RAILWAY TECHNOLOGIES

Pneumatic Motion & Fluid Control Solutions

ENGINEERINGADVANTAGE

www.norgren.com/rail

NORGREN RAILINE

RAILWAY TECHNOLOGIES

Contents

NORGREN RAILINE

We listen to our customers and work closely with them to provide engineering solutions with added value.

ALSTOM

AUSTBRECK PTY. LTD.

AXTONE RAILWAY COMPONENTS

BOMBARDIER

BRECKNELL WILLIS

BRO ISLINGTON S.A.

CAF CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES S.A.

CIMC ROLLING STOCK AUSTRALIA PTY LTD

CNR 中国北车 北京赛德高科铁道电气科技有限责任公司 BEIJING CED RAILWAY ELECTRIC TECH . CO ., LTD.

CNR 中国北车 齐齐哈尔轨道交通装备有限责任公司 QIQIHAR RAILWAY ROLLING STOCK CO., LTD.

CSR 中国南车 南车株洲电力机车有限公司 CSR ZHUZHOU ELECTRIC LOCOMOTIVE CO.,LTD.

CSR 中国南车 南车长江车辆有限公司 CSR YANGTZE CO.,LTD.

DB Mobility Networks Logistics

DELLNER COUPLERS

DowneEDi Rail

ESCORTS

Faiveley TRANSPORT

FPS

GEMCORAIL

HITACHI Inspire the Next

ICIC PKP INTERCITY

Koleje Mazowieckie

melecs

MTR

Nabtesco

newag

pesa Pojazdy Szynowe PESA Bydgoszcz SA

Przewozy Regionalne

RAWAG

renfe Integria

GOBIERNO DE ESPAÑA MINISTERIO DE FOMENTO

ROBEL

SCHAKU

schunk

SEMVAC A/S

SIEMENS

SKM szybka kolej miejska PKP Szybka Kolej Miejska w Trójmieście sp. z o.o.

STADLER We Track Clever Solutions

STAUFF

www.stemmann.de

TABOR ROK ZAŁ. 1907 OPOLE SA ZYNOWY

Talgo

tamware DOOR SOLUTIONS™

TransTech POWER TRANSFER SYSTEMS

UGL Rail

Wabtec CORPORATION

“We can respond quickly and positively to a customer’s unique need”

Norgren has a proven track record in creating competitive advantage for customers in many industries. We work harder to understand our rail customers’ business and technical needs to give them smarter engineering solutions.

Norgren’s global engineering infrastructure enables us to respond quickly and positively to a customer’s unique needs. To develop high-quality proprietary engineering solutions for target markets as well as products to satisfy the general needs of the pneumatic industry, we have 20 sites world wide with engineering design capabilities, 5 of which are centres of excellence with specific focus on the rail industry.

After more than 30 years of experience in the rail industry we have developed a core set of products. These core products have been designed to encompass the environmental needs of this sector. All the products in this catalogue meet three fundamental environmental specifications, unless otherwise noted:

- Temperature from -40ºC to +80ºC
- Voltage tolerance of +/- 30%
- EN61373 Category 1 Class A and B vibration resistance

Go to page 36 for details on our extensive range of pneumatic and fluid control products meeting the above standards.

Norgren’s global presence, expertise, capabilities and extensive Railine product portfolio makes us ideally suited for developing custom application solutions. Go to page 6 and you will find examples of solutions developed by our Engineering teams worldwide.

“Sales and manufacturing facilities in 75 countries give us the global reach, understanding and capabilities that customers look for”

Norgren’s global footprint

Specialist technical centres are located in China, England, Germany and the USA

We have a global network of technical centres close to our key markets where skilled and experienced design and development engineers produce custom-built solutions to give our customers competitive advantage

With established manufacturing facilities globally Norgren has the manufacturing and support capabilities to be able to cope with the most demanding international projects. Drawing on many years of experience of handling major projects across national boundaries, Norgren can harness global resources to match its customers’ own operations.

>>GLOBAL REACH World leading pneumatic and fluid control technologies

‘Global manufacturing and support’

With an established sales and service network in 75 countries, we have the reach and capability to ensure continuity of supply and local support where it is needed for customers involved in export markets or multi-site operations. Front-line sales and technical support engineers share our knowledge and skills with customers around the world.

For details and information visit norgren.com

APPLICATIONS

Specialised multi-stage filtration system

» CUSTOMER **APPLICATION**

Oil free compressed air for auxiliary rail systems, brakes and door equipment

» NORGREN **SOLUTION**

Special 4 stage filtration system

» ENGINEERING **ADVANTAGE**

- » Special filter to remove excess water and carbon particles
- » Low temperature filter to remove water and filter to 5 micron
- » Fine particle removal filter to give a final air quality of 0.01 micron
- » Oil and particles removed from downstream - ISO 8573-1
- » Dry door and brake valves, improved reliability for couplings & pantographs
- » Easy installation and maintenance
- » Cost effective over the full life cycle

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Specialised multi-stage filtration system

» CUSTOMER **APPLICATION**

Compressed air filtration for auxiliary rail systems, brakes and door equipment

» NORGREN **SOLUTION**

Specialised 3-stage filtration system

» ENGINEERING **ADVANTAGE**

- » Excellent filtration performance ensures reliability of downstream components and systems
- » Large high-flow elements ensure maximum element change out intervals with minimum system pressure drop
- » Independent or modular 1, 2 or 3 stage filtration
- » Complete pre-assembled package minimises installation time
- » Special internal components and large metal bowls ensure reliability
- » Optional visual or electric service life indicator
- » Manual or automatic drains for filters and condensate tanks. Automatic units can be electrically operated or pilot operated.

Braking System Components

CUSTOMER **APPLICATION**

Train braking system components

NORGREN **SOLUTION**

Special solenoid valves & regulators

ENGINEERING **ADVANTAGE**

- Ability to function at both high and low temperatures
- +/- 30% voltage tolerance and surge suppression eliminate damage from power peaks
- Compact high performance valve
- High vibration resistance
- Rapid response time and long life
- Customised manifold solutions

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Braking System Components

CUSTOMER **APPLICATION**

Train braking system pressure monitoring

NORGREN **SOLUTION**

Special pressure switches

ENGINEERING **ADVANTAGE**

- -40°C to +100°C temperature range
- Gold plated contacts for high cycle life
- Vibration resistance to 15g
- High repeatability & accuracy
- Robust construction

Coupling Systems

» CUSTOMER **APPLICATION**

Carriage coupling / uncoupling for Metro and Mainline cars

» NORGREN **SOLUTION**

Special pneumatic cylinder, heavy duty limit sensing valves and fittings

» High spring force and high load rod bearing ensure reliable operation

» ENGINEERING **ADVANTAGE**

» Engineered to integrate to existing design

» Compact design

» Simplified installation

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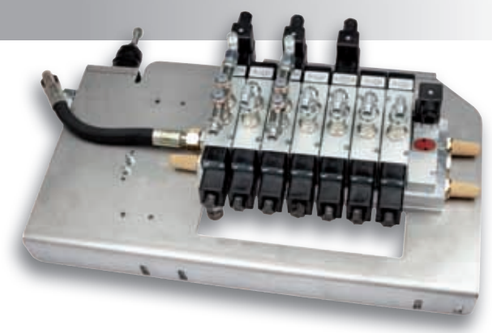
Coupling Systems



» CUSTOMER **APPLICATION**

Locomotive coupling / uncoupling with retractable nose cone for High Speed trains

» NORGREN **SOLUTION**

Special pneumatic cylinder with integrated position sensing, and customised compact valve manifold with unique manual over ride function

» ENGINEERING **ADVANTAGE**

» Compact, light weight valve manifold solutions

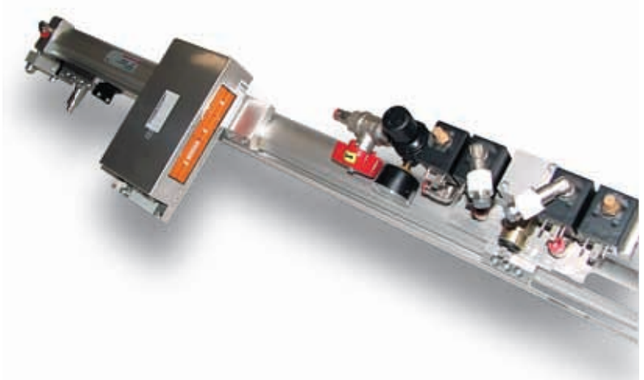
» Standard or customised actuators

» Heavy duty limit valves

» Solenoid valves proven in railway applications over many years

» Designed to save space, weight and installation time

Door Systems-External



» CUSTOMER **APPLICATION**

External plug door systems for Mainline and High Speed trains

» NORGREN **SOLUTION**

Special pneumatic rodless cylinder with integrated control system

» ENGINEERING **ADVANTAGE**

- » Safe, reliable and secure operation
- » Entrapment prevention
- » Interlocking and feedback for drive systems
- » Compact, space saving design
- » Proven reliability over many years of operation in the rail industry

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Door Systems-External

courtesy of
Train Door Solutions Ltd. (TDS)

» CUSTOMER **APPLICATION**

External sliding doors for Metro cars

» NORGREN **SOLUTION**

Special pneumatic actuators with integrated control system

» ENGINEERING **ADVANTAGE**

- » Rodded and rodless options
- » Extended cushioning and increased side load stability
- » Interlocking and feedback for drive systems
- » Entrapment protection
- » Proven reliability over many years in metro cars around the world
- » Quick and simple servicing

Door Systems-Internal

CUSTOMER **APPLICATION**

Internal pneumatic single leaf and double leaf door control systems

NORGREN **SOLUTION**

Special pneumatic rodless cylinder with integrated control system

ENGINEERING **ADVANTAGE**

- Safe, reliable and secure operation
- Fire resistant to BS 6853 Cat 1B
- Entrapment prevention
- Interlocking and feedback for drive systems
- Curved actuators for toilet doors
- Compact, space saving design
- Proven reliability over many years of operation in the rail industry

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Door Systems-Internal

CUSTOMER **APPLICATION**

Internal electrically operated single leaf and double leaf door control systems

NORGREN **SOLUTION**

Special electric rodless cylinder with integrated control system

ENGINEERING **ADVANTAGE**

- Safe, reliable and secure operation
- Entrapment prevention
- Interlocking and feedback for drive systems
- Compact, space saving design
- Smooth, quiet design with variable speed drive
- Proven reliability and quality

Door Systems-Internal

CUSTOMER **APPLICATION**

Manually operated semi-automatic single leaf or double leaf internal door system

NORGREN **SOLUTION**

Special cylinder, manual opening, automatic closing

ENGINEERING **ADVANTAGE**

- Low cost alternative to electric and pneumatic
- Constant opening force of 60 N
- Constant closing force of 50 N
- No drive system required, fewer moving parts, lighter weight
- Variable dwell for holding time delay before automatic closure
- Adjustable speed control for closure

Freight Wagon Door Systems

CUSTOMER **APPLICATION**

Wagon discharge automation systems

NORGREN **SOLUTION**

Special actuators and control system

ENGINEERING **ADVANTAGE**

- Heavy duty cylinders for discharge door and top hatch operation
- Customised mounting options
- Special purpose control valves
- Air preparation including filters, Y strainers, check valves, dryers, regulators, isolation valves & drain valves ensure reliable operation
- Improves freight handing efficiency and safety

Freight Wagon Door Systems

CUSTOMER **APPLICATION**

Automated freight wagon controls

NORGREN **SOLUTION**

Specialised control systems designed to integrate with customer specific control systems

ENGINEERING **ADVANTAGE**

- Low power solenoid valves for remote control solar powered systems
- Customised actuators designed for use in harsh environments
- Air motors
- Heavy duty mechanical and manual over-ride valves
- Heavy duty Y strainers, filters and non-return valves
- Heavy duty push-in and compression fittings for brakes and accessories

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Freight Wagon Door Systems

CUSTOMER **APPLICATION**

Freight wagon control for top hatch and discharge doors

NORGREN **SOLUTION**

Use a customised cylinder with an integrated latch and manual over ride to lock the piston of the door cylinder, for air-supply failure protection. The latching cylinder is combined with other heavy duty components as a complete kit.

ENGINEERING **ADVANTAGE**

- Proven technology
- Reduced components circuitry, installation time and weight
- Integrated design, instead of separate locking cylinders
- Manual over ride to allow manual operation if compressed air not available

Horn Control

» CUSTOMER **APPLICATION**

Horn operation

» NORGREN **SOLUTION**

Special valve with electrical feedback

» ENGINEERING **ADVANTAGE**

- » Manual, pilot and solenoid operated options
- » Double contact safety switch for feedback to data logger
- » Reduced piping and installation time
- » No commissioning or adjustment time required
- » Robust construction

Mirror Control

» CUSTOMER **APPLICATION**

Rear view mirror movement

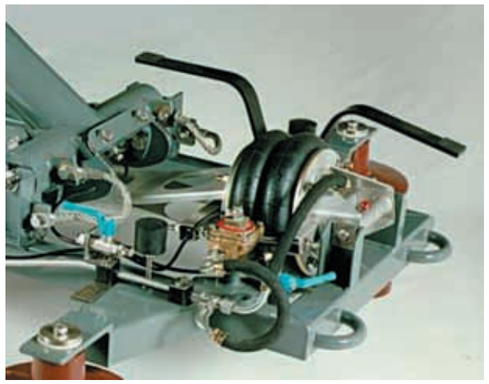
» NORGREN **SOLUTION**

Special pneumatic actuator and controls

» ENGINEERING **ADVANTAGE**

- » Force resistance at high speed
- » External speed & cushion adjustment
- » Fully integrated design
- » Wide temperature range
- » Highly reliable operation

Pantograph Systems



CUSTOMER **APPLICATION**

Pantograph systems for Mainline and High Speed rail vehicles

NORGREN **SOLUTION**

Special air bellow and customised control systems, including railway approved fittings and tubing

Special actuator assembly with flow and pressure regulation

Proportional technology, valves, airline and fittings all completely reliable under the most extreme conditions

ENGINEERING **ADVANTAGE**

- Fast operation and rapid response
- Constant force maintained even at high speed
- Ability to work in both high and low temperatures (-40°C to + 80°C)
- Tested for 400 KM/H trains to withstand external elements and vibration
- Optional "Auto Drop Down (ADD)" and "Over-reach" control functions
- Robust and compact construction

Pantograph Systems

CUSTOMER **APPLICATION**

Pantograph system

NORGREN **SOLUTION**

The challenge for Norgren is to provide a control box with high relief flow rate that can be installed in the existing small space. Since the difference between the highest and the lowest is up to 300 mm the relief flow should be high enough to maintain a constant contact force.

Norgren developed a control box using R27 and F72 regulators and filters. The relief flow rate of the R27 is high enough to provide a constant contact flow. The solution is small enough to fit in the existing limited space.

ENGINEERING **ADVANTAGE**

The solution enables the contact force between the electric cable and the pantograph to be constant, allowing a constant power supply. This has solved the bouncing and arcing problem in the pantograph system.

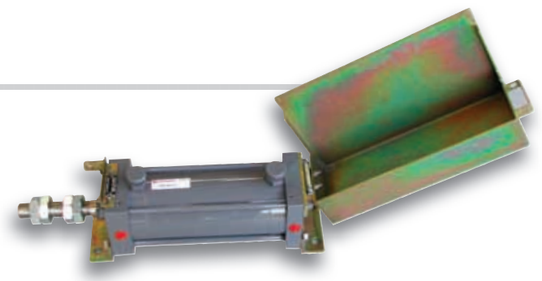
Points Control

CUSTOMER **APPLICATION**

Points Control Movement

NORGREN **SOLUTION**

Design a special cylinder with integrated front & rear latching to customer specific requirements and integrate a vandal resistant cover for increased safety



ENGINEERING **ADVANTAGE**

- Reduced components
- Simplified design and reduced weight
- Non-corrosive materials and paint finish
- Thorough design, development and testing programme
- Independent validation and approval to high standards

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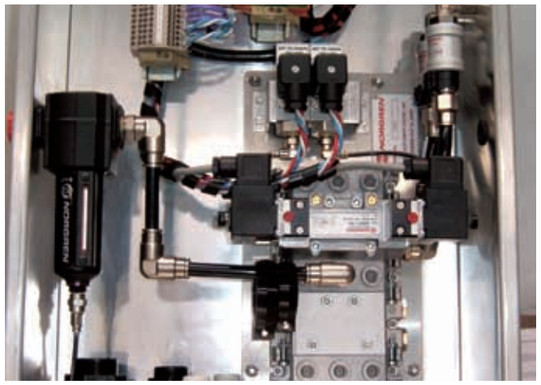
Points Control



CUSTOMER **APPLICATION**

Control of points actuators

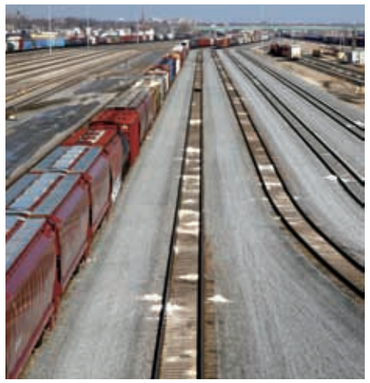
NORGREN **SOLUTION**

Customised control system assembly

ENGINEERING **ADVANTAGE**

- Customised multi-function manifolds
- Customised vandal resistant enclosures
- Fully tested and accredited solutions
- Low maintenance, optimum reliability and maximum life

Retarder Cylinders



» CUSTOMER **APPLICATION**

Retarders for controlling freight wagon speed in marshalling yards

» NORGREN **SOLUTION**

Special pneumatic actuators

» ENGINEERING **ADVANTAGE**

- » -40°C to +80°C temperature range
- » High side load resistance from oversized rod and heavy duty bearing
- » Special seal materials to withstand harsh environments
- » Stainless steel piston for corrosion resistance
- » Robust construction

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Step Control

» CUSTOMER **APPLICATION**

Door step actuation for Mainline and High Speed trains

» NORGREN **SOLUTION**

Special pneumatic cylinder/s

» ENGINEERING **ADVANTAGE**

- » Slide and swing operation options catered for
- » Compact, robust construction
- » Optional integrated interlocking function
- » Resistant to harsh environments
- » Integrated with train framework

Toilet Control

CUSTOMER **APPLICATION**

Vacuum control of toilet flushing system

NORGREN **SOLUTION**

Modular system consisting of special valves, actuators and regulators

ENGINEERING **ADVANTAGE**

- Ultra low water consumption
- Fast and simple installation
- Proven reliability over many years
- Preferred Industry choice
- Optional integrated diagnostics

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Toilet Control

CUSTOMER **APPLICATION**

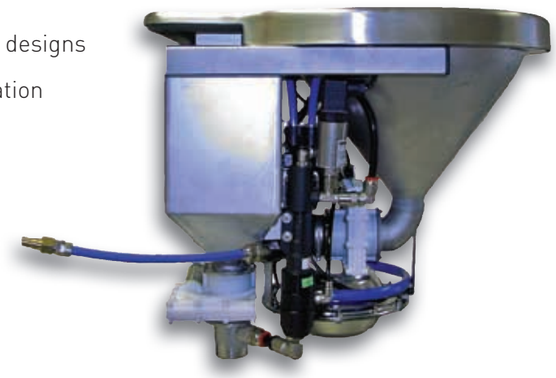
Pneumatic control of toilet flushing system

NORGREN **SOLUTION**

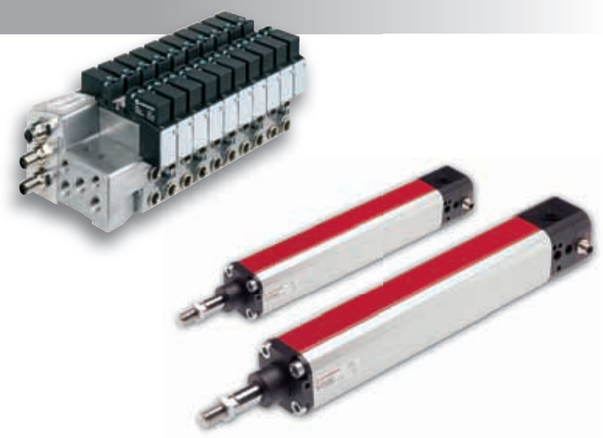
Integrated electro-pneumatic control system

ENGINEERING **ADVANTAGE**

- Simplified, low cost design
- Customised control systems & “Plug and Play” designs
- Optional system monitoring, feedback and isolation
- Reduced water consumption
- Single flush and dual flush designs



Ventilation Control



CUSTOMER **APPLICATION**

On-board and tunnel ventilation & damper control systems

NORGREN **SOLUTION**

Actuators and valve islands

ENGINEERING **ADVANTAGE**

- Customised actuators
- Railway specific solenoid valves
- "Smartcylinder" with integrated valve, reed switches & speed controls designed to save space and reduce installation time
- High flow Fieldbus valve islands with patented spool technology for unsurpassed reliability
- Fail safe and low/high temperature options

Water Control

CUSTOMER **APPLICATION**

Centralised control of freshwater supply and grey water drainage of catering and restaurant applications

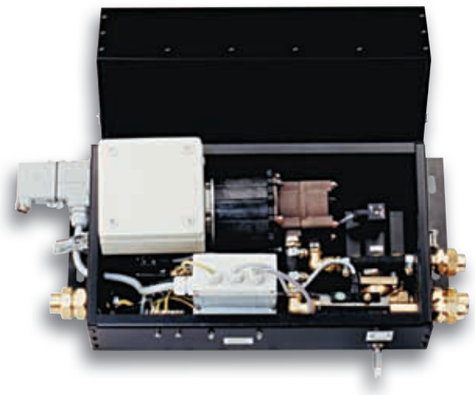
NORGREN **SOLUTION**

Customised valves and control systems

ENGINEERING **ADVANTAGE**

- Modular, space saving design
- Can be integrated with other systems
- Precise and safe control
- Rapid fill and drain designs

Water Control



CUSTOMER **APPLICATION**

External outlets of grey water and sewage

NORGREN **SOLUTION**

Special 2/2 pilot operated valve with pilot solenoid

ENGINEERING **ADVANGTAGE**

- Remains pressure tight even during high pressure peaks in tunnels or parallel to oncoming trains
- Extremely reliable operation even with contamination
- +/- 30% voltage tolerance and surge suppression eliminate damage from power fluctuations and spikes
- Simple installation
- Optional fully integrated solutions
- High flow for rapid drainage
- Automatic operation replaces labour intensive manual operation

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Water Control

CUSTOMER **APPLICATION**

For the control of water supply to hand-wash basins, the customer needed a small solenoid valve, that could be controlled by a sensor / timer. The valve had to meet demanding specifications with regard to resistance to particle contamination and limestone deposits. Reliability had been a key issue with previous mechanical and competitor's solenoid operated solutions, and were the main reason for change.

NORGREN **SOLUTION**

A platform product was customized to meet the specification for flow, response and resistance to particle contamination. More than 25,000 units have been installed, and have worked reliably since

An extended tolerance of +/- 30% of the nominal voltage (the German VDE standard requires +/-10%) and a power surge suppression, to eliminate damage from power peaks, were provided for the pilot valve

ENGINEERING **ADVANTAGE**

Buschjost helped the customer eliminate a major maintenance problem by replacing the existing unreliable solution with a customized solenoid valve that functions under the difficult conditions of the application

The extended tolerance and surge suppression ensure functionality under difficult conditions as found in the rail industry

PRODUCTS

NORGREN RAILINE

“Our strengths lie in applications within the field of pneumatic motion and fluid control”

Pneumatic motion and fluid control technologies

Norgren is at the forefront in exploiting the potential of pneumatic motion and fluid control technologies.

The company employs approximately 6,000 people worldwide including 300 design and development engineers located throughout its global manufacturing and technical centres. Norgren is part of the publicly traded IMI Group that has over 14,000 people and worldwide revenues of $3billion.

OUR OBJECTIVE to be a valued partner

‘Innovate, explore and create’

Our objective is to become an integral part of a customer’s business, a valued partner driven by their goals.

Carl Norgren was the pioneer that invented an entire industry with the first lubricator. And as pioneers, Norgren innovates continuously and explores new options with creativity. Norgren’s product portfolio is probably the most extensive in the industry and includes a host of highly regarded brands such as Lintra, Excelon, Pneufit, Martonair, Enots, Herion, Buschjost, KIP, FAS and Kloehn.

Drawing on this wide and established range of technologies, Norgren engineers deliver custom solutions – visit norgren.com

ACTUATORS

Double acting profile cylinders LPRA/182000/M

Ø 32 ... 125 mm

High performance, stability and reliability

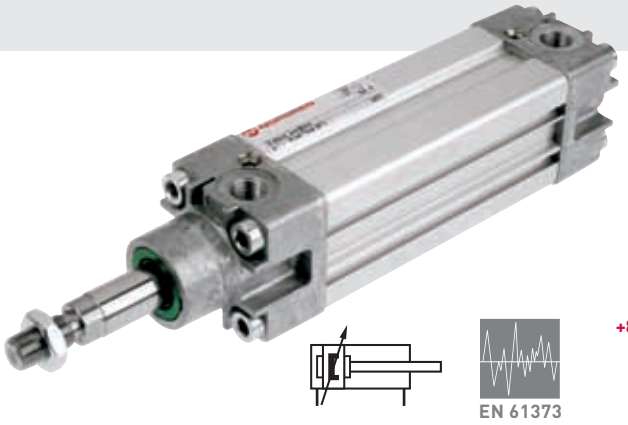
M/50 switches (solid state) can be mounted flush with the profile

Cylinders and mountings conform to ISO 15552 (ISO 6431, VDMA 24562 and NFE 49-003-1)

Comprehensive range of mountings

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B



Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated
Standard:
ISO 15552
Operation:
Double acting, magnetic piston, adjustable cushioning

Operating pressure:
1 ... 16 bar (14 ... 232 psi)
Operating temperature:
-40 ... +80°C max.
(-40 ... +176°F max.)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Air ports:
ISO G parallel or NPT
Cylinder diameters:
32, 40, 50, 63, 80, 100, 125 mm
Strokes:
Standard: see page below
Non-standard strokes:
Available (10 ... 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

Technical data

Cylinder Ø (mm)	32	40	50	63	80	100	125
Air ports	1/8"	1/4"	1/4"	3/8"	3/8"	1/2"	1/2"
Piston rod Ø (mm)	12	16	20	20	25	25	32
Piston rod thread	M10 x 1,25	M12 x 1,25	M16 x 1,5	M16 x 1,5	M20 x 1,5	M20 x 1,5	M27 x 2
Cushion length mm (inch)	19 (.75)	22 (.87)	24 (.94)	24 (.94)	27 (1.06)	34 (1.34)	41 (1.61)
Theoretical thrusts at 6 bar (87 psi) outstroke N (lb)	482 (108)	754 (169)	1178 (265)	1870 (420)	3016 (678)	4710 (1059)	7363 (1656)
Theoretical thrusts at 6 bar (87 psi) instroke N (lb)	414 (93)	633 (142)	990 (222)	1680 (378)	2722 (612)	4416 (993)	6882 (1547)
Air consumption at 6 bar (87 psi) outstroke l/cm (inch³/inch)	0,056 (8.7)	0,088 (13.7)	0,137 (21.3)	0,218 (33.9)	0,35 (54.4)	0,55 (85.5)	0,86 (133.7)
Air consumption at 6 bar (87 psi) instroke l/cm (inch³/inch)	0,048 (7.5)	0,074 (11.5)	0,114 (17.7)	0,195 (30.3)	0,32 (49.8)	0,51 (79.3)	0,79 (122.9)

Option selector

LP★★/182★★★/★★/★★★★

Piston rod material	Substitute
Stainless steel martensitic (standard)	R
Hard chromium plated	C
Stainless steel austenitic	S
Thread form (air ports only)	**Substitute**
ISO G parallel	A
NPT	C
Cylinder Ø (mm)	**Substitute**
032, 040, 050, 063, 080, 100, 125	

Strokes (mm)	
3000 max.	
Variants (magnetic piston)	**Substitute**
Standard	M
Piston rod bellow	MG
Without cushion	MW
Double ended piston rod	JM
Four-positon cylinder	MT
Extended piston rod	MU
LP**/182***/MU/****/***	Extension (mm)

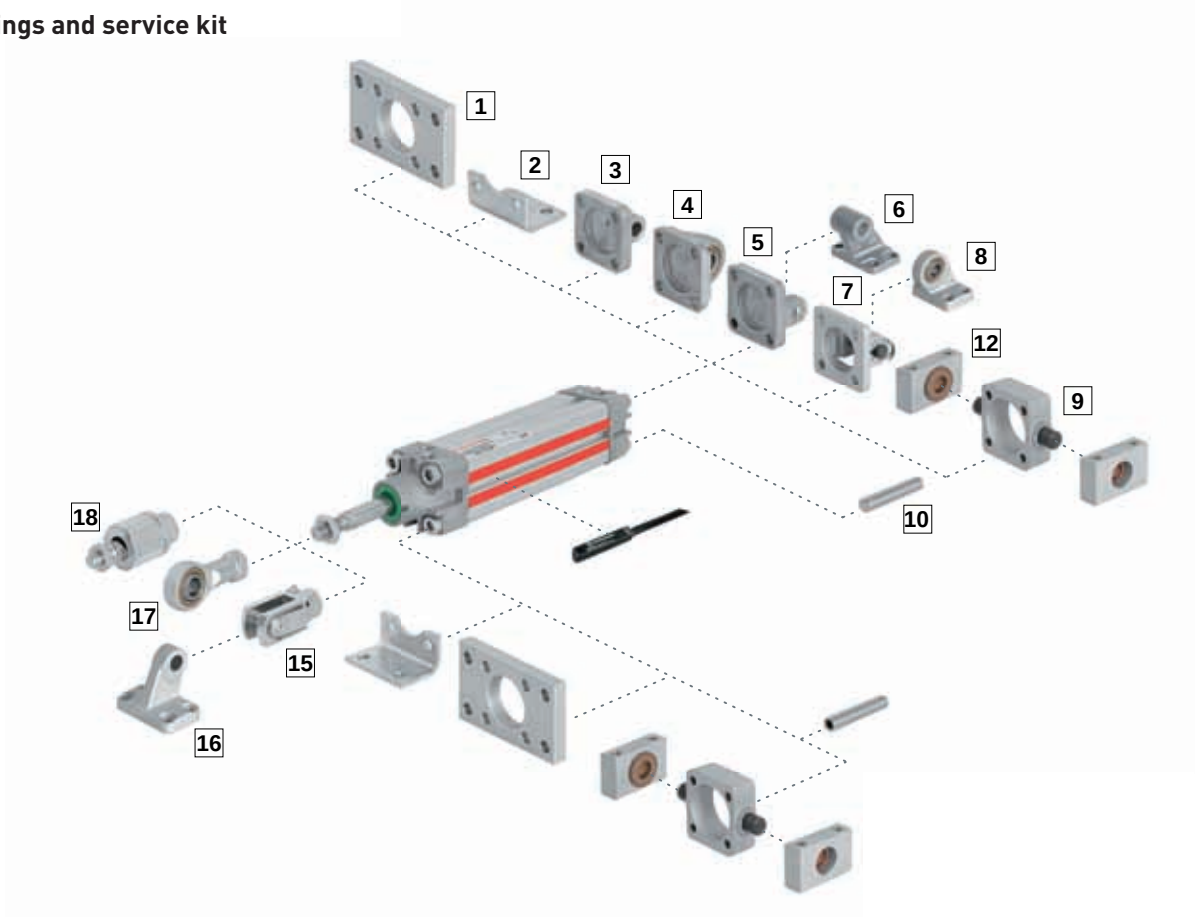
Standard strokes

Cylinder Ø (mm)	Strokes (mm) 25	50	80	100	125	160	200	250	320	400	500
32	•	•	•	•	•	•	•	•	•	•	•
40	•	•	•	•	•	•	•	•	•	•	•
50	•	•	•	•	•	•	•	•	•	•	•
63	•	•	•	•	•	•	•	•	•	•	•
80	•	•	•	•	•	•	•	•	•	•	•
100	•	•	•	•	•	•	•	•	•	•	•
125	•	•	•	•	•	•	•	•	•	•	•

Double acting profile cylinders
LPRA/182000/M

Ø 32 ... 125 mm

Mountings and service kit



Model	A	AK	B, G	C	D	D2	F	FH
								
	10	18	1	2	5	7	15	9
Ø	Page 1-10	Page 1-10	Page 1-10	Page 1-10	Page 1-10	Page 1-10	Page 1-11	Page 1-11
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
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
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
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
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
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
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

Model	R	S	SS	SW	UF	UR	US	Service kit
								
	3	12	16	6	17	4	8	
Ø	Page 1-12	Page 1-12	Page 1-12	Page 1-12	Page 1-12	Page 1-12	Page 1-13	
32	QA/8032/27	QA/8032/41	M/P19931	M/P19493	QM/8025/32	QA/8032/33	M/P40310	LQA/8032/00
40	QA/8040/27	QA/8040/41	M/P19932	M/P19494	QM/8040/32	QA/8040/33	M/P40311	LQA/8040/00
50	QA/8050/27	QA/8040/41	M/P19933	M/P19495	QM/8050/32	QA/8050/33	M/P40312	LQA/8050/00
63	QA/8063/27	QA/8063/41	M/P19934	M/P19496	QM/8050/32	QA/8063/33	M/P40313	LQA/8063/00
80	QA/8080/27	QA/8063/41	M/P19935	M/P19497	QM/8080/32	QA/8080/33	M/P40314	LQA/8080/00
100	QA/8100/27	QA/8100/41	M/P19936	M/P19498	QM/8080/32	QA/8100/33	M/P40315	LQA/8100/00
125	QM/8125/27	QA/8100/41	M/P19937	M/P19499	QM/8125/32	QM/8125/33	M/P71355	LQA/8125/00

Double acting profile cylinders
LPRA/182000/M

Ø 32 ... 125 mm

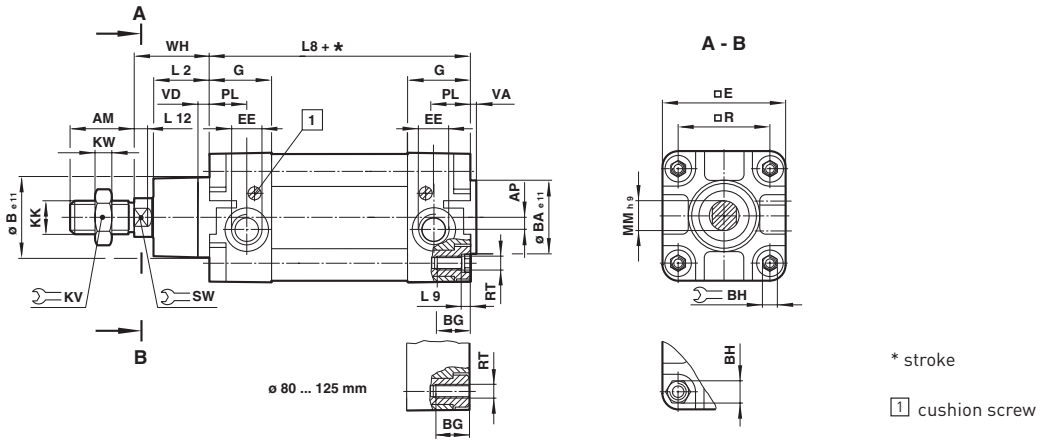
Switches

Voltage V d.c.	Current max.	Temperature	LED	Features	Cable length	Cable type	Protection class	Model
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	PNP	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAP/*V
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	NPN	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAN/*V

* Please insert the cable length 2, 5 or 10 m.

Basic dimensions

Dimensions shown in mm
Projection/First angle



* stroke

1 cushion screw

Ø	AM	AP	Ø Be 11	Ø BAe 11	BG	BH	q E	EE	G	KK	KV	KW	L2	L8
32	22	3,5	30	30	16	6	47	1/8"	27,5	M10x1,25	17	5	20	94
40	24	4,5	35	35	16	6	53	1/4"	32	M12x1,25	19	6	22	105
50	32	6	40	40	16	8	65	1/4"	31	M16x1,5	24	8	27	106
63	32	10	45	45	16	8	75	3/8"	33	M16x1,5	24	8	29	121
80	40	8,5	45	45	17	19	95	3/8"	33	M20x1,5	30	10	33	128
100	40	9	55	55	17	19	115	1/2"	37	M20x1,5	30	10	36	138
125	54	10	60	60	20	24	140	1/2"	46	M27x2	41	13,5	45	160

Ø	L9	L12	Ø MMh 9	PL	q R	RT	SW	VA	VD	WH	at 0 mm	per 25 mm	Model (standard)
32	4	6	12	13	32,5	M 6	10	3	6	26	0,51 kg	0,06 kg	LPR#/182032/M/*
40	4	6,5	16	15	38	M 6	13	3,5	6	30	0,80 kg	0,08 kg	LPR#/182040/M/*
50	5	8	20	18,5	46,5	M 8	17	3,5	6	37	1,33 kg	0,12 kg	LPR#/182050/M/*
63	5	8	20	19	56,5	M 8	17	4	6	37	1,80 kg	0,13 kg	LPR#/182063/M/*
80	–	10	25	19	72	M 10	22	4	6	46	3,25 kg	0,20 kg	LPR#/182080/M/*
100	–	10	25	18	89	M 10	22	4	6	51	4,81 kg	0,23 kg	LPR#/182100/M/*
125	–	13	32	20	110	M 12	27	6	15,5	65	8,00 kg	0,33 kg	LPR#/182125/M/*

* Please insert standard stroke length.
# Please insert 'A' for ISO G parallel or 'C' for NPT threads.

Double acting profile cylinders LPRA/182000/M

Ø 32 ... 125 mm

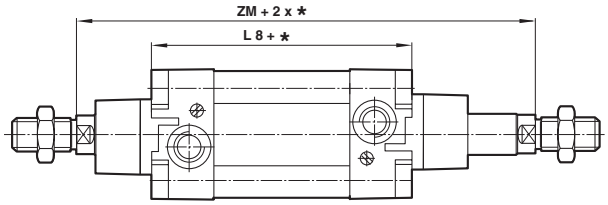
Cylinder variants

Dimensions shown in mm

LPR./182000/JM – Double ended piston rod

Ø	ZM	L8	Model (standard)
32	146	94	LPR#/182032/MJ/*
40	165	105	LPR#/182040/MJ/*
50	180	106	LPR#/182050/MJ/*
63	195	121	LPR#/182063/MJ/*
80	220	128	LPR#/182080/MJ/*
100	240	138	LPR#/182100/MJ/*
125	290	160	LPR#/182125/MJ/*

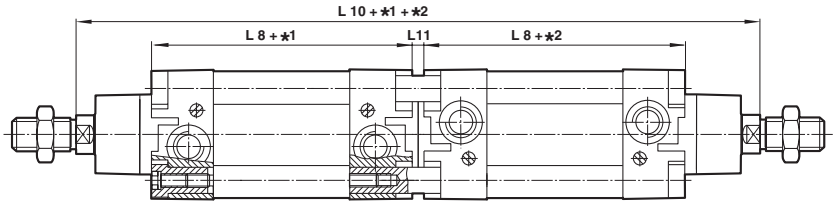
* Please insert standard stroke length.
# Please insert 'A' for ISO G parallel or 'C' for NPT threads.



LPR./182000/MT – Four-position cylinder

Ø	L 8	L 10	L 11	Model (standard)
32	94	247	7	LPR#/182032/MT/*/**
40	105	278	8	LPR#/182040/MT/*/**
50	106	294	8	LPR#/182050/MT/*/**
63	121	325	9	LPR#/182063/MT/*/**
80	128	357	9	LPR#/182080/MT/*/**
100	138	387	9	LPR#/182100/MT/*/**
125	160	462	12	LPR#/182125/MT/*/**

* Please insert standard stroke length.
** Please insert standard stroke length 1 and stroke length 2
# Please insert 'A' for ISO G parallel or 'C' for NPT threads.

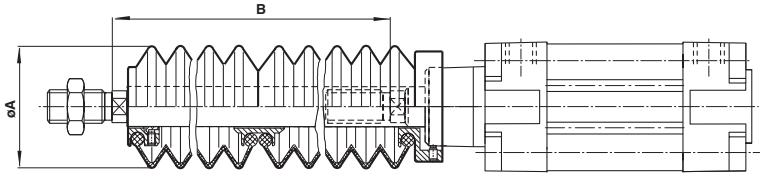


* stroke length 1 and stroke length 2

LPR./182000/MG – Piston rod bellow

Ø	Ø A	Max. stroke per bellow	Piston rod extension B for first bellow	for further bellow	Model (standard)
32	40	60	30	25	LPR#/182032/MG/*
40	63	145	50	32	LPR#/182040/MG/*
50	63	145	40	32	LPR#/182050/MG/*
63	63	145	40	32	LPR#/182063/MG/*
80	80	250	50	45	LPR#/182080/MG/*
100	80	250	50	45	LPR#/182100/MG/*
125	80	250	50	45	LPR#/182125/MG/*

* Please insert standard stroke length.
# Please insert 'A' for ISO G parallel or 'C' for NPT threads.



Double acting cylinders
LRA/8000/M

Ø 32 ... 200 mm

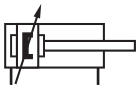
High performance, stability and reliability

Cylinders and mountings conform to ISO 15552 (ISO 6431, VDMA 24562 and NFE 49-003-1)

Comprehensive range of mountings

Wide temperature range

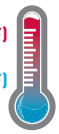
Shock and vibration tested to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated
Standard:
ISO 15552
Operation:
Double acting, magnetic piston, adjustable cushioning

Operating pressure:
1 ... 16 bar (14 ... 232 psi)
Operating temperature:
-40 ... +80°C (-40 ... +176°F) max. Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Air ports:
ISO G parallel or NPT
Cylinder diameters:
32, 40, 50, 63, 80, 100, 125, 160, 200 mm
Strokes:
Standard: see page below
Non-standard strokes:
Available (10 ... 3000 mm)

Materials:
Barrel: anodised aluminium
End covers: pressure diecast aluminium (Ø 200 mm gravity cast aluminium)
Piston rod: stainless steel (martensitic)
Piston rod seals: polyurethane (Ø 125 ... 200 mm nitrile rubber)
Piston seals: polyurethane (Ø 125 ... 200 mm nitrile rubber)
'O'-rings: nitrile rubber

Technical data

Cylinder Ø mm	32	40	50	63	80	100	125	160	200
Air ports	1/8"	G 1/4"	1/4"	3/8"	3/8"	1/2"	1/2"	3/4"	3/4"
Piston rod Ø mm	12	16	20	20	25	25	32	40	40
Piston rod thread	M10 x 1,25	M12 x 1,25	M16 x 1,5	M16 x 1,5	M20 x 1,5	M20 x 1,5	M27 x 2	M36 x 2	M36 x 2
Cushion length mm (inch)	19 (.75)	22 (.87)	24 (.94)	24 (.94)	27 (1.06)	34 (1.34)	41 (1.61)	45 (1.77)	45 (1.77)
Theoretical thrusts at 6 bar (87 psi) outstroke N (lb)	482 (108)	754 (169)	1178 (265)	1870 (420)	3016 (678)	4710 (1059)	7363 (1656)	12064 (2713)	18840 (4236)
Theoretical thrusts at 6 bar (87 psi) instroke N (lb)	414 (93)	633 (142)	990 (222)	1680 (378)	2722 (612)	4416 (993)	6882 (1547)	11310 (2543)	18090 (4068)
Air consumption at 6 bar (87 psi) outstroke l/cm (inch³/inch)	0,056 (8.7)	0,088 (13.7)	0,137 (21.3)	0,218 (33.9)	0,35 (54.4)	0,55 (85.5)	0,86 (133.7)	1,41 (219.3)	2,20 (342.1)
Air consumption at 6 bar (87 psi) instroke l/cm (inch³/inch)	0,048 (7.5)	0,074 (11.5)	0,114 (17.7)	0,195 (30.3)	0,32 (49.8)	0,51 (79.3)	0,79 (122.9)	1,32 (205.3)	2,10 (326.6)

Option selector

L★★/8★★★/★★/★★★★

Piston rod material	Substitute
Stainless steel martensitic (standard)	R
Hard chromium plated	C
Stainless steel austenitic	S
Thread form (air ports only)	**Substitute**
ISO G parallel	A
NPT	C
Cylinder Ø (mm)	**Substitute**
032, 040, 050, 063, 080, 100, 125, 160, 200	

Strokes (mm)
3000 max.

Variants (magnetic piston)	Substitute
Standard	M
Piston rod bellow	MG
Without cushion	MW
Double ended piston rod	JM
Four-positon cylinder	MT
Extended piston rod	MU

L**/*8****/MU/****/*** → Extension (mm)

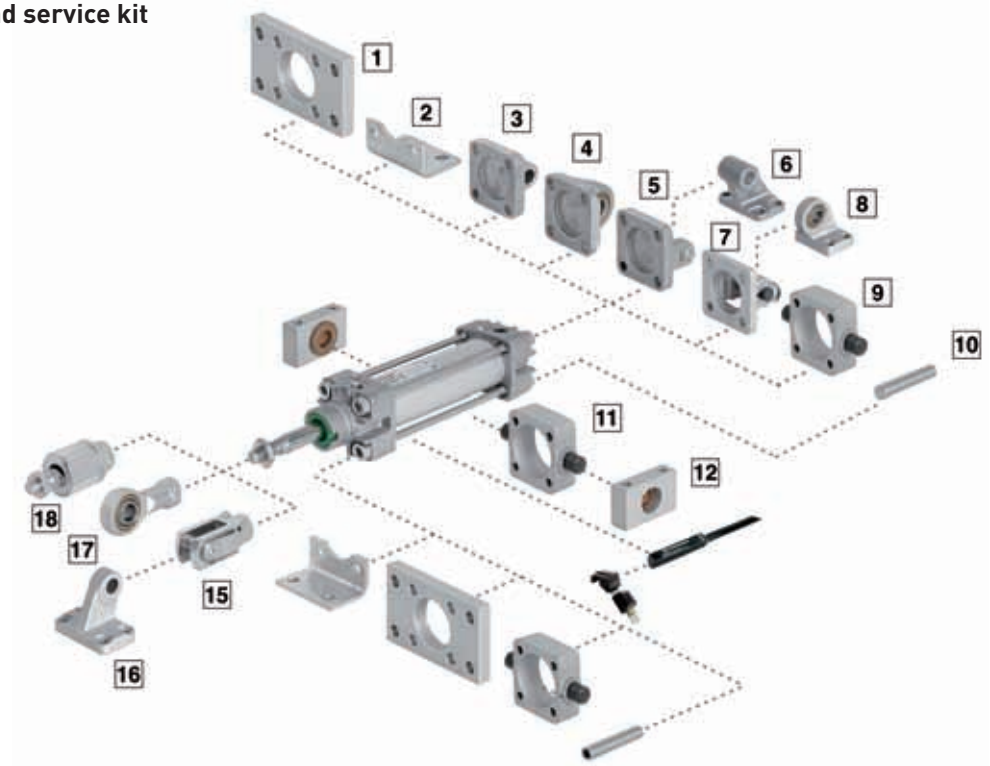
Standard strokes

Cylinder Ø (mm)	Strokes (mm) 25	50	80	100	125	160	200	250	320	400	500
32	•	•	•	•	•	•	•	•	•	•	•
40	•	•	•	•	•	•	•	•	•	•	•
50	•	•	•	•	•	•	•	•	•	•	•
63	•	•	•	•	•	•	•	•	•	•	•
80	•	•	•	•	•	•	•	•	•	•	•
100	•	•	•	•	•	•	•	•	•	•	•
125	•	•	•	•	•	•	•	•	•	•	•
160	•	•	•	•	•	•	•	•	•	•	•
200	•	•	•	•	•	•	•	•	•	•	•

Double acting cylinders
LRA/8000/M

Ø 32 ... 200 mm

Mountings and service kit



Model	A	AK	B, G	C	D	D2	F	FH	H
									
	10	18	1	2	5	7	15	9	11
Ø	Page 1-10	Page 1-10	Page 1-10	Page 1-10	Page 1-10	Page 1-10	Page 1-11	Page 1-11	Page 1-11
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/8032/28
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/8040/28
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/8050/28
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/8063/28
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/8080/28
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/8100/28
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	QA/8125/28
160	QM/8160/35	QM/8160/38	QM/8160/22	QM/8160/21	QM/8160/23	QA/8160/42	QM/8160/25	–	QA/8160/28
200	QM/8200/35	QM/8160/38	QM/8200/22	QM/8200/21	QM/8200/23	QA/8200/42	QM/8160/25	–	QA/8200/28

Model	R	S	SS	SW	UF	UR	US	Switch mounting	Service kit
									
	3	12	16	6	17	4	8	23	
Ø	Page 1-12	Page 1-12	Page 1-12	Page 1-12	Page 1-12	Page 1-12	Page 1-13	Page 1-13	
32	QA/8032/27	QA/8032/41	M/P19931	M/P19493	QM/8025/32	QA/8032/33	M/P40310	QM/27/2/1	LQA/8032/00
40	QA/8040/27	QA/8040/41	M/P19932	M/P19494	QM/8040/32	QA/8040/33	M/P40311	QM/27/2/1	LQA/8040/00
50	QA/8050/27	QA/8040/41	M/P19933	M/P19495	QM/8050/32	QA/8050/33	M/P40312	QM/27/2/1	LQA/8050/00
63	QA/8063/27	QA/8063/41	M/P19934	M/P19496	QM/8050/32	QA/8063/33	M/P40313	QM/27/2/1	LQA/8063/00
80	QA/8080/27	QA/8063/41	M/P19935	M/P19497	QM/8080/32	QA/8080/33	M/P40314	QM/27/2/1	LQA/8080/00
100	QA/8100/27	QA/8100/41	M/P19936	M/P19498	QM/8080/32	QA/8100/33	M/P40315	QM/27/2/1	LQA/8100/00
125	QM/8125/27	QA/8100/41	M/P19937	M/P19499	QM/8125/32	QM/8125/33	M/P71355	QM/27/2/1	LQA/8125/00
160	QM/8160/27	QA/8160/41	M/P19938	M/P19679	QM/8160/32	QM/8160/33	M/P71356	QM/27/2/1	LQA/8160/00
200	QM/8200/27	QA/8160/41	M/P19939	M/P19683	QM/8160/32	QM/8200/33	M/P71357	QM/27/2/1	LQA/8200/00

Double acting cylinders
LRA/8000/M

Ø 32 ... 200 mm

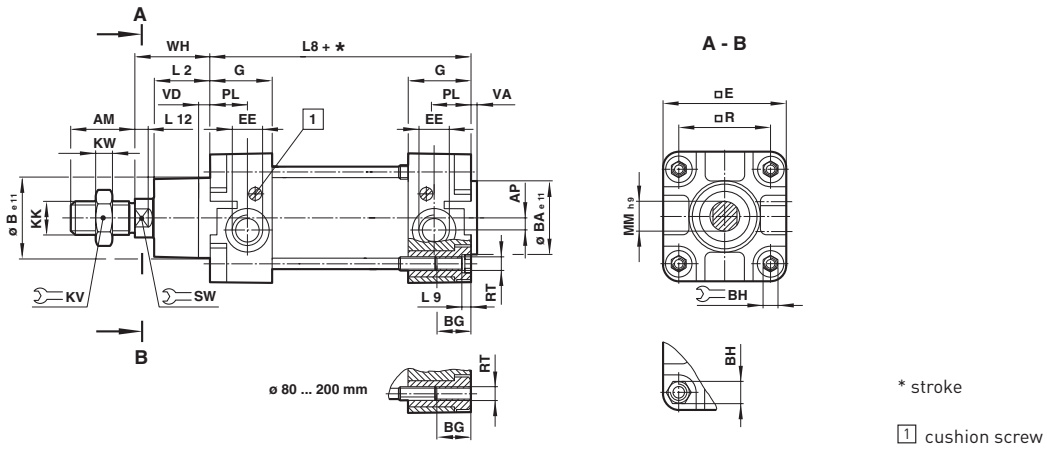
Switches

Voltage V d.c.	Current max.	Temperature	LED	Features	Cable length	Cable type	Protection class	Model
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	PNP	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAP/*V
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	NPN	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAN/*V

* Please insert the cable length 2, 5 or 10 m.

Basic dimensions

Dimensions shown in mm
Projection/First angle



Ø	AM	AP	Ø Be11	Ø BAe11	BG	BH	❑ E	EE	G	KK	KV	KW	L2		
32	22	3,5	30	30	18	6	47	1/8"	27,5	M10x1,25	17	5	20		
40	24	4,5	35	35	18	6	53	1/4"	32	M12x1,25	19	6	22		
50	32	6	40	40	18	8	65	1/4"	31	M16x1,5	24	8	27		
63	32	10	45	45	17,5	8	75	3/8"	33	M16x1,5	24	8	29		
80	40	8,5	45	45	21,5	19	95	3/8"	33	M20x1,5	30	10	33		
100	40	9	55	55	21,5	19	115	1/2"	37	M20x1,5	30	10	36		
125	54	10	60	60	30	24	140	1/2"	46	M27x2	41	13,5	45		
160	72	19	65	65	28,5	32	183,5	3/4"	50	M36x2	55	18	58		
200	72	19	75	75	28,5	32	224	3/4"	50	M36x2	55	18	67		
Ø	**L8**	**L9**	**L12**	**Ø MMh 9**	**PL**	**❑ R**	**RT**	**SW**	**VA**	**VD**	**WH**	**at 0 mm**	**per 25 mm**	**Model**	
32	94	4	6	12	13	32,5	M 6	10	3	6	26	0,51 kg	0,06 kg	LR#/8032/M/*	
40	105	4	6,5	16	15	38	M 6	13	3,5	6	30	0,80 kg	0,08 kg	LR#/8040/M/*	
50	106	5	8	20	18,5	46,5	M 8	17	3,5	6	37	1,33 kg	0,12 kg	LR#/8050/M/*	
63	121	5	8	20	19	56,5	M 8	17	4	6	37	1,80 kg	0,13 kg	LR#/8063/M/*	
80	128	-	10	25	19	72	M 10	22	4	6	46	3,25 kg	0,20 kg	LR#/8080/M/*	
100	138	-	10	25	18	89	M 10	22	4	6	51	4,81 kg	0,23 kg	LR#/8100/M/*	
125	160	-	13	32	22,5	110	M 12	27	6	15,5	65	8,00 kg	0,33 kg	LR#/8125/M/*	
160	180	-	16	40	25	140	M 16	36	4	15	80	14,9 kg	0,55 kg	LR#/8160/M/*	
200	180	-	16	40	26	175	M 16	36	5	15	95	21,7 kg	0,60 kg	LR#/8200/M/*	

* Please insert standard stroke length.
# Please insert 'A' for ISO G parallel or 'C' for NPT threads.

Double acting cylinders LRA/8000/M

Ø 32 ... 200 mm

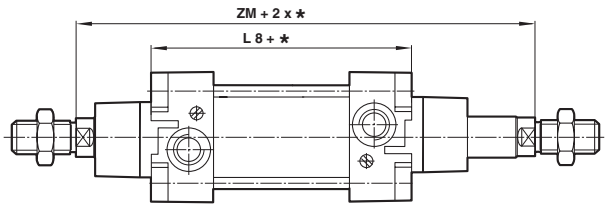
Cylinder variants

Dimensions shown in mm

LR./8000/JM – Double ended piston rod

Ø	ZM	L8	Model
32	146	94	LR#/8032/JM/*
40	165	105	LR#/8040/JM/*
50	180	106	LR#/8050/JM/*
63	195	121	LR#/8063/JM/*
80	220	128	LR#/8080/JM/*
100	240	138	LR#/8100/JM/*
125	290	160	LR#/8125/JM/*
160	340	180	LR#/8160/JM/*
200	370	180	LR#/8200/JM/*

* Please insert standard stroke length.
# Please insert 'A' for ISO G parallel or 'C' for NPT threads.

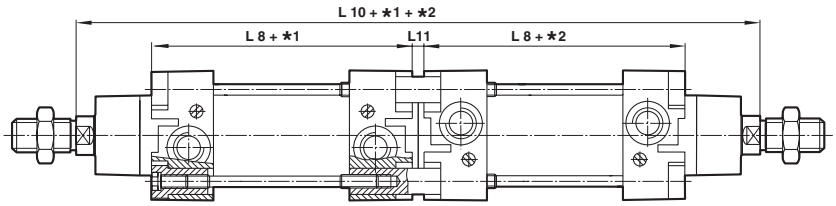


* stroke

LR./8000/MT – Four-position cylinder

Ø	L 8	L 10	L 11	Model
32	94	247	7	LR#/8032/MT/*/**
40	105	278	8	LR#/8040/MT/*/**
50	106	294	8	LR#/8050/MT/*/**
63	121	325	9	LR#/8063/MT/*/**
80	128	357	9	LR#/8080/MT/*/**
100	138	387	9	LR#/8100/MT/*/**
125	160	462	12	LR#/8125/MT/*/**
160	180	532	12	LR#/8160/MT/*/**
200	180	560	10	LR#/8200/MT/*/**

* Please insert standard stroke length.
** Please insert standard stroke length 1 and stroke length 2
# Please insert 'A' for ISO G parallel or 'C' for NPT threads.

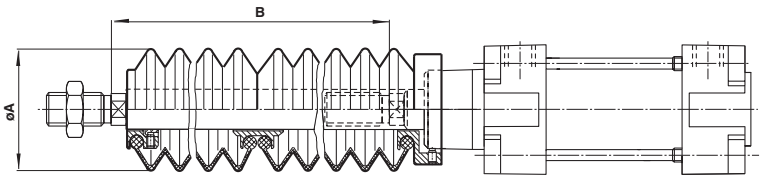


* stroke length 1 and stroke length 2

LR./8000/MG – Piston rod bellow

Ø	Ø A	Max. stroke per bellow	Piston rod extension B for first bellow	for further bellow	Model
32	40	60	30	**25**	LR#/8032/MG/*
40	63	145	50	**32**	LR#/8040/MG/*
50	63	145	40	**32**	LR#/8050/MG/*
63	63	145	40	**32**	LR#/8063/MG/*
80	80	250	50	**45**	LR#/8080/MG/*
100	80	250	50	**45**	LR#/8100/MG/*
125	80	250	50	**45**	LR#/8125/MG/*
160	116	350	70	60	LR#/8160/MG/*
200	116	350	70	60	LR#/8200/MG/*

* Please insert standard stroke length.
# Please insert 'A' for ISO G parallel or 'C' for NPT threads.



Mountings for LPRA/182000/M, LRA/8000/M

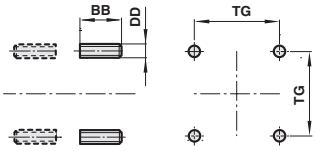
Ø 32 ... 200 mm

Mountings

Dimensions shown in mm
Projection/First angle

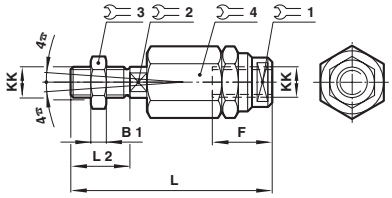
Front or rear stud mounting A

Conforms to ISO 15552, type MX1



Ø	BB	DD	TG	kg	Model (A)
32/40	17	M6	32,5/38	0,02	QM/8032/35
50/63	23	M8	46,5/56,5	0,05	QM/8050/35
80/100	28	M10	72/89	0,08	QM/8080/35
125	34	M12	110	0,14	QM/8125/35
160/200	42	M16	140/175	0,31	QM/8160/35

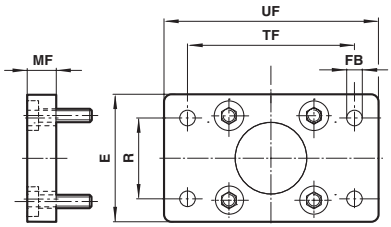
Piston rod swivel AK



Ø	KK	B1	F	L	L2	1	2	3	4	kg	Model (AK)
32	M10x1,25	5	26	73	20	19	12	17	30	0,20	QM/8025/38
40	M12x1,25	6	26	77	24	19	12	19	30	0,20	QM/8040/38
50/63	M16x1,5	8	34	106	32	30	19	24	42	0,65	QM/8050/38
80/100	M20x1,5	10	42	122	40	30	19	30	42	0,72	QM/8080/38
125	M27x2	13,5	40	147	54	40	24	41	55	1,70	QM/8125/38

Front flange B, G

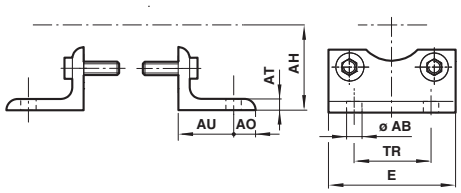
Conforms to ISO 15552, type MF1 and MF2



Ø	E	Ø FB	MF	R	TF	UF	kg	Model (B, G)
32	50	7	10	32	64	80	0,25	QA/8032/22
40	55	9	10	36	72	90	0,35	QA/8040/22
50	65	9	12	45	90	110	0,70	QA/8050/22
63	75	9	12	50	100	125	0,80	QA/8063/22
80	100	12	16	63	126	154	1,35	QA/8080/22
100	120	14	16	75	150	186	2,20	QA/8100/22
125	140	16	20	90	180	224	2,70	QM/8125/22
160	180	18	20	115	230	280	3,10	QM/8160/22
200	220	22	25	135	270	320	4,60	QM/8200/22

Foot mounting C

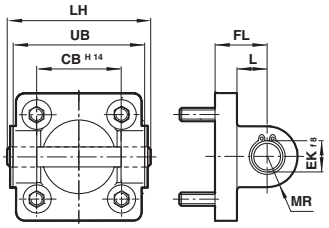
Conforms to ISO 15552, type MS1



Ø	Ø AB	AH	AO	AT	AU	E	TR	kg	Model (C)
32	7	32	8	4	24	48	32	0,15	QA/8032/21
40	9	386	9	4	28	53	36	0,18	QA/8040/21
50	9	45	10	5	32	64	45	0,30	QA/8050/21
63	9	50	12	5	32	74	50	0,39	QA/8063/21
80	12	63	19	5	41	98	63	0,80	QA/8080/21
100	14	71	19	5	41	115	75	0,95	QA/8100/21
125	16	90	20	9	45	140	90	2,40	QM/8125/21
160	18	115	20	8	60	180	115	3,50	QM/8160/21
200	22	135	30	9	70	220	135	5,25	QM/8200/21

Rear clevis D

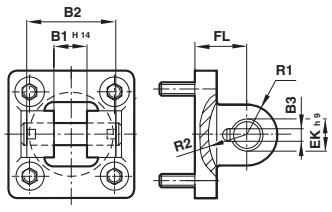
Conforms to ISO 15552, type MP2



Ø	CB H14	Ø EK f8	FL	L	LH	MR	UB	kg	Model (D)
32	26	10	22	13	52	9	45	0,11	QA/8032/23
40	28	12	25	16	60	12	52	0,16	QA/8040/23
50	32	12	27	17	68	12	60	0,22	QA/8050/23
63	40	16	32	22	79	15	70	0,34	QA/8063/23
80	50	16	36	22	99	15	90	0,54	QA/8080/23
100	60	20	41	27	119	20	110	0,90	QA/8100/23
125	70	25	50	31	139	25	130	2,70	QM/8125/23
160	90	30	55	35,5	181	30	170	4,30	QM/8160/23
200	90	30	60	36	181	30	170	6,10	QM/8200/23

Rear clevis D2

Conforms to ISO 15552, type AB6



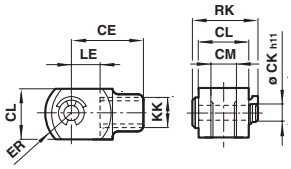
Ø	B1 H14	B2	B3	Ø EK h9	FL	R1	R2	kg	Model (D2)
32	14	34	3,3	10	22	11	17	0,20	QA/8032/42
40	16	40	4,3	12	25	12	20	0,23	QA/8040/42
50	21	45	4,3	16	27	14,5	22	0,36	QA/8050/42
63	21	51	4,3	16	32	18	25	0,55	QA/8063/42
80	25	65	4,3	20	36	22	30	0,90	QA/8080/42
100	25	75	4,3	20	41	22	32	1,45	QA/8100/42
125	37	97	6,3	30	50	30	42	2,70	QA/8125/42
160	43	122	6,3	35	55	36	46	4,30	QA/8160/42
200	43	122	6,3	35	60	38	49	6,10	QA/8200/42

Mountings for LPRA/182000/M, LRA/8000/M

Ø 32 ... 200 mm

Piston rod clevis F

Conforms to DIN ISO 8140

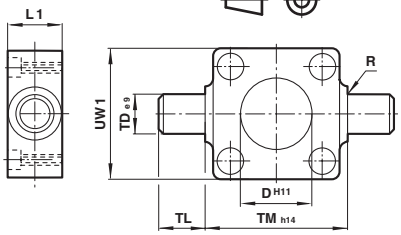


Ø	KK	CE	Ø CKh11	CL	CM	ER	LE	RK	kg	Model (F)
32	M10x1,25	40	10	20	10	16	20	28	0,09	QM/8025/25
40	M12x1,25	48	12	24	12	19	24	32	0,13	QM/8040/25
50/63	M16x1,5	64	16	32	16	25	32	41,5	0,33	QM/8050/25
80/100	M20x1,5	80	20	40	20	32	40	50	0,67	QM/8080/25
125	M27x2	110	30	55	30	45	54	62	1,35	QM/8125/25
160	M36x2	144	35	70	35	57	72	95	3,00	QM/8160/25
200	M36x2	144	35	70	35	57	72	95	3,00	QM/8160/25

Front or rear detachable trunnion FH

Conforms to VDMA 24562 part 2, type MT 5/6

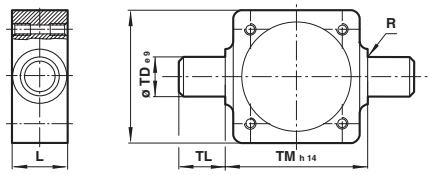
Dimensions shown in mm
Projection/First angle

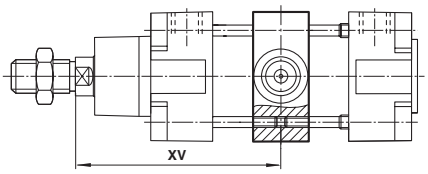


Ø	Ø Dh11	L1	R	Ø TDe9	TL	TMh14	UW1	kg	Model (FH)
32	30	16	1	12	12	50	50	0,20	QA/8032/34
40	35	20	1,6	16	16	63	55	0,38	QA/8040/34
50	40	24	1,6	16	16	75	65	0,60	QA/8050/34
63	45	24	1,6	20	20	90	75	1,10	QA/8063/34
80	45	28	1,6	20	20	110	100	1,90	QA/8080/34
100	55	38	2	25	25	132	120	3,50	QA/8100/34
125	60	50	2	25	25	160	145	6,50	QA/8125/34

Centre trunnion H for LR/8000/M series only

Conforms to ISO 15552, type MT4





Ø	L	R	Ø TD e9	TL	TM h14	UW	XV min.	XV max.	kg	Model (H)
32	20	1	12	12	50	50	66	80	0,16	QA/8032/28
40	24	1,6	16	16	63	58	76	89	0,35	QA/8040/28
50	28	1,6	16	16	75	70	82	98	0,65	QA/8050/28
63	28	1,6	20	20	90	80	88	107	0,85	QA/8063/28
80	28	1,6	20	20	110	100	97	123	1,20	QA/8080/28
100	38	2	25	25	132	126	112	128	2,30	QA/8100/28
125	50	2	25	25	160	152	136	154	3,30	QM/8125/28
160	50	2,5	32	32	200	192	155	185	5,30	QM/8160/28
200	50	2,5	32	32	250	240	170	200	9,40	QM/8200/28

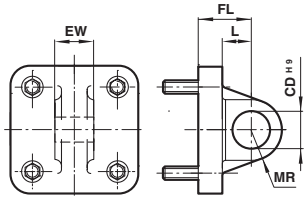
Note: Style 'H': These mountings are only supplied assembled complete with the cylinder. Unless otherwise specified, units will be supplied with dimension 'XV' plus half the stroke length. 'XV' = Distance from the piston rod shoulder to the centre of the mounting.

Mountings for LPRA/182000/M, LRA/8000/M

Ø 32 ... 200 mm

Rear eye R

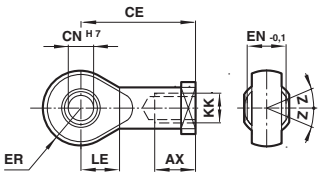
Conforms to ISO 15552, type MP4



Ø	Ø CDH9	EW	FL	L	MR	kg	Model (R)
32	10	25,8	22	13	9	0,09	QA/8032/27
40	12	27,8	25	16	12	0,11	QA/8040/27
50	12	31,7	27	17	12	0,17	QA/8050/27
63	16	39,7	32	22	15	0,24	QA/8063/27
80	16	49,7	36	22	15	0,37	QA/8080/27
100	20	59,7	41	27	20	0,59	QA/8100/27
125	25	69,7	50	33	25	3,20	QM/8125/27
160	30	89,7	55	35,5	30	6,10	QM/8160/27
200	30	89,7	60	37	30	6,80	QM/8200/27

Universal piston rod eye UF

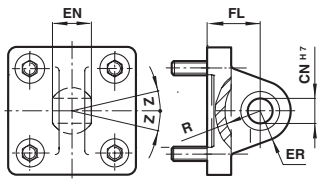
Conforms to DIN ISO 8139



Ø	Gewinde KK	AX	CE	Ø CNH7	EN-0,1	ER	LE	Z	kg	Model (UF)
32	M10x1,25	20	43	10	14	14	15	13°	0,09	QM/8025/32
40	M12x1,25	22	50	12	16	16	17	13°	0,13	QM/8040/32
50/63	M16x1,5	28	64	16	21	21	22	15°	0,33	QM/8050/32
80/100	M20x1,5	33	77	20	25	25	26	15°	0,67	QM/8080/32
125	M27x2	51	110	30	37	35	36	15°	1,35	QM/8125/32
160/200	M36x2	56	125	35	43	40	41	16°	3,00	QM/8160/32

Universal rear eye UR

Conforms to ISO 15552, type MP6

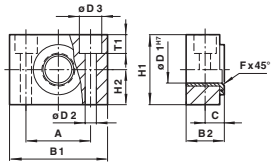


Ø	Ø CNH7	EN	ER	FL	R	Z	kg	Model (UR)
32	10	14	16	22	14,5	13°	0,15	QA/8032/33
40	12	16	19	25	18	13°	0,25	QA/8040/33
50	16	21	21	27	19	13°	0,40	QA/8050/33
63	16	21	24	32	24	15°	0,55	QA/8063/33
80	20	25	28	36	24	15°	0,90	QA/8080/33
100	20	25	30	41	29	15°	1,50	QA/8100/33
125	30	37	40	50	36	15°	2,70	QM/8125/33
160	35	43	44	55	41	16°	4,6	QM/8160/33
200	35	43	48	60	42	16°	7,3	QM/8200/33

Trunnion support S

Conforms to ISO 15552, type AT4

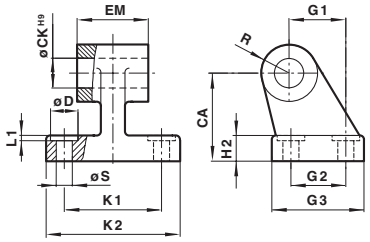
Dimensions shown in mm
Projection/First angle



Ø	A	B1	B2	C	Ø D1H7	Ø D2	Ø D3	F x 45°	H1	H2	T1	kg	Model (S)
32	32	46	18	10,5	12	6,6	11	1	30	15	6,8	0,10	QA/8032/41
40/50	36	55	21	12	16	9	15	1,6	36	18	9	0,14	QA/8040/41
63/80	42	65	23	13	20	11	18	1,6	40	20	11	0,18	QA/8063/41
100/125	50	75	28,5	16	25	14	20	2	50	25	13	0,34	QA/8100/41
160/200	60	92	39	21,5	32	18	26	2,5	60	25	15,5	1,90	QA/8160/41

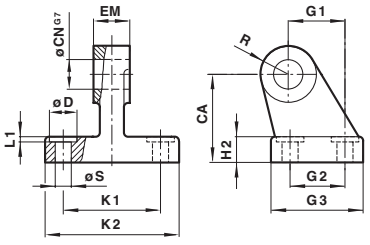
Wide hinge SW

Conforms to ISO 15552, type AB7



Ø	CA	Ø CKH9	Ø D	H2	EM	G1	G2	G3	K1	K2	L1	R	Ø S	kg	Model (SW)
32	32	10	11	8	26,5	21	18	31	38	51	1,6	10	6,6	0,05	M/P19493
40	36	12	11	10	28,5	24	22	35	41	54	1,6	11	6,6	0,07	M/P19494
50	45	12	15	12	32,5	33	30	45	50	65	1,6	13	9	0,14	M/P19495
63	50	16	15	12	40,5	37	35	50	52	67	1,6	15	9	0,18	M/P19496
80	63	16	18	14	50,5	47	40	60	66	86	2,5	15	11	0,28	M/P19497
100	71	20	18	15	60,5	55	50	70	76	96	2,5	19	11	0,42	M/P19498
125	90	25	20	20	70,5	70	60	90	94	124	3,2	22	14	2,70	M/P19499
160	115	30	20	25	89,5	97	88	126	118	156	4	31	14	6,30	M/P19679
200	135	30	26	30	89,5	105	90	130	122	162	4	31	18	8,00	M/P19683

Narrow hinge SS



Ø	CA	Ø CNG7	Ø D	H2	EM	G1	G2	G3	K1	K2	L1	R	Ø S	kg	Model (SS)
32	32	10	11	8	10	21	18	31	38	51	1,6	10	6,6	0,15	M/P19931
40	36	12	11	10	12	24	22	35	41	54	1,6	11	6,6	0,20	M/P19932
50	45	10	15	12	16	33	30	45	50	65	1,6	13	9	0,48	M/P19933
63	50	16	15	12	16	37	35	50	52	67	1,6	15	9	0,50	M/P19934
80	63	20	18	14	20	47	40	60	66	86	2,5	15	11	0,75	M/P19935
100	71	20	18	15	20	55	50	70	76	96	2,5	19	11	1,20	M/P19936
125	90	25	20	20	30	70	60	90	94	124	3,2	22	14	2,50	M/P19937
160	115	35	20	25	35	97	88	126	118	156	4	31	14	6,00	M/P19938
200	135	35	26	30	35	105	90	130	122	162	4	31	18	7,60	M/P19939

Mountings for LPRA/182000/M, LRA/8000/M

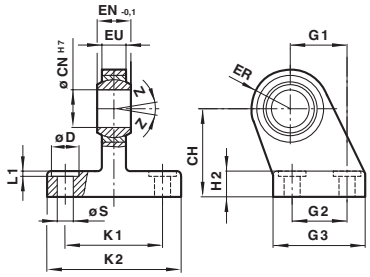
Ø 32 ... 200 mm

Swivel hinge US

Conforms to VDMA 24562 part 2

Dimensions shown in mm

Projection/First angle

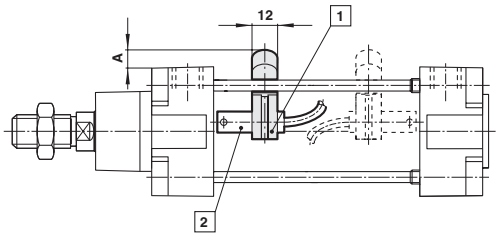


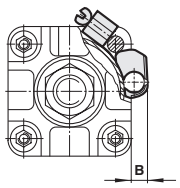
Ø	CH	Ø CNH7	Ø D	EN -0,1	ER	EU	G1	G2	G3	H2	K1	K2	L1	Ø S	Z	kg	Model (US)
32	32	10	11	14	16	10,5	21	18	31	8	38	51	1,6	6,6	13°	0,19	M/P40310
40	36	12	11	16	19	12	24	22	35	10	41	54	1,6	6,6	13°	0,24	M/P40311
50	45	16	15	21	21	15	33	30	45	12	50	65	1,6	9	13°	0,46	M/P40312
63	50	16	15	21	24	15	37	35	50	12	52	67	1,6	9	15°	0,59	M/P40313
80	63	20	18	25	28	18	47	40	60	14	66	86	2,5	11	15°	1,03	M/P40314
100	71	20	18	25	30	18	55	50	70	15	76	96	2,5	11	15°	1,40	M/P40315
125	90	30	20	37	40	25	70	60	90	20	94	124	3,2	14	15°	3,10	M/P71355
160	115	35	20	43	44	28	97	88	126	25	118	159	4	14	15°	6,40	M/P71356
200	135	35	26	43	48	28	105	90	130	30	122	162	4	18	15°	9,10	M/P71357

Switch mounting

QM/27/2/1, switch: M/50

Cylinder Ø	A	B	Weight
32	9	7	0,010 kg
40	8	8	0,010 kg
50	7	5	0,010 kg
63	7	7	0,010 kg
80	7	4	0,010 kg
100	2	2	0,010 kg
125	- 4	- 3	0,010 kg
160	- 10	- 9	0,010 kg
200	- 17	- 14	0,010 kg





1 Bracket

2 Switch

Heavy duty imperial cylinders
RM/900/M

Ø 1 1/4 ... 4"

Heavy duty cylinder ideal for a wide range of rail applications

Extensive range of mountings

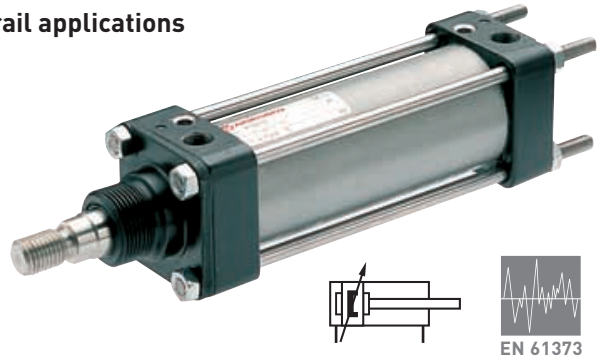
Rugged, reliable long established design

Magnetic piston as standard

Mounting bracket for low temperature M/50 series solid state switches

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated
Operation:
Double acting, adjustable cushioning and magnetic piston

Operating pressure:
2 ... 10 bar (29 ... 145 psi)
Operating temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Cylinder diameters:
1 1/4, 1 3/4, 2, 2 1/2, 3 and 4 inches
Stroke length:
Up to 15 times cylinder diameter
Air ports:
ISO G parallel

Materials:
Barrel: anodized aluminium
End cover: diecast aluminium
Bearing housing: brass for 1 1/4" ... 3", aluminium alloy for 4"
Piston: aluminium
Piston rod and tie rods: stainless steel (Martensitic)
Seals and 'O'-rings: nitrile rubber

Technical data

Cylinder Ø (inch)	1 1/4	1 3/4	2	2 1/2	3	4
Air ports	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8	G 3/8
Piston rod Ø (mm)	12	16	20	25	25	32
Piston rod thread	M10x1,5	M12x1,75	M16x2	M22x2,5	M22x2,5	M24x3
Cushion length mm (inch)	20 (.79)	20 (.79)	20 (.79)	21 (.83)	29 (1.14)	38 (1.5)
Theoretical thrusts at 6 bar (87 psi) outstroke N (lb)	482 (108)	933 (210)	1225 (275)	1930 (434)	2721 (612)	4902 (1102)
Theoretical thrusts at 6 bar (87 psi) instroke N (lb)	406 (91)	812 (183)	1055 (237)	1626 (366)	2417 (543)	4420 (994)
Air consumption at 6 bar (87 psi) outstroke l/cm (inch³/inch)	0,056 (8,7)	0,109 (16,9)	0,143 (22,2)	0,225 (35)	0,318 (49,5)	0,572 (88,9)
Air consumption at 6 bar (87 psi) instroke l/cm (inch³/inch)	0,047 (7,1)	0,095 (14,8)	0,124 (19,3)	0,190 (29,5)	0,282 (43,9)	0,516 (80,2)

Option selector

★M/9★★★/★★/★★★★

Piston rod material	Substitute
Stainless steel martensitic (standard)	R
Stainless steel austenitic (option)	S

Cylinder Ø (inch)	Substitute
1 1/4	125
1 3/4	175
2	20
2 1/2	25
3	30
4	40

Strokes (mm)	
Max. stroke = 15 x cylinder Ø	
Variants (magnetic piston)	**Substitute**
Standard	M
Double ended piston rod	JM

Standard strokes

Cylinder Ø (inch)	Strokes (mm) 50	75	100	150	200	225	250	300
1 1/4	•	•	•	•	•	•	•	•
1 3/4	•	•	•	•	•	•	•	•
2	•	•	•	•	•	•	•	•
2 1/2	•	•	•	•	•	•	•	•
3	•	•	•	•	•	•	•	•
4	•	•	•	•	•	•	•	•

Heavy duty imperial cylinders
RM/900/M

Ø 1 1/4 ... 4"

Mountings and service kit

Model	B	B+G	C	D	F	G	H	K
								
Ø inch	Page 1-17	Page 1-17	Page 1-17	Page 1-17	Page 1-19	Page 1-17	Page 1-19	Page 1-18
1 1/4	M/P6938	QM/819	QM/754	M/P6937	QM/402	M/P6938	M/P14001	M/P6937
1 3/4	QM/888	QM/1181	QM/753	M/P7457	QM/404	QM/986	M/P11224	M/P7457
2	QM/875	QM/1182	QM/752	M/P10228	QM/405	QM/871	M/P8635	QM/962
2 1/2	QM/876	QM/1184	QM/748	M/P10311	QM/407	QM/877	M/P8636	QM/964
3	QM/878	QM/1185	QM/983	M/P10229	QM/407	QM/984	M/P8637	QM/966
4	QM/887	QM/1187	QM/982	QM/758	QM/408	QM/987	M/P8638	QM/758

Model	L	M	N	R	UF	UR	Switch mounting	Service kit
								
Ø inch	Page 1-18	Page 1-18	Page 1-18	Page 1-19	Page 1-20	Page 1-20	Page 1-20	
1 1/4	QM/394	QM/393	M/P11716	M/P11966	QM/1141	QM/1161	QM/27/2/1	QM/9125/00
1 3/4	QM/922	QM/923	M/P7955	M/P11219	QM/1142	QM/1162	QM/27/2/1	QM/9175/00
2	QM/909	QM/908	M/P9969	M/P10349	QM/1143	QM/1163	QM/27/2/1	QM/920/00
2 1/2	QM/910	QM/901	M/P9905	M/P10351	QM/1144	QM/1164	QM/27/2/1	QM/925/00
3	QM/911	QM/901	M/P9905	M/P10353	QM/1144	QM/1165	QM/27/2/1	QM/930/00
4	QM/912	QM/902	QM/1475*	QM/763	QM/1146	QM/1166	QM/27/2/1	QM/940/00

Switches

Voltage V d.c.	Current max.	Temperature	LED	Features	Cable length	Cable type	Protection class	Model
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	PNP	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAP/*V
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	NPN	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAN/*V

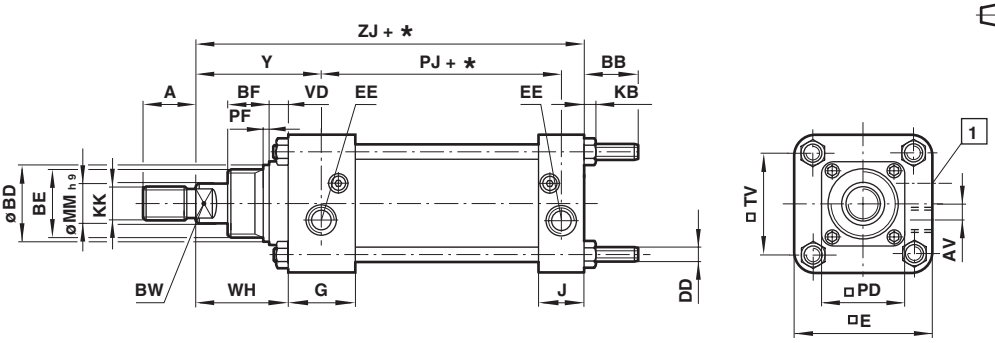
* Please insert the cable length 2, 5 or 10 m.

Heavy duty imperial cylinders
RM/900/M

Ø 1 1/4 ... 4”

Basic dimensions

Dimensions shown in mm
Projection/First angle



* stroke (mm)

1 Cushion screw Ø 1 1/4 ... 4 inch

Ø inch	A	AV	BB	Ø BD	BE	BF	BW	DD	E	EE	G	J	KB	KK
1 1/4	14,5	6	22	22	M 22 x 2	19	10	M 6	45	G 1/8	25	22	5	M10x1,5
1 3/4	19	8,5	26,5	27	M 27 x 2	19	12	M 8	57	G 1/4	29	25	6,5	M12x1,75
2	24	7,5	25	34	M 33 x 2	20	17	M 8	63,5	G 1/4	29,5	24	6,5	M16x2
2 1/2	33,5	8	25	40	M 39 x 2	25,5	22	M 8	74,5	G 3/8	30	25	6,5	M22x2,5
3	33,5	7	33	40	M 39 x 2	25,5	22	M 10	91	G 3/8	35	35	8	M22x2,5
4	38	12	32	-	Ø 43	-	27	M 10	114	G 3/8	35	35	8	M24x3

Ø inch	Ø MMh9	PD	PF	PJ	TV	VD	WH	Y	ZJ	at 0 mm	per 25 mm	Model
1 1/4	12	-	-	69	30,5	8	37	49,5	125,5	0,47 kg	0,06 kg	RM/9125/M/*
1 3/4	16	-	-	70	43	8	37	52	132,5	0,91 kg	0,10 kg	RM/9175/M/*
2	20	-	3	67	47,5	9,5	46	60,5	137	1,15 kg	0,13 kg	RM/920/M/*
2 1/2	25	-	3	73	55,5	8	53	68,5	152,5	1,93 kg	0,17 kg	RM/925/M/*
3	25	59	3	95	66,5	13	56,5	71	179,5	3,02 kg	0,20 kg	RM/930/M/*
4	32	63,5	-	97	89	13	64	77,5	187,5	4,01 kg	0,26 kgÝ	RM/940/M/*

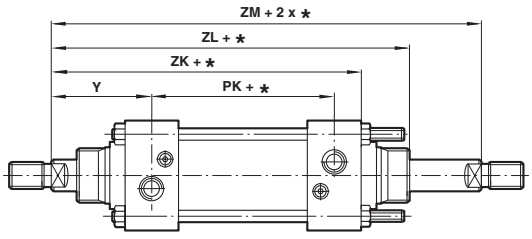
* Please insert standard stroke length (mm).

Cylinder variants

RM/900/JM – Double ended piston rod

Ø inch	PK	ZK	ZL	ZM	Y	at 0 mm	per 25 mm	Model
1 1/4	66,5	128,5	155,5	165,5	49,5	0,65 kg	0,08 kg	RM/9125/JM/*
1 3/4	69,5	136,5	163,5	173,5	52	1,21 kg	0,13 kg	RM/9175/JM/*
2	67	142,5	172	187,5	60,5	1,66 kg	0,19 kg	RM/920/JM/*
2 1/2	72,5	157	190,5	210	68,5	2,82 kg	0,27 kg	RM/925/JM/*
3	95	179,5	218	237	71	3,86 kg	0,30 kg	RM/930/JM/*
4	96,5	187,5	232	251,5	77,5	5,31 kg	0,41 kg	RM/940/JM/*

* Please insert standard stroke length.



* stroke

Heavy duty imperial cylinders
RM/900/M

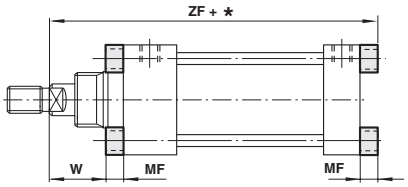
Ø 1 1/4 ... 4"

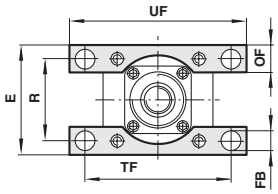
Mountings

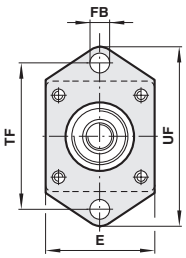
Dimensions shown in mm
Projection/First angle

Front flange B or rear flange G
Front and rear flange BG

For 9125 cylinder only



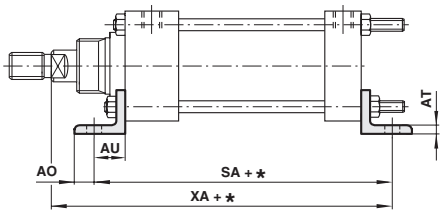


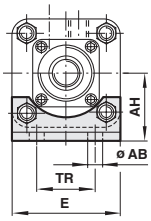


* stroke

Ø inch	E	FB	MF	OF	R	TF	UF	W	ZF	Weight	Model B	Model BG	Model G
1 1/4	45	8	9,5	-	-	63,5	79	27,5	135	0,15 kg	M/P6938	QM/819	M/P6938
1 3/4	59	9	10	16	43	81	98,5	27	142,5	0,20 kg	QM/888	QM/1181	QM/986
2	64	9	10	16	47,5	85,5	105	35,5	147	0,20 kg	QM/875	QM/1182	QM/871
2 1/2	75,5	9	10	20	55,5	93,5	113	43	162,5	0,25 kg	QM/876	QM/1184	QM/877
3	88,5	11,5	16	22	66,5	111	133,5	41,5	195,5	0,45 kg	QM/878	QM/1185	QM/984

Foot mounting C

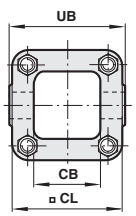


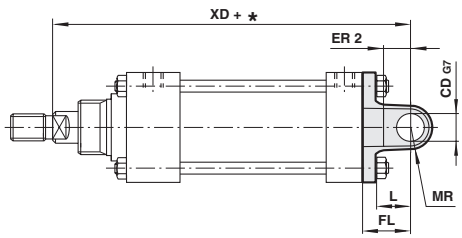


* stroke

Ø inch	Ø AB	AH	AO	AT	AU	E	SA	TR	XA	Weight	Model
1 1/4	6,8	24	6,5	6,5	14,5	45	117	-	139,5	0,06 kg	QM/754
1 3/4	10,5	37,5	11	5	19	57	133,5	-	151,5	0,20 kg	QM/753
2	13	40	11	5	19	63	129,5	-	156	0,20 kg	QM/752
2 1/2	13	46,5	11	5	19	74	137,5	30	171,5	0,25 kg	QM/748
3	13	52,5	11	5	19	91	160	28,5	198,5	0,30 kg	QM/983
4	13,5	70	24,5	8	25,5	114	174	51	212,5	0,65 kg	QM/982

Rear clevis D





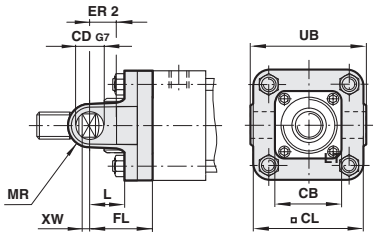
* stroke

Ø inch	CB	Ø CDG7	CL	ER 2	FL	L	MR	UB	XD	Weight	Model
1 1/4	25,4	6	44,5	9,5	14,5	9,5	6,5	-	139,5	0,08 kg	M/P6937
1 3/4	34,9	12	57	14,5	19	14,5	10	-	151,5	0,15 kg	M/P7457
2	34,9	16	62,5	20,5	28,5	20,5	13	-	165,5	0,25 kg	M/P10228
2 1/2	42,9	16	74	20,5	28,5	20,5	13	-	181	0,25 kg	M/P10311
3	44,5	20	88	25,5	35	25,5	14	-	214,5	0,75 kg	M/P10229
4	69,9	22	114,5	36,5	57	38	19	122,5	244,5	1,25 kg	QM/758

Heavy duty imperial cylinders
RM/900/M

Ø 1 1/4 ... 4”

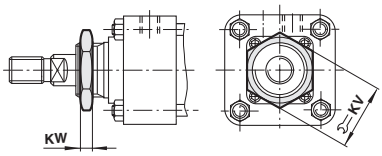
Front clevis K



Ø inch	CB	Ø CDG7	CL	ER 2	FL	L	MR	UB	XW	Weight	Model
1 1/4	25,4	6	44,5	9,5	14,5	9,5	6,5	-	22,5	0,08 kg	M/P6937
1 3/4	34,9	12	57	14,5	19	14,5	10	-	18	0,15 kg	M/P7457
2	34,9	16	62,5	20,5	28,5	20,5	13	-	7,5	0,25 kg	QM/962
2 1/2	42,9	16	74	20,5	28,5	20,5	13	-	16,5	0,25 kg	QM/964
3	44,5	20	88	25,5	35	25,5	14	-	6,5	0,75 kg	QM/966
4	69,9	22	114,5	36,5	57	38	19	122,5	7	1,25 kg	QM/758

Nose mounting N

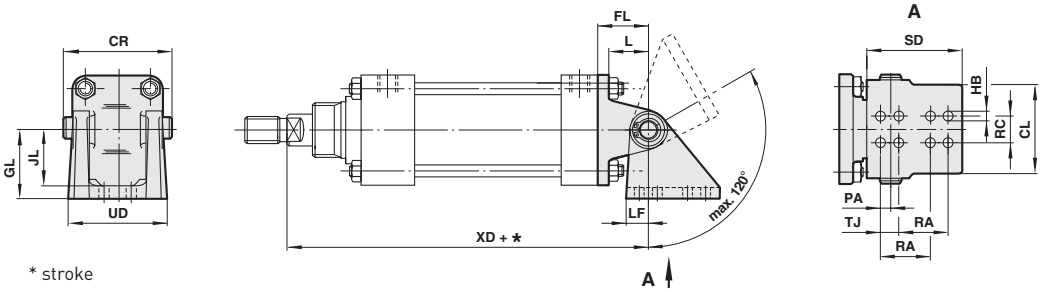
Dimensions shown in mm
Projection/First angle



Ø inch	KV	KW	Weight	Model
1 1/4	28	6,5	0,02 kg	M/P11716
1 3/4	38	8	0,04 kg	M/P7955
2	43	8	0,04 kg	M/P9969
2 1/2	48	8	0,04 kg	M/P9905
3	48	8	0,04 kg	M/P9905
4	57	8	0,06 kg	QM/1475*

* These cannot be supplied separately. If a spare Nose Mounting is required, specify basic cylinder reference with 'Q' prefix and -/06 suffix, e.g. QM/940/N/06.

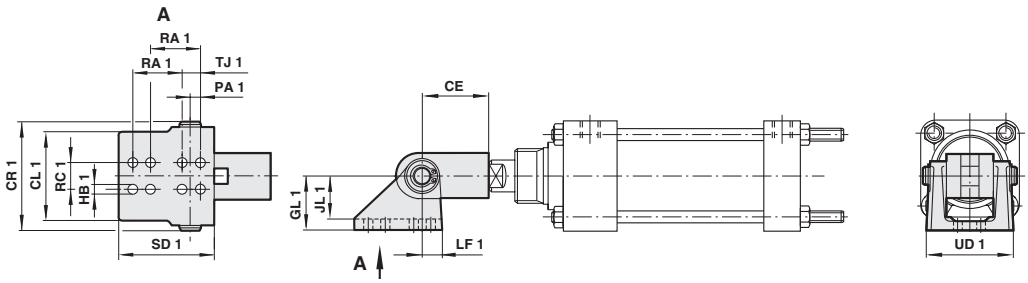
Rear hinge mounting L



* stroke

Ø inch	CL	CR	FL	GL	Ø HB	JL	L	LF	PA	RA	RC	SD	TJ	UD	XD	Weight	Model
1 1/4	31	39,5	25,5	28,5	7,2	20,5	19	9,5	1,5	25,5	–	41,5	–	–	151	0,25 kg	QM/394
1 3/4	32	44,5	32	32	8,7	25,5	24	13	5	32	–	47,5	–	–	164,5	1,10 kg	QM/922
2	60	73	35	47,5	8,5	39,5	25,5	15,5	6,5	47,5	19	66,5	–	68,5	172	1,20 kg	QM/909
2 1/2	60	73	35	47,5	8,5	39,5	25,5	15,5	6,5	47,5	19	66,5	–	68,5	187,5	1,25 kg	QM/910
3	60	73	35	47,5	8,5	39,5	25,5	15,5	6,5	47,5	19	66,5	–	68,5	214,5	1,50 kg	QM/911
4	70	82,5	51	74,5	12	65	30	23,5	11	76	22	101,5	–	82,5	238	3,50 kg	QM/912

Rear hinge mounting M



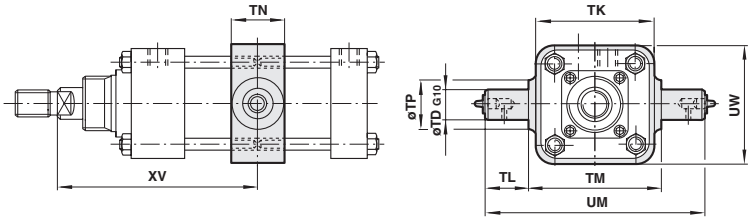
Ø inch	CE	CL 1	CR 1	GL 1	Ø HB 1	JL 1	LF 1	PA 1	RA 1	RC 1	SD 1	TJ 1	UD 1	Weight	Model
1 1/4	25,5	31	39,5	28,5	7,2	20,5	9,5	1,5	25,5	–	41,5	–	–	0,17 kg	QM/393
1 3/4	33,5	32	44,5	32	8,7	25,5	13	5	32	–	47,5	–	–	0,30 kg	QM/923
2	41,5	43	54	32	8,5	24	14	5	32	–	51	–	49	0,40 kg	QM/908
2 1/2	58,5	60	73	47,5	8,5	39,5	16	6,5	47,5	19	67	–	68,5	1,00 kg	QM/901
3	58,5	60	73	47,5	8,5	39,5	16	6,5	47,5	19	67	–	68,5	1,00 kg	QM/901
4	66,5	70	82,5	74,5	12	65	24	11	76	22	102	–	82,5	2,00 kg	QM/902

Heavy duty imperial cylinders
RM/900/M

Ø 1 1/4 ... 4"

Centre trunnion H

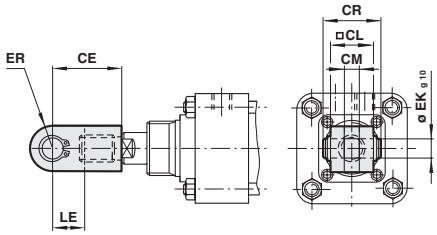
Dimensions shown in mm
Projection/First angle



Ø inch	Ø TDg10	TK	TL	TM	TN	Ø TP	UM	UW	XV min	XV max	Weight	Model
1 1/4	12	45	17,5	50,5	20,5	18	85,5	45	72,5	93	0,16 kg	M/P14001
1 3/4	16	65	24	73	25,5	22	120,5	65	79	94,5	0,50 kg	M/P11224
2	18	70	25,5	79,5	32	29	130	70	90,5	97	0,60 kg	M/P8635
2 1/2	22	81	32	90,5	38	35	154	81	102	108,5	0,90 kg	M/P8636
3	25	95	38	108	38	38	184	95	111,5	125,5	1,25 kg	M/P8637
4	32	127	41,5	139,5	44,5	44,5	222,5	127	121,5	130	2,50 kg	M/P8638

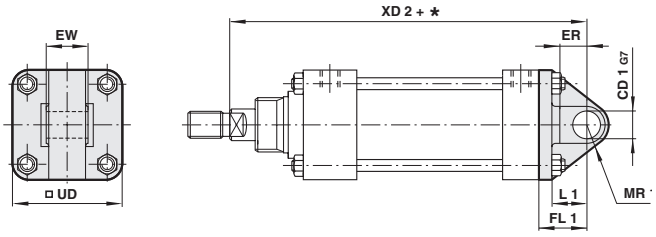
Note: These mountings are only supplied assembled complete with the cylinder. Unless otherwise specified, units will be supplied with dimension 'XV' plus half the stroke length. Grease nipple supplied as standard on cylinders 9175 to 940.

Piston rod clevis F



Ø inch	CE	CL	CM	CR	Ø EKg10	ER	LE	Weight	Model
1 1/4	25,5	12,5	6,4	18	6	6,5	11	0,03 kg	QM/402
1 3/4	33,5	19	10	26	10	10	12,5	0,05 kg	QM/404
2	41,5	25,5	11	33	12	13	19	0,10 kg	QM/405
2 1/2	58,5	38	14	47	16	19	25,5	0,40 kg	QM/407
3	58,5	38	14	47	16	19	25,5	0,40 kg	QM/407
4	66,5	44,5	16	53	18	22	28,5	0,90 kg	QM/408

Rear eye R



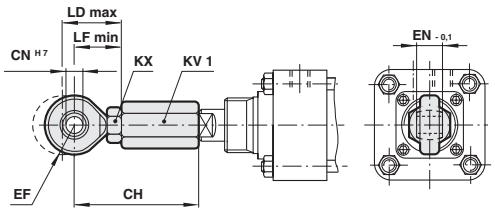
* stroke

Ø inch	Ø CD 1G7	ER	EW	FL 1	L 1	MR 1	UD	XD 2	Weight	Model
1 1/4	6	19	19	25,5	19	9	45	151	0,10 kg	M/P11966
1 3/4	10	14,5	19	32	24	10	57	164,5	0,26 kg	M/P11219
2	16	19	38,1	35	25,5	14	62	172	0,55 kg	M/P10349
2 1/2	16	19	38,1	35	25,5	14	74	187,5	0,80 kg	M/P10351
3	16	19	38,1	35	25,5	16	87,5	214,5	0,90 kg	M/P10353
4	18	25,5	44,5	51	30	21	112,5	238	2,60 kg	QM/763

Heavy duty imperial cylinders
RM/900/M

Ø 1 1/4 ... 4”

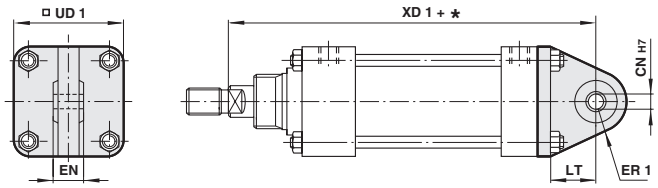
Universal piston rod eye UF



Dimensions shown in mm
Projection/First angle

Ø inch	CH	Ø CNH7	EF	EN-0,1	KV 1	KX	LD max.	LF min.	Z	Weight	Model
1 1/4	59	8	13	12	14	13	30	24	17°	0,07 kg	QM/1141
1 3/4	74	10	15	14	17	17	33	28	16°	0,13 kg	QM/1142
2	74	10	15	14	22	17	33	28	16°	0,17 kg	QM/1143
2 1/2	96,5	14	19	19	32	22	39	36	18°	0,43 kg	QM/1144
3	96,5	14	19	19	32	22	39	36	18°	0,43 kg	QM/1144
4	101	14	19	19	32	22	39	36	18°	0,44 kg	QM/1146

Universal rear eye UR

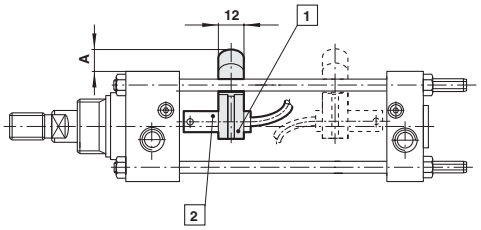


* stroke

Ø inch	Ø CNH7	EN	ER 1	LT	UD 1	XD 1	Z	Weight	Model
1 1/4	8	12	16	19	44,5	151,5	13°	0,18 kg	QM/1161
1 3/4	10	14	18	26	56,5	166,5	12°	0,30 kg	QM/1162
2	10	14	18	27	63	172	12°	0,43 kg	QM/1163
2 1/2	14	19	26	26	73	187,5	12°	0,60 kg	QM/1164
3	14	19	26	26	87,5	214,5	12°	0,75 kg	QM/1165
4	14	19	26	30	114	238	12°	2,40 kg	QM/1166
5	25	31	36	36	138	279	12°	2,70 kg	QM/950/33
6	30	37	43	39	176	290	12°	4,60 kg	QM/960/33
8	30	37	48	42	216	337	12°	7,30 kg	QM/980/33

Switch mounting
QM/27/2/1

Cylinder Ø	A	B	Weight
1 1/4	9	30,5	0,010 kg
1 3/4	8	35,5	0,010 kg
2	7	38	0,010 kg
2 1/2	7	44,5	0,010 kg
3	4	49,5	0,010 kg
4	2	59	0,010 kg



1 Bracket

2 Switch

“Of all utilities, compressed air represents one of the largest opportunities for immediate energy savings on any site”

The Carbon Trust

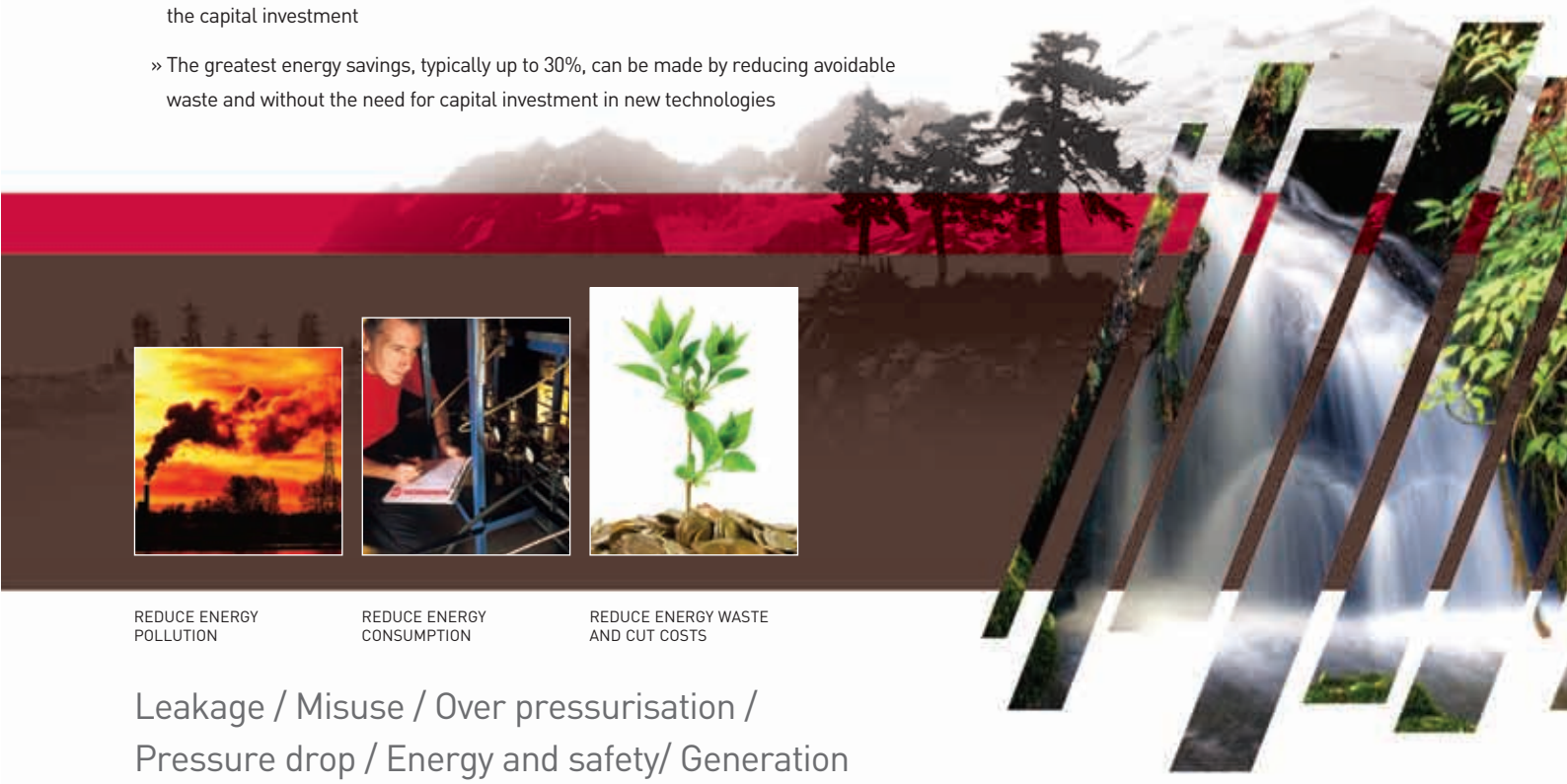
Because compressed air systems are safe, reliable and versatile, they are usually taken for granted with no regard for cost.

