L-4GN-AR0	F64L-4GN-MR0	4380-201	5350-98	5568-01
G1/2	25	4,44	FFV68-408	FFV68-428	4380-300, 4380-301	5351-98	665-72
G3/4	11	2,88	F64L-6GN-AR0	F64L-6GN-MR0	4380-201	5350-98	5568-01
G3/4	35	5,05	FFV68-608	FFV68-628	4380-300, 4380-301	5351-99	665-70
G1	60	5,05	FFV68-808	FFV68-828	4380-300, 4380-301	5351-99	665-70

Models listed include ISO G threads, automatic drain and metal bowl.

Maximum flow with 6,3 bar inlet pressure to maintain stated oil removal performance.

To order a basic unit without yoke substitute 'N' at the 5th and 6th digits eg: F64L-**NN**N-AR0.

For optimum coalescing element life a pre-filter should be fitted to remove coarse particles, see page 408 for basic filters and page 426 for double and treble yokes.

Note: no options available for FFV68 .

F64★-★★★-★★★

Body type	Substitute
G1/4	B
G3/8, G1/2, G3/4	L

Port size	Substitute
1/4"	2
3/8"	3
1/2"	4
3/4"	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Option	Substitute
None	N

Element	Substitute
Coalescing	0

Bowl	Substitute
Metal with liquid level indicator	D
Transparent with guard	P

Drain	Substitute
Manual	M
Auto drain	A

Please contact our technical service for details of non standard models including metal bowl with pyrex sight glass, etc.

Typical performance characteristics

Inlet pressure (bar)	Maximum flow dm³/s*			
	F64B	F64L	FFV68-408	FFV68-608
1	2,8	4,4	10	24
3	4,8	7,6	17	41
5	6,2	9,8	20	53
6,3	7,0	11,0	25	60
7	7,3	11,5	26	63
9	8,4	13,2	30	72

* Maximum flow to maintain stated oil removal performance

Olympian Plus plug-in system

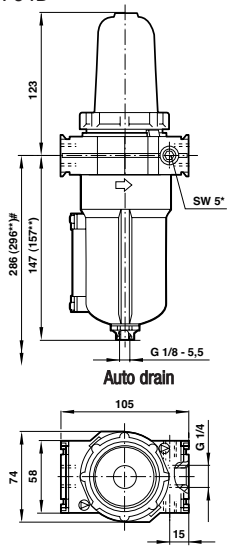
F64B/F64L, FFV68 'Ultraire'® high efficiency oil/oil vapour removal filters

G¼ to G1

Accessories

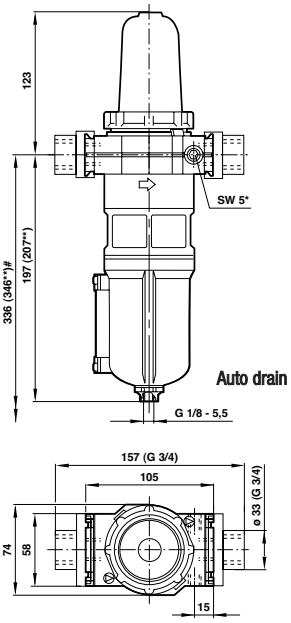
Series	Port size	Bracket kit	Bracket kit	3/2 Shut-off valve
				
F64B/F64L	G1/4		74504-50	T64T-2GB-P1N
	G3/8		74504-50	T64T-3GB-P1N
	G1/2		74504-50	T64T-4GB-P1N
	G3/4		74504-50	T64T-6GB-P1N
FFV68	G1/2	18-001-979		T68C-4GB-B2N
	G3/4	18-001-979		T68C-6GB-B2N
	G1	18-001-979		T68C-8GB-B2N

F64B



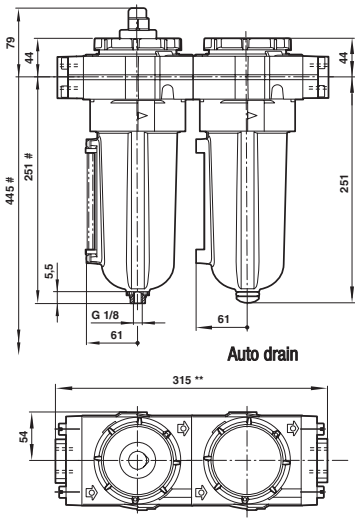
* Gauge port Rc1/8
** Manual drain
# Minimum clearance required to remove bowl

F64L



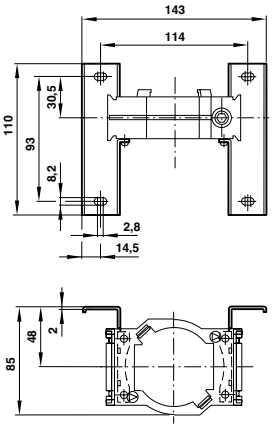
* Gauge port Rc1/8
** Manual drain
# Minimum clearance required to remove bowl

FFV68-608 / -808‡

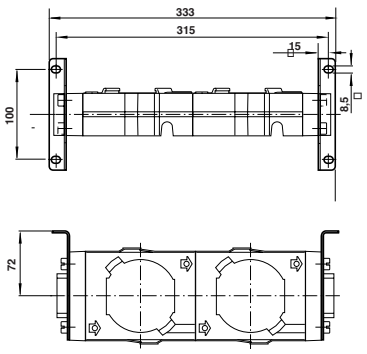


‡ FFV68-408 uses the short bowl version
# Minimum clearance required to remove bowl.
** For 1¼" and 1½" ported yokes add 10 mm

Bracket mounting F64B/L

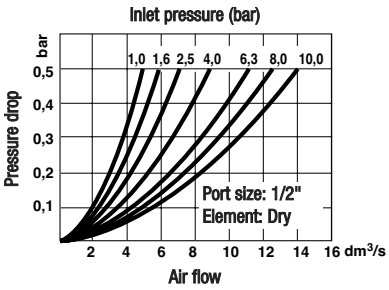


Bracket mounting FFV68

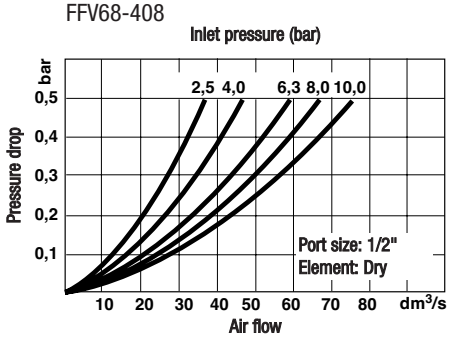


Flow characteristics

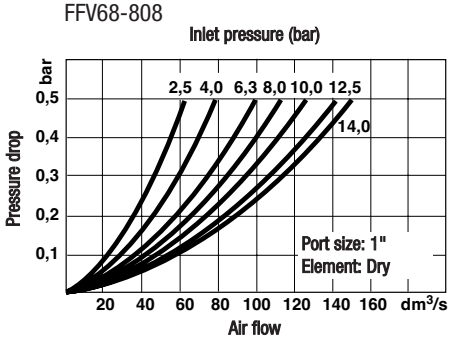
F64L



FFV68-408



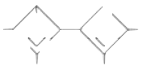
FFV68-808



Olympian Plus plug-in system

FFB64, FFB68 Breathing air sets

G¼ to G¾



Pre-assembled combinations include a general purpose pre-filter and 'Ultraire®' oil/oil vapour removal filter

High quality breathing air for the supply of up to 5 masks.

Activated carbon pack assists in the removal of hydro-carbon gases and odours

Technical data

Medium:
Compressed air only

Operating pressure:
0 to 17 bar

Air quality output:
Air quality to ISO 8573-1 : Class 1.7.1.

Note: These units will not remove carbon monoxide, carbon dioxide or other toxic gases or fumes.

Remaining oil content:
Maximum remaining oil content @ 21°C is 0,003 mg/m^3

Particle removal:
Removes particles to 0,01µm.

Ambient temperature:
-20°C to +65°C metal bowls

Consult our Technical Service for use below +2°C

Materials

G1/4, G3/8 models:
Bowls: aluminium & zinc

Body & yoke: zinc alloy

Pre-filter element: sintered bronze or plastic

Main filter element & activated carbon pack: composite materials

G1/2, G3/4 models:
Bowls & body: aluminium

Yoke: aluminium

Elastomers: synthetic rubber

Pre-filter element: sintered plastic

Main filter element & activated carbon pack: composite materials

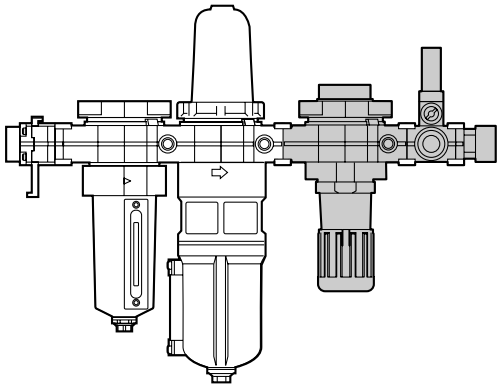
Port size	No. of masks	Primary pre-filter (µm)	Bowls	Flow (dm^3/s)	kg	Model Auto	Manual	Model with pressure regulator Auto	Manual
G1/4	1	5	Metal	16	3,20	FFB64-208	FFB64-228*	FFR64-208*	FFR64-228*
G3/8	2	5	Metal	28	3,57	FFB64-308	FFB64-328*	FFR64-308*	FFR64-328*
G1/2	3	25	Metal	35	7,45	FFB68-408	FFB68-428	FFR68-408	FFR68-428
G3/4	4/5	25	Metal	60	7,65	FFB68-608	FFB68-628	FFR68-608	FFR68-628

*Upper element will change from white to blue to indicate any oil carry-over.

For service kit numbers refer to individual units.

Accessories

Series	Port size	Bracket kit	Bracket kit	3/2 Shut-off valve
				
FFB64	1/4		74504-50	T64T-2GB-P1N
	3/8		74504-50	T64T-3GB-P1N
FFB68	1/2	18-001-979		T68C-4GB-B2N
	3/4	18-001-979		T68C-6GB-B2N



The addition of a pressure switch and end connector allows a low pressure warning signal to be given to an external electrical circuit.

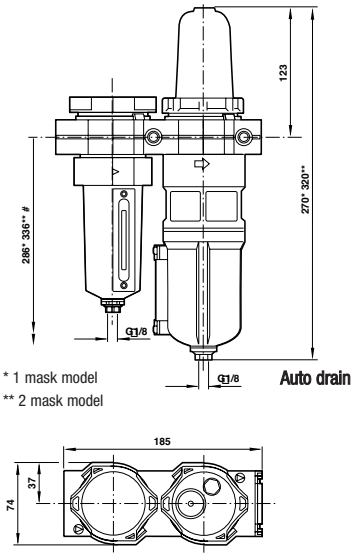
FFR model shown – see page 427 (64 Series only) for pressure switches and end connectors.

Olympian Plus plug-in system

FFB64, FFB68 Breathing air sets

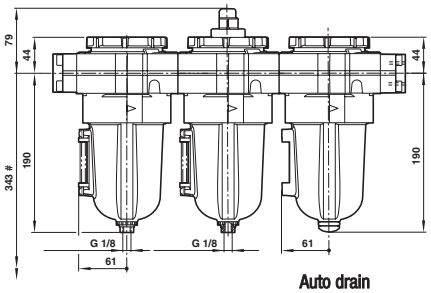
G¼ to G¾

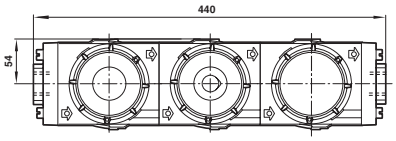
1 & 2 Mask models



* 1 mask model
** 2 mask model

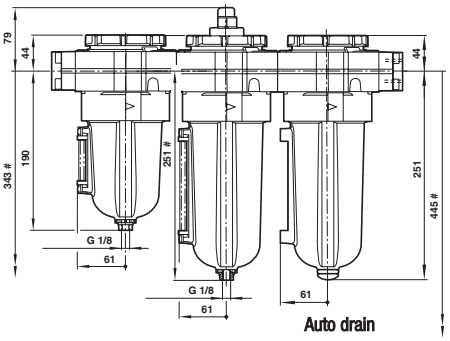
3 Mask models

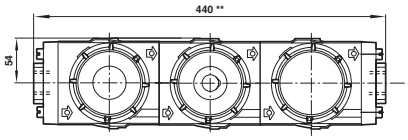




* Minimum clearance to remove bowl.
Weight: 6,56 kg

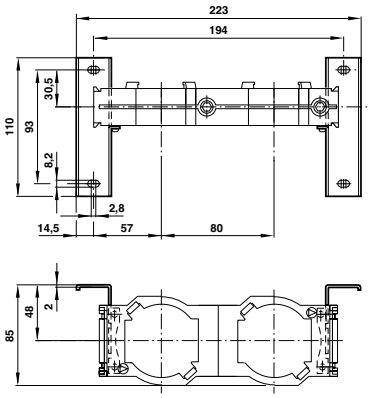
4 & 5 Mask models



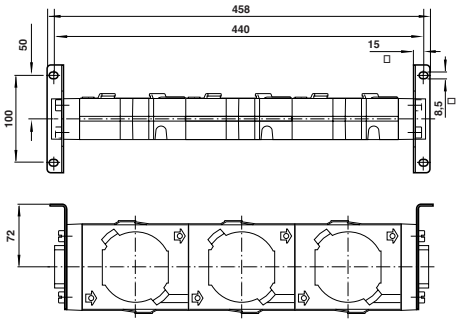


* Minimum clearance to remove bowl.
Weight: 7,19 kg

Bracket mounting
1 & 2 Mask models



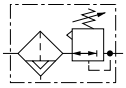
3, 4 & 5 Mask models



Olympian Plus plug-in system

B64G, B68G Filter/regulators

G¼ to G1½



B64G

B68G

High efficiency water removal

Good regulation characteristics

Non-rising adjusting knob has snap-action lock

Standard options include non-relieving models, manual drain and alternative pressure ranges

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar (metal bowl)

Gauge ports:
G1/8

Ambient temperature:
-20°C to +80°C metal bowls.
Consult our Technical Service for use below +2°C

Materials

B64G Series:
Body & yoke: zinc alloy
Bonnet & bowl: aluminium
Elastomers: synthetic rubber
Filter element: sintered plastic

B68G Series:
Body, bonnet, bowl & yoke: aluminium
Adjusting knob: acetal resin
Elastomers: synthetic rubber
Filter element: sintered plastic

Port size	Flow (dm^3/s)	Range (bar)	kg	Model Auto	Manual	Service kit Auto	Manual	Element (40 µm)
G1/4	30	0,3 ... 10	1,71	B64G-2GK-AD3-RMN	B64G-2GK-MD3-RMN	4383-200	4383-20a0	4338-02
G3/8	76	0,3 ... 10	1,69	B64G-3GK-AD3-RMN	B64G-3GK-MD3-RMN	4383-200	4383-200	4338-02
G1/2	106	0,3 ... 10	1,66	B64G-4GK-AD3-RMN	B64G-4GK-MD3-RMN	4383-200	4383-200	4338-02
G3/4	106	0,3 ... 10	2,02	B64G-6GK-AD3-RMN	B64G-6GK-MD3-RMN	4383-200	4383-200	4338-02
G3/4	240	0,4 ... 8	3,29	B68G-6GK-AR3-RLN	B68G-6GK-MR3-RLN	4383-300	4383-300	5576-99
G1	240	0,4 ... 8	3,29	B68G-8GK-AR3-RLN	B68G-8GK-MR3-RLN	4383-300	4383-300	5576-99
G1¼	240	0,4 ... 8	3,35	B68G-AGK-AR3-RLN	B68G-AGK-MR3-RLN	4383-300	4383-300	5576-99
G1½	240	0,4 ... 8	3,35	B68G-BGK-AR3-RLN	B68G-BGK-MR3-RLN	4383-300	4383-300	5576-99

Models listed include ISO G threads, knob adjustment, automatic drain, metal bowl, 40 µm element, relieving diaphragm.
Typical flow with 10 bar inlet pressure, 6,3 bar set pressure and a 1 bar droop from set.
For replacement filter/regulator (without yoke) substitute 'N' at the 5th and 6th letters respectively eg: B68G-**NN**K-AR3-RLN.
For replacement filter/regulator (without yoke) substitute 'N' at the 5th and 6th letters respectively e.g. B64G-**NN**K-AD3-RMN.

Options selector

B64G-★#★★-★★★-★★★

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Adjustment	Substitute
Knob	K
T-bar	T

Drain	Substitute
Manual	M
Automatic	A

Bowl	Substitute
Metal with liquid level indicator	D
Guarded transparent	P

Gauge	Substitute
With	G
Without	N

Outlet pressure adjustment range*	Substitute
0,3 ... 4 bar	F
0,3 ... 10 bar	M
0,7 ... 17 bar	S**

Diaphragm	Substitute
Relieving	R
Non relieving	N

Element	Substitute
5 µm	1
25 µm	2
40 µm	3

* Can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

B68G-★#★★-★★★-★★★

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Adjustment	Substitute
Knob	K
T-bar	T

Drain	Substitute
Manual	M
Automatic	A

Bowl	Substitute
1 l without liquid level indicator	C
0,5 l without liquid level indicator	M
0,5 l with liquid level indicator	R
1 l with liquid level indicator	U

Gauge	Substitute
With	G
Without	N

Outlet pressure adjustment range	Substitute
0,3 ... 4 bar	F
0,4 ... 8 bar	L
0,7 ... 17 bar	S**

Diaphragm	Substitute
Relieving	R
Non relieving	N

Element	Substitute
5 µm	1
25 µm	2
40 µm	3

For port size, see Options selector on page 408

**Units with 17 bar adjustment range are available only with the T-bar adjustment; therefore substitute T at the 7th digit and S at the 12th position.

Olympian Plus plug-in system

B64G, B68G Filter/regulators

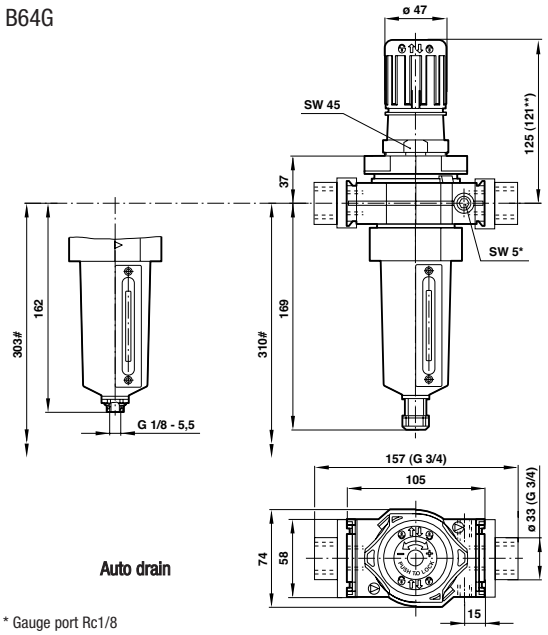
G¼ to G1½

Accessories

Series	Port size	Bracket kit	Bracket kit	Gauge 0 ... 10 bar*	3/2 Shut-off valve	Panel nut	Tamper resistant kit
							
B64G	G1/4		74504-50	18-013-013	T64T-2GB-P1N	4348-89	4355-50
	G3/8				T64T-3GB-P1N	4348-89	4355-50
	G1/2				T64T-4GB-P1N	4348-89	4355-50
	G3/4				T64T-6GB-P1N	4348-89	4355-50
B68G	G3/4	18-001-979		18-013-013	T68C-6GB-B2N	–	4355-50
	G1	18-001-979			T68C-8GB-B2N	–	4355-50
	G1¼	18-001-978			T68C-AGB-B2N	–	4355-50
	G1½	–			T68C-BGB-B2N	–	4355-50

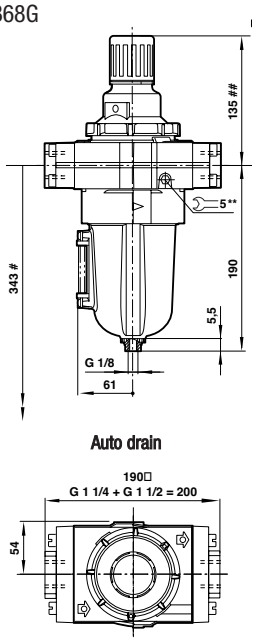
* Other pressure ranges available – see page 486

B64G



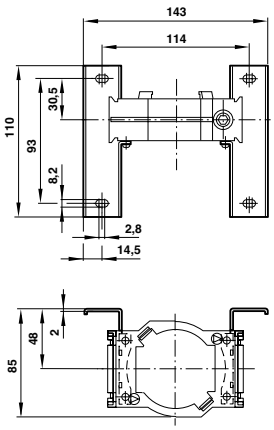
* Gauge port Rc1/8
** Knob in locked position.
# Minimum clearance required to remove bowl.

B68G

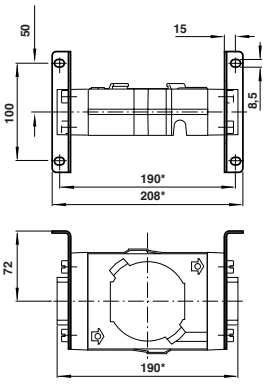


* Manual drain
# Minimum clearance required to remove bowl
*** For 1¼" and 1½" ported yokes add 10 mm.

Bracket mounting (B64G)

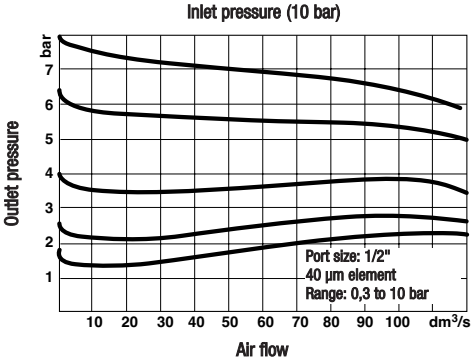


Bracket mounting (B68G)

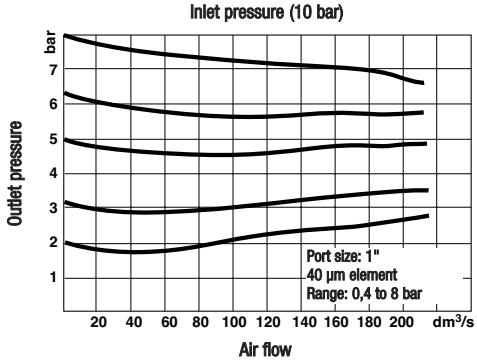


Flow characteristics

B64G



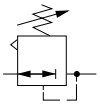
B68G



Olympian Plus plug-in system

R64G, R68G Pressure regulators

G¼ to G1½



R64G

R68G

Diaphragm and balanced valve design ensure good regulation characteristics

Non-rising adjusting knob has snap-action lock

Standard options include non-relieving models and alternative pressure ranges

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar (R64G)
20 bar (R68G)

Gauge ports:
G1/8

Ambient temperature:
-20˚C to +80˚C
Consult our Technical Service for use below +2°C

Materials

R64 Series:
Body & yoke: zinc alloy
Bonnet: aluminium
Elastomers: synthetic rubber

R68G Series:
Body, bonnet & yoke: aluminium
Adjusting knob: acetal resin
Optional T-bar adjusting screw: steel
Elastomers: synthetic rubber

Port size	Flow (dm^3/s) #	Range (bar)	kg	Model Auto	Service kit
G1/4	35	0,3 ... 10	1,54	R64G-2GK-RMN	4381-200
G3/8	80	0,3 ... 10	1,52	R64G-3GK-RMN	4381-200
G1/2	120	0,3 ... 10	1,49	R64G-4GK-RMN	4381-200
G3/4	120	0,3 ... 10	1,85	R64G-6GK-RMN	4381-200
G3/4	150	0,4 ... 8	1,95	R68G-6GK-RLN	4381-300
G1	180	0,4 ... 8	1,89	R68G-8GK-RLN	4381-300
G1¼	180	0,4 ... 8	1,93	R68G-AGK-RLN	4381-300
G1½	180	0,4 ... 8	1,97	R68G-BGK-RLN	4381-300

Models listed include unidirectional flow, ISO G threads, knob adjustment, relieving diaphragm, 0,3 to 10 bar outlet pressure adjustment range (0,3 to 8 bar R68G)* without gauge.
Typical flow with 10 bar inlet pressure, 6,3 bar set pressure and a 1 bar droop from set.
*Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.
For replacement regulator (without yoke) substitute 'N' at the 5th and 6th digits eg: R64G-**NN**K-RMN.
For replacement regulator (without yoke) substitute 'N' at the 5th and 6th digits eg: R68G-**NN**K-RLN.

Options selector

R64★-★★★-★★★

Flow type	Substitute
Standard	G
Reverse flow (64 only)	R

Port size	Substitute
1/4	2
3/8	3
1/2	4
3/4	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Adjustment	Substitute
Knob	K
T-bar	T

Gauge	Substitute
With	G
Without	N

Outlet pressure adjustment range*	Substitute
0,3 ... 4 bar	F
0,3 ... 10 bar	M
0,7 ... 17 bar	S**

Diaphragm	Substitute
Relieving	R
Non relieving	N

* Can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

R68G-★★★-★★★

Port size	Substitute
3/4	6
1	8
1¼	A
1½	B

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Adjustment	Substitute
Knob	K
T-bar	T

Gauge	Substitute
With	G
Without	N

Outlet pressure adjustment range*	Substitute
0,3 ... 4 bar	F
0,4 ... 8 bar	L
0,7 ... 17 bar	S**

Diaphragm	Substitute
Relieving	R
Non relieving	N

* Can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

** Units with 17 bar outlet pressure range are available only with the T-bar adjustment; therefore substitute T at the 7th digit and S at the 9th position.

Olympian Plus plug-in system

R64G, R68G Pressure regulators

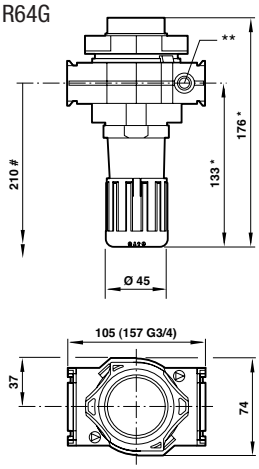
G¼ to G1½

Accessories

Series	Port size	Bracket kit	Bracket kit	Gauge 0 ... 10 bar*	3/2 Shut-off valve	Panel nut	Tamper resistant kit
							
R64G	G1/4	–	74504-50	18-013-013	T64T-2GB-P1N	4348-89	4355-50
	G3/8	–	74504-50	18-013-013	T64T-3GB-P1N	4348-89	4355-50
	G1/2	–	74504-50	18-013-013	T64T-4GB-P1N	4348-89	4355-50
	G3/4	–	74504-50	18-013-013	T64T-6GB-P1N	4348-89	4355-50
R68G	G3/4	18-001-979	–	18-013-013	T68C-6GB-B2N	–	4355-50
	G1	18-001-979	–	18-013-013	T68C-8GB-B2N	–	4355-50
	G1¼	18-001-978	–	18-013-013	T68C-AGB-B2N	–	4355-50
	G1½	–	–	18-013-013	T68C-BGB-B2N	–	4355-50

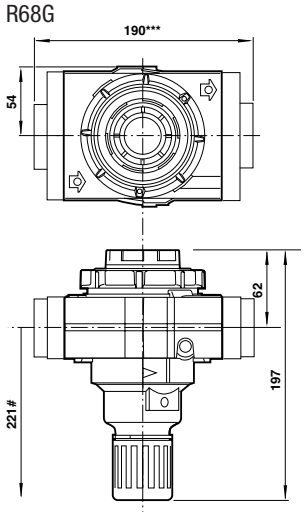
* Other pressure ranges available – see page 486

R64G



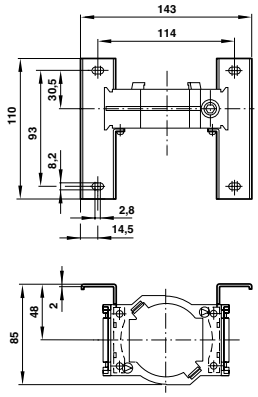
* Minimum clearance required to remove unit from yoke.
# Reduces by 4 mm with knob in locked position.

R68G

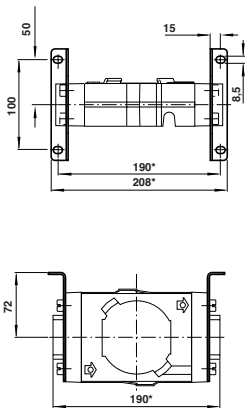


Minimum clearance required to remove unit from yoke
*** For 1¼" and 1½" ported yokes add 10 mm
Panel mounting hole Ø: 52 mm
Panel thickness: 0 ... 6 mm

Bracket mounting (R64G)

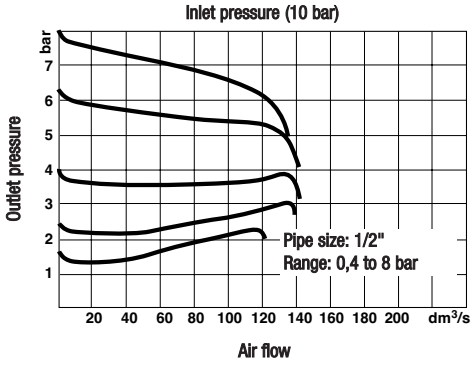


Bracket mounting (R68G)

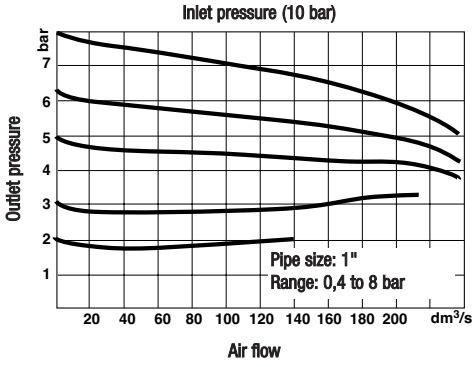


Flow characteristics

R64G



R68G



Olympian Plus plug-in system

L64, L68 Lubricators

G¼ to G1½

L64M L68M

Micro-fog plug-in lubricators for most general purpose pneumatic applications

Oil-fog option for heavy duty lubrication

Standard options include high capacity metal reservoirs

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar (metal bowl)

Start point:
L64 1,5 dm^3/s
L68 6 dm^3/s
Minimum flow required for lubricator operation at 6,3 bar inlet pressure

Ambient temperature:
-20°C to +80°C metal bowls.
Consult our Technical Service for use below +2°C

Materials

L64 series:
Body & yoke: zinc alloy
Sight dome: transparent nylon
Elastomers: synthetic rubber

L68 series:
Bowl (0,5 litre), body & yoke: aluminium
Sight dome: transparent nylon
Elastomers: synthetic rubber

Alternative models

L68 high flow oil-fog 'Fixed Venturi'.
Contact our Technical Service for details.

Micro-fog lubricators

Port size	Flow (dm^3/s) #	Bowl capacity (litre)	kg	Model *	Service kit
G1/4	25	0,2	1,42	L64M-2GP-EDN	4382-200
G3/8	62	0,2	1,40	L64M-3GP-EDN	4382-200
G1/2	72	0,2	1,37	L64M-4GP-EDN	4382-200
G3/4	72	0,2	1,73	L64M-6GP-EDN	4382-200
G3/4	200	0,5	2,10	L68M-6GP-ERN	4382-300
G1	200	0,5	2,04	L68M-8GP-ERN	4382-300
G1¼	200	0,5	2,08	L68M-AGP-ERN	4382-300
G1½	200	0,5	2,12	L68M-BGP-ERN	4382-300

Models listed include ISO G threads and metal reservoir without drain.

#Typical flow with 6,3 bar inlet pressure and 0,5 bar pressure drop.

* Models listed in the order table must not be located downstream of frequently cycling directional control valves. Order the optional bi-directional oil-fog lubricator for use under such conditions.

To order a basic unit without yoke substitute 'N' at the 5th and 6th letters respectively e.g. L64M-**NN**P-EDN.

To order a basic unit without yoke substitute 'N' at the 5th and 6th letters respectively e.g. L68M-**NN**P-ERN.

Options selector

L64★-★★P-★★★

Type	Substitute
Oil-fog	C
Micro-fog	M

Port size	Substitute
1/4"	2
3/8"	3
1/2"	4
3/4"	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Options	Substitute
None	N
Quick fill device	Q

Bowl	Substitute
Metal with liquid level indicator	D
Garded transparent	P
Long metal bowl with liquid level indicator	A

Drain	Substitute
Closed bottom bowl	E
Manual	M

L68★-★★★-★★★

Type	Substitute
Oil-fog	C
Micro-fog	M

Port size	Substitute
3/4"	6
1	8
1¼	A
1½	B

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Type	Substitute
Uni-directional	P
Fixed Venturi (oil-fog)	E

Options	Substitute
None	N
Quick fill device	Q

Bowl	Substitute
0,5 l with sight glass	R*
1 l with sight glass	U*
8 l with sight glass	J
20 l with sight glass	K

Drain	Substitute
Closed bottom	E
Manual	M
No drain	N
Remote fill	R

*Remote fill only available with 0,5 and 1 litre bowls.

Olympian Plus plug-in system

L64, L68 Lubricators

G¼ to G1½

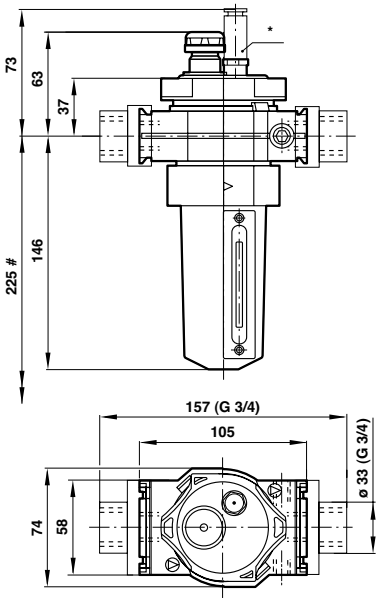
Accessories

Series	Port size	Bracket kit	Bracket kit	3/2 Shut-off valve	Tamper resistant kit	Quick fill nipple	Level switch ‡	Remote fill kit
								
L64	G1/4	–	74504-50 74504-52*	T64T-2GB-P1N	2117-01	18-011-024	18-023-610* ‡	18-027-984
	G3/8	–	74504-50 74504-52*	T64T-3GB-P1N	2117-01	18-011-024	18-023-610* ‡	18-027-984
	G1/2	–	74504-50 74504-52*	T64T-4GB-P1N	2117-01	18-011-024	18-023-610* ‡	18-027-984
	G3/4	–	74504-50 74504-52*	T64T-6GB-P1N	2117-01	18-011-024	18-023-610* ‡	18-027-984
L68	G3/4	18-001-979		T68C-6GB-B2N	2117-01	18-011-021	18-007-975	18-027-980
	G1	18-001-979		T68C-8GB-B2N	2117-01	18-011-021	(8 litre bowl)	18-027-980
	G1¼	18-001-978		T68C-AGB-B2N	2117-01	18-011-021	18-007-974	18-027-980
	G1½	–		T68C-BGB-B2N	2117-01	18-011-021	(20 litre bowl)	18-027-980

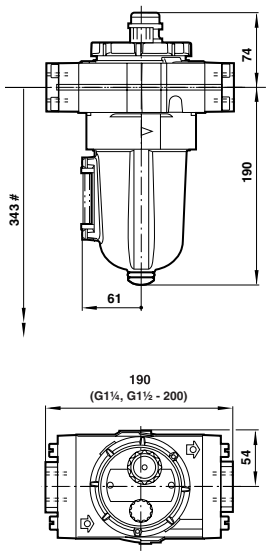
*To fit 1 litre bowl version.

‡ Field conversion

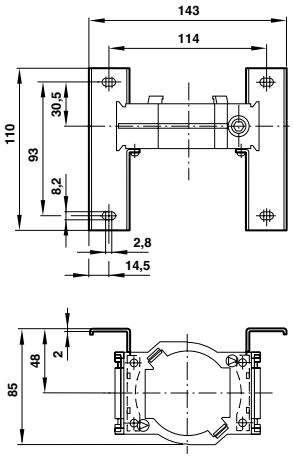
L64



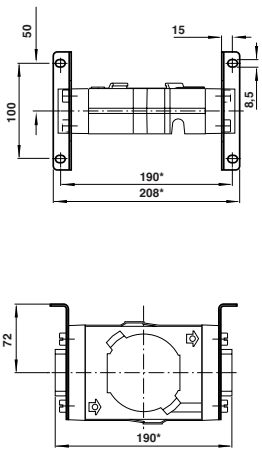
L68



Bracket mounting (L64)



Bracket mounting (L68)



*Optional quick fill device.

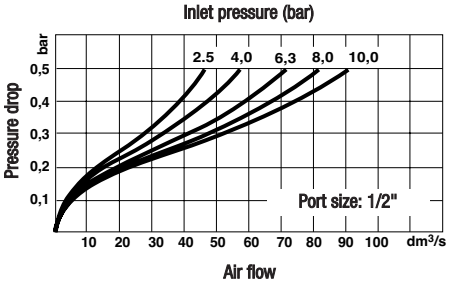
** Minimum clearance required to remove bowl.

Minimum clearance required to remove bowl

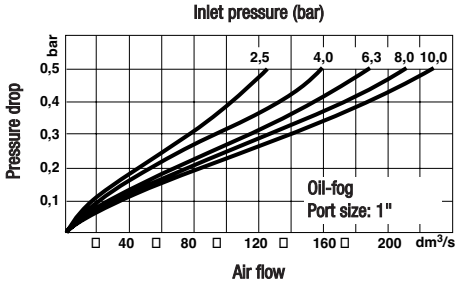
** For 1¼" and 1½" ported yokes add 10 mm.

Flow characteristics

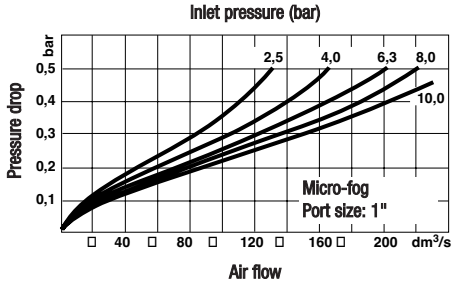
L64 C/M*



L68C*



L68M*

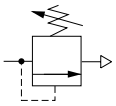


* Not fixed venturi version. Please contact Norgren Technical for fixed venturi information

Olympian Plus plug-in system

V64H, V68H Pressure relief valves

G¼ to G1½



Olympian relief valves protect compressed air systems from over-pressurisation

High relief capacity, sensitive and accurate

Threaded relief port for silencer or piped exhaust.

Norgren pressure relief valves comply with category 0(S.E.P.) and category 1 of the Pressure Equipment Directive 97/23/EC. If categories 2, 3 or 4 products are required contact our Technical Services.

V64H

V68H

Technical data

Medium:
Compressed air only

Gauge ports:
G1/8

Relief port:
G1/2 (V64H), G1 (V68H)

Ambient temperature:
-20°C to +80°C.
Consult our Technical Service for use below +2°C

Materials

V64H Series:
Body, bonnet & yoke: zinc alloy
Bottom plug: aluminium
Adjusting screw: steel
Elastomers: synthetic rubber

V68H Series:
Body, intermediate body, bonnet, bottom plug & yoke: aluminium
Adjusting screw: steel
Elastomers: synthetic rubber

Port size	kg	Model	Service kit
G1/4	1,68	V64H-2GD-RMN	4384-200
G3/8	1,66	V64H-3GD-RMN	4384-200
G1/2	1,63	V64H-4GD-RMN	4384-200
G3/4	1,99	V64H-6GD-RMN	4384-200
G3/4	2,21	V68H-6GD-RMN	4384-300
G1	2,20	V68H-8GD-RMN	4384-300
G1¼	2,22	V68H-AGD-RMN	4384-300
G1½	2,26	V68H-BGD-RMN	4384-300

Options selector

V64H-★★★-R★★

Port size	Substitute
1/4"	2
3/8"	3
1/2"	4
3/4"	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Adjustment	Substitute
Slotted screw	D

Gauge	Substitute
With	G
Without	N

Outlet pressure adjustment range*	Substitute
0,3 ... 4 bar	F
1 ... 10 bar	M
0,7 ... 17 bar	S

*Relief valve can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

V68H-★★★-R★★

Port size	Substitute
3/4"	6
1	8
1¼	A
1½	B

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Adjustment	Substitute
Slotted screw	D

Gauge	Substitute
With	G
Without	N

Outlet pressure adjustment range*	Substitute
0,3 ... 4 bar	F
1 ... 10 bar	M
0,7 ... 17 bar	S

*Relief valve can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

Olympian Plus plug-in system

V64H, V68H Pressure relief valves

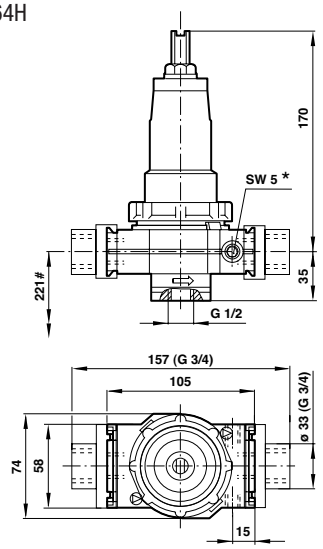
G¼ to G1½

Accessories

Series	Port size	Bracket kit	Bracket kit	Gauge 0 ... 10 bar*	Silencer	Tamper resistant cap	3/2 Shut-off valve
							
V64H	G1/4		74504-50	18-013-013	MB004B	1581-90	T64T-2GB-P1N
	G3/8		74504-50	18-013-013	MB004B	1581-90	T64T-3GB-P1N
	G1/2		74504-50	18-013-013	MB004B	1581-90	T64T-4GB-P1N
	G3/4		74504-50	18-013-013	MB004B	1581-90	T64T-6GB-P1N
V68H	G3/4	18-001-979		18-013-013	MB008B	1581-90	T68C-6GB-B2N
	G1	18-001-979		18-013-013	MB008B	1581-90	T68C-8GB-B2N
	G1¼	18-001-978		18-013-013	MB008B	1581-90	T68C-AGB-B2N
	G1½	–		18-013-013	MB008B	1581-90	T68C-BGB-B2N

* Other pressure ranges available – see page 486

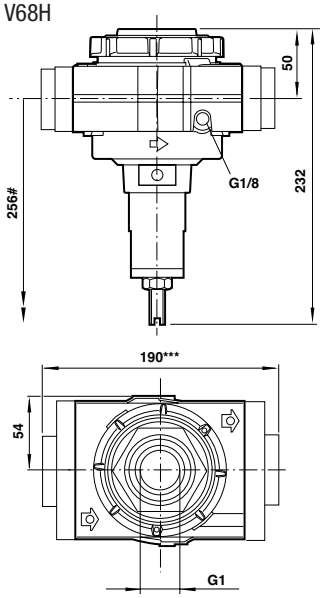
V64H



* Gauge port Rc1/8

\# Minimum clearance required to remove unit from yoke

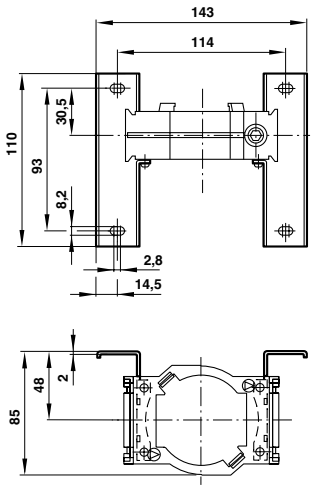
V68H



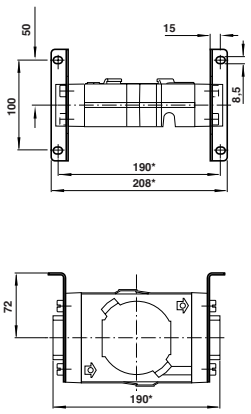
\# Minimum clearance required to remove unit from yoke

*** For 1¼" and 1½" ported yokes add 10 mm

Bracket mounting (V64H)

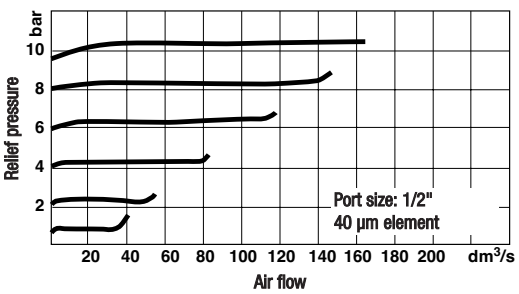


Bracket mounting (68H)

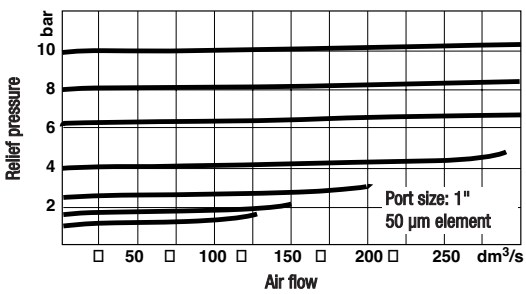


Flow characteristics

V64H



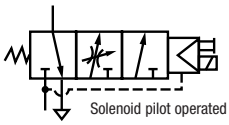
V68

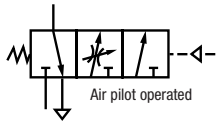


Olympian Plus plug-in system

P64F, P68F Soft start/dump valves

G¼ to G1½





P64F

P68F

Assists machine designers in complying with the European Machineries Directive

Can help existing machinery to comply with PUWER (Provision and Use of Work Equipment Regulations)

Controlled increase of downstream pressure on start up

Solenoid, air pilot or manual operator.

High forward flow capacity

High flow dump facility

Port size	Solenoid operated model	kg	Air pilot operated model	kg	Service kit
G1/4	P64F-2GC-PFN	2,07	P64F-2GA-NNN	1,96	**
G3/8	P64F-3GC-PFN	2,05	P64F-3GA-NNN	1,94	**
G1/2	P64F-4GC-PFN	2,02	P64F-4GA-NNN	1,91	**
G3/4	P64F-6GC-PFN	2,38	P64F-6GA-NNN	2,27	**
G3/4	P68F-6GH-NPN	2,95	P68F-6GB-NNN	2,77	**
G1	P68F-8GH-NPN	2,93	P68F-8GB-NNN	2,75	**
G1¼	P68F-AGH-NPN	2,90	P68F-AGB-NNN	2,72	**
G1½	P68F-BGH-NPN	2,92	P68F-BGB-NNN	2,74	**

*Solenoid operated models are supplied with 24 V d.c. solenoids but without connector plugs. To select alternative voltages and other options refer to the Options selector below. For connector plugs see next page

** Factory repair only.

For replacement soft start/dump valve, without yoke substitute 'NN' at 5th and 6th digit eg. P64F-**NN**C-PFN.

For replacement soft start/dump valve without yoke substitute 'N' at 5th digit, e.g. P68F-**N**GH-NPN

P68F models supplied with manual lockout as standard.

Technical data

Medium:

Compressed air

Maximum operating pressure:

For solenoid operated versions: 10 bar

For pilot operated versions: 17 bar

Minimum operating pressure:

3 bar

Ambient temperature:

Solenoid operated versions: +5°C to +50°C

Pilot operated versions: -20°C to +80°C.

Consult our Technical Service for use below +2°C

Air pilot port:

P64F Rc1/4

P68F G1/4

Exhaust port:

P64F G1/2

P68F G1

Maximum flow:

P64F – 57dm^3/s

P68F – 147dm^3/s

Note: Maximum flow with 6,3 bar inlet pressure and pressure drop of 0,5 bar

Snap pressure:

Full flow when downstream pressure reaches 50-80% of inlet pressure.

Options selector

P6★F-★★★-★★★

Series	Substitute
64	4
68	8

Port size	Substitute
1/4*	2
3/8*	3
1/2*	4
3/4	6
1**	8
1¼**	A
1½**	B

* 64 series only ** 68 series only

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Connectors	Substitute
3 pin plug with cable gland, no indicator	A
Without	N

P64F (22 mm solenoid)

Coil voltage	Nominal power rating	Substitute
24 V d.c.	2 W	F
12 V d.c.	2 W	E
6 V d.c.	2 W	D
220/240 V, 50/60 Hz	4/2,5 V A	B
110/120 V, 50/60 Hz	4/2,5 V A	A
No coil	2 W	Z
No solenoid	–	N

P68F (32 mm solenoid)

Coil voltage	Nominal power rating	Substitute
24 V d.c.	4,5 W	P
12 V d.c.	4,5 W	Q
6 V d.c.	4,5 W	M
220/240 V, 50/60 Hz	14/10 V A	K
110/120 V, 50/60 Hz	14/10 V A	J
No solenoid	–	N

Solenoid manual operator	Substitute
Shrouded push button	P
None	N

Operator	Substitute
Air pilot	A
Air pilot with manual lockout	B
22 mm miniature solenoid	C
22 mm miniature solenoid with manual lockout	D
32 mm solenoid	G*
32 mm solenoid with manual lockout	H*
CNOMO solenoid	L
CNOMO solenoid with manual lockout	M
Direct ported bottom plate	N*

*P68F only

Materials

P64F:

Body & yoke: zinc alloy

Intermediate body: aluminium

Top plate: zinc

P68F:

Body & yoke: aluminium

Intermediate body & top plate: aluminium

Elastomers: synthetic materials

Filter discs: sintered plastic

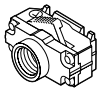
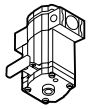
Internal components: brass/steel

Olympian Plus plug-in system

P64F, P68F Soft start/dump valves

G¼ to G1½

Accessories

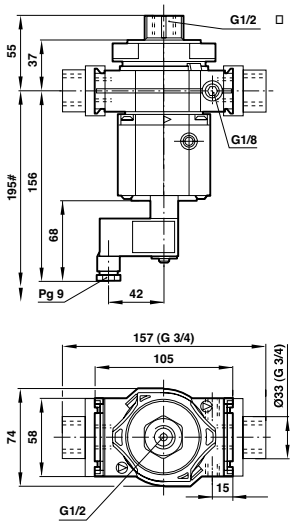
Series	Port size	Bracket kit	Bracket kit	3/2 Shut-off valve	Manual shut-off with lockout	Exhaust port silencer	Connector plug with cable gland **		
									
P64F	G1/4	74504-50	–	T64T-2GB-P1N	–	MB004B	M/P24121/1*	10-50 V a.c./d.c.	Indicator type
	G3/8	74504-50	–	T64T-3GB-P1N	Factory fit option only.	MB004B	M/P24121/2	70-110 V a.c.	Indicator type
	G1/2	74504-50	–	T64T-4GB-P1N	See Options selector	MB004B	M/P19063	–	No indicator
	G3/4	74504-50	–	T64T-6GB-P1N	–	MB004B	–	–	–
P68F	G3/4	–	18-001-979	T68C-6GB-B2N	Standard	MB008B	M/P24120/1	10-50 V a.c./d.c.	Indicator type
	G1	–	18-001-979	T68C-8GB-B2N	Standard	MB008B	M/P24120/2	70-115 V a.c./d.c.	Indicator type
	G1¼	–	18-001-978	T68C-AGB-B2N	Standard	MB008B	M/P15737	–	No indicator
	G1½	–	–	T68C-BGB-B2N	Standard	MB008B	–	–	–

* Reduced light intensity at 12 V.

** Refer to page 383 for other solenoid plugs

P64F

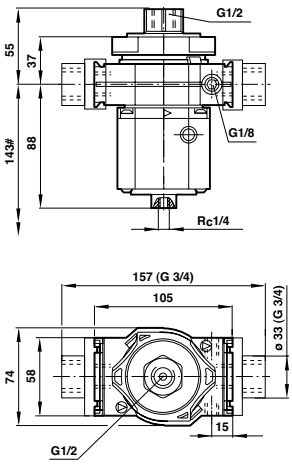
Solenoid operated



* Gauge port Rc⅛

\# Minimum clearance to remove unit.

Air pilot operated

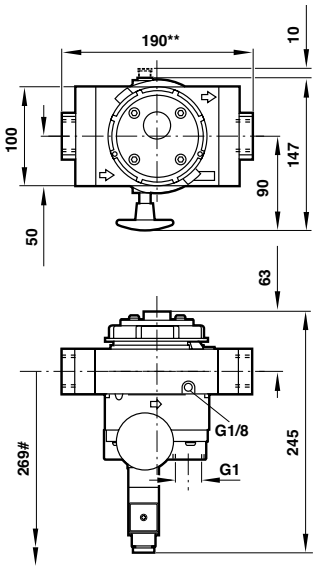


* Gauge port Rc⅛

\# Minimum clearance to remove unit.

P68F

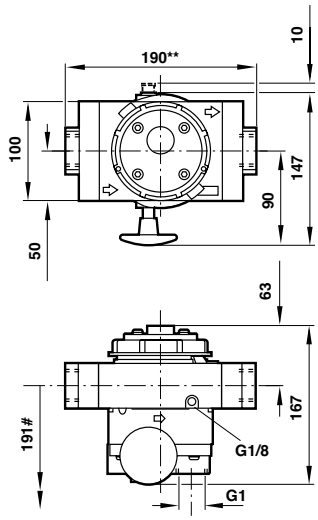
Solenoid operated plus manual shut-off with lockout



** 200 mm for 1¼ and 1½ models.

\# Minimum clearance to remove unit.

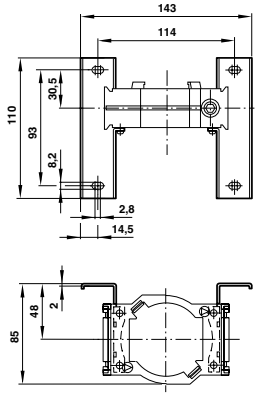
Air pilot operated plus manual shut-off with lockout



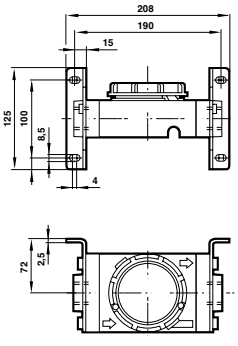
** 200 mm for 1¼ and 1½ models.

\# Minimum clearance to remove unit.

Bracket mounting (P64F)



Bracket mounting (P68F)



Olympian Plus plug-in system Accessories

Yokes

Series	Port size	Single unit	Double unit	Treble unit
64	G1/4	Y64A-2GA-N1N	Y64A-2GA-N2N	Y64A-2GA-N3N
64	G3/8	Y64A-3GA-N1N	Y64A-3GA-N2N	Y64A-3GA-N3N
64	G1/2	Y64A-4GA-N1N	Y64A-4GA-N2N	Y64A-4GA-N3N
64	G3/4	Y64A-6GA-N1N	Y64A-6GA-N2N	Y64A-6GA-N3N
68	G3/4	Y68A-6GN-NIN	Y68A-6GN-N2N	Y68A-6GN-N3N
68	G1	Y68A-8GN-NIN	Y68A-8GN-N2N	Y68A-8GN-N3N
68	G1¼	Y68A-AGN-NIN	Y68A-AGN-N2N	Y68A-AGN-N3N
68	G1½	Y68A-BGN-NIN	Y68A-BGN-N2N	Y68A-BGN-N3N

Yokes may be installed in a pipe system in advance of the selection or fitment of the basic units.

When installed, enables Olympian basic units to be 'plugged in' or removed without disturbing connecting pipework.

Shut-off yokes

Series	Port size	Single unit	Double unit	Treble unit
64	G1/4	Y64B-2GA-T1N	Y64B-2GA-T2N	Y64B-2GA-T3N
64	G3/8	Y64B-3GA-T1N	Y64B-3GA-T2N	Y64B-3GA-T3N
64	G1/2	Y64B-4GA-TC1N	Y64B-4GA-T2N	Y64B-4GA-T3N
64	G3/4	Y64B-6GA-T1N	Y64B-6GA-T2N	Y64B-6GA-T3N
68	G3/4	Y68B-6GN-C1N	Y68B-6GN-C2N	Y68-6GN-C3N
68	G1	Y68B-8GN-C1N	Y68B-8GN-C2N	Y68-8GN-C3N
68	G1¼	Y68B-AGN-C1N	Y68B-AGN-C2N	Y68-AGN-C3N
68	G1½	Y68B-BGN-C1N	Y68B-BGN-C2N	Y68-BGN-C3N

A standard yoke assembly incorporating an upstream 3/2 lockable shut-off valve.

Adaptor plate

Series	Model
64	74616-50

When fitted to a yoke end allows an Olympian Plus assembly to be connected to a flat surface e.g. externally on a control cabinet where an FRL conditions the inlet air.

Yoke connector kit

Series	Model
64	74503-51

Allows quick and easy connection of one Olympian Plus product/accessory to another.

Blanking plug

Series	Model
64	18-999-434
68	18-999-225

Supplied with plugged pressure gauge ports.

Fitted in place of any Olympian basic unit, a blanking plug allows air to pass through the yoke.

Olympian Plus plug-in system Accessories

End connector

Series	Port size	Model
64	G1/2	74505-50
64	G3/4	74505-53

For use with end mounted porting block or for G1/2 or G3/4 over porting.

Provides a threaded end to an assembly

Shut-off valve

Series	Port size	Model
64	G1/4	T64T-2GB-P1N
64	G3/8	T64T-3GB-P1N
64	G1/2	T64T-4GB-P1N
64	G3/4	T64T-6GB-P1N
68	G3/4	T68C-6GB-B2N
68	G1	T68C-8GB-B2N
68	G1¼	T68C-AGB-B2N
68	G1½	T68C-BGB-B2N

Lockout facility. G1/8 exhaust port on 64 series, use silencer, ref. T40B1800.

3 port/2 position.

Easy to operate

Lockable in the 'closed' position

Pressure switch

Series	Model
64	4346-99

2 to 10 bar adjustable. Porting block mounted. DIN 43650 form C.

Monitors air pressure, providing an electrical output when the pressure drops below or exceeds an adjustable preset level. Electrical signal could be fed back to a PC, PLC or audible/visible alarm

2 G1/4 auxiliary air outlets

Electronic pressure switch also available, see page 455

Porting blocks

Series	Model
64	74507-50
64 with integral non-return valve	74507-53

2 G1/4 outlets. 1 G3/8 outlet.

Series	Top port	Side port	Model
68	G1/2	G1/4	18-026-986

Porting blocks may be used as spacers, gauge ports or as auxiliary air outlets. They may be fitted to end connectors, rear entry manifolds, shut-off valves and rear entry shut-off valves.

Use the correct length screws (supplied) when fitting porting blocks.

Provides 3 auxiliary air outlets

Can be installed in a combination to branch off to smaller sub-systems

Type 74507-53 is often installed between a filter-regulator and lubricator. Its integral non-return valve prevents any reverse flow of lubricant contaminating the upstream air

Duplex assemblies

Series	Port size	Single unit	Double unit
64	G1/2	18-026-980*	18-026-978
64	G1/2		18-026-979

*Shut-off valves lockable in closed position only.

The Olympian Plus duplex system enables two sets of Olympian Plus air preparation equipment to be neatly installed in parallel. This system has been specifically designed for use in process plant and on main machinery installations and other equipment in continuous use where not even the shortest interruption of services is permissible during long periods of operation. When one set is in service, the other acts as a 'standby'. When maintenance needs to be carried out on the set in use, inlet air is diverted to the stand-by set – simply open the two stand-by shut-off valves and close the other two shut-off valves.

Inlet and outlet ports: (64) G½/G1(68). Gauge ports (at both inlet and outlet): R_C⅛

Other configurations available – please contact our Technical Service.

Olympian Plus plug-in system Accessories

Coalescing exhaust silencers

Port size	Type	Model
G1/4	Single redimount	CS13-264-10GG
G3/8	Single redimount	CS13-364-10GG
G1/2	Single redimount	CS13-464-10GG
G3/4	Single redimount	CS13-664-10GG
G3/4	Single redimount	CS15-600-10DD
G3/4	Double redimount	CS15-600-20DD
G1	Single redimount	CS15-800-10DD
G1	Double redimount	CS15-800-20DD
G1¼	Double redimount	CS15-A00-20DD
G1½	Double redimount	CS15-B00-20DD

- Effectively reduces noise emission of multi-valve and cylinder systems
- Removes oil mist and sub-micron particles from exhaust air
- Assists in complying with Noise and COSHH regulations
- Available as single or double units (for high flow).
- Flow in either direction

Shut-off & lockout valves

Port size	3-Port/2-Position G1/4 exhaust port	3-Port/2-Position Unthreaded exhaust port
G1/4	T13-214-T2AD	T13-214-E2AD
G3/8	T13-314-T2AD	T13-314-E2AD
G1/2	T13-414-T2AD	T13-414-E2AD
G3/4	T13-614-T2AD	T13-614-E2AD
G3/4	T15-614-T2AD	T15-614-E2AD
G1	T15-814-T2AD	T15-814-E2AD
G1¼	T15-A14-T2AD	T15-A14-E2AD
G1½	T15-B14-T2AD	T15-B14-E2AD

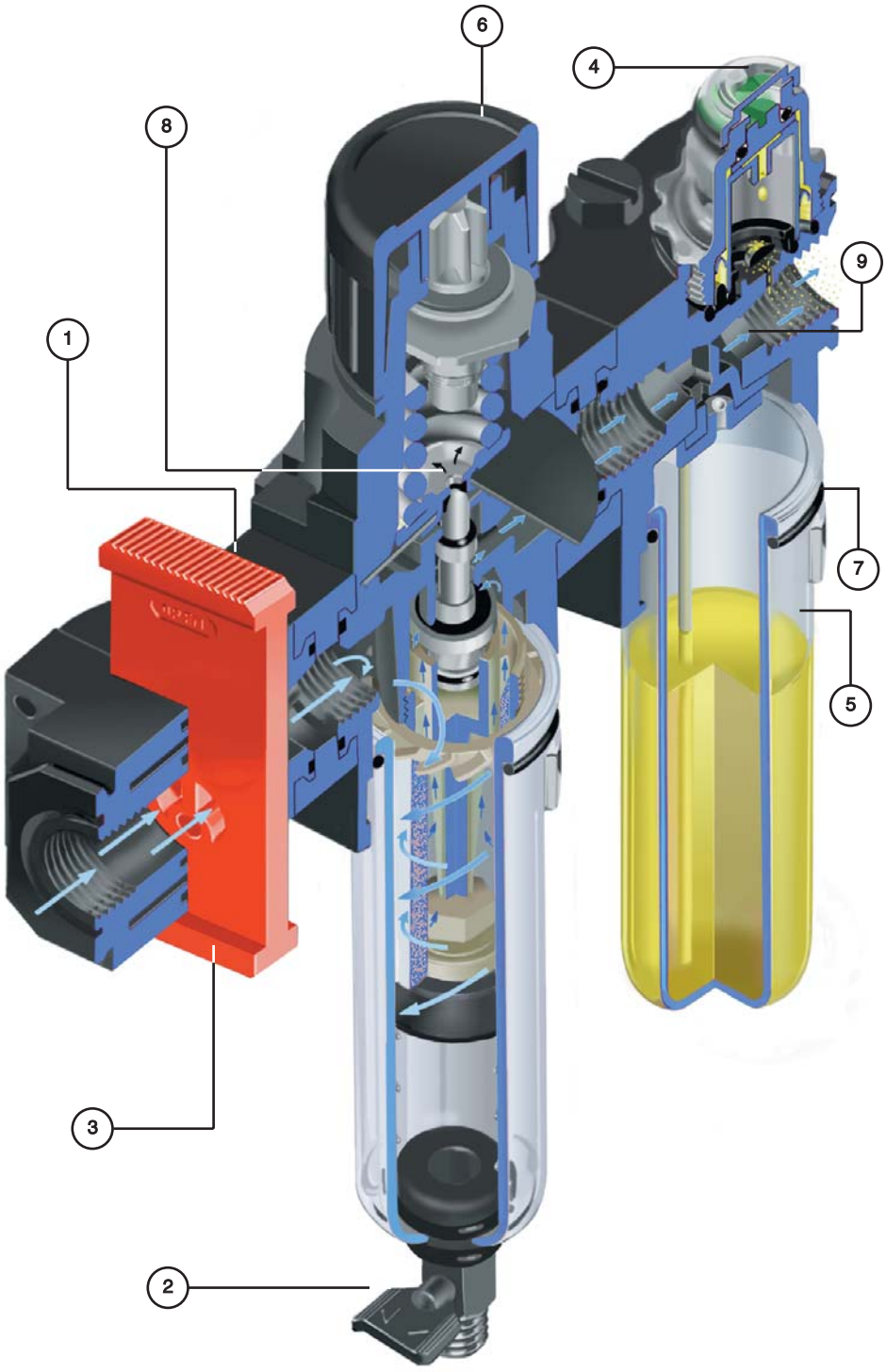
- Olympian plug in design
- Quick action 1/4 turn from full flow to exhaust
- 3-port/2-position valves
- Available with G1/4 threaded exhaust or with unthreaded exhaust
- Triple lock facility
- Ball valve design provides low pressure drop

Excelon

Excelon, the alternative modular air preparation system from Norgren.

Although direct ported, thanks to a patented Quikclamp connection system, Excelon can be used where both stand alone units or modular assemblies are required.

Just another example of Norgren's adaptability.



1 PATENTED QUIKCLAMP CONNECTION SYSTEM

Simple, speedy assembly of accessories and combination units

2 PATENTED QUARTER TURN MANUAL DRAIN

Simple 1/4 turn to operate. Features a threaded pipeaway outlet.

3 PATENTED SHUT-OFF VALVE

3/2 with a threaded exhaust and lockable blade for safe system isolation.

4 LUBRICATOR SIGHT FEED DOME

Allows full 360° visibility and screwdriver adjustment for easy drip rate setting.
Can be made tamper-resistant.

5 BAYONET BOWLS

Easy removal for routine maintenance.
Detent action prevents removal under pressure.

6 PUSH TO LOCK ADJUSTING KNOB

Can be fitted with a tamper resistant cover.

7 CAPTIVE 'O' RINGS

8 BALANCED VALVE

For improved regulation characteristics.

9 LUBRICATOR SENSOR

Helps to maintain constant oil density with varying flow.

PLUS many more design features and accessories.