An essential resource for industry, business and public sector, compressed air is often referred to as the fourth utility after electricity, gas and water. However, unlike the other three, compressed air is generated on site, and users therefore have much more control over usage costs. It is worth investing time and effort in reducing compressed air costs because:

» In a typical industrial system, compressed air accounts for 10% of the total electricity bill

» Over a 10-year life of a compressor, the cost of energy is 73% to run the system and far outweighs the capital investment

» The greatest energy savings, typically up to 30%, can be made by reducing avoidable waste and without the need for capital investment in new technologies



REDUCE ENERGY POLLUTION

REDUCE ENERGY CONSUMPTION

REDUCE ENERGY WASTE AND CUT COSTS

Leakage / Misuse / Over pressurisation / Pressure drop / Energy and safety/ Generation

REDUCE IT Waste, Energy Consumption, Carbon Emissions

‘It makes sense’

By highlighting issues within manufacturing units or processes, Norgren’s skilled and experienced engineers can help save substantial amounts of energy costs and money by identifying and eliminating waste, improve the reliability and performance of the compressed air system and reduce the environmental impact through reduced electricity consumption and consequent carbon emissions.

For details and information visit norgren.com

Heavy duty imperial cylinders
LRM/900

Ø 5" ... 14"

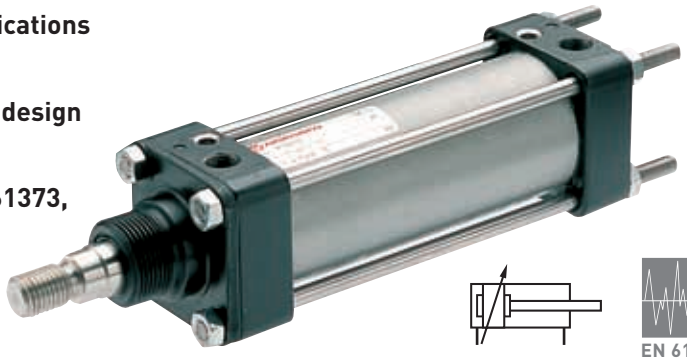
Ideal for a wide range of Rail applications

Extensive range of mountings

Rugged, reliable long established design

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated
Operation:
Double acting, adjustable cushioning

Operating pressure:
2 ... 10 bar (29 ... 145 psi)
Operating temperature:
-40 ... +80°C
(-40 ... +176°F max.)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Cylinder diameters:
5, 6, 8, 10, 12 and 14 inches
Stroke length:
Up to 15 times cylinder diameter
Air ports:
ISO G parallel

Materials:
Barrel: anodized aluminium, except Ø 14 inches which is steel
End cover: diecast aluminium
Bearing housing: aluminium
Piston: aluminium
Piston rod and tie rods: stainless steel (Martensitic)
Seals and 'O'-rings: nitrile rubber

Technical data

Cylinder Ø (inch)	5	6	8	10	12	14
Air ports	G 1/2	G 1/2	G 3/4	G 1	G 1	G 1
Piston rod Ø (inch)	1 1/2	1 1/2	1 3/4	2 1/4	2 1/4	2 1/4
Piston rod thread	M30x3,5	M30x3,5	M36x4	M48x5	M48x5	M48x5
Cushion length mm (inch)	29 (1.14)	32 (1.26)	44 (1.73)	50 (1.97)	50 (1.97)	50 (1.97)
Theoretical thrusts at 6 bar (87 psi) outstroke N (lb)	7600 (1708)	10887 (2447)	19419 (4366)	30402 (6835)	43837 (9855)	59723 (13426)
Theoretical thrusts at 6 bar (87 psi) instroke N (lb)	6920 (1555)	10207 (2295)	18486 (4156)	28871 (6490)	42306 (9511)	58192 (13082)
Air consumption at 6 bar (87 psi) outstroke l/cm (inch³/inch)	0,887 (137.9)	1,27 (197.5)	2,266 (352.4)	3,547 (551.6)	5,114 (795.3)	6,968 (1083.7)
Air consumption at 6 bar (87 psi) instroke l/cm (inch³/inch)	0,807 (125.5)	1,191 (185.2)	2,157 (335.5)	3,368 (523.8)	4,936 (767.7)	6,789 (1055.8)

Option selector

L★M/9★★★/★/★★★★

Piston rod material	Substitute
Stainless steel martensitic (standard)	R
Stainless steel austenitic (option)	S

Cylinder Ø (inch)	Substitute
5	50
6	60
8	80
10	100
12	120
14	140

Strokes (mm)
Max. stroke = 15 x cylinder Ø

Variants (magnetic piston)	Substitute
Standard	None
Double ended piston rod	J

Standard strokes

Cylinder Ø (inch)	Strokes (mm) 50	75	100	150	200	225	250	300
5	•	•	•	•	•	•	•	•
6	•	•	•	•	•	•	•	•
8	•	•	•	•	•	•	•	•
10	•	•	•	•	•	•	•	•
12	•	•	•	•	•	•	•	•
14	•	•	•	•	•	•	•	•

Heavy duty imperial cylinders
LRM/900

Ø 5" ... 14"

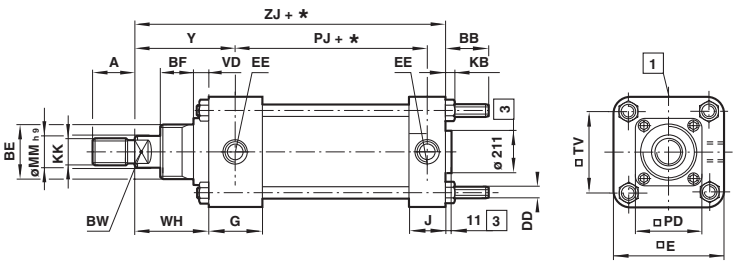
Mountings and service kit

Model	B	B+G	C	D	F	G	H
							
Ø inch	Page 1-24	Page 1-24	Page 1-24	Page 1-25	Page 1-26	Page 1-24	Page 1-26
5	QM/886	QM/1188	QM/981	QM/759	QM/409	QM/988	M/P8639
6	QM/884	QM/1189	QM/826	QM/761	QM/409	QM/884	M/P8640
8	QM/883	QM/1190	QM/825	QM/762	QM/410	QM/883	M/P8645
10	QM/882	–	QM/824	–	QM/411	QM/882	M/P8667
12	QM/889	–	QM/756	–	QM/411	QM/889	M/P8670
14	QM/741	–	QM/755	–	QM/411	QM/741	M/P11819

Model	K	L	M	N	R	UR	Service kit
							
Ø inch	Page 1-25	Page 1-25	Page 1-26	Page 1-25	Page 1-27	Page 1-27	
5	QM/759	QM/913	QM/903	QM/997*	QM/764	QM/950/33	LQM/950/00
6	QM/761	QM/914	QM/903	QM/997*	QM/765	QM/960/33	LQM/960/00
8	QM/762	QM/915	QM/904	-	QM/766	QM/980/33	LQM/980/00
10	–	QM/917	QM/919	-	QM/767	-	LQM/9100/00
12	–	QM/918	QM/919	-	QM/768	-	LQM/9120/00
14	–	QM/924	QM/919	-	QM/769	-	LQM/9140/00

Basic dimensions

Dimensions shown in mm
Projection/First angle



* stroke (mm)
1 Cushion screw Ø 5 ... 14 inch
3 For Ø 14 inch only

Ø inch	A	BB	BE	BW	DD	E	EE	G	J	KB	KK
5	47,5	48	Ø 58,5	Ø 10	M 12	140	G 1/2	41	41	10	M30x3,5
6	47,5	49,5	Ø 58,5	Ø 10	M 16	167	G 1/2	41	41	13	M30x3,5
8	57	53,5	Ø 63,5	Ø 10	M 18	219	G 3/4	52	52	15	M36x4
10	76	70,5	Ø 77	Ø 10	M 24	270	G 1	60	60	19	M48x5
12	76	70,5	Ø 77	Ø 10	M 24	321	G 1	60	60	19	M48x5
14	76	93	Ø 89	Ø 10	M 30	375	G 1	60	60	24	M48x5

Ø inch	Ø MMh9	PD	PJ	TV	VD	WH	Y	ZJ	at 0 mm	per 25 mm	Model
5	1 1/2 inch	82,5	109	108	18	83	101	228,5	9,10 kg	0,55 kg	LRM/950/*
6	1 1/2 inch	82,5	115,5	128,5	18	83	101	235	12,80 kg	0,80 kg	LRM/960/*
8	1 3/4 inch	89	145,5	168,5	19	86	108,5	276	23,00 kg	1,00 kg	LRM/980/*
10	2 1/4 inch	111	173,5	209,5	22	109	139,5	343	73,40 kg	1,90 kg	LRM/9100/*
12	2 1/4 inch	111	173,5	246	22	109	139,5	343	98,60 kg	2,10 kg	LRM/9120/*
14	2 1/4 inch	-	187,5	292	32	128	153,5	366,5	99,80 kg	3,00 kg	LRM/9140/*

*Please insert stroke length (mm)

Heavy duty imperial cylinders
LRM/900

Ø 5" ... 14"

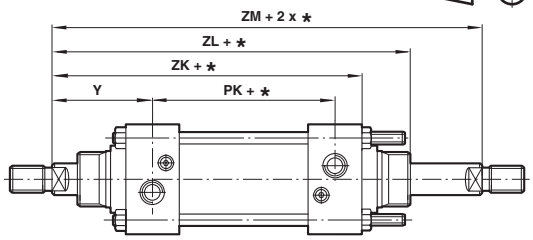
Cylinder variants

Dimensions shown in mm
Projection/First angle

LRM/900/J – with double ended piston rod

Ø inch	PK	ZK	ZL	ZM	Y	at 0 mm	per 25 mm	Model
5	109	228,5	292	311,5	101	11,85 kg	0,77 kg	LRM/950/J/*
6	115,5	235	298,5	318	101	15,60 kg	1,20 kg	LRM/960/J/*
8	145,5	276	339,5	362	108,5	26,91 kg	1,30 kg	LRM/980/J/*
10	173,5	343	419	452	139,5	81,10 kg	2,39 kg	LRM/9100/J/*
12	173,5	343	419	452	139,5	105,30 kg	2,59 kg	LRM/9120/J/*
14	187,5	366,5	462	494,5	153,5	109,00 kg	3,30 kg	LRM/9140/J/*

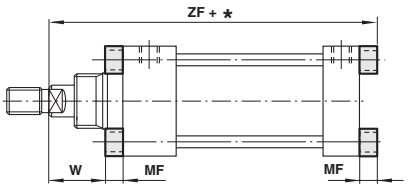
*Please insert stroke length (mm)

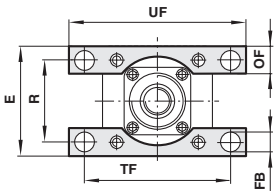


* stroke

Mountings

Front flange B or rear flange G
Front and rear flange BG

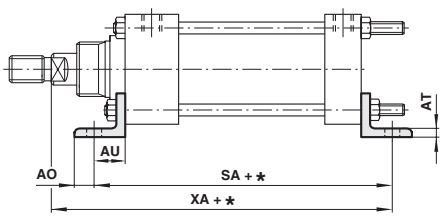


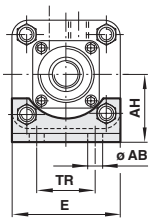


* stroke

Ø inch	E	FB	MF	OF	R	TF	UF	W	ZF	Weight	Model B	Model BG	Model G
5	148	14,5	20	40	108	171,5	203	63	248,5	1,50 kg	QM/886	QM/1188	QM/988
6	168,5	18	20	40	128,5	205	243	63	255	2,40 kg	QM/884	QM/1189	QM/884
8	218,5	22	25	50	168	263,5	314,5	61	301	5,50 kg	QM/883	QM/1190	QM/883
10	274,5	26	30	65	209,5	333,5	397	79	373	12,00 kg	QM/882	–	QM/882
12	311	26	30	65	246	384	448	79	373	14,00 kg	QM/889	–	QM/889
14	368	33	38	76	292	457	533	90	405	23,00 kg	QM/741	–	QM/741

Foot mounting C





* stroke

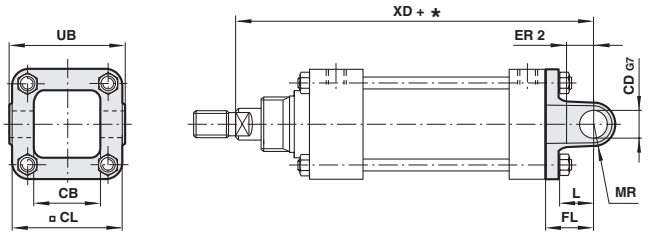
Ø inch	Ø AB	AH	AO	AT	AU	E	SA	TR	XA	Weight	Model
5	17,5	82,5	21,5	8	28,5	140	202,5	57	257	1,00 kg	QM/981
6	17,5	99,5	25	10	35	167	222	70	270	2,50 kg	QM/826
8	17,5	122	22	10	38	219	266	82,5	314	3,50 kg	QM/825
10	26	159	46	15	54	270	341,5	114,5	397	8,00 kg	QM/824
12	26	177	46	15	54	320	341,5	139,5	397	9,50 kg	QM/756
14	33,5	212,5	33,5	15	66,5	375	372	159	433,5	20,50 kg	QM/755

Heavy duty imperial cylinders
LRM/900

Ø 5" ... 14"

Rear clevis D

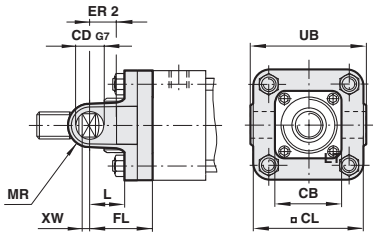
Dimensions shown in mm
Projection/First angle



* stroke

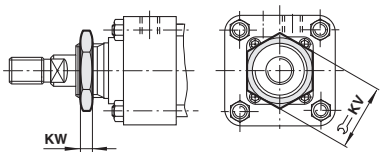
Ø inch	CB	Ø CDG7	CL	ER 2	FL	L	MR	UB	XD	Weight	Model
5	92,1	25	139,5	32	70	44,5	24	152,5	298,5	2,50 kg	QM/759
6	106,4	32	166,5	35	76	49	29	181	311	3,50 kg	QM/761
8	122,2	38	217,5	38	85,5	57	38	237	362	7,00 kg	QM/762

Front clevis K



Ø inch	CB	Ø CDG7	CL	ER 2	FL	L	MR	UB	XW	Weight	Model
5	92,1	25	139,5	32	70	44,5	24	152,5	13	2,50 kg	QM/759
6	106,4	32	166,5	35	76	49	29	181	6,5	3,50 kg	QM/761
8	122,2	38	217,5	38	85,5	57	38	237	0	7,00 kg	QM/762

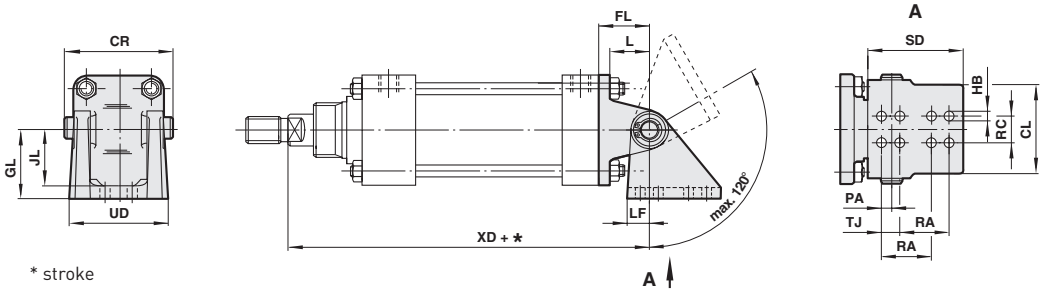
Nose mounting N



Ø inch	KV	KW	Weight	Model
5	70	12,5	0,18 kg	QM/997*
6	70	12,5	0,18 kg	QM/997*

* These cannot be supplied separately. If a spare Nose Mounting is required, specify basic cylinder reference with 'Q' prefix and -/06 suffix, e.g. QM/950/N/06.

Rear hinge mounting L



* stroke

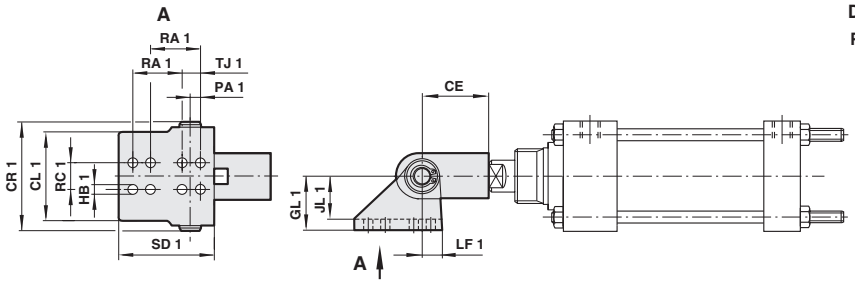
Ø inch	CL	CR	FL	GL	Ø HB	JL	L	LF	PA	RA	RC	SD	TJ	UD	XD	Weight	Model
5	70	82,5	57	74,5	12	65	33,5	23,5	11	76	22	101,5	–	82,5	285,5	5,00 kg	QM/913
6	98,5	114,5	70	89	13,5	76	43	28	12,5	101,5	32	165	32	108	305	11,00 kg	QM/914
8	100	114,5	79,5	116	16,7	100	47,5	31,5	16	114,5	32	184	38	117,5	355,5	17,50 kg	QM/915
10	151	178	95,5	171,5	27	151	57	44,5	16	133,5	51	247,5	57	159	438	25,00 kg	QM/917
12	151	178	95,5	171,5	27	151	57	44,5	16	133,5	51	247,5	57	159	438	30,00 kg	QM/918
14	210	239	120,5	232	27	209,5	73	63,5	28,5	139,5	63,5	279,5	70	210	487,5	61,00 kg	QM/924

Heavy duty imperial cylinders
LRM/900

Ø 5" ... 14"

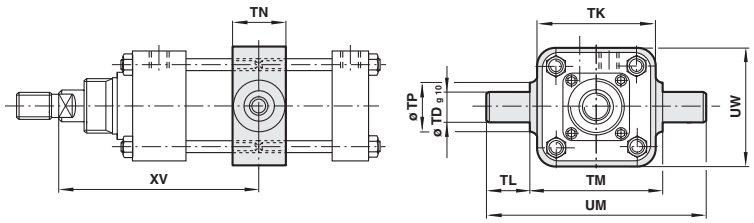
Rear hinge mounting M

Dimensions shown in mm
Projection/First angle



Ø inch	CE	CL 1	CR 1	GL 1	Ø HB 1	JL 1	LF 1	PA 1	RA 1	RC 1	SD 1	TJ 1	UD 1	Weight	Model
5	79,5	79,5	92	89	10,3	79,5	28,5	16	89	22	114,5	–	–	3,00 kg	QM/903
6	79,5	79,5	92	89	10,3	79,5	28,5	16	89	22	114,5	32	–	3,00 kg	QM/903
8	95,5	98,5	114,5	89	13,5	76	28,5	12,5	102	32	165	32	108	6,00 kg	QM/904
10	120,5	124	139,5	116	20	100	35	12,5	120,5	38	206,5	41,5	–	9,00 kg	QM/919
12	120,5	124	139,5	116	20	100	35	12,5	120,5	38	206,5	41,5	–	9,00 kg	QM/919
14	120,5	124	139,5	116	20	100	35	12,5	120,5	38	206,5	41,5	–	10,50 kg	QM/919

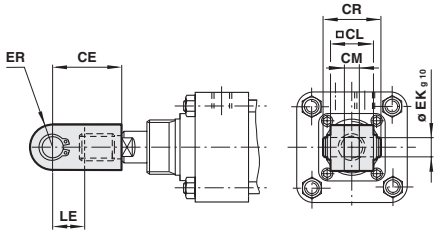
Centre trunnion H



Ø inch	Ø TDg10	TK	TL	TM	TN	Ø TP	UM	UW	XV min	XV max	Weight	Model
5	38	152	51	165	51	51	266,5	152	149,5	162	3,50 kg	M/P8639
6	38	187	51	192	51	51	293,5	187	149,5	168,5	5,00 kg	M/P8640
8	45	241,5	54	247,5	70	64	355,5	245	173	189	10,00 kg	M/P8645
10	65	330	76	330	76	114	482,5	318	207	245	25,00 kg	M/P8667
12	75	381	76	381	89	127	533,5	368	213,5	238,5	35,00 kg	M/P8670
14	90	457	101,5	457	101,5	140	660,5	432	239	255,5	51,50 kg	M/P11819

Note: 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.

Piston rod clevis F



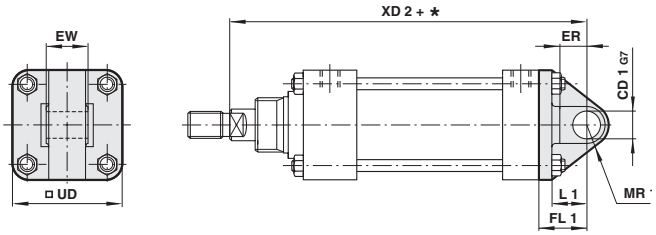
Ø inch	CE	CL	CM	CR	Ø EKg10	ER	LE	Weight	Model
5	79,5	51	20	60	22	25	32	1,25 kg	QM/409
6	79,5	51	20	60	22	25	32	1,25 kg	QM/409
8	95,5	63,5	25	74	25	32	38	1,70 kg	QM/410
10	120,5	76	32	87	32	38	44,5	2,75 kg	QM/411
12	120,5	76	32	87	32	38	44,5	2,75 kg	QM/411
14	120,5	76	32	87	32	38	44,5	4,50 kg	QM/411

Heavy duty imperial cylinders
LRM/900

Ø 5” ... 14”

Rear eye R

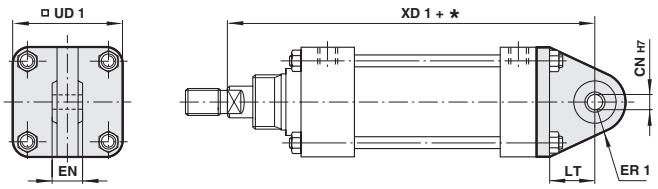
Dimensions shown in mm
Projection/First angle



* stroke

Ø inch	Ø CD 1G7	ER	EW	FL 1	L 1	MR 1	UD	XD 2	Weight	Model
5	18	28,5	44,5	57	33,5	21	138	285,5	3,60 kg	QM/764
6	25	28,5	63,5	70	43	25,5	165	305	6,20 kg	QM/765
8	25	32	63,5	79,5	47,5	25,5	217,5	355,5	11,50 kg	QM/766
10	38	44,5	101,6	95,5	57	41	268,5	438	12,60 kg	QM/767
12	38	44,5	101,6	95,5	57	41	319	438	17,30 kg	QM/768
14	57	73	127	120,5	73	54	375	487,5	32,80 kg	QM/769

Universal rear eye UR



* stroke

Ø inch	Ø CNH7	EN	ER 1	LT	UD 1	XD 1	Z	Weight	Model
5	25	31	36	36	138	279	12°	2,70 kg	QM/950/33
6	30	37	43	39	176	290	12°	4,60 kg	QM/960/33
8	30	37	48	42	216	337	12°	7,30 kg	QM/980/33

Double acting imperial cylinders NFPA

Ø 4" ... 8"

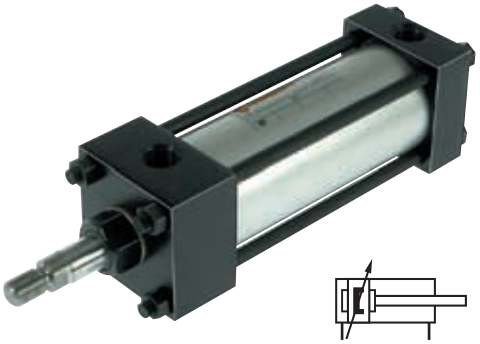
Adjustable captive cushion needle

Constructed of the finest materials

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

Magnetic piston standard



EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

Medium:
Filtered compressed air lubricated or non lubricated
Operation:
Double acting, adjustable cushioning and magnetic piston
Bore sizes:
4", 5", 6", 8",
Operating pressure:
250 psi (17 bar)

Operating temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
Strokes:
Made to order, available 2 ... 120 inches

Materials*:
Head and end caps: black anodized aluminum alloy
Tube: Aluminum alloy, clear anodized O.D., hard coat anodized I.D.
Piston: machined high-strength aluminum alloy.
Piston rod: hard chrome plated steel
Rod bearing: oil impregnated sintered iron
Seals: nitrile rod seal, urethane rod wiper, nitrile piston seals, nitrile tube end seals
Tie rods: high-tensile strength steel
*consult factory for alternative materials

Technical data

Cylinder Ø (inch)	4	5	6	8
Air ports	1/2 NPT	1/2 NPT	3/4 NPT	3/4 NPT
Piston rod diameter (inch)	1	1	1 3/8	1 3/8
Cushion length (inch)	0.95	0.95	1.15	1.15
Theoretical thrusts at 80 psi (6 bar) outstroke	1005 lb (4473 N)	1571 lb (6988 N)	2262 lb (10061 N)	4020 lb (17881 N)
Theoretical thrusts at 80 psi (6 bar) instroke	942 lb (4193 N)	1508 lb (6708 N)	2143 lb (9532 N)	3901 lb (17352 N)

Option selector

A★★77★1-LT-PS-★★-★X★★

Mounting options	Substitute
Head Rectangular Flange (MF1)	03
Head Square (ME3) – 8" bore	03
Side Lugs (MS2)	09
Cap trunnion (MT2)	8R
Cap fixed clevis (MP1)	12
Cap fixed eye (MP3)	32
Piston rod diameters	**Substitute**
1" for 4" and 5" cylinders	B
1 3/8" for 6" and 8" cylinders	C

Stroke in inch	
Bore in inch	
Additional options	**Substitute**
Standard	None
Metal rod scraper	MS
Cushion location	N(33)*
Piston rod boot over	RB
Piston rod extension	RX
Stainless steel piston rod	SS

* Option required for MT2 mounting style.

Double acting imperial cylinders NFPA

Ø 4" ... 8"

Mountings

Model	Removable cap trunnion (MT2)	Cap fixed clevis (MP1)	Cap fixed eye (MP3)	Head rectangular flange mount (MF1)	Head square mount (ME3)	Side lug mount (MS2)
						
Ø (inches)	Page 1-31	Page 1-31	Page 1-31	Page 1-32	Page 1-32	Page 1-32
4	A8R77B1-LT-N(33)-PS-4"x*	A1277B1-LT-PS-4"x*	A3277B1-LT-PS-4"x*	A0377B1-LT-PS-4"x*		A0977B1-LT-PS-4"x*
5	A8R77B1-LT-N(33)-PS-5"x*	A1277B1-LT-PS-5"x*	A3277B1-LT-PS-5"x*	A0377B1-LT-PS-5"x*		A0977B1-LT-PS-5"x*
6	A8R77C1-LT-N(33)-PS-6"x*	A1277C1-LT-PS-6"x*	A3277C1-LT-PS-6"x*	A0377C1-LT-PS-6"x*		A0977C1-LT-PS-6"x*
8	A8R77C1-LT-N(33)-PS-8"x*	A1277C1-LT-PS-8"x*	A3277C1-LT-PS-8"x*		A0377C1-LT-PS-8"x*	A0977C1-LT-PS-8"x*

* Please insert the stroke length in inches

Model	NFPA rod clevis	Norgren clevis bracket	NFPA eye bracket	Switch mounting bracket for M/50		Service kit
						
Ø (inches)	Page 1-33	Page 1-33	Page 1-33	Page 1-33		
4	49030A	49023A	49020A	QM/27/2/1		LTRK-25-400
5	49030A	49023A	49020A	QM/27/2/1		LTRK-25-500
6	49032A	49024A	49019A	QM/27/2/1		LTRK-35-600
8	49032A	49024A	49019A	QM/27/2/1		LTRK-35-800

Switches

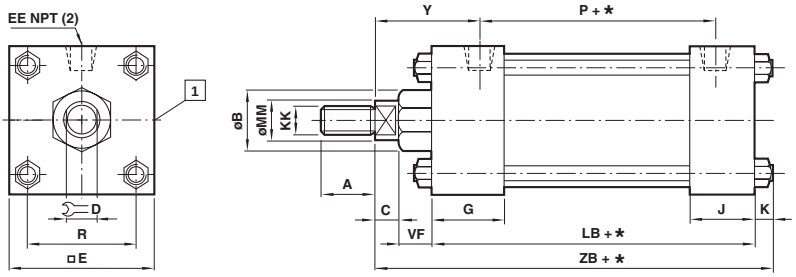
Voltage V d.c.	Current max.	Temperature	LED	Features	Cable length	Cable type	Protection class	Model
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	PNP	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAP/*V
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	NPN	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAN/*V

* Please insert the cable length 2, 5 or 10 m.

Double acting imperial cylinders
NFPA
Ø 4" ... 8"

Basic dimensions

Dimensions shown in inch
Projection/Third angle



* stroke (inch)

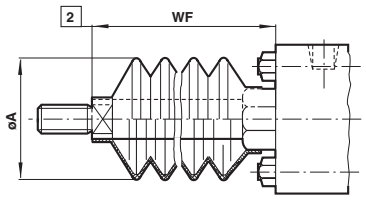
[1] Cushion screw

Bore	Ø MM	A	B +.000 -.002	C	D	E	EE	G	J	K	KK	LB	P	R	VF	Y	ZB	Weight lb	Add per inch of stroke lb
4"	1"	1.125	1.499	.500	.813	4.500	.500	1.750	1.250	.375	3/4 – 16	4.250	2.690	3.323	.875	2.380	6.000	9.8 (4.45 kg)	0.45 (.20 kg)
5"	1"	1.125	1.499	.500	.813	5.500	.500	1.750	1.250	.438	3/4 – 16	4.500	2.940	4.101	.875	2.380	6.313	15.1 (6.85 kg)	0.51 (.23 kg)
6"	1-3/8"	1.625	1.999	.625	1.125	6.500	.750	2.000	1.500	.438	1 – 14	5.000	3.125	4.870	1.000	2.813	7.063	23.5 (16.19 kg)	0.77 (.35 kg)
8"	1-3/8"	1.625	1.999	.625	1.125	8.500	.750	2.000	1.500	.563	1 – 14	5.125	3.250	6.442	1.000	2.813	7.313	40.0 (18.14 kg)	1.06 (.48 kg)

Piston rod boot over

Apiston rod extension RX () is required when applying a rod boot to a cylinder. See below for required rod extension per bore size and stroke.

Ø inch	Ø A	Piston rod extension required – RX ()	WF retracted
4	3.00	0.089 x stroke + 0.547 = RX value	1.375 + RX value
5	3.00	0.089 x stroke + 0.547 = RX value	1.375 + RX value
6	3.50	0.081 x stroke + 0.547 = RX value	1.625 + RX value
8	3.50	0.081 x stroke + 0.547 = RX value	1.625 + RX value



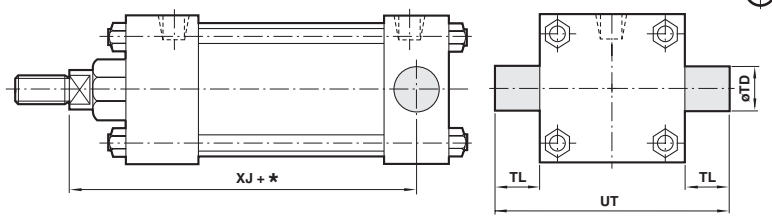
[2] Retracted

Example: A1277B1-LT-PB-RB-RX(??)4X5
0.089 x 5 + 0.547 = 0.992" = piston rod extension
A1277B1-LT-PS-RB-RX(0.992)4x5
WF = 2.367"

Cylinder with mounting

Removable cap trunnion (MT2)

Dimensions shown in inch
Projection/Third angle

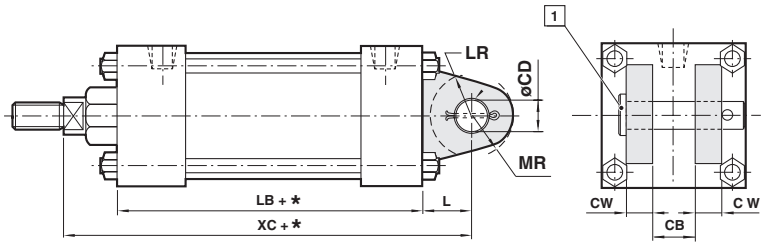


* stroke

Bore	TD +.000 -.001	TL	UT	XJ	Weight lb	Add per inch of stroke lb	Model
4"	1.000	1.000	6.500	5.000	11.5 (5.22 kg)	0.45 (0.20 kg)	A8R77B1-LT-N(33)-PS-4"x*
5"	1.000	1.000	7.500	5.250	18.7 (8.48 kg)	0.51 (0.23 kg)	A8R77B1-LT-N(33)-PS-5"x*
6"	1.375	1.375	9.250	5.875	27.3 (12.38 kg)	0.77 (0.35 kg)	A8R77C1-LT-N(33)-PS-6"x*
8"	1.375	1.375	11.250	6.000	41.4 (18.78 kg)	1.06 (0.48 kg)	A8R77C1-LT-N(33)-PS-8"x*

* Please insert the stroke length in inches

Cap fixed clevis (MP1)

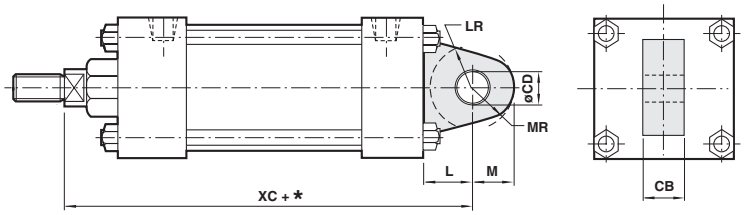


* stroke

Bore	CB	CD	CW	L	LB	LR	MR	XC	Weight lb	Add per inch of stroke lb	Model
4"	1.250	.750	.625	1.250	4.250	1.250	.938	6.875	14.8 (6.71 kg)	0.45 (0.20 kg)	A1277B1-LT-PS-4"x*
5"	1.250	.750	.625	1.250	4.500	1.250	.938	7.125	22.2 (10.07 kg)	0.51 (0.23 kg)	A1277B1-LT-PS-5"x*
6"	1.500	1.000	.750	1.500	5.000	1.500	1.188	8.125	35.7 (10.66 kg)	0.77 (0.35 kg)	A1277C1-LT-PS-6"x*
8"	1.500	1.000	.750	1.500	5.125	1.500	1.188	8.250	43.0 (19.50 kg)	1.06 (0.48 kg)	A1277C1-LT-PS-8"x*

* Please insert the stroke length in inches

Cap fixed eye (MP3)



* stroke

Bore	CB	CD	L	LR	M	MR	XC	Weight lb	Add per inch of stroke lb	Model
4"	1.250	.750	1.250	1.250	.750	.938	6.875	15.5 (7.03 kg)	0.45 (0.20 kg)	A3277B1-LT-PS-4"x*
5"	1.250	.750	1.250	1.250	.750	.938	7.125	22.8 (10.34 kg)	0.51 (0.23 kg)	A3277B1-LT-PS-5"x*
6"	1.500	1.000	1.500	1.500	1.000	1.188	8.125	37.0 (16.78 kg)	0.77 (0.35 kg)	A3277C1-LT-PS-6"x*
8"	1.500	1.000	1.500	1.500	1.000	1.188	8.250	60.5 (27.44 kg)	1.06 (0.48 kg)	A3277C1-LT-PS-8"x*

* Please insert the stroke length in inches

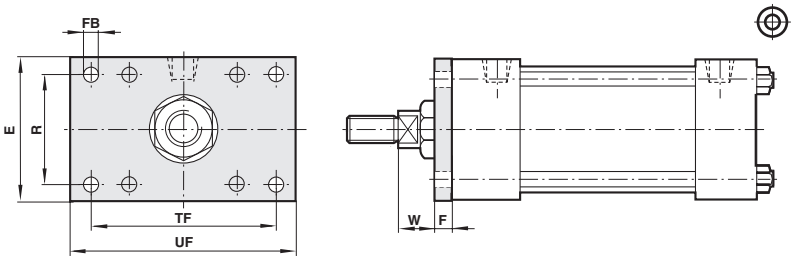
Double acting imperial cylinders
NFPA

Ø 4" ... 8"

Cylinder with mounting

Dimensions shown in inch
Projection/Third angle

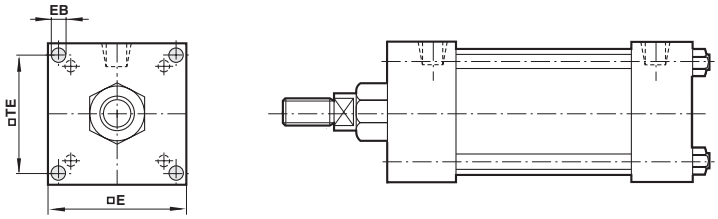
Head rectangular flange mount (MF1) *1)



Bore	E	F	FB	R	TF	UF	W (Std.)	Weight lb	Add per inch of stroke lb	Model
4"	4.500	.625	.438	3.323	5.438	6.250	.750	14.8 (6,71 kg)	0.45 (0,21 kg)	A0377B1-LT-PS-4"x*
5"	5.500	.625	.563	4.101	6.625	7.625	.750	22.7 (10,30 kg)	0.51 (0,23 kg)	A0377B1-LT-PS-5"x*
6"	6.500	.750	.563	4.879	7.625	8.625	.875	35.6 (16,15 kg)	0.77 (0,35 kg)	A0377C1-LT-PS-6"x*

* Please insert the stroke length in inches
*1) Test results pending - consult Norgren Technical for more information.

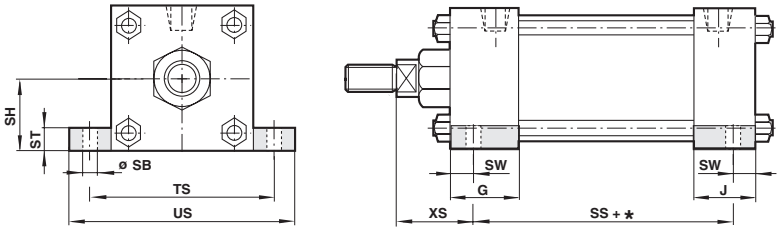
Head square mount (ME3) *1)



Bore	E	EB	TE	Weight lb	Add per inch of stroke lb	Model
8"	8.500	.688	7.570	40.00 (18,15 kg)	1.06 (0,48 kg)	A0377C1-LT-PS-8"x*

* Please insert the stroke length in inches
*1) Test results pending - consult Norgren Technical for more information.

Side lug mount (MS2) *1)



* stroke

Bore	G	J	SB	SH	SS	ST	SW	TS	US	XS (Std.)	Weight lb	Add per inch of stroke lb	Model
4"	1.750	1.250	.563	2.250	3.250	.750	.500	5.500	6.500	1.875	11.5 (5,22 kg)	0.45 (0,21 kg)	A0977B1-LT-PS-4"x*
5"	1.750	1.250	.813	2.750	3.125	1.000	.688	6.875	8.250	2.062	18.7 (8,48 kg)	0.51 (0,23 kg)	A0977B1-LT-PS-5"x*
6"	2.000	1.500	.813	3.250	3.625	1.000	.688	7.875	9.250	2.313	27.3 (12,38 kg)	0.77 (0,35 kg)	A0977C1-LT-PS-6"x*
8"	2.000	1.500	.813	4.250	3.750	1.000	.688	9.875	11.250	2.313	41.4 (18,78 kg)	1.06 (0,48 kg)	A0977C1-LT-PS-8"x*

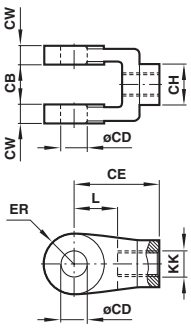
* Please insert the stroke length in inches
*1) Test results pending - consult Norgren Technical for more information.

Double acting imperial cylinders NFPA

Ø 4" ... 8"

NFPA rod clevis

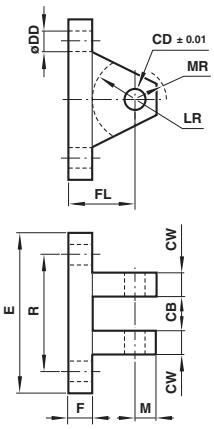
Dimensions shown in inch
Projection/Third angle



For cyl. Ø	KK	CB	CD	CE		CW	ER	L	Weight lb	Model (Std.)	Model (Assy.)
4" & 5"	3/4 – 16	1.250	.750	2.375	1.250	.625	.750	1.250	3.75 (1,7 kg)	49030	49030A
6" & 8"	1 – 14	1.500	1.000	3.125	1.500	.750	1.000	1.500	7.94 (3,6 kg)	49032	49032A

Note: Rod Clevis Assembly 49102A and 49103A are supplied with NFPA Pin. All others are with Standard Pin

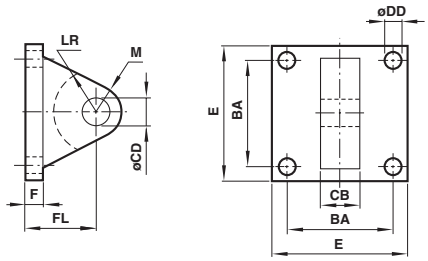
Norgren clevis bracket



For cyl. Ø	CB	CD	CW	DD	E	F	FL	LR	M	MR	R	Weight lb	Model (Std.)	Model (Assy.)
4" & 5"	1.250	.750	.625	.531	5.000	.625	1.875	1.188	.750	.906	3.828	9.81 (4,45 kg)	49023	49023A
6" & 8"	1.500	1.000	.750	.656	6.500	.750	2.250	1.500	1.000	1.250	4.953	25.25 (11,45 kg)	49024	49024A

Note: Norgren Clevis Bracket Assembly is supplied with Standard Pin.

NFPA eye bracket

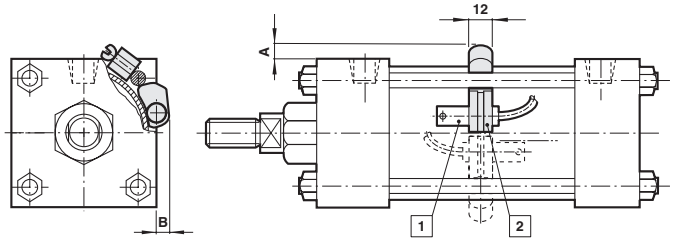


For cyl. Ø	BA	CB	CD	DD	E	F	FL	LR	M	Weight lb	Model (Std.)	Model (Assy.)
4" & 5"	2.563	1.250	.750	.531	3.500	.625	1.875	1.250	.750	9.15 (4,15 kg)	49020	49020A
6" & 8"	3.250	1.500	1.000	.656	4.500	.750	2.250	1.500	1.000	13.45 (6,10 kg)	49019	49019A

Note: NFPA Eye bracket assembly is supplied with standard pin.

Switch mounting QM/27/2/1, switch: M/50

Cylinder Ø	A	B	Weight lb
4"	.13	.06	0.02 (0,01 kg)
5"	.10	.00	0.02 (0,01 kg)
6"	.00	.00	0.02 (0,01 kg)
8"	.00	.00	0.02 (0,01 kg)



Double acting roundline cylinders LRM/55401/M

Ø 32 ... 100 mm

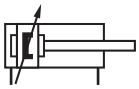
Clean line design

Low friction, long life seals

Standard magnetic piston for full control system versatility

Wide temperature range

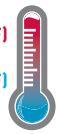
Shock and vibration tested to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated
Operation:
Double acting, magnetic piston, adjustable cushioning

Operating pressure:
1 ... 10 bar (14.51 ... 145.03 psi)
Operating temperature:
-40°C ... +80°C
(-40 ... +176°F max.)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Standard strokes:
See below
Non-standard strokes:
Available (10 ... 3000 mm)

Materials:
Barrel and end covers: anodized aluminium
Piston rods: stainless steel (martensitic)
Piston and piston rod seals: polyurethane
'O'-rings: nitrile rubber

Technical data

Cylinder Ø mm	32	40	50	63	80	100
Air ports	G 1/8	G 1/4	G 1/4	G 3/8	G 3/8	G 1/2
Piston rod Ø mm	12	16	20	20	25	25
Piston rod thread mm	M10x1,25	M12x1,25	M16x1,5	M16x1,5	M20x1,5	M20x1,5
Cushion length mm (inch)	19 (.75)	22 (.87)	24 (.94)	24 (.94)	27 (1.06)	34 (1.34)
Theoretical thrusts at 6 bar (87 psi) outstroke N (lb)	482 (108)	754 (169)	1178 (265)	1870 (420)	3016 (678)	4710 (1059)
Theoretical thrusts at 6 bar (87 psi) instroke N (lb)	414 (93)	633 (142)	990 (222)	1680 (378)	2722 (612)	4416 (993)
Air consumption at 6 bar (87 psi) outstroke l/cm (inch³/inch)	0,056 (8.7)	0,088 (13.7)	0,137 (21.3)	0,218 (33.9)	0,35 (54.4)	0,55 (85.5)
Air consumption at 6 bar (87 psi) instroke l/cm (inch³/inch)	0,048 (7.5)	0,074 (11.5)	0,114 (17.7)	0,195 (30.3)	0,32 (49.8)	0,51 (79.3)

Option selector

L★M/554★★/★★/★★★★

Piston rod material	Substitute
Stainless steel martensitic (standard)	R
Hard chromium plated	C
Stainless steel austenitic	S

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

Strokes (mm)
3000 max.

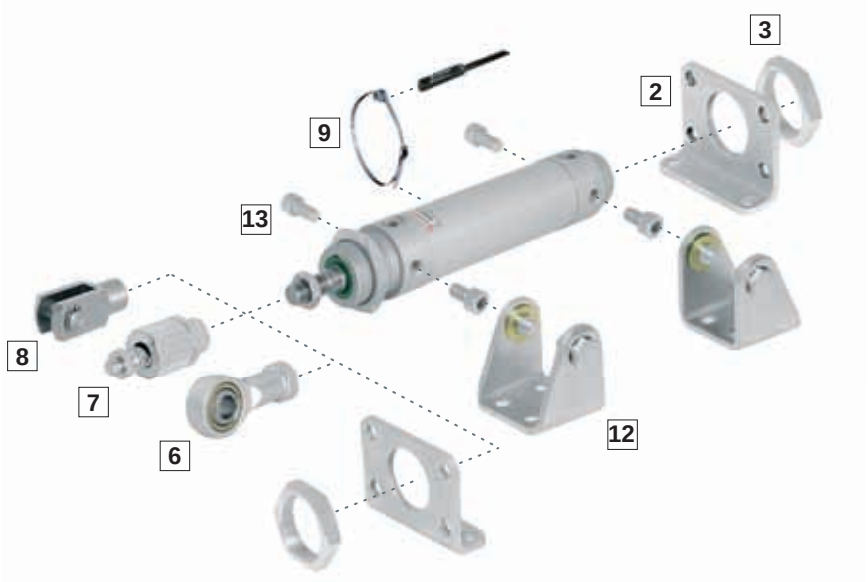
Variants (magnetic piston)	Substitute
Standard	M
Double ended piston rod	JM
Extended piston rod	MU
L*M/554**/MU/***/***	Extension (mm)

Standard strokes

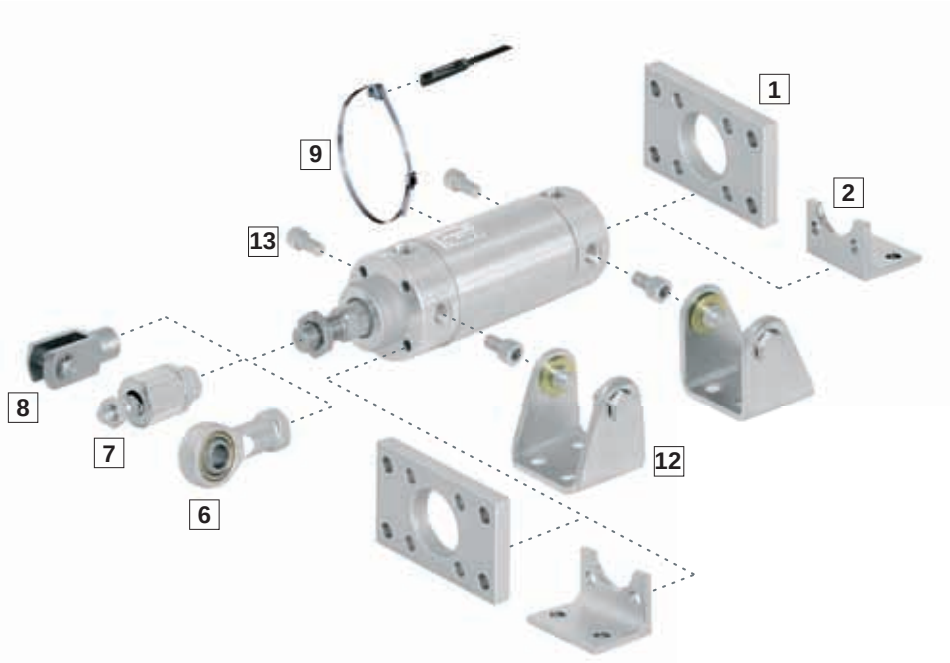
Cylinder Ø (mm)	Strokes (mm) 25	50	80	100	125	160	200	250	300
32	•	•	•	•	•	•	•	•	•
40	•	•	•	•	•	•	•	•	•
50	•	•	•	•	•	•	•	•	•
63	•	•	•	•	•	•	•	•	•
80	•	•	•	•	•	•	•	•	•
100	•	•	•	•	•	•	•	•	•

Mountings

Ø 32 ... 63 mm



Ø 80 ... 100 mm



Model	AK	B, G	C	F	H	L	N	UF	Switch mounting	Service kit
	7	1	2	8	13	12	3	6	9	
Ø (mm)	Page 1-37	Page 1-37	Page 1-37	Page 1-37	Page 1-38	Page 1-38	Page 1-38	Page 1-38	Page 1-38	
32	QM/8025/38	QM/55232/22	QM/55232/21	QM/8025/25	QM/55232/28	QM/55232/24	M/P29254	QM/8025/32	QM/50/432/23	LQA/8032/00
40	QM/8040/38	QM/55240/22	QM/55240/21	QM/8040/25	QM/55240/28	QM/55240/24	M/P29255	QM/8040/32	QM/50/440/23	LQA/8040/00
50	QM/8050/38	QM/55250/22	QM/55250/21	QM/8050/25	QM/55250/28	QM/55250/24	M/P29256	QM/8050/32	QM/50/450/23	LQA/8050/00
63	QM/8050/38	QM/55263/22	QM/55263/21	QM/8050/25	QM/55263/28	QM/55263/24	M/P29256	QM/8050/32	QM/50/463/23	LQA/8063/00
80	QM/8080/38	QM/55480/22	QM/55480/21	QM/8080/25	QM/55480/28	QM/55480/24	M/P34806	QM/8080/32	QM/50/480/23	LQA/8080/00
100	QM/8080/38	QM/55410/22	QM/55410/21	QM/8080/25	QM/55410/28	QM/55410/24	M/P34806	QM/8080/32	QM/50/410/23	LQA/8100/00

Double acting roundline cylinders
LRM/55401/M

Ø 32 ... 100 mm

Switches

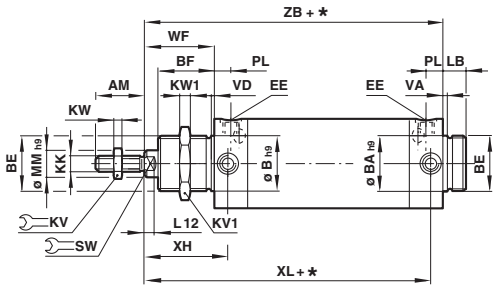
Voltage V d.c.	Current max.	Temperature	LED	Features	Cable length	Cable type	Protection class	Model
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	PNP	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAP/*V
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	NPN	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAN/*V

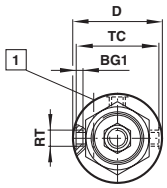
* Please insert the cable length 2, 5 or 10 m.

Basic dimensions

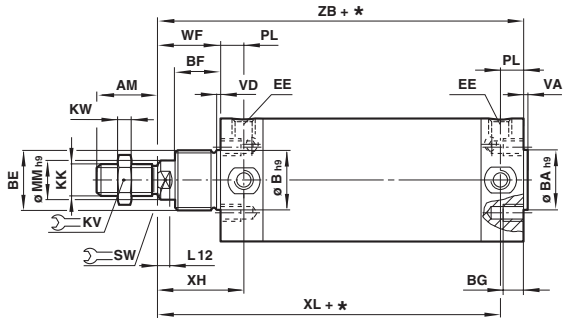
Dimensions shown in mm
Projection/First angle

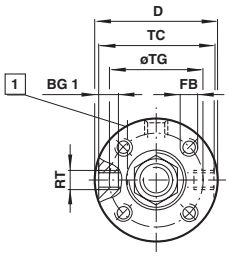
Ø 32 ... 63 mm





Ø 80 and 100 mm





* stroke

1 Cushion screw

Ø	AM	Ø B/BAh9	BE	BF	BG	BG1	D	EE	FB	KK	KV	KV1	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 MMh9	PL	RT	SW	Ø TC	TG	VA/VD	WF	XH	XL	ZB	kg at 0 mm	kg per 100 mm	Model
32	5,5	12	9	M 8 x 1	10	35	–	3	38	47	123	132	0,40	0,14	LRM/55433/*
40	7,5	16	12	M 10 x 1	13	44	–	3	45	57	142	154	0,83	0,27	LRM/55441/*
50	8,5	20	12	M 12 x 1,5	17	54	–	3	50	62	152	164	1,30	0,32	LRM/55451/*
63	8,5	20	13	M 14 x 1,5	17	67	–	3	51	64	159	172	1,60	0,38	LRM/55464/*
80	11,5	25	15	M 16 x 1,5	22	85,5	70	5	61	76	196	211	3,10	0,59	LRM/55481/*
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	LRM/55411/*

* Please insert stroke length.

Double acting roundline cylinders LRM/55401/M

Ø 32 ... 100 mm

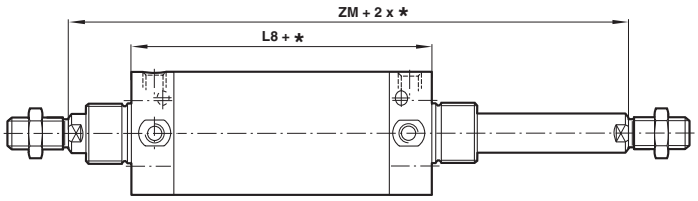
Cylinder variants

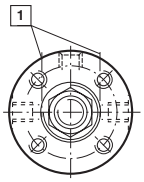
Dimensions shown in mm
Projection/First angle

LRM/55401/JM – Double ended piston rod

Ø	L8	ZM	Model
32	94	170	LRM/55433/JM/*
40	109	199	LRM/55441/JM/*
50	114	214	LRM/55451/JM/*
63	121	223	LRM/55461/JM/*
80	150	272	LRM/55481/JM/*
100	158	280	LRM/55411/JM/*

* Please insert stroke length.



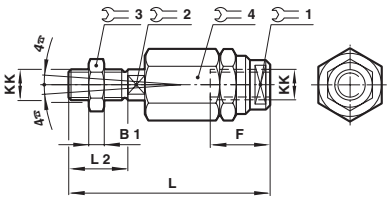


* stroke

1 Cushion screw

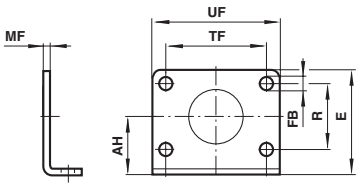
Mountings

Piston rod swivel AK



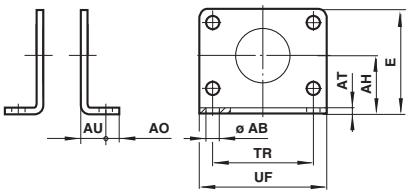
Ø	KK	B1	F	L	L2	1	2	3	4	kg	Model
32	M10x1,25	5	26	73	20	19	12	17	30	0,20	QM/8025/38
40	M12x1,25	6	26	77	24	19	12	19	30	0,20	QM/8040/38
50/63	M16x1,5	8	34	106	32	30	19	24	42	0,65	QM/8050/38
80/100	M20x1,5	10	42	122	40	30	19	30	42	0,72	QM/8080/38

Rear flange B, front flange G



Ø	AH	E1	Ø FB	MF	R	TF	UF	kg	Model
32	28	49	7	4	28	52	66	0,11	QM/55232/22
40	33	58	9	5	30	60	80	0,19	QM/55240/22
50	40	70	9	5	40	70	90	0,25	QM/55250/22
63	45	80	9	5	50	76	96	0,33	QM/55263/22
80	56	100	12	8	–	120	150	0,81	QM/55480/22
100	66	120	14	8	–	130	170	1,10	QM/55410/22

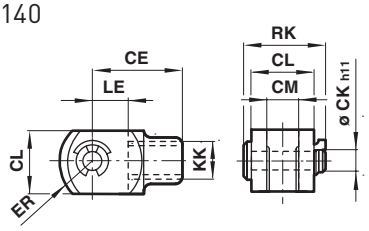
Foot C



Ø	Ø AB	AH	AO	AT	AU	E	TR	kg	Model
32	7	28	7	4	14	66	52	0,25	QM/55232/21
40	9	33	10	5	20	80	60	0,44	QM/55240/21
50	9	40	10	5	20	90	70	0,59	QM/55250/21
63	9	45	10	5	20	96	76	0,73	QM/55263/21
80	12	56	15	5	45	90	63	0,67	QM/55480/21
100	14	66	20	5	45	113	75	1,00	QM/55410/21

Piston rod clevis F

Conforms to DIN ISO 8140

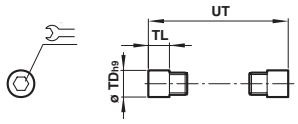


Ø	KK	CE	Ø CKh11	CL	CM	ER	LE	RK	kg	Model
32	M10x1,25	40	10	20	10	16	20	28	0,09	QM/8025/25
40	M12x1,25	48	12	24	12	19	24	32	0,13	QM/8040/25
50/63	M16x1,5	64	16	32	16	25	32	41,5	0,33	QM/8050/25
80/100	M20x1,5	80	20	40	20	32	40	50	0,67	QM/8080/25

Double acting roundline cylinders
LRM/55401/M

Ø 32 ... 100 mm

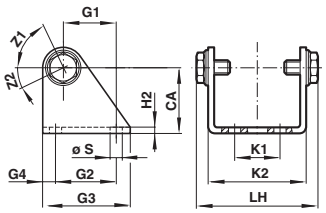
End cover trunnion H



Ø	Ø TDh9	TL	UT		kg	Model
32	10	8	51	5	0,02	QM/55232/28
40	12	9,5	63	6	0,03	QM/55240/28
50	14	11	76	6	0,05	QM/55250/28
63	16	13	93	8	0,07	QM/55263/28
80	18	13	111,5	8	0,09	QM/55480/28
100	20	13	131,5	10	0,25	QM/55410/28

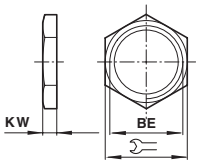
Rear hinge L

Dimensions shown in mm
Projection/First angle



Ø	CA	G1	G2	G3	G4	Ø S	H2	K1	K2	LH	Z1	Z2	Model
32	35	20	24	40	8	7	4	20	46,5	59,5	202°	36°	QM/55232/24
40	40	27	30	50	10	9	5	28	56,5	71	197°	33°	QM/55240/24
50	45	30	34	54	10	9	5	36	68,5	83	196°	31°	QM/55250/24
63	50	34	35	65	15	9	5	42	82,5	99	191°	25°	QM/55263/24
80	65	47,5	55	80	12,5	11	6	55	102,5	125,5	193°	27°	QM/55480/24
100	77	63	70	100	15	11	6	70	122,5	145,5	192°	27°	QM/55410/24

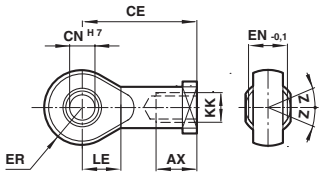
Nose nut N



Ø	BE		KW	kg	Model
32	M30 x 1,5	36	8	0,03	M/P29254
40	M38 x 1,5	46	10	0,06	M/P29255
50/63	M45 x 1,5	55	10	0,08	M/P29256
80/100	M55 x 1,5	60	13	0,25	M/P34806

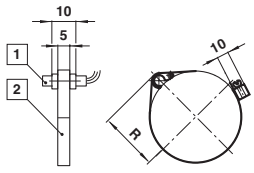
Universal piston rod eye UF

Conforms to DIN ISO 8139



Ø	Thread KK	AX	CE	Ø CNH7	EN-0,1	ER	LE	Z	kg	Model
32	M10x1,25	20	43	10	14	14	15	13°	0,09	QM/8025/32
40	M12x1,25	22	50	12	16	16	17	13°	0,13	QM/8040/32
50/63	M16x1,5	28	64	16	21	21	22	15°	0,33	QM/8050/32
80/100	M20x1,5	33	77	20	25	25	26	15°	0,67	QM/8080/32

Switch mounting
QM/50/XXX/23



1 Magnetically operated switch
2 Switch mounting bracket

Ø	R max.	Model
32	29	QM/50/432/23
40	33,5	QM/50/440/23
50	38,5	QM/50/450/23
63	45,5	QM/50/463/23
80	54,5	QM/50/480/23
100	64,5	QM/50/410/23

Air bellows, single acting M/31000

Ø 8 ... 14 1/2 inch

Suitable for a wide variety of rail vehicle applications

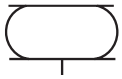
Almost frictionless operation

No maintenance or lubrication

Weather/corrosion resistant metal parts

Approvals for fire and smoke restistance

Typical applications; actuator, air spring, or vibration isolation



EN 61373

+70°C (+158°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air lubricated or unlubricated, Nitrogen, water (with glycol)

Operation:
Single acting

Operating pressure:
5,5 bar (79 psi) recommanded dynamic pressure
8 bar (116 psi) max.

Operating temperature:
"Static":-40°C ... (+70°C) see **Note**
-40°F ... (+158°F)
"Dynamic": -30°C ... (+50°C)
-22°F ... (+122°F)
The numbers in brackets represent the maximum permissible operating temperature.

Nominal diameters:
8, 10, 12, 14 1/2 inches

Strokes:
From 50 ... 430 mm max., depending on diameters and number of convolutions

Important instructions:
see page 1-40

Materials:
End plates: steel, chromplated
Studs: steel, zinc plated
Central ring: aluminium or steel, chromplated, partly moulded in
Bellow: NR/BR, SBR compound rubber

Note When operated at +70°C (+158°F) for pro-longed periods, the bellow will experience a reduce working life.
Static = constant/unchanging external load
Dynamic = vibration or a changing internal pressure as a result of changing external load

Technical data

Models	M/31081	M/31082	M/31101	M/31102	M/31103	M/31121	M/31122	M/31123	M/31141	M/31142	M/31143
Norminal Ø (inch)	8	8	10	10	10	12	12	12	14 1/2	14 1/2	14 1/2
Air port	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2
Norminal Ø (inch) x convolutions	8 x 1	8 x 2	10 x 1	10 x 2	10 x 3	12 x 1	12 x 2	12 x 3	14 1/2 x 1	14 1/2 x 2	14 1/2 x 3
Recommended max. stroke in mm (inch)	65 (2.56)	145 (5.71)	85 (3.35)	170 (6.69)	250 (9.84)	85 (3.35)	170 (6.69)	250 (9.84)	100 (3.94)	215 (8.47)	320 (12.6)
Stroke in mm (inch)	75 (2.95)	175 (6.9)	100 (3.94)	225 (8.85)	330 (13)	100 (3.94)	225 (8.85)	330 (13)	125 (4.92)	265 (10.43)	380 (14.96)
Installation height min. in mm (inch)	50 (1.97)	75 (2.95)	50 (1.97)	75 (2.95)	100 (3.94)	50 (1.97)	75 (2.95)	100 (3.94)	50 (1.97)	75 (2.95)	100 (3.94)
Installation height max. in mm (inch)	125 (4.92)	250 (9.84)	150 (5.91)	300 (11.81)	430 (16.92)	150 (5.91)	300 (11.81)	430 (16.92)	175 (6.89)	340 (13.39)	480 (18.9)
Recommended max. working height in mm (inch)	115 (4.53)	220 (8.66)	135 (5.32)	245 (9.65)	350 (13.78)	135 (5.32)	245 (9.65)	350 (13.78)	150 (5.91)	290 (11.41)	420 (16.54)
Retracting force in N (lbs) to reach min. height	120 (26.97)	130 (29.23)	150 (33.72)	150 (33.72)	100 (22.48)	200 (44.96)	250 (56.20)	250 (56.20)	230 (51.70)	280 (62.94)	330 (74.18)
Clearance around the air bellow in mm (inch)	245 (9.65)	245 (9.65)	300 (11.81)	300 (11.81)	300 (11.81)	350 (13.78)	350 (13.78)	350 (13.78)	425 (16.73)	425 (16.73)	425 (16.73)
Weight in kg (lb)	3 (6.61)	3,75 (8.26)	4,1 (9.03)	4,7 (10.36)	5,3 (11.68)	5,4 (11.90)	6,2 (13.66)	6,9 (15.21)	7,1 (15.65)	8,3 (18.29)	9,6 (21.16)
Theor. thrust in N (lbs) at 6 bar (87 psi) at installation height min.	18300 (4114)	18000 (4047)	25000 (5020)	26000 (5845)	26500 (5957)	39000 (8767)	39700 (8925)	41000 (9217)	59000 (13264)	59500 (13376)	58900 (13241)
Theor. thrust in N (lbs) at 6 bar (87 psi) at installation height max.	6000 (1349)	4500 (1012)	8000 (1798)	6000 (1349)	7000 (1574)	14000 (3147)	10100 (2270)	10500 (2360)	17000 (3822)	17500 (3934)	15400 (3462)
Vibration height in mm (inch)	100 (3.94)	200 (7.87)	120 (4.74)	220 (8.66)	*	120 (4.74)	240 (9.45)	*	130 (5.12)	250 (9.84)	*
Volume (l) at vibration height	1,55	4	3,4	7,2	*	5,5	12	*	9,8	20,4	*
Stiffness at 4 bar (58 psi) in N/mm (lbs/inch)	560 (126)	200 (45)	257 (58)	123,5 (28)	*	372 (84)	190 (43)	*	558 (125)	252 (56)	*
Airspring natural "fn" frequency (Hz) at 4 bar (58 psi)	3	2,2	2,6	1,8	*	2,5	1,9	*	2,4	1,6	*
Isolation rate "I" in % at 10 Hz and 4 bar (58 psi)	91,1	95,8	92,6	96,5	*	93,3	96,7	*	93,9	97,4	*
Max. torque in Nm (inch/lbs) for mounting studs or holes	28 (247.8)	28 (247.8)	25 (221.3)	25 (221.3)	25 (221.3)	25 (221.3)	25 (221.3)	25 (221.3)	25 (221.3)	25 (221.3)	25 (221.3)

Air bellows, single acting
M/31000
Ø 8 ... 14 1/2 inch

Options selector

M/31★★★

Nominal diameters (inches)	Substitute
8	08
10	10
12	12
14 1/2	14

Number of convolutions	Substitute
1	1
2	2
3	3

Ordering example

To order a compact air bellow
in standard rubber material,
a nominal diameter of 8 inches
and 2 convolutions
quote: M/31082

Important instructions:

Thrust:
The thrust depends on the height of the bellow. When height increases - the thrust decreases.

- Before installing the air bellow, check it carefully for any damage it may have suffered from transport or improper storage.

- Do not inflate the air bellow until it has been secured properly.

Clearance:
There must be enough clearance around the air bellow.

- The full surface of the metal parts is to be used to bear the forces.

- Air bellows must be equipped with lateral guides.

- Deflate the air bellows fully before removing.

- Ensure that the bellows is not constantly in contact with hydraulic oil, lubricants, solvents, metal cuttings and welding sparks.

- Should the air bellow be subjected to special media in an application, ask Norgren for further information, specifying the medium, temperature and concentration

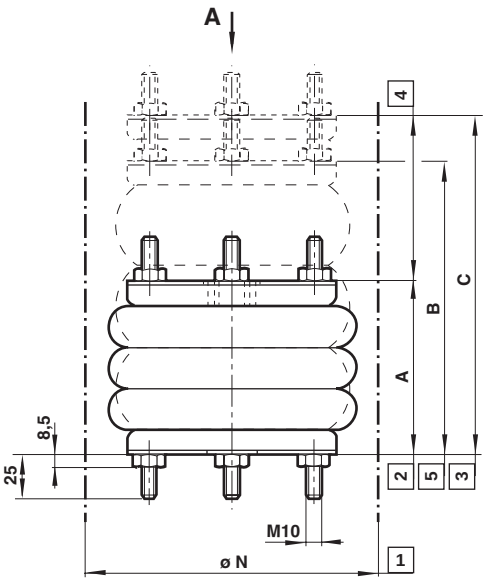
Stops:
To avoid damage when the bellow is compressed or extended mechanical stops at both end positions have to be used.

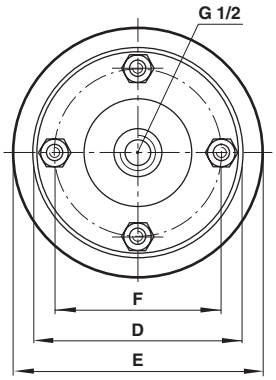
Air bellows, single acting
M/31000
Ø 8 ... 14 1/2 inch

Basic dimensions

M/31061 ... M/31163

Dimensions shown in mm
Projection/First angle





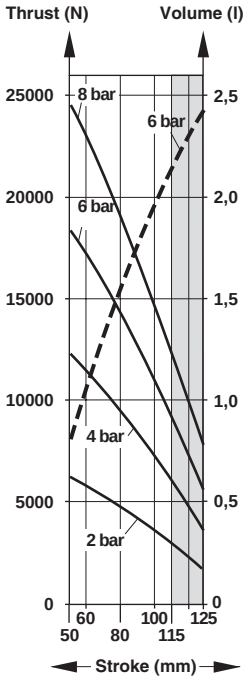
1 Installation diameter min.
2 Installation height min.
3 Installation height max.
4 Stroke
5 Recommended max. working hight

Norminal Ø (inch) x convolutions	Recommended max. stroke (mm)	Recommended max. working height B (mm)	Stroke (mm)	Installation height A min. (mm)	Installation height C max. (mm)	Max. torque for mounting studs (Nm)	Ø E	Ø D	Ø F	Ø N	Weight (kg)	Models
8 x 1	65	115	75	50	125	28	230	184	155,5	245	3	M/31081
8 x 2	145	220	175	75	250	28	230	184	155,5	245	3,75	M/31082
10 x 1	85	135	100	50	150	25	270	210	181	300	4,1	M/31101
10 x 2	170	245	225	75	300	25	270	210	181	300	4,7	M/31102
10 x 3	250	350	330	100	430	25	270	210	181	300	5,3	M/31103
12 x 1	85	135	100	50	150	25	330	260	232	350	5,4	M/31121
12 x 2	170	245	225	75	300	25	330	260	232	350	6,2	M/31122
12 x 3	250	350	330	100	430	25	330	260	232	350	6,9	M/31123
14 1/2 x 1	100	150	125	50	175	25	400	310	282,5	425	7,1	M/31141
14 1/2 x 2	215	290	265	75	340	25	400	310	282,5	425	8,3	M/31142
14 1/2 x 3	320	420	380	100	480	25	400	310	282,5	425	9,6	M/31143

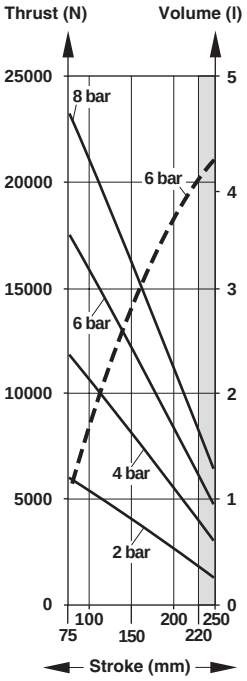
Air bellows, single acting
M/31000
Ø 8 ... 14 1/2 inch

Thrust (at 2, 4, 6, 8 bar), volume (at 6 bar)

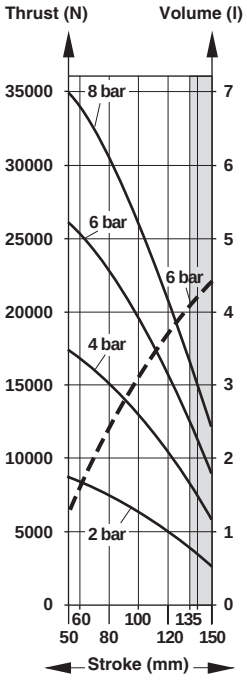
M/31081



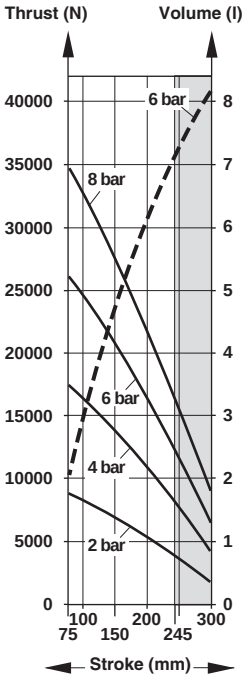
M/31082



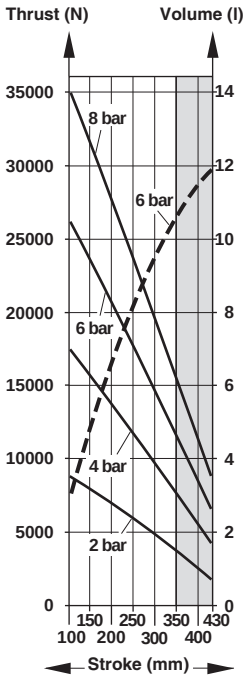
M/31101



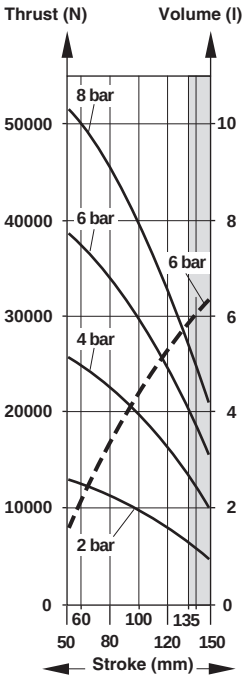
M/31102



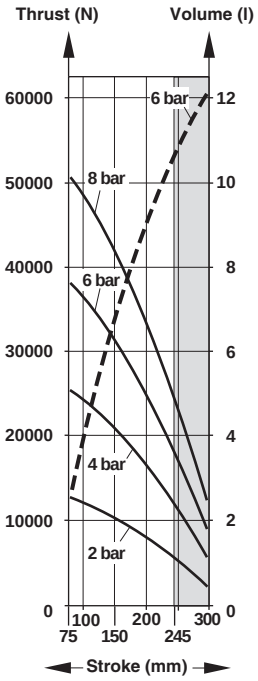
M/31103



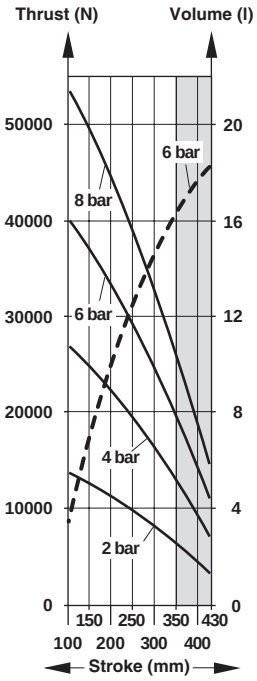
M/31121



M/31122



M/31123

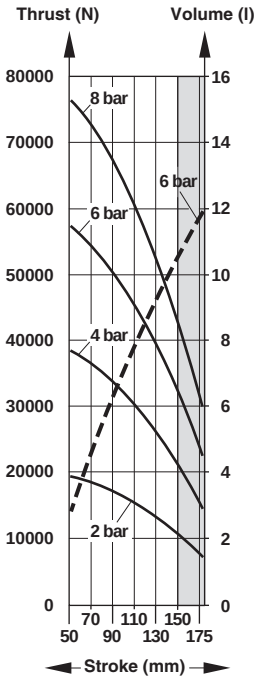


-- Thrust (N) – – Volume (l)

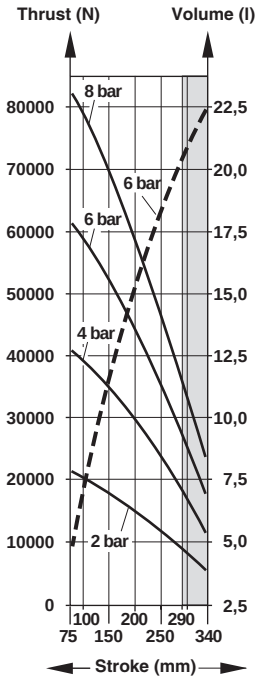
Caution!
Ensure that all applications are within the max. installation height. For applications in the grey area please contact Norgren technical service.

Thrust (at 2, 4, 6, 8 bar), volume (at 6 bar)

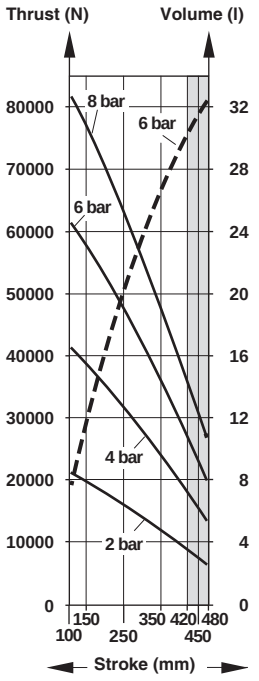
M/31141



M/31142



M/31143

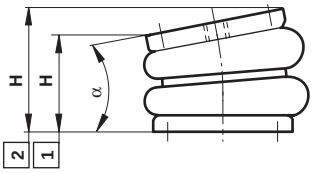


–– Thrust (N) – – Volume (l)

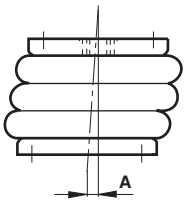
Caution!
Ensure that all applications are within the max. installation height. For applications in the grey area please contact Norgren technical service.

Air bellows, single acting
M/31000
Ø 8 ... 14 1/2 inch

Operation angle



Out of alignment



Dimensions shown in mm

Table 3

Norminal Ø (inch) x convolutions	max. α °	max. A	Models
8 x 1	10	10	M/31081
8 x 2	15	10	M/31082
10 x 1	20	10	M/31101
10 x 2	25	20	M/31102
10 x 3	30	30	M/31103
12 x 1	20	10	M/31121
12 x 2	25	20	M/31122
12 x 3	30	30	M/31123
14 1/2 x 1	20	10	M/31141
14 1/2 x 2	25	20	M/31142
14 1/2 x 3	30	30	M/31143

[1] Installation height min

[2] Installation height max

Operation angle

Tilt angles from 10 ... 30° are possible, depending on the air bellow design.
Ensure application is within minimum and maximum installation heights.

Application example - Air bellow as an actuator

A 1000 kg conveyor carrying a 550 kg pallet needs to be lifted by 90 mm (stroke) in order to transfer the pallet to another level. Four (4) air bellows should be used. The available operating pressure is 5 bar.
The operating temperature is 45°C. There is a 270 mm square space to house each air bellow. Compression and extension stops are provided. The air bellows have to be mounted in a space which is 85 mm apart. During the lifting operation the conveyor may tilt in the second half of the stroke by a max. of 9°.

Step 1: Fill in and complete the datasheet

a)	Total weight to be lifted:	F	=	(1000 kg + 550 kg) • 10 m/s² = 15500 N
b)	Number of air bellows:	n	=	4
c)	Thrust per air bellow:	f	=	$\frac{15500\ N}{4}$ = 3875 N
d)	Operating pressure:	P	=	5 bar
e)	Required stroke:	S	=	90 mm
f)	Vertical space:	Xv	=	85 mm
g)	Horzontal space:	Xh	=	270 mm
h)	Operating temperature:	T	=	45°C
i)	Operation angle:	a	=	9°
j)	Out of alignment:	A	=	0 mm
k)	Chemical resistance:			normal environment

Step 2:

From table (technical data) air bellows have to be selected, that have a min. 90 mm stroke and clearance around the air bellows smaller than Xh = 270 mm.
We select: M/31082

Step 3:

Calculate the total height at which the air bellow should be used, see step 1:

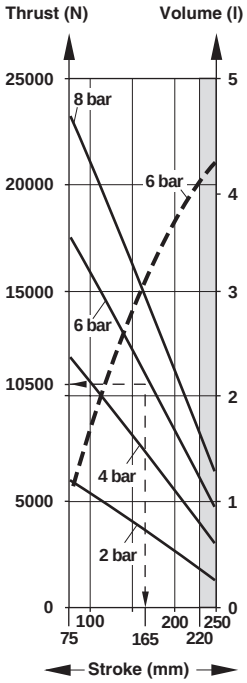
Vertical space	Xv 85 mm
Stroke	S 90 mm
Total height	175 mm

By refering to the total height of 175 mm and the vertical space of 85 mm, only M/31082 (installation height min. 75 to recommended max. working height 220 mm) can be used from table (technical data).

The max. installation height is 165 mm. 75 mm installation height min. of M/31083 plus 90 mm stroke.

Step 4:

Check the thrust at 6 bar at a height of 165 mm.
From the charts in the datasheet we can see that:



M/31082 will provide 10500 N at 6 bar. To get the figure for 5 bar, we have to calculate:

$\frac{105060\ N \bullet 5}{6}$ = 8750 N at 5 bar

Result:

The air bellow M/31082 can provide the required thrust of 3875 N.

Step 5:

Check the operation angel and the out of alignment when the selected air bellow can tilt.
i) max. operation angle 15° is higher as existing operating angel 9°.
j) max. out of alignment is 10 mm is higher as existing alignment 0 mm.

Result:

M/31082 can be used.

Step 6:

Check all remaining parameters
h) At 45°C Standard rubber material
-40°C ... (+ 70°C) "Static";
-30°C ... + 50°C "Dynamic"
k) No special chemical resistance is required

Result:

M/31082 is the chosen air bellow, because it meets all requirements.

Air bellows, single acting
M/31000
Ø 8 ... 14 1/2 inch

Application example - Air bellow as a vibration isolator

A hydraulic power unit with an excitation frequency (fe) between 1200 and 3000 cycles/min (= 20 to 50 Hz) must be vibration isolated. The total weight of the power unit is 3800 kg. The supporting area under the unit is 1,2 m x 0,8 m. The operating temperature is 50°C. The space for the installation is 240 mm high. Four air bellows will be used. The max. operating pressure is 4 bar. A minimum of 97% vibration isolation has to be reached.

Step 1: Fill in and complete the datasheet

a)	Total weight to be isolated:	F	=	3800 kg • 10 m/s^2 = 38000 N
b)	Number of air bellows:	n	=	4
c)	Thrust per air bellow:	f	=	$\frac{38000\ N}{4}$ = 9500 N
d)	Operating pressure:	P	=	4 bar
f)	Vertical space:	Xv	=	240 mm
g)	Horizontal space:	Xh	=	400 mm (0,8 m /2)
h)	Operating temperature:	T	=	50°C
k)	Chemical resistance:			normal environment
m)	Isolation rate:	I	=	97%
p)	Excitation frequency	fe	=	min. 20 Hz, max. 50 Hz

Two types of air bellows are chosen. Each one has to work with a vibration height lower than 240 mm and fit in a horizontal space samler than 400 mm. From table (technical data) we select:
1. M/31102 - Vibration height 220 mm - Clearance around the air bellow 300 (mm) - Airspring natural frequency "fn" at 4 bar 1,8 (Hz)
2. M/31122 - Vibration height 240 mm - Clearance around the air bellow 350 (mm)- Airspring natural frequency "fn" at 4 bar 1,9 (Hz)

Step 2:

Take the air bellow with the lowest airspring natural frequency fn = 1,8 Hz in order to get the highest isolation rate refering to fe min. = 20 Hz. Air bellow M/31102 is chosen.

Step 3:

Calculate the isolation rate (I) of the M/31102 by using the formula:

Formula:

$$I = 1 - \frac{1}{\left(\frac{fe}{fn}\right)^2 - 1}$$

Example:

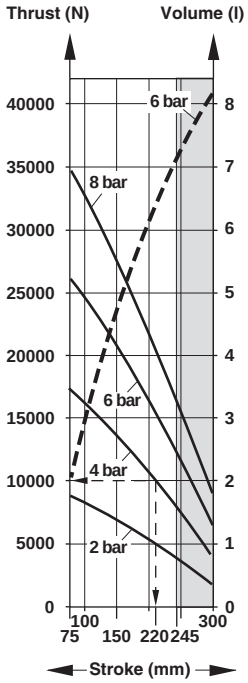
$$I = 1 - \frac{1}{\left(\frac{20}{1,8}\right)^2 - 1}$$

$$I = 1 - \frac{1}{122,4} = 0,991$$

I = 99,1%

Step 4:

Check the thrust at 4 bar at a height of 220 mm. From the charts in the datasheet we can see that.



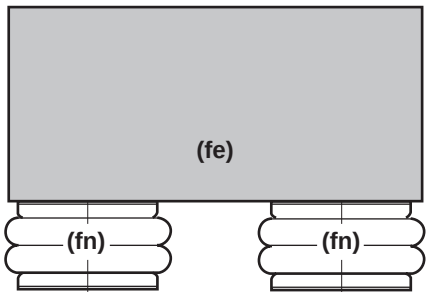
M/31102 will provide 10000 N as a vibration height of 220 mm at 4 bar.

Step 5:

Check all remaining parameters
h) At 50°C Standard rubber material (-40 to +70°C) can be used.
g) No special chemical resistance is required.

Result:

4 x M/31102 air bellows are chosen. They will provide 99,1% vibration isolation and lift the 3800 kg weight at 4 bar.



fe = Excitation frequency of load
fn = Airspring natural frequency

VALVES

ISO★STAR
5/2 and 5/3 glandless valves (solenoid and pilot actuated)
ISO 1, 2 and 3

Page 2-02

VSP551
3/2 way solenoid valves (directly actuated)
CNOMO Interface, directly sub-base and G1/8 ported

Page 2-10

Microsol
2/2 & 3/2 way solenoid valves (directly actuated)
Base mounted

Page 2-12

VR61 and VR62
3/2, 2 x 3/2, 5/2 and 5/3 directional control valves
1/4" or 3/8"

Page 2-14

Prospector®
3/2 way solenoid & pilot actuated poppet valves
1/2" ... 1"

Page 2-27

SUPER X
3/2 and 5/2 pilot actuated spool valves
1/8" & 1/4"

Page 2-30

SUPER X
3/2, 5/2 and 5/3 manually and mechanically actuated spool valves
1/8" & 1/4"

Page 2-32

SLV/15293
3/2 heavy duty poppet valves mechanically actuated
G1/4

Page 2-42

VR95
2/2 way direct solenoid operated poppet valves
1/4"

Page 2-44

VR96
3/2 way direct solenoid operated poppet valves
1/4"

Page 2-47

VR24
3/2 way direct solenoid operated poppet valves
1/4" or flanged with NAMUR interface

Page 2-50

VR24Z
3/2 way direct solenoid operated poppet valves
Special flange mounting option

Page 2-55

VR98
3/2 way direct or indirect solenoid operated poppet valves
1/2"

Page 2-58

82510, 82610
2/2 way valves (direct solenoid actuated seat)
1/8" ... 3/8"

Page 2-61

82530
2/2 way valves (solenoid actuated diaphragm with forced lifting)
1/4" ... 1/2"

Page 2-65

82080
2/2 way valves (direct solenoid actuated seat)
1/4" & 3/8"

Page 2-67

82540
2/2 way valves (solenoid actuated diaphragm with forced lifting)
1/4" ... 2"

Page 2-69

85700
2/2 way valves (solenoid actuated piston with forced lifting)
1/4" ... 2"

Page 2-73

82900, 83300
2/2 way release exhaust valves (pilot actuated)
3/4" & 1"

Page 2-76

82710
2/2 way valves (pilot actuated)
1/4" ... 1/2"

Page 2-78

84180, 84190
2/2 way valves (pilot actuated)
1/8" ... 1/2"

Page 2-80

84500, 84720
2/2 way valves (pilot actuated)
1/2" ... 2"

Page 2-82

82180, 82280
2/2 way valves (pilot actuated)
1/2" ... 2"

Page 2-84

5/2 and 5/3 glandless valves (solenoid and pilot actuated) ISO*STAR

ISO 1, 2 and 3

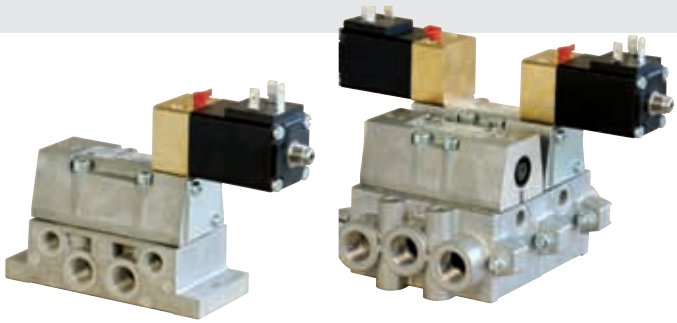
Specially coated glandless spool and sleeve for long trouble-free life

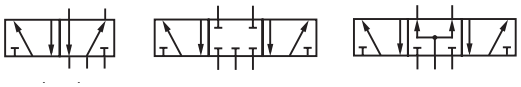
Manual override as standard

Wide range of sub-bases and accessories

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B





EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features and data – basic valve without solenoid operator

Medium:
Compressed air, 40 µm filtered, lubricated or non-lubricated
Operation:
Glandless spool valve, solenoid pilot or air pilot actuated
Mounting:
On sub-bases
Sizes:
ISO 1, 2 and 3

Maximum operating pressure:
10 bar (145 psi) solenoid pilot actuated valves
16 bar (232 psi), air pilot actuated valves and solenoid pilot actuated valves with external pilot supply
Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Flow characteristics
(unregulated):

Size	Function	l/min	Cv	Kv
ISO 1	5/2	1230	1,20	1,08
ISO 1	5/3 APB	1320	1,35	1,15
ISO 2	5/2	2450	2,45	2,16
ISO 2	5/3 APB	2520	2,57	2,20
ISO 3	5/2	4400	4,48	3,84
ISO 3	5/3 APB	4650	4,74	4,06

Materials
Body: Die cast aluminium
Spool and sleeve: Hard anodised teflon coated, matched aluminium
Static seals: VMQ and nitrile rubber
Plastic parts: POM
Screws: Zinc plated

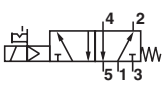
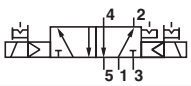
Technical data – solenoid operators

Type	32mm solenoid valve with sub base inlet and outlet connections
Circuit function	3/2, Normally closed
Orifice	1,2 mm
Seal material	Flourine rubber
Body material	Brass
Port connection	Exhaust port 1/8" BSP male; Inlet and outlet ports CNOMO sub base
Coil Material	Epoxy Resin
Nominal voltages	12, 24, 37.5, 52, 74, 96, 110 Volts
Pull in voltage	80% of nominal voltage
Drop out voltage	3% of nominal voltage
Power consumption	5 Watt
Voltage tolerance	±20% of nominal *1)
Electrical connection	DIN EN 175301-803 (DIN 43650) Form A
Manual override	Standard: with Polyamide rotational lever, optional without manual override

Pressure range	2 ...10 bar
Over / burst pressure	35 bar
Kv value	0.05 cubic metres / hour
Qnn value	55 litres / min
Weight	0.25 kg
Fluid temperature range	-40 ... +100°C
Ambient temperature range	-40 ... +60°C *1)
Duty cycle	100% ED
Maximum cycling rate	1000 cpm
Opening/closing time	20/22 ms
Low voltage directive	2006/95/EC
EMC directive	2004/108/EC
PE directive	97/23/EC

*1) This product has been used successfully in a wide variety of railway applications for more than 20 years. It is possible to achieve higher operating specifications, such as up to +80°C or voltage tolerance of +/- 30% depending on the application and duty. For such requirements specific type testing and approval may be required. For more details contact Norgren technical service.

5/2 CNOMO solenoid pilot actuated valves

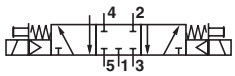
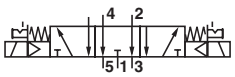
Symbol	ISO size	Pilot supply *1)	Operator 14	Return 12	Operating pressure (bar)	Weight (kg)	Model
	1	Internal	Solenoid	Spring	2 ... 10	0,60	RXE9573-Z71-*
	2					0,80	RXE9574-Z71-*
	3					1,00	RXE9575-Z71-*
	1	Internal	Solenoid	Solenoid	2 ... 10	1,00	RXE0573-Z50-*
	2					1,20	RXE0574-Z50-*
	3					1,40	RXE0575-Z50-*

* Insert 'Voltage Code' from table, see page 2-03
*1) Optional external pilot supply; operating pressure 2 ... 16 bar, with external pilot supply 2 ... 10 bar - contact Norgren technical service for further information.

5/2 and 5/3 glandless valves (solenoid and pilot actuated) ISO*STAR

ISO 1, 2 and 3

5/3 CNOMO solenoid pilot actuated valves

Symbol	ISO size	Mid position	Pilot supply *1)	Operator 14	Return 12	Operating pressure (bar)	Weight (kg)	Model
	1	APB	Internal	Solenoid	Solenoid	2 ... 10	1,00	RXE9673-Z50-*
	2						1,20	RXE9674-Z50-*
	3						1,40	RXE9675-Z50-*
	1	COE	Internal	Solenoid	Solenoid	2 ... 10	1,00	RXE9773-Z50-*
	2						1,20	RXE9774-Z50-*
	3						1,40	RXE9775-Z50-*

* Insert 'Voltage Code' from table below
*1) Optional external pilot supply; operating pressure 2 ... 16 bar, with external pilot supply 2 ... 10 bar - contact Norgren technical service for further information.
5/3 valve mid position valve function: APB = All Ports Blocked, COE = Centre Open Exhaust

Option selector (solenoid actuated valves) RXE★★7★-Z★★-★★★

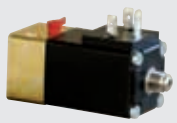
Valve function	Substitute
5/2 solenoid/solenoid, bistable valve	05
5/2 solenoid/spring, monostable valve	95
5/3 - APB	96
5/3 - COE	97
5/3 - COP on request	98
ISO size	**Substitute**
ISO 1	3
ISO 2	4
ISO 3	5

Voltage code	Substitute
For voltage code please see tables below	
Pilot supply *	**Substitute**
Internal (double solenoid)	0
Internal (single solenoid valve, mechanical spring)	1
External (double solenoid)	5
External (single solenoid valve, mechanical spring)	6
Integrated flow control	**Substitute**
Without flow regulator (double solenoid)	5
With flow regulator (double solenoid)	6
Without flow regulator (solenoid & spring)	7
With flow regulator (solenoid & spring)	8

* Single acting, air spring return options not available in Railine product range

Solenoid pilot valves – voltage codes and part numbering

Voltage	Voltage code – solenoid pilot valve with manual overide	Spare – replacement coil part number
12 V d.c.	111	VSP551111
24 V d.c.	112	VSP551112
37,5 V d.c.	113	VSP551113
52 V d.c.	114	VSP551114
74 V d.c.	115	VSP551115
96 V d.c.	116	VSP551116
110 V d.c.	117	VSP551117



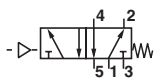
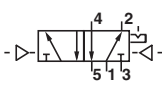
Note: Solenoid pilot valve without manual override also available – contact Norgren Technical service

Accessories

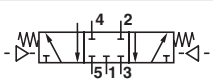
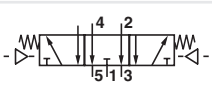
Connector

0570275

5/2 air pilot actuated valves

Symbol	ISO size	Operator 14	Return 12	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Model
	1	Air	Spring	-0,9 ... 16	2 ... 16	0,30	RXP9573-170-00
	2					0,50	RXP9574-170-00
	3					0,70	RXP9575-170-00
	1	Air	Air	-0,9 ... 16	2 ... 16	0,20	RXP0573-170-00
	2					0,40	RXP0574-170-00
	3					0,70	RXP0575-170-00

5/3 air pilot actuated valves

Symbol	ISO size	Mid position	Operator 14	Return 12	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Model
	1	APB	Air	Air	-0,9 ... 16	2 ... 16	0,30	RXP9673-170-00
	2						0,50	RXP9674-170-00
	3						0,70	RXP9675-170-00
	1	COE	Air	Air	-0,9 ... 16	2 ... 16	0,30	RXP9773-170-00
	2						0,50	RXP9774-170-00
	3						0,70	RXP9775-170-00

5/3 valve mid position function: APB = All Ports Blocked, COE = Centre Open Exhaust

5/2 and 5/3 glandless valves (solenoid and pilot actuated) ISO*STAR

ISO 1, 2 and 3

Option selector (air pilot actuated valves)

RXP★★7★-1★0-00

Valve function	Substitute
5/2 pilot/pilot, bistable valve	05
5/2 pilot/spring, monostable valve	95
5/3 - APB	96
5/3 - COE	97
5/3 - COP on request	98

ISO size	Substitute
ISO 1	3
ISO 2	4
ISO 3	5

Integrated flow control	Substitute
Without - Standard	7
With	8

Sub-bases, end plates and blanking disc VDMA 24345 sub-base options

	Form A Single station sub-base side ported		Form B Single station sub-base bottom ported	Form C Modular sub-base		Form D End plates		Blanking disc for VDMA sub-bases *1)	
									
	Page 2-07		Page 2-07	Page 2-07		Page 2-07		Page 2-08	
	G thread	NPT thread	G thread	G thread	NPT thread	G thread	NPT thread	G thread	NPT thread
ISO 1	M/P19126 (1/4)	C/P19126 (1/4)	M/P19125 (1/4)	CQM/22152/3/21	239-238B	CQM/22152/3/22	239-289B	FP 8382	239-251
ISO 2	M/P19132 (3/8)	C/P19132 (3/8)	M/P19131 (3/8)	CQM/22253/3/21	239-242B	CQM/22253/3/22	239-291B	FP 8482	239-252
ISO 3	M/P19138 (1/2)	C/P19138 (1/2)	M/P19137 (1/2)	CQM/22354/3/21	239-246B	CQM/22354/3/22	239-293B	FP 8582	239-253

Universal sub-base options for ISO G parallel thread only

	Modular base with side, end and bottom ports open	Universal end plate, all ports blocked	Universal end plate, side ports open	Transition plate from ISO 1 to ISO 2	Blanking disk for ISO 1 and ISO 2 *1)
					
	Page 2-09	Page 2-09	Page 2-09	Page 2-09	Page 2-09
ISO 1	CQM/22152/3/27 (G1/4)	CQM/22152/28 (G1/4)	CQM/22152/3/31 (G1/4)	CQM/22152/3/29 (1 ˚ 2)	M/P43173
ISO 2	CQM/22253/3/27 (G3/8)	CQM/22153/28 (G3/8)	CQM/22253/3/31 (G3/8)	CQM/22152/3/29 (1 ˚ 2)	M/P43174

Accessories for G- and NPT threads

	Blanking plate for VDMA and universal sub-bases	Transition plate for VDMA sub-bases	Silencer
			
	Page 2-08	Page 2-08	Page 2-08
ISO 1	CQM/22152/3/23	CQM/22152/3/24 (1 to 2)	0015510
ISO 2	CQM/22253/3/23	CQM/22253/3/24 (2 to 3)	
ISO 3	CQM/22354/3/23	FP8570 (1 to 3)	

*1) For multipressure systems

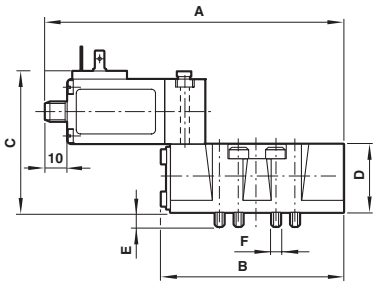
5/2 and 5/3 glandless valves (solenoid and pilot actuated) ISO*STAR

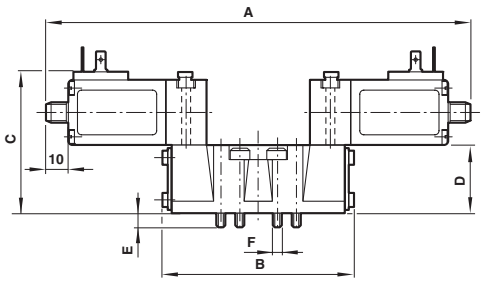
ISO 1, 2 and 3

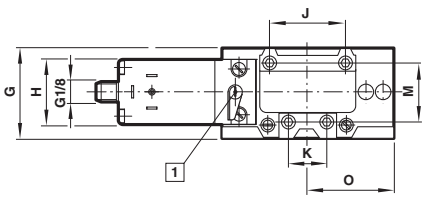
RXE 957*-Z models
Single CNOMO solenoid pilot valves

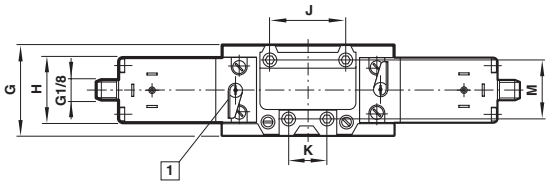
RXE 057*-Z, RXE 967*-Z and RXE 977*-Z models
Double CNOMO solenoid pilot valves

Dimensions shown in mm
Projection/First angle









1 Manual override

Single CNOMO solenoid pilot valves

ISO size	A	B	C	D	E	F	G	H	J	K	M	O	kg	Model
1	145	88,5	69	33	7,5	M5	42	32	36	18	28	42	0,6	RXE9573-Z...
2	164	112,5	79	42	7	M6	55,5	32	48	24	38	53	0,8	RXE9574-Z...
3	185	135,5	80	43	11,5	M8	62,5	32	64	32	48	65,5	1,0	RXE9575-Z...

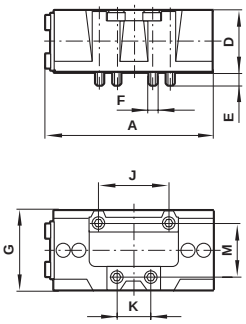
Double CNOMO solenoid pilot valves

ISO size	A	B	C	D	E	F	G	H	J	K	M	kg	Model
1	200	92	69	33	7,5	M5	42	32	36	18	28	1,0	RXE0573-Z... RXE9673-Z... RXE9773-Z...
2	218	118	79	42	7	M6	55,5	32	48	24	38	1,2	RXE0574-Z... RXE9674-Z. RXE9774-Z.
3	241	140	80	43	11,5	M8	62,5	32	64	32	48	1,4	RXE0575-Z... RXE0675-Z... RXE0775-Z...

5/2 and 5/3 glandless valves (solenoid and pilot actuated)
ISO*STAR

ISO 1, 2 and 3

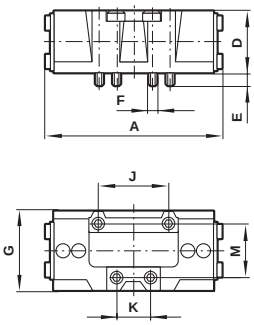
RXP957* models
Single air pilot valve



ISO size	A	D	E	F	G	J	K	M	kg	Model
1	92,5	33	7,5	M5	42	36	18	28	0,3	RXP9573-170-00
2	118	42	7	M6	55,5	48	24	38	0,5	RXP9574-170-00
3	134	43	11,5	M8	62,5	64	32	48	0,7	RXP9575-170-00

RXP057*, RXP967*, RXP977* models
Double air pilot valve

Dimensions shown in mm
Projection/First angle

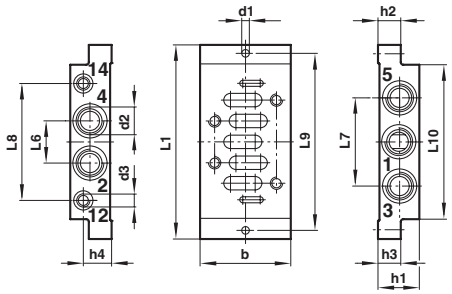


ISO size	A	D	E	F	G	J	K	M	kg	Model
1	88,5	33	7,5	M5	42	36	18	28	0,2	RXP0573-170-00
1	92,5	33	7,5	M5	42	36	18	28	0,3	RXP9673-170-00 RXP9773-170-00
2	111	42	7	M6	55,5	48	24	38	0,4	RXP0574-170-00
2	118	42	7	M6	55,5	48	24	38	0,5	RXP9674-170-00 RXP9774-170-00
3	134	43	11,5	M8	62,5	64	32	48	0,7	RXP0575-170-00
3	134	43	11,5	M8	62,5	64	32	48	0,7	RXP9675-170-00 RXP9775-170-00

Sub-bases and end plates

Dimensions shown in mm
Projection/First angle

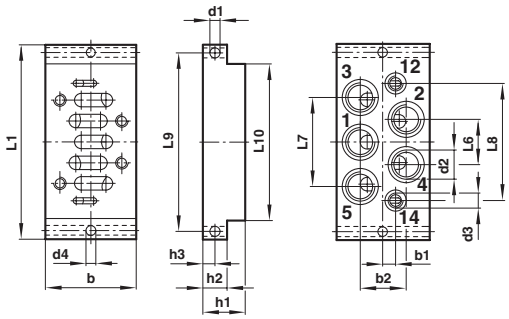
VDMA 24345 sub-base options
Single station sub-base side ported (Form A)
for ISO G and NPT threads



ISO	b	d1	d2	d3	h1	h2	h3	Model
1	48	5,5	1/4"	1/8"	32	10	10,5 (21,5)	#/P19126
2	57	6,6	3/8"	1/8"	40	13	14 (26)	#/P19132
3	71	6,6	1/2"	1/8"	32	18	179	#/P19138

ISO	h4	L1	L6	L7	L8	L9	L10	kg	Model
1	23,5	110	24	43	58	98	84	0,16	#/P19126
2	30	124	30	56	74	112	95	0,28	#/P19132
3	22	149	32	68	90	136	119	0,36	#/P19138

Single station sub-base
bottom ported (Form B)
for ISO G and NPT threads

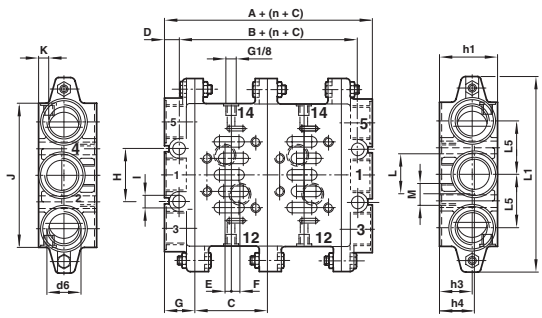


ISO	b	b1	b2	d1	d2	d3	d4	h1	Model
1	46	7	23	5,5	1/4"	1/8"	5,5	30	#/P19125
2	56	8	27	6,6	3/8"	1/8"	6,6	35	#/P19131
3	71	10	34	6,6	1/2"	1/8"	6,69	32	#/P19137

ISO	h2	h3	L1	L6	L7	L8	L9	L10	kg	Model
1	10	5	110	23	46	62	98	84	0,19	#/P19125
2	13	6,5	124	28	56	73	112	95	0,32	#/P19131
3	18	9	149	34	68	90	136	119	0,40	#/P19137

( ) Dimension for ports 3 and 5.
Insert 'M' for ISO G parallel or 'C' for NPT threads

Modular sub-bases (Form C) and end plates (Form D)
for ISO G and NPT threads



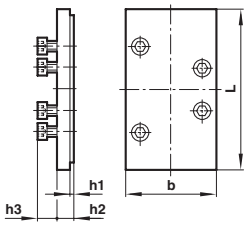
ISO	A	B	C	D	E	F	G	H	I	kg	Model G thread	Model NPT thread
1	44	22	43	11	1,5	7,5	22	28	7	0,24	CQM/22152/3/21	239-238B
2	52	26	56	13	5	6	26	35	9	0,36	CQM/22253/3/21	239-242B
3	60	30	71	15	6	8	30	52	12	0,72	CQM/22354/3/21	239-246B

ISO	J	K	L	M	h1	h3	h4	L1	L5	d6	kg	Model	Model NPT thread
1	85	8,5	26	G1/4	46	21	24	110	28	3/8"	0,22	CQM/22152/3/22	239-289B
2	100	9	30	G3/8	47	22	24	135	28	1/2"	0,34	CQM/22253/3/22	239-291B
3	140	10	38	G1/2	56	31	34	190	52	1"	0,66	CQM/22354/3/22	239-293B

5/2 and 5/3 glandless valves (solenoid and pilot actuated) ISO*STAR

ISO 1, 2 and 3

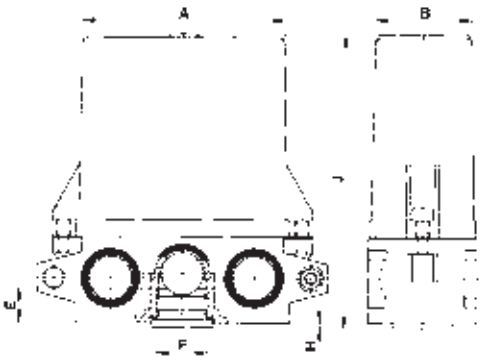
Blanking plate for VDMA & universal sub-bases with ISO G and NPT threads



ISO	b	L	h1	h2	h3	kg	Model
1	42	80	2	14	11	0,05	CQM/22152/3/23
2	55	85	2,5	12,5	13,5	0,09	CQM/22253/3/23
3	70	120	2,5	12,5	15,5	0,26	CQM/22354/3/23

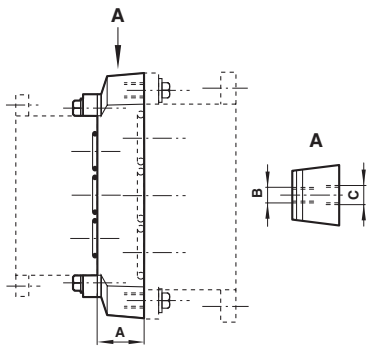
Silencer for VDMA & universal sub-bases with ISO G and NPT threads

Dimensions shown in mm
Projection/First angle



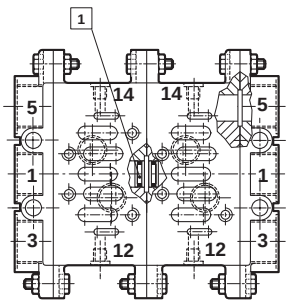
ISO	A	B	E	F	H	J	Model
1	77	38	15	G3/8	2	122	0015510

Transition plate from ISO 1 to ISO 2 and ISO 2 to ISO 3 for VDMA sub-bases for ISO G and NPT threads



ISO	A	B	C	kg	Model
1 to 2	25	M5	M6	0,35	CQM/22152/3/24
2 to 3	40	M6	M8	0,65	CQM/22253/3/24
1 to 3	34	M5	M8	0,90	FP8570

Blanking disc FP8382, FP8482 & FP8582 for ISO G thread 239-251, 239-252 & 239-253 for NPT thread

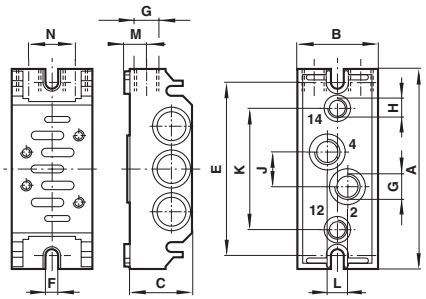


1 Blanking disc (FP.) or 239-...

Universal sub-base options for ISO G threads only

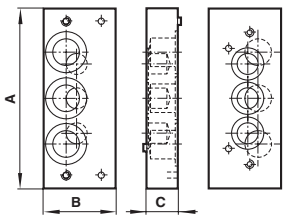
Modular base with side, end and bottom ports open

Dimensions shown in mm
Projection/First angle



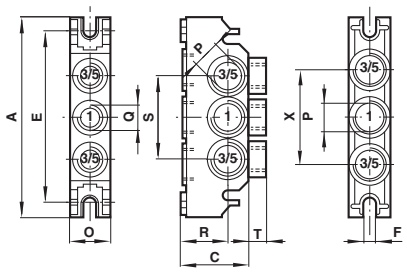
ISO	A	B	C	E	F	G	H	J	K	L	M	N	kg	Model
1	106	43	36	92	5,5	G1/4	G1/8	18	64	11	12	28	0,16	CQM/22152/3/27
2	120	56	43	102	6,5	G3/8	G1/8	24	68	19	15	38	0,35	CQM/22253/3/27

Transition plate from ISO 1 to ISO 2



ISO	A	B	C	kg	Model
1 to 2	114	46	20	0,23	CQM/22152/3/29

Universal end plate, all ports blocked

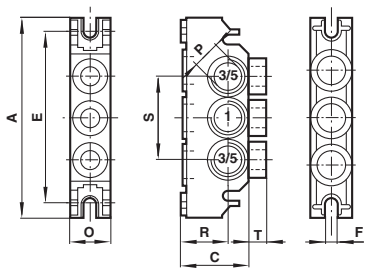


ISO	A	C	E	F	O	P	Q	R	S	T	X	kg	Model
1	106	36	92	5,5	22	G3/8	G1/4	25	44	9	50	0,13	CQM/22152/3/28
2	120	46	102	6,5	29	G1/2	G1/4	31	58	7	58	0,23	CQM/22253/3/28

Drill dimensions for opening ports

G1/4	Ø 8
G3/8	Ø 15
G1/2	Ø 15

Universal end plate, side ports open

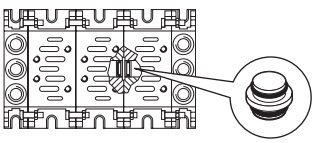


ISO	A	C	E	F	O	P	R	S	T	kg	Model
1	106	36	92	5,5	22	G3/8	25	44	9	0,13	CQM/22152/3/31
2	120	46	102	6,5	29	G1/2	31	58	7	0,23	CQM22253/3/31

Drill dimensions for opening ports

G1/4	Ø 8
G3/8	Ø 15
G1/2	Ø 15

Blanking disk for ISO 1 and ISO 2 universal sub-bases



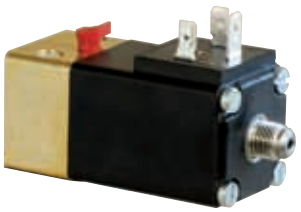
ISO	kg	Model
1	0,01	M/P43173
2	0,03	M/P43174

3/2 way solenoid valves (directly actuated)
VSP551
CNOMO Interface, direct sub-base and G1/8 ported

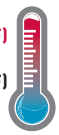
Compact design

Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B



EN 61373



+60°C (+140°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air lubricated or unlubricated

Operation:
Solenoid direct operated poppet valve

Orifice:
1,2 mm

Port size/mounting:
CNOMO Interface, direct sub-base and G1/8 ported

Operating pressure:
2 ... 10 bar (29 ... 145 psi)

Ambient temperature:
-40 ... +60°C (-40 ... 140°F) *1), depending on solenoid system. Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
Housing: brass
Seals: Flourine rubber
Coil: Epoxy Resin
Inner parts: steel 1.4104/ 430 F brass

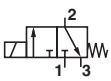
Technical data – solenoid operators

Nominal voltages	12, 24, 37.5, 52, 74, 96, 110 Volts
Pull in voltage	80% of nominal voltage
Drop out voltage	3% of nominal voltage
Power consumption	5 Watt
Voltage tolerance	±20% of nominal *1)
Electrical connection	DIN EN 175301-803 (DIN 43650) Form A
Manual override	Standard: with Polyamide rotational lever, optional without manual override
Pressure range	2 ...10 bar
Over / burst pressure	35 bar

Kv value	0.05 cubic metres / hour
Qnn value	55 litres / min
Fluid temperature range	-40 ... +100°C
Duty cycle	100% ED
Maximum cycling rate	1000 cpm
Opening/closing time	20/22 ms
Low voltage directive	2006/95/EC
EMC directive	2004/108/EC
PE directive	97/23/EC

*1) This product has been used successfully in a wide variety of railway applications for more than 20 years. It is possible to achieve higher operating specifications, such as up to +80°C or voltage tolerance of +/- 30% depending on the application and duty. For such requirements specific type testing and approval may be required. For more details contact Norgren technical service.

Technical data

Symbol	Port size 1 & 2	3	Mounting/ Interface	Flow (l/min)	Operating pressure (bar)	Ambient temperature (°C)	Weight (kg)	Dimension No.	Model *1)
		G1/8	With CNOMO adaptor	55	2 ... 10	-40 ... +60	0,33	1	VSP55111x
	G1/8	G1/8	-	55	2 ... 10	-40 ... +60	0,30	2	VSP55121x
		G1/8	Direct sub base	55	2 ... 10	-40 ... +60	0,25	3	VSP55131x

*1) x = Insert voltage code

Option selector

VSP551★★★

Version	Substitute
With CNOMO interface	1
G1/8	2
Direct mounting sub-base	3
Manual override	**Substitute**
With – turn to lock (standard)	1
Without (optional)	3

Voltage	Substitute
12 V d.c.	1
24 V d.c.	2
37,5 V d.c.	3
52 V d.c.	4
74 V d.c.	5
96 V d.c.	6
110 V d.c.	7

3/2 way solenoid valves (directly actuated)
VSP551
CNOMO Interface, direct sub-base and G1/8 ported

Accessories

Connector

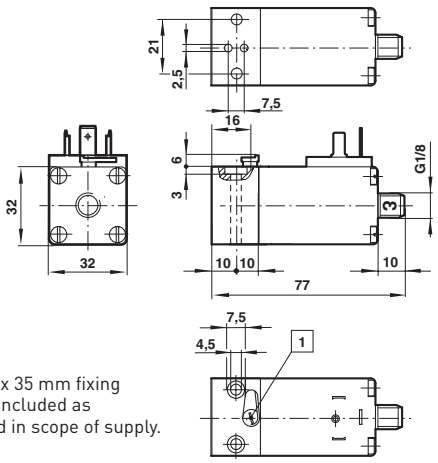
0570275

Dimensions

Dimensions shown in mm
Projection/First angle

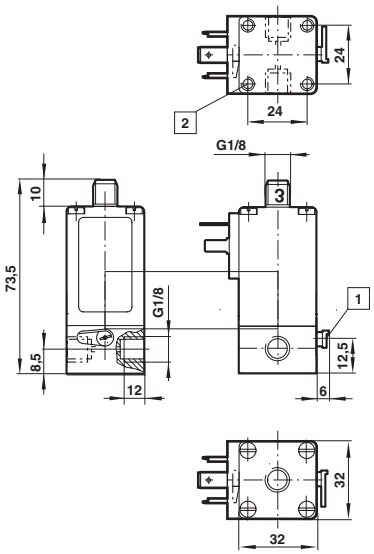
Valves

1



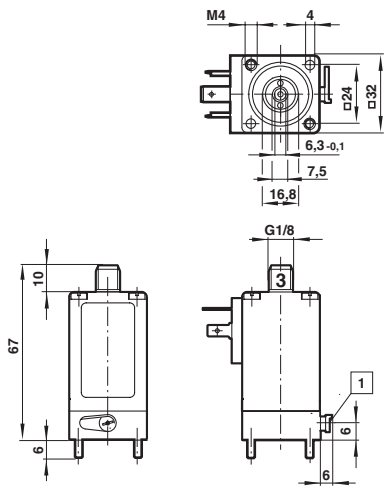
Two M4 x 35 mm fixing screws included as standard in scope of supply.

2

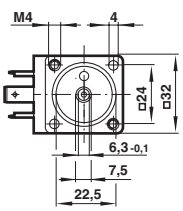


3

With manual override



Without manual override



1 Manual override
2 8 mm deep
3 Exhaust port

Microsol
2/2 & 3/2 way solenoid valves (directly actuated)
Base mounted

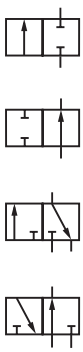
Very compact design – 15 mm wide

High flow rate

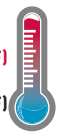
Designed and manufactured specifically for each application

Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B



EN 61373



+80°C (+176°F)

-45°C (-49°F)

Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricted, neutral liquids or gases
Operation:
Poppet valve, directly actuated with spring return

Switching function:
Normally closed and normally open
Response time:
8 ... 15 ms
Operating pressure:
0 ... 10 bar (0 ... 145 psi)
Available orifice:
0,5 ... 1,1 mm

Fluid temperature:
-45 ... +80°C (-49 ... 176°F)
Ambient temperature:
-45 ... +80°C (-49 ... 176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
Mounting position:
As required

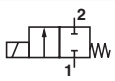
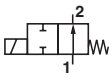
Materials:
Body: for 2/2 valves PPS, for 3/2 valves PPS, PA, stainless steel
Seat seal: FMVQ
Internal parts: stainless steel, PA 6/6

Please note:
Microsol valves are manufactured to order and are designed to specifically to meet the needs of each customer application.
Technical features will vary slightly depending upon the application.

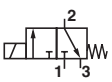
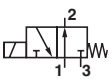
Technical data
Electrical details

Voltage	6 ... 110 V d.c.
Voltage tolerance	±30%
Power	1,5 ... 2 W
Rating	100% E.D.
Electrical insulation	1500 V a.c.
Insulation class	F (155°C)
Protection class	IP65

2/2 direct acting valves

Symbol	Function	Port	Orifice mm	Flow (l/min)	Operating pressure (bar)	Manual override	Drawing No.	Model
	NC	Flange	0,5 ... 1,1	up to 48	Application specific	No	1	Contact Norgren
	NO	Flange	0,5 ... 1,1	up to 48	Application specific	No	2	Contact Norgren

3/2 direct acting valves

Symbol	Function	Port	Orifice mm	Flow (l/min)	Operating pressure (bar)	Manual override	Drawing No.	Model
	NC	Flange	0,5 ... 1,1	up to 27	Application specific	No	4	Contact Norgren
	NO	Flange	0,5 ... 1,1	up to 27	Application specific	No	4	Contact Norgren

Microsol
2/2 & 3/2 way solenoid valves (directly actuated)
Base mounted

Accessories

Electrical connector

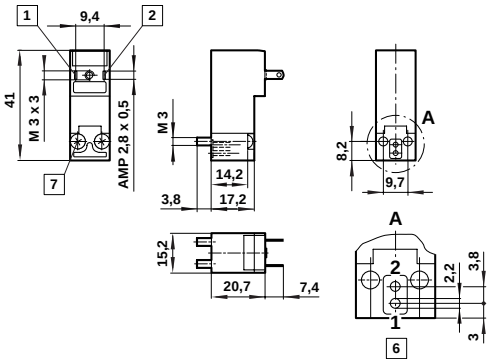
Single connector M/P43082

Dimensions

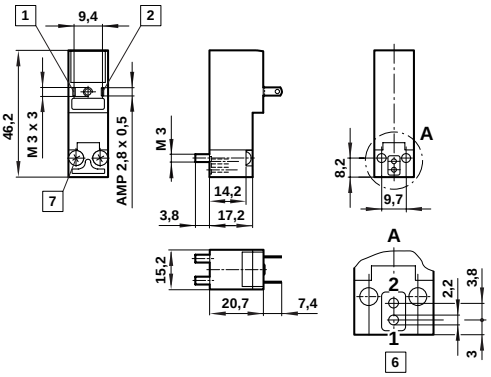
Dimensions shown in mm

Projection/First angle

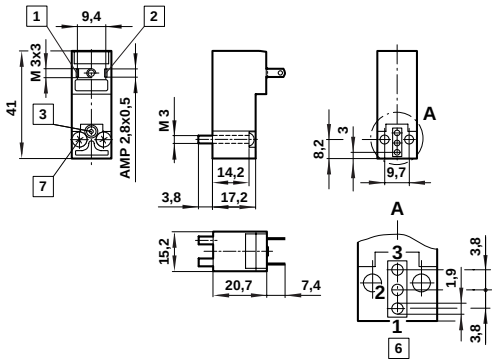
1



2



4



1 Wire (red)/pin +

2 Wire (black)/pin –

3 Manual override

4 For NC models

5 For NO models

6 Mounting pattern

7 The recommended mounting screw tightening torque is 0,6 Nm.

All solenoids are supplied with mounting screws and gasket.

3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves VR61 and VR62

1/4" or 3/8"

High flow rate

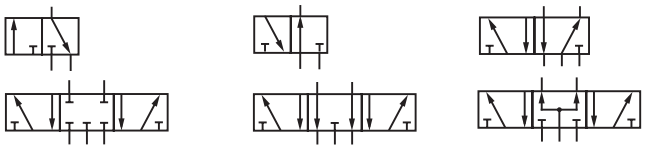
Proven sealing system using Herion experience in the chemical and process industry

Maintenance-free

Optional manual overrides

Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B



EN 61373

+65°C (+149°F)

-40°C (-40°F)

Technical features

Medium:
Filtered, lubricated or non-lubricated compressed air
Actuation:
Solenoid or pilot controlled
Mounting position:
Spring return valves horizontal preferable
Air ports:
G1/4, 1/4 NPT, G3/8 or 3/8 NPT

Operating pressure:
Solenoid actuated:
2 ... 10 bar (29 ... 145 psi)
Solenoid actuated with external supply: -0,9 ... 10 bar (-13 ... 145 psi)
Pilot actuated: -0,9 ... 16 bar (-13 ... 232 psi)
Details on the following pages

Flow direction:
Internal pilot: Supply must be port 1
External pilot and air pilot: Supply to any port
Temperatures:
Fluid/ambient:
- 40 ... +65°C (-40 ... +149°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

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

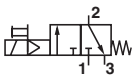
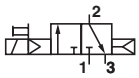
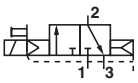
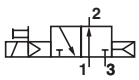
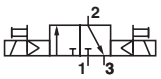
Technical data for solenoid

Voltage tolerance	± 30%
Power consumption	4,5 W (24, 72, 110 V d.c.)
Rating	100 % ED
Protection class	IP 65 with sealed plugs (ISO 6952)
Manual override	Push only - Standard
Solenoid	4 x 90° rotable
Solenoid plug interface	Type A, EN 175301-803 (DIN 43650)
Material	PPS (body), FKM & NBR (seals)

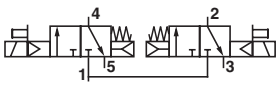
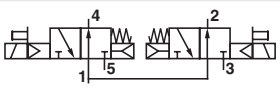
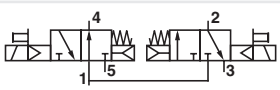
3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves VR61 and VR62

1/4" or 3/8"

3/2 directional control valves, solenoid actuated

Symbol	Size	Function	Actuation/return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	G1/4	NC	Solenoid/spring	internal	1300	2 ... 10	–	0,29	1	VR61B417A-D#*
	1/4 NPT	NC	Solenoid/spring	internal	1300	2 ... 10	–	0,29	1	VR61R417A-D#*
	G3/8	NC	Solenoid/spring	internal	2600	2 ... 10	–	0,52	1	VR62C417A-D#*
	3/8 NPT	NC	Solenoid/spring	internal	2600	2 ... 10	–	0,52	1	VR62S417A-D#*
	G1/4	NC	Solenoid/air-spring	internal	1300	2 ... 10	–	0,29	3	VR61B413A-D#*
	1/4 NPT	NC	Solenoid/air-spring	internal	1300	2 ... 10	–	0,29	3	VR61R413A-D#*
	G3/8	NC	Solenoid/air-spring	internal	2600	2 ... 10	–	0,52	3	VR62C413A-D#*
	3/8 NPT	NC	Solenoid/air-spring	internal	2600	2 ... 10	–	0,52	3	VR62S413A-D#*
	G1/4	NC	Solenoid/air-spring	external	1300	-0,9 ... 10	3 ... 10	0,29	3	VR61B423A-D#*
	1/4 NPT	NC	Solenoid/air-spring	external	1300	-0,9 ... 10	3 ... 10	0,29	3	VR61R423A-D#*
	G3/8	NC	Solenoid/air-spring	external	2600	-0,9 ... 10	3 ... 10	0,52	3	VR62C423A-D#*
	3/8 NPT	NC	Solenoid/air-spring	external	2600	-0,9 ... 10	3 ... 10	0,52	3	VR62S423A-D#*
	G1/4	NO	Solenoid/air-spring	internal	1300	2 ... 10	–	0,29	5	VR61B313A-D#*
	1/4 NPT	NO	Solenoid/air-spring	internal	1300	2 ... 10	–	0,29	5	VR61R313A-D#*
	G3/8	NO	Solenoid/air-spring	internal	2600	2 ... 10	–	0,52	5	VR62C313A-D#*
	3/8 NPT	NO	Solenoid/air-spring	internal	2600	2 ... 10	–	0,52	5	VR62S313A-D#*
	G1/4	NC	Solenoid/solenoid	internal	1300	2 ... 10	–	0,38	7	VR61B411A-D#*
	1/4 NPT	NC	Solenoid/solenoid	internal	1300	2 ... 10	–	0,38	7	VR61R411A-D#*
	G3/8	NC	Solenoid/solenoid	internal	2600	2 ... 10	–	0,61	7	VR62C411A-D#*
	3/8 NPT	NC	Solenoid/solenoid	internal	2600	2 ... 10	–	0,61	7	VR62S411A-D#*

2 x 3/2 directional control valves, solenoid actuated

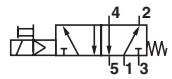
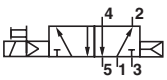
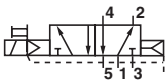
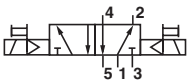
Symbol	Size	Function	Actuation/return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Weight (kg)	Drawing No.	Model
	G1/4	NC/NC	Solenoid/solenoid	internal	950	2 ... 10	0,43	13	VR61BA11A-D#*
	1/4 NPT	NC/NC	Solenoid/solenoid	internal	950	2 ... 10	0,43	13	VR61RA11A-D#*
	G3/8	NC/NC	Solenoid/solenoid	internal	1900	2 ... 10	0,73	13	VR62CA11A-D#*
	3/8 NPT	NC/NC	Solenoid/solenoid	internal	1900	2 ... 10	0,73	13	VR62SA11A-D#*
	G1/4	NO/NO	Solenoid/solenoid	internal	950	2 ... 10	0,43	13	VR61BB11A-D#*
	1/4 NPT	NO/NO	Solenoid/solenoid	internal	950	2 ... 10	0,43	13	VR61RB11A-D#*
	G3/8	NO/NO	Solenoid/solenoid	internal	1900	2 ... 10	0,73	13	VR62CB11A-D#*
	3/8 NPT	NO/NO	Solenoid/solenoid	internal	1900	2 ... 10	0,73	13	VR62SB11A-D#*
	G1/4	NO/NC	Solenoid/solenoid	internal	950	2 ... 10	0,43	13	VR61BC11A-D#*
	1/4 NPT	NO/NC	Solenoid/solenoid	internal	950	2 ... 10	0,43	13	VR61RC11A-D#*
	G3/8	NO/NC	Solenoid/solenoidt	internal	1900	2 ... 10	0,73	13	VR62CC11A-D#*
	3/8 NPT	NO/NC	Solenoid/solenoidt	internal	1900	2 ... 10	0,73	13	VR62SC11A-D#*

Insert code for manual override. Note: Standard option is 3 = push only, see page 2-17
* Insert voltage code from table on page 2-17 or 000 for version without solenoid
NC = Normally closed
NO = Normally open
NC/NC = Both valves normally closed (port P)
NO/NO = Both valves normally opend(port P)
NO/NC = 1 valve normally open, 1 valve normally closed (port P)

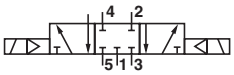
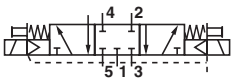
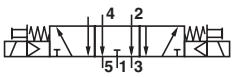
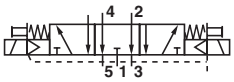
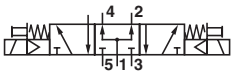
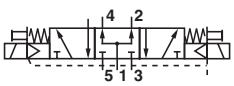
3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62

1/4" or 3/8"

5/2 directional control valves, solenoid actuated

Symbol	Size	Actuation/return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	G1/4	Solenoid/spring	internal	1300	3 ... 10	–	0,29	9	VR61B517A-D#*
	1/4 NPT	Solenoid/spring	internal	1300	3 ... 10	–	0,29	9	VR61R517A-D#*
	G3/8	Solenoid/spring	internal	2600	3 ... 10	–	0,52	9	VR62C517A-D#*
	3/8 NPT	Solenoid/spring	internal	2600	3 ... 10	–	0,52	9	VR62S517A-D#*
	G1/4	Solenoid/air-spring	internal	1300	2 ... 10	–	0,33	11	VR61B513A-D#*
	1/4 NPT	Solenoid/air-spring	internal	1300	2 ... 10	–	0,33	11	VR61R513A-D#*
	G3/8	Solenoid/air-spring	internal	2600	2 ... 10	–	0,62	11	VR62C513A-D#*
	3/8 NPT	Solenoid/air-spring	internal	2600	2 ... 10	–	0,62	11	VR62S513A-D#*
	G1/4	Solenoid/air-spring	external	1300	-0,9 ... 10	3 ... 10	0,33	11	VR61B523A-D#*
	1/4 NPT	Solenoid/air-spring	external	1300	-0,9 ... 10	3 ... 10	0,33	11	VR61R523A-D#*
	G3/8	Solenoid/air-spring	external	2600	-0,9 ... 10	3 ... 10	0,62	11	VR62C523A-D#*
	3/8 NPT	Solenoid/air-spring	external	2600	-0,9 ... 10	3 ... 10	0,62	11	VR62S523A-D#*
	G1/4	Solenoid/solenoid	internal	1300	2 ... 10	–	0,42	13	VR61B511A-D#*
	1/4 NPT	Solenoid/solenoid	internal	1300	2 ... 10	–	0,42	13	VR61R511A-D#*
	G3/8	Solenoid/solenoid	internal	2600	2 ... 10	–	0,72	13	VR62C511A-D#*
	3/8 NPT	Solenoid/solenoid	internal	2600	2 ... 10	–	0,72	13	VR62S511A-D#*

5/3 directional control valves, solenoid actuated

Symbol	Size	Function	Actuation/ return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	G1/4	APB	solenoid/solenoid	internal	950	3 ... 10	-	0,47	15	VR61B611A-D#*
	1/4 NPT	APB	solenoid/solenoid	internal	950	3 ... 10	-	0,47	15	VR61R611A-D#*
	G3/8	APB	solenoid/solenoid	internal	1900	3 ... 10	-	0,81	15	VR62C611A-D#*
	3/8 NPT	APB	solenoid/solenoid	internal	1900	3 ... 10	-	0,81	15	VR62S611A-D#*
	G1/4	APB	solenoid/solenoid	external	950	-0,9 ... 10	3 ... 10	0,47	15	VR61B622A-D#*
	1/4 NPT	APB	solenoid/solenoid	external	950	-0,9 ... 10	3 ... 10	0,47	15	VR61R622A-D#*
	G3/8	APB	solenoid/solenoid	external	1900	-0,9 ... 10	3 ... 10	0,81	15	VR62C622A-D#*
	3/8 NPT	APB	solenoid/solenoid	external	1900	-0,9 ... 10	3 ... 10	0,81	15	VR62S622A-D#*
	G1/4	COE	solenoid/solenoid	internal	950	3 ... 10	-	0,47	15	VR61B711A-D#*
	1/4 NPT	COE	solenoid/solenoid	internal	950	3 ... 10	-	0,47	15	VR61R711A-D#*
	G3/8	COE	solenoid/solenoid	internal	1900	3 ... 10	-	0,81	15	VR62C711A-D#*
	3/8 NPT	COE	solenoid/solenoid	internal	1900	3 ... 10	-	0,81	15	VR62S711A-D#*
	G1/4	COE	solenoid/solenoid	external	950	-0,9 ... 10	3 ... 10	0,47	15	VR61B722A-D#*
	1/4 NPT	COE	solenoid/solenoid	external	950	-0,9 ... 10	3 ... 10	0,47	15	VR61R722A-D#*
	G3/8	COE	solenoid/solenoid	external	1900	-0,9 ... 10	3 ... 10	0,81	15	VR62C722A-D#*
	3/8 NPT	COE	solenoid/solenoid	external	1900	-0,9 ... 10	3 ... 10	0,81	15	VR62S722A-D#*
	G1/4	COP	solenoid/solenoid	internal	950	3 ... 10	-	0,47	15	VR61B811A-D#*
	1/4 NPT	COP	solenoid/solenoid	internal	950	3 ... 10	-	0,47	15	VR61R811A-D#*
	G3/8	COP	solenoid/solenoid	internal	1900	3 ... 10	-	0,81	15	VR62C811A-D#*
	3/8 NPT	COP	solenoid/solenoid	internal	1900	3 ... 10	-	0,81	15	VR62S811A-D#*
	G1/4	COP	solenoid/solenoid	internal	950	-0,9 ... 10	3 ... 10	0,47	15	VR61B822A-D#*
	1/4 NPT	COP	solenoid/solenoid	external	950	-0,9 ... 10	3 ... 10	0,47	15	VR61R822A-D#*
	G3/8	COP	solenoid/solenoid	external	1900	-0,9 ... 10	3 ... 10	0,81	15	VR62C822A-D#*
	3/8 NPT	COP	solenoid/solenoid	external	1900	-0,9 ... 10	3 ... 10	0,81	15	VR62S822A-D#*

Insert code for manual override. Note: Standard option is 3 = push only, see page 2-17
* Insert voltage code from table on page 2-17 or 000 for version without solenoid
APB = All ports blocked
COE = Centre open exhaust
COP = Centre open pressure

3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62

1/4" or 3/8"

Option selector (solenoid actuated valves) VR6★★★★★A-D★★★N

ISO parallel threads	Substitute
G1/4	1B
G3/8	2C
NPT threads	**Substitute**
1/4 NPT	1R
3/8 NPT	2S
Function	**Substitute**
3/2 - NO	3
3/2 - NC	4
5/2	5
5/3 - APB	6
5/3 - COE	7
5/3 - COP	8
2 x 3/2 - NC	A
2 x 3/2 - NO	B
2 x 3/2 - NO/NC	C

Voltage	Substitute
24 V d.c.	23
36 V d.c.	24
72 V d.c.	2A
110 V d.c.	27
Manual override	**Substitute**
Push only - Standard	3
Push and turn	2
Without	1

Actuation/ return	Pilot supply	Substitute
Solenoid/solenoid	Internal	11
Solenoid/air-spring	Internal	13
Solenoid/spring	Internal	17
Solenoid/solenoid	External	22
Solenoid/air-spring	External	23
Solenoid/spring	External	27

Selection of solenoid and voltage codes

Voltage	Part number code	Power consumption	Spare – replacement coil part number
24 V d.c.	23N	4,5 W	303002400
36 V d.c.	24N	4,5 W	303003600
72 V d.c.	2AN	4,5 W	303007200
110 V d.c.	27N	4,5 W	303011000

Accessories

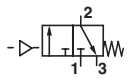
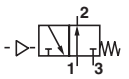
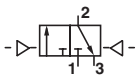
Connector DIN EN 175301-803, form A (DIN 43650 A)

0570275
12 ... 250 V a.c./d.c.

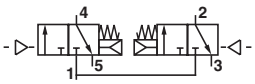
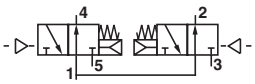
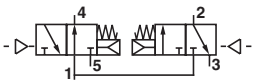
3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62

1/4" or 3/8"

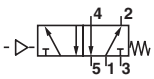
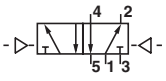
3/2 directional control valves, pilot actuated

Symbol	Size	Function	Actuation/ return	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	G1/4	NC	Air/spring	1300	-0,9 ... 10	2,5 ... 10	0,21	31	VR61B4D7A-XA090
	1/4 NPT	NC	Air/spring	1300	-0,9 ... 10	2,5 ... 10	0,21	31	VR61R4D7A-XP090
	G3/8	NC	Air/spring	2600	-0,9 ... 10	2,5 ... 10	0,43	33	VR62C4D7A-XA090
	3/8 NPT	NC	Air/spring	2600	-0,9 ... 10	2,5 ... 10	0,43	33	VR62S4D7A-XP090
	G1/4	NO	Air/spring	1300	-0,9 ... 10	2,5 ... 10	0,21	32	VR61B3D7A-XA090
	1/4 NPT	NO	Air/spring	1300	-0,9 ... 10	2,5 ... 10	0,21	32	VR61R3D7A-XP090
	G3/8	NO	Air/spring	2600	-0,9 ... 10	2,5 ... 10	0,43	34	VR62C3D7A-XA090
	3/8 NPT	NO	Air/spring	2600	-0,9 ... 10	2,5 ... 10	0,43	34	VR62S3D7A-XP090
	G1/4	NC	Air/air	1300	-0,9 ... 10	2 ... 10	0,21	37	VR61B4DDA-XA020
	1/4 NPT	NC	Air/air	1300	-0,9 ... 10	2 ... 10	0,21	37	VR61R4DDA-XP020
	G3/8	NC	Air/air	2600	-0,9 ... 10	2 ... 10	0,43	38	VR62C4DDA-XA020
	3/8 NPT	NC	Air/air	2600	-0,9 ... 10	2 ... 10	0,43	38	VR62S4DDA-XP020

2 x 3/2 directional control valves, pilot actuated

Symbol	Size	Function	Actuation/ return	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	G1/4	NC/NC	Air/air	950	2 ... 10	2 ... 10	0,28	43	VR61BADDA-XA020
	1/4 NPT	NC/NC	Air/air	950	2 ... 10	2 ... 10	0,28	43	VR61RADDA-XP020
	G3/8	NC/NC	Air/air	1900	2 ... 10	2 ... 10	0,60	44	VR62CADDA-XA020
	3/8 NPT	NC/NC	Air/air	1900	2 ... 10	2 ... 10	0,60	44	VR62SADDA-XP020
	G1/4	NO/NO	Air/air	950	2 ... 10	2 ... 10	0,28	43	VR61BBDDA-XA020
	1/4 NPT	NO/NO	Air/air	950	2 ... 10	2 ... 10	0,28	43	VR61RBDDA-XP020
	G3/8	NO/NO	Air/air	1900	2 ... 10	2 ... 10	0,60	44	VR62CBDDA-XA020
	3/8 NPT	NO/NO	Air/air	1900	2 ... 10	2 ... 10	0,60	44	VR62SBDDA-XP020
	G1/4	NO/NC	Air/air	950	2 ... 10	2 ... 10	0,28	43	VR61BCDDA-XA020
	1/4 NPT	NO/NC	Air/air	950	2 ... 10	2 ... 10	0,28	43	VR61RCDDA-XP020
	G3/8	NO/NC	Air/air	1900	2 ... 10	2 ... 10	0,60	44	VR62CCDDA-XA020
	3/8 NPT	NO/NC	Air/air	1900	2 ... 10	2 ... 10	0,60	44	VR62SCDDA-XP020

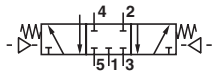
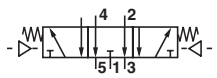
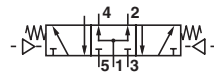
5/2 directional control valves, pilot actuated

Symbol	Size	Actuation/ return	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	G1/4	Air/spring	1300	-0,9 ... 10	2,5 ... 10	0,26	40	VR61B5D7A-XA090
	1/4 NPT	Air/spring	1300	-0,9 ... 10	2,5 ... 10	0,26	40	VR61R5D7A-XP090
	G3/8	Air/spring	2600	-0,9 ... 10	2,5 ... 10	0,56	41	VR62C5D7A-XA090
	3/8 NPT	Air/spring	2600	-0,9 ... 10	2,5 ... 10	0,56	41	VR62S5D7A-XP090
	G1/4	Air/air	1300	-0,9 ... 10	2 ... 10	0,27	43	VR61B5DDA-XA020
	1/4 NPT	Air/air	1300	-0,9 ... 10	2 ... 10	0,27	43	VR61R5DDA-XP020
	G3/8	Air/air	2600	-0,9 ... 10	2 ... 10	0,58	44	VR62C5DDA-XA020
	3/8 NPT	Air/air	2600	-0,9 ... 10	2 ... 10	0,58	44	VR62S5DDA-XP020

NC = Normally closed
NO = Normally open
NC/NC = Both valves normally closed (port P)
NO/NO = Both valves normally open (port P))
NO/NC = 1valve normally open, 1 valve normally closed (port P)

3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62
1/4" or 3/8"

5/3 directional control valves, pilot actuated

Symbol	Size	Function	Actuation/ return	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	G1/4	APB	Air/air	950	-0,9 ... 10	3 ... 10	0,32	46	VR61B6DDA-XA020
	1/4 NPT	APB	Air/air	950	-0,9 ... 10	3 ... 10	0,32	46	VR61R6DDA-XP020
	G3/8	APB	Air/air	1900	-0,9 ... 10	3 ... 10	0,67	47	VR62C6DDA-XA020
	3/8 NPT	APB	Air/air	1900	-0,9 ... 10	3 ... 10	0,67	47	VR62S6DDA-XP020
	G1/4	COE	Air/air	950	-0,9 ... 10	3 ... 10	0,32	46	VR61B7DDA-XA020
	1/4 NPT	COE	Air/air	950	-0,9 ... 10	3 ... 10	0,32	46	VR61R7DDA-XP020
	G3/8	COE	Air/air	1900	-0,9 ... 10	3 ... 10	0,67	47	VR62C7DDA-XA020
	3/8 NPT	COE	Air/air	1900	-0,9 ... 10	3 ... 10	0,67	47	VR62S7DDA-XP020
	G1/4	COP	Air/air	950	-0,9 ... 10	3 ... 10	0,32	46	VR61B8DDA-XA020
	1/4 NPT	COP	Air/air	950	-0,9 ... 10	3 ... 10	0,32	46	VR61R8DDA-XP020
	G3/8	COP	Air/air	1900	-0,9 ... 10	3 ... 10	0,67	47	VR62C8DDA-XA020
	3/8 NPT	COP	Air/air	1900	-0,9 ... 10	3 ... 10	0,67	47	VR62S8DDA-XP020

APB = All ports blocked
COE = Centre open exhaust
COP = Centre open pressure

Option selector (pilot actuated valves)

VR6★★★D★A-X★★★0

ISO parallel threads	Substitute
G1/4	1B
G3/8	2C
NPT threads	**Substitute**
1/4 NPT	1R
3/8 NPT	2S
Function	**Substitute**
3/2 - NO	3
3/2 - NC	4
5/2	5
5/3 - APB	6
5/3 - COE	7
5/3 - COP	8
2 x 3/2 - NC	A
2 x 3/2 - NO	B
2 x 3/2 - NO/NC	C

Actuation/return	Substitute
Air/air	02
Air/spring	09
Pilot thread	**Substitute**
G1/8	A
1/8 NPT	P
Actuation/return	**Substitute**
Air/air	D
Air/spring	7

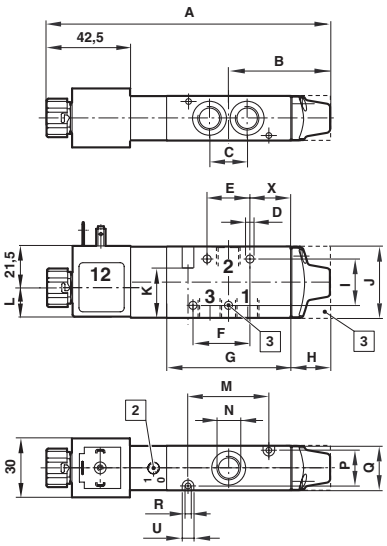
3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62

1/4" or 3/8"

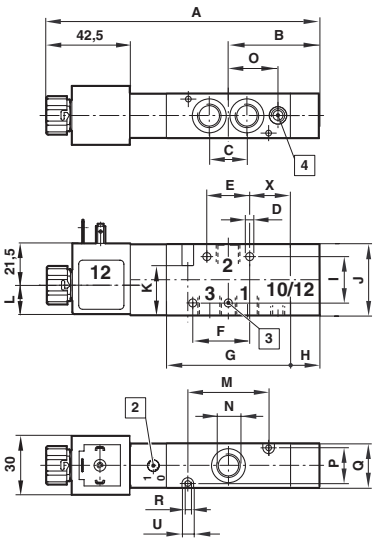
Dimensions

Dimensions shown in mm
Projection/First angle

1



3



2 Manual override

3 VR62: Central mounting hole (left hole is not applicable) and square end cover

4 External pilot port, M5 or 10-32 UNF (VR61), G1/8 or 1/8-27 NPT (VR62)

No.	A	B	C	Ø D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Ø R	Ø U	V	X	Model
1	155	57,5	21	4,5	24	32	70	22,5	26	40	28	17	46	1/4"	-	20	25	3,2	6,5	-	23	VR61#417A-...
1	174,5	70	24,5	4,5	26	-	83,5	28	36	55	44	32	54	3/8"	-	28	34	4,5	8,0	23	30	VR62#417A-...
3	140,5	43	21	4,5	24	32	70	8	26	40	28	17	46	1/4"	-	20	25	3,2	6,5	-	23	VR61#413A-...
3	155	50,5	24,5	4,5	26	-	83,5	9	36	55	44	32	54	3/8"	-	28	34	4,5	8,0	-	30	VR62#413A-...
3	140,5	43	21	4,5	24	32	70	8	26	40	28	17	46	1/4"	29	20	25	3,2	6,5	-	23	VR61#423A-...
3	155	50,5	24,5	4,5	26	-	83,5	9	36	55	44	32	54	3/8"	-	28	34	4,5	8,0	-	30	VR62#423A-...

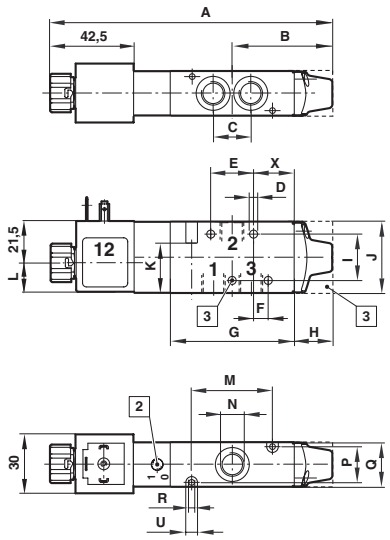
= 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62

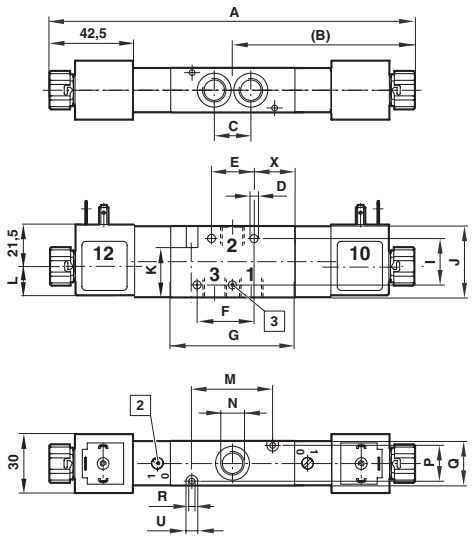
1/4" or 3/8"

Dimensions shown in mm
Projection/First angle

5



7



2 Manual override

3 VR62: Central mounting hole (left or right hole is not applicable) and square end cover

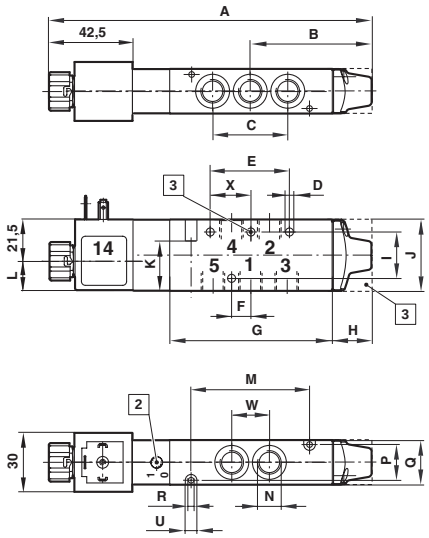
No.	A	B	C	Ø D	E	F	G	H	I	J	K	L	M	N	P	Q	Ø R	Ø U	X	Model
5	140,5	43	21	4,5	24	8	70	8	26	40	28	17	46	1/4"	20	25	3,2	6,5	23	VR61#313A-...
5	155	50,5	24,5	4,5	26	-	83,5	9	36	55	44	32	54	3/8"	28	34	4,5	8,0	28	VR62#313A-...
7	195	97,5	21	4,5	24	32	70	-	26	40	28	17	46	1/4"	20	25	3,2	6,5	23	VR61#411A-...
7	209,5	105	24,5	4,5	26	-	83,5	-	36	55	44	32	54	3/8"	28	34	4,5	8,0	30	VR62#411A-...

= 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62

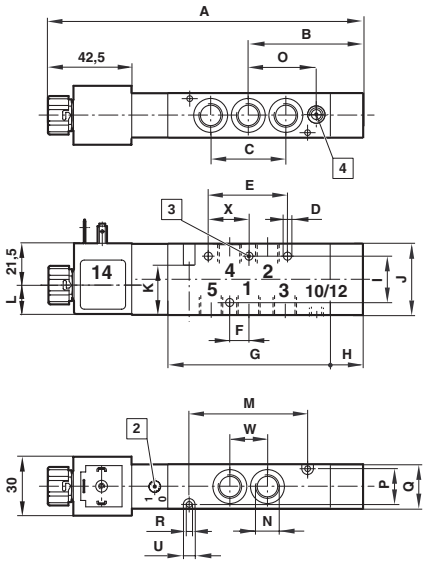
1/4" or 3/8"

(9)



(11)

Dimensions shown in mm
Projection/First angle



2 Manual override

3 VR62: Central mounting hole (left and right hole are not applicable) and square end cover

4 External pilot port, M5 or 10-32 UNF (VR61), G1/8 or 1/8-27 NPT (VR62)

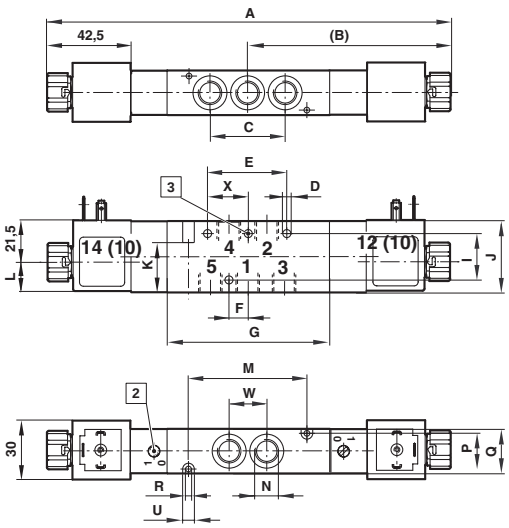
No.	A	B	C	Ø D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Ø R	Ø U	W	X	Model
9	175	67,5	42	4,5	44	10	90	22,5	26	40	28	17	66	1/4"	-	20	25	3,2	6,5	21	22	VR61#517A-...
9	199	82	49	4,5	-	12	108	28	36	55	44	32	78	3/8"	-	28	34	4,5	8,0	24,5	26	VR62#517A-...
11	161	53	42	4,5	44	10	90	8	26	40	28	17	66	1/4"	-	20	25	3,2	6,5	21	22	VR61#513A-...
11	179,5	62,5	49	4,5	-	12	108	8,5	36	55	44	32	78	3/8"	-	28	34	4,5	8,0	24,5	26	VR62#513A-...
11	161	53	42	4,5	44	10	90	8	26	40	28	17	66	1/4"	39	20	25	3,2	6,5	21	22	VR61#523A-...
11	179,5	62,5	49	4,5	-	12	108	8,5	36	55	44	32	78	3/8"	48	28	34	4,5	8,0	24,5	26	VR62#523A-...

= 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62
1/4" or 3/8"

13

Dimensions shown in mm
Projection/First angle



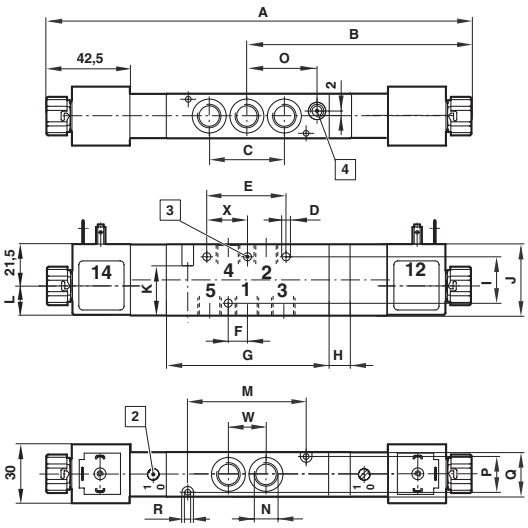
2 Manual override

3 VR62: Central mounting hole (left and right hole are not applicable)

No.	A	B	C	Ø D	E	F	G	I	J	K	L	M	N	P	Q	Ø R	Ø U	V	W	Model
13	215	107,5	42	4,5	44	10	90	26	40	28	17	66	1/4"	20	25	3,2	6,5	21	22	VR61#511A-... VR61#A11A-... VR61#B11A-... VR61#C11A-...
13	234	117	49	4,5	–	12	108	36	55	44	32	78	3/8"	28	34	4,5	8,0	24,5	26	VR62#511A-... VR62#A11A-... VR62#B11A-... VR62#C11A-...

Insert 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

15



2 Manual override

3 VR62: Central mounting hole (left and right hole are not applicable)

4 External pilot port, M5 or 10-32 UNF (VR61), G1/8 or 1/8-27 NPT (VR62)

No.	A	B	C	Ø D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Ø R	Ø U	W	X	Model
15	233	125,5	42	4,5	44	10	90	18	26	40	28	17	66	1/4"	39	20	25	3,2	6,5	21	22	VR61#611A-... VR61#711A-... VR61#811A-...
15	256,5	139,5	49	4,5	-	12	108	22,5	36	55	44	32	78	3/8"	48	28	34	4,5	8	24,5	26	VR62#611A-... VR62#711A-... VR62#811A-...

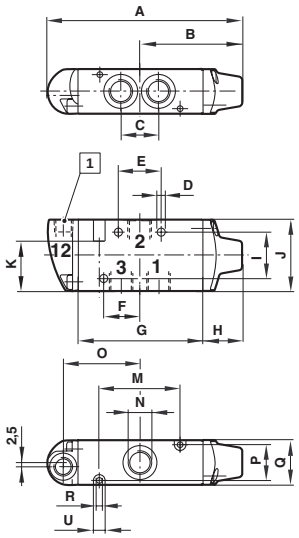
Insert 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62

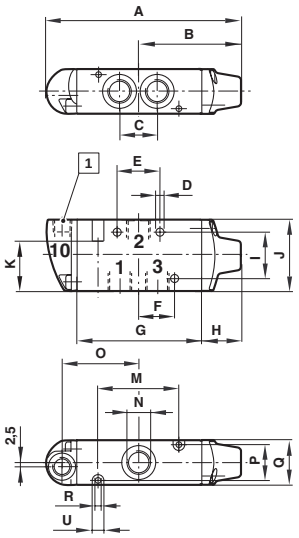
1/4" or 3/8"

Dimensions shown in mm
Projection/First angle

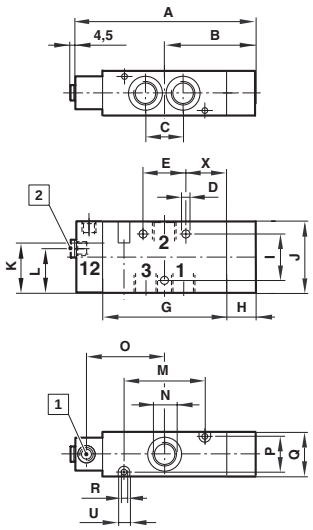
31



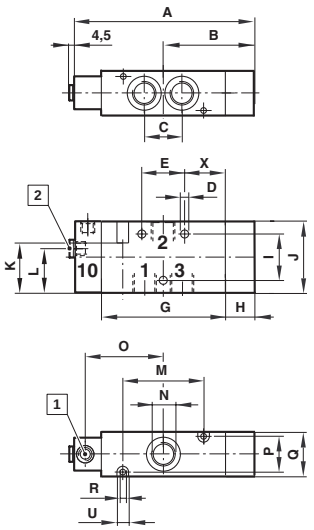
32



33



34



[1] Pilot ports G1/8 or 1/8-27 NPT

[2] Alternative pilot ports G1/8 or 1/8-27 NPT

No.	A	B	C	Ø D	E	F	G	H	I	J	K	L	M	N	O	P	Q	Ø R	Ø U	X	Model
31	110	57,5	21	4,5	24	20	70	22,5	26	40	28	-	46	1/4"	43	20	25	3,2	6,5	-	VR61#4D7A-...
32	110	57,5	21	4,5	24	20	70	22,5	26	40	28	-	46	1/4"	43	20	25	3,2	6,5	-	VR61#3D7A-...
33	132	70	24,5	4,5	26	-	83,5	28	36	55	44	33,5	54	3/8"	52	28	34	4,5	8,0	30	VR62#4D7A-...
34	132	70	24,5	4,5	26	-	83,5	28	36	55	44	33,5	54	3/8"	52	28	34	4,5	8,0	28	VR62#3D7A-...

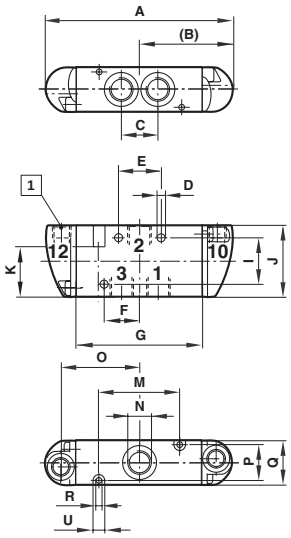
= 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves VR61 and VR62

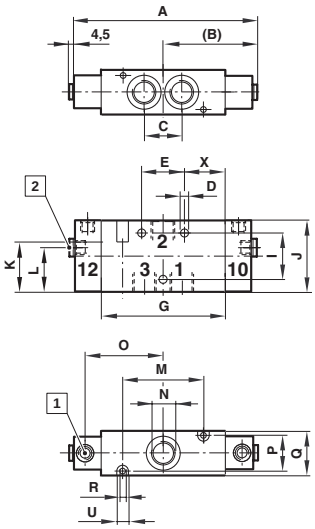
1/4" or 3/8"

Dimensions shown in mm
Projection/First angle

37



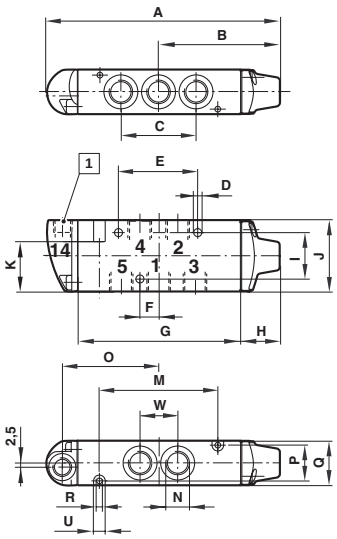
38



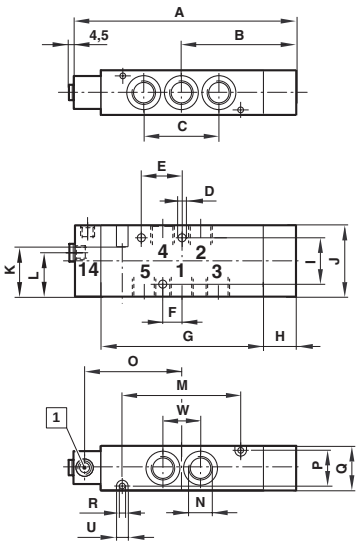
No.	A	B	C	D	E	F	G	I	J	K	L	M	N	O	P	Q	R	U	X	Model
37	104	52	21	4,5	24	20	70	26	40	28	-	46	1/4"	43	20	25	3,2	6,5	-	VR61#4DDA-...
38	124	62	24,5	4,5	26	-	83,5	36	55	44	33,5	54	3/8"	52	28	34	4,5	8,0	30	VR62#4DDA-...

= 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

40



41



1 Pilot ports G1/8 or 1/8-27 NPT

2 Alternative pilot ports G1/8 or 1/8-27 NPT

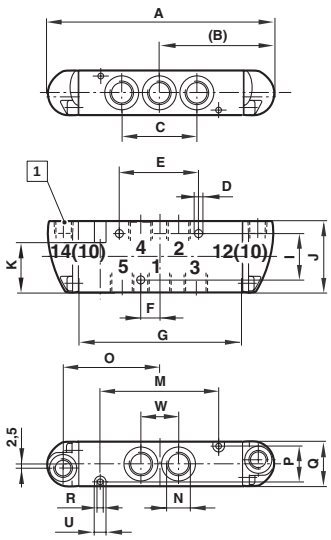
No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	U	W	Model
40	130	67,5	42	4,5	44	10	90	22,5	26	40	28	-	66	1/4"	53	20	25	3,2	6,5	21	VR61#5D7A-...
41	156	82	49	4,5	26	12	108	28	36	55	44	33,5	78	3/8"	64	28	34	4,5	8,0	24,5	VR62#5D7A-...

= 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

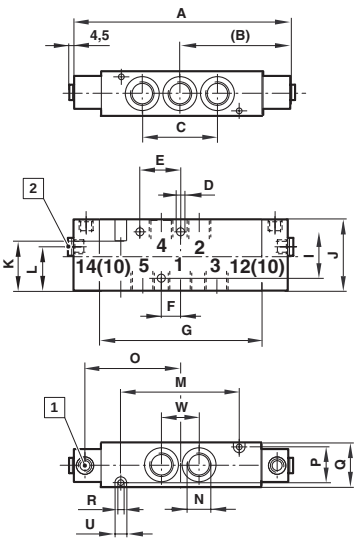
3/2, 2 x 3/2, 5/2 and 5/3 directional control solenoid and pilot valves
VR61 and VR62

1/4" or 3/8"

43



44

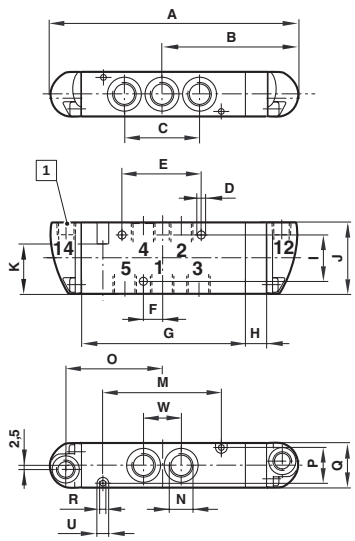


Dimensions shown in mm
Projection/First angle

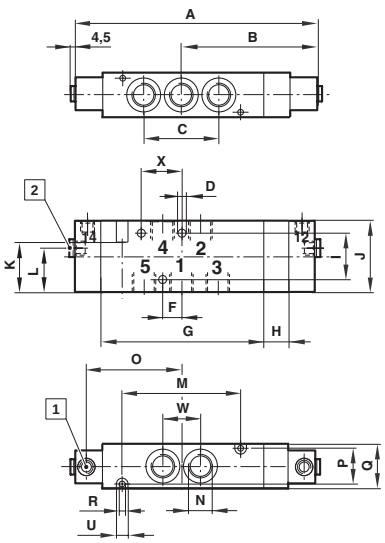
No.	A	B	C	D	E	F	G	I	J	K	L	M	N	O	P	Q	R	U	W	Model
43	124	62	42	4,5	44	10	90	26	40	28	-	66	1/4"	53	20	25	3,2	6,5	21	VR61#5DDA-... VR61#ADDA-... VR61#BDDA-... VR61#CDDA-...
44	148	74	49	4,5	26	12	108	36	55	44	33,5	78	3/8"	64	28	34	4,5	8,0	24,5	VR62#5DDA-... VR62#ADDA-... VR62#BDDA-... VR62#CDDA-...

= 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

46



47



1 Pilot ports G1/8 or 1/8-27 NPT

2 Alternative pilot ports G1/8 or 1/8-27 NPT

No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	U	W	Model
46	142	80	42	4,5	44	10	90	18	26	40	28	-	66	1/4"	53	20	25	3,2	6,5	21	VR61#6DDA-... VR61#7DDA-... VR61#8DDA-...
47	170,5	96,5	49	4,5	26	12	108	22,5	36	55	44	33,5	78	3/8"	64	28	34	4,5	8,0	24,5	VR62#6DDA-... VR62#7DDA-... VR62#8DDA-...

= 'B' for ISO G and 'R' for NPT threads (VR61 series) and 'C' for ISO G and 'S' for NPT threads (VR62 series)

3/2 way solenoid & pilot actuated poppet valves Prospector®

1/2" ... 1"

Exceptionally high flow

High reliability

Durable, robust construction

Reversible seals

Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B

Call Norgren for availability

Available from December 2010

EN 61373

+60°C (+140°F)

-40°C (-40°F)

Technical features and data – basic valve without solenoid operator

Medium:
Filtered and lubricated or non-lubricated compressed air

Mounting:
Through-holes in valve body.

Operating pressure:
2 ... 10 bar (29 ... 145 psi) solenoid pilot
0 ... 20 bar (0 ... 290 psi) air pilot

Ambient temperature:
-40 ... +60°C (-40 ... +140°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials
Body, piston, poppets and sub-base: aluminium alloy
Operators: zinc or aluminium
Elastomers: nitrile rubbers seals

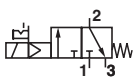
Technical data – solenoid operators

Type	32mm solenoid valve with sub base inlet and outlet connections
Circuit function	3/2, Normally closed
Orifice	1,2 mm
Seal material	Flourine rubber
Body material	Brass
Port connection	Exhaust port 1/8" BSP male; Inlet and outlet ports CNOMO sub base
Coil Material	Epoxy Resin
Nominal voltages	12, 24, 37.5, 52, 74, 96, 110 Volts
Pull in voltage	80% of nominal voltage
Drop out voltage	3% of nominal voltage
Power consumption	5 Watt
Voltage tolerance	±20% of nominal *1)
Electrical connection	DIN EN 175301-803 (DIN 43650) Form A
Manual override	Standard: with Polyamide rotational lever, optional without manual override

Pressure range	2 ...10 bar
Over / burst pressure	35 bar
Kv value	0.05 cubic metres / hour
Qnn value	55 litres / min
Weight	0.25 kg
Fluid temperature range	-40 ... +100°C
Ambient temperature range	-40 ... +60°C *1)
Duty cycle	100% ED
Maximum cycling rate	1000 cpm
Opening/closing time	20/22 ms
Low voltage directive	2006/95/EC
EMC directive	2004/108/EC
PE directive	97/23/EC

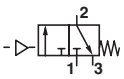
*1) This product has been used successfully in a wide variety of railway applications for more than 20 years. It is possible to achieve higher operating specifications, such as up to +80°C or voltage tolerance of +/- 30% depending on the application and duty. For such requirements specific type testing and approval may be required. For more details contact Norgren technical service.

Solenoid pilot operated

Symbol	Valve size (inch)	Port size	Function	Flow (l/min)	Weight (kg)	Model
	1/2	G1/2	NC	5,717	1,11	VRDA024C-00-***
	1/2	1/2 PTF	NC	5,717	1,11	VRD1024C-00-***
	1/2	G3/4	NC	6,111	1,11	VRDA025C-00-***
	1/2	3/4 PTF	NC	6,111	1,11	VRD1025C-00-***
	1	G1	NC	14,391	2,02	VRDA036C-00-***
	1	1 PTF	NC	14,391	2,02	VRD1036C-00-***

*** Insert voltage code, see page 2-28

Air pilot operated

Symbol	Valve size (inch)	Port size	Function	Flow (l/min)	Weight (kg)	Model
	1/2	G1/2	NC	5,717	0,96	VRDA024C-AA
	1/2	1/2 PFT	NC	5,717	0,96	VRD1024C-AA
	1/2	G3/4	NC	6,111	0,96	VRDA025C-AA
	1/2	3/4 PFT	NC	6,111	0,96	VRD1025C-AA
	1	G1	NC	14,391	1,86	VRDA036C-AA
	1	1 PFT	NC	14,391	1,86	VRD1036C-AA

3/2 way solenoid & pilot actuated poppet valves
Prospector®

1/2" ... 1"

Option selector

VRD★0★★C-00-★★★

Thread form	Substitute
ISO G parallel	A
PTF	1
Body size/port size	**Substitute**
1/2" body/ 1/2" ports	24
1/2" body/ 3/4" ports	25
1" body/ 1" ports	36

Voltage code	Substitute
For voltage code please see tables below Standard: with manual override	
Pilot operated	AA

Solenoid pilot valves – voltage codes and part numbering

Voltage	Voltage code – solenoid pilot valve with manual overide	Spare – replacement coil part number with manual overide
12 V d.c.	111	VSP551111
24 V d.c.	112	VSP551112
37,5 V d.c.	113	VSP551113
52 V d.c.	114	VSP551114
74 V d.c.	115	VSP551115
96 V d.c.	116	VSP551116
110 V d.c.	117	VSP551117

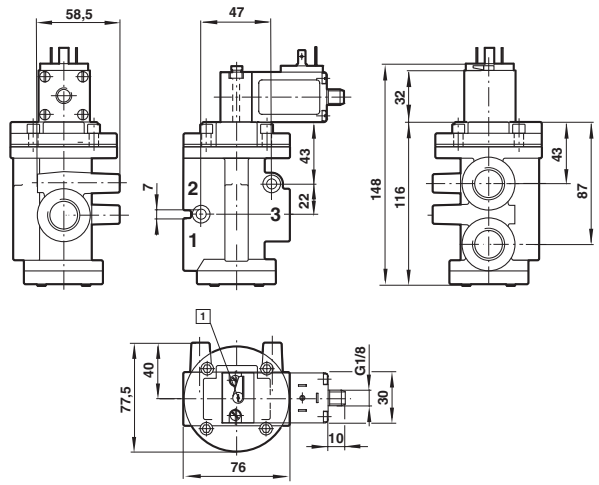
Note: Solenoid pilot valve without manual override also available – contact Norgren Technical service

Accessories

Connector

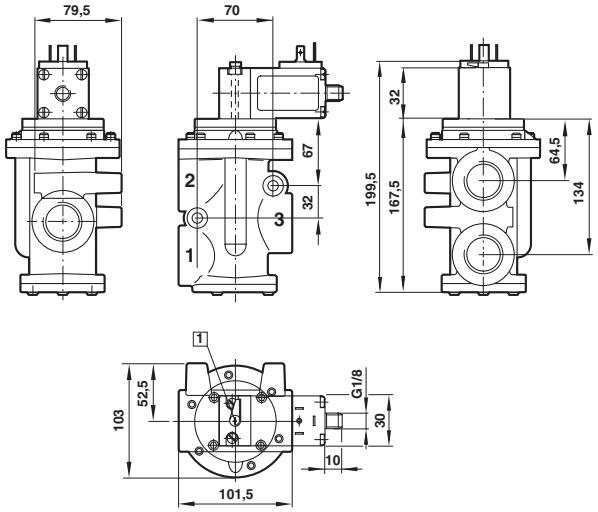
0570275

Basic dimensions
1/2" base, solenoid valve
Port size: 1/2 or 3/4"



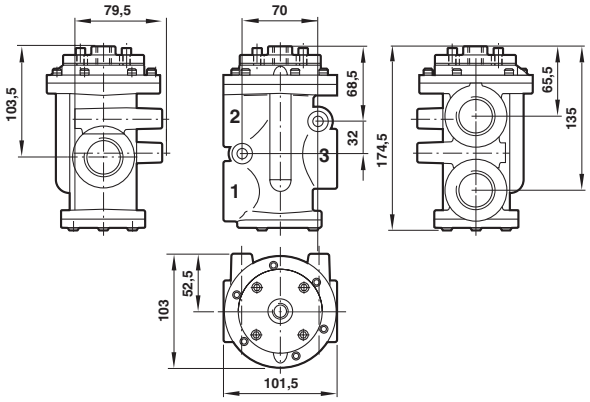
1" base, solenoid valve
Port size: 1"

Dimensions shown in mm
Projection/First angle

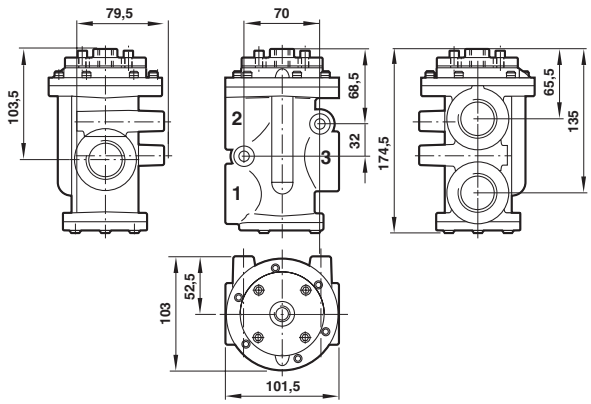


Dimensions shown in mm
Projection/First angle

Basic dimensions
1/2" base, pilot valve
Port size: 1/2 or 3/4"



1" base, pilot valve
Port size: 1"



3/2 and 5/2 pilot actuated spool valves SUPER X

1/8" and 1/4"

Wide range of operators

Suitable for multi-directional flow and dual supply applications

High flow capacity

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+70°C (+158°F)

-30°C (-22°F)

Technical features

Medium:
Compressed air, filtered, lubricated and non-lubricated
Operation:
Spool valve, directly and indirectly actuated
Mounting:
Through-holes in valve body

Operating pressure:
Max. 10 bar (145 psi)
Ambient temperature:
-30 ... +70°C (-22 ... +158°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

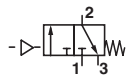
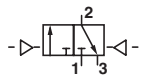
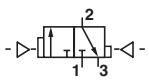
Flow:

Size	l/min	Cv	Kv
1/8"	335	0,34	0,295
1/4"	965	0,98	0,351

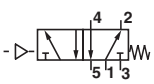
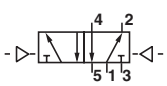
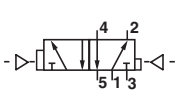
Materials
Body: diecast zinc
End cover: aluminium or glass-filled nylon
Seals: nitrile rubber

Technical data

3/2 Pilot actuated valves

Symbol	Port size	Actuation	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Spares kit	Dimension No.	Model
	G1/8	Air/spring	-0,9 ... 10	2 ... 10	0,21	VR03 8447 02	1	VR03041302
	1/8 PTF	Air/spring	-0,9 ... 10	2 ... 10	0,21	VR03 8447 02	1	VR03041322
	G1/4	Air/spring	-0,9 ... 10	2 ... 10	0,42	VR03 8612 02	7	VR03060102
	1/4 PTF	Air/spring	-0,9 ... 10	2 ... 10	0,42	VR03 8612 02	7	VR03060122
	G1/8	Air/air	-0,9 ... 10	2 ... 10	0, 22	VR03 8447 02	2	VR03040702
	1/8 PTF	Air/air	-0,9 ... 10	2 ... 10	0, 22	VR03 8447 02	2	VR03040722
	G1/4	Air/air	-0,9 ... 10	2 ... 10	0,42	VR03 8612 02	8	VR03060702
	1/4 PTF	Air/air	-0,9 ... 10	2 ... 10	0,42	VR03 8612 02	8	VR03060722
	G1/8	Air priority/air	-0,9 ... 10	2 ... 10	0,25	VR03 8447 02	3	VR03041202
	1/8 PTF	Air priority/air	-0,9 ... 10	2 ... 10	0,25	VR03 8447 02	3	VR03041222
	G1/4	Air priority/air	-0,9 ... 10	2 ... 10	0,42	VR03 8612 02	8	VR03061202
	1/4 PTF	Air priority/air	-0,9 ... 10	2 ... 10	0,42	VR03 8612 02	8	VR03061222

5/2 Pilot actuated valves

Symbol	Port size	Actuation	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Spares kit	Dimension No.	Model
	G1/8	Air/spring	-0,9 ... 10	3 ... 10	0,30	VR03 8447 02	4	VRX3044102
	1/8 PTF	Air/spring	-0,9 ... 10	3 ... 10	0,30	VR03 8447 02	4	VRX3044122
	G1/4	Air/spring	-0,9 ... 10	3 ... 10	0,50	VR03 8612 02	9	VRX3064102
	1/4 PTF	Air/spring	-0,9 ... 10	3 ... 10	0,50	VR03 8612 02	9	VRX3064122
	G1/8	Air/air	-0,9 ... 10	3 ... 10	0,35	VR03 8447 02	5	VRX3044702
	1/8 PTF	Air/air	-0,9 ... 10	3 ... 10	0,35	VR03 8447 02	5	VRX3044722
	G1/4	Air/air	-0,9 ... 10	3 ... 10	0,57	VR03 8612 02	10	VRX3064702
	1/4 PTF	Air/air	-0,9 ... 10	3 ... 10	0,57	VR03 8612 02	10	VRX3064722
	G1/8	Air priority/air	-0,9 ... 10	3 ... 10	0,33	VR03 8447 02	6	VRX3045202
	1/8 PTF	Air priority/air	-0,9 ... 10	3 ... 10	0,33	VR03 8447 02	6	VRX3045222
	G1/4	Air priority/air	-0,9 ... 10	3 ... 10	0,57	VR03 8612 02	10	VRX3065202
	1/4 PTF	Air priority/air	-0,9 ... 10	3 ... 10	0,57	VR03 8612 02	10	VRX3065222

3/2 and 5/2 pilot actuated spool valves
SUPER X
1/8" and 1/4"

Option selector

VR★30★★★★2

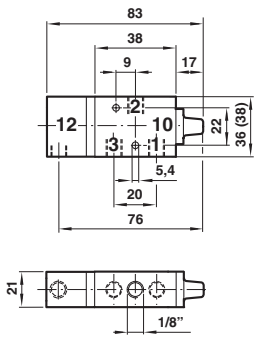
Function	Substitute
3/2	0
5/2	X
Air port	**Substitute**
1/8"	4
1/4"	6
3/2 Pilot actuated valves	**Substitute**
Air/spring (1/4")	01
Air/air (1/8")	07
Air/air (1/4")	12
Air priority/air (1/8")	12
Air/spring (1/8")	13
Air priority/air (1/4")	60

Thread	Substitute
ISO G	0
PTF (SAE SHORT)	2
5/2 Pilot actuated valves	**Substitute**
Air/spring	41
Air/air	47
Air priority/air	52

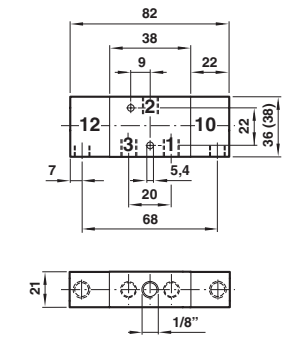
Dimensions shown in mm
Projection/First angle

Dimensions

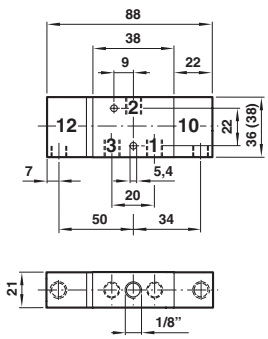
1



2



3



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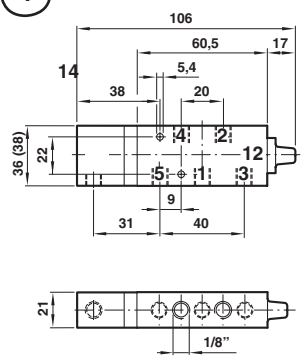

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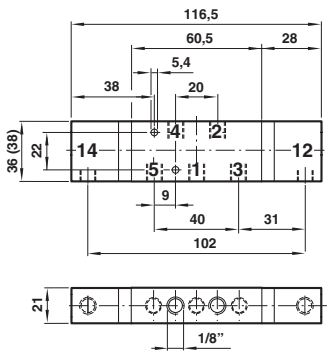
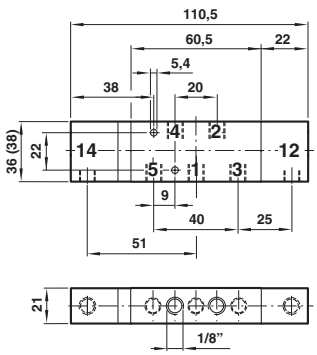
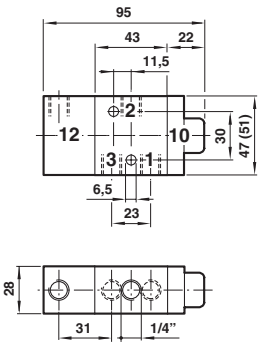


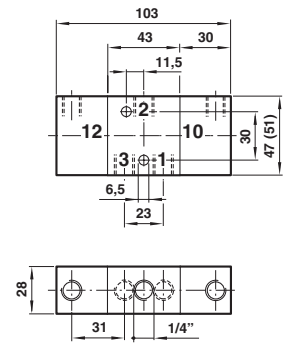
6



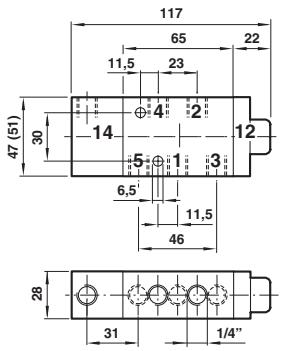
7



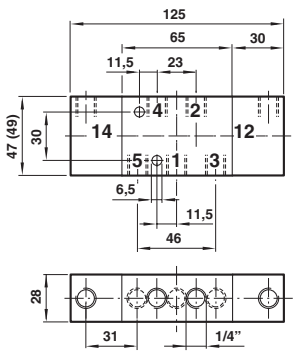
8



9



10



( ) Values for inch port size

3/2, 5/2 and 5/3 manually and mechanically actuated spool valves SUPER X

1/8" and 1/4"

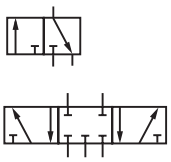
Wide range of operators

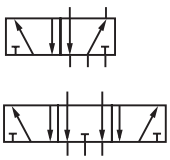
Suitable for multi-directional flow and dual supply applications

High flow capacity

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B





EN 61373

+70°C (+158°F)

-30°C (-22°F)

Technical features

Medium:
Compressed air, filtered, lubricated and non-lubricated
Operation:
Spool valve, directly and indirectly actuated
Mounting:
Through-holes in valve body

Operating pressure:
Max. 10 bar (145 psi max.)
Ambient temperature:
-30 ... +70°C (-22 ... +158°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

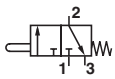
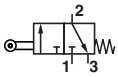
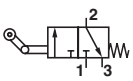
Flow:

Size	l/min	Cv	Kv
1/8"	335	0,34	0,295
1/4"	965	0,98	0,351

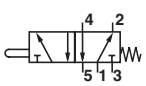
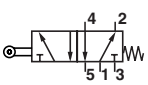
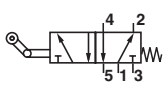
Materials
Body: diecast zinc
End cover: aluminium or glass-filled nylon
Seals: nitrile rubber

Technical data

3/2 mechanical valves

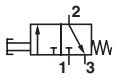
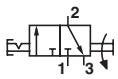
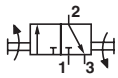
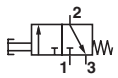
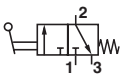
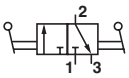
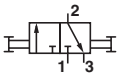
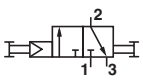
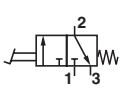
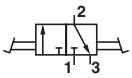
Symbol	Port size	Actuation	Operating pressure (bar)	Operating force (N)	Weight (kg)	Spares kit	Dimension No.	Model
	G1/8	Plunger/spring	- 0,9 ... 10	31	0,14	VR03 8408 02	1	VR03 0400 02
	1/8 PTF	Plunger/spring	- 0,9 ... 10	31	0,14	VR03 8408 02	1	VR03 0400 22
	G1/4	Plunger/spring	- 0,9 ... 10	53	0,34	VR03 8602 02	22	VR03 0600 02
	1/4 PTF	Plunger/spring	- 0,9 ... 10	53	0,34	VR03 8602 02	22	VR03 0600 22
	G1/8	Roller/spring	- 0,9 ... 10	31	0,14	VR03 8408 02	2	VR03 0402 02
	1/8 PTF	Roller/spring	- 0,9 ... 10	31	0,14	VR03 8408 02	2	VR03 0402 22
	G1/4	Roller/spring	- 0,9 ... 10	61	0,34	VR03 8602 02	23	VR03 0602 02
	1/4 PTF	Roller/spring	- 0,9 ... 10	61	0,34	VR03 8602 02	23	VR03 0602 22
	G1/8	Roller lever/spring	- 0,9 ... 10	18	0,21	VR03 8408 02	4	VR03 0293 02
	1/8 PTF	Roller lever/spring	- 0,9 ... 10	18	0,21	VR03 8408 02	4	VR03 0293 22

5/2 mechanical valves

Symbol	Port size	Actuation	Operating pressure (bar)	Operating force (N)	Weight (kg)	Spares kit	Dimension No.	Model
	G1/8	Plunger/spring	- 0,9 ... 10	54	0,25	VR03 8408 02	5	VRX3 04400 2
	1/8 PTF	Plunger/spring	- 0,9 ... 10	54	0,25	VR03 8408 02	5	VRX3 0440 22
	G1/4	Plunger/spring	- 0,9 ... 10	62	0,46	VR03 8602 02	24	VRX3 0640 02
	1/4 PTF	Plunger/spring	- 0,9 ... 10	62	0,46	VR03 8602 02	24	VRX3 0640 22
	G1/8	Roller/spring	- 0,9 ... 10	54	0,25	VR03 8408 02	6	VRX3 0442 02
	1/8 PTF	Roller/spring	- 0,9 ... 10	54	0,25	VR03 8408 02	6	VRX3 0442 22
	G1/4	Roller/spring	- 0,9 ... 10	67	0,46	VR03 8602 02	25	VRX3 0642 02
	1/4 PTF	Roller/spring	- 0,9 ... 10	67	0,46	VR03 8602 02	25	VRX3 0642 22
	G1/8	Roller lever (heavy duty)/spring	- 0,9 ... 10	31	0,29	VR03 8408 02	7	VRX3 0393 02
	1/8 PTF	Roller lever (heavy duty)/spring	- 0,9 ... 10	31	0,29	VR03 8408 02	7	VRX3 0393 22

3/2, 5/2 and 5/3 manually and mechanically actuated spool valves
SUPER X
1/8" and 1/4"

3/2 manual valves

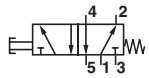
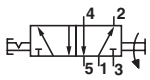
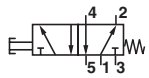
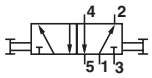
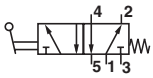
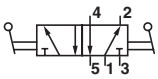
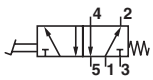
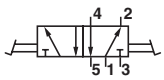
Symbol	Port size	Actuation	Colour	Operating pressure (bar)	Operating force (N)	Weight (kg)	Spares kit	Dimension No.	Model
	G1/8	Button/spring	Black	- 0,9 ... 10	31	0,15	VR03 8408 02	8	VR03 0404 02
	1/8 PTF	Button/spring	Black	- 0,9 ... 10	31	0,15	VR03 8408 02	8	VR03 0404 22
	G1/8	Button/spring	Green	- 0,9 ... 10	31	0,15	VR03 8408 02	8	VR03 0405 02
	1/8 PTF	Button/spring	Green	- 0,9 ... 10	31	0,15	VR03 8408 02	8	VR03 0405 22
	G1/8	Button/spring	Red	- 0,9 ... 10	31	0,15	VR03 8408 02	8	VR03 0406 02
	1/8 PTF	Button/spring	Red	- 0,9 ... 10	31	0,15	VR03 8408 02	8	VR03 0406 22
	G1/4	Button/spring	Black	- 0,9 ... 10	53	0,35	VR03 8602 02	26	VR03 0604 02
	1/4 PTF	Button/spring	Black	- 0,9 ... 10	53	0,35	VR03 8602 02	26	VR03 0604 22
	G1/8	Button (palm)/spring	Red	- 0,9 ... 10	31	0,29	VR03 8408 02	9	VR03 0366 02
	1/8 PTF	Button (palm)/spring	Red	- 0,9 ... 10	31	0,29	VR03 8408 02	9	VR03 0366 22
	G1/8	Button (palm)/spring	Green	- 0,9 ... 10	31	0,29	VR03 8408 02	9	VR03 0367 02
	1/8 PTF	Button (palm)/spring	Green	- 0,9 ... 10	31	0,29	VR03 8408 02	9	VR03 0367 22
	G1/8	Button (palm)/spring	Black	- 0,9 ... 10	31	0,29	VR03 8408 02	9	VR03 0368 02
	1/8 PTF	Button (palm)/spring	Black	- 0,9 ... 10	31	0,29	VR03 8408 02	9	VR03 0368 22
	G1/8	Emergency stop/twist reset	Red	- 0,9 ... 10	31	0,29	VR03 8408 02	9	VR03 0428 02
	1/8 PTF	Emergency stop/twist reset	Red	- 0,9 ... 10	31	0,29	VR03 8408 02	9	VR03 0428 22
	G1/8	Rotary knop/set reset	Black	- 0,9 ... 10	31	0,29	VR03 8408 02	10	VR03 0419 02
	1/8 PTF	Rotary knop/set reset	Black	- 0,9 ... 10	31	0,29	VR03 8408 02	10	VR03 0419 22
	G1/8	Button (shrouded)/spring	Black	- 0,9 ... 10	31	0,21	VR03 8408 02	11	VR03 0414 02
	1/8 PTF	Button (shrouded)/spring	Black	- 0,9 ... 10	31	0,21	VR03 8408 02	11	VR03 0414 22
	G1/8	Button (shrouded)/spring	Green	- 0,9 ... 10	31	0,21	VR03 8408 02	11	VR03 0415 02
	1/8 PTF	Button (shrouded)/spring	Green	- 0,9 ... 10	31	0,21	VR03 8408 02	11	VR03 0415 22
	G1/8	Button (shrouded)/spring	Red	- 0,9 ... 10	31	0,21	VR03 8408 02	11	VR03 0416 02
	1/8 PTF	Button (shrouded)/spring	Red	- 0,9 ... 10	31	0,21	VR03 8408 02	11	VR03 0416 02
	G1/8	Lever/spring	Black	- 0,9 ... 10	9	0,28	VR03 8408 02	12	VR03 0438 02
	1/8 PTF	Lever/spring	Black	- 0,9 ... 10	9	0,28	VR03 8408 02	12	VR03 0438 22
	G1/4	Lever/spring	Black	- 0,9 ... 10	15	0,48	VR03 8408 02	27	VR03 0638 02
	1/4 PTF	Lever/spring	Black	- 0,9 ... 10	15	0,48	VR03 8408 02	27	VR03 0638 22
	G1/8	Toggle/toggle	Black	- 0,9 ... 10	28	0,16	VR03 8408 02	13	VR03 0403 02
	1/8 PTF	Toggle/toggle	Black	- 0,9 ... 10	28	0,16	VR03 8408 02	13	VR03 0403 22
	G1/8	Lever/lever	Black	- 0,9 ... 10	9	0,29	VR03 8408 02	12	VR03 0437 02
	1/8 PTF	Lever/lever	Black	- 0,9 ... 10	9	0,29	VR03 8408 02	12	VR03 0437 22
	G1/4	Lever/lever	Black	- 0,9 ... 10	13	0,49	VR03 8602 02	27	VR03 0637 02
	1/4 PTF	Lever/lever	Black	- 0,9 ... 10	13	0,49	VR03 8602 02	27	VR03 0637 22
	G1/4	Knob/knob	Black	- 0,9 ... 10	13	0,37	VR03 8602 02	28	VR03 0625 02
	1/4 PTF	Knob/knob	Black	- 0,9 ... 10	13	0,37	VR03 8602 02	28	VR03 0625 22
	G1/4	Knob/knob or pilot *	Black	- 0,9 ... 10	13	0,41	VR03 8612 02	29	VR03 0627 02
	1/4 PTF	Knob/knob or pilot *	Black	- 0,9 ... 10	13	0,41	VR03 8612 02	29	VR03 0627 22
	G1/8	Pedal/spring	Black	- 0,9 ... 10	22	1,03	VR03 8408 02	14	VR03 0481 02
	1/8 PTF	Pedal/spring	Black	- 0,9 ... 10	22	1,03	VR03 8408 02	14	VR03 0481 22
	G1/4	Pedal/spring	Black	- 0,9 ... 10	22	1,23	VR03 8602 02	30	VR03 0681 02
	1/4 PTF	Pedal/spring	Black	- 0,9 ... 10	22	1,23	VR03 8602 02	30	VR03 0681 22
	G1/8	Pedal/pedal	Black	- 0,9 ... 10	22	1,07	VR03 8408 02	14	VR03 0483 02
	1/8 PTF	Pedal/pedal	Black	- 0,9 ... 10	22	1,07	VR03 8408 02	14	VR03 0483 22
	G1/4	Pedal/pedal	Black	- 0,9 ... 10	22	1,27	VR03 8602 02	30	VR03 0683 02
	1/4 PTF	Pedal/pedal	Black	- 0,9 ... 10	22	1,27	VR03 8602 02	30	VR03 0683 02

* Pilot pressure 2 ... 10 bar

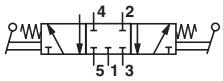
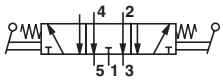
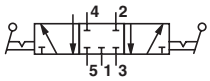
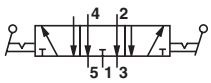
3/2, 5/2 and 5/3 manually and mechanically actuated spool valves
SUPER X

1/8" and 1/4"

5/2 manual valves

Symbol	Port size	Actuation	Colour	Operating pressure (bar)	Operating force (N)	Weight (kg)	Spares kit	Dimension No.	Model
	G1/8	Button/spring	Black	- 0,9 ... 10	54	0,26	VR03 8408 02	15	VRX3 0444 02
	1/8 PTF	Button/spring	Black	- 0,9 ... 10	54	0,26	VR03 8408 02	15	VRX3 0444 22
	G1/8	Button/spring	Green	- 0,9 ... 10	54	0,26	VR03 8408 02	15	VRX3 0445 02
	1/8 PTF	Button/spring	Green	- 0,9 ... 10	54	0,26	VR03 8408 02	15	VRX3 0445 22
	G1/8	Button/spring	Red	- 0,9 ... 10	54	0,26	VR03 8408 02	15	VRX3 0446 02
	1/8 PTF	Button/spring	Red	- 0,9 ... 10	54	0,26	VR03 8408 02	15	VRX3 0446 22
	G1/4	Button/spring	Black	- 0,9 ... 10	54	0,47	VR03 8408 02	31	VRX3 0644 02
	1/4 PTF	Button/spring	Black	- 0,9 ... 10	62	0,47	VR03 8408 02	31	VRX3 0644 22
	G1/8	Button (palm)/spring	Red	- 0,9 ... 10	62	0,40	VR03 8408 02	16	VRX3 0386 02
	1/8 PTF	Button (palm)/spring	Red	- 0,9 ... 10	31	0,40	VR03 8408 02	16	VRX3 0386 22
	G1/8	Button (palm)/spring	Green	- 0,9 ... 10	31	0,40	VR03 8408 02	16	VRX3 0387 02
	1/8 PTF	Button (palm)/spring	Green	- 0,9 ... 10	31	0,40	VR03 8408 02	16	VRX3 0387 22
	G1/8	Button (palm)/spring	Black	- 0,9 ... 10	31	0,40	VR03 8408 02	16	VRX3 0388 02
	1/8 PTF	Button (palm)/spring	Black	- 0,9 ... 10	31	0,40	VR03 8408 02	16	VRX3 0388 22
	G1/8	Emergency stop/twist reset	Red	- 0,9 ... 10	31	0,40	VR03 8408 02	16	VRX3 0468 02
	1/8 PTF	Emergency stop/twist reset	Red	- 0,9 ... 10	31	0,40	VR03 8408 02	16	VRX3 0468 22
	G1/8	Button (shrouded)/spring	Black	- 0,9 ... 10	54	0,32	VR03 8408 02	17	VRX3 0454 02
	1/8 PTF	Button (shrouded)/spring	Black	- 0,9 ... 10	54	0,32	VR03 8408 02	17	VRX3 0454 22
	G1/8	Button (shrouded)/spring	Green	- 0,9 ... 10	54	0,32	VR03 8408 02	17	VRX3 0455 02
	1/8 PTF	Button (shrouded)/spring	Green	- 0,9 ... 10	54	0,32	VR03 8408 02	17	VRX3 0455 22
	G1/8	Button (shrouded)/spring	Red	- 0,9 ... 10	54	0,32	VR03 8408 02	17	VRX3 0456 02
	1/8 PTF	Button (shrouded)/spring	Red	- 0,9 ... 10	54	0,32	VR03 8408 02	17	VRX3 0456 22
	G1/8	Knob, push/knob, pull	Black	- 0,9 ... 10	22	0,28	VR03 8408 02	18	VRX3 0465 02
	1/8 PTF	Knob, push/knob, pull	Black	- 0,9 ... 10	22	0,28	VR03 8408 02	18	VRX3 0465 22
	G1/4	Knob/knob	Black	- 0,9 ... 10	13	0,49	VR03 8408 02	32	VRX3 0665 02
	1/4 PTF	Knob/knob	Black	- 0,9 ... 10	13	0,49	VR03 8408 02	32	VRX3 0665 22
	G1/8	Lever/spring	Black	- 0,9 ... 10	16	0,40	VR03 8408 02	19	VRX3 0478 02
	1/8 PTF	Lever/spring	Black	- 0,9 ... 10	16	0,40	VR03 8408 02	19	VRX3 0478 22
	G1/4	Lever/spring	Black	- 0,9 ... 10	15	0,60	VR03 8602 02	33	VRX3 0678 02
	1/4 PTF	Lever/spring	Black	- 0,9 ... 10	15	0,60	VR03 8602 02	33	VRX3 0678 22
	G1/8	Toggle/toggle	Black	- 0,9 ... 10	48	0,27	VR03 8408 02	20	VRX3 0443 02
	1/8 PTF	Toggle/toggle	Black	- 0,9 ... 10	48	0,27	VR03 8408 02	20	VRX3 0443 22
	G1/8	Lever/lever	Black	- 0,9 ... 10	13	0,40	VR03 8408 02	19	VRX3 0477 02
	1/8 PTF	Lever/lever	Black	- 0,9 ... 10	13	0,40	VR03 8408 02	19	VRX3 0477 22
	G1/4	Lever/lever	Black	- 0,9 ... 10	13	0,61	VR03 8602 02	33	VRX3 0677 02
	1/4 PTF	Lever/lever	Black	- 0,9 ... 10	13	0,61	VR03 8602 02	33	VRX3 0677 02
	G1/8	Pedal/spring	Black	- 0,9 ... 10	22	1,12	VR03 8408 02	14	VRX3 0482 02
	1/8 PTF	Pedal/spring	Black	- 0,9 ... 10	22	1,12	VR03 8408 02	14	VRX3 0482 22
	G1/4	Pedal/spring	Black	- 0,9 ... 10	22	1,33	VR03 8602 02	35	VRX3 0682 02
	1/4 PTF	Pedal/spring	Black	- 0,9 ... 10	22	1,33	VR03 8602 02	35	VRX3 0682 22
	G1/8	Pedal/pedal	Black	- 0,9 ... 10	22	1,18	VR03 8408 02	14	VRX3 0484 02
	1/8 PTF	Pedal/pedal	Black	- 0,9 ... 10	22	1,18	VR03 8408 02	14	VRX3 0484 22
	G1/4	Pedal/pedal	Black	- 0,9 ... 10	22	1,39	VR03 8602 02	35	VRX3 0684 02
	1/4 PTF	Pedal/pedal	Black	- 0,9 ... 10	22	1,39	VR03 8602 02	35	VRX3 0684 22

5/3 manual valves

Symbol	Port size	Actuation	Colour	Function	Operating pressure (bar)	Operating force (N)	Weight (kg)	Spares kit	Dimension No.	Model
	G1/8	Lever/spring/lever	Black	APB	- 0,9 ... 10	15	0,85	VR03 8408 02	21	VRX3 3438 02
	1/8 PTF	Lever/spring/lever	Black	APB	- 0,9 ... 10	15	0,85	VR03 8408 02	21	VRX3 3438 22
	G1/4	Lever/spring/lever	Black	APB	- 0,9 ... 10	15	1,06	VR03 8602 02	34	VRX3 3638 02
	1/4 PTF	Lever/spring/lever	Black	APB	- 0,9 ... 10	15	1,06	VR03 8602 02	34	VRX3 3638 22
	G1/8	Lever/spring/lever	Black	COE	- 0,9 ... 10	15	0,85	VR03 8408 02	21	VRX3 3478 02
	1/8 PTF	Lever/spring/lever	Black	COE	- 0,9 ... 10	15	0,85	VR03 8408 02	21	VRX3 3478 22
	G1/4	Lever/spring/lever	Black	COE	- 0,9 ... 10	15	1,06	VR03 8602 02	34	VRX3 3678 02
	1/4 PTF	Lever/spring/lever	Black	COE	- 0,9 ... 10	15	1,06	VR03 8602 02	34	VRX3 3678 22
	G1/8	Lever/lever/lever	Black	APB	- 0,9 ... 10	12	0,44	VR03 8408 02	21	VRX3 3437 02
	1/8 PTF	Lever/lever/lever	Black	APB	- 0,9 ... 10	12	0,44	VR03 8408 02	21	VRX3 3437 22
	G1/4	Lever/lever/lever	Black	APB	- 0,9 ... 10	12	0,65	VR03 8602 02	34	VRX3 3637 02
	1/4 PTF	Lever/lever/lever	Black	APB	- 0,9 ... 10	12	0,65	VR03 8602 02	34	VRX3 3637 22
	G1/8	Lever/lever/lever	Black	COE	- 0,9 ... 10	12	0,44	VR03 8408 02	21	VRX3 3477 02
	1/8 PTF	Lever/lever/lever	Black	COE	- 0,9 ... 10	12	0,44	VR03 8408 02	21	VRX3 3477 22
	G1/4	Lever/lever/lever	Black	COE	- 0,9 ... 10	12	0,65	VR03 8602 02	34	VRX3 3677 02
	1/4 PTF	Lever/lever/lever	Black	COE	- 0,9 ... 10	12	0,65	VR03 8602 02	34	VRX3 3677 22

3/2, 5/2 and 5/3 manually and mechanically actuated spool valves
SUPER X

1/8" and 1/4"

Option selector

VR★★★★★★★★2

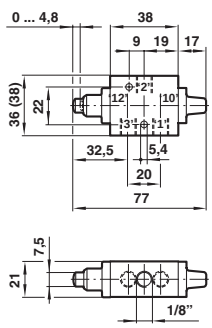
Function	Substitute
3/2	030
5/2	X30
5/3	X33
Air port	**Substitute**
1/8"	4
1/4"	6
3/2 Mechanical actuated valves	**Substitute**
Plunger/spring	00
Roller/spring	02
Roller lever (heavy duty)/spring	93
3/2 Manual actuated valves	**Substitute**
Button/spring (Black)	04
Button/spring (Green)	06
Button/spring (Red)	05
Emergency stop/twist reset (Red)	82
Rotary knob/set reset (Black)	19
Button (shrouded)/spring (Black)	14
Button (shrouded)/spring (Green)	15
Button (shrouded)/spring (Red)	16
Lever/spring	38
Toggle/toggle	03
Lever/lever	37
Knob/knob	25
Knob/knob or pilot	27
Pedal/spring	81
Pedal/pedal	83

Thread	Substitute
ISO G	0
PTF-SAE SHORT	2
5/2 Mechanical actuated valves	**Substitute**
Plunger/spring	40
Roller lever (heavy duty)/spring	93
5/2 and 5/3 Manual actuated valves	**Substitute**
Lever/lever/lever, APB	37
Lever/spring lever, APB	38
Toggle/toggle	43
Button / spring (Black)	44
Button / spring (Green)	45
Button / spring (Red)	46
Button (shrouded) / spring (Black)	54
Button (shrouded) / spring (Green)	55
Button (shrouded) / spring (Red)	56
Knob, push / knob, pull or pilot (Black)	65
Emergency stop / twist reset (Red)	68
Lever/lever	77
Lever/lever/lever, COE	77
Lever/spring	78
Lever/spring/lever, COE	78
Pedal/spring	82
Pedal/pedal	84
Button (palm) / spring (Red)	86
Button (palm) / spring (Green)	87
Button (palm) / spring (Black)	88

Dimensions

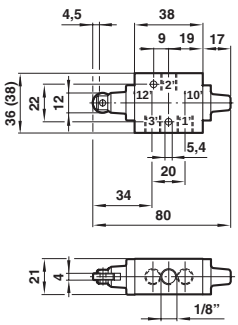
Dimensions shown in mm
Projection/First angle

1



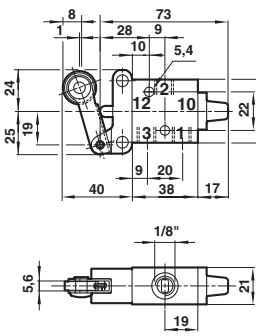
The plunger on this valve is designed for axial loading only.

2



Recommended cam rise:
max. 4,5 mm
Cam angle of approach: 30° max.
Cam speed: max. 8 m/min
Operating speed: 300 cpm

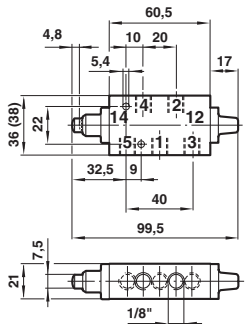
4



Over-travel: 1 mm
Cam angle of approach:
45° maximum
Cam speed: 8 m/min. maximum
Operating speed: 300 cpm

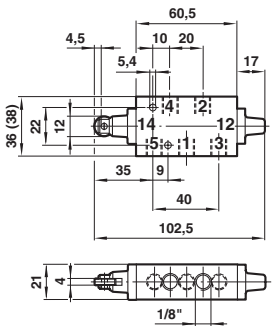
( ) Values for inch port size

5



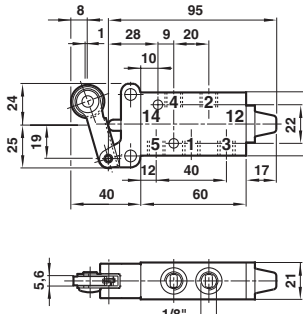
Full movement: 4,8 mm
The plunger on this valve is designed for axial loading only.

6



Maximum recommended can rise: 4,5 mm
Cam angle of approach: 30° maximum
Cam speed: 8 m/min. maximum
Operating speed: 300 cpm

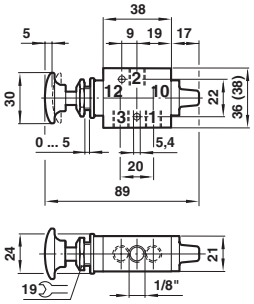
7



Over-travel: 1 mm
Cam angle of approach: 45° maximum
Cam speed: 8 m/min. maximum
Operating speed: 300 cpm

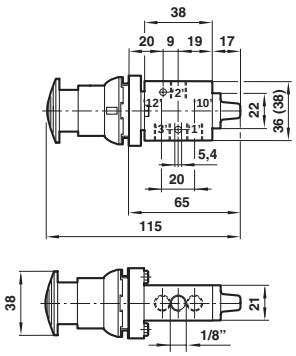
8

Dimensions shown in mm
Projection/First angle



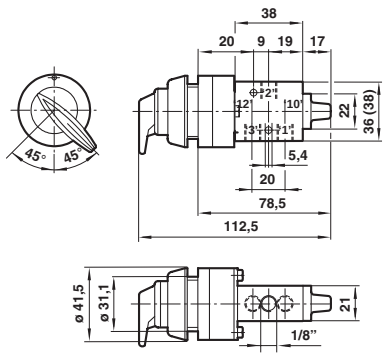
These valves are suitable for panel mounting by means of an optional nut and washer, reference 03 0430 00;
Panel hole: Ø 15 mm;
Panel thickness: 5 mm maximum.