Excelon modular system

Boxed sets and combination units

Filter/regulators and lubricators

G¼ to G½

BL72

BL73

BL74

Boxed sets include: filter/regulator and micro-fog lubricator complete with exhausting shut-off valve, pressure gauge and mounting brackets

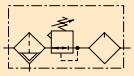
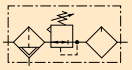
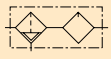
High efficiency water and particle removal

Quick release bayonet bowls

Push to lock adjusting knob with tamper resistant option

All round (360°) visibility of lubricator sight feed dome for ease of drip rate setting

Micro-fog lubricator for most general purpose pneumatic applications

		Port size	Element (µm)	Bowl	Pressure range (bar)	kg	Operation	Model Auto *	Manual **
Boxed sets		G1/4	40	Transparent	0,3 ... 10	1,65	Relieving	BL72-201GA	BL72-221G
		G3/8	40	Transparent	0,3 ... 10	2,26	Relieving	BL73-301G	BL73-321G
		G1/2	40	Guarded transparent	0,3 ... 10	3,55	Relieving	BL74-401G	BL74-421G
Filter-regulator & lubricator combinations		G1/4	40	Transparent	0,3 ... 10	1,67	Relieving	BL72-208GA	BL72-228G
		G3/8	40	Transparent	0,3 ... 10	1,67	Relieving	BL72-308GA	BL72-328G
		G3/8	40	Transparent	0,3 ... 10	2,26	Relieving	BL73-308G	BL73-328G
		G1/2	40	Transparent	0,3 ... 10	2,26	Relieving	BL73-408G	BL73-428G
		G1/2	40	Guarded transparent	0,3 ... 10	3,50	Relieving	BL74-408G	BL74-428G
		G3/4	40	Guarded transparent	0,3 ... 10	3,55	Relieving	BL74-608G	BL74-628G
Filter & lubricator combinations		G1/4	40	Transparent		1,95		FL72-208GA	FL72-228G
		G3/8	40	Transparent		1,95		FL72-308GA	FL72-328G

* For metal bowl options substitute '5' at 7th digit e.g. BL73-351G ** For metal bowl options substitute '6' at 7th digit e.g. BL72-261G

Technical data

Medium:

Compressed air

Maximum inlet pressure:

Transparent & guarded bowls: 10 bar

Metal: 17 bar

Ambient temperature:

Transparent & guarded bowls:

-20°C to +50°C

Consult our Technical Service for use below +2°C

Materials

BL72, FL72:

Polycarbonate bowl standard, zinc bowl optional. Zinc body. Neoprene, nitrile and Geolast elastomeric materials. Transparent nylon liquid level indicator lens for metal bowl.

Filter/regulator: Acetal bonnet. Sintered polypropylene element. Brass valve.

Lubricator: Transparent nylon sight-feed dome.

BL73:

Aluminium bonnet, brass valve

Sintered plastic element

Aluminium body and bowl

Transparent nylon liquid level indicator and sight feed dome

Neoprene and nitrile elastomers

Options selector

★L7★-★★★G★

Units	Substitute
Filter-regulator-lubricator combinations	B
Filter-lubricator combinations	F

Series	Substitute
72	2
73	3
74	4

Port size	Substitute
1/4	2
3/8	3
1/2	4
3/4	6

Drain	Substitute
Auto drain (72 only)	A

Accessories	Substitute
Shut-off valve & gauge & brackets	1
Shut-off valve & gauge	2
Shut-off valve & bracket	3
Shut-off valve	4
Gauge & bracket	5
Gauge	6
Bracket	7
None	8

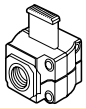
Units	Substitute
Micro-fog lubricator & auto drain* filter (Filter-regulator)	0
Oil-fog lubricator & auto drain filter (Filter-regulator)	1
Micro-fog & manual drain	2
Oil-fog & manual drain	3
Micro-fog lubricator & auto drain & metal bowl	5
Oil-fog lubricator & auto drain & metal bowl	6
Micro-fog lubricator & manual drain & metal bowl	7
Oil-fog lubricator & manual drain & metal bowl	8

* Semi-auto 72 only

BL74:

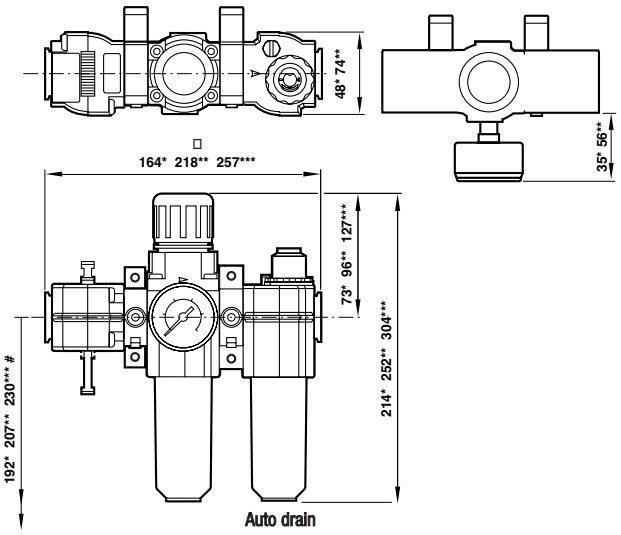
Aluminium bonnet, brass valve. Sintered plastic element. Aluminium body, transparent polycarbonate with steel bowl guard. Transparent nylon sight-feed dome, neoprene and nitrile elastomers.

Accessories

Series	Port size	Gauge 0 ... 10 bar ‡	Tamper resistant cover and seal wire	Seal wire	Tamper resistant snap-on cap for lubricator sight feed dome	Exhaust port silencer 3/2 Shut-off valve	3/2 Shut-off valve	Wall mounting bracket
								
BL72	G1/4	18-013-989	4255-51	2117-01	4050-89	T40M0500	T72T-2GA-P1N	4213-89
FL72	G3/8	–	–	–	4050-89	–	T72T-3GA-P1N	4213-89
BL73	G3/8	18-013-013	4455-51	2117-01	4050-89	T40M0500	T73T-3GA-P1N	4313-50
FL73	G1/2	–	–	–	4050-89	–	T73T-4GA-P1N	4313-50
BL74	G1/2	18-013-013	4355-50*	2117-01	–	T40B1800	T74T-4GA-P1N	4313-50
FL74	G3/4	–	–	–	–	–	T74T-6GA-P1N	4313-50

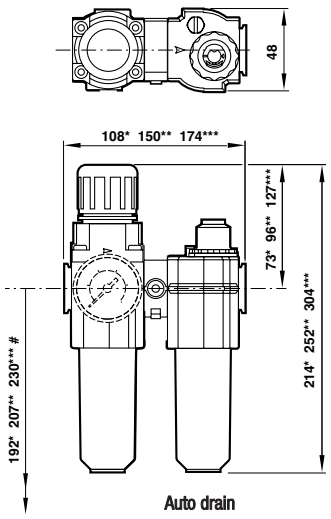
Pack of 10. ‡ For additional gauges see page 486 * Seal wire not included.

Boxed sets



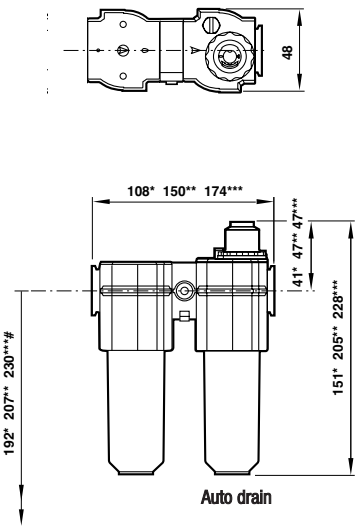
*BL72 **BL73 ***BL74 # Minimum clearance required to remove bowl.

Filter/regulator & lubricator combinations



*BL72 **BL73 ***BL74 # Minimum clearance required to remove bowl.

Filter & lubricator combinations

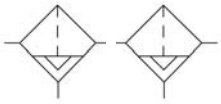


*BL72 **BL73 ***BL74 # Minimum clearance required to remove bowl.

Excelon modular system

F72G, F73G, F74G General purpose filters

G¼ to G¾



Excelon design allows in-line installation or modular installation with other Excelon products

Quick release bayonet bowl

Optional service life indicator turns from green to red when the filter element needs to be replaced

F72G F73G F74G

Technical data

Medium:

Compressed air only

Maximum inlet pressure:

10 bar transparent bowls

17 bar metal bowls

10 bar (F72G with metal bowl and auto drain)

Ambient temperature:

Transparent & guarded bowls: -34°C to +50°C

F72G metal bowls: -34°C to +65°C

F73G & F74G metal bowls: -34°C to +80°C

Consult our Technical Service for use below +2°C

Materials

F72G:

Body: zinc
Transparent bowl: polycarbonate
Metal bowl: zinc
Liquid level indicator lens (metal bowl): transparent nylon
Element: sintered polypropylene
Elastomers: neoprene & nitrile
Optional service life indicator: Transparent nylon body, acetal internal parts, stainless steel spring, nitrile elastomers.

F73G & F74G:

Body: aluminium
Transparent bowl: polycarbonate
Guarded transparent bowl: polycarbonate with steel guard
Metal bowl: aluminium
Liquid level indicator lens (metal bowl): transparent nylon
Element: sintered polypropylene
Elastomers: neoprene & nitrile
Optional service life indicator: Transparent nylon body, acetal internal parts, stainless steel spring, nitrile elastomers.

Port size	Flow (dm^3/s) #	kg	Model Auto	Semi-auto	Manual	Service kit	Element (40 µm
G1/4	30	0,45	F72G-2GN-AL3	F72G-2GN-ST3	F72G-2GN-QT3	4380-500	5925-02
G1/4	29	0,50	F73G-2GN-AT3		F73G-2GN-QT3	4380-600	4438-03
G3/8	30	0,45	F72G-3GN-AL3	F72G-3GN-ST3	F72G-3GN-QT3	4380-500	5925-02
G3/8	35	0,50	F73G-3GN-AT3		F73G-3GN-QT3	4380-600	4438-03
G3/8	68	0,83	F74G-3GN-AD3		F74G-3GN-QP3*	4380-700	4338-05
G1/2	38	0,50	F73G-4GN-AT3		F73G-4GN-QT3	4380-600	4438-03
G1/2	83	0,81	F74G-4GN-AP3		F74G-4GN-QP3*	4380-700	4338-05
G3/4	83	0,79	F74G-6GN-AP3		F74G-6GN-QP3*	4380-700	4338-05

Models listed include ISO G threads, 40 µm element. Models do not include the service life indicator.

Typical flow with 6,3 bar inlet pressure and a 0,5 bar droop from set.

* Transparent with guard

Options selector

F7★G-★★★-★★★

Series	Substitute
72	2
73	3
74	4

Port size	Substitute
1/4 (72 & 73)	2
3/8	3
1/2 (73 & 74)	4
3/4 (74)	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Service life indicator	Substitute
With (visual)	D
With (electrical)	E
Without	N

Element	Substitute
5 µm	1
25 µm	2
40 µm	3

Bowl	Substitute
Metal with liquid level indicator	D
Long metal with liquid indicator (72)	E
Transparent without guard (72, 73)	T
Long transparent without guard (72)	L*
Long transparent with guard (72)	W*
Transparent with guard (73, 74)	P

Drain	Substitute
1/4 turn manual	Q
Semi automatic	S
Auto drain*	A

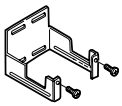
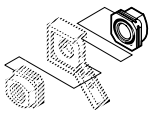
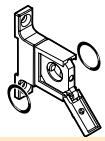
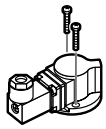
* Supplied with long bowl option only

Excelon modular system

F72G, F73G, F74G General purpose filters

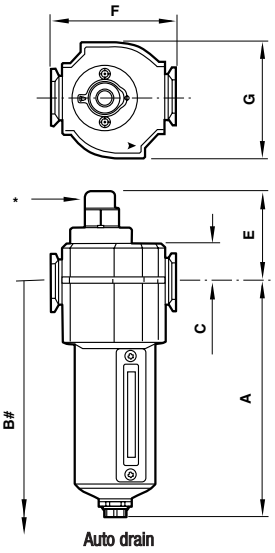
G¼ to G¾

Accessories

Series	Port size	Wall mounting bracket	Quikmount pipe adaptors (quantity of 1)	Quikclamp	Quikclamp and Quikclamp wall bracket	Service life indicator (visual) **	Service life indicator (electrical) **
							
F72G	G1/4	4224-50	4215-08	4214-51	4214-52	5797-50	4020-51R
	G3/8		4215-09		4213-89*		
F73G	G1/4	4424-50	4315-09	4314-51	4314-52	5797-50	4020-51R
	G3/8		4315-10		4313-50*		
	G1/2		4315-11				
	G3/4		4315-12				
F74G	G3/8	4324-50	4315-10	4314-51	4314-52	5797-50	4020-51R
	G1/2		4315-11		4313-50*		
	G3/4		4315-12				

*Bracket only.

** Field relpacement: cannot be retro-fitted to a standard filter

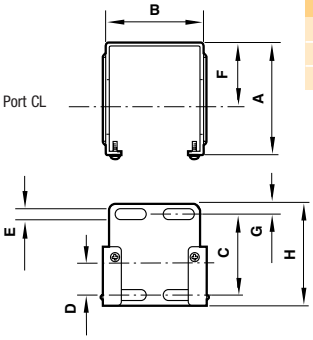


Series	Drain	A	B	C	E	F	G
72	Semi-auto	164	215	19	53	50	48
	Auto	141	192	19	53	50	48
	Manual	134	185	19	53	50	48
73	Auto	147	207	25	60	68	62
	Manual	156	216	25	60	68	62
74	Auto	161	230	25	60	80	74
	Manual	177	246	25	60	80	74

* Optional service indicator

Minimum clearance required to remove bowl

Bracket mounting

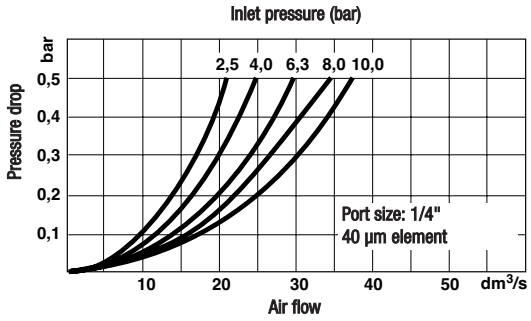


Series	A	B	C	D	E	F	G	H
72	60	42	39	18,6	4	38	6	51
73	67	60	48	19	7	38	6	61
74	79	69	50	20	5	51	6	61

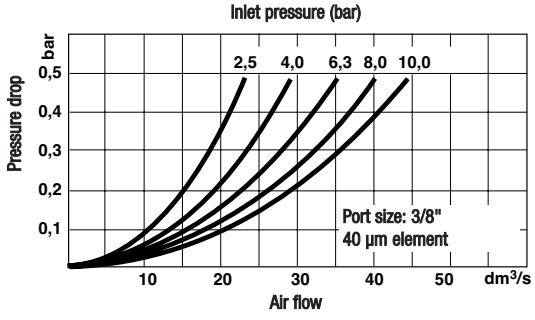
See page 454 for further details

Flow characteristics

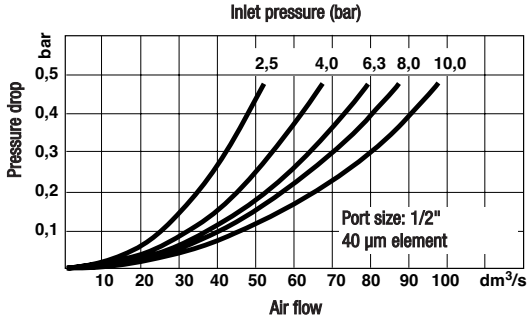
F72G



F73G



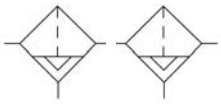
F74G



Excelon modular system

F72C, F73C, F74C, F74H 'Puraire'® oil removal filters

G¼ to G¾



Excelon design allows in-line installation or modular installation with other Excelon products

High efficiency oil and particle removal.

Quick release bayonet bowl

Standard service life indicator turns from green to red when the filter element needs to be replaced

Optional electrical service life indicator gives an electrical signal when the filter element needs to be replaced

Note: Install with 5 µm pre-filter upstream.

F72C F72C F74C F74H

Port size	Flow (dm³/s) #	kg	Bowls	Model Auto	Manual	Semi-auto	Service kit	Coalescing element
G1/4	4,5	0,40	Transparent	F72C-2GD-AL0	F72C-2GD-QT0	F72C-2GD-ST0	4380-500	5925-09
G1/4	10,0	0,54	Transparent	F73C-2GD-AT0	F73C-2GD-QT0		4380-602	4444-01
G3/8	4,5	0,40	Transparent	F72C-3GD-AL0	F72C-3GD-QT0	F72C-3GD-ST0	4380-500	5925-09
G3/8	10,0	0,54	Transparent	F73C-3GD-AT0	F73C-3GD-QT0		4380-602	4444-01
G3/8	16,0	0,85	Guarded transparent	F74C-3GD-AP0	F74C-3GD-QP0		4380-730	4344-01
G1/2	10,0	0,54	Transparent	F73C-4GD-AT0	F73C-4GD-QT0		4380-602	4444-01
G1/2	16,0	0,83	Guarded transparent	F74C-4GD-AP0	F74C-4GD-QP0		4380-730	4344-01
G1/2	28,0	1,11	Guarded transparent	F74H-4GD-AP0	F74H-4GD-QP0		4380-730	4344-02
G3/4	28,0	1,10	Guarded transparent	F74H-6GD-AP0	F74H-6GD-QP0		4380-730	4344-02

Maximum flow with 6,3 bar inlet pressure, to maintain stated oil removal characteristics.

Technical data

Medium:
Compressed air

Maximum inlet pressure:
10 bar transparent bowl or guarded
8 bar transparent bowl F72C with auto drain
17 bar metal bowl
8 bar metal bowl F72C with auto drain

Air quality output:
ISO8573-1 : Class 1.7.2

Remaining oil content:
0,01 mg/m³ at +21°C

Particle removal:
0,01 µm

Ambient temperature:
Transparent bowl: -34° to +50°C
Metal bowl: -34° to +65°C
Consult our Technical Service for use below +2°C

Materials

F72C:
Body: zinc
Transparent bowl: polycarbonate
Metal bowl: zinc
Liquid level indicator lens (metal bowl): transparent nylon
Element: synthetic fibre & polyurethane foam
Elastomers: neoprene & nitrile
Service life indicator: transparent nylon body, acetal internal parts, stainless steel spring, nitrile elastomers.

Options selector

F7★★-★★★-★★0

Series	Substitute
72	2C
73	3C
74	4C
74 (High flow)	4H

Port size	Substitute
1/4	2
3/8	3
1/2	4
3/4	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Bowl	Substitute
Metal with liquid level indicator	D
Long metal with liquid level indicator (72)	E
Transparent without guard (72, 73)	T
Long transparent without guard (72)	L*
Long transparent with guard (72)	W*
Transparent with guard (73, 74)	P

Drain	Substitute
1/4 turn manual	Q
Semi automatic (72)	S
Auto drain*	A

Service life indicator	Substitute
With (visual)	D
With (electrical)	E
Without	N

* Supplied with long bowl options only

F73C, F74C, F74H:
Body: aluminium
Transparent bowl: polycarbonate
Guarded transparent bowl: polycarbonate with steel guard
Metal bowl: aluminium
Liquid level indicator lens (metal bowl): transparent nylon (Pyrex optional)
Element: synthetic fibre & polyurethane foam
Elastomers: neoprene & nitrile
Service life indicator: transparent nylon body, acetal internal parts, stainless steel spring, nitrile elastomers.

Typical performance characteristics

Inlet pressure (bar)	Maximum flow dm³/s* F72C	F73C	F74C	F74H
1	1,8	4,0	6,4	11,2
3	3,1	6,9	11,0	19,3
5	4,0	8,9	14,3	24,9
6,3	4,5	10,0	16,0	28,0
7	4,7	10,5	16,9	29,5
9	5,4	12,0	19,1	33,5

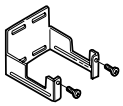
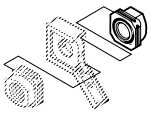
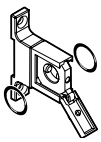
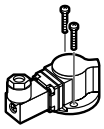
* Maximum flow to maintain stated oil removal performance

Excelon modular system

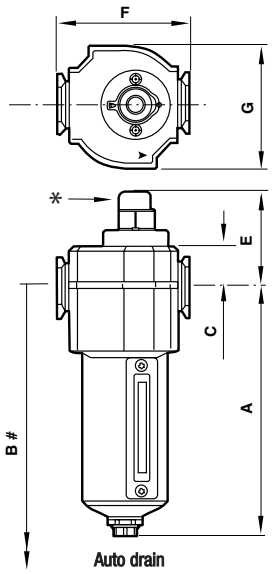
F72C, F73C, F74C, F74H 'Puraire'® oil removal filters

G¼ to G¾

Accessories

Series	Port size	Wall mounting bracket	Quikmount pipe adaptors (quantity of 1)	Quikclamp	Quikclamp and Quikclamp wall bracket	Service life indicator (visual)	Service life indicator (electrical)
							
F72C	G1/4	4224-50	4215-08	4214-51	4214-52	5797-50	4020-51R
	G3/8		4215-09		4213-89*		
F73C	G1/4	4424-50	4315-09	4314-51	4314-52	5797-50	4020-51R
	G3/8		4315-10		4313-50*		
	G1/2		4315-11				
	G3/4		4315-12				
F74C, F74H	G3/8	4324-50	4315-10	4314-51	4314-52	5797-50	4020-51R
	G1/2		4315-11		4313-50*		
	G3/4		4315-12				

*Bracket only.

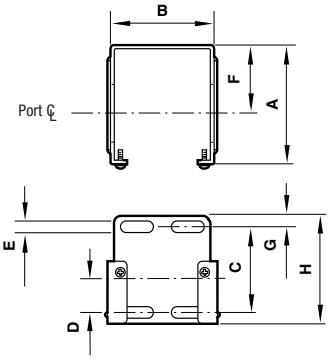


Series	Drain	A	B	C	E	F	G
F72C	Semi-auto	164	215	19	53	50	48
	Auto	141	192	19	53	50	48
	Manual	134	185	19	53	50	48
F73C	Auto	147	207	25	60	68	62
	Manual	156	216	25	60	68	62
F74C	Auto	161	230	25	60	80	74
	Manual	177	246	25	60	80	74
F74H	Auto	215	284	25	60	80	74
	Manual	230	300	25	60	80	74

* Standard service indicator

Minimum clearance required to remove bowl

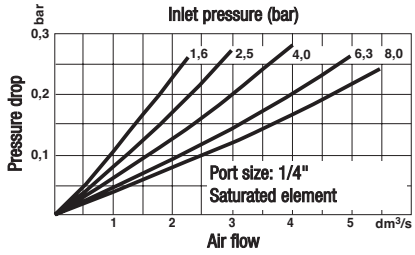
Bracket mounting



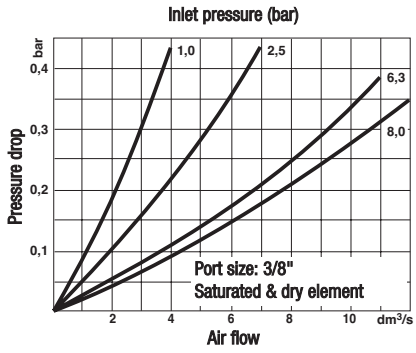
Series	A	B	C	D	E	F	G	H
72	60	42	39	18,6	4	38	6	51
73	67	60	48	19	7	38	6	61
74	79	69	50	20	5	51	6	61

Flow characteristics

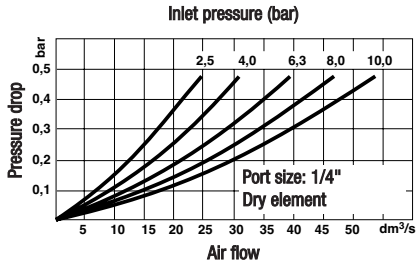
F72C



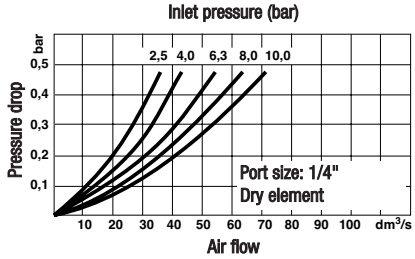
F73C



F74C



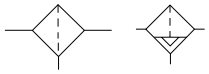
F74H



Excelon modular system

F72V, F74V 'Ultraire®' oil vapour removal filters

G¼ to G¾



Excelon design allows in-line or modular installation with other Excelon products

Adsorbing type activated carbon element removes oil vapours and most hydrocarbon odours

High intensity blue colour change indication (F72V)

F72V

F74V

Technical data

Medium:
Compressed air

Maximum inlet pressure:
10 bar (F72V)
17 bar (F74V)

Air quality output:
Within ISO 8573-1, Class 1.7.1 (oil content) when installed downstream of an oil removal filter.

Remaining oil content:
0,003 mg/m³ max. at +20°C.

Ambient temperature:
-34°C to +65°C
Consult our Technical Service for use below +2°C

Materials

F72V:
Body: zinc
Transparent bowl: polycarbonate
Metal bowl: zinc
Element: activated carbon & polycarbonate
Elastomers: nitrile

F74V:
Body & bowl: aluminium
Element: activated carbon & aluminium
Elastomers: neoprene & nitrile

Port size	Flow (dm³/s) *	Bowls	kg	Model	Service kit	Element
G1/4	1,6	Transparent	0,52	F72V-2GN-ETC	4380-500	4241-01
G3/8	1,6	Transparent	0,52	F72V-3GN-ETC	4380-500	4241-01
G3/8	13	Metal	1,15	F74V-3GN-EMA	4380-750	4341-01
G1/2	13	Metal	1,14	F74V-4GN-EMA	4380-750	4341-01
G3/4	13	Metal	1,12	F74V-6GN-EMA	4380-750	4341-01

* Maximum flow with 6,3 bar inlet pressure to maintain stated oil removal performance.

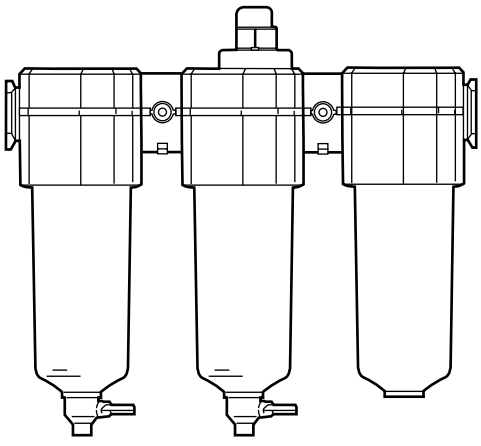
Typical performance characteristics

Inlet pressure (bar)	Maximum flow dm³/s*	
	F72V	F74V
2,5	1,0	8,7
4	1,3	10,7
6,3	1,6	13,3
8	1,8	15,6
10	2,0	17,6

* Maximum flow to maintain stated oil removal performance

Oil vapour removal filters must be protected upstream by an oil removal filter.

A typical assembly:



General purpose filter
Page 432

Oil removal filter
Page 434

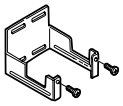
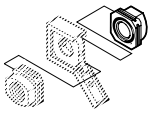
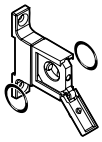
Oil vapour removal filter

Excelon modular system

F72V, F74V 'Ultraire®' oil vapour removal filters

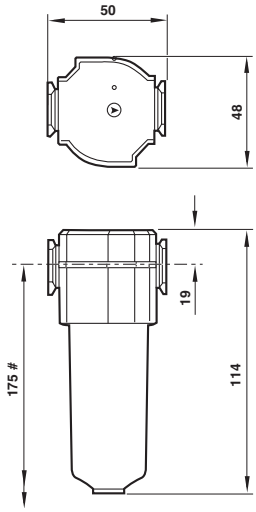
G¼ to G¾

Accessories

Series	Port size	Wall mounting bracket	Quikmount pipe adaptors (quantity of 1)	Quikclamp	Quikclamp and Quikclamp wall bracket
					
F72V	G1/4	4224-50	4215-08	4214-51	4214-52
	G3/8		4215-09		4213-89*
F74V	G3/8	4324-50	4315-10	4314-51	4314-52
	G1/2		4315-11		4313-50*
	G3/4		4315-12		

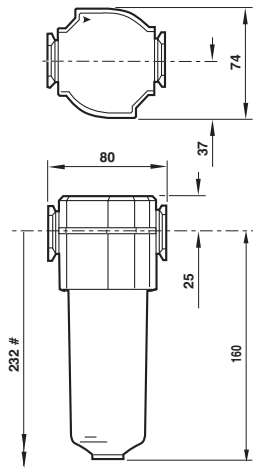
*Bracket only

F72V



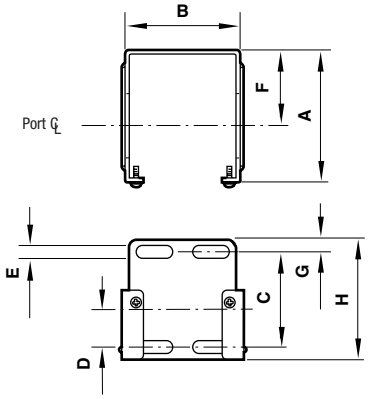
* Minimum clearance required to remove bowl.

F74V



* Minimum clearance required to remove bowl.

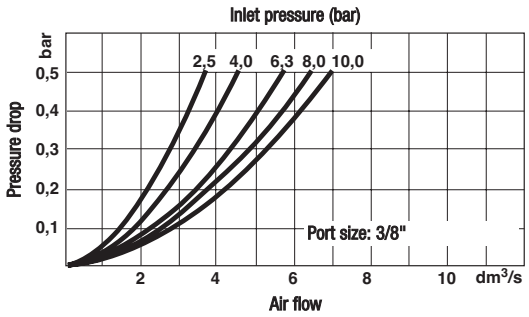
Bracket mounting



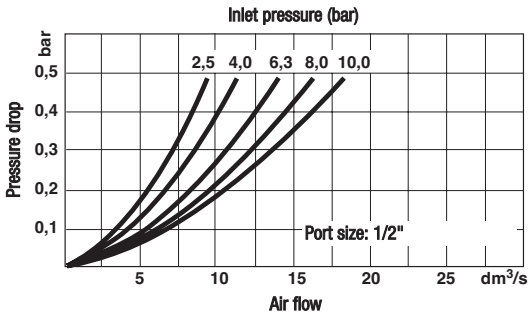
Series	A	B	C	D	E	F	G	H
72	60	42	39	18,6	4	38	6	51
74	79	69	50	20	5	51	6	61

Flow characteristics

F72V



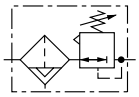
F74V



Excelon modular system

B72G, B73G, B74G Filter/regulators

G¼ to G¾



Excelon design allows in-line installation or modular installation with other Excelon products

High efficiency water and particle removal

Quick release bayonet bowl

Push to lock adjusting knob with tamper resistant accessory

Optional patented quarter turn manual drain

B72G

B73G

B74G

Port size	Flow (dm^3/s) #	Bowls	kg	Model Auto	Manual	Semi-auto	Service kit	Element
G1/4	38	Transparent	0,56	B72G-2GK-AL3-RMN	B72G-2GK-QT3-RMN	B72G-2GK-ST3-RMN	4383-500	5925-02
G1/4	49	Transparent	0,7	B73G-2GK-AT3-RMN	B73G-2GK-QT3-RMN	–	4383-600	4438-03
G3/8	38	Transparent	0,56	B72G-3GK-AL3-RMN	B72G-3GK-QT3-RMN	B72G-3GK-ST3-RMN	4383-500	5925-02
G3/8	50	Transparent	0,7	B73G-3GK-AT3-RMN	B73G-3GK-QT3-RMN	–	4383-600	4438-03
G3/8	77	Guarded transparent	1,25	B74G-3GK-AP3-RMN	B74G-3GK-QP3-RMN	–	4383-700	4338-05
G1/2	50	Transparent	0,7	B73G-4GK-AT3-RMN	B73G-4GK-QT3-RMN	–	4383-600	4438-03
G1/2	100	Guarded transparent	1,25	B74G-4GK-AP3-RMN	B74G-4GK-QP3-RMN	–	4383-700	4338-05
G3/4	100	Guarded transparent	1,30	B74G-6GK-AP3-RMN	B74G-6GK-QP3-RMN	–	4383-700	4338-05

Models listed include ISO G threads, knob adjustment, semi automatic drain, 40 µm element, relieving diaphragm, 0,3 to 10 bar outlet pressure adjustment range without gauge.

Typical flow with 10 bar inlet pressure, 6,3 bar set pressure and a 1 bar droop from set.

Technical data

Medium:

Compressed air

Maximum inlet pressure:

10 bar (transparent bowl)

17 bar (metal bowl)

10 bar (B72G with metal bowl & auto drain)

Gauge ports:

G1/8

Ambient temperature:

Transparent bowl: -34° to +50°C

Metal bowl: -34° to +65°C (B72G)

Metal bowl: -34°C to +80°C (B73G & B74G).

Consult our Technical Service for use below +2°C

Materials

B72G:

Body: zinc

Bonnet: acetal

Valve: brass

Transparent bowl: polycarbonate

Metal bowl: zinc

Liquid level indicator lens (metal bowl): transparent nylon

Element: sintered polypropylene

Elastomers: neoprene & nitrile

B73G & B74G:

Body & bonnet: aluminium

Valve: brass

Transparent bowl: polycarbonate

Guarded transparent bowl: polycarbonate with steel

Metal bowl: aluminium

Liquid level indicator lens (metal bowl): transparent nylon (Pyrex optional)

Element: sintered polypropylene

Elastomers: neoprene & nitrile

Options selector

B7★G-★★★-★★★-★★★

Series	Substitute
72	2
73	3
74	4

Port size	Substitute
1/4" (72 & 73)	2
3/8"	3
1/2" (73 & 74)	4
3/4" (74)	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Adjustment	Substitute
Knob	K
T-bar	T

Drain	Substitute
1/4 turn manual	Q
Semi automatic (72)	S
Auto drain**	A

Gauge	Substitute
With	G
Without	N

Outlet pressure adjustment range*	Substitute
0,3 ... 2 bar (72)	C
0,3 ... 4 bar	F
0,3 ... 10 bar	M
0,7 ... 17 bar (73, 74)	S

Diaphragm	Substitute
Relieving	R
Non relieving	N

Element	Substitute
5 µm	1
25 µm	2
40 µm	3

Bowl	Substitute
Metal with liquid level indicator	D
Long metal with liquid level indicator (72)	E
Transparent without guard (72, 73)	T
Long transparent without guard (72)	L
Long transparent with guard (72)	W
Transparent with guard (73,74)	P

* Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

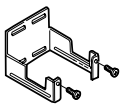
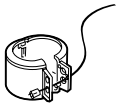
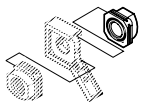
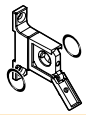
**Supplied in long bowl options only

Excelon modular system

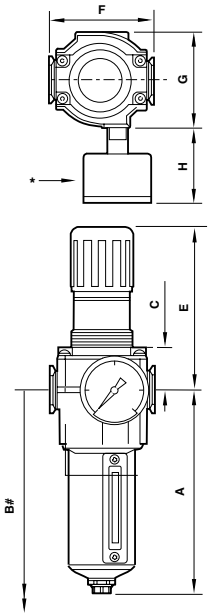
B72G, B73G, B74G Filter/regulators

G¼ to G¾

Accessories

Series	Port size	Wall mounting bracket	Neck mounting bracket	Gauge 0 ... 10 bar‡	Panel nut	Tamper resistant cover and seal wire	Quikmount pipe adaptors (quantity of 1)	Quikclamp	Quikclamp and Quikclamp wall bracket
									
B72G	G1/4	4224-50	74316-50	18-013-989	4248-89	4255-51	4215-08	4214-51	4214-52
	G3/8						4215-09		4213-89*
B73G	G1/4	4424-50	4461-50	18-013-013	5191-88	4455-51	4315-09	4314-51	4314-52
	G3/8						4315-10		4313-50*
	G1/2						4315-11		
	G3/4						4315-12		
B74G	G3/8	4324-50	4368-51	18-013-013	4348-89	4355-51	4315-10	4314-51	4314-52
	G1/2						4315-11		4313-50*
	G3/4						4315-12		

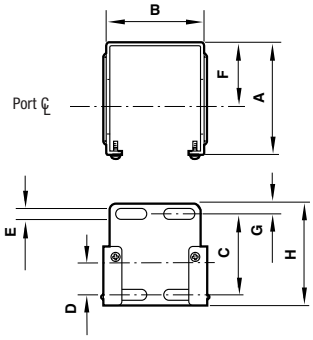
* Bracket only. ‡ Other pressure ranges available – see page 486



*Optional gauge.

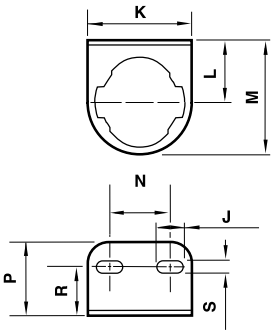
Minimum clearance required to remove bowl.

Bracket mounting

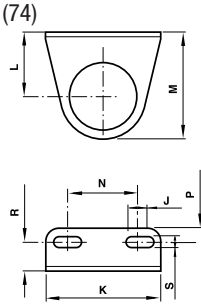


Series	A	B	C	D	E	F	G	H
72	60	42	39	18,6	4	38	6	51
73	67	60	48	19	7	38	6	61
74	79	69	50	20	5	51	6	6

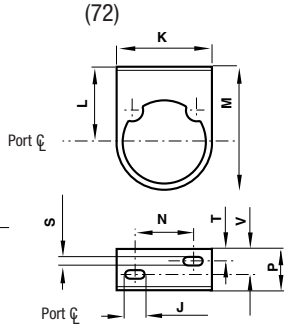
Neck mounting bracket (73)



Neck mounting bracket (74)



(72)

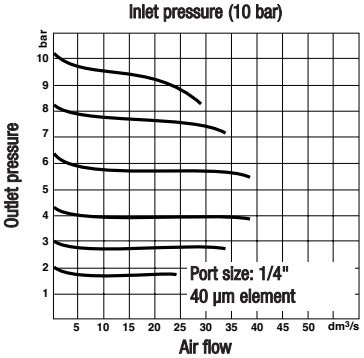


Series	J	K	L	M	N	P	R	S	T	V
72	8	49	38	63,5	30	24	–	4,4	8	15
73	17	64	38	70	38	38	25	7	–	–
74	24	89	52	86	56	35	23	7	–	–

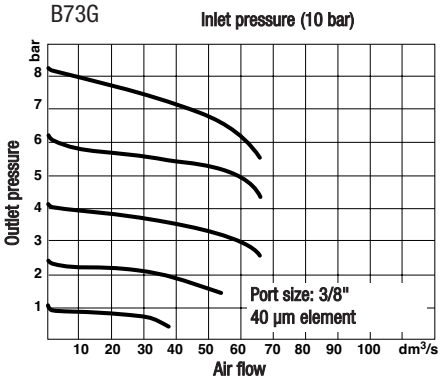
Series	Drain	A	B	C	E	F	G	H	Panel Ø	Panel depth
72	Semi-auto	164	215	26	73	50	48	35	40	0 ... 4
	Auto	141	192	26	73	50	48	35	40	0 ... 4
	Manual	134	185	26	73	50	48	35	40	0 ... 4
73	Auto	147	207	31	96	68	62	56	48	2 ... 6
	Manual	156	216	31	96	68	62	56	48	2 ... 6
74	Auto	161	230	31	127	80	74	56	52	2 ... 6
	Manual	177	246	31	127	80	74	56	52	2 ... 6

Flow characteristics

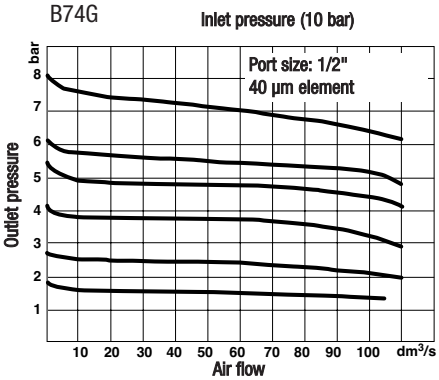
B72G



B73G



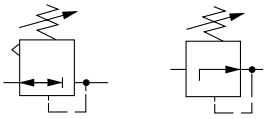
B74G



Excelon modular system

R72G, R73G, R74G Pressure regulators

G¼ to G¾



R72G R73G R74G

Excelon design allows in-line or modular installation

Full flow gauge ports

Balanced valve design for optimum pressure control

Standard relieving models allow reduction of downstream pressure when the system is dead-ended

Push to lock adjusting knob with tamper resistant accessory

Manifold regulators can be banked together to provide numerous regulated pressures from a common primary pressure

Technical data

Medium:
Compressed air

Maximum inlet pressure:
20 bar

Gauge ports:
G1/8

Ambient temperature:
-34°C to +65°C (R72G)
-34°C to +80°C (R73G & R74G)
Consult our Technical Service for use below +2°C

Materials

R72G:
Body: zinc
Bonnet & bottom plug: acetal
Valve: brass
Elastomers: nitrile

R73G & R74G:
Body & bonnet: aluminium
Valve: brass
Elastomers: nitrile
Bottom plug: acetal

Port size	Flow (dm³/s) #	kg	Model	Service kit
G1/4	33	0,36	R72G-2GK-RMN	4381-500
G1/4	50	0,48	R73G-2GK-RMN	4381-600
G3/8	33	0,36	R72G-3GK-RMN	4381-500
G3/8	60	0,48	R73G-3GK-RMN	4381-600
G3/8	98	0,82	R74G-3GK-RMN	4381-700
G1/2	60	0,48	R73G-4GK-RMN	4381-600
G1/2	105	0,80	R74G-4GK-RMN	4381-700
G3/4	105	0,78	R74G-6GK-RMN	4381-700

Models listed include unidirectional flow, ISO G threads, knob adjustment, relieving diaphragm, 0,3 to 10 bar outlet pressure adjustment range without gauge.
Typical flow with 10 bar inlet pressure, 6,3 bar set pressure and a 1 bar droop from set.

Options selector

R7★★-★★★-★★★

Series	Substitute
72	2
73	3
74	4

Flow type	Substitute
Uni-directional	G
Reverse	R
Manifold (72 only)	M

Port size	Substitute
1/4" (72 & 73)	2
3/8"	3
1/2" (73 & 74)	4
3/4" (74)	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Gauge	Substitute
With	G
Without	N

Outlet pressure adjustment range*	Substitute
0,3 ... 2 bar (72)	C
0,3 ... 4 bar	F
0,3 ... 10 bar	M
0,7 ... 17 bar** (73, 74)	S

Diaphragm	Substitute
Relieving	R
Non relieving	N

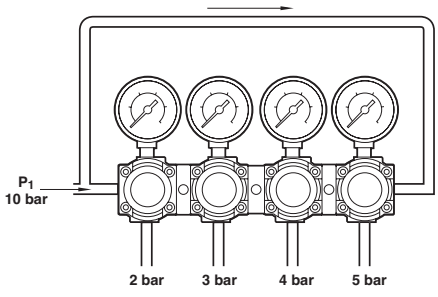
Adjustment	Substitute
Knob	K
T-bar	T

*Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.
**Units with 17 bar outlet pressure range are available only with the T-bar adjustment; therefore substitute T at the 7th position and S at the 9th position.

R72M Manifold pressure regulators

These products allow inlet pressure to pass directly through the body. The outlet port is at right angles to the inlet. This then allows units to be 'Quikclamped' together in a bank meaning numerous regulated pressures can be obtained from a single supply – see illustration.

R72M pressure regulators are ideal for control cabinet installations where neat, compact assemblies are required.
See pages 453 and 454 for part number details for Quikclamp connectors and page 486 for pressure gauges.

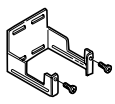
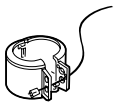
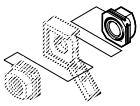
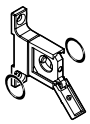


Excelon modular system

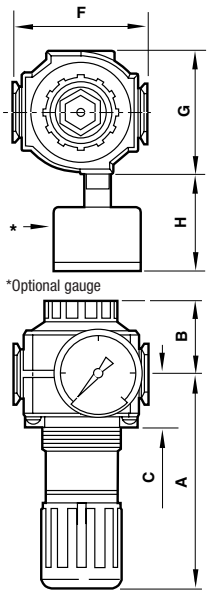
R72G, R73G, R74G Pressure regulators

G¼ to G¾

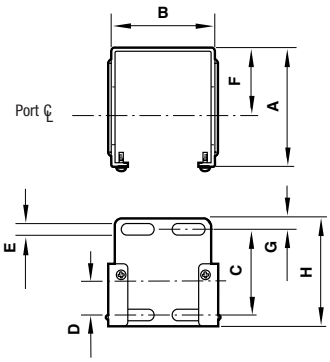
Accessories

Series	Port size	Wall mounting bracket	Neck mounting bracket	Gauge 0 ... 10 bar‡	Panel nut	Tamper resistant cover and seal wire	Quikmount pipe adaptors (quantity of 1)	Quikclamp	Quikclamp and Quikclamp wall bracket
									
R72G	G1/4	4224-50	74316-50	18-013-989	4248-89	4255-51	4215-08	4214-51	4214-52
R72M	G3/8			18-013-027			4215-09		4213-89*
R73G	G1/4	4424-50	4461-50	18-013-013	5191-88	4455-51	4315-09	4314-51	4314-52
	G3/8						4315-10		4313-50*
	G1/2						4315-11		
	G3/4						4315-12		
R74G	G3/8	4324-50	4368-51	18-013-013	4348-89	4355-51	4315-10	4314-51	4314-52
	G1/2						4315-11		4313-50*
	G3/4						4315-12		

* Bracket only. ‡ Other pressure ranges available – see page 486

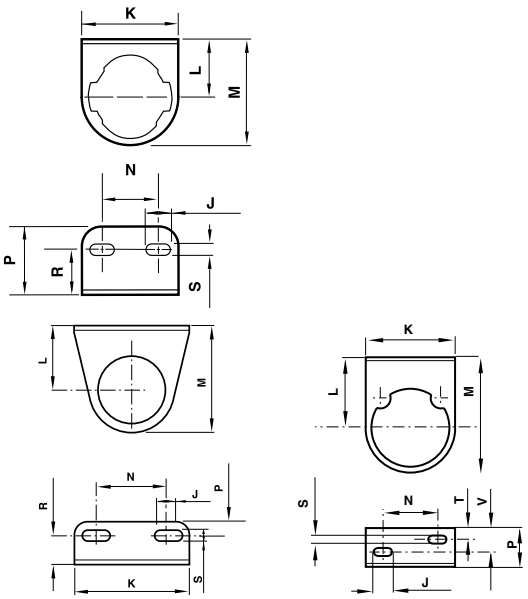


Bracket mounting



Series	A	B	C	D	E	F	G	H
72	60	42	39	18,6	4	38	6	51
73	67	60	48	19	7	38	6	61
74	79	69	50	20	5	51	6	61

Neck mounting bracket

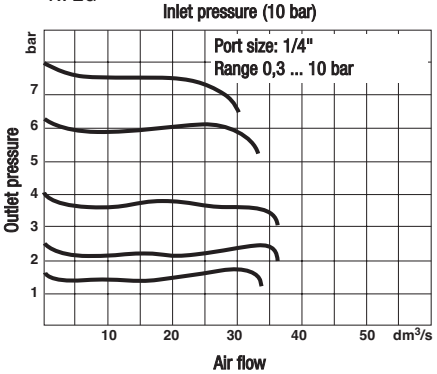


Series	A	B	C	F	G	H	Panel Ø	Panel depth
72	73	33	26	50	48	35	40	0 ... 4
73	96	39	31	68	62	56	48	2 ... 6
74	127	43	31	80	74	56	52	2 ... 6

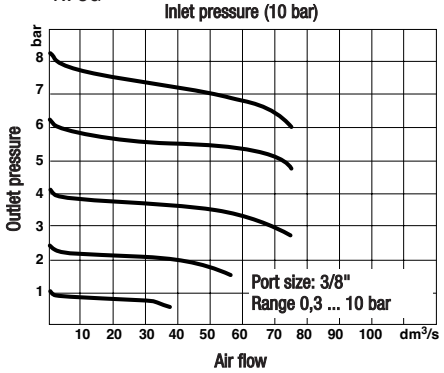
Series	J	K	L	M	N	P	R	S	T	V
72	8	49	38	63,5	30	24	–	4,4	7	10
73	17	64	38	70	38	38	25	7	–	–
74	24	89	52	86	56	35	23	7	–	–

Flow characteristics

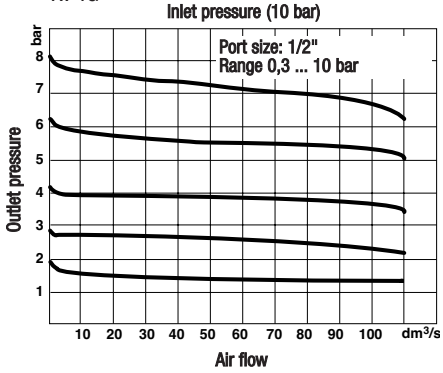
R72G



R73G



R74G



Excelon modular system

L72, L73, L74 Lubricators

G¼ to G¾

Excelon design allows in-line or modular installation

Quick release bayonet bowl.

Flow sensor provides a nearly constant oil/air ratio over a wide range of flows

Highly visible, prismatic liquid level indicator lens on metal bowls

All round (360°) visibility of sight-feed dome for ease of drip rate setting

Micro-fog and oil-fog

L72C

L73M

L74M

Technical data

Medium:
Compressed air

Maximum inlet pressure:
10 bar (transparent bowl)
17 bar (metal bowl)

Start point:
L72C 0,47 dm^3/s
L72M 0,94 dm^3/s
L73 0,71 dm^3/s
L74 0,94 dm^3/s

Minimum flow required for lubricator operation at 6,3 bar inlet pressure

Ambient temperature:
Transparent bowl: -20° to +50°C
Metal bowl:
-20° to +65°C (L72)
-20° to +80°C (L73 & L74)

Consult our Technical Service for use below +2°C

Materials

L72M, L72C:
Body: zinc
Transparent bowl: polycarbonate
Metal bowl: zinc
Liquid level indicator lens (metal bowl): transparent nylon
Sight-feed dome: transparent nylon
Elastomers: neoprene, nitrile & Geolast

L73M, L73C, L74M, L74C:
Body: aluminium
Transparent bowl: polycarbonate
Guarded transparent bowl: polycarbonate with steel guard
Metal bowl: aluminium
Liquid level indicator lens (metal bowl, 0,1 & 0,2 litre): transparent nylon (Pyrex optional)
Sight-feed dome: transparent nylon
Elastomers: neoprene & nitrile

Port size	Flow (dm^3/s) #	Bowls	Bowl capacity (litre)	kg	Model *	Service kit
G1/4	24	Transparent	0,06	0,49	L72M-2GP-ETN	4382-500
G1/4	50	Transparent	0,1	0,49	L73M-2GP-EPN	4382-600
G3/8	24	Transparent	0,04	0,49	L72M-3GP-ETN	4382-500
G3/8	64	Transparent	0,1	0,55	L73M-3GP-EPN	4382-600
G3/8	50	Guarded transparent	0,2	0,60	L74M-3GP-QPN	4382-700
G1/2	64	Transparent	0,1	0,55	L73M-4GP-EPN	4382-600
G1/2	70	Guarded transparent	0,2	0,60	L74M-4GP-QPN	4382-700
G3/4	70	Guarded transparent	0,2	0,90	L74M-6GP-EPN	4382-700

#Typical flow with 6,3 bar inlet pressure and 0,5 bar pressure drop.

* Models listed in the order table must not be located downstream of frequently cycling directional control valves. Order the optional bi-directional oil-fog lubricator for use under such conditions.

Options selector

L7★★-★★★-★★★

Series	Substitute
72*	2
73*	3
74	4

* Not available with 1 litre bowl

Type	Substitute
Oil-fog	C
Micro-fog	M

Port size	Substitute
1/4 (72 & 73)	2
3/8	3
1/2 (73 & 74)	4
3/4 (74)	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Air flow direction	Substitute
Bi-directional (74)	E
Uni-directional	P

Options	Substitute
Low oil level switch** (74)	L
None	N
Pyrex dome#	P
Quick fill nipple (73, 74)	Q

Bowl	Substitute
Metal with liquid level indicator	D
Metal with Pyrex sight glass	R
Transparent without guard (72, 73)	T
Long transparent without guard (72)	L
Long transparent with guard (72)	W
1 litre metal with Pyrex liquid level indicator‡ (74)	A
0,2 litre transparent with guard (73, 74)	P*

Drain	Substitute
Closed bottom	E
Manual 1/4 turn	Q
Remote fill device	R

* Not available with 1 litre bowl

** Low oil level switch requires 1 litre bowl, type 'A' at 9th digit.

Pyrex dome used only with bowl type 'A' or 'R' at 9th digit.

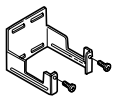
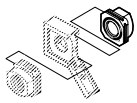
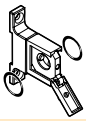
‡ Pyrex liquid level indicator used only with option 'P' at 10th digit.

Excelon modular system

L72, L73, L74 Lubricators

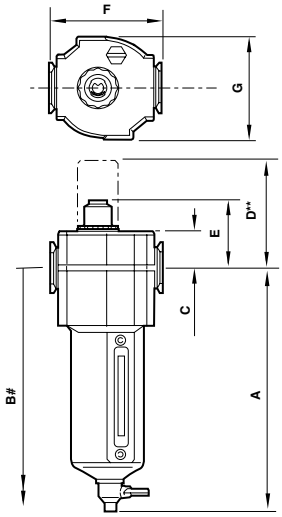
G¼ to G¾

Accessories

Series	Port size	Wall mounting bracket	Quikmount pipe adaptors (quantity of 1)	Quikclamp	Quikclamp and Quikclamp wall bracket	Remote fill kit	Quick fill nipple	Tamper resistant snap-on cap for lubricator sight feed dome	Level switch ‡
									
L72	G1/4	4224-50	4215-08	4214-51	4214-52			4050-89	
	G3/8		4215-09		4213-89 *				
L73	G3/8	4424-50	4315-09	4314-51	4314-52		18-011-024	4050-89	
	G3/8		4315-10		4313-50*				
	G1/2		4315-11						
	G3/4		4315-12						
L74	G3/8	4324-50	4315-10	4314-51	4314-52	18-027-984	18-011-024		18-023-610**
	G1/2	4323-51**	4315-11		4313-50*				
	G3/4		4315-12						

*Bracket only. **To fit 1 litre bowl version # Pack of 10.

‡ Field conversion

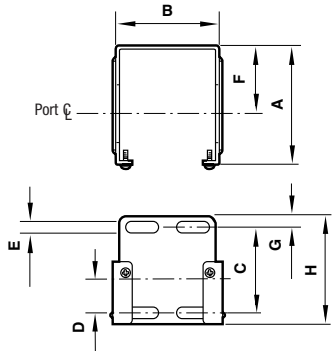


** Optional Pyrex sight-feed dome.

Minimum clearance required to remove bowl.

Series	A	B	C	D	E	F	G
72	110	191	19	64	41	50	48
73	156	255	25	70	47	68	62
74	177	276	25	68	47	80	74

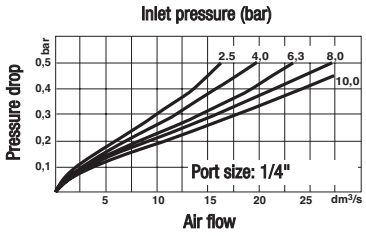
Bracket mounting



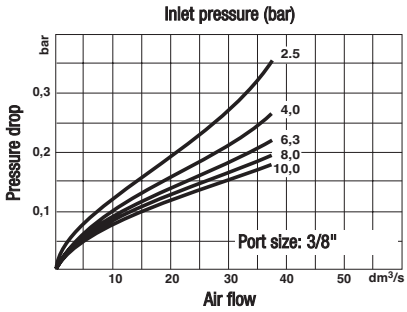
Series	A	B	C	D	E	F	G	H
72	60	42	39	18,6	4	38	6	51
73	67	60	48	19	7	38	6	61
74	79	69	50	20	5	51	6	61

Flow characteristics

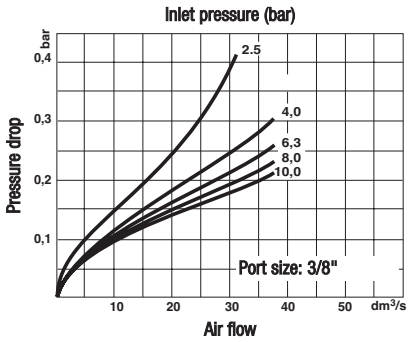
L72C/M



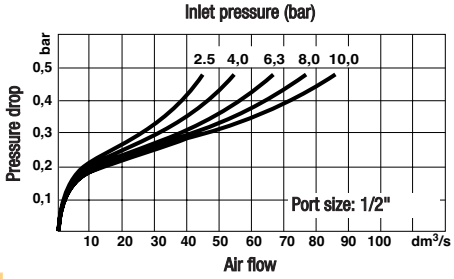
L73C



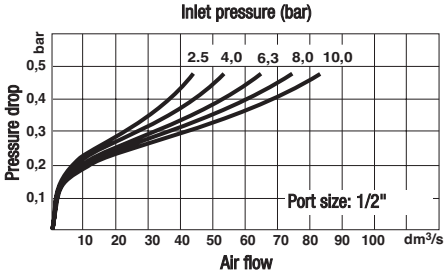
L73M



L74C



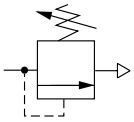
L74M



Excelon modular system

V72G, V74G Pressure relief valves

G¼ to G¾



Excelon design allows in-line installation or modular installation with other Excelon products

Push to lock adjusting knob with tamper resistant accessory

Helps protect air operated equipment from over pressure by retarding excessive pressure build up

Norgren pressure relief valves comply with category 0(S.E.P.) and category 1 of the Pressure Equipment Directive 97/23/EC. If categories 2, 3 or 4 products are required contact our Technical Services.

V72G

V74G

Port size	kg	Model	Service kit
G1/4	0,33	V72G-2GK-NMN	4209-03
G3/8	0,33	V72G-3GK-NMN	4209-03
G3/8	0,69	V74G-3GK-NMN	4384-700
G1/2	0,68	V74G-4GK-NMN	4384-700
G3/4	0,67	V74G-6GK-NMN	4384-700

Note: for Excelon 73 combinations use V74G.

Models listed include ISO G parallel threads, knob adjustment, and a 0,3 to 10 bar relief pressure adjustment range.

Technical data

Medium:
Compressed air

Gauge ports:
G1/8

Relief port:
G1/4 (V72G), G1/2 (V74G)

Ambient temperature:
-34° to +65°C (V72G)
-34° to +80°C (V74G)
Consult our Technical Service for use below +2°C

Materials

V72G:
Body: zinc body
Bonnet: acetal
Valve: brass
Elastomers: neoprene
Bottom plug: acetal

V74G:
Body & bonnet: aluminium
Valve: aluminium and nitrile
Elastomers: nitrile
Bottom plug: acetal

Options selector

V7★G-★★★-N★★

Series	Substitute
72	2
73	3
74	4

Port size	Substitute
1/4" (72)	2
3/8"	3
1/2" (74)	4
3/4" (74)	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

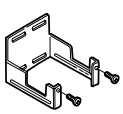
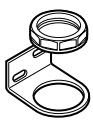
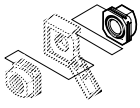
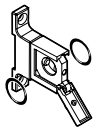
Gauge	Substitute
With	G
Without	N

Relief pressure adjustment range*	Substitute
0,3 ... 4 bar	F
0,3 ... 10 bar	M
0,7 ... 17 bar (74)**	S
0,3 ... 2 bar (72)	C

Adjustment	Substitute
Knob	K
T-bar	T

* Relief valve can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.
**Units with 17 bar relief pressure range are available only with the T-bar adjustment; therefore substitute T at the 7th position and S at the 9th position.

Accessories

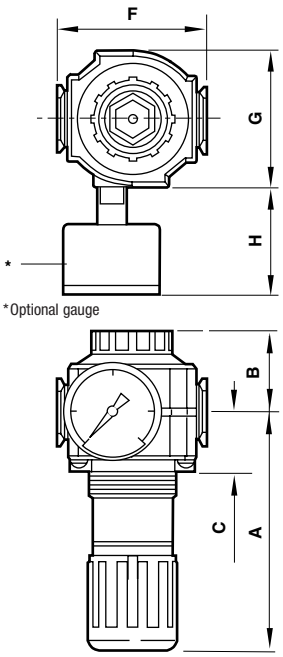
Series	Port size	Wall mounting bracket	Neck mounting bracket	Gauge 0 ... 10 bar‡	Panel nut	Tamper resistant cover and seal wire	Quikmount pipe adaptors (quantity of 1)	Quikclamp	Quikclamp and Quikclamp wall bracket
									
V72G	G1/4	4224-50	74316-50	18-013-989	4248-89	4255-51	4215-08	4214-51	4214-52
	G3/8						4215-09		4213-89*
V74G	G3/8						4315-10		4314-52
	G1/2	4324-50	4368-51	18-013-013	4348-89	4355-51	4315-11	4314-51	4313-50*
	G3/4						4315-12		

* Bracket only. # Other pressure ranges available – see page 486

Excelon modular system

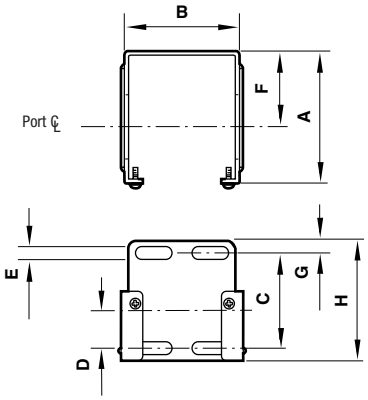
V72G, V74G Pressure relief valves

G¼ to G¾



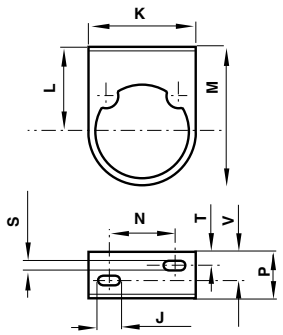
Series	A	B	C	F	G	H	Panel Ø	Panel depth
72	73	25	26	50	48	35	40	0 ... 4
74	127	43	31	80	74	56	52	2 ... 6

Bracket mounting

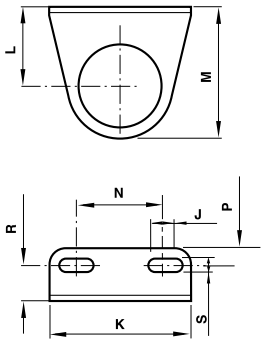


Series	A	B	C	D	E	F	G	H
72	60	42	39	18,6	4	38	6	51
74	79	69	50	20	5	51	6	61

Neck mounting bracket (72)



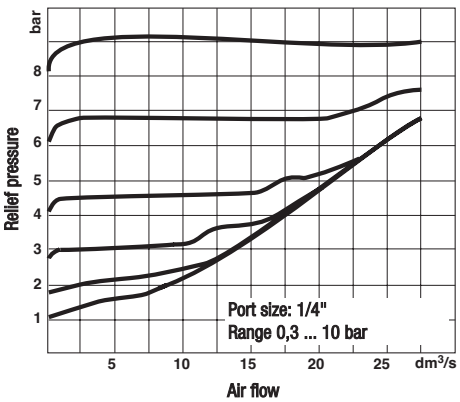
Neck mounting bracket (74)



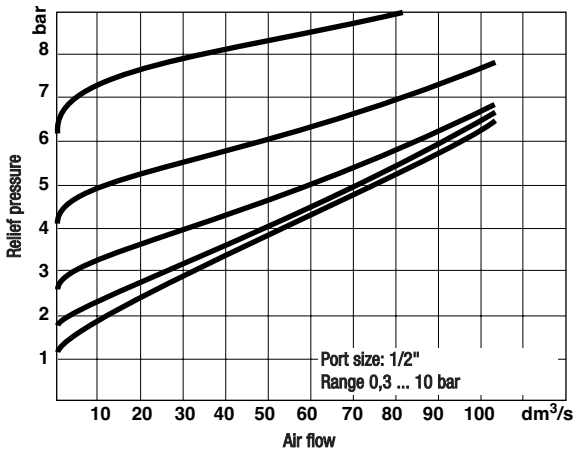
Series	J	K	L	M	N	P	R	S	T	V
72	8,5	49	38	63,5	30	24	–	4,4	7	10
74	24	89	52	86	56	35	23	7	–	–

Flow characteristics

V72G



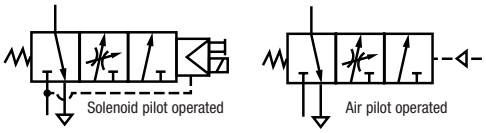
V74G



Excelon modular system

P72F, P74F Soft start/dump valves

G¼ to G¾



P72F

P74F

Excelon design allows in-line or modular installation with other Excelon products

Assists machine designers in complying with the European Machineries Directive

Can help existing machinery to comply with PUWER (Provision and Use of Work Equipment Regulations)

Controlled increase of downstream pressure on start up

Solenoid or air pilot operated.

High forward flow capacity

High flow dump facility

Manual lockout option – when actuated overrides operating signal to dump downstream air

Port size	Solenoid operated model *	kg	Air pilot operated model	kg	Service kit
G1/4	P72F-2GC-PFN	2,0	P72F-2GA-NNN	0,88	**
G3/8	P72F-3GC-PFN	2,0	P72F-3GA-NNN	0,87	**
G3/8	P74F-3GC-PFN	1,08	P74F-3GA-NNN	1,05	**
G1/2	P74F-4GC-PFN	1,05	P74F-4GA-NNN	1,02	**
G3/4	P74F-6GC-PFN	1,41	P74F-6GA-NNN	1,35	**

* Solenoid operated models are supplied with 22 mm 24 V d.c. 2 W solenoids but without connector plugs. To select alternative voltages and other options refer to the Options selector below. For connector plugs see next page.

** Factory repair only

Technical data

Medium:

Compressed air

Maximum operating pressure:

For solenoid operated versions:

10 bar

For pilot operated versions: 17 bar

Minimum operating pressure:

3 bar

Ambient temperature:

For solenoid operated versions: 5°C to +50°C.

For pilot operated versions: -20°C to +65°C.

Consult our Technical Service for use below +2°C

Air pilot port:

P74F M5

P74F Rc1/4

Exhaust port:

P72F Rc1/4

P74F G1/2

Maximum flow:

P72F 21 dm^3/s

P74F 57 dm^3/s

Note: Maximum flow with 6,3 bar inlet pressure and pressure drop of 0,5 bar

Snap pressure:

Full flow when downstream pressure reaches 50 to 80% of inlet pressure.

Options selector

P7★F-★★★-★★★

Series	Substitute
72	2
73	3
74	4

Port size	Substitute
1/4" (72 & 73)	2
3/8"	3
1/2" (73 & 74)	4
3/4" (74)	6

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Connectors	Substitute
3 pin plug with cable gland, no indicator	A
Without	N

Coil voltage	Nominal power rating	Substitute
24 V d.c.	2 W	F
12 V d.c.	2 W	E
6 V d.c.	2 W	D
220/240 V 50/60 Hz	4/2,5 VA	B
110/120 V 50/60 Hz	4/2,5 VA	A
No coil	2 W	Z
No solenoid		N

For standard 22 mm solenoids.

Solenoid manual operator	Substitute
Shrouded push button	P
None	N

Operator	Substitute
Air pilot*	A
Air pilot with manual lockout slide* (74)	B
22 mm miniature solenoid	C
22 mm miniature solenoid with manual lockout slide (74)	D
CNOMO solenoid	L
CNOMO solenoid with manual lockout slide (74)	M

* To order air pilot models also substitute 'NNN' at digits 8, 9 and 10 e.g. P74F-4GA-NNN.