9



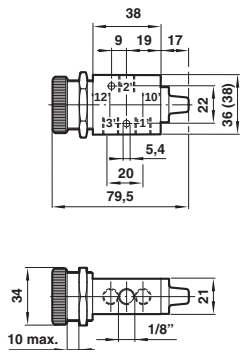
These valves are suitable for panel mounting.
Panel hole: Ø 32,1 mm; panel thickness: 6 mm maximum

10



These valves are suitable for panel mounting.
Panel hole: Ø 32,1 mm; panel thickness: 6 mm maximum

11



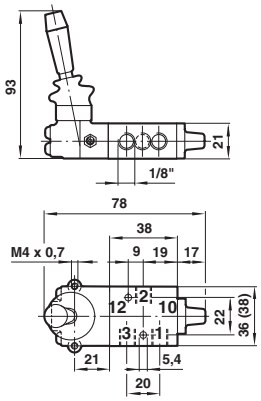
These valves are suitable for panel mounting.
Panel hole: Ø 31 mm
Panel thickness: 10 mm maximum.

( ) Values for inch port size

3/2, 5/2 and 5/3 manually and mechanically actuated spool valves
SUPER X
1/8" and 1/4"

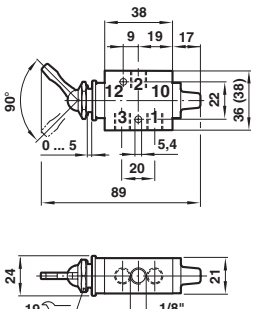
Dimensions shown in mm
Projection/First angle

12



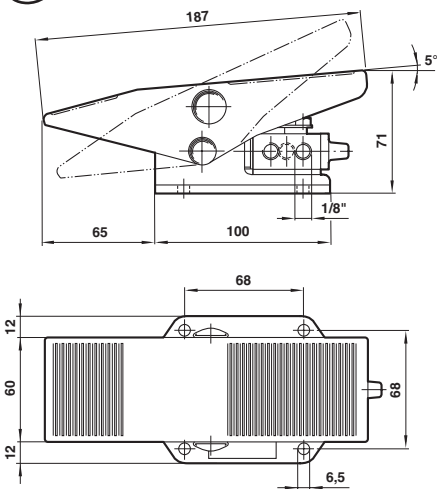
Model VR03 0437 02 features a positive detent in each position and is suitable for panel mounting by means of a bezel kit, reference 03 3437 64.
Panel hole: Ø 24 mm
Panel thickness: 8 mm maximum.

13



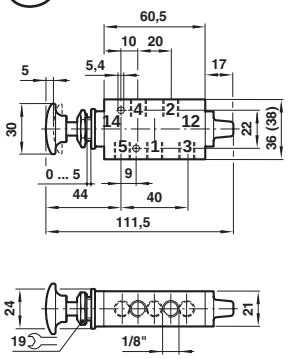
This valve is suitable for panel mounting.
Panel hole: Ø 15 mm;
Panel thickness: 5 mm maximum.

14



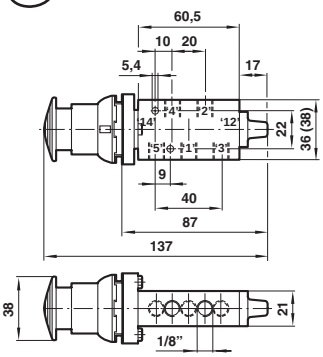
A foot guard is available for this valve, reference 03 0480 60.

15



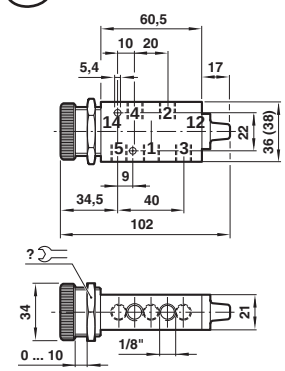
These valves are suitable for panel mounting by means of an optional nut and washer, reference 03 0430 00;
Panel hole: Ø 15 mm;
Panel thickness: 5 mm maximum.

16



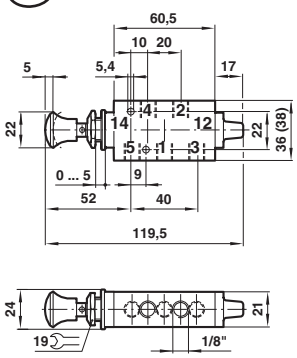
These valves are suitable for panel mounting.
Panel hole: Ø 32,1 mm; panel thickness: 6 mm maximum

17



These valves are suitable for panel mounting.
Panel hole: Ø 31 mm
Panel thickness: 10 mm maximum.

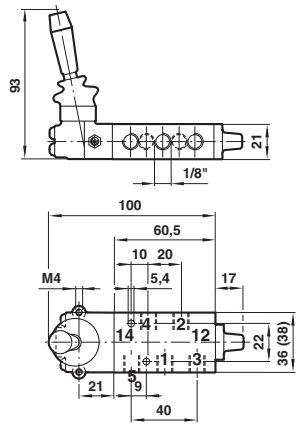
18



This valve is suitable for panel mounting by means of an optional nut and washer, reference 03 0430 00.
Panel hole: Ø 15 mm
Panel thickness: 5 mm maximum.

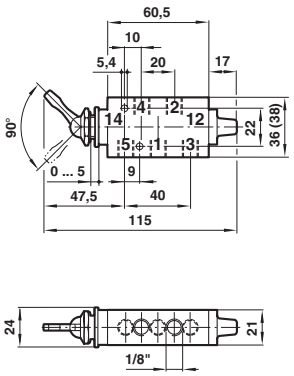
( ) Values for inch port size

19



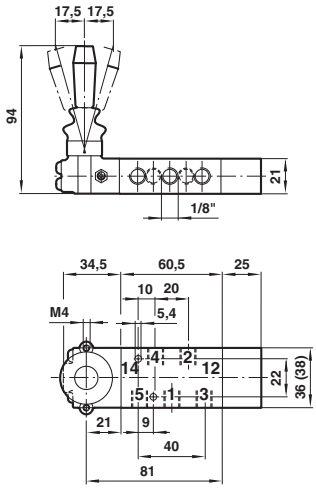
Both models are suitable for panel mounting by means of a bezel kit, reference 03 3437 64.
Panel hole: Ø 24 mm;
Panel thickness: 8 mm maximum.

20



This valve is suitable for panel mounting.
Panel hole: Ø 15 mm;
Panel thickness: 5 mm maximum.

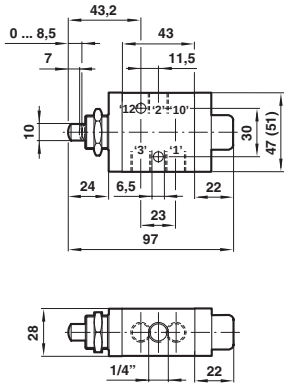
21



Panel hole: Ø 24 mm;
Panel thickness: 8 mm maximum.

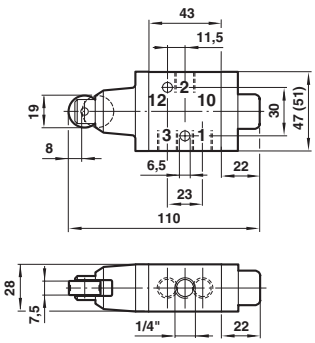
22

Dimensions shown in mm
Projection/First angle



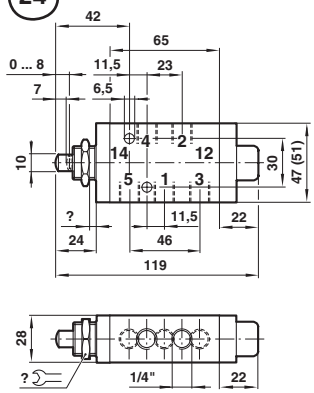
The plunger on this valve is designed for axial loading only.

23



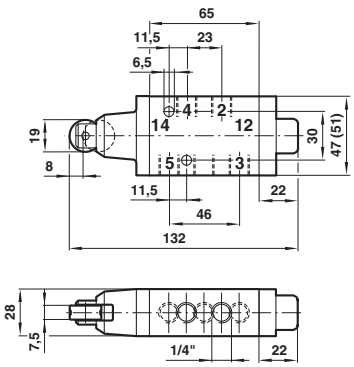
Cam angle of approach:
45° maximum
Cam speed: 6 m/min. maximum
Operating speed: 200 cpm

24



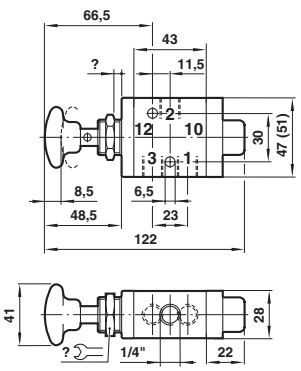
The plunger on this valve is designed for axial loading only.

25



Cam angle of approach:
45° maximum
Cam speed: 6 m/min. maximum
Operating speed: 200 cpm

26



This valve is suitable for panel mounting and includes a nut and washer.
Panel hole: Ø 21 mm;
Panel thickness: 8 mm maximum.

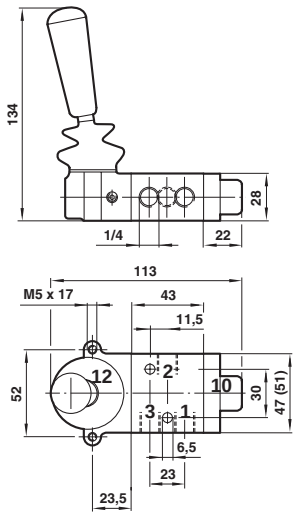
( ) Values for inch port size

3/2, 5/2 and 5/3 manually and mechanically actuated spool valves
SUPER X

1/8" and 1/4"

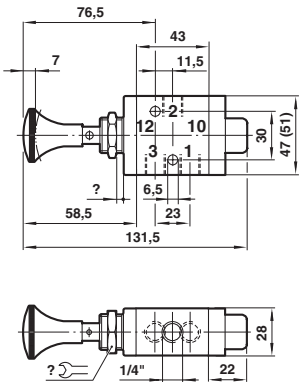
Dimensions shown in mm
Projection/First angle

27



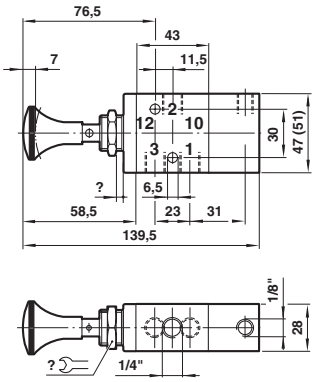
Model VR03063702 features a positive detent in each position.
Panel hole: Ø 31 mm;
Panel thickness: 8 mm maximum.

28



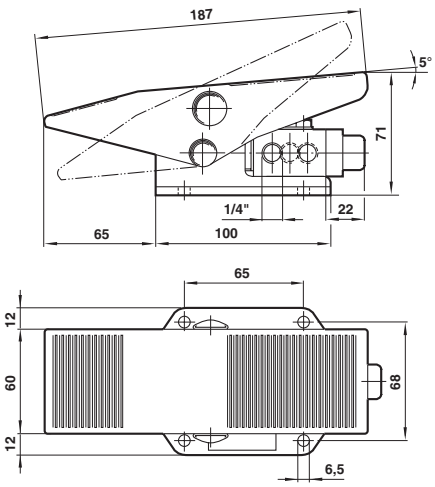
This valve is suitable for panel mounting and includes a nut and washer.
Panel hole: Ø 21 mm; Panel thickness: 8 mm maximum

29



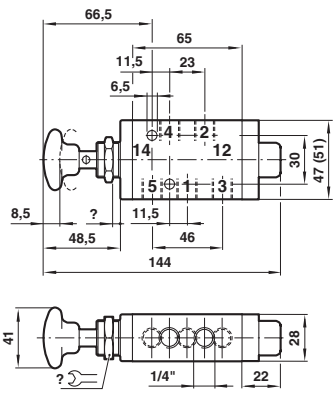
Reset pressure: 4 bar minimum
This valve is suitable for panel mounting and includes a nut and washer.
Panel hole: Ø 21 mm; Panel thickness: 8 mm maximum

30



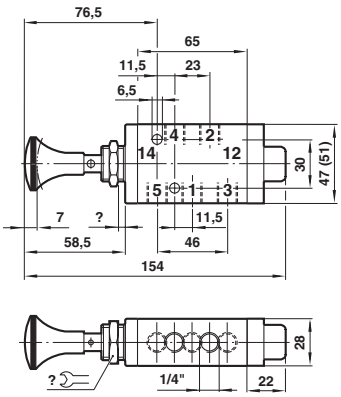
A foot guard is available for this valve, reference 03 0480 60.

31



This valve is suitable for panel mounting and includes a nut and washer.
Panel hole: Ø 21 mm; Panel thickness: 8 mm maximum

32



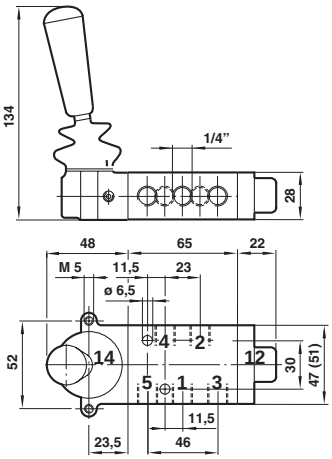
This valve is suitable for panel mounting and includes a nut and washer.
Panel hole: Ø 21 mm; Panel thickness: 8 mm maximum

( ) Values for inch port size

3/2, 5/2 and 5/3 manually and mechanically actuated spool valves
SUPER X
1/8" and 1/4"

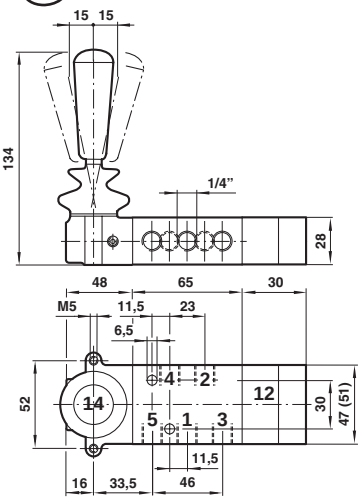
Dimensions shown in mm
Projection/First angle

33



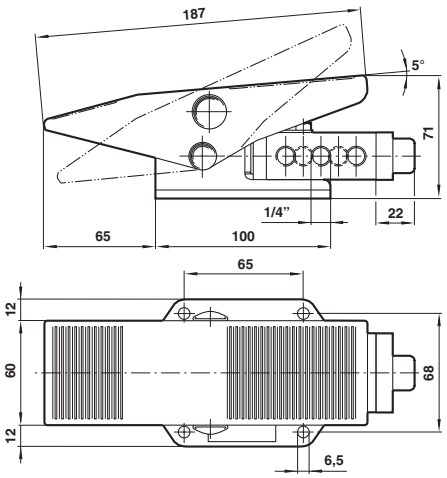
Model VRX3 0677 02 features a positive detent in each position.
Panel hole: Ø 31 mm;
Panel thickness: 8 mm maximum.

34



Panel hole: Ø 31 mm
Panel thickness: 8 mm maximum.

35



A foot guard is available for this valve, reference 03 0480 60.

( ) Values for inch port size

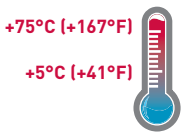
3/2 Heavy duty poppet valves
SLV/15293

G1/4

Robust corrosion resistant construction

Dustproof

Position of levers may be adjusted



Technical features

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

Operation:
Poppet valve, directly actuated

Mounting:
Through-holes in valve body

Port size:
G1/4

Operating pressure:
NC 0,7 ... 7 bar (10 ... 101 psi)
NO 0,7 ... 10 bar (10 ... 145 psi)

Flow characteristics

'1' – '2':

Cv	Kv	L/min
1,28	1,11	1258

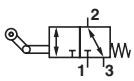
'2' – '3':

Cv	Kv	L/min
0,86	0,74	844

Operating temperature:
+5 ... 75°C (41 ... 167°F).

Materials
Body and poppet: brass
Lever: diecast aluminium alloy
Screws and roller: stainless steel
Seals: nitrile rubber

Technical data

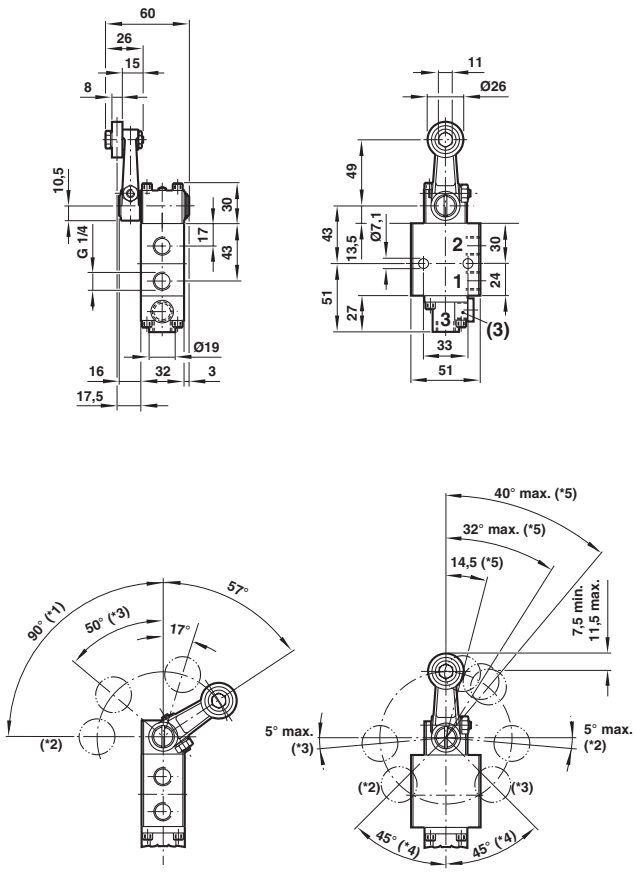
Symbol	Type	Operator	Return	Operating pressure (bar)	Weight (kg)	Model
	Normally closed	Roller	Spring	NC 0,7 ... 7 NO 0,7 ... 10	0,99	SLV/15293

3/2 Heavy duty poppet valves
SLV/15293
G1/4

Dimensions

Dimensions shown in mm
Projection/First angle

Roller actuated, spring return



Operating force: 1,5 Nm at 0,7 bar
Pre-travel: 14° maximum, exhaust seat closes
Operating travel: 32°/7,5 mm minimum,
including pre-travel
Total movement of valve including over-travel:
40°/11,5 mm maximum

*Notes
1. Operating lever must not be set to exceed this position at any time during operation.
2. Maximum rest position of operating lever for valve operating clockwise.
3. Maximum rest position of operating lever for valve operating anti-clockwise.
4. Operating lever must not enter this arc at any time during operation.
5. Valve may be operated either clockwise or anti-clockwise.
6. Operating lever may be positioned at any angle on the operating spindle providing the conditions of operation in notes 1 - 5 are maintained.

Operating mechanism may be rotated through 360° at 90° intervals.

2/2 way direct solenoid operated poppet valves VR95

G1/4 or 1/4 NPT

Working from 0 bar up

Short switching times

Suited for fine vacuum down to 1,33•10-3 mbar•l/s

Suited for outdoor use under critical environment conditions (see solenoid list)

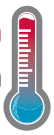
Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B

EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

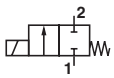
Medium:
For neutral gaseous and liquid fluids (with contaminated fluids, upstream installation of a dirt trap is recommended.)
Operation:
Solenoid direct operated poppet valve

Mounting position:
Optional, preferably with solenoid on top
Flow:
350 l/min.
Orifice:
4 mm
Port size:
G1/4, 1/4 NPT

Operating pressure:
0 ... 10 bar (0 ... 145 psi)
Operating temperature:
-40 ... +80°C (-40 ... +176°F), depending on solenoid system. Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
Housing: brass or stainless steel
Seals: EPDM
other see option selector
Inner parts: steel 1.4104/430F, brass

Technical data – basic valve without solenoid operator

Symbol	Port size	Operating pressure bar	Material Seat seal	Housing	Temperature *2) (°C)	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	G1/4	0 ... 10	EPDM	brass	-40 ... +80	0,21	1	0700 or 5220	VR95B1614-01xxP
	1/4 NPT	0 ... 10	EPDM	brass	-40 ... +80	0,21	1	0700 or 5220	VR95R1614-01xxP
	G1/4	0 ... 10	EPDM	stainless steel	-40 ... +80	0,34	2	0800 or 5270	VR95B1714-01xxP
	1/4 NPT	0 ... 10	EPDM	stainless steel	-40 ... +80	0,34	2	0800 or 5270	VR95R1714-01xxP

*1) xx = Insert solenoid code at 13th digit and voltage code at 14th digit, see below
*2) Depending on solenoid system, see page 2-45

Option selector

VR95★1★14-01★★P

Port size	Substitute
G1/4	B
1/4 NPT	R
Housing material	**Substitute**
Brass	6
Stainless steel (optional)	7

Voltage	Substitute
24 V d.c.	3
36 V d.c.	4
72 V d.c.	A
110 V d.c.	7
Solenoids	**Substitute**
5220	1
5270	2
0700	3
0800	4

2/2 way direct solenoid operated poppet valves VR95

G1/4 or 1/4 NPT

Solenoid operators

	Power consumption 24 V d.c. (W)	Rated current 24 V d.c. (m A)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model	Part number code
	16,9	703	-25 ... +40 -25 ... +60	+20 / -30 +10 / -30	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0700	3
	16,9	703	-25 ... +40 -25 ... +60	+20 / -30 +10 / -30	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	4
	8,9	369	-40 ... +60 -40 ... +80	±30 +30 / -20	IP 65	M20 x 1,5 *6)	0,500	6	4	5220 *8)	1
	8,9	369	-40 ... +60 -40 ... +80	±30 +30 / -20	IP 65	M20 x 1,5 *6)	0,500	6	4	5270 *8)	2

*5) Required connector: type 0570275
*6) Connector cable gland not supplied, see table »Accessories«
*7) IP-Protection class according to EN60529
*8) Suitable for outdoor installation

Accessories

Cable gland

Page 2-46

Thread	Cable Ø	Material	Model
M 20x1,5	5,0...8,0 mm	Nickel plated brass	0588819
M 20x1,5	9,0...13 mm	Stainless steel 1.4571	0589385

Connector

0570275

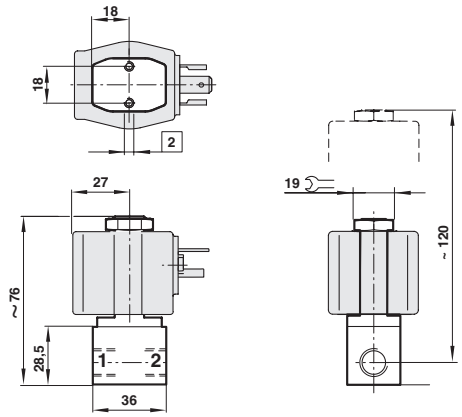
2/2 way direct solenoid operated poppet valves
VR95
G1/4 or 1/4 NPT

Dimensions

Dimensions shown in mm
Projection/First angle

Valves

1



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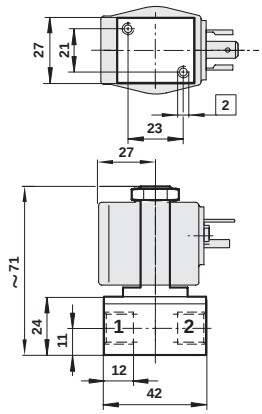
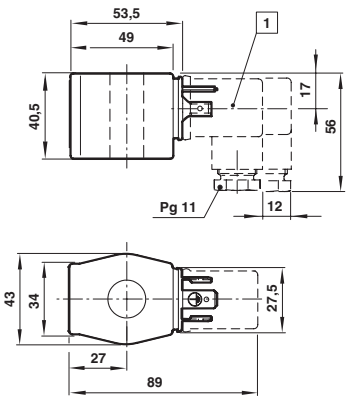


2 M4 x 6 mm deep

Solenoids

3



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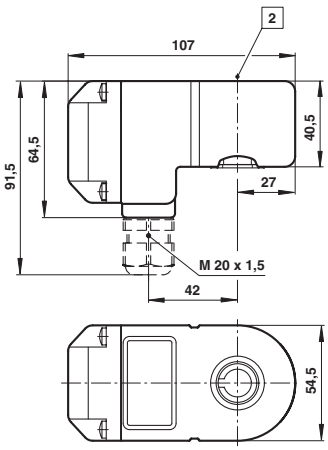
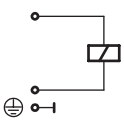


1 Connector can be indexed by 4x90°

2 Ø 16 or 13 (with spacer tube)

Circuit diagrams

1



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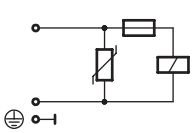
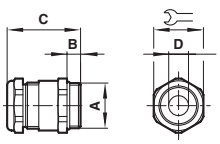


Cable gland



A	B	C		Model
M20 x 1,5	9	36	22	0588819
M20 x 1,5	6,5	27,5	22	0589385

3/2 way direct solenoid operated poppet valves VR96

G1/4 or 1/4 NPT

Working from 0 bar up

Short switching times

Suited for fine vacuum down to 1,33·10-3 mbar

Suited for outdoor use under critical environment conditions (see solenoid list)

Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B

EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

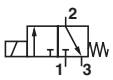
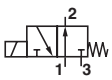
Medium:
For neutral gaseous and liquid fluids (with contaminated fluids, upstream installation of a dirt trap is recommended)
Operation:
Solenoid direct operated poppet valve

Mounting position:
Optional, preferably with solenoid on top
Orifice:
3 & 4 mm
Port size:
G1/4, 1/4 NPT and G1/8 for Stainless steel only

Operating pressure:
0 ... 10 bar
Operating temperature:
-40 ... +80°C (-40 ... 176°F), depending on solenoid system. Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
Housing: brass or stainless steel
Seals: EPDM
Inner parts: steel 1.4104/ 430 F brass

Technical data – basic valve without solenoid operator

Symbol	Port size	Orifice (mm)	Flow (l/min)	Operating pressure (bar)	Material Seat seal	Housing	Temperature *2) (°C)	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	G1/4	3	200	0 ... 10	EPDM	brass	-40 ... +80	0,32	1	0700 or 5220	VR96B4613-01xxP
	1/4 NPT	3	200	0 ... 10	EPDM	brass	-40 ... +80	0,32	1	0700 or 5220	VR96R4613-01xxP
	G1/8	3	200	0 ... 10	EPDM	stainless steel	-40 ... +80	0,52	3	0700 or 5220	VR96A4713-01xxP
	G1/4	4	350	0 ... 10	EPDM	brass	-40 ... +80	0,32	1	0800 or 5270	VR96B4614-01xxP
	1/4 NPT	4	350	0 ... 10	EPDM	brass	-40 ... +80	0,32	1	0800 or 5270	VR96R4614-01xxP
	G1/4	3	200	0 ... 10	EPDM	brass	-40 ... +80	0,50	2	0700 or 5220	VR96B3613-01xxP
	1/4 NPT	3	200	0 ... 10	EPDM	brass	-40 ... +80	0,50	2	0700 or 5220	VR96R3613-01xxP
	G1/4	4	350	0 ... 10	EPDM	brass	-40 ... +80	0,50	2	0800 or 5270	VR96B3614-01xxP
	1/4 NPT	4	350	0 ... 10	EPDM	brass	-40 ... +80	0,50	2	0800 or 5270	VR96R3614-01xxP

*1) xx = Insert solenoid code at 13th digit and voltage code at 14th digit, see below
*2) Depending on solenoid system, see page 2-48

Option selector

VR96★★★1★-01★★P

Port size	Substitute
G1/4	B
1/4 NPT	R
Function	**Substitute**
NO (brass only)	3
NC	4
Housing material	**Substitute**
Brass	6
Stainless steel (optional)	7
Orifice (mm)	**Substitute**
3	3
4 (brass only)	4

Voltage	Substitute
24 V d.c.	3
36 V d.c.	4
72 V d.c.	A
110 V d.c.	7
Solenoids	**Substitute**
5220	1
5270	2
0700	3
0800	4

3/2 way direct solenoid operated poppet valves
VR96
G1/4 or 1/4 NPT

Solenoid operators

	Power consumption 24 V d.c. (W)	Rated current 24 V d.c. (m A)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model	Part number code
	16,9	703	-25 ... +40 -25 ... +60	+20 / -30 +10 / -30	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0700	**3**
	16,9	703	-25 ... +40 -25 ... +60	+20 / -30 +10 / -30	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	**4**
	8,9	369	-40 ... +60 -40 ... +80	±30 +30 / -20	IP 65	M20 x 1,5 *6)	0,500	6	4	5220 *8)	**1**
	8,9	369	-40 ... +60 -40 ... +80	±30 +30 / -20	IP 65	M20 x 1,5 *6)	0,500	6	4	5270 *8)	**2**

*5) Required connector: type 0570275
*6) Connector cable gland not supplied, see table »Accessories«
*7) IP-Protection class according to EN60529
*8) Suitable for outdoor installation

Accessories

Cable gland

Page 2-49

Thread	Cable Ø	Material	Model
M 20x1,5	5,0...8,0 mm	Nickel plated brass	0588819
M 20x1,5	9,0...13 mm	Stainless steel 1.4571	0589385

Connector

0570275

3/2 way direct solenoid operated poppet valves VR96

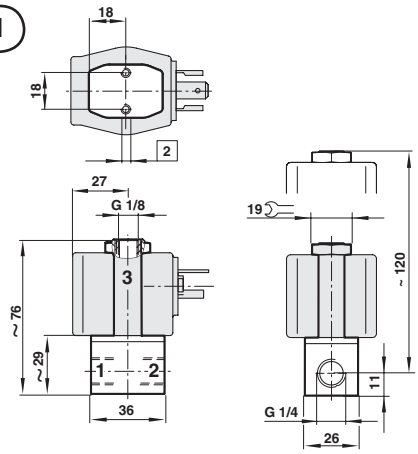
G1/4 or 1/4 NPT

Dimensions

Dimensions shown in mm
Projection/First angle

Valves

1



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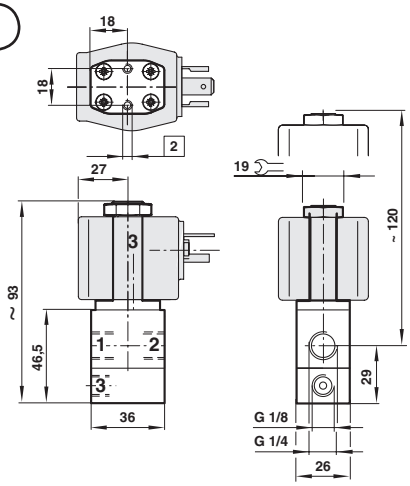

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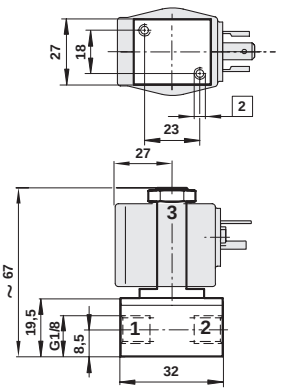
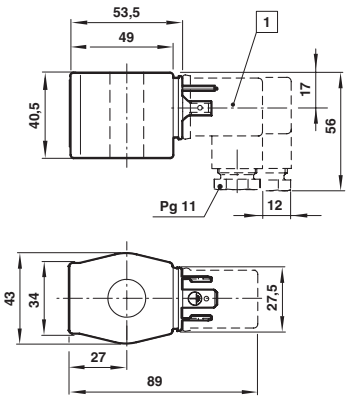


2 M4 x 6 mm deep

Solenoids

3



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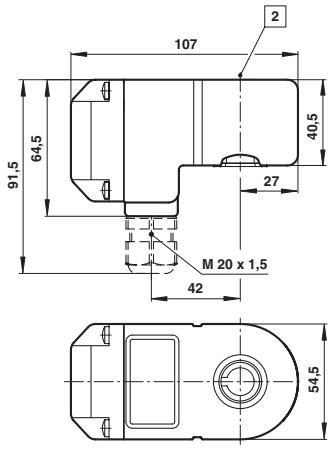
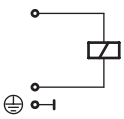


1 Connector can be indexed by 4x90°
2 Ø 16 or 13 (with spacer tube)

Circuit diagrams

1



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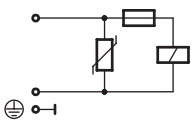
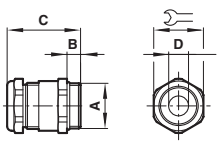


Cable gland



A	B	C		Model
M20 x 1,5	9	36	22	0588819
M20 x 1,5	6,5	27,5	22	0589385

3/2 way direct solenoid operated poppet valves VR24

G1/4, 1/4 NPT or flanged with NAMUR interface

TÜV-approval based on IEC 61 508

Valves for safety systems up to SIL 4

Standard NAMUR type
- redundancy: 1 of 2, 2 of 3 for P in flange interface only
- add-on manual override or inductive limit switches

Valve switches at power failure into starting position (mechanical spring return)

Suited for outdoor use under critical environment conditions (see solenoid list)

Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B

EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air, filtered, non-lubricated and dry
Other gase and liquid fluids on request
Operation:
Direct solenoid operated poppet valves
Flow direction:
Optional
Mounting position:
Any, but preferably with solenoid vertical

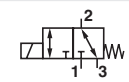
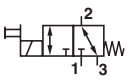
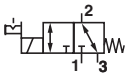
Flow:
Gaseous fluids: 340 l/min
Liquid fluids: Kv 0,34
Port size:
G1/4, 1/4 NPT or flanged with NAMUR Interface
Orifice:
5 mm
Operating pressure:
0 ... 10 bar (0 ... 145 psi)

Temperature valve:
-40 ... +80°C (-40 ... +176°F), depending on solenoid system. Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
Temperature solenoid:
See table

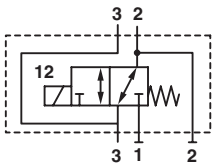
Materials:
Housing: brass (standard), hard anodized aluminium (NAMUR)
Seal: EPDM
Inner parts: stainless steel, brass

Technical data – basic valve without solenoid operator

With threaded connection, brass valves

Symbol	Port size	Operating pressure (bar)	Material Seat seal	Temperature*2) (°C)	Manual override	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	G1/4	0 ... 10	EPDM	-40 ... +80		0,65	1	0800 or 5270	VR24B9615-01xxP
	1/4 NPT	0 ... 10	EPDM	-40 ... +80		0,65	1	0800 or 5270	VR24R9615-01xxP
	G1/4	0 ... 10	EPDM	-40 ... +80	push only	0,70	1	0800 or 5270	VR24B9615-03xxP
	1/4 NPT	0 ... 10	EPDM	-40 ... +80	push only	0,70	1	0800 or 5270	VR24R9615-03xxP
	G1/4	0 ... 10	EPDM	-40 ... +80	turn and lock	0,70	1	0800 or 5270	VR24B9615-02xxP
	1/4 NPT	0 ... 10	EPDM	-40 ... +80	turn and lock	0,70	1	0800 or 5270	VR24R9615-02xxP

Namur version, hard anodized aluminium valves

Symbol	Port size	Operating pressure (bar)	Material Seat seal	Temperature *2) (°C)	Manual override	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	G1/4	0 ... 10	EPDM	-40 ... +80	add on	0,65	1	0800 or 5270	VR24U9515-01xxP
	1/4 NPT	0 ... 10	EPDM	-40 ... +80	add on	0,65	1	0800 or 5270	VR24W9515-01xxP

*1) xx = Insert solenoid code at 13th digit and voltage code at 14th digit, see page 2-51
*2) Depending on solenoid system, see page 2-51

3/2 way direct solenoid operated poppet valves VR24

G1/4, 1/4 NPT or flanged with NAMUR interface

Option selector

VR24★9★15-0★★★P

Port size	Substitute
G1/4	B
1/4 NPT	R
G1/4 Namur	U
1/4 NPT Namur	W
Housing material	**Substitute**
Aluminium anodized	5
Brass	6
Stainless steel (optional)	7

Voltage	Substitute
24 V d.c.	3
36 V d.c.	4
72 V d.c.	A
110 V d.c.	7
Solenoids	**Substitute**
5270	2
0800	4
Manual override	**Substitute**
None	1
Push and turn	2
Push only	3

Solenoid operators

	Power consumption 24 V d.c. (W)	Rated current 24 V d.c. (mA)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model	Part number code
	16,9	703	-25 ... +40 -25 ... +60	+20 / -30 +10 / -30	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	4
	8,9	369	-40 ... +60 -40 ... +80	±30 +30 / -20	IP 65	M20 x 1,5 *6)	0,500	6	4	5270 *8)	2

*5) Required connector: type 0570275
*6) Connector cable gland not supplied, see table »Accessories«
*7) IP-Protection class according to EN60529
*8) Suitable for outdoor installation

Accessories

Cable gland

Page 2-54

Thread	Cable Ø	Material	Model
M 20x1,5	5,0...8,0 mm	Nickel plated brass	0588819
M 20x1,5	9,0...13 mm	Stainless steel 1.4571	0589385

Connector	Silencer *1)	Exhaust guard *2)	Flange plate	Yoke
				
	Page 2-54	Page 2-54	Page 2-54	Page 2-54
0570275	C/S2 1/4 NPT	0613422 (G1/4, 1/4 NPT)	0612790 (NAMUR single connection plate)	0540593
	M/S2 G1/4		0612791 (NAMUR-rip use in combination with 0612790, Alu)	

*1) For indoor use
*2) For outdoor use

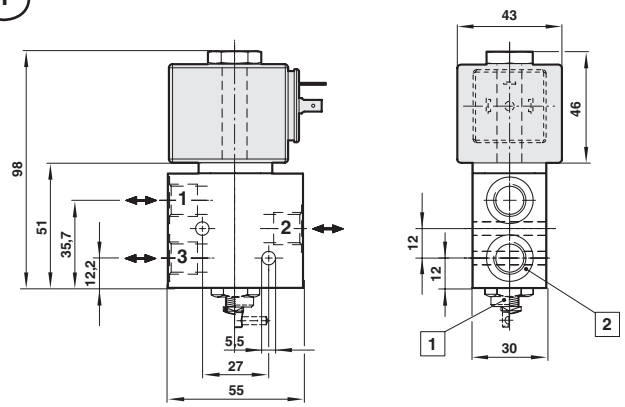
3/2 way direct solenoid operated poppet valves
VR24
G1/4, 1/4 NPT or flanged with NAMUR interface

Dimensions

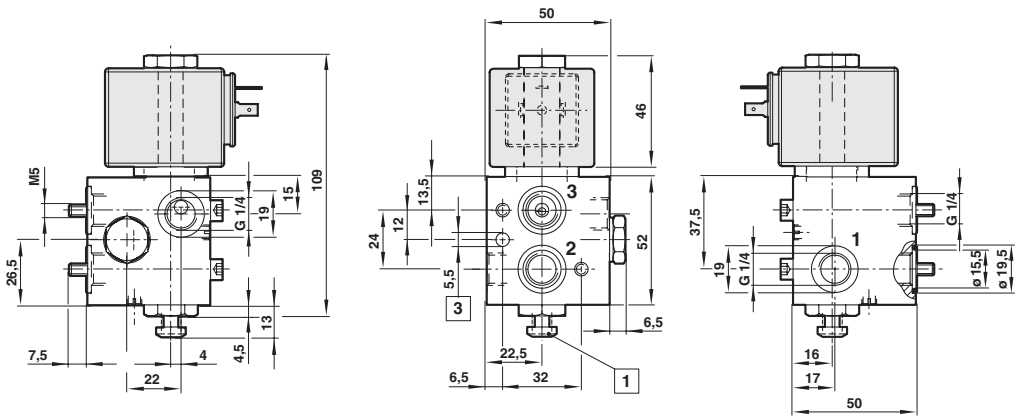
Dimensions shown in mm
Projection/First angle

Valves

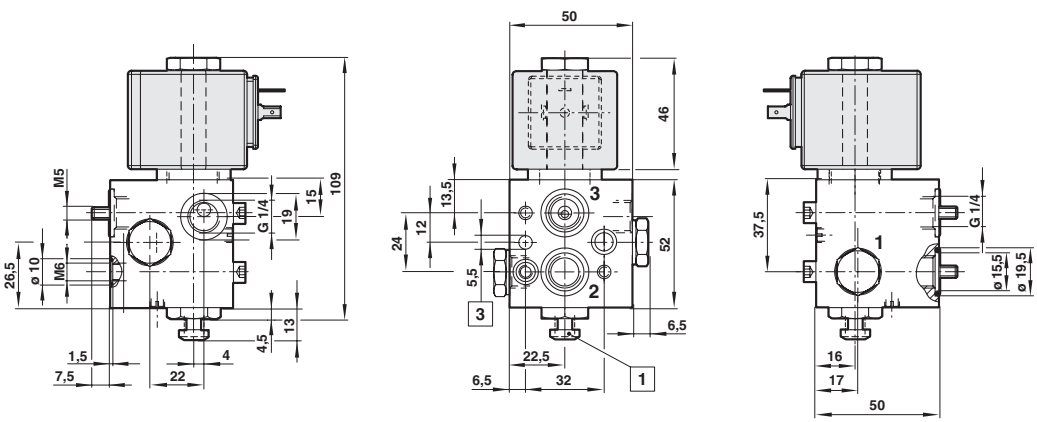
1



2



3



1 Add-on manual override see page 2-53

2 Port size G1/4 or 1/4 NPT

3 3 mm deep

3/2 way direct solenoid operated poppet valves VR24

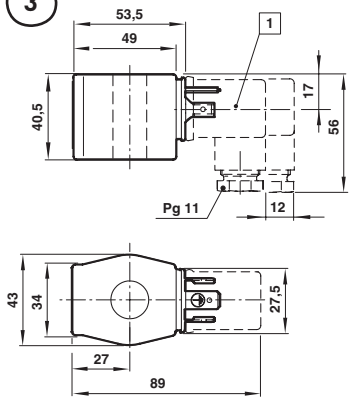
G1/4, 1/4 NPT or flanged with NAMUR interface

Dimensions

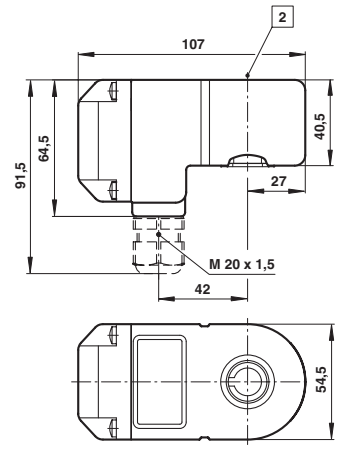
Dimensions shown in mm
Projection/First angle

Solenoids

3



6

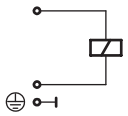


1 Connector can be indexed by 4x90°

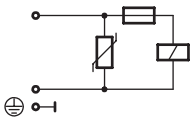
2 Ø 16 or 13 (with spacer tube)

Circuit diagrams

1

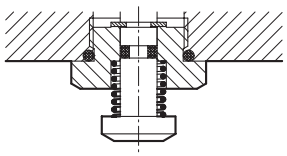


4

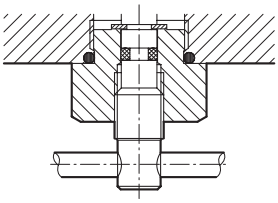


Add-on manual override

Without detent
Model: 0600205

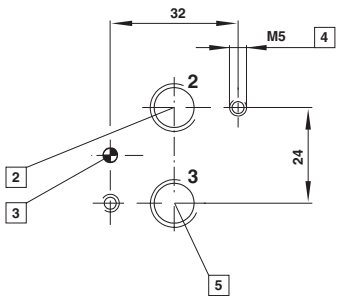


With detent
Model: 0601765



Please note: add-on manual override for NAMUR valves provided only for commissioning and tests

NAMUR hole pattern



2 Port 2 (A)
3 Coding stud threaded
4 M5 (10 deep)
5 Port 3 (R)

NAMUR quick exhaust module for a better kv-value by exhaust see data sheet 7502144

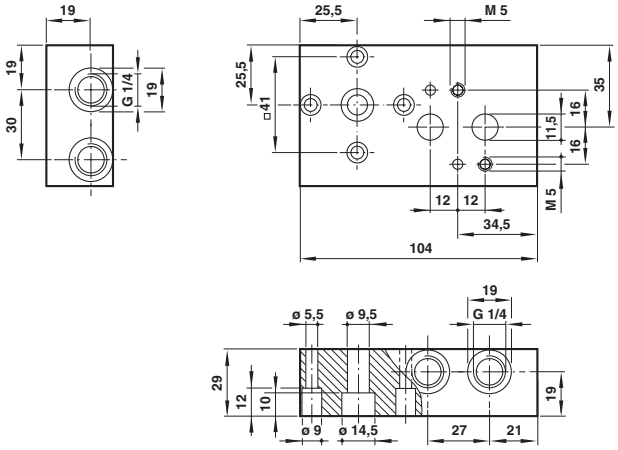
NAMUR interlinking plates in redundancy design for »safety exhausting« and »safety ventilating« see data sheet 5.15.300 (7503386)

3/2 way direct solenoid operated poppet valves VR24

G1/4, 1/4 NPT or flanged with NAMUR interface

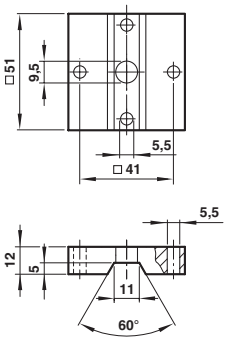
Single connection plate

Type: 0612790



NAMUR slot

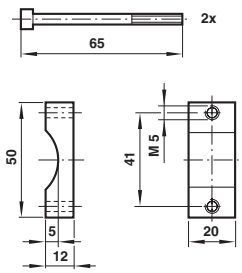
Type: 0612791



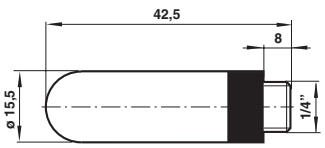
Dimensions shown in mm
Projection/First angle

Yoke

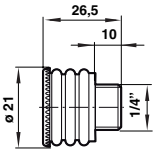
Type: 0540593



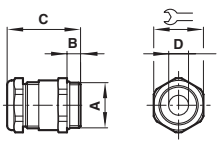
Silencer
Model: M/S2, C/S2



Exhaust guard
Model: 0613422



Cable gland



A	B	C		Model
M20 x 1,5	9	36	22	0588819
M20 x 1,5	6,5	27,5	22	0589385

3/2 way direct solenoid operated poppet valves VR24Z (previously 1025392)

Special flange mounting option

Valve switches at power failure into starting position (mechanical spring return)

Suited for outdoor use under critical environment conditions (see solenoid list)

Add-on manual override or inductive limit switches

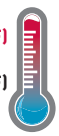
Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B

EN 61373

+60°C (+140°F)

-40°C (-40°F)



Technical features

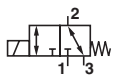
Medium:
Compressed air, filtered, non-lubricated and dry
Other gase and liquid fluids on request
Operation:
Direct solenoid operated poppet valves
Flow direction:
Optional
Mounting position:
Any, but preferably with solenoid vertical

Flow:
Gaseous fluids: 340 l/min
Liquid fluids: Kv 0,34
Port size:
Flanged version, port 3 - G1/8
Orifice:
5 mm
Operating pressure:
0 ... 10 bar (0 ... 145 psi)

Temperature valve:
-40 ... +60°C (-40 ... +140°F), depending on solenoid system.
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
Temperature solenoid:
See table

Materials:
Housing: hard anodized aluminium
Seal: VMQ
Inner parts: stainless steel, brass

Technical data – basic valve without solenoid operator

Symbol	Port size 1 & 2	3	Operating pressure bar	Material Seat seal	Temperature *2) (°C)	Manual override	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	Flange	G1/8	0 ... 10	VMQ	-40 ... +60	Add on	0,65	1	0800 or 5270	VR24Z9565-01xxP

*1) xx = Insert solenoid code at 13th digit and voltage code at 14th digit, see below
*2) Depending on solenoid system, see page 2-56

Option selector

VR24Z9565-01★★P

Solenoids	Substitute
5270	2
0800	4

Voltage	Substitute
24 V d.c.	3
36 V d.c.	4
72 V d.c.	A
110 V d.c.	7

3/2 way direct solenoid operated poppet valves
VR24Z9565 (previously 1025392)

Special flange mounting option

Solenoid operators

	Power consumption 24 V d.c. (W)	Rated current 24 V d.c. (mA)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model	Code
	16,9	703	-25 ... +40 -25 ... +60	+20 / -30 +10 / -30	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	4
	8,9	369	-40 ... +60 -40 ... +80	±30 +30 / -20	IP 65	M20 x 1,5 *6)	0,500	6	4	5270 *8)	2

*5) Required connector: type 0570275
*6) Connector cable gland not supplied, see table »Accessories«
*7) IP-Protection class according to EN60529
*8) Suitable for outdoor installation

Accessories

Cable gland

Page 2-57

Thread	Cable Ø	Material	Model
M 20x1,5	5,0...8,0 mm	Nickel plated brass	0588819
M 20x1,5	9,0...13 mm	Stainless steel 1.4571	0589385

Connector

0570275	

Silencer *1)

Page 2-57

M/S1 G1/8	

Exhaust guard *2), *3)
Use with part number 160231828

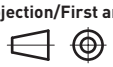
Page 2-57

0613422 (G1/4 or 1/4 NPT)	

*1) For indoors use
*2) For outdoors use
*3) Please order the connector 160231828 (from G1/8 to G1/4) separately

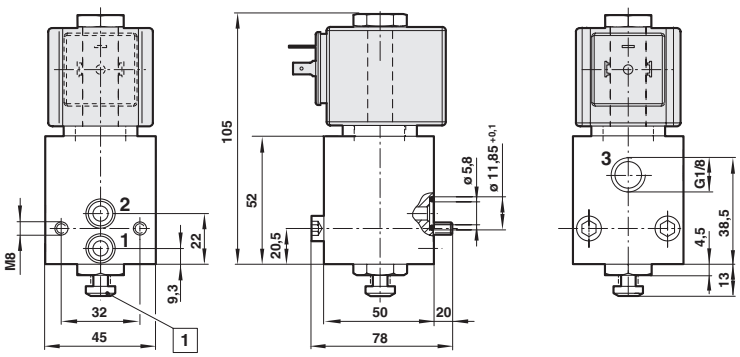
Dimensions

Dimensions shown in mm
Projection/First angle



Valves

1



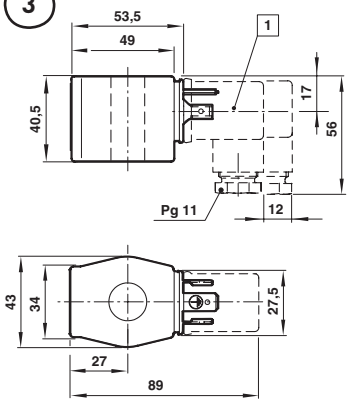
1 Add-on manual override, see page 2-57

3/2 way direct solenoid operated poppet valves
VR24Z9565 (previously 1025392)
Special flange mounting option

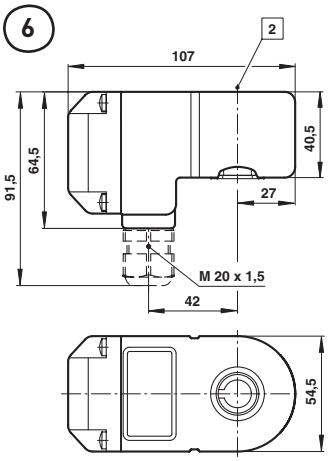
Solenoids

Dimensions shown in mm
Projection/First angle

3



6

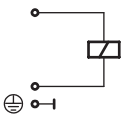


1 Connector can be indexed by 4x90°

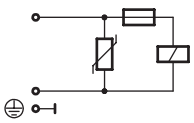
2 Ø 16 or 13 (with spacer tube)

Circuit diagrams

1

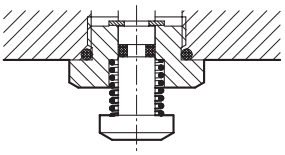


4

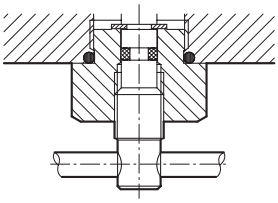


Add-on manual override

Without detent
Model: 0600205

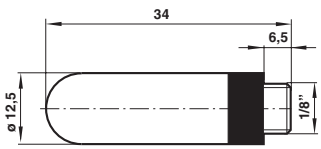


With detent
Model: 0601765

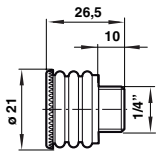


Please note: add-on manual override for NAMUR valves provided only for commissioning and tests

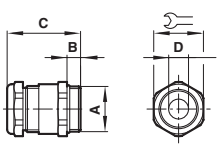
Silencer
Model: M/S1



Exhaust guard
Model: 0613422



Cable gland



A	B	C		Model
M20 x 1,5	9	36	22	0588819
M20 x 1,5	6,5	27,5	22	0589385

3/2 way direct or indirect solenoid operated poppet valves VR98

G1/2, 1/2 NPT

TÜV-approval based on IEC 61 508

Valves for safety systems up to SIL 4

Add-on manual override or inductive limit switches

Valve switches at power failure into starting position (mechanical spring return)

Suited for outdoor use under critical environment conditions (see solenoid list)

Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B

EN 61373

+60°C (+140°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air, filtered, non-lubricated and dry
Operation:
Direct or indirect solenoid operated poppet valves optional connection for external solenoid pilot supply on indirect acting solenoid

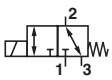
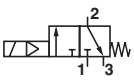
Mounting position:
Any, but preferably with solenoid vertical
Orifice:
8 mm
Port size:
G1/2, 1/2 NPT
Operating pressure:
0 ... 10 bar

Flow:
1000 l/min
Flow direction:
Optional or fixed
Operating temperature:
-40 ... +60°C (-40 ... +140°F), depending on solenoid system
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
Housing: brass
Seal: SNBR (special perbunan)
Inner parts: stainless steel, brass

Technical data – basic valve without solenoid operator

With threaded connection, brass valves

Symbol	Port size	Operating pressure bar	Material Seat seal	Temperature *2) range °C	Manual override	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	G1/2	0 ... 10	SNBR	-40 ... +60	add-on	0,90	1	0800 or 5270	VR98D9678-01xxP
	1/2 NPT	0 ... 10	SNBR	-40 ... +60	add-on	0,90	1	0800 or 5270	VR98T9678-01xxP
	G1/2	2 ... 10	SNBR	-40 ... +60	add-on	1,10	2	3030	VR98D4678-F15xP
	1/2 NPT	2 ... 10	SNBR	-40 ... +60	add-on	1,10	2	3030	VR98T4678-F15xP

*1) xx = Insert solenoid code for direct operated valves and voltage code at 14th digit, see below
*2) Depending on solenoid system, see page 2-59

Option selector

VR98★★★78-★1★★P

Port size	Substitute
G1/2	D
1/2 NPT	T
Function	**Substitute**
NC (indirect acting solenoid, supply on port 1)	4
Universal porting (direct acting solenoid)	9
Housing material	**Substitute**
Aluminium anodized (NAMUR only)	5
Brass (standard)	6
Stainless steel (optional)	7

Voltage	Substitute
24 V d.c.	3
36 V d.c.	4
72 V d.c.	A
110 V d.c.	7
Solenoids	**Substitute**
5270 *1)	2
0800 *1)	4
3030 *2)	5
Pressure range	**Substitute**
0 ... 10 *1)	0
2 ... 10 *2)	F

*1) Universal, direct acting solenoid
*2) NC, indirect acting solenoid

3/2 way direct or indirect solenoid operated poppet valves VR98

G1/2, 1/2 NPT

Solenoid operators

	Power consumption 24 V d.c. (W)	Rated current 24 V d.c. (m A)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model	Part number code
	16,9	703	-25 ... +40 -25 ... +60	±20 +10 / -20	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	4
	4,5	188	-40 ... +65	±30	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,09	12	1	3030	5
	8,9	369	-40 ... +60 -40 ... +80	+30 / -15 +30 / -10	IP 65	M20 x 1,5 *6)	0,500	6	4	5270 *8)	2

*5) Required connector: type 0570275
*6) Connector cable gland not supplied, see table »Accessories«
*7) IP-Protection class according to EN60529
*8) Suitable for outdoor installation

Accessories

Cable gland

Page 2-60

Thread	Cable Ø	Material	Model
M 20x1,5	5,0...8,0 mm	Nickel plated brass	0588819
M 20x1,5	9,0...13 mm	Stainless steel 1.4571	0589385

Connector	Silencer *1)	Exhaust guard *2)	Manual override *3)
			
	Page 2-60	Page 2-60	
0570275	M/S4 (G1/2)	0613423 (G1/2, 1/2NPT)	0553886 (without detent)
	C/S4 (1/2 NPT)		0553887 (with detent)

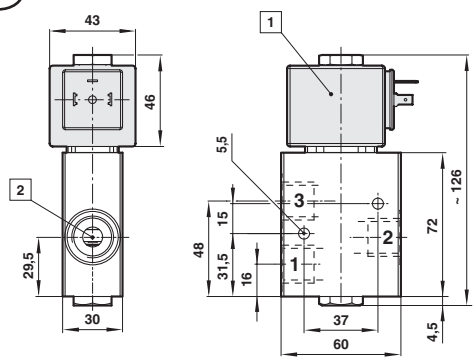
*1) For indoor use only
*2) For outdoor use
*3) Useable with the indirect atuated valves only.

Dimensions

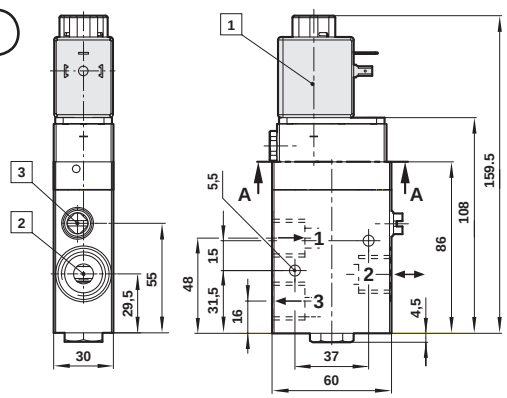
Dimensions shown in mm
Projection/First angle

Valves

1



2

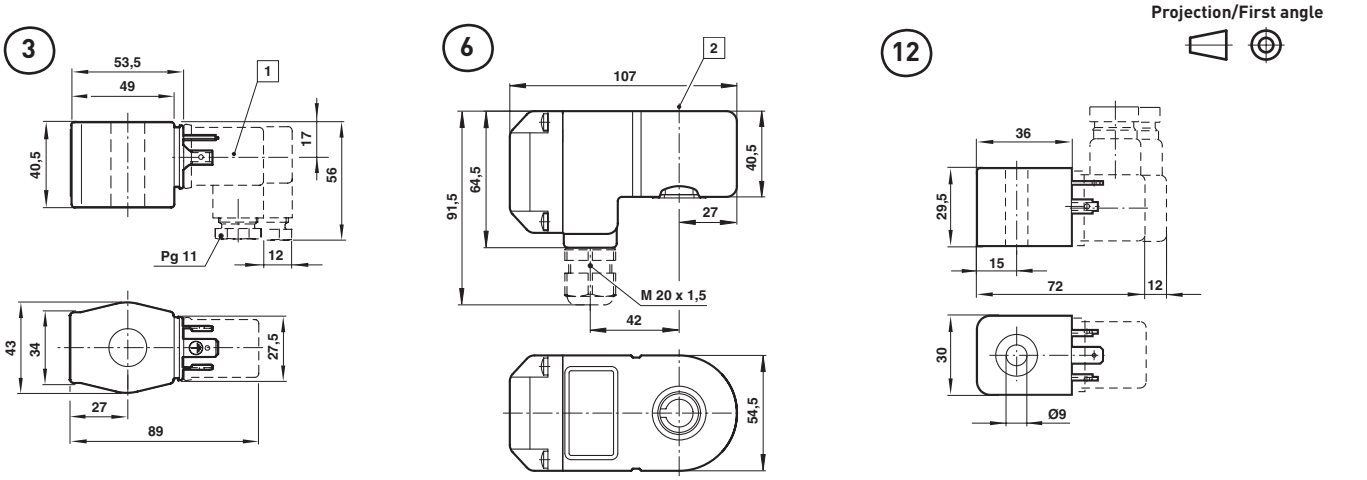


1 Solenoid can be positioned to suit application
2 Working port G1/2 or 1/2 NPT
3 External solenoid pilot connection G1/8 or 1/8 NPT

3/2 way direct or indirect solenoid operated poppet valves
VR98
G1/2, 1/2 NPT

Solenoids

Dimensions shown in mm
Projection/First angle



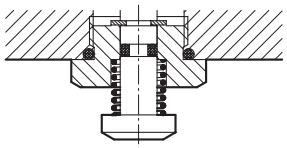
1 Connector can be positioned by 4x90°

2 Ø 16 or 13 (with spacer tube)

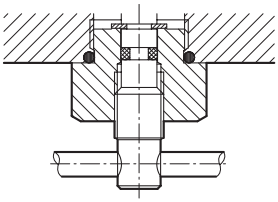
Circuit diagrams

Add-on manual override

Without detent
Model: 0600205

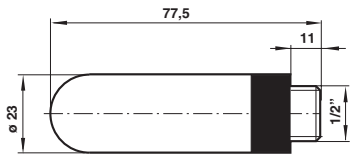


With detent
Model: 0601765

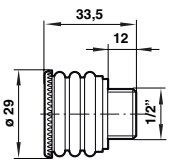


Please note: add-on manual override for NAMUR valves provided only for commissioning and tests

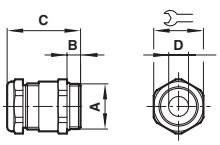
Silencer
Model: M/S4, C/S4



Exhaust guard
Model: 0613423



Cable gland



A	B	C		Model
M20 x 1,5	9	36	22	0588819
M20 x 1,5	6,5	27,5	22	0589385

2/2 way valves (direct solenoid actuated seat)
82510, 82610

1/8" ... 3/8"

Small size drain or shut off valve

Direct acting

Suitable for vacuum

Body with 2 x M5 mounting threads as standard

Brass or stainless steel body

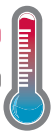
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+110°C (+230°F)

-10°C (14°F)



Technical features

Medium:
Neutral gases and liquids
Operation:
Solenoid operated
Mounting:
Internal threads
Port size:
G1/8 ... G3/8 or
1/8 NPT ... 3/8 NPT

Operating pressure:
0 ... 40 bar (0 ... 580 psi)
Fluid temperature:
Body: brass
-10 ... +90°C (14 ... +194°F)
Body: stainless steel
-10 ... +110°C (14 ... +230°F)

Ambient temperature:
-10 ... +50°C (14 ... +122°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

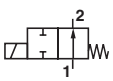
Materials
Body: brass or stainless steel
Seat seal: NBR or FPM

Electrical details for solenoid operators

Design	DIN VDE 0580
Voltage range	±10%
Duty cycle	100% ED
Protection class	EN 60529 IP65
Socket	Form A acc. to DIN EN 175301-803 (included)

According to DIN VDE 0580 at coil temperature of +20°C. In operation the power consumption of the solenoid decreases by approx. 30%.

2/2 way normally open valves

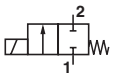
Symbol	Size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model Body material Brass	Model Body material Stainless steel
	G1/4	1,5	0,07	0 ... 16	0,33	8251001.9101.xxxxx	8261001.9101.xxxxx
	1/4 NPT	1,5	0,07	0 ... 16	0,33	8252001.9101.xxxxx	8462001.9101.xxxxx
	G1/4	2,5	0,15	0 ... 6	0,33	8251021.9101.xxxxx	8261021.9101.xxxxx
	1/4 NPT	2,5	0,15	0 ... 6	0,33	8252021.9101.xxxxx	8462021.9101.xxxxx
	G1/4	2,5	0,15	0 ... 25	0,57	8251021.9151.xxxxx	8261021.9151.xxxxx
	1/4 NPT	2,5	0,15	0 ... 25	0,57	8252021.9151.xxxxx	8462021.9151.xxxxx
	G1/4	3	0,21	0 ... 3	0,33	8251041.9151.xxxxx	8261041.9101.xxxxx
	1/4 NPT	3	0,21	0 ... 3	0,33	8252041.9151.xxxxx	8462041.9101.xxxxx
	G1/4	3	0,21	0 ... 16	0,57	8251041.9151.xxxxx	8261041.9151.xxxxx
	1/4 NPT	3	0,21	0 ... 16	0,57	8252041.9151.xxxxx	8462041.9151.xxxxx
	G1/4	4	0,35	0 ... 8	0,57	8251061.9151.xxxxx	8261061.9151.xxxxx
	1/4 NPT	4	0,35	0 ... 8	0,57	8252061.9151.xxxxx	8462061.9151.xxxxx

xxxxx Please insert voltage and frequency codes from page 2-63

2/2 way valves (direct solenoid actuated seat)
82510, 82610

1/8" ... 3/8"

2/2 way normally closed valves

Symbol	Size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model Body material Brass	Model Body material Stainless steel
	G1/8	1,5	0,07	0 ... 25	0,33	8251800.9101.xxxxx	8261803.9101.xxxxx
	1/8 NPT	1,5	0,07	0 ... 25	0,33	8252800.9101.xxxxx	8462803.9101.xxxxx
	G1/4	1,5	0,07	0 ... 25	0,33	8251000.9101.xxxxx	8261003.9101.xxxxx
	1/4 NPT	1,5	0,07	0 ... 25	0,33	8252000.9101.xxxxx	8462003.9101.xxxxx
	G3/8	1,5	0,07	0 ... 25	0,33	8251100.9101.xxxxx	8261103.9101.xxxxx
	3/8 NPT	1,5	0,07	0 ... 25	0,33	8252100.9101.xxxxx	8462103.9101.xxxxx
	G1/8	2,5	0,15	0 ... 10	0,33	8251820.9101.xxxxx	8261823.9101.xxxxx
	1/8 NPT	2,5	0,15	0 ... 10	0,33	8252820.9101.xxxxx	8462823.9101.xxxxx
	G1/4	2,5	0,15	0 ... 10	0,33	8251020.9101.xxxxx	8261023.9101.xxxxx
	1/4 NPT	2,5	0,15	0 ... 10	0,33	8252020.9101.xxxxx	8462023.9101.xxxxx
	G3/8	2,5	0,15	0 ... 10	0,33	8251120.9101.xxxxx	8261123.9101.xxxxx
	3/8 NPT	2,5	0,15	0 ... 10	0,33	8252120.9101.xxxxx	8462123.9101.xxxxx
	G1/8	2,5	0,15	0 ... 40	0,57	8251820.9151.xxxxx	8261823.9151.xxxxx
	1/8 NPT	2,5	0,15	0 ... 40	0,57	8252820.9151.xxxxx	8462823.9151.xxxxx
	G1/4	2,5	0,15	0 ... 40	0,57	8251020.9151.xxxxx	8261023.9151.xxxxx
	1/4 NPT	2,5	0,15	0 ... 40	0,57	8252020.9151.xxxxx	8462023.9151.xxxxx
	G3/8	2,5	0,15	0 ... 40	0,57	8251120.9151.xxxxx	8261123.9151.xxxxx
	3/8 NPT	2,5	0,15	0 ... 40	0,57	8252120.9151.xxxxx	8462123.9151.xxxxx
	G1/8	3	0,21	0 ... 4	0,33	8251840.9101.xxxxx	8261843.9101.xxxxx
	1/8 NPT	3	0,21	0 ... 4	0,33	8252840.9101.xxxxx	8462843.9101.xxxxx
	G1/4	3	0,21	0 ... 4	0,33	8251040.9101.xxxxx	8261043.9101.xxxxx
	1/4 NPT	3	0,21	0 ... 4	0,33	8252040.9101.xxxxx	8462043.9101.xxxxx
	G3/8	3	0,21	0 ... 4	0,33	8251140.9101.xxxxx	8261143.9101.xxxxx
	3/8 NPT	3	0,21	0 ... 4	0,33	8252140.9101.xxxxx	8462143.9101.xxxxx
	G1/8	3	0,21	0 ... 20	0,57	8251840.9151.xxxxx	8261843.9151.xxxxx
	1/8 NPT	3	0,21	0 ... 20	0,57	8252840.9151.xxxxx	8462843.9151.xxxxx
	G1/4	3	0,21	0 ... 20	0,57	8251040.9151.xxxxx	8261043.9151.xxxxx
	1/4 NPT	3	0,21	0 ... 20	0,57	8252040.9151.xxxxx	8462043.9151.xxxxx
	G3/8	3	0,21	0 ... 20	0,57	8251140.9151.xxxxx	8261143.9151.xxxxx
	3/8 NPT	3	0,21	0 ... 20	0,57	8252140.9151.xxxxx	8462143.9151.xxxxx
	G1/8	4	0,35	0 ... 12	0,57	8251860.9151.xxxxx	8261863.9151.xxxxx
	1/8 NPT	4	0,35	0 ... 12	0,57	8252860.9151.xxxxx	8462863.9151.xxxxx
	G1/4	4	0,35	0 ... 12	0,57	8251060.9151.xxxxx	8261063.9151.xxxxx
	1/4 NPT	4	0,35	0 ... 12	0,57	8252060.9151.xxxxx	8462063.9151.xxxxx
	G3/8	4	0,35	0 ... 12	0,57	8251160.9151.xxxxx	8261163.9151.xxxxx
	3/8 NPT	4	0,35	0 ... 12	0,57	8252160.9151.xxxxx	8462163.9151.xxxxx
	G1/8	5	0,50	0 ... 6	0,57	8251880.9151.xxxxx	8261883.9151.xxxxx
	1/8 NPT	5	0,50	0 ... 6	0,57	8252880.9151.xxxxx	8462883.9151.xxxxx
	G1/4	5	0,50	0 ... 6	0,57	8251080.9151.xxxxx	8261083.9151.xxxxx
	1/4 NPT	5	0,50	0 ... 6	0,57	8252080.9151.xxxxx	8462083.9151.xxxxx
	G3/8	5	0,50	0 ... 6	0,57	8251180.9151.xxxxx	8261183.9151.xxxxx
	3/8 NPT	5	0,50	0 ... 6	0,57	8252180.9151.xxxxx	8462183.9151.xxxxx

xxxxx Please insert voltage and frequency codes from page 2-63

2/2 way valves (direct solenoid actuated seat) 82510, 82610

1/8" ... 3/8"

Option selector

82★★★★★.★★★★.★★★★★

Material	Substitute
Brass	5
Stainless Steel	6
Thread form	**Substitute**
ISO G parallel	1
NPT	2
Port size	**Substitute**
1/8"	8
1/4"	1
3/8"	2
Orifice	**Substitute**
1,5 mm	0
2,5 mm	2
3 mm	4
4 mm	6
5 mm	8

Frequency	Substitute
See table frequency codes	xx
Voltage	**Substitute**
See table voltage codes	xxx
Solenoid system	**Substitute**
Standard (see table next page)	xxxx
Valve options	**Substitute**
Standard (body brass; seat seal NBR)	0
NO (normally open, only G1/4; 1/4 NPT)	1
NC (normally closed) Standard, body stainless steel; seat seal FPM)	3

Voltage and frequency codes solenoid 9101 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	8 W	8 W
036	00	36 V d.c.	-	8 W	8 W
110	00	110 V d.c.	-	8 W	8 W
024	50	24 V a.c.	50 Hz	15 VA	7 W
110	50	110 V a.c.	50 Hz	15 VA	7 W
230	50	230 V a.c.	50 Hz	15 VA	7 W
120	60	120 V a.c.	60 Hz	15 VA	7 W
220	60	220 V a.c.	60 Hz	15 VA	7 W

Voltage and frequency codes solenoid 9151 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	18 W	18 W
036	00	36 V d.c.	-	18 W	18 W
110	00	110 V d.c.	-	18 W	18 W
024	50	24 V a.c.	50 Hz	45 VA	17 W
110	50	110 V a.c.	50 Hz	45 VA	17 W
230	50	230 V a.c.	50 Hz	45 VA	17 W
120	60	120 V a.c.	60 Hz	45 VA	17 W
220	60	220 V a.c.	60 Hz	45 VA	17 W

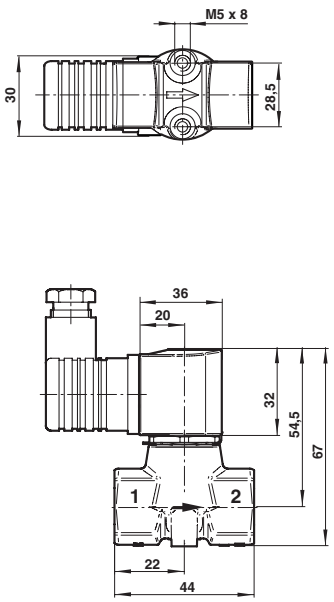
2/2 way valves (direct solenoid actuated seat)
82510, 82610

1/8" ... 3/8"

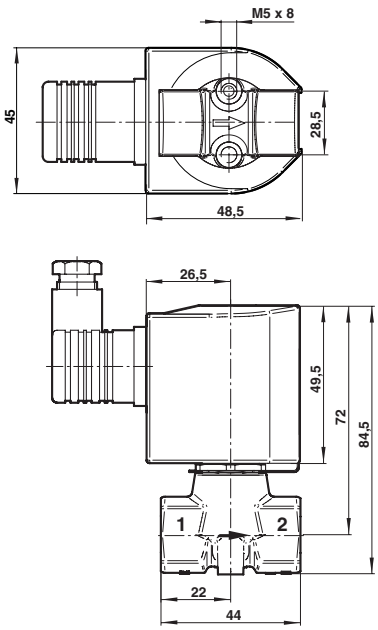
Basic dimensions

Dimensions shown in mm
Projection/First angle

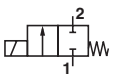
9101



9151



Special applications

Symbol	Application	Port size	Orifice (mm)	Body material	Flow kv value (m^3/h)	Operating pressure (bar)	Fluid temperature	Ambient/Pilot temperature	Sealing	Model
	2/2 way pressure release	G1/8	1,2	Aluminium, anodized	0,04	0 ... 10	-10 ... +60°C	-10 ... +55°C	NBR	8496228.9784.xxxxx

xxxxx Please insert voltage and frequency codes.

Voltage and frequency codes solenoid 9784 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	5 W	5 W
110	00	110 V d.c.	-	5 W	5 W

2/2 way valves (solenoid actuated diaphragm with forced lifting)
82530

1/4" ... 1/2"

Small size drain or shut off valve

Suitable for vacuum

Compact solenoid with integrated core tube

Valve operates without differential pressure

Brass body

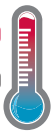
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+90°C (+194°F)

-10°C (14°F)



Technical features

Medium:
Neutral gases and liquids
e. g. air, water, oil
Operation:
Solenoid actuated,
with forced lifting
Mounting:
Internal threads

Port size:
G1/4 ... G1/2 or
1/4 NPT ... 1/2 NPT
Operating pressure:
0 ... 10 bar (0 ... 145 psi)
Fluid temperature:
-10 ... +90°C (14 ... +194°F)

Ambient temperature:
-10 ... +50°C (14 ... +122°F)
Storage temperature:
-40°C (-40°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

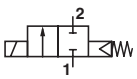
Materials
Body: brass
Seat seal: NBR diaphragm
(EPDM or FPM optional)

Electrical details for solenoid operators

Design	DIN VDE 0580
Voltage range	±10%
Duty cycle	100% ED
Protection class	EN 60529 IP65
Socket	Form A acc. to DIN EN 175301-803 (included)

According to DIN VDE 0580 at coil temperature of +20°C. In operation the power consumption of the solenoid decreases by approx. 30%.

2/2 way normally closed valves

Symbol	Port size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model
	G1/4	10	1,5	0 ... 10	0,5	8253000.8001.xxxxx
	1/4 NPT	10	1,5	0 ... 10	0,5	8263000.8001.xxxxx
	G3/8	10	1,7	0 ... 10	0,5	8253100.8001.xxxxx
	3/8 NPT	10	1,7	0 ... 10	0,5	8263100.8001.xxxxx
	G1/2	10	1,7	0 ... 10	0,6	8253200.8001.xxxxx
	1/2 NPT	10	1,7	0 ... 10	0,6	8263200.8001.xxxxx

xxxxx Please insert voltage and frequency codes from page 2-66

Option selector

82★3★★★.★★★★.★★★★★

Thread form	Substitute
ISO G parallel	5
NPT	6
Port size	**Substitute**
1/4"	0
3/8"	1
1/2"	2
Valve options	**Substitute**
Without	00
Seat seal FPM	03
Seat seal EPDM	14

Frequency	Substitute
See table frequency codes	xx
Voltage	**Substitute**
See table voltage codes	xxx
Solenoid system	**Substitute**
Standard	8000

2/2 way valves (solenoid actuated)
82530

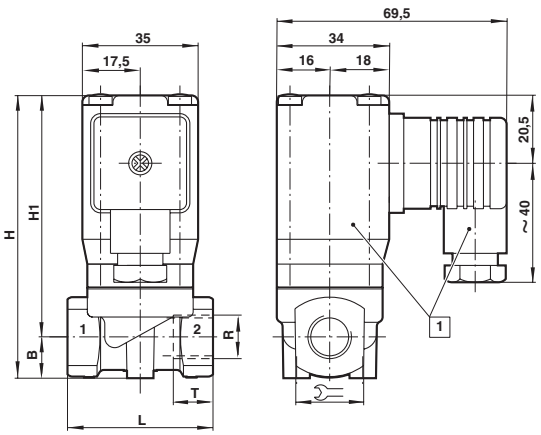
1/4" ... 1/2"

Voltage and frequency codes

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	12 W	12 W
036	00	36 V d.c.	-	12 W	12 W
110	00	110 V d.c.	-	12 W	12 W
024	50	24 V a.c.	50 Hz	20 VA	20 VA
110	50	110 V a.c.	50 Hz	20 VA	20 VA
230	50	230 V a.c.	50 Hz	20 VA	20 VA
120	60	120 V a.c.	60 Hz	20 VA	20 VA
220	60	220 V a.c.	60 Hz	20 VA	20 VA

Basic dimensions

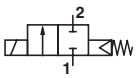
Dimensions shown in mm
Projection/First angle



Supply port	Orifice (mm)	B	H	H1	L	T	⌓	Model
G1/4	10	14	87	73	44	12	21	8253000.8001
1/4 NPT	10	14	87	73	44	10	21	8263000.8001
G3/8	10	14	87	73	44	12	21	8253100.8001
3/8 NPT	10	14	87	73	44	10	21	8263100.8001
G1/2	10	14	90	74,5	60	15	27	8253200.8001
1/2 NPT	10	14	90	74,5	60	13	27	8263200.8001

[1] Solenoid rotatable 4 x 90°
Socket turnable 4 x 90° (socket included)

Special applications

Symbol	Application	Port size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Fluid temperature	Ambient/ Pilot temperature	Sealing	Voltage (V d.c.)	Model
	Clean water /air	G1/4	4	0,37	0 ... 0,25	-10 ... +90°C	-10 ... +50°C	NBR	24	8496874.8080.02400
	Hand wash basin tab	G1/4	5	0,17	0 ... 0,2	0 ... +50°C	0 ... +50°C	EDPM	24	8495896.8087.02400
	Hand wash basin tab	G1/4	5	0,17	0 ... 0,2	0 ... +50°C	0 ... +50°C	EDPM	36	8495896.8087.03600
	Hand wash basin tab	G1/4	5	0,17	0 ... 0,2	0 ... +50°C	0 ... +50°C	EDPM	110	8495896.8087.11000
	Clean water /air	G3/8	10	1,7	0 ... 1,0	0 ... +40°C	-10 ... +40°C	NBR	24	8497834.8080.02400

2/2 way valves (direct solenoid actuated seat)
82080
1/4" & 3/8"

Small size drain or shut off valve

Direct acting

For aggressive gases and fluids

Seat valves with sealed core tube/media isolated

Unsusceptible to calcification and magnetization of foreign particles

PVDF body

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+110°C (+230°F)

-10°C (14°F)

Technical features

Medium:
Aggressive gases and fluids
Operation:
Solenoid operated
Mounting:
Internal threads

Port size:
G1/4 or G3/8
Operating pressure:
0 ... 7 bar (0 ... 102 psi)
Fluid temperature:
-10 ... +110°C (14 ... +230°F)

Ambient temperature:
-10 ... +50°C (14 ... +122°F)
Storage temperature:
-40°C (-40°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

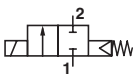
Materials
Body: PVDF
Seat seal: EPDM
Media isolation: PTFE

Electrical details for solenoid operators

Design	DIN VDE 0580
Voltage range	±10%
Duty cycle	100% ED
Protection class	EN 60529 IP65
Socket	Form A acc. to DIN EN 175301-803 (included)

According to DIN VDE 0580 at coil temperature of +20°C. In operation the power consumption of the solenoid decreases by approx. 30%.

2/2 way valves

Symbol	Port size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model Solenoid in V d.c.	Model Solenoid in V a.c.
	G1/4	3	0,23	0 ... 7	0,3	8208000.8050.xxxxx	8208000.8051.xxxxx
	G3/8	3	0,23	0 ... 7	0,3	8208100.8050.xxxxx	8208100.8051.xxxxx
	G1/4	4,5	0,42	0 ... 5	0,3	8208060.8050.xxxxx	8208060.8051.xxxxx
	G3/8	4,5	0,42	0 ... 5	0,3	8208160.8050.xxxxx	8208160.8051.xxxxx
	G1/4	6	0,62	0 ... 2	0,3	8208070.8050.xxxxx	8208070.8051.xxxxx
	G3/8	6	0,62	0 ... 2	0,3	8208170.8050.xxxxx	8208170.8051.xxxxx
	G1/4	8	0,83	0 ... 1	0,3	8208080.8050.xxxxx	8208080.8051.xxxxx
	G3/8	8	0,83	0 ... 1	0,3	8208180.8050.xxxxx	8208180.8051.xxxxx

xxxxx Please insert voltage and frequency codes from page 2-68

Option selector

8208★★★.★★★★.★★★★★

Port size	Substitute
1/4"	0
3/8"	1

Orifice	Substitute
3 mm	0
4,5 mm	6
6 mm	7
8 mm	8

Valve options	Substitute
Seat seal FPM	3
Seat seal PTFE	6

Frequency	Substitute
See table frequency codes	xx

Voltage	Substitute
See table voltage codes	xxx

Solenoid system	Substitute
Standard for V d.c.	8050
Standard for V a.c.	8051

2/2 way valves (direct solenoid actuated seat)
82080

1/4" & 3/8"

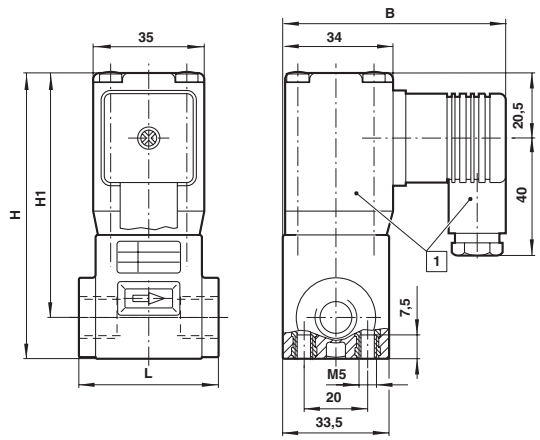
Voltage and frequency codes 8050 and 8051 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	12 W	12 W
036	00	36 V d.c.	-	12 W	12 W
110	00	110 V d.c.	-	12 W	12 W
024	49	24 V a.c.	40 ... 60 Hz	13 VA	13 VA
110	49	110 V a.c.	40 ... 60 Hz	13 VA	13 VA
230	49	230 V a.c.	40 ... 60 Hz	13 VA	13 VA
120	49	120 V a.c.	40 ... 60 Hz	13 VA	13 VA
220	49	220 V a.c.	40 ... 60 Hz	13 VA	13 VA

Note: a.c. achieved by using a rectifier in built with solenoid plug.

Basic dimensions

Dimensions shown in mm
Projection/First angle

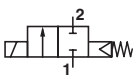


1 Solenoid and Socket turnable 4 x 90° (socket included)

Body PVDF

Supply port	B	H	H1	L	Model Solenoid in V d.c.	Model Solenoid in V a.c.
G1/4	70	90	77	44	8208000.8050.xxxxx	8208000.8051
G3/8	70	90	77	44	8208100.8050.xxxxx	8208100.8051

Special applications

Symbol	Application	Port size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Fluid temperature	Ambient/ Pilot temperature	Sealing	Voltage (V d.c.)	Model
	Pump drain	G3/8	2,4	0,15	0 ... 5.5	0 ... +90°C	-30 ... +50°C	EPDM	24	8493955.8096.02400
	Pump drain	G3/8	2,4	0,15	0 ... 5.5	0 ... +90°C	-30 ... +50°C	EPDM	110	8493955.8096.11000
	Toilet flush tank refill	G1/4	4,5	0,42	0 ... 1.5	0 ... +60°C	0 ... +50°C	EPDM	24	8496004.8264.02400
	Hand wash basin tab	G1/4	4,5	0,42	0 ... 1	0 ... +60°C	0 ... +50°C	EPDM	24	8496027.8087.02400
	Hand wash basin tab	G1/4	4,5	0,42	0 ... 1	0 ... +60°C	0 ... +50°C	EPDM	36	8496027.8087.03600

2/2 way valves (solenoid actuated diaphragm with forced lifting) 82540

1/4" ... 2"

Damped operation

Operation without differential pressure

Suitable for vacuum

High flow rate

For systems with low or fluctuating pressure

Brass body

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+90°C (+194°F)

-10°C (14°F)

Technical features

Medium:
Neutral gases and liquids
e. g. air, water, oil
Operation:
Solenoid operated
Mounting:
Internal threads

Port size:
G1/4 ... G 2 or
1/4 NPT ... 2 NPT
Operating pressure:
0 ... 10/16 bar
(0 ... 145/232 psi)
Fluid temperature:
-10 ... +90°C (14 ... +194°F)

Ambient temperature:
-10 ... +50°C (14 ... +122°F)
Storage temperature:
-40°C (-40°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

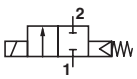
Materials
Body: brass
Seat seal: NBR

Electrical details for all solenoid operators

Design	DIN VDE 0580
Voltage range	±10%
Duty cycle	100% ED
Protection class	EN 60529 IP65
Socket	Form A acc. to DIN EN 175301-803 (included)

According to DIN VDE 0580 at coil temperature of +20°C. In operation the power consumption of the solenoid decreases by approx. 30%.

2/2 way normally closed valves

Symbol	Port size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model Solenoid in V d.c.	Model Solenoid in V a.c.
	G1/4	8	1,9	0 ... 10	0,8	8254000.9151.xxxxx	8254000.9154.xxxxx
	1/4 NPT	8	1,9	0 ... 10	0,8	8264000.9151.xxxxx	8264000.9154.xxxxx
	G3/8	10	3	0 ... 10	0,8	8254100.9151.xxxxx	8254100.9154.xxxxx
	3/8 NPT	10	3	0 ... 10	0,8	8264100.9151.xxxxx	8264100.9154.xxxxx
	G1/2	12	3,4	0 ... 10	0,9	8254200.9151.xxxxx	8254200.9154.xxxxx
	1/2 NPT	12	3,4	0 ... 10	0,9	8264200.9151.xxxxx	8264200.9154.xxxxx
	G3/4	20	5,8	0 ... 10	1,0	8254300.9151.xxxxx	8254300.9154.xxxxx
	3/4 NPT	20	5,8	0 ... 10	1,0	8264300.9151.xxxxx	8264300.9154.xxxxx
	G1	25	8	0 ... 10	1,3	8254400.9151.xxxxx	8254400.9154.xxxxx
	1 NPT	25	8	0 ... 10	1,3	8264400.9151.xxxxx	8264400.9154.xxxxx

xxxxx Please insert voltage and frequency codes

Voltage and frequency codes 9151 and 9154 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	18 W	18 W
036	00	36 V d.c.	-	18 W	18 W
110	00	110 V d.c.	-	18 W	18 W
024	49	24 V a.c.	40 ... 60 Hz	20 VA	20 VA
110	49	110 V a.c.	40 ... 60 Hz	20 VA	20 VA
230	49	230 V a.c.	40 ... 60 Hz	20 VA	20 VA
120	49	120 V a.c.	40 ... 60 Hz	20 VA	20 VA
220	49	220 V a.c.	40 ... 60 Hz	20 VA	20 VA

Note: a.c. achieved by using a rectifier in built with solenoid plug.

2/2 way valves (solenoid actuated diaphragm with forced lifting)
82540

1/4" ... 1"

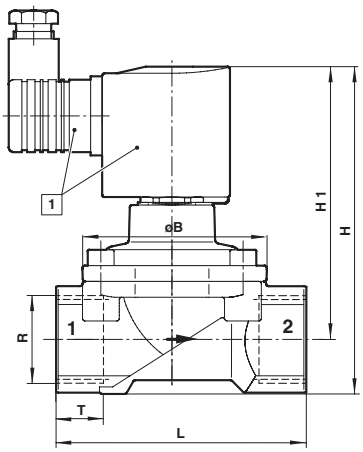
Option selector

82★4★★★.★★★★.★★★★★

Thread form	Substitute
ISO G parallel	5
NPT	6
Port size	**Substitute**
1/4"	0
3/8"	1
1/2"	2
3/4"	3
1"	4
1 1/4"	5
1 1/2"	6
2"	7

Frequency	Substitute
See table frequency codes	xx
Voltage	**Substitute**
See table voltage codes	xxx
Solenoid system	**Substitute**
Standard for V d.c., max. 10 bar	9151
Standard for V a.c., max. 10 bar	9154
Standard for V d.c., max. 16 bar (up to DN 25)	9301
Standard for V a.c., max. 16 bar (up to DN 25)	9304
Standard for V d.c., max. 16 bar (DN 32 ... 50)	9401
Standard for V a.c., max. 16 bar (DN 32 ... 50)	9404
Valve options	**Substitute**
NC (normally closed) Standard	00
NO (normally open)	01
Manual override	02
Seat seal FPM	03
Seat seal EPDM	14

Basic dimensions

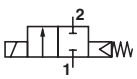


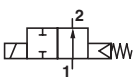
Dimensions shown in mm

Supply port (R)	Ø B	H	H1	L	T	Model
G1/4	44	104	92,5	60	12	8254000.915x
1/4 NPT	44	104	92,5	60	10	8264000.915x
G3/8	44	104	92,5	60	12	8254100.915x
3/8 NPT	44	104	92,5	60	10,5	8264100.915x
G1/2	44	108	94,5	67	14	8254200.915x
1/2 NPT	44	108	94,5	67	13,5	8264200.915x
G3/4	50	115	99	80	16	8254300.915x
3/4 NPT	50	115	99	80	14	8264300.915x
G1	62	124	103,5	95	18	8254400.915x
1 NPT	62	124	103,5	95	17	8264400.915x

[1] Solenoid rotatable 4 x 90°
Socket turnable 4 x 90° (socket included)

Special applications

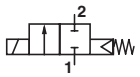
Symbol	Application	Port size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Fluid temperature	Ambient/ Pilot temperature	Sealing	Voltage (V d.c.)	Model
	Draining of water tanks	G1/2	10	2,1	0 ... 5	0 ... +50°C	-30 ... +50°C	EPDM	24	8493747.8484.02400
	Draining of water tanks	G1/2	10	2,1	0 ... 5	0 ... +50°C	-30 ... +50°C	EPDM	110	8493747.8484.11000
	Draining of water tanks	G3/4	20	6,5	0 ... 0,1	0 ... +50°C	-30 ... +50°C	EPDM	24	8493469.8476.02400
	Draining of water tanks	G3/4	20	6,5	0 ... 0,1	0 ... +50°C	-30 ... +50°C	EPDM	110	8493469.8476.11000
	Water supply	G3/4	20	6,5	0 ... 0,1	0 ... +50°C	-30 ... +50°C	EPDM	110	8495908.9785.11000
	Draining of water tanks	G1	25	11	0 ... 0,3	0 ... +50°C	0 ... +50°C	EPDM	24	8496733.9785.02400
	Draining of water tanks	G1	25	11	0 ... 0,3	0 ... +50°C	0 ... +50°C	EPDM	110	8496733.9785.11000
	Valve with manual override	G1	25	10	0 ... 0,3	0 ... +50°C	0 ... +50°C	EPDM	110	8496680.9785.11000

Symbol	Application	Port size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Fluid temperature	Ambient/ Pilot temperature	Sealing	Voltage (V d.c.)	Model
	Warm water heating /NO	G1/2	12	3,6	0 ... 16	0 ... +90°C	0 ... +50°C	NBR	101,5 ... 147,5	8496864.9785.12000
	Warm water heating /NO	G3/4	20	10	0 ... 16	0 ... +90°C	0 ... +50°C	NBR	101,5 ... 147,5	8496865.9785.12000
	Warm water heating /NO	G1	25	12,5	0 ... 16	0 ... +90°C	0 ... +50°C	NBR	101,5 ... 147,5	8496866.9785.12000

2/2 way valves (solenoid actuated diaphragm with forced lifting) 82540

1/4" ... 1"

2/2 way valves

Symbol	Size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model Solenoid in V d.c.	Model Solenoid in V a.c.
	G1/4	8	1,9	0 ... 16	0,8	8254000.9301.xxxxx	8254000.9304.xxxxx
	1/4 NPT	8	1,9	0 ... 16	0,8	8264000.9301.xxxxx	8264000.9304.xxxxx
	G3/8	10	3	0 ... 16	0,8	8254100.9301.xxxxx	8254100.9304.xxxxx
	3/8 NPT	10	3	0 ... 16	0,8	8264100.9301.xxxxx	8264100.9304.xxxxx
	G1/2	12	3,4	0 ... 16	0,9	8254200.9301.xxxxx	8254200.9304.xxxxx
	1/2 NPT	12	3,4	0 ... 16	0,9	8264200.9301.xxxxx	8264200.9304.xxxxx
	G3/4	20	5,8	0 ... 16	1,0	8254300.9301.xxxxx	8254300.9304.xxxxx
	3/4 NPT	20	5,8	0 ... 16	1,0	8264300.9301.xxxxx	8264300.9304.xxxxx
	G1	25	8	0 ... 16	1,3	8254400.9301.xxxxx	8254400.9304.xxxxx
	1 NPT	25	8	0 ... 16	1,3	8264400.9301.xxxxx	8264400.9304.xxxxx

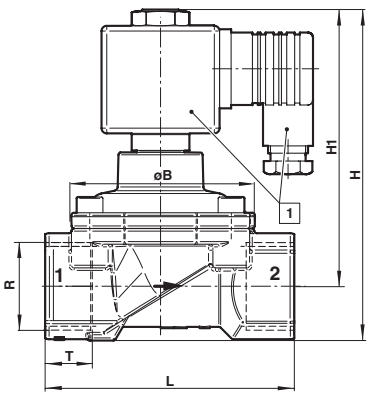
xxxxx Insert voltage and frequency codes.

Voltage and frequency codes 9301 and 9304 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	18 W	18 W
036	00	36 V d.c.	-	18 W	18 W
110	00	110 V d.c.	-	18 W	18 W
024	49	24 V a.c.	40 ... 60 Hz	20 VA	20 VA
110	49	110 V a.c.	40 ... 60 Hz	20 VA	20 VA
230	49	230 V a.c.	40 ... 60 Hz	20 VA	20 VA
120	49	120 V a.c.	40 ... 60 Hz	20 VA	20 VA
220	49	220 V a.c.	40 ... 60 Hz	20 VA	20 VA

Note: a.c. achieved by using a rectifier in built with solenoid plug.

Basic dimensions



Dimensions shown in mm

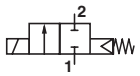
Supply port	Ø B	H	H1	L	T	Model
G1/4	44	108	96	60	12	8254000.930x
1/4 NPT	44	108	96	60	10	8264000.930x
G3/8	44	108	96	60	12	8254100.930x
3/8 NPT	44	108	96	60	10,5	8264100.930x
G1/2	44	110	96	67	14	8254200.930x
1/2 NPT	44	110	96	67	13,5	8264200.930x
G3/4	50	117	100	80	16	8254300.930x
3/4 NPT	50	117	100	80	14	8264300.930x
G1	62	126	105	95	18	8254400.930x
1 NPT	62	126	105	95	17	8264400.930x

[1] Solenoid rotatable 4 x 90°
Socket turnable 4 x 90° (socket included)

2/2 way valves (solenoid actuated diaphragm with forced lifting) 82540

1 1/4" ... 2"

2/2 way valves

Symbol	Size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model Solenoid in V d.c.	Model Solenoid in V a.c.
	G1 1/4	32	23	0 ... 16	4,3	8254500.9401.xxxxx	8254500.9404.xxxxx
	1 1/4 NPT	32	23	0 ... 16	4,3	8264500.9401.xxxxx	8264500.9404.xxxxx
	G1 1/2	40	25	0 ... 16	4,3	8254600.9401.xxxxx	8254600.9404.xxxxx
	1 1/2 NPT	40	25	0 ... 16	4,3	8264600.9401.xxxxx	8264600.9404.xxxxx
	G 2	50	41	0 ... 16	5,4	8254700.9401.xxxxx	8254700.9404.xxxxx
	2 NPT	50	41	0 ... 16	5,4	8264700.9401.xxxxx	8264700.9404.xxxxx

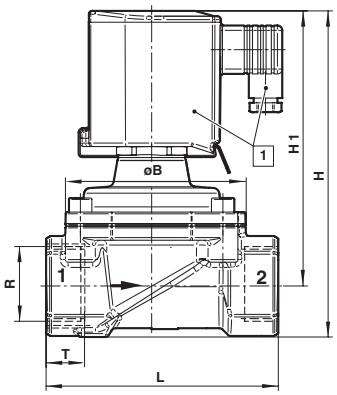
xxxxx Please insert voltage and frequency codes.

Voltage and frequency codes 9401 and 9404 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	38 W	38 W
024	49	24 V a.c.	40 ... 60 Hz	42 VA	42 VA
036	00	36 V d.c.	-	38 W	38 W
110	49	110 V a.c.	40 ... 60 Hz	42 VA	42 VA
230	49	230 V a.c.	40 ... 60 Hz	42 VA	42 VA
120	49	120 V a.c.	40 ... 60 Hz	42 VA	42 VA
220	49	220 V a.c.	40 ... 60 Hz	42 VA	42 VA

Note: a.c. achieved by using a rectifier in built with solenoid plug.

Basic dimensions



Dimensions shown in mm

Supply port (R)	Ø B	H	H1	L	T	Model
G1 1/4	92	186	157	132	20	8254500.940x
1 1/4 NPT	92	186	157	132	17	8264500.940x
G1 1/2	92	186	157	132	22	8254600.940x
1 1/2 NPT	92	186	157	132	17	8264600.940x
G 2	109	201	167	160	24	8254700.940x
2 NPT	109	201	167	160	17,5	8264700.940x

[1] Solenoid rotatable 4 x 90°
Socket turnable 4 x 90° (socket included)

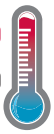
2/2 way valves (solenoid actuated piston with forced lifting)
85700
1/4" ... 2"

Special application

EN 61373

+90°C (+194°F)

-20°C (-4°F)



High flow rate

Damped operation

Suitable for vacuum

For systems with low or fluctuating pressure

Valve operates without differential pressure

Stainless steel piston

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

Technical features

Medium:
Neutral gases and liquids
e. g. air, water, oil
Operation:
Solenoid operated
Mounting:
Internal threads

Port size:
G1/4 ... G 2 or
1/4 NPT ... 2 NPT
Operating pressure:
0 ... 25 bar/40 bar optional
(0 ... 363 psi/580 psi optional)

Fluid temperature:
-20 ... +90°C (-4 ... +194°F)
Ambient temperature:
-20 ... +50°C (-4 ... +122°F)
Storage temperature:
-40°C (-40°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

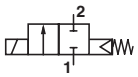
Materials
Body: brass
Piston seal: NBR

Electrical details for all solenoid operators

Design	DIN VDE 0580
Voltage range	±10%
Duty cycle	100% ED
Protection class	EN 60529 IP65
Socket	Form A acc. to DIN EN 175301-803 (included)

According to DIN VDE 0580 at coil temperature of +20°C. In operation the power consumption of the solenoid decreases by approx. 30%.

2/2 way normally closed valves

Symbol	Size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model Solenoid in V d.c.	Model Solenoid in V a.c.
	G1/4	8	2,2	0 ... 25	2,4	8570000.9401.xxxxx	8570000.9404.xxxxx
	1/4 NPT	8	2,2	0 ... 25	2,4	8571000.9401.xxxxx	8571000.9404.xxxxx
	G3/8	10	3,4	0 ... 25	2,4	8570100.9401.xxxxx	8570100.9404.xxxxx
	3/8 NPT	10	3,4	0 ... 25	2,4	8571100.9401.xxxxx	8571100.9404.xxxxx
	G1/2	12	4,4	0 ... 25	2,5	8570200.9401.xxxxx	8570200.9404.xxxxx
	1/2 NPT	12	4,4	0 ... 25	2,5	8571200.9401.xxxxx	8571200.9404.xxxxx
	G3/4	20	7,0	0 ... 25	2,7	8570300.9401.xxxxx	8570300.9404.xxxxx
	3/4 NPT	20	7,0	0 ... 25	2,7	8571300.9401.xxxxx	8571300.9404.xxxxx
	G1	25	10,5	0 ... 25	3,1	8570400.9401.xxxxx	8570400.9404.xxxxx
	1 NPT	25	10,5	0 ... 25	3,1	8571400.9401.xxxxx	8571400.9404.xxxxx

xxxxx Please insert voltage and frequency codes

Voltage and frequency codes 9401 and 9404 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	38 W	38 W
036	00	36 V d.c.	-	38 W	38 W
110	00	110 V d.c.	-	38 W	38 W
024	49	24 V a.c.	40 ... 60 Hz	42 VA	42 VA
110	49	110 V a.c.	40 ... 60 Hz	42 VA	42 VA
230	49	230 V a.c.	40 ... 60 Hz	42 VA	42 VA
120	49	120 V a.c.	40 ... 60 Hz	42 VA	42 VA
220	49	220 V a.c.	40 ... 60 Hz	42 VA	42 VA

Note: a.c. achieved by using a rectifier in built with solenoid plug.

2/2 way valves (solenoid actuated piston with forced lifting)
85700

1/4" ... 2"

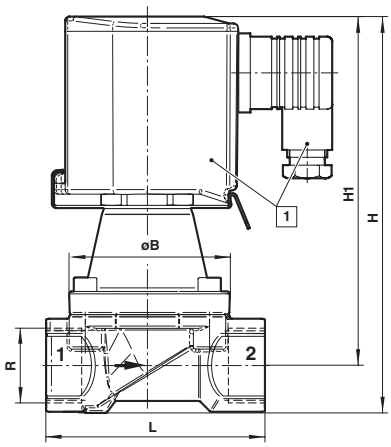
Option selector

857★★★★.★★★★.★★★★★

Thread form	Substitute
ISO G parallel	0
NPT	1
Port size	**Substitute**
1/4"	0
3/8"	1
1/2"	2
3/4"	3
1"	4
1 1/4"	5
1 1/2"	6
2"	7
Valve options	**Substitute**
NC (normally closed) Standard	00
NO (normally open)	01
Manual override	02
Seat seal FPM	03
Seat seal PTFE	06
Seat seal EPDM	14
Max. operating pressure 40 bar	22

Frequency	Substitute
See table frequency codes	xx
Voltage	**Substitute**
See table Voltage codes	xxx
Solenoid system	**Substitute**
Standard for V d.c., DN 8 ... 25	9401
Standard for V a.c., DN 8 ... 25	9404
Standard for V d.c., DN 32 ... 50	8401
Standard for V a.c., DN 32 ... 50	8404

Basic dimensions

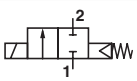


Dimensions shown in mm

Supply port	Ø B	H	H1	L	T	Model
G1/4	44	152	140,5	60	12	8570000.940x
1/4 NPT	44	152	140,5	60	10	8571000.940x
G3/8	44	152	140,5	60	12	8570100.940x
3/8 NPT	44	152	140,5	60	10,5	8571100.940x
G1/2	44	154,5	140,5	67	14	8570200.940x
1/2 NPT	44	154,5	140,5	67	13,5	8571200.940x
G3/4	50	162	146,5	80	16	8570300.940x
3/4 NPT	50	162	146,5	80	14	8571300.940x
G1	62	183	162	95	18	8570400.940x
1 NPT	62	183	162	95	17	8571400.940x

[1] Solenoid rotatable 4 x 90°
Socket turnable 4 x 90° (socket included)

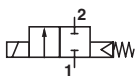
Special applications

Symbol	Application	Port size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Fluid temperature	Ambient/ Pilot temperature	Sealing	Voltage (V d.c.)	Model
	Desiccant dryer purge valve	G3/4	20	7,00	0 ... 25	-20 ... +90°C	-20 ... +50°C	NBR	24	8570300.8301.02400

2/2 way valves (solenoid actuated piston with forced lifting) 85700

1 1/4" ... 2"

2/2 way normally closed valves

Symbol	Size	Orifice (mm)	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model Solenoid in V d.c.	Model Solenoid in V a.c.
	G1 1/4	32	23	0 ... 25	5,6	8570500.8401.xxxxx	8570500.8404.xxxxx
	1 1/4 NPT	32	23	0 ... 25	5,6	8571500.8401.xxxxx	8571500.8404.xxxxx
	G1 1/2	40	25	0 ... 25	5,4	8570600.8401.xxxxx	8570600.8404.xxxxx
	1 1/2 NPT	40	25	0 ... 25	5,4	8571600.8401.xxxxx	8571600.8404.xxxxx
	G 2	50	41	0 ... 25	6,8	8570700.8401.xxxxx	8570700.8404.xxxxx
	2 NPT	50	41	0 ... 25	6,8	8571700.8401.xxxxx	8571700.8404.xxxxx

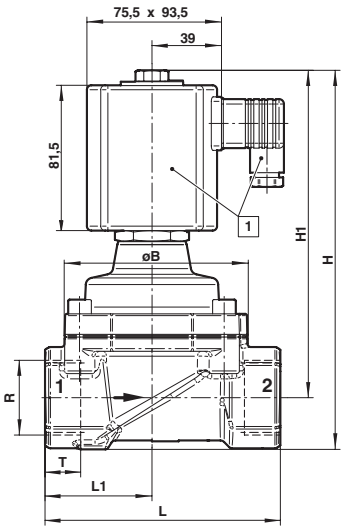
xxxxx Insert voltage and frequency codes

Voltage and frequency codes 8401 and 8404 series solenoid system

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	-	40 W	40 W
036	00	36 V d.c.	-	8 W	8 W
110	00	110 V d.c.	-	40 W	40 W
024	49	24 V a.c.	40 ... 60 Hz	45 VA	45 VA
110	49	110 V a.c.	40 ... 60 Hz	45 VA	45 VA
230	49	230 V a.c.	40 ... 60 Hz	45 VA	45 VA
120	49	120 V a.c.	40 ... 60 Hz	45 VA	45 VA
220	49	220 V a.c.	40 ... 60 Hz	45 VA	45 VA

Note: a.c. achieved by using a rectifier in built with solenoid plug.