Materials

P72F:

Body: zinc alloy

Elastomers: synthetic materials

Filter discs: sintered plastic

Internal components: brass/steel

P74F:

Body & intermediate body: aluminium

Elastomers: synthetic materials

Filter discs: sintered plastic

Internal components: brass/steel

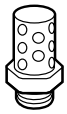
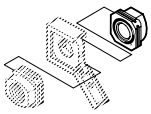
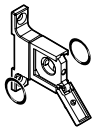
Top plate & exhaust bonnet: zinc

Excelon modular system

P72F, P74F Soft start/dump valves

G¼ to G¾

Accessories

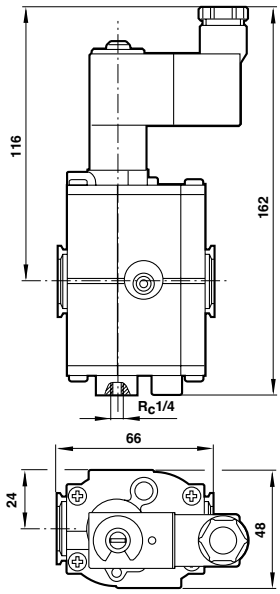
Series	Port size	Exhaust port silencer	Quikmount pipe adaptors (quantity of 1)	Quikclamp	Quikclamp and Quikclamp wall bracket	Plug with cable gland for 22 mm solenoid **		
								
P72F	G1/4	MB002B	4215-08	4214-51	4214-52	M/P24121/1*	12 ... 24 V a.c./d.c.	Indicator type
	G3/8		4215-09		4213-89**	M/P24121/2	150 ... 230 V a.c.	Indicator type
						M/P19063		No indicator
P74F	G3/8	MB004B	4315-10	4314-51	4314-52	M/P24121/1*	12 ... 24 V a.c./d.c.	Indicator type
	G1/2		4215-11		4313-50**	M/P24121/2	150 ... 230 V a.c.	Indicator type
	G3/4		4315-12			M/P19063		No indicator

*Reduced light intensity at 12 V. ** Bracket only.

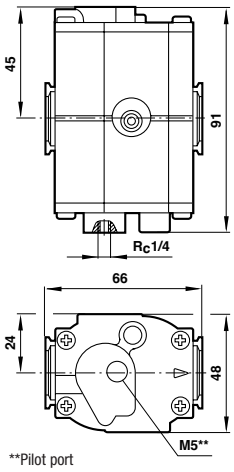
** Refer to page 383 for other solenoid plugs

P72F

Solenoid operated



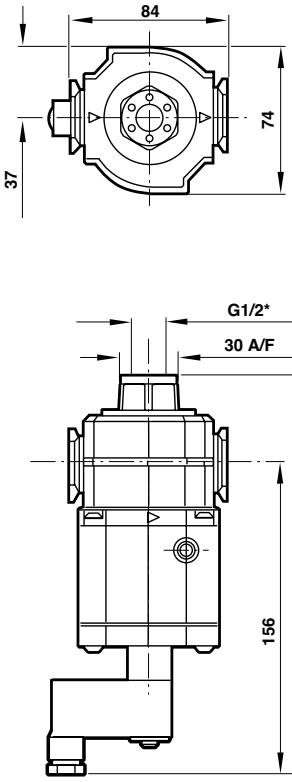
Air pilot operated



**Pilot port

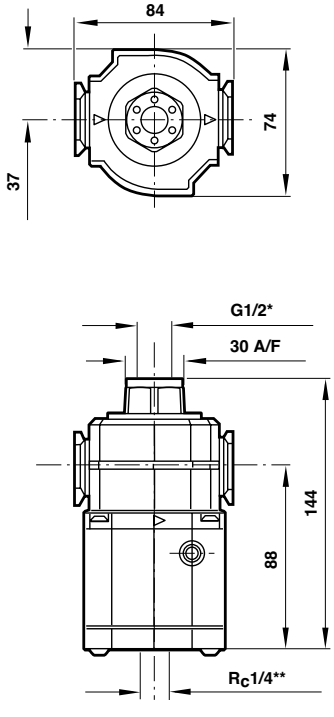
P74F

Solenoid operated



*Exhaust port

Air pilot operated



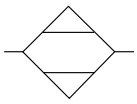
*Exhaust port

**Pilot port

Membrane driers

W07M, W72M, W74M

G¼, G½



- Removes water vapour from compressed air
- Provides dewpoint suppression up to 44°C below the ambient temperature, depending on air flow through the membrane
- Dewpoint suppression of 11°C below the ambient temperature is suitable for most industrial applications
- W72 and W74 utilize the Excelon® Quikclamp™ design to provide in-line or modular installation with 72, 73 and 74 Series products
- W07 available for in-line installation only
- Easy installation, no power required
- Maintenance free with proper pre-filtration
- Minimal pressure drop

Port size	Nominal flow (dm³/s) * Outlet	Inlet	Differential pressure (bar)	kg	Model *
G1/4	1,00	1,06	0,028	0,39	W07M-2GN-NNA
G1/4	2,40	2,65	0,023	0,82	W72M-2GN-NNB
G1/4	4,75	5,27	0,062	0,84	W72M-2GN-NNC
G1/2	9,50	10,47	0,045	1,60	W74M-4GN-NND
G1/2	14,20	15,76	0,093	1,79	W74M-4GN-NNE

* Nominal flow at 7 bar inlet pressure, 38°C ambient temperature, and a dew point suppression of 11°C. Flow demand affects dew point suppression.

Options selector

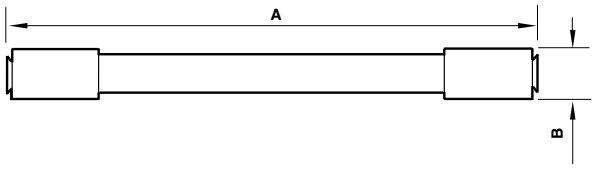
W★★M-★★N-NN★

Series	Substitute
07	07
72	72
74	74

Port size	Substitute
1/4	2
1/2	4

Flow (dm³/s)	Substitute
1,00	A
2,40	B
4,75	C
9,50	D
14,20	E

Threads	Substitute
PTF	A
ISO G parallel	G



	A	B
W07M-2GN-NNA	406	30
W72M-2GN-NNB	457	44
W72M-2GN-NNC	483	44
W74M-4GN-NND	533	63
W74M-4GN-NNE	660	63

Technical data

Medium:

Compressed air, pre-filtered to 0,01 µm and oil free (ISO 8573-1, class 1. _ .2)

Maximum operating pressure:

10 bar

Ambient temperature:

-20 to 80°C*

*Air supply must be dry enough to avoid ice formation at temperatures below +2°C.

Required pre-filter:

General purpose filter (5 µm element) and an oil removal filter (0,01 µm particle removal) with equivalent pipe size and flow capacity equal to or greater than the membrane air dryer

Selection programme available on request

Materials

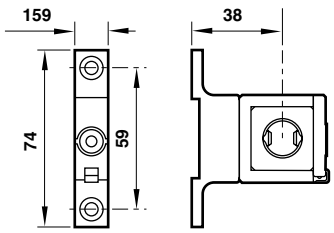
Body and end caps:

Anodized aluminium

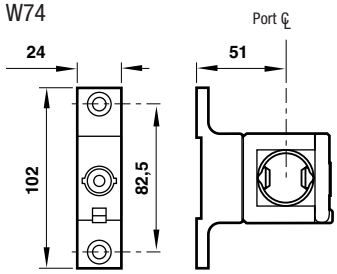
Membrane: polymeric materials

Quikclamp and Quikclamp wall bracket

W72

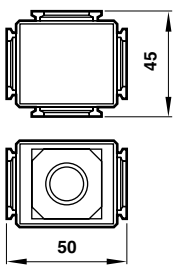


W74

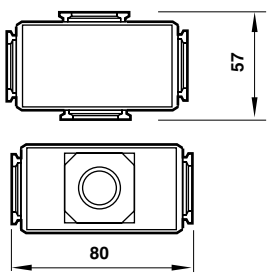


Manifold blocks

W72



W74

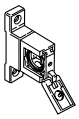
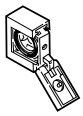


Membrane driers

W07M, W72M, W74M

G¼, G½

Accessories

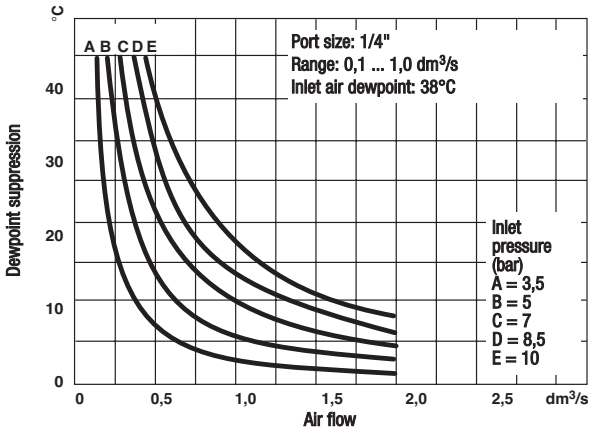
Series	Quikclamp and Quikclamp wall bracket	Quikclamp with O-rings
		
W72	4214-52	4214-51
W74	4314-52	4314-51

Manifold blocks

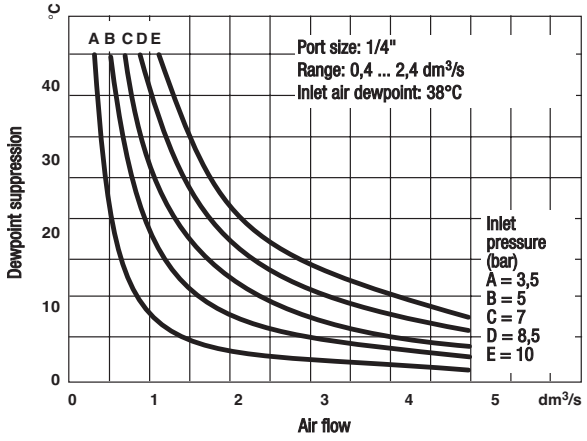
Series W72	Model	Series W74	Model
			
3/8" NPTF	4228-01	3/4" NPTF	4328-51
3/8" ISO Rc	4228-02	3/4" ISO Rc	4328-52
3/8" ISO G	4228-03	3/4" ISO G	4328-53

Flow characteristics

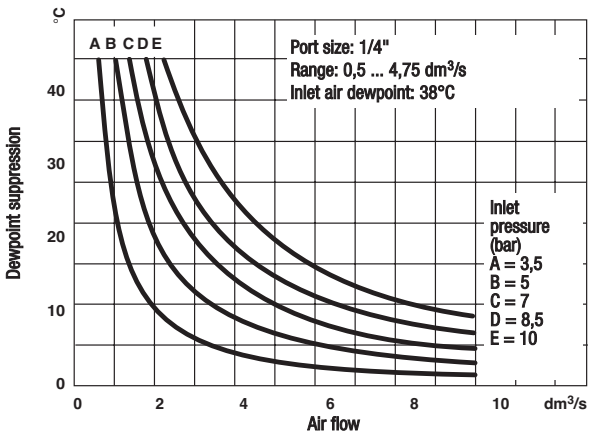
W07M-2GN-NNA



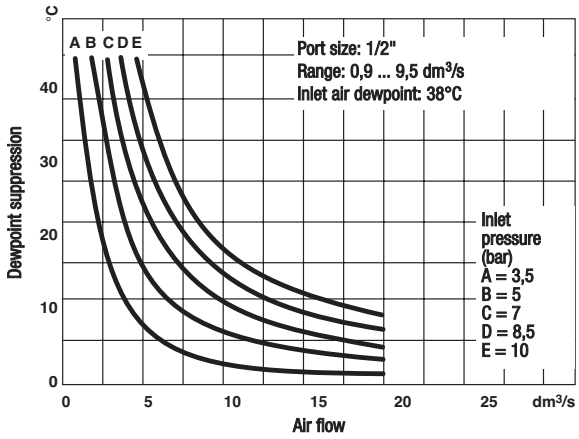
W72M-2GN-NNB



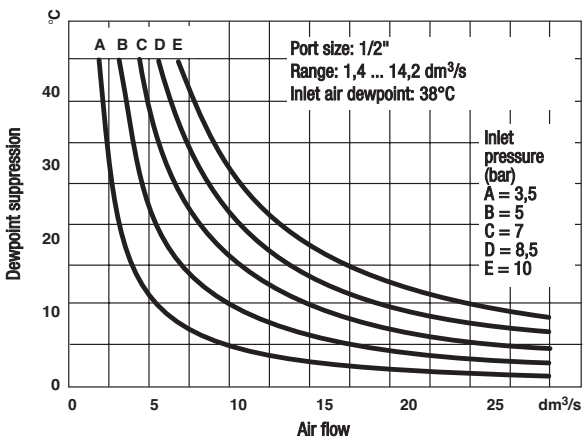
W72M-2GN-NNC



W74M-4GN-NND



W74M-4GN-NNE



smartfrl

Air preparation assemblies with system diagnostics

Air preparation assemblies capable of monitoring their own performance advising of any problems via a Fieldbus link

Can help reduce energy, maintenance and purchasing costs

Can help minimise downtimes and 'end of line' product rejection

Can increase productivity

A 'smart frl' can perform the following functions -

- Can advise when filter element replacement is necessary
- Can advise when replenishment of lubricant is necessary
- Can advise of excessive or insufficient line pressures via an integral pressure 'window'
- Can operate an external device, e.g. a soft start/dump valve
- Can advise when your next scheduled maintenance is due
- Can record the highest and lowest line pressures seen
- Can record and advise the duration of service
- Can display pressure data in one of four units – bar, psi, Mpa or kg/cm^2
- Can display data in one of five languages - English, French, German, Spanish or Italian

Technical data

Medium:
Compressed air

Maximum pressure:
10 bar standard
17 bar optional

Port connections:
G1/2

Ambient temperature:
-20°C to +65°C
Air supply must be dry enough to avoid ice formation at temperatures below +2°C

Fieldbus protocol:
AS-i

Configuration:
3 inputs, 1 output

Mounting:
Modular within Excelon 73, 74
Olympian Plus 64*
*Under development

Series	Maximum operating pressure (bar)	kg	Model
Excelon 73, 74	10	0,85	A74G-NNE-1NN
Excelon 73, 74	17	0,85	A74G-NNF-1NN
Olympian 64	10	0,95	A64G-NNA-1NN
Olympian 64	17	0,95	A64G-NNB-1NN

Options selector *

*(module only)

A★4G-NN★-★NN

Series	Substitute
Olympian 64**	6
Excelon 74 (or 73)	7

** Under development

Type	Substitute
Olympian 64, 10 bar, nitrile	A
Olympian 64, 17 bar, nitrile	B
Olympian 64, 10 bar, viton	C
Olympian 64, 17 bar, viton	D
Excelon 74, 10 bar, nitrile	E
Excelon 74, 17 bar, nitrile	F
Excelon 74, 10 bar, viton	G
Excelon 74, 17 bar, viton	H

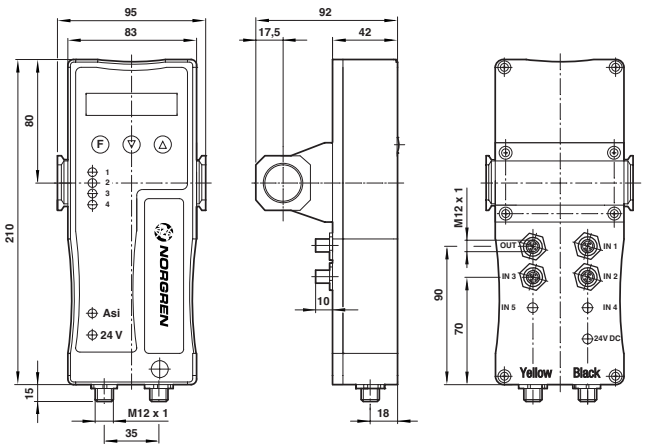
Protocol	Substitute
Busless*	0
AS-i	1
Profibus*	2
Interbus-S*	3
DeviceNet*	4

* Under development – please contact our Technical Service

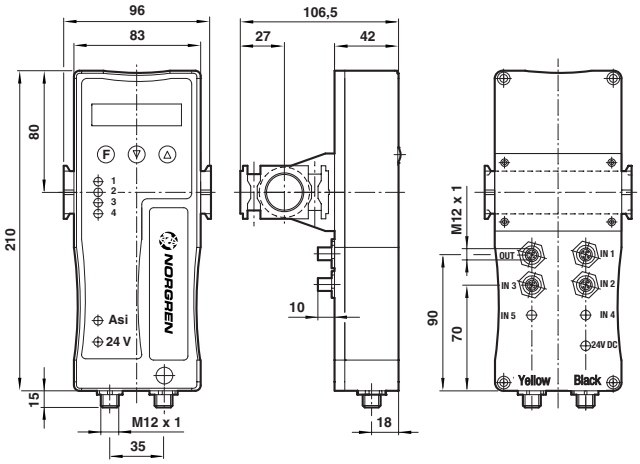
Materials

Casing: ABS
Membrane keypad: plastic
Connections: steel
Gaskets: nitrile

'Smart' module dimensions – Excelon



'Smart' module dimensions – Olympian



Components

Consider the functions you require and specify an assembly to suit.
Optional port sizes are available - please refer to the individual product sections in our 'Pneumatics' catalogue for further details.

Olympian Plus**

Component	Series	Description	Model	Page No.
smart module	Olympian Plus	For 10 bar maximum pressure	A64G-NNA-1NN	450
		For 17 bar maximum pressure ##	A64G-NNB-1NN	450
General purpose filter*	Olympian Plus	Unit less yoke – 40 µm element; full automatic drain; metal bowl	F64G-NNE-AD3	408
		Unit less yoke – 5 µm element; full automatic drain; metal bowl	F64G-NNE-AD1	408
Oil removal filter*	Olympian Plus	Unit less yoke – metal bowl; full automatic drain	F64H-NNE-AD0	410
Pressure regulator	Olympian Plus	Unit less yoke – relieving; 0,3 to 10 bar pressure adjustment range	R64G-NNK-RMN	418
		Unit less yoke – relieving; 0,7 to 17 bar pressure adjustment range	R64G-NNT-RSN	418
Lubricator*	Olympian Plus	Unit less yoke – micro-fog; 0,2 litre metal bowl	L64M-NNP-EDL	420
Soft start/dump valve	Olympian Plus	Unit less yoke – solenoid operated, 24 V d.c. no plug & cable gland	P64F-NNC-PFN	424
		Unit less yoke – solenoid operated, 24 V d.c. with plug & cable gland	P64F-NNC-PFA	424

* All filters are fitted with electrical service life indicators and full automatic drains; all lubricators are fitted with lubricant liquid level switches.

** Under development

No yoke required – see note at bottom of page

Olympian accessories# and yokes**

Component	Series	Description	Model	Page No.
Shut-off valve	Olympian Plus	G1/2; 3 port/2 position	T64T-4GA-P1N	n/a
Adjustable pressure switch	Olympian Plus	Adjustable from 2 to 10 bar; 2 x G1/4 auxiliary air outlets	4346-99	427
Wall mounting brackets	Olympian Plus	Wall mounting brackets (pair)	74504-50	On demand
Tamper resistant cover	Olympian Plus	Tamper resistant cover	4355-50	419
		Seal wire	2117-01	431
Each unit selected from the table above will need a 'station' to plug into*	Olympian Plus	Single station yoke G1/2	Y64A-4GA-N1N	426
		Two station yoke G1/2	Y64A-4GA-N2N	426
		Three station yoke G1/2	Y64A-4GA-N3N	426
To join 2 yokes/accessories together	Olympian Plus	Connector kit	74503-51	426
If your assembly features a pressure switch or smart module at the end, this adapter will provide a threaded end connection	Olympian Plus	End connector G1/2	74505-50	426
		End connector G3/4	74505-53	426

* Except the 'smart' module – this simply requires a connectcor kit, model number 74503-51, assembled to each side

** Under development

Each accessory needs a 12 mm connector. Input/output Fieldbus connectors are available from Norgren, part number 11648-E00

smartfrl

Air preparation assemblies with system diagnostics

Excelon 73 & 74

Component	Series	Description	Model	Page No.
smart module	Excelon 73 & 74	For 10 bar maximum pressure	A74G-NNE-1NN	450
		For 17 bar maximum pressure	A74G-NNF-1NN	450
General purpose filter*	Excelon 73	40 µm element; transparent polycarbonate bowl G3/8	F73G-3GE-AT3	432
		40 µm element; metal bowl G3/8	F73G-3GE-AD3	432
	Excelon 74	40 µm element; guarded polycarbonate bowl G1/2	F74G-4GE-AP3	432
		40 µm element; metal bowl G1/2	F74G-4GE-AD3	432
Oil removal filter*	Excelon 73	Transparent polycarbonate bowl G3/8	F73C-3GE-AT0	434
		Metal bowl G3/8	F73C-3GE-AD0	434
	Excelon 74	Guarded polycarbonate bowl G1/2	F74H-4GE-AP0	434
		Metal bowl G1/2	F74H-4GE-AD0	434
Pressure regulator	Excelon 73	Relieving; 0,3 to 10 bar pressure adjustment range G3/8	R73G-3GK-RMN	440
		Relieving; 0,7 to 17 bar pressure adjustment range G3/8	R73G-3GT-RSN	440
	Excelon 74	Relieving; 0,3 to 10 bar pressure adjustment range G1/2	R74G-4GK-RMN	440
		Relieving; 0,7 to 17 bar pressure adjustment range G1/2	R74G-4GT-RSN	440
Lubricator*	Excelon 73	Micro-fog; 0,1 litre transparent polycarbonate bowl G3/8	L73M-3GP-ETL	442
		Micro-fog; 0,1 litre metal bowl G3/8	L73M-3GP-EDL	442
		Micro-fog; 0,2 litre guarded polycarbonate bowl G1/2	L74M-4GP-EPL	442
		Micro-fog; 0,2 litre metal bowl G1/2	L74M-4GP-EDL	442
Soft start/dump valve	Excelon 74	Solenoid operated; 24V dc no plug & cable gland G3/8	P74F-3GC-PFN	446
		Solenoid operated; 24V dc with plug & cable gland G3/8	P74F-3GC-PFA	446
	Excelon 73 & 74	Solenoid operated; 24V dc no plug & cable gland G1/2	P74F-4GC-PFN	446
		Solenoid operated; 24V dc with plug & cable gland G1/2	P74F-4GC-PFA	446

* All filters are fitted with electrical service life indicators and full automatic drains; all lubricators are fitted with lubricant liquid level switches.

Excelon accessories# and connectors

Component	Series	Description	Model	Page No.
Shut-off valve	Excelon 73	G3/8; 3 port / 2 position	T73T-3GA-P1N	453
	Excelon 74	G1/2; 3 port / 2 position	T74T-4GA-P1N	453
Adjustable pressure switch	Excelon 73 & 74	Adjustable from 2 to 10 bar; 3 x G1/4 auxiliary air outlets	4346-52	On demand
Porting block	Excelon 73 & 74	3 x G1/4 auxiliary air outlets	4316-06	451
Tamper resistant cover	Excelon 73	Tamper resistant cover and seal wire	4455-51	455
	Excelon 74	Tamper resistant cover	4355-50	419
		Seal wire	2117-01	431
To join two Excelon products or accessories together	Excelon 73 & 74	Quikclamp	4314-51	454
		Quikclamp with wall mount bracket	4314-52	454
If your assembly features a pressure switch or smart module at the end, this adapter will provide a threaded end connection	Excelon 73 & 74	Quikmount pipe adapter G1/4	4315-09	455
		Quikmount pipe adapter G3/8	4315-10	455
		Quikmount pipe adapter G1/2	4315-11	455
		Quikmount pipe adapter G3/4	4315-12	455

Each accessory needs a 12 mm connector. Input/output Fieldbus connectors are available from Norgren, part number 11648-E00

Excelon modular system Accessories

Soft start valve

Series	Port size	Flow (CV)	Model
72	G1/4	1,35	P72E-2GN-NNN
72	G3/8	1,35	P72E-3GN-NNN
74	*	40	P74E-NNN-NNN

*Ports are unthreaded. Quikclamps (this page) and Quikmount pipe adaptors (page 455) are required.

Controls the rate of downstream pressure build-up at system start up

High flow

Cushioned poppets for long life

Shut-off valves

Series	Port size	Model 2/2	Model 3/2
72	G1/4	T72B-2GA-P1N	T72T-2GA-PIN
72	G3/8	T72B-3GA-P1N	T72T-3GA-PIN
73	G1/4	T73B-2GA-P1N	T73T-2GA-PIN
73	G3/8	T73B-3GA-P1N	T73T-3GA-PIN
73	G1/2	T73B-4GA-P1N	T73T-4GA-PIN
74	G3/8	T74B-3GA-P1N	T74T-3GA-PIN
74	G1/2	T74B-4GA-P1N	T74T-4GA-PIN
74	G3/4	T74B-6GA-P1N	T74T-6GA-PIN

Ideal for isolating sub-systems not in use

Easy to operate – low stiction

Lockable in the 'closed' position

Solenoid operated control valves

Series	Port size	Function	Type	Model
72	G1/4	3/2 NC	Solenoid	P72C-2GC-PFN
72	G1/4	3/2 NC	Pilot	P72C-2GA-NNN
72	G3/8	3/2 NC	Solenoid	P72C-3GC-PFN
72	G3/8	3/2 NC	Pilot	P72C-3GA-NNN
74	*	2/2 NC	Solenoid	P74A-NGC-PFN
74	*	2/2 NO	Solenoid	P74B-NGC-PFN
74	*	3/2 NC	Solenoid	P74C-NGC-PFN
74	*	3/2 NC	Solenoid with lockout	P74C-NGD-PFN
74	*	2/2 NC	Pilot	P74A-NGA-NNN
74	*	2/2 NO	Pilot	P74B-NGA-NNN
74	*	3/2 NC	Pilot	P74C-NGA-NNN

*Ports are unthreaded. Quikclamps (this page) and Quikmount pipe adaptors (page 455) are required.
Solenoid models are fitted with 24 V d.c., 2 W coils – no connector plugs, see page 382

3 port and 2 port, normally closed or normally open versions.

High flow, spring return.

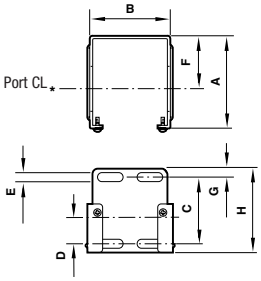
Solenoid or air pilot operated.

Wall mounting bracket

Series	Model
72	4224-50
73	4424-50
74	4324-50
L74*	4324-51

* with 1 litre bowl

Series	A	B	C	D	E	F	G	H
72	60	42	39	18,6	4	38	6	51
73	67	60	48	19	7	38	6	61
74	79	69	50	20	5	51	6	61



Provides secure wall mounting for individual Excelon products*

*Except P72, P74, T73 and T74 units.

Quikclamp

Series	Model
72	4214-51
73 & 74	4314-51

Allows easy connection of one Excelon unit to another

One piece – no loose parts

Uniquely, connected products can be rotated in 90° increments

Excelon modular system Accessories

Quikclamps and wall brackets

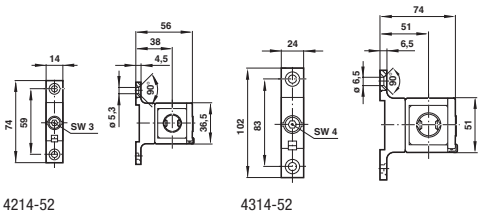
Series	Model
72	4214-52
73 & 74	4314-52

Allows easy connection of one Excelon unit to another

One piece – no loose parts

Uniquely, connected products can be rotated in 90° increments

Secure mounting to a wall, panel or machine surface



4214-52 4314-52

Manifold block

Series	Model
72	4228-03
73 & 74	4328-53

Provides a manifolding capability for up to 3 products, e.g. 3 pressure regulators can be mounted on one block to provide 3 different secondary pressures from a common primary pressure

Ideal for right-angled piping

Porting block

Series	Model
72	4216-52
73 & 74	4316-51

Provides 3 G1/4 auxiliary air outlets

Ideal for branching off to smaller sub-systems

When placed between a filter-regulator and lubricator allows branching off to systems requiring a non-lubricated supply

Service life indicator

Series	Type	Model
72, 73, 74	Electrical	4020-51R
72, 73, 74	Visual	5797-50

4020-51R provides an electrical output on detecting an excessive pressure drop across a filter element

5797-50 provides a visual indication

Neck mounting bracket

Series	Model
72	74316-50
73	4461-50
74	4368-51

Provides secure wall mounting for individual pressure regulators, filter-regulators and pressure relief valves

Includes panel nut

Panel nut

Series	Model
72	4248-89
73	5191-88
74	4348-89

Used to panel mount pressure regulators, filter-regulators and pressure relief valves

Excelon modular system
Accessories

Tamper resistant cover

Series	Model
72	4255-51*
73	4455-51
74	4355-50

*Includes seal wire.

Quick and easy method of helping prevent unauthorised adjustment of pressure regulators, filter-regulators and pressure relief valves

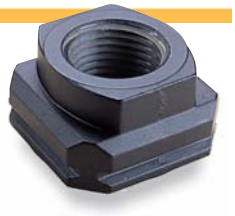
Can be locked with up to 2 or 4 padlocks

Quikmount pipe adaptors

Series	Port size	Model
72	G1/4	4215-08
72	G3/8	4215-09
74	G1/4	4315-09
74	G3/8	4315-10
74	G1/2	4315-11
74	G3/4	4315-12

Use with Quikclamps to provide threaded connections to system piping

Can be used on products with unthreaded ports – P74A, P74B, P74C and P74E



Transition connector

Model
4417-01

Enables an Excelon 73 or 74 unit to be connected to an Excelon 72 unit. Slides between an Excelon 73/74 Quikclamp and an Excelon 72 Quikclamp.

Allows a mixed assembly of Excelon 72, 73 and 74 products

Ideal for 'flow matching' applications, e.g. an Excelon 72 general purpose filter can provide sufficient flow to a 'lower flowing' Excelon 74 oil removal filter

33D Electronic pressure switches

Series	Switch only *	Block only
72	0881300	0523109
73 & 74	0881300	0523110

For full details of pressure switch range see page 386

* All 18D & 33D pressure switches with flange connection can be mounted directly with the 2 screws delivered together with the porting block

Monitors pressure, providing an electrical output when the pressure drops below or exceeds an adjustable preset level

Electrical signal can be fed back to a PC, PLC or audible/visible alarm

2 G1/4 auxiliary outlets

Threaded port for direct system piping

33D Electronic pressure switches

Series	Switch only *	Block only
72	0863216	0523109
73 & 74	0863216	0523110

For full details of pressure switch range see page 385

* All 18D & 33D pressure switches with flange connection can be mounted directly with the 2 screws delivered together with the porting block

System pressure indication

Digital display

High accuracy

Switching status indicated by LED

'Off-line' pressure adjustment

1 or 2 set points

Analog output signal

Flange type for Excelon porting blocks

Ported combination units

P1C, P1H, PTC, PTH Filter/regulators and lubricators

Filters and lubricators

G⅛, G¼

PTH P1C P1H

Combinations of filter-regulators/filters and lubricators can be ordered as pre-assembled units

Complete control of filtration, regulation and lubrication at a single point

Micro-fog versions for most general purpose pneumatic applications

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
10 bar

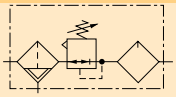
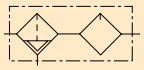
Ambient temperature:
-20°C to +50°C.
Consult our Technical Service for use below +2°C

Materials

Body: zinc alloy
Bowls: polycarbonate
Filter element: polypropylene
Elastomers: nitrile

Alternative models

Metal bowls
Filter elements
Contact our Technical Service for details

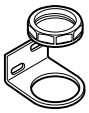
		Port size	kg	Model Auto	Manual
Filter/regulator & lubricator combinations		G1/8	0,37	P1H-101-A3QG	P1H-101-M3QG
		G1/8	0,44	PTH-101-A3QG**	PTH-101-M3QG**
		G1/4	0,35	P1H-201-A3QG	P1H-201-M3QG
		G1/4	0,44	PTH-201-A3QG**	PTH-201-M3QG**
Filter & lubricator combinations		G1/8	0,34	P1C-100-A3QG	P1C-100-M3QG
		G1/8	0,37	PTC-100-A3QG**	PTC-100-M3QG**
		G1/4	0,34	P1C-200-A3QG	P1C-200-M3QG
		G1/4	0,37	PTC-200-A3QG**	PTC-200-M3QG**

Models listed include ISO G threads, transparent bowls, filter/regulator with relieving diaphragm, automatic drain, 40 µm element, 0,3 to 8,6 bar outlet pressure adjustment range (filter/regulator/lubricator combinations)

** Includes integral mounting bracket.

For lubricator with manual drain substitute 'A' for 'Q' at 9th digit, eg. P1H-101-A3AG

Accessories

Series	Neck mounting bracket	Gauge 0 ... 10 bar#	Tamper resistant kit	Tamper resistant snap-on cap for lubricator sight feed dome
				
P1C/P1H	18-025-003	18-013-989	18-001-092	4050-89/X10*

Other pressure ranges available, see page 486

* Pack of 10

Ported combination units

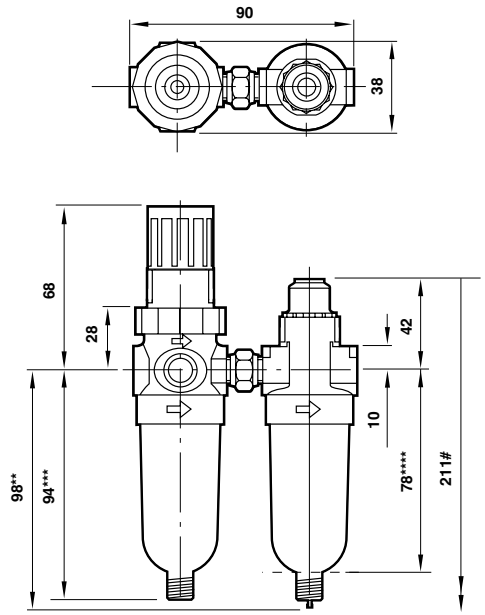
P1C, P1H, PTC, PTH Filter/regulators and lubricators

Filters and lubricators

G⅛, G¼

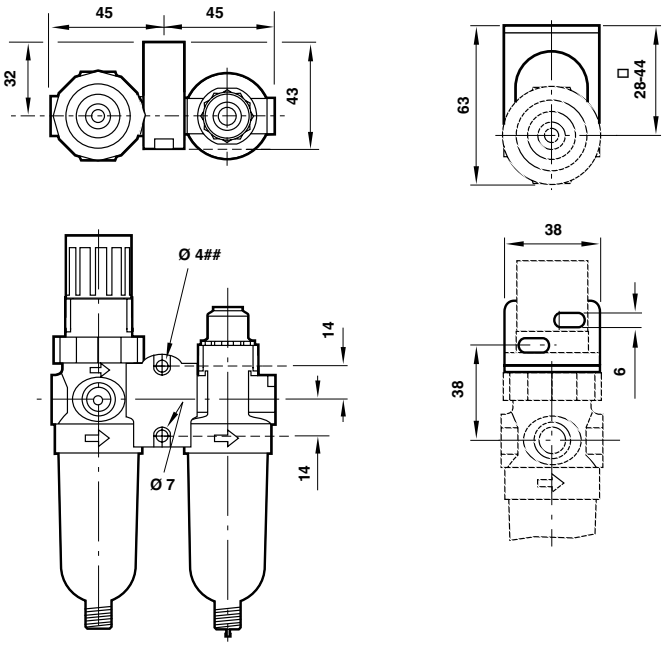
Filter-regulator & lubricator combinations

P1H



Minimum clearance to remove bowl.
**Manual drain. ***Automatic drain. ****Without drain.

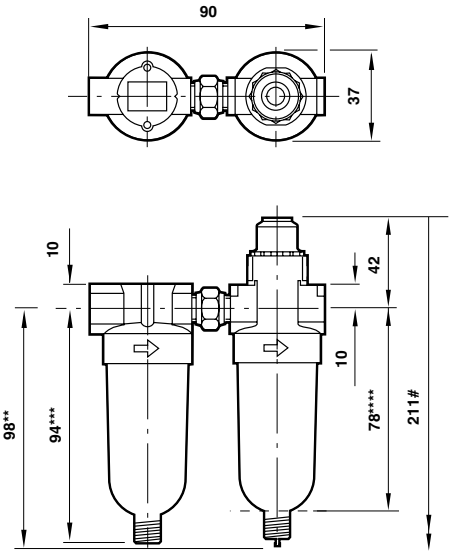
PTH with integral mounting bracket



Use 51 mm long screws, 5/32" diameter to wall mount.

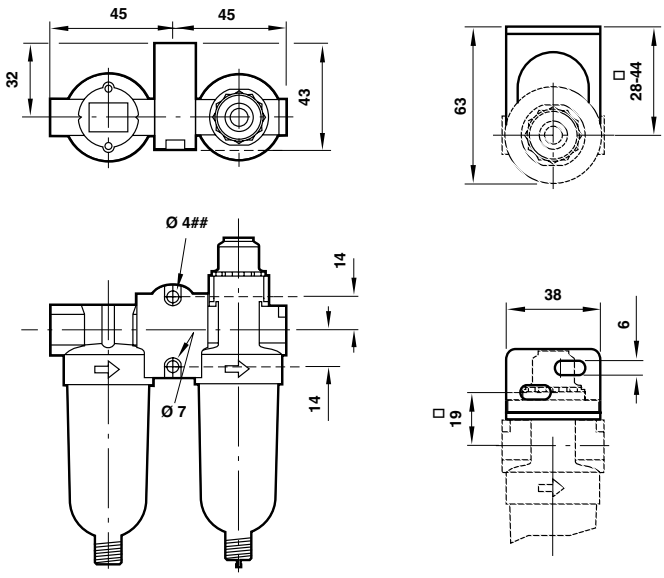
Filter & lubricator combinations

P1C



Minimum clearance to remove bowl.
**Manual drain. ***Automatic drain. ****Without drain.

PTC with integral mounting bracket

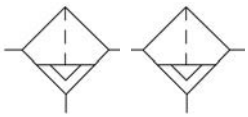


Use 51 mm long screws, 5/32" diameter to wall mount.

Ported general purpose filters

F07, F17, F18

G⅛ to G2



F07

F17

F18

Direct ported filters with high water removal efficiency

Automatic drains supplied as standard

High flow with minimal pressure drop

Technical data

Medium:

Compressed air only

Maximum inlet pressure:

10 bar transparent bowls

17 bar metal bowls

Ambient temperature:

-34°C to +50°C transparent bowls (F07 only)

-34°C to +80°C metal bowls (F07 only)

-20°C to +80°C metal bowls (F17, F18)

Consult our Technical Service for use below +2°C

Materials

F07:

Bowl: polycarbonate to BS 6005, zinc alloy (optional)

Body: zinc alloy

Elastomers: neoprene & nitrile

Filter element: polypropylene

F17:

Bowl & body: aluminium

Elastomers: neoprene & nitrile

Filter element: sintered plastic

F18:

Bowl: aluminium

Body & intermediate body: aluminium

Elastomers: neoprene & nitrile

Filter element: sintered bronze

Alternative models

5 µm filter elements.

25 µm filter elements (F17 & F18 only)

For pressure drop indicators see page 575

Consult our Technical Service for details

Port size	Flow (dm3/s) #	Drain	Bowl	kg	Model	Service kit	Element
G1/8	9	Auto	Transparent	0,13	F07-100-A3TG	3652-18**	
G1/8	9	Auto	Metal	0,17	F07-100-A3MG	3652-18**	
G1/8	9	Manual	Transparent	0,13	F07-100-M3TG	3652-18**	
G1/8	9	Manual	Metal	0,17	F07-100-M3MG	3652-18**	
G1/4	11,5	Auto	Transparent	0,13	F07-200-A3TG	3652-18**	
G1/4	11,5	Auto	Metal	0,17	F07-200-A3MG	3652-18**	
G1/4	11,6	Manual	Transparent	0,13	F07-200-M3TG	3652-18**	
G1/4	11,7	Manual	Metal	0,17	F07-200-M3MG	3652-18**	
G3/4	183	Auto	Metal	1,74	F17-600-A3HD	F17-100A	5576-99
G3/4	183.	Manual	Metal	1,76	F17-600-M3HD	F17-100M	5576-99
G1	236	Auto	Metal	1,74	F17-800-A3HD	F17-100A	5576-99
G1	236	Manual	Metal	1,76	F17-800-M3HD	F17-100M	5576-99
G1½	765	Auto	Metal	7,11	F18-B00-A3DD	F18-100A	5882-98
G2	765	Auto	Metal	7,35	F18-C00-A3DD	F18-100A	5882-98

Models listed include ISO G threads and 40 µm element.

Maximum flow with 6,3 bar inlet pressure and pressure drop of 0,5 bar

** Service kit includes 40 µm element

For G3/8 and G1/2 use Excelon or Olympian plus.

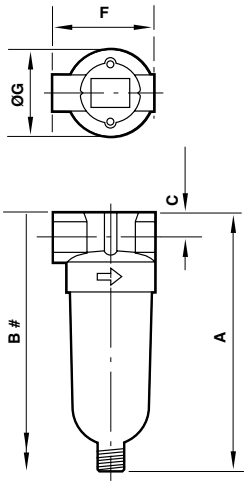
Accessories

Series	Bracket kit	Bracket kit
		
F07	5939-06	
F17		6212-50
F18		Use pipe supports

Ported general purpose filters

F07, F17, F18

G⅛ to G2



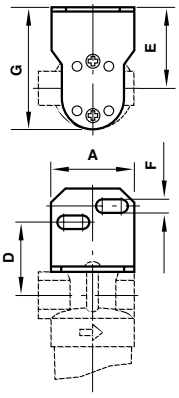
Automatic drain

* Minimum clearance required to remove bowl.

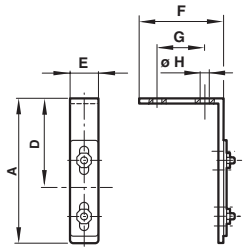
Series	Port size	Drain	A	B	C	F	ØG	kg
F07	G1/8, G1/4	Auto	104	154	10	42	37	0,13
		Manual	108	158	10	42	37	0,13
F17	G3/4, G1	Auto	288	424	32	121	110	1,93
		Manual	236	372	32	121	110	1,88
F18	G1½, G2	Auto	431	584	47	209	207	6,76

Bracket mountings

F07



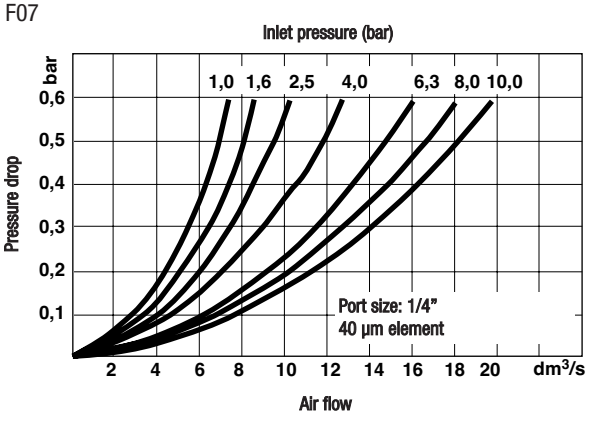
F17



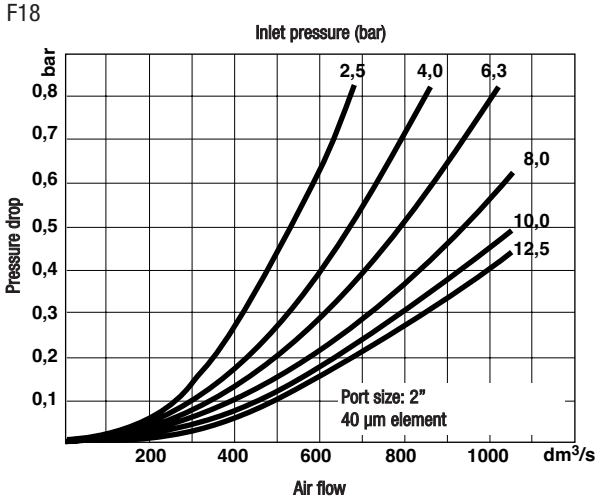
Series	Port size	A	D	E	F	G	H
F07	G1/8, G1/4	38	35	34	6	52	-
F17	G3/4, G1	130	81	25	76	43	9

Flow characteristics

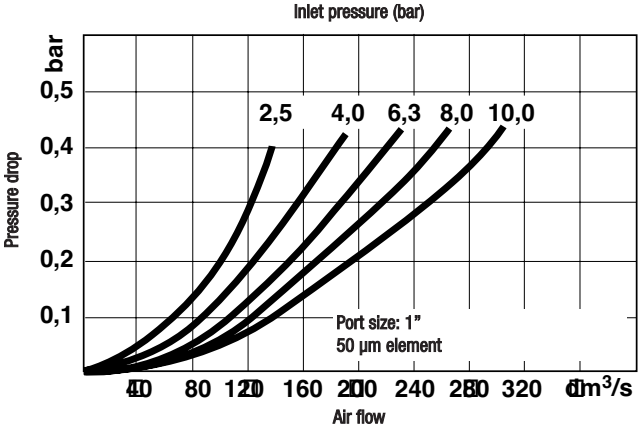
F07



F18



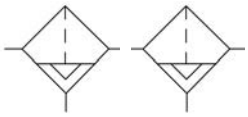
F17



Ported ‘Puraire’® oil removal filters

F39, F47

G⅛ to G2



High efficiency coalescing oil-removal filters

Maximum remaining oil content 0,01 mg/m³, particle removal to 0,01 µm

Automatic drains fitted as standard

G1½ and G2 models have mechanical service inidicator as standard

F39

F47

Technical data

Medium:

Compressed air only

Maximum inlet pressure:

10 bar (transparent bowls)

17 bar (metal bowls)

Air quality output:

Air quality to ISO 8573-1 : Class 1.7.2.

Remaining oil content:

0,01 mg/m³ maximum

Particle removal:

0,01 µm

Ambient temperature:

-34°C to +50°C transparent bowls (F39 only)

-34°C to +65°C metal bowls (F39)

-20°C to +65°C metal bowls (F47)

Consult our Technical Service for use below +2°C

Materials

F39:

Bowl: polycarbonate to BS 6005, zinc alloy (optional)

Body: zinc alloy

Elastomers: neoprene & nitrile

Main filter element: synthetic fibre & polyurethane foam

F47:

Body, intermediate body & bowl: aluminium

Elastomers: neoprene & nitrile

Filter element: synthetic fibre & polyurethane foam

Alternative models

For pressure drop indicators see page 575

Port size	Flow (dm³/s) #	Drain	Bowl	kg	Model	Service kit
G1/8	2,8	Auto	Transparent	0,13	F39-100-A0TG	4141-10
G1/8	2,8	Auto	Metal	0,23	F39-100-A0MG	4141-10
G1/8	2,8	Manual	Transparent	0,13	F39-100-M0TG	4141-10
G1/8	2,8	Manual	Metal	0,23	F39-100-M0MG	4141-10
G1/4	3,0	Auto	Transparent	0,13	F39-200-A0TG	4141-10
G1/4	3,0	Auto	Metal	0,23	F39-200-A0MG	4141-10
G1/4	3,0	Manual	Transparent	0,13	F39-200-M0TG	4141-10
G1/4	3,0	Manual	Metal	0,23	F39-200-M0MG	4141-10
G1½	118	Auto	Metal	7,04	F47-B01-A0DD	F47-00-100
G2	156	Auto	Metal	6,47	F47-C01-A0DD	F47-00-100
G2	284	Auto	Metal (long)	10,06	F47-C21-A0DD	F47-20-100

Maximum flow with 6,3 bar inlet pressure to maintain stated oil removal performance.

For optimum coalescing element life a pre-filter should be fitted to remove coarse particles, see page 458

Manual drain oil removal filters are not recommended in service where plant maintenance is irregular. Consult our Technical Service for further details

F47 includes visual indicator

For G3/8, G1/2, G3/4, G1, G1¼ sizes use Excelon or Olympian units.

Typical performance characteristics

Inlet pressure (bar)	Maximum flow dm³/s*		
	F39	F47	F47 (long)
1	1,2	50	100
3	2,0	100	170
5	2,7	140	260
6,3	3,0	156	284
7	3,1	170	325
9	3,6	215	390

* Maximum flow to maintain stated oil removal performance

Ported 'Puraire'® oil removal filters

F39, F47

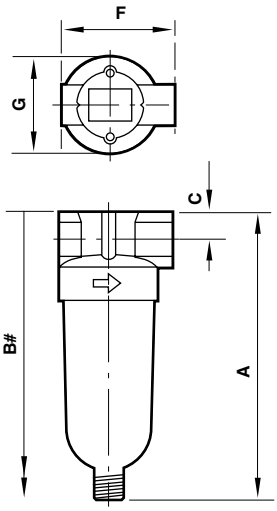
G⅛ to G2

Accessories

Series	Service life indicator (electrical)	Service life indicator (visual)	Bracket kit
			
F39			5939-06*
F47	4020-51R	5797-50	**

*Bracket kit applies

** Use pipe supports

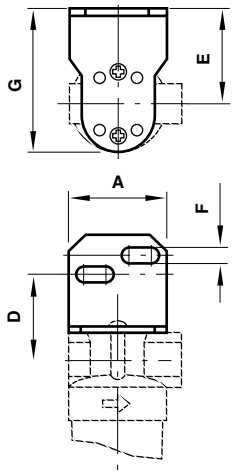


Automatic drain

Minimum clearance required to remove bowl.

Series	Port size	Drain	A	B	C	F	ØG	kg
F39	G1/8, G1/4	Auto	104	154	10	42	37	0,13
		Manual	108	158	10	42	37	0,13
F47	G1½, G2	Auto	431	584	47	209	207	7,04
F47 (long bowl)	G2	Auto	645	997	47	209	207	10,6

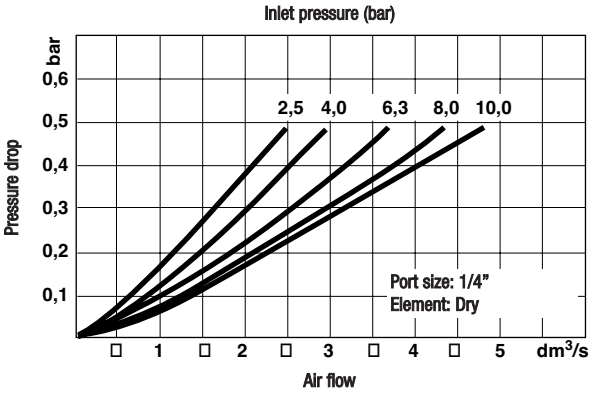
Bracket mounting



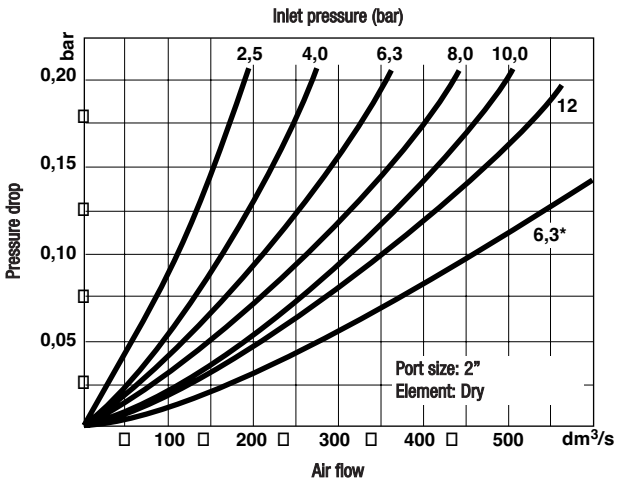
Series	Port size	A	D	E	F	G
F39	G1/8, G1/4	38	35	34	6	52

Flow characteristics

F39



F47*

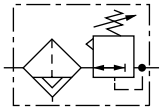


* Note: above graph shows long bowl version

Ported filter-regulators

B07

G⅛, G¼



B07

Filter-regulators for all general purpose pneumatic applications

High performance design provides high flow with minimum pressure drop

Non-rising adjusting knob has snap-action lock

Standard options include non-relieving models, metal bowls and alternative pressure ranges

Port size	Flow (dm³/s) #	Drain	Bowl	Range (bar) ‡	kg	Model	Service kit
G1/8	6,2	Auto	Transparent	0,3 ... 7	0,26	B07-101-A3KG	3820-14
G1/8	6,2	Auto	Metal	0,3 ... 7	0,25	B07-133-A3KG	3820-14
G1/8	6,2	Auto	Metal	0,5 ... 10	0,21	B07-105-A3MG	3407-29
G1/8	6,2	Manual	Transparent	0,3 ... 7	0,26	B07-101-M3KG	3820-14
G1/8	6,2	Manual	Metal	0,3 ... 7	0,25	B07-133-M3KG	3820-14
G1/8	6,2	Manual	Metal	0,5 ... 10	0,21	B07-105-M3MG	3407-29
G1/4	6,5	Auto	Transparent	0,3 ... 7	0,26	B07-201-A3KG	3820-14
G1/4	6,5	Auto	Metal	0,3 ... 7	0,25	B07-233-A3KG	3820-14
G1/4	6,5	Auto	Metal	0,5 ... 10	0,25	B07-205-A3MG	3407-29
G1/4	6,5	Manual	Transparent	0,3 ... 7	0,26	B07-201-M3KG	3820-14
G1/4	6,5	Manual	Metal	0,3 ... 7	0,25	B07-233-M3KG	3820-14
G1/4	6,5	Manual	Metal	0,5 ... 10	0,25	B07-205-M3MG	3407-29

Models listed include ISO G threads, relieving diaphragm and 40 µm element.

Maximum flow with 10 bar inlet pressure, 6,3 bar set pressure and pressure droop of 1 bar from set.

‡ Can be adjusted to zero bar outlet pressure, and, generally to pressures in excess of those specified.

Technical data

Medium:

Compressed air only

Maximum inlet pressure:

10 bar (transparent bowl)

0 to 17 bar (metal bowl)

Gauge ports:

Rc1/8

Ambient temperature:

-34°C to +50°C transparent bowls

-34°C to +65°C metal bowls

Consult our Technical Service for use below +2°C

Materials

Body: zinc

Bonnet: acetal

Valve: brass/nitrile

Valve seat: acetal

Bowl: transparent – polycarbonate; metal – zinc

Element: sintered polypropylene

Elastomers: nitrile

Alternative models

Pressure ranges

Filter elements

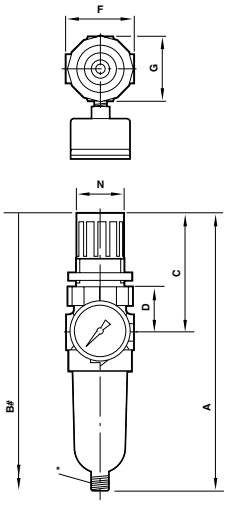
Non-relieving versions

Contact our Technical Service for details

Accessories

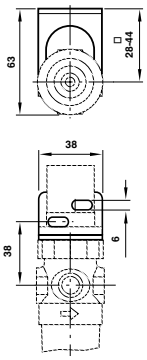
Series	Neck mounting bracket	Gauge 0 ... 10 bar*	Panel mounting	Tamper resistant kit
				
B07	18-025-003	18-013-989	2962-89 (Plastic nut)	6097-08
(Includes nut 2962-89)			2962-04 (Metal nut)	

* Other pressure ranges available – see page 486



Automatic drain

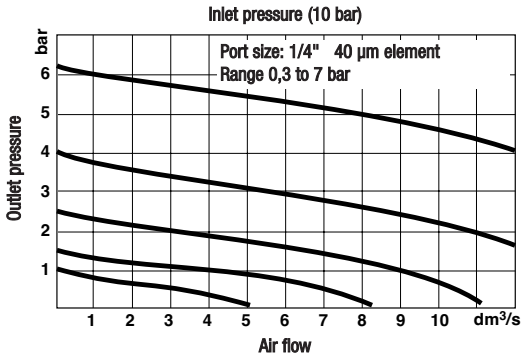
Bracket mounting



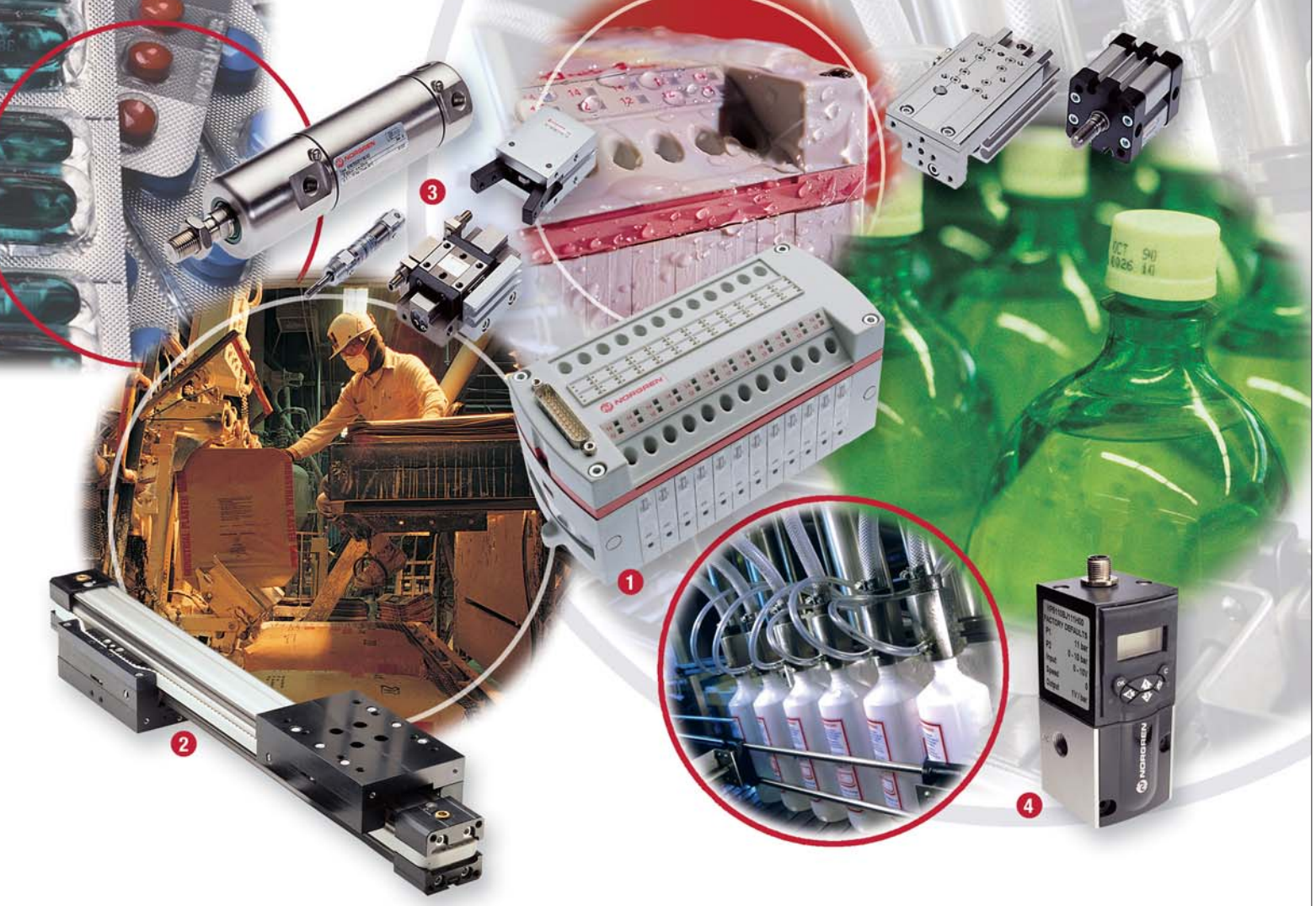
Minimum clearance required to remove bowl.

*1/8" BSP drain connection.

Flow characteristics



Port size	Drain	A	B	C	D	F	G	Panel Ø	Panel depth	kg
G1/8, G1/4	Auto	160	210	68	28	41	38	30	0 ... 6	0,26
	Manual	164	214	68	28	41	38	30	0 ... 6	0,26



Norgren in the packaging industry

Norgren is a leading global supplier to the packaging industry, offering a comprehensive range of proven and reliable products which enhance machine performance.

OEMs and end users also benefit from our advanced customised design capabilities and integrated system solutions.

VM10

1] The VM10 has been designed and engineered to make life as easy as possible for Norgren customers and is specially suitable for packaging machinery with IP65 protection rating as standard for washdown applications. See page 218

Twin LINTRA

2] This cylinder provides minimal envelope dimensions, and delivers twice the stroke length and twice the speed of conventional cylinders. See page 98

Wide range of actuators

3]
- A range of grippers to handle any component
- Miniature roundline cylinders ideal for many packaging applications
- Customised cylinders for the packaging industry
- Seven families of linear slides to suit any applications

Expertise in PET bottling

Norgren have established a leading position in the highly specialised PET bottling sector with dedicated engineers and a unique development and testing facility for high pressure components.

VP51 programmable proportional valve

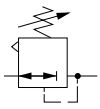
4]
- Ideal for many applications in the packaging industry thanks to his precision, flexibility and reliability.
- In addition Norgren can offer a comprehensive range of proportional valves see page 355 for more information

www.norgren.com/packaging

Ported pressure regulators

R07, 20AG

G⅛ to G1



Ported regulators for general purpose pneumatic applications

Relieving operation as standard

Non-rising adjusting knob on R07 with snap-action lock

Options include non-relieving models and alternative spring ranges

R07

20AG

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
20 bar (R07)
28 bar max. (20AG)

Gauge ports:
Rc1/8 (R07)
G1/8 (20AG)

Ambient temperature:
-34°C to +65°C (R07)
-20°C to +80°C (20AG)
Consult our Technical Service for use below +2°C

Materials

R07
Body: zinc alloy
Adjusting knob: acetal resin
Elastomers: nitrile

20AG
Body & bonnet: zinc alloy
Bottom plug: brass
Adjusting screw: steel plated
Elastomers: synthetic rubber

Alternative models

Other pressure ranges.
Adjusting screws
Non-relieving versions
Contact our Technical Service for details

Port size	Flow (dm³/s)	Range (bar) ‡	kg	Model	Service kit
G1/8	6,5	0,3 ... 7	0,19	R07-100-RNKG	3407-02
G1/8	7,5*	0,5 ... 10	0,16	R07-105-RNMG	3407-29
G1/4	7,5*	0,5 ... 10	0,16	R07-205-RNMG	3407-29
G1/4	7	0,3 ... 7	0,19	R07-200-RNKG	3407-02
G1/2	60**	0,1 ... 3,5	1,40	20AG-X4G/PD100	20AG-X4-100
G1/2	60**	0,2 ... 8	1,30	20AG-X4G/PH100	20AG-X4-100
G1/2	60**	7 ... 16	1,29	20AG-X4G/PJ100	20AG-X4-100
G3/4	80**	0,1 ... 3,5	2,75	20AG-X6G/PD100	20AG-X8-100
G3/4	80**	0,2 ... 8	2,85	20AG-X6G/PH100	20AG-X8-100
G1	100**	0,1 ... 3,5	2,44	20AG-X8G/PD100	20AG-X8-100
G1	100**	0,2 ... 8	2,90	20AG-X8G/PH100	20AG-X8-100

Models listed include ISO G threads and relieving diaphragm.
* Maximum flow with 10 bar inlet pressure, 6,3 bar outlet pressure and a pressure droop of 1 bar.
** Maximum flow with 7 bar inlet pressure, 4 bar outlet pressure and a pressure droop of 1 bar.
‡ Can be adjusted to zero bar outlet pressure, and, generally, to pressures in excess of those specified.
For non-relieving models (R07) substitute 'N' for 'R' at the 7th digit, e.g. R07-100-**N**NKG.
For non-relieving models (20AG) delete 'X' from model no. e.g. 20AG-4G/PH100.
For G3/8 size use Excelon or Olympian units

Other pressure regulators are available to suit your application:

- R91 Series – miniature plastic regulators for potable water, non-potable water and compressed air – see page 487
- R30M Series – miniature plastic regulators featuring push-in ports as standard, for non-potable water and compressed air – ideal for manifold mounting – see page 487
- R06, R43 and 11-809 Series - brass units for potable and non-potable water – see page 487

We can also supply pressure regulators to suit your specific requirements,* for example:

- Pre-set regulators
- Units degreased for oxygen use
- Units with minimum and/or maximum pressure settings
- Units for low or high temperature applications

*Subject to quantity required, consult our Technical Service.