Basic dimensions



Dimensions shown in mm

Supply port	Ø B	H	H1	L	L1	T	Model
G1 1/4	92	212,5	183,5	132	60	20	8570500.840x
1 1/4 NPT	92	212,5	183,5	132	60	17	8571500.840x
G1 1/2	92	212,5	183,5	132	60	22	8570600.840x
1 1/2 NPT	92	212,5	183,5	132	60	17	8571600.840x
G 2	109	226,5	192	160	74	24	8570700.840x
2 NPT	109	226,5	192	160	74	17,5	8571700.840x

[1] Solenoid rotatable 4 x 90°
Socket turnable 4 x 90° (socket included)

2/2 way release exhaust valves (pilot actuated) 82900, 83300

3/4" & 1"

Quick release valve for Pantograph systems

One-piece diaphragm

Clear compact design

High flow rate

Aluminium or stainless steel body

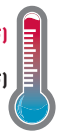
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+85°C (+185°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air, lubricated or non-lubricated
Operation:
Remote pilot operated (pilot exhaust)
Mounting:
Internal threads

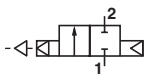
Supply ports:
G3/4, 3/4 NPT, G1 or 1 NPT
Pilot port:
G1/8 or 1/8 NPT
Operating pressure:
0,4 ... 8 bar (13 ... 116 psi)

Fluid temperature:
-40 ... +85°C (-40°F ... +185°F)
Ambient temperature:
-40 ... +85°C (-40°F ... +185°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

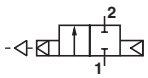
Materials
Body: aluminium
Seat seal: TPE
Body: stainless Steel
Seat seal: TPE

Technical data

2/2 way normally closed valves

Symbol	Port size	Body material	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model
	G3/4	Aluminium	18	0,4 ... 8	0,32	8290300.0000.00000
	3/4 NPT	Aluminium	22	0,4 ... 8	0,29	8290400.0000.00000
	G1	Stainless steel	18	0,4 ... 8	0,7	8330300.0000.00000
	1 NPT	Stainless steel	22	0,4 ... 8	0,8	8330400.0000.00000

Special applications

Symbol	Application	Port size	Body material	Flow kv value (m^3/h)	Operating pressure (bar)	Weight (kg)	Model
	Adapted switching speed	G3/4	Aluminium, anodized	18	0,4 ... 8	0,32	8590103.0000.00000

Option selector

8★★★★★★.0000.00000

Material/thread	Substitute
Aluminium/ISO G parallel	290
Aluminium/NPT	291
Stainless steel/ISO G parallel	330
Stainless steel/NPT	331

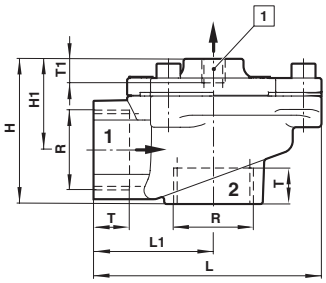
Valve options	Substitute
NC (normally closed) Standard	00
Port size	**Substitute**
3/4"	3
1"	4

2/2 way release exhaust valves (pilot actuated) 82900, 83300

3/4" & 1"

Basic dimensions

Dimensions shown in mm



1 Pilot port G1/8 or 1/8 NPT (pilot exhaust)

Body aluminium

Supply port (R)	B	H	H1	L	L1	T	T1	Model
G3/4	80,0	61,5	39,0	95,0	50	16	10	8290300.0000.00000
3/4 NPT	80,0	61,5	39,0	95,0	50	14	10	8291300.0000.00000
G1	80,0	61,5	39,0	95,0	50	18	10	8290400.0000.00000
1 NPT	80,0	61,5	39,0	95,0	50	17	10	8291400.0000.00000

Body stainless steel

Supply port (R)	B	H	H1	L	L1	T	T1	Model
G3/4	80,0	61,5	39,0	95,0	50	16	10	8330300.0000.00000
3/4 NPT	80,0	61,5	39,0	95,0	50	14	10	8331300.0000.00000
G1	80,0	61,5	39,0	95,0	50	18	10	8330400.0000.00000
1 NPT	80,0	61,5	39,0	95,0	50	17	10	8331400.0000.00000

2/2 way valves (pilot actuated)
82710
1/4" ... 1/2"

Small size drain or shut-off valve

Spindle seal with diaphragm

Suitable for contaminated process fluids

Optical position indicator is standard on 82710

Stainless steel body optional

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+90°C (+194°F)

-10°C (14°F)

Technical features

Medium:
Neutral gases and liquids
Operation:
Remote pilot operated
Mounting:
Internal threads
Port size:
G1/4 ... G1/2 or
1/4 NPT ... 1/2 NPT

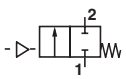
Pilot port:
G1/8
Operating pressure:
-0,9 ... 6 bar (-13 ... 87 psi)
Pilot pressure:
3 ... 8 bar (43 ... 116 psi)
Fluid temperature:
-10 ... +90°C/150°C optional
(14 ... +194°F/302°F optional)

Ambient temperature:
-10 ... +50°C/150°C optional
(14 ... +122°F/302°F optional)
Storage temperature:
-40°C (-40°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

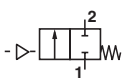
Materials
Body: brass, PPO (cover)
Seat seal: fabric reinforced NBR diaphragm (EPDM or FPM optional)

Technical data

2/2 way normally closed valves

Symbol	Size	Flow kv value (m^3/h)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Model
	G1/4	1,9	-0,9 ... 6	3 ... 8	0,75	8271000.0000.00000
	1/4 NPT	1,9	-0,9 ... 6	3 ... 8	0,75	8275000.0000.00000
	G3/8	2,4	-0,9 ... 6	3 ... 8	0,72	8271100.0000.00000
	3/8 NPT	2,4	-0,9 ... 6	3 ... 8	0,72	8275100.0000.00000
	G1/2	2,9	-0,9 ... 6	3 ... 8	0,70	8271200.0000.00000
	1/2 NPT	2,9	-0,9 ... 6	3 ... 8	0,70	8275200.0000.00000

Special applications

Symbol	Application	Port size	Flow kv value (m^3/h)	Operating pressure (bar)	Pilot pressure (bar)	Fluid temperature	Ambient / Pilot temperature	Sealing	Model
	Drain valve (general purpose)	G1/4	1.9	-0.9 ... 6	3 ... 8	0 ... +90°C	0 ... +50°C	NBR	8271099.0000.00000
	Odour-trap drain valve	G1/4	1.9	-0.9 ... 6	3 ... 8	0 ... +120°C	-10 ... +50°C	EPDM	8495488.0000.00000
	Odour-trap drain valve	G1/2	2.9	-0.9 ... 6	3 ... 8	0 ... +120°C	-10 ... +50°C	EPDM	8496443.0000.00000
	Drain valve (general purpose)	G1/2	2.9	0 ... 2.5	1.5 ... 8	0 ... +90°C	0 ... +50°C	NBR	8496564.0000.00000
	Oil carry over prevention – drain valve	G1/4	1.9	-0.9 ... 10	3 ... 8	0 ... +150°C	0 ... +150°C	FPM	8499330.0000.00000

Option selector

827★★★★.0000.00000

Thread form	Substitute
ISO G parallel	1
NPT	5

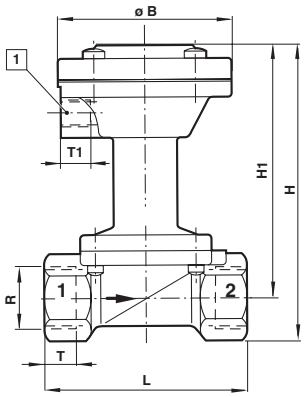
Port size	Substitute
1/4"	0
3/8"	1
1/2"	2

Valve options	Substitute
NC (normally closed) Standard	00
NO (normally open)	01
Seat seal FPM	03
Seat seal EPDM	14
Body stainless steel	51

2/2 way valves (pilot actuated)
82710
1/4" ... 1/2"

Basic dimensions

Dimensions shown in mm



[1] Pilot port G1/8 or 1/8 NPT

Body brass

Supply port (R)	Ø B	H	H1	L	T	T1	Model
G1/4	60	101	86	67	12	10	8271000.0000.00000
1/4 NPT	60	101	86	67	10	9	8275000.0000.00000
G3/8	60	101	86	67	12	10	8271100.0000.00000
3/8 NPT	60	101	86	67	10.5	9	8275100.0000.00000
G1/2	60	101	86	67	14	10	8271200.0000.00000
1/2 NPT	60	101	86	67	13.5	9	8275200.0000.00000

2/2 way valves (pilot actuated)
84180, 84190

1/8" ... 1/2"

Small size drain or shut-off valve

Compact miniature actuator Ø 30 mm

Suitable for contaminated process fluids

Actuator may be rotated 360°

Suitable for vacuum up to max. 90%

Brass or stainless steel body

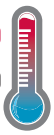
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+90°C (+194°F)

-10°C (14°F)



Technical features

Medium:
Neutral gases and liquids
Operation:
Remote pilot operated
Mounting:
Internal threads
Port size:
G1/8 ... G1/2 or
1/8 NPT ... 1/2 NPT

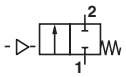
Pilot port:
M5
Operating pressure:
0 ... 25 bar (0 ... 363 psi)
Pilot pressure:
4 ... 10 bar (58 ... 145 psi)

Fluid temperature:
-10 ... +90°C (14 ... 194°F)
Ambient temperature:
-10 ... +60°C (14 ... 140°F)
Storage temperature:
-40°C (-40°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

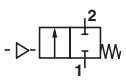
Materials
Body: brass
Seat seal: PTFE
Body: stainless steel
Seat seal: PTFE

Technical data

2/2 way normally closed valves

Symbol	Size	Flow kv value (m^3/h)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Model Body material Brass	Model Body material Stainless steel
	G1/8	0,12	0 ... 25	4 ... 10	0,34	8418800.0000.00000	8419800.0000.00000
	1/8 NPT	0,12	0 ... 25	4 ... 10	0,34	8438800.0000.00000	8439800.0000.00000
	G1/4	0,35	0 ... 25	4 ... 10	0,32	8418020.0000.00000	8419020.0000.00000
	1/4 NPT	0,35	0 ... 25	4 ... 10	0,32	8438020.0000.00000	8439020.0000.00000
	G3/8	0,60	0 ... 20	4 ... 10	0,32	8418140.0000.00000	8419140.0000.00000
	3/8 NPT	0,60	0 ... 20	4 ... 10	0,32	8438140.0000.00000	8439140.0000.00000
	G1/2	1,80	0 ... 8	4 ... 10	0,46	8418260.0000.00000	8419260.0000.00000
	1/2 NPT	1,80	0 ... 8	4 ... 10	0,46	8438260.0000.00000	8439260.0000.00000

Special applications

Symbol	Application	Port size	Flow kv value (m^3/h)	Operating pressure (bar)	Pilot pressure (bar)	Fluid temperature	Ambient / Pilot temperature	Sealing	Model Body material Brass
	Vacuum toilets	G1/4	2	0 ... 6	3 ... 8	0 ... +90°C	0 ... +50°C	NBR	8496487.0000.00000

Option selector

84★★★★★.0000.00000

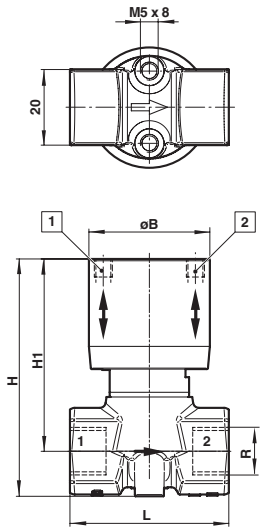
Material/thread	Substitute
Brass/ISO G parallel	18
Brass/NPT	38
Stainless steel/ISO G parallel	19
Stainless steel/NPT	39

Port size	Substitute
1/8"	8
1/4"	0
3/8"	1
1/2"	2

Orifice	Substitute
2 mm	00
4 mm	20
6 mm	40
10 mm	60

2/2 way valves (pilot actuated)
84180, 84190
1/8" ... 1/2"

Basic dimensions



1 Pilot port (normally closed) M5

2 Exhaust port (normally open) M5

Dimensions shown in mm

Projection/First angle

Body brass

Supply port (R)	Orifice	Ø B	H	H1	L	Model
G1/4	2	33	65	53	44	8418800.0000.00000
1/8 NPT	2	33	65	53	44	8438800.0000.00000
G1/4	4	33	65	53	44	8418020.0000.00000
1/4 NPT	4	33	65	53	44	8438020.0000.00000
G3/8	6	33	65	53	44	8418140.0000.00000
3/8 NPT	6	33	65	53	44	8438140.0000.00000
G1/2	10	33	81	67	60	8418260.0000.00000
1/2 NPT	10	33	81	67	60	8438260.0000.00000

Body stainless steel

Supply port (R)	Orifice	Ø B	H	H1	L	Model
G1/4	2	33	65	53	44	8419800.0000.00000
1/8 NPT	2	33	65	53	44	8439800.0000.00000
G1/4	4	33	65	53	44	8419020.0000.00000
1/4 NPT	4	33	65	53	44	8439020.0000.00000
G3/8	6	33	65	53	44	8419140.0000.00000
3/8 NPT	6	33	65	53	44	8439140.0000.00000
G1/2	10	33	81	67	60	8419260.0000.00000
1/2 NPT	10	33	81	67	60	8439260.0000.00000

2/2 way valves (pilot actuated)
84500, 84720
1/2" ... 2"

Large size drain or shut-off valve

High flow rate

Suitable for contaminated process fluids

Damped closing (Valves closes against flow direction)

Suitable for lower case vacuum up to max. 90%

Optical position indicator is standard

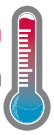
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+180°C (+356°F)

-10°C (14°F)



Technical features

Medium:
Neutral gases and liquids
Operation:
Remote pilot operated
Mounting:
Internal threads
Port size:
G1/2 ... G 2 or
1/2 NPT ... 2 NPT

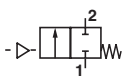
Pilot port:
G1/4 or 1/4 NPT
Operating pressure:
0 ... 16 bar (0 ... 262 psi)
see table
Pilot pressure:
3,5 ... 10 bar (51 ... 116 psi)

Fluid temperature:
-10 ... +180°C (14 ... 356°F)
Ambient temperature:
-10 ... +60°C (14 ... 140°F)
Storage temperature:
-40°C (-40°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials
Body: brass
Seat seal: NBR
Internal parts: brass, stainless steel
Actuator: polymer

Technical data

2/2 way normally closed valves

Symbol	Size	Flow kv value (m^3/h)	Op. pressure act. Ø 50 (bar)	Op. pressure act. Ø 70 (bar)	Pilot pressure (bar)	Weight act. Ø 50 (kg)	Weight act. Ø 70 (kg)	Model actuator Ø 50	Model actuator Ø 70
	G1/2	4,8	0 ... 16	0 ... 16	3,5 ... 10	1,3	1,4	8472200.0000.00000	8450200.0000.00000
	1/2 NPT	4,8	0 ... 16	0 ... 16	3,5 ... 10	1,3	1,4	8473200.0000.00000	8451200.0000.00000
	G3/4	10	0 ... 8	0 ... 10	3,5 ... 10	1,4	1,5	8472300.0000.00000	8450300.0000.00000
	3/4 NPT	10	0 ... 8	0 ... 10	3,5 ... 10	1,4	1,5	8473300.0000.00000	8451300.0000.00000
	G1	14	0 ... 5	0 ... 10	3,5 ... 10	1,7	1,8	8472400.0000.00000	8450400.0000.00000
	1 NPT	14	0 ... 5	0 ... 10	3,5 ... 10	1,7	1,8	8473400.0000.00000	8451400.0000.00000
	G1 1/4	23	-	0 ... 7	3,5 ... 10	-	2,4	-	8450500.0000.00000
	1 1/4 NPT	23	-	0 ... 7	3,5 ... 10	-	2,4	-	8451500.0000.00000
	G1 1/2	30	-	0 ... 4,5	3,5 ... 10	-	2,7	-	8450600.0000.00000
	1 1/2 NPT	30	-	0 ... 4,5	3,5 ... 10	-	2,7	-	8451600.0000.00000
	G 2	37	-	0 ... 3	3,5 ... 10	-	3,9	-	8450700.0000.00000
	2 NPT	37	-	0 ... 3	3,5 ... 10	-	3,9	-	8451700.0000.00000

Option selector

84★★★★★.0000.00000

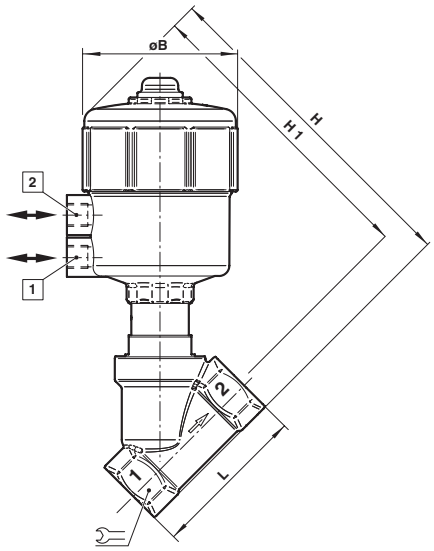
Actuator size	Substitute
Ø 50 (G)	72
Ø 50 (NPT)	73
Ø 70 (G)	50
Ø 70 (NPT)	51
Port size	**Substitute**
1/2"	2
3/4"	3
1"	4
1 1/4"	5
1 1/2"	6
2"	7

Valve options	Substitute
NC (normally closed) Standard	00
NO (normally open)	01
Double acting	08
Double electrical position indicator	23
NAMUR interface plate	50

2/2 way valves (pilot actuated)
84500, 84720
1/2" ... 2"

Basic dimensions

Dimensions shown in mm



2/2 way valves

Supply port	Orifice	Ø B	H	H1	L		Model
G1/2	15	66	154	140,5	65	27	8472200.0000.00000
1/2 NPT	15	66	154	140,5	65	27	8473200.0000.00000
G3/4	20	66	160	144	75	32	8472300.0000.00000
3/4 NPT	20	66	160	144	75	32	8473300.0000.00000
G1	25	66	171	150,5	90	41	8472400.0000.00000
1 NPT	25	66	171	150,5	90	41	8473400.0000.00000
G1/2	15	89,5	177,5	164	65	27	8450200.0000.00000
1/2 NPT	15	89,5	177,5	164	65	27	8451200.0000.00000
G3/4	20	89,5	184	168	75	32	8450300.0000.00000
3/4 NPT	20	89,5	184	168	75	32	8451300.0000.00000
G1	25	89,5	194,5	174	90	41	8450400.0000.00000
1 NPT	25	89,5	194,5	174	90	41	8451400.0000.00000
G1 1/4	32	89,5	209,5	184,5	110	50	8450500.0000.00000
1 1/4 NPT	32	89,5	209,5	184,5	110	50	8451500.0000.00000
G1 1/2	40	89,5	208,5	186	120	55	8450600.0000.00000
1 1/2 NPT	40	89,5	208,5	186	120	55	8451600.0000.00000
G2	50	89,5	229,5	194,5	150	70	8450700.0000.00000
2 NPT	50	89,5	229,5	194,5	150	70	8451700.0000.00000

[1] Pilot port (normally closed) G1/4 or 1/4 NPT

[2] Pilot port (normally open) G1/4 or 1/4 NPT

2/2 way valves (pilot actuated)
82180, 82280

1/2" ... 2"

Large size drain or shut-off valve

High flow rate

Suitable for contaminated process fluids

Damped closing (valves closes against flow direction)

Suitable for vacuum up to max. 90%

Steel operating for higher operating pressure

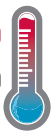
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+180°C (+356°F)

-10°C (14°F)



Technical features

Medium:
Neutral gases and liquids
Operation:
Remote pilot operated
Mounting:
Internal threads
Port size:
G1/2 ... G 2 or 1/2 NPT ... 2 NPT

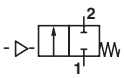
Pilot port:
G1/4 or 1/4 NPT
Operating pressure:
0 ... 16 bar (0 ... 262 psi)
see table
Pilot pressure:
3,5 ... 10 bar (51 ... 116 psi)

Fluid temperature:
-10 ... +180°C (14 ... 356°F)
Ambient temperature:
-10 ... +60°C (14 ... 140°F)
Storage temperature:
-40°C (-40°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

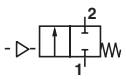
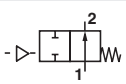
Materials
Body: brass
Seat seal: NBR
Actuator: steel

Technical data

2/2 way normally closed valves

Symbol	Port size	Flow kv value (m^3/h)	Op. pressure act. Ø 70 (bar)	Op. pressure act. Ø 125 (bar)	Pilot pressure (bar)	Weight act. Ø 70 (kg)	Weight act. Ø 125 (kg)	Model actuator Ø 70	Model actuator Ø 125
	G1/2	4,8	0 ... 16	-	3,5 ... 8	1,4	-	8218200.0000.00000	-
	1/2 NPT	4,8	0 ... 16	-	3,5 ... 8	1,4	-	8219200.0000.00000	-
	G3/4	10	0 ... 10	-	3,5 ... 8	1,5	-	8218300.0000.00000	-
	3/4 NPT	10	0 ... 10	-	3,5 ... 8	1,5	-	8219300.0000.00000	-
	G1	14	0 ... 10	-	3,5 ... 8	1,8	-	8218400.0000.00000	-
	1 NPT	14	0 ... 10	-	3,5 ... 8	1,8	-	8219400.0000.00000	-
	G1 1/4	23	0 ... 7	0 ... 16	3,5 ... 8	2,4	5,3	8218500.0000.00000	8228500.0000.00000
	1 1/4 NPT	23	0 ... 7	0 ... 16	3,5 ... 8	2,4	5,3	8219500.0000.00000	8229500.0000.00000
	G1 1/2	30	0 ... 4,5	0 ... 10	3,5 ... 8	2,7	5,5	8218600.0000.00000	8228600.0000.00000
	1 1/2 NPT	30	0 ... 4,5	0 ... 10	3,5 ... 8	2,7	5,5	8219600.0000.00000	8229600.0000.00000
	G 2	37	0 ... 3	0 ... 10	3,5 ... 8	3,9	7,7	8218700.0000.00000	8228700.0000.00000
	2 NPT	37	0 ... 3	0 ... 10	3,5 ... 8	3,9	7,7	8219700.0000.00000	8229700.0000.00000

Special applications

Symbol	Application	Port size	Flow kv value (m^3/h)	Operating pressure (bar)	Pilot pressure (bar)	Fluid temperature	Ambient / Pilot temperature	Sealing	Weight (kg)	Model
	Reduced pilot pressure	G1/2	3,8	0 ... 5	1,5 ... 8	-10 ...+180°C	-10 ...+60°C	PTFE	1,2	8496243.0000.00000
	Tank drain valve	G1	15	0 ... 10	3,5 ... 8	-10 ...+90°C	-10 ...+60°C	PTFE	1,7	8495584.0000.00000
	Tank drain valve	G1 1/2	30	0 ... 10	3,5 ... 8	-10 ...+90°C	-10 ...+60°C	PTFE	5,7	8495585.0000.00000
	Normally open valve	G1	16	0 ... 10	1 ... 6	-10 ...+200°C	-30 ...+60°C	PTFE	2	8496088.0000.00000

2/2 way valves (pilot actuated)
82180, 82280
1/2" ... 2"

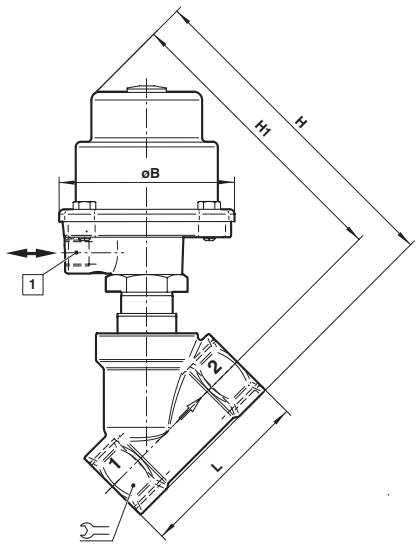
Option selector

82★★★★★.0000.00000

Actuator size	Substitute
Ø 70	1
Ø 125	2
Thread form	**Substitute**
ISO G parallel	8
NPT	9
Port size (G or NPT)	**Substitute**
1/2"	2
3/4"	3
1"	4
1 1/4"	5
1 1/2"	6
2"	7

Valve options	Substitute
NC (normally closed) Standard	00
NO (normally open)	01
Double electrical position indicator	23
Optical position indicator	52
Fluid temperature max. 200°C (392°F)	59

Basic dimensions



Dimensions shown in mm

1 Pilot port G1/4 or 1/4 NPT

2/2 way valves

Supply port	Orifice	Ø B	H	H1	L		Model
G1/2	15	89,5	154	140,5	65	27	8218200.0000.00000
1/2 NPT	15	89,5	154	140,5	65	27	8219200.0000.00000
G3/4	20	89,5	160	144	75	32	8218300.0000.00000
3/4 NPT	20	89,5	160	144	75	32	8219300.0000.00000
G1	25	89,5	171	150,5	90	41	8218400.0000.00000
1 NPT	25	89,5	171	150,5	90	41	8219400.0000.00000
G1 1/4	32	89,5	186	161	110	50	8218500.0000.00000
1 1/4 NPT	32	89,5	186	161	110	50	8219500.0000.00000
G1 1/2	40	89,5	190	162,5	120	55	8218600.0000.00000
1 1/2 NPT	40	89,5	190	162,5	120	55	8219600.0000.00000
G 2	50	89,5	206	171	150	70	8218700.0000.00000
2 NPT	50	89,5	206	171	150	70	8219700.0000.00000
G1 1/4	32	163,0	250	225	110	50	8228500.0000.00000
1 1/4 NPT	32	163,0	250	225	110	50	8229500.0000.00000
G1 1/2	40	163,0	255	227,5	120	55	8228600.0000.00000
1 1/2 NPT	40	163,0	255	227,5	120	55	8229600.0000.00000
G 2	50	163,0	270	235	150	70	8228700.0000.00000
2 NPT	50	163,0	270	235	150	70	8229700.0000.00000

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A powerful and strong brand needs foundations as strong as possible. And that’s why we’ve established clear values at the heart of our brand.

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PRESSURE SWITCHES

18D-LT
Electro-mechanical pneumatic pressure switches

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18D-LT x2
Electro-mechanical pneumatic pressure switches

Page 3-05

Electro-mechanical pneumatic pressure switches 18D-LT

G1/4, 1/4 NPT or flange

Microswitch with gold plated contacts

High number of switching cycles

Microswitch approved by UL and CSA

Intrinsically safe operation

Wide range of temperature

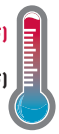
Shock and vibration tested to EN 61373, Category 1, class A and B

Pressure switch suitable for -55°C (-67°F) on request

EN 61373

+85°C (+185°F)

-40°C (-40°F)



Technical features

Medium:
For neutral, gaseous and liquid fluids, non-combustible
Operation:
Diaphragm
Operating temperature range:
Fluid (reliability)
Ambient (reliability)
-40 ... +85°C (-40 ... +185°F)
Temperature at switching element:
-40 ... +85°C (-40 ... +185°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Media viscosity:
Up to 1000 mm^2/s
Switching pressure difference/hysteresis:
Fixed
Repeatability:
Repeatability:
0,2 ... 2 bar (2.9 ... 29 psi): ±0,2 bar (2.9 psi)
0,5 ... 8 bar: (7.2 ... 116 psi) ±0,4 bar (5.6 psi)
1,0 ... 10 bar: (14,5 ... 145 psi) ±0,6 bar (8.7 psi)
1,6 ... 16 bar: (23.2 ... 232 psi) ±0,75 bar (10.8 psi)

Life cycle of mechanical parts:
10^7 switching cycles
Switching element:
Microswitch with gold plated contacts
Degree of protection:
IP65 for DIN EN 175301-803 (DIN 43650) form A connection
IP67 for M12 x 1 connection
Mounting position:
Optional
Electrical connection:
DIN EN 175301-803 (DIN 43650) form A or M12 x 1 IEC 947-5-2

Materials
Housing: Aluminium (brass)
Seals: EPDM, VMQ, NBR

Option selector

088★★5★

Air port	Substitute
G 1/4	0
Flange	1
1/4 NPT	4

Pressure range (bar)	Substitute
-1 ... 0	1
0,2 ... 2	2
0,5 ... 8	3
1 ... 10	4
1 ... 16	6

Electrical connection	Substitute
DIN EN 175301-803 (DIN 43650) form A	7
M12x1 IEC 947-5-2	8

DIN plug connection – plug included in scope of supply

Pressure range *1)	Max. switching pressure difference lower range (bar)	upper range (bar)	Max. over pressure *2) (bar)	Switching cycles (per min)	Materials press sensor body	seals	Port size	Weight (kg)	Drawing No.	Model
-1 ... 0	0,2	0,4	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	2	088#157
0,2 ... 2	0,25	0,45	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	2	088#257
0,5 ... 8	0,4	0,9	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	1	088#357
1 ... 10	0,45	1,0	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	1	088#457
1 ... 16	0,5	1,1	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	1	088#657
-1 ... 0	0,2	0,4	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881157
0,2 ... 2	0,25	0,45	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881257
0,5 ... 8	0,4	0,9	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881357
1 ... 10	0,45	1,0	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881457
1 ... 16	0,5	1,1	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881657

*1) Setpoints should be ideally in the middle of the switching pressure range. Reference pressure = atmospheric pressure. Switching pressure must not exceed the indicated values.
*2) Max. values
Please insert '0' for ISO G, '2' for NPT thread

Electro-mechanical pneumatic pressure switches 18D-LT

G1/4, 1/4 NPT or flange

M12 x 1 Connection – plug not included, max. allowable voltage 30 V

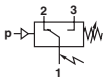
Pressure range *1)	Max. switching pressure difference lower range (bar)	upper range (bar)	Max. over pressure (bar)	Switching cycles (per min)	Materials press sensor body	seals	Port size	Weight (kg)	Drawing No.	Model
-1 ... 0	0,2	0,4	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	2	088#158
0,2 ... 2	0,25	0,45	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	2	088#258
0,5 ... 8	0,4	0,9	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	1	088#358
1 ... 10	0,45	1,0	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	1	088#458
1 ... 16	0,5	1,1	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,2	1	088#658
-1 ... 0	0,2	0,4	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881158
0,2 ... 2	0,25	0,45	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881258
0,5 ... 8	0,4	0,9	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881358
1 ... 10	0,45	1,0	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881458
1 ... 16	0,5	1,1	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,2	3	0881658

*1) Setpoints should be ideally in the middle of the switching pressure range. Reference pressure = atmospheric pressure. Switching pressure must not exceed the indicated values.
*2) Max. values
Please insert '0' for ISO G, '2' for NPT thread

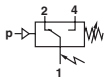
Accessories

Pressure port reducing nipple	Surge damper	Cover (via adjustment screw)	Connector (included as standard in scope of supply of switch)	Connector M 12 x 1, 4-pin, 90°	Connector M 12 x 1 4-pin, straight
					
0574767 (brass)	0574773 (brass)	0554737	0570110	0523056 (without cable)	0523055 (without cable)
0550083 (stainless steel)	0553258 (stainless steel)				

Switching function



Connector DIN EN 175301-803, form A
Microswitch SPDT
Terminals 1 - 3: Contacts close on rising pressure.
Terminals 1 - 2: Contacts open on rising pressure.



Connector M12 x 1
Microswitch SPDT
Terminals 1 - 4: Contacts close on rising pressure.
Terminals 1 - 2: Contacts open on rising pressure.

Switching capacity
Micro-switch with gold plated contacts

Load level	Current type	Load type	U min (V)	Max. permanent current Imax (A) at U (V) 30	48	60	125	250
Standard *3)	a.c.	ohmic	12	5	5	5	5	5
(e.g. contactors, solenoids)	a.c.	inductive, cos φ = 0,7	12	3	3	3	3	3
	d.c.	ohmic	12	5	1,2	0,8	0,4	–
	d.c.	inductive, L/R = 10 ms	12	3	0,5	0,35	0,05	–
Minor *4)	a.c.	ohmic	5 *6)	0,34	0,2	0,17	0,08	0,04
(e.g. electronic circuits)	d.c.	inductive, L/R = 10 ms	5 *6)	0,1	0,01	–	–	–

Reference number: 30/min, Reference temperature: +30°C
Spark quenching/intrinsically safe with diode with d.c. and inductive load:
I max = 1,5 x I max. of table
I min = 1 (mA)
Creepage and air paths correspond to insulation group B
according to VDE Reg. 0110 (except contact clearance of microswitch).

*3) Gold-plating not required as it would decay. Max. perm. inrush current (appr. 30 ms) I a.c. = max. 15 A
*4) Gold-plating required (will not decay).
*6) Lower value of critical voltage guarantees sufficient contact safety. Lower voltages permissible under favourable conditions.

Electro-mechanical pneumatic pressure switches
18D-LT

G1/4, 1/4 NPT or flange

Recommended circuit - spark quenching / intrinsically safe with d.c. voltage

1. Diode D in parallel to inductive load.
   Observance of correct polarity (positive pole to cathode).

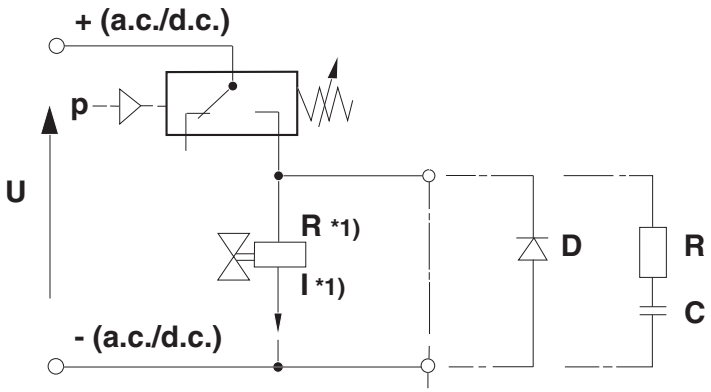
   Dimensioning specifications for quenching diode:
   Rated voltage at diode: $U_D \geq 1{,}4 \times Us$

   Rated current at diode: $I_N \geq I_{Load}$

   Selection of a quick switching diode (recovery time trr ≤ 200 [ms]).

2. RC link in parallel to load in parallel to switching contact.
   Suited for d.c. and a.c. voltage.

   Dimensioning principles:
   R in Ω ≈ 0,2 x R_{Load} in Ω
   C in [µF] ≈ I_{Load} in [A]

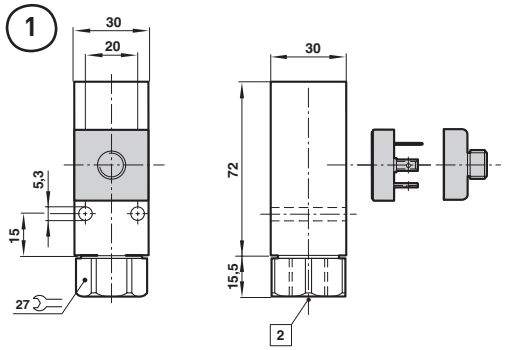


*1) R_{Load}, I_{Load}

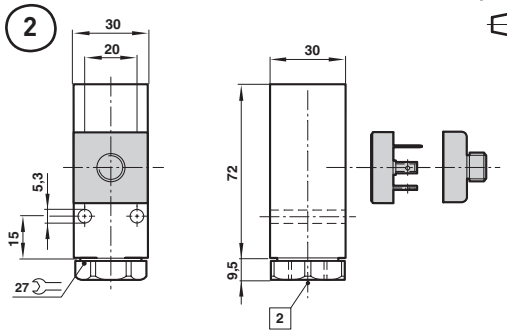
Dimensions

Dimensions shown in mm
Projection/First angle

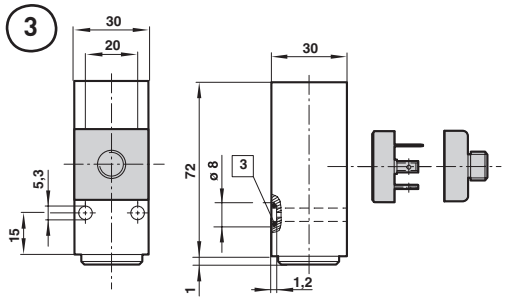
G 1/4 or 1/4 NPT



G 1/4 or 1/4 NPT



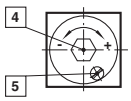
Flange



3 O-ring 5 x 1,5

Adjustable switch point

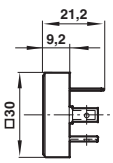
After releasing the locking screw
Clockwise rotation = encreasing switch point
Anti-clockwise rotation = decreasing the switch point



4 Switch point screw
5 Locking screw

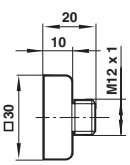
Electrical connection

for plug conforming to
DIN EN 175301-803, form A



Electrical connection

M12 x 1



Electro-mechanical pneumatic pressure switches 18D-LT x2

G1/4, 1/4 NPT, flange

Microswitch with gold plated contacts

High number of switching cycles

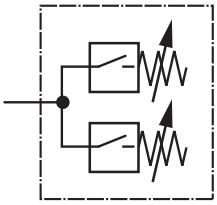
Microswitch approved by UL and CSA

Intrinsically safe operation

Wide range of temperature

Shock and vibration tested to EN 61373, Category 1, class A and B

Pressure switches suitable for -55°C (-67°F) on request



EN 61373

+85°C (+185°F)

-40°C (-40°F)

Technical features

Medium:
For neutral, gaseous and liquid fluids, non-combustible
Operation:
Diaphragm
Operating temperature range:
Fluid/Ambient (reliability)
-40 ... +85°C (-40 ... +185°F)

Temperature at switching element:
-40 ... +85°C (-40 ... +185°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)
Media viscosity:
Up to 1000 mm^2/s
Switching pressure difference/hysteresis:
Fixed

Repeatability:
Repeatability:
0,2 ... 2 bar (2.9 ... 29 psi):
±0,2 bar (2.9 psi)
0,5 ... 8 bar: (7.2 ... 116 psi)
±0,4 bar (5.6 psi)
1,0 ... 10 bar: (14,5 ... 145 psi)
±0,6 bar (8.7 psi)
1,6 ... 16 bar: (23.2 ... 232 psi)
±0,75 bar (10.8 psi)
Life cycle of mechanical parts:
10^7 switching cycles

Switching element:
Microswitch with gold plated contacts
Degree of protection:
IP65
Mounting position:
Optional
Electrical connection:
DIN EN 175301-803
(DIN 43650) form A
Materials
Housing: Aluminium (brass)
Seals: EPDM

Option selector

DS-M2★★4★★★★★A00

Thread form	Substitute
ISO G	G
NPT	N
Flange	F

Port size	Substitute
1/4"	4
Flange	F

Pressure range switch 'A' (bar)	Substitute
0,2 ... 2	02
0,5 ... 8	08
1,0 ... 10	10
1,0 ... 16	16

Electrical switching function switch 'A'	switch 'B'	Substitute
NO	NC	X
NC	NO	Y
NO	NO	O
NC	NC	C

Pressure range switch 'B' (bar)	Substitute
0,2 ... 2	02
0,5 ... 8	08
1,0 ... 10	10
1,0 ... 16	16

Thread port connection – plug included in scope of supply

Pressure range *1) switch A (bar)	switch B (bar)	Max. over pressure *2) (bar)	Switching cycles (per min)	Materials press sensor body	seals	Port size	Weight (kg)	Drawing No.	Model
0,2 ... 2	0,2 ... 2	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440202*A00
0,5 ... 8	0,5 ... 8	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440808*A00
1 ... 10	1 ... 10	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#441010*A00
1 ... 16	1 ... 16	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#441616*A00
0,2 ... 2	0,5 ... 8	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440202*A00
0,2 ... 2	1 ... 10	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440210*A00
0,2 ... 2	1 ... 16	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440216*A00
0,5 ... 8	1 ... 10	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440510*A00
0,5 ... 8	1 ... 16	26	100	AL, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440516*A00

* Please insert X, Y, O or C for electrical switching function see option selector
# Please insert 'G' for ISO G, 'N' for NPT thread
*1) Setpoints should be ideally in the middle of the switching pressure range. Reference pressure = atmospheric pressure. Switching pressure must not exceed the indicated values.
*2) Max. values
Switching pressure difference see page 3-06

Electro-mechanical pneumatic pressure switches 18D-LT x2

G1/4, 1/4 NPT, flange

Flange connection – plug included in scope of supply

Pressure range *1) switch A (bar)	switch B (bar)	Max. over pressure *2) (bar)	Switching cycles (per min)	Materials press sensor body	seals	Port size	Weight (kg)	Drawing No.	Model
0,2 ... 2	0,2 ... 2	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40202*A00
0,5 ... 8	0,5 ... 8	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40808*A00
1 ... 10	1 ... 10	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF41010*A00
1 ... 16	1 ... 16	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF41616*A00
0,2 ... 2	0,5 ... 8	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40208*A00
0,2 ... 2	1 ... 10	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40210*A00
0,2 ... 2	1 ... 16	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40216*A00
0,5 ... 8	1 ... 10	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40510*A00
0,5 ... 8	1 ... 16	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40516*A00

* Please insert X, Y, O or C for electrical switching function, see option selector on page 3-05.
*1) Setpoints should be ideally in the middle of the switching pressure range. Reference pressure = atmospheric pressure. Switching pressure must not exceed the indicated values.
*2) Max. values

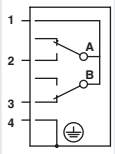
Pressure range and switching pressure difference

Pressure range (bar)	Max. switching pressure difference lower range (bar)	upper range (bar)
0,2 ... 2	0,25	0,45
0,5 ... 8	0,40	0,90
1,0 ... 10	0,45	1,00
1,0 ... 16	0,50	1,10

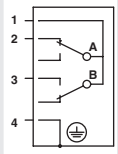
Accessories

Pressure port reducing nipple	Surge damper	Connector (included as standard in scope of supply of switch)
		
0574767 (brass)	0574773 (brass)	0570110
0550083 (stainless steel)	0553258 (stainless steel)	

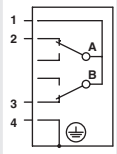
Switching function



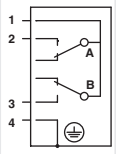
Switch A: NO
Terminals 1 - 2: Contacts closed on rising pressure.
Switch B: NC
Terminals 1 - 3: Contacts closed on falling pressure.



Switch A: NC
Terminals 1 - 2: Contacts closed on falling pressure.
Switch B: NO
Terminals 1 - 3: Contacts closed on rising pressure.



Switch A: NC
Terminals 1 - 2: Contacts closed on falling pressure.
Switch B: NC
Terminals 1 - 3: Contacts closed on falling pressure.



Switch A: NO
Terminals 1 - 2: Contacts closed on rising pressure.
Switch B: NO
Terminals 1 - 3: Contacts closed on rising pressure.

Switching capacity
Micro-switch with gold plated contacts

Load level	Current type	Load type	U min (V)	Max. permanent current Imax (A) at U (V) 30	48	60	125	250
Standard *3)	a.c.	ohmic	12	5	5	5	5	5
(e.g. contactors,	a.c.	inductive, cos φ = 0,7	12	3	3	3	3	3
solenoids)	d.c.	ohmic	12	5	1,2	0,8	0,4	–
	d.c.	inductive, L/R = 10 ms	12	3	0,5	0,35	0,05	–
Minor *4)	a.c.	ohmic	5 *6)	0,34	0,2	0,17	0,08	0,04
(e.g. electronic	d.c.	inductive,	5 *6)	0,1	0,01	–	–	–
circuits)		L/R = 10 ms						

Reference number: 30/min, Reference temperature: +30°C
Spark quenching/intrinsically safe with diode with d.c. and inductive load:
I max = 1,5 x I max. of table
I min = 1 (mA)
Creepage and air paths correspond to insulation group B
according to VDE Reg. 0110 (except contact clearance of microswitch).

*3) Gold-plating not required as it would decay. Max. perm. inrush current (appr. 30 ms) I a.c. = max. 15 A
*4) Gold-plating required (will not decay).
*6) Lower value of critical voltage guarantees sufficient contact safety. Lower voltages permissible under favourable conditions.

Electro-mechanical pneumatic pressure switches 18D-LT x2

G1/4, 1/4 NPT, flange

Recommended circuit – spark quenching / intrinsically safe with d.c. voltage

1. Diode D in parallel to inductive load.
   Observance of correct polarity (positive pole to cathode).

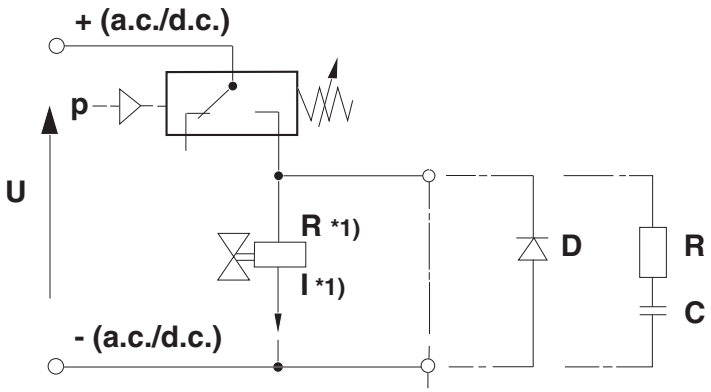
   Dimensioning specifications for quenching diode:
   Rated voltage at diode: $U_D \geq 1{,}4 \times Us$

   Rated current at diode: $I_N \geq I_{Load}$

   Selection of a quick switching diode (recovery time trr $\leq$ 200 [ms]).

2. RC link in parallel to load in parallel to switching contact.
   Suited for d.c. and a.c. voltage.

   Dimensioning principles:
   R in Ω ≈ 0,2 x R_{Load} in Ω
   C in [µF] ≈ I_{Load} in [A]



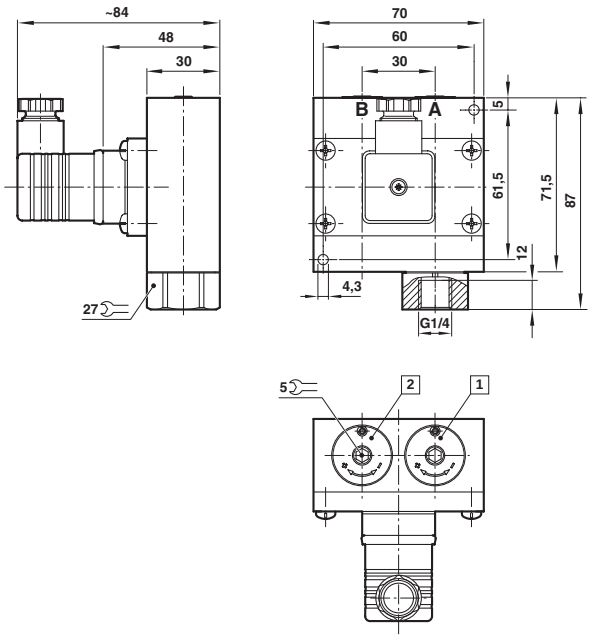
*1) R_{Load}, I_{Load}

Dimensions

G 1/4 or 1/4 NPT

(4)

Dimensions shown in mm
Projection/First angle

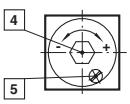


1 Switch A

2 Switch B

Adjustable switch point

After releasing the locking screw
Clockwise rotation = encreasing switch point
Anti-clockwise rotation = decreasing the switch point



4 Switch point screw

5 Locking screw

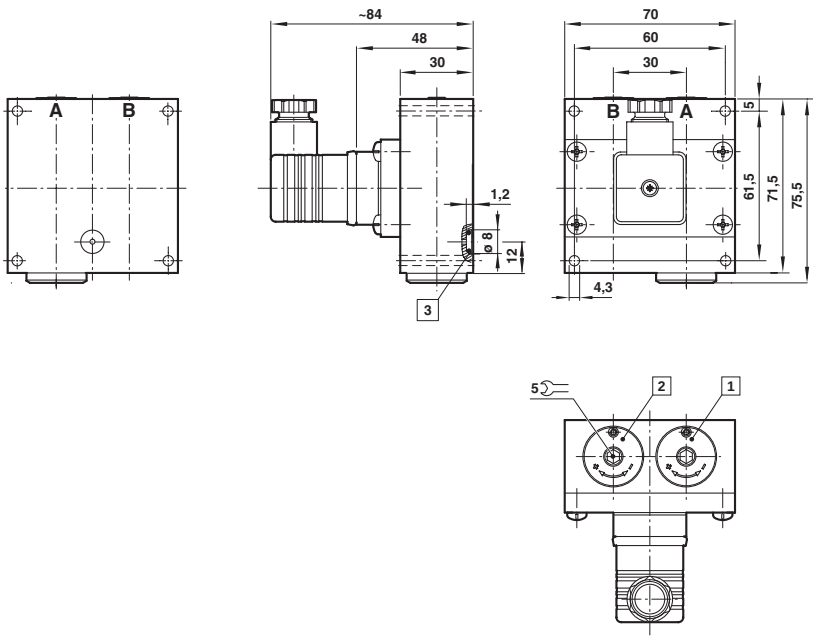
Electro-mechanical pneumatic pressure switches
18D-LT x2

G1/4, 1/4 NPT, flange

Flange

5

Dimensions shown in mm
Projection/First angle



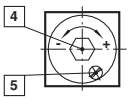
1 Switch A

2 Switch B

3 O-ring 5 x 1,5

Adjustable switch point

After releasing the locking screw
Clockwise rotation = encreasing switch point
Anti-clockwise rotation = decreasing the switch point



4 Switch point screw

5 Locking screw

AIR LINE EQUIPMENT

Excelon® Quikclamp system LF72G, LF73G, LF74G
General purpose filter
1/4" ... 3/4"

Page 4-02

Excelon® Quikclamp system LF74H
Oil removal filter
1/2" & 3/4"

Page 4-05

Excelon® Quikclamp system LR72G, LR73G, LR74G
Pressure regulator
1/4" ... 3/4"

Page 4-07

Excelon® Quikclamp system LB72G, LB73G, LB74G
Filter regulator
1/4" ... 3/4"

Page 4-11

Olympian Plus plug-in system LF64G, LF68E
General purpose filter
1/4" ... 1 1/2"

Page 4-15

Olympian Plus plug-in system LF64H, LF68H
Oil removal (coalescing) filter
3/8" ... 1 1/2"

Page 4-20

Olympian Plus plug-in system LR64G, LR68G
Pressure regulator
1/4" ... 1 1/2"

Page 4-25

Olympian Plus plug-in system LB64G, LB68G
Filter/regulator
1/4" ... 1 1/2"

Page 4-30

Miniature series LF07
General purpose filter
1/8" & 1/4"

Page 4-36

Miniature series LR07
General purpose regulator
1/8" & 1/4"

Page 4-38

Miniature series LB07
General purpose filter/ regulator
1/8" & 1/4"

Page 4-40

LF17
General purpose filter
3/4" ... 1 1/2"

Page 4-42

LF46
Oil removal (coalescing) filter
3/4", 1" & 1 1/4"

Page 4-44

LR17
General purpose regulator
3/4", 1", 1 1/4" and 1 1/2"

Page 4-46

L20AG
High flow pressure regulator
1/2" ... 1"

Page 4-48

LR27
Precision pressure regulator
G 1/4

Page 4-51

SLA/15542
Compact interface mount regulator

Page 4-53

Excelon® Quikclamp system LV72G, LV74G
Pressure relief valves
1/4" ... 3/4"

Page 4-54

LVP50
3 way proportional pressure control valve
G 1/4, 1/4 NPT or manifold

Page 4-58

18-013-...
Gauge
1/8" & 1/4"

Page 4-61

General purpose filter
Excelon® Quikclamp system LF72G, LF73G, LF74G
1/4" ... 3/4"

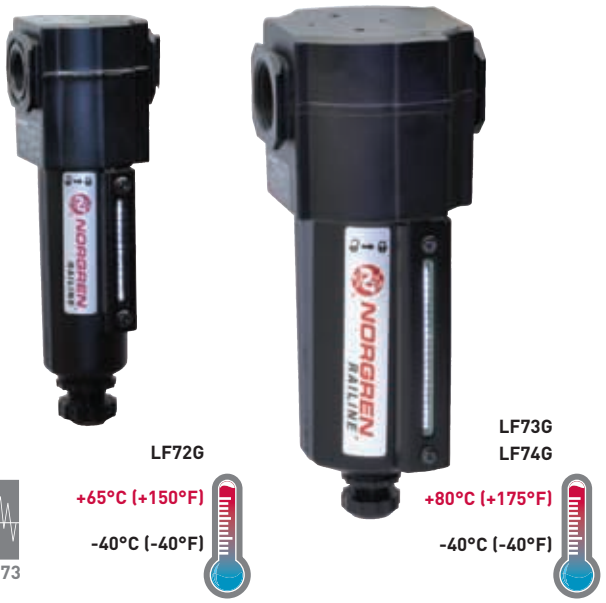
Excelon design allows in-line installation or modular installation with other Excelon products

Quick release bayonet bowl

Prismatic liquid level indicator lens

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B



Technical features

Medium:
Compressed air only
Maximum inlet pressure:
17 bar (250 psi)
Filter element:
5 or 40 µm; 25 µm optional
Drain:
Manual

Ambient temperature:
LF72G: -40 ... +65°C (-40 ... +150°F)
LF73G & LF74G: -40 ... +80°C (-40 ... +175°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
LF72G:
Body and bowl: zinc
Liquid level indicator lens: transparent nylon
Element: sintered polypropylene
Elastomers: nitrile
LF73G & LF74G
Body and bowl: aluminium
Liquid level indicator lens: transparent nylon
Element: sintered polypropylene
Elastomers: nitrile

Technical data

Air port	Flow* dm^3/s	scfm	Weight kg	lb	Model with G-thread 40 µm	5 µm	Model with PTF-thread 40 µm	5 µm
1/4"	30	64	0,56	1.23	LF72G-2GN-ME3	LF72G-2GN-ME1	LF72G-2AN-ME3	LF72G-2AN-ME1
3/8"	30	64	0,56	1.23	LF72G-3GN-ME3	LF72G-3GN-ME1	LF72G-3AN-ME3	LF72G-3AN-ME1
1/4"	29	62	0,51	1.12	LF73G-2GN-MD3	LF73G-2GN-MD1	LF73G-2AN-MD3	LF73G-2AN-MD1
3/8"	35	75	0,51	1.12	LF73G-3GN-MD3	LF73G-3GN-MD1	LF73G-3AN-MD3	LF73G-3AN-MD1
1/2"	38	81	0,51	1.12	LF73G-4GN-MD3	LF73G-4GN-MD1	LF73G-4AN-MD3	LF73G-4AN-MD1
3/8"	66	141	0,81	1.78	LF74G-3GN-MD3	LF74G-3GN-MD1	LF74G-3AN-MD3	LF74G-3AN-MD1
1/2"	83	178	0,82	1.80	LF74G-4GN-MD3	LF74G-4GN-MD1	LF74G-4AN-MD3	LF74G-4AN-MD1
3/4"	83	178	0,80	1.76	LF74G-6GN-MD3	LF74G-6GN-MD1	LF74G-6AN-MD3	LF74G-6AN-MD1

* Typical flow at 6,3 bar (90 psi) inlet pressure, 40 µm element and 0,5 bar (7 psi) pressure drop.

Option selector

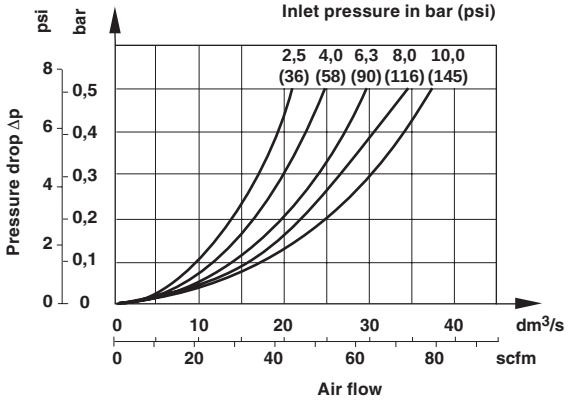
LF7★G-★★N-M★★

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 form	**Substitute**
PTF	A
ISO G parallel	G

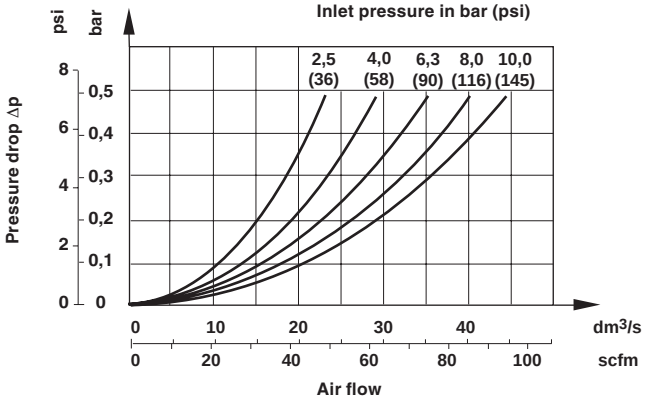
Filter element	Substitute
5 µm	1
25 µm (optional)	2
40 µm	3
Bowl with liquid level indicator	**Substitute**
Metal (73/74)	D
Long metal with liquid indicator (72)	E

Flow characteristics

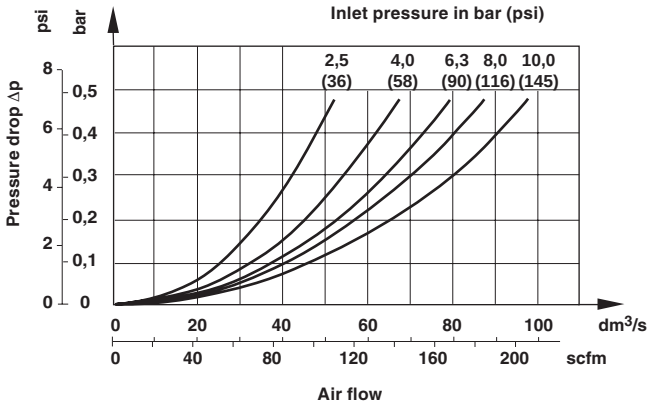
LF72G – Port size 1/4", 40 µm element



LF73G – Port size 3/8", 40 µm element



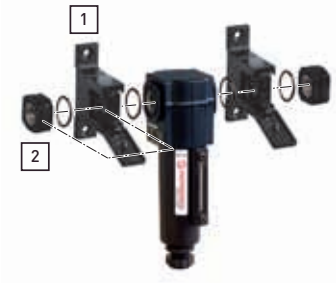
LF74G – Port size 1/2", 40 µm element



General purpose filter
Excelon® Quikclamp system LF72G, LF73G, LF74G
1/4" ... 3/4"

Accessories

72 series



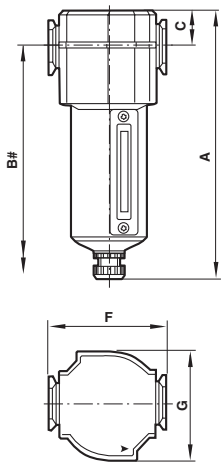
73/74 series

Series	Quikclamp with wall bracket* 1	Quikclamp*	Service kit	Replacement elements 5 µm	Replacement elements 40 µm
72	4214-58	4214-57	4380-502	5925-03	5925-02
73	4314-63	4314-62	4380-607	4438-01	4438-03
74	4314-63	4314-62	4380-701	4438-04	4438-05

* Please use a Quikmount pipe adaptor if the Quikclamp be mounted at inlet or outlet side.

Series	Port size	Quikmount pipe adaptor ISO G parallel thread 2	PTF-thread 2
72	1/4"	4215-08	4215-02
72	3/8"	4215-09	4215-03
73 & 74	1/4"	4315-09	4315-01
73 & 74	3/8"	4315-10	4315-02
73 & 74	1/2"	4315-11	4315-03
73 & 74	3/4"	4315-12	4315-04

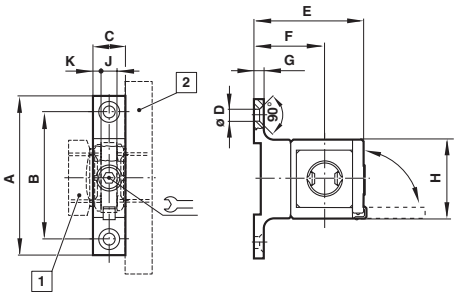
Basic dimensions



Minimum clearance required to remove bowl

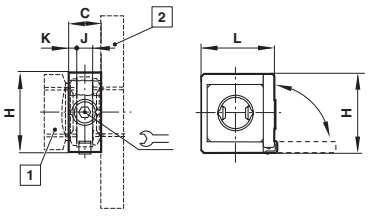
Series	A	B	C	F	G
72	161	176	19	50	48
73	175	198	25	68	62
74	196	221	25	80	74

Quikclamp® with wall bracket



Series	A	B	C	Ø D	E	F	G	H	J	K	
72	74	59	14,5	5,3	56	38	4,5	36,5	6,5	4	3
73/74	102	83	24,5	6,5	74	51	6,5	51	13,5	5,5	4

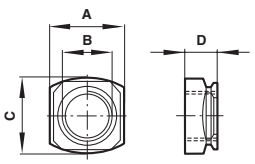
Quikclamp®



1 Quikmount pipe adaptor
2 Excelon® unit

Series	C	H	J	K	L	
72	14,5	36,5	6,5	4	36,5	3
73/74	24,5	51	13,5	5,5	46	4

Quikmount pipe adaptor



Series	A	B	C	D
72	29	1/4, 3/8	29	16
73/74	38,5	1/4, 3/8, 1/2, 3/4	38,5	18

Dimensions shown in mm
Projection/First angle

Oil removal filter
Excelon® Quikclamp system LF74H
1/2" & 3/4"

Excelon design allows in-line installation or modular installation with other Excelon products

High efficiency oil and particle removal

Quick release bayonet bowl

Service indicator standard

Prismatic liquid level indicator lens

Wide temperature range

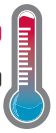
Shock and vibration tested to EN 61373, Category 1, class A and B

Install an LF74G filter with 5 µm element upstream of the LF74H for maximum service life

EN 61373

+65°C (+150°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air
Maximum inlet pressure:
17 bar (250 psi)
Particle removal:
To 0,01 µm

Maximum remaining oil content in outlet air:
0,01 mg/m³ at +20°C with an inlet concentration of 17 mg/m³.
Drain:
Manual

Ambient temperature:
-40 ... +65°C (-40 ... +150°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
Body and bowl: aluminium
Liquid level indicator lens: transparent nylon
Element: synthetic fibre & polyurethane foam
Elastomers: nitrile

Service life indicator:
Body and adaptor: aluminium
lens: transparent nylon
Internal parts: acetal
Spring: stainless steel
Elastomers: nitrile

Technical data

Air port	Flow* dm³/s	scfm	Weight kg	lb	Model with G-thread	Model with PTF-thread
1/2"	28	59	1,12	2.46	LF74H-4GN-MD0	LF74H-4AN-MD0
3/4"	28	59	1,11	2.44	LF74H-6GN-MD0	LF74H-6AN-MD0

* Maximum flow to maintain stated oil content at 6,3 bar (90 psi) inlet pressure.

Option selector

LF74H-★★D-MD0

Port size	Substitute
1/2"	4
3/4"	6

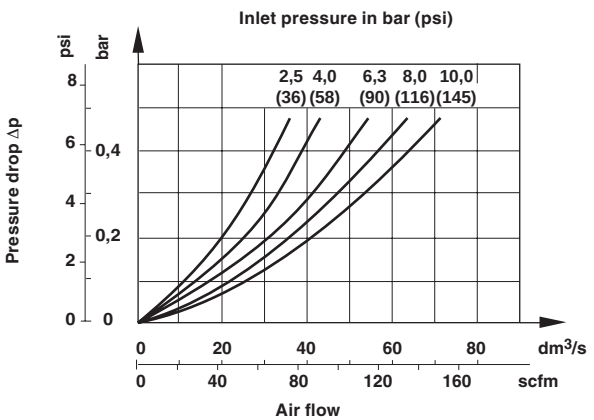
Threads form	Substitute
PTF	A
ISO G parallel	G

Typical performance characteristics

Inlet pressure bar	psi	Maximum flow dm³/s*	scfm
1	15	11,2	24
3	45	19,3	41
5	75	24,9	53
6,3	90	28,0	59
7	100	29,5	63
9	130	33,5	71

* Maximum flow to maintain stated oil removal performance

Flow characteristics



Oil removal filter
Excelon® Quikclamp system LF74H
1/2" & 3/4"

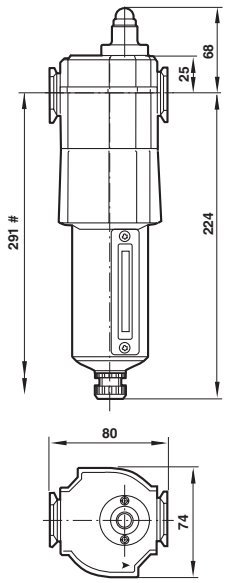
Accessories

Quikclamp with wall bracket*	Quikclamp*	Service kit
 1		
4314-63	4314-62	4380-731 Seal and element
		4344-04 Oil removal element

* Please use a Quikmount pipe adaptor if the Quikclamp is mounted at inlet or outlet side.

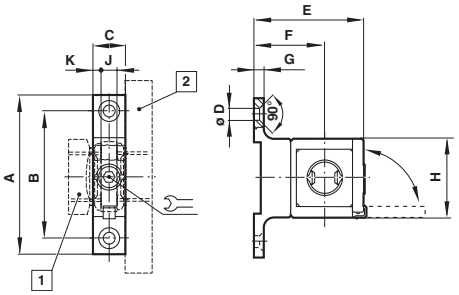
Port size	Quikmount pipe adaptor ISO G parallel thread  2	PTF-thread  2
1/4"	4315-09	4315-01
3/8"	4315-10	4315-02
1/2"	4315-11	4315-03
3/4"	4315-12	4315-04

Basic dimensions



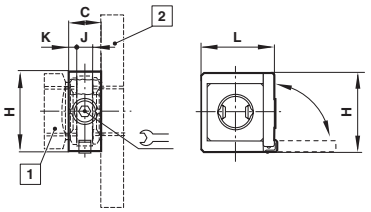
Minimum clearance required to remove bowl

Quikclamp® with wall bracket



A	B	C	ØD	E	F	G	H	J	K	
102	83	24,5	6,5	74	51	6,5	51	13,5	5,5	4

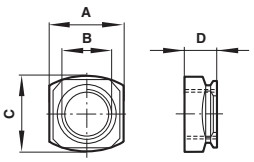
Quikclamp®



1 Quikmount pipe adaptor
2 Excelon® unit

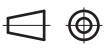
C	H	J	K	L	
24,5	51	13,5	5,5	46	4

Quikmount pipe adaptor



A	B	C	D
38,5	1/4, 3/8, 1/2, 3/4	38,5	18

Dimensions shown in mm
Projection/First angle



Pressure regulator
Excelon® Quikclamp system LR72G, LR73G, LR74G
1/4" ... 3/4"

Excelon design allows in-line or modular installation

Balanced valve design for optimum pressure control

Push to lock adjusting knob with tamper resistant accessory

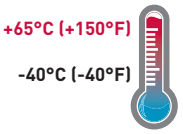
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

LR72G

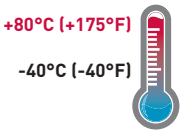
LR73G
LR74G

EN 61373



+65°C (+150°F)

-40°C (-40°F)



+80°C (+175°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air
Pressure range:
0,3 ...10 bar (4.35 ... 145 psi)
Other pressure ranges are available contact Norgren
Maximum inlet pressure:
20 bar (290 psi)

Gauge ports:
LR72: Rc 1/8 for ISO G main ports, 1/8 PTF for PTF main ports
LR73/74: Rc 1/8 for ISO G main ports, 1/4 PTF for PTF main ports

Ambient temperature:
LR72G: -40 ... +65°C (-40 ... +150°F)
LR73G & LR74G: -40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
LR72
Body: zinc
Bonnet & bottom plug: acetal
Valve: brass
Elastomers: nitrile
LR73G
Body: aluminium
Bonnet: zinc
Valve: brass
Bottom plug: acetal
Elastomers: nitrile
LR74G
Body & bonnet: aluminium
Valve: brass
Bottom plug: acetal
Elastomers: nitrile

Technical data

Air port	Flow* dm^3/s	scfm	Weight kg	lb	Model with G-thread	Model with PTF-thread
1/4"	33	70	0,36	0.79	LR72G-2GK-RMN	LR72G-2AK-RMN
3/8"	33	70	0,36	0.79	LR72G-3GK-RMN	LR72G-3AK-RMN
1/4"	50	106	0,48	1.05	LR73G-2GK-RMN	LR73G-2AK-RMN
3/8"	60	127	0,48	1.05	LR73G-3GK-RMN	LR73G-3AK-RMN
1/2"	60	127	0,48	1.05	LR73G-4GK-RMN	LR73G-4AK-RMN
3/8"	98	208	0,82	1.80	LR74G-3GK-RMN	LR74G-3AK-RMN
1/2"	105	222	0,80	1.76	LR74G-4GK-RMN	LR74G-4AK-RMN
3/4"	105	222	0,78	1.71	LR74G-6GK-RMN	LR74G-6AK-RMN

* Typical flow at 10 bar (145 psi) inlet pressure, 6,3 bar (90 psi) set pressure and 0,5 bar (7 psi) droop from set.

Option selector

LR7★G-★★★-RMN

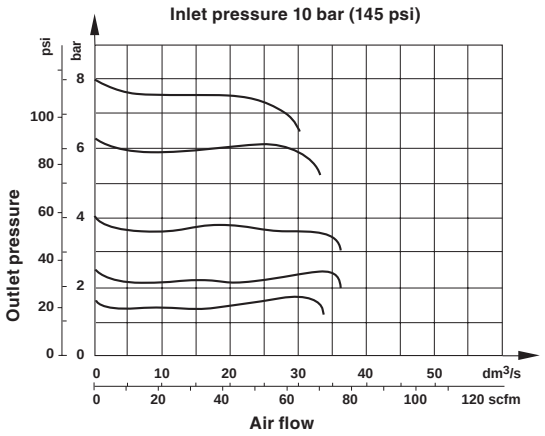
Series	Substitute
72	2
73	3
74	4
Port size	**Substitute**
1/4" (72 & 73)	2
3/8" (72, 73 & 74)	3
1/2" (73 & 74)	4
3/4" (74)	6

Adjustment	Substitute
Knob (standard)	K
T-handle (10 bar, 145 psi)	T
Threads form	**Substitute**
PTF	A
ISO G parallel	G

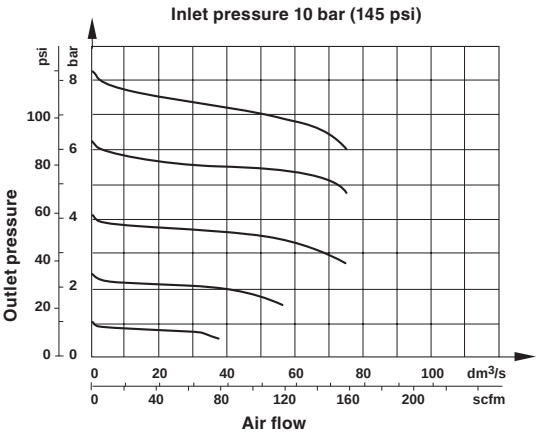
Pressure regulator
Excelon® Quikclamp system LR72G, LR73G, LR74G
1/4" ... 3/4"

Flow characteristics

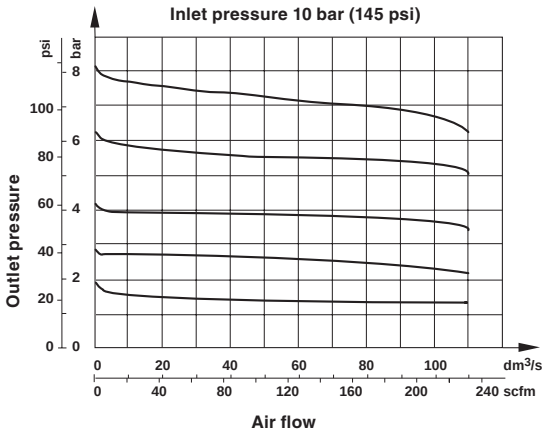
LR72G – Port size 1/4", regulating range 0,3 ... 10 bar (5 ... 145 psi)



LR73G – Port size 3/8", regulating range 0,3 ... 10 bar (5 ... 145 psi)



LR74G – Port size 1/2", regulating range 0,3 ... 10 bar (5 ... 145 psi)

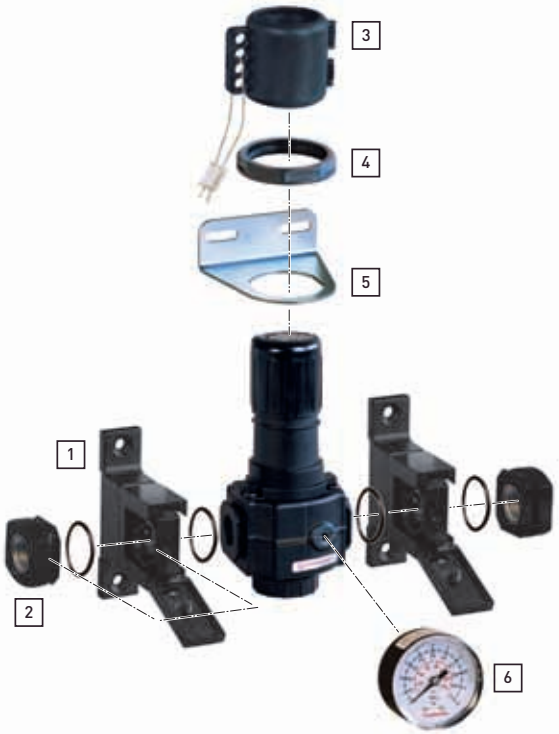


Pressure regulator
Excelon® Quikclamp system LR72G, LR73G, LR74G
1/4" ... 3/4"

Accessories

72 series

73/74 series



Series	Quikclamp with wall bracket*	Quikclamp*	Tamper resistant cover & seal wire	Wall bracket and panel mounting nut	Panel nut (zinc)	Service kit
	 1		 3	 4 5	 4	
72	4214-58	4214-57	4255-51	74316-50	4268-89	4381-513
73	4314-63	4314-62	4455-51	4461-50	5191-88	4383-607
74	4314-63	4314-62	4355-51	4368-51	4368-89	4381-708

* Please use a Quikmount pipe adaptor if the Quikclamp is mounted at inlet or outlet side.

Series	Port size	Quikmount pipe adaptor ISO G parallel thread  2	PTF-thread  2
72	1/4"	4215-08	4215-02
72	3/8"	4215-09	4215-03
73 & 74	1/4"	4315-09	4315-01
73 & 74	3/8"	4315-10	4315-02
73 & 74	1/2"	4315-11	4315-03
73 & 74	3/4"	4315-12	4315-04

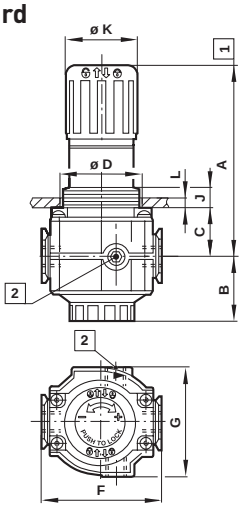
Gauge (for full technical specification see page 4-61)		 6	 6		
Series	Port size	Pressure range in bar	Pressure range in psi	Diameter	Model
72 (ISO G main port)	Rc 1/8	0 ... 10		40 mm	18-013-989
72 (PTF main port)	1/8 PTF		0 ... 160	1 1/2"	18-013-212
73 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
73 (PTF main port)	1/4 PTF		0 ... 160	2"	18-013-209
74 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
74 (PTF main port)	1/4 PTF		0 ... 160	2"	18-013-209

Pressure regulator
Excelon® Quikclamp system LR72G, LR73G, LR74G
1/4" ... 3/4"

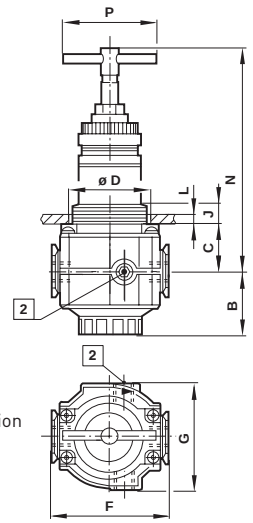
Basic dimensions

Dimensions shown in mm
Projection/First angle

Standard



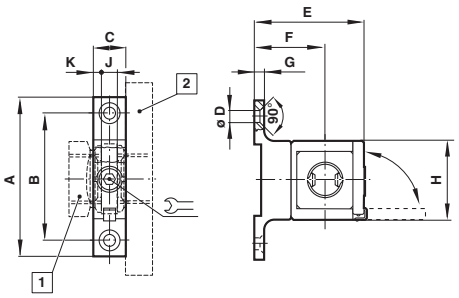
T-handle



1 Reduces by 4 mm with knob in locked position
2 Gauge port

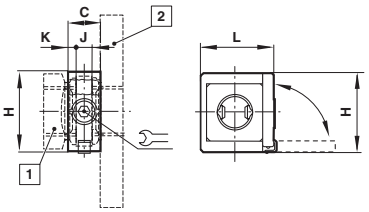
Series	A	B	C	F	G	ØD	J	ØK	L	N	P
72	73	33	26	50	48	40	12	35	0 ... 4	102	63
73	96	39	31	68	62	48	11	42	2 ... 6	103	63
74	127	43	31	80	74	52	19	47	2 ... 6	151	63

Quikclamp® with wall bracket



Series	A	B	C	ØD	E	F	G	H	J	K	
72	74	59	14,5	5,3	56	38	4,5	36,5	6,5	4	3
73/74	102	83	24,5	6,5	74	51	6,5	51	13,5	5,5	4

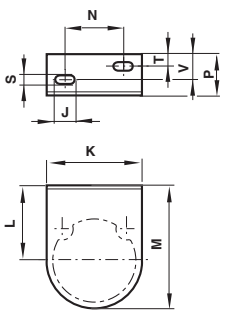
Quikclamp®



1 Quikmount pipe adaptor
2 Excelon® unit

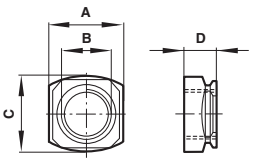
Series	C	H	J	K	L	
72	14,5	36,5	6,5	4	36,5	3
73/74	24,5	51	13,5	5,5	46	4

Neck mounting bracket



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	13	13
74	24	89	52	86	56	35	23	7	12	12

Quikmount pipe adaptor



Series	A	B	C	D
72	29	1/4, 3/8	29	16
73/74	38,5	1/4, 3/8, 1/2, 3/4	38,5	18

Filter regulator
Excelon® Quikclamp system LB72G, LB73G, LB74G
1/4" ... 3/4"

Excelon design allows in-line installation or modular installation with other Excelon products

High efficiency water and particle removal

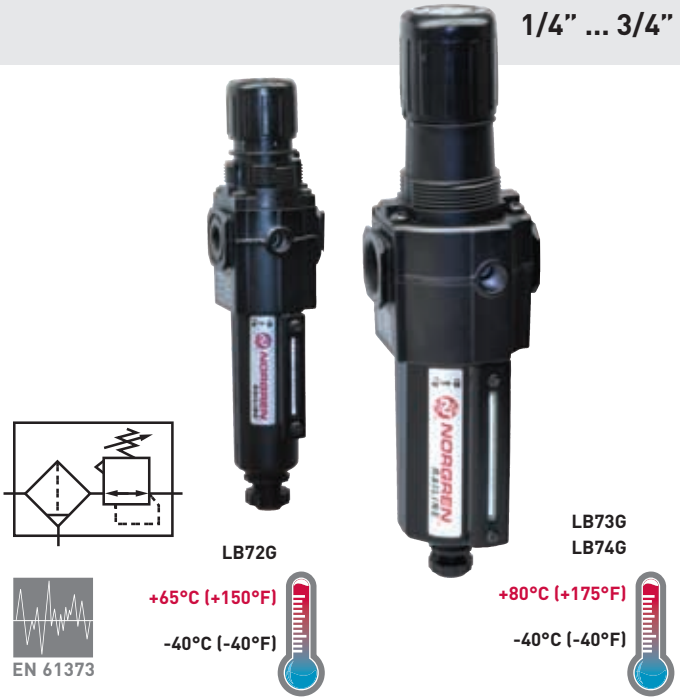
Quick release bayonet bowl

Push to lock adjusting knob with tamper resistant accessory

Prismatic liquid level indicator lens

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B



Technical features

Medium:
Compressed air only
Pressure range:
0,3 ...10 bar (5 ... 145 psi)
Other pressure ranges are available contact Norgren
Maximum inlet pressure:
17 bar (250 psi)
Filter element:
5 or 40 µm; 25 µm optional
Gauge ports:
LB72G: Rc 1/8 for ISO G main ports, 1/8 PTF for PTF main ports
LB73G & LB74G:
Rc 1/8 for ISO G main ports, 1/4 PTF for PTF main ports

Drain:
Manual
Relieving:
Standard
Ambient temperature:
LB72G:-40 ... +65°C
(-40 ... +150°F)
LB73G & LB74G: -40 ... +80°C
(-40 ... +175°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
LB72G:
Body and bowl: zinc
Bonnet: acetal
Valve: brass and nitrile
Liquid level indicator lens: transparent nylon
Element: sintered polypropylene
Elastomers: nitrile

LB73G:
Body and bowl: aluminium
Bonnet: zinc
Valve: brass and nitrile
Liquid level indicator lens: transparent nylon
Element: sintered polypropylene
Elastomers: nitrile
LB74G:
Body, bonnet and bowl: aluminium
Valve: brass and nitrile
Liquid level indicator lens: transparent nylon
Element: sintered polypropylene
Elastomers: nitrile

Technical data

Air port	Flow* dm^3/s	scfm	Weight kg	lb	Model with G-thread 40 µm	5 µm	Model with PTF-thread 40 µm	5 µm
1/4"	38	81	0,76	1.67	LB72G-2GK-ME3-RMN	LB72G-2GK-ME1-RMN	LB72G-2AK-ME3-RMN	LB72G-2AK-ME1-RMN
3/8"	38	81	0,76	1.67	LB72G-3GK-ME3-RMN	LB72G-3GK-ME1-RMN	LB72G-3AK-ME3-RMN	LB72G-3AK-ME1-RMN
1/4"	49	104	0,71	1.56	LB73G-2GK-MD3-RMN	LB73G-2GK-MD1-RMN	LB73G-2AK-MD3-RMN	LB73G-2AK-MD1-RMN
3/8"	50	106	0,71	1.56	LB73G-3GK-MD3-RMN	LB73G-3GK-MD1-RMN	LB73G-3AK-MD3-RMN	LB73G-3AK-MD1-RMN
1/2"	50	106	0,71	1.56	LB73G-4GK-MD3-RMN	LB73G-4GK-MD1-RMN	LB73G-4AK-MD3-RMN	LB73G-4AK-MD1-RMN
3/8"	77	163	1,31	2.88	LB74G-3GK-MD3-RMN	LB74G-3GK-MD1-RMN	LB74G-3AK-MD3-RMN	LB74G-3AK-MD1-RMN
1/2"	100	212	1,31	2.88	LB74G-4GK-MD3-RMN	LB74G-4GK-MD1-RMN	LB74G-4AK-MD3-RMN	LB74G-4AK-MD1-RMN
3/4"	100	212	1,31	2.88	LB74G-6GK-MD3-RMN	LB74G-6GK-MD1-RMN	LB74G-6AK-MD3-RMN	LB74G-6AK-MD1-RMN

* Typical flow at 10 bar (145 psi) inlet pressure, 6,3 bar (90 psi) set pressure and 0,5 bar (7 psi) droop from set.

Filter regulator
Excelon® Quikclamp system LB72G, LB73G, LB74G
1/4" ... 3/4"

Option selector

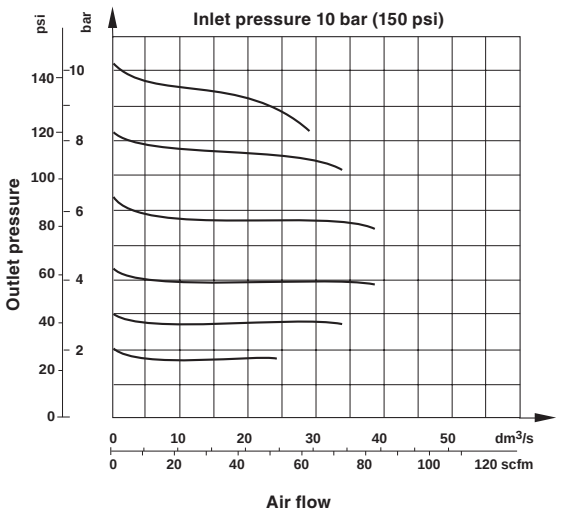
LB7★G-★★★-M★★-RMN

Series	Substitute
72	2
73	3
74	4
Port size	**Substitute**
1/4" (72 & 73)	2
3/8" (72 ... 74)	3
1/2" (73 & 74)	4
3/4" (74)	6
Threads form	**Substitute**
PTF	A
ISO G parallel	G

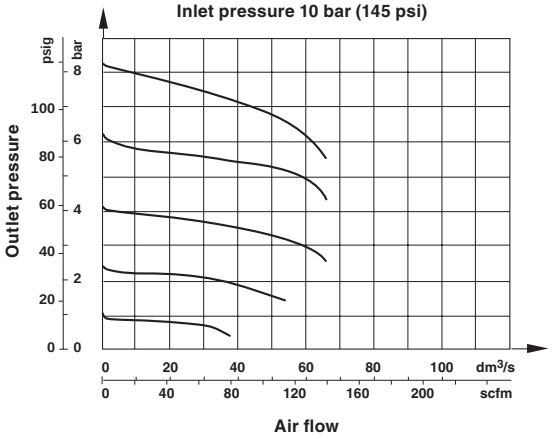
Filter element	Substitute
5 µm	1
25 µm (optional)	2
40 µm	3
Bowl with liquid level indicator	**Substitute**
Metal (73/74)	D
Long metal with liquid indicator (72)	E
Adjustment	**Substitute**
Knob (standard)	K
T-handle (10 bar, 145 psi)	T

Flow characteristics

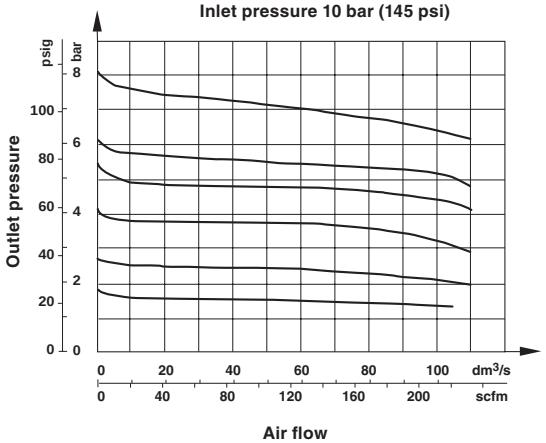
LB72G – Port size 1/4", pressure range 0,3 ... 10 bar (5 ... 145 psi), 40 µm element



LB73G – Port size 3/8", pressure range 0,3 ... 10 bar (5 ... 145 psi), 40 µm element

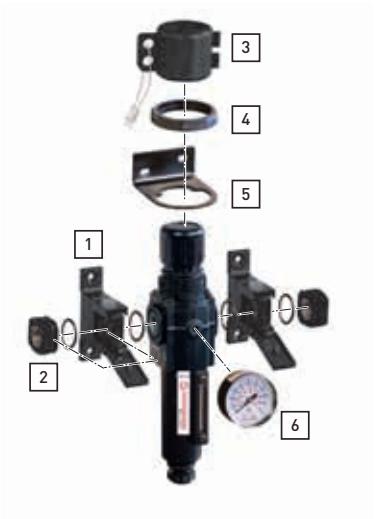


LB74G – Port size 1/2", pressure range 0,3 ... 10 bar (5 ... 145 psi), 40 µm element



Filter regulator
Excelon® Quikclamp system LB72G, LB73G, LB74G
1/4" ... 3/4"

Accessories
72 series



Accessories
73/74 series

Series	Quikclamp with wall bracket*	Quikclamp*	Tamper resistant cover & seal wire	Wall bracket and panel mounting nut	Panel nut (zinc)	Service kit	Service kit	Replacement elements	
	1		3	4 5	4			5 µm	40 µm
72	4214-58	4214-57	4255-51	74316-51	4248-88	4381-513	4380-502	5925-03	5925-02
73	4314-63	4314-62	4455-51	4461-50	5191-88	4383-607	4380-607	4438-01	4438-03
74	4314-63	4314-62	4355-51	4368-51	4348-89	4381-708	4380-701	4438-04	4438-05

* Please use a Quikmount pipe adaptor if the Quikclamp be mounted at inlet or outlet side.

Series	Port size	Quikmount pipe adaptor ISO G parallel thread 2	PTF-thread 2
72	1/4"	4215-08	4215-02
72	3/8"	4215-09	4215-03
73 & 74	1/4"	4315-09	4315-01
73 & 74	3/8"	4315-10	4315-02
73 & 74	1/2"	4315-11	4315-03
73 & 74	3/4"	4315-12	4315-04

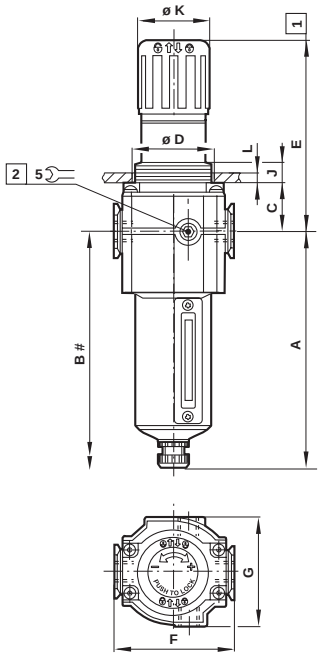
Gauge (for full technical specification see page 4-61)		6	6		
Series	Port size	Pressure range in bar	Pressure range in psi	Diameter	Model
72 (ISO G main port)	Rc 1/8	0 ... 10		40 mm	18-013-989
72 (PTF main port)	1/8 PTF		0 ... 160	1 1/2"	18-013-212
73 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
73 (PTF main port)	1/4 PTF		0 ... 160	2"	18-013-209
74 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
74 (PTF main port)	1/4 PTF		0 ... 160	2"	18-013-209

Filter regulator
Excelon® Quikclamp system LB72G, LB73G, LB74G
1/4" ... 3/4"

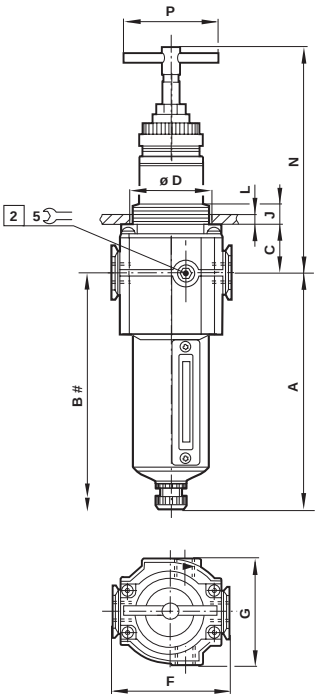
Basic dimensions

Dimensions shown in mm
Projection/First angle

Standard



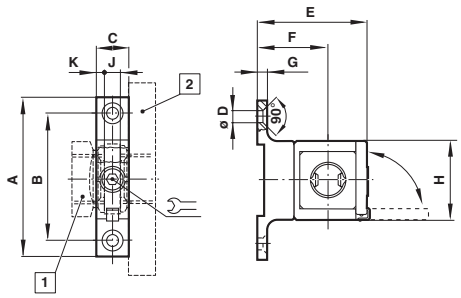
T-handle



Minimum clearance required to remove bowl
1 Reduces by 4 mm with knob in locked position
2 Gauge port

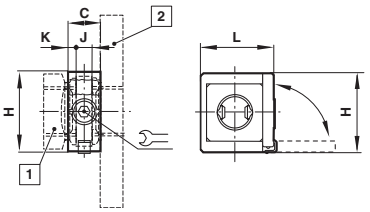
Series	A	B	C	D	E	F	G	J	K	L	N	P
72	127	176	26	40	73	50	48	12	35	0 ... 4	95	63
73	150	198	31	48	96	68	62	11	42	2 ... 6	103	63
74	170	221	31	52	127	80	74	19	47	2 ... 6	151	63

Quikclamp® with wall bracket



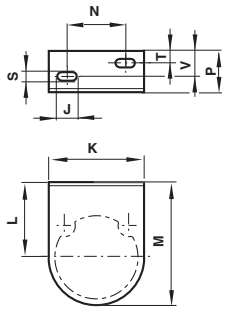
Series	A	B	C	Ø D	E	F	G	H	J	K	
72	74	59	14,5	5,3	56	38	4,5	36,5	6,5	4	3
73/74	102	83	24,5	6,5	74	51	6,5	51	13,5	5,5	4

Quikclamp®



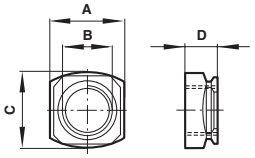
Series	C	H	J	K	L	
72	14,5	36,5	6,5	4	36,5	3
73/74	24,5	51	13,5	5,5	46	4

Neck mounting bracket



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	13	13
74	24	89	52	86	56	35	23	7	12	12

Quikmount pipe adaptor



Series	A	B	C	D
72	29	1/4, 3/8	29	16
73/74	38,5	1/4, 3/8, 1/2, 3/4	38,5	18

General purpose filter
Olympian Plus plug-in system LF64G, LF68E
1/4" ... 1 1/2"

Effective liquid removal and positive solid filtration

Large filter element area for minimum pressure drop

Optional male threaded drain adaptor available for connection to pilot or solenoid operated drain valve

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air
Maximum inlet pressure:
17 bar (250 psi)
Filter element:
5 or 40 µm; 25 µm optional
Drain:
Manual (standard)

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
Bowl size:
Sight glass (standard)
LF64G: 0,2 litre, LF68E: 1 litre

Materials:
LF64G
Body and yoke: zinc alloy
Bowl: aluminium
Prismatic liquid level indicator: Grilamid
Filter element: sintered plastic
Elastomers: synthetic rubber
LF68E
Body, bowl and yoke: aluminium
Liquid level indicator: Pyrex
Filter element: sintered bronze
Elastomers: synthetic rubber

Technical data

Air port	Flow*		Weight		Model with G-thread		Model with PTF-thread	
	dm^3/s	scfm	kg	lb	40 µm	5 µm	40 µm	5 µm
1/4"	33	70	1,42	3.13	LF64G-2GN-MD3	LF64G-2GN-MD1	LF64G-2AN-MD3	LF64G-2AN-MD1
3/8"	66	140	1,42	3.13	LF64G-3GN-MD3	LF64G-3GN-MD1	LF64G-3AN-MD3	LF64G-3AN-MD1
1/2"	75	158	1,32	2.91	LF64G-4GN-MD3	LF64G-4GN-MD1	LF64G-4AN-MD3	LF64G-4AN-MD1
3/4"	75	158	1,72	3.79	LF64G-6GN-MD3	LF64G-6GN-MD1	LF64G-6AN-MD3	LF64G-6AN-MD1
Without yoke					LF64G-NNN-MD3	LF64G-NNN-MD1	LF64G-NNN-MD3	LF64G-NNN-MD1

Air port	Flow*		Weight		Model with G-thread		Model with PTF-thread	
	dm^3/s	scfm	kg	lb	40 µm	5 µm	40 µm	5 µm
3/4"	160	339	2,45	5.40	LF68E-6GN-MU3	LF68E-6GN-MU1	LF68E-6AN-MU3	LF68E-6AN-MU1
1"	190	403	2,33	5.13	LF68E-8GN-MU3	LF68E-8GN-MU1	LF68E-8AN-MU3	LF68E-8AN-MU1
1 1/4"	200	424	2,43	5,35	LF68E-AGN-MU3	LF68E-AGN-MU1	LF68E-AAN-MU3	LF68E-AAN-MU1
1 1/2"	200	424	2,30	5,07	LF68E-BGN-MU3	LF68E-BGN-MU1	LF68E-BAN-MU3	LF68E-BAN-MU1
Without yoke					LF68E-NNN-MU3	LF68E-NNN-MU1	LF68E-NNN-MU3	LF68E-NNN-MU1

* Typical flow at 6,3 bar (90 psi) inlet pressure, 40 µm element and 0,5 bar (7 psi) pressure drop.

General purpose filter
Olympian Plus plug-in system LF64G, LF68E
1/4" ... 1 1/2"

Option selector

LF64G-★★N-★★★

Port size	Substitute
1/4"	2
3/8"	3
1/2"	4
3/4"	6
Without yoke	N

Threads form	Substitute
PTF or without yoke (N in 6th position), drain thread = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), drain thread = ISO RC	N

Filter element	Substitute
5 µm	1
25 µm (optional)	2
40 µm	3

Bowl	Substitute
With sight glass (standard)	D
Without sight glass	M

Drain	Substitute
Manual (standard)	M
Automatic	A*
Open (with male thread adaptor)	N

* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

LF68E-★★N-★★★

Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Without yoke	N

Threads form	Substitute
PTF or without yoke (N in 6th position), drain thread = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), drain thread = ISO RC	N

Filter element	Substitute
5 µm	1
25 µm (optional)	2
40 µm	3

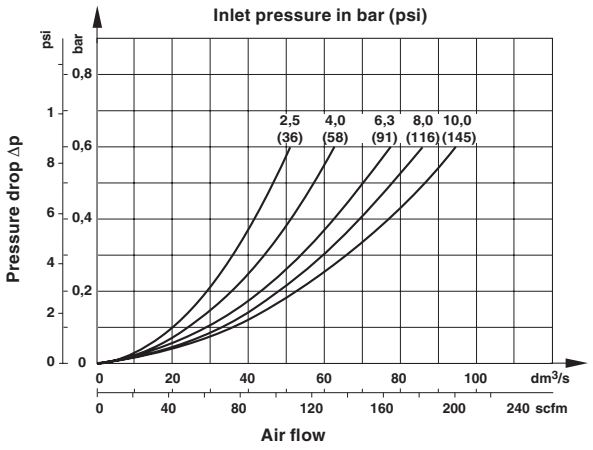
Bowl	Substitute
With sight glass (standard)	U
Without sight glass	C

Drain	Substitute
Manual (standard)	M
Automatic	A*
Open (with male thread adaptor)	N

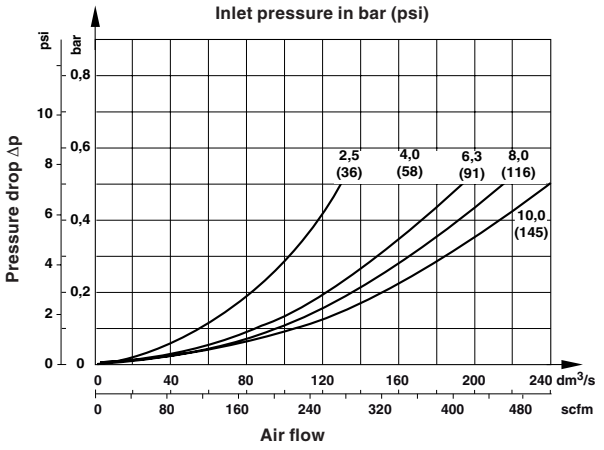
* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

Flow characteristics

LF64 – Port size 1/2", 40 µm element



LF68 – Port size 1", 40 µm element



General purpose filter
Olympian Plus plug-in system LF64G, LF68E
1/4" ... 1 1/2"

Accessories 64 series

Thread	Models with G-thread Single yoke  5	Double yoke 	Models with PTF-thread Single yoke  5	Double yoke 
1/4"	Y64A-2GA-N1N	Y64A-2GA-N2N	Y64A-2AA-N1N	Y64A-2AA-N2N
3/8"	Y64A-3GA-N1N	Y64A-3GA-N2N	Y64A-3AA-N1N	Y64A-3AA-N2N
1/2"	Y64A-4GA-N1N	Y64A-4GA-N2N	Y64A-4AA-N1N	Y64A-4AA-N2N
3/4"	Y64A-6GA-N1N*	Y64A-6GA-N2N*	Y64A-6AA-N1N*	Y64A-6AA-N2N*

*These yokes are supplied with two end connenctor kits as standard.

Thread	Models with G-threads End connector kit  2	Models with G-threads Rear entry bracket kit  8	Models with PTF-threads End connector kit  2
3/4"	74505-53	18-026-981	74505-55

Others

Bracket mounting  1	Nut  4	Service kit, manual drain 	Service kit, open ended adaptor 	Service kit, automatic drain 
74504-50	74502-89	LF64G-KITM05 (5 µm)	LF64G-KITN05 (5 µm)	LF64G-KITA05 (5 µm)
		LF64G-KITM25 (25 µm)	LF64G-KITN25 (25 µm)	LF64G-KITA25 (25 µm)
		LF64G-KITM40 (40 µm)	LF64G-KITN40 (40 µm)	LF64G-KITA40 (40 µm)

General purpose filter
Olympian Plus plug-in system LF64G, LF68E
1/4" ... 1 1/2"

Accessories 68 series

Thread	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
				
	5		5	
3/4"	Y68A-6GN-N1N	Y68A-6GN-N2N	Y68A-6AN-N1N	Y68A-6AN-N2N
1"	Y68A-8GN-N1N	Y68A-8GN-N2N	Y68A-8AN-N1N	Y68A-8AN-N2N
1 1/4"	Y68A-AGN-N1N	Y68A-AGN-N2N	Y68A-AAN-N1N	Y68A-AAN-N2N
1 1/2"	Y68A-BGN-N1N	Y68A-BGN-N2N	Y68A-BAN-N1N	Y68A-BAN-N2N

Thread	Models with G-thread End connector kit	Models with PTF-thread End connector kit	Without thread Single yoke	Bracket mounting
				
	2	2	5	1
3/4"	5524-55	5524-53	74785-99	18-001-979
1"	5524-52	5524-50		18-001-979
1 1/4"	5523-52	5523-50		18-001-978
1 1/2"	5523-93	5523-95		18-001-972

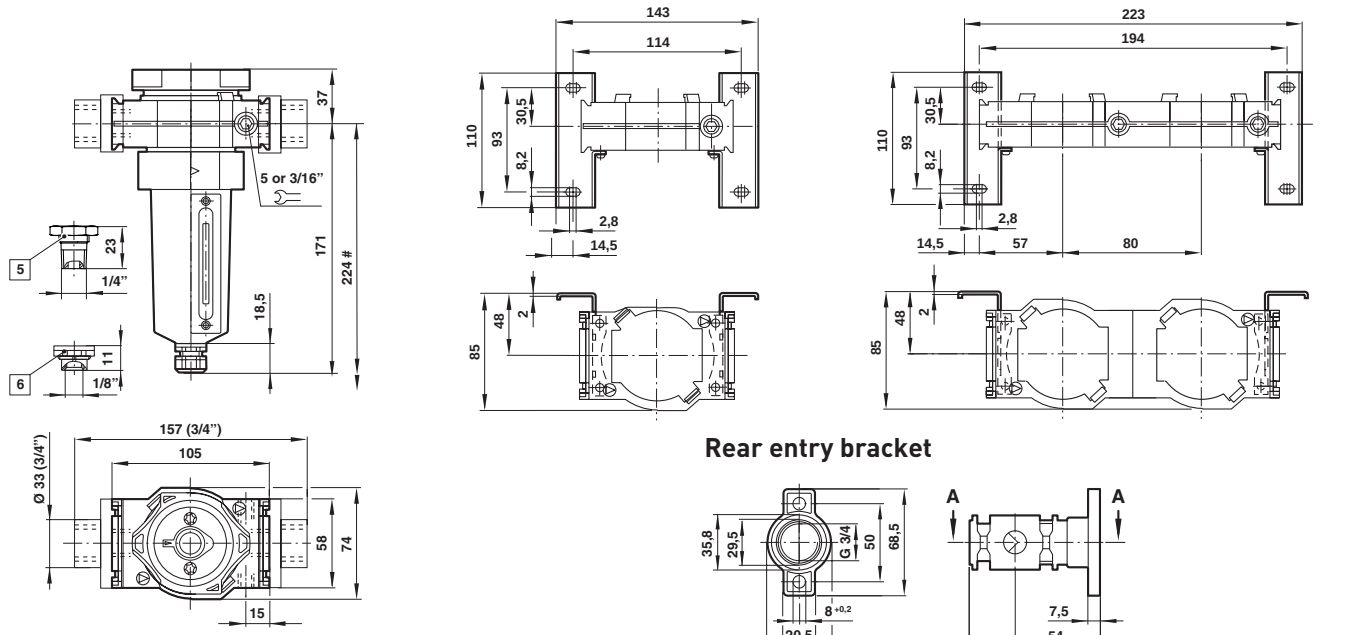
Others

Nut	Service kit, manual drain	Service kit, open ended adaptor	Service kit, automatic drain
			
4			
5520-89	LF68G-KITM05 (5 µm)	LF68G-KITN05 (5 µm)	LF68G-KITA05 (5 µm)
	LF68G-KITM25 (25 µm)	LF68G-KITN25 (25 µm)	LF68G-KITA25 (25 µm)
	LF68G-KITM40 (40 µm)	LF68G-KITN40 (40 µm)	LF68G-KITA40 (40 µm)

General purpose filter
Olympian Plus plug-in system LF64G, LF68E
1/4" ... 1 1/2"

Basic dimensions 64 series

Dimensions shown in mm
Projection/First angle

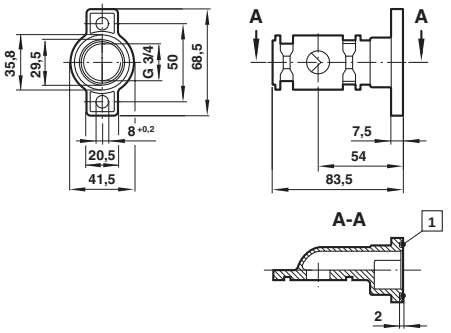


Minimum clearance required to remove bowl

5 Open ended adaptor (optional)

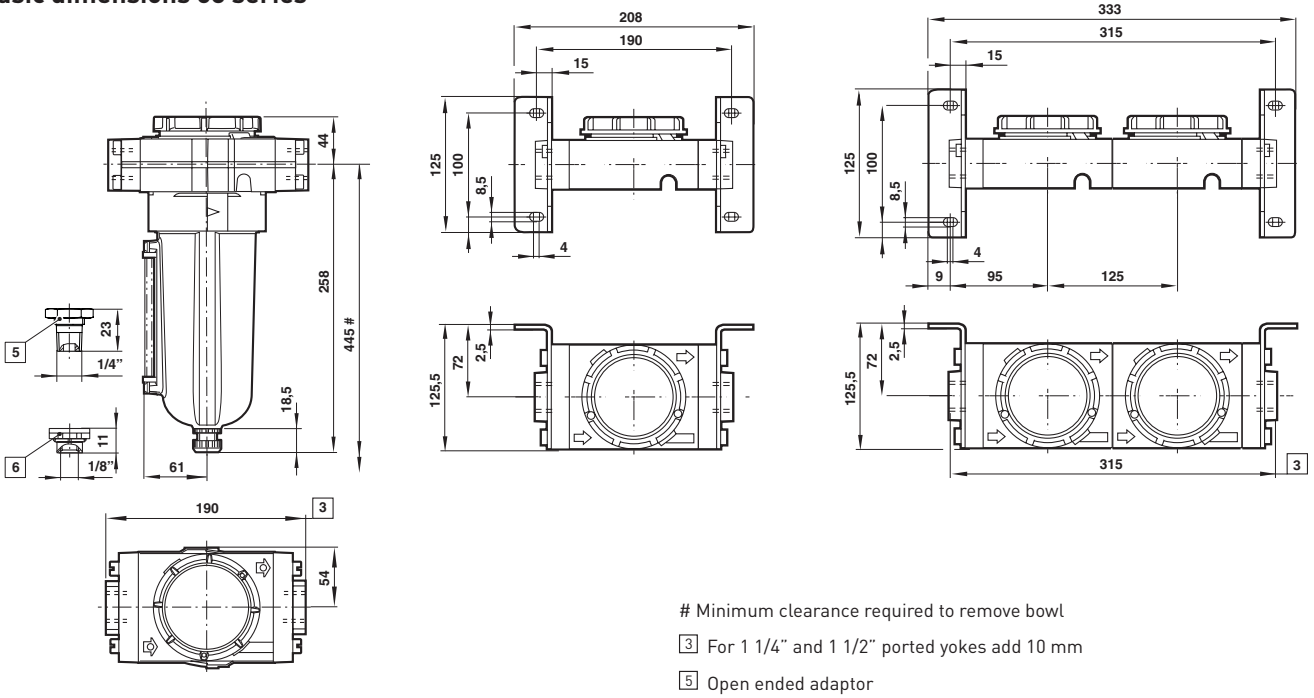
6 Automatic drain (optional)

Rear entry bracket



1 'O'-ring (included in scope of supply of bracket)

Basic dimensions 68 series



Minimum clearance required to remove bowl

3 For 1 1/4" and 1 1/2" ported yokes add 10 mm

5 Open ended adaptor

6 Automatic drain (optional)

Oil removal (coalescing) filter
Olympian Plus plug-in system LF64H, LF68H
3/8" ... 1 1/2"

Coalescing element provides high efficiency oil and particle removal

Standard visual service indicator turns from green to red when the filter element needs to be replaced

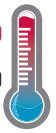
Optional male threaded drain adaptor available for connection to pilot or solenoid operated drain valve

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

(install a pre-filter with a 5 µm filter element upstream of the filters for optimum coalescing element life)

EN 61373



+80°C (+176°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air only
Maximum inlet pressure:
17 bar (250 psi)
Particle removal:
To 0,01 µm
Maximum remaining oil content in outlet air:
0,01 mg/m³ at +20°C with an inlet concentration of 17 mg/m³.

Drain:
Manual (standard)
Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
Bowl size:
LF64G: 0,2 litre, LF68E: 1 litre

Materials:
LF64H
Body and yoke: zinc alloy
Bowl: aluminium
Prismatic liquid level indicator: Grilamid
Filter element: composite
Elastomers: synthetic rubber

LF68H
Body, bowl and yoke: aluminium
Liquid level indicator: Pyrex
Filter element: composite
Elastomers: synthetic rubber

Service life indicator:
Body and adaptor: aluminium
lens: grilamid, transparent nylon
Internal parts: acetal
Spring: stainless steel
Elastomers: synthetic rubber

Technical data

Air port	Max. flow at 6,3 bar* dm³/s	scfm	Weight kg	lb	Model with G-thread	Model with PTF-thread
3/8"	28	59	1,70	3.74	LF64H-3GD-MD0	LF64H-3AD-MD0
1/2"	28	59	1,67	3.68	LF64H-4GD-MD0	LF64H-4AD-MD0
3/4"	28	59	2,01	4.43	LF64H-6GD-MD0	LF64H-6AD-MD0
Without yoke					LF64H-NND-MD0	LF64H-NND-MD0

* To maintain stated oil content at 6,3 bar (90 psi) inlet pressure.

Air port	Max. flow at 6,3 bar* dm³/s	scfm	Weight kg	lb	Model with G-thread	Model with PTF-thread
3/4"	35	74	2,66	5.86	LF68H-6GD-MU0	LF68H-6AD-MU0
1"	60	127	2,60	5.73	LF68H-8GD-MU0	LF68H-8AD-MU0
1 1/4"	60	127	2,60	5,73	LF68H-AGD-MU0	LF68H-AAD-MU0
1 1/2	60	127	2,60	5.73	LF68H-BGD-MU0	LF68H-BAD-MU0
Without yoke					LF68H-NND-MU0	LF68H-NND-MU0

Oil removal (coalescing) filter
Olympian Plus plug-in system LF64H, LF68H
3/8" ... 1 1/2"

Option selector

LF64H-★★D-★★0

Port size	Substitute
3/8"	3
1/2"	4
3/4"	6
Without yoke	N
Threads form	**Substitute**
PTF or without yoke (N in 6th position), drain thread = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), drain thread = ISO RC	N

Bowl	Substitute
With sight glass (standard)	D
Without sight glass	M
Drain	**Substitute**
Manual (standard)	M
Automatic	A*
Open (with male thread adaptor)	N

* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

LF68H-★★D-★★0

Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Without yoke	N
Threads form	**Substitute**
PTF or without yoke (N in 6th position), drain thread = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), drain thread = ISO RC	N

Bowl	Substitute
With sight glass (standard)	U
Without sight glass	C
Drain	**Substitute**
Manual (standard)	M
Automatic	A*
Open (with male thread adaptor)	N

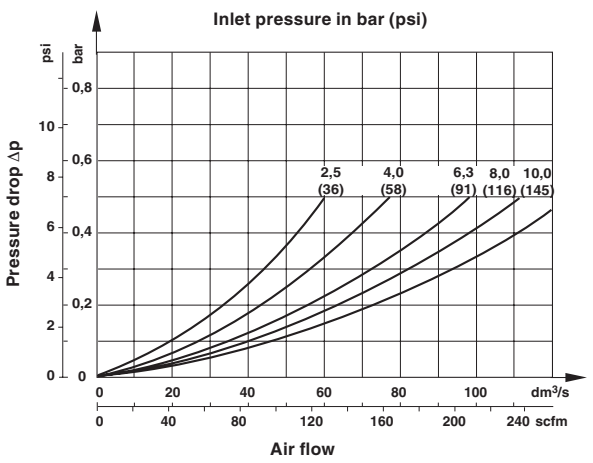
* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

Typical performance characteristics

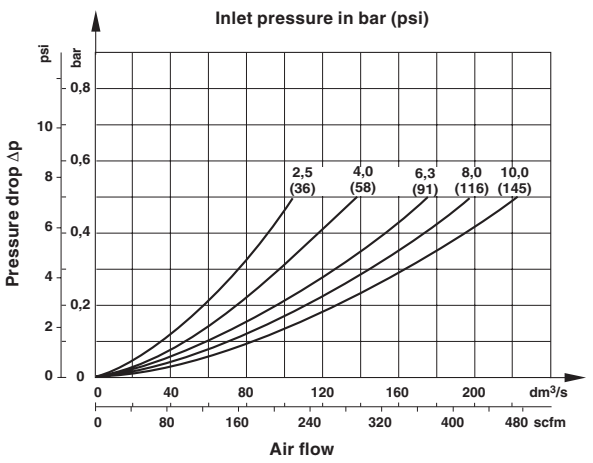
Series	Air port	Maximum flow to maintain stated oil removal performance dm³/s (scfm)					
		1 bar	3 bar	5 bar	6,3 bar	7 bar	9 bar
LF64H	1/2"	11,2 (24)	19,3 (41)	24,9 (53)	28 (59)	29,5 (63)	33,5 (71)
LF68H	1"	24 (51)	41 (87)	53 (122)	60 (127)	63 (133)	72 (153)

Flow characteristics

LF64H – Port size 1/2"



LF68H – Port size 1"



Oil removal (coalescing) filter
Olympian Plus plug-in system LF64H, LF68H
3/8" ... 1 1/2"

Accessories 64 series

Thread	Models with G-thread Single yoke  5	Double yoke 	Models with PTF-thread Single yoke  5	Double yoke 
3/8"	Y64A-3GA-N1N	Y64A-3GA-N2N	Y64A-3AA-N1N	Y64A-3AA-N2N
1/2"	Y64A-4GA-N1N	Y64A-4GA-N2N	Y64A-4AA-N1N	Y64A-4AA-N2N
3/4"	Y64A-6GA-N1N*	Y64A-6GA-N2N*	Y64A-6AA-N1N*	Y64A-6AA-N2N*

*These yokes are supplied with two end connenctor kits as standard.

Thread	Models with G-thread End connector kit  2	Models with G-thread Rear entry bracket kit  8	Models with PTF-threads End connector kit  2
3/4"	74505-53	18-026-981	74505-55

Others

Bracket mounting  1	Nut  4	Service kit, manual drain 	Service kit, open ended adaptor 	Service kit, automatic drain 
74504-50	74502-89	LF64H-KITMOC	LF64H-KITNOC	LF64H-KITAOC

Oil removal (coalescing) filter
Olympian Plus plug-in system LF64H, LF68H
3/8" ... 1 1/2"

Accessories 68 series

Thread	Models with G-thread Single yoke  5	Double yoke 	Models with PTF-thread Single yoke  5	Double yoke 
3/4"	Y68A-6GN-N1N	Y68A-6GN-N2N	Y68A-6AN-N1N	Y68A-6AN-N2N
1"	Y68A-8GN-N1N	Y68A-8GN-N2N	Y68A-8AN-N1N	Y68A-8AN-N2N
1 1/4"	Y68A-AGN-N1N	Y68A-AGN-N2N	Y68A-AAN-N1N	Y68A-AAN-N2N
1 1/2"	Y68A-BGN-N1N	Y68A-BGN-N2N	Y68A-BAN-N1N	Y68A-BAN-N2N

Thread	Models with G-thread End connector kit  2	Models with PTF-thread End connector kit  2	Without thread Single yoke  5	Bracket mounting  1
3/4"	5524-55	5524-53	74785-99	18-001-979
1"	5524-52	5524-50		18-001-979
1 1/4"	5523-52	5523-50		18-001-978
1 1/2"	5523-93	5523-95		18-001-972

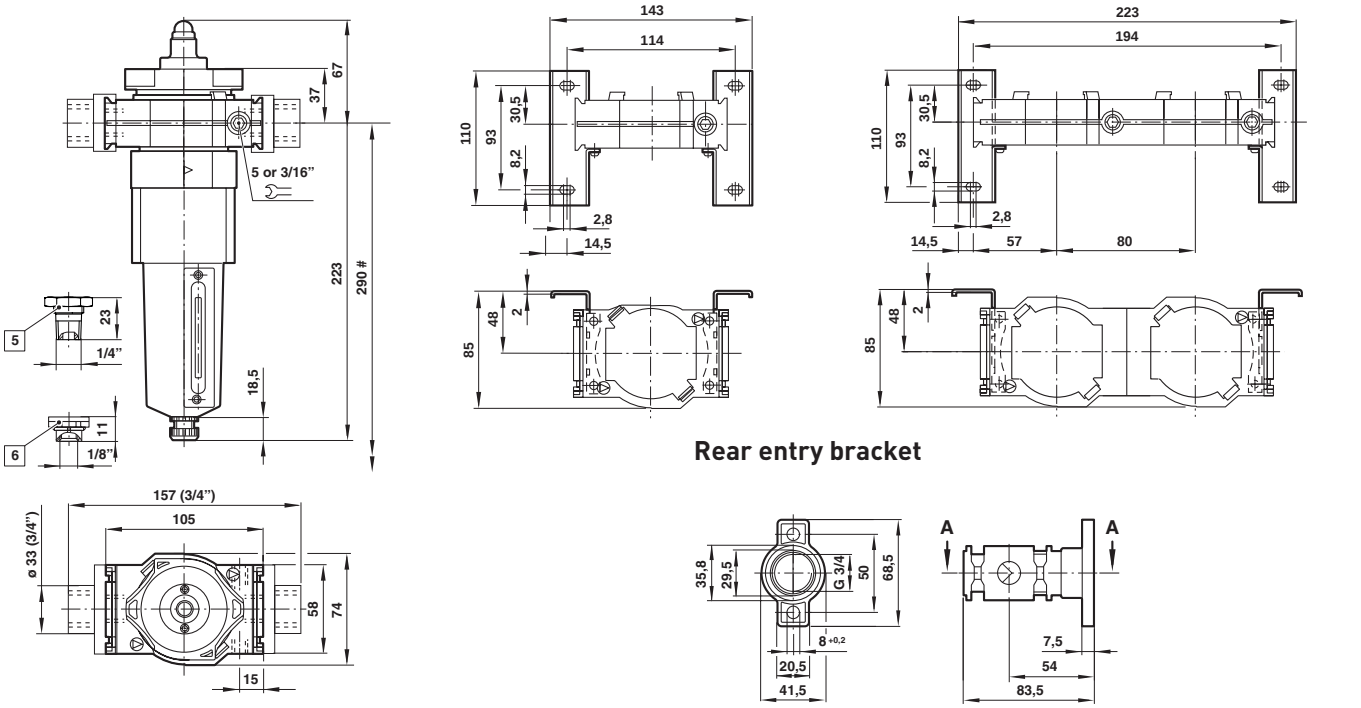
Others

Nut  4	Service kit, manual drain 	Service kit, open ended adaptor 	Service kit, automatic drain 
5520-89	LF68H-KITMOC	LF68H-KITNOC	LF68H-KITAOC

Oil removal (coalescing) filter
Olympian Plus plug-in system LF64H, LF68H
3/8" ... 1 1/2"

Basic dimensions 64 series

Dimensions shown in mm
Projection/First angle

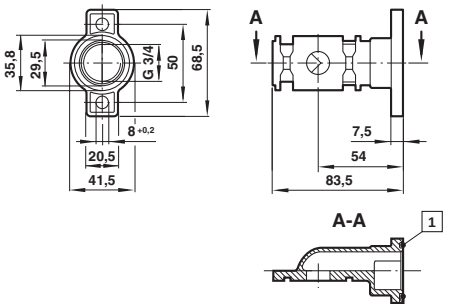


Minimum clearance required to remove bowl

5 Open ended adaptor (optional)

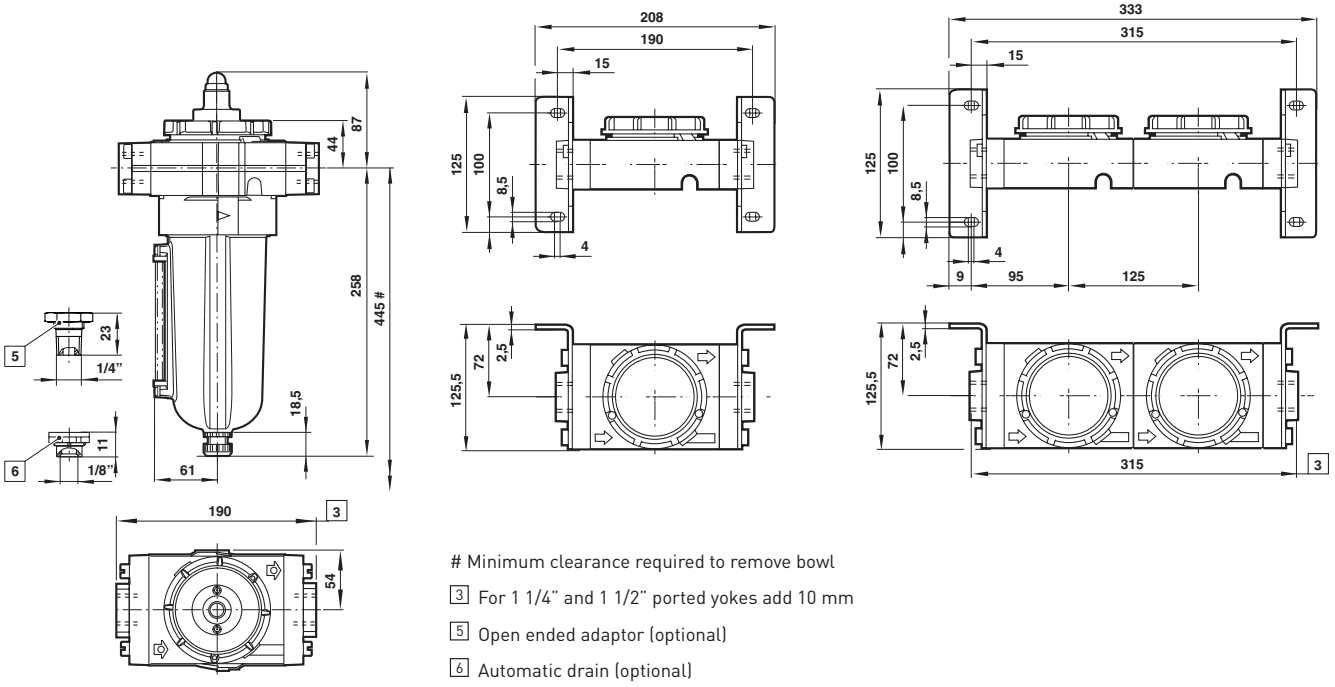
6 Automatic drain (optional)

Rear entry bracket



1 'O'-ring (included in scope of supply of bracket)

Basic dimensions 68 series



Minimum clearance required to remove bowl

3 For 1 1/4" and 1 1/2" ported yokes add 10 mm

5 Open ended adaptor (optional)

6 Automatic drain (optional)

Pressure regulator
Olympian Plus plug-in system LR64G, LR68G
1/4" ... 1 1/2"

Non-rising adjusting knob has snap-action lock

Diaphragm and balanced valve design ensure good regulation characteristics

Wide temperature range

Shock and vibration tested to EN 61373,Category 1, class A and B

Technical features

Medium:
Compressed air only
Pressure range:
LR64G: 0,3 ... 10 bar (5 ... 145 psi)
LR68G: 0,4 ... 8 bar (5 ... 120 psi)
Other pressure ranges are available contact Norgren

Maximum inlet pressure:
17 bar (250 psi) for LR64G
20 bar (290 psi) for LR68G
Gauge ports:
Rc 1/8 with ISO G main ports, 1/8 PTF with PTF main ports

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
Relieving:
Standard

Materials:
LR64G
Body and yoke: zinc alloy
Bonnet: aluminium
Adjusting knob: Acetal resin
Elastomers: synthetic rubber
LR68G
Body, bonnet, valve and yoke: aluminium
Adjusting knob: Acetal resin
Elastomers: synthetic rubber

Technical data

Air port	Flow* dm^3/s	scfm	Weight kg	lb	Model with G-thread	Model with PTF-thread
1/4"	35	74	1,54	3.39	LR64G-2GK-RMN	LR64G-2AK-RMN
3/8"	80	170	1,52	3.35	LR64G-3GK-RMN	LR64G-3AK-RMN
1/2"	120	254	1,49	3.28	LR64G-4GK-RMN	LR64G-4AK-RMN
3/4"	120	254	1,85	4.07	LR64G-6GK-RMN	LR64G-6AK-RMN
Without yoke					LR64G-NNK-RMN	LR64G-NNK-RMN

Air port	Flow dm^3/s	scfm	Weight kg	lb	Model with G-thread	Model with PTF-thread
3/4"	150	318	1,95	4.29	LR68G-2GK-RLN	LR68G-2AK-RLN
1"	180	381	1,89	4.16	LR68G-3GK-RLN	LR68G-3AK-RLN
1 1/4"	180	381	1,93	4.25	LR68G-4GK-RLN	LR68G-4AK-RLN
1 1/2"	180	381	1,97	4.34	LR68G-6GK-RLN	LR68G-6AK-RLN
Without yoke					LR68G-NAK-RLN	LR68G-NAK-RLN

* Typical flow at 6,3 bar (90 psi) inlet pressure and 0,5 bar (7 psi) pressure drop.

Option selector

LR64G-★★K-RMN

Port size	Substitute
1/4"	2
3/8"	3
1/2"	4
3/4"	6
Without yoke	N

Threads form	Substitute
PTF	A
ISO G parallel	G
Without yoke	N

LR68G-★★K-RLN

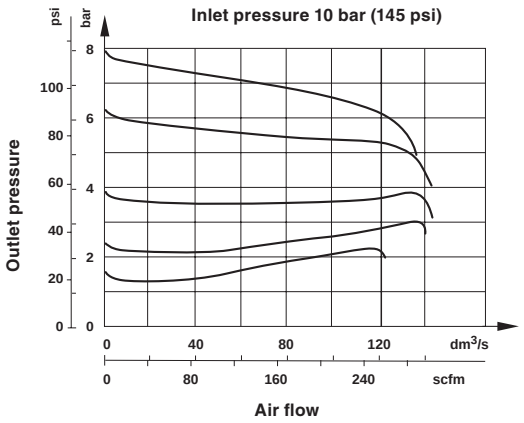
Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Without yoke	N

Threads form	Substitute
PTF or without yoke (N in 6th position), gauge port threads = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), gauge port threads = ISO RC	N

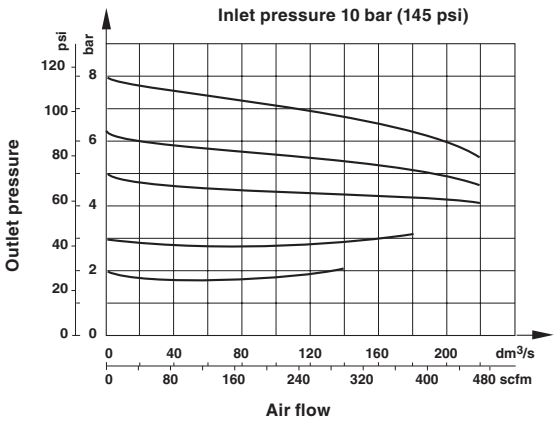
Pressure regulator
Olympian Plus plug-in system LR64G, LR68G
1/4" ... 1 1/2"

Flow characteristics

LR64G – Port size 1/2", range 0,3 ... 10 bar (5 ... 145 psi)



LR68G – Port size 1", range 0,4 ... 8 bar (5 ... 120 psi)



Pressure regulator
Olympian Plus plug-in system LR64G, LR68G
1/4" ... 1 1/2"

Accessories 64 series

Thread	Models with G-thread Single yoke  5	Double yoke 	Models with PTF-thread Single yoke  5	Double yoke 
1/4"	Y64A-2GA-N1N	Y64A-2GA-N2N	Y64A-2AA-N1N	Y64A-2AA-N2N
3/8"	Y64A-3GA-N1N	Y64A-3GA-N2N	Y64A-3AA-N1N	Y64A-3AA-N2N
1/2"	Y64A-4GA-N1N	Y64A-4GA-N2N	Y64A-4AA-N1N	Y64A-4AA-N2N
3/4"	Y64A-6GA-N1N*	Y64A-6GA-N2N*	Y64A-6AA-N1N*	Y64A-6AA-N2N*

*These yokes are supplied with two end connenctor kits as standard.

Thread	Models with G-thread End connector kit  2	Models with G-thread Rear entry bracket kit  8	Models with PTF-threads End connector kit  2
3/4"	74505-53	18-026-981	74505-55

Others

Bracket mounting  1	Nut  4	Tamper resistant cap & seal wire  3	Service kit 
74504-50	74502-89	4355-51	LR64G-KITR

Gauge (for full technical specification see page 4-61)

Series	Port size	6 Pressure range in bar	6 Pressure range in psi	Diameter	Model
64 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
64 (PTF main port)	1/8 PTF		0 ... 160	2"	18-013-212

Pressure regulator
Olympian Plus plug-in system LR64G, LR68G
1/4" ... 1 1/2"

Accessories 68 series

Thread	Models with G-thread Single yoke  5	Double yoke 	Models with PTF-thread Single yoke  5	Double yoke 
3/4"	Y68A-6GN-N1N	Y68A-6GN-N2N	Y68A-6AN-N1N	Y68A-6AN-N2N
1"	Y68A-8GN-N1N	Y68A-8GN-N2N	Y68A-8AN-N1N	Y68A-8AN-N2N
1 1/4"	Y68A-AGN-N1N	Y68A-AGN-N2N	Y68A-AAN-N1N	Y68A-AAN-N2N
1 1/2"	Y68A-BGN-N1N	Y68A-BGN-N2N	Y68A-BAN-N1N	Y68A-BAN-N2N

Thread	Models with G-thread End connector kit  2	Models with PTF-thread End connector  2	Bracket mounting  1	Without thread Single yoke  5
3/4"	5524-55	5524-53	18-001-979	74785-99
1"	5524-52	5524-50	18-001-979	
1 1/4"	5523-52	5523-50	18-001-978	
1 1/2"	5523-93	5523-95	18-001-972	

Others

Nut  4	Tamper resistant cap & seal wire  3	Service kit 
5520-89	4355-51	LR68G-KITR

Gauge (for full technical specification see page 4-61)


6

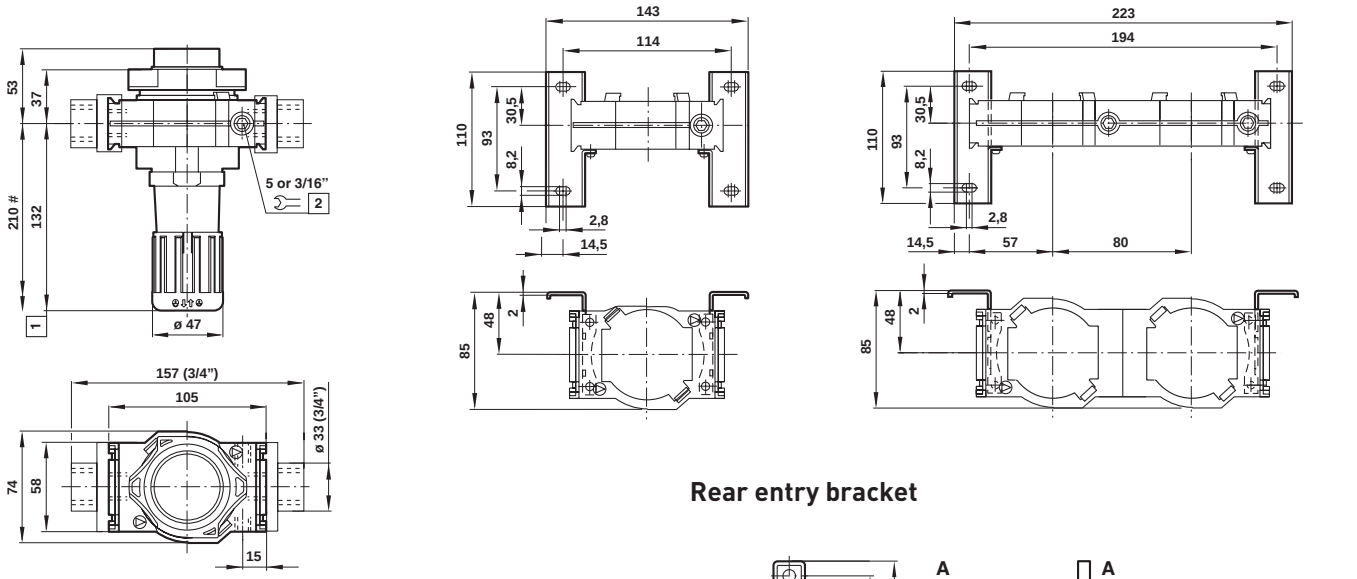

6

Series	Port size	Pressure range in bar	Pressure range in psi	Diameter	Model
68 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
68 (PTF main port)	1/8 PTF		0 ... 160	2"	18-013-212

Pressure regulator
Olympian Plus plug-in system LR64G, LR68G
1/4" ... 1 1/2"

Basic dimensions 64 series

Dimensions shown in mm
Projection/First angle

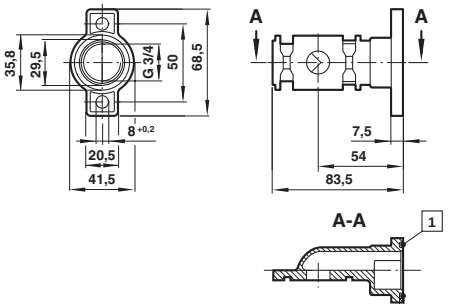


Minimum clearance required to remove unit from yoke

1 Reduces by 4 mm with knob in locked position

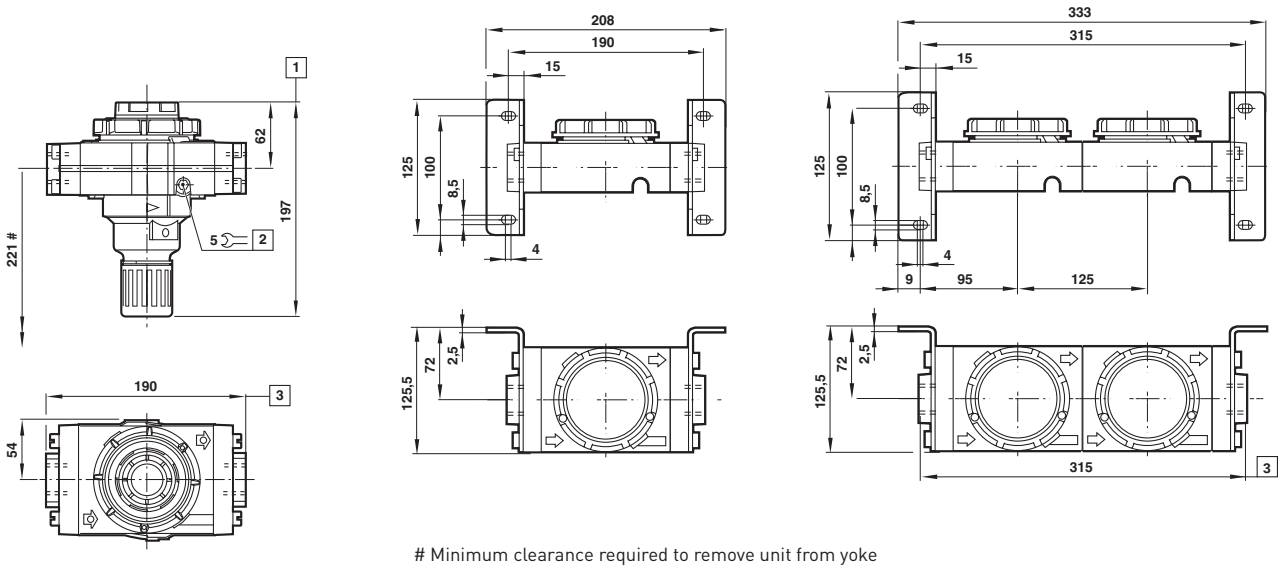
2 Gauge port

Rear entry bracket



1 'O'-ring (included in scope of supply of bracket)

Basic dimensions 68 series



Minimum clearance required to remove unit from yoke

1 Reduces by 4 mm with knob in locked position

2 Gauge port

3 For 1 1/4" and 1 1/2" ported yokes add 10 mm

Filter/regulator
Olympian Plus plug-in system LB64G, LB68G
1/4" ... 1 1/2"

High efficiency water removal

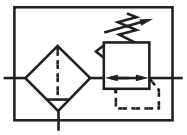
Diaphragm and balanced valve design ensure good regulation characteristics

Non-rising adjusting knob has snap-action lock

Standard options include non-relieving models, manual drain and alternative pressure ranges

Wide temperature range

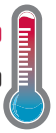
Shock and vibration tested to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air
Pressure range:
LB64G: 0,3 ... 10 bar (5 ... 145 psi)
LB68G: 0,4 ... 8 bar (5 ... 120 psi)
Other pressure ranges are available contact Norgren
Maximum inlet pressure:
17 bar (250 psi)

Filter element:
5 or 40 µm; 25 µm optional
Gauge ports:
Rc 1/8 with ISO G main ports, 1/8 PTF with PTF main ports
Drain:
Manual (standard)
Bowl size:
LB64G: 0,2 litre, LB68G: 1 litre

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
LB64G
Body and yoke: zinc alloy
Bowl: aluminium
Prismatic liquid level indicator: Grilamid
Filter element: sintered plastic
Adjusting knob: Acetal resin
Elastomers: synthetic rubber
LB68G
Body, bowl and yoke: aluminium
Liquid level indicator: Pyrex
Filter element: sintered plastic
Adjusting knob: Acetal resin
Elastomers: synthetic rubber

Technical data

Air port	Flow*		Weight		Model with G-thread		Model with PTF-thread	
	dm^3/s	scfm	kg	lb	40 µm	5 µm	40 µm	5 µm
1/4"	30	64	1,71	3.76	LB64G-2GK-MD3-RMN	LB64G-2GK-MD1-RMN	LB64G-2AK-MD3-RMN	LB64G-2AK-MD1-RMN
3/8"	76	161	1,69	3.72	LB64G-3GK-MD3-RMN	LB64G-3GK-MD1-RMN	LB64G-3AK-MD3-RMN	LB64G-3AK-MD1-RMN
1/2"	106	225	1,66	3.65	LB64G-4GK-MD3-RMN	LB64G-4GK-MD1-RMN	LB64G-4AK-MD3-RMN	LB64G-4AK-MD1-RMN
3/4"	106	225	2,02	4.45	LB64G-6GK-MD3-RMN	LB64G-6GK-MD1-RMN	LB64G-6AK-MD3-RMN	LB64G-6AK-MD1-RMN
Without yoke					LB64G-NNK-MD3-RMN	LB64G-NNK-MD1-RMN	LB64G-NNK-MD3-RMN	LB64G-NNK-MD1-RMN

Air port	Flow*		Weight		Model with G-thread		Model with PTF-thread	
	dm^3/s	scfm	kg	lb	40 µm	5 µm	40 µm	5 µm
3/4"	240	509	3,29	7.25	LB68G-6GK-MU3-RLN	LB68G-6GK-MU1-RLN	LB68G-6AK-MU3-RLN	LB68G-6AK-MU1-RLN
1"	240	509	3,29	7.25	LB68G-8GK-MU3-RLN	LB68G-8GK-MU1-RLN	LB68G-8AK-MU3-RLN	LB68G-8AK-MU1-RLN
1 1/2"	240	509	3,35	7.38	LB68G-AGK-MU3-RLN	LB68G-AGK-MU1-RLN	LB68G-AAK-MU3-RLN	LB68G-AAK-MU1-RLN
1 1/4"	240	509	3,35	7.38	LB68G-BGK-MU3-RLN	LB68G-BGK-MU1-RLN	LB68G-BAK-MU3-RLN	LB68G-BAK-MU1-RLN
Without yoke					LB68G-NNK-MU3-RLN	LB68G-NNK-MU1-RLN	LB68G-NAK-MU3-RLN	LB68G-NAK-MU1-RLN

* Typical flow at 10 bar (145 psi) inlet pressure 6,3 bar (90 psi) set, 40 µm element and 1 bar (15 psi) pressure drop.

Filter/regulator
Olympian Plus plug-in system LB64G, LB68G
1/4" ... 1 1/2"

Option selector

LB64G-★★K-★★★-RMN

Port size	Substitute
1/4"	2
3/8"	3
1/2"	4
3/4"	6
Without yoke	N
Threads form	**Substitute**
PTF or without yoke (N in 6th position), no gauge ports, drain thread = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), no gauge ports, drain thread = ISO Rc	N

Filter element	Substitute
5 µm	1
25 µm (optional)	2
40 µm	3
Bowl	**Substitute**
With sight glass (standard)	D
Without sight glass	M
Drain	**Substitute**
Manual (standard)	M
Automatic	A*

* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

LB68G-★★K-★★★-RLN

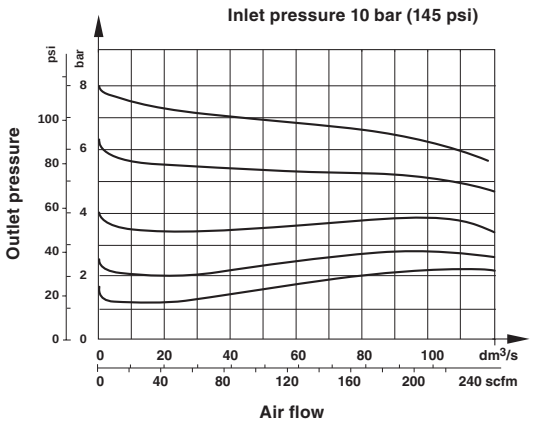
Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Without yoke	N
Threads form	**Substitute**
PTF or without yoke (N in 6th position), drain and gauge threads = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), drain and gauge threads = ISO Rc	N

Filter element	Substitute
5 µm	1
25 µm (optional)	2
40 µm	3
Bowl	**Substitute**
With sight glass (standard)	U
Without sight glass	C
Drain	**Substitute**
Manual (standard)	M
Automatic	A*

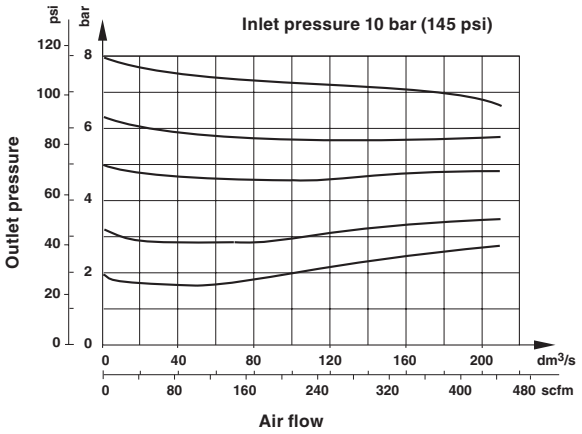
* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

Flow characteristics

LB64G – Port size 1/2", 40 µm element, range 0,3 ... 10 bar (5 ... 145 psi)



LB68G – Port size 1", 40 µm element, range 0,4 ... 8 bar (5 ... 120 psi)



Filter/regulator
Olympian Plus plug-in system LB64G, LB68G
1/4" ... 1 1/2"

Accessories 64 series

Thread	Models with G-thread Single yoke  5	Double yoke 	Models with PTF-thread Single yoke  5	Double yoke 
1/4"	Y64A-2GA-N1N	Y64A-2GA-N2N	Y64A-2AA-N1N	Y64A-2AA-N2N
3/8"	Y64A-3GA-N1N	Y64A-3GA-N2N	Y64A-3AA-N1N	Y64A-3AA-N2N
1/2"	Y64A-4GA-N1N	Y64A-4GA-N2N	Y64A-4AA-N1N	Y64A-4AA-N2N
3/4"	Y64A-6GA-N1N*	Y64A-6GA-N2N*	Y64A-6AA-N1N*	Y64A-6AA-N2N*

*These yokes are supplied with two end connenctor kits as standard.

Thread	Models with G-thread End connector kit  2	Models with G-thread Rear entry bracket kit  8	Models with PTF-thread End connector kit  2
3/4"	74505-53	18-026-981	74505-55

Bracket mounting  1	Nut  4	Tamper resistant cap & seal wire  3
74504-50	74502-89	4355-51

Others

Series	Port size	Gauge (for full technical specification see page 4-61)  6 Pressure range in bar	 6 Pressure range in psi	Diameter	Model
64 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
64 (PTF main port)	1/8 PTF		0 ... 160	2"	18-013-212

Service kit, manual drain 	Service kit, automatic drain 
LB64G-KITM05R (5 µm)	LB64G-KITA05R (5 µm)
LB64G-KITM25R (25 µm)	LB64G-KITA25R (25 µm)
LB64G-KITM40R (40 µm)	LB64G-KITA40R (40 µm)

Accessories 68 series

Thread	Models with G-thread Single yoke  5	Double yoke 	Models with PTF-thread Single yoke  5	Double yoke 
3/4"	Y68A-6GN-N1N	Y68A-6GN-N2N	Y68A-6AN-N1N	Y68A-6AN-N2N
1"	Y68A-8GN-N1N	Y68A-8GN-N2N	Y68A-8AN-N1N	Y68A-8AN-N2N
1 1/4"	Y68A-AGN-N1N	Y68A-AGN-N2N	Y68A-AAN-N1N	Y68A-AAN-N2N
1 1/2"	Y68A-BGN-N1N	Y68A-BGN-N2N	Y68A-BAN-N1N	Y68A-BAN-N2N

Thread	Models with G-thread End connector kit  2	Bracket mounting  1	Models with PTF-thread End connector  2	Without thread Single yoke  5
3/4"	5524-55	18-001-979	5524-53	74785-99
1"	5524-52	18-001-979	5524-50	
1 1/4"	5523-52	18-001-978	5523-50	
1 1/2"	5523-93	18-001-972	5523-95	

Filter/regulator
Olympian Plus plug-in system LB64G, LB68G
1/4" ... 1 1/2"

Others

Nut	Tamper resistant cap & seal wire	Service kit	Automatic drain
			
4	3		
5520-89	4355-51	LB68G-KITM05R (5 µm)	LB68G-KITA05R (5 µm)
		LB68G-KITM25R (25 µm)	LB68G-KITA25R (25 µm)
		LB68G-KITM40R (40 µm)	LB68G-KITA40R (40 µm)

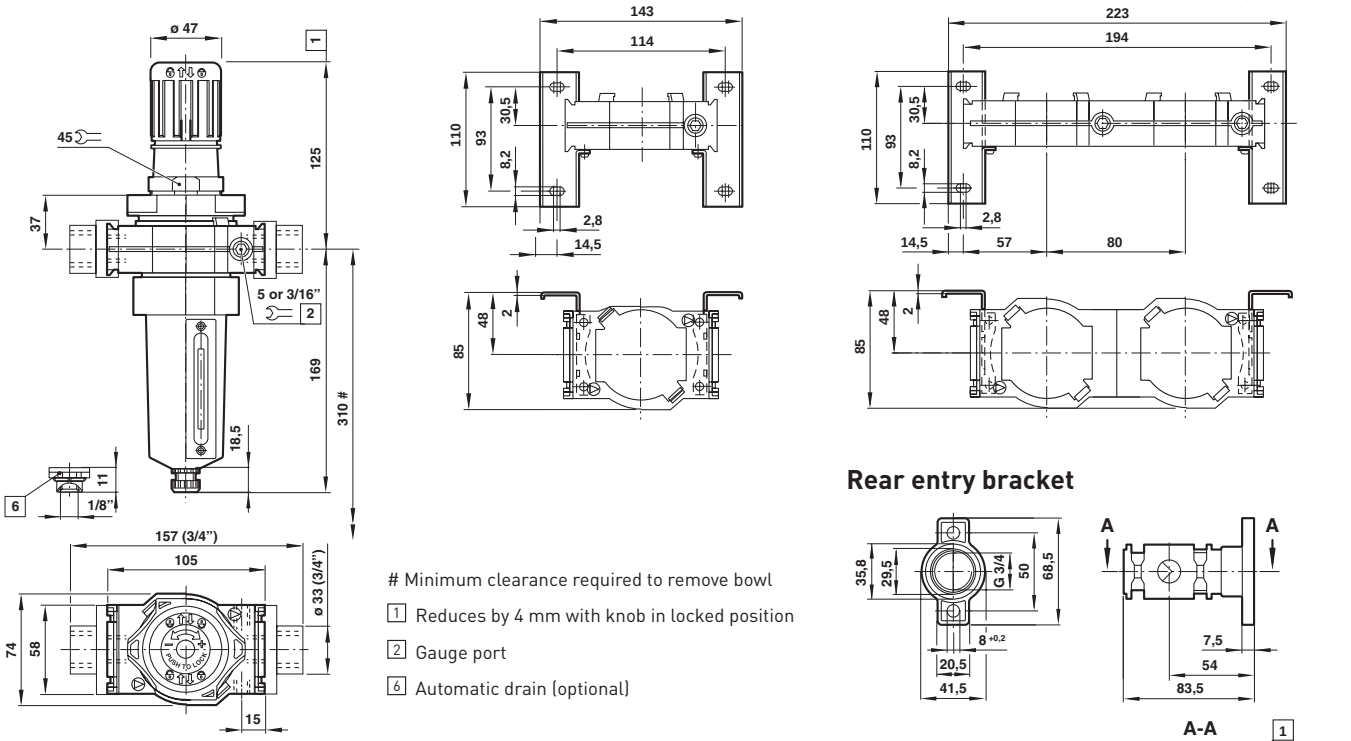
Gauge
(for full technical specification see page 4-61)


Series	Port size	6 Pressure range in bar	6 Pressure range in psi	Diameter	Model
68 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
68 (PTF main port)	1/8 PTF		0 ... 160	2"	18-013-212

Filter/regulator
Olympian Plus plug-in system LB64G, LB68G
1/4" ... 1 1/2"

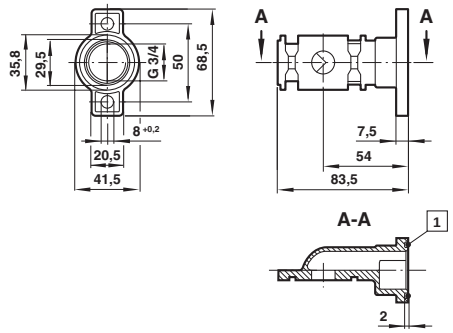
Basic dimensions 64 series

Dimensions shown in mm
Projection/First angle



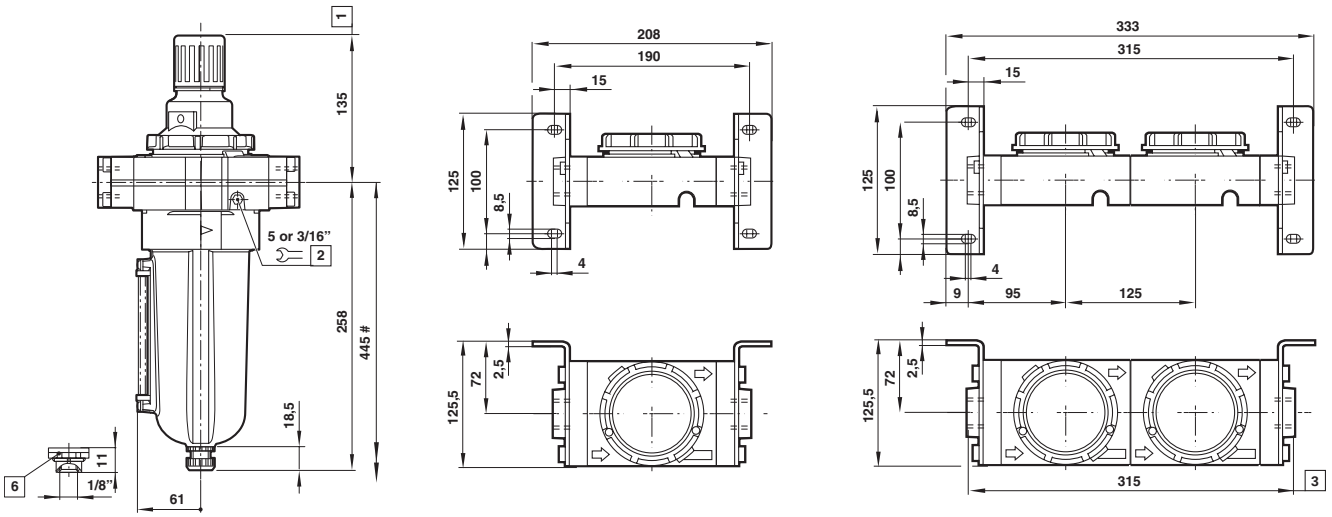
Minimum clearance required to remove bowl
1 Reduces by 4 mm with knob in locked position
2 Gauge port
6 Automatic drain (optional)

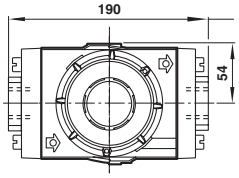
Rear entry bracket



1 'O'-ring (included in scope of supply of bracket)

Basic dimensions 68 series





Minimum clearance required to remove bowl
1 Reduces by 4 mm with knob in locked position
2 Gauge port
3 For 1 1/4" and 1 1/2" ported yokes add 10 mm
6 Automatic drain (optional)

General purpose filter
Miniature series LF07

1/8" & 1/4"

Compact design

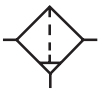
Protects air operated devices by removing liquid and solids contaminants

Screw-on bowl reduces maintenance time

Can be disassembled without the use of tools or removal from the air line

Wide temperature range

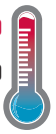
Shock and vibration tested to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air only
Maximum pressure:
17 bar (250 psi)
Filter element:
5 or 40 µm

Typical flow:
See below
Bowl size:
31 ml (1 fluid ounce)
Drain:
Manual

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
Body and bowl: zinc
Element: sintered polypropylene
Elastomers: nitrile

Technical data

Port size	Flow dm³/s*	scfm	Weight kg	lb	Model with G-thread 40 µm	5 µm	Model with PTF-thread 40 µm	5 µm
1/8"	9	19	0,13	0.28	LF07-100-M3MG	LF07-100-M1MG	LF07-100-M3MA	LF07-100-M1MA
1/4"	11,5	24	0,13	0.28	LF07-200-M3MG	LF07-200-M1MG	LF07-200-M3MA	LF07-200-M1MA

* Approximate flow at 6.3 bar (90 psi) inlet pressure, 40 µm element and 0,3 bar (5 psi) pressure drop.

Option selector

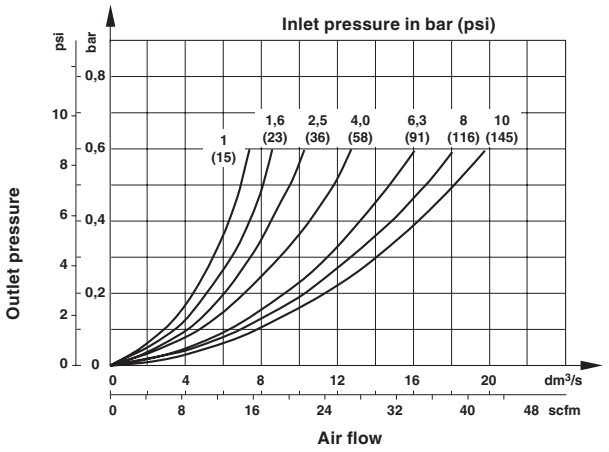
LF07-★00-M★M★

Port size	Substitute
1/8"	1
1/4"	2

Threads	Substitute
PTF	A
ISO G parallel	G
Filter element	**Substitute**
5 µm	1
40 µm	3

Flow characteristics

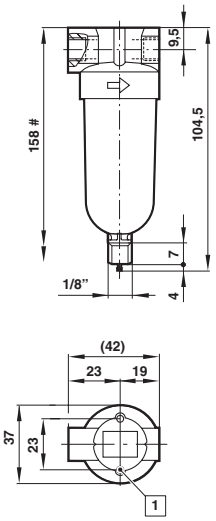
LF07 – Port size 1/4", 40 µm element



Accessories

Wall mounting bracket and body screws	Service kit	Replacement drain
 1		
5939-06	3652-23 (5 µm – black)	773-07
	3652-24 (40 µm – green)	

Basic dimensions



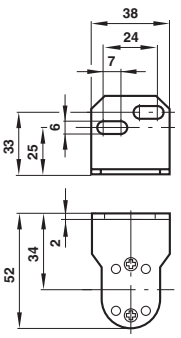
Minimum clearance required to remove bowl

1 Mounting holes

Wall mounting bracket

Dimensions shown in mm

Projection/First angle



Use 1/8" (3 mm) screws to mount bracket to wall.

General purpose regulator
Miniature series LR07
1/8" & 1/4"

Compact design

Full flow gauge ports

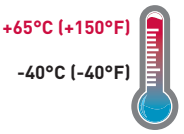
Low torque, non-rising adjusting knob

Snap action knob locks pressure setting when pushed in

Standard relieving models allow reduction of outlet pressure even when the system is dead-ended

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B



Technical features

Medium:
Compressed air only
Pressure range:
0,3 ... 10 bar (5 ... 145 psi)
Other pressure ranges are available contact Norgren

Maximum inlet pressure:
20 bar (290 psi)
Typical flow:
See below
Gauge ports:
1/8" PTF with PTF main ports
1/8" ISO Rc with ISO G main ports

Relieving:
Standard
Ambient temperature:*
-40 ... +65°C (-40 ... +150°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body: zinc
Bonnet and valve seat: acetal
Valve: brass/nitrile
Elastomers: nitrile

Technical data

Port size	Flow* dm^3/s	scfm	Weight kg	lb	Model with G-thread	Model with PTF-thread
1/8"	6,5	14	0,19	0.41	LR07-100-RNMG	LR07-100-RNMA
1/4"	7	15	0,19	0.41	LR07-200-RNMG	LR07-200-RNMA

*Typical flow with 7 bar (100 psi) inlet pressure, 40 µm element, 6,3 bar (90 psi) set pressure and a 1 bar (15 psi) droop from set. .

Option selector

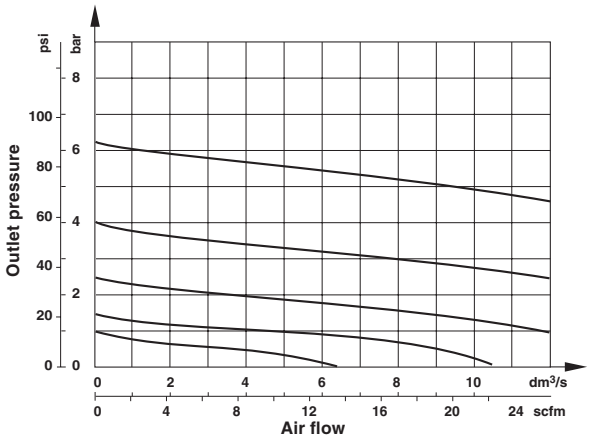
LR07-★00-RNM★

Port size	Substitute
1/8"	1
1/4"	2

Threads	Substitute
PTF	A
ISO G parallel	G

Flow characteristics

LR07 – Port size: 1/4", inlet pressure: 10 bar (145 psi), pressure range: 0,3 ... 7 bar (5 ... 100 psi)



General purpose regulator
Miniature series LR07
1/8" & 1/4"

Accessories

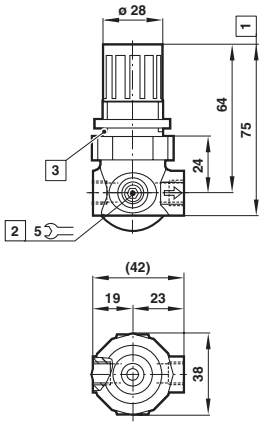
Wall mounting bracket and panel nut	Panel nut	Service kit
 1 4	 4	
18-025-004	2962-04	3407-A2

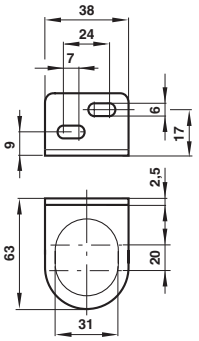
Gauge (for full technical specification see page 4-61)		 6	 6		
Series	Port size	Pressure range in bar	Pressure range in psi	Diameter	Model
07 (ISO G main port)	Rc 1/8	0 ... 10		40 mm	18-013-989
07 (PTF main port)	1/8 PTF		0 ... 160	1 1/2"	18-013-212

Basic dimensions

Wall mounting bracket

Dimensions shown in mm
Projection/First angle





1 Reduces by 4 mm with knob in locked position

2 Gauge port

3 Panel mounting hole diameter 30 mm, Panel thickness 0 ... 6 mm

General purpose filter/regulator
Miniature series LB07
1/8" & 1/4"

Compact design

Snap action knob locks pressure setting when pushed in

Standard relieving models allow reduction of outlet pressure even when the system is dead-ended

Protects air operated devices by removing liquid and solids contaminants

Screw-on bowl reduces maintenance time

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

Technical features

Medium:
Compressed air only
Pressure range:
0,3 ... 10 bar (5 ... 145 psi)
Other pressure ranges are available contact Norgren
Maximum inlet pressure:
17 bar (250 psi)

Filter element:
5 or 40 µm
Typical flow:
See below
Gauge ports:
1/8" PTF with PTF main ports
1/8" ISO Rc with ISO G main ports
Drain:
Manual

Bowl size:
31 ml (1 fluid ounce)
Operating temperature:
-40 ... +65°C (-40 ... +150°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body and bowl: zinc
Bonnet: acetal
Valve: brass/nitrile
Valve seat: acetal
Element: sintered polypropylene
Elastomers: nitrile

Technical data

Port size	Flow* dm³/s	scfm	Weight kg	lb	Model with G-thread 40 µm	5 µm	Model with PTF-thread 40 µm	5 µm
1/8"	6,2	13	0,26	0.57	LB07-133-M3KG	LB07-133-M1KG	LB07-133-M3KA	LB07-133-M1KA
1/4"	6,5	14	0,26	0.57	LB07-233-M3KG	LB07-233-M1KG	LB07-233-M3KA	LB07-233-M1KA

* Typical flow with 7 bar (100 psi) inlet pressure, 6,3 bar (90 psi) set pressure, 40 µm element, and a 1 bar (15 psi) droop from set.

Option selector

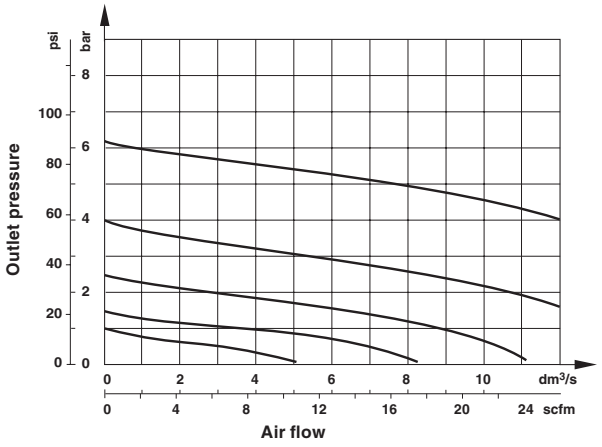
LB07-★33-M★M★

Port size	Substitute
1/8"	1
1/4"	2
Filter element	**Substitute**
5 µm	1
40 µm	3

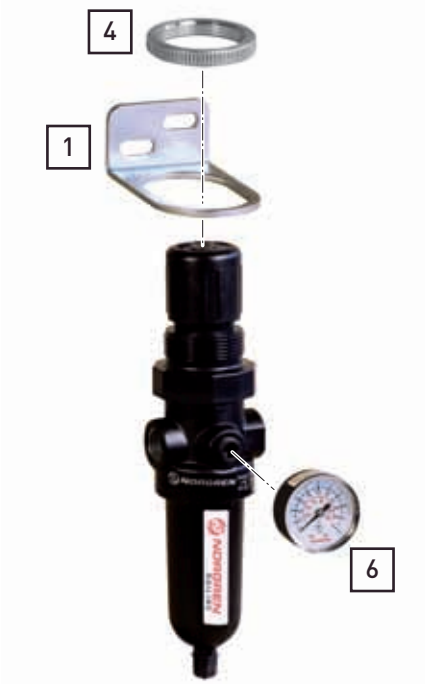
Threads	Substitute
PTF	A
ISO G parallel	G

Flow characteristics

LB07 – Port size: 1/4", element: 40 µm, inlet pressure: 10 bar (145 psi), range: 0,3 ... 7 bar (5 ... 100 psi)



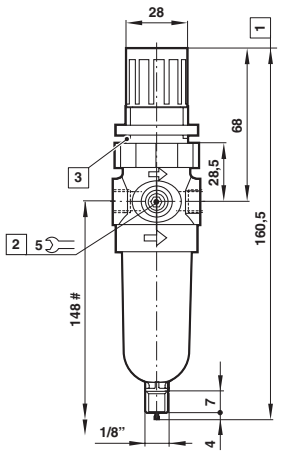
Accessories



Wall mounting bracket and panel nut	Panel nut	Service kit		Replacement drain
				
1 4	4	Type		
18-025-004	2962-04	5 µm	3820-15	773-07
		40 µm	3820-17	

Gauge (for full technical specification see page 4-61)		 6 Pressure range in bar	 6 Pressure range in psi		
Series	Port size			Diameter	Model
07 (ISO G main port)	Rc 1/8	0 ... 10		40 mm	18-013-989
07 (PTF main port)	1/8 PTF		0 ... 160	1 1/2"	18-013-212

Basic dimensions

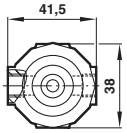


1 Reduces by 4 mm with knob in locked position

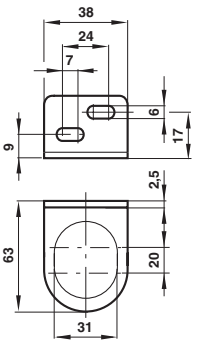
2 Gauge port

3 Panel mounting hole diameter 30 mm, Panel thickness 0 ... 6 mm

Minimum clearance required to remove bowl



Wall mounting bracket



Dimensions shown in mm

Projection/First angle

General purpose filter
LF17

3/4" ... 1 1/2"

Protects air operated devices by removing liquid and solid contaminants from compressed air

Screw-on bowl reduces maintenance time

Optional visual service indicator turns from green to red when the filter element needs to be cleaned or replaced

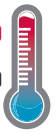
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air
Maximum pressure:
17 bar (250 psi)

Filter element:
5 or 40 µm; 25 µm optional
Drain:
Manual

Bowl size:
1 litre (1 quart US)

Materials:
Body and bowl: aluminum
Bowl sight glass: pyrex
Elastomers: nitrile
Filter element: sintered bronze

Technical data

Port size	Flow dm^3/s *	scfm	Weight kg	lb	Model with ISO G or BSPP threads 40 µm	5 µm	Model with PTF-threads 40 µm	5 µm
3/4"	153	324	1,93	4.25	LF17-600-P3DG	LF17-600-P1DG	LF17-600-P3DA	LF17-600-P1DA
1"	201	426	1,88	4.14	LF17-800-P3DG	LF17-800-P1DG	LF17-800-P3DA	LF17-800-P1DA
1 1/4"	201	426	1,99	4.38	LF17-A00-P3DG	LF17-A00-P1DG	LF17-A00-P3DA	LF17-A00-P1DA
1 1/2"	201	426	1,95	4,29	LF17-B00-P3DC	LF17-B00-P1DC	LF17-B00-P3DA	LF17-B00-P1DA

*Typical flow with a 40 µm element at 6,3 bar (90 psi) inlet pressure and 0,5 bar (7 psi) pressure drop.

Option selector

LF17-★0★-★★★★

Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Service indicator	**Substitute**
Without (standard)	0
With (optional)	1
Drain	**Substitute**
Manual (standard)	P
Open ended adaptor	X

Threads	Substitute
PTF	A
BSPP (1 1/2" ported units only)	C
ISO G parallel (not available with 1 1/2" ported units)	G
Bowl	**Substitute**
With sight glass (standard)	D
Without sight glass	M
Filter element	**Substitute**
5 µm	1
25 µm (optional)	2
40 µm	3

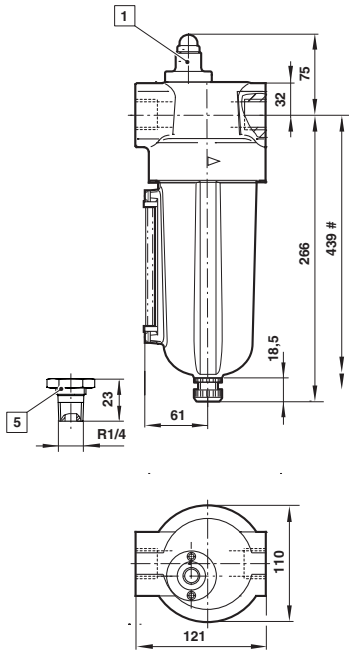
General purpose filter
LF17
3/4" ... 1 1/2"

Spares

Service kit 'O'-rings and gaskets	Replacement elements	
		
5578-23	5 µm	5311-01
	25 µm	5311-02
	40 µm	5311-03

Dimensions

Dimensions shown in mm
Projection/First angle



Minimum clearance required to remove bowl

1 Service life indicator on request

5 Open ended adaptor

Oil removal (coalescing) filter
LF46

3/4", 1" & 1 1/4"

High efficiency oil and particle removal

Screw-on bowl reduces maintenance time

Can be disassembled without the use of tools or removal from the air line

Standard service indicator turns from green to red when the filter element needs to be replaced

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

Install an LF17 filter with a 5 µm filter element upstream of the LF46 filter for maximum service life.

EN 61373

+65°C (+150°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air only
Maximum pressure:
17 bar (250 psi)
Particle removal:
Down to 0,01 µm

Maximum remaining oil content of air leaving the filter:
0,01 ppm at +20°C (+70°F) when air is pre-filtered with a Norgren oil removal filter
Drain:
Manual

Bowl size:
1 litre (1 quart US)
Operating temperature:
-40 ... +65°C (-40 ... +150°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body and bowl: aluminum
Bowl sight glass: pyrex
Elastomers: nitrile
Filter element: synthetic fiber and polyurethane foam

Technical data

Port size	Max. flow* dm^3/s	scfm	Weight kg	lb	Model with ISO G parallel threads	Model with PTF-threads
3/4"	42	90	4,11	9.06	LF46-601-P0DG	LF46-601-P0DA
1"	59	125	4,05	8.92	LF46-801-P0DG	LF46-801-P0DA
1 1/4"	59	125	4,29	9.45	LF46-A01-P0DG	LF46-A01-P0DA

* Maximum flow for oil-saturated element at 6,3 bar (90 psi) inlet pressure to maintain stated oil removal performance.

Option selector

LF46-★0★-★0★★

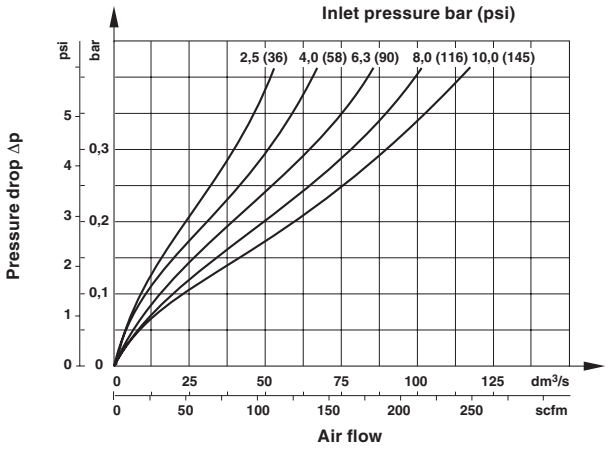
Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
Service life Indicator	**Substitute**
Without	0
With (visual)	1
Drain	**Substitute**
Manual (standard)	P
Open ended adaptor	X

Threads	Substitute
PTF	A
ISO G parallel	G
Bowl	**Substitute**
With sight glass (standard)	D
Without sight glass	M

Oil removal (coalescing) filter
LF46
3/4", 1" 1 1/4"

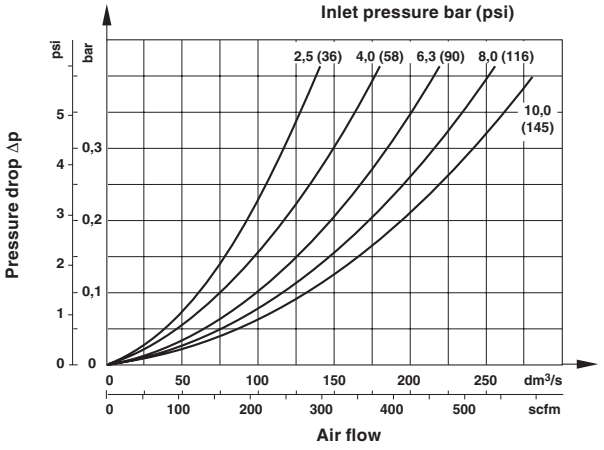
Flow characteristics

Port size: 1", oil stated element



1 Max flow to maintain stated oil removal performance

Dry element



Spares

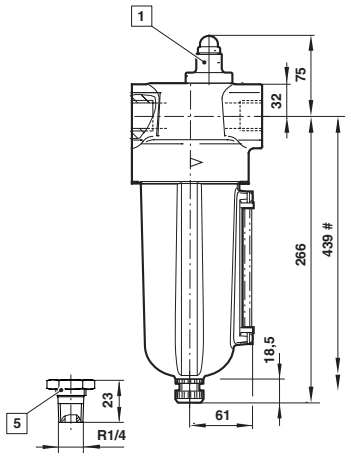
Service kit
'0'-rings and gaskets

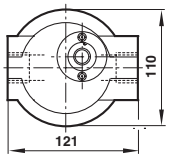
5351-05

Service kit contains coalescing element, element o-ring, bowl o-ring, and drain gasket.

Dimensions

Dimensions shown in mm
Projection/First angle





Minimum clearance required to remove bowl

1 Standard with service life indicator

5 Open ended adaptor

General purpose regulator
LR17

3/4", 1", 1 1/4" and 1 1/2"

Accurate and quick response to changes in flow demand and line pressure variations

Balanced valve minimizes effect of changes in inlet pressure on outlet pressure

Standard relieving models allow reduction of outlet pressure even when the system is dead-ended

Low torque, non-rising adjusting knob

Integral locking device on knob adjustment

Can be serviced without removal from the air line

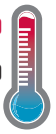
Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+80°C (+175°F)

-34°C (-30°F)



Technical features

Medium:
Compressed air
Pressure range:
0,3 ... 8,5 bar (5 ... 125 psi)
Maximum pressure:
20 bar (290 psi)

Typical flow:
See below
Gauge ports:
1/4" PTF with PTF main ports
R1/4 with ISO Rc, ISO G main ports

Operating temperature:
-34 ... +80°C (-30 ... +175°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body and bonnet: aluminum
Bottom plug: acetal
Valve: aluminum and nylon
Elastomers: nitrile

Technical data

Port size	Flow* dm^3/s	scfm	Weight kg	lb	Model with ISO G or BSPP-thread	Model with PTF-thread
3/4"	208	446	1,05	2.31	LR17-600-RNLG	LR17-600-RNLA
1"	227	487	0,92	2.02	LR17-800-RNLG	LR17-800-RNLA
1-1/4"	189	405	1,22	2.68	LR17-A00-RNLG	LR17-A00-RNLA
1-1/2"	208	446	1,18	2.60	LR17-B00-RNLC	LR17-B00-RNLA

* Typical flow with 10 bar (145 psi) inlet pressure, 6,3 bar (90 psi) set pressure and a 1 bar (15 psi) droop from set.

Option selector

LR17-★0★-RN★★

Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Adjustment	**Substitute**
Knob	0
T-bar	1

Threads	Substitute
PTF	A
BSPP (1 1/2" ported units only)	C
ISO G parallel (not available with 1-1/2" ported units)	G
Pressure adjustment ranges*	**Substitute**
0,3 ... 3,5 bar (5 ... 50 psi)	E
0,3 ... 8,5 bar (5 ... 125 psi)	L

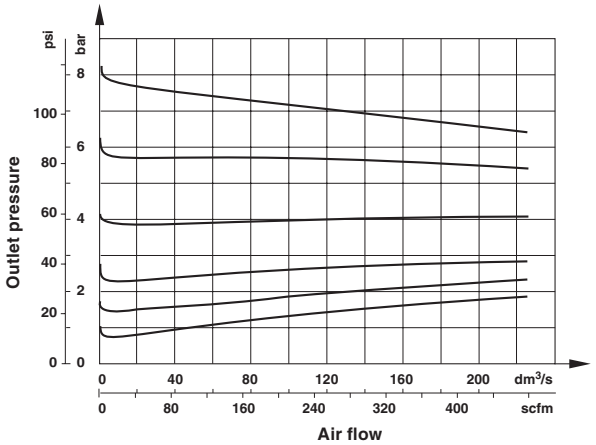
* Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

General purpose regulator LR17

3/4", 1", 1 1/4" and 1 1/2"

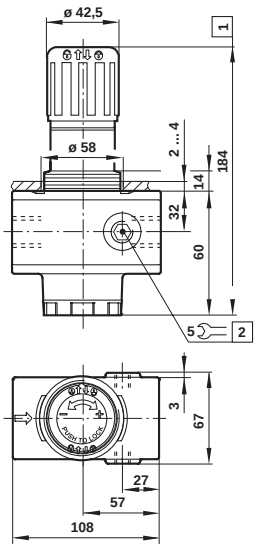
Typical performance characteristics

LR17 – Port size 1", spring range 0,3 ... 8 bar (5 ... 125 psi), inlet pressure 10 bar (145 psi)



Dimensions

Dimensions shown in mm
Projection/First angle



1 Reduces by 4 mm with knob in locked position

2 Gauge port

Accessories

Gauge (for full technical specification see page 4-61)

Series	Port size	6 Pressure range in bar	6 Pressure range in psi	Diameter	Model
17 (ISO G main port)	Rc 1/4	0 ... 10		50 mm	18-013-013*
17 (PTF main port)	1/4 PTF		0 ... 160	2"	18-013-209

*Please order the adaptor 150232818 separately.

Service kit

Service kit

5578-21

High flow pressure regulator
L20AG

1/2" ... 1"

Ported regulators for general purpose pneumatic applications

Relieving operation as standard

Options include non-relieving models and alternative spring ranges

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B

EN 61373

+80°C (+176°F)

-20°C (-4°F)

Technical features

Medium:
Compressed air only
Pressure range:
See below

Maximum inlet pressure:
28 bar (400 psi)
Gauge port:
Rc 1/8 with main G ports
1/8 PTF with main PTF ports

Operating temperature:
-20 ... +80°C (-4 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body & bonnet: zinc alloy
Bottom plug: glass filled nylon for 1/2, brass for 3/4" and 1"
Adjusting screw: steel plated
Elastomers: synthetic rubber

Technical data

Port size	Flow dm^3/s	scfm	Pressure range (bar)*	Relieving	Weight kg	lb	Model with ISO G-thread	Model with PTF-thread
1/2	60	127	0,1 ... 3,5	Standard	1,40	3.08	L20AG-X4G-PD100	L20AG-X4G-AD100
1/2	60	127	0,2 ... 8	Standard	1,30	2.86	L20AG-X4G-PH100	L20AG-X4G-AH100
1/2	60	127	7 ... 16	Standard	1,29	2.84	L20AG-X4G-PJ100	L20AG-X4G-AJ100
3/4	80	170	0,1 ... 3,5	Standard	2,75	6.06	L20AG-X6G-PD100	L20AG-X6G-AD100
3/4	80	170	0,2 ... 8	Standard	2,85	6.28	L20AG-X6G-PH100	L20AG-X6G-AH100
1	100	212	0,1 ... 3,5	Standard	2,44	5.37	L20AG-X8G-PD100	L20AG-X8G-AD100
1	100	212	0,2 ... 8	Standard	2,90	6.39	L20AG-X8G-PH100	L20AG-X8G-AH100

*Can be adjusted to zero bar outlet pressure and generally to pressures in excess of those specified

Option selector

L20AG-X★G-★★100

Port size	Substitute
1/2"	4
3/4"	6
1"	8

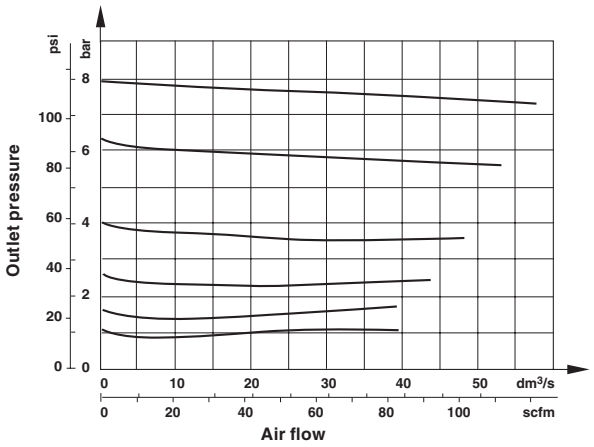
* Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

Pressure ranges*	Substitute
0,1 ... 3,5 bar	D
0,2 ... 8 bar	H
7 ... 16 bar, 1/2" only	J
Threads	**Substitute**
PTF	A
ISO G parallel	P

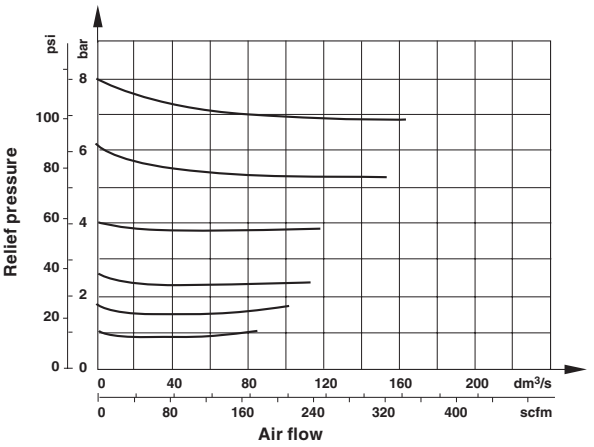
High flow pressure regulator
L20AG
1/2" ... 1"

Flow characteristics

Inlet pressure: 10 bar (145 psi), port size: 1/2"
Range: 0,2 ... 8 bar (3 ... 116 psi)



Inlet pressure: 10 bar (145 psi), port size: 1"
Range: 0,2 ... 7 bar (3 ... 101 psi)



Accessories

Wall mounting bracket	Service kit
	
1	
18-001-005 (1/2" body only)	20AG-X4-101 (1/2" body only)
18-001-029	20AG-X8-101

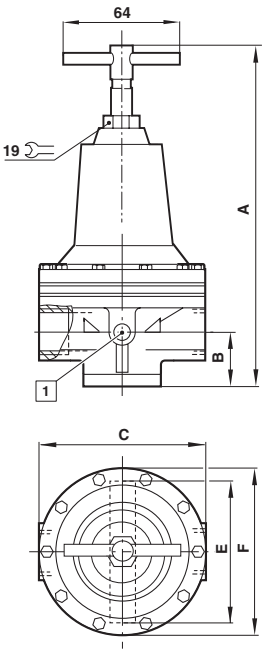
Gauge

Series	Port size	 6 Pressure range in bar	 6 Pressure range in psi	Diameter	Model
L20AG (ISO G main port)	Rc 1/8	0 ... 10	0 ... 140	40 mm	18-013-989
L20AG (PTF main port)	1/8 PTF	0 ... 11	0 ... 160	1 1/2"	18-013-212
L20AG (ISO G main port)	Rc 1/8	0 ... 10	0 ... 140	50 mm	18-013-013

High flow pressure regulator
L20AG

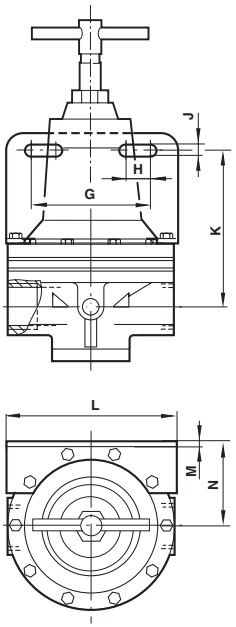
1/2” ... 1”

Dimensions



1 Gauge port

Bracket mounting



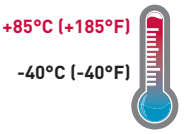
Dimensions shown in mm
Projection/First angle

Series	B	C	D	E	F
L20AG-X4G	125	35	85	85	125
L20AG-X6G	185	40	115	125	160
L20AG-X8G	185	40	115	125	160

Series	G	H	J	K	L	M
L20AG-X4G	100	85	30	7	70	55
L20AG-X6G	140	125	65	8	80	75
L20AG-X8G	140	125	65	8	80	75

Precision pressure regulator
LR27
G 1/4

Ideally suited to Pantograph application
High-precision manual pressure regulator
Highly sensitive and accurate
Perfect for dead-end applications
Excellent long term stability
High forward and relief flow capability
Low air consumption
Wide temperature range
Shock and vibration tested to EN 61373, Category 1, class A and B



Technical features

Medium:
Dry, oil free air filtered to 25 µm
Operation:
Handwheel 2,5 ... 3 turns
Maximum inlet pressure:
10 bar (145 psi)
Gauge ports:
G1/4 or 1/4 NPT

Flow capacity:
Up to 600 l/min
Sensitivity:
Better than 0,3 mbar
Hysteresis & repeatability:
Less than 0,05% setting at mid range

Ambient temperature:
-40 ... +85°C (-40 ... +185°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body: passivated zinc diecasting
Internal springs: mild steel
Elastomers: reinforced nylon
Port & base screws: nickel plated brass

Technical data

Pressure range (bar)	Air consumption (l/m)	Weight kg	lb	Model with ISO G-thread	Model with NPT thread
0,14 ... 2,0	0,3	0,72	1.58	LR27-200-RNCG	LR27-200-RNCR
0,14 ... 4,0	0,6	0,72	1.58	LR27-200-RNFG	LR27-200-RNFR
0,14 ... 8,0	1,2	0,72	1.58	LR27-200-RNLG	LR27-200-RNLR

Option selector

LR27-200-RN★★

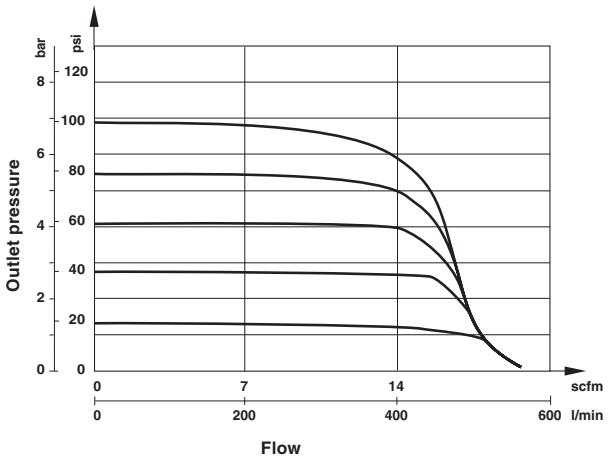
Pressure range	Substitute
0,14 ... 2 bar	C
0,14 ... 4 bar	F
0,14 ... 8 bar	L

Threads	Substitute
NPT	R
ISO G parallel	G

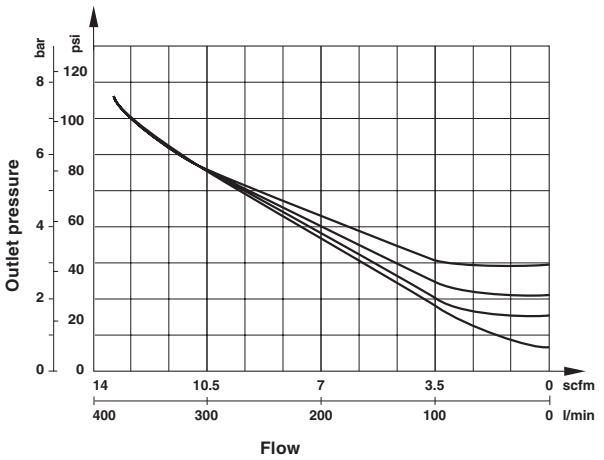
Precision pressure regulator
LR27
G 1/4

Flow characteristics

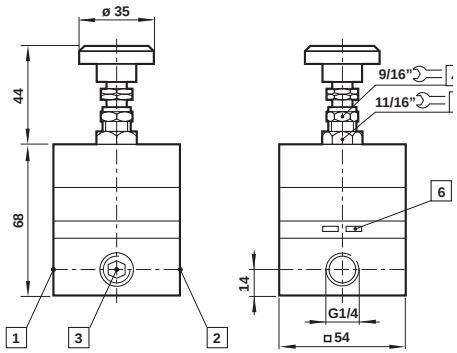
Forward flow (supply pressure 7 bar)



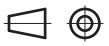
Relief flow (supply pressure 7 bar)



Basic dimensions



Dimensions shown in mm
Projection/First angle



1 Inlet port
2 Outlet port
3 Gauge port
4 Tension nut
5 Mounting nut (Ø 11,5 required for panel mounting)
6 Exhaust

Compact interface mount regulator
SLA/15542

Compact design

Standard non-relieving models allow reduction of outlet pressure even when the system is dead-ended

Option for -40°C (-40°F) available on request

+70°C (+158°F)

-25°C (-13°F)

Technical features

Medium:
Compressed air only
Maximum inlet pressure:
20 bar (290 psi)
Pressure range:
0,3 ... 10 bar (5 ... 145 psi)

Typical flow:
See below
Relieving:
non-relieving

Ambient temperature:
-25 ... +70°C (-13 ... +158°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body: aluminium
Cap: brass
Valve: brass/nitrile
Elastomers: nitrile

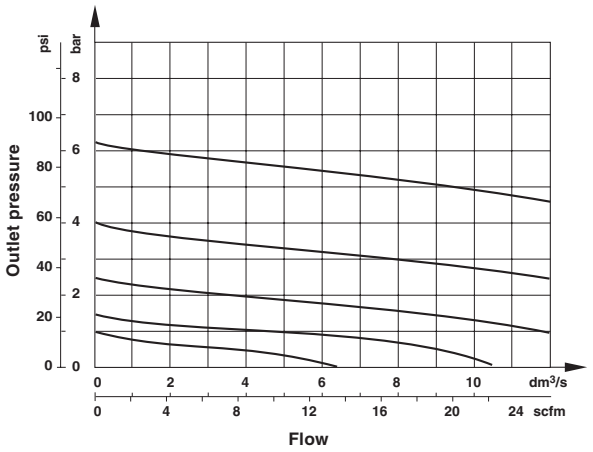
Technical data

Port size	Flow* dm^3/s	scfm	Weight kg	lb	Model
Interface	6,5	14	0,16	0.35	SLA/15542

*Typical flow with 7 bar (100 psi) inlet pressure, 40 µm element, 6,3 bar (90 psi) set pressure and a 1 bar (15 psi) droop from set. .

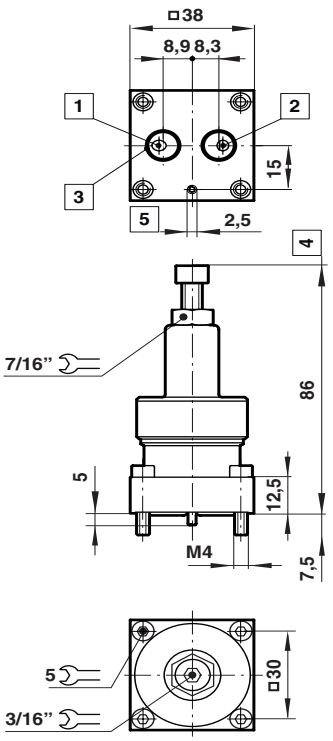
Flow characteristics

Inlet pressure: 10 bar (145 psi), pressure range: 0,3 ... 7 bar (5 ... 100 psi)



Basic dimensions

Dimensions shown in mm
Projection/First angle



1 Inlet port
2 Outlet port
3 Hole diameter 10 mm 'O'-ring (9,9 i/d x 2,65 o/d) standard in scope of supply of regulator
4 Adjustable section 9 mm
5 Location pin

Pressure relief valves
Excelon® Quikclamp system LV72G, LV74G
1/4" ... 3/4"

Excelon design allows in-line installation or modular installation with other Excelon products

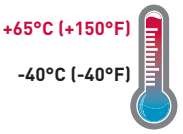
Push to lock adjusting knob with tamper resistant accessory

Helps protect air operated equipment from over pressurisation

Norgren pressure relief valves comply with category 0 (S.E.P.) and category 1 of the Pressure Equipment Directive 97/23/EC.

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B



Technical features

Medium:
Compressed air
Relief pressure range:
0,3 ...10 bar (5 ... 145 psi)
Other relief pressures are available, contact Norgren
Relief port:
LV72: 1/4", LV74G: tapped air port size only

Gauge ports:
LV72G: Rc 1/8 for ISO G main ports, 1/8 PTF for PTF main ports
LV74G: Rc 1/8 for ISO G main ports, 1/4 PTF for PTF main ports

Ambient temperature:
-40 ... +65°C (-40 ... +150°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:
LV72G
Body: zinc body
Bonnet: acetal
Elastomers: nitrile
Bottom plug: acetal
LV74G
Body & bonnet: aluminium
Valve: aluminium and nitrile
Elastomers: nitrile
Bottom plug: acetal

Technical data

Air port	Weight kg	lb	Model with ISO G-thread	Model with PTF-thread
1/4"	0,33	0.72	LV72G-2GK-NMN	LV72G-2AK-NMN
3/8"	0,33	0.72	LV72G-3GK-NMN	LV72G-3AK-NMN
3/8"	0,69	1.52	LV74G-3GK-NMN	LV74G-3AK-NMN
1/2"	0,68	1.49	LV74G-4GK-NMN	LV74G-4AK-NMN
3/4"	0,67	1.47	LV74G-6GK-NMN	LV74G-6AK-NMN

Option selector

LV7★G-★★★-NMN

Series	Substitute
72	2
74	4

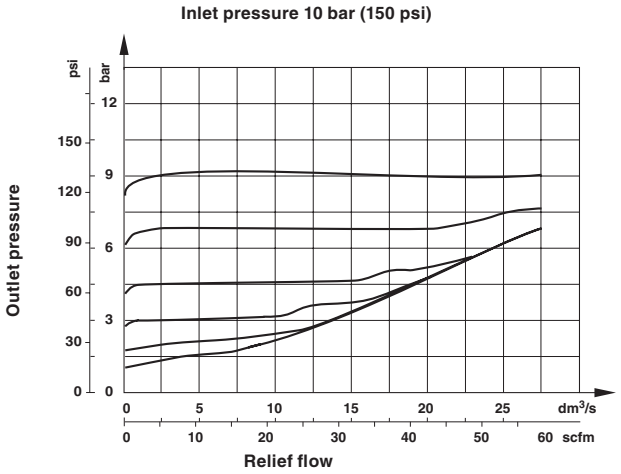
Port size	Substitute
1/4" (72)	2
3/8"	3
1/2" (74)	4
3/4" (74)	6

Adjustment	Substitute
Knob (standard)	K
T-handle (10 bar, 145 psi)	T

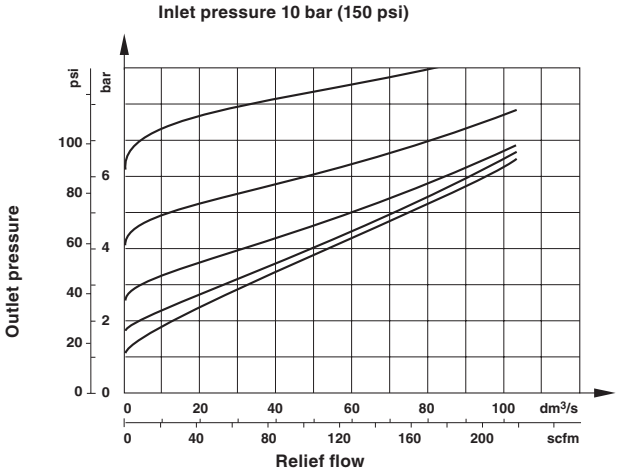
Threads form	Substitute
PTF	A
ISO G parallel	G

Flow characteristics

LV72G – Port size 1/4", regulating range 0,3 ... 10 bar (5 ... 145 psi)



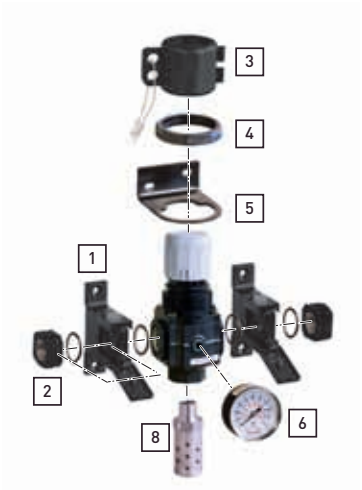
LV74G – Port size 1/2", regulating range 0,3 ... 10 bar (5 ... 145 psi)



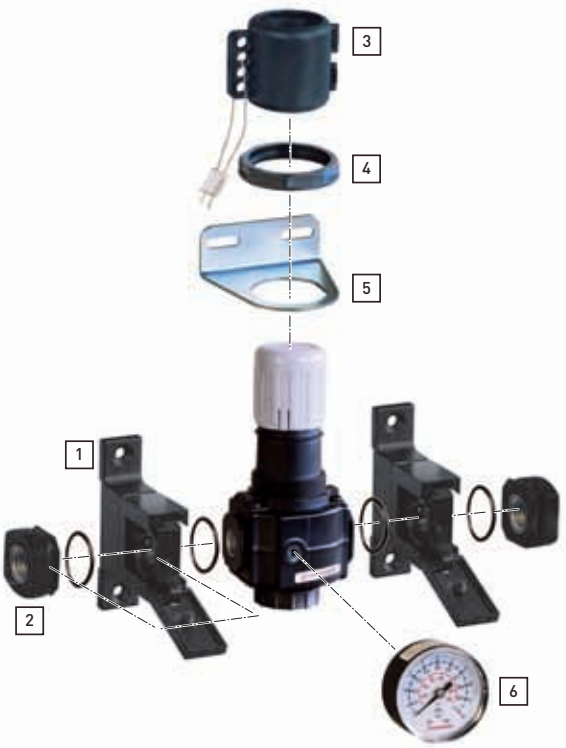
Pressure relief valves
Excelon® Quikclamp system LV72G, LV74G
1/4" ... 3/4"

Accessories

72 series



74 series



Series	Quikclamp with wall bracket*	Quikclamp*	Tamper resistant cover & seal wire	Wall bracket and panel mounting nut	Panel nut (zinc)	Silencer	Service kit
	 1		 3	 4 5	 4	 8	
72	4214-58	4214-57	4255-51	74316-50	4268-89	MB002B (Rc 1/4) MB002A (1/4 NPT)	NA
74	4314-63	4314-62	4355-51	4368-51	4368-89	–	4384-703

* Please use a Quikmount pipe adaptor if the Quikclamp is mounted at inlet or outlet side.

Series	Port size	Quikmount pipe adaptor ISO G parallel thread  2	PTF-thread  2
72	1/4"	4215-08	4215-02
72	3/8"	4215-09	4215-03
74	1/4"	4315-09	4315-01
74	3/8"	4315-10	4315-02
74	1/2"	4315-11	4315-03
74	3/4"	4315-12	4315-04

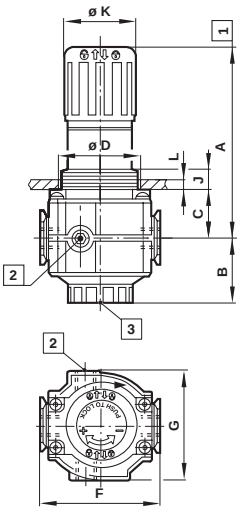
Gauge (for full technical specification see page 4-61)		 6	 6		
Series	Port size	Pressure range in bar	Pressure range in psi	Diameter	Model
72 (ISO G main port)	Rc 1/8	0 ... 10		40 mm	18-013-989
72 (PTF main port)	1/8 PTF		0 ... 160	1 1/2"	18-013-212
74 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
74 (PTF main port)	1/4 PTF		0 ... 160	2"	18-013-209

Pressure relief valves
Excelon® Quikclamp system LV72G, LV74G
1/4" ... 3/4"

Basic dimensions

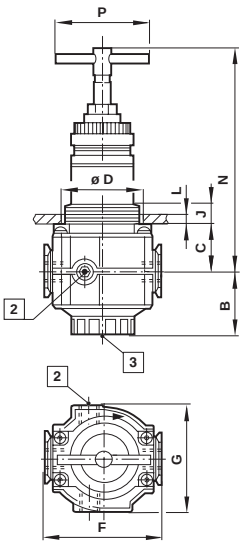
Dimensions shown in mm
Projection/First angle

Standard



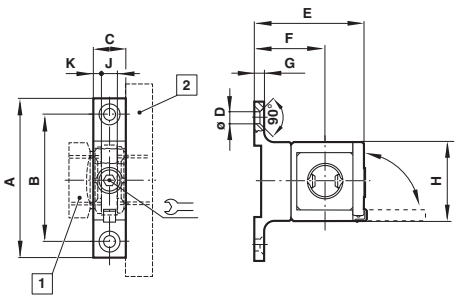
Series	A	B	C	F	G	Ø D	J	Ø K	L	N	P
72	73	33	26	50	48	40	12	35	0 ... 4	102	63
74	127	43	31	80	74	52	19	47	2 ... 6	151	63

T-handle



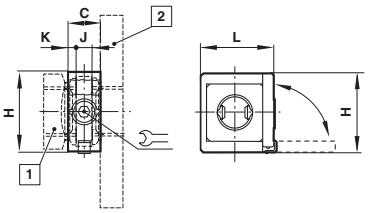
1 Reduces by 4 mm with knob in locked position
2 Gauge port
3 Exhaust port Rc 1/4, 1/4 PTF for LV72G only

Quikclamp® with wall bracket



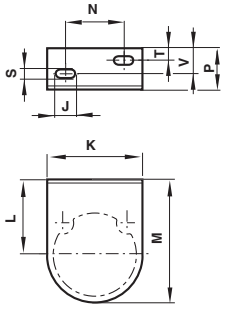
Series	A	B	C	Ø D	E	F	G	H	J	K	
72	74	59	14,5	5,3	56	38	4,5	36,5	6,5	4	3
74	102	83	24,5	6,5	74	51	6,5	51	13,5	5,5	4

Quikclamp®



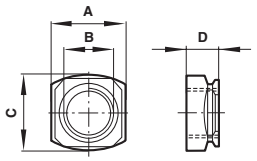
Series	C	H	J	K	L	
72	14,5	36,5	6,5	4	36,5	3
74	24,5	51	13,5	5,5	46	4

Neck mounting bracket



Series	J	K	L	M	N	P	R	S	T	V
72	8	49	38	63,5	30	24	–	4,4	7	10
74	24	89	52	86	56	35	23	7	12	12

Quikmount pipe adaptor



Series	A	B	C	D
72	29	1/4, 3/8	29	16
74	38,5	1/4, 3/8, 1/2, 3/4	38,5	18

3 way proportional pressure control valve
LVP50

G 1/4, 1/4 NPT or manifold

Closed-loop air piloted proportional pressure control valve

High flow

Excellent performance characteristics

Fast response time

Adjustable gain

Adjustable pressure range

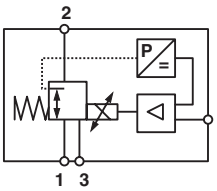
Low power consumption

Feedback signal

Manifold mounting option – ISO size 2

Wide temperature range

Shock vibration tested to EN 61373, Category 1, class A and B



EN 61373

+65°C (+149°F)

-40°C (-40°F)

Technical features

Medium:
Dry, non-lubricated air, Class 1 (ISO 8573-1), +70°C (+158°F; 0,3 ppm) at 7 bar

Operation:
Air piloted spool valve with integrated electronic pressure control

Output (nominal) pressure:
0 ... 10 bar (0 ... 145 psi)

Supply pressure:
Minimum 2 bar (29.00 psi) above maximum output required, 14 bar (203.04 psi) max.

Supply sensitivity:
Better than 0,75% span output change per bar supply pressure change

Flow:
Up to 1400 N l/min (see characteristic curves)

Air consumption:
‹ 5 N l/min

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Temperature effect:
Typically better than 0.03% span/°C (0 ... +50°C, +32 ... +120°F), ‹5% span (extended range -40 ... +80°C, -40 ... +176°F)

Response time:
‹80 ms (from 10 ... 90% of output pressure into a 0,1 litre load)

Degree of protection:
IP65 in normal operation (exhaust and baffle protected from water ingress at temperatures ‹5°C, +41°F

Linearity:
‹1%

Hysteresis:
‹1%

Vibration & shock immunity:
‹3% span (BS61373:1999 Class A 0,75 m/s^2, 5 ... 150Hz, Class B 1 m/s^2, 5 ... 150Hz)

Weight:
0,63 kg

Materials
Body: aluminium
Lid and end cover: zinc diecast, nylon

Electrical details

Electromagnetic compatibility	CE marked: conforms to EC requirements EN 50081-2 (1994) and EN 50082-2 (1995)
Electrical input signal	4 ... 20 mA or 0 ... 10 V factory set
Electrical power input	24 V d.c. +25%, -30% (power consumption < 1 W)
Output pressure feedback signal	0 ... 10 V full range
Connections	M12x1, 5-pin

Option selector

LVP50★★★★★11HSR

Control signal	Substitute
0 ... 2 bar/30 psi	02
0 ... 6 bar/90 psi	06
0 ... 10 bar/145 psi	10
Unit for pressure	**Substitute**
bar	B
psi	P

Input signal	Substitute
0 ... 10 V	1
4 ... 20 mA	4
Port size	**Substitute**
G 1/4	J
NPT 1/4	K
Manifold	X

3 way proportional pressure control valve LVP50

G 1/4, 1/4 NPT or manifold

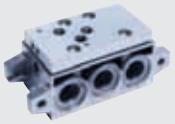
Connecting plugs

Elbow connector M12 x 1

0252543 (5-pin, wireable)

Manifold mount assembly to ISO 2 sub base

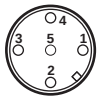
Single manifold



ZZ5M00

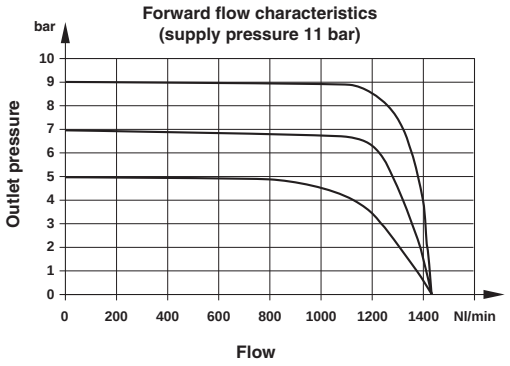
O-rings, flat seal and screws are included

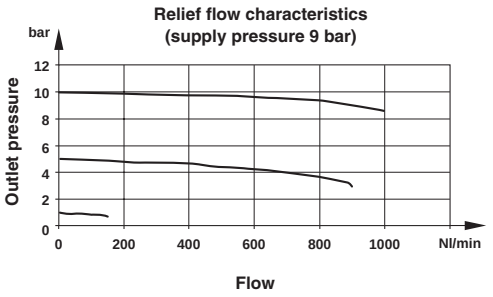
Electrical connector pin looking into the end of the instrument



Pin-No.	Function
1	+24 V d.c. supply
2	0 ... 10 V feedback
3	Contol signal (+VE)
4	Common (supply signal and feedback return)
5	Chassis

Characteristic curves

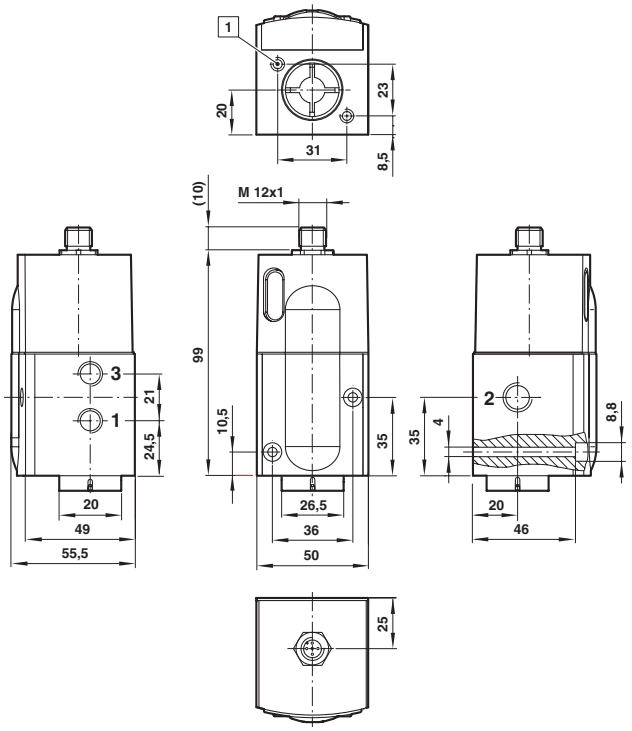




3 way proportional pressure control valve
LVP50

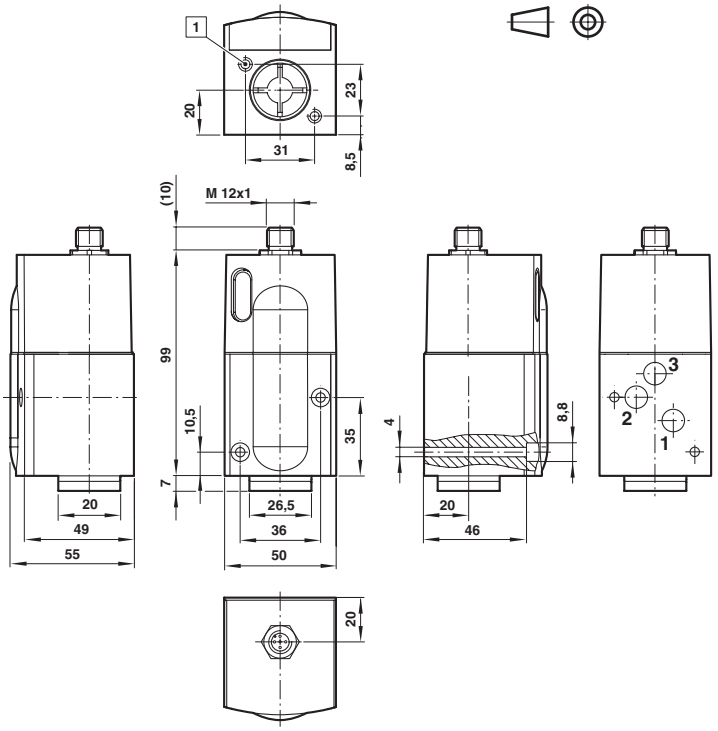
G 1/4, 1/4 NPT or manifold

Basic dimensions



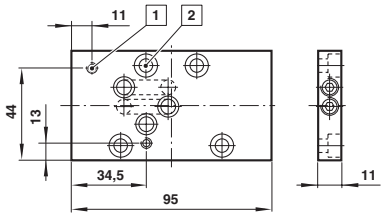
VP50 with manifold interface

Dimensions shown in mm
Projection/First angle



1 M5 x 8 mm deep

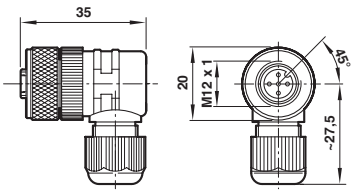
Manifold mount assembly to ISO 2 sub base included all seals and screws



1 Two screws M4 x 50 mm deep to mount the VP50 onto the manifold

2 Four screws M6x16 mm deep to mount the manifold onto the iso subbase

Connector



Connector, 90°
M12 x 1, 5 pin, female, A coded
Model: 0252543

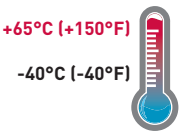
Gauge
18-013-...
1/8" & 1/4"

Monitor pressures in compressed air systems for optimum efficiency

The gauges are manufactured & calibrated to maintain accuracy within ASME B40.1 specifications for the published process/ ambient -40 ... +65°C (-40 ... +150°F) temperature limits. Reference temperature is +23°C ±1°C (approx +73°F ± 2°F) as per Section 6.2.1. Calibration procedure & accuracy of the gauges is determined by Section 6.2.4 & Table 1.