Accessories

Series	Port size	Bracket kit	Gauge 0 ... 10 bar*	Panel mounting	Tamper resistant kit	Tamper-proof cap	Black plastic handwheel	Slotted adjusting screw
								
R07		18-025-003 (Includes nut 2962-89)	18-013-989	2962-89 (Nut only)	18-001-092			
20AG	G1/2	18-001-005	18-013-013	18-003-026		18-004-997	1192-99	1094-99
	G3/4, G1	18-001-029					1321-99	1095-02

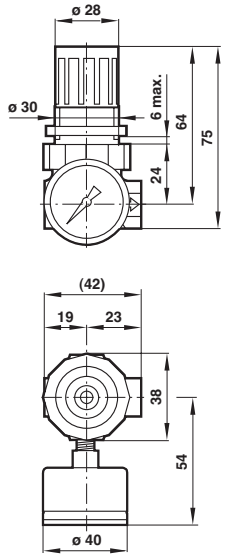
* Other pressure ranges available – see page 486

Ported pressure regulators

R07, 20AG

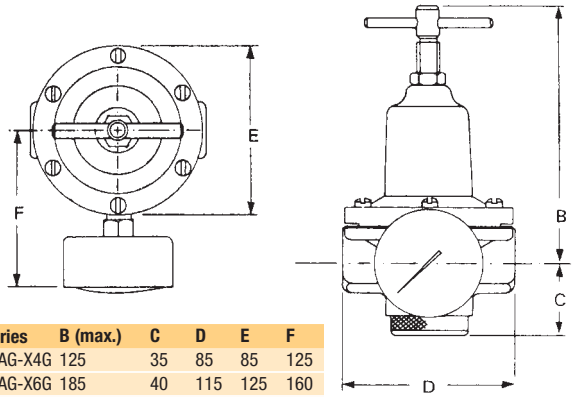
G⅛ to G1

R07



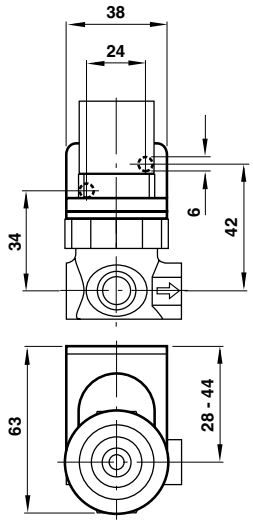
19 kg

20AG

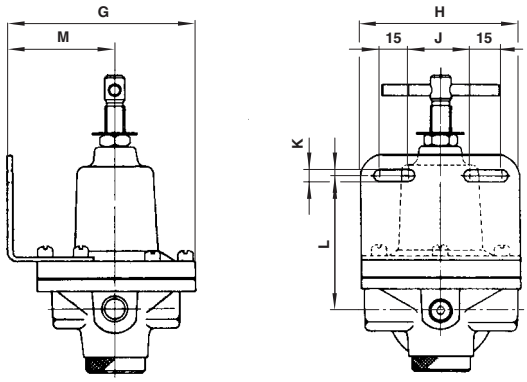


Series	B (max.)	C	D	E	F
20AG-X4G	125	35	85	85	125
20AG-X6G	185	40	115	125	160
20AG-X8G	185	40	115	125	160

Bracket mounting (R07)



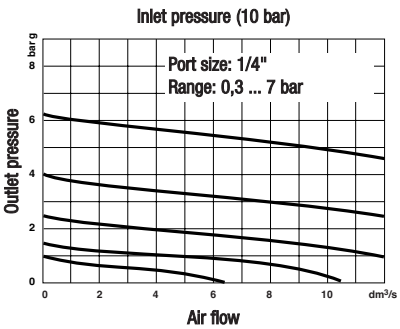
Bracket mounting (20AG)



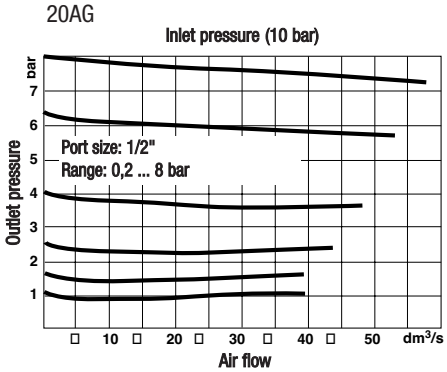
Series	G	H	J	K	L	M
20AG-X4G	100	85	30	7	70	55
20AG-X6G	140	125	65	8	80	75
20AG-X8G	140	125	65	8	80	75

Flow characteristics

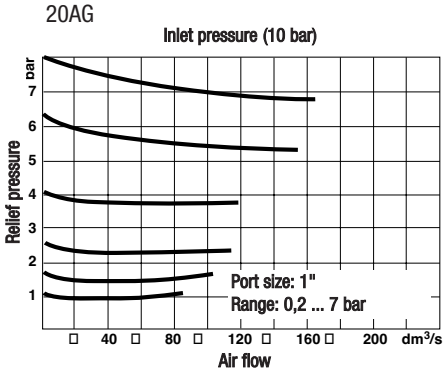
R07



20AG



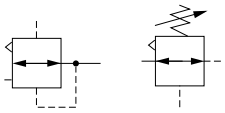
20AG



Ported pilot operated pressure regulators

11-808, R18, 11400, 11-204

G¾ to G2



Can be installed at any point in the compressed air system without regard to accessibility – pilot regulator can be installed in the most convenient location

Accurate pressure regulation over a wide range of flows

Can be used with conventional or feedback pilot regulator

Feedback pilot regulator senses downstream pressure and automatically adjusts pilot operated regulator outlet pressure

See also page 478 for special purpose R24 pilot operated regulators

11400/11-204

11-808

R18

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
20 bar (11-808, 11-204)
25 bar (11400)
31 bar (R18)

Gauge ports:
Rc1/8 (11-808)
G1/8 (11400)
G1/4 (R18)

Pilot port:
Rc1/4 (11-808)
G1/4 (R18)

Exhaust ports:
G3/4" (R18)

Ambient temperature:
-20°C to +80°C
Consult our Technical Service for use below +2°C

Materials

11-808:
Body: zinc alloy
Bonnet: aluminium alloy
Elastomers: nitrile

11400:
Body & bonnet: zinc alloy
Adjusting knob: acetal resin
Elastomers: nitrile

R18:
Body & bonnet: aluminium alloy
Elastomers: nitrile

11-204:
Body & bonnet: zinc alloy
Adjusting knob: acetal resin
Elastomers: synthetic rubber

Constant Bleed 11-808

All pilots and pilot operated regulators have a constant bleed feature to give maximum performance, this gives a continual escape of air in to the atmosphere.

Pilot operated regulators

Port size	Flow (dm³/s)	Range (bar) *	Operation	kg	Model	Service kit
G3/4	180#	0,16 ... 17	Relieving	2,20	11-808-960	11-908-100
G1	180#	0,16 ... 17	Relieving	2,36	11-808-980	11-908-100
G1½	950‡	0,16 ... 17	Relieving	3,20	R18-B00-RNXD	R18-100R
G1½	950‡	0,16 ... 17	Non-relieving	3,16	R18-B00-NNXD	R18-100N
G2	950‡	0,16 ... 17	Relieving	3,08	R18-C00-RNXD	R18-100R
G2	950‡	0,16 ... 17	Non-relieving	3,01	R18-C00-NNXD	R18-100N

* Can be adjusted to zero bar outlet pressure, and, generally, to pressures in excess of those specified.
# Maximum flow (feedback pilot) with 8 bar inlet pressure, 6,3 bar outlet pressure and zero pressure droop.
‡ Maximum flow (feedback pilot) with 7 bar inlet pressure, 6,3 bar outlet pressure and a droop of 1 bar from set..

Feedback pilot regulators

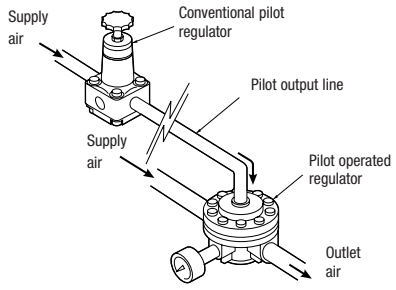
Port size	Range (bar) *	Operation	kg	Model	Service kit
G1/4	0,16 ... 7	Relieving	1,20	11-204-004	11-204-100
G1/4	4 ... 17	Relieving	1,30	11-204-006	11-204-100

Feedback pilot regulators are designed solely for use with pilot operated regulators and must not be used in any other application.
For conventional pilot regulators see page 412 (R38 & 11400 Series)

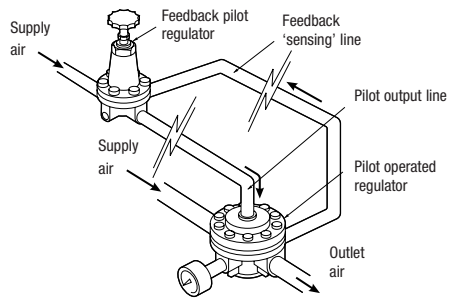
Conventional pilot regulators

Port size	Accuracy (bar)	Range (bar)	Operation	kg	Model	Service kit
G1/4	0,07	0,06 ... 2	Relieving only	0,90	11400-2G/PC100	11400-100
G1/4	0,15	0,06 ... 4	Relieving only	0,94	11400-2G/PE100	11400-100
G1/4	0,25	0,16 ... 7	Relieving only	1,00	11400-2G/PG100	11400-100
G1/4	1,00	7 ... 20	Relieving only	1,05	20AL-X2G/PK100	11400-100

Conventional pilot

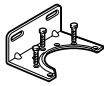


Feedback pilot



Feedback pilot regulators give more sensitive control and quicker reaction to downstream pressure changes.
Feedback 'sensing' line to be kept to miniumum length (<200mm).

Accessories

Series	Bracket kit	Gauge 0 ... 25 bar‡	Silencer
			
11-808	18-001-027	18-013-014	
R18	*	18-013-014	MB006B
11-204	18-001-005		

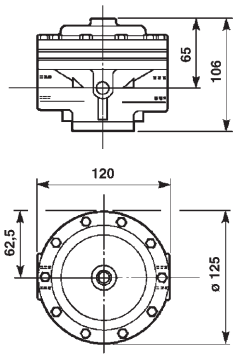
‡ Pressure gauges should always be connected to the main regulator, not the pilot regulator. Other pressure ranges available – see page 486
* Use pipe supports

Ported pilot operated pressure regulators

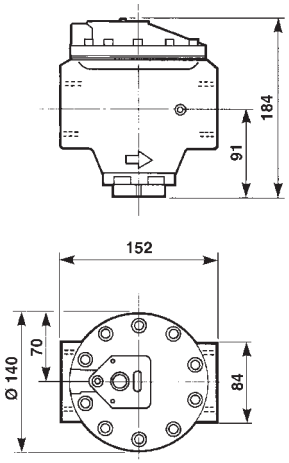
11-808, R18, 11400, 11-204

G¾ to G2

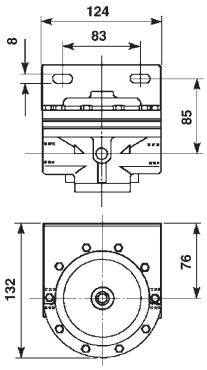
11-808



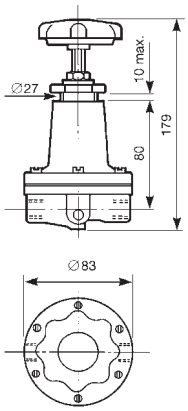
R18



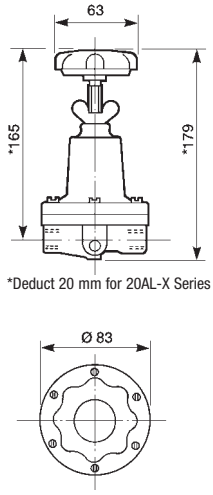
Bracket mounting (11-808)



11-204



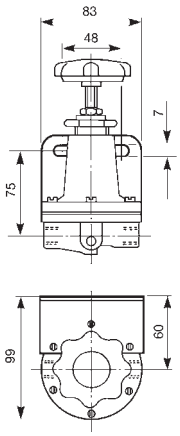
11400, 20AL-X



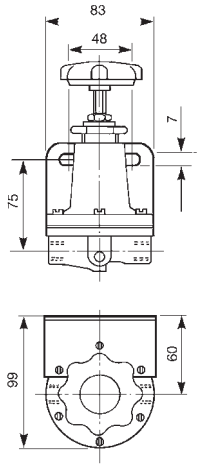
*Deduct 20 mm for 20AL-X Series

Weight: 1,00 kg (11400)
1,05kg (20AL-X)

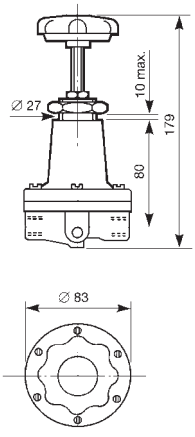
Bracket mounting (11-204)



Bracket mounting (11400)
Bracket mounting (20AL-X)

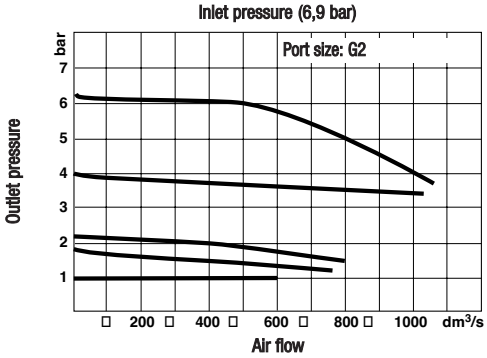


Panel mounting (11400)
Panel mounting (20AL-X)

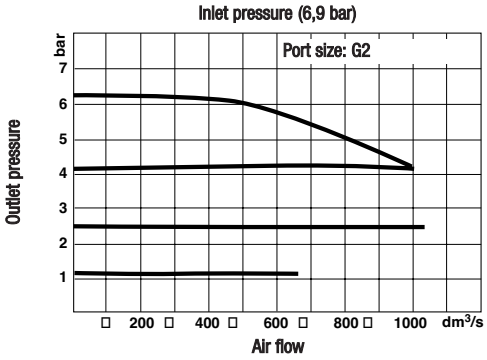


Flow characteristics

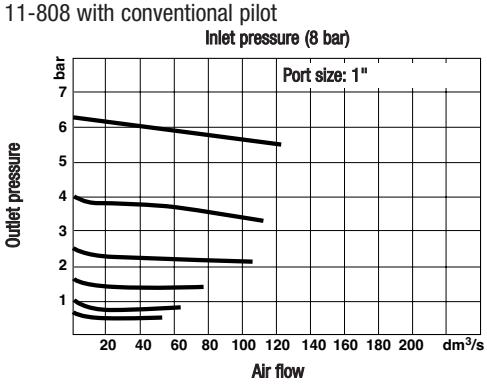
R18, with conventional pilot



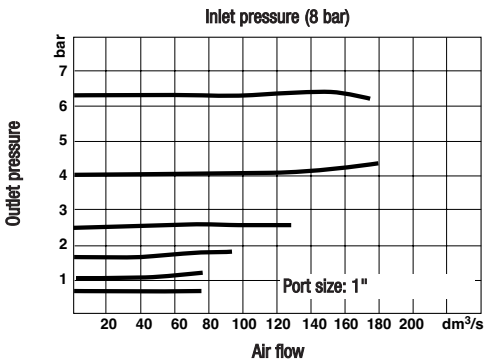
R18, with 11-204 feedback pilot



11-808 with conventional pilot



11-808, with 11-204 feedback pilot



Ported lubricators

L07, L17, 10-826

G⅛ to G2

Ported lubricators up to G2 port size

Micro-fog lubricators provide a fine mist for most general purpose pneumatic applications

Oil-fog lubricators for heavy duty lubrication

L07

L17

10-826

Technical data

Medium:

Compressed air only

Maximum inlet pressure:

10 bar (transparent bowl)

17 bar (metal bowl)

10 bar (10-826)

Start point:

L07 0,24 dm^3/s

L17 3,8 dm^3/s

10-826 140 dm^3/s

Minimum flow required for lubricator operation at 6,3 bar inlet pressure

Ambient temperature:

-20°C to +50°C transparent bowls

-20°C to +80°C metal bowls.

Consult our Technical Service for use below +2°C

Materials

L07:

Bowl: polycarbonate, zinc alloy (optional)

Body: zinc alloy

Sight-feed dome: transparent nylon

Elastomers: neoprene & nitrile

L17 and 10-826:

Bowl: aluminium alloy (0,5 ltr or 1 ltr), steel reservoirs (8 ltr & 20 ltr)

Body: aluminium alloy

Elastomers: neoprene & nitrile

Sight feed dome: transparent nylon

Alternative models

High capacity reservoirs

Contact our Technical Service for details

Micro-fog lubricator

Port size	Flow (dm^3/s) #	Bowl	Bowl capacity (litre)	kg	Model *	Service kit
G1/8	5	Transparent	31 ml	0.13	L07-100-MPQG	3795-04
G1/8	5	Metal	31 ml	0,15	L07-100-MPMG	3795-04
G1/4	6,7	Transparent	31 ml	0.13	L07-200-MPQG	3795-04
G1/4	6,7	Metal	31 ml	0,15	L07-200-MPMG	3795-04
G3/4	76	Metal	0,5 l	1,69	L17-600-MP9D	L17-100M
G1	130	Metal	0,5 l	1,62	L17-800-MP9D	L17-100M

For G3/8 and G1/2 sizes, use Excelon or Olympian units.

#Typical flow with 6,3 bar inlet pressure and 0,5 bar pressure drop.

* Models listed in the order table must not be located downstream of frequently cycling directional control valves. Order the optional bi-directional oil-fog lubricator for use under such conditions.

Oil-fog lubricators

Port size	Flow (dm^3/s) #	Bowl	Bowl capacity (litre)	kg	Model *	Service kit
G3/4	76	Metal	0,5 l	1,69	L17-600-OP9D	L17-100
G1	130	Metal	0,5 l	1,62	L17-800-OP9D	L17-100
G2	675	Metal	1 l	4,60	10-826-997	10-026-100
G2	675	Metal	8 l	15,00	10-826-999	10-026-100
G2	675	Metal	20 l	32,20	10-826-998	10-026-100

For G1/4, G3/8 and G1/2 sizes use Excelon or Olympian units

#Typical flow with 6,3 bar inlet pressure and 0,5 bar pressure drop.

* Models listed in the order table must not be located downstream of frequently cycling directional control valves. Order the optional bi-directional oil-fog lubricator for use under such conditions.

Accessories

Series	Port size	Neck mounting bracket	Neck mounting bracket	Seal wire	Quick fill nipple	Remote fill kit	Tamper resistant snap-on cap for lubricator sight feed dome
							
L07	G1/8	18-025-003		–	–		4050-89/X10*
L17	G1	-	18-001-980	Seal wire 2117-01	18-011-021	18-027-980**	–

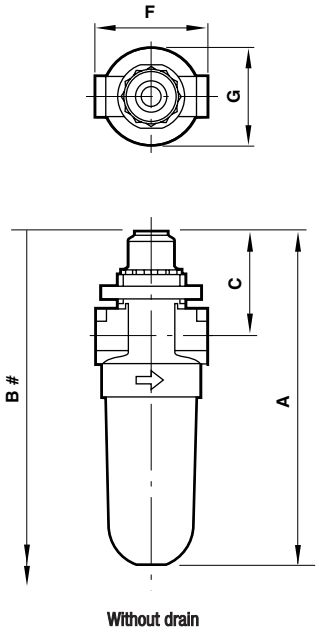
*Pack of 10

**0,5 l bowl only.

Ported lubricators

L07, L17, 10-826

G⅛ to G2



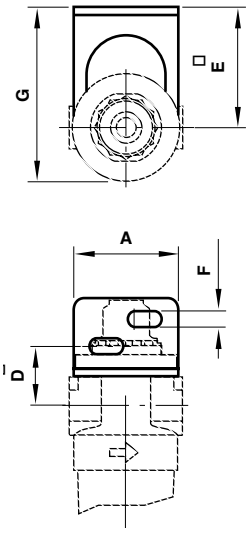
Without drain

* Minimum clearance required to remove bowl.

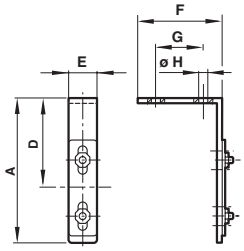
Series	Port size	A	B	C	F	ØG	kg
L07	G1/8, G1/4	120	183	42	41	37	0,13
L17	G3/4, G1	310	464	56	114	110	1,69
10-826	G2 (1 l)	360	–	63	133	–	4,60

Bracket mounting

L07



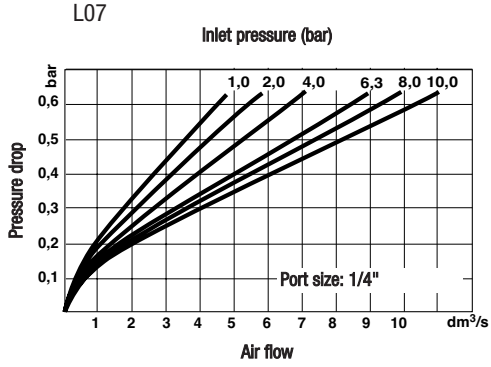
L17



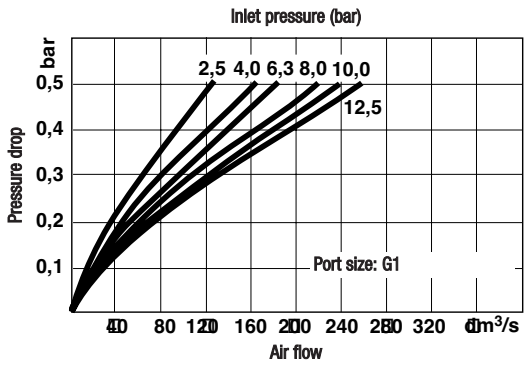
Series	Port size	A	D	E	F	G	H
L07	G1/8, G1/4	38	19	28 ... 44	6	63	-
L17	G3/4, G1	130	81	25	76	43	9

Flow characteristics

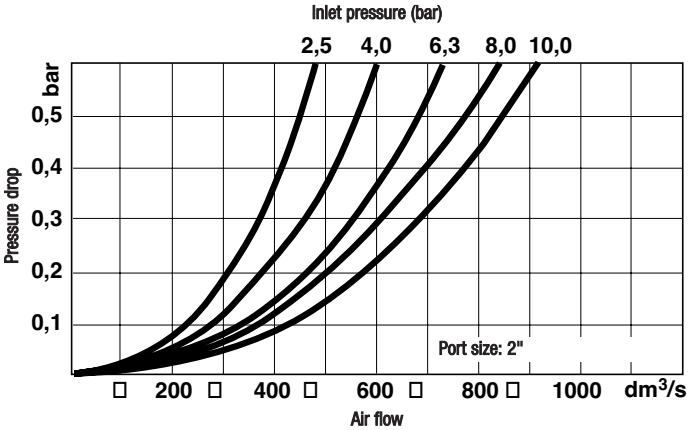
L07



L17



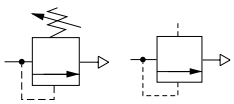
10-826



Ported pressure relief valves - Diaphragm type

V07, 40AC

⅛" to 1"



V07 40AC

Protect compressed air systems from over-pressurisation

40AC pilot operated units can be installed at any point in the compressed air system without regard to accessibility – pilot regulator can be installed in the most convenient location

Norgren pressure relief valves comply with category 0(S.E.P.) and category 1 of the Pressure Equipment Directive 97/23/EC. If categories 2, 3 or 4 products are required contact our Technical Services.

Technical data

Medium:
Compressed air only

Gauge ports:
Rc1/8 (V07)
G1/8 (40AC)

Relief port:
As inlet port

Ambient temperature:
-34°C ... +65°C (V07)
-20°C ... +80°C (40 AC)
Consult our Technical Service for use below +2°C

Materials

V07:
Body: zinc alloy
Adjusting knob & bonnet: acetal resin
Valve seat: polyphenylene
Elastomers: nitrile

40AC:
Body: zinc alloy
Bonnet: aluminium alloy
Elastomers: synthetic rubber

Diaphragm type

Port size	Range (bar) *	kg	Model	Service kit
G1/8	0,3 ... 9	0,13	V07-100-NNLG	3407-19
G1/4	0,3 ... 9	0,13	V07-200-NNLG	3407-19

Pilot operated

Port size	Range (bar) *	kg	Model	Service kit
G3/4	0,14 ... 16	1,60	40AC-6/PX100	40AC-100
G1	0,14 ... 16	1,55	40AC-8/PX100	40AC-100

*Other pressure ranges available.
Operating pressure range may be restricted by piloting regulator or controlled air supply.
For pilot operator use regulator type 11400, see page 474
Feedback pilot regulators should never be used in conjunction with pilot operated relief valves.
* Note: Use of these units outside of their operating pressure ranges could lead to product malfunction and should not be attempted.

Accessories

Series	Bracket kit	Gauge	Panel mounting	Tamper resistant kit
				
V07	18-025-003	18-013-989 (0 ... 10 bar)	2962-89 (Plastic nut only)	18-001-093
	(includes panel nut)		2962-04 (Metal nut only)	
40AC	18-001-029	18-013-014 (0 ... 25 bar)	–	–

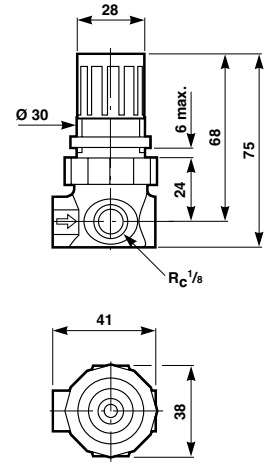
* Other pressure ranges available – see page 486

Available as **Cat 1** under P.E.D. as standard
Cat 4 available on request

Ported pressure relief valves - Diaphragm type

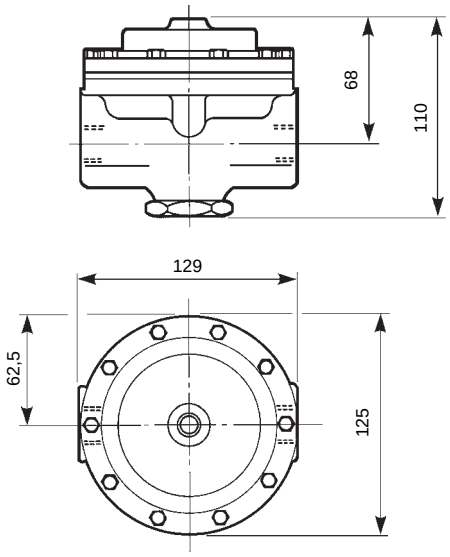
V07, 40AC

⅛" to 1"



Weight: 0,13 kg

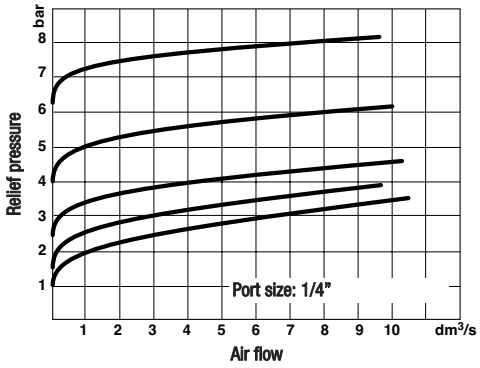
40AC



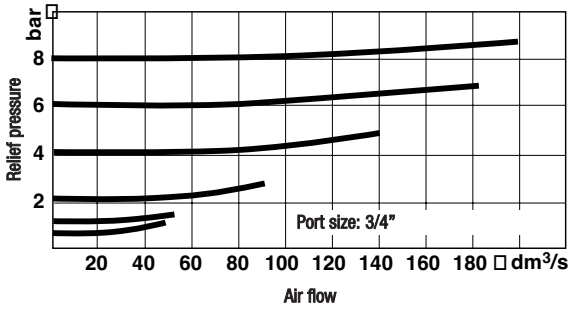
Weight: 1,60 kg

Flow characteristics

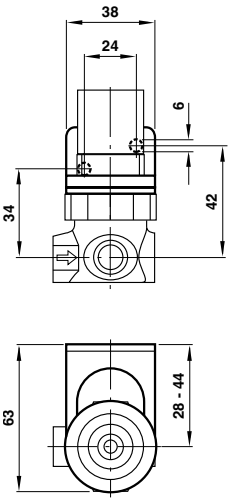
V07



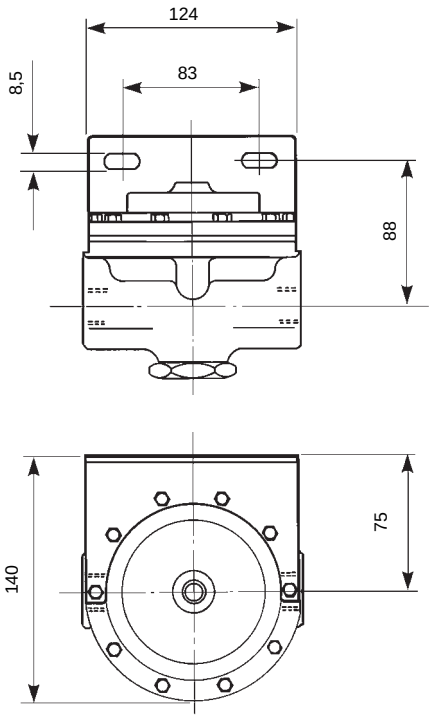
40AC



Bracket kit (V07)



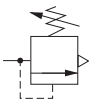
Bracket kit (40AC)



Ported pressure relief valves - Pop type

1002, 61B2, V05

R1/4



1002

61B2

V05 (brass)

V05 (plastic)

Protect compressed air systems from over-pressurisation

Simple, low cost 'Pop' type units for direct connection to pressure vessels and associated components

Pre-set and tamper resistant relief valves protected from ingress

Norgren pressure relief valves comply with category 0(S.E.P.) and category 1 of the Pressure Equipment Directive 97/23/EC. If categories 2, 3 or 4 products are required contact our Technical Services.

Technical data

Medium:

Compressed air only

Ambient temperature:

-40°C to +230°C (1002)

-20°C ... +80°C (61B2)

-4°C ... +40°C (V05)

Consult our Technical Service for use below +2°C

Materials

1002:

Body & adjusting cap: brass

Ball seal: stainless steel

61A2, 61B2:

Body & adjusting cap: brass

Seal: polyurethane

V05 (brass):

Body & adjusting cap: brass

Seal: polyurethane

Seal body: acetal or brass

Alternative models

Pre-set relief pressure (1002, 61B2, V05)

Pull ring (1002)

Plastic models (V05)

Consult our Technical Service for use below +2°C

'Pop' type

Series	Range (bar)	kg	Model
R1/4	0 ... 1,6	0,110	1002/BM000
R1/4	1,6 ... 2,5	0,110	1002/BP000
R1/4	6,3 ... 14	0,110	1002/BR000
R1/4	0,63 ... 1,6	0,051	61B2/BM000
R1/4	1,6 ... 4	0,051	61B2/BN000
R1/4	2,5 ... 5	0,051	61B2/BS000
R1/4	5 ... 10	0,051	61B2/BT000
R1/4	10 ... 16	0,051	61B2/BU000

To order a 1002 unit with pull ring fitted substitute '8' for '0' at the last digit, e.g. 1002/BG00**8**.

Options selector

V05-200-P★★★

Nominal setting	Substitute
1,00 bar (15 psi)	15
1,35 bar (20 psi)	20
1,70 bar (25 psi)	25
2,00 bar (30 psi)	30
2,35 bar (35 psi)	35
2,70 bar (40 psi)	40
3,00 bar (45 psi)	45
3,35 bar (50 psi)	50
3,70 bar (55 psi)	55
4,00 bar (60 psi)	60

Additional pressure settings are available up to 15,5 bar (225 psi), please contact Norgren Technical Service for details

Thread type	Substitute
NPT (brass)	A
BSPT (brass)	B
Push in connection (plastic)	P

Available as **Cat 1** under P.E.D. as standard

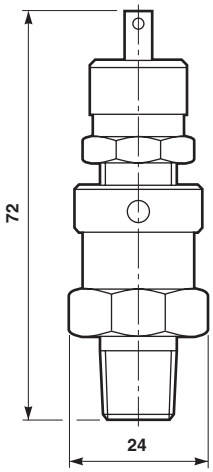
Cat 4 available on request

Ported pressure relief valves - Pop type

1002, 61B2, V05

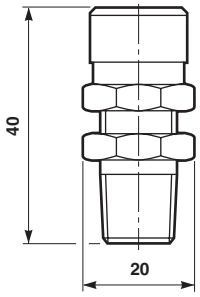
R1/4

1002



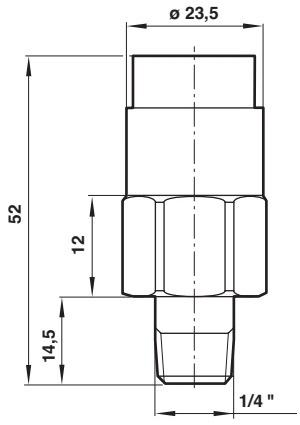
Weight: 0,11 kg

61B2

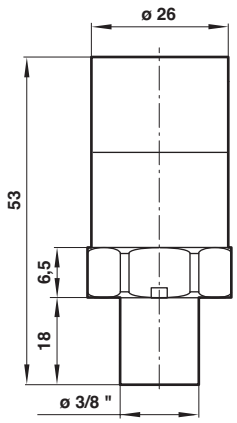


Weight: 0,05 kg

V05 (brass)

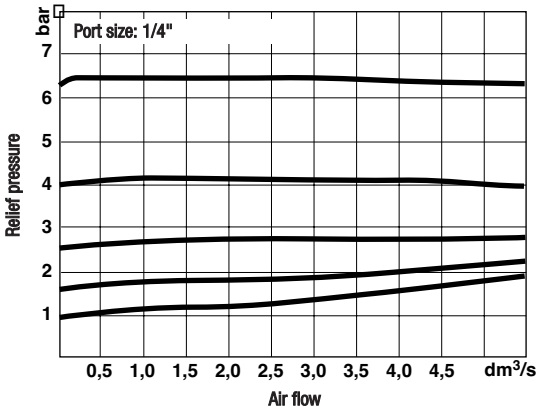


V05 (plastic)

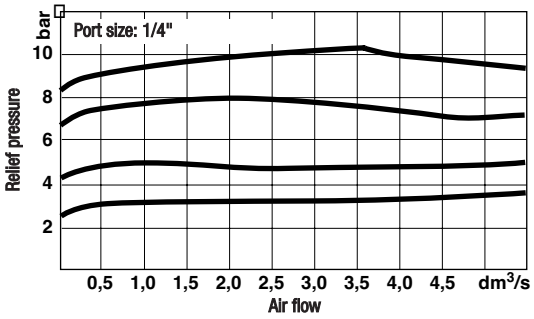


Flow characteristics

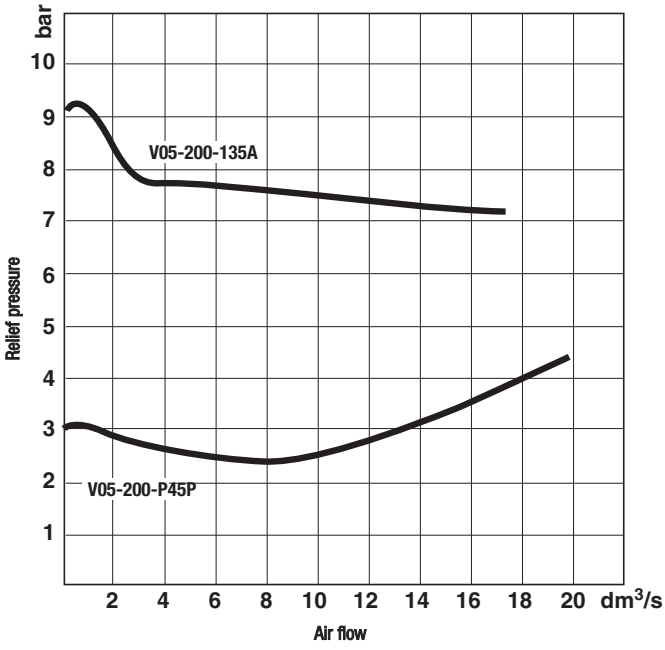
1002



61A2, 61B2



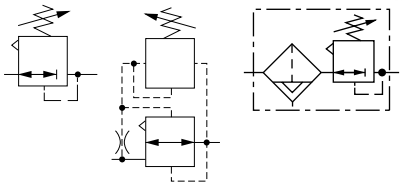
V05



Precision pressure regulators & filter-regulators

11-818, 11400, 20AL-X, R38, B38

G¼, ¼" NPTF



11400/20AL-X

11-818

R38

B38

11-818* compact, high precision regulators for air gauging, laboratory use and precise pilot control

11400/20AL-X for high accuracy with constant bleed, recommended as pilot control for R18/11-808/R24 regulators and 40AC relief valves

R38 instrument regulators for process and petro-chemical industries

See also page 416 for R24 special purpose regulators

* Not recommended for dead end use, consult our Technical Service for details

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
25 bar (11400/20AL-X)
10 bar (11-818-100)
14 bar (11-818-110)
8 bar (11-818-999)
20 bar (R38/B38)

Gauge ports:
G1/8 (11400/20AL-X)
1/4" NPTF (R38/B38)

Ambient temperature:
-20°C to +80°C
-40°C to +80°C (R38/B38)
0°C to +70°C (11-818)
Consult our Technical Service for use below +2°C

Materials

11-818, 11400 and 20AL-X:
Body & bonnet: zinc alloy
Adjusting knob: acetal resin
Elastomers: synthetic rubber

R38:
Body & bonnet: aluminium alloy
Adjusting screw: steel
Elastomers: synthetic rubber

B38:
Element: 25µm polyethylene, 5µm ceramic (manual drain only)

Alternative models

Non-relieving versions (R38 & B38)
Contact our Technical Service for details

Port size	Accuracy (bar)**	Range (bar) *	Operation	kg	Model	Service kit
G1/4	0,01	0,02 ... 0,5	Relieving only	0,59	11-818-999	2787-96
G1/4	0,03	0,07 ... 4	Relieving only	0,59	11-818-100	2787-98
G1/4	0,05	0,4 ... 10	Relieving only	0,59	11-818-110	2787-97
G1/4	0,07	0,06 ... 2	Relieving only	0,90	11400-2G/PC100 *	11400-100/20AL
G1/4	0,15	0,06 ... 4	Relieving only	0,94	11400-2G/PE100 *	11400-100/20AL
G1/4	0,25	0,16 ... 7	Relieving only	1,00	11400-2G/PG100 *	11400-100/20AL
G1/4	1,00	7 ... 20	Relieving only	1,05	20AL-X2G/PK100	11400-100/20AL
1/4 PTF	0,10	0,04 ... 2	Relieving	0,48	R38-200-RNCA	R38-100R
1/4 PTF	0,20	0,06 ... 4	Relieving	0,65	R38-200-RNFA	R38-101R
1/4 PTF	0,25	0,25 ... 7	Relieving	0,65	R38-200-RNKA	R38-101R
1/4 PTF	0,10	0,04 ... 2	Relieving	0,53	B38-200-B2CA #	B38-100A
1/4 PTF	0,20	0,07 ... 4	Relieving	0,75	B38-200-B2FA #	B38-100A
1/4 PTF	0,25	0,25 ... 7	Relieving	0,75	B38-200-B2KA #	B38-100A

* For panel mounting substitute 3 at the last digit e.g 11400-2G/PC10**3**
# For 5µm element substitute 1 at the 8th digit e.g. B38-200-B**1**CA
** Typical mid-range variance from set pressure with 7 bar inlet at 2 dm^3/s (10 bar inlet for 20AL-X2G).
A Norgren oil removal filter should be fitted upstream of these units, see pages 434 and 460
Can be adjusted to zero bar outlet pressure and generally to pressure in excess of those specified

Accessories

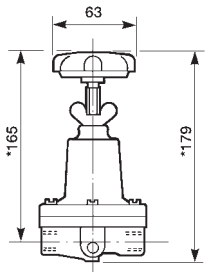
Series	Bracket kit	Gauge	Panel mounting	Tamper-proof cap
				
11-818	–	Use downstream tee	3081-01 (Nut only, for	639-02
			2,5 ... 6 mm panel thickness)	
11400	18-001-005	18-013-011 (0 ... 4 bar)	18-003-999	18-004-997
		18-013-013 (0 ... 10 bar)	–	–
20AL-X	18-001-005	18-013-014 (0 ... 25 bar)	18-003-026	18-004-987
R38 & B38	18-001-974 (Includes	18-013-913 (0 ... 6 bar)	5988-01 (Nut only)	–
	panel mounting nut)	18-013-909 (0 ... 10 bar)		
		18-013-905 (0 ... 25 bar)		

Precision pressure regulators & filter-regulators

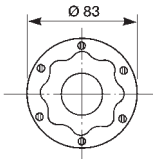
11-818, 11400, 20AL-X, R38, B38

G¼, ¼" NPTF

11400, 20AL-X

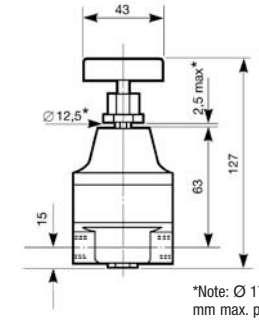


*Deduct 20 mm for 20AL-X Series

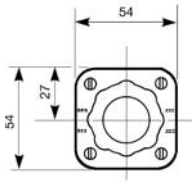


Weight: 1,00 kg (11400)
1,05kg (20AL-X)

11-818

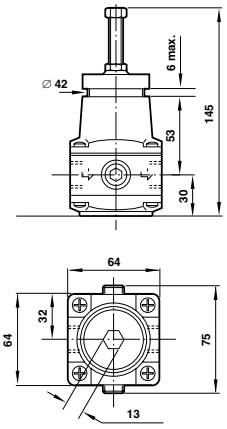


*Note: Ø 17,5 and up to 6 mm max. panel thickness when used with optional panel mounting nut reference 3081-01.
To order see accessories opposite.



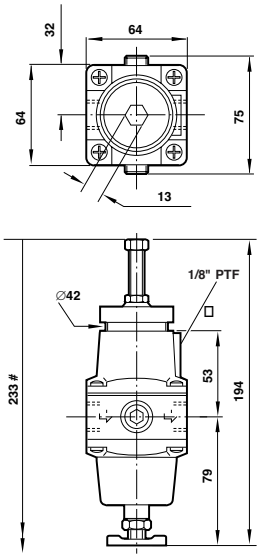
Weight: 0,59 kg

R38



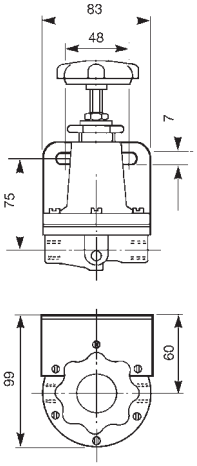
Weight: 0,46 kg

B38

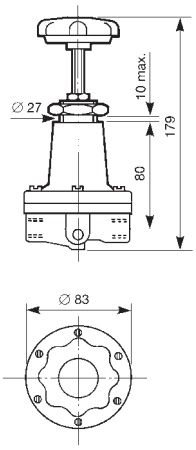


* Minimum clearance required to remove bowl.

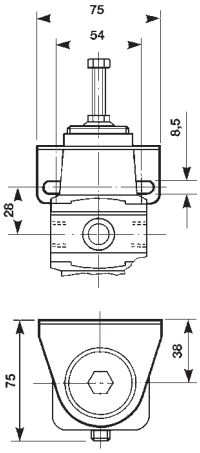
Bracket mounting (11400, 20AL-X)



Panel mounting (11400, 20AL-X)

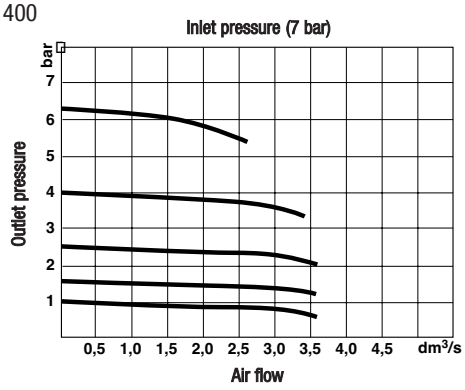


Bracket mounting (R38)

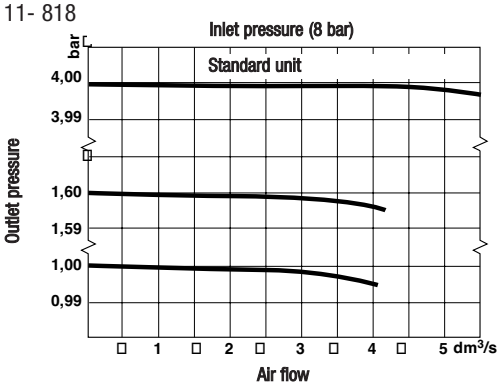


Flow characteristics

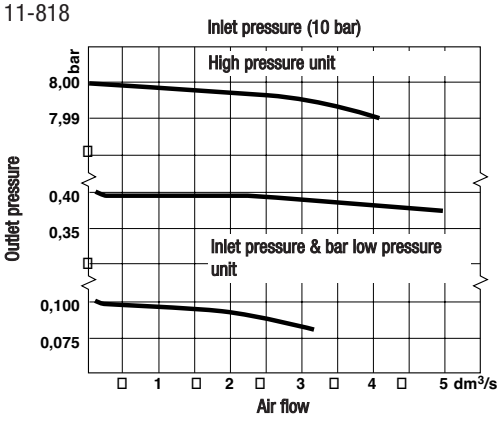
11400



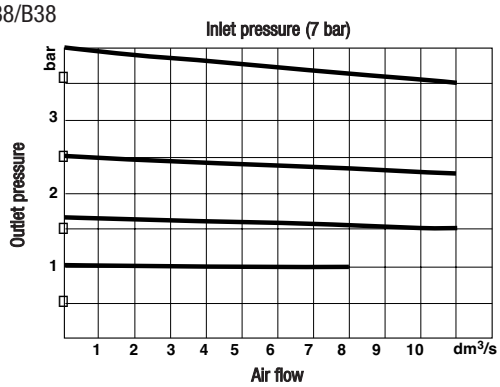
11- 818



11-818



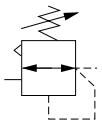
R38/B38



Precision pressure regulators

R27 Series

G¼



High-precision manual pressure regulator which regulates pressure by use of a control chamber instead of a spring, so increasing its sensitivity to any variations and eliminating any spring hysteresis.

Perfect for dead-end applications.

Excellent long term stability

Handwheel, lever, plunger or pilot operated

Note: The R27 is a high precision manual pressure regulator which regulates pressure by use of a control chamber, instead of a spring, so increasing its sensitivity to any variations and eliminating any spring hysteresis. The R27 is perfect for dead-end applications.

Description	Range (bar)	Operation	Air consumption l/m	kg	Model
Standard regulator	0,14 ... 2,0	Handwheel 2,5 ... 3 turns	0,3	0,72	R27-200-RNCG
Standard regulator	0,14 ... 4,0	Handwheel 2,5 ... 3 turns	0,6	0,72	R27-200-RNFG
Standard regulator	0,14 ... 8,0	Handwheel 2,5 ... 3 turns	1,2	0,72	R27-200-RNLG
Lever operated regulator	0,14 ... 2,0	Lever control 125° rotation	0,3	0,72	R27-230-RNCG
Lever operated regulator	0,14 ... 4,0	Lever control 125° rotation	0,6	0,72	R27-230-RNFG
Lever operated regulator	0,14 ... 8,0	Lever control 125° rotation	1,2	0,72	R27-230-RNLG
Plunger operated regulator	0,14 ... 4,0	Plunger travel 1,65 mm	0,6	0,72	R27-232-RNFG
Plunger operated regulator	0,14 ... 8,0	Plunger travel 1,65 mm	1,2	0,72	R27-232-RNLG
Pilot operated relay	0,14 ... 8,0	Pilot pressure signal	1,2	0,72	R27-234-RNCG
Pilot operated relay with manual bias	0,14 ... 8,0 Bias of up to 2 bar	Pilot pressure signal, handwheel controlled bias	1,2	0,72	R27-236-RNXG

Technical data

Medium:
Dry, oil free air filtered to 5 µm

Maximum inlet pressure:
10 bar

Gauge ports:
G1/4

Ambient temperature:
-20°C to +70°C
Consult our Technical Service for use below +2°C

Flow capacity:
Up to 5 dm^3/s

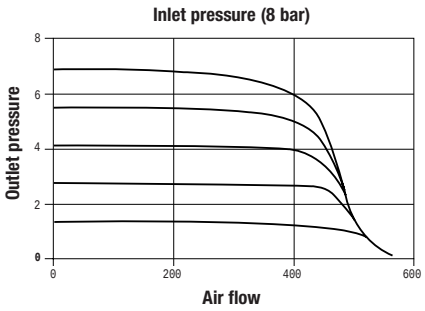
Sensitivity:
Better than 0,3 mbar

Hysteresis & repeatability:
Less than 0,005% setting at mid-range

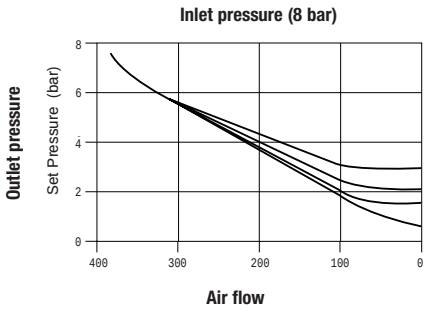
Materials

Body: passivated zinc diecasting
Internal springs: mild steel
Elastomers: reinforced nylon
Port & base screws: nickel plated brass

Forward flow characteristics



Relief flow characteristics

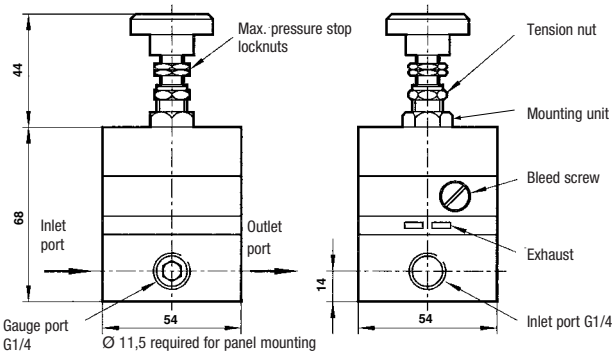


Precision pressure regulators

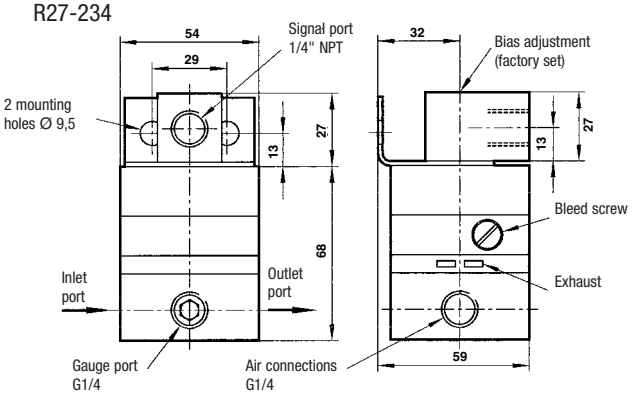
R27 Series

G¼

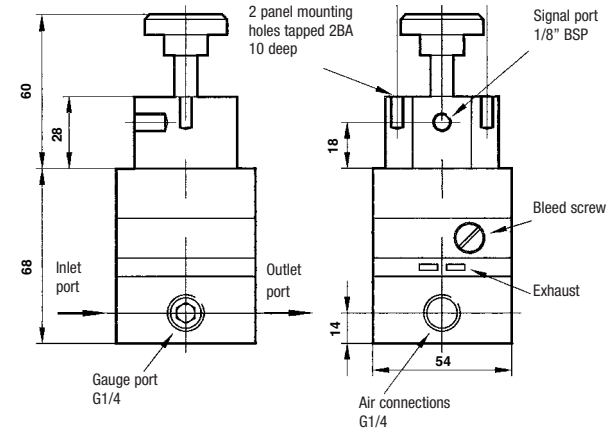
R27-200



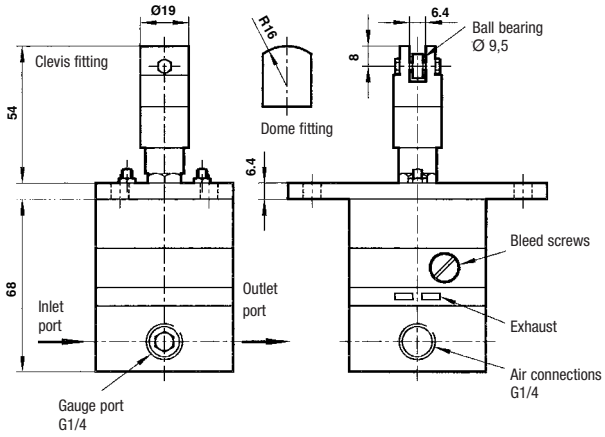
R27-234



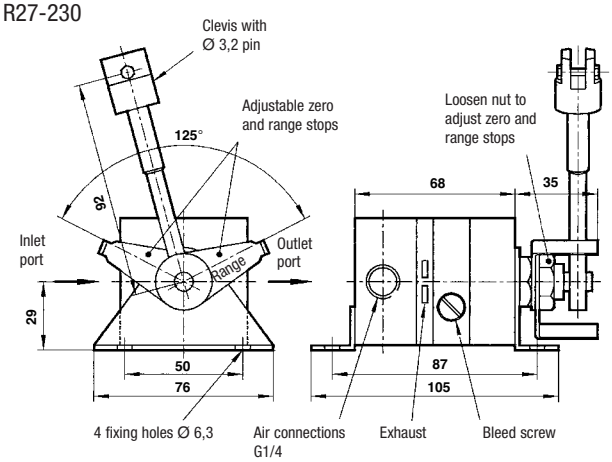
R27-236



R27-232



R27-230

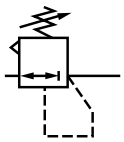


‘Micro Trol’ special purpose pressure regulators

Manual & pilot operation

R24 Series

G¼ to G1¼



Exceptionally high flow and relief flow characteristics

Easy to adjust even at high output pressures

Balanced valve minimises effect of variations in inlet pressure on outlet pressure

Relieving feature allows outlet pressure reduction even when the system is dead ended

Full flow gauge ports

Panel mounting facility

Technical data

Medium:
Compressed air

Maximum inlet pressure:
20 bar *

Gauge ports:
G1/4 with 1/4 main
G3/8 with 3/8 main
G1/2 with all others
Pilot port G1/4, for piolot operated versions

Ambient temperature:
0°C to +80°C.
Consult our Technical Service for use below +2°C

Materials

Body & bonnet: zinc alloy
Bottom plug & adjusting knob (manual): acetal resin
Main valve: brass/synthetic rubber
Elastomers: synthetic rubber

* Additional inlet pressure options available

Range 0,7 to 8 bar

Port size	Type	kg	Model	Service kit
G1/4	Manual	0,86	R24-200-RNLG	5292-52
G1/4	Pilot	0,73	R24-201-RNXG	5292-54
G3/8	Manual	0,83	R24-300-RNLG	5292-52
G3/8	Pilot	0,70	R24-301-RNXG	5292-54
G1/2	Manual	0,81	R24-400-RNLG	5292-52
G1/2	Pilot	0,68	R24-401-RNXG	5292-54
G3/4	Manual	1,24	R24-600-RNLG	5292-53
G3/4	Pilot	1,18	R24-601-RNXG	5292-55
G1	Manual	1,24	R24-800-RNLG	5292-53
G1	Pilot	1,18	R24-801-RNXG	5292-55
G1 ¼	Manual	1,20	R24-A00-RNLG	5292-53
G1 ¼	Pilot	1,14	R24-A01-RNXG	5292-55

*Only available as pilot operated version

Options selector

R24-★0★-R★★★

Anschluss	Sustituir
1/4	2
3/8	3
1/2	4
3/4	6
1	8
1¼	A

Type	Substitute
Manual operated	0
Pilot operated	1

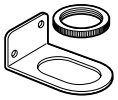
Gauge	Substitute
With	G
Without	N

Threads	Substitute
PTF	A
ISO Rc taper	B
ISO G parallel	G

Spring	Substitute
None	X*
0,3 ... 2 bar	C
0,3 ... 4 bar	F
0,7 ... 8 bar	L
0,7 ... 17 bar	S

*Only available as pilot operated version

Accessories

Bracket kit	Gauge	Concentric reducing adaptors for gauge ports	Panel nut
			
18-999-412	0 ... 6 bar: 18-013-012	R1/4-G1/8 150232818	2962-04
	0 ... 10 bar: 18-013-013	R3/8-G1/8 150233818	
	0 ... 25 bar: 18-013-014	R1/2-G1/8 150234818	

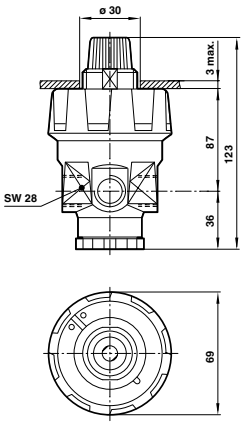
‘Micro Trol’ special purpose pressure regulators

Manual & pilot operation

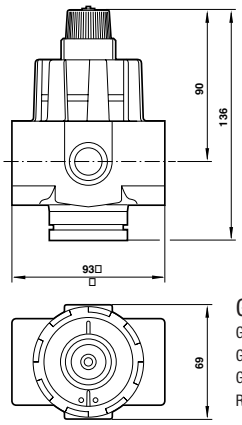
R24 Series

G¼ to G1¼

R24 (G1/4 ... G1/2) Manually operated



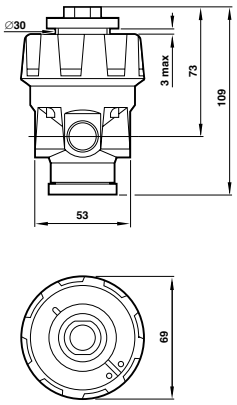
R24 (G3/4 ... G1¼) Manually operated



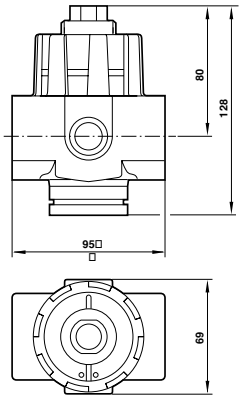
Gauge ports:

G1/4 (Units with G1/4 main ports)
G3/8 (Units with G3/8 main ports)
G1/2 (Units with G1/2 main ports)
Rc1/2 (Units with G3/4 ... G11/4 main ports)

R24 (G1/4 ... G1/2) Pilot operated

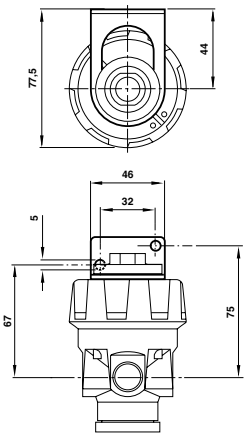


R24 (G3/4 ... G1¼) Pilot operated

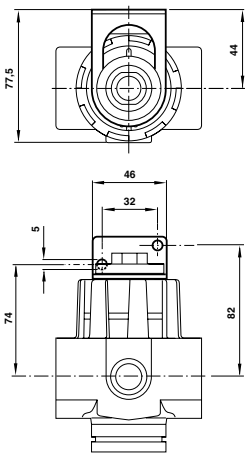


Pilot port: G1/4

Bracket mounting G1/4, G3/8, G1/2



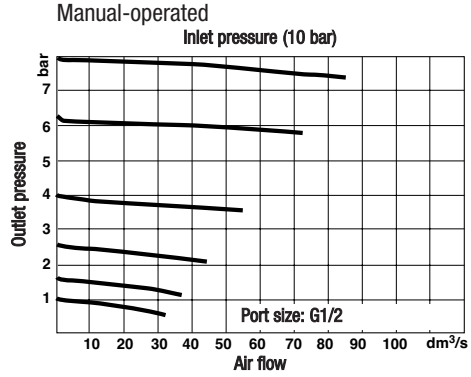
Bracket mounting G3/4, G1, G1¼



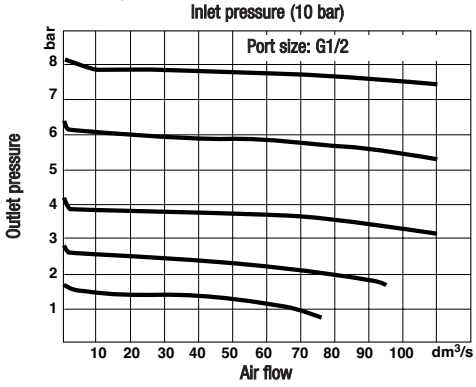
Panel mounting hole diameter: 32 mm
Panel thickness: 0 to 3 mm

Flow characteristics

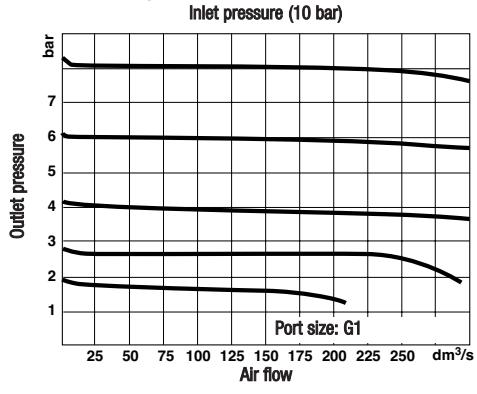
Manual-operated



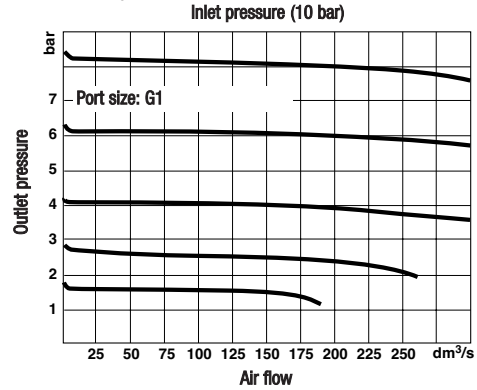
Pilot-operated



Manual-operated



Pilot-operated

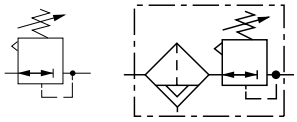


General purpose stainless steel regulators

Pressure regulators, filter-regulators

R05, B05

¼" PTF



Metallic parts meet NACE* recommendations

Miniature high corrosion resistant design

Adjusting knob has snap-action lock

Particularly suitable for marine, petro-chemical, food processing, medical, dental and similar applications

Panel mounting facility

* National Association of Corrosion Engineers - recognised oil-field recommendation for resistance to sulphide stress cracking common in well-head and other corrosive environments.

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar

Gauge ports:
1/8" PTF

Ambient temperature:
-34°C to +66°C
Consult our Technical Service for use below +2°C

Materials

Body: stainless steel body
Adjusting knob/bonnet: acetal resin
Elastomers: viton
Filter element: polypropylene

Alternative models

Non-relieving versions
Contact our Technical Services for details

General purpose stainless steel regulators

Port size	Flow (dm³/s)*	Range (bar)	Operation	kg	Model	Service kit
1/4 PTF	3	0,2 ... 3,5	Relieving	0,20	R05-200-RNEA	3407-71
1/4 PTF	3	0,3 ... 8,6	Relieving	0,20	R05-200-RNLA	3407-71

For higher flows use R38
Typical flow with 7 bar inlet pressure, 6,3 bar set pressure and a droop of 1 bar

General purpose filter-regulators

Port size	Flow (dm³/s)	Element (µm)	Drain	Range (bar)	Operation	kg	Model	Service kit
1/4 NPTF	4	5	Manual	0,2 ... 3,5	Relieving	0,42	B05-233-M1EA	3820-08
1/4 NPTF	5	5	Manual	0,3 ... 8,6	Relieving	0,42	B05-233-M1LA	3820-08

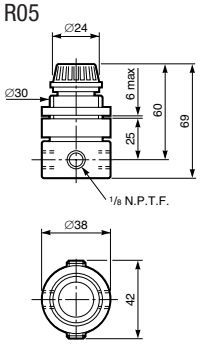
For higher flows use B38
* Can be adjusted to zero outlet pressure, and, generally, to pressures in excess of those specified.
# Typical flow with 12 bar inlet pressure, 3 bar / 8 bar set pressure and a droop of 1 bar.

Accessories

Series	Gauge (0 ... 6 bar)*	Panel mounting
		
R05	18-013-844	2962-89 (Nut only)
B05	18-013-844	2962-89 (Nut only)

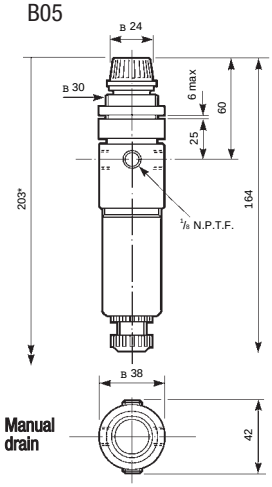
* Other pressure ranges available – see page 486

R05



Weight: 0,20 kg

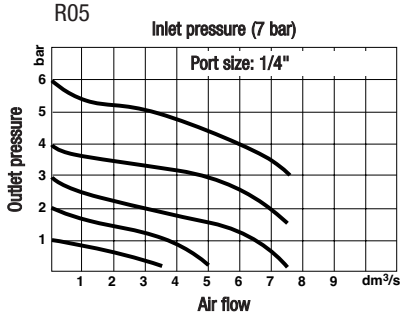
B05



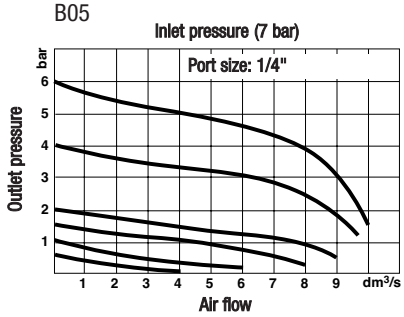
Weight: 0,42 kg
*Minimum clearance required to remove bowl from body.

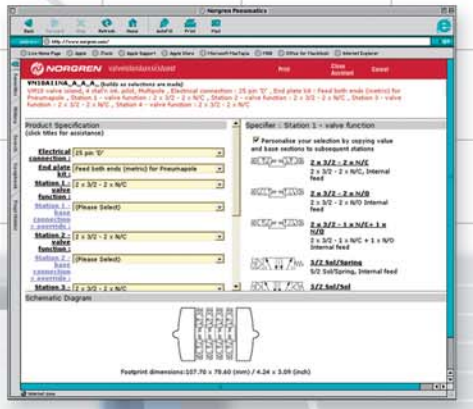
Flow characteristics

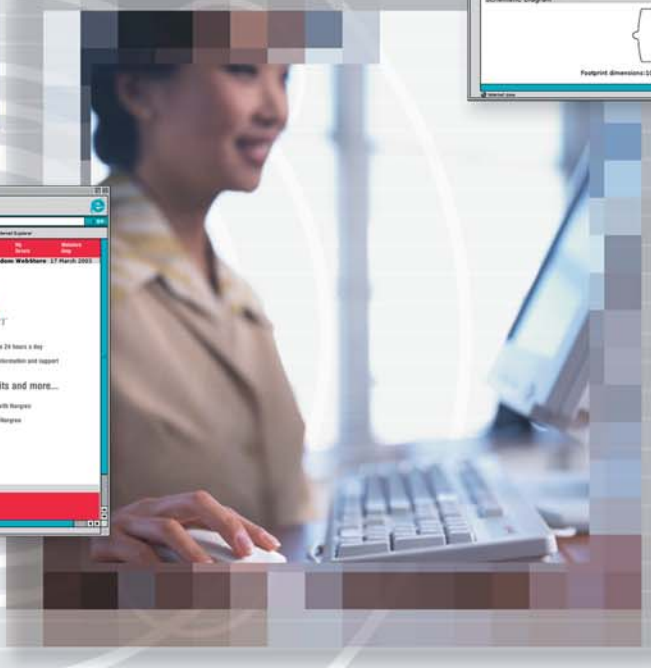
R05



B05







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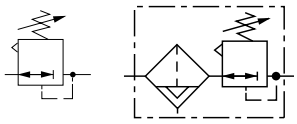
Precision stainless steel regulators

Pressure regulators, filter-regulators

R38, B38

¼" PTF, ½" PTF (B38)



R38 and B38 Lloyds Register Type Approved

Materials meet NACE* recommendations (MR-0175, 2002 revision)

Suitable for marine, offshore, food processing and dental applications

R38/B38 models for precision regulation and high flow rates

* National Association of Corrosion Engineers – recognised oil-field recommendation for resistance to sulphide stress cracking common in well-head and other corrosive environments

R38

B38

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar (autodrain)
31 bar (R38, B38 manual drain)

Gauge ports:
1/4 PTF (R38, B38)

Ambient temperature:
-40°C to +80°C (R38, B38)
Consult our Technical Service for use below +2°C

Materials

Body, bowl, bonnet & adjusting screw: stainless steel
Elastomers: synthetic rubber
Filter element: high density polyethylene (25 µm), ceramic pyrolith (5 µm) (B38)

Alternative models

5 µm element
Pressure ranges
Non-relieving versions
Viton elastomers
Contact our Technical Service for details

Precision regulators

Port size	Flow (dm³/s)*	Range (bar)	Operation	kg	Model	Service kit
1/4 PTF	8	0,04 ... 2	Relieving	0,48	R38-240-RNCA	R38-100R
1/4 PTF	8	0,07 ... 4	Relieving	0,46	R38-240-RNFA	R38-101R

* Typical flow with 7 bar inlet pressure, 6,3 bar set pressure and a droop of 1 bar

Precision filter-regulators

Port size	Flow (dm³/s)	Element (µm)	Drain	Range (bar)	Operation	kg	Model	Service kit
1/4 PTF	8*	25	Manual	0,25 ... 7	Relieving	1,40	B38-244-B2KA	R38-101R & B38-100S (25)
1/4 PTF	8*	25	Manual	0,07 ... 4	Relieving	1,40	B38-244-B2FA	R38-101R & B38-100S (25)
1/4 PTF	8*	25	Auto	0,07 ... 4	Relieving	1,60	B38-244-A2FA	R38-101R & B38-100S (25)
1/2 PTF	50**	25	Manual	0,3 ... 9	Relieving	1,40	B38-444-M2LA #	2787-41 & 2787-44
1/2 PTF	50**	25	Auto	0,3 ... 9	Relieving	2,10	B38-444-A2LA ‡	2787-41 & 2787-44

Can be adjusted to zero outlet pressure, and, generally, to pressures in excess of those specified.
* Typical flow with 7 bar inlet pressure, 1 bar set pressure and a droop of 0,05 bar.
** Typical flow with 12 bar inlet pressure, 8 bar set pressure and a droop of 1 bar.

Drain kits:
Manual drain 2787-43
‡ Auto drain 3000-87

Options selector

B38-★4★-★★★★

Anschluss	Sustituir
1/4	2
1/2	4

Diaphragm	Substitute
Relieving with panel nut	4
Non relieving with panel nut	5

Drain	Substitute
Automatic	A
Manual – short bowl	B
Manual – long bowl	M

Element	Substitute
5 µm	1
25 µm	2

Thread	Substitute
PTF	A
ISO RC Taper	B
ISO G Parallel	D

Outlet pressure adjustment range*	Substitute
0,04 ... 2	C
0,07 ... 4	F
0,25 ... 7	K#
0,50 ... 10	M
0,3 ... 9	L‡

* Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.
# 1/4" only. ‡ 1/2" only

Precision stainless steel regulators

Pressure regulators, filter-regulators

R38, B38

¼" PTF, ½" PTF (B38)

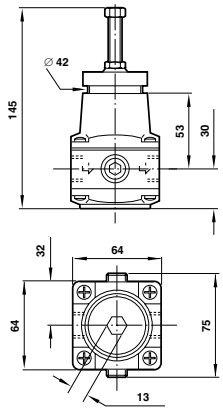
Accessories

Series	Neck mounting bracket	Gauge (0 ... 10 bar)#	Panel mounting	Plastic adjusting knob
				
R38	18-001-973 (includes panel nut)	18-013-913*	5988-02 (Nut only)	74630-04
B38	18-001-973 (includes panel nut)	18-013-913*	5988-02 (Nut only)	74630-04

Other pressure ranges available – see page 486

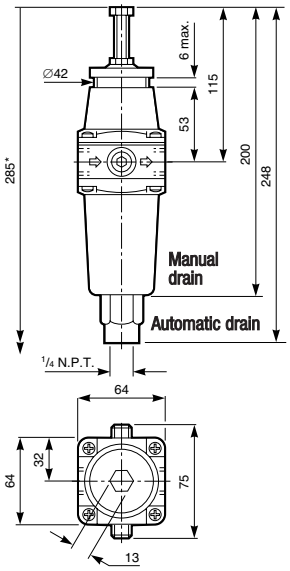
* Stainless steel items not strictly to NACE standard MR-01-75

R38 (¼)

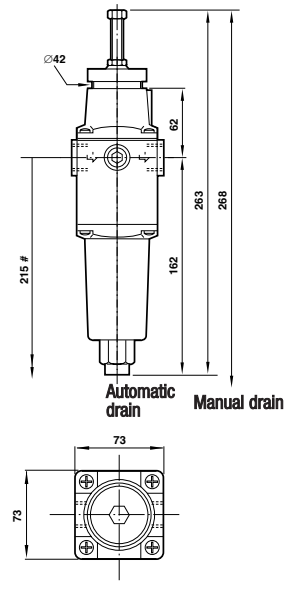


Weight: 0,48 kg

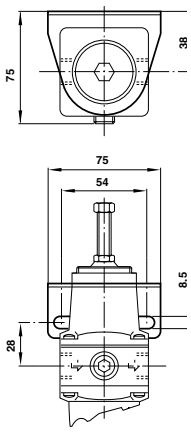
B38 (¼)



B38 (½)

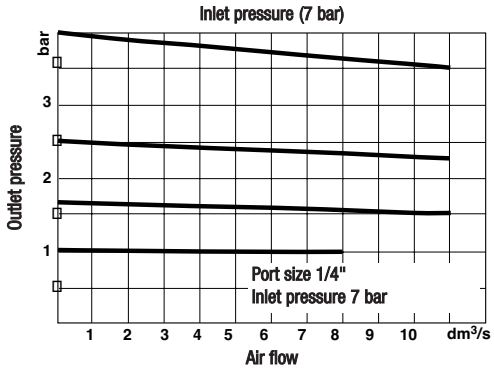


Bracket mounting (R38)
Bracket mounting (B38)

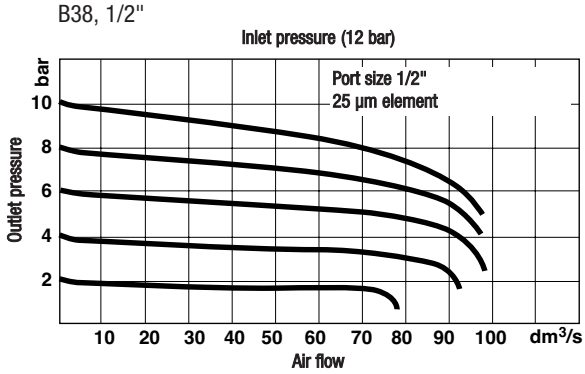


Flow characteristics

R38/B38, 1/4"



B38, 1/2"

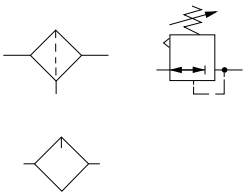


Ported stainless steel equipment

Filters, pressure regulators, lubricators

F22, R22, L22

½" PTF



F22 R22 L22

Lloyds Register Type Approved

Materials meet NACE* recommendations (MR-0175, 2002 revision)

25 µm filter element and auto drain as standard

Orientable metal bowls with sightglasses

* National Association of Corrosion Engineers – recognised oil-field recommendation for resistance to sulphide stress cracking common in well-head and other corrosive environments

Technical data

Medium:
Compressed air only

Maximum inlet pressure:
17 bar (F22, L22)
20 bar (R22)

Gauge ports:
1/4 PTF (R22)

Start point:
1,7 dm^3/s @ 6,3 bar (L22)

Ambient temperature:
-20°C to +80°C
Consult our Technical Service for use below +2°C

Materials

Bowl, bonnet & adjusting screw: stainless steel
Elastomers: synthetic rubber
Filter element: sintered stainless steel, polyethylene (option of stainless steel)

Alternative models

5 µm element
Pressure ranges
Non-relieving versions
Contact our Technical Service for details

Filters

Port size	Flow (dm^3/s)*	Element (µm)	Drain	Bowl	kg	Model	Service kit
1/2 PTF	57	25	Auto	Metal	1,88	F22-400-A2DA	F22-100A
1/2 PTF	57	25	Manual	Metal	1,84	F22-400-M2DA	F22-100M

* Maximum flow with 6,3 bar inlet pressure and pressure drop of 0,5 bar.

Pressure regulators

Port size	Flow (dm^3/s)*	Range (bar)	Operation	kg	Model	Service kit
1/2 PTF	50	0,4 ... 10	Relieving	1,52	R22-401-RNMA	R22-100R
1/2 PTF	50	0,4 ... 10	Non-relieving	1,54	R22-401-NNMA	R22-100NR

*Can be adjusted to zero bar outlet pressure, and, generally, to pressures in excess of those specified.
Maximum flow with 10 bar inlet pressure, 6,3 bar outlet pressure and a pressure droop of 1 bar from set.

Lubricators

Port size	Flow (dm^3/s) #	Start point (dm^3/s)‡	Operation	Bowl	Bowl capacity	kg	Model *	Service kit
1/2 PTF	48	1,7	Oil-fog	Metal	0,2 l	1,93	L22-400-OP8A	L22-100

#Typical flow with 6,3 bar inlet pressure and 0,5 bar pressure drop.
* Models listed in the order table must not be located downstream of frequently cycling directional control valves. Order the optional bi-directional oil-fog lubricator for use under such conditions.

‡ Start point at 6,3 bar.

Accessories

Series	Bracket kit	Gauge (0 ... 10 bar)#	Neck mounting bracket
			
F22	18-001-962		
R22	18-001-962	18-013-909*	18-001-959 (Panel nut and single bracket)
L22	18-001-962		

Other pressure ranges available – see page 486
* Stainless steel items not strictly to NACE standard MR-01-75.

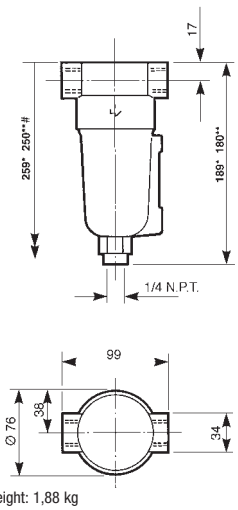
Ported stainless steel equipment

Filters, pressure regulators, lubricators

F22, R22, L22

½" PTF

F22

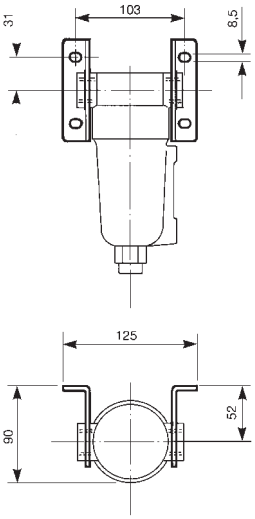


Weight: 1,88 kg

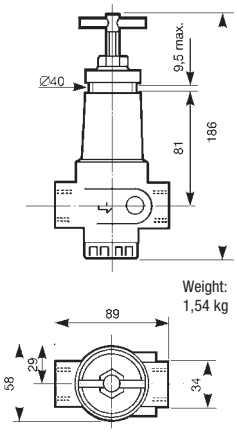
*Auto **Manual

Minimum clearance required to remove bowl from body

Bracket mounting (F22)

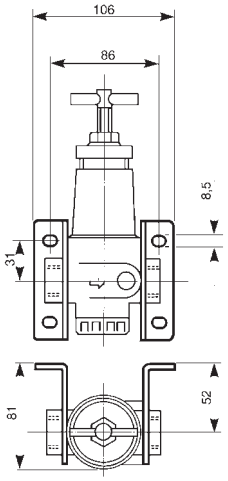


R22

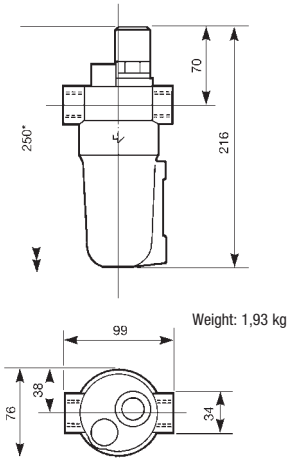


Weight: 1,54 kg

Bracket mounting (R22)

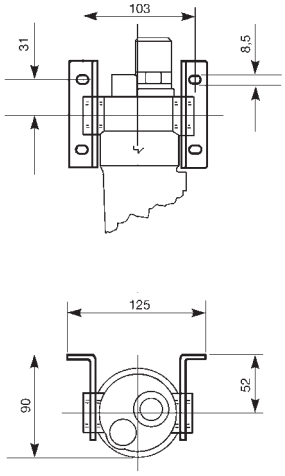


L22



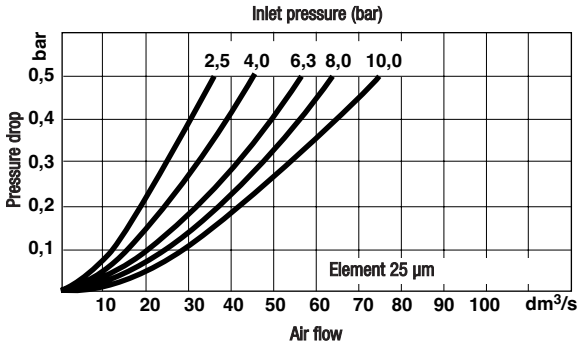
Weight: 1,93 kg

Bracket mounting (L22)

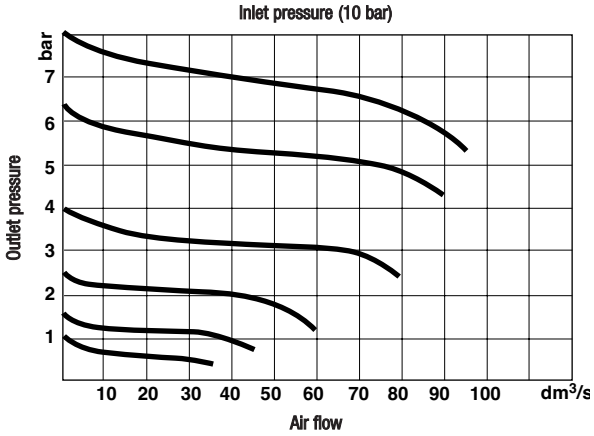


Flow characteristics

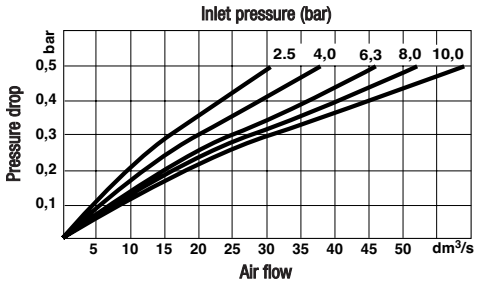
F22



R22



L22



Pressure gauges

Monitor pressures in compressed air systems for optimum efficiency

Triple calibrated dials: bar, psi and Mpa (megapascal)

Choice of pressure ranges

Can be direct or panel mounted

Conform to BS ISO837-1

Plastic or stainless steel bodies

Technical data

Medium:

Compressed air, oil and gases or liquids which do not corrode copper alloys

Port connections:

R1/8, G1/8A, G1/4A, 1/4x18NPT, 1/4 x 18 NPTF

1/4 NPTF (stainless steel models)

Ambient temperature:

-20°C to +60°C

Consult our Technical Service for use below +2°C

Materials

Body: plastic, steel or stainless steel

Face: plastic (plastic and steel bodies), glass (stainless steel bodies)

Movements: copper/brass (plastic & steel bodies), stainless steel

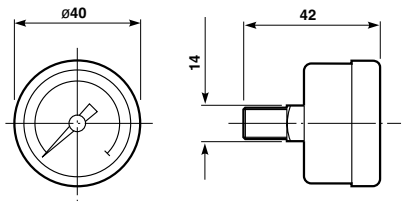
Range (bar)	Nominal diameter (mm)#	Connection type	Port connections:	Model
0 ... 1,6	40	Centre back	R1/8	18-013-991
0 ... 4	40	Centre back	R1/8	18-013-990
0 ... 10	40	Centre back	R1/8	18-013-989
0 ... 25	40	Centre back	R1/8	18-013-908
0 ... 1,6	50	Centre back	R1/8	18-013-010
0 ... 4	50	Centre back	R1/8	18-013-011
0 ... 6	50	Centre back	R1/8	18-013-012
0 ... 10	50	Centre back	R1/8	18-013-013
0 ... 25	50	Centre back	R1/8	18-013-014
0 ... 10	63	Centre back	R1/8	18-013-856
0 ... 16	63	Centre back	R1/8	18-013-855
0 ... 6	50	C/B Panel mounted	G1/8A	18-013-858
0 ... 10	50	C/B Panel mounted	G1/8A	18-013-857
0 ... 10	63	C/B Panel mounted	G1/4A	18-013-852
0 ... 16	63	C/B Panel mounted	G1/4A	18-013-851
0 ... 1,6	50	Bottom	R1/8	18-013-024
0 ... 4	50	Bottom	R1/8	18-013-025
0 ... 6	50	Bottom	R1/8	18-013-026
0 ... 10	50	Bottom	R1/8	18-013-027
0 ... 25	50	Bottom	R1/8	18-013-028
0 ... 10	63	Bottom	G1/4A	18-013-854
0 ... 16	63	Bottom	G1/4A	18-013-853

Stainless steel types for 22 & 38 Series pressure regulators and filter-regulators

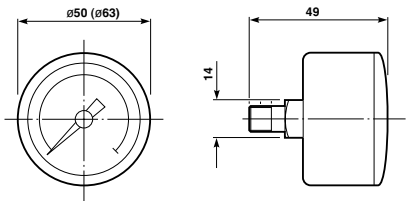
0 ... 10	40	Centre back	1/8 NPTF	18-013-844
0 ... 6	40	Centre back	1/4" x 18 NPTF	18-013-913
0 ... 10	40	Centre back	1/4" x 18 NPTF	18-013-909
0 ... 25	40	Centre back	1/4" x 18 NPTF	18-013-905

Actual case diameter may exceed nominal diameter by 5 mm.

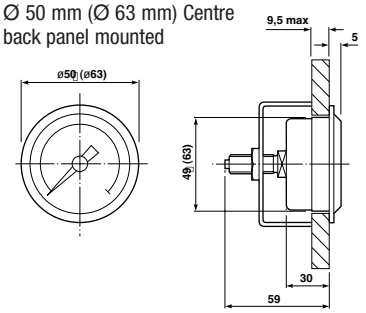
Ø 40 mm Centre back mounted



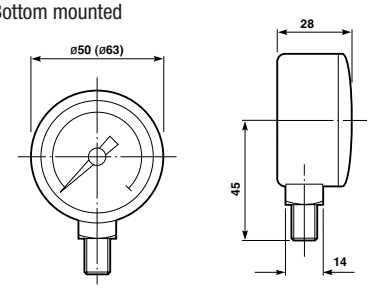
Ø 50 mm (Ø 63 mm) Centre back mounted



Ø 50 mm (Ø 63 mm) Centre back panel mounted



Ø 50 mm (Ø 63 mm) Bottom mounted



Additional ranges

R91 and R30M Miniature plastic pressure regulators for water and compressed air use

Models for compressed air and non-potable water applications

Port size	Range (bar)	Model
G1/4	0,3 ... 3,5	R91G-2GK-NEN
G1/4	0,3 ... 8,6	R91G-2GK-NLN
G1/4	0,3 ... 8,6	R91G-2GK-RLN*
8 mm Ø	0 ... 4,8	R30M-8DK-RGN**
8 mm Ø	0,3 ... 7	R30M-8DK-RKN**
10 mm Ø	0 ... 4,8	R30M-ADK-RGN**
10 mm Ø	0,3 ... 7	R30M-ADK-RKN**

*Relieving type for compressed air use only

** Non-relieving models also available for water (relieving models listed)

Bonnet and body made from acetal plastic

R30M features push-in ports and an integral bracket for base or wall mounting. Ideal for manifold mounting

Models for potable and de-ionised water applications

Port size	Range (bar)	Model
G1/4	0,3 ... 3,5	R91W-2GK-NEN
G1/4	0,3 ... 8,6	R91W-2GK-NLN

Materials in contact with fluid are approved by the National Sanitation Foundation and the Food and Drug Administration for use in potable water systems

R06, R43 and 11-809 Water regulators for potable water and non-water applications

Port size	Range (bar)	Model
G1/8	0,14 ... 7	R06-170-NNKD*
G1/8	0,14 ... 7	R06-122-NNKD
G1/4	0,14 ... 7	R06-270-NNKD*
G1/4	0,14 ... 7	R06-222-NNKD
G1/4	0,7 ... 8	R43-201-NNLD*
G3/8	0,7 ... 8	R43-301-NNLD*
G1/2	0,3 ... 8	R43-401-NNLD*
G3/4	0,3 ... 8	11-809-999
G1	0,3 ... 8	11-809-995

*Suitable for potable water supplies. United Kingdom Water Byelaws Scheme approved.
Other pressure ranges available.

Brass bodied units ideal for potable as well as general water systems

Inlet pressures up to 28 bar (R06) and 31 bar (R43)

Provides reliable pressure regulation at flows up to 40 l/m*

*P1 = 7 bar, P2 = 4 bar, ΔP = 0,5 bar

R16 Miniature pre-set regulator

Port size	Pre-set (bar)	Model
G1/4	2	R16-200-R30D

Other pre-set pressure ranges available. Also available non-set for field adjustment and setting.

Ideal for use in conjunction with blow guns

Factory pre-set and sealed to give a regulated pressure of 2 bar

Tamper resistant

Compact

Additional ranges

Mistcool liquid spraying systems

Mistcool (for fogging liquids)

Oil capacity	Type	Model
0,2 l	Micro-fog	3A [B]
1 l	Micro-fog	3A [C]
8 l	Micro-fog	3A [E]
20 l	Micro-fog	3A [F]
0,2 l	Oil-fog	1A [B]
1 l	Oil-fog	1A [C]
8 l	Oil-fog	1A [E]
20 l	Oil-fog	1A [F]

G1/4 units comprising filter-regulator and 'oil-fog' or 'micro-fog' lubricator. Solenoid valves can be used to provide intermittent spraying.

Lubricates and cools cutting tools, conveyor chains, die faces and other surfaces where it is required to supply lubricant in small controlled amounts without contaminating the surrounding area

Spraying method promotes longer tool life, cleaner working areas, increased feed rates and swarf removal

Spraylube (for non-fogging liquids e.g. water)

Reservoir		Valves		Air control
1 l	60BX02-2	Spray valve	60BF48-2	B73G-2GK-QD3-RMN
8 l	60AL02-2	Mixer valve	60AA01-2	F73G-2GN-QD3
20 l	60AK02-2			R73G-2GK-RMN (2 required)

One from each column required. Solenoid valves can be used to provide intermittent spraying.

Drip leg drain

Port size	Bowl	Model
G1/2	Transparent	17-816-999
G1/2	Metal	17-816-998

Fully automatic units that drain liquid from low points in compressed air systems

Vent valve allows pressure to be exhausted to atmosphere before routine maintenance is carried out

Olympian Plus and ported vacuum filters

Port size	Bowl	Model
G1/4	Transparent	F73G-2GN-ET2
G1/4	Metal	F73G-2GN-ED2
G3/8	Transparent	F73G-3GN-ET2
G3/8	Metal	F73G-3GN-ED2
G1/2	Metal	F74G-4GN-ED2
G3/4	Metal	F17-600-M3HD
G1	Metal	F17-800-M3HD
G1¼	Metal	F68G-AGN-EC2
G1½	Metal	F68G-BGN-EC2

25 µm element units, ideal for the general protection of vacuum systems. Replacement 25 µm or 5 µm elements and mounting brackets available.

Ideal for removing dirt, dust and free moisture from vacuum systems

G1/4 to G1½ port sizes

For Membrane dryers see page 448

Product selector table 490
Fittings
- Pneufit C composite fittings (metric) 492
- Pneufit C composite fittings (inch) 498
- Pneufit push-in fittings (metric) 502
- Pneufit push-in fittings (inch) 510
- Pneufit self-sealing fittings 512
- Weldfit push-in fittings 513
- Stainless steel push-in fittings 516
- Compression fittings (metric) 518
- Compression fittings (inch) 526
- Compression fittings (external nut) 532
- Push-on fittings 536
- BSP and hose fittings 540

Tubing
- Tubing and hoses 546
- Tubing accessories 553

Accessories
- Ball valves 554
- Quick release couplings 560
- Blow guns 572
- Heavy duty silencers 573

Additional ranges 574

Fittings

	Metric (tube size mm O/D) 3	4	5	6	8	9	10	12	13	14	15	16	18	22	28
Pneufit C composite	●	●		●	●		●								
Pneufit push-in		●	●	●	●		●	●		●					
Pneufit self-sealing		●		●	●										
Weldfit push-in				●	●		●	●							
Stainless steel push-in		●	●	●	●		●	●			●	●	●	●	●
Compression		●		●	●		●	●		●	●	●	●	●	
Compression (external nut)		●	●	●	●		●	●			●				
Push-on	●		●												
BSP and hose fittings		●		●	●		●	●							

Tubing and hoses

	3	4	5	6	8	9	10	12	13	14	15	16	18	22	28
Nylon		●	●	●	●		●	●		●		●		●	●
Terylene braided PVC		●	●	●	●		●	●				●		●	●
Metal braided rubber		●	●	●	●		●	●							
Copper		●	●	●	●		●	●				●		●	●
Bundy				●	●		●	●							

Accessories

	3	4	5	6	8	9	10	12	13	14	15	16	18	22	28
Ball valves															
Quick release couplings		●		●	●	●			●						
Double shut-off couplings															
Self venting safety couplings						●									
Blow guns															
Quietaire heavy duty silencers															

Additional ranges - see page 574

Plasfit push-in fittings | 82 Series fittings | Cartridge push-in fittings (kits) | Sintered bronze silencers | Pressure indicators | Pressure drop indicators

Inches (tube size inch O/D) 1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	1¼	1½	2	2½	3	4	Page No. Metric	Inch
●	●		●	●	●											492	498
●		●	●	●	●	●										502	510
●			●													512	
																513	
	●	●	●	●	●	●	●									516	
																518	526
																532	
●			●		●	●		●	●	●	●					536	
																540	

1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	1¼	1½	2	2½	3	4	Page No.
●			●		●	●		●	●	●	●	●				547
●			●		●	●		●	●							549
					●	●										549 & 551
			●													550
●			●		●	●		●	●	●	●					550

1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	1¼	1½	2	2½	3	4	Page No.
●		●	●	●	●	●	●	●								544
		●	●	●	●											560
		●	●	●	●	●		●								565
		●	●	●	●	●										571
●	●	●	●	●	●	●	●	●								572
	●	●	●	●	●	●										573

Porous plastic silencers | Exhaust filters | Pressure indicators | Pneumatic counter | Fast & slow rotating joints | Air reservoirs

Pneufit C composite fittings

Metric

Ø 3 to 10 mm O/D tube

- **Releasable grab ring technology combining plastic and brass components for a compact and superior fitting design**
- **Colour coding option available with tamper-resistant feature**
- **Moulded mounting brackets on tube connector designs**
- **Light weight design**
- **Red release sleeve indicates metric tube size**
- **Silicone free O-ring seals**
- **Grips soft PU tube through to copper**
- **Reusable O-ring seals on parallel threads**
- **Non-PTFE based thread sealant on tapered threads**
- **Easy tube insertion for rapid and quick assembly of pneumatic circuits**
- **Internal hexagon on straight adaptors allows assembly in confined spaces**
- **Reliable and corrosion resistant**

Technical data

Medium

Compressed air

Operating pressure:

Vacuum - 18 bar unless otherwise stated (dependant on tubing specification)

Ambient temperature:

-20° to +80° C

Materials

Bodies: plastic - PBT, except straight adaptors and straight stem adaptors

Straight adaptors: nickel plated brass

Straight stem adaptors: plastic - acetal

Threads: nickel plated brass

Grab ring: stainless steel - BS 1440 Pt 2, grade 301.S21

'O' rings: silicone free nitrile

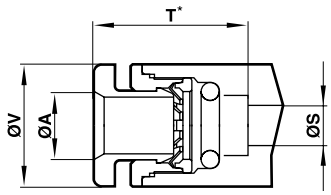
Thread sealant: non PTFE

Alternative models

Alternative models

Pneufit push-in fittings, see page 502

Typical dimensions



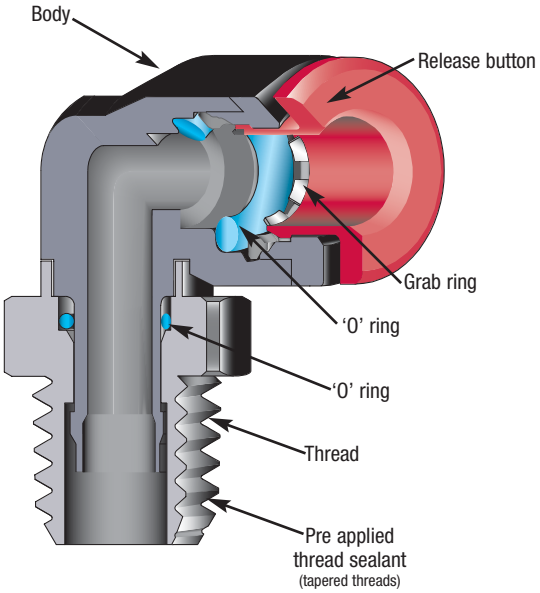
ØA O/D Tube	ØS#	ØT* Tube stop	V
3 mm	2,3	15,3	10,7
4 mm	2,8	15,3	10,7
6 mm	4,4	17,1	12,9
8 mm	6,0	19,2	14,5
10 mm	7,7	20,25	17,6

* Dimensions here and in the individual tables refer to the release button in the 'OUT' position

Dimensions here (minimum bore diameter) are common per tube size for all connectors, elbow and tees unless otherwise stated

Typical part number: C01470628

90° swivel elbow adaptor



Tube sizes

3, 4, 6, 8, 10mm O/D

Warning: The Pneufit C design is not to be used with vehicle air braking or ancillary systems. For push-in fittings suitable for these applications, please refer to the Fleetfit range or contact Technical Sales for assistance

Tube types

Nylon 11 or 12, polyurethane* and other plasticised or unplasticised tubing which conforms to the tolerances specified in DIN 73378, NFE 49-101, ISO / WD 16026, ISO / WD 16627

Copper

* Suitable for 85D

Torque figures

Thread sealant is applied to the full circumference of the thread. The recommended tightening torque figures for designs with thread sealant are found in the torque table below

BSPT Thread	Tightening torque (Nm)
1/8	6,86 ... 8,82
1/4	11,76 ... 13,72
3/8	21,56 ... 25,32
1/2	27,44 ... 29,40

C-Clips

For colour coding and tamper-resistance feature

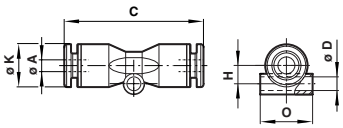
	3mm ... 4mm 1/8" ... 5/32"	6mm 1/4"	8mm 5/16"	10mm 3/8"
Red	48A35501	48B35501	48C35501	48D35501
Yellow	48A35502	48B35502	48C35502	48D35502
Orange	48A35503	48B35503	48C35503	48D35503
Green	48A35504	48B35504	48C35504	48D35504
Black	48A35505	48B35505	48C35505	48D35505
Brown	48A35506	48B35506	48C35506	48D35506
Violet	48A35507	48B35507	48C35507	48D35507
Blue	8A35508	48B35508	48C35508	48D35508
White	48A35509	48B35509	48C35509	48D35509
Silver	48A35510	48B35510	48C35510	48D35510

Box quantity of 30

Pneufit C composite fittings

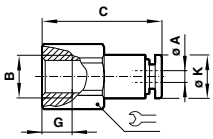
Metric

Ø 3 to 10 mm O/D tube



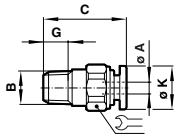
Straight connector

O/D Tube	ØA	C	ØD	H	ØK	O	
3	3	33,5	4,2	5,0	10,5	11,0	C00200300
4	4	33,5	4,2	5,0	10,5	11,0	C00200400
6	6	39,0	4,2	6,0	13,0	13,5	C00200600
8	8	43,5	4,2	7,0	14,5	15,0	C00200800
10	10	48,0	4,2	8,0	17,5	18,0	C00201000



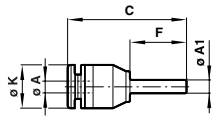
Female straight adaptor

O/D Tube	BSPP Female	ØA	B	C	⌯	G	ØK	
4	M5	4	M5	22,5	11,0	7,0	10,5	C02260405
4	G1/8"	4	G1/8"	25,0	13,0	7,5	10,5	C02260418
4	G1/4"	4	G1/4"	29,5	17,0	11,0	10,5	C02260428
6	G1/8"	6	G1/8"	27,0	13,0	7,5	13,0	C02260618
6	G1/4"	6	G1/4"	31,5	17,0	11,0	13,0	C02260628
8	G1/8"	8	G1/8"	29,0	15,0	7,5	14,5	C02260818
8	G1/4"	8	G1/4"	34,0	17,0	11,0	14,5	C02260828
8	G1/4"	8	G1/4"	29,5	19,0	11,0	17,5	C02261028
8	G3/8"	8	G3/8"	29,5	19,0	11,5	17,5	C02261038



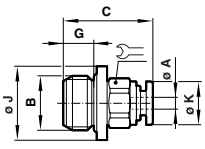
Straight adaptor

O/D Tube	BSPT Thread	ØA	B	C	⌯	G	ØK	
4	R1/8"	4	1/8"	19,5	11,0	8,5	12,0	C01250418
4	R1/4"	4	1/4"	23,0	14,0	11,0	15,0	C01250428
6	R1/8"	6	1/8"	25,0	13,0	8,5	14,0	C01250618
6	R1/4"	6	1/4"	23,0	14,0	11,0	15,0	C01250628
8	R1/8"	8	1/8"	28,5	15,0	8,5	16,0	C01250818
8	R1/4"	8	1/4"	26,0	15,0	11,0	16,0	C01250828
8	R3/8"	8	3/8"	26,0	17,0	12,5	18,5	C01250838
8	R1/2"	8	1/2"	31,5	22,0	16,0	24,0	C01250848
10	R1/8"	10	1/8"	30.0	19,0	8,5	21,0	C01251018
10	R1/4"	10	1/4"	32,0	19,0	11,0	21,0	C01251028
10	R3/8"	10	3/8"	29,5	19,0	12,5	21,0	C01251038
10	R1/2"	10	1/2"	33,0	22,0	16,0	24,0	C01251048



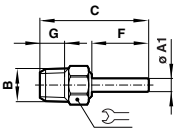
Straight stem adaptor

O/D Tube	O/D Stem	ØA	ØA1	C	F	ØK	
4	5	4	5,0	34,5	18,0	10,5	C00230504
4	6	4	6,0	35,5	19,0	10,5	C00230604
4	8	4	8,0	35,0	21,0	10,5	C00230804
4	10	4	10,0	37,0	24,0	11,0	C00231004
6	4	6	4,0	36,0	17,0	13,0	C00230406
6	8	6	8,0	39,5	21,0	13,0	C00230806
6	10	6	24,0	40,5	10,0	13,0	C00231006
8	6	8	6,0	40,5	19,0	14,5	C00230608
8	10	8	24,0	45,5	10,0	14,5	C00231008



Straight adaptor

O/D Tube	BSPP Thread	ØA	B	C	⌯	G	ØJ	ØK	
4	M3	4	M3	19,0	-	3,5	10,5	10,5	C02250403
4	M5	4	M5	21,0	-	4,5	10,5	10,5	C02250405
4	G1/8"	4	G1/8"	18,5	11,0	5,5	14,0	12,0	C02250418
4	G1/4"	4	G1/4"	21,5	11,0	8,0	18,0	12,0	C02250428
6	M5	6	M5	24,5	-	4,5	12,5	13,0	C02250605
6	G1/8"	6	G1/8"	24,0	13,0	5,5	14,0	14,0	C02250618
6	G1/4"	6	G1/4"	23,0	13,0	8,0	18,0	14,0	C02250628
8	G1/8"	8	G1/8"	27,0	15,0	5,5	14,0	16,0	C02250818
8	G1/4"	8	G1/4"	25,0	15,0	8,0	18,0	16,0	C02250828
8	G3/8"	8	G3/8"	25,0	15,0	9,0	21,5	16,0	C02250838
8	G1/2"	8	G1/2"	27,5	15,0	11,0	25,5	16,0	C02250848
10	G1/8"	10	G1/8"	28,0	19,0	5,5	14,0	21,0	C02251018
10	G1/4"	10	G1/4"	31,0	19,0	8,0	18,0	21,0	C02251028
10	G3/8"	10	G3/8"	28,0	19,0	9,0	21,5	21,0	C02251038
10	G1/2"	10	G1/2"	30,0	19,0	11,0	25,5	21,0	C02251048



Straight stem adaptor

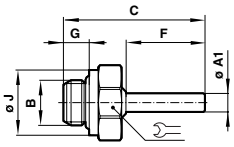
O/D Stem	BSPT Thread	ØA1	B	C	⌯	F	G	
4	R1/8"	4,0	R1/8"	32,5	10,0	17,0	8,5	C01150418
4	R1/4"	4,0	R1/4"	35,0	14,0	17,0	11,0	C01150428
5	R1/8"	5,0	R1/8"	33,5	10,0	18,0	8,5	C01150518
5	R1/4"	5,0	R1/4"	36,0	14,0	18,0	11,0	C01150528
6	R1/8"	6,0	R1/8"	34,5	10,0	19,0	8,5	C01150618
6	R1/4"	6,0	R1/4"	37,0	14,0	19,0	11,0	C01150628
8	R1/8"	8,0	R1/8"	36,0	12,0	20,0	8,5	C01150818
8	R1/4"	8,0	R1/4"	38,0	14,0	20,0	11,0	C01150828
8	R3/8"	8,0	R3/8"	42,0	19,0	20,0	12,5	C01150838
10	R1/4"	10,0	R1/4"	43,0	14,0	24,0	11,0	C01151028
10	R3/8"	10,0	R3/8"	45,5	19,0	24,0	12,5	C01151038
10	R1/2"	10,0	R1/2"	49,0	22,0	24,0	16,0	C01151048
12	R3/8"	12,0	R3/8"	49,5	19,0	27,5	12,5	C01151238
12	R1/2"	12,0	R1/2"	52,5	22,0	27,5	16,0	C01151248
14	R1/2"	14,0	R1/2"	53,0	27,0	28,0	16,0	C01151448

SUPPLIED IN BOXED QUANTITIES OF 10

Pneufit C composite fittings

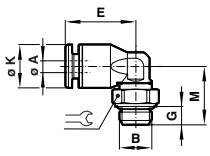
Metric

Ø 3 to 10 mm O/D tube



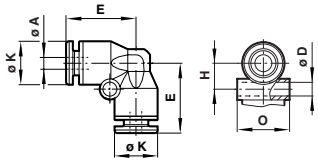
Straight stem adaptor

O/D Stem	BSPP Thread	ØA1	B	C	⌯	F	G	ØJ	
4	G1/8"	4,0	G1/8"	30,5	10,0	17,0	5,5	14,0	C02150418
4	G1/4"	4,0	G1/4"	35,5	10,0	17,0	8,0	18,0	C02150428
5	G1/8"	5,0	G1/8"	31,5	10,0	18,0	5,5	14,5	C02150518
5	G1/4"	5,0	G1/4"	36,5	10,0	18,0	8,0	18,0	C02150528
6	G1/8"	6,0	G1/8"	32,5	10,0	19,0	5,5	14,0	C02150618
6	G1/4"	6,0	G1/4"	37,5	10,0	19,0	8,0	18,0	C02150628
8	G1/8"	8,0	G1/8"	34,0	12,0	20,0	5,5	14,0	C02150818
8	G1/4"	8,0	G1/4"	38,5	12,0	20,0	8,0	18,0	C02150828
8	G3/8"	8,0	G3/8"	41,5	17,0	20,0	9,0	22,0	C02150838
10	G1/4"	10,0	G1/4"	42,5	17,0	24,0	8,0	18,0	C02151028
10	G3/8"	10,0	G3/8"	45,5	17,0	24,0	9,0	22,0	C02151038
10	G1/2"	10,0	G1/2"	50,0	18,0	24,0	11,0	26,0	C02151048



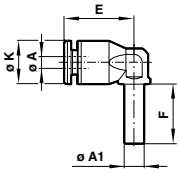
90° swivel elbow adaptor

O/D Tube	BSPP Thread	ØA	B	E	⌯	G	ØK	M	
3	G1/8"	3	G1/8"	18,0	11,0	5,5	10,5	20,0	C02470318
4	M5"	4	M5	18,0	10,0	4,5	10,5	17,5	C02470405
4	G1/8"	4	G1/8"	18,0	11,0	5,5	10,5	20,0	C02470418
4	G1/4"	4	G1/4"	18,0	11,0	8,0	10,5	23,0	C02470428
6	M5"	6	M5	21,0	10,0	4,5	13,0	18,5	C02470605
6	G1/8"	6	G1/8"	21,0	11,0	5,5	13,0	20,5	C02470618
6	G1/4"	6	G1/4"	21,0	11,0	5,5	13,0	23,5	C02470628
8	G1/4"	8	G1/4"	25,0	17,0	8,0	14,5	25,5	C02470828
8	G3/8"	8	G3/8"	25,0	17,0	9,0	14,5	26,5	C02470838
10	G3/8"	10	G3/8"	27,5	17,0	9,0	17,5	28,5	C02471038



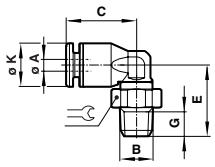
90° Elbow connector

O/D Tube	ØA	ØD	E	H	ØK	O	
3	3	4,2	18,0	11,0	10,5	11,0	C00400300
4	4	4,2	18,0	11,0	10,5	11,0	C00400400
6	6	4,2	21,0	13,5	13,0	13,5	C00400600
8	8	4,2	25,0	15,0	14,5	15,0	C00400800
10	10	4,2	27,5	18,0	17,5	18,0	C00401000



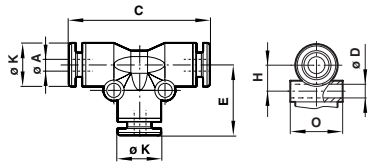
90° Stem elbow connector

O/D Tube	O/D Stem	A	ØA1	E	F	ØK	
4	4	4	4	18,0	15,0	10,5	C00430400
6	6	6	6	21,0	17,0	13,0	C00430600
8	8	8	8	25,0	19,0	14,5	C00430800



90° swivel elbow adaptor

O/D Tube	BSPT Thread	ØA	B	C	⌯	E	G	ØK	
3	R1/8"	3	R1/8"	18,0	10,0	19,5	8,5	10,5	C01470318
4	R1/8"	4	R1/8"	18,0	10,0	19,5	8,5	10,5	C01470418
4	R1/4"	4	R1/4"	18,0	14,0	20,5	11,0	10,5	C01470428
6	R1/8"	6	R1/8"	21,0	10,0	21,0	8,5	13,0	C01470618
6	R1/4"	6	R1/4"	21,0	14,0	24,0	11,0	13,0	C01470628
6	R3/8"	6	R3/8"	21,0	17,0	26,0	12,5	13,0	C01470638
8	R1/4"	8	R1/4"	25,0	14,0	25,0	11,0	14,5	C01470828
8	R3/8"	8	R3/8"	25,0	17,0	26,5	12,5	14,5	C01470838
10	R3/8"	10	R3/8"	27,5	17,0	28,5	12,5	17,5	C01471038



Tee connector

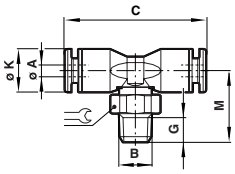
O/D Tube	ØA	C	ØD	E	H	ØK	O	
3	3	36,0	4.3	18,0	7,0	10,5	11,0	C00600300
4	4	36,0	4.3	18,0	7,0	10,5	11,0	C00600400
6	6	42,0	4.3	21,0	8,0	13,0	13,5	C00600600
8	8	50,0	4.3	25,0	8,5	14,5	15,0	C00600800
10	10	55,0	4.3	27,5	8,5	17,5	18,0	C00601000

SUPPLIED IN BOXED QUANTITIES OF 10

Pneufit C composite fittings

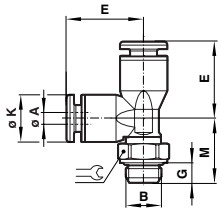
Metric

Ø 3 to 10 mm O/D tube



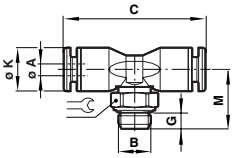
Swivel tee adaptor

O/D Tube	BSPT Thread	ØA	B	C	⌲	G	ØK	M	
4	R1/8"	4	R1/8"	36,0	10,0	8,5	10,5	19,5	C01670418
4	R1/4"	4	R1/4"	26,0	14,0	11,0	10,5	20,5	C01670428
6	R1/8"	6	R1/8"	42,0	10,0	8,5	13,0	21,5	C01670618
6	R1/4"	6	R1/4"	42,0	14,0	11,0	13,0	24,0	C01670628
6	R3/8"	6	R3/8"	42,0	17,0	12,5	13,0	26,0	C01670638
8	R1/4"	8	R1/4"	50,0	14,0	11,0	14,5	25,0	C01670828
8	R3/8"	8	R3/8"	50,0	17,0	12,5	14,5	26,5	C01670838
10	R3/8"	10	R3/8"	55,0	17,0	12,5	17,5	28,5	C01671038



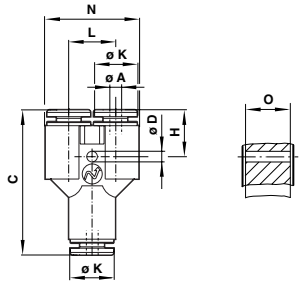
Swivel side tee adaptor

O/D Tube	BSPP Thread	ØA	B	⌲	E	G	ØK	M	
3	M3	3	M3	18,0	8,0	3,5	10,5	15,0	C02680303
4	G1/8"	4	G1/8"	18,0	11,0	5,5	10,5	20,0	C02680418
6	G1/8"	6	G1/8"	21,0	11,0	5,5	13,0	20,5	C02680618
6	G1/4"	6	G1/4"	21,0	11,0	8,0	13,0	23,5	C02680628
8	G1/4"	8	G1/4"	25,0	17,0	8,0	14,5	25,5	C02680828
8	G3/8"	8	G3/8"	25,0	17,0	9,0	14,5	26,5	C02680838
10	G3/8"	10	G3/8"	27,5	17,0	9,0	17,5	28,5	C02681038



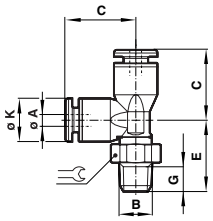
Swivel tee adaptor

O/D Tube	BSPP Thread	ØA	B	C	⌲	G	ØK	M	
4	G1/8"	4	G1/8"	36,0	11,0	5,5	10,5	20,0	C02670418
6	G1/8"	6	G1/8"	42,0	11,0	5,5	13,0	20,5	C02670618
6	G1/4"	6	G1/4"	42,0	11,0	8,0	13,0	23,5	C02670628
8	G1/4"	8	G1/4"	50,0	17,0	8,0	14,5	25,5	C02670828
8	G3/8"	8	G3/8"	50,0	17,0	8,0	14,5	26,5	C02670838
10	G3/8"	10	G3/8"	55,0	17,0	9,0	17,5	28,5	C02671038



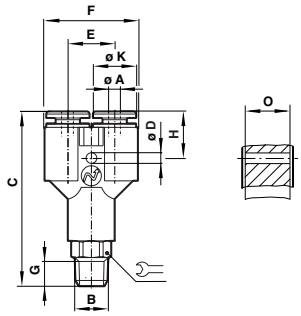
Parallel Y connector

O/D Tube	O/D Tube	O/D Tube	ØA	C	ØD	H	ØK	L	N	O	
4	4	4	4	41,0	3,2	13,0	11,0	11,0	22,0	10,0	C00820400
6	6	6	6	44,0	3,2	14,0	14,0	14,0	28,0	12,5	C00820600
6	4	6	4	44,5	3,2	14,5	14,0	14,0	28,0	12,5	C00820604
8	8	8	8	46,5	3,2	15,0	15,0	16,0	31,0	13,5	C00820800
8	6	8	6	46,0	3,2	14,5	15,0	16,0	31,0	13,5	C00820806
10	10	10	10	57,5	4,2	15,0	20,0	20,5	42,0	15,0	C00821000
10	8	10	8	57,0	4,2	18,0	20,0	20,5	42,0	15,0	C00821008



Swivel side tee adaptor

O/D Tube	BSPT Thread	ØA	B	C	⌲	E	G	ØK	
4	R1/8"	4	R1/8"	18,0	10,0	19,5	8,5	10,5	C01680418
4	R1/4"	4	R1/4"	18,0	14,0	20,5	11,0	10,5	C01680428
6	R1/8"	6	R1/8"	21,0	10,0	21,0	8,5	13,0	C01680618
6	R1/4"	6	R1/4"	21,0	14,0	24,0	11,0	13,0	C01680628
6	R3/8"	6	R3/8"	21,0	17,0	26,0	12,5	13,0	C01680638
8	R1/4"	8	R1/4"	25,0	14,0	25,0	11,0	14,5	C01680828
8	R3/8"	8	R3/8"	25,0	17,0	26,5	12,5	14,5	C01680838
10	R3/8"	10	R3/8"	27,5	17,0	28,5	12,5	17,5	C01681038



Parallel Y adaptor

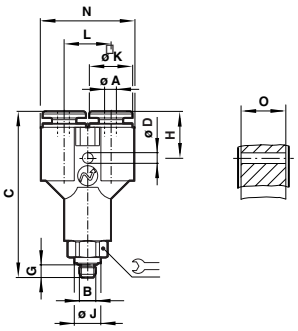
O/D Tube	BSPT Thread	ØA	B	C	⌲	ØD	E	F	G	H	ØK	O	
4	R1/8"	4	R1/8"	48,0	10,0	3,2	11,0	22,0	8,5	13,0	10,5	10,0	C01880418
6	R1/8"	6	R1/8"	52,0	11,0	3,2	14,0	28,0	8,5	14,0	13.0	12,5	C01880618
6	R1/4"	6	R1/4"	55,0	14,0	3,2	14,0	28,0	11,0	14,0	13,0	12,5	C01880628
8	R1/8"	8	R1/8"	55,0	14,0	3,2	16,0	31,0	8,5	15,0	14,5	13,5	C01880818
8	R1/4"	8	R1/4"	57,5	14,0	3,2	16,0	31,0	11,0	15,0	14,5	13,5	C01880828
10	R3/8"	10	R3/8"	70,5	19,0	4,2	20,5	42,0	12,5	15,0	17,5	15,0	C01881038
10	R1/2"	10	R1/2"	74,0	22,0	4,2	20,5	42,0	16,0	15,0	17,5	15,0	C01881048

SUPPLIED IN BOXED QUANTITIES OF 10

Pneufit C composite fittings

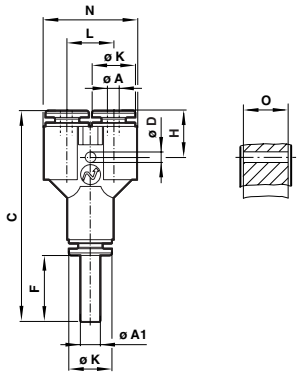
Metric

Ø 3 to 10 mm O/D tube



Parallel Y adaptor

O/D Tube	Thread	ØA	ØB	C	⌯	ØD	G	H	ØJ	ØK	L	N	O	
4	M5	4	M5	46,5	10,0	3,2	4,5	13,0	8,0	11,0	11,0	22,0	10,0	C02880405
6	M5	6	M5	50,0	11,0	3,2	4,5	14,0	10,0	14,0	14,0	28,0	12,5	C02880605



Parallel Y stem connector

O/D Tube	O/D Stem	ØA	ØA1	C	ØD	F	H	ØK	L	N	O	
4	4	4	4	58,0	2,95	17,0	13,0	11,5	11,0	22,5	10,0	C00840404
4	6	4	6	60,0	2,95	19,0	13,0	11,5	11,0	22,5	10,0	C00840604
6	6	6	6	63,0	3,2	19,0	14,0	14,0	14,0	28,0	12,4	C00840606
8	8	8	8	68,0	3,2	21,5	15,0	16,0	16,0	32,0	13,5	C00840808

SUPPLIED IN BOXED QUANTITIES OF 10

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Pneufit C composite fittings

Inch

Ø ⅛" to ⅜" O/D tube

- Releasable grab ring technology combining plastic and brass components for a compact and superior fitting design
- Colour coding option available with tamper-resistant feature
- Moulded mounting brackets on tube connector designs
- Light weight design
- Red release sleeve indicates metric tube size
- Silicone free 'O' ring seals
- Grips soft PU tube through to copper.
- Reusable 'O' ring seals on parallel threads
- Non-PTFE based thread sealant on tapered threads
- Easy tube insertion for rapid and quick assembly of pneumatic circuits
- Internal hexagon on straight adaptors allows assembly in confined spaces
- Reliable and corrosion resistant

Technical data

Medium:
Compressed air

Operating pressure:
Vacuum - 18 bar unless otherwise stated (dependant on tubing specification)

Ambient temperature:
-20° to +80° C

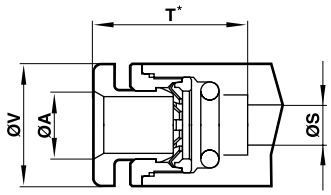
Materials

Bodies: plastic - PBT, except straight adaptors and straight stem adaptors
Straight adaptors: nickel plated brass
Straight stem adaptors: plastic - acetal
Threads: nickel plated brass
Grab ring: stainless steel - BS 1440 Pt 2, grade 301.S21
'O' rings: silicone free nitrile
Thread sealant: non PTFE

Alternative models

Pneufit Push-in fittings, see page 510

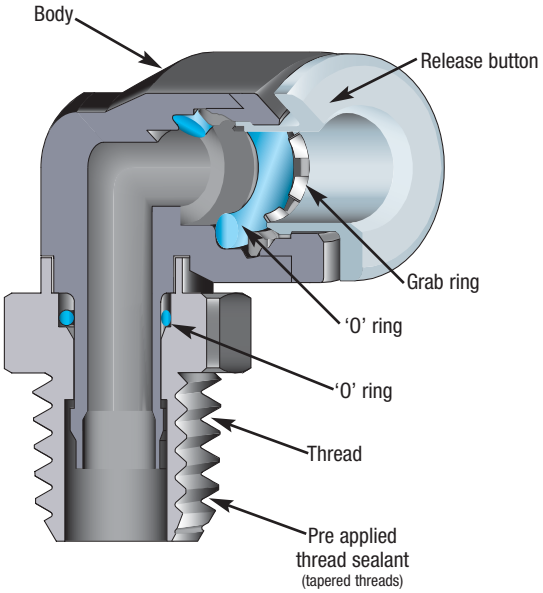
Typical dimensions



ØA O/D Tube	ØS#	ØT* Tube stop	V
1/8"	2,3	15,3	10,7
5/32"	2,8	15,3	10,7
1/4"	4,4	17,1	12,9
5/16"	6,0	19,2	14,5
3/8"	7,7	20,25	17,6

* Dimensions here and in the individual tables refer to the release button in the 'OUT' position

Dimensions here (minimum bore diameter) are common per tube size for all connectors, elbow and tees unless otherwise stated



Tube sizes

1/8", 5/32", 1/4", 5/16", 3/8" O/D
Warning: The Pneufit C design is not to be used with vehicle air braking or ancillary systems. For push-in fittings suitable for these applications, please refer to the Fleetfit range or contact Technical Sales for assistance

Tube types

Nylon 11 or 12, polyurethane* and other plasticised or unplasticised tubing which conforms to the tolerances specified in DIN 73378, NFE 49-101, ISO / WD 16026, ISO / WD 16627
Copper and stainless steel tube
* Suitable for 85D

Torque figures

Thread sealant is applied to the full circumference of the thread. The recommended tightening torque figures for designs with thread sealant are found in the torque table below

NPTF Thread	Tightening torque (Nm)
1/8"	6,86 ... 8,82
1/4"	11,76 ... 13,72
3/8"	21,56 ... 25,32
1/2"	27,44 ... 29,40

C-Clips

For colour coding and tamper-resistance feature

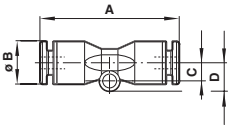
	3mm ... 4mm 1/8" ... 5/32"	6mm 1/4"	8mm 5/16"	10mm 3/8"
Red	48A35501	48B35501	48C35501	48D35501
Yellow	48A35502	48B35502	48C35502	48D35502
Orange	48A35503	48B35503	48C35503	48D35503
Green	48A35504	48B35504	48C35504	48D35504
Black	48A35505	48B35505	48C35505	48D35505
Brown	48A35506	48B35506	48C35506	48D35506
Violet	48A35507	48B35507	48C35507	48D35507
Blue	8A35508	48B35508	48C35508	48D35508
White	48A35509	48B35509	48C35509	48D35509
Silver	48A35510	48B35510	48C35510	48D35510

Box quantity of 30

Pneufit C composite fittings

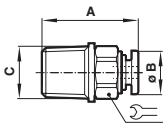
Inch

Ø ⅛" to ⅜" O/D tube



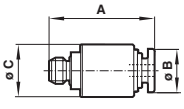
Straight connector

O/D Tube	A	B	C	D	
1/8"	33,5	10,7	5,0	13,6	C20200100
5/32"	33,5	10,7	5,0	13,6	C20200200
1/4"	39,0	12,9	6,0	15,7	C20200400
5/16"	43,5	14,5	7,0	17,5	C20200500
3/8"	48,0	17,4	8,1	20,1	C20200600



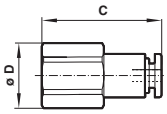
Straight adaptor

O/D Tube	NPTF Thread	A	B	C		
1/8"	1/16"	21,7	10,7	1/16"	7/16"	C24250116
1/8"	1/8"	20,2	10,7	1/8"	7/16"	C24250118
1/8"	1/4"	25,7	10,7	1/4"	9/16"	C24250128
5/32"	1/8"	21,2	10,7	1/8"	7/16"	C24250218
5/32"	1/4"	25,7	10,7	1/4"	9/16"	C24250228
1/4"	1/8"	26,1	12,9	1/8"	1/2"	C24250418
1/4"	1/4"	27,6	12,9	1/4"	1/2"	C24250428
1/4"	3/8"	27,6	12,9	3/8"	11/16"	C24250438
5/16"	1/8"	29,5	14,5	1/8"	5/8"	C24250518
5/16"	1/4"	29,5	14,5	1/4"	5/8"	C24250528
5/16"	3/8"	27,5	14,5	3/8"	11/16"	C24250538
3/8"	1/8"	31,1	17,6	1/8"	11/16"	C24250618
3/8"	1/4"	34,6	17,6	1/4"	11/16"	C24250628
3/8"	3/8"	30,1	17,6	3/8"	11/16"	C24250638
3/8"	1/2"	35,6	17,6	1/2"	7/8"	C24250648



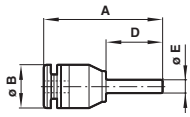
Straight adaptor

O/D Tube	UNF Thread	A	B	C	
1/8"	10-32	21,2	10,7	10,6	C24250110
5/32"	10-32	21,2	10,7	10,6	C24250210
1/4"	10-32	24,1	12,9	12,6	C24250410



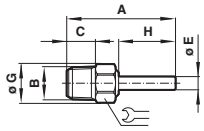
Female straight adaptor

O/D Tube	NPTF Thread	A	D		
1/8"	1/8"	28,2	15,8	9/16"	C24260118
1/8"	1/4"	35,2	17,0	5/8"	C24260128
5/32"	1/8"	28,2	15,8	9/16"	C24260218
5/32"	1/4"	35,2	17,0	5/8"	C24260228
1/4"	1/8"	31,6	15,8	9/16"	C24260418
1/4"	1/4"	38,1	17,0	5/8"	C24260428
5/16"	1/8"	33,0	17,0	5/8"	C24260518
5/16"	1/4"	40,5	17,0	5/8"	C24260528
3/8"	1/4"	41,1	21,0	3/4"	C24260628
3/8"	3/8"	42,1	24,0	7/8"	C24260638



Straight stem adaptor

O/D Tube	O/D Stem	A	B	D	E	
1/8"	5/32"	33,5	10,7	17	4,0	C20230201
1/8"	1/4"	35,5	10,7	19	6,25	C20230401
5/32"	1/4"	35,5	10,7	19	6,25	C20230402
5/32"	5/16"	35,5	10,7	21	8,0	C20230502
5/32"	3/8"	37,0	10,7	24	10,0	C20230602
1/4"	1/8"	35,5	13,0	17	3,15	C20230104
1/4"	5/32"	35,5	13,0	17	4,0	C20230204
1/4"	5/16"	40,0	13,0	21	8,0	C20230504
1/4"	3/8"	41,0	13,0	24	10,0	C20230604
1/4"	1/2"	41,0	13,0	27,5	12,65	C20230704
5/16"	3/8"	45,5	14,5	24	10,0	C20230605
5/16"	1/2"	49,5	14,5	27,5	12,65	C20230705
3/8"	1/2"	51,0	17,5	27,5	12,65	C20230706



Straight stem adaptor

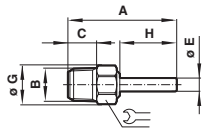
O/D Stem	BSPT Thread	A	B	C	E	G	H		
1/4"	1/8"	34,5	1/8"	8,6	6,3	11,0	19,0	10,0	C21150418
1/4"	1/4"	37,0	1/4"	11,1	6,3	15,0	19,0	14,0	C21150428
1/2"	3/8"	50,0	3/8"	12,7	12,65	20,0	27,5	19,0	C21150738
1/2"	1/2"	52,5	1/2"	15,9	12,65	23,0	27,5	22,0	C21150748

SUPPLIED IN BOXED QUANTITIES OF 10

Pneufit C composite fittings

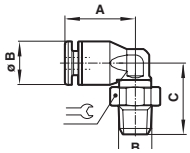
Inch

Ø ⅛" to ⅜" O/D tube



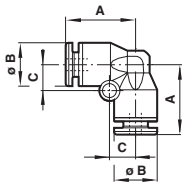
Straight stem adaptor

O/D Stem	NPTF Thread	A	B	C	E	G	H		
5/32"	10-32	30,5	10-32	4,3	4,0	11,0	17,0	10,0	C24150210
5/32"	1/8"	33,0	1/8"	9,5	4,0	12,3	17,0	7/16"	C24150218
5/32"	1/4"	39,0	1/4"	14,25	4,0	15,75	17,0	9/16"	C24150228
1/4"	1/8"	35,5	1/8"	9,5	6,25	12,3	19,0	7/16"	C24150418
1/4"	1/4"	41,0	1/4"	14,25	6,25	15,75	19,0	9/16"	C24150428
5/16"	1/4"	42,0	1/4"	14,25	8,0	15,75	20,0	9/16"	C24150528
3/8"	1/4"	46,0	1/4"	14,25	10,0	15,75	24,0	9/16"	C24150628
3/8"	3/8"	47,0	3/8"	14,25	10,0	18,5	24,0	11/16"	C24150638
1/2"	3/8"	51,0	3/8"	14,25	12,65	21,0	27,5	3/4"	C24150738
1/2"	1/2"	57,5	1/2"	19,05	12,65	24,35	27,5	7/8"	C24150748



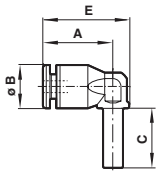
90° swivel elbow adaptor

O/D Tube	UNF Thread	A	B	C		
1/8"	10-32	18,0	10,7	17,5	10,0	C24470110
5/32"	10-32	18,0	10,7	17,5	10,0	C24470210
1/4"	10-32	21,0	12,9	18,5	10,0	C24470410



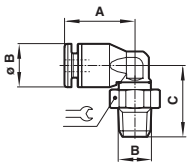
Elbow connector

O/D Tube	A	B	C	
1/8"	18,0	10,7	6,5	C20400100
5/32"	18,0	10,7	6,5	C20400200
1/4"	21,0	12,9	7,7	C20400400
5/16"	25,0	14,5	7,25	C20400500
3/8"	27,5	17,4	8,35	C20400600



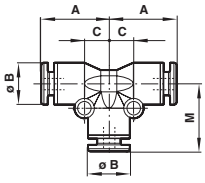
Stem elbow connector

O/D Tube	O/D Stem	A	B	C	E	
1/4"	1/4"	21,0	12,9	24,5	26,0	C20430400



90° swivel elbow adaptor

O/D Tube	NPTF Thread	A	B	C		
1/8"	1/8"	18,0	10,7	20,0	7/16"	C24470118
1/8"	1/4"	18,0	10,7	26,0	9/16"	C24470128
5/32"	1/8"	18,0	10,7	20,0	7/16"	C24470218
5/32"	1/4"	18,0	10,7	26,0	9/16"	C24470228
1/4"	1/8"	21,0	12,9	21,0	7/16"	C24470418
1/4"	1/4"	21,0	12,9	26,5	9/16"	C24470428
1/4"	3/8"	21,0	12,9	28,0	3/4"	C24470438
5/16"	1/8"	24,5	14,5	32,2	5/8"	C24470518
5/16"	1/4"	25,0	14,5	27,0	9/16"	C24470528
3/8"	1/4"	27,5	17,4	29,0	9/16"	C24470628
3/8"	3/8"	27,5	17,4	31,0	3/4"	C24470638
3/8"	1/2"	27,5	17,4	36,5	7/8"	C24470648



Tee connector

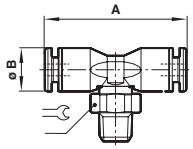
O/D Tube	A	B	C	E	
1/8"	18,0	10,7	6,5	23,5	C20600100
5/32"	18,0	10,7	6,5	23,5	C20600200
1/4"	21,0	12,9	7,7	27,5	C20600400
5/16"	25,0	14,5	7,25	32,5	C20600500
3/8"	27,5	17,4	8,35	36,5	C20600600

SUPPLIED IN BOXED QUANTITIES OF 10

Pneufit C composite fittings

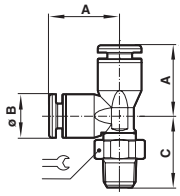
Inch

Ø ⅛" to ⅜" O/D tube



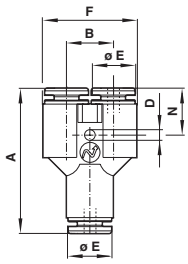
Swivel tee adaptor

O/D Tube	NPTF Thread	A	B		
1/8"	1/8"	36,0	10,7	7/16"	C24670118
5/32"	1/8"	36,0	10,7	7/16"	C24670218
5/32"	1/4"	36,0	10,7	9/16"	C24670228
1/4"	1/8"	42,0	12,9	7/16"	C24670418
1/4"	1/4"	42,0	12,9	9/16"	C24670428
1/4"	3/8"	42,0	12,9	3/4"	C24670438
5/16"	1/4"	50,0	14,5	9/16"	C24670528
3/8"	1/8"	55,0	17,4	5/8"	C24670618
3/8"	1/4"	55,0	17,4	9/16"	C24670628
3/8"	3/8"	55,0	17,4	3/4"	C24670638



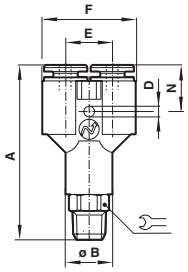
Swivel side tee adaptor

O/D Tube	NPTF Thread	A	B	C		
1/8"	1/8"	18,0	10,7	20,0	7/16"	C24680118
5/32	1/8"	18,0	10,7	20,0	7/16"	C24680218
5/32"	1/4"	18,0	10,7	26,0	9/16"	C24680228
1/4"	1/8"	21,0	12,9	21,0	7/16"	C24680418
1/4"	1/4"	21,0	12,9	26,5	9/16"	C24680428
5/16"	1/4"	25,0	14,5	27,0	9/16"	C24680528
3/8"	1/4"	27,5	17,4	29,0	9/16"	C24680628
3/8"	3/8"	27,5	17,4	31,0	3/4"	C24680638



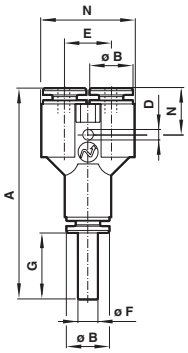
Parallel Y connector

O/D Tube	O/D Tube	O/D Tube	A	B	D	E	F	N	
5/32"	5/32"	5/32"	41,0	11,0	3,2	11,0	22,0	13,0	C20820200
1/4"	1/4"	1/4"	43,8	13,0	3,2	14,0	28,0	14.25	C20820400
5/16"	5/16"	5/16"	46,7	14,5	3,2	16,0	31,0	14,90	C20820500
1/4"	5/32"	5/32"	44,3	10,7	3,2	14,0	28,0	14,50	C20820604



Parallel Y adaptor

O/D Tube	NPTF Thread	A	B	D	E	F	N		
5/32"	1/8"	49,0	11,0	3,2	11,0	22,0	13,0	7/16"	C24880218
5/32"	1/4"	55,0	11,0	3,2	11,0	22,0	13,0	9/16"	C24880228
1/4"	1/8"	52,5	14,0	3,2	14,0	28,0	14,25	7/16"	C24880418
1/4"	1/4"	58,0	14,0	3,2	14,0	28,0	14,25	9/16"	C24880428
3/8"	1/4"	72,5	20,0	4,2	20,6	42,0	14,90	3/4"	C24880628
3/8"	3/8"	72,5	20,0	4,2	20,6	42,0	14,90	3/4"	C24880638
3/8"	1/2"	77,0	20,0	4,2	20,6	42,0	14,90	7/8"	C24880648



Parallel Y stem adaptor

O/D Tube	O/D Stem	A	B	D	E	F	N	G	
5/32"	5/32"	58,0	11,5	2,95	11,0	4,0	13,0	17,0	C20840202
5/32"	1/4"	60,0	11,5	2,95	11,0	6,25	13,0	19,0	C20840402
1/4"	1/4"	63,0	14,0	3,2	14,0	6,25	14,25	19,2	C20840404
5/16"	5/16"	68,0	16,0	3,2	16,0	8,0	14.90	21,3	C20840505

SUPPLIED IN BOXED QUANTITIES OF 10

Pneufit push-in fittings

Metric

Ø 4 to 14 mm O/D tube

Compact units featuring retained collets and positive tube anchorage.