Wide temperature range

Shock and vibration tested to EN 61373, Category 1, class A and B



Technical features

Medium:
Compressed air, oil and gases or liquids which do not corrode copper alloys

Port connections:
Rc 1/8, 1/8 NPT, 1/4 NPTF

Ambient temperature:
-40 ... +65°C (-40 ... +150°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

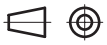
Materials:
Body: steel
Face: plastic
Movements: copper/brass

Technical data

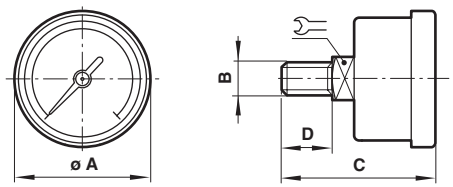
Port size	Diameter	Pressure range	Face	Model
R1/8	40 mm	0 ... 10 bar	White, black & red lettering	18-013-989
R1/8	50 mm	0 ... 10 bar	White, black & red lettering	18-013-013
1/8 PTF	1 1/2"	0 ... 160 psi	Black, red & white lettering	18-013-212
1/4 PTF	2"	0 ... 160 psi	Black, red & white lettering	18-013-209

Dimensions

Dimensions shown in mm
Projection/First angle



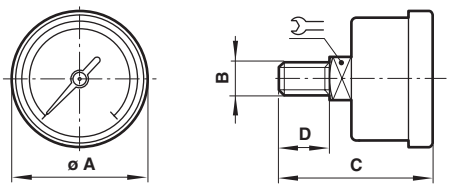
Gauge – metric, white face



Ø A	B	C	D		Model
40	R1/8	44	10	14	18-013-989
50	R1/8	48	14	14	18-013-013

Dimensions shown in inch
Projection/First angle

Gauge – inch, black face



Ø A	B	C	D		Model
1 1/2	1/8 PTF	1.60	0.97	.43	18-013-212
2	1/4 PTF	1.73	1.03	.55	18-013-209

“Norgren Railine Fittings”

EXTENSIVE RANGE >> Available in a wide range of sizes from 6 to 42mm O.D and 1/8" to 2" Nominal bore (larger sizes on request), Norgren's brass and aluminium fittings are available in a variety of shapes such as straight, elbow, tee, stem adaptor and elbow connector. Special types are also available to meet individual customer needs.

HUGE INSTALLED BASE >> Already utilised extensively around the world by train builders and operators the design and construction of the fitting has proved itself in the field with over 30 years unblemished service.

TRIED AND TESTED >> Able to withstand the harshest operating conditions, fittings are qualified to PED 97/23/EC and are tested to EN61373 for shock and vibration. Tested for operating temperatures from -45˚C to +200˚C. The fittings also meet the salt spray requirements set out in ISO 9227-06.

BROAD RANGE OF APPLICATIONS >> Applications for Norgren's fittings include main compressed air lines, pantographs, couplings, HVAC, auxiliary systems, door controls and brakes. Norgren's lightweight fittings feature all of the specification qualifications mentioned and can replace traditional steel, stainless and brass compression fittings.

Visit norgren.com/rail

FITTINGS

82A series
Aluminium (light weight) compression fittings
Ø 6 ... 42 mm tube size, BSPP and BSPT thread

Page 5-02

82 series
Brass compression fittings
Ø 6 ... 42 mm tube size, BSPP and BSPT thread

Page 5-04

83A series
Aluminium (light weight) compression fittings
Ø 1/8" ... 2" nominal pipe size, BSPP and BSPT thread

Page 5-06

83 series
Brass compression fittings
Ø 1/8" ... 2" nominal pipe size, BSPP and BSPT thread

Page 5-08

83A series
Aluminium (light weight) compression fittings
Ø 1/8" ... 2" nominal pipe size, NPT thread

Page 5-10

83 series
Brass compression fittings
Ø 1/8" ... 2" nominal pipe size, NPT thread

Page 5-12

Fleetfit
Commercial vehicle push-in fittings
Ø 6 ... 18 mm tube size, BSPP, BSPT and Metric threads

Page 5-14

Fleetfit
Commercial vehicle push-in fittings
Ø 1/4" ... 3/4" tube size, BSPT, NPT and Metric threads

Page 5-18

Pneufit
Push-in fittings
Ø 4 ... 14 mm tube size, BSP threads

Page 5-22

Pneufit
Push-in fittings
Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP and NPT threads

Page 5-34

BSP & HOSE Fittings
M5, 1/8" ... 1"

Page 5-43

Aluminium (light weight) compression fittings 82A series

Ø 6 ... 42 mm tube size, BSPP and BSPT thread

For use in areas of vibration

Can be remade without damage to tube

Suitable for use on seam welded as well as seamless tube or pipe

Thinner tube can be used; as thin as 0,8 mm wall thickness

Lower torque requirement on the tube nut than fittings which bite into the tube

Will cope with tube misalignment of ±4°

Corrosion resistant AL2 alloy

Approximately 65% lighter than brass or stainless steel fittings

EN 61373

+150°C (+302°F)

-45°C (-49°F)

Technical features

Medium:
Compressed air, water (plus other media suitable for use with materials of construction).
Operating pressure:
Typically up to 15 bar (218 psi) For applications above 15 bar (218 psi) contact Norgren technical service
Ambient temperature:
-45 ... +150°C (-49 ... +302°F) with HNBR 'O'-ring (yellow)

Tube sizes:
6, 8, 10, 12, 14, 15, 18, 20, 22, 25, 28, 32, 35, 38, 42 mm
Thread sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/2" (BSPT and BSPP)
Tubing:
Designed for use with:
Copper tube to BS 2871
Stainless steel tube to AISI 304 and AISI 316
Nylon – PA12
(tube support required)

Testing & Approvals:
PED 97/23/EC
Shock & Vibration tested to EN 61373 Category 2 (Bogie mounted)
Salt Spray tested to ISO 9227-06, data on request

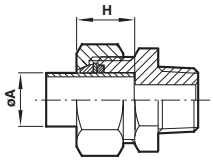
Materials
Body & nut: AL2 Aluminium with PA20 anodic treatment to HB 175 hardness
Washer & clampring: Brass, white galvinised 'O'-Ring: HNBR – colour coded yellow

Technical data

Recommended nut torque settings

Tube Ø mm	Recommended torque	Tube Ø mm	Recommended torque
6	20 Nm	22	55 Nm
8	20 Nm	25	75 Nm
10	20 Nm	28	95 Nm
12	25 Nm	30	135 Nm
14	30 Nm	32	150 Nm
15	30 Nm	35	170 Nm
16	35 Nm	38	280 Nm
18	45 Nm	42	290 Nm
20	55 Nm		

Torque settings based on Railway applications up to 15 bar for use with stainless steel tube



Tube stop position

Ø A	H	Ø A	H
6	16,0	22	19,5
8	17,0	25	21,0
10	18,5	28	22,5
12	18,0	30	23,0
14	18,0	32	23,5
15	18,5	35	23,5
16	20,5	38	27,0
18	19,5	42	26,5
20	19,5		

The information provided in this table are typical values as dimension H will vary slightly with torque applied to the nut.

For fittings without tube stops such as straight connector and bulkheads the above tube insertion depths are also applicable

Option selector

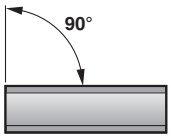
82A★★★★★★★★

Thread type	Add 'V' = optional – FKM high temperature 'O'-ring
Shape	
Pipe size	Thread size/pipe size

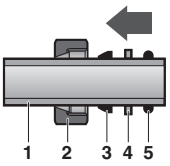
Aluminium (light weight) compression fittings 82A series

Ø 6 ... 42 mm tube size, BSPP and BSPT thread

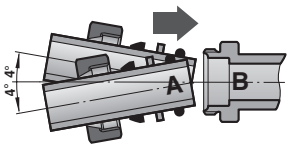
Method of assembly



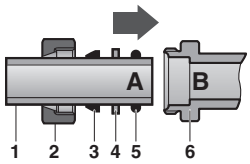
1. Ensure that the end of the tube is cut square and is free from burrs.



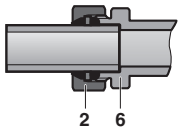
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignement is not higher than ± 4°



4. Move the pipe head (A) with all components asembled as shown towards the casing abutment (B). In pipe fitings without abutment (B), the pipe should be inserted as per the tube stop/abutment position listed below.



5. Move the four components from left to right and screw the nut (2) onto the pipe fitting casing (6).

Straight adaptors and connectors

Straight adaptor (taper) 82A125	Straight adaptor (parallel) 82A225	Female adaptor (parallel) 82A226	Straight union (equal) 82A020	Straight union (unequal) 82A020	Bulkhead union 82A029	Cap 82A012	Straight stem connector (taper) 82A115	Straight stem connector (parallel) 82A215
								

Elbow adaptors and connectors

Union elbow (equal) 82A040	Union elbow (unequal) 82A040	90° Elbow adaptor (taper) 82A145	90° Elbow adaptor female (taper) 82A246
			

Tee adaptors and connectors

Union tee (equal) 82A060	Union tee (unequal) 82A060	Tee adaptor (taper) 82A165	Tee adaptor female (taper) 82A266
			

Accessories

Tubing nut 82A0F4	Split ring 82A0J1	Tubing washer 82A0E7	Tubing 'O'-ring 8000K	Thread 'O'-ring ISO G parallel thread 8000K
				

Please contact Norgren technical service for a full list of part numbers

Brass compression fittings
82 series

Ø 6 ... 42 mm tube size, BSPP and BSPT thread

For use in areas of vibration

Pre-assembled units

No special assembly tools or heat required

Can be remade without damage to tube

Suitable for use on seam welded as well as seamless tube or pipe

Thinner tube can be used; as thin as 0,8 mm wall thickness

Lower torque requirement on the tube nut than fittings which bite into the tube

Will cope with tube misalignment of ±4°

EN 61373

+150°C (+302°F)

-45°C (-49°F)

Technical features

Medium:
Compressed air, water (plus other media suitable for use with materials of construction).
Operating pressure:
Typically up to 15 bar (218 psi) For applications above 15 bar (218 psi) contact Norgren technical service
Ambient temperature:
-45 ... +150°C (-49 ... +302°F) with HNBR 'O'-ring (yellow)

Tube sizes:
6, 8, 10, 12, 14, 15, 18, 20, 22, 25, 28, 32, 35, 38, 42 mm
Thread sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/2" (BSPT and BSPP)
Tubing:
Designed for use with:
Copper tube to BS 2871
Stainless steel tube to AISI 304 and AISI 316
Nylon – PA12 (tube support required)

Testing & Approvals:
PED 97/23/EC
Shock & vibration tested to EN 61373 Category 2 (Bogie mounted)

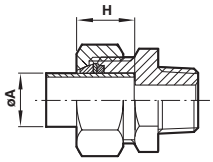
Materials
Body & nut: brass
Washer & clampring: brass, white galvinised
'O'-Ring: HNBR – colour coded yellow

Technical data

Recommended nut torque settings

Tube Ø mm	Recommended torque	Tube Ø mm	Recommended torque
6	20 Nm	22	55 Nm
8	20 Nm	25	75 Nm
10	20 Nm	28	95 Nm
12	25 Nm	30	135 Nm
14	30 Nm	32	150 Nm
15	30 Nm	35	170 Nm
16	35 Nm	38	280 Nm
18	45 Nm	42	290 Nm
20	55 Nm		

Torque settings based on Railway applications up to 15 bar for use with stainless steel tube



Tube stop position

Ø A	H	Ø A	H
6	16,0	22	19,5
8	17,0	25	21,0
10	18,5	28	22,5
12	18,0	30	23,0
14	18,0	32	23,5
15	18,5	35	23,5
16	20,5	38	27,0
18	19,5	42	26,5
20	19,5		

The information provided in this table are typical values as dimension H will vary slightly with torque applied to the nut.

For fittings without tube stops such as straight connector and bulkheads the above tube insertion depths are also applicable

Option selector

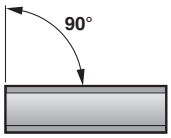
82★★★★★★★★

Thread type	Add 'V' = optional – FKM high temperature 'O'-ring.
Shape	
Pipe size	Thread size/pipe size

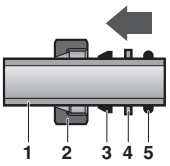
Brass compression fittings
82 series

Ø 6 ... 42 mm tube size, BSPP and BSPT thread

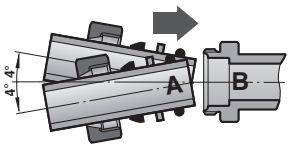
Method of assembly



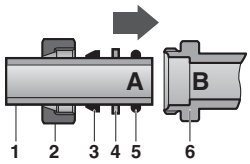
1. Ensure that the end of the tube is cut square and is free from burrs.



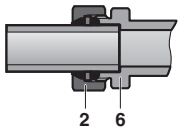
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignement is not higher than ± 4°



4. Move the pipe head (A) with all components asembled as shown towards the casing abutment (B). In pipe fitings without abutment (B), the pipe should be inserted as per the tube stop/abutment position listed below.



5. Move the four components from left to right and screw the nut (2) onto the pipe fitting casing (6).

Straight adaptors and connectors

Straight adaptor (taper) 82125	Straight adaptor (parallel) 82225	Female adaptor (parallel) 82226	Straight union (equal) 82020	Straight union (unequal) 82020	Bulkhead union 82029	Cap 82012	Straight stem connector (taper) 82115	Straight stem connector (parallel) 82215
								

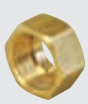
Elbow adaptors and connectors

Union elbow (equal) 82040	Union elbow (unequal) 82040	90° Elbow adaptor (taper) 82145	90° Elbow adaptor female (taper) 82246
			

Tee adaptors and connectors

Union tee (equal) 82060	Union tee (unequal) 82060	Tee adaptor (taper) 82165	Tee adaptor female (taper) 82266
			

Accessories

Tubing nut 820F4	Split ring 820J1	Tubing washer 820E7	Tubing 'O'-ring 8000K	Thread 'O'-ring ISO G parallel thread 8000K	Tube support 82033
					

Please contact Norgren technical service for a full list of part numbers

Aluminium (light weight) compression fittings 83A series

Ø 1/8" ... 2" nominal pipe size, BSPP and BSPT thread

For use in areas of vibration

Pre-assembled units

No special assembly tools or heat required

Can be remade without damage to tube

Suitable for use on seam welded as well as seamless tube or pipe

Thinner tube can be used; as thin as 0,03" (0,8 mm) wall thickness

Lower torque requirement on the tube nut than fittings which bite into the tube

Will cope with tube misalignment of ±4°

Corrosion resistant AL2 alloy

Approximately 65% lighter than brass or stainless steel fittings

EN 61373

+150°C (+302°F)

-45°C (-49°F)

Technical features

Medium:
Compressed air, water (plus other media suitable for use with materials of construction).
Operating pressure:
Typically up to 15 bar (218 psi) For applications above 15 bar (218 psi) contact Norgren technical service
Ambient temperature:
-45 ... +150°C (-49 ... +302°F) with HNBR 'O'-ring (yellow)

Tube sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
Thread sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/2" (BSPT and BSPP)
Tubing:
Designed for use with:
Copper tube to BS 2871
Nylon – PA12 (tube support required), stainless steel tube to AISI 304 and AISI 316

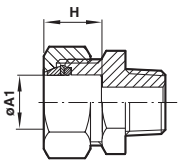
Testing & approvals:
PED 97/23/EC
Shock & vibration tested to EN 61373 Category 2 (Bogie mounted)
Salt spray tested to ISO 9227-06, data on request

Materials
Body & Nut: AL2 Aluminium with PA20 anodic treatment to HB 175 hardness
Washer & clampring: brass, white galvinised
'O'-Ring: HNBR – colour coded yellow

Technical data
Recommended nut torque settings

Nominal pipe size	Recommended torque	Tube Ø	Recommended torque
1/8"	20 Nm	1"	150 Nm
1/4"	30 Nm	1 1/4"	300 Nm
3/8"	40 Nm	1 1/2"	310 Nm
1/2"	45 Nm	2"	320 Nm
3/4"	90 Nm		

Torque settings based on Railway applications up to 15 bar for use with stainless steel tube



Tube stop position and tube outside diameter details

Nominal pipe size	Pipe O/D Ø A1"	Pipe O/D Ø A1 mm	H mm
1/8"	0,405	10,3	18
1/4"	0,540	13,7	18,5
3/8"	0,675	17,1	20
1/2"	0,840	21,3	20
3/4"	1,050	26,7	21,5
1"	1,315	33,4	22,5
1 1/4"	1,660	42,2	27
1 1/2"	1,900	48,3	25
2"	2,375	60,3	35

The information provided in this table are typical values as dimension H will vary slightly with torque applied to the nut. For fittings without tube stops such as straight connector and bulkheads the above tube insertion depths are also applicable

Option selector

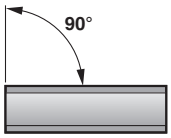
83A★★★★★★★★

Thread type	Add 'V' = optional – FKM high temperature 'O'-ring.
Shape	
Pipe size	Thread size/pipe size

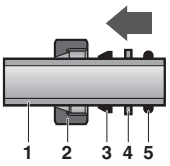
Aluminium (light weight) compression fittings 83A series

Ø 1/8" ... 2" nominal pipe size, BSPP and BSPT thread

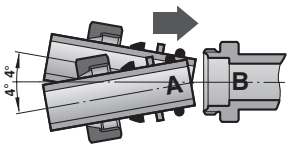
Method of assembly



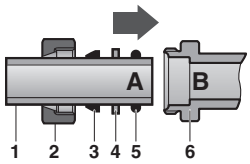
1. Ensure that the end of the tube is cut square and is free from burrs.



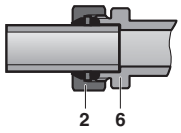
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignement is not higher than ± 4°



4. Move the pipe head (A) with all components asembled as shown towards the casing abutment (B). In pipe fitings without abutment (B), the pipe should be inserted as per the tube stop/abutment position listed below.



5. Move the four components from left to right and screw the nut (2) onto the pipe fitting casing (6).

Straight adaptors and connectors

Straight adaptor (taper) 83A125	Straight adaptor (parallel) 83A225	Female adaptor (parallel) 83A226	Straight union (equal) 83A020	Straight union (unequal) 83A020	Bulkhead union 83A029	Cap 83A012	Straight stem connector (taper) 83A115	Straight stem connector (parallel) 83A215
								

Elbow adaptors and connectors

Union elbow (equal) 83A040	Union elbow (unequal) 83A040	90° Elbow adaptor (taper) 83A145	90° Elbow adaptor female (taper) 83A246
			

Tee adaptors and connectors

Union tee (equal) 83A060	Union tee (unequal) 83A060	Tee adaptor (taper) 83A165	Tee adaptor female (taper) 83A266
			

Accessories

Tubing nut 83A0F4	Split ring 83A0J1	Tubing washer 83A0E7	Tubing 'O'-ring 8000K	Thread 'O'-ring ISO G parallel thread 8000K
				

Please contact Norgren technical service for a full list of part numbers

Brass compression fittings
83 series

Ø 1/8" ... 2" nominal pipe size, BSPP and BSPT thread

For use in areas of vibration

Pre-assembled units

No special assembly tools or heat required

Can be remade without damage to tube

Suitable for use on seam welded as well as seamless tube or pipe

Thinner tube can be used; as thin as 0,03" (0,8 mm) wall thickness

Lower torque requirement on the tube nut than fittings which bite into the tube

Will cope with tube misalignment of ±4°

EN 61373

+150°C (+302°F)

-45°C (-49°F)

Technical features

Medium:
Compressed air, water (plus other media suitable for use with materials of construction).
Operating pressure:
Typically up to 218 psi (15 bar)
For applications above 218 psi (15 bar) bar contact Norgren technical service
Ambient temperature:
-45 ... +150°C with HNBR 'O'-ring (yellow)

Tube sizes (nominal pipe size see below for corresponding tube outside diameter):
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
Thread sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/2" (BSPT and BSPP)
Tubing:
Designed for use with:
Copper tube to BS 2871
Nylon – PA12 (tube support required), stainless steel tube to AISI 304 and AISI 316

Testing & Approvals:
PED 97/23/EC
Shock & vibration tested to EN 61373 Category 2 (Bogie mounted)
Salt spray tested to ISO 9227-06, data on request

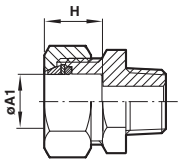
Materials
Body & nut: brass
Washer & clampring: brass
'O'-Ring: HNBR – colour coded yellow

Technical data

Recommended nut torque settings

Tube Ø mm	Recommended torque	Tube Ø mm	Recommended torque
1/8"	20 Nm	1"	150 Nm
1/4"	30 Nm	1 1/4"	300 Nm
3/8"	40 Nm	1 1/2"	310 Nm
1/2"	45 Nm	2"	320 Nm
3/4"	90 Nm		

Torque settings based on Railway applications up to 15 bar for use with stainless steel tube



Tube stop position and tube outside diameter details

Nominal pipe size	Pipe O/D Ø A1"	Pipe O/D Ø A1 mm	H mm
1/8"	0,405	10,3	18
1/4"	0,540	13,7	18,5
3/8"	0,675	17,1	20
1/2"	0,840	21,3	20
3/4"	1,050	26,7	21,5
1"	1,315	33,4	22,5
1 1/4"	1,660	42,2	27
1 1/2"	1,900	48,3	25
2"	2,375	60,3	35

The information provided in this table are typical values as dimension H will vary slightly with torque applied to the nut.

For fittings without tube stops such as straight connector and bulkheads the above tube insertion depths are also applicable

Option selector

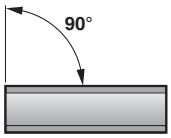
83★★★★★★★★

Thread type	Add 'V' = optional – FKM high temperature 'O'-ring.
Shape	
Pipe size	Thread size/pipe size

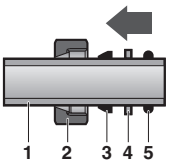
Brass compression fittings
83 series

Ø 1/8" ... 2" nominal pipe size, BSPP and BSPT thread

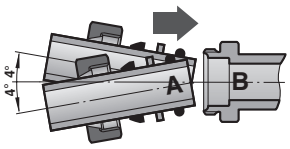
Method of assembly



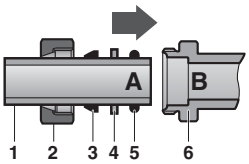
1. Ensure that the end of the tube is cut square and is free from burrs.



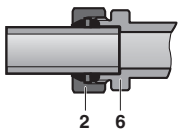
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignement is not higher than ± 4°



4. Move the pipe head (A) with all components asembled as shown towards the casing abutment (B). In pipe fitings without abutment (B), the pipe should be inserted as per the tube stop/abutment position listed below.



5. Move the four components from left to right and screw the nut (2) onto the pipe fitting casing (6).

Straight adaptors and connectors

Straight adaptor (taper) 83125	Straight adaptor (parallel) 83225	Female adaptor (parallel) 83226	Straight union (equal) 83020	Straight union (unequal) 83020	Bulkhead union 83029	Cap 83012	Straight stem connector (taper) 83115	Straight stem connector (parallel) 83215
								

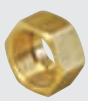
Elbow adaptors and connectors

Union elbow (equal) 83040	Union elbow (unequal) 83040	90° Elbow adaptor (taper) 83145	90° Elbow adaptor female (taper) 83246
			

Tee adaptors and connectors

Union tee (equal) 83060	Union tee (unequal) 83060	Tee adaptor (taper) 83165	Tee adaptor female (taper) 83266
			

Accessories

Tubing nut 830F4	Split ring 830J1	Tubing washer 830E7	Tubing 'O'-ring 8000K	Thread 'O'-ring ISO G parallel thread 8000K
				

Please contact Norgren technical service for a full list of part numbers

Aluminium (light weight) compression fittings 83A series

Ø 1/8" ... 2" nominal pipe size, NPT thread

For use in areas of vibration

Pre-assembled units

No special assembly tools or heat required

Can be remade without damage to tube

Suitable for use on seam welded as well as seamless tube or pipe

Thinner tube can be used; as thin as 0,03" (0,8 mm) wall thickness

Lower torque requirement on the tube nut than fittings which bite into the tube

Will cope with tube misalignment of ±4°

Corrosion resistant AL2 alloy

Approximately 65% lighter than brass or stainless steel fittings

EN 61373

+150°C (+302°F)

-45°C (-49°F)

Technical features

Medium:
Compressed air, water (plus other media suitable for use with materials of construction).
Operating pressure:
Typically up to 15 bar (218 psi)
For applications above 15 bar (218 psi) contact Norgren technical service
Ambient temperature:
-45 ... +150°C (-49 ... +302°F) with HNBR 'O'-ring (yellow)
Tube sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1-1/4", 1-1/2", 2"

Thread sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1-1/2" (NPT)
Thread sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/2" (BSPT and BSPP)
Tubing:
Designed for use with:
Copper tube to BS 2871
Nylon - PA12 (tube support required), stainless steel tube to AISI 304 and AISI 316

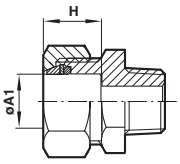
Testing & approvals:
PED 97/23/EC
Shock & vibration tested to EN 61373 Category 2 (Bogie mounted)
Salt Spray tested to ISO 9227-06, data on request

Materials
Body & Nut: AL2 Aluminium with PA20 anodic treatment to HB 175 hardness
Washer & clampring: brass, white galvinised
'O'-Ring: HNBR – colour coded yellow

Technical data
Recommended nut torque settings

Nominal pipe size	Recommended torque	Tube Ø	Recommended torque
1/8"	20 Nm (15 ft.lb.)	1"	150 Nm (111 ft.lb.)
1/4"	30 Nm (22 ft.lb.)	1 1/4"	300 Nm (221 ft.lb.)
3/8"	40 Nm (30 ft.lb.)	1 1/2"	310 Nm (229 ft.lb.)
1/2"	45 Nm (33 ft.lb.)	2"	320 Nm (236 ft.lb.)
3/4"	90 Nm (66 ft.lb.)		

Torque settings based on Railway applications up to 15 bar for use with stainless steel tube



Tube stop position and tube outside diameter details

Nominal pipe size	Pipe O/D Ø A1"	Pipe O/D Ø A1 mm	H
1/8"	0,405	10,3	18
1/4"	0,540	13,7	18,5
3/8"	0,675	17,1	20
1/2"	0,840	21,3	20
3/4"	1,050	26,7	21,5
1"	1,315	33,4	22,5
1 1/4"	1,660	42,2	27
1 1/2"	1,900	48,3	25
2"	2,375	60,3	35

The information provided in this table are typical values as dimension H will vary slightly with torque applied to the nut. For fittings without tube stops such as straight connector and bulkheads the above tube insertion depths are also applicable.

Option selector

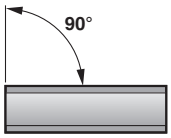
83A★★★★★★★★

Thread type	Add 'V' = optional – FKM high temperature 'O'-ring.
Shape	
Pipe size	Thread size/pipe size

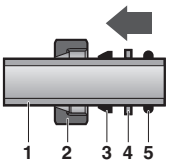
Aluminium (light weight) compression fittings 83A series

Ø 1/8" ... 2" nominal pipe size, NPT thread

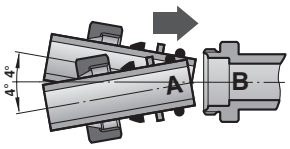
Method of assembly



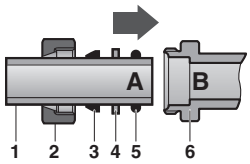
1. Ensure that the end of the tube is cut square and is free from burrs.



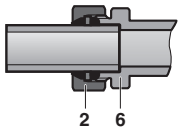
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignement is not higher than ± 4°



4. Move the pipe head (A) with all components asembled as shown towards the casing abutment (B). In pipe fitings without abutment (B), the pipe should be inserted as per the tube stop/abutment position listed below.



5. Move the four components from left to right and screw the nut (2) onto the pipe fitting casing (6).

Straight adaptors and connectors

Straight adaptor (taper) 83A425	Female adaptor (taper) 83A426	Straight union (equal) 83A020	Straight union (unequal) 83A020	Bulkhead union 83A029	Cap 83A012	Straight stem connector (taper) 83A415
						

Elbow adaptors and connectors

Union elbow (equal) 83A040	Union elbow (unequal) 83A040	90° Elbow adaptor (taper) 83A445	90° Elbow adaptor female (taper) 83A446
			

Tee adaptors and connectors

Union tee (equal) 83A060	Union tee (unequal) 83A060	Tee adaptor (taper) 83A465	Tee adaptor female (taper) 83A466
			

Accessories

Tubing nut 83A0F4	Split ring 83A0J1	Tubing washer 83A0E7	Tubing 'O'-ring 8000K
			

Please contact Norgren technical service for a full list of part numbers

Brass compression fittings
83 series

Ø 1/8" ... 2" nominal pipe size, NPT thread

For use in areas of vibration

Pre-assembled units

No special assembly tools or heat required

Can be remade without damage to tube

Suitable for use on seam welded as well as seamless tube or pipe

Thinner tube can be used; as thin as 0,03" (0,8 mm) wall thickness

Lower torque requirement on the tube nut than fittings which bite into the tube

Will cope with tube misalignment of ±4°

EN 61373

+150°C (+302°F)

-45°C (-49°F)

Technical features

Medium:
Compressed air, water (plus other media suitable for use with materials of construction).
Operating pressure:
Typically up to 218 psi (15 bar)
For applications above 218 psi (15 bar) bar contact Norgren technical service
Ambient temperature:
-45 ... +150°C with HNBR 'O'-ring (yellow)

Tube sizes (nominal pipe size see below for corresponding tube outside diameter):
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2"
Thread sizes:
1/8", 1/4", 3/8", 1/2", 3/4", 1", 1 1/2" (BSPT and BSPP)
Tubing:
Designed for use with:
Copper tube to BS 2871
Nylon – PA12 (tube support required), stainless steel tube to AISI 304 and AISI 316

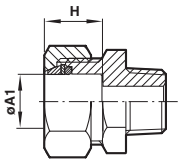
Testing & Approvals:
PED 97/23/EC
Shock & vibration tested to EN 61373 Category 2 (Bogie mounted)
Salt spray tested to ISO 9227-06, data on request

Materials
Body & nut: brass
Washer & clampring: brass
'O'-Ring: HNBR – colour coded yellow

Technical data
Recommended nut torque settings

Nominal pipe size	Recommended torque	Tube Ø	Recommended torque
1/8"	20 Nm (15 ft.lb.)	1"	150 Nm (111 ft.lb.)
1/4"	30 Nm (22 ft.lb.)	1 1/4"	300 Nm (221 ft.lb.)
3/8"	40 Nm (30 ft.lb.)	1 1/2"	310 Nm (229 ft.lb.)
1/2"	45 Nm (33 ft.lb.)	2"	320 Nm (236 ft.lb.)
3/4"	90 Nm (66 ft.lb.)		

Torque settings based on Railway applications up to 15 bar for use with stainless steel tube



Tube stop position and tube outside diameter details

Nominal pipe size	Pipe O/D Ø A1"	Pipe O/D Ø A1 mm	H mm
1/8"	0,405	10,3	18
1/4"	0,540	13,7	18,5
3/8"	0,675	17,1	20
1/2"	0,840	21,3	20
3/4"	1,050	26,7	21,5
1"	1,315	33,4	22,5
1 1/4"	1,660	42,2	27
1 1/2"	1,900	48,3	25
2"	2,375	60,3	35

The information provided in this table are typical values as dimension H will vary slightly with torque applied to the nut.

For fittings without tube stops such as straight connector and bulkheads the above tube insertion depths are also applicable

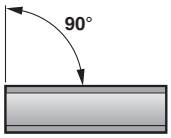
Option selector

83★★★★★★★★

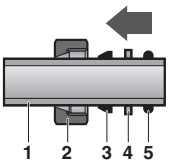
Thread type	Add 'V' = optional – FKM high temperature 'O'-ring.
Shape	
Pipe size	Thread size/pipe size

Brass compression fittings
83 series
Ø 1/8" ... 2" nominal pipe size, NPT thread

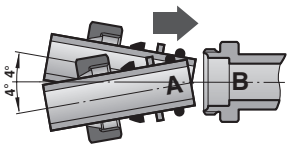
Method of assembly



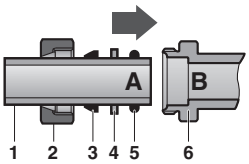
1. Ensure that the end of the tube is cut square and is free from burrs.



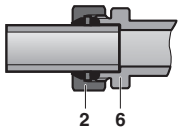
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignement is not higher than ± 4°.



4. Move the pipe head (A) with all components asembled as shown towards the casing abutment (B). In pipe fitings without abutment (B), the pipe should be inserted as per the tube stop/abutment position listed below.



5. Move the four components from left to right and screw the nut (2) onto the pipe fitting casing (6).

Straight adaptors and connectors

Straight adaptor (taper) 83425	Female adaptor (taper) 83426	Straight union (equal) 83020	Straight union (unequal) 83020	Bulkhead union 83029	Cap 83012	Straight stem connector (taper) 83415
						

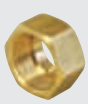
Elbow adaptors and connectors

Union elbow (equal) 83040	Union elbow (unequal) 83040	90° Elbow adaptor (taper) 83445	90° Elbow adaptor female (taper) 83446
			

Tee adaptors and connectors

Union tee (equal) 83060	Union tee (unequal) 83060	Tee adaptor (taper) 83465	Tee adaptor female (taper) 83466
			

Accessories

Tubing nut 830F4	Split ring 830J1	Tubing washer 830E7	Tubing 'O'-ring 8000K	Thread 'O'-ring ISO G parallel thread 8000K
				

Please contact Norgren technical service for a full list of part numbers

Commercial vehicle push-in fittings
Fleetfit

Ø 6 ... 18 mm tube size

Simple tube connection and disconnection – no tools required

Fewer component parts – internally machined form in body to secure collet reduces number of potential leak paths

Internal tube support as standard for greater safety

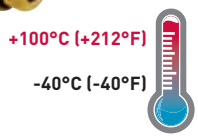
Corrosion resistant

Easy identification – all collets marked with tube size

Reduced assembly & maintenance times provide time/labour savings

Greater reliability and reduced testing

Ease of tube insertion in areas of restricted access



Technical features

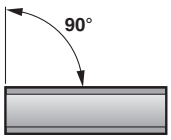
Medium:
Compressed air
Maximum working pressure:
0 to 10 bar (0 ... 145 psi)
Working temperature:
-40 ... +100°C (-40 ... +212°F)
Tubing:
Tube should be to DIN 74324

Standards & Legislation:
Fittings and tubing comply to department of transport Federal motor vehicle safety standard, (DOT FMVSS 106) (Mandatory requirements for Inch tube fittings in U.S.A.) Society for automotive engineers SAE J1131 (inch tube and fittings) German TUV approval and DIN 74324 (metric tube and fittings)

Swivel fittings
The swivel feature should be used for positioning purposes only and should not be used as a rotating joint.
Additional ranges:
The selection of metric fittings listed in this catalogue form part of a wider range of vehicle push-in fittings for further details consult Norgren Technical service.

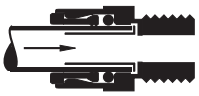
Materials
Body (straights), tube support, collet: brass BS 2874 CZ 121
Body (elbows, tees): brass BS 2874 CZ 122
'O'-ring: buna N (low nitrile)
Thread sealant: precoat 5

Method of assembly

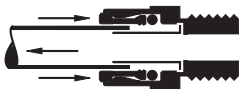


1. Ensure that the end of the tube is cut square and is free from burrs.

2. Push the tube through the collet into the fitting.

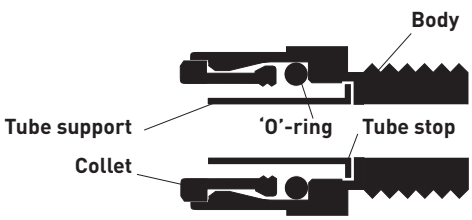


3. Continue pushing the tube through the 'O'-ring until it bottoms on the tube stop. Then pull back on the tube to reinforce the collet teeth gripping action.



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.

Component functions



Body
The body has an internally machined form to secure the collet(s), 'O'-Ring(s) and Tube support(s). It also has internal & externally machined thread form(s) for connection to ports where applicable.

Collet
The purpose of the collet is to grip the tube and ensure it is retained by the fitting at all times.

'O'-ring
The 'O'-Ring is to ensure adequate interference between the tube & fitting body therefore providing a pneumatic seal at all times.

Tube support
The tube support prevents the tube collapsing during extreme tensile loading conditions. Such conditions are only encountered during performance testing and far exceed those experienced during normal use.

Straight adaptors and connectors

Straight adaptor (metric)
97 4666

Page 5-15

Straight adaptor (BSP taper)
97 4530

Page 5-15

Straight connector (equal)
97 4503

Page 5-17

Reducing straight connector
97 4504

Page 5-17

Elbow adaptors and connector

Swivel elbow adaptor (metric)
97 4521

Page 5-16

Universal hobbs elbow adaptor (metric)
97 4138

Page 5-16

Swivel elbow adaptor (BSP parallel)
47 4104

Page 5-16

Elbow adaptor (BSP taper)
97 4330

Page 5-16

Elbow connector

97 4511

Page 5-16

Tee connectors

Tee connector (equal)
97 4514

Page 5-17

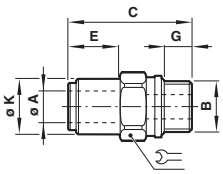
Reducing tee connector
97 4588

Page 5-17

Dimensions

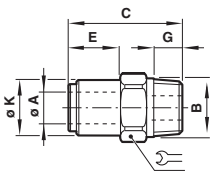
Dimensions shown in mm

Straight adaptor metric thread



O/D Tube A	B	C	E	G	Ø K		Model
6	M10 x 1,0	28,5	13,5	8,0	13,0	14	97466631
6	M12 x 1,5	30,5	11,5	10,0	13,0	17	97466633
6	M14 x 1,5	31,5	13,5	10,0	13,0	19	97466634
6	M16 x 1,5	27,5	7,5	10,0	13,0	22	97466635
6	M22 x 1,5	30,5	5,0	12,0	13,0	27	97466638
8	M10 x 1,0	29,5	12,5	8,0	15,0	17	97466641
8	M12 x 1,5	31,5	12,5	10,0	15,0	17	97466643
8	M14 x 1,5	31,5	13,5	10,0	15,0	19	97466644
8	M16 x 1,5	31,5	11,5	10,0	15,0	22	97466645
8	M22 x 1,5	30,5	15,0	12,0	15,0	27	97466648
10	M10 x 1,0	33,0	16,0	8,0	17,0	17	97466651
10	M12 x 1,5	35,0	16,0	10,0	17,0	17	97466653
10	M14 x 1,5	5,0	15,0	10,0	17,0	19	97466654
10	M16 x 1,5	35,0	15,0	10,0	17,0	22	97466655
10	M22 x 1,5	31,0	5,5	12,0	17,0	27	97466658
12	M12 x 1,5	38,5	18,5	10,0	20,5	22	97466663
12	M14 x 1,5	38,5	18,5	10,0	20,5	22	97466664
12	M16 x 1,5	39,0	19,0	10,0	20,5	22	97466665
12	M22 x 1,5	35,0	9,5	12,0	20,5	27	97466668
15	M22 x 1,5	45,0	19,5	12,0	26,0	27	97466670
16	M16 x 1,5	42,5	19,5	10,0	26,0	27	97466679
16	M22 x 1,5	44,5	19,5	12,0	26,0	27	97466675
18	M22 x 1,5	44,5	18,5	12,0	29,0	30	97466680

Straight adaptor BSP taper thread



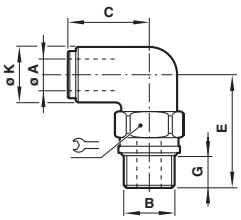
O/D Tube A	Taper B	C	E	G	Ø K		Model
6	R1/8	26,5	11,0	9,5	12,5	13	97453004
6	R1/4	27,0	9,5	11,1	12,5	14	97453010
8	R1/8	30,0	13,5	9,5	14,5	15	97453005
8	R1/4	30,0	11,5	11,1	14,5	15	97453011
10	R1/4	34,5	16,0	11,1	16,5	17	97453012
10	R3/8	34,5	13,5	12,5	16,5	17	97453020
12	R1/4	39,5	19,0	11,1	20,0	22	97453013

Commercial vehicle push-in fittings
Fleetfit

Ø 6 ... 18 mm tube size

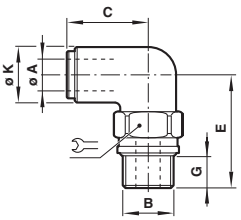
Dimensions shown in mm

Swivel elbow adaptor metric thread



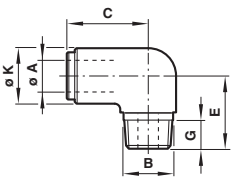
O/D Tube A	B	C	E	G	Ø K		Model
6	M16 x 1,5	21,5	30,0	10,0	17,5	22	97452135
8	M12 x 1,5	23,0	27,0	10,0	17,5	17	97452143
8	M16 x 1,5	27,0	26,0	12,5	17,5	26	97452145
8	M22 x 1,5	25,0	35,5	12,0	26,0	27	97452148
10	M12 x 1,5	27,5	29,0	10,0	18,5	17	97452153
10	M16 x 1,5	27,5	30,0	10,0	18,5	22	97452155
10	M22 x 1,5	27,5	35,5	12,0	26,0	27	97452158
12	M16 x 1,5	32,5	34,0	10,0	22,0	22	97452165
12	M22 x 1,5	32,5	40,0	12,0	26,0	27	97452168

Swivel elbow adaptor BSP parallel thread



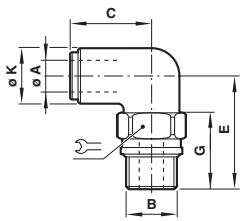
O/D Tube A	BSP parallel B	C	E	G	Ø K		Model
6	R1/8	21,0	23,0	7,0	12,0	15,0	97410404
10	R1/4	27,5	31,0	10,0	15,0	19,0	97410412

Elbow adaptor BSP taper thread



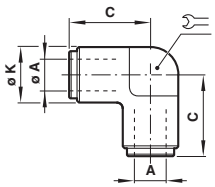
O/D Tube A	BSP Taper B	C	E	G	Ø K	Model
6	R1/8	20,5	20,0	9,5	14,0	97433004
6	R1/4	22,0	22,0	11,0	16,0	97433010
8	R1/4	23,0	22,0	11,0	16,0	97433011
10	R1/4	25,0	24,0	11,0	17,5	97433012
12	R1/4	30,0	27,0	11,0	24,0	97433013
12	R1/2	30,5	31,0	16,0	24,0	97433030

Universal hobbs elbow adaptor metric thread



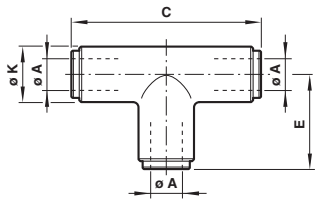
O/D Tube A	B	C	E	G	Ø K		Model
6	M10 x 1,0	23,5	26,0	16,0	14,0	15	97413831
6	M12 x 1,5	23,5	29,0	19,0	14,0	17	97413833
6	M16 x 1,5	24,5	34,0	21,5	17,5	24	97413835
6	M22 x 1,5	28,5	41,5	25,0	26,0	30	97413838
8	M12 x 1,5	25,5	31,5	19,0	17,5	17	97413843
8	M16 x 1,5	25,5	34,0	21,5	17,5	24	97413845
8	M22 x 1,5	28,5	41,5	25,0	26,0	30	97413848
10	M10 x 1,0	27,0	28,0	16,0	18,5	15	97413851
10	M12 x 1,5	29,0	31,0	19,0	18,5	17	97413853
10	M14 x 1,5	28,0	31,5	19,5	18,5	19	97413854
10	M16 x 1,5	29,0	33,5	21,5	18,5	24	97413855
10	M22 x 1,5	32,0	40,5	25,0	26,0	30	97413858
12	M16 x 1,5	32,0	35,5	21,5	22,0	24	97413865
12	M22 x 1,5	34,5	40,5	25,0	26,0	30	97413868
16	M16 x 1,5	38,0	38,5	25,0	26,0	24	97413879
16	M22 x 1,5	38,0	40,5	21,5	26,0	30	97413875
18	M22 x 1,5	39,5	43,0	25,0	23,0	30	97413880

Elbow connector



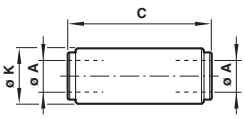
O/D Tube A	C	Ø K		Model
6	21,0	13,0	10	97451104
8	23,0	15,0	11	97451105
9	27,0	17,0	14	97451113
10	27,0	17,0	14	97451106
12	32,0	20,5	16	97451107
15	38,5	27,0	27	97451115
16	39,0	27,0	27	97451108

Equal tee connector



O/D Tube A	C	E	Ø K	Model
6	42,0	21,0	13,0	97451404
8	45,5	23,0	15,0	97451405
9	54,0	27,0	14,0	97451413
10	54,0	27,0	17,0	97451406
12	64,0	32,0	20,5	97451407
15	77,0	38,5	27,0	97451415
16	78,0	39,0	27,0	97451408

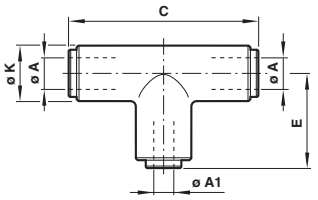
Equal straight connector



O/D Tube A	C	Ø K	Model
6	35,6	13,0	97450304
8	37,6	15,0	97450305
9	44,1	17,0	97450313
10	44,1	17,0	97450306
11	46,1	19,0	97450336
12	51,1	20,5	97450307
14	50,2	22,0	97450392
15	61,5	25,4	97450315
16	61,5	25,4	97450308

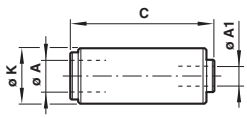
Reducing tee connector

Dimensions shown in mm



O/D Tube A	Tube A	Tube Ø A1	C	E	Ø K	Model
10	10	6	55,0	23,5	17,0	97458801
12	12	6	64,0	25,5	21,0	97458810
12	12	8	64,0	27,5	21,0	97458822

Reducing straight connector



O/D Tube A	O/D Tube Ø A1	C	Ø K	Model
8	6	38,5	15,0	97450447
10	6	43,5	17,0	97450448

Commercial vehicle push-in fittings
Fleetfit

Ø 1/4" ... 3/4" tube size, BSP and NPT threads

Simple tube connection and disconnection – no tools required

Fewer component parts – internally machined form in body to secure collet reduces number of potential leak paths

Internal tube support as standard for greater safety

Corrosion resistant

Easy identification – all collets marked with tube size

Total fittings system solution

Reduced assembly & maintenance times provide time/ labour savings

Greater reliability and reduced testing

Ease of tube insertion in areas of restricted access

+100°C (+212°F)

-40°C (-40°F)

Technical features

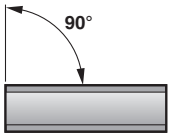
Medium:
Compressed air
Maximum working pressure:
0 ... 10 bar (0 ... 145 psi)
Working temperature:
-40°C .. 100°C (-40°F ... 212°F)

Standards & Legislation:
Fittings and Tubing Comply to Department Of Transport Federal Motor Vehicle Safety Standard, (DOT FMVSS 106) (Mandatory requirements for inch tube fittings in U.S.A.)
Society for Automotive Engineers SAE J1131 (Inch tube and fittings)
German TÜV approval and DIN 74324 (Metric Tube and Fittings)

Swivel fittings:
The swivel feature should be used for positioning purposes only and should not be used as a rotating joint.

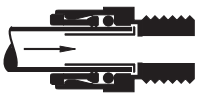
Materials:
Body (straights), Tube support, Collet: brass BS 2874 CZ 121
Body (elbows, tees): brass BS 2874 CZ 122
'O'-Ring: Buna N (low nitrile)
Thread sealant: Precoat 5
Tubing:
Tube should be to SAE J844

Method of assembly

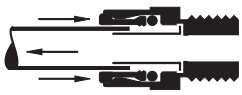


1. Ensure that the end of the tube is cut square and is free from burrs.

2. Push the tube through the collet into the fitting.

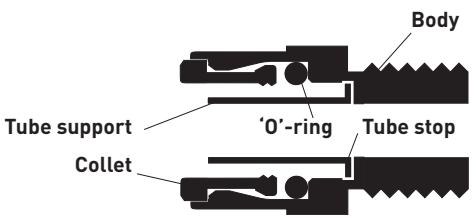


3. Continue pushing the tube through the 'O'-ring until it bottoms on the tube stop. Then pull back on the tube to reinforce the collet teeth gripping action.



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.

Component functions



Body
The body has an internally machined form to secure the collet(s), 'O'-Ring(s) and Tube support(s). It also has internal & externally machined thread form(s) for connection to ports where applicable.

Collet
The purpose of the collet is to grip the tube and ensure it is retained by the fitting at all times.

'O'-ring
The 'O'-Ring is to ensure adequate interference between the tube & fitting body therefore providing a pneumatic seal at all times.

Tube support
The tube support prevents the tube collapsing during extreme tensile loading conditions. Such conditions are only encountered during performance testing and far exceed those experienced during normal use.

Straight adaptors and connectors

Straight adaptor (NPTF)
95453

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Straight adaptor (metric)
944666

Page 5-19

Straight adaptor (BSP taper)
944530

Page 5-20

Equal straight connector
944503

Page 5-20

Reducing straight connector
944504

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Elbow adaptors and connector

Elbow adaptor (NPTF)
954331

Page 5-20

Universal hobbs elbow adaptor (metric)
944138

Page 5-21

Elbow adaptor (BSP taper)
944330

Page 5-20

Tee connectors

Equal tee connector
944514

Page 5-21

Reducing tee connector
944588

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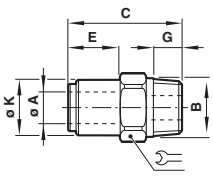
Dimensions

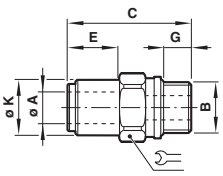
Straight adaptor NPTF thread



O/D Tube A	NPTF B	C	E	G	Ø K		Model
3/16"	1/8"	25,8	10,8	9,5	11,7	1/2"	95453003
1/4"	1/8"	26,3	10,8	9,5	12,7	1/2"	95453004
1/4"	1/4"	29,8	9,3	14,3	12,7	9/16"	95453010
1/4"	3/8"	30,5	8,0	14,3	12,7	1 1/16"	95453018
3/8"	1/8"	33,6	17,1	9,5	16,5	1 1/16"	95453006
3/8"	1/4"	37,6	16,1	14,3	16,5	1 1/16"	95453012
3/8"	3/8"	36,1	13,6	14,3	16,5	1 1/16"	95453020
3/8"	1/2"	37,1	9,1	19,0	16,5	7/8"	95453029
1/2"	1/4"	42,6	19,1	14,3	20,0	7/8"	95453013
1/2"	3/8"	41,6	18,1	14,3	20,0	7/8"	95453021
1/2"	1/2"	43,6	15,6	19,0	20,0	7/8"	95453030
5/8"	3/8"	47,5	22,5	14,3	25,0	1 1/16"	95453022
5/8"	1/2"	53,5	23,5	19,0	25,0	1 1/16"	95453031
3/4"	1/2"	53,5	22,5	19,0	29,5	1 3/16"	95453049

Straight adaptor Metric thread

Dimensions shown in mm

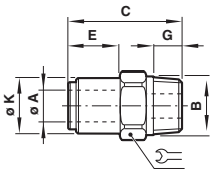


O/D Tube A	Thread B	C	E	G	Ø K		Model
1/4"	M10 x 1.0	28,5	13,5	6,5	13,0	14	94466631
1/4"	M12 x 1.5	30,5	11,5	7,5	13,0	17	94466633
1/4"	M16 x 1.5	27,5	7,5	7,5	13,0	22	94466635
3/8"	M12 x 1.5	35,0	16,0	7,5	16,8	17	94466653
3/8"	M14 x 1.5	35,0	15,0	7,5	17,0	19	94466654
3/8"	M16 x 1.5	35,0	15,0	7,5	17,0	22	94466655
3/8"	M22 x 1.5	31,0	5,5	9,5	17,0	27	94466658
1/2"	M16 x 1.5	39,0	19,0	7,5	20,5	22	94466665
1/2"	M20 x 1.5	38,0	13,0	10,0	20,5	27	94466667
1/2"	M22 x 1.5	35,0	9,5	9,5	20,5	27	94466668
5/8"	M16 x 1.5	42,5	19,5	7,5	26,0	27	94466679
5/8"	M22 x 1.5	44,5	19,5	9,5	26,0	27	94466675

Commercial vehicle push-in fittings
Fleetfit

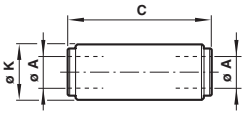
Ø 1/4” ... 3/4” tube size, BSP and NPT threads

Straight adaptor
BSP taper thread



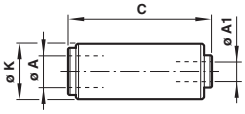
O/D Tube A	B	C	E	G	Ø K		Model
1/4"	1/8"	26,5	10,5	9,5	12,5	13	94453004
1/4"	1/4"	27,0	9,5	11,0	12,5	14	94453010
3/8"	1/8"	33,5	17,0	9,5	16,5	17	94453006
3/8"	1/4"	39,5	19,0	11,0	20,0	22	94453012
3/8"	3/8"	34,5	13,5	12,5	16,5	17	94453020
3/8"	1/2"	34,0	9,0	16,0	16,5	22	94453029
1/2"	1/4"	39,5	19,0	11,0	20,0	22	94453013
1/2"	3/8"	40,0	18,0	12,5	20,0	22	94453021
1/2"	1/2"	40,5	15,5	16,0	20,0	22	94453030

Equal straight connector



O/D Tube A	C	Ø K	Model
1/4"	35,6	13,0	94450304
3/8"	44,1	17,0	94450306
1/2"	51,1	20,5	94450307
5/8"	61,5	25,5	94450308
3/4"	63,0	30,0	94450309

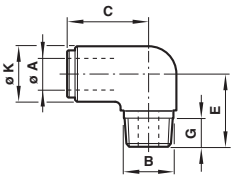
Reducing straight connector



O/D Tube A	O/D Tube Ø A1	C	Ø K	Model
1/4"	3/16"	36,0	13,0	94450437
3/8"	3/16"	43,0	17,0	94450439
3/8"	1/4"	43,5	17,0	94450448
1/2"	3/8"	48,5	20,5	94450464

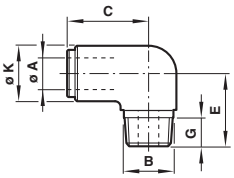
Elbow adaptor
NPTF thread

Dimensions shown in mm



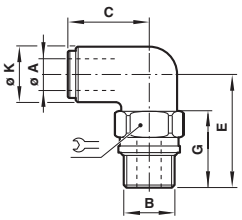
O/D Tube A	NPTF B	C	E	G	Ø K	Model
3/16"	1/8"	20,5	19,0	9,5	12,0	95433103
1/4"	1/8"	20,5	20,0	9,5	14,0	95433104
1/4"	1/4"	22,0	26,0	14,5	17,5	95433110
1/4"	3/8"	24,0	28,0	14,5	21,0	95433118
1/4"	1/2"	24,5	35,0	19,0	24,0	95433127
5/16"	1/8"	22,5	24,0	9,5	17,5	95433105
3/8"	1/8"	27,5	22,0	9,5	17,5	95433106
3/8"	1/4"	27,0	26,0	14,5	17,5	95433112
3/8"	3/8"	29,0	28,0	14,5	21,0	95433120
3/8"	1/2"	29,0	35,0	19,0	24,0	95433129
1/2"	1/4"	31,0	29,0	14,5	22,0	95433113
1/2"	3/8"	32,0	29,0	14,5	22,0	95433121
1/2"	1/2"	32,5	35,0	19,0	24,0	95433130
1/2"	3/4"	37,0	38,0	19,0	29,5	95433144
5/8"	3/8"	36,5	31,0	14,5	27,0	95433198
5/8"	1/2"	39,0	36,0	19,0	29,5	95433131
3/4"	1/2"	38,5	37,5	19,0	33,0	95433149

Elbow adaptor
BSP taper thread



O/D Tube A	BSP taper B	C	E	G	Ø K	Model
1/4"	1/8"	20,5	20,0	9,5	14,3	94433004
1/4"	1/4"	21,8	22,0	11,1	15,9	94433010
3/8"	1/4"	25,1	24,0	11,1	17,5	94433012
3/8"	3/8"	26,1	27,5	12,7	20,0	94433020
3/8"	1/2"	30,1	31,0	15,9	23,8	94433029
1/2"	1/4"	30,1	27,0	11,1	23,8	94433013
1/2"	3/8"	30,1	28,5	12,7	23,8	94433021
1/2"	1/2"	30,6	31,0	15,9	23,8	94433030

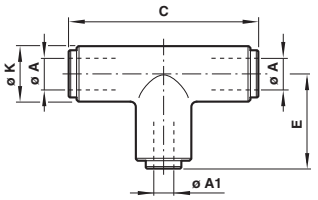
Universal hobbs elbow adaptor
Metric thread



O/D Tube A	Thread B	C	E	G	Ø K		Model
1/4"	M12 x 1.5	23,5	29,0	19,0	14,0	17	94413833
1/4"	M16 x 1.5	24,5	34,0	21,5	17,5	24	94413835
1/4"	M22 x 1.5	28,5	41,5	25,0	26,0	30	94413838
3/8"	M12 x 1.5	29,0	31,0	19,0	18,5	17	94413853
3/8"	M16 x 1.5	29,0	33,5	21,5	18,5	24	94413855
3/8"	M22 x 1.5	32,0	40,5	25,0	26,0	30	94413858
1/2"	M14 x 1.5	32,5	33,5	19,5	22,0	19	94413864
1/2"	M16 x 1.5	32,5	35,5	21,5	22,0	24	94413865
1/2"	M22 x 1.5	34,5	40,5	25,0	26,0	30	94413868
5/8"	M22 x 1.5	38,0	40,5	25,0	26,0	30	94413875

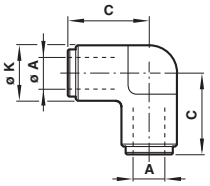
Reducing tee connector

Dimensions shown in mm



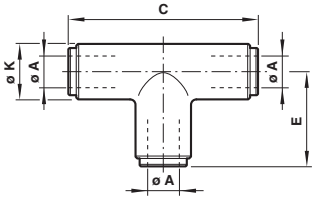
O/D Tube A	O/D Tube A1	O/D Tube A2	C	E	Ø K	Model
3/8"	1/4"	1/4"	51,0	23,5	17,0	94458816
3/8"	3/8"	1/4"	55,0	23,5	17,0	94458801
3/8"	3/8"	1/2"	60,0	32,5	20,5	94458802
1/2"	3/8"	3/8"	62,5	30,0	20,5	94458804
1/2"	1/2"	3/16"	64,0	24,5	20,5	94458803
1/2"	1/2"	1/4"	64,0	25,0	20,5	94458810
1/2"	1/2"	3/8"	62,0	31,0	20,5	94458811
5/8"	1/2"	5/8"	76,5	39,5	27,0	94458814

Equal elbow connector



O/D Tube A	C	Ø K	Model
1/4"	21	11	94451104
3/8"	27	14,5	94451106
1/2"	32	18	94451107

Equal tee connector



O/D Tube A	C	E	Ø K	Model
1/4"	42,0	21,0	13,0	94451404
3/8"	54,0	27,0	17,0	94451406
1/2"	64,0	32,0	20,5	94451407
5/8"	78,0	39,0	27,0	94451408

Push-in fittings
Pneufit

Ø 4 ... 14 mm tube size, BSP threads

Very compact units

Easy tube insertion for rapid assembly of pneumatic circuits

Positive tube anchorage

All BSP taper threads pre-coated with non-PTFE based sealant

Straight adaptors feature internal hexagon for allen key

Silicone free 'O'-rings

+80°C (+176°F)

-20°C (-4°F)

Technical features

Medium:
Compressed air
(For other media please consult Technical Department)
Operating pressure:
Vacuum -18 bar (261 psi)
(Dependent upon operating specification of tubing)

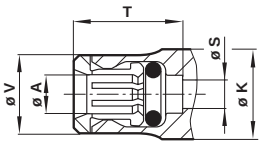
Vacuum:
-750 mm of Hg i.e. 98%
Operating temperature:
-20°C ... +80°C (-4°C ... +176°F)
"Special" low temperature options contact Norgren Technical service
Tube sizes:
4, 5, 6, 8, 10, 12, 14 mm O/D

Tubing 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

Materials
Nickel plated brass body
Nickel plated brass for collet
Silicone free nitrile rubber 'O'-ring (FKM optional)
Plastic sealing washer (parallel threads)
Non - PTFE thread sealant (taper threads)

Technical data

Ø A O/D tube	Ø S*2)	Ø T*1)	V	Ø K
4	2,8	14	7,5	10
5	3,4	15	10	11
6	4,4	15,5	11	12
8	6	16,5	13	14
10	7,6	21	14,5	17
12	9,6	24,5	18	20,5
14	11,5	24,5	20	21



*1) Dimensions here and in the individual tables refer to the collet being in the 'IN' position.

*2) Dimensions here (minimum bore diameter) are common per tube size for all Connectors, elbows and Tees unless otherwise stated.

Option selector

10 ★★★★★★★

Thread type	Thread size/tube size
Shape	Thread size/tube size

Push-in fittings
Pneufit

Ø 4 ... 14 mm tube size, BSP threads

Straight adaptors and connectors

Stem tailpiece adaptor (stem to hose bore) 10019

Page 5-24

Straight connector (tube to tube) 10020

Page 5-24

Straight stem connector 10022

Page 5-24

Reducing/expanding connector 10023

Page 5-24

Bulkhead connector (tube to tube) 10029

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Mixed bulkhead connector 10031

Page 5-25

Straight stem adaptor (BSP taper) 10115

Page 5-25

Straight stem adaptor (BSP parallel) 10215

Page 5-25

Straight adaptor (BSP taper) 10125

Page 5-26

Straight adaptor (BSP parallel) 10225

Page 5-26

Female straight adaptor (female parallel BSP) 10226

Page 5-26

Elbow adaptors, connectors and banjos

Elbow connector 10040

Page 5-27

Stem elbow connector 10043

Page 5-27

Bulkhead swivel elbow connector 10049

Page 5-27

Elbow adaptor (BSP taper) 10145

Page 5-27

90° Swivel elbow adaptor (BSP taper) 10147

Page 5-28

90° Swivel elbow adaptor (BSP parallel) 10247

Page 5-28

Extended swivel elbow adaptor (BSP taper) 10154

Page 5-28

45° Swivel elbow adaptor (BSP parallel) 10257

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Elbow banjo assembly (non-Regulating BSP parallel) 10A51

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Elbow banjo assembly (regulating-out BSP parallel) 10K51

Page 5-29

Tee adaptors, connectors and banjos, 'Y' adaptors and connectors, 4-way connectors

Tee connector (tube x 3) 10060

Page 5-29

Tee adaptor (BSP taper) 10165

Page 5-29

Swivel tee adaptor (BSP taper) 10167

Page 5-30

Swivel tee adaptor (BSP parallel) 10267

Page 5-30

Tee banjo assembly (non-regulating parallel thread) 10A71

Page 5-30

Fixed side tee adaptor (BSP taper) 10175

Page 5-30

Swivel tee adaptor (BSP taper) 10168

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Swivel tee adaptor (BSP parallel) 10268

Page 5-31

4-way connector (tube x 4) 10090

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Banjo bodies and bolts

Elbow banjo body 10051

Page 5-31

Tee banjo body 10071

Page 5-32

Banjo bolt (non-regulating single stacking) 20A00

Page 5-32

Banjo bolt (non-regulating double stacking BSP parallel) 20B00

Page 5-32

Banjo bolt (non-regulating triple stacking BSP parallel) 20C00

Page 5-32

Banjo bolt (non-regulating single stacking with top port BSP parallel) 20*00

Page 5-32

Banjo bolt (regulating single stacking) 20*00

Page 5-32/33

Accessories, manifolds

Silencer (plug in) 10011

Page 5-33

Plug (acetal) 11004

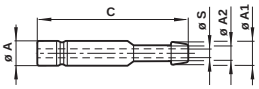
Page 5-33

Push-in fittings
Pneufit

Ø 4 ... 14 mm tube size, BSP threads

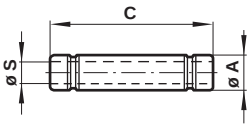
Dimensions shown in mm

Stem tailpiece adaptor, stem to hose bore
10019



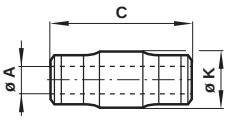
Ø A	Ø A1	Ø A2	C	Ø S	Model
4	4,5	3	34	1,8	100190403
4	6,5	5	34	2,1	100190405
5	6,5	5	35,5	2,8	100190505
6	6,5	5	36	2,8	100190605
6	8	6,5	36	4	100190606
8	8	6,5	37	4,3	100190806
8	9,5	8	38,5	5,5	100190808
10	8	6,5	41,5	4,3	100191006
10	9,5	8	43	5,5	100191008
10	12	10	44	7,3	100191010
12	9,5	8	46,5	5,5	100191208
12	12	10	46,5	7,3	100191210
12	15	12,5	47,5	9,7	100191212
14	15	12,5	47	9,7	100191412

Straight stem connector
10022



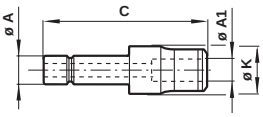
Ø A	C	Ø S	Model
4	30	2,6	100220400
5	33	3,4	100220500
6	34	4	100220600
8	36	6	100220800
10	45	7,6	100221000
12	52	9,6	100221200
14	52	11,5	100221400

Straight connector, tube to tube
10020



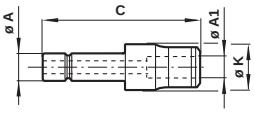
Ø A	C	Ø K	Model
4	30	10	100200400
5	32	11	100200500
6	33,5	12	100200600
8	35,5	14	100200800
10	44,5	17	100201000
12	51,5	20,5	100201200
14	52,5	21	100201400

Reducing/expanding connector
10023



Ø A	Ø A1	C	Ø K	Model
5	4	33,5	10	100230504
6	4	34	10	100230604
6	5	35	11	100230605
8	4	31	10	100230804
8	5	33	11	100230805
8	6	36,5	12	100230806
10	4	31	12	100231004
10	5	36,5	12	100231005
10	6	37,5	12	100231006
10	8	38	14	100231008
12	4	35	14	100231204
12	5	35	14	100231205
12	6	35	14	100231206
12	8	42	14	100231208
12	10	50	17	100231210
14	6	36,5	16	100231406
14	8	37,5	16	100231408
14	10	46,5	17	100231410
14	12	53,5	20,5	100231412

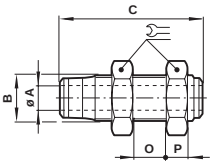
Reducing/expanding connector
10023



Ø A	Ø A1	C	Ø K	Model
4	6	35	12	100230406
6	8	37,5	14	100230608

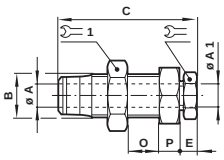
Dimensions shown in mm

Bulkhead connector, tube to tube
10029



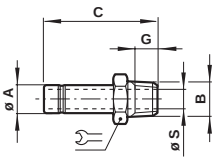
Ø A	B	C	O	P		Model
4	M10x1,0	30	12	9	14	100290400
5	M12x1,0	32	14	9	17	100290500
6	M14x1,5	35,5	15	10	19	100290600
8	M16x1,5	36,5	16	10	22	100290800
10	M20x1,5	43,5	14	11	27	100291000
12	M24x1,5	50,5	15	11	30	100291200
14	M24x1,5	50,5	15	11	30	100291400

Mixed bulkhead connector
10031



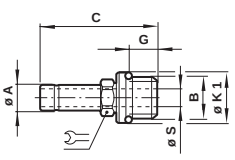
Ø A & Ø A1	B	C	E	O	P		1	Model
4	M12x1,0	27	6	9,5	9	8	17	100310404
6	M15x1,0	29,5	7	9,5	10	13	22	100310606
8	M18x1,5	33,5	8	11	10	13	24	100310808
10	M20x1,5	40	8	14,5	11	17	27	100311010
12	M24x1,5	44	9	17,5	11	19	30	100311212
14	M26x1,5	46	11,5	18,5	11	22	32	100311414

Straight stem adaptor, BSP taper
10115



Ø A	B	C	G	Ø S		Model
4	R1/8	30	7,5	2,1	10	101150418
4	R1/4	33,5	11	2,1	14	101150428
5	R1/8	31	7,5	3,2	11	101150518
5	R1/4	35	11	3,2	14	101150528
6	R1/8	32	7,5	4,1	12	101150618
6	R1/4	35	11	4,1	14	101150628
8	R1/8	33	7,5	7,1	14	101150818
8	R1/4	36,5	11	5,1	14	101150828
8	R3/8	40	12,5	5,1	19	101150838
10	R1/4	40	11	7,7	15	101151028
10	R3/8	45	12,5	7,7	19	101151038
10	R1/2	48	16	8,1	22	101151048
12	R3/8	48	12,5	9,1	19	101151238
12	R1/2	51,5	16	9,1	22	101151248
14	R1/2	51,5	16	11,2	22	101151448

Straight stem adaptor, BSP parallel
10215

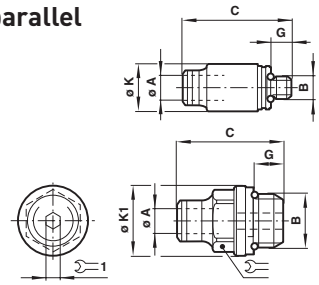


Ø A	B	C	G	Ø K1	Ø S		Model
4	G1/8	29	5	13,5	2,1	8	102150418
4	G1/4	33	7,5	17,5	2,1	10	102150428
5	G1/8	30,5	5	13,5	3,3	8	102150518
5	G1/4	34	7,5	17,5	3,3	10	102150528
6	G1/8	31	5	13,5	4	8	102150618
6	G1/4	34,5	7,5	17,5	4	10	102150628
8	G1/8	32,5	5	13,5	5	10	102150818
8	G1/4	35,5	7,5	17,5	6	10	102150828
8	G3/8	39	9	21,5	6	13	102150838
10	G1/4	41,5	7,5	17,5	6,5	13	102151028
10	G3/8	43,5	9	21,5	8	13	102151038
10	G1/2	49	12	25,5	8	17	102151048
12	G3/8	48,5	9	21,5	10	17	102151238
12	G1/2	52,5	12	25,5	10	17	102151248
14	G3/8	48,5	9	21,5	10	17	102151438
14	G1/2	52,5	12	25,5	11,5	17	102151448

Push-in fittings
Pneufit

Ø 4 ... 14 mm tube size, BSP threads

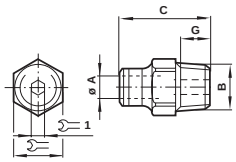
Straight adaptor, BSP parallel
10225



Ø A	B	C	G	Ø K	Ø K1	⌀	⌀ 1	Model
4	M3	21	2,5	9	–	–	1,5	102250403
4	M5	21,5	3,5	9	–	–	2,5	102250405
4	G1/8	19	5	–	14	10	3	102250418
4	G1/4	21,5	7,5	–	18	10	3	102250428
5	M5	23	3,5	10	–	–	2,5	102250505
5	G1/8	23,5	5	–	14	10	4	102250518
5	G1/4	22	7,5	–	18	12	4	102250528
6	M5	24	3,5	11	–	–	2,5	102250605
6	G1/8	25	5	–	14	11	4	102250618
6	G1/4	23,5	7,5	–	18	13	4	102250628
8	G1/8	26,5	5	–	14	13	5	102250818
8	G1/4	28	7,5	–	18	14	6	102250828
8	G3/8	26	9	–	12	17	6	102250838
8	G1/2	31,5	12	–	26	17	6	102250848
10	G1/8	32	5	–	14	17	5	102251018
10	G1/4	33,5	7,5	–	18	17	7	102251028
10	G3/8	32	9	–	22	19	8	102251038
10	G1/2	32	12	–	26	19	8	102251048
12	G1/4	37,5	7,5	–	18	22	7	102251228
12	G3/8	38	9	–	22	22	10	102251238
12	G1/2	37	12	–	26	22	10	102251248
14	G3/8	38	9	–	22	22	10	102251438
14	G1/2	37	12	–	26	22	10	102251448

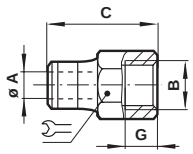
Straight adaptor, BSP taper
10125

Dimensions shown in mm



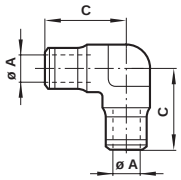
Ø A	B	C	G	⌀	⌀ 1	Model
4	R1/8	20,5	10	10	3	101250418
4	R1/4	23	11	14	3	101250428
5	R1/8	22,5	7,5	10	4	101250518
5	R1/4	23	11	14	4	101250528
6	R1/8	23	7,5	11	4	101250618
6	R1/4	25	11	14	4	101250628
8	R1/8	26,5	7,5	13	5	101250818
8	R1/4	28	11	14	6	101250828
8	R3/8	27	12,5	17	6	101250838
8	R1/2	29	16	22	6	101250848
10	R1/8	31,5	7,5	17	5	101251018
10	R1/4	34	11	17	7	101251028
10	R3/8	34	12,5	17	8	101251038
10	R1/2	33,5	16	22	8	101251048
12	R1/4	39	11	22	7	101251228
12	R3/8	39	12,5	22	10	101251238
12	R1/2	40	16	22	10	101251248
14	R3/8	39,5	12,5	22	10	101251438
14	R1/2	40	16	22	10	101251448

Female straight adaptor, female parallel BSP
10226



Ø A	B	C	G	⌀	Model
4	M5	22,5	5	10	102260405
4	G1/8	24,5	7,5	13	102260418
4	G1/4	29	5	17	102260428
5	M5	23,5	7,5	10	102260505
5	G1/8	25,5	7,5	13	102260518
5	G1/4	29,5	7,5	17	102260528
6	G1/8	26	11	13	102260618
6	G1/4	30,5	11	17	102260628
8	G1/8	27	11	13	102260818
8	G1/4	31,5	11	17	102260828
10	G1/4	36,5	11	17	102261028
10	G3/8	39	11,5	19	102261038
12	G3/8	41	11,5	19	102261238
12	G1/2	44,5	15	24	102261248

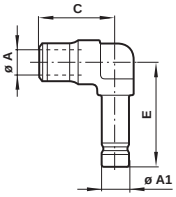
Elbow connector
10040



Ø A	C	Model
4	17	100400400
5	18,5	100400500
6	19,5	100400600
8	21,5	100400800
10	26,5	100401000
12	31,5	100401200
14	33	100401400

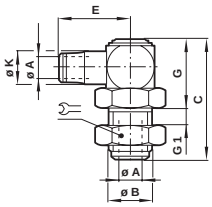
Stem elbow connector
10043

Dimensions shown in mm



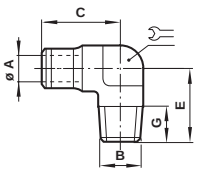
Ø A	Ø A1	C	E	Model
4	4	9,5	25	100430400
6	6	19	27,5	100430600
8	8	21	29,5	100430800
8	5	19,5	30	100430805

Bulkhead swivel elbow connector
10049



Ø A	Ø B	C	E	G	G1	Ø K	⌓	Model
4	M12x1,0	35,5	20,5	21,5	7	10	17	100490400
5	M12x1,0	35,5	21,5	21,5	7	11	17	100490500
6	M14x1,5	40	24	24,5	7	12	19	100490600
8	M16x1,5	45	26,5	30	7	14,5	22	100490800
10	M22x1,5	49	31,5	31	9	17	27	100491000
12	M24x1,5	54	38	32,5	12	20,5	30	100491200
14	M26x1,5	57	38	32,5	15	22,5	32	100491400

Elbow adaptor, BSP taper
10145

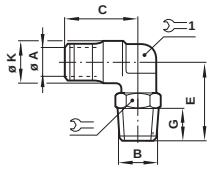


Ø A	B	C	E	G	⌓	Model
4	R1/8	15	17	7,5	7	101450418
4	R1/4	20	18	11	11	101450428
5	R1/8	15,5	18,5	7,5	7	101450518
5	R1/4	20	20	11	11	101450528
6	R1/8	16	19,5	7,5	8	101450618
6	R1/4	20	20	11	11	101450628
8	R1/8	17	21,5	7,5	11	101450818
8	R1/4	20	21,5	11	11	101450828
8	R3/8	23	22	12,5	13	101450838
8	R1/2	29	24	16	17	101450848
10	R1/8	18,5	26,5	7,5	13	101451018
10	R1/4	21,5	26,5	11	13	101451028
10	R3/8	23	26,5	12,5	13	101451038
10	R1/2	29	28,5	16	17	101451048
12	R1/4	23,5	31,5	11	16	101451228
12	R3/8	25	31,5	12,5	16	101451238
12	R1/2	29	32	16	17	101451248

Push-in fittings
Pneufit

Ø 4 ... 14 mm tube size, BSP threads

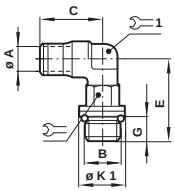
90° Swivel elbow adaptor, BSP taper
10147



Ø A	B	C	E	G	Ø K		1	Model
4	R1/8	17	20,5	7,5	10	10	7	101470418
4	R1/4	17	24	11	10	14	7	101470428
5	R1/8	18,5	21	7,5	11	11	9	101470518
5	R1/4	18,5	24,5	11	11	14	9	101470528
6	R1/8	19,5	21,5	7,5	12	11	9	101470618
6	R1/4	19,5	25	11	12	14	9	101470628
6	R3/8	20	27,5	12,5	12	17	8	101470638
8	R1/8	21,5	23	7,5	14,5	14	11	101470818
8	R1/4	21,5	26	11	14,5	14	11	101470828
8	R3/8	22	30,5	12,5	14,5	17	13	101470838
8	R1/2	22	34,5	16	14,5	22	13	101470848
10	R1/8	26,5	25,5	7,5	17	14	13	101471018
10	R1/4	26,5	29	11	17	17	13	101471028
10	R3/8	26,5	30,5	12,5	17	17	13	101471038
10	R1/2	26,5	34,5	16	17	22	13	101471048
12	R1/4	31,5	32	11	20,5	19	16	101471228
12	R3/8	31,5	34	12,5	20,5	22	16	101471238
12	R1/2	31,5	38	16	20,5	22	16	101471248
14	R3/8	30,5	33	12,5	21,5	22	17	101471438
14	R1/2	31,5	37	16	21,5	22	17	101471448

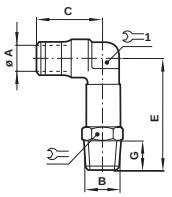
Dimensions shown in mm

90° Swivel elbow adaptor, BSP parallel
10247



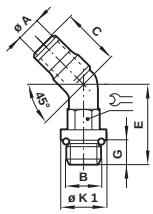
Ø A	B	C	E	G	Ø K1		1	Model
4	M3	17	16	3,5	–	8	7	102470403
4	M5	17	19	4	8	8	7	102470405
4	G1/8	17	22	5,5	14	11	7	102470418
4	G1/4	17	25,5	8	18	11	7	102470428
5	M5	18,5	20	4	8	8	9	102470505
5	G1/8	18,5	22,5	5,5	14	11	9	102470518
5	G1/4	18,5	26	8	18	11	9	102470528
6	M5	19,5	20,5	4	8	8	9	102470605
6	G1/8	19,5	23	5,5	14	11	9	102470618
6	G1/4	19,5	26,5	8	18	11	9	102470628
8	G1/8	21,5	24	5,5	14	13	11	102470818
8	G1/4	21,5	29	8	18	17	11	102470828
8	G3/8	22	33,5	9	22	19	13	102470838
8	G1/2	22	39,5	11	26	19	13	102470848
10	G1/8	26,5	26,5	5,5	14	17	13	102471018
10	G1/4	26,5	31,5	8	18	17	13	102471028
10	G3/8	26,5	33,5	9	22	19	13	102471038
10	G1/2	26,5	39,5	11	26	19	13	102471048
12	G1/4	31,5	35,5	8	18	19	16	102471228
12	G3/8	31,5	37	9	22	19	16	102471238
12	G1/2	31,5	43	11	26	19	16	102471248
14	G3/8	30,5	36	9	22	19	17	102471438
14	G1/2	31,5	39	11	26	24	17	102471448

Extended swivel elbow adaptor, BSP taper
10154



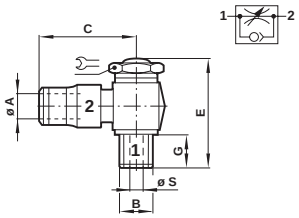
Ø A	B	C	E	G		1	Model
4	R1/8	17	34	7,5	10	7	101540418
4	R1/4	17	40	11	14	7	101540428
6	R1/8	19,5	36,5	7,5	11	9	101540618
6	R1/4	19,5	41	11	14	9	101540628
8	R1/8	21,5	40,5	7,5	14	11	101540818
8	R1/4	21,5	44,5	11	14	11	101540828
8	R3/8	22	51,5	12,5	17	13	101540838
10	R3/8	26,5	51,5	12,5	17	13	101541038

45° Swivel elbow adaptor, BSP parallel
10257



Ø A	B	C	E	G	Ø K1		Model
6	G1/8	17,5	19,5	5	14	11	102570618
6	G1/4	17,5	23	7,5	18	11	102570628
8	G1/8	19,5	20,5	5	14	11	102570818
8	G1/4	19,5	26	7,5	18	17	102570828

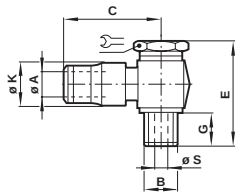
Elbow banjo assembly, regulating-out BSP parallel
10K51



Ø A	B	C	E	G	Ø S		Model
4	M5	18,5	27	4,5	2,5	8	10K510405
4	G1/8	20,5	34	6	5	14	10K510418
5	M5	20	27	4,5	2,5	8	10K510505
5	G1/8	21,5	34	6	5	14	10K510518
6	M5	22	27	4,5	2,5	8	10K510605
6	G1/8	23,5	34	6	5	14	10K510618
6	G1/4	24	36,5	6	8,5	17	10K510628
8	G1/8	23,5	34	6	5	14	10K510818
8	G1/4	24,5	36,5	6	8,5	17	10K510828
8	G3/8	26,5	51,5	10	10	22	10K510838
10	G1/4	30	36,5	6	8,5	17	10K511028
10	G3/8	31	51,5	10	10	22	10K511038
12	G3/8	33	51,5	10	10	22	10K511238
12	G1/2	38	57,5	10	10	27	10K511248

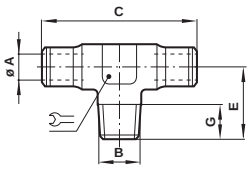
Dimensions shown in mm

Elbow banjo assembly, non-regulating BSP parallel
10A51



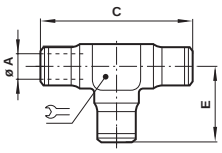
Ø A	B	C	E	G	Ø K	Ø S		Model
4	M5	18,5	22	4	9,5	2,5	8	10A510405
4	G1/8	20,5	30	6	11	5	14	10A510418
5	M5	20	22	4	11	2,5	8	10A510505
5	G1/8	21,5	30	6	11,5	5	14	10A510518
6	G1/8	23,5	30	6	12,5	5	14	10A510618
6	G1/4	24	34	7,5	13	8,5	17	10A510628
8	G1/8	23,5	30	6	14	5	14	10A510818
8	G1/4	24,5	34	7,5	14	8,5	17	10A510828
8	G3/8	26,5	41	9	16,5	10	22	10A510838
10	G1/4	30	34	7,5	16	8,5	17	10A511028
10	G3/8	31	41	9	17	10	22	10A511038

Tee adaptor, BSP taper
10165



Ø A	B	C	E	G		Model
4	R1/8	34	15	7,5	7	101650418
5	R1/8	37	15,5	7,5	7	101650518
5	R1/4	40	20	11	11	101650528
6	R1/8	39	16	7,5	8	101650618
6	R1/4	40	20	11	11	101650628
8	R1/8	42,5	17	7,5	11	101650818
8	R1/4	42,5	20	11	11	101650828
8	R3/8	44	23,5	12,5	13	101650838
10	R1/4	53,5	21,5	11	13	101651028
10	R3/8	53,5	23,5	12,5	13	101651038
12	R1/4	63,5	23,5	11	16	101651228
12	R3/8	63	25	12,5	16	101651238

Tee connector, tube X 3
10060



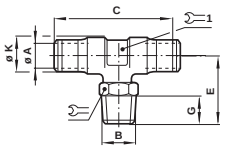
Ø A	C	E		Model
4	34	17	7	100600400
5	37	18,5	7	100600500
6	39	19,5	8	100600600
8	42,5	21,5	11	100600800
10	53,5	26,5	13	100601000
12	63,5	31,5	16	100601200
14	66,5	33	17	100601400

Push-in fittings
Pneufit

Ø 4 ... 14 mm tube size, BSP threads

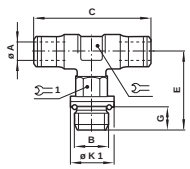
Dimensions shown in mm

Swivel tee adaptor, BSP taper
10167



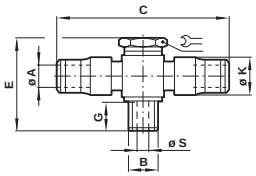
Ø A	B	C	E	G	Ø K		1	Model
4	R1/8	34	21,5	7,5	10	10	7	101670418
4	R1/4	34	24	11	10	14	7	101670428
5	R1/8	37	22	7,5	11	11	9	101670518
5	R1/4	37	24,5	11	11	14	9	101670528
6	R1/8	39	22,5	7,5	12	11	9	101670618
6	R1/4	39	25	11	12	14	9	101670628
8	R1/8	42,5	24	7,5	14,5	14	11	101670818
8	R1/4	42,5	26	11	14,5	14	11	101670828
8	R3/8	43,5	30,5	12,5	14,5	17	13	101670838
10	R1/4	53,5	29	11	17	17	13	101671028
10	R3/8	53,5	30,5	12,5	17	17	13	101671038
10	R1/2	53,5	34,5	16	17	22	13	101671048
12	R1/4	63,5	32	11	20,5	19	16	101671228
12	R3/8	63,5	34	12,5	20,5	22	16	101671238
12	R1/2	63,5	38	16	20,5	22	16	101671248
14	R3/8	61,5	33	12,5	22,5	22	17	101671438
14	R1/2	63,5	37	16	22,5	22	17	101671448

Swivel tee adaptor, BSP parallel
10267



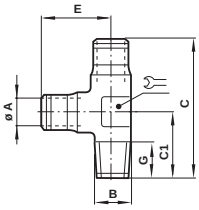
Ø A	B	C	E	G	Ø K1		1	Model
4	M3	34	16	3,5	–	7	8	102670403
4	M5	34	19,5	4	8	7	8	102670405
4	G1/8	34	22	5,5	14	7	11	102670418
5	M5	37	20	4	8	9	8	102670505
5	G1/8	37	22	5,5	14	9	11	102670518
5	G1/4	37	26	8	18	9	11	102670528
6	M5	39	20,5	4	8	9	8	102670605
6	G1/8	39	23	5,5	14	9	11	102670618
6	G1/4	39	26,5	8	18	9	11	102670628
8	G1/8	42,5	23,5	5,5	14	11	13	102670818
8	G1/4	42,5	29	8	18	11	17	102670828
8	G3/8	43,5	22	9	22	13	19	102670838
10	G1/4	53,5	31,5	8	18	13	17	102671028
10	G3/8	53,5	33,5	9	22	13	19	102671038
12	G1/4	63,5	35,5	8	18	16	19	102671228
12	G3/8	63,5	37	9	22	16	19	102671238
14	G1/2	63,5	39	11	26	17	24	102671448

Tee banjo assembly, non-regulating parallel thread
10A71



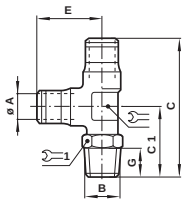
Ø A	B	C	E	G	Ø K	Ø S		Model
4	M5	37,5	22	4	9,5	2,5	8	10A710405
4	G1/8	41	30	6	11	5	14	10A710418
5	M5	40,5	22	4	11	2,5	8	10A710505
5	G1/8	43,5	30	6	11,5	5	14	10A710518
6	M5	41,5	22	4	11,5	2,5	8	10A710605
6	G1/8	47,5	30	6	12,5	5	14	10A710618
6	G1/4	48,5	34	7,5	13	8,5	17	10A710628
8	G1/8	47,5	30	6	14	5	14	10A710818
8	G1/4	49,5	34	7,5	14	8,5	17	10A710828

Fixed side tee adaptor, BSP taper
10175



Ø A	B	C	C1	E	G		Model
4	R1/8	32	15	17	7,5	7	101750418
5	R1/8	34	15,5	18,5	7,5	7	101750518
5	R1/4	40	20	20	11	11	101750528
6	R1/8	35,5	16	19,5	7,5	8	101750618
6	R1/4	40	20	20	11	11	101750628
8	R1/8	38	17	21,5	7,5	11	101750818
8	R1/4	41,5	20	21,5	11	11	101750828
8	R3/8	45,5	23,5	22	12,5	13	101750838
10	R1/4	48,5	21,5	26,5	11	13	101751028
10	R3/8	50	23,5	26,5	12,5	13	101751038
12	R1/4	55	23,5	31,5	11	16	101751228
12	R3/8	56,5	25	31,5	12,5	16	101751238

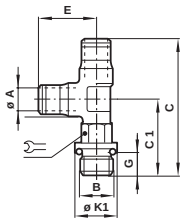
Swivel tee adaptor, BSP taper
10168



Ø A	B	C	C1	E	G		1	Model
4	R1/8	38,5	20,5	17	7,5	7	10	101680418
4	R1/4	41	24	17	11	7	14	101680428
5	R1/8	40,5	22	18,5	7,5	9	11	101680518
5	R1/4	43	24,5	18,5	11	9	14	101680528
6	R1/8	42	22,5	19,5	7,5	9	11	101680618
6	R1/4	44,5	25	19,5	11	9	14	101680628
8	R1/8	45	24	21,5	7,5	11	14	101680818
8	R1/4	47,5	26	21,5	11	11	14	101680828
8	R3/8	52,5	30,5	22	12,5	13	17	101680838
10	R1/4	55,5	29	26,5	11	13	17	101681028
10	R3/8	57	30,5	26,5	12,5	13	17	101681038
12	R1/4	63,5	32	31,5	11	16	19	101681228
12	R3/8	66	34	31,5	12,5	16	22	101681238
12	R1/2	70	38	31,5	16	16	22	101681248
14	R3/8	66,5	33	33	12,5	17	22	101681438
14	R1/2	70	37	33	16	17	22	101681448

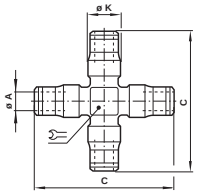
Swivel tee adaptor, BSP parallel
10268

Dimensions shown in mm



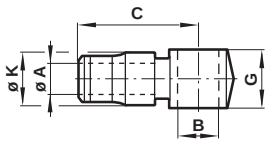
Ø A	B	C	C1	E	G	Ø K1		Model
4	M3	34	17	17	3,5	-	8	102680403
4	M5	36,5	19,5	17	4	8	8	102680405
4	G1/8	38,5	22	17	5,5	14	11	102680418
5	M5	39	20	18,5	4	8	8	102680505
5	G1/8	40,5	22,5	18,5	5,5	14	11	102680518
5	G1/4	44,5	26	18,5	8	18	11	102680528
6	G1/8	42,5	23	19,5	5,5	14	11	102680618
6	G1/4	46	26,5	19,5	8	18	11	102680628
8	G1/8	45	24	21,5	5,5	14	13	102680818
8	G1/4	50,5	29	21,5	8	18	17	102680828
8	G3/8	55	33	21,5	9	22	19	102680838
10	G1/4	58,5	31,5	26,5	8	18	17	102681028
10	G3/8	60	33,5	26,5	9	22	19	102681038
12	G1/4	67	35,5	31,5	8	18	19	102681228
12	G3/8	68,5	37	31,5	9	22	19	102681238
14	G3/8	69	36	33	9	22	19	102681438
14	G1/2	72,5	39	33	11	26	24	102681448

4-way connector, tube X 4
10090



Ø A	C	Ø K		Model
4	42	10,5	10	100900400
5	45,5	11	10	100900500
6	47,5	12	10	100900600
8	57,5	14,5	13	100900800
10	68,5	17	13	100901000

Elbow banjo body
10051

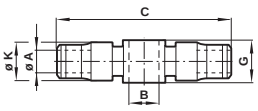


Ø A	B for screw	C	G	Ø K	Model
4	M5	18,5	12,5	9,5	100510405
4	G1/8	20,5	14	11	100510418
5	M5	20	12,5	11	100510505
5	G1/8	21,5	14	11,5	100510518
6	M5	22	12,5	12,5	100510605
6	G1/8	23,5	14	12,5	100510618
6	G1/4	24	16	13	100510628
8	G1/8	23,5	14	14	100510818
8	G1/4	24,5	16	14	100510828
8	G3/8	26,5	20,5	16,5	100510838
10	G1/4	30	16	16	100511028
10	G3/8	31	20,5	17	100511038
12	G3/8	33	20,5	17,5	100511238
12	G1/2	38	22	17,5	100511248

Push-in fittings
Pneufit

Ø 4 ... 14 mm tube size, BSP threads

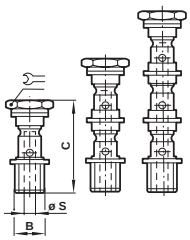
Tee banjo body
10071



Ø A	B for screw	C	G	Ø K	Model
4	M5	37,5	12,5	9,5	100710405
4	G1/8	41	14	11	100710418
5	M5	40	12,5	11	100710505
5	R1/8	43	14	11,5	100710518
6	M5	41,5	12,5	11,5	100710605
6	G1/8	47,5	14	12,5	100710618
6	G1/4	48,5	16	13	100710628
8	G1/8	47,5	14	14	100710818
8	G1/4	49,5	16	14	100710828

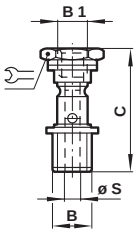
Banjo bolt,
non-regulating stacking
20A00, 20B00, 20C00

Dimensions shown in mm



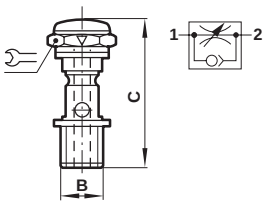
B	C	Ø S	Execution		Model
M5	22	2,5	single	8	20A000005
G1/8	29	5	single	14	20A000018
G1/4	33	8,5	single	17	20A000028
G3/8	41	10	single	22	20A000038
G1/2	49	11,5	single	27	20A000048
M5	34,5	2,5	double	8	20B000005
G1/8	46,5	5	double	14	20B000018
G1/4	52,5	8,5	double	17	20B000028
G3/8	64	10	double	22	20B000038
G1/2	72,5	11,5	double	27	20B000048
G1/8	63	5	triple	14	20C000018
G1/4	71,5	8,5	triple	17	20C000028
G3/8	87	10	triple	22	20C000038

Banjo bolt, non-regulating single stacking with top port BSP parallel
20*00



B	B1	C	ØS		Model
M5	M5	25,5	2,5	8	20D000505
M5	G1/4	34	8,5	17	20D000528
M5	G3/8	41	10	22	20D000538
G1/8	G1/8	36	5	14	20E001818
G1/8	G1/4	35,5	6	17	20E001828
G1/8	G3/8	41	10	22	20E001838
G1/4	G1/4	45	8,5	17	20F002828
G3/8	G3/8	52	10	22	20G003838

Regulating out banjo bolts Single stacking, (screwdriver adjustable), Reg out
20K00



B	C	Triple		Model
M5	27,5	10 bar	8	20K000005
G1/8	34	10 bar	14	20K000018
G1/4	36,5	10 bar	17	20K000028
G3/8	51,5	10 bar	22	20K000038
G1/2	57	10 bar	27	20K000048

Dimensions shown in mm

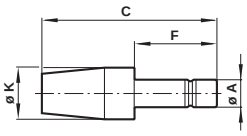
Regulating out banjo bolts single stacking, (screwdriver adjustable), reg in
20L00

B	C	Triple	⌯	Model
M5	27,5	10 bar	8	20L000005
G1/8	34	10 bar	14	20L000018
G1/4	36,5	10 bar	17	20L000028
G3/8	51,5	10 bar	22	20L000038
G1/2	57	10 bar	27	20L000048

Regulating out banjo bolts single stacking (screwdriver adjustable), bi-directional
20M00

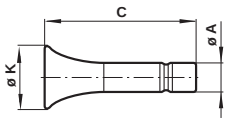
B	C	Triple	⌯	Model
M5	27,3	10 bar	8	20M000005
G1/8	34	10 bar	14	20M000018
G1/4	36,5	10 bar	17	20M000028
G3/8	51,5	10 bar	22	20M000038
G1/2	57	10 bar	27	20M000048

Silencer, plug in
10011



Ø A	C	F	Ø K	Model
4	31,5	16,5	11	100110400
6	33,5	18,5	11	100110600
8	40,5	19,5	13	100110800
10	53,5	24	19	100111000
12	57	27,5	19	100111200

Plug (Acetal)
11004



Ø A	C	Ø K	Model
4	26,5	9,5	110040400
5	28	10,5	110040500
6	28,5	11,5	110040600
8	29,5	12,5	110040800
10	34	15,5	110041000
12	37,5	16,5	110041200
14	37,5	19,5	110041400

Push-in fittings
Pneufit

Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP and NPT threads

Very compact units

Easy tube insertion for rapid assembly of pneumatic circuits

Positive tube anchorage

All taper threads pre-coated with non-PTFE based sealant

Straight Adaptors feature internal hexagon for Allen key

Silicone free 'O'-rings

+80°C (+176°F)

-20°C (-4°F)

Technical features

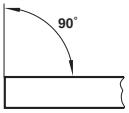
Medium:
Compressed air (for other media please consult Technical Department)
Operating pressure:
Vacuum -18 bar (261 psi) dependent upon operating specification of tubing
Vacuum: -750 mm of Hg i.e. 98%

Operating temperature:
-20 ... +80°C (-4 ... +176°F)
"Special" low temperature options contact Norgren Technical service
Tube sizes
1/8", 5/32", 3/16", 1/4", 5/16", 3/8", 1/2" O/D

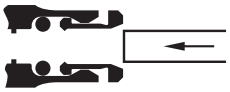
Tubing types:
Nylon 11 or 12, polyurethane and other plasticised or unplasticised tubing which conforms to the tolerances specified in BS 5409, Part 1, 1976, light and normal duty, DIN 73378, DIN 74234, NFE 49-100

Materials:
Body: nickel plated brass or glass filled nylon
Collet: nickel plated brass
'O'- ring: silicone free nitrile rubber (viton optional)
Washer: plastic sealing (parallel threads)
Thread sealant: Non-PTFE

Method of assembly

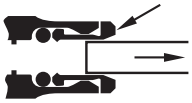


1. Ensure that the end of the tube is cut square and is free from burrs.



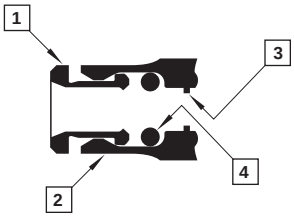
2. Push the tube through the collet into the fitting.