Silicone free 'O'-ring seals.

Non-PTFE based thread sealant on all BSP taper threads.

Easy tube insertion for rapid assembly.

Internal hexagon on straight adaptors allows assembly in confined spaces.

For simple and quick assembly of pneumatic circuits.

Wide range of types available.

Reliable and corrosion resistant.

Technical data

Medium:

Compressed air

Operating pressure:

Vacuum - 18 bar unless otherwise stated (dependant on tubing specification)

Ambient temperature:

-20° to +80° C

Materials

Body: nickel plated brass or glass filled nylon

Collet: nickel plated brass

'O'-ring: Silicone free nitrile rubber

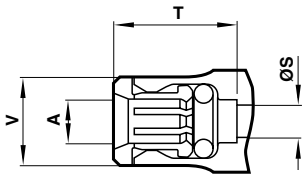
Sealing washer (parallel threads): nitrile 'O'-ring

Thread sealant: non-PTFE

Alternative models

Plastic push-in fittings, see page 574

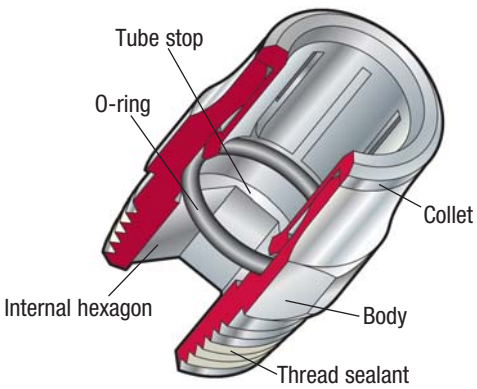
Typical dimensions



ØA O/D Tube	ØS#	ØT* Tube stop	V
4	2,8	14,0	7,5
5	3,4	15,0	10,0
6	4,4	15,5	11,0
8	6,0	16,5	13,0
10	7,6	21,0	14,5
12	9,6	24,5	18,0
14	11,5	24,5	20,0

* Dimensions here and in the individual tables refer to the collet being in the 'IN' position.

Dimensions here (minimum bore diameter) are common per tube size for all connectors, elbows and tees unless otherwise stated.



For cartridge kits see page 574.

Tube sizes

4, 5, 6, 8, 10, 12, 14 mm O/D

Warning: The push-in tube fittings in this section must not be used in vehicle air braking and ancillary systems.

For push-in fittings suitable for these applications please consult our Technical Service for details.

Tube types

Nylon 11 or 12, polyurethane* and other plasticised or unplasticised tubing which conforms to the tolerances specified in BS5409/1: 1976, light and normal duty, DIN 73378, DIN 74234, NFE 49-100.

* It is light, stable and has a hardness of 92 to 98 shore A.

Torque figures

Thread sealant is applied to the full circumference of the thread. The recommended tightening torque figures for designs with thread sealant are found in the torque table below

BSPT Thread	Tightening torque (Nm)
1/8	6,86 ... 8,82
1/4	11,76 ... 13,72
3/8	21,56 ... 25,32
1/2	27,44 ... 29,40

PneuKit selection box

O/D Tube	
4 mm	PNEUKIT-4
6 mm	PNEUKIT-6
8 mm	PNEUKIT-8.

Contains a selection of the most popular push-in fittings, including adaptors, connectors, plugs and a tube cutter.

Pneufit push-in fittings

Metric

Ø 4 to 14 mm O/D tube

Straight adaptor

O/D Tube	Metric & BSPP	
4	M3 x 0,5	102250403
4	M5 x 0,8	102250405
4	1⁄8	102250418
4	1⁄4	102250428
5	M5 x 0,8	102250505
5	1⁄8	102250518
5	1⁄4	102250528
6	M5 x 0,8	102250605
6	1⁄8	102250618
6	1⁄4	102250628
8	1⁄8	102250818
8	1⁄4	102250828
8	3⁄8	102250838
8	1⁄2	102250848
10	1⁄8	102251018
10	1⁄4	102251028
10	3⁄8	102251038
10	1⁄2	102251048
12	1⁄4	102251228
12	3⁄8	102251238
12	1⁄2	102251248
14	3⁄8	102251438
14	1⁄2	102251448

Straight adaptor

O/D Tube	BSPT	
4	1⁄8	101250418
4	1⁄4	101250428
5	1⁄8	101250518
5	1⁄4	101250528
6	1⁄8	101250618
6	1⁄4	101250628
8	1⁄8	101250818
8	1⁄4	101250828
8	3⁄8	101250838
8	1⁄2	101250848
10	1⁄8	101251018
10	1⁄4	101251028
10	3⁄8	101251038
10	1⁄2	101251048
12	1⁄4	101251228
12	3⁄8	101251238
12	1⁄2	101251248
14	3⁄8	101251438
14	1⁄2	101251448

Straight adaptor

O/D Tube	Metric & BSPP female	
4	M5 x 0,8	102260405
4	G1⁄8A	102260418
4	G1⁄4A	102260428
5	M5 x 0.8	102260505
5	G1⁄8A	102260518
5	G1⁄4A	102260528
6	G1⁄8A	102260618
6	G1⁄4A	102260628
8	G1⁄8A	102260818
8	G1⁄4A	102260828
10	G1⁄4A	102261028
10	G3⁄8A	102261038
12	G3⁄8A	102261238
12	G1⁄2A	102261248

Straight stem adaptor

O/D Stem	BSPT	
4	1⁄8	101150418
4	1⁄4	101150428
5	1⁄8	101150518
5	1⁄4	101150528
6	1⁄8	101150618
6	1⁄4	101150628
8	1⁄8	101150818
8	1⁄4	101150828
8	3⁄8	101150838
10	1⁄4	101151028
10	3⁄8	101151038
10	1⁄2	101151048
12	3⁄8	101151238
12	1⁄2	101151248
14	1⁄2	101151448

Straight stem adaptor

O/D Stem	BSPP	
4	1⁄8	102150418
4	1⁄4	102150428
5	1⁄8	102150518
5	1⁄4	102150528
6	1⁄8	102150618
6	1⁄4	102150628
8	1⁄8	102150818
8	1⁄4	102150828
8	3⁄8	102150838
10	1⁄4	102151028
10	3⁄8	102151038
10	1⁄2	102151048
12	3⁄8	102151238
12	1⁄2	102151248
14	3⁄8	102151438
14	1⁄2	102151448

Straight connector

O/D Tube	
4	100200400
5	100200500
6	100200600
8	100200800
10	100201000
12	100201200
14	100201400

Bulkhead connector

O/D Tube	
4	100290400
5	100290500
6	100290600
8	100290800
10	100291000
12	100291200
14	100291400

Pneufit push-in fittings

Metric

Ø 4 to 14 mm O/D tube

Mixed bulkhead connector
Push-in fitting to compression fitting

O/D Tube	O/D tube comp	
4	4	100310404
6	6	100310606
8	8	100310808
10	10	100311010
12	12	100311212
14	14	100311414

Supplied complete with tubing nut and sleeve.

Plug
(acetal)

O/D Tube	
4	110040400
5	110040500
6	110040600
8	110040800
10	110041000
12	110041200
14	110041400

Unequal stem

Reducing O/D stem	O/D Tube	
5	4	100230504
6	4	100230604
6	5	100230605
8	4	100230804
8	5	100230805
8	6	100230806
10	4	100231004
10	5	100231005
10	6	100231006
10	8	100231008
12	4	100231204
12	5	100231205
12	6	100231206
12	8	100231208
12	10	100231210
14	6	100231406
14	8	100231408
14	10	100231410
14	12	100231412
Expanding		
4	6	100230406
6	8	100230608

Stem tailpiece adaptor

O/D Stem	Hose Bore	
4	3	100190403
4	5	100190405
5	5	100190505
6	5	100190605
6	6,3	100190606
8	6,3	100190806
8	8	100190808
10	6,3	100191006
10	8	100191008
10	10	100191010
12	8	100191208
12	10	100191210
12	12,5	100191212
14	12,5	100191412

Straight stem connector – brass

O/D Stem	
4	100220400
5	100220500
6	100220600
8	100220800
10	100221000
12	100221200
14	100221400

Silencers

O/D Stem	
4	100110400
6	100110600
8	100110800
10	100111000
12	100111200

Pressure indicator
Plug-in

O/D Stem	
4	100100400
6	100100600
8	100100800

Pneufit push-in fittings

Metric

Ø 4 to 14 mm O/D tube

Pressure indicators
Panel mounted

O/D Tube	
4	100090400
6	100090600
8	100090800

Fixed elbow adaptor

O/D Tube	BSPT	
4	1/8	101450418
4	1/4	101450428
5	1/8	101450518
5	1/4	101450528
6	1/8	101450618
6	1/4	101450628
8	1/8	101450818
8	1/4	101450828
8	3/8	101450838
8	1/2	101450848
10	1/8	101451018
10	1/4	101451028
10	3/8	101451038
10	1/2	101451048
12	1/4	101451228
12	3/8	101451238
12	1/2	101451248

90° swivel elbow adaptor

O/D Tube	BSPT	
4	1/8	101470418
4	1/4	101470428
5	1/8	101470518
5	1/4	101470528
6	1/8	101470618
6	1/4	101470628
6	3/8	101470638
8	1/8	101470818
8	1/4	101470828
8	3/8	101470838
8	1/2	101470848
10	1/8	101471018
10	1/4	101471028
10	3/8	101471038
10	1/2	101471048
12	1/4	101471228
12	3/8	101471238
12	1/2	101471248
14	3/8	101471438
14	1/2	101471448

90° swivel elbow adaptor

O/D Tube	BSPP	
4	M3 x 0,5	102470403
4	M5 x 0,8	102470405
4	1/8	102470418
4	1/4	102470428
5	M5 x 0,8	102470505
5	1/8	102470518
5	1/4	102470528
6	M5 x 0,8	102470605
6	1/8	102470618
6	1/4	102470628
8	1/8	102470818
8	1/4	102470828
8	3/8	102470838
8	1/2	102470848
10	1/8	102471018
10	1/4	102471028
10	3/8	102471038
10	1/2	102471048
12	1/4	102471228
12	3/8	102471238
12	1/2	102471248
14	3/8	102471438
14	1/2	102471448

Extended swivel elbow adaptor

O/D Tube	BSPT	
4	1/8	101540418
4	1/4	101540428
6	1/8	101540618
6	1/4	101540628
8	1/8	101540818
8	1/4	101540828
8	3/8	101540838
10	3/8	101541038

45° swivel adaptor

O/D Tube	BSPP	
6	1/8	102570618
6	1/4	102570628
8	1/8	102570818
8	1/4	102570828

Pneufit push-in fittings

Metric

Ø 4 to 14 mm O/D tube

Equal elbow connector

O/D Tube	
4	100400400
5	100400500
6	100400600
8	100400800
10	100401000
12	100401200
14	100401400

Stem elbow connector

Equal O/D tube	O/D Stem	
4	4	100430400
6	6	100430600
8	8	100430800
Unequal O/D tube	**O/D Stem**	
8	5	100430805
Extended O/D tube	**O/D Stem**	
6	6	100440600

Bulkhead swivel elbow connector

O/D Tube	
4	100490400
5	100490500
6	100490600
8	100490800
10	100491000
12	100491200
14	100491400

Fixed tee adaptor

O/D Tube	BSPT	
4	1/8	101650418
5	1/8	101650518
5	1/4	101650528
6	1/8	101650618
6	1/4	101650628
8	1/8	101650818
8	1/4	101650828
8	3/8	101650838
10	1/4	101651028
10	3/8	101651038
12	1/4	101651228
12	3/8	101651238

Swivel tee adaptor

O/D Tube	BSPP	
4	M3 x 0,5	102670403
4	M5 x 0,8	102670405
4	1/8	102670418
5	M5 x 0,8	102670505
5	1/8	102670518
5	1/4	102670528
6	M5 x 0,8	102670605
6	1/8	102670618
6	1/4	102670628
8	1/8	102670818
8	1/4	102670828
8	3/8	102670838
10	1/4	102671028
10	3/8	102671038
12	1/4	102671228
12	3/8	102671238
14	3/8	102671438
14	1/2	102671448

Swivel tee adaptor

O/D Tube	BSPT	
4	1/8	101670418
4	1/4	101670428
5	1/8	101670518
5	1/4	101670528
6	1/8	101670618
6	1/4	101670628
8	1/8	101670818
8	1/4	101670828
8	3/8	101670838
10	1/4	101671028
10	3/8	101671038
10	1/2	101671048
12	1/4	101671228
12	3/8	101671238
12	1/2	101671248
14	3/8	101671438
14	1/2	101671448

Equal tee connector

O/D Tube	
4	100600400
5	100600500
6	100600600
8	100600800
10	100601000
12	100601200
14	100601400

Pneufit push-in fittings

Metric

Ø 4 to 14 mm O/D tube

Fixed side tee adaptor

O/D Tube	BSPT	
4	1/8	101750418
5	1/8	101750518
5	1/4	101750528
6	1/8	101750618
6	1/4	101750628
8	1/8	101750818
8	1/4	101750828
8	3/8	101750838
10	1/4	101751028
10	3/8	101751038
12	1/4	101751228
12	3/8	101751238

Swivel side tee adaptor

O/D Tube	BSPP	
4	M3 x 0,5	102680403
4	M5 x 0,8	102680405
4	1/8	102680418
5	M5 x 0,8	102680505
5	1/8	102680518
5	1/4	102680528
6	1/8	102680618
6	1/4	102680628
8	1/8	102680818
8	1/4	102680828
8	3/8	102680838
10	1/4	102681028
10	3/8	102681038
12	1/4	102681228
12	3/8	102681238
14	3/8	102681438
14	1/2	102681448

Swivel side tee adaptor

O/D Tube	BSPT	
4	1/8	101680418
4	1/4	101680428
5	1/8	101680518
5	1/4	101680528
6	1/8	101680618
6	1/4	101680628
8	1/8	101680818
8	1/4	101680828
8	3/8	101680838
10	1/4	101681028
10	3/8	101681038
12	1/4	101681228
12	3/8	101681238
12	1/2	101681248
14	3/8	101681438
14	1/2	101681448

4 way cross connector

O/D Tube	
4	100900400
5	100900500
6	100900600
8	100900800
10	100901000

Parallel Y connector

Equal O/D tube	O/D Tube	
4	4	100820400
6	6	100820600
8	8	100820800
10	10	100821000
Unequal O/D tube	**O/D Tube**	
6	4	100820604
8	6	100820806
10	8	100821008

Parallel Y adaptor

O/D Tube	BSPT	
4	R1/8	101880418
6	R1/8	101880618
6	R1/4	101880628
8	R1/8	101880818
8	R1/4	101880828
10	R3/8	101881038
10	R1/2	101881048

Pneufit push-in fittings

Metric

Ø 4 to 14 mm O/D tube

Manifold

O/D Tube inlet	O/D Tube Outlet	
8	4	100D60804
8	6	100D60806
10	6	100D61006
10	8	100D61008

2 inlets; 6 outlets.

Manifold

O/D Tube inlet	O/D Tube Outlet (x6)	BSPT	
8	4	1/4	101D60428
8	4	3/8	101D60438
8	6	1/4	101D60628
8	6	3/8	101D60638
10	8	3/8	101D60838
10	8	1/2	101D60848

Elbow banjo assembly non regulating bolt

O/D Tube	BSPP	
4	M5 x 0,8	10A510405
4	G1/8A	10A510418
5	M5 x 0,8	10A510505
5	G1/8A	10A510518
6	M5 x 0,8	10A510605
6	G1/8A	10A510618
6	G1/4A	10A510628
8	G1/8A	10A510818
8	G1/4A	10A510828
8	G3/8A	10A510838
10	G1/4A	10A511028
10	G3/8A	10A511038

Elbow banjo assembly regulating out

O/D Tube	BSPP	
4	M5 x 0,8	10K510405
4	1/8	10K510418
5	M5 x 0,8	10K510505
5	1/8	10K510518
6	M5 x 0,8	10K510605
6	1/8	10K510618
6	1/4	10K510628
8	1/8	10K510818
8	1/4	10K510828
8	3/8	10K510838
10	1/4	10K511028
10	3/8	10K511038
12	3/8	10K511238
12	1/2	10K511248

Pressure rating on this item 10 bar.

Tee banjo assembly Non regulating bolt

O/D Tube	BSPP	
4	M5	10A710405
4	1/8	10A710418
5	M5	10A710505
5	1/8	10A710518
6	M5	10A710605
6	1/8	10A710618
6	1/4	10A710628
8	1/8	10A710818
8	1/4	10A710828

Elbow banjo assembly

O/D Tube	BSPT	
4	1/8	10TA00418
6	1/8	10TA00618
6	1/4	10TA00628
8	1/4	10TA00828
8	3/8	10TA00838
10	1/4	10TA01028
10	3/8	10TA01038
12	1/2	10TA01248

Pressure rating on this item 10 bar.

Elbow banjo assembly

O/D Tube	BSPT	
4	1/8	10T000418
6	1/8	10T000618
6	1/4	10T000628
8	1/8	10T000818
8	1/4	10T000828
8	3/8	10T000838
10	1/4	10T001028
10	3/8	10T001038
12	1/2	10T001248

Pressure rating on this item 10 bar.

Elbow banjo body

O/D Tube	Bolt Thread	
4	M5 x 0,8	100510405
4	1/8	100510418
5	M5 x 0,8	100510505
5	1/8	100510518
6	M5 x 0,8	100510605
6	1/8	100510618
6	1/4	100510628
8	1/8	100510818
8	1/4	100510828
8	3/8	100510838
10	1/4	100511028
10	3/8	100511038
12	3/8	100511238
12	1/2	100511248

Pneufit push-in fittings

Metric

Ø 4 to 14 mm O/D tube

Tee banjo body

O/D Tube	Bolt Thread	
4	M5 x 0,8	100710405
4	1⁄8	100710418
5	M5 x 0,8	100710505
5	1⁄8	100710518
6	M5 x 0,8	100710605
6	1⁄8	100710618
6	1⁄4	100710628
8	1⁄8	100710818
8	1⁄4	100710828

Banjo bolt
Non regulating single stacking

BSPP	
M5 x 0,8	20A000005
1/8	20A000018
1/4	20A000028
3/8	20A000038
1/2	20A000048

Regulating out banjo bolts
Single stacking
(screwdriver adjustable)

Flow	BSPP	
	M5 x 0,8	20K000005
Reg out	G1⁄8A	20K000018
	G1/4A	20K000028
	G3⁄8 A	20K000038
	G1⁄2A	20K000048
	M5 x 0,8	20L000005
Reg in	G1⁄8A	20L000018
	G1⁄4A	20L000028
	G3⁄8A	20L000038
	G1⁄2A	20L000048
	M5 x 0,8	20M000005
Bi direc	G1⁄8A	20M000018
	G1⁄4A	20M000028
	G3⁄8A	20M000038
	G1⁄2A	20M000048

Pressure rating on this item 10 bar.

Banjo bolt
Non-regulating single stacking
with top port (BSP parallel)

Port thread	Bolt Thread	
M5 x 0,8	G1/4A	20D000528
G1⁄8	G1⁄8A	20E001818
G1⁄8	G1⁄4A	20E001828
G1⁄8	G3⁄8A	20E001838
G1⁄4	G1⁄4A	20F002828
G3⁄8	G3⁄8A	20G003838

Banjo bolt
Non regulating single stacking
with test point

BSPP	
G1⁄8A	20J000018

Banjo bolt
Non regulating double stacking

BSPP	
M5 x 0,8	20B000005
1/8	20B000018
1/8	20B000028
1/8	20B000038
1/8	20B000048

Banjo bolt
Non regulating triple stacking

BSPP	
G1⁄8A	20C000018
G1⁄4A	20C000028
G3⁄8A	20C000038

Airfuse

O/D Tube	Flow Factor Cv*/C**	
4	0,09/0,38	T50P0004
6	0,38/1,57	T50P0006
8	0,78/3,2	T50P0008
10	1,103/4,5	T50P0010
12	1,64/6,7	T50P0012

*Cv: US gall/min. **C: $dm^3/(s.bar)$.

See page 381.

Pneufit push-in fittings

Inch

Ø ⅛" to ½" O/D tube

For simple and quick assembly of pneumatic circuits.

Positive tube connection.

Wide range of types available.

Reliable and corrosion resistant.

Technical data

Medium:
Compressed air

Operating pressure:
Vacuum – 18 bar unless otherwise stated (dependant upon tubing specification).

Ambient temperature:
-20°C to +80°C.

Materials

Collet & body manufactured from bar: nickel plated brass to BS 2874: 1986 (CZ121)

Body manufactured from stamping: nickel plated brass to BS 2872: 1969 (CZ122)

Body: nickel plated brass or glass filled nylon

Collet: nickel plated brass

'O'-ring: silicone free nitrile rubber

Sealing washer (parallel threads): nitrile 'O'-ring

Thread sealant: non-PTFE

Tube sizes

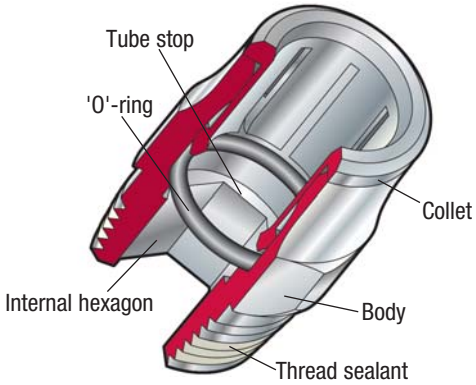
1/8", 3/16", 1/4", 5/16", 3/8", 1/2" O/D

Warning: The push-in tube fittings in this section must not be used in vehicle air braking and ancillary systems.

For push-in fittings suitable for these applications please consult our Technical Service.

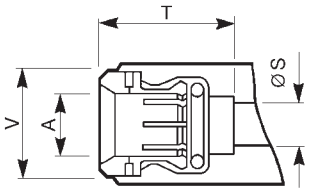
Tube types

Nylon 11 or 12 and other plasticised or unplasticised tubing which conforms to the tolerances specified in BS 5409, Part 1, 1976.



For cartridge kits see page 574

Typical dimensions



ØA O/D Tube	ØS#	ØT* Tube stop	V
1⁄8"	0,09	0,53	0,26
5⁄32"	0,11	0,55	0,30
3⁄16"	0,13	0,59	0,38
1⁄4"	0,17	0,61	0,42
5⁄16"	0,24	0,65	0,51
3⁄8"	0,30	0,83	0,59
1⁄2"	0,38	0,96	0,71

* Dimensions here and in the individual tables refer to the collet being in the 'IN' position.

Dimensions here (minimum bore diameter) are common per tube size for all connectors, elbows and tees unless otherwise stated.

Pneufit push-in fittings

Inch

Ø ⅛" to ½" O/D tube

Straight connector

O/D Tube	
1/8	12 020 0100
5/32	12 020 0200
3/16	12 020 0300
1/4	12 020 0400
5/16	12 020 0500
3/8	12 020 0600
1/2	12 020 0700

Bulkhead connector

O/D Tube	Thread	
1/8	M10 x 1,0	12 029 0100
5/32	M10 x 1,0	12 029 0200
3/16	M12 x 1,0	12 029 0300
1/4	M14 x 1,5	12 029 0400
5/16	M16 x 1,5	12 029 0500
3/8	M20 x 1,5	12 029 0600
1/2	M24 x 1,5	12 029 0700

Straight adaptor

O/D Tube	BSPT	
1/8	1/8	12 125 0118
3/16	1/8	12 125 0318
3/16	1/4	12 125 0328
1/4	1/8	12 125 0418
1/4	1/4	12 125 0428
5/16	1/8	10 125 0818
5/16	1/4	10 125 0828
5/16	3/8	10 125 0838
3/8	1/4	12 125 0628
3/8	3/8	12 125 0638
3/8	1/2	12 125 0648
1/2	1/4	12 125 0728
1/2	3/8	12 125 0738
1/2	1/2	12 125 0748

Straight adaptor

O/D Tube	Thread	
1/8	M5 x 0,8	12 225 0105
3/16	M5 x 0,8	12 225 0305

Equal connector

O/D Tube	
1/8	12 040 0100
5/32	12 040 0200
3/16	12 040 0300
1/4	12 040 0400
5/16	12 040 0500
3/8	12 040 0600
1/2	12 040 0700

Swivel elbow adaptor

O/D Tube	BSPT	
1/8	1/8	12 147 0118
3/16	1/8	12 147 0318
3/16	1/4	12 147 0328
1/4	1/8	12 147 0418
1/4	1/4	12 147 0428
3/8	1/4	12 147 0628
3/8	3/8	12 147 0638
3/8	1/2	12 147 0648
1/2	1/4	12 147 0728
1/2	3/8	12 147 0738
1/2	1/2	12 147 0748

Equal tee connector

O/D Tube	
1/8	12 060 0100
5/32	12 060 0200
3/16	12 060 0300
1/4	12 060 0400
5/16	12 060 0500
3/8	12 060 0600
1/2	12 060 0700

Swivel tee adaptor

O/D Tube	BSPT	
3/16	R1/8	12 167 0318
1/4	R1/8	12 167 0418
1/4	R1/4	12 167 0428
3/8	R3/8	12 167 0638
1/2	R1/4	12 167 0728
1/2	R3/8	12 167 0738

Swivel side tee adaptor

O/D Tube	BSPT	
3/16	1/8	12 168 0318
3/16	1/4	12 168 0328
1/4	1/8	12 168 0418
1/4	1/4	12 168 0428
3/8	1/4	12 168 0628
3/8	3/8	12 168 0638
1/2	1/4	12 168 0728

Pneufit self-sealing fittings

Ø 4 mm to 8 mm O/D tube

Self-sealing straight adaptors.

No air flow when tubing is removed – air flow is restored when tubing is inserted.

1/8 & 1/4 BSPT threads.

Technical data

Medium:
Compressed air

Operating pressure:
10 bar

Ambient temperature:
-20°C to +80°C

Materials

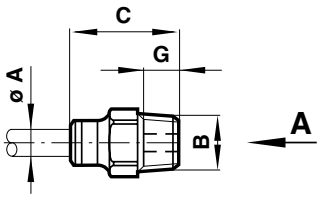
Body: nickel plated brass
Collet: nickel plated brass
'O' ring: rubber silicone free nitrile rubber
Thread sealant: Precoat 5 (non PTFE)

Alternative models

NPTF version with inch tube sizes available. Consult out Technical Service for details.

Tube types

Nylon 11 or 12, polyurethane and other plasticised or unplasticised tubing which conforms to the tolerances specified in BS5409, Part 4, 1976, DIN73378, DIN74234, NFE49-100.



	A O/D Tube	B Thread	C	G	SW	Nominal size
101240418	4	1/8	25,5	8,6	11	
101240618	6	1/8	27,5	8,6	11	
101240628	6	1/4	27,5	11,1	14	
101240828	8	1/4	32,7	11,1	14	5,7

Weldfit push-in fittings

Metric

Ø 6 to 12 mm O/D tube

Provides system protection from weld spatter when combined with Weldtube.

Easy tube insertion for rapid assembly of pneumatic & water circuits.

Silicone free 'O'-rings.

Very compact.

Nickel plated.

Tube support provides high pull out loads.

Easy to disassemble, enables quick re-tubing of system.

Counterbored collet head gives complete protection to inner tube even if side loads are applied.

Technical data

Medium:

Compressed air, water

Operating pressure:

Vacuum to 18 bar except banjo flow regulators which are 10 bar max.

Ambient temperature:

-30°C to +70°C

Materials

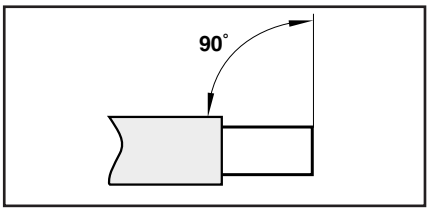
Body & collet: nickel plated brass

'O'-ring: silicone free

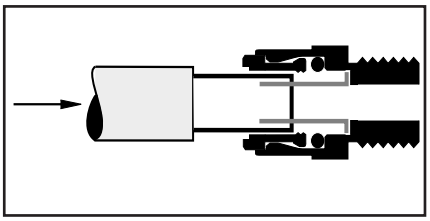
Sealing washer (for parallel threads): nitrile 'O'-ring

Imperial range also available

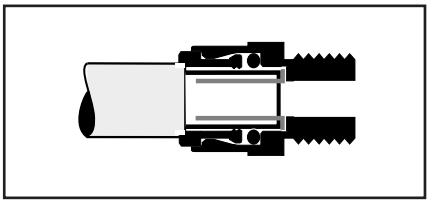
Method of assembly



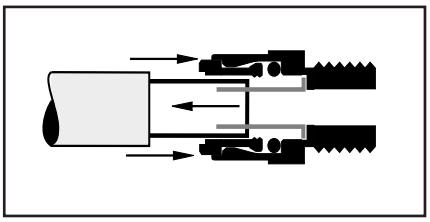
1. Ensure that the end of the tube is cut square and is free from burrs. Correct length of inner tube must be exposed. See WeldTube section for details of tube preparation.



2. Push the tube through the collet into the fitting.



3. Continue pushing the tube through the 'O' ring until it bottoms on the tube stop. Then pull back on the the tube to reinforce the collet teeth gripping action.



4. To disconnect - First ensure there is no air present. Push the tube into the fitting until it bottoms on the tube stop. Then hold down the collet and withdraw the tube.

Tube sizes

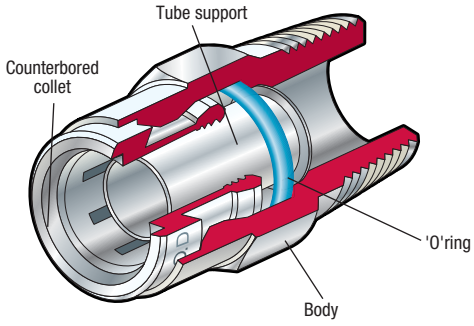
6, 8, 10, 12 mm O/D

Warning: The push-in tube fittings in this section must not be used in vehicle air braking and ancillary systems.

For push-in fittings suitable for these applications please consult our Technical Service for details.

Tube types

To be used in conjunction with WeldTube. See page 547



Weldfit push-in fittings

Metric

Ø 6 to 12 mm O/D tube

Straight connector

O/D Tube	
6	210200600
8	210200800
10	210201000
12	210201200

90° swivel elbow adaptor

O/D Tube	BSPP	
6	G1⁄8A	212470618
6	G1⁄4A	212470628
8	G1⁄8A	212470818
8	G1⁄4A	212470828
8	G3⁄8A	212470838
8	G1⁄2A	212470848
10	G1⁄8A	212471018
10	G1⁄4A	212471028
10	G3⁄8A	212471038
10	G1⁄2A	212471048
12	G1⁄4A	212471228
12	G3⁄8A	212471238
12	G1⁄2A	212471248

Supplied with sealing washer.

Straight adaptor

O/D Tube	BSPP	
6	G1⁄8A	212250618
6	G1⁄4A	212250628
8	G1⁄8A	212250818
8	G1⁄4A	212250828
8	G3⁄8A	212250838
8	G1⁄2A	212250848
10	G1⁄4A	212251028
10	G3⁄8A	212251038
10	G1⁄2A	212251048
12	G3⁄8A	212251238
12	G1⁄2A	212251248

Supplied with sealing 'O'-ring.

45° swivel elbow adaptor

O/D Tube	BSPP	
6	G1⁄8A	212570618
6	G1⁄4A	212570628
8	G1⁄8A	212570818
8	G1⁄4A	212570828
10	G1⁄8A	212571018

Supplied with sealing washer.

Elbow adaptor

O/D Tube	
6	210400600
8	210400800
10	210401000
12	210401200

Elbow banjo assembly

O/D Tube	BSPP	
6	G1⁄8A	21A510618
6	G1⁄4A	21A510628
8	G1⁄4A	21A510828
8	G3⁄8A	21A510838
10	G3⁄8A	21A511038
10	G1⁄2A	21A511048
12	G3⁄8A	21A511238
12	G1⁄2A	21A511248

Tee connector

O/D Tube	
6	210600600
8	210600800
10	210601000
12	210601200

Elbow banjo assembly

O/D Tube	BSPP Thread	
6	G1⁄8A	21A510618
6	G1⁄4A	21A510628
8	G1⁄4A	21A510828
8	G3⁄8A	21A510838
10	G3⁄8A	21A511038
10	G1⁄2A	21A511048
12	G3⁄8A	21A511238
12	G1⁄2A	21A511248

Weldfit push-in fittings

Metric

Ø 6 to 12 mm O/D tube

Elbow banjo assembly
Regulating out
(screwdriver adjustable)

O/D Tube	BSPP	
6	G1⁄8A	21K510618
6	G1⁄4A	21K510628
8	G1⁄4A	21K510828
8	G3⁄8A	21K510838
10	G3⁄8A	21K511038
12	G1⁄2A	21K511248

Banjo bolt
Regulating in

BSPP	
M5 x 0,8	20L000005
G1⁄8A	20L000018
G1⁄4A	20L000028
G3⁄8A	20L000038
G1⁄2A	20L000048

Supplied complete with sealing washers.

Banjo bolt
Non regulating single stacking

BSPP	
M5 x 0,8	20A000005
1/8	20A000018
1/4	20A000028
3/8	20A000038
1/2	20A000048

Supplied complete with sealing washers.

Banjo bolt
Bi-directional regulated flow

BSPP	
M5 x 0,8	20M000005
G1⁄8A	20M000018
G1⁄4A	20M000028
G3⁄8A	20M000038
G1⁄2A	20M000048

Supplied complete with sealing washers.

Banjo bolt
Non regulating double stacking

BSPP	
M5 x 0,8	20B000005
1/8	20B000018
1/4	20B000028
3/8	20B000038
1/2	20B000048

Supplied complete with sealing washers.

Banjo bolt
Non regulating,
with top port (BSP parallel)

Port thread	Bolt Thread	
M5 x 0,8	G1⁄4A	20D000528
G1⁄8	G1⁄8A	20E001818
G1⁄8	G1⁄4A	20E001828
G1⁄8	G3⁄8A	20E001838
G1⁄4	G1⁄4A	20F002828
G3⁄8	G3⁄8A	20G003838

Supplied complete with sealing washers.

Regulating out banjo bolts
Single stacking
(screwdriver adjustable)

BSPP	
M5 x 0,8	20K000005
G1⁄8A	20K000018
G1/4	20K000028
G3⁄8 A	20K000038
G1⁄2A	20K000048

Supplied complete with sealing washers.

Stainless steel push-in tube fittings

Metric

Ø 4 to 12 mm O/D tube

Resistant to aggressive environments
Suitable for food applications
Stainless steel
Very Compact
Corporate red food grade release sleeve
Allows easy leak free installation
Easy tube insertion and removal
'O'ring sealing on parallel threads
Compatible with range of tubing
Full bore no flow restrictions

Technical data

Medium:
Compressed air or water

Operating pressure:
Vacuum - 18 bar
Vacuum - 750mm of Hg
ie. 98%

Ambient temperature:
Air -20°C to +110°C
Water 0°C to +110°C

Materials

Body: Stainless steel 316
Grab ring: Stainless steel 316
Release sleeve: Acetal
'O'ring: Viton

Alternative models

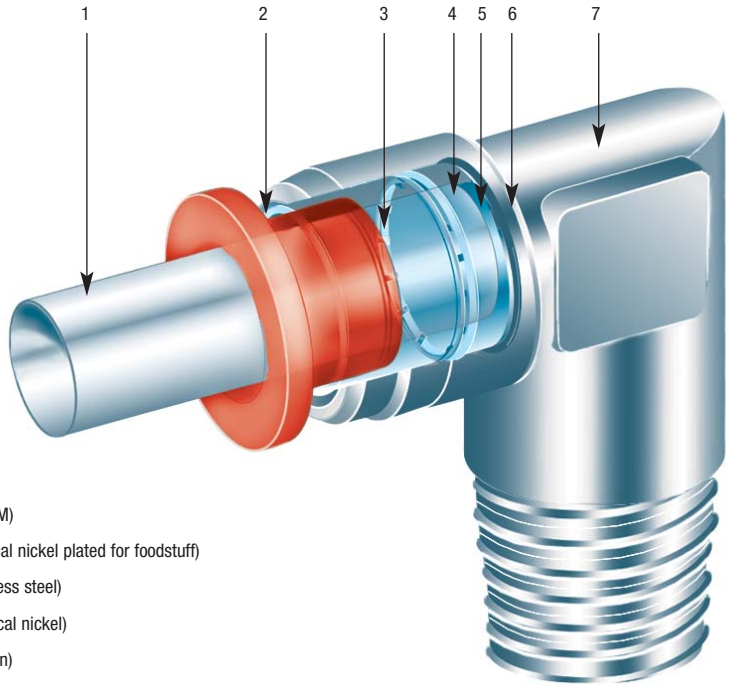
61 Series ball valves
Filters pressure regulators and lubricators
Roundline, tie-rod and rodless cylinders
Air bellows

Tube sizes

4, 6, 8, 10 and 12 mm O/D

Tube types

Nylon 11 or 12, polyurethane and PTFE



1 Pipe
2 Release sleeve (POM)
3 Ring (OT.58 chemical nickel plated for foodstuff)
4 Locking ring (stainless steel)
5 Bush (OT.58 chemical nickel)
6 Internal O-ring (Viton)
7 Body (AISI 3 1 6)

Stainless steel push-in tube fittings

Metric

Ø 4 to 12 mm O/D tube

Straight connector

O/D Tube	
4	S00200400
6	S00200600
8	S00200800
10	S00201000
12	S00201200

Tee connector

O/D Tube	
4	S00600400
6	S00600600
8	S00600800
10	S00601000
12	S00601200

Straight adaptor

O/D Tube	BSPP Thread	
4	1/8	S02250418
6	1/8	S02250618
6	1/4	S02250628
8	1/8	S02250818
8	1/4	S02250828
10	1/4	S02251028
10	3/8	S02251038
12	1/4	S02251228
12	3/8	S02251238
12	1/2	S02251248

Tee adaptor

O/D Tube	BSPT Thread	
4	R1/8	S01650418
6	R1/8	S01650618
6	R1/4	S01650628
8	R1/4	S01650828
10	R1/4	S01651028
12	R1/4	S01651228
12	3/8	S01651238

Elbow adaptor

O/D Tube	BSPP Thread	
4	R1/8	S01450418
6	R1/8	S01450618
6	R1/4	S01450628
8	R1/8	S01450818
8	R1/4	S01450828
10	R1/4	S01451028
12	R1/4	S01451228

Unequal stem connector

O/D Stem	O/D Tube	
6	4	S00230604
8	4	S00230804
8	6	S00230806
10	6	S00231006
10	8	S00231008
12	6	S00231206
12	8	S00231208
12	10	S00231210

Straight adaptor

O/D Tube	BSPT Thread	
4	R1/8	S01250418
6	R1/8	S01250618
6	R1/4	S01250628
8	R1/8	S01250818
8	R1/4	S01250828
10	R1/4	S01251028
10	R3/8	S01251038
12	R1/4	S01251228
12	R3/8	S01251238

Straight stem adaptor

O/D Stem	BSPP Thread	
4	G1/8A	S02150418
6	G1/8A	S02150618
8	G1/4A	S02150828
10	G1/4A	S02151028
12	G3/8A	S02151238
12	G1/2A	S02151248

Elbow connector

O/D Tube	
4	S00400400
6	S00400600
8	S00400800
10	S00401000
12	S00401200

Bulkhead connector

O/D Tube	
4	S00290400
6	S00290600
8	S00290800
10	S00291000
12	S00291200

Compression fittings

Metric and inch

Ø 4 to 28 mm O/D tube

Ø 3/16" to ¾" O/D tube

Wide range of types and sizes.

Rugged and durable.

Suitable for use under extreme conditions of temperature and pressure.

Ideal for most general industrial applications.

Technical data

Medium:

Compressed air or any fluids compatible with the materials/tubing listed.

Operating pressure:

The maximum working pressure is limited by the type of tubing being used. Refer to pages 546 to 552 for details.

Ambient temperature:

The maximum working temperature is generally limited by the type of tubing being used. Refer to pages 546 to 552 for details.

Materials

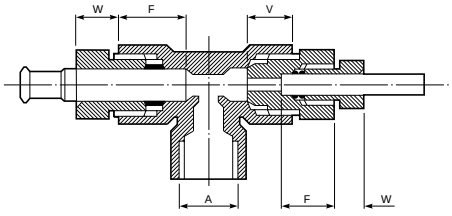
Tubing nut, sleeve & body manufactured from bar: brass to BS 2874: 1986 (CZ 121)

Body manufactured from stamping: brass to BS 2872: 1969 (CZ 122)

Banjo bolts are brass, nickel plated, however, MS bolts are steel, zinc plated.

Typical dimensions

Hose stem to tube with reducing connector



O/D Tube	A Thread	F	V	W
4	M8 x 1,0	10,5	8,3	6,0
5	M10 x 1,0	12,0	9,5	6,5
6	M11 x 1,0	12,0	9,4	7,0
8	M13 x 1,0	15,0	11,7	8,0
10	M15 x 1,0	16,5	12,7	8,0
12	M18 x 1,5	17,0	13,4	9,0
15	M22 x 1,5	18,5	16,0	10,0
16	M24 x 1,5	19,0	16,2	10,5
18	M26 x 1,5	20,0	17,0	10,5
22	M30 x 1,5	24,5	20,5	11,0
28	M38 x 1,5	30,0	25,8	12,5

O/D Tube	A Thread	F	V	W
3/16"	3/8" x 24 TPI	0,44	0,35	0,26
1/4"	7/16" x 24 TPI	0,50	0,38	0,26
5/16"	1/2" x 24 TPI	0,56	0,42	0,26
3/8"	9/16" x 24 TPI	0,60	0,42	0,28
1/2"	3/4" x 24 TPI	0,66	0,50	0,26
5/8"	7/8" x 20 TPI	0,72	0,58	0,34
3/4"	1,025" x 18 TPI	0,78	0,64	0,40

A = outside diameter tube size and thread details.*

F = tube or stem length inside fitting.

V = nippled connector length inside fitting.

W = projection of tubing nut from compression joint.

All these dimensions are common to a particular tubing outside diameter size. Refer to later pages in this section for details of individual coupling dimensions. dimensions V & W will vary with the torque applied so these dimensions are guidance only. *Note: The 'O/D tube' sizes in the following tables refer to the Enots compression threads listed above.

Tube sizes

4, 5, 6, 8, 10, 12, 15, 16, 18, 22, 28 mm O/D

3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4" O/D

Tube types

Nylon 11 or 12 and other plasticised or unplasticised tubing which conforms to the tolerances specified in BS5409: Part 1 1976. Copper, annealed and half-hard to BS2871: Part 2.

Double wall brazed steel.

Torque figures

Thread sealant is applied to the full circumference of the thread. The recommended tightening torque figures for designs with thread sealant are found in the torque table below

O/D Tube	Half Hard Copper	Annealed Copper	Nylon 11 & 12	Double Wall Brazed Steel
4	4,5 Nm	3,4 Nm	2,8 Nm	5,7 Nm
5	6,8 Nm	5,7 Nm	5,7 Nm	-
6	9,0 Nm	7,9 Nm	5,7 Nm	10,2 Nm
8	11,3 Nm	7,9 Nm	7,9 Nm	12,4 Nm
10	21,5 Nm	18,1 Nm	13,6 Nm	21,5 Nm
12	24,9 Nm	22,6 Nm	15,8 Nm	27,1 Nm
15	34,0 Nm	28,0 Nm	25,0 Nm	-
16	46,0 Nm	31,0 Nm	26,0 Nm	-
18	52,0 Nm	35,0 Nm	45,0 Nm	-
22	79,0 Nm	68,0 Nm	46,0 Nm	-
28	76,0 Nm	68,0 Nm	96,0 Nm	-

Conversion: Nm x 0,74 = lbf ft

Inch

Recommended torque using 34027800 series sleeves

O/D Tube	Half Hard Copper	Nylon 11 & 12	Double Wall Brazed Steel
1/8"	50 lbf in	60 lbf in	60 lbf in
1/8"	80 lbf in	60 lbf in	60 lbf in
1/8"	80 lbf in	60 lbf in	80 lbf in
1/8"	115 lbf in	70 lbf in	110 lbf in
1/8"	35 lbf ft	20 lbf ft	25 lbf ft
1/8"	35 lbf ft	35 lbf ft	-
1/8"	60 lbf ft	35 lbf ft	-

Compression fittings

Metric

Ø 4 to 28 mm O/D tube

Tubing plug

Male O/D tube	
4	36 0509 02
5	36 0509 03
6	36 0509 04
8	36 0509 05
10	36 0509 06
12	36 0509 07
16	36 0509 08
22	36 0509 10

Stem tailpiece adaptor

O/D Stem	Hose Bore	
4	5,0	36 0524 15
5	5,0	36 0524 16
6	6,3	36 0524 24
8	6,3	36 0524 25
10	10,0	36 0524 42
12	10,0	36 0524 43
16	12,5	36 0524 53
22	19,0	36 0524 67

Female tailpiece adaptor

O/D Tube	Hose Bore	
8	6,3	36 0522 25
16	12,5	36 0522 53

Straight stem adaptor

O/D Stem	BSPP	
5	G1/8A	36 0521 03
6	G1/4A	36 0521 10
8	G1/8A	36 0521 05
8	G1/4A	36 0521 11
10	G3/8A	36 0521 20
12	G3/8A	36 0521 21
16	G1/2A	36 0521 31
22	G3/4A	36 0521 47
28	G1A	36 0521 62

Straight stem adaptor

O/D Stem	BSPT	
5	R1/8	36 0531 03
6	R1/8	36 0531 04
6	R1/4	36 0531 10
8	R1/8	36 0531 05
8	R1/4	36 0531 11
10	R1/4	36 0531 12
10	R3/8	36 0531 20
12	R3/8	36 0531 21

Nippled stem connector

Male O/D tube	O/D Stem	
5	5	36 0625 03
6	6	36 0625 04
8	8	36 0625 05
10	10	36 0625 06
12	12	36 0625 07

Bulkhead connector

O/D Tube	External thread	
4	M12 x 1,0	36 0508 02
5	M15 x 1,0	36 0508 03
6	M15 x 1,0	36 0508 04
8	M18 x 1,5	36 0508 05
10	M20 x 1,5	36 0508 06
12	M24 x 1,5	36 0508 07
16	M30 x 1,5	36 0508 08
22	M38 x 1,5	36 0508 10

Minimum bulkhead thickness 3mm.
Locknuts should be ordered separately.

Bulkhead locknut

Thread	
M12 x 1,0	36 0520 01
M15 x 1,0	36 0520 03
M18 x 1,5	36 0520 05
M20 x 1,5	36 0520 06
M24 x 1,5	36 0520 07
M30 x 1,5	36 0520 08
M38 x 1,5	36 0520 10
M48 x 1,5	36 0520 12

Nippled connector

Male O/D tube	
4	36 0632 02
5	36 0632 03
6	36 0632 04
8	36 0632 05
10	36 0632 06
12	36 0632 07

Compression fittings

Metric

Ø 4 to 28 mm O/D tube

Reducing connector

Female O/D tube	Male O/D tube	
4	5	36 0517 26
4	6	36 0517 27
4	8	36 0517 28
5	6	36 0517 37
5	8	36 0517 38
5	10	36 0517 39
5	12	36 0517 40
5	16	36 0517 41
6	8	36 0517 47
6	10	36 0517 48
6	12	36 0517 49
8	10	36 0517 56
8	12	36 0517 57
8	16	36 0517 58
10	12	36 0517 64
10	16	36 0517 65
12	16	36 0517 71
12	22	36 0517 73
16	28	36 0517 80
22	28	36 0517 87

Unequal connector

Male O/D tube	Female O/D tube	
4	8	36 0562 28
5	6	36 0562 37
5	8	36 0562 38
6	8	36 0562 47
6	10	36 0562 48
8	10	36 0562 56
8	12	36 0562 57
10	12	36 0562 64

Straight connector

O/D Tube	
4	36 0503 02
5	36 0503 03
6	36 0503 04
8	36 0503 05
10	36 0503 06
12	36 0503 07
15	37 0503 15
16	36 0503 08
18	37 0503 18
22	36 0503 10

Bracketed straight connector

O/D Tube	
4	36 0552 02
6	36 0552 04
8	36 0552 05
10	36 0552 06
12	36 0552 07

Metric to inch adaptor

O/D Tube	Male O/D tube	
4	1/8	36 0526 02
4	5/32	36 0526 09
4	3/16	36 0526 15
4	1/4	36 0526 22
5	3/16	36 0526 16
6	3/16	36 0526 17
6	1/4	36 0526 24
8	1/4	36 0526 25
8	5/16	36 0526 32
10	3/8	36 0526 42
12	1/2	36 0526 52
16	5/8	36 0526 59

Nippled adaptor

O/D Tube	Female Thread	
4	10-32UNF	36 0643 00
6	M14 x 1,5	36 0553 34

Nippled adaptor

Male O/D tube	BSPT	
4	1/8	36 0556 02
5	1/8	36 0556 03
6	1/8	36 0556 04
8	1/8	36 0556 05
4	1/4	36 0556 08
5	1/4	36 0556 09
6	1/4	36 0556 10
8	1/4	36 0556 11
10	1/4	36 0556 12
8	3/8	36 0556 19
10	3/8	36 0556 20
12	3/8	36 0556 21
12	1/2	36 0556 30

Nippled adaptor

Male O/D tube	Female BSPP	
4	1/8	36 0557 02
5	1/8	36 0557 03
6	1/8	36 0557 04
6	1/4	36 0557 10
8	1/4	36 0557 11
8	3/8	36 0557 19
10	1/4	36 0557 12
10	3/8	36 0557 20
12	3/8	36 0557 21
12	1/2	36 0557 30

Compression fittings

Metric

Ø 4 to 28 mm O/D tube

Straight male adaptor

O/D Tube	BSPT	
4	R1/8	36 0530 02
4	R1/4	36 0530 08
5	R1/8	36 0530 03
5	R1/4	36 0530 09
6	R1/8	36 0530 04
6	R1/4	36 0530 10
6	R3/8	36 0530 18
8	R1/8	36 0530 05
8	R1/4	36 0530 11
8	R3/8	36 0530 19
8	R1/2	36 0530 28
10	R1/8	36 0530 06
10	R1/4	36 0530 12
10	R3/8	36 0530 20
10	R1/2	36 0530 29
12	R1/4	36 0530 13
12	R3/8	36 0530 21
12	R1/2	36 0530 30
12	R3/4	36 0530 44
16	R3/8	36 0530 22
16	R1/2	36 0530 31
16	R3/4	36 0530 45

Straight male adaptor

O/D Tube	BSPP	
4	G1/8A	36 0504 02
4	G1/4A	36 0504 08
5	G1/8A	36 0504 03
5	G1/4A	36 0504 09
6	G1/8A	36 0504 04
6	G1/4A	36 0504 10
6	G3/8A	36 0504 18
8	G1/8A	36 0504 05
8	G1/4A	36 0504 11
8	G3/8A	36 0504 19
8	G1/2A	36 0504 28
10	G1/4A	36 0504 12
10	G3/8A	36 0504 20
10	G1/2A	36 0504 29
12	G1/4A	36 0504 13
12	G3/8A	36 0504 21
12	G1/2A	36 0504 30
16	G3/8A	36 0504 22
16	G1/2A	36 0504 31
16	G3/4A	36 0504 45
22	G1/2A	36 0504 33
22	G3/4A	36 0504 47
22	G1A	36 0504 60
28	G3/4A	36 0504 49
28	G1A	36 0504 62

Use with copper washer – see page 531

Straight male adaptor (NPTF)

O/D Tube	NPTF	
5	1/8	36 0532 03
5	1/4	36 0532 09
6	1/8	36 0532 04
6	1/4	36 0532 10
8	1/8	36 0532 05
8	1/4	36 0532 11
8	3/8	36 0532 19
10	1/4	36 0532 12
10	3/8	36 0532 20
10	1/2	36 0532 29
12	1/4	36 0532 13
12	3/8	36 0532 21
12	1/2	36 0532 30
16	1/2	36 0532 31

Straight male adaptor

O/D Tube	Metric Thread	
5	M8 x 1,0	36 0554 20
5	M10 x 1,0	36 0554 21
6	M10 x 1,0	36 0554 31
6	M12 x 1,0	36 0554 32
8	M12 X 1,5	36 0554 43
10	M14 X 1,5	36 0554 54

Use with copper washer – see page 531

Straight adaptor

O/D Tube	Female BSPP	
4	1/8	36 0505 02
5	1/8	36 0505 03
5	1/4	36 0505 09
6	1/8	36 0505 04
6	1/4	36 0505 10
8	1/8	36 0505 05
8	1/4	36 0505 11
8	3/8	36 0505 19
10	1/4	36 0505 12
10	3/8	36 0505 20
12	3/8	36 0505 21
12	1/2	36 0505 30
16	1/2	36 0505 31
22	3/4	36 0505 47
28	1	36 0505 62

Stem elbow connector

O/D Tube	O/D Stem	
5	5	36 0551 03
6	6	36 0551 04
8	8	36 0551 05
10	10	36 0551 06
12	12	36 0551 07
16	16	36 0551 08

Compression fittings

Metric

Ø 4 to 28 mm O/D tube

Elbow connector

O/D Tube	
4	36 0511 02
5	36 0511 03
6	36 0511 04
8	36 0511 05
10	36 0511 06
12	36 0511 07
16	36 0511 08
15	37 0511 15
22	36 0511 10
28	36 0511 12

Bracketed elbow connector

O/D Tube	
4	36 0548 02
5	36 0548 03
6	36 0548 04
8	36 0548 05
10	36 0548 06
12	36 0548 07

Female elbow adaptor

O/D Tube	Female BSPP	
4	G1/8	36 0555 02
5	G1/8	36 0555 03
6	G1/4	36 0555 10
8	G1/4	36 0555 11
10	G1/4	36 0555 12
10	G3/8	36 0555 20
12	G3/8	36 0555 21
12	G1/2	36 0555 30

Male elbow adaptor

O/D Tube	BSPT	
4	R1/8	36 0005 02
4	R1/4	36 0005 08
5	R1/8	36 0005 03
5	R1/4	36 0005 09
6	R1/8	36 0005 04
6	R1/4	36 0005 10
6	R3/8	36 0005 18
8	R1/8	36 0005 05
8	R1/4	36 0005 11
8	R3/8	36 0005 19
8	R1/2	36 0005 28
10	R1/4	36 0005 12
10	R3/8	36 0005 20
10	R1/2	36 0005 29
12	R1/4	36 0005 13
12	R3/8	36 0005 21
12	R1/2	36 0005 30
16	R1/2	36 0005 31
16	R3/4	36 0005 45

Male elbow adaptor

O/D Tube	NPTF	
5	1/8	36 0331 03
6	1/8	36 0331 04
6	1/4	36 0331 10
8	1/8	36 0331 05
8	1/4	36 0331 11
10	3/8	36 0331 20
12	1/4	36 0331 13
12	3/8	36 0331 21
12	1/2	36 0331 30
16	1/2	36 0331 31

Stem tee connector

O/D Tube	O/D Stem	
5	5	36 0550 03
6	6	36 0550 04
8	8	36 0550 05
10	10	36 0550 06
12	12	36 0550 07
16	16	36 0550 08

90° stem tee connector

O/D Tube	O/D Stem	
6	6	36 0631 04
8	8	36 0631 05
10	10	36 0631 06
12	12	36 0631 07

Side stem tee connector

O/D Tube	O/D Stem	
5	5	36 0626 03
6	6	36 0626 04
8	8	36 0626 05
10	10	36 0626 06
12	12	36 0626 07

Tee connector

O/D Tube		
4		36 0514 02
5		36 0514 03
6		36 0514 04
8		36 0514 05
10		36 0514 06
12		36 0514 07
16		36 0514 08
15		37 0514 15
22		36 0514 10
28		36 0514 12

Compression fittings

Metric

Ø 4 to 28 mm O/D tube

Bracketed tee connector

O/D Tube	
4	36 0549 02
6	36 0549 04
8	36 0549 05
10	36 0549 06
12	36 0549 07

Male tee adaptor

O/D Tube	BSPT	
4	R1/8	36 0627 02
5	R1/8	36 0627 03
6	R1/8	36 0627 04
8	R1/4	36 0627 11
10	R1/4	36 0627 12
12	R3/8	36 0627 21

Male side tee adaptor

O/D Tube	BSPT	
4	R1/8	36 0628 02
5	R1/8	36 0628 03
6	R1/8	36 0628 04
8	R1/4	36 0628 11
10	R1/4	36 0628 12
12	R3/8	36 0628 21

'Y' connector

O/D Tube	
4	36 0558 02
5	36 0558 03
6	36 0558 04
8	36 0558 05
10	36 0558 06
12	36 0558 07
16	36 0558 08
22	36 0558 10

Four way connector

O/D Tube	
4	36 0516 02
5	36 0516 03
6	36 0516 04
8	36 0516 05
10	36 0516 06
12	36 0516 07
16	36 0516 08
22	36 0516 10
28	36 0516 12

Connector block

O/D Tube	
5	36 0202 03
10	36 0202 06

2 outlets. Others available

Single sided manifold

O/D Tube Outlet	O/D Tube inlet	
4	8	36 0304 28
6	12	36 0304 49
8	12	36 0304 57
10	16	36 0304 65
12	16	36 0304 71

4 outlets. Others available

Double sided manifold

O/D Tube Outlet	O/D Tube inlet	
4	8	36 0406 28
5	8	36 0406 38
6	12	36 0406 49
10	16	36 0406 65
12	16	36 0406 71

6 outlets. Others available

Tubing nut

O/D Tube	
4	36 0500 02
5	36 0500 03
6	36 0500 04
8	36 0500 05
10	36 0500 06
12	36 0500 07
15	37 0500 15
16	36 0500 08
18	37 0500 18
22	36 0500 10
28	36 0500 12

Universal tubing sleeve
Metal and nylon tube

O/D Tube	
4	36 0501 02
5	36 0501 03
6	36 0501 04
8	36 0501 05
10	36 0501 06
12	36 0501 07
15	37 0501 15
16	36 0501 08
18	37 0501 18
22	36 0501 10
28	36 0501 12

Compression fittings

Metric

Ø 4 to 28 mm O/D tube

Tubing sleeve
Metal tube only

O/D Tube	
4	36 0549 02
5	36 0549 03
6	36 0549 04
8	36 0549 05
10	36 0549 06
12	36 0549 07

Elbow banjo assembly
Non-regulating

O/D Tube	BSP Parallel	
4	1/8	18 A51 0418**
5	1/8	18 A51 0518**
6	1/8	18 A51 0618**
6	1/4	18 A51 0628**
8	1/8	18 A51 0818**
8	1/4	18 A51 0828**
8	3/8	18 A51 0838**
10	1/4	18 A51 1028**
10	3/8	18 A51 1038**
10	1/2	18 A51 1048**
12	3/8	18 A51 1238**
12	1/2	18 A51 1248**

**Black plastic washers *Copper washers

Supplied complete with sealing washers.

Copper washers are available as bulk pack version on all series

Elbow banjo assembly
Regulating out
(screwdriver adjustable)

O/D Tube	BSP Parallel	
5	1/8	18 K51 0518
8	1/8	18 K51 0818
8	1/4	18 K51 0828

Supplied complete with sealing washers.

Pressure rating on this product is 10 bar.

Tee banjo assembly
Non-regulating

O/D Tube	BSP Parallel	
5	1/8	18 A71 0518**
6	1/8	18 A71 0618**
6	1/4	18 A71 0628**
8	1/4	18 A71 0828**
8	3/8	18 A71 0838**
10	1/4	18 A71 1038*

**Black plastic washers *Copper washers

Supplied complete with sealing washers.

Elbow banjo body

O/D Tube	Bolt Thread	
4	1/8	18 051 0418
5	1/8	18 051 0518
6	1/8	18 051 0618
6	1/4	18 051 0628
8	1/8	18 051 0818*
8	1/4	18 051 0828
8	3/8	18 051 0838
10	1/4	18 051 1028*
10	3/8	18 051 1038
10	1/2	18 051 1048
12	1/2	18 051 1248

*To double stack these bodies order longer bolts 20P000018, 20P000028.

Tee banjo body

O/D Tube	Bolt Thread	
6	1/8	18 071 0618
6	1/4	18 071 0628
8	1/4	18 071 0828
8	3/8	18 071 0838

* To double stack this body order longer bolt 20P000028.

Banjo bolt
Non regulating single stacking

BSP Parallel	
1/8	20A000018
1/4	20A000028
3/8	20A000038
1/2	20A000048

Supplied complete with sealing washers.

Banjo bolt
Non regulating double stacking

BSP Parallel	
1/8	20 B00 0018
1/8	20 P00 0018*
1/4	20 B00 0028
1/4	20 P00 0028*
3/8	20 B00 0038
1/2	20 B00 0048

Supplied complete with sealing washers.

Compression fittings

Metric

Ø 4 to 28 mm O/D tube

Regulating out banjo bolts
Single stacking
(screwdriver adjustable)

Flow	BSPP	
Reg-Out	G1⁄8A	20K000018
Reg-Out	G1/4A	20K000028
Reg-Out	G3⁄8 A	20K000038
Reg-Out	G1⁄2A	20K000048
Reg-In	G1⁄8A	20L000018
Reg-In	G1⁄4A	20L000028
Reg-In	G3⁄8A	20L000038
Reg-In	G1⁄2A	20L000048
Bi-Direc	G1⁄8A	20M000018
Bi-Direc	G1⁄4A	20M000028
Bi-Direc	G3⁄8A	20M000038
Bi-Direc	G1⁄2A	20M000048

Supplied complete with sealing washers.
Pressure rating on this product is 10 bar.

Hobbs straight connector

BSPP	BSPP	
1/8	1/8	36 0543 01
1/4	1/4	36 0543 02
1/4	1/8	36 0543 11
3/8	3/8	36 0543 03
3/8	1/4	36 0543 20
3/4	3/4	36 0543 06
3/4	1/2	36 0543 36
1/2	1/2	36 0543 04
1/2	3/8	36 0543 28
1	3/4	36 0543 47
1	1	36 0543 08

Hobbs coned locknut

For BSP	
1/8	36 054 001
1/4	36 054 002
3/8	36 054 003
1/2	36 054 004
3/4	36 054 006

Hobbs seal

For BSP	
1/8	34 0156 01
1/4	34 0156 02
3/8	34 0156 03
1/2	34 0156 04
3/4	34 0156 06
1	34 0156 08

Hobbs elbow adaptor

O/D Tube	BSPP	
4	1/8	36 0541 02
4	1/4	36 0541 08
5	1/8	36 0541 03
5	1/4	36 0541 09
6	1/8	36 0541 04
6	1/4	36 0541 10
6	3/8	36 0541 18
8	1/8	36 0541 05
8	1/4	36 0541 11
8	3/8	36 0541 19
8	1/2	36 0541 28
10	1/4	36 0541 12
10	3/8	36 0541 20
12	1/4	36 0541 13
12	3/8	36 0541 21
16	3/8	36 0541 22
16	1/2	36 0541 31
16	3/4	36 0541 45
22	1/2	36 0541 33
22	3/4	36 0541 47
28	1	36 0541 62

Hobbs tee adaptor

O/D Tube	BSPP	
4	1/4	36 0542 08
5	1/8	36 0542 03
6	1/8	36 0542 04
6	1/4	36 0542 10
6	3/8	36 0542 18
8	1/8	36 0542 05
8	1/4	36 0542 11
8	3/8	36 0542 19
8	1/2	36 0542 28
10	1/4	36 0542 12
10	3/8	36 0542 20
10	1/2	36 0542 29
12	1/4	36 0542 13
12	1/2	36 0542 30
16	3/8	36 0542 22
16	1/2	36 0542 31
22	1/2	36 0542 33
22	3/4	36 0542 47
28	3/4	36 0542 49

Compression fittings

Inch

Ø 3/16" to ¾" O/D tube

Tubing plug

Male O/D tube	
3/16	34 0036 03
1/4	34 0036 04
5/16	34 0036 05
3/8	34 0036 06
1/2	34 0036 07
5/8	34 0036 08
3/4	34 0036 09

Stem tailpiece adaptor

O/D Stem	Hose Bore	
3/16	3/16	34 0056 03
1/4	1/4	34 0056 04
5/16	5/16	34 0056 05
3/8	3/8	34 0056 06
1/2	1/2	34 0056 07
3/4	3/4	34 0056 09

Female tailpiece adaptor

O/D Tube	Hose Bore	
5/16	1/4	34 0322 39

Straight stem adaptor

O/D Stem	BSPT	
3/16	1/8	34 0343 08
5/16	1/4	34 0343 17
1/2	3/8	34 0343 27

Nippled stem connector

Male O/D tube	O/D Stem	
3/16	3/16	34 0013 03
1/4	1/4	34 0013 04
5/16	5/16	34 0013 05
3/8	3/8	34 0013 06
1/2	1/2	34 0013 07
5/8	5/8	34 0013 08
3/4	3/4	34 0013 09

Bulkhead adaptor

O/D Tube	External BSP thread	
3/16	1/4	34 0021 03
1/4	3/8	34 0021 04
5/16	3/8	34 0021 05
3/8	1/2	34 0021 06
1/2	3/4	34 0021 07
5/8	7/8	34 0021 08
3/4	1	34 0021 09

Locknut to be ordered separately

* This fitting has an 1/8 BSP female thread at the hexagonal end.

Bulkhead locknut

BSP Thread	
1/8	34 0223 01
1/4	34 0223 02
3/8	34 0223 03
1/2	34 0223 04
3/4	34 0223 06
7/8	34 0223 07
1	34 0223 08

Nippled connector

Male O/D tube	
3/16	34 0291 03
1/4	34 0291 04
5/16	34 0291 05
3/8	34 0291 06
1/2	34 0291 07

Reducing connector

Male O/D tube	Female O/D tube	
1/4	3/16	34 0352 31
5/16	3/16	34 0352 32
5/16	1/4	34 0352 39
3/8	3/16	34 0352 33
3/8	1/4	34 0352 40
3/8	5/16	34 0352 46
1/2	3/16	34 0352 34
1/2	1/4	34 0352 41
1/2	5/16	34 0352 47
1/2	3/8	34 0352 52
5/8	5/16	34 0352 48
5/8	3/8	34 0352 53
5/8	1/2	34 0352 57
3/4	3/8	34 0352 54
3/4	1/2	34 0352 58

Compression fittings

Inch

Ø 3/16" to ¾" O/D tube

Unequal connector

Male O/D tube	Female O/D tube	
3/16	5/16	34 0345 32
1/4	5/16	34 0345 39
5/16	3/8	34 0345 46
5/16	1/2	34 0345 47

Straight connector

O/D Tube	
3/16	34 0007 03
1/4	34 0007 04
5/16	34 0007 05
3/8	34 0007 06
1/2	34 0007 07
5/8	34 0007 08
3/4	34 0007 09

Bracketed straight connector

O/D Tube	
3/16	34 0009 03
1/4	34 0009 04
5/16	34 0009 05
3/8	34 0009 06
1/2	34 0009 07

Nippled adaptor

Male O/D tube	BSPT	
3/16	1/8	34 0350 08
1/4	1/8	34 0350 09
5/16	1/4	34 0350 17
3/8	1/4	34 0350 18
1/2	1/4	34 0350 19
5/16	3/8	34 0350 25
3/8	3/8	34 0350 26
1/2	3/8	34 0350 27
1/2	1/2	34 0350 36

Nippled adaptor

Male O/D tube	Female BSPP	
3/16	1/8	34 0351 08
1/4	1/8	34 0351 09
5/16	1/4	34 0351 17
3/8	3/8	34 0351 26
1/2	3/8	34 0351 27
1/2	1/2	34 0351 36

Straight male adaptor

O/D Tube	BSPT	
3/16	1/8	34 0346 08
3/16	1/4	34 0346 15
1/4	1/8	34 0346 09
1/4	1/4	34 0346 16
5/16	1/8	34 0346 10
5/16	1/4	34 0346 17
5/16	3/8	34 0346 25
5/16	1/2	34 0346 34
3/8	1/8	34 0346 11
3/8	1/4	34 0346 18
3/8	3/8	34 0346 26
3/8	1/2	34 0346 35
1/2	1/4	34 0346 19
1/2	3/8	34 0346 27
1/2	1/2	34 0346 36
1/2	3/4	34 0346 53
5/8	3/8	34 0346 28
5/8	1/2	34 0346 37
3/4	1/2	34 0346 38
3/4	3/4	34 0346 55

Straight male adaptor

O/D Tube	BSPP	
3/16	1/8	34 0348 08
1/4	1/8	34 0348 09
1/4	1/4	34 0348 16
5/16	1/8	34 0348 10
5/16	1/4	34 0348 17
5/16	1/2	34 0348 34
3/8	1/4	34 0348 18
3/8	3/8	34 0348 26
3/8	1/2	34 0348 35
1/2	3/8	34 0348 27
1/2	1/2	34 0348 36

Use with copper washer – see page 531 .

Straight male adaptor

O/D Tube	NPTF	
3/16	1/8	34 0347 08
3/16	1/4	34 0347 15
1/4	1/8	34 0347 09
1/4	1/4	34 0347 16
5/16	1/8	34 0347 10
5/16	1/4	34 0347 17
5/16	3/8	34 0347 25
5/16	1/2	34 0347 34
3/8	1/4	34 0347 18
3/8	3/8	34 0347 26
3/8	1/2	34 0347 35
1/2	1/4	34 0347 19
1/2	3/8	34 0347 27
1/2	1/2	34 0347 36
5/8	1/2	34 0347 37

Compression fittings

Inch

Ø 3/16" to ¾" O/D tube

Straight adaptor

O/D Tube	Female BSPP	
3/16	1/8	34 0344 08
3/16	1/4	34 0344 15
1/4	1/8	34 0344 09
1/4	1/4	34 0344 16
5/16	1/8	34 0344 10
5/16	1/4	34 0344 17
5/16	3/8	34 0344 25
5/16	1/2	34 0344 34
3/8	1/4	34 0344 18
3/8	3/8	34 0344 26
1/2	3/8	34 0344 27
1/2	1/2	34 0344 36
5/8	3/8	34 0344 28
5/8	1/2	34 0344 37
3/4	3/4	34 0344 55
3/4	1	34 0344 71

Universal stem elbow

O/D Stem	
1/4	34 0292 04
5/16	34 0292 05
3/8	34 0292 06
1/2	34 0292 07

Stem elbow connector

O/D Tube	O/D Stem	
3/16	3/16	34 0057 03
1/4	1/4	34 0057 04
5/16	5/16	34 0057 05
3/8	3/8	34 0057 06
1/2	1/2	34 0057 07
5/8	5/8	34 0057 08
3/4	3/4	34 0057 09

Elbow connector

O/D Tube	
3/16	34 0060 03
1/4	34 0060 04
5/16	34 0060 05
3/8	34 0060 06
1/2	34 0060 07
5/8	34 0060 08
3/4	34 0060 09

Bracketed elbow connector

O/D Tube	
3/16	34 0064 03
1/4	34 0064 04
5/16	34 0064 05
1/2	34 0064 07

Male elbow adaptor

O/D Tube	BSPT	
3/16	1/8	34 0330 08
3/16	1/4	34 0330 15
1/4	1/8	34 0330 09
1/4	1/4	34 0330 16
5/16	1/8	34 0330 10
5/16	1/4	34 0330 17
5/16	3/8	34 0330 25
3/8	1/4	34 0330 18
3/8	3/8	34 0330 26
1/2	1/4	34 0330 19
1/2	3/8	34 0330 27
1/2	1/2	34 0330 36
5/8	3/8	34 0330 28
5/8	1/2	34 0330 37
5/8	3/4	34 0330 54
3/4	3/4	34 0330 55

Female elbow adaptor

O/D Tube	Female BSP	
3/16	1/8	34 0328 08
3/16	1/4	34 0328 15
1/4	1/8	34 0328 09
1/4	1/4	34 0328 16
5/16	1/8	34 0328 10
5/16	1/4	34 0328 17
5/16	3/8	34 0328 25
3/8	1/4	34 0328 18
3/8	3/8	34 0328 26
1/2	1/4	34 0328 19
1/2	3/8	34 0328 27
1/2	1/2	34 0328 36
5/8	1/2	34 0328 37
3/4	3/4	34 0328 55

Male elbow adaptor

O/D Tube	NPTF	
3/16	1/8	34 0331 08
1/4	1/8	34 0331 09
3/8	1/4	34 0331 18
1/2	1/2	34 0331 36
5/8	1/2	34 0331 37

Compression fittings

Inch

Ø 3/16" to ¾" O/D tube

Universal stem tee

O/D Stem	
3/16	34 0342 03
1/4	34 0342 04
5/16	34 0342 05
3/8	34 0342 06

Stem tee connector

O/D Tube	O/D Stem	
3/16	3/16	34 0339 03
1/4	1/4	34 0339 04
5/16	5/16	34 0339 05
3/8	3/8	34 0339 06
1/2	1/2	34 0339 07

90° Stem tee connector

O/D Tube	O/D Stem	
3/16	3/16	34 0340 03
1/4	1/4	34 0340 04
5/16	5/16	34 0340 05
3/8	3/8	34 0340 06
1/2	1/2	34 0340 07

Side stem tee connector

O/D Tube	O/D Stem	
3/16	3/16	34 0341 03
1/4	1/4	34 0341 04
5/16	5/16	34 0341 05
3/8	3/8	34 0341 06
1/2	1/2	34 0341 07
5/8	5/8	34 0341 08

Tee connector

O/D Tube	O/D Tube	
3/16	3/16	34 0290 03
1/4	1/4	34 0290 04
5/16	5/16	34 0290 05
3/8	3/8	34 0290 06
1/2	1/2	34 0290 07
5/8	5/8	34 0290 08
3/4	3/4	34 0290 09
1/2	5/16	34 0290 47*

* centre leg 5/16 O/D tube.

Bracketed tee connector

O/D Tube		
3/16		34 0293 03
1/4		34 0293 04
5/16		34 0293 05
3/8		34 0293 06
1/2		34 0293 07

Female tee adaptor

O/D Tube	Female BSP	
1/4	1/8	34 0335 09
5/16	1/4	34 0335 17
3/8	1/4	34 0335 18
1/2	3/8	34 0335 27

Centre leg = BSP

Side tee adaptor

O/D Tube	Female BSP	
3/16	1/8	34 0337 08
5/16	1/4	34 0337 17
1/2	3/8	34 0337 27

Male tee adaptor

O/D Tube	BSPT	
3/16	1/8	34 0334 08
1/4	1/8	34 0334 09
5/16	1/4	34 0334 17
3/8	1/4	34 0334 18
1/2	3/8	34 0334 27
1/2	1/2	34 0334 36

Male side tee adaptor

O/D Tube	BSPT	
3/16	1/8	34 0336 08
5/16	1/4	34 0336 17
3/8	1/4	34 0336 18
1/2	3/8	34 0336 27

Compression fittings

Inch

Ø 3/16" to ¾" O/D tube

'Y' Connector

O/D Tube	
3/16	34 0127 03
1/4	34 0127 04
5/16	34 0127 05
3/8	34 0127 06
1/2	34 0127 07

Double sided manifold

O/D Tube Outlet	O/D Tube inlet	
5/16	3/16	34 0404 32
1/2	1/4	34 0404 41
1/2	5/16	34 0404 47
5/8	3/8	34 0404 53

4 Outlets. Others available

Bracketed 'Y' connector

O/D Tube	
5/16	34 0333 05
1/2	34 0333 07

Tubing nut

O/D Tube	
3/16	34 0279 03
1/4	34 0279 04
5/16	34 0279 05
3/8	34 0279 06
1/2	34 0279 07
5/8	34 0279 08
3/4	34 0279 09

Four way connector

O/D Tube	
1/4	34 0131 04
5/16	34 0131 05
3/8	34 0131 06
1/2	34 0131 07

Universal tubing sleeve
Metal and nylon tube

O/D Tube	
3/16	34 0278 03
1/4	34 0278 04
5/16	34 0278 05
3/8	34 0278 06
1/2	34 0278 07
5/8	34 0278 08
3/4	34 0278 09

Four way stem connector

O/D Tube	O/D Stem	
5/16	5/16	34 0134 05
1/2	1/2	34 0134 07

Tubing sleeve
Metal tube only

O/D Tube	
3/16	34 0003 03
1/4	34 0003 04
5/16	34 0003 05
3/8	34 0003 06
1/2	34 0003 07

Connector block

Outlets	O/D Tube	
4	3/16	34 0017 03
6	5/16	34 0019 05

Hobbs coned locknut

BSP	
1/8	34 0155 01
1/4	34 0155 02
3/8	34 0155 03
1/2	34 0155 04
3/4	34 0155 06
1	34 0155 08

Compression fittings

Inch

Ø 3/16" to ¾" O/D tube

Hobbs seal

BSP	
1/8	34 0156 01
1/4	34 0156 02
3/8	34 0156 03
1/2	34 0156 04
3/4	34 0156 06
1	34 0156 08

Hobbs elbow adaptor

O/D Tube	BSP Parallel	
3/16	1/8	34 0338 08
3/16	1/4	34 0338 15
1/4	1/8	34 0338 09
1/4	1/4	34 0338 16
5/16	1/8	34 0338 10
5/16	1/4	34 0338 17
5/16	3/8	34 0338 25
3/8	1/4	34 0338 18
3/8	3/8	34 0338 26
1/2	1/4	34 0338 19
1/2	3/8	34 0338 27
1/2	1/2	34 0338 36
5/8	1/2	34 0338 37
5/8	3/4	34 0338 54
3/4	3/4	34 0338 55
3/4	1	34 0338 71

Single sided manifold

O/D Tube Outlet	O/D Tube inlet	Outlets	
3/16	5/16	6	34 0306 32
1/4	1/2	4	34 0304 41
1/4	1/2	6	34 0306 41
1/2	3/4	4	34 0304 58

Bonded washer

BSP	
1/8	48 0215 01
1/4	48 0215 02
3/8	48 0215 03
1/2	48 0215 04
5/8	48 0215 05
3/4	48 0215 06

Folded copper washer

BSP Thread	Metric Thread	Inch Thread	
1/8	-	3/8 x 24TPI	48 0213 01
1/4	-	-	48 0213 02
3/8	M16	-	48 0213 03
1/2	-	-	48 0213 04
5/8	-	-	48 0213 05
3/4	-	-	48 0213 06
7/8	M30	-	48 0213 07
1	M33	-	48 0213 08
1¼	-	-	48 0213 09
-	-	7/16 x 24TPI	48 0213 27
-	M14	9/16 x 24TPI	48 0213 29
-	-	3/4 x 24TPI	48 0213 30
-	M8	-	48 0213 41
-	M10	-	48 0213 42
-	M12	-	48 0213 43

Compression fittings
External nut

43 Series

Ø 4 to 22 mm O/D tube

Rugged and durable

Ideal for most industrial applications

Wide range of types and sizes

Thread sizes from 1/8" to 1" BSP

Supplied assembled with tubing sleeves, nuts and appropriate seals

Technical data

Medium:

These fittings are designed for use with compressed air, oils, water and other fluids used in pneumatic and low pressure hydraulic applications.

Consult our Technical Service for details.

Operating pressure:

The maximum working pressure is limited by the type of tubing being used.

Ambient temperature:

The maximum working temperature is limited by the type of tubing being used.

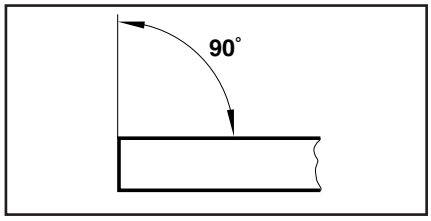
Materials

Brass to OT 58 UNI 5705 for all items, except plastic washers.

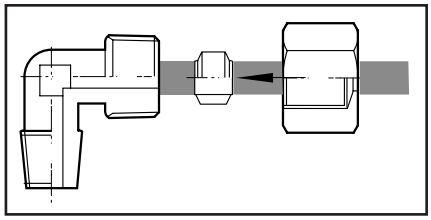
Plastic washers: nylon

All brass items have a nickel plated finish unless otherwise stated.

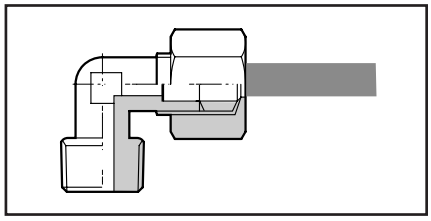
Method of assembly



1. Ensure that the tube is cut square and is free from fraze.



2. For larger sizes of metal tubes it is beneficial to lightly oil the tubing nut and sleeve before tightening the joint. Place the tubing nut and sleeve on the tube and push the tube into the fitting until it bottoms on the tube stop.



3. Holding the tube firmly in contact with the tube stop screw the tubing nut down finger tight and then tighten a further 11/4-11/2 full turns. Slacken off the assembly and ensure that the groove made by sleeve even. Release nut and re-tighten nut an extra quarter turn.

Note

When fitting to curved tubes ensure that section entering the fitting is straight for a minimum of twice the nut height. The method of preparation and assembly described will ensure leak-proof joints over a wide pressure range, depending upon the size and type of tubing being used. Failure to follow this guide, or over-tightening at any joint, may lead to damage of the fittings or an unsatisfactory seal.

Tube sizes

4, 6, 8, 10, 12, 14, 15, 16, 18, 22 mm O/D

Threads used on products conform to:

ISO 7.1 Taper BSP

ISO 228 Parallel BSP

ISO R/226 metric

Tube types

Nylon 11 or 12 and other plasticised or unplasticised tubing and other soft plastic tubing.

Copper, annealed and half-hard.

Double wall brazed steel tube (Bundy)

Compression fittings
External nut
43 Series
Ø 4 to 22 mm O/D tube

Tubing plug

O/D Tube	
4	43 004 0400
6	43 004 0600
8	43 004 0800
10	43 004 1000
12	43 004 1200
14	43 004 1400
15	43 004 1500
16	43 004 1600
18	43 004 1800
22	43 004 2200

Natural brass finish.

Stem tailpiece connector

O/D Tube	Hose Bore	
6	7	43 019 0607
8	7	43 019 0807
8	10	43 019 0810
10	7	43 019 1007
10	10	43 019 1010
12	10	43 019 1210
12	13	43 019 1213
14	13	43 019 1413

Natural brass finish.

Tube support

O/D I/D tube	
4/2,7	43 033 0403
6/4,0	43 033 0604
8/6,0	43 033 0806
10/8,0	43 033 1008
12/9,0	43 033 1209
12/10,0	43 033 1210
14/12,0	43 033 1412
15/12,5	43 033 1512
16/13,0	43 033 1613
18/15,0	43 033 1815
18/16,0	43 033 1816
22/18,0	43 033 2218

Natural brass finish.
For use on plastic tubing.

Straight stem adaptor

O/D Stem	BSPP Thread	
6	G1/8A	43 215 0618
6	G1/4A	43 215 0628
8	G1/8A	43 215 0818
8	G1/4A	43 215 0828
8	G3/8A	43 215 0838
10	G1/4A	43 215 1028
10	G3/8A	43 215 1038
14	G3/8A	43 215 1438
14	G1/2A	43 215 1448

Reducing connector

O/D Tube	O/D Tube	
6	4	43 028 0604
8	6	43 028 0806
10	8	43 028 1008
12	10	43 028 1210
14	12	43 028 1412

Natural brass finish for sleeve and reducer.

Bulkhead connector

O/D Tube	
4	43 029 0400
6	43 029 0600
8	43 029 0800
10	43 029 1000
12	43 029 1200
14	43 029 1400

Minimum bulkhead thickness 3,0 mm

Straight connector

O/D Tube	
4	43 020 0400
6	43 020 0600
8	43 020 0800
10	43 020 1000
12	43 020 1200
14	43 020 1400
15	43 020 1500
16	43 020 1600
18	43 020 1800
22	43 020 2200

Straight male adaptor

O/D Stem	BSPP Thread	
4	1/8	43 225 0418
6	1/8	43 225 0618
6	1/4	43 225 0628
8	1/8	43 225 0818
8	1/4	43 225 0828
8	3/8	43 225 0838
10	1/4	43 225 1028
10	3/8	43 225 1038
14	3/8	43 225 1438
14	1/2	43 225 1448
22	3/4	43 225 2268
22	1	43 225 2288

Compression fittings
External nut
43 Series
Ø 4 to 22 mm O/D tube

Straight male adaptor

O/D Tube	BSPT Thread	
4	R1/8	43 125 0418
4	R1/4	43 125 0428
6	R1/8	43 125 0618
6	R1/4	43 125 0628
6	R3/8	43 125 0638
8	R1/8	43 125 0818
8	R1/4	43 125 0828
8	R3/8	43 125 0838
10	R1/4	43 125 1028
10	R3/8	43 125 1038
10	R1/2	43 125 1048
12	R1/4	43 125 1228
12	R3/8	43 125 1238
12	R1/2	43 125 1248
14	R3/8	43 125 1438
14	R1/2	43 125 1448
15	R1/2	43 125 1548
16	R1/2	43 125 1648
16	R3/4	43 125 1668
18	R1/2	43 125 1848
18	R3/4	43 125 1868
22	R1/2	43 125 2248
22	R3/4	43 125 2268

Straight female adaptor

O/D Tube	BSPP Thread	
4	R1/8	43 226 0418
6	R1/8	43 226 0618
6	R1/4	43 226 0628
8	R1/8	43 226 0818
8	R1/4	43 226 0828
8	R3/8	43 226 0838
10	R1/4	43 226 1028
10	R3/8	43 226 1038
10	R1/2	43 226 1048
12	R1/4	43 226 1228
12	R3/8	43 226 1238
12	R1/2	43 226 1248
14	R3/8	43 226 1438
14	R1/2	43 226 1448
15	R1/2	43 226 1548
16	R1/2	43 226 1648
16	R3/4	43 226 1668
18	R1/2	43 226 1848
18	R3/4	43 226 1868
22	R3/4	43 226 2268

Elbow connector

O/D Tube	
4	43 040 0400
6	43 040 0600
8	43 040 0800
10	43 040 1000
12	43 040 1200
14	43 040 1400
15	43 040 1500
16	43 040 1600
18	43 040 1800
22	43 040 2200

Male elbow adaptor

O/D Tube	BSPT Thread	
4	R1/8	43 145 0418
6	R1/8	43 145 0618
6	R1/4	43 145 0628
8	R1/8	43 145 0818
8	R1/4	43 145 0828
8	R3/8	43 145 0838
10	R1/4	43 145 1028
10	R3/8	43 145 1038
10	R1/2	43 145 1048
12	R1/4	43 145 1228
12	R3/8	43 145 1238
12	R1/2	43 145 1248
14	R3/8	43 145 1438
14	R1/2	43 145 1448
15	R1/2	43 145 1548
16	R1/2	43 145 1648
18	R1/2	43 145 1848
18	R3/4	43 145 1868
22	R3/4	43 145 2268

Tee connector

O/D Tube	
4	43 060 0400
6	43 060 0600
8	43 060 0800
10	43 060 1000
12	43 060 1200
14	43 060 1400
15	43 060 1500
16	43 060 1600
18	43 060 1800
22	43 060 2200

Male tee adaptor

O/D Tube	BSPT Thread	
4	1/8	43 165 0418
6	R1/8	43 165 0618
6	R1/4	43 165 0628
8	R1/8	43 165 0818
8	R1/4	43 165 0828
8	R3/8	43 165 0838
10	R1/4	43 165 1028
10	R3/8	43 165 1038
10	R1/2	43 165 1048
12	R1/4	43 165 1228
12	R3/8	43 165 1238
12	R1/2	43 165 1248
14	R3/8	43 165 1438
14	R1/2	43 165 1448
15	R1/2	43 165 1548
16	R1/2	43 165 1648
18	R1/2	43 165 1848
18	R3/4	43 165 1868
22	R3/4	43 165 2268

Male side tee adaptor

O/D Tube	BSPT Thread	
4	R1/8	431750418
6	R1/8	431750618
6	R1/4	431750628
8	R1/8	431750818
8	R1/4	431750828
8	R3/8	431750838

Compression fittings
External nut
43 Series
Ø 4 to 22 mm O/D tube

Four way connector

O/D Tube	
4	43 090 0400
6	43 090 0600
8	43 090 0800
10	43 090 1000
12	43 090 1200
14	43 090 1400

Elbow banjo assembly

O/D Tube	BSPP Thread	
4	G1/8A	43 A51 0418
6	G1/8A	43 A51 0618
6	G1/4A	43 A51 0628
8	G1/8A	43 A51 0818
8	G1/4A	43 A51 0828
8	G3/8A	43 A51 0838
10	G1/4A	43 A51 1028
10	G3/8A	43 A51 1038
14	G1/4A	43 A51 1428
14	G3/8A	43 A51 1438
14	G1/2A	43 A51 1448
22	G3/4A	43 A51 2268

Single banjo body

O/D Tube	BSPP Thread	
4	G1/8	43 051 0418
6	G1/8	43 051 0618
6	G1/4	43 051 0628
8	G1/8	43 051 0818
8	G1/4	43 051 0828
8	G3/8	43 051 0838
10	G1/4	43 051 1028
10	G3/8	43 051 1038
14	G1/4	43 051 1428#
14	G3/8	43 051 1438#
14	G1/2	43 051 1448#
22	G3/4	43 051 2268#

To be used with bolts marked *

Banjo bolt

BSPP Thread	
G1/8A	43 A00 0018
G1/4A	43 A00 0028
G3/8A	43 A00 0038
G1/4A	43 A00 0L28*
G3/8A	43 A00 0L38*
G1/2A	43 A00 0L48*
G3/4A	43 A00 0L68*

* To be used with bodies marked #

Universal tubing sleeve

O/D Tube	
4	43 002 0400
6	43 002 0600
8	43 002 0800
10	43 002 1000
12	43 002 1200
14	43 002 1400
15	43 002 1500
16	43 002 1600
18	43 002 1800
22	43 002 2200

Natural brass finish.

Conical tubing sleeve

O/D Tube	
4	43 003 0400
6	43 003 0600
8	43 003 0800
10	43 003 1000
12	43 003 1200
14	43 003 1400
15	43 003 1500
16	43 003 1600
18	43 003 1800
22	43 003 2200

Natural brass finish.

Tubing nut

O/D Tube	Internal Thread	
4	M8 x 1,0	43 001 0400
6	M10 x 1,0	43 001 0600
8	M12 x 1,0	43 001 0800
10	M16 x 1,5	43 001 1000
12	M18 x 1,5	43 001 1200
14	M20 x 1,5	43 001 1400
15	M20 x 1,5	43 001 1500
16	M22 x 1,5	43 001 1600
18	M24 x 1,5	43 001 1800
22	M30 x 1,5	43 001 2200

Conical tubing nut

O/D Tube	Internal Thread	
4	M8 x 1,0	43 034 0400
6	M10 x 1,0	43 034 0600
8	M12 x 1,0	43 034 0800
10	M16 x 1,5	43 034 1000
12	M18 x 1,5	43 034 1200
14	M20 x 1,5	43 034 1400
15	M20 x 1,5	43 034 1500
16	M22 x 1,5	43 034 1600
18	M24 x 1,5	43 034 1800
22	M30 x 1,5	43 034 2200

Note: This nut has an identification diameter on the outboard end.

Push-on tube fittings

24 Series

Ø 4/2,5 mm to 15/12,5 mm OD/ID tube

Ideal for use on vacuum systems.

For simple and quick connection of pneumatic circuits.

Neat, compact design.

Precision machined for complete reliability.

Corrosion resistant.

Unique barb shape ensures good grip on tube even if fitting is tightened by hand.

Ideal for use in confined spaces where tight bend radii are required.

Tubing nuts included.

Technical data

Medium:

Compressed air.

Operating pressure:

Vacuum: -15 bar

(dependant on tube operating specification)

Ambient temperature:

-18°C to +70°C.

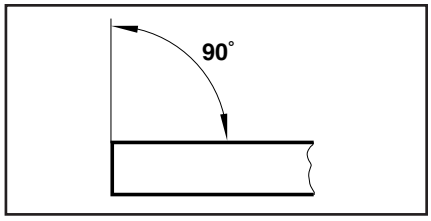
Materials

Nut and body: Nickel plated brass to OT58 UNI 5705

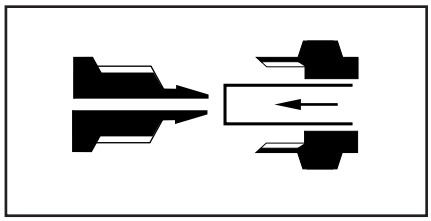
'O' ring: NBR 70

Sealing washer: Polyamide 66

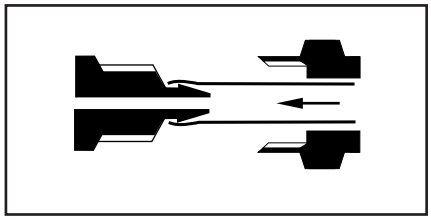
Method of assembly



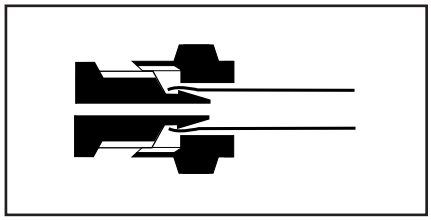
1. Ensure that the end of the tube is cut square and is free from burrs.



2. Place the knurled nut over the tube.



3. Push the tube over the barbed end of the fitting up to the tube stop.



4. Screw the knurled nut onto the fitting until finger tight. The hexagon on the nut is to aid release.

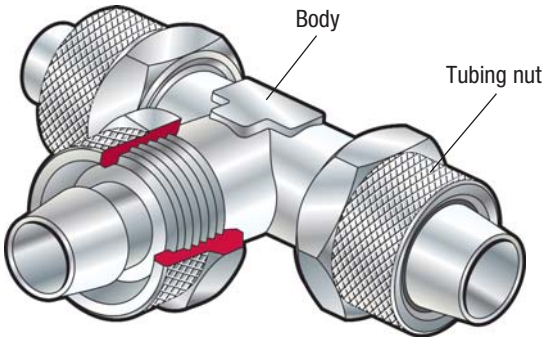
Tube sizes

4/2,5 mm, 5/3 mm, 6/4 mm, 8/6 mm, 10/8 mm, 12/10 mm, 15/12,5 mm OD/ID

Tube types

Extra flexible tubing is available (see page 546 for details).

Nylon 11 & 12, polyurethane.



Push-on tube fittings

24 Series

Ø 4/2,5 mm to 15/12,5 mm OD/ID tube

Straight male adaptor

O/D I/D tube	Male BSPT	
4/2,5	R1/8	241250418
5/3	R1/8	241250518
6/4	R1/8	241250618
6/4	R1/4	241250628
6/4	R3/8	241250638
8/6	R1/8	241250818
8/6	R1/4	241250828
8/6	R3/8	241250838
8/6	R1/2	241250848
10/8	R1/8	241251018
10/8	R1/4	241251028
10/8	R3/8	241251038
10/8	R1/2	241251048
12/10	R3/8	241251238
12/10	R1/2	241251248
15/12,5	R1/2	241251548

Straight male adaptor

O/D I/D tube	Male BSPP	
4/2,5	G1/8A	242250418
5/3	G1/8A	242250518
6/4	G1/8A	242250618
6/4	G1/4A	242250628
6/4	G3/8A	242250638
6/4	G1/2A	242250648
8/6	G1/8A	242250818
8/6	G1/4A	242250828
8/6	G3/8A	242250838
8/6	G1/2A	242250848
10/8	G1/8A	242251018
10/8	G1/4A	242251028
10/8	G3/8A	242251038
10/8	G1/2A	242251048
12/10	G3/8A	242251238
12/10	G1/2A	242251248
15/12,5	G1/2A	242251548

Supplied complete with sealing washer.

Straight male adaptor

O/D I/D tube	Male BSPP	
4/2,5	M5	242250405
5/3	M5	242250505
6/4	M5	242250605

Supplied complete with sealing washer.

Straight female adaptor

O/D I/D tube	Female BSPP	
6/4	G1/8	242260618
6/4	G1/4	242260628
6/4	G3/8	242260638
8/6	G1/8	242260818
8/6	G1/4	242260828
8/6	G3/8	242260838
8/6	G1/2	242260848
10/8	G1/4	242261028
10/8	G3/8	242261038
10/8	G1/2	242261048

Straight connector

O/D I/D tube	O/D I/D tube	
4/2,5	-	240200400
5/3	-	240200500
6/4	-	240200600
6/4	5/3	240200605
8/6	-	240200800
8/6	6/4	240200806
10/8	-	240201000
12/10	-	240201200
15/12,5	-	240201500

Bulkhead connector

O/D I/D tube	
4/2,5	240290400
5/3	240290500
6/4	240290600
8/6	240290800
8/6 x 6/4	240290806
10/8	240291000
12/10	240291200
15/12,5	240291500

Elbow male adaptor

O/D I/D tube	Male BSPT	
4/2,5	1/8	241450418
5/3	1/8	241450518
6/4	1/8	241450618
6/4	1/4	241450628
6/4	3/8	241450638
8/6	1/8	241450818
8/6	1/4	241450828
8/6	3/8	241450838
8/6	1/2	241450848
10/8	1/8	241451018
10/8	1/4	241451028
10/8	3/8	241451038
10/8	1/2	241451048
12/10	3/8	241451238
12/10	1/2	241451248
15/12,5	1/2	241451548

Swivel elbow adaptor

O/D I/D tube	Male BSPT	
6/4	1/8	242470618
6/4	1/4	242470628
8/6	1/8	242470818
8/6	1/4	242470828
10/8	1/4	242471028

Supplied complete with sealing washer.

Push-on tube fittings

24 Series

Ø 4/2,5 mm to 15/12,5 mm OD/ID tube

Elbow female adaptor

O/D I/D tube	Female BSPP	
5/3	G1/8	242460518
6/4	G1/8	242460618
6/4	G1/4	242460628
8/6	G1/8	242460818
8/6	G1/4	242460828
10/8	G1/4	242461028
10/8	G3/8	242461038

Elbow connector

O/D I/D tube	
4/2,5	240400400
5/3	240400500
6/4	240400600
8/6	240400800
8/6-6/4	240400806
10/8	240401000
12/10	240401200
15/12,5	240401500

Tee male adaptor

O/D I/D tube	Male BSPT	
4/2,5	1/8	241650418
5/3	1/8	241650518
6/4	1/8	241650618
6/4	1/4	241650628
8/6	1/8	241650818
8/6	1/4	241650828
10/8	1/8	241651018
10/8	1/4	241651028
10/8	3/8	241651038
12/10	3/8	241651238
15/12,5	1/2	241651548

Side tee male adaptor

O/D I/D tube	Male BSPT	
5/3	R1/8	241750518
6/4	R1/8	241750618
6/4	R1/4	241750628
8/6	R1/8	241750818
8/6	R1/4	241750828
10/8	R1/8	241751018
10/8	R1/4	241751028
10/8	R3/8	241751038
12/10	R3/8	241751238

Tee connector

O/D I/D tube	
4/2,5	240600400
5/3	240600500
6/4	240600600
8/6	240600800
8/6 - 6/4	240600806
10/8	240601000
10/8 - 6/4	240601006
10/8 - 8/6	240601008
12/10	240601200
15/12,5	240601500

Equal cross connector

O/D I/D tube	
6/4	240900600
8/6	240900800
10/8	240901000
12/10	240901200

Tubing nut

O/D I/D tube	
4/2,5	240010400
5/3	240010500
6/4	240010600
8/6	240010800
10/8	240011000
12/10	240011200

Plug

O/D I/D tube	
4/2,5	240050400
6/4	240050600
8/6	240050800

Push-on tube fittings

24 Series

Ø 4/2,5 mm to 15/12,5 mm OD/ID tube

Elbow banjo assembly

O/D I/D tube	Bolt Thread	
4/2,5	M5	24A510405
5/3	M5	24A510505
6/4	M5	24A510605
4/2,5	G1/8A	24A510418
5/3	G1/8A	24A510518
6/4	G1/8A	24A510618
8/6	G1/8A	24A510818
6/4	G1/4A	24A510628
8/6	G1/4A	24A510828
10/8	G1/4A	24A511028
6/4	G3/8A	24A510638
8/6	G3/8A	24A510838
12/10	G3/8A	24A511238
12/10	G1/2A	24A511248

Supplied complete with sealing washer.

Tee banjo assembly

O/D I/D tube	Bolt Thread	
4/2,5	M5	24A710405
4/2,5	G1/8A	24A710418
5/3	M5	24A710505
5/3	G1/8A	24A710518
6/4	M5	24A710605
6/4	G1/8A	24A710618
6/4	G1/4	24A710628
6/4	G3/8A	24A710638
8/6	G1/8A	24A710818
8/6	G1/4A	24A710828
8/6	G3/8A	24A710838
8/6	G1/2A	24A710848
12/10	G3/8A	24A711238
12/10	G1/2A	24A711248

Supplied complete with sealing washer.

Double elbow banjo assembly

O/D I/D tube	Bolt Thread	
4/2,5	G1/8A	24B510418
6/4	G1/8A	24B510618
6/4	G1/4A	24B510628
8/6	G1/4A	24B510828
10/8	G1/4A	24B511028
10/8	G1/2A	24B511048
12/10	G3/8A	24B511238

Double tee banjo assembly

O/D I/D tube	Bolt Thread	
4/2,5	G1/8A	24B710418
6/4	G1/4A	24B710628
8/6	G1/4A	24B710828
10/8	G1/4A	24B711028

Banjo flow regulator Regulating out

O/D I/D tube	Bolt Thread	
4/2,5	M5	24K510405
4/2,5	1/8	24K510418
6/4	M5	24K510605
6/4	1/8	24K510618
6/4	1/4	24K510628
8/6	1/8	24K510818
8/6	1/4	24K510828
10/8	1/4	24K511028

Triple elbow banjo assembly

O/D I/D tube	Bolt Thread	
4/2,5	1/8	24C510418
6/4	1/4	24C510628
8/6	1/4	24C510828
10/8	1/4	24C511028

Triple tee banjo

O/D I/D tube	Bolt Thread	
4/2,5	1/8	24C710418
6/4	1/4	24C710628
8/6	1/4	24C710828
10/8	1/4	24C711028

Banjo flow regulator Regulating in

O/D I/D tube	Bolt Thread	
4/2,5	M5	24L510405
4/2,5	1/8	24L510418
5/3	1/8	24L510518
6/4	1/8	24L510618
8/6	1/8	24L510818
6/4	1/4	24L510628
8/6	1/4	24L510828

Banjo flow regulator Bi-directional

O/D I/D tube	Bolt Thread	
4/2,5	M5	24M510405
5/3	1/8	24M510518
6/4	1/8	24M510618
6/4	1/4	24M510628
8/6	1/4	24M510828

BSP and hose fittings

M3, M5, ⅛" to 1½" BSP

Bright nickel plated.

Corrosion resistant.

Compact design.

Washers included where necessary.

Thread sealant (optional extra)

Technical data

Medium:

Compressed air or any fluids compatible with the materials listed opposite.

Operating pressure:

Generally limited by tubing specification except where plastic sealing washers are used (banjo bolts, M3 & M5 units). In these cases pressure is limited to 18 bar. Suitable for vacuum applications. flow regulating banjos are limited to 1 to 10 bar operating range.

Ambient temperature:

Generally limited by tubing specification except where plastic sealing washers are used (banjo bolts, M3 & M5 units). In these cases temperature is limited to +70°C.

Materials

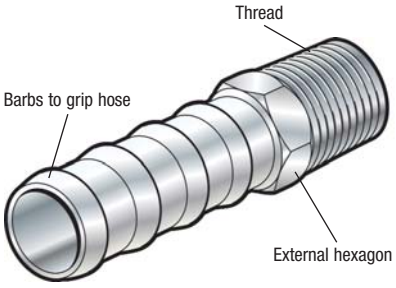
Bar parts: brass to BS 2874: 1986 (CZ 121), bright nickel plated

Stamped parts: brass to BS 2872: 1969 (CZ 122), bright nickel plated

Sealing washers: copper (Delrin for M5 items)

Thread sizes

M3, M5, 1/8, 1/4, 3/8, 1/2, 3/4, 1, 1¼, 1½ BSP threads



BSP and hose fittings

M3, M5, ⅛" to 1½" BSP

BSP connector

Reducing Male BSPP	Female BSPP	
G1/8A	M5 x 0,8	160231805
G1/4A	M5 x 0,8	160232805
G1/4A	G1/8A	160232818
G3/8A	G1/8A	160233818
G3/8A	G1/4A	160233828
G1/2A	G1/8A	160234818
G1/2A	G1/4A	160234828
G1/2A	G3/8A	160234838
G3/4A	G1/4A	160236828
G3/4A	G3/8A	160236838
G3/4A	G1/2A	160236848
Expanding Male BSPP	**Female BSPP**	
M5 x 0,8	1/8	160230518
1/8	1/4	160231828
1/8	3/8	160231838
1/4	3/8	160232838
1/4	1/2	160232848
1/4	3/4	160232868
3/8	1/2	160233848
3/8	3/4	160233868
1/2	3/4	160234868

Supplied with sealing washer.

BSP connector

Reducing Male BSPT	Female BSPP	
R1/8	G1/8	150231818
R1/4	G1/8	150232818
R1/4	G1/4	150232828
R3/8	G1/8	150233818
R3/8	G1/4	150233828
R3/8	G3/8	150233838
R1/2	G1/8	150234818
R1/2	G1/4	150234828
R1/2	G3/8	150234838
R1/2	G1/2	150234848
R3/4	G1/4	150236828
R3/4	G3/8	150236838
R3/4	G1/2	150236848
R1	G3/8	150238838
R1	G1/2	150238848
R1	G3/4	150238868
Expanding Male BSPT	**Female BSPP**	
1/8	1/4	150231828
1/8	3/8	150231838
1/8	1/2	150231848
1/4	3/8	150232838
1/4	1/2	150232848
1/4	3/4	150232868
3/8	1/2	150233848
3/8	3/4	150233868
1/2	3/4	150234868
3/4	1	150236888

Bulkhead connector

Female	Male	
M5 x 0,8	M10 x 1,0	160290005
G1/8	M16 x 1,5	160290018
G1/4	M20 x 1,5	160290028
G3/8	M26 x 1,5	160290038
G1/2	M28 x 1,5	160290048
G3/4	M33 x 1,5	160290068
G1	M42 x 1,5	160290088
G1¼	M48 x 1,5	1602900A8

Supplied with locknut.

Sleeve adaptor

BSPP	BSPP	
M5 x 0,8	M5 x 0,8	160220505
G1/8	M5 x 0,8	160221805
G1/8	G1/8	160221818
G1/4	G1/8	160222818
G1/4	G1/4	160222828
G3/8	G1/8	160223818
G3/8	G1/4	160223828
G3/8	G3/8	160223838
G1/2	G1/8	160224818
G1/2	G1/4	160224828
G1/2	G3/8	160224838
G1/2	G1/2	160224848
G3/4	G1/2	160226848
G3/4	G3/4	160226868
G1	G3/4	160228868
G1	G1	160228888

Adaptor

Female NPTF	Male BSPT	
R1/8	R1/8	154231818
R1/4	R1/4	154232828
R3/8	R3/8	154233838
R1/2	R1/2	154234848
R3/4	R3/4	154236868

Female BSPP	Male NPTF	
R1/4	R1/4	172232828
R3/8	R3/8	172233838
R1/2	R1/2	172234848

Nipple adaptor

BSPP	BSPP	
M5 x 0,8	M5 x 0,8	160200505
1/8	M5 x 0,8	160201805
1/8	1/8	160201818
1/4	1/8	160202818
1/4	1/4	160202828
3/8	1/4	160203828
3/8	3/8	160203838
1/2	1/4	160204828
1/2	3/8	160204838
1/2	1/2	160204848
3/4	1/2	160206848
3/4	3/4	160206868
1	1/2	160208848
1	3/4	160208868
1	1	160208888

Supplied with sealing washers.

BSP and hose fittings

M3, M5, ⅛" to 1½" BSP

Nipple adaptor

BSPT	BSPT	
R1/8	R1/8	150201818
R1/4	R1/8	150202818
R1/4	R1/4	150202828
R3/8	R1/8	150203818
R3/8	R1/4	150203828
R3/8	R3/8	150203838
R1/2	R1/8	150204818
R1/2	R1/4	150204828
R1/2	R3/8	150204838
R1/2	R1/2	150204848
R3/4	R1/4	150206828
R3/4	R3/8	150206838
R3/4	R1/2	150206848
R3/4	R3/4	150206868
R1	R3/8	150208838
R1	R1/2	150208848
R1	R3/4	150208868
R1	R1	150208888

Hexagon nipple

Male BSPT	Male NPTF	
R1/8	1/8	154201818
R1/4	1/4	154202828
R3/8	3/8	154203838
R1/2	1/2	154204848
R3/4	3/4	154206868

Adaptor fittings – allow connection between components and system using BSP or NPT threads.

Plug

BSPT	
R1/8	150050018
R1/4	150050028
R3/8	150050038
R1/2	150050048
R3/4	150050068
R1	150050088

Plug

BSPP	
M5	160050005
G1/8A	160050018
G1/4A	160050028
G3/8A	160050038
G1/2A	160050048
G3/4A	160050068
G1A	160050088

Supplied with sealing washer.

Hose adaptor

Hose Bore	BSPT	
4	R1/8	291170418
6	R1/8	291170618
6	R1/4	291170628
6	R3/8	291170638
7	R1/8	291170718
7	R1/4	291170728
7	R3/8	291170738
8	R1/4	291170828
8	R3/8	291170838
9	R1/8	291170918
9	R1/4	291170928
9	R3/8	291170938
9	R1/2	291170948
10	R1/8	291171018
10	R1/4	291171028
10	R3/8	291171038
12	R3/8	291171238
13	R1/4	291171328
13	R3/8	291171338
13	R1/2	291171348
13	R3/4	291171368
16	R3/8	291171638
16	R1/2	291171648
16	R3/4	291171668
19	R3/8	291171938
19	R1/2	291171948
19	R3/4	291171968
25	R3/4	291172568
25	R1	291172588
32	R1	291173288

Swivel hose adaptor

Hose Bore	Female BSPP	
1/4	1/8	302180418
1/4	1/4	302180428
1/4	3/8	302180438
3/8	1/4	302180628
3/8	3/8	302180638
3/8	1/2	302180648
1/2	1/2	302180748
1/2	3/4	302180768
3/4	3/4	302180968

Hose connector

Hose Bore	
3/16	300140303
1/4	300140404
5/16	300140505
3/8	300140606
1/2	300140707
5/8	300140808
3/4	300140909
1	300141010

BSP and hose fittings

M3, M5, ⅛" to 1½" BSP

Hose adaptor

Hose Bore	BSPT	
3⁄16	R1⁄8	301170318
3⁄16	R1⁄4	301170328
1⁄4	R1⁄8	301170418
1⁄4	R1⁄4	301170428
1⁄4	R3⁄8	301170438
1⁄4	R1⁄2	301170448
5⁄16	R1⁄8	301170518
8	R1⁄4	291170828
3⁄8	R1⁄8	301170618
3⁄8	R1⁄4	301170628
3⁄8	R3⁄8	301170638
3⁄8	R1⁄2	301170648
1⁄2	R1⁄4	301170728
1⁄2	R3⁄8	301170738
1⁄2	R1⁄2	301170748
1⁄2	R3⁄4	301170768
16	R1⁄2	291171648
16	R3⁄4	291171668
19	R1⁄2	291171948
19	R3⁄4	291171968
3⁄4	R1	301170988
1	R1	301171088
1¼	R1¼	3011711A8
1½	R1½	3011712B8

Hose adaptor

Hose Bore	BSPP	
2,5	M3	292170203
3	M5 x 0,8	292170305
3	G1⁄8A	292170318
4	G1⁄8A	292170418
4	G1⁄4A	292170428
5	G1⁄8A	292170518
6	G1⁄8A	292170618
6	G1⁄4A	292170628
6	G3⁄8A	292170638
9	G1⁄8A	292170918
9	G1⁄4A	292170928
9	G3⁄8A	292170938
9	G1⁄2A	292170948
13	G1⁄4A	292171328
13	G3⁄8A	292171338
13	G1⁄2A	292171348
13	G3⁄4A	292171368
19	G3⁄4A	292171968

Supplied with sealing washer.

Flat union

Male BSPT	
R1/8	150331818
R1/4	150332828
R3/8	150333838
R1/2	150334848
R3/4	150336868
R1	150338888

Tee connector

Female BSPP	
1⁄8	160620018
1⁄4	160620028
3⁄8	160620038
1⁄2	160620048
3⁄4	160620068

Tee

Male BSPT	Female BSPP	
1⁄8	1⁄8	150690018
1⁄4	1⁄4	150690028
3⁄8	3⁄8	150690038
1⁄2	1⁄2	150690048
3⁄4	3⁄4	150690068

Tee

BSPT	
1⁄4	150600028

Cross

Female BSPP	
1⁄8	160920018
1⁄4	160920028
3⁄8	160920038
1⁄2	160920048

Elbow

Female BSPP	
1⁄8	160420018
1⁄4	160420028
3⁄8	160420038
1⁄2	160420048
3⁄4	160420068

BSP and hose fittings

M3, M5, ⅛" to 1½" BSP

Elbow

Male BSPT	Female BSPP	
R1/8	G1/8	150430018
R1/4	G1/4	150430028
R3/8	G3/8	150430038
R1/2	G1/2	150430048
R3/4	G3/4	150430068

Elbow

BSPT	
R1/8	150400018
R1/4	150400028
R3/8	150400038
R1/2	150400048

Manifold

Female BSPP		
1/8	4	34 0504 01
1/4	4	34 0504 02
3/8	4	34 0504 03
1/8	6	34 0506 01
1/4	6	34 0506 02
3/8	6	34 0506 03

Natural brass finish.

Locknut

Thread	
G1/8	360546 01
G1/4	360546 02
G3/8	360546 03
G1/2	360546 04
G3/4	360546 06

Natural brass finish

Elbow banjo assembly Non-regulating

Male BSPP	Female BSPP	
1/8	1/8	16A511818
1/4	1/4	16A512828
3/8	3/8	16A513838
1/2	1/2	16A514848

Female parallel BSP thread to male parallel BSP thread.

Elbow banjo assembly Regulating out

Male BSPP	Female BSPP	
1/8	1/8	16K511818
1/4	1/4	16K512828
3/8	3/8	16K513838
1/2	1/2	16K514848

Arrow on bolt hexagon indicates free flow direction.

Pressure range 1 to 10 bar.

Elbow banjo body

Female BSPP	Bolt Thread	
1/8	1/8	16K511818
1/4	1/4	16K512828
3/8	3/8	16K513838
1/2	1/2	16K514848

Female parallel BSP thread.

1] Integrated valve/cylinder unit for a gearshift control.
2] Modular cartridge valve integrated in a transmission intarder.
3] Retarder with proportional control unit.
4] Vehicle manifolds with DOT / SAE cartridges cut assembly time, weight and space.
5] Sealco valve has integrated push-in cartridges for quick assembly.
6] Special twin valve

Norgren in the truck industry

Norgren is a leading international supplier of on-board pneumatic and electronic solutions, with over thirty years' experience in the commercial vehicle industry.

Modular powertrain solutions

Norgren's expertise lies in adapting standard modular valves and proportional valves for use in special manifolds or housings.

These customised solutions are often integrated in the powertrain component.

- Proven technology
- Cost-effective customisation
- Meet space requirements
- Housing ensures protection of mechanical and electrical components
- Common pneumatic and electrical connections
- Ease and speed of assembly

Increased chassis throughput

Norgren provides a total fittings system solution for air brake and auxiliary air systems.

Norgren provides total fittings system solutions

Norgren expertise on-board coaches and buses:

- Ventilation flaps and air conditioning systems
- Pneumatic and electric door systems
- Anti jack-knifing control systems
- Kneeling systems
- High pressure valves for compressed natural gas

Norgren products are used in the cab for:

- Instrumentation
- Air seat
- Visual indicators
- Air horn

TÜV Freiwillig geprüft auf Haltekraft, Korrosionsbeständigkeit, Dichtheit und Vibrationsfestigkeit gemäß DIN-Normen

FMVSS DOT FMVSS DOT

ON-BOARD SOLUTIONS

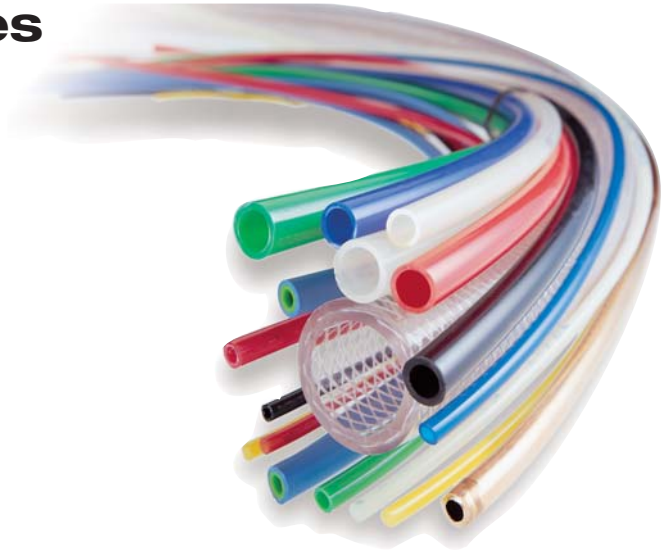
Please visit Norgren dedicated site at

www.norgren.com/commercial_veh

Tubing and hoses

Ø 4 to 28 mm O/D

Ø ⅛" to 1⅛" O/D



Available in a variety of different types to suit a wide range of applications.

All tubing can be used with specific ranges of tube fittings shown in this catalogue.

Nylon and polyurethane tube available in a range of colours for ease of identification.

Tube sizes (metric)

O/D mm	4	5	6	8	10	12	14	16	22	28
Nylon	●	●	●	●	●	●	●	●	●	●
Polyurethane	●	●	●	●	●	●				
Polyester reinforced PVC	●	●	●	●	●	●	●	●	●	●
Metal braided	●	●	●	●	●	●				
Copper-half hard and annealed	●	●	●	●	●	●		●	●	●
Bundy			●	●	●	●				

Tube sizes (inch)

O/D inches	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	11/8
Nylon	●		●	●	●	●	●	●	●		
Nylon (food grade)			●	●	●	●					
Polyester reinforced PVC			●	●	●	●	●	●	●		
Metal braided			●	●	●	●	●				
Copper-half hard and annealed	●	●	●	●	●	●	●	●	●	●	●
Copper heavy duty			●	●	●	●	●	●	●	●	
Bundy		●	●	●	●	●	●				

Technical data

Medium:

Compressed air. Consult our Technical Service for use with other fluids.

Operating pressure:

Refer to specific tubing type on the following pages.

Ambient temperature:

Refer to specific tubing type on the following pages.

Materials

Nylon tube: nylon (polyamide) type 12, fully plasticised and light stabilised. metric tube meets the requirements of DIN 73378 and BS 5409.

Polyurethane tube: is light stabilised and has a hardness of 92-98 shore A.

Nylon tube (food grade): nylon (polyamide) type 11 or 12 unplasticised.

Polyester reinforced PVC: high quality electrically non-conductive plasticised PVC hose, high tensile polyester fibre braiding, galvanised steel 'O' clips and brass tailpieces on assembled hoses.

Metal braided hoses: E90 nitrile rubber hose, galvanised steel braiding wire, brass ferrules, copper tailpieces.

Copper tube: phosphorous de-oxidised copper to BS6017 grade Cu-DHP.

Double wall brazed steel: copper coated steel strip with tinned external surface (Bundy).

Weldtube: polyurethane (95° shore A) inner tube, flame retardant PVC outer tube.

Maximum working pressures

O/D mm		4	5	6	8	8**	10	10**	12	12**	14	15**	16	22	28
Max. pressure (bar)*	Nylon	28	31	25	19	10	24	8	18	6	15	6	18	15	15
at -40°C to + 20°C	Polyurethane	10	11	9	9	–	9	–	9	–	–	–	–	–	–
Min. bend radius mm	Nylon	25	25	30	50		60		75		80		95	125	160
	Polyurethane	7	9	16	17	–	25	–	–	–	–	–	–	–	

Maximum continuous working temperature: nylon +80°C, polyurethane +60°C.

*Multiply by factors in table alongside for use at higher temperatures.

**Extraflexible tube

Pressure/temperature conversion factors

Working Temperature	Factor
+30°C	0,83
+40°C	0,72
+50°C	0,64
+60°C	0,57
+80°C	0,47

Tubing and hoses

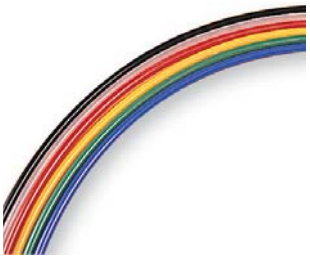
Ø 4 to 28 mm O/D

Ø ⅛" to 1⅛" O/D

Norgren nylon tubing to DIN 73378, DIN 74324 and BS5409-1 : 1976 table 2

O/D-I/Dmm Colour	Length (m)	4/2,5	6/4	8/6
Corporate Red	25	PA0804025	PA0806025	PA0808025
Corporate Grey	25	PA0604025	PA0606025	PA0608025

Nylon to DIN 73378, DIN 74324 and BS5409-1 : 1976 table 2

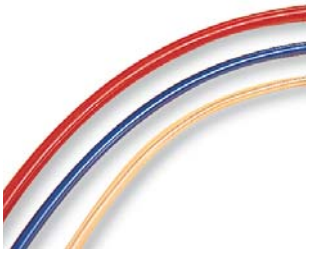


O/D I/D Colour	Length (m)	4/2,5	5/3	6/4	8/6	10/7,5	12/9	14/11	16/12	22/17	28/22
Natural	15	PA0004015C	PA0005015C	PA0006015C	PA0008015C	PA0010015C	PA0012015C	PA0014015C	PA0016015C	PA0022015C	PA0028015C
Natural	25	PA0004025C	PA0005025C	PA0006025C	PA0008025C	PA0010025C	PA0012025C	PA0014025C	PA0016025C	PA0022025C	PA0028025C
Natural	100	PA0004100C	PA0005100C	PA0006100C	PA0008100C	PA0010100C	PA0012100C	PA0014100C	–	–	–
Black	15	PA0704015C	PA0705015C	PA0706015C	PA0708015C	PA0710015C	PA0712015C	–	–	–	–
Black	25	PA0704025C	PA0705025C	PA0706025C	PA0708025C	PA0710025C	PA0712025C	PA0714025C	–	–	–
Black	100	PA0704100C	PA0705100C	PA0706100C	PA0708100C	PA0710100C	PA0712100C	PA0714100C	–	–	–
Blue	15	PA0504015C	PA0505015C	PA0506015C	PA0508015C	PA0510015C	PA0512015C	–	–	–	–
Blue	25	PA0504025C	PA0505025C	PA0506025C	PA0508025C	PA0510025C	PA0512025C	PA0514025C	–	–	–
Blue	100	PA0504100C	PA0505100C	PA0506100C	PA0508100C	PA0510100C	PA0512100C	PA0514100C	–	–	–
Red	15	PA0104015C	PA0105015C	PA0106015C	PA0108015C	PA0110015C	PA0112015C	–	–	–	–
Red	25	PA0104025C	PA0105025C	PA0106025C	PA0108025C	PA0110025C	PA0112025C	PA0114025C	–	–	–
Red	100	PA0104100C	PA0105100C	PA0106100C	PA0108100C	PA0110100C	PA0112100C	PA0114100C	–	–	–
Yellow	15	PA0304015C	PA0305015C	PA0306015C	PA0308015C	PA0310015C	PA0312015C	PA0314015C	–	–	–
Yellow	25	PA0304025C	PA0305025C	PA0306025C	PA0308025C	PA0310025C	PA0312025C	PA0314025C	–	–	–
Yellow	100	PA0304100C	PA0305100C	PA0306100C	PA0308100C	PA0310100C	PA0312100C	PA0314100C	–	–	–
Green	15	PA0204025C	PA0205015C	PA0206015C	PA0208015C	PA0210015C	PA0212015C	PA0214025C	–	–	–
Green	100	PA0204100C	PA0205100C	PA0206100C	PA0208100C	PA0210100C	PA0212100C	PA0214100C	–	–	–

Extraflex nylon PS11

O/D I/D Colour	Length (m)	8/6	10/8	12/10	15/12,5
Natural	25	PS0008025	PS0010025	PS0012025	PS0015025

Polyurethane



O/D I/D Colour	Length (m)	4/2,5	5/3	6/4	8/5,5	10/7	12/8
Natural	25	PU0004025C	PU0005025C	PU0006025C	PU0008025C	PU0010025C	PU0012025C
Natural	100	PU0004100C	PU0005100C	PU0006100C	PU0008100D	PU0010100D	PU0012100D
Black	25	PU0704025C	PU0705025C	PU0706025C	PU0708025C	PU0710025C	PU0712025C
Black	100	PU0704100C	PU0705100C	PU0706100C	PU0708100D	PU0710100D	PU0712100D
Blue	25	PU0504025C	PU0505025C	PU0506025C	PU0508025C	PU0510025C	PU0512025C
Blue	100	PU0504100C	PU0505100C	PU0506100C	PU0508100D	PU0510100D	PU0512100D
Red	25	PU0104025C	PU0105025C	PU0106025C	PU0108025C	PU0110025C	PU0112025C
Red	100	PU0104100C	PU0105100C	PU0106100C	PU0108100D	PU0110100D	PU0112100D
Yellow	25	PU0304025C	PU0305025C	PU0306025C	PU0308025C	PU0310025C	PU0312025C
Yellow	100	PU0304100C	PU0305100C	PU0306100C	PU0308100D	PU0310100D	PU0312100D
Green	25	PU0204025C	Options	PU0206025C	PU0208025C	Options	Options
Green	100	PU0204100C	Options	PU0206100C	PU0208100D	PU0210100D	PU0212100D

Key: (D) = Drum (C) = coil

Weldtube

O/D Outer tube (mm)	O/D Inner tube (mm)	I/D Inner tube (mm)	Max. recommended working pressure (bar)	Bend radius (mm)	Colour	
8	6	4	10	40	Black	WT4706025
8	6	4	10	40	Red	WT4106025
8	6	4	10	40	Green	WT4206025
8	6	4	10	40	Blue	WT4506025
10	8	6	10	50	Black	WT4708025
10	8	6	10	50	Red	WT4108025
10	8	6	10	50	Green	WT4208025
10	8	6	10	50	Blue	WT4508025
12,5	10	7	10	65	Black	WT4710025
12,5	10	7	10	65	Red	WT4110025
12,5	10	7	10	65	Green	WT4210025
12,5	10	7	10	65	Blue	WT4510025
14,5	12	9	10	75	Black	WT4712025
14,5	12	9	10	75	Red	WT4112025
14,5	12	9	10	75	Green	WT4212025
14,5	12	9	10	75	Blue	WT4512025

The colours are for the outer PVC cover. tubing is supplied shrink-wrapped in 25 m coils. Other colours can be supplied for orders of sufficient quantity.
Tubing can also be supplied in longer lengths subject to economic order quantities. inch tube also available.

Inch range also available

Tubing and hoses

Ø 4 to 28 mm O/D BSPT male thread

Ø ⅛" to 1⅛" O/D

PA Pneuflex spring coils
Weldtube

O/D Tube	Adaptor (thread)	Length of closed spiral (mm)	Working length (mm)	Operating pressure at +20°C (bar)	
6	R1/4	200	3000	31	PA330600328
6	R1/4	250	3750	31	PA330600428
6	R1/4	333	5000	31	PA330600528
6	R1/4	500	7500	31	PA330600828
6	R1/4	1000	15000	31	PA330601528
8	R1/4	200	3000	22	PA330800328
8	R1/4	250	3750	22	PA330800428
8	R1/4	333	5000	22	PA330800528
8	R1/4	500	7500	22	PA330800828
8	R1/4	1000	15000	22	PA330801528
10	R1/4	210	3000	17	PA331000328
10	R1/4	262	3750	17	PA331000428
10	R1/4	350	5000	17	PA331000528
10	R1/4	525	7500	17	PA331000828
10	R1/4	1000	15000	17	PA331001528
12	R3/8	200	3000	12	PA331200338
12	R3/8	250	3750	12	PA331200438
12	R3/8	333	5000	12	PA331200538
12	R3/8	500	7500	12	PA331200838
12	R3/8	1000	15000	12	PA331201538
*15	G1/2A	166	3000	17	PA331500348
*15	G1/2A	207	3750	17	PA331500448
*15	G1/2A	277	5000	17	PA331500548
*15	G1/2A	415	7500	17	PA331500848

Mounting method: swivel fittings with male threads at both ends.
Coils are coloured yellow. Other colours can be supplied to order.
*All adaptors thread are BSPT except ½ BSPP male thread.

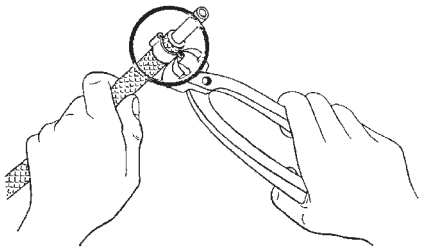
PU Pneuflex spring coils

O/D Tube	Adaptor (thread)	Length of closed spiral (mm)	Working length (mm)	Operating pressure at +20°C (bar)	
6 x 4	R1/8	165	2000	10	PU310600218
6 x 4	R1/8	350	4000	10	PU310600418
6 x 4	R1/8	545	6000	10	PU310600618
6 x 4	R1/8	720	8000	10	PU310600818
8 x 5	R1/4	180	2000	10	PU310800228
8 x 5	R1/4	400	4000	10	PU310800428
8 x 5	R1/4	630	6000	10	PU310800628
8 x 5	R1/4	800	8000	10	PU310800828
10 x 6,5	R1/4	185	2000	9	PU311000228
10 x 6,5	R1/4	400	4000	9	PU311000428
10 x 6,5	R1/4	635	6000	9	PU311000628
10 x 6,5	R1/4	800	8000	9	PU311000828
12 x 8	R3/8	180	2000	9	PU311200238
12 x 8	R3/8	390	4000	9	PU311200438
12 x 8	R3/8	590	6000	9	PU311200638
12 x 8	R3/8	780	8000	9	PU311200838

Tubing and hoses

Ø 4 to 28 mm O/D

Ø ⅛" to 1⅛" O/D



A special pair of pincers, product number 39001400, is available for crimping 'O' clips to hose.

Instructions

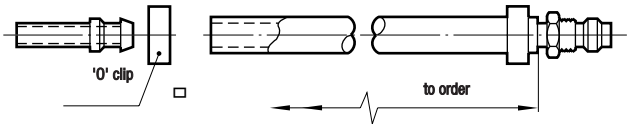
1. Cut off the desired length of hose
2. Insert reusable tailpieces
3. Slip on the clips
4. Clamp tightly with pincers

30m terylene braided hose coils, 'O' clips and pincers

O/D mm	8	10	12	13,5	16	18,5	27	33
Bore	3	5	6,3	8	10	12,5	20	25
Pressure (bar)*	10	10	10	10	10	9	7	6
Product number 30 m hose	PV 2008030	PV 2010030	PV 2012030	PV 2014030	PV 2016030	PV 2019030	PV 2027030	PV 2033030
'O' clips for above O/D hoses	48 0168 02	48 0168 03	48 0168 04	48 0168 05	48 0168 06	48 0168 07	48 0168 11	48 0168 15
Special pincers for 'O' clips	39 0014 00							

*Maximum working pressure at +20°C.

For temperatures above +20°C, consult our Technical Service.



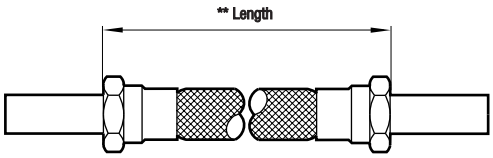
State length of hose required when ordering. Maximum length 30 m.

Terylene braided PVC hose assemblies

O/D mm	4	5	6	8	10	12	16	22	28
Pressure bar*	10	10	10	10	10	10	9	7	6
Min bend radius mm	28	28	31,5	31,5	48,5	48,5	50,5	70	225
To order 30 m max.	42 0200 00 000	42 0210 00 000	42 0220 00 000	42 0230 00 000	42 0240 00 000	42 0250 00 000	42 0260 00 000	42 0270 00 000	42 0280 00 000

Operating temperature: -20°C to +70°C. *Maximum working pressure at +20°C.

For use at temperatures above +20°C, consult our Technical Service.



**State length of hose required if ordering non-standard lengths.

Metal braided rubber hose

O/D mm	4	5	6	8	10	12
Pressure (bar)*	69	69	69	69	69	47
Length						
To order. 155 mm min.	42 0020 00 000	42 0030 00 000	42 0040 00 000	42 0050 00 000	42 0060 00 000	42 0070 00 000
250 mm	42 0020 00 000	42 0030 00 250	42 0040 00 250	42 0050 00 250	42 0060 00 250	42 0070 00 250
300 mm	42 0020 00 000	42 0030 00 300	42 0040 00 300	42 0050 00 300	42 0060 00 300	42 0070 00 300
350 mm	42 0020 00 000	42 0030 00 350	42 0040 00 350	42 0050 00 350	42 0060 00 350	42 0070 00 350
400 mm	42 0020 00 000	42 0030 00 400	42 0040 00 400	42 0050 00 400	42 0060 00 400	42 0070 00 400
500 mm	42 0020 00 000	42 0030 00 500	42 0040 00 500	42 0050 00 500	42 0060 00 500	42 0070 00 500
600 mm	42 0020 00 000	42 0030 00 600	42 0040 00 600	42 0050 00 600	42 0060 00 600	42 0070 00 600
750 mm	42 0020 00 000	42 0030 00 750	42 0040 00 750	42 0050 00 750	42 0060 00 750	42 0070 00 750
1000 mm	42 0020 00 000	42 0030 01 000	42 0040 01 000	42 0050 01 000	42 0060 01 000	42 0070 01 000

*Maximum working pressure at -20°C to +100°C for fluids other than compressed air. Maximum with compressed air is 10 bar.

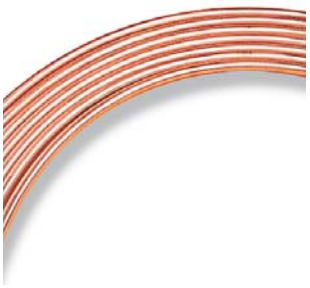
Installation notes-

1. Flexible hose is weakened when installed in a twisted position.
2. Ample bend radius should be allowed to avoid collapsing the hose.
3. When hose is installed in a flexing application remember that metal end fittings are not part of the flexible portion.
4. Use elbows or adaptors to eliminate excess hose bends.

Tubing and hoses

Ø 4 to 28 mm O/D

Ø ⅛" to 1⅛" O/D



Copper tubing to BS 2871 : Part 2 with dimensions generally to table 4

O/D-I/D mm Pressure (bar)* Length	Type	4/2,8 128	5/3,4 138	6/4,4 112	8/6,4 81	10/8,4 64	12/9,6 81	16/13,6 59	22/19,0 53	28/25,0 41
10 m coil	Annealed	CS6004010	CS 6005010	CS 6006010	CS6008010	CS 6010010				
3 m straight	Annealed						CS 6012003	CS 6016003	CS 6022003	CS 6028003

O/D-I/D mm Pressure (bar)* Length	Type	4/2,8 193	5/3,4 208	6/4,0 218	8/6,0 157	10/7,6 150	12/9,6 122	16/13,6 89	22/19,0 81	28/25,0 62
3 m straight	Half hard	CS 7004003	CS 7005003	CS 7006003	CS 7008003	CS 7010003	CS 7012003	CS 7016003	CS 7022003	CS 7028003

*Recommended safe working pressure at -200°C to +50°C. For higher temperatures, multiply by factor in table below.

Working Temperature	Factor	Half Hard Copper
+50°C to + 100°C	0,97	0,95
+100°C to +150°C	0,82	0,88
+150°C to +175°C	0,63	0,54
+175°C to +200°C	0,43	0,29

Bundy tube - double wall brazed steel tube 3 m straight (10 ft)

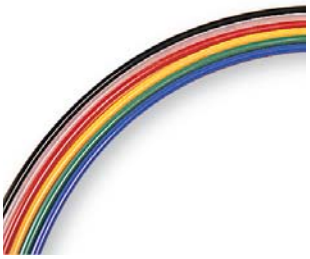
O/D mm Pressure (bar)* at +20°C Length	6 300	8 250	10 195	12 160
3 m straight	BU 6306003	BU 6308003	BU 6210003	BU 6212003

*Maximum working pressure for straight length, non-pulsating pressures, when used with compression tube fittings shown in this catalogue.

Tubing and hoses

Ø 4 to 28 mm O/D

Ø ⅛" to 1⅛" O/D



Nylon tubing

Colour	O/D Length	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
Natural	50'	PA0051050C	PA0053050C	PA0054050C	PA0055050C	PA0056050C	PA0057050C	PA0058050	PA0059050
	250'	PA0051250	PA0053250	PA0054250	PA0055250	PA0056250	PA0057250	–	–
	500'	–	–	–	–	PA0056500	PA0057500	–	–
	2000'	–	PA0053B00D	PA0054B00D	–	–	–	–	–
Blue	50'	PA0551050C	PA0553050C	PA0554050C	PA0555050C	PA0556050C	PA0557050C	–	–
Red	50'		PA0153050C	PA0154050C	PA0155050C	PA0156050C	PA0157050C	–	–
Black	50'	PA0751050C	PA0753050C	PA0754050C	PA0755050C	PA0756050C	PA0757050C	–	–
Green	50'	PA0251050C	PA0253050C	PA0254050C	PA0255050C	PA0256050C	PA0257050C	–	–
Yellow	50'	PA0351050C	PA0353050C	PA0354050C	PA0355050C	PA0356050C	PA0357050C	–	–
Brown	50'	–	PA0453050C	PA0454050C	PA0455050C	PA0456050C	PA0457050C	–	–

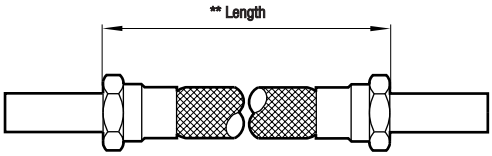
Maximum working pressures

O/D	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
Max. pressure (bar)* at -40°C to +20°C	28,0	21,8	20,0	19,3	18,2	14,5	13,2	10,8
Min. bend radius	0,75"	1,50"	1,75"	2,00"	2,50"	3,00"	4,00"	6,00"

*Multiply by factor in table alongside for use at higher temperatures. Maximum continuous working temperature 80°C.

Pressure/temperature conversion factors

Working Temperature	Factor
+30°C	0,83
+40°C	0,72
+50°C	0,64
+60°C	0,57
+80°C	0,47



**State length of hose required if ordering non-standard lengths.

Metal braided rubber hose - inch

O/D mm Pressure (bar)* Length	3/16" 69	1/4" 69	5/16" 69	3/8" 69	1/2" 47
To order 6 min.	41 0633 00 000	41 0634 00 000	41 0635 00 000	41 0636 00 000	41 0638 00 000
10	41 0633 00 100	41 0634 00 100	41 0635 00 100	41 0636 00 100	41 0638 00 100
12	41 0633 00 120	41 0634 00 120	41 0635 00 120	41 0636 00 120	41 0638 00 120
14	41 0633 00 140	41 0634 00 140	41 0635 00 140	41 0636 00 140	41 0638 00 140
16	41 0633 00 160	41 0634 00 160	41 0635 00 160	41 0636 00 160	41 0638 00 160
18	41 0633 00 180	41 0634 00 180	41 0635 00 180	41 0636 00 180	41 0638 00 180
20	41 0633 00 200	41 0634 00 200	41 0635 00 200	41 0636 00 200	41 0638 00 200
24	41 0633 00 240	41 0634 00 240	41 0635 00 240	41 0636 00 240	41 0638 00 240
30	41 0633 00 300	41 0634 00 300	41 0635 00 300	41 0636 00 300	41 0638 00 300
36	41 0633 00 360	41 0634 00 360	41 0635 00 360	41 0636 00 360	41 0638 00 360

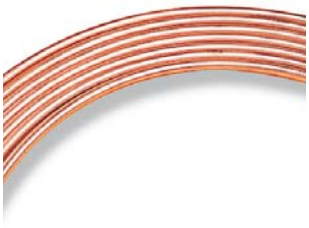
*State length of hose required if ordering non-standard lengths. Minimum length 6".
When installing a flexible hose the following simple rules should be noted.

1. Flexible hose is weakened when installed in a twisted position.
2. Ample bend radius should be allowed to avoid collapsing the hose.
3. When hose is installed in a flexing application remember that metal end fittings are not part of the flexible portion.
4. Use elbows or adaptors to eliminate excess hose bends.

Tubing and hoses

Ø 4 to 28 mm O/D

Ø ⅛" to 1⅛" O/D



Copper tubing to BS 2871 Standard duty: annealed

O/D-I/D mm		1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	11/8
Pressure (bar)*		0,069	0,100	0,131	0,178	0,240	0,303	0,404	0,529	0,622	0,747	0,99
Length	Type	205	156	126	120	94	77	77	60	68	57	44
33 ft. coil	Annealed	CS6051033	CS 6052033	CS 6053033	CS 6054033	CS 6055033	CS 6056033					
10 ft. straight	Annealed							CS 6057010	CS 6058010	CS 6059010	CS 6060010	CS 6062010

O/D-I/D mm		1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	11/8
Pressure (bar)*		0,069	0,100	0,131	0,178	0,240	0,303	0,404	0,529	0,622	0,747	0,997
Length	Type	313	238	192	184	143	117	117	92	103	87	67
10 ft. straight	Half hard	CS7051010	CS 7052010	CS7053010	CS7054010	CS7055010	CS7056010	CS7057010	CS7058010	CS7059010	CS7060010	CS7062010

O/D-I/D mm		3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8
Pressure (bar)*		0,115	0,154	0,216	0,279	0,372	0,497	0,590	0,747
Length	Type	126	120	94	77	77	60	68	111
10 ft. straight	Heavy duty	CH6053010	CH 6054010	CH6055010	CH 6056010	CH 6057010	CH 6058010	CH 6059010	CH 6060010

*Recommended safe working pressure at -200°C to +50°C. For higher temperatures, multiply by factor in table below.

Working Temperature	Factor	Half Hard Copper
+50°C to + 100°C	0,97	0,95
+100°C to +150°C	0,82	0,88
+150°C to +175°C	0,63	0,54
+175°C to +200°C	0,43	0,29

Bundy tube - double wall brazed steel tube 3 m straight (10 ft)

O/D mm	5/32	3/16	1/4	3/8	1/2
Pressure (bar)* at +20°C	380	340	300	195	160
Length					
10 ft. straight	BU6352010	BU 6353010	BU 6354010	BU 6356010	BU 6357010

*Maximum working pressure for straight length, non-pulsating pressures, when used with compression tube fittings shown in this catalogue.

Tubing accessories

For nylon, polyurethane, copper and steel tube

Nylon tube ties

Type	Maximum bundle Ø mm	
Releasable	50	34 0380 11
	81	34 0380 12
Lockable	35	34 0380 01
	50	34 0380 02
	75	34 0380 03

Tubing channels

O/D Tube	No. of channels
10	100HA0500
10	100HA0600
10	100HA0800
6	100H61200

Nylon tube ties

Type	
Mounting cradle	34 0380 21
Confined space	34 0380 22
For releasable ties	34 0380 23
For lockable ties	34 0380 24
Cable tie mounting plate for up to 3 bundles	34 0380 25

Tubing ties

Operating temperature:
–50°C to +85°C

Minimum tensile strength:
13,61 kg - locking type
27,21 kg - releasable type

Tubing clips - single sided

mm & inch O/D tubes Type	No. of tubes	4	5 & 3/16	6 & 1/4	8 & 5/16	10 & 3/8	12 & 1/2	16 & 5/8	3/4	22	28
Single sided	1	34 0218 02	34 0218 03	34 0218 04	34 0218 05	34 0218 06	34 0218 07	34 0215 08	34 0215 09	36 0001 10	34 0215 11
	2	34 0219 02	34 0219 03	34 0219 04	34 0219 05	34 0219 06					
	3	34 0220 02	34 0220 03	34 0220 04	34 0220 05	34 0220 06					
Double sided	2							34 0216 08	34 0216 09		34 0216 11

Self-tapping screw, 48003424, is available for clips on tubes up to and including 12 mm O/D. For larger sizes use a 6 mm bolt.

Tube cutter

Type	
Cutter	M/3314
Replacement blade	39 0120 10*
Replacement blade	39 0120 61**

*Pack of 10

** 1-off

For use on nylon and polyurethane tubing 4 to 16 mm and ⅛" to ½" O/D tube.

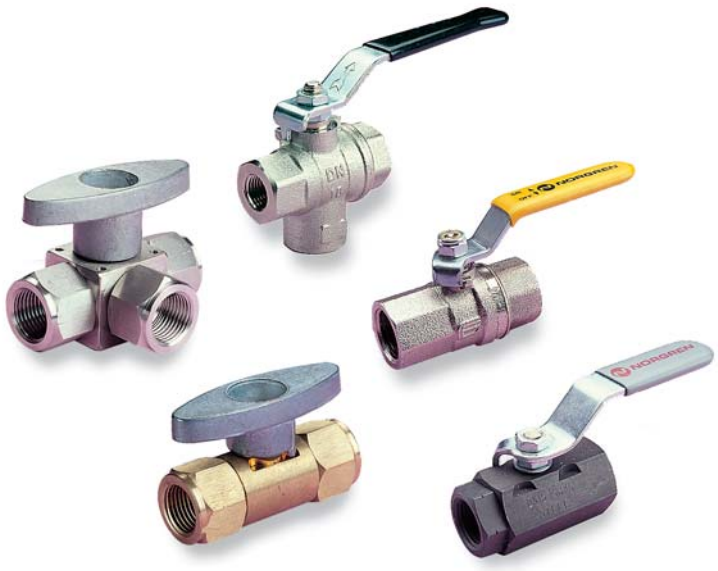
Weldtube stripper

Type	
Stripper	39004100
Spare blades (pack of 2)	39004160

Ball valves

60, 61, 62 and NVC Series Brass

⅛" to 4" BSP



Precision engineered shut-off valves.
Minimum resistance to fluid flow.
Positive quick open/shut action.
Flow in either direction (except exhaust type).

Technical data

Medium:

Compressed air, inert gases, water, oils and many hydrocarbon derivatives depending upon valve seat material

Operating pressure:

Refer to tables

Ambient temperature:

Refer to tables opposite

Materials

60 Series:

Nickel plated brass to UNI-5705-65, chromium plated brass, zinc plated steel, PTFE seats and nitrile or Viton rubber seals

61 Series:

Stainless steel body, stem, ball nut and handle PTFE seats

62 Series:

Steel body, carbon steel stem, carbon steel ball PTFE seats, Viton seals, zinc plated nuts and handle

NVC***2H:

Brass bodies, PTFE seats and seal
zinc die cast heads

NVC***2F:

Carbon steel body, phosphate finish, zinc die cast handle, PTFE seats and seal

NVC***2B:

Stainless steel (316) body, zinc die cast handle, PTFE seats and seal

Alternative models

Different handel variations
Alternative seat and seal material
Distribution manifolds
Consult our Technical Service for details

Port sizes

G1/8, G1/4, G3/8, G1/2, G3/4, G1, G1¼, G1½, G2, G2½, G3, G4
Rc1/4, Rc3/8, Rc1/2, Rc3/4, Rc1, Rc1¼

60 Series ball valves

Brass

⅛" to 4" BSP

Mini
Reduced bore

Female	Maximum pressure (bar)	
G1/8	10	601112118
G1/4	10	601112128
G3/8	10	601112138
G1/2	10	601112148

PTFE seats, nitrile seals
Operating temperature: -10°C to +90°C

Female/ Male	Maximum pressure (bar)	
G1/8	10	601112218
G1/4	10	601112228
G3/8	10	601112238
G1/2	10	601112248

PTFE seats, nitrile seals
Operating temperature: -10°C to +90°C

Standard
Full bore

Female	Maximum pressure (bar)	
G1/4	45	602112128
G3/8	40	602112138
G1/2	35	602112148
G3/4	30	602112168
G1	25	602112188
G1¼	20	6021121A8
G1½	20	6021121B8
G2	16	6021121C8
G3	10	6021121E8

PTFE seats, Viton seals
Operating temperature: -20°C to +150°C

*For 'Tee' handled version change 4th digit to 2 ie. 602**2**12128 for a 1/4" full bore tee handled ball valve.
Only up to 1" available with tee handle.

Female/ Male	Maximum pressure (bar)	
G1/4	45	602112228
G3/8	40	602112238
G1/2	35	602112248
G3/4	30	602112268
G1	25	602112288
G1¼	20	6021122A8

PTFE seats, Viton seals
Operating temperature: -20°C to +150°C

Exhausting
Full bore

Female	Maximum pressure (bar)	
G1/4	64	602113128EX
G3/8	64	602113138EX
G1/2	50	602113148EX
G3/4	50	602113168EX
G1	50	602113188EX
G1¼	40	6021131A8EX

PTFE seats and seals
Operating temperature: -20°C to +100°C

*For 'Tee' handled version change 4th digit to 2 ie. 602**2**13128EX for a 1/4" full bore tee handled ball valve.

Three way
Full bore

Female	Maximum pressure (bar)	
G1/4	25	602114428
G3/8	25	602114438
G1/2	25	602114448
G3/4	16	602114468

PTFE seats, Viton seals
Operating temperature: -15°C to +150°C

*Test specification differs from standard. Please consult our Technical Service for further details

Lockable exhausting
Full bore

Female	Maximum pressure (bar)	
1/4	13,6 bar	601812128
3/8	13,6 bar	601812138
1/2	13,6 bar	601812148
3/4	13,6 bar	601812168
1	13,6 bar	601812188

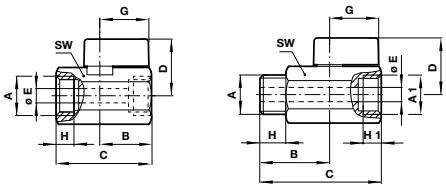
*Test specification differs from standard. Please consult our Technical Service for further details.
Note: lever lockable only in closed position. Standard handle accepts Ø 7 mm shackle.

60 Series ball valves

Brass

⅛" to 4" BSP

Mini
Reduced bore

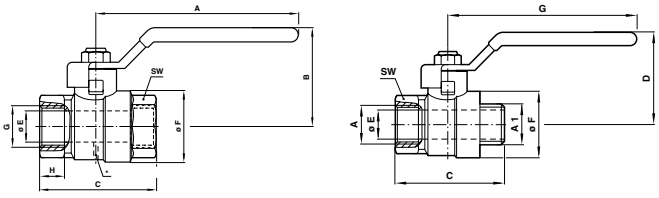


Female/female

Female/female	A	B	C	D	Ø E	G	H	SW
601112118	G1⁄8	20	37	22	5,5	19	9	19
601112128	G1⁄4	20	37	22	5,5	19	9	19
601112138	G3⁄8	21	41	24	8,0	19	9	21
601112148	G1⁄2	25	48	30	10,0	22		25

Male/female	A	B	C	D	E	G	H	H1	SW
601112218	G1⁄8	20	37	22	5,5	19	9	9	19
601112228	G1⁄4	20	37	22	5,5	19	9	9	19
601112238	G3⁄8	21	41	24	8,0	19	9	9	21
601112248	G1⁄2	25	48	30	10,0	22	11	11	25

Standard
Full bore

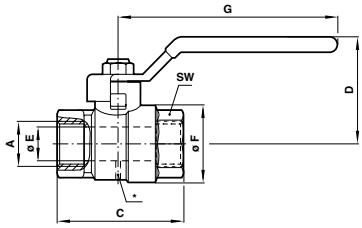


Female

Female	A	C	D	Ø E	Ø F	G	H	SW
602112128	G1⁄4	48	36	8	23	85	12	18
602112138	G3⁄8	49	36	10	24	85	12	21
602112148	G1⁄2	60	40	15	30	85	15	25
602112168	G3⁄4	69	47	20	38	105	16,3	31
602112188	G1	83	51	25	46	105	19,1	38
6021121A8	G1¼	96	63	32	58	130	21,4	47
6021121B8	G1½	106	69	40	70	130	22	54
6021121C8	G2	129	83	50	86	165	25,7	66
6021121D8	G2½	159	99	65	111	248	30,2	85
6021121E8	G3	182	110	80	135	248	33,3	100
6021121F8	G4	219	129	100	167	248	39,3	125

Female/male	A	C	D	Ø E	Ø F	G	SW
602112228	G1⁄4	50	36	8	23	85	18
602112238	G3⁄8	54	36	10	24	85	21
602112248	G1⁄2	65	40	15	30	85	25
602112268	G3⁄4	75	47	20	38	105	31
602112288	G1	86	51	25	46	105	38
6021122A8	G1¼	99	63	32	58	130	47

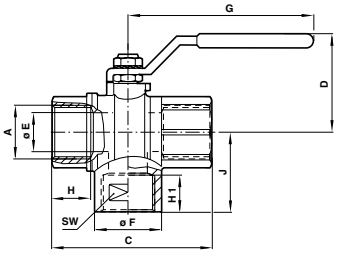
Exhausting
Full bore



*Exhaust

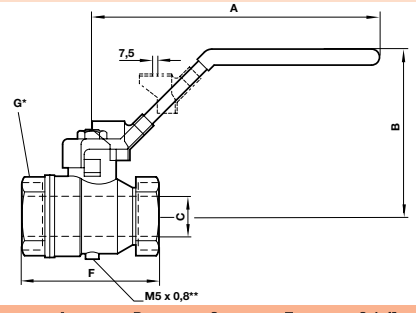
	A	C	D	Ø E	Ø F	G	SW
602113128EX	G1⁄4	52	61	8	29	100	22
602113138EX	G3⁄8	54	61	10	29	100	22
602113148EX	G1⁄2	69	64	15	36	100	27
602113168EX	G3⁄4	77	76	20	45	120	33
602113188EX	G1	89	80	25	54	120	40
6021131A8EX	G1¼	103	98	32	65	150	50

Three way
Full bore



	A	C	D	Ø E	Ø F	G	H	H1	J	SW
602114428	G1⁄4	52	42	10	22	98	11,5	11,5	26,0	22
602114438	G3⁄8	52	42	10	22	98	12,5	11,5	26,0	22
602114448	G1⁄2	64	45	15	27	98	16,5	15	33,5	27
602114468	G3⁄4	74	57	20	32	118	17,5	16	39,5	32
6021144A8	G1¼	100	66	32	50	118			54,5	50

Lockable exhausting
Full bore



*G (across flats)
** exhaust port

		A	B	C	F	G (a/f)
1⁄4	601812128	93	45	8	44	20
3⁄8	601812138	93	45	9	44	20
1⁄2	601812148	93	50	14	58	24
3⁄4	601812168	114	57	19	64	30
1	601812188	114	61	24	81	40

61 Series ball valves

Stainless steel

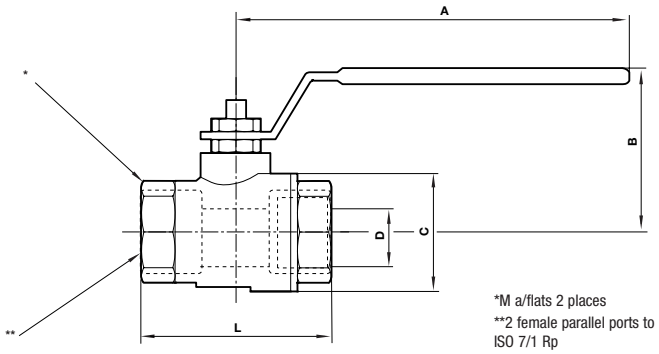
1/4" ... 1" BSPP

Stainless steel ball valves

Female BSPP	Maximum pressure (bar)	
1/4	100	615112128
3/8	100	615112138
1/2	100	615112148
3/4	64	615112168
1	64	615112188

Operating temperature: -20°C to +150°C

*To order 'Tee' handled version change 4th character to 2



*M a/flats 2 places

**2 female parallel ports to ISO 7/1 Rp

	A	B	C	D (t.bore)	L	M (a/f)
1/4	100	45	29	8	50	21
3/8	100	45	29	10	50	21
1/2	110	53,5	34	15	60	26
3/4	140	64	42,5	20	70	32
1	140	68	50,5	25	85	40

62 Series ball valves

Carbon steel

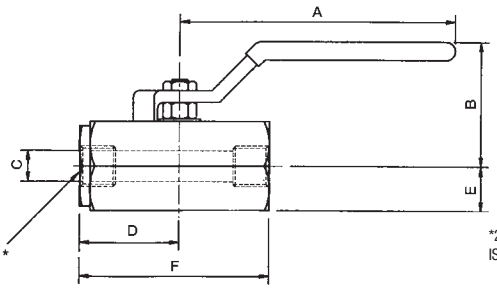
1/4" ... 1" BSPP

Lever handle - 625112*

Female BSPP	Maximum pressure (bar)	
1/4	140	625112128
3/8	140	625112138
1/2	140	625112148
3/4	140	625112168
1	140	625112188

Operating temperature: -30°C to +220°C

*To order 'Tee' handled version change 4th character to 2



*2 female parallel ports to ISO228/1

	A	B	C (t.bore)	D	L	M (a/f)
1/4	96	41	10	25	13	50
3/8	96	41	10	25	13	50
1/2	96	43	13	32	16	63
3/4	129	52	17	37	20	75
1	129	58	22	44	25	88

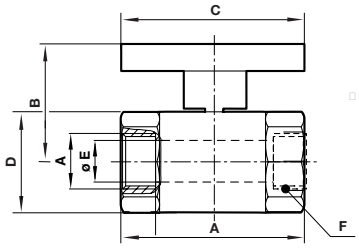
Traditional 3-piece ball valves

¼" to 1" BSP

Standard

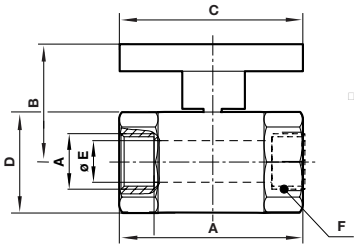
	Brass	Model Carbon Steel	Stainless Steel
1/4	NVC4PC2H	NVC4PC2F	NVC4PC2B
3/8	NVC6PC2H	NVC6PC2F	NVC6PC2B
1/2	NVC8PC2H	NVC8PC2F	NVC8PC2B
3/4	NVC12PC2H	NVC12PC2F	NVC12PC2B
1	NVC16PC2H	NVC16PC2F	–
	Max. pressure 27 bar Max. temp. +230°C	Max. pressure 64 bar Max. temp. +230°C	Max. pressure 64 bar Max. temp. +230°C

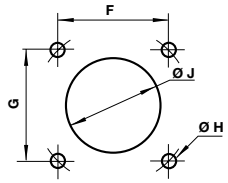
	A	B	C	D	E Through bore
1/4	61	39	75	25	10
3/8	74	39	75	25	10
1/2	78	39	75	28	10
3/4	85	42	75	32	13
1	109	48	100	41	19



Panel mounting

	Brass	Model Carbon Steel	Stainless Steel
1/4	NVC4PC2H/P	NVC4PC2F/P	NVC4PC2B/P
3/8	NVC6PC2H/P	NVC6PC2F/P	NVC6PC2B/P
1/2	NVC8PC2H/P	NVC8PC2F/P	NVC8PC2B/P
	Max. pressure 27 bar Max. temp. +230°C	Max. pressure 64 bar Max. temp. +230°C	Max. pressure 64 bar Max. temp. +230°C

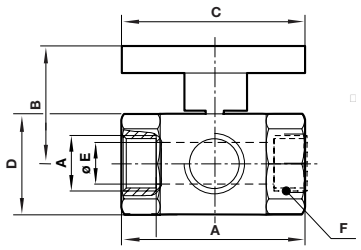


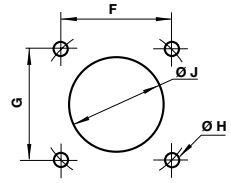


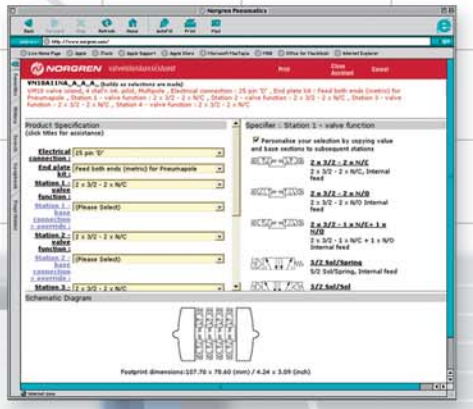
3 way panel mounted diverter

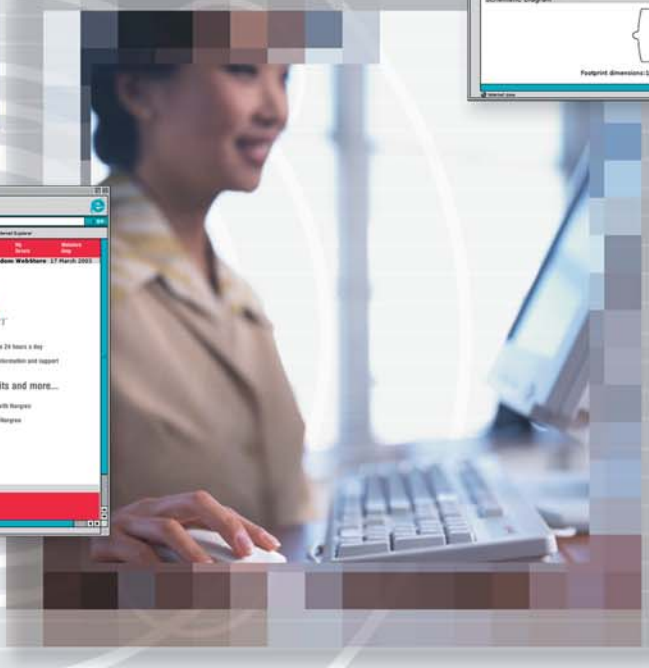
	Brass	Model Carbon Steel	Stainless Steel
1/4	NVC4PC2H/PL	NVC4PC2F/PL	NVC4PC2B/PL
3/8	NVC6PC2H/PL	NVC6PC2F/PL	NVC6PC2B/PL
1/2	NVC8PC2H/PL	NVC8PC2F/PL	NVC8PC2B/PL
	Max. pressure 27 bar Max. temp. +230°C	Max. pressure 64 bar Max. temp. +230°C	Max. pressure 64 bar Max. temp. +230°C

	A	B	C	D	E Through bore	F	G	H	J
1/4	61	48	75	25	10	27	24	5	27
3/8	74	48	75	25	10	27	24	5	27
1/2	78	48	75	28	10	27	24	5	27









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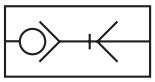
Single shut off quick release couplings

232 Series



Small diameter coupling
Single handed operation
Good flow rates, low pressure drop

Technical data

Operating pressure:
0 to 35 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure)
Cv = 0,253

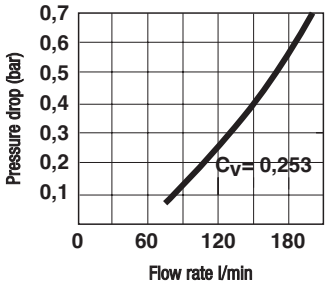
Compatibility

Rectus 20, Legris 20, Festo 20, Bosch size 1, Walther 06-003

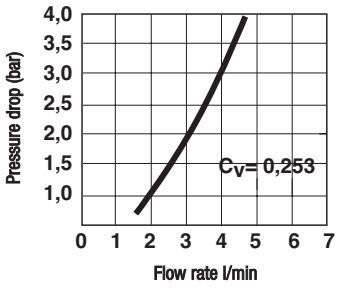
Materials

Coupler back, body & sleeve: nickel plated brass
Valve: brass
Spring & balls: stainless steel
Seals: Buna N
Plug: nickel plated brass

Air inlet pressure 6 bar



Water



Socket - male thread

BSPP	
1/8	232210018
M5	2322A005

Plug - male thread

BSPP	
1/8	232110018
M5	2321A0005

Socket - female thread

BSPP	
1/8	232220018
M5	2322D0005

Plug - female thread

BSPP	
1/8	232120018
M5	2321D0005

Socket - hose barb

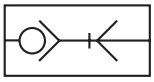
ID Hose	
3	232230300
4	232230400

Plug - hose barb

ID Hose	
3	232130300
4	232130400

Single shut off quick release couplings

233 Series



Wide range of connections
Compact robust construction
High flow, low pressure drop

Technical data

Operating pressure:
0 to 35 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure) Cv=0,844

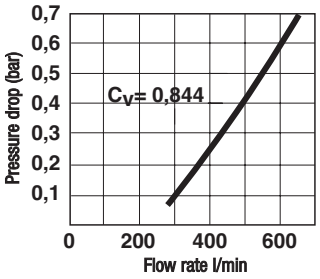
Compatibility

Rectus 21, Rectus 90,
Legris 21, Camozzi,
Schrader mini
Bosch size 2

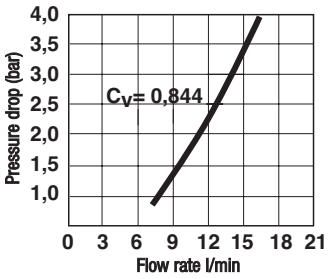
Materials

Coupler back, body & sleeve:
nickel plated brass
Valve: brass
Spring & balls: stainless steel
Seals: Buna N
Plug: nickel plated brass

Air inlet pressure 6 bar



Water



Socket - spring guard

O/D	I/D tube
6/4	233290400
8/6	233290600

Socket - push on panel mounted

O/D	I/D tube
6/4	233280400
8/6	233280600

Plug - male thread

BSPP	
G1/8	233110018
G1/4	233110028

Socket - male thread

BSPP	
G1/8	233210018
G1/4	233210028

Plug - female thread

BSPP	
G1/8	233120018
G1/4	233120028

Socket - female thread

BSPP	
G1/8	233220018
G1/4	233220028

Plug - hose barb

ID Hose	
4	233130400
6	233130600
9	233130900

Socket - hose barb

ID Hose	
4	233230400
6	233230600
9	233230900

Plug - push on fitting

O/D	I/D tube
6/4	233160400
8/6	233160600

Socket - push on fitting

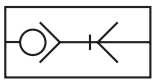
O/D	I/D tube
6/4	233260400
8/6	233260600

Plug - spring guard

O/D	I/D tube
6/4	233190400
8/6	233190600

Single shut off quick release couplings

238 Series



Durable construction
High flow rates, low pressure drop
Can be used with steel plugs fitted to air tools

Technical data

Operating pressure:
0 to 35 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure)
Cv = 1,476

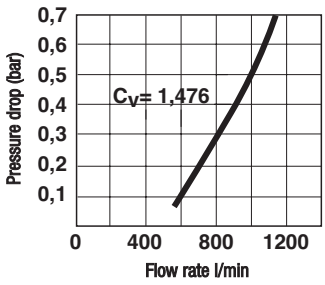
Compatibility

Rectus 25/26, Legris 25/26
Bosch size 3
Parker PE/PEF52
Cejn 320
PCL AC71

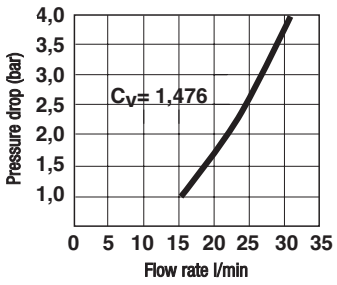
Materials

Coupler back, body & sleeve: nickel plated brass
Valve: brass
Spring & balls: stainless steel
Seals: Buna N
Plug: nickel plated brass

Air inlet pressure 6 bar



Water



Socket - male thread

BSPP	
1/4	238210028
3/8	238210038
1/2	238210048

Plug - male thread

BSPP	
1/8	238110018
1/4	238110028
3/8	238110038
1/2	238110048

Socket - female thread

BSPP	
1/4	238220028
3/8	238220038
1/2	238220048

Plug - female thread

BSPP	
1/4	238120028
3/8	238120038
1/2	238120048

Socket - hose barb

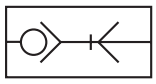
ID Hose	
6	238230600
9	238230900
13	238231300

Plug - hose barb

ID Hose	
6	238130600
9	238130900
13	238131300

Single shut off quick release couplings

234 Series



Low pressure drop
High flow rate
Compact & robust
Wide range of connections

Technical data

Operating pressure:
0 to 35 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure)
Cv = 2,764

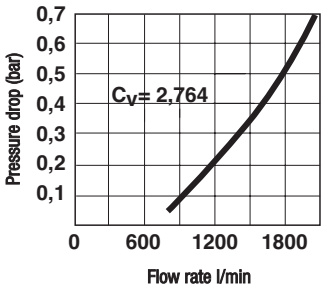
Compatibility

Rectus 25/26, Legris 25/26,
Parker PEF/PF52, PCL AC71
Bosch size 3, Cejn 320,

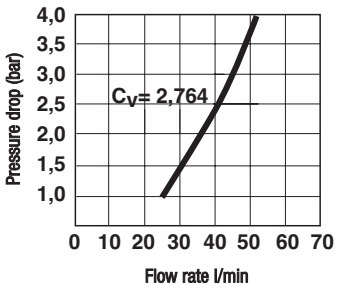
Materials

Coupler back & body: nickel plated brass
Valve: zinc die-casting nickel plated
Spring & balls: stainless steel
Seals: Buna N
Sleeve & plug: hardened nickel plated steel

Air inlet pressure 6 bar



Water



Socket - male thread

BSPP	
R1/4	234210028
R3/8	234210038
R1/2	234210048

Plug - male thread

BSPP	
R1/8	234110018
R1/4	234110028
R3/8	234110038
R1/2	234110048

Socket - female thread

BSPP	
G1/4	234220028
G3/8	234220038
G1/2	234220048

Plug - female thread

BSPP	
G1/4	234120028
G3/8	234120038
G1/2	234120048

Socket - hose barb

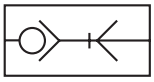
ID Hose	
6	234230600
9	234230900
13	234231300

Plug - hose barb

ID Hose	
6	234130600
9	234130900
13	234131300

Single shut off quick release couplings

235 Series



Very high flow
Low pressure drop
Compact & robust

Technical data

Operating pressure:
0 to 35 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure)
Cv = 5,166

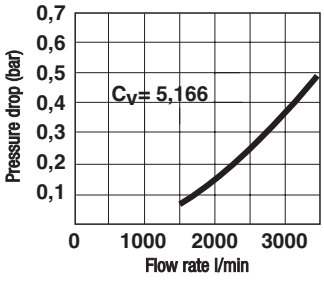
Compatibility

Rectus 27
Legris 27
Parker PEF 53
Cejn 410

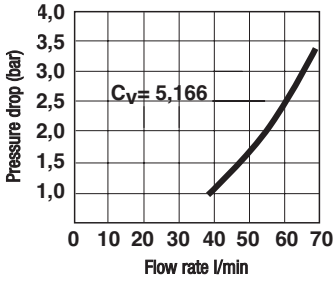
Materials

Coupler back & body: nickel plated brass
Valve: brass
Spring & balls: stainless steel
Seals: Buna N
Sleeve & plug: hardened nickel plated steel

Air inlet pressure 6 bar



Water



Socket - male thread

BSPP	
1/4	235210028
3/8	235210038
1/2	235210048

Plug - male thread

BSPP	
1/4	235110028
3/8	235110038
1/2	235110048

Socket - female thread

BSPP	
1/4	235220028
3/8	235220038
1/2	235220048

Plug - female thread

BSPP	
1/4	235120028
3/8	235120038
1/2	235120048

Socket - hose barb

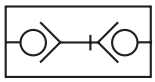
ID Hose	
9	235230900
13	235231300

Plug - hose barb

ID Hose	
9	235130900
13	235131300

Double shut-off quick release couplings

233 Series



Double valve allows full flow but prevents leak on disconnection

Compact dimensions

Single hand operation

Technical data

Operating pressure:
0 to 35 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure)
Cv = 0,475

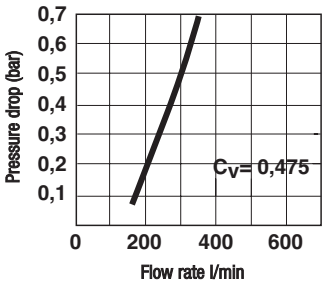
Compatibility

233 Double shut off are not compatible with 233 single shut off due to valve connection method

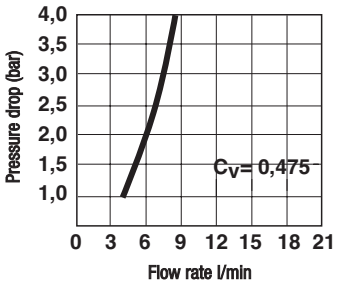
Materials

Coupler back, body & sleeve: nickel plated brass
Valve: brass
Spring & balls: stainless steel
Seals: Buna N
Plug: nickel plated brass

Air inlet pressure 6 bar



Water



Socket - male thread

BSPP	
1/4	233410028

Plug - male thread

BSPP	
1/4	233310028

Socket - female thread

BSPP	
1/4	233420028

Plug - female thread

BSPP	
1/4	233320028

Socket - hose barb

ID Hose	
6	233430600

Plug - hose barb

ID Hose	
6	233330600

Socket - hose barb panel mount

ID Hose	
6	233470600

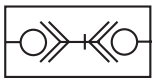
Plug - push on fitting

ID Hose	
6	233360600

Double shut-off quick release couplings

DH Series

US Mil C4109 ¼'' to ¾''



Technical data

Operating pressure:

Brass

1/8": 250 bar
1/4", 3/8": 200 bar
1/2": 150 bar
3/4"and 1": 100 bar

Stainless steel

1/8", 1/4", 3/8", 1.2": 250 bar
3/4": 160 bar
1": 100 bar

Ambient temperature:

-20°C to +100°C for Buna N seals
-15°C to +200°C for Viton seals

Air flow:

Please refer to graphs

Compatibility

The plug profile is manufactured in accordance with ISO - 7241-1 series B

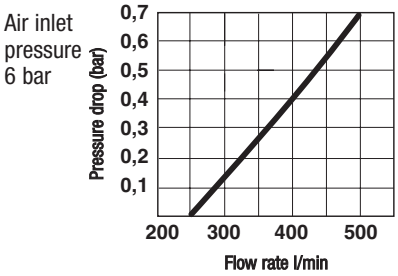
Materials

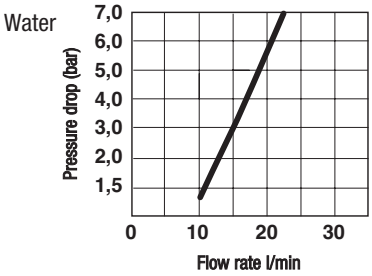
Brass with Buna N seals

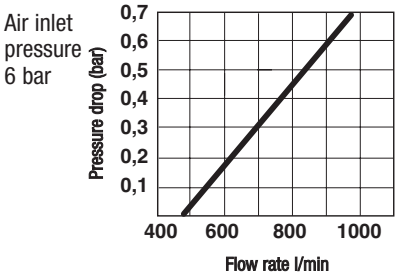
Back body, sleeve and valve: brass
Spring and locking ring: stainless steel
Locking balls: stainless steel
Seals: Buna N
Plug: brass

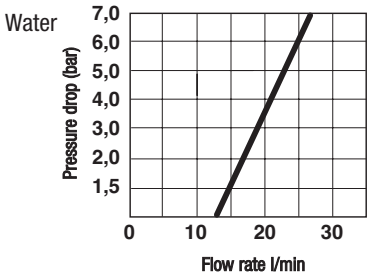
Stainless steel with Viton seals

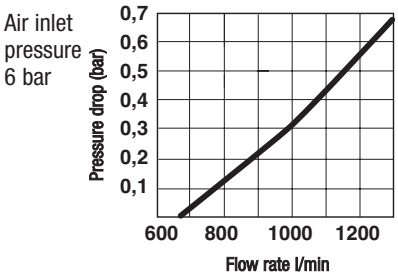
Back body, sleeve and valve: stainless steel
Spring and locking ring: stainless steel
Locking balls: stainless steel
Seals: Viton
Plug: stainless steel

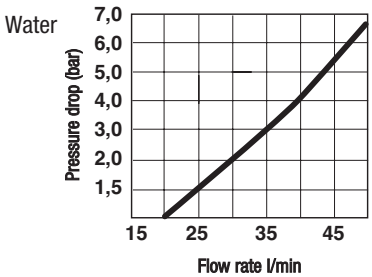




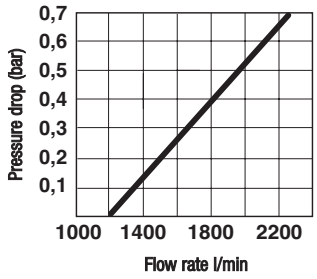




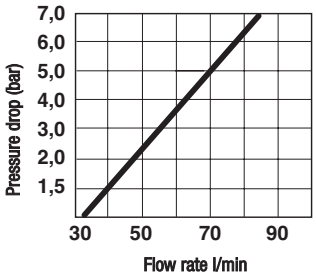




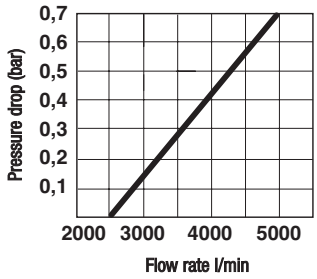
Air inlet pressure 6 bar



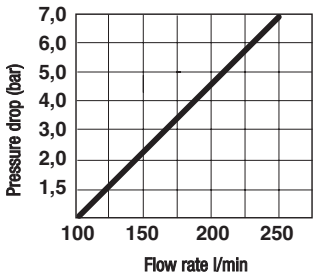
Water



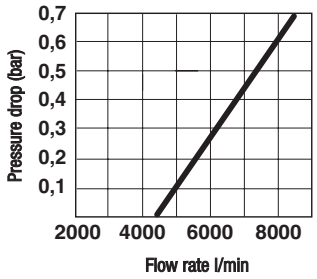
Air inlet pressure 6 bar



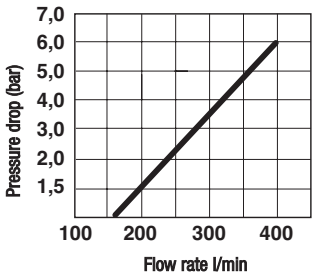
Water



Air inlet pressure 6 bar



Water



Brass double shut off socket (Buna N seal) - female threads

Profile	BSP parallel	Material	Max working pressure	
1/8	1/8	Brass	250	DHS-220BP
1/4	1/4	Brass	250	DHS-440BP
3/8	3/8	Brass	200	DHS-660BP
1/2	1/2	Brass	150	DHS-880BP
3/4	3/4	Brass	100	DHS-12120BP
1	1	Brass	100	DHS-16160BP

Brass double shut off plug (Buna N seal) - female threads

Profile	BSP parallel	Material	Max working pressure	
1/8	1/8	Brass	250	DHP-220BP
1/4	1/4	Brass	250	DHP-440BP
3/8	3/8	Brass	200	DHP-660BP
1/2	1/2	Brass	150	DHP-880BP
3/4	3/4	Brass	100	DHP-12120BP
1	1	Brass	100	DHP-16160BP

Stainless steel double shut off socket (Viton seals) - female threads

Profile	BSP parallel	Material	Max working pressure	
1/8	1/8	Stainless steel	250	DHS-220SVP
1/4	1/4	Stainless steel	250	DHS-440SVP
3/8	3/8	Stainless steel	250	DHS-660SVP
1/2	1/2	Stainless steel	250	DHS-880SVP
3/4	3/4	Stainless steel	160	DHS-12120SVP
1	1	Stainless steel	100	DHS-16160SVP

Stainless steel double shut off plug (Viton seals) - female threads

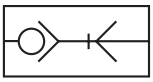
Profile	BSP parallel	Material	Max working pressure	
1/8	1/8	Stainless steel	250	DHP-220SVP
1/4	1/4	Stainless steel	250	DHP-440SVP
3/8	3/8	Stainless steel	250	DHP-660SVP
1/2	1/2	Stainless steel	250	DHP-880SVP
3/4	3/4	Stainless steel	160	DHP-12120SVP
1	1	Stainless steel	100	DHP-16160SVP

Quick release couplings

237 Series

US Mil C4109 1/4”

(Dynaquip D3 compatible)



High flow rate, low pressure drop
Industrial standard profile

Technical data

Operating pressure:
0 to 35 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure)
Cv = 1,382

Compatibility

DYNAQUIP D3

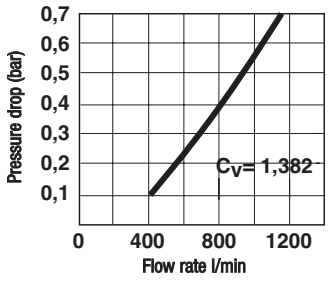
Rectus 23/24	Legris 23,
Parker 30 1/4,	Cejn 310,
Aignep 220	Hansen 3000

Materials

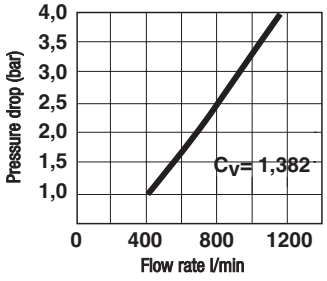
Coupler back & body: nickel plated brass
Valve: brass
Spring & balls: stainless steel
Seals: Buna N
Sleeve & plug: hardened nickel plated steel

Also available
Series 23D, low flow version of this coupling

Air inlet pressure 6 bar



Water



Socket - male thread

BSPP	
1/4	237210028
3/8	237210038
1/2	237210048

Plug - male thread

BSPP	
1/4	237110028
3/8	237110038
1/2	237110048

Socket - female thread

BSPP	
1/4	237220028
3/8	237220038
1/2	237220048

Plug - female thread

BSPP	
1/4	237120028
3/8	237120038
1/2	237120048

Socket - hose barb

ID Hose	
6	237230600
9	237230900
13	237231300

Plug - hose barb

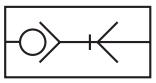
ID Hose	
6	237130600
9	237130900
13	237131300

Quick release couplings

231 Series

US Mil C4109 3/8''

(Dynaquip D4 compatible)



Heavy duty
Good flow rates
Industrial standard

Technical data

Operating pressure:
0 to 15 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure) Cv = 1,689

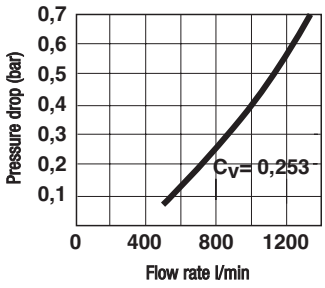
Compatibility

DYNAQUIP D4
Rectus 30
Parker 30 3/8
Cejn 430
Hansen 4000

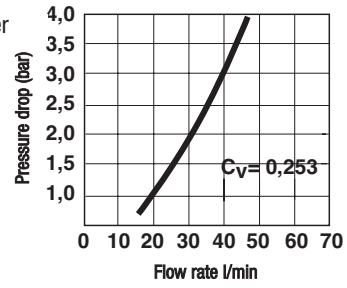
Materials

Coupler back & sleeve: nickel plated brass
Coupler body: nickel plated steel
Valve: nickel plated steel
Spring & pins: stainless steel
Seals: Buna N
Plug: hardened & nickel plated steel

Air inlet pressure 6 bar



Water



Socket - male thread

BSPP	
3/8	231220038
1/2	231220048

Plug - male thread

BSPP	
3/8	231110038
1/2	231110048

Socket - female thread

BSPP	
3/8	231220038
1/2	231220048

Plug - female thread

BSPP	
3/8	231120038
1/2	231120048

Socket - hose barb

ID Hose	
9	231230900

Plug - hose barb

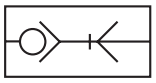
ID Hose	
9	231130900
13	231131300

Quick release couplings

239 Series

US Mil C4109 1/2''

(Dynaquip D5 compatible)



Heavy duty
High flow rates
Industrial standard

Technical data

Operating pressure:
0 to 35 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure)
Cv = 3,609

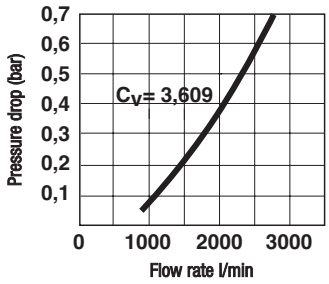
Compatibility

DYNAQUIP D5
US Mil C4109,
Rectus 37
Parker PB54
Cejn 550
Hansen 5000

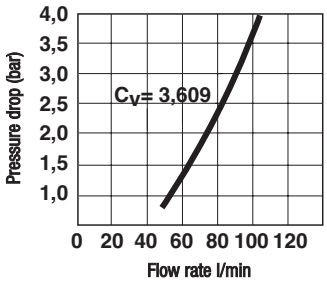
Materials

Coupler back, body & sleeve: nickel plated brass
Valve: brass
Spring & pins: stainless steel
Seals: Buna N
Plug: hardened & nickel plated steel

Air inlet pressure 6 bar



Water



Socket- male thread

BSPP	
1/2	239210048
3/4	239210068

Plug - male thread

BSPP	
1/2	239110048
3/4	239110068

Socket - female thread

BSPP	
1/2	239220048
3/4	239220068

Plug - female thread

BSPP	
1/2	239120048
3/4	239120068

Socket - hose barb

ID Hose	
13	239231300
19	239231900

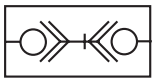
Plug - hose barb

ID Hose	
13	239131300
19	239131900

Self venting safety coupling

EN 983 Compliant quick release couplings

US Mil C4109 ¼"



This single shut off coupling has a two stage disconnection. The first stage closes the valve and allows the downstream pressure to vent whilst the coupling is still joined, avoiding whiplash.

Once the pressure is vented the second stage disconnection releases the plug from the socket.

This complies to the requirement of EN 983.

Technical data

Operating pressure:
0 to 15 bar

Ambient temperature:
-20°C to +100°C

Air flow:
(6 bar inlet pressure)
Cv = 1, 920

Compatibility

Norgren 237 Series

Materials

Coupler back & sleeve: nickel plated brass

Valve: brass

Spring. pins & balls: stainless steel

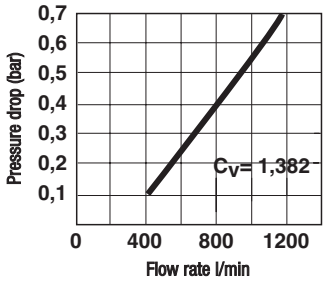
Seals: Buna N

Body & plug: hardened nickel plated steel

Alternative models

Self venting couplings are also available in coupling and plug serves as per our 238, 234, 237, 239 series.

Air inlet pressure 6 bar



Socket - male thread

BSPP	
1/4	237610028
3/8	237610038
1/2	237610048

Socket - female thread

BSPP	
1/4	237620028
3/8	237620038
1/2	237620048

Socket - hose barb

ID Hose	
6	237630600
9	237630900
13	237631300

Blow guns

BG Series

Rc¼, G¼

BG4000:

Bright chrome finish.

Cushioned corporate vinyl thumb grip.

Exhausts air when nozzle is blocked.

Complies with O.S.H.A.

BG5000:

One piece design in moulded high impact plastic.

Exhausts air when nozzle is blocked.

Complies with O.S.H.A.

Technical data

Medium:
Non-lubricated compressed air, filtered

Connection:
G1/4 (BG4000 and BG5000)

Operating pressure:
10 bar maximum line pressure

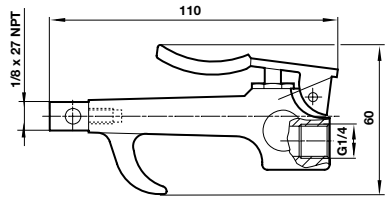
The USA O.S.H.A. recommendations state that nozzle pressures should not exceed 2 bar. This ensures that the blocked end condition pressure will not exceed the 0,4 bar that could penetrate human skin with possibly fatal consequences. Blow guns should always be supplied through a suitable pressure regulator to ensure safe operation

Mounting

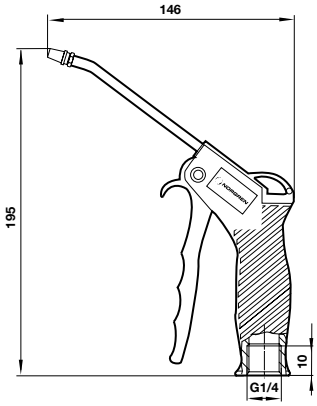
Hand-held incorporating finger guard

Size	
G1/4	BG4000
G1/4	BG5000

BG4000

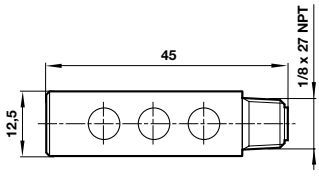


BG5000

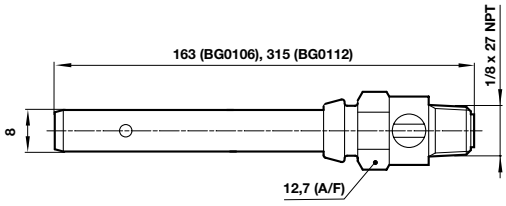


Accessories for BG4000

Safety booster BG0100



Extension tubes BG0106, BG0112



Quietaire heavy duty silencers

MA and MB Series

⅛" to 2" BSPT, BSPP or PTF

Reduce the noise levels of pneumatic equipment.

Prevent open line exhaust dangers.

Corrosion resistant.

High flow capacity with low back pressure.

Brass mesh screen and aluminium construction provide improved flow, longer life and cleanable element.

Prevent metal chips, abrasive grits, dust and other contaminants from entering open exhaust ports.

Technical data

Medium:

Compressed air, filtered, lubricated and non-lubricated, inert gases

Operating pressure:

-1 to 20 bar

Ambient temperature:

-20°C to + 80°C

Operation:

Exhaust silencer

Mounting:

Directly in the exhaust port

Materials

Aluminium body and shell, brass mesh element

Alternative models

M/S & C/S range of porous plastic silencers.

T40 series of Quietaire sintered bronze silencers

Male thread

Model PTF	BSPT	Port size	Flow Factor Cv*/C**	kg
MB001A	MB001B	1/8	1,3 / 5,3	0,03
MB002A	MB002B	1/4	2,3 / 9,4	0,03
MBP03A	MBP03B	3/8"	2,9 / 11,8	0,03
MB003A	MB003B	3/8	4,9 / 20,0	0,10
MB004A	MB004B	1/2	6,8 / 27,7	0,09
MBP06A	MBP06B	3/4"	7,2 / 29,4	0,09
MB006A	MB006B	3/4	14,8 / 60,4	0,45
MB008A	MB008B	1	18,0 / 73,4	0,04
MBP10A	MBP10B	1¼"	23,6 / 96,3	0,04

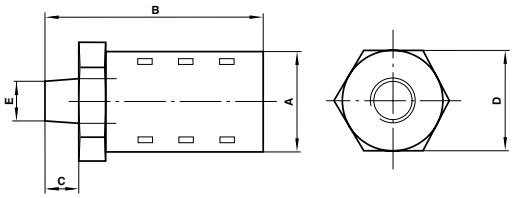
*Cv measured in US/gall/min **C measured in $dm^3/(s.bar)$

Female thread

Model PTF	BSPT	BSPP	Port size	Flow Factor Cv*/C**	kg
MA001	MA001B		1/8"	0,8 / 3,26	0,03
MA002	MA002B		1/4"	2,4 / 9,79	0,03
MA003	MA003B		3/8"	5,7 / 23,3	0,10
MA004	MA004B		1/2"	6,9 / 28,1	0,09
MA006	MA006B		3/4"	18,0 / 73,4	0,45
MA008	MA008B		1"	20 / 81,6	0,40
MA010		MA010C	1¼"	42 / 171,4	0,62
MA012		MA012C	1½"	39 / 159,1	0,60
MA016A		MA016C	2"	59 / 241,0	0,76

*Cv measured in US/gall/min **C measured in $dm^3/(s.bar)$

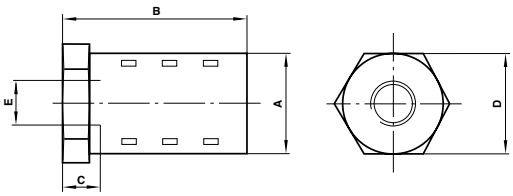
Male thread



A	B	C	D	E*	
21	51	9	20,6	1/8"	MB001
21	55	13	20,6	1/4"	MB002
21	55	13	20,6	3/8"	MBP03
32	88	13	31,7	3/8"	MB003
32	92	17	31,7	1/2"	MB004
32	92	17	31,7	3/4"	MBP06
51	134	20	50,8	3/4"	MB006
51	138	23	50,8	1"	MB008
51	140	26	50,8	11/4"	MBP10

* For MB***B Rc (BSPT) according to BS21 and ISO - 7/1
For MB***A PTF-SAE SHORT according to ANSI-B1.20.1x

Female thread



A	B	C	D	E*	
21	42	6	20,6	1/8"	MA001
21	45	9	20,6	1/4"	MA002
32	78	9	31,7	3/8"	MA003
32	83	12	31,7	1/2"	MA004
51	118	12	50,8	3/4"	MA006
51	118	15	50,8	1"	MA008
64	144	15	63,5	1¼"	MA010
64	144	15	63,5	1½"	MA012
76	168	16	76,2	2"	MA016A

* For MA***B Rc (BSPT) according to BS21 and ISO - 7/1
For MA***A PTF-SAE SHORT according to ANSI-B1.20.1
For MA***C G (BSPP) according to BS2779 and ISO-228/x

Additional ranges

Plasfit push-in tube fittings

O/D Tube	Series
5 ... 12 mm	11
3/16 ... 1/2	13

For use in drinks dispense, food processing and general industrial compressed air applications.
Quick and simple assembly.
Tamper resistant with optional snap-on cover.
Suitable for rigid and flexible tubing.
SK and WRC approval.

82 Series fittings (Metric)

O/D Tube	Series
5 ... 28 mm	82

For use in areas of vibration
Pre-assembled units
No special assembly tools or heat required
Can be remade
Thinner tube can be used
Will cope with some tube misalignment

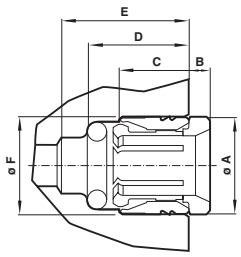
Cartridge push-in fittings (kits)

Allows compact product design
Fitting becomes integral part of component
Suitable for vacuum up to 98%
Ease of component assembly
Suitable for use with both plastic and metal components
Silicone free O-rings gives positive seal

General dimensions

O/D Tube	A	B Length	C Depth	D Depth	E Depth	F	
4	7,5	2,0	6,0	8,6	12,0	8,1	100080400
5	10,0	2,2	6,8	9,6	12,8	9,1	100080500
6	11,0	2,2	7,3	10,1	13,2	10,1	100080600
8	13,0	2,2	7,3	10,1	14,2	12,1	100080800
10	14,5	2,2	9,6	14,6	18,7	16,1	100081000
12	18,0	2,2	12,3	17,2	22,2	18,3	100081200

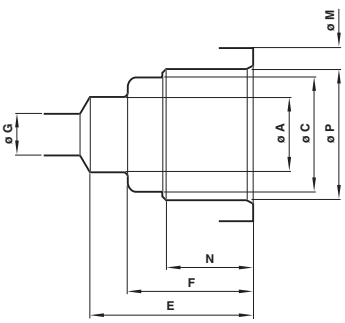
Inch version also available upon request.



Port form dimensions

O/D Tube	A +0,10 -0	C + -0,5	E + -0,10	F + -0,10	G	N +0,15 -0	S Max	T Max	For plastic components M Rec min. wall thickness	For plastic components P +0,10 -0	For metal components M Rec min. wall thickness	For metal components P +0,05 -0
4	4,08	6,95	12,10	8,70	2,80	6,00	0,7	0,30	1,5	8,20	1,5	8,30
5	5,08	8,15	12,90	9,70	3,40	6,80	0,7	0,50	1,5	9,20	1,5	9,30
6	6,08	9,20	13,30	10,20	4,40	7,30	0,7	0,50	1,5	10,20	1,5	10,30
8	8,10	11,30	14,30	10,30	6,00	7,30	0,7	0,50	1,5	12,10	1,5	12,30
10	10,10	13,95	18,80	14,70	7,60	9,60	0,7	0,50	2,0	16,05	2,0	16,30
12	12,20	17,02	22,30	17,30	9,65	12,30	0,7	0,50	2,0	18,20	2,0	18,50

Inch version also available upon request.



Additional ranges

Sintered bronze silencers, T40 series

BSPT		BSPP	
		M5	T40M0500
1/8	T40B1800	1/8	T40C1800
1/4	T40B2800	1/4	T40C2800
3/8	T40B3800	3/8	T40C3800
1/2	T40B4800	1/2	T40C4800
3/4	T40B6800	3/4	T40C6800
1	T40B8800	1	T40C8800

- Reduce the noise levels of pneumatic equipment.
- Compact and efficient.
- Screw directly into the exhaust port.
- Prevent the ingress of dirt.

Pressure indicators

Type		
10-32 UNF	Low pressure	5VS-100 Series
G1/8	High pressure	5VS-400 Series

- Indicate the presence or absence of a pneumatic signal
- Wide angle of visibility
- Contrasting colour combinations for positive identification

Pressure drop indicators

Type		
G1/8	In-line ports	18-833-001
	In-line ports	18-833-009
	Rear ports	18-833-017
	Rear ports, panel mounted	18-833-025

- Give visual indication of level of pressure drop across units.
- Provide indication of condition of filter elements.
- Domed lens gives wide angle of visibility.
- Enable pressure drop in various parts of the system to be monitored.

M/S & T45 Porous plastic silencers

NPT Model		BSPP
M5		M/1545
1/8	C/S1	M/S1
1/4	C/S2	M/S2
3/8	C/S3	M/S3
1/2	C/S4	M/S4
3/4	C/S6	M/S6
1	C/S8	M/S8

- Reduce the noise levels of pneumatic equipment.
- Compact, efficient and lightweight.
- Screw directly into the exhaust port.
- Prevent the ingress of dirt.
- Low cost.

Threaded silencers

O/D Tube	
4	T45P0004
6	T45P0006
8	T45P0008
10	T45P0010
12	T45P0012
5/32	T45Y0002
1/4	T45Y0004
5/16	T45Y0005
3/8	T45Y0006

- Reduce the noise levels of pneumatic equipment
- Compact, efficient and lightweight
- Insert directly into Push-In Fitting exhaust port
- Prevent the ingress of dirt
- Low cost

Stem or PIF silencers

Exhaust filters

BSPP	
G1/8	M/1511
G1/4	M/1512
G1/2	M/1514
G3/4	M/1516
G1	M/1518

- Prevent the ingress of dirt with minimal flow restriction.
- Robust and compact.
- Screw directly into the exhaust port.

Additional ranges

Pressure indicators panel mounted

Size	
G1/4	V14B517A-Q2700

Can be mounted directly on the valve body.
Compact design

Pneumatic counters

	Recorded impulses	
M5	999999	M/616
	999999	M/617*

*M/617 is magnetically actuated, ideal for recording magnetic cylinder cycles

Compact design

Slow rotating joints

BSPT Taper	
1/8	04 0174 00
1/4	04 0175 00
3/8	04 0176 00

For use with a variety of fluids
7 bar maximum
50 r.p.m. maximum.

Fast rotating joints

	BSPT Taper	
Pressure	1/4	04 0161 00
Vacuum	1/4	04 0162 00

Pressure and vacuum models
For use with a variety of fluids
7 bar maximum
2000 r.p.m. maximum

Air reservoirs

Volume	
0,1 dm^3	M/1428
0,16 dm^3	M/1429
0,15 dm^3	M/163/15
0,50 dm^3	M/163/50
1,00 dm^3	M/163/100
2,00 dm^3	M/164/200

Robust construction

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