3. Continue pushing the tube through the 'O'-ring until it bottoms on the tube stop then pull back.



4. To disconnect push the tube into the fitting, hold down the collet and withdraw the tube.

Components



1 Collet
2 Body
3 Tube stop
4 'O'-ring

Straight adaptors, connectors and plugs

Straight adaptor MM O/D tube to NPTF (male) thread 10425/12425

Page 5-36

Straight adaptor Inch O/D tube to BSPT thread 10125/12125

Page 5-36

Straight adaptor O/D tube to male NPTF taper 12425

Page 5-37

Straight adaptor O/D tube to male metric thread 12225/10225

Page 5-37

Straight adaptor O/D tube to female NPTF thread 12426

Page 5-37

Stem adaptor MM O/D stem to NPTF (male) thread 10415/12415

Page 5-37

Stem adaptor Inch O/D stem to BSPT thread 10115/12115

Page 5-37

Straight stem adaptor O/D tube stem to taper NPTF thread 12415

Page 5-37

Straight connector Inch tube to MM tube 10020/12037

Page 5-38

Straight connector O/D tube to O/D tube 12020

Page 5-38

Bulkhead connector O/D tube to O/D tube 12029

Page 5-38

Expanding 12023

Page 5-38

Tube end expander/ reducer, tube stem to O/D tube 12023

Page 5-38

Straight stem connector 12022

Page 5-39

Plug 12004

Page 5-39

Plug 13004

Page 5-39

Stem tailpiece adaptor, O/D tube stem to hose bore 12019

Page 5-39

Elbow adaptors, connectors and banjos

Fixed elbow adaptor O/D tube to male BSPT thread 12145

Page 5-39

Fixed elbow adaptor O/D tube to male NPTF thread 12445

Page 5-40

Swivel male elbow O/D tube to male NPTF thread 12477

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Swivel elbow adaptor O/D tube to male BSPT thread 12147/10147

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Swivel female elbow adaptor, O/D tube to female NPTF thread 12448

Page 5-40

Extended swivel elbow adaptor, O/D tube to male NPTF thread 12454

Page 5-41

Elbow connector O/D tube to O/D tube 12040

Page 5-41

Tee adaptors, connectors and banjos

Swivel tee adaptor O/D tube to male taper BSP thread 12167/10167

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Swivel male centre tee O/D tube to male NPTF thread 12467

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Tee connector O/D tube to O/D tube 12060

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Swivel side tee adaptor O/D tube to male taper BSP thread 12168/10168

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Swivel male side tee O/D tube to male taper NPTF thread 12468

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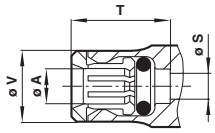
Push-in fittings
Pneufit

Ø 1/8” ... 1/2”, Ø 4 ... 12 mm tube size, BSP and NPT threads

Typical dimensions

Dimensions shown in inch

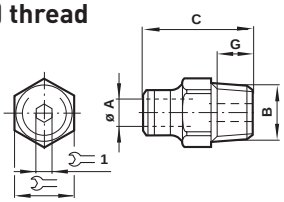


A O/D tube	S	T tubing stop	V
1/8"	0.09	0.53	0.26
5/32"(4)	0.11	0.55	0.3
3/16"	0.13	0.59	0.38
1/4"	0.17	0.61	0.42
5/16"(8)	0.24	0.65	0.51
3/8"	0.3	0.83	0.59
1/2"	0.38	0.96	0.71

Dimensions

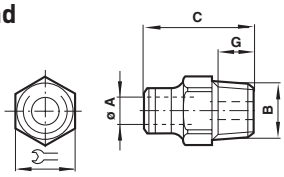
Projection/First angle

Straight adaptor 10425/12425
MM O/D Tube to NPTF (male) thread



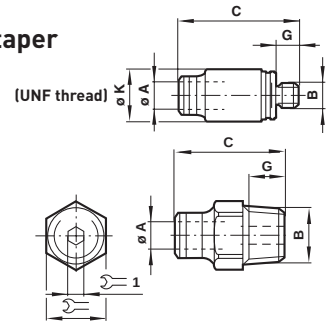
O/D Tube A mm	Thread B	C	G		1	Model
4	10/32 UNF	0.85	0.2	0.35	3/32"	124250210
4	1/8 NPT	0.89	0.37	7/16"	1/8"	124250218
4	1/4 NPT	1.04	0.56	9/16"	1/8"	124250228
5	1/8 NPT	0.96	0.37	7/16"	5/32"	104250518
5	1/4 NPT	1.04	0.56	9/16"	5/32"	104250528
6	10/32 UNF	0.94	0.2	0.43Ø	3/32"	104250610
6	1/8 NPT	0.98	0.37	7/16"	5/32"	104250618
6	1/4 NPT	1.11	0.56	9/16"	5/32"	104250628
6	3/8 NPT	1.07	0.56	11/16"	5/32"	104250638
8	1/8 NPT	1.12	0.37	1/2"	3/16"	124250518
8	1/4 NPT	1.23	0.56	9/16"	1/4"	124250528
8	3/8 NPT	1.13	0.56	11/16"	1/4"	124250538
10	1/8 NPT	1.32	0.37	11/16"	3/16"	104251018
10	1/4 NPT	1.47	0.56	11/16"	9/32"	104251028
10	3/8 NPT	1.41	0.56	11/16"	5/16"	104251038
10	1/2 NPT	1.45	0.75	7/8"	5/16"	104251048
12	1/4 NPT	1.67	0.56	7/8"	9/32"	104251228
12	3/8 NPT	1.63	0.56	7/8"	13/32"	104251238
12	1/2 NPT	1.7	0.75	7/8"	13/32"	104251248

Straight adaptor 10125/12125
Inch O/D tube to BSPT thread



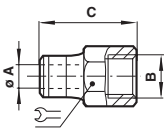
O/D Tube A	Thread B	C	G		Model
1/8"	R1/8	0.79	0.3	0.39	121250118
1/8"	R1/4	0.89	0.44	0.55	121250128
5/32"	R1/8	0.81	0.3	0.39	101250418
5/32"	R1/4	0.91	0.44	0.55	101250428
1/4"	R1/8	0.91	0.3	0.43	121250418
1/4"	R1/4	0.99	0.44	0.55	121250428
1/4"	R3/8	1.01	0.5	0.67	121250438
5/16"	R1/8	1.05	0.3	0.51	101250818
5/16"	R1/4	1.11	0.44	0.55	101250828
5/16"	R3/8	1.07	0.5	0.67	101250838
3/8"	R1/8	1.25	0.3	0.67	121250618
3/8"	R1/4	1.35	0.44	0.67	121250628
3/8"	R3/8	1.35	0.5	0.67	121250638
3/8"	R1/2	1.33	0.63	0.87	121250648
1/2"	R1/4	1.54	0.44	0.87	121250728
1/2"	R3/8	1.56	0.5	0.87	121250738
1/2"	R1/2	1.58	0.63	0.87	121250748

Straight adaptor 12425
O/D tube to male NPTF taper



O/D Tube A	Thread B	C	G	Ø K		Model
1/8"	10-32 UNF	0.79	0.2	0.31	3/32"	124250110
1/8"	1/16 NPT	0.8	0.37	3/8"	3/32"	124250116
1/8"	1/8 NPT	0.67	0.37	7/16"	3/32"	124250118
1/8"	1/4 NPT	0.95	0.56	9/16"	3/32"	124250128
5/32"	10-32 UNF	0.85	0.2	0.35	3/32"	124250210
5/32"	1/8 NPT	0.89	0.37	7/16"	1/8"	124250218
5/32"	1/4 NPT	1.04	0.56	9/16"	1/8"	124250228
3/16"	1/8 NPT	0.96	0.37	7/16"	5/32"	124250318
3/16"	1/4 NPT	1.04	0.56	9/16"	5/32"	124250328
1/4"	10-32 UNF	0.94	0.2	0.43	3/32"	124250410
1/4"	1/8 NPT	0.98	0.37	7/16"	5/32"	124250418
1/4"	1/4 NPT	1.11	0.56	9/16"	5/32"	124250428
1/4"	3/8 NPT	1.07	0.56	11/16"	5/32"	124250438
5/16"	1/8 NPT	1.12	0.37	1/2"	3/16"	124250518
5/16"	1/4 NPT	1.23	0.56	9/16"	1/4"	124250528
5/16"	3/8 NPT	1.13	0.56	11/16"	1/4"	124250538
3/8"	1/8 NPT	1.32	0.37	11/16"	3/16"	124250618
3/8"	1/4 NPT	1.47	0.56	11/16"	1/4"	124250628
3/8"	3/8 NPT	1.41	0.56	11/16"	5/16"	124250638
3/8"	1/2 NPT	1.45	0.75	7/8"	5/16"	124250648
1/2"	1/4 NPT	1.67	0.56	7/8"	1/4"	124250728
1/2"	3/8 NPT	1.63	0.56	7/8"	3/8"	124250738
1/2"	1/2 NPT	1.7	0.75	7/8"	3/8"	124250748

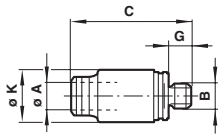
Straight adaptor 12426
O/D tube to female NPTF thread



O/D Tube A	Thread B	C		Model
1/8"	1/8 NPT	1.14	9/16"	124260118
1/8"	1/4 NPT	1.38	11/16"	124260128
5/32"	1/8 NPT	1.14	9/16"	124260218
5/32"	1/4 NPT	1.42	11/16"	124260228
1/4"	1/8 NPT	1.19	9/16"	124260418
1/4"	1/4 NPT	1.46	11/16"	124260428
5/16"	1/8 NPT	1.23	9/16"	124260518
5/16"	1/4 NPT	1.5	11/16"	124260528
3/8"	1/4 NPT	1.66	11/16"	124260628
3/8"	3/8 NPT	1.7	7/8"	124260638

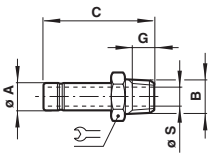
Straight adaptor 12225/10225
O/D tube to male metric thread

Dimensions shown in inch



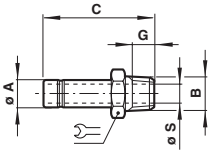
O/D Tube A	Thread B	C	G	Ø K	Model
1/8"	M5 x 0.8	0.78	0.2	0.31	122250105
5/32"	M5 x 0.8	0.84	0.2	0.35	102250405
3/16"	M5 x 0.8	0.9	0.2	0.39	122250305
1/4"	M5 x 0.8	0.94	0.2	0.43	122250405

Stem adaptor 10415/12415
MM O/D stem to NPTF (male) thread



O/D Tube A mm	Thread B	C	G	Ø S		Model
4	1/8 NPT	1.25	0.37	0.08	7/16"	124150218
4	1/4 NPT	1.44	0.56	0.08	9/16"	124150228
5	1/8 NPT	1.31	0.37	0.13	7/16"	104150518
5	1/4 NPT	1.5	0.56	0.13	9/16"	104150528
6	1/8 NPT	1.33	0.37	0.16	7/16"	104150618
6	1/4 NPT	1.52	0.56	0.16	9/16"	104150628
8	1/8 NPT	1.37	0.37	0.2	7/16"	124150518
8	1/4 NPT	1.56	0.56	0.2	9/16"	124150528
10	1/4 NPT	1.74	0.56	0.3	9/16"	104151028
10	3/8 NPT	1.81	0.56	0.3	11/16"	104151038
12	3/8 NPT	1.95	0.56	0.36	11/16"	104151238
12	1/2 NPT	2.15	0.75	0.36	7/8"	104151248

Stem adaptor 10115/12115
Inch O/D stem to BSPT thread

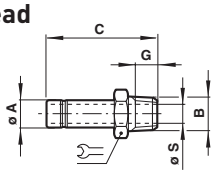


O/D Tube A	Thread B	C	G	Ø S		Model
5/32"	1/8 NPT	1.18	0.3	0.08	0.39	101150418
5/32"	1/4 NPT	1.32	0.44	0.08	0.55	101150428
1/4"	1/8 NPT	1.26	0.3	0.16	0.47	121150418
1/4"	1/4 NPT	1.4	0.44	0.16	0.55	121150428
5/16"	1/8 NPT	1.3	0.3	0.2	0.55	101150818
5/16"	1/4 NPT	1.44	0.44	0.2	0.55	101150828
3/8"	1/4 NPT	1.57	0.44	0.3	0.59	121150628
3/8"	3/8 NPT	1.77	0.5	0.3	0.75	121150638
1/2"	3/8 NPT	1.89	0.5	0.39	0.75	121150738
1/2"	1/2 NPT	2.03	0.63	0.39	0.87	121150748

Push-in fittings
Pneufit

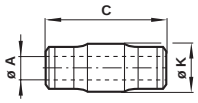
Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP and NPT threads

Straight stem adaptor 12415
O/D tube stem to taper NPTF thread



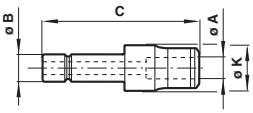
O/D Tube A	Thread B	C	G	Ø S		Model
5/32"	10-32 UNF	1.14	0.2	0.08	5/16"	124150210
5/32"	1/8 NPT	1.25	0.37	0.08	7/16"	124150218
5/32"	1/4 NPT	1.45	0.56	0.08	9/16"	124150228
1/4"	1/8 NPT	1.33	0.37	0.16	7/16"	124150418
1/4"	1/4 NPT	1.52	0.56	0.16	9/16"	124150428
5/16"	1/8 NPT	1.37	0.37	0.19	7/16"	124150518
5/16"	1/4 NPT	1.56	0.56	0.19	9/16"	124150528
3/8"	1/4 NPT	1.74	0.56	0.3	9/16"	124150628
3/8"	3/8 NPT	1.82	0.56	0.3	11/16"	124150638
1/2"	3/8 NPT	1.95	0.56	0.35	11/16"	124150738
1/2"	1/2 NPT	2.15	0.75	0.35	7/8"	124150748

Straight connector 12020
O/D tube to O/D tube



O/D Tube A	C	Ø K	Model
1/8"	1.15	0.35	120200100
5/32"	1.17	0.39	120200200
3/16"	1.26	0.43	120200300
1/4"	1.28	0.47	120200400
5/16"	1.35	0.55	120200500
3/8"	1.71	0.67	120200600
1/2"	1.98	0.81	120200700

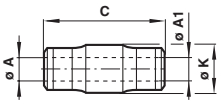
Tube end expander
tube stem to O/D tube 12023



O/D Tube A	Stem O/D B	C	Ø K	Model
1/4"	1/8"	1.34	0.47	120230104
1/4"	5/32"	1.38	0.47	120230204
1/4"	3/16"	1.4	0.47	120230304

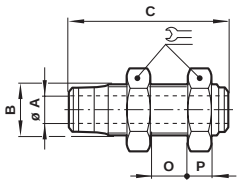
Straight connector 10020/12037
inch tube to mm tube

Dimensions shown in inch



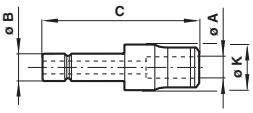
O/D Tube A	O/D Tube A1	C	Ø K	Model
5/32"	4 mm	1.17	0.35	100200400
3/16"	5 mm	1.26	0.43	120370305
1/4"	6 mm	1.28	0.47	120370406
5/16"	8 mm	1.35	0.55	100200800
3/8"	10 mm	1.71	0.66	120370610
1/2"	12 mm	1.98	0.81	120370712

Bulkhead connector 12029
O/D tube to O/D tube



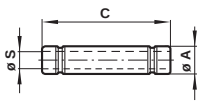
O/D Tube A	Thread B	C	O	P		Model
1/8"	M10 x 1.0	1.15	0.47	0.20	0.55	120290100
5/32"	M10 x 1.0	1.18	0.47	0.20	0.55	120290200
3/16"	M12x 1.0	1.26	0.55	0.20	0.67	120290300
1/4"	M14 x 1.5	1.38	0.59	0.24	0.75	120290400
5/16"	M16 x 1.5	1.42	0.63	0.24	0.87	120290500
3/8"	M20 x 1.5	1.69	0.55	0.28	1.06	120290600
1/2"	M24 x 1.5	1.97	0.59	0.28	1.18	120290700

Tube end reducer 12023
tube stem to O/D tube



O/D Tube A	Stem O/D B	C	Ø K	Model
1/8"	5/32"	1.22	0.35	120230201
1/8"	1/4"	1.3	0.35	120230401
5/32"	1/4"	1.34	0.39	120230402
5/32"	5/16"	1.22	0.39	120230502
5/32"	3/8"	1.22	0.47	120230602
3/16"	1/4"	1.38	0.43	120230403
3/16"	5/16"	1.3	0.43	120230503
1/4"	5/16"	1.46	0.47	120230504
1/4"	3/8"	1.5	0.47	120230604
1/4"	1/2"	1.38	0.55	120230704
5/16"	3/8"	1.69	0.55	120230605
5/16"	1/2"	1.65	0.55	120230705
3/8"	1/2"	1.97	0.67	120230706

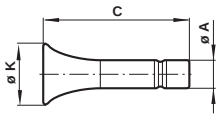
Straight stem connector 12022



O/D Tube A	C	Ø S	Model
1/8"	1.18	0.09	120220100
5/32"	1.19	0.13	120220200
3/16"	1.31	0.16	120220300
1/4"	1.34	0.24	120220400
5/16"	1.42	0.3	120220500
3/8"	1.77	0.38	120220600
1/2"	2.05	0.45	120220700

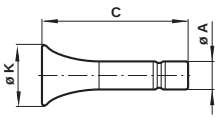
Plug 12004 (Nickel plated brass)

Dimensions shown in inch



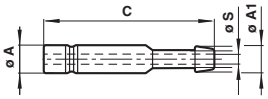
O/D Tube A	C	Ø K	Model
1/8"	1.02	0.34	120040100
5/32"	1.04	0.38	120040200
3/16"	1.1	0.42	120040300
1/4"	1.12	0.46	120040400
5/16"	1.16	0.5	120040500
3/8"	1.34	0.61	120040600
1/2"	1.48	0.66	120040700

Plug 13004 (Plastic)



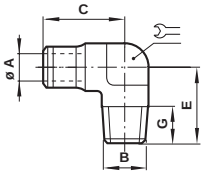
O/D Tube A	C	Ø K	Model
5/32"	1.04	0.38	130040200
3/16"	1.1	0.41	130040300
1/4"	1.12	0.46	130040400
5/16"	1.16	0.5	130040500
3/8"	1.34	0.61	130040600
1/2"	1.48	0.65	130040700

Stem tailpiece adaptor 12019
O/D tube stem to hose bore



O/D Tube A	A1	C	Ø S	Model
1/8"	1.34	0.17	0.06	120190101
5/32"	1.35	0.17	0.07	120190201
1/4"	1.43	0.24	0.11	120190403
5/16"	1.47	0.31	0.17	120190504
3/8"	1.7	0.37	0.22	120190605
1/2"	1.84	0.47	0.29	120190706

Fixed elbow adaptor 12145
O/D tube to male BSPT thread

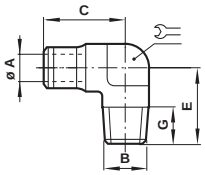


O/D Tube A	Thread B	C	E	G		Model
1/8"	R1/8	0.66	0.63	0.34	0.27	121450118
3/16"	R1/8	0.72	0.65	0.34	0.27	121450318
1/4"	R1/8	0.77	0.67	0.34	0.42	121450418
3/16"	R1/4	0.78	0.8	0.44	0.38	121450328

Push-in fittings
Pneufit

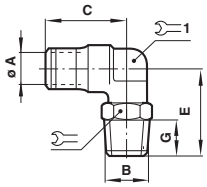
Ø 1/8” ... 1/2”, Ø 4 ... 12 mm tube size, BSP and NPT threads

Fixed elbow adaptor 12445
O/D tube to male NPTF thread



O/D Tube A	Thread B	C	E	G		Model
1/8"	1/8 NPT	0.67	0.66	0.37	0.28	124450118
5/32"	1/8 NPT	0.67	0.66	0.37	0.28	124450218
5/32"	1/4 NPT	0.72	0.92	0.56	0.43	124450228
3/16"	1/8 NPT	0.72	0.67	0.37	0.28	124450318
3/16"	1/4 NPT	0.79	0.92	0.56	0.43	124450328
1/4"	1/8 NPT	0.77	0.7	0.37	0.31	124450418
1/4"	1/4 NPT	0.79	0.92	0.56	0.43	124450428
1/4"	3/8 NPT	0.84	1.1	0.56	0.63	124450438
5/16"	1/8 NPT	0.84	0.74	0.37	0.43	124450518
5/16"	1/4 NPT	0.84	0.92	0.56	0.43	124450528
3/8"	1/8 NPT	1.05	0.8	0.37	0.52	124450618
3/8"	1/4 NPT	1.05	0.98	0.56	0.52	124450628
3/8"	3/8 NPT	1.05	1.1	0.56	0.63	124450638
3/8"	1/2 NPT	1.13	1.36	0.75	0.94	124450648
1/2"	1/4 NPT	1.25	1.03	0.56	0.63	124450728
1/2"	3/8 NPT	1.25	1.1	0.56	0.63	124450738
1/2"	1/2 NPT	1.25	1.36	0.75	0.94	124450748

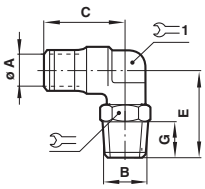
Swivel elbow adaptor 12147/10147
O/D tube to male BSPT thread



O/D Tube A	Thread B	C	E	G		Model
1/8"	R1/8	0.63	0.86	0.34	0.39	121470118
5/32"	R1/8	0.66	0.81	0.3	0.39	101400418
3/16"	R1/8	0.73	0.86	0.34	0.43	121470318
1/4"	R1/8	0.77	0.88	0.34	0.43	121470418
5/16"	R1/8	0.84	0.91	0.34	0.55	101470818
5/32"	R1/4	0.66	0.95	0.44	0.55	101470428
3/16"	R1/4	0.72	1.04	0.44	0.55	121470328
1/4"	R1/4	0.77	0.99	0.44	0.55	121470428
5/16"	R1/4	0.84	1.03	0.44	0.55	101470828
3/8"	R1/4	1.05	1.13	0.44	0.67	121470628
1/2"	R1/4	1.25	1.25	0.44	0.75	121470728
3/8"	R3/8	1.05	1.2	0.5	0.67	121470638
3/8"	R1/2	1.25	1.36	0.63	0.87	121470648
1/2"	R3/8	1.05	1.35	0.5	0.87	121470738
1/2"	R1/2	1.25	1.5	0.63	0.87	121470748

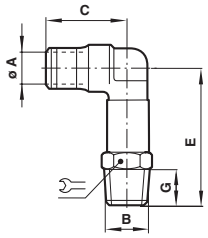
Swivel male elbow 12477
O/D tube to male NPTF thread

Dimensions shown in inch



O/D Tube A	Thread B	C	E	G		Model
1/8"	10-32 UNF	0.63	0.73	0.2	5/16"	124770110
1/8"	1/8 NPT	0.63	0.82	0.37	7/16"	124770118
1/8"	1/4 NPT	0.68	1.07	0.37	9/16"	124770128
5/32"	10-32 UNF	0.67	0.77	0.2	5/16"	124770210
5/32"	1/8 NPT	0.67	0.86	0.37	7/16"	124770218
5/32"	1/4 NPT	0.67	1.07	0.56	9/16"	124770228
3/16"	1/8 NPT	0.72	0.88	0.37	7/16"	124770318
3/16"	1/4 NPT	0.72	1.09	0.56	9/16"	124770328
1/4"	1/8 NPT	0.77	0.9	0.37	7/16"	124770418
1/4"	1/4 NPT	0.77	1.11	0.56	9/16"	124770428
1/4"	3/8 NPT	0.8	1.15	0.56	3/4"	124770438
5/16"	1/8 NPT	0.84	0.96	0.37	9/16"	124770518
5/16"	1/4 NPT	0.84	1.15	0.56	9/16"	124770528
3/8"	1/8 NPT	1.05	1.05	0.37	9/16"	124770618
3/8"	1/4 NPT	1.05	1.26	0.56	11/16"	124770628
3/8"	3/8 NPT	1.05	1.26	0.56	3/4"	124770638
3/8"	1/2 NPT	1.05	1.48	0.75	7/8"	124770648
1/2"	1/4 NPT	1.25	1.37	0.56	3/4"	124770728
1/2"	3/8 NPT	1.25	1.41	0.56	3/4"	124770738
1/2"	1/2 NPT	1.25	1.62	0.75	7/8"	124770748

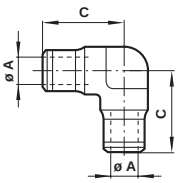
Extended swivel elbow adaptor 12454
O/D tube to male NPTF thread



O/D Tube A	Thread B	C	E	G		Model
5/32"	1/8 NPT	0.67	1.39	0.37	7/16"	124540218
5/32"	1/4 NPT	0.77	1.49	0.37	7/16"	124540228
1/4"	1/8 NPT	0.67	1.71	0.56	9/16"	124540418
1/4"	1/4 NPT	0.77	1.75	0.56	9/16"	124540428
3/8"	1/4 NPT	1.05	2.1	0.56	11/16"	124540628
3/8"	3/8 NPT	1.05	2.1	0.56	3/4"	124540638

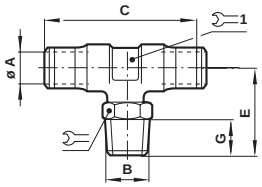
Elbow connector 12040
O/D tube to O/D tube

Dimensions shown in inch



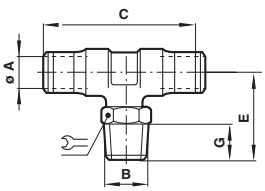
O/D Tube A	C	Model
1/8"	0.65	120400100
5/32"	0.67	120400200
3/16"	0.72	120400300
1/4"	0.77	120400400
5/16"	0.84	120400500
3/8"	1.05	120400600
1/2"	1.25	120400700

Swivel tee adaptor 12167/10167
O/D tube to male taper BSP thread



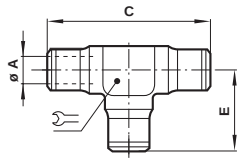
O/D Tube A	Thread B	C	E	G		1	Model
5/32"	R1/8	1.33	0.81	0.34	0.39	0.28	101670418
1/4"	R1/8	1.54	0.88	0.34	0.34	0.35	121670418
5/32"	R1/4	1.33	0.95	0.44	0.55	0.28	101670428
1/4"	R1/4	1.54	0.99	0.44	0.43	0.35	121670428
3/8"	R1/4	2.1	1.13	0.44	0.43	0.52	121670618
1/2"	R1/4	2.5	1.25	0.44	0.43	0.63	121670728
3/8"	R3/8	2.1	1.2	0.5	0.5	0.52	121670638
1/2"	R3/8	2.5	1.34	0.5	0.5	0.63	121670738

Swivel male centre tee 12467
O/D tube to male NPTF thread



O/D Tube A	Thread B	C	E	G		Model
1/8"	10-32 UNF	1.25	0.73	0.2	5/16"	124670110
1/8"	1/8 NPT	1.26	0.81	0.37	7/16"	124670118
1/8"	1/4 NPT	1.34	1.07	0.56	9/16"	124670128
5/32"	10-32 UNF	1.34	0.77	0.2	5/16"	124670210
5/32"	1/8 NPT	1.33	0.86	0.37	7/16"	124670218
5/32"	1/4 NPT	1.33	1.07	0.56	9/16"	124670228
3/16"	1/8 NPT	1.45	0.88	0.37	7/16"	124670318
3/16"	1/4 NPT	1.45	1.09	0.56	9/16"	124670328
1/4"	1/8 NPT	1.54	0.9	0.37	7/16"	124670418
1/4"	1/4 NPT	1.54	1.12	0.56	9/16"	124670428
1/4"	3/8 NPT	1.57	1.2	0.56	3/4"	124670438
5/16"	1/8 NPT	1.68	0.96	0.37	9/16"	124670518
5/16"	1/4 NPT	1.68	1.15	0.56	9/16"	124670528
3/8"	1/8 NPT	2.1	0.66	0.37	9/16"	124670618
3/8"	1/4 NPT	2.1	1.26	0.56	11/16"	124670628
3/8"	3/8 NPT	2.1	1.26	0.56	3/4"	124670638
3/8"	1/2 NPT	2.1	1.48	0.75	7/8"	124670648
1/2"	1/4 NPT	2.5	1.37	0.56	3/4"	124670728
1/2"	3/8 NPT	2.5	1.41	0.56	3/4"	124670738
1/2"	1/2 NPT	2.5	1.62	0.75	7/8"	124670748

Tee connector 12060
O/D tube to O/D tube

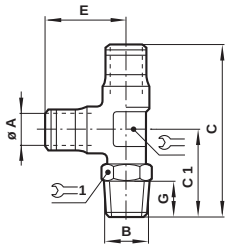


O/D Tube A	C	E	Ø K		Model
1/8"	1.26	0.63	0.32	0.2	120600100
5/32"	1.34	0.67	0.4	0.28	120600200
3/16"	1.44	0.72	0.44	0.28	120600300
1/4"	1.54	0.77	0.48	0.31	120600400
5/16"	1.68	0.84	0.56	0.43	120600500
3/8"	2.1	1.05	0.67	0.52	120600600
1/2"	2.5	1.25	0.81	0.63	120600700

Push-in fittings
Pneufit

Ø 1/8” ... 1/2”, Ø 4 ... 12 mm tube size, BSP and NPT threads

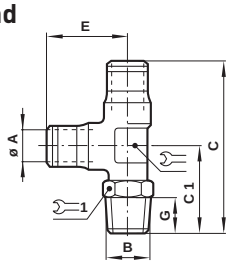
Swivel side tee adaptor, O/D tube to male taper BSP thread
12168/10168



O/D Tube A	Thread B	C	C1	E	G		1	Model
5/32"	R1/8	1.47	0.81	0.66	0.34	0.28	0.39	101680418
3/16"	R1/8	1.59	0.86	0.72	0.34	0.35	0.34	121680318
1/4"	R1/8	1.65	0.88	0.77	0.34	0.35	0.34	121680418
5/16"	R1/8	1.74	0.91	0.84	0.34	0.43	0.55	101680818
5/32"	R1/4	1.61	0.95	0.72	0.44	0.28	0.55	101680428
3/16"	R1/4	1.69	0.97	0.72	0.44	0.34	0.43	121680328
1/4"	R1/4	1.76	1	0.77	0.44	0.35	0.43	121680428
5/16"	R1/4	1.87	1.03	0.84	0.44	0.43	0.55	101680828
3/8"	R1/4	2.19	1.13	1.05	0.44	0.52	0.43	121680628
1/2"	R1/4	2.5	1.25	1.24	0.44	0.63	0.43	121680728
3/8"	R3/8	2.25	1.2	1.05	0.5	0.52	0.5	121680638
1/2"	R3/8	2.59	1.34	1.25	0.5	0.63	0.5	121680738

Swivel male side tee adaptor , O/D tube to male taper NPTF thread
12468

Dimensions shown in inch



O/D Tube A	Thread B	C	C1	E	G		1	Model
1/8"	10-32 UNF	1.36	0.63	1.36	0.63	–	5/16"	124680110
1/8"	1/8 NPT	1.36	0.73	0.63	0.63	0.20	7/16"	124680118
1/8"	1/4 NPT	1.44	0.77	0.67	0.67	0.27	9/16"	124680128
5/32"	10-32 UNF	1.44	0.67	1.44	0.67	–	5/16"	124680210
5/32"	1/8 NPT	1.52	0.86	0.67	0.67	0.27	7/16"	124680218
5/32"	1/4 NPT	1.73	1.07	0.67	0.67	0.27	9/16"	124680228
3/16"	1/8 NPT	1.6	0.88	0.72	0.72	0.35	7/16"	124680318
3/16"	1/4 NPT	1.81	1.09	0.72	0.72	0.35	9/16"	124680328
1/4"	1/8 NPT	1.67	0.9	0.77	0.77	0.35	7/16"	124680418
1/4"	1/4 NPT	1.88	1.11	0.77	0.77	0.35	9/16"	124680428
1/4"	3/8 NPT	1.59	0.81	0.79	0.79	0.31	3/4"	124680438
5/16"	1/8 NPT	1.8	0.96	0.84	0.84	0.43	9/16"	124680518
5/16"	1/4 NPT	1.98	1.15	1.98	0.84	0.43	9/16"	124680528
3/8"	1/8 NPT	2	0.94	1.05	1.05	0.52	9/16"	124680618
3/8"	1/4 NPT	2.31	1.26	1.05	1.05	0.52	11/16"	124680628
3/8"	3/8 NPT	2.31	1.26	1.05	1.05	0.52	3/4"	124680638
3/8"	1/2 NPT	2.53	1.48	1.05	1.05	0.52	7/8"	124680648
1/2"	1/4 NPT	2.62	1.37	1.25	1.25	0.63	3/4"	124680728
1/2"	3/8 NPT	2.65	1.41	1.25	1.25	0.63	3/4"	124680738
1/2"	1/2 NPT	2.87	1.62	1.25	1.25	0.63	7/8"	124680748

Very compact units

Easy tube insertion for rapid assembly of pneumatic circuits

Positive tube anchorage

All taper threads pre-coated with non-PTFE based sealant

Straight Adaptors feature internal hexagon for Allen key

Silicone free 'O'-rings

Technical features

Medium:
Compressed air or any fluids compatible with the materials listed opposite

Thread forms:
BSPP, BSPT, NPT

Operating pressure:
Generally limited by tubing specification except where plastic sealing washers are used (banjo bolts and M5 units). In these cases pressure is limited to 18 bar (261 psi). Suitable for vacuum applications. Flow regulating banjos are limited to 1 ... 10 bar (14 ... 145 psi) operating range.

Ambient temperature:
Generally limited by tubing specification except where plastic sealing washers are used (banjo bolts, & M5 units). In these cases temperature is limited to +70°C (158°F).

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)

BSP & HOSE Fittings

M5, 1/8" ... 1"

Straight adaptors, connectors and plugs

BSP connector – reducer
16023

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BSP connector – expander
16230

Page 5-45

BSP connector – reducer
15023

Page 5-45

BSP connector – expander
15023

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Bulkhead connector
16029

Page 5-46

Sleeve adaptor
16022

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Adaptor NPTF – BSPT
15423

Page 5-46

Adaptor BSPT – NPTF
17223

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Nipple adaptor
15020

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Nipple adaptor
16020

Page 5-47

Nipple adaptor
15420

Page 5-47

Flat union
15033

Page 5-47

Plug
15005

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Plug
16005

Page 5-47

Plug
25013

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Hose adaptor
29117

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Hose adaptor
29117

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Elbow adaptors and T-connectors

Elbow
16042

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Elbow
15043

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Elbow
15040

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Tee connector
16062

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Tee
15060

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Tee
15069

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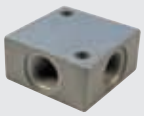
Cross
16092

Page 5-49

Cross block
16094



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Manifold
34050

Page 5-49

Elbow banjos

Elbow banjo assembly regulating out
16K51

Page 5-50

Elbow banjo assembly non-regulating
16A51

Page 5-50

Elbow banjo body
16051

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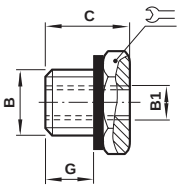
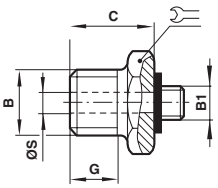
BSP connector – reducer 16023
ISO G parallel thread with seal



B	B1	C	G	⌲	Model
G1/8	M5	10,5	6	14	160231805
G1/4	M5	15,5	7,5	17	160232805
G1/4	G1/8	13	8	17	160232818
G3/8	G1/8	14	9	19	160233818
G3/8	G1/4	14	9	19	160233828
G1/2	G1/8	15,5	10	24	160234818
G1/2	G1/4	15,5	10	24	160234828
G1/2	G3/8	15,5	10	24	160234838
G3/4	G1/4	23	14	32	160236828
G3/4	G3/8	17,5	12	30	160236838
G3/4	G1/2	17,5	12	30	160236848

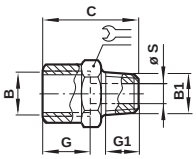
BSP connector – expander 16023
ISO G parallel thread with seal

Dimensions shown in mm



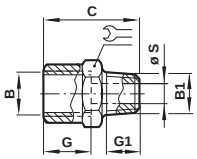
B	B1	C	G	G1	Ø S	⌲	Model
M5	G1/8	14,5	4	7,5	2	14	160230518
G1/8	G1/4	19,5	6	9,5	5,5	17	160231828
G1/8	G3/8	21	6	10,5	5,5	22	160231838
G1/4	G3/8	22,5	8	10,5	8	22	160232838
G1/4	G1/2	26	8	13	8	26	160232848
G1/4	G3/4	33	7,5	16,5	6,5	32	160232868
G3/8	G1/2	27	9	13	11	26	160233848
G3/8	G3/4	34	8,5	16,5	9,5	32	160233868
G1/2	G3/4	38	11,5	16,5	13,5	32	160234868

BSP connector – reducer 15023
ISO R taper thread



B	B1	C	G	G1	Ø S	⌲	Model
G1/8	R1/8	20	7,5	7,5	5,5	14	150231818
G1/8	R1/4	16	11	7,5	5,5	14	150232818
G1/4	R1/4	26	11	9,5	8	17	150232828
G1/8	R3/8	16,5	11,5	7,5	5,5	17	150233818
G1/4	R3/8	16,5	11,5	9,5	8	17	150233828
G3/8	R3/8	27,5	11,5	10,5	11	22	150233838
G1/8	R1/2	19,5	14	7,5	5,5	22	150234818
G1/4	R1/2	19,5	14	9,5	8	22	150234828
G3/8	R1/2	19,5	14	10,5	11	22	150234838
G1/2	R1/2	33	14	13	15	26	150234848
G1/4	R3/4	29,5	18,5	11	11,5	27	150236828
G3/8	R3/4	23,5	16,5	10,5	11	27	150236838
G1/2	R3/4	23,5	16,5	13	15	27	150236848
G3/8	R1	34,5	21,5	14	15	35	150238838
G1/2	R1	26,5	19	13	15	34	150238848
G3/4	R1	26,5	19	14,5	19	34	150238868

BSP connector – expander 15023
ISO R taper thread

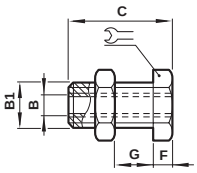


B	B1	C	G	G1	Ø S	⌲	Model
G1/4	R1/8	22	7,5	9,5	5	17	150231828
G3/8	R1/8	22,5	7,5	10,5	5	22	150231838
G1/2	R1/8	31	8,5	15	5	27	150231848
G3/8	R1/4	27	11	10,5	8	22	150232838
G1/2	R1/4	30	11	13	8	26	150232848
G3/4	R1/4	37,5	11	16,5	7	32	150232868
G1/2	R3/8	30,5	11,5	13	11	26	150233848
G3/4	R3/8	38,5	12,5	16,5	11	32	150233868
G3/4	R1/2	35	14	14,5	15	32	150234868
G1	R3/4	45	19	19	18	41	150236888

M5, 1/8" ... 1"

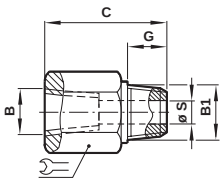
Dimensions shown in mm

Bulkhead connector 16029
metric and ISO G parallel thread



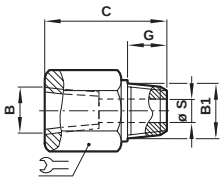
B	B1	C	F	G max.	⌓	Model
M5	M10x1,0	14	3,5	7	14	160290005
G1/8	M16x1,5	18	4	10	22	160290018
G1/4	M20x1,5	25	4	16	27	160290028
G3/8	M26x1,5	26	5	15	32	160290038
G1/2	M28x1,5	33	6	21	36	160290048
G3/4	M33x1,5	36,5	6	22,5	41	160290068
G1	M42x1,5	41,5	8	24,5	46	160290088
G1 1/4	M48x1,5	50	8	29,5	55	1602900A8

Adaptor 15423
NPTF – BSPT thread



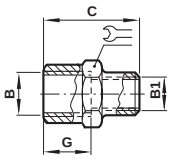
B	B1	C	G	Ø S	⌓	Model
1/8 NPT	R1/8	27,5	9,5	4,5	15	154231818
1/4 NPT	R1/4	36	11	7,5	19	154232828
3/8 NPT	R3/8	38	12,5	9,5	22	154233838
1/2 NPT	R1/2	47	16	13	27	154234848
3/4 NPT	R3/4	50	19	17,5	36	154236868

Adaptor 17223
BSPT – NPTF thread



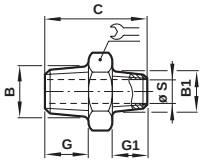
B	B1	C	G	Ø S	⌓	Model
R1/4	1/4 NPT	33,5	14,5	7,5	19	172232828
R3/8	3/8 NPT	33,5	14,5	9,5	24	172233838
R1/2	1/2 NPT	44	19	12,5	27	172234848

Sleeve adaptor 16022
ISO G parallel thread



B	B1	C	G	⌓	Model
M5	M5	11	11	8	160220505
G1/8	M5	13	7,5	14	160221805
G1/8	G1/8	15	15	14	160221818
G1/4	G1/8	19	9,5	17	160222818
G1/4	G1/4	22	22	17	160222828
G3/8	G1/8	20	10,5	22	160223818
G3/8	G1/4	23	10,5	22	160223828
G3/8	G3/8	24	24	22	160223838
G1/2	G1/8	24	13	24	160224818
G1/2	G1/4	25	13	24	160224828
G1/2	G3/8	27,5	13	24	160224838
G1/2	G1/2	30	30	26	160224848
G3/4	G1/2	30	14,5	30	160226848
G3/4	G3/4	31	31	32	160226868
G1	G3/4	39	17	40	160228868
G1	G1	45,5	46,5	41	160228888

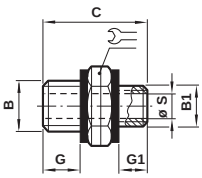
Nipple adaptor 15020
ISO R taper thread



B	B1	C	G	G1	Ø S	⌓	Model
R1/8	R1/8	19,5	7,5	7,5	5,5	12	150201818
R1/4	R1/8	23,5	11	7,5	5,5	14	150202818
R1/4	R1/4	27	11	11	6,4	14	150202828
R3/8	R1/8	24	11,5	7,5	5,5	17	150203818
R3/8	R1/4	27,5	11,5	11	8	17	150203828
R3/8	R3/8	28	11,5	11,5	11	17	150203838
R1/2	R1/8	27	14	7,5	5,5	22	150204818
R1/2	R1/4	30,5	14	11	8	22	150204828
R1/2	R3/8	31	14	11,5	11	22	150204838
R1/2	R1/2	33,5	14	14	15	22	150204848
R3/4	R1/4	37	19	11	6,4	27	150206828
R3/4	R3/8	39	19	12,5	9	27	150206838
R3/4	R1/2	37,5	16	14	15	27	150206848
R3/4	R 3/4	40	16,5	16,5	19	27	150206868
R1	R3/8	43	22	12,5	9	36	150208838
R1	R1/2	46	22	16	12,5	36	150208848
R1	R3/4	43	19	16,5	19	34	150208868
R1	R1	45,5	19	19	23	34	150208888

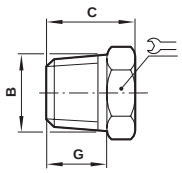
Dimensions shown in mm

Nipple adaptor 16020
ISO G parallel thread with seal



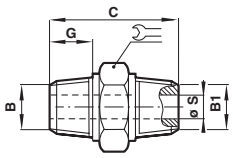
B	B1	C	G	G1	Ø S	⌯	Model
M5	M5	11,5	4	4	2	8	160200505
G1/8	M5	14,5	6	4	2	14	160201805
G1/8	G1/8	16,5	6	6	5,5	14	160201818
G1/4	G1/8	19	8	6	5,5	17	160202818
G1/4	G1/4	21	8	8	8	17	160202828
G3/8	G1/4	22	9	8	8	19	160203828
G3/8	G3/8	23	9	9	11	19	160203838
G1/2	G1/4	23,5	10	8	8	24	160204828
G1/2	G3/8	24,5	10	9	11	24	160204838
G1/2	G1/2	25,5	10	10	15	24	160204848
G3/4	G1/2	27,5	12	10	15	30	160206848
G3/4	G3/4	53	14,5	14,5	18	32	160206868
G1	G1/2	56,5	17,5	13,5	14	41	160208848
G1	G3/4	58	17,5	14,5	18	41	160208868
G1	G1	61	17,5	17,5	25	41	160208888

Plug 15005
ISO R taper thread



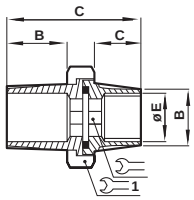
B	C	G	⌯	Model
R1/8	14,5	9,5	10	150050018
R1/4	16,5	11	14	150050028
R3/8	19	12,5	17	150050038
R1/2	22,5	16	22	150050048
R3/4	27	19	27	150050068
R1	30	22	36	150050088

Nipple adaptor 15420
NPT thread



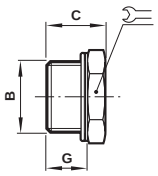
B	B1	C	Ø D	G	G1	⌯	Model
1/8 NPT	R1/8	27	4,5	9,5	9,5	11	154201818
1/4 NPT	R1/4	3,5	7,5	11	14,5	14	154202828
3/8 NPT	R3/8	37	9,5	12,5	14,5	17	154203838
1/2 NPT	R1/2	46,5	12,5	16	19	22	154204848
3/4 NPT	R3/4	47,5	17,5	19	19	27	154206868

Flat union 15033
ISO R taper thread



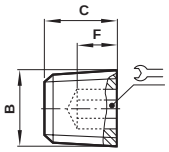
B	C	E	F	⌯	⌯1	Model
R1/8	33,5	15	10	5	15	150331818
R1/4	42	18,5	13	8	24	150332828
R3/8	43	19	13	10	27	150333838
R1/2	52	23	17,5	14	30	150334848
R3/4	56,5	25	19	17	38	150336868
R1	68	29	23	19	46	150338888

Plug 16005
ISO G parallel thread with seal



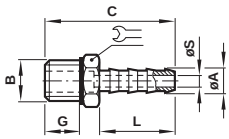
B	C	G	⌯	Model
M5	7,5	4	8	160050005
G1/8	10	6,5	14	160050018
G1/4	13	9	17	160050028
G3/8	13,5	9,5	19	160050038
G1/2	14,5	10	24	160050048
G3/4	16	11	30	160050068
G1	17	12	40	160050088

Plug 25013
ISO R taper thread



B	C	F	⌲	Model
R1/8	8	6	5	250130018
R1/4	10	8	6	250130028
R3/8	11	8	8	250130038
R1/2	13	8	10	250130048
R3/4	17	11	14	250130068
R1	18	13	17	250130088

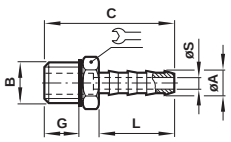
Hose adaptor 29117
ISO R taper thread



Ø A	B	C	G	L	Ø S min.	⌲	Model
4	R1/8	32	7,5	19,5	3,2	12	291170418
6	R1/8	32	7,5	19,5	3,2	12	291170618
6	R1/4	35,5	11	19,5	3,2	14	291170628
6	R3/8	42,5	14,5	22,5	5	17	291170638
7	R1/8	32	7,5	19,5	5	12	291170718
7	R1/4	35,5	11	19,5	6	14	291170728
7	R3/8	36	11,5	19,5	6	17	291170738
8	R1/4	35,5	11	19,5	7,5	14	291170828
8	R3/8	36	11,5	19,5	7,5	17	291170838
9	R1/8	36	8,5	22,5	5	13	291170918
9	R1/4	41	12,5	22,5	7,6	14	291170928
9	R3/8	42,5	14	22,5	7,6	17	291170938
9	R1/2	45,5	17	22,5	7,6	22	291170948
10	R1/8	36	8,5	22,5	8,8	13	291171018
10	R1/4	35,5	11	19,5	7,5	14	291171028
10	R3/8	36	11,5	19,5	7,5	17	291171038
12	R3/8	36	11,5	19,5	9,5	17	291171238
13	R1/4	48,5	12,5	29,5	7	16	291171328
13	R3/8	49,5	14,5	29,5	11	17	291171338
13	R1/2	52,5	16,8	29,5	11	22	291171348
13	R3/4	55	18,5	29,5	11	27	291171368
16	R3/8	36	11,5	19,5	11	19	291171638
16	R1/2	39	14	19,5	12,5	22	291171648
16	R3/4	43,5	16,5	19,5	14,5	27	291171668
19	R3/8	58,5	14,5	38	11	22	291171938
19	R1/2	61	17	38	14	22	291171948
19	R3/4	63,5	18,5	38	17,5	27	291171968
25	R3/4	63,5	18,5	38	18	27	291172568
25	R1	67,5	21,5	38	22	35	291172588
32	R1	72,5	21,5	43	24	35	291173288

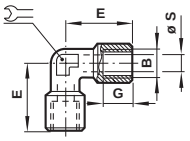
Dimensions shown in mm

Hose adaptor 29217
metric and ISO G parallel thread
with seal



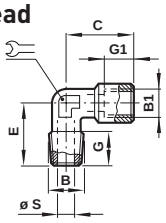
Ø A	B	C	G	L	Ø S min.	⌲	Model
2,5	M3	14	3,5	7,5	1,8	5	292170203
3	M5	15,5	3,5	7,5	2	8	292170305
3	G1/8	21	7,5	7,5	2	14	292170318
4	G1/8	36,5	7,5	22,5	3,3	14	292170418
4	G1/4	40,5	10	22,5	3,3	19	292170428
5	G1/8	36,5	7,5	22,5	4	14	292170518
6	G1/8	36,5	7,5	22,5	5	14	292170618
6	G1/4	40,5	10	22,5	5	19	292170628
6	G3/8	43	11,5	22,5	5	22	292170638
9	G1/8	36,5	7,5	22,5	7,5	14	292170918
9	G1/4	40,5	10	22,5	7,5	19	292170928
9	G3/8	43	11,5	22,5	7,5	22	292170938
9	G1/2	47	15	22,5	7,5	27	292170948
13	G1/4	47,5	10	29,5	11	19	292171328
13	G3/8	49,5	11,5	29,5	11	22	292171338
13	G1/2	54,5	15	29,5	11	27	292171348
13	G3/4	59,5	16,5	29,5	11	32	292171368
19	G3/4	67,5	16,5	38	17,5	32	292171968

Elbow 16042
ISO G parallel thread



B	E	G	Ø S	⌲	Model
G1/8	21	7	5,5	12	160420018
G1/4	25,5	9,5	8	13	160420028
G3/8	28	11,5	11	16	160420038
G1/2	32	15	15	20	160420048
G3/4	36,5	14,5	19	27	160420068

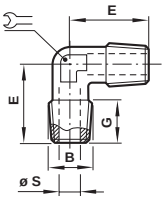
Elbow 15043
ISO G parallel and ISO R taper thread



B	B1	C	E	G	G1	Ø S	⌲	Model
R1/8	G1/8	21	18,5	8	7	5,5	12	150430018
R1/4	G1/4	25,5	24	11	9,5	8	13	150430028
R3/8	G3/8	28	27	11,5	11,5	11	16	150430038
R1/2	G1/2	32	29,5	14	13	15	20	150430048
R3/4	G3/4	36,5	32	14,5	14,5	19	27	150430068

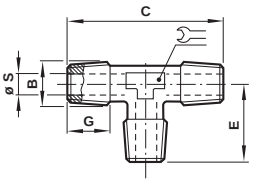
Dimensions shown in mm

Elbow 15040
ISO R taper thread



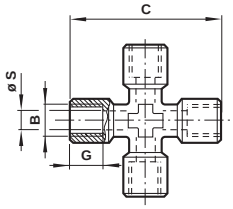
B	E	G	Ø S		Model
R1/8	18,5	7,5	6	12	150400018
R1/4	24	11	8	13	150400028
R3/8	27	12	11	16	150400038
R1/2	29,5	14	15	20	150400048

Tee 15060
ISO R taper thread



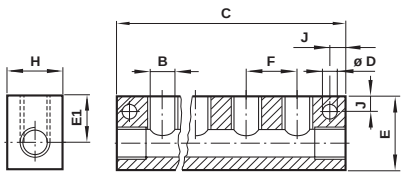
B	C	E	G	Ø S		Model
R1/4	46	23	11	8	13	150600028

Cross 16092
ISO G parallel thread



B	C	G	Ø S	Model
G1/8	39	8,5	6	160920018
G1/4	50	11	8	160920028
G3/8	56	12	11	160920038
G1/2	64	15	15	160920048

Manifold 34050
ISO G parallel thread



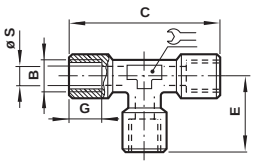
Numbers of outports: 4

B	C	Ø D	E	E1	F	H	J	Model
G1/8	81	5,5	25	15	17	16	5	34050401
G1/4	109	5,5	31	20	23	23	5	34050402
G3/8	127	6,5	35	23	27	25,5	6	34050403

Numbers of outports: 6

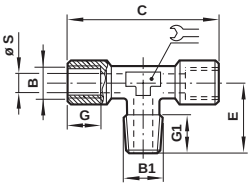
B	C	Ø D	E	E1	F	H	J	Model
G1/8	115	5,5	25	15	17	16	5	34050601
G1/4	155	5,5	31	20	23	23	5	34050602
G3/8	181	6,5	35	23	27	25,5	6	34050603

Tee connector 16062
ISO G parallel thread



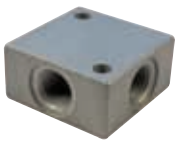
B	C	E	G	Ø S		Model
G1/8	39	19,5	8,5	6	12	160620018
G1/4	49	14,5	11	8	13	160620028
G3/8	54	27	12	11	16	160620038
G1/2	64	29	15	15	20	160620048
G3/4	73	36,5	14,5	19	27	160620068

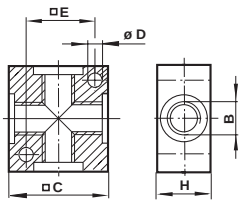
Tee 15069
ISO G parallel and ISO R taper thread



B	B1	C	E	G	G1	Ø S		Model
G1/8	R1/8	39	17,5	8,5	8	6	12	150690018
G1/4	R1/4	49	23	11	11	8	13	150690028
G3/8	R3/8	54	25,5	12	11,5	11	16	150690038
G1/2	R1/2	64	29	15	14	15	20	150690048
G3/4	R3/4	73	32	16,5	14,5	19	27	150690068

Cross block 16094
ISO G parallel thread

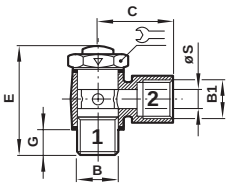




B	C	Ø D	E	H	Model
G1/8	25	4,5	17,5	16	160940018
G1/4	40	5,5	27	20	160940028
G3/8	50	5,5	35	25	160940038
G1/2	50	5,5	35	32	160940048

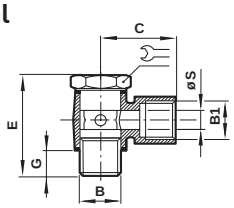
Elbow banjo assembly 16K51
regulating out, opreating pressure 10 bar,
ISO G parallel thread with seal

Dimensions shown in mm



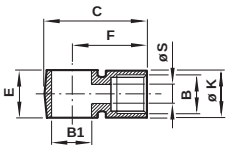
B/B1	C	E	G	Ø S		Model
G1/8	21	34	5	6	14	16K511818
G1/4	28	37	6	7,6	17	16K512828
G3/8	31	52	9,5	9,6	22	16K513838
G1/2	47	58	12	9,6	27	16K514848

Elbow banjo assembly 16A51
non-regulating
ISO G parallel thread with seal



B/B1	C	E	G	Ø S		Model
G1/8	21	29	5	6	14	16A511818
G1/4	28	32	6	7,6	17	16A512828
G3/8	31	45	9,5	9,6	22	16A513838
G1/2	47	47	12	9,6	27	16A514848

Elbow banjo body 16051



B/B1	C	E	F	Ø K	Ø S	Model
G1/8	28	14	21	13	6	160511818
G1/4	37	16	28	16	7,6	160512828
G3/8	42	20,5	31	20,5	9,6	160513838
G1/2	61	22	47	24,5	9,6	160514848

TUBING

Nylon tube
PA2

Ø 3 ... 16 mm

Available in a range of colours for ease of identification

In addition to general industrial applications Nylon is suitable for use on air braking systems of commercial vehicles and conforms to DIN 74324 (applicable sizes: 6, 8, 10, 12, 16mm O/D)

25 metre lengths supplied in cartons providing good protection and easy storage

+20°C (+68°F)

-40°C (-40°F)

Technical features

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 (polyamide) type 12, fully plasticised and light stabilised. Metric tube meets the requirements of DIN 74324

Technical data

Colour	Length (m)	O/D I/D tube 4/2,5	5/3*	6/4	8/6	10/7,5	12/9	14/11*	16/12
Natural	25	PA2-0004025C	PA2-0005025C	PA2-0006025C	PA2-0008025C	PA2-0010025C	PA2-0012025C	PA2-0014025C	PA2-0016025C
Natural	100	PA2-0004100	-	PA2-0006100	PA2-0008100	PA2-0010100	PA2-0012100	-	-
Red	25	PA2-0104025C	PA2-0105025C	PA2-0106025C	PA2-0108025C	PA2-0110025C	PA2-0112025C	PA2-0114025C	PA2-0116025C
Red	100	PA2-0104100	-	PA2-0106100	PA2-0108100	PA2-0110100	PA2-0112100	-	-
Green	25	PA2-0204025C	PA2-0205025C	PA2-0206025C	PA2-0208025C	PA2-0210025C	PA2-0212025C	PA2-0214025C	PA2-0216025C
Green	100	PA2-0204100	-	PA2-0206100	PA2-0208100	PA2-0210100	PA2-0212100	-	-
Yellow	25	PA2-0304025C	PA2-0305025C	PA2-0306025C	PA2-0308025C	PA2-0310025C	PA2-0312025C	PA2-0314025C	PA2-0316025C
Yellow	100	PA2-0304100	-	PA2-0306100	PA2-0308100	PA2-0310100	PA2-0312100	-	-
Blue	25	PA2-0504025C	PA2-0505025C	PA2-0506025C	PA2-0508025C	PA2-0510025C	PA2-0512025C	PA2-0514025C	PA2-0516025C
Blue	100	PA2-0504100	-	PA2-0506100	PA2-0508100	PA2-0510100	PA2-0512100	-	-
Black	25	PA2-0704025C	PA2-0705025C	PA2-0706025C	PA2-0708025C	PA2-0710025C	PA2-0712025C	PA2-0714025C	PA2-0716025C
Black	100	PA2-0704100	-	PA2-0706100	PA2-0708100	PA2-0710100	PA2-0712100	-	-
Silver	25	PA2-0904025C	PA2-0905025C	PA2-0906025C	PA2-0908025C	PA2-0910025C	PA2-0912025C	PA2-0914025C	PA2-0916025C
Silver	100	PA2-0904100	-	PA2-0906100	PA2-0908100	PA2-0910100	PA2-0912100	-	-

*Tube size does not conform to DIN 74324

Option selector

PA2-0★★★★★★★

Colour	Substitute
Natural	0
Red	1
Green	2
Yellow	3
Blue	5
Black	7
Silver	9

Packaging	Substitute
25 m Carton/Box	C
100 m Plastic bag	None
Length (m)*	**Substitute**
25	025
100	100
Outer diameter	**Substitute**
3	03
4	04
5	05
6	06
8	08
10	10
12	12
14	14
16	16

Nylon tube PA2

Ø 3 ... 16 mm

Maximum operating pressures and bend radi

	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16
Max. pressure (bar)* at -40 ... +20°C	-	31	33	27	19	19	19	16	19
Min. bend radius	-	25	25	30	40	60	60	80	95

Maximum continuous working temperature: nylon +80°C

* Multiply by factors in table below for use at higher temperatures

Operating pressure/temperature conversion factors

Working temperature	Factor (Nylon)
–40 ... +20°C	1,00
+30°C	0,83
+40°C	0,75
+50°C	0,64
+60°C	0,57
+80°C	0,47

To calculate working pressures at various temperatures, multipy working pressure at -40 ... +20°C by factor given in table
Maximum continuous working temperature: +80°C

Accessories

Tubing channels

Model	Tube Ø	No. of channels
100HA0600	6	10
100HA0800	8	10
100H61200	12	6

Tube clips – single sided

Model	Tube Ø	Number of tubes
34021804	6	1
34021904	6	2
34021805	8	1
34021905	8	2
34021806	10	1
34021906	10	2
34021807	12	1
34021907	12	2
34021508	16	1

Tube cutter

Model	Description
M/3314	Cutter
39012010	Replacement blade (pack of 10)
39012061	Replacement blade (1-off)

Nylon tube
PA
Ø 1/8" ... 3/4"

Available in a range of colours for ease of identification

+20°C (+68°F)

-40°C (-40°F)

Technical features

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 (polyamide) type 11 or 12, fully plasticised

Technical data

Colour	Length (inch)	O/D I/D tube 1/8" 0,065"	5/32 " 0,100"	3/16" 0,125"	1/4" 0,175"	5/16" 0,215"	3/8" 0,260"	1/2" 0.370"	5/8" 0,470"	3/4" 0,590"
Natural	50' coils	PA0051050C	PA0052050C	PA0053050C	PA0054050C	PA0055050C	PA0056050C	PA0057050C	PA0058050	PA0059050
Red	50' coils	–	PA0152050C	PA0153050C	PA0154050C	PA0155050C	PA0156050C	PA0157050C	–	PA0159050
Black	50' coils	PA0751050C	PA0752050C	PA0753050C	PA0754050C	PA0755050C	PA0756050C	PA0157050C	–	–
Blue	50' coils	PA0551050C	PA0552050C	PA0553050C	PA0554050C	PA0555050C	PA0556050C	PA0557050C	–	–
Brown	50' coils	–	PA0452050C	PA0453050C	PA0454050C	PA0455050C	PA0456050C	PA0457050C	–	–
Green	50' coils	PA0251050C	PA0252050C	PA0253050C	PA0254050C	PA0255050C	PA0256050C	PA0257050C	–	–
Yellow	50' coils	PA0351050C	PA0352050C	PA0353050C	PA0354050C	PA0355050C	PA0356050C	PA0257050C	–	–

Option selector

PA0★5★050★

Colour	Substitute
Natural	0
Red	1
Green	2
Yellow	3
Brown	4
Blue	5
Black	7

Cartons	Substitute
Without	None
With	C
Outer diameter	**Substitute**
1/8"	1
5/32"	2
3/16"	3
1/4"	4
5/16"	5
3/8"	6
1/2"	7
5/8"	8
3/4"	9

Nylon tube
PA
Ø 1/8" ... 3/4"

Maximum operating pressures and bend radi

	Ø 1/8"	Ø 5/32"	Ø 3/16"	Ø 1/4"	Ø 5/16"	Ø 3/8"	Ø 1/8"	Ø 5/8"	Ø 3/4"
Max. pressure (bar)* at -40 ... +20°C	28	26	21,8	20	19,3	18,2	14,5	13,2	10,8
Min. bend radius	0,8"	1"	1,5"	1,7"	2"	2,5"	3"	4"	6"

Maximum continuous working temperature: nylon +80°C

* Multiply by factors in table below for use at higher temperatures

Operating pressure/temperature conversion factors

Working temperature	Factor (Nylon)
–40 ... +20°C	1,00
+30°C	0,83
+40°C	0,75
+50°C	0,64
+60°C	0,57
+80°C	0,47

To calculate working pressures at various temperatures, multipy working pressure at -40 ... +20°C by factor given in table
Maximum continuous working temperature: +80°C

Accessories

Tube clips single sided

Model	Tube Ø	Number of tubes
34021803	3/16"	1
34021903	3/16"	2
34021804	1/4"	1
34021904	1/4"	2
34021805	5/16"	1
34021905	5/16"	2
34021806	3/8"	1
34021906	3/8"	2
34021807	1/2"	1
34021807	1/2"	2
34021508	5/8"	1
34021509	3/4"	1

Tube cutter

Model	Description
M/3314	Cutter
39012010	Replacement blade (pack of 10)
39012061	Replacement blade (1-off)

Rail vehicle approved nylon tubing
LPA2, LPA3

Ø 6 ... 12 mm

Fire and smoke resistant nylon tubing designed for applications on railway vehicles

Tube tested and conforming to the following standards;
DIN 54 837: 2007-12
DIN EN ISO 5659-2: 2007
DIN 5510: 2007-10 (see details below).
Smoke toxicity test to DIN5110-2:2009-05

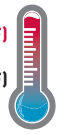
Additionally tested and conforming to;
NF X 70-100 : 2006
NF X - 10-702 : 1995 (see details below)

Dimensionally compatible with DIN 74324

Suitable for use with Norgren Fleetfit vehicle fittings

+100°C (+212°F)

-60°C (-76°F)



Technical features

Medium:
Compressed air
Dimensional standard:
Conforming to DIN 74324
Operating pressure:
See below

Operating temperature:
-60 ... +100°C max.
(-76 ... +212°F max.)
Note: pressure/temperature conversations factor see below

Tube colour:
Grey
Standard length:
50 m

Materials
Vestamide Nylon PA12

Technical data

Outer Ø (mm)	Wall thickness (mm)	Inner Ø (mm)	Operating pressure at 20°C max.* (bar)	Burst pressure at 20°C (bar)	Min. bend radius (mm)
6	1	4	26	78	30
8	1	6	19	57	50
8	1,5	5	30	90	50
10	1	8	14	42	20
12	1,5	9	19	57	30

* Multiply by factors in the below table for use at higher temperatures

Pressure/temperature conversation factors

Working temperature	Factor
-60 ... +20°C	1
-60 ... +30°C	0,83
-60 ... +40°C	0,72
-60 ... +50°C	0,64
-60 ... +60°C	0,57
-60 ... +70°C	0,52
-60 ... +80°C	0,47
-60 ... +90°C	0,44
-60 ... +100°C	0,36

Testing results DIN 5510-2

Flamibility class	S 4
Smoke development class	SR 2
Dripping class	ST 2
Toxicity	(request test report)

Additional testing

Test standard	NF X 70 – 100 : 2006
	Fire tests - Analysis of gaseous effluents - Part 2: Tubular furnace thermal degradation method
	NF X 10 – 702 : 1995
	Fire test methods - Determination of the opacity of the fumes in an atmosphere without air renewal
Classification standard	NF F 16 – 101 : 1988
	Rolling stock - Fire behaviour - Materials choosing
Test result	The requirements of Class F 2 were fulfilled

Rail vehicle approved nylon tubing
LPA2, LPA3

Ø 6 ... 12 mm

Option selector

LPA★-06★★050

Tube size to DIN 74324	Substitute
Conforming	2
Non conforming	3
Tube size	**Substitute**
6	06
8	08
10	10
12	12

Order numbers

Colour	Coil length (m)	Outer Ø (mm)	Wall thickness (mm)	Inner Ø (mm)	Model
Grey	50	6	1	4	LPA2-0606050
Grey	50	8	1	6	LPA2-0608050
Grey	50	8*	1,5*	5	LPA3-0608050
Grey	50	10	1	8	LPA2-0610050
Grey	50	12	1,5	9	LPA2-0612050

* Tube size does not conform to DIN 74324

Accessories

Tube clips single sided

Model	Tube Ø	Number of tubes
34021804	6	1
34021904	6	2
34021805	8	1
34021905	8	2
34021806	10	1
34021906	10	2
34021807	12	1
34021907	12	2

Tube cutter

Model	Description
M/3314	Cutter
39012010	Replacement blade (pack of 10)
39012061	Replacement blade (1-off)

Fittings

Fittings

For fittings conforming to DIN 74324 see the Fleetfit range on page 5-14

NORGREN RAILINE

“Innovation that improved reliability also improved performance and passenger safety”

Door control assembly

Pneumatic door systems mounted separately in the ceiling of class 14X, 15X and 170 vehicles along with piping and regulators suffered from poor reliability, causing frequent delays to schedules

A Norgren custom-built replacement was designed to be easier to replace and engineered to a higher specification to eliminate the need for individually piped and wired valves. The simplified design comprised a single plug-in block that housed Nugget 40 valves with T20 regulators.

The ‘modular door control assembly’ achieved the customers’ goal of a key system with greater reliability that took less time to replace. In addition, the new replacement improved performance and safety.

FOUR STAGE FILTRATION SYSTEM

ALUMINIUM FITTINGS ARE 65% LIGHTER

MODULAR DOOR CONTROL ASSEMBLY

courtesy of
Train Door Solutions Ltd. (TDS)

‘Rail industry innovation’

FOUR STAGE FILTRATION SYSTEM

Designed to remove oil and water carried through to the vehicle sub-systems, increased reliability and reduced both maintenance and system failure costs.

ALUMINIUM FITTINGS ARE 65% LIGHTER

Lighter than conventional brass fittings, Norgren aluminium fittings are installed without specialist tools and connections can be re-made without damaging tubing. They can replace conventional fittings in most pneumatic applications including auxiliary systems, door controls and brakes.

Visit norgren.com/rail

ACCESSORIES

LT1000
Block form flow regulators (uni-directional)
1/8" & 1/4"

Page 7-02

LT1100
Block form flow regulators (bi-directional)
1/8" & 1/4"

Page 7-04

LT70
Quick exhaust valves
1/8" & 1/4"

Page 7-06

LS/520, LC/520
Heavy duty non-return valves
1/4" ... 1"

Page 7-08

LT65
Shuttle valves ('OR' logic function)
1/4"

Page 7-09

T40
Quietaire sintered bronze silencers
M5, 1/8" ... 1"

Page 7-10

MA & MB
Heavy duty silencers
1/8" ... 2"

Page 7-12

M/1500
Exhaust filter
G1/8 ... G1

Page 7-14

0613422, 0613423
Exhaust guard
1/4" & 1/2"

Page 7-15

60 series
Brass ball valves
G 1/8 ... G 3, Rp 1/4 ... Rp 2

Page 7-16

0310000
Strainer
G1/4 ... G2

Page 7-20

Block form flow regulators (uni-directional) LT1000

1/8" & 1/4"

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

Wide temperature range

Shock and vibration resistant to EN 61373, Category 1, class A and B

***Note: In areas of vibration use of panel mounting is not recommended**

EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

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

Operating pressure:
1 ... 10 bar (14.5 ... 145 psi)

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials
Body: aluminium alloy (painted)
Seals: low nitrile
Internal parts: brass
External parts: aluminium alloy (anodised)
Needle: brass (nickel plated)

Technical data

Symbol	Port size	Max. regulated flow factor C dm³/s.bar	Cv	Kv m³/h	Free flow factor C dm³/s	Cv	Kv m³/h	Opening pressure (bar)	Weight (kg)	Model
	G1/8	0,57	0,14	0,12	1,50	0,37	0,32	< 0,1	0,031	LT1000C1800
	1/8 NPT	0,57	0,14	0,12	1,50	0,37	0,32	< 0,1	0,031	LT1000A1800
	G1/4	1,30	0,32	0,28	2,80	0,69	0,6	< 0,1	0,056	LT1000C2800
	1/4 NPT	1,30	0,32	0,28	2,80	0,69	0,6	< 0,1	0,056	LT1000A2800

Option selector

LT1000★★★00

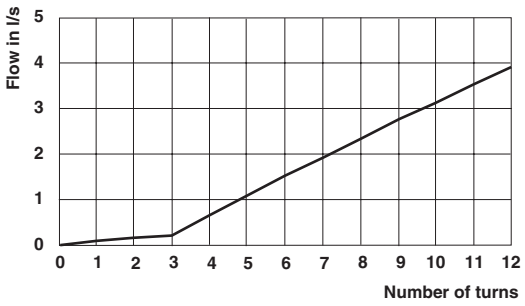
Thread form	Substitute
ISO G parallel	C
NPT	A

Port size	Substitute
1/8"	18
1/4"	28

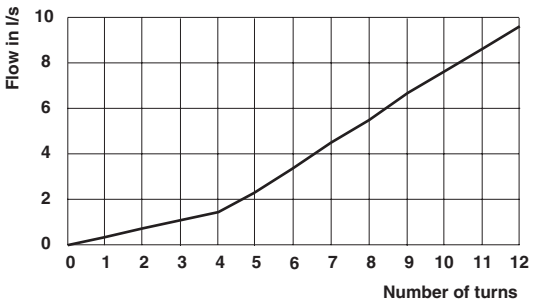
Block form flow regulators (uni-directional)
LT1000
1/8" & 1/4"

Flow vs turns at 6 bar – flow in dm³/s

1/8" version

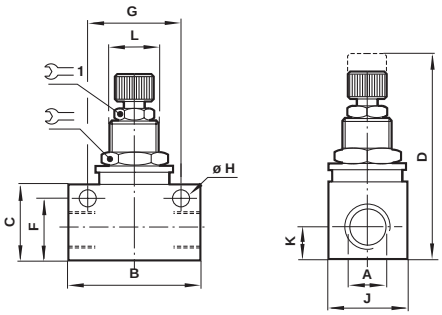


1/4" version



Dimensions

Dimensions shown in mm
Projection/First angle



Dimensions shown in mm

A	B	C	D	F	G	H	J	K	L		1	Panel hole	Max. panel thickness	Model
1/8"	34,0	20,0	51,0	16,5	24,0	4,5	16,0	8,0	M12x1	14	9	12,5	4,0	LT1000#1800
1/4"	45,0	25,5	61,5	21,0	32,0	4,5	19,0	9,5	M14x1	17	9	14,5	4,0	LT1000#2800

Please insert 'C' for ISO G and 'A' for NPT thread

Block form flow regulators (bi-directional)
LT1100

1/8" & 1/4"

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

Wide temperature range

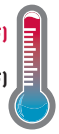
Shock and vibration resistant to EN 61373, Category 1, class A and B

***Note: In areas of vibration use of panel mounting is not recommended**

EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

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

Operating pressure:
0 ... 10 bar (0 ... 145 psi)

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials
Body: aluminium alloy (painted)
Seals: low nitrile
Internal parts: brass
External parts: aluminium alloy (anodised)
Needle: brass (nickel plated)

Technical data

Symbol	Port size	Max. regulated flow factor C dm³/s.bar	Cv	Kv m³/h	Min. operating pressure (bar)	Opening pressure (bar)	Weight (kg)	Model
	G1/8	0,57	0,14	0,12	0	< 0,1	0,031	LT1100C1800
	1/8 NPT	0,57	0,14	0,12	0	< 0,1	0,031	LT1100A1800
	G1/4	1,3	0,32	0,28	0	< 0,1	0,056	LT1100C2800
	1/4 NPT	1,3	0,32	0,28	0	< 0,1	0,056	LT1100A2800

Option selector

LT1100★★★00

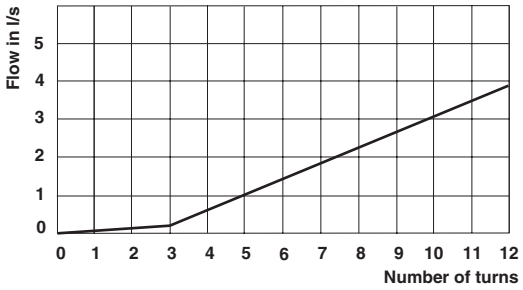
Thread form	Substitute
ISO G parallel	C
NPT	A

Port size	Substitute
1/8"	18
1/4"	28

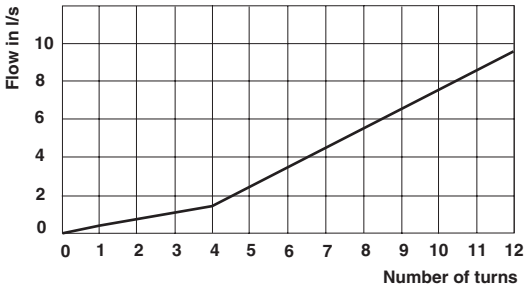
Block form flow regulators (bi-directional)
LT1100
1/8" & 1/4"

Flow vs turns at 6 bar – flow in dm³/s

1/8" version

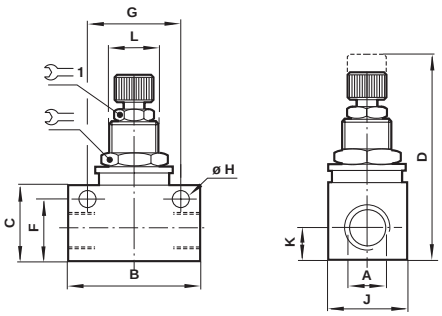


1/4" version



Dimensions

Dimensions shown in mm
Projection/First angle



Dimensions shown in mm

A	B	C	D	F	G	H	J	K	L		1	Panel hole	Max. panel thickness	Model
1/8 "	34,0	20,0	51,0	16,5	24,0	4,5	16,0	8,0	M12 x 1	14	9	12,5	4,0	LT1100#1800
1/4"	45,0	25,4	61,5	20,8	32,0	4,5	19	9,5	M14 x 1	17	9	14,5	4,0	LT1100#2800

Please insert 'C' for ISO G and 'A' for NPT thread

Quick exhaust valve
LT70
1/8" & 1/4"

Enables air to be exhausted quickly from air cylinders

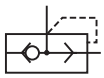
Allows higher cylinder speeds to be achieved

Simple, compact design and construction

Very reliable in operation

Wide temperature range

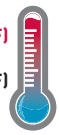
Shock and vibration resistant to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated
Operation:
Poppet valve

Mounting:
Line mounted
Operating pressure:
0,5 ... 10 bar (7 ... 145 psi)

Operating temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body and cover: aluminium or zinc alloy
Seals: nitrile rubber

Technical data

Symbol	Port size	Flow factor Kv *1) 1 - 2	2 - 3	Flow factor Cv 1 - 2	2 - 3	Flow at 6 bar operating pressure (m^3/h) 1 - 2	2 - 3	Weight kg	lb	Spare kits	Model with ISO G-threads	Model with NPT-threads
	1/8"	1,06	1,23	0.9	1.8	95,80	110,9	0,15	0.33	LT70C1800K0	LT70C1800	LT70A1800
	1/4"	2,23	2,46	1.9	2.5	201,6	221,8	0,13	0.29	LT70C2800K0	LT70C2800	LT70A2800

*1) Measured in m^3/h

Option selector

LT70★★800

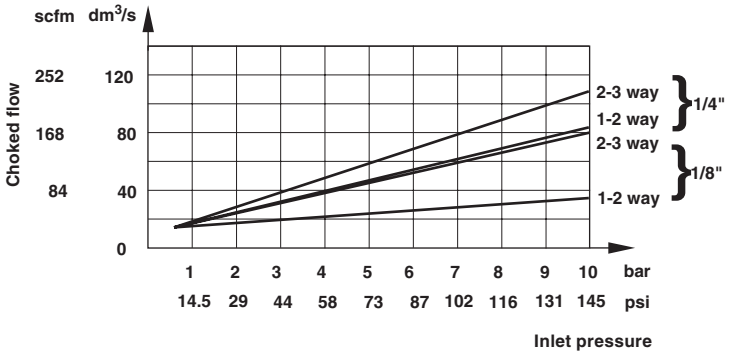
Thread form	Substitute
NPT	A
ISO G parallel	C

Port size	Substitute
1/8"	1
1/4"	2

Quick exhaust valve
LT70
1/8” ... 1/4”

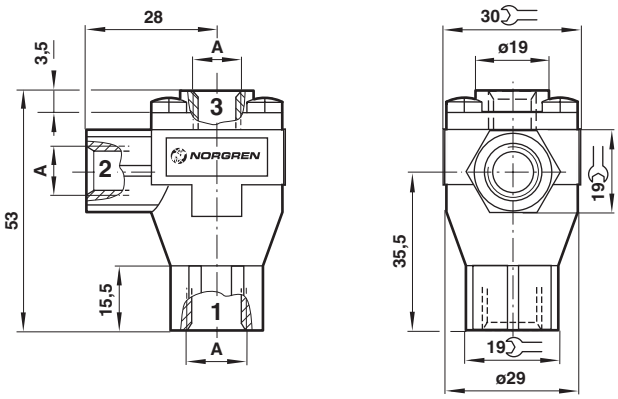
Characteristic curves

Choked flow versus inlet pressure
Way (1 - 2) + (2 - 3)D



Dimensions

Dimensions shown in mm
Projection/First angle



Model	LT70*1800	LT70*2800
A	1/8 "	1/4 "

* Please insered ‘C’ for ISO G or ‘A’ for NPT thread

Heavy duty non-return valves
LS/520, LC/520

1/4" ... 1"

Allows free flow of air in one direction only

Simple, reliable design

Wide temperature range

Shock and vibration resistant to EN 61373, Category 1, class A and B

EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air, filtered, lubricated and non-lubricated
Operation:
Non-return valve

Mounting:
Line mounted
Operating pressure:
0,2 ... 10 bar (3 ... 145 psi)

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials
Body: brass
Seals: low nitrile rubber
Valve: aluminium

Technical data

Symbol	Port size	Flow factor C dm³/s.bar	Cv	Kv m³/h	Cracking pressure (bar)	Weight (kg)	Model
	G1/4	4,3	1	0,92	< 0,2	0,09	LS/521
	1/4 NPT	4,3	1	0,92	< 0,2	0,09	LC/521
	G3/8	10,5	2,6	2,24	< 0,2	0,14	LS/532
	3/8 NPT	9,2	2,2	1,96	< 0,2	0,14	LC/532
	G1/2	17	4,2	3,62	< 0,2	0,21	LS/522
	1/2 NPT	13	3,2	2,77	< 0,2	0,21	LC/522
	G3/4	42	10,3	8,95	< 0,2	0,55	LS/523
	3/4NPT	38	9,3	8,1	< 0,2	0,55	LC/523
	G1	65	16	13,85	< 0,2	1,10	LS/524
	1 NPT	65	16	13,85	< 0,2	1,10	LC/524

Option selector

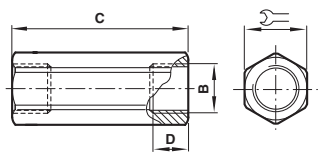
L★5★★

Thread form	Substitute
ISO G parallel	S
NPT *	C

* Product with National Pipe Straight Thread to suit male NPT fittings.

Port size	Substitute
1/4"	21
3/8"	32
1/2"	22
3/4"	23
1"	24

Dimensions



Dimensions shown in mm

B	C	D	⌓	Model
1/4"	48	11	19	L#/521
3/8"	62	13	22	L#/532
1/2"	76	17	27	L#/522
3/4"	92	18	36	L#/523
1"	124	25	45	L#/524

Shuttle valve ('OR' logic function)
LT65
1/4"

Allows two independent signal sources to be connected to a common pilot line

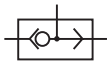
Can be used to perform an 'OR' logic function

Can be combined to operate from three or more sources

Valves can be ganged together

Wide temperature range

Shock and vibration resistant to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

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

Operation:
Shuttle valve ('OR' logic function)

Operating pressure:
0,7 ... 10 bar (10 ... 145 psi)

Ambient temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials
Body: brass
Ball: stainless steel
Seat: brass
Seals: low nitrile

Technical data

Symbol	Port size	C dm³/s.bar	Cv	Kv m³/h	Flow at 6 - 5 bar (l/min)	Weight (kg)	Model
	G 1/4	2,6	0,64	0,56	631	0,42	LT65C2800
	1/4 NPT	2,6	0,64	0,56	631	0,42	LT65A2800

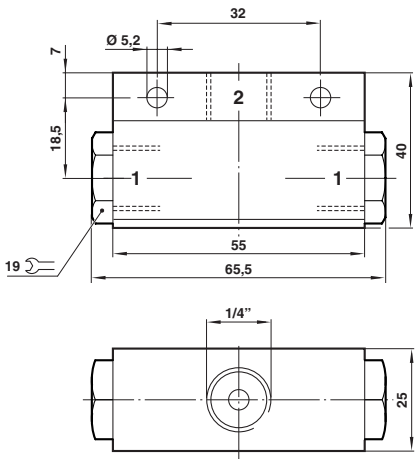
Option selector

LT65★2800

Thread form	Substitute
NPT	A
ISO G parallel	C

Dimensions

Dimensions shown in mm
Projection/First angle



Quietaire sintered bronze silencers
T40
M5, 1/8" ... 1"

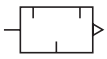
Reduce the noise levels of pneumatic equipment

Compact and efficient

Screw directly into the exhaust port

Prevent the ingress of dirt

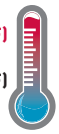
Shock and vibration resistant to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air, filtered, lubricated or non lubricated, vacuum, Inert gases
Operation:
Exhaust silencer or inlet filter

Operating pressure:
10 bar (145 psi) maximum
Mounting:
Directly in exhaust or vent port

Operating temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Element: sintered bronze
Body: brass

Technical data

Symbol	Port size	Flow factor Cv	Kv *1)	Continuous sound pressure level *2) 0,7 bar	6 bar	Weight kg	lb	Model with ISO G-threads BSPP	Model with ISO R-threads BSPT
	M5	0,2	0,21	56	70	0,004	**0.009**	T40M0500	–
	1/8"	0,54	0,53	66	75	0,01	**0.022**	T40C1800	T40B1800
	1/4"	1,6	1,34	68	78	0,02	**0.044**	T40C2800	T40B2800
	3/8"	3,5	2,98	75	84	0,045	**0.099**	T40C3800	T40B3800
	1/2"	5,1	4,47	75	88	0,07	**0.154**	T40C4800	T40B4800
	3/4"	9	7,88	87	96	0,13	**0.287**	T40C6800	T40B6800
	1"	11,6	10,22	93	100	0,2	**0.441**	T40C8800	T40B8800

*1) Measured in m^3/h
*2) SPL in dBA at 1 m from unit

Option selector

T40★★★00

Thread form	Substitute
Metric	A
ISO-BSPT	B
ISO-BSPP	C

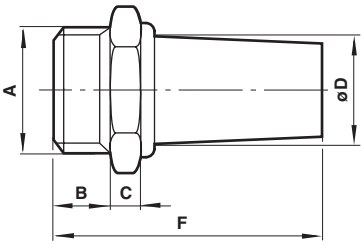
Port size	Substitute
M5	05
1/8"	18
1/4"	28
3/8"	38
1/2"	48
3/4"	68
1	88

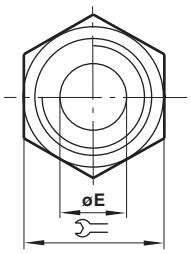
Quietaire sintered bronze silencers
T40
M5, 1/8" ... 1"

Dimensions

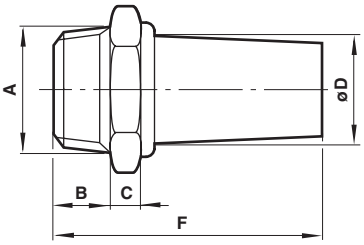
Dimensions shown in mm
Projection/First angle

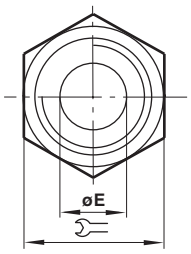
A	B	C	Ø D	Ø E	F		Model
M5	5	15	5	2,5	20	7	T40M0500
G1/8B	6	18	9,5	6	24	13	T40C1800
G1/4B	8	25	12	8,5	33	17	T40C2800
G3/8B	10	34	17	12	44	22	T40C3800
G1/2B	12	44	20	14,5	56	27	T40C4800
G3/4B	14	66	26	19	80	32	T40C6800
G1B	16	66	31	25	82	41	T40C8800





A	B	C	Ø D	Ø E	F		Model
R1/8	9,5	18	9,5	6	27,5	**13**	T40B1800
R1/4	11	25	12	8,5	36	**17**	T40B2800
R3/8	12,5	34	17	12	46,5	**22**	T40B3800
R1/2	16	44	20	14,5	60	**27**	T40B4800
R3/4	19	66	26	19	85	**32**	T40B6800
R1	22,5	66	31	25	88,5	**41**	T40B8800





Heavy duty silencers
MA & MB series
1/8" ... 2"

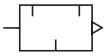
Reduce the noise levels of pneumatic equipment

High flow capacity with low back pressure

Brass mesh screen and aluminium construction

Provide improved flow, longer life and cleanable element

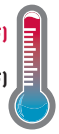
Shock and vibration resistant to EN 61373, Category 1, class A and B



EN 61373

+80°C (+176°F)

-40°C (-40°F)



Technical features

Medium:
Compressed air, filtered, lubricated and non-lubricated, inert gases
Operation:
Exhaust silencer

Operating pressure:
20 bar max. (290 psi)
Ambient temperature:
-40 ... +80°C max. (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials
Body: aluminium and shell,
Filter element: brass mesh

Technical data

Male thread

Port size	Flow factor Cv	C*1	Kv*2	Weight (kg)	Model ISO R	Model NPT
1/8	2	8,2	1,75	0,03	MB001B	MB001A
1/4	2,2	9	1,92	0,03	MB002B	MB002A
3/8	2,94	12	2,56	0,03	MBP03B	MBP03A
3/8	4,78	19,5	4,16	0,10	MB003B	MB003A
1/2	5,49	22,4	4,78	0,09	MB004B	MB004A
3/4	5,49	22,4	4,78	0,09	MBP06B	MBP06A
3/4	12,5	51	10,78	0,45	MB006B	MB006A
1	15,68	64	13,65	0,40	MB008B	MB008A
1 1/4	16,67	68	14,5	0,40	MBP10B	MBP10A

*1) Measured in $dm^3/(s.bar)$
*2) Measured in m^3/h

Female thread

Port size	Flow factor Cv	C*1	Kv*2	Weight (kg)	Model ISO Rc	Model NPT
1/8	2	8,2	1,75	0,03	MA001B	MA001A
1/4	2,57	10,5	1,29	0,03	MA002B	MA002A
3/8	5,83	23,8	5,07	0,10	MA003B	MA003A
1/2	5,71	23,3	4,97	0,09	MA004B	MA004A
3/4	16,18	66	14,07	0,45	MA006B	MA006A
1	16,67	68	14,5	0,40	MA008B	MA008A

Port size	Flow factor Cv	C*1	Kv*2	Weight (kg)	Model ISO G	Model NPT
1 1/4	26,7	110	23,45	0,62	MA010C	MA010A
1 1/2	40,93	167	35,6	0,60	MA012C	MA012A
2	53,9	220	46,9	0,76	MA016C	MA016A

Option selector

Male thread

MB★★★★

Port size	Substitute
1/8"	001
1/4"	002
3/8"	P03*
3/8"	003
1/2"	004
3/4"	P06*
3/4"	006
1"	008
1 1/4"	P10*

* Compact size

Thread form	Substitute
NPT	A
ISO R	B

Female thread

MA★★★★

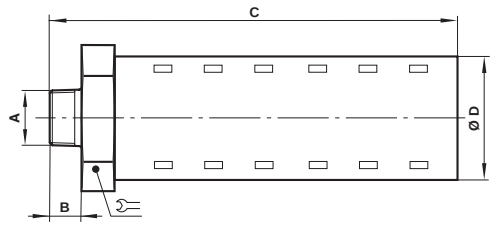
Port size	Substitute
1/8"	001
1/4"	002
3/8"	003
1/2"	004
3/4"	006
1"	008
1 1/4 "	010
1 1/2"	012
2"	016

Thread form	Substitute
NPT	A
ISO Rc	B *1)
ISO G parallel	C *1)

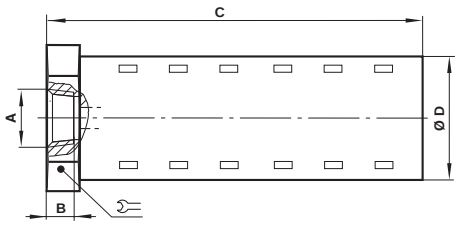
*1) See model on technical data table

Dimensions

Dimensions shown in mm



A	B	C	D	⌯	Model
1/8 inch	9	51	21	21	MB001#
1/4 inch	13	55	21	21	MB002#
3/8 inch	13	55	21	21	MBP03#
3/8 inch	13	88	32	32	MB003#
1/2 inch	17	92	32	32	MB004#
3/4 inch	17	92	32	32	MBP06#
3/4 inch	20	134	51	51	MB006#
1 inch	23	138	51	51	MB008#
1 1/4 inch	26	140	51	51	MBP10#



A	B	C	Ø D	⌯	Model
1/8 inch	6	42	21	21	MA001#
1/4 inch	9	45	21	21	MA002#
3/8 inch	9	78	32	32	MA003#
1/2 inch	12	83	32	32	MA004#
3/4 inch	12	118	51	51	MA006#
1 inch	15	118	51	51	MA008#
1 1/4 inch	15	144	64	64	MA010#
1 1/2 inch	15	144	64	64	MA012#
2 inch	16	168	76	76	MA016#

Exhaust filter
M/1500
G1/8 ... G1

Prevent the ingress of dirt with minimal flow restriction

Robust and compact

Screw directly into the exhaust port

Shock and vibration resistant to EN 61373, Category 1, class A and B

EN 61373

+80°C (+176°F)

-40°C (-40°F)

Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated, inert gases
Operation:
Exhaust filter

Mounting:
Directly in the exhaust port
Operating pressure:
10 bar (145 psi) maximum

Operating temperature:
-40 ... +80°C (-40 ... +176°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

Materials:
Body: aluminium alloy
Element: sintered bronze

Technical data

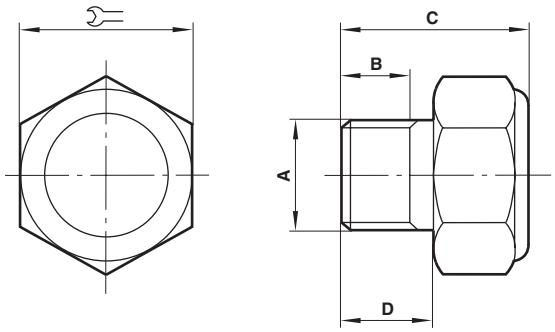
Port size	Flow factor Cv	Kv *1)	Weight kg	Weight lb	Model
G 1/8	0,49	0,426	0,006	0.013	M/1511
G 1/4	1,37	1,19	0,018	0.040	M/1512
G 1/2	2,75	2,39	0,030	0.066	M/1514
G 3/4	5,05	4,39	0,050	0.110	M/1516
G 1	6,47	5,62	0,091	0.200	M/1518

*1) Measured in m^3/h

Dimensions shown in mm
Projection/First angle

Dimensions

A	B	C	D	⌓	Model
G 1/8	6	16	8	15	M/1511
G 1/4	8	22	10	23,5	M/1512
G 1/2	10,5	25	13	30,5	M/1514
G 3/4	14	31	16	42,5	M/1516
G 1	15	35	19	47	M/1518



Exhaust guard
0613422, 0613423
1/4" & 1/2"

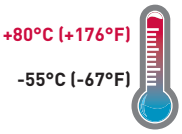
Suitable for outdoor use

Protects against contamination and moisture penetration

Compact, efficient, lightweight

Can be screwed directly into exhaust ports

Suitable for BSP or NPT thread



Technical features

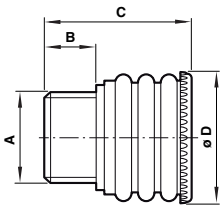
Medium:
Lubricated or non-lubricated compressed air, inert gases

Operation:
The non-return function protects the spring chamber of pneumatic actuators in particular against aggressive ambient air.

Operating pressure:
10 bar (145 psi) max.
Operating temperature:
-55 ... +80°C (-67 ... +176°F)

Materials
Housing: POM
'O'-rings: VMQ

Basic dimensions



Dimensions shown in mm

A	Suitable for	B	C	Ø D	Weight	Model
1/4"	G1/4, 1/4 NPT	10	26,5	21	5 g	0613422
1/2"	G1/2, 1/2 NPT	12	33,5	29	11 g	0613423

Brass ball valves
60 series

G 1/8 ... G 3

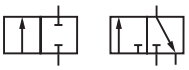
Ideally suited for most general applications

Easy installation, simple operation and maintenance free

Full bore passage giving minimum flow resistance

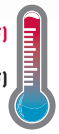
3-way ball valves with actuator interface conforming to ISO 5211 for rotary actuators

Wide temperature range



+220°C (+428°F)

-30°C (-22°F)



Technical features

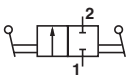
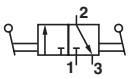
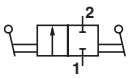
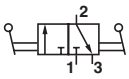
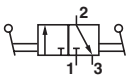
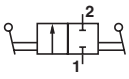
Medium:
Compressed air, water, inert gases and any other fluid compatible with the valve materials

Port sizes:
Mini G 1/8 ... G 1/2
Standard G 1/8 ... G 3
3-way G 1/4 ... G 3/4

Operating pressure:
See individual details
Operating temperature:
-30 ... +220°C (-22 ... +428°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials
Body: nickel plated brass to UNI 5705-65
Seats: virgin PTFE
Seals: virgin PTFE, FKM or nitrile
Ball: chromium plated brass
Handle with PVC grip: zinc plated steel (plastic handle on mini ball range)

Technical data

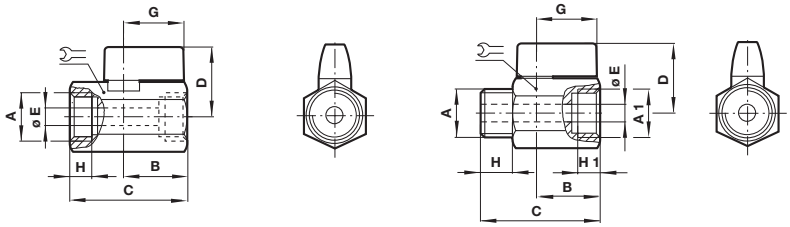
Symbol	Series	Type	Application	Materials Body	Seals/seals	Max. pressure (bar)	Temperature range	Thread standards
	6011	Mini	General, light duty	Brass	PTFE & nitrile 'O'ring	10	-10 ... +90°C	ISO 228/1
	6018	Lockable exhausting	General, with exhaust	Brass	PTFE	13,6	4 ... 60°C	ISO 228/1
	6021	Standard	General purpose	Brass	PTFE & viton 'O'ring	10 ... 45	-20 ... +150°C	ISO 228/1
	6021	Three way	General diverting	Brass	PTFE & nitrile 'O'ring	16 ... 25	-15 ... +150°C	ISO 228/1
	6021	Exhausting	General with exhaust	Brass	PTFE	40 ... 64	-20 ... +100°C	ISO 228/1
	6051	Standard	Air & low pressure	Carbon Steel Hydraulic	RTFE	138	-30 ... 220°C	ISO 228/1

6011: Light duty in-line brass ball valves suitable for a wide variety of low pressure industrial uses.
6018: Medium duty in-line brass exhausting ball valves. Venting action & lockout design adds safety feature to valve.
6021: Medium duty in-line brass ball valves for most applications. Available as a standard valve, a three way diverting valve or with a downstream exhaust option.
6051: Heavy duty ball valve, two piece bar stock construction

Dimensions

Dimensions shown in mm
Projection/First angle

6011 series, Miniball



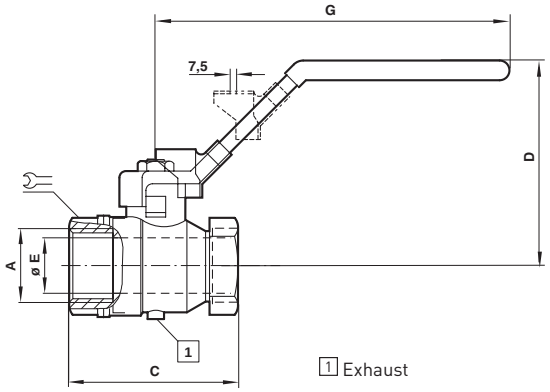
Reduced bore, female/female

A	B	C	D	Ø E	G	H		Weight (kg)	Model
G1/8	18	36	22	5,5	19	9	19	0,078	601112118
G1/4	18	36	22	5,5	19	9	19	0,071	601112128
G3/8	21	41	24	8,0	19	9	21	0,086	601112138
G1/2	25	48	30	10,0	22	10	25	0,137	601112148

Reduced bore, male/female

A	A1	B	C	D	Ø E	G	H	H1		Weight (kg)	Model
G1/8A	G1/8	20	37	22	5,5	19	9	9	19	0,063	601112218
G1/4A	G1/4	20	37	22	5,5	19	9	9	19	0,061	601112228
G3/8A	G3/8	21	41	24	8,0	19	9	9	21	0,083	601112238
G1/2A	G1/2	25	48	30	10,0	22	11	11	25	1,300	601112248

6018 series, Lockable exhausting ball valve



Full bore, female/female

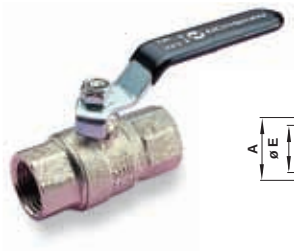
Max. pressure (bar)	A	B	Ø E	C	G		Weight (kg)	Model
13,6	G1/4	45	8	44	93	20	0,170	601812128
13,6	G3/8	45	9	44	93	20	0,160	601812138
13,6	G1/2	50	14	58	93	24	0,240	601812148
13,6	G3/4	57	19	64	114	30	0,370	601812168
13,6	G1	61	24	81	114	40	0,620	601812188

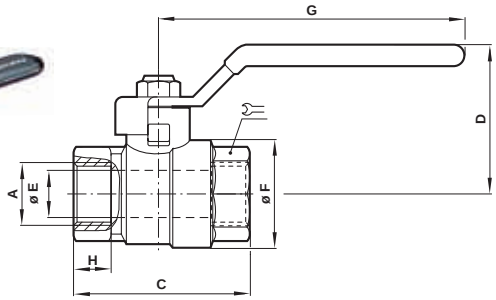
Lever lockable only in closed position. Standard handle accepts Ø 7 mm shackle.
Test specification differs from standard. Please consult our Technical Service for futher details.

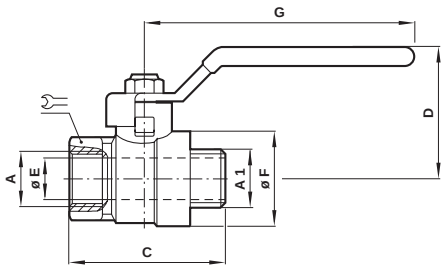
Brass ball valves
60 series
G 1/8 ... G 3

6021 series, Standard ball valves

Dimensions shown in mm







Full bore, female/female

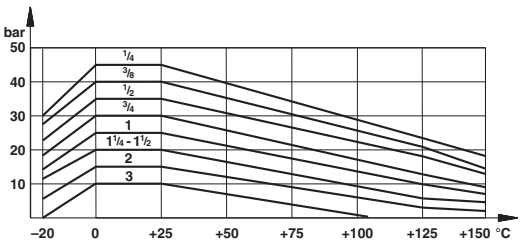
Max. pressure (bar)	A	C	D	Ø E	Ø F	G	H	⌯	Weight (kg)	Model
45	G1/4	48	36	8	23	85	12	18	0,116	602112128
40	G3/8	49	36	10	24	85	12	21	0,130	602112138
35	G1/2	60	40	15	30	85	15	25	0,182	602112148
30	G3/4	69	47	20	38	105	16,3	31	0,315	602112168
25	G1	83	51	25	46	105	19,1	38	0,496	602112188
20	G1 1/4	96	63	32	58	130	21,4	47	0,880	6021121A8
20	G1 1/2	106	69	40	70	130	22	54	1,300	6021121B8
16	G2	129	83	50	86	165	25,7	66	2,170	6021121C8
16	G2 1/2	159	99	65	111	248	30,2	85	3,770	6021121D8
10	G3	182	110	80	135	248	33,3	100	5,840	6021121E8

Full bore, female/male

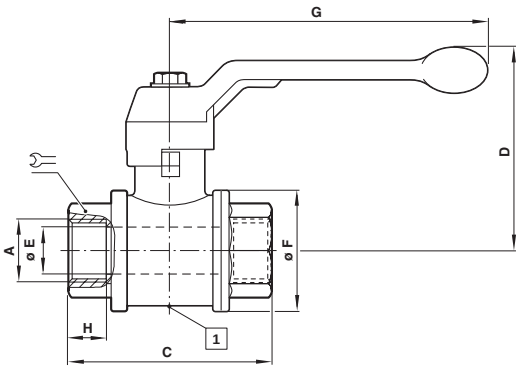
Max. pressure (bar)	A	A1	C	D	Ø E	Ø F	G	⌯	Weight (kg)	Model
45	G1/4A	G1/4	50	36	8	23	85	18	0,113	602112228
40	G3/8A	G3/8	54	36	10	24	85	21	0,140	602112238
35	G1/2A	G1/2	65	40	15	30	85	25	0,200	602112248
30	G3/4A	G3/4	75	47	20	38	105	31	0,350	602112268
25	G1A	G1	86	51	25	46	105	38	0,530	602112288
20	G1 1/4A	G1 1/4	99	63	32	58	130	47	0,927	6021122A8

For T handle valves, substitute 2 for 1 at 4th digit.

Pressure/temperature diagram



6021 series, Exhausting ball valve



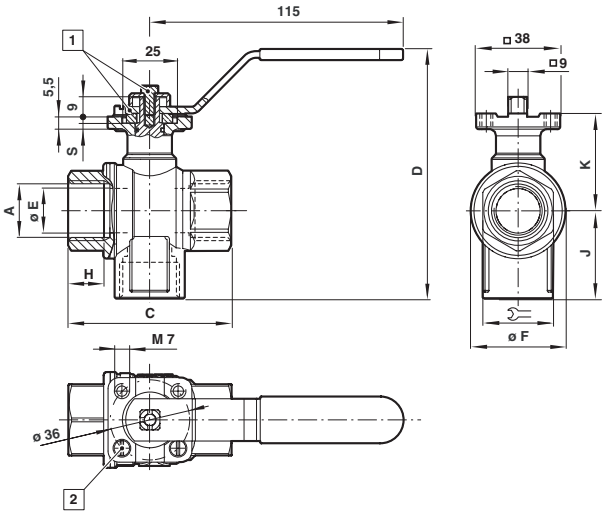
1 Exhaust

Max. pressure (bar)	A	C	D	Ø E	Ø F	G	⌯	Weight (kg)	Model
64	G1/4	52	61	8	29	100	22	0,245	602113128EX
64	G3/8	54	61	10	29	100	22	0,245	602113138EX
50	G1/2	69	64	15	36	100	27	0,370	602113148EX
50	G3/4	77	76	20	45	120	33	0,635	602113168EX
50	G1	89	80	25	54	120	40	0,890	602113188EX
40	G1 1/4	103	98	32	65	150	50	1,550	6021131A8EX

For T handle valves, substitute 2 for 1 at 4th digit.

6021 series, 3-way ball valve conforms to ISO 5211

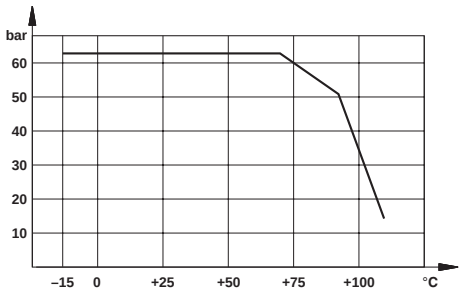
Dimensions shown in mm
Projection/First angle



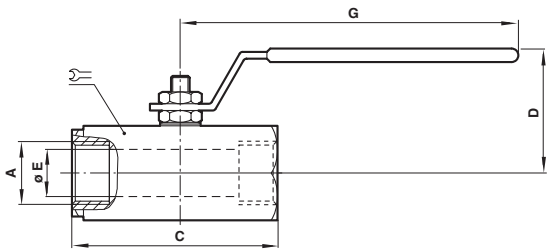
3-way full bore

Female B	C	D	ØF	G	J	⌲	Max. pressure (bar)	Weight (kg)	Model
G1/4	52	60	28	11	26	22	25	0,34	602114438
G3/8	52	60	28	11,5	26	22	25	0,28	602114438
G1/2	64	62	34,5	15	33,5	27	25	0,41	602114448
G3/4	74	43	43	16	39,5	32	16	0,60	602114468

Pressure/temperature diagram



6251 series, Carbon steel ball valve



Female BSPP B	C	D	Ø S	H	⌲	Max. pressure (bar)	Model
G1/4	50	41	10	96	25	140	625112128
G3/8	50	41	10	99	25	140	625112138
G1/2	63	43	13	96	32	140	625112148
G3/4	75	52	17	129	37	140	625112168
G1	88	58	22	129	44	140	625112188

To order 'Tee' handled version change 4th character to 2

Strainer
0310000

G1/4 ... G2

Compact design

Wide temperature range

Shock and vibration resistant to EN 61373, Category 1, class A and B

EN 61373

+100°C (+212°F)

-40°C (-40°F)

Technical features

Medium:
Neutral and semi-neutral gases and liquids
Application:
Dirt traps are built into pipelines upstream of controls, measuring instruments etc. They protect the equipment against clogging and breakdown and improve the operational reliability.

Operating pressure:
16 bar max. (232 psi)
Operating viscosity:
160 mm^2/s max.
Filter element:
Interchangeable, filter mesh size optional

Flow direction:
Indicated by arrow
Operation temperatur:
-40 ... +100°C (-40 ... +212°F)
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).
Mounting position:
Filter element tilted downwards

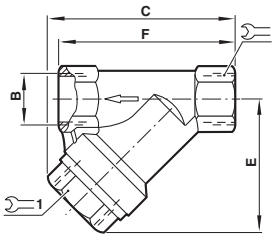
Materials
Body: brass (to G1), red brass (G1 1/4 ... G2)
Plug: brass
Filter: stainless steel
Seals: NBR

Technical data

Symbol	Port size	Orifice (mm)	Mesh size (mm)	Weight (kg)	lb	Model
	G1/4	6	0,15	0,43	0.95	0310040
	G1/4	6	0,35	0,43	0.95	0310041
	G3/8	10	0,15	0,41	0.90	0310140
	G3/8	10	0,35	0,41	0.90	0310141
	G1/2	12	0,15	0,37	0.82	0310240
	G1/2	12	0,35	0,37	0.82	0310241
	G3/4	20	0,15	1,17	2.58	0310340
	G3/4	20	0,35	1,17	2.58	0310341
	G1	25	0,15	1,03	2.27	0310440
	G1	25	0,35	1,03	2.27	0310441
	G1 1/4	32	0,25	1,1	2.43	0311702
	G1 1/4	32	0,50	1,1	2.43	0311701
	G1 1/2	40	0,25	1,4	3.09	0311802
	G1 1/2	40	0,50	1,4	3.09	0311801
	G2	50	0,25	2,50	5.51	0311902
	G2	50	0,50	2,50	5.51	0311901

Strainer
0310000
G1/4 ... G2

Dimensions



Dimensions shown in mm

B	C	E*	F	⌓	⌓1	Model
G1/4	83	57	80	27	24	0310040
G1/4	83	57	80	27	24	0310041
G3/8	83	57	80	27	24	0310140
G3/8	83	57	80	27	24	0310141
G1/2	83	57	80	27	24	0310240
G1/2	83	57	80	27	24	0310241
G3/4	110	82	105	41	41	0310340
G3/4	110	82	105	41	41	0310341
G1	110	82	105	41	41	0310440
G1	110	82	105	41	41	0310441
G1 1/4	110	76	110	50	30	0311702
G1 1/4	110	76	110	50	30	0311701
G1 1/2	120	84	120	55	30	0311802
G1 1/2	120	84	120	55	30	0311801
G2	150	102	150	70	36	0311902
G2	150	102	150	70	36	0311901

*Sufficient clearance (pipe center to floor 2x dimension 'E') must be allowed for removal of the filter element.

“Innovation that improved reliability also improved performance and passenger safety”

Door control assembly

Pneumatic door systems mounted separately in the ceiling of class 14X, 15X and 170 vehicles along with piping and regulators suffered from poor reliability, causing frequent delays to schedules

A Norgren custom-built replacement was designed to be easier to replace and engineered to a higher specification to eliminate the need for individually piped and wired valves. The simplified design comprised a single plug-in block that housed Nugget 40 valves with T20 regulators.

The ‘modular door control assembly’ achieved the customers’ goal of a key system with greater reliability that took less time to replace. In addition, the new replacement improved performance and safety.

FOUR STAGE FILTRATION SYSTEM

ALUMINIUM FITTINGS ARE 65% LIGHTER

MODULAR DOOR CONTROL ASSEMBLY

courtesy of
Train Door Solutions Ltd. (TDS)

‘Rail industry innovation’

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AUSTRALIA
Tel: +61 3 9213 0800
Fax: +61 3 9213 0890
enquiry@norgren.com.au

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Tel: +43 22 36 63 520
Fax: +43 22 36 63 520 20
enquiry@at.norgren.com

BELGIUM & LUXEMBURG
Tel: +32 2 333 44 11
Fax: +32 2 333 44 88
enquiry@be.norgren.com

BRAZIL
Tel: +55 11 5698 4000
Fax: +55 11 5698 4001
vendas@norgren.com.br

CANADA
Tel: +1 303 794 2611
Fax: +1 303 795 9487
inquiry@usa.norgren.com

CHINA
Tel: +86 21 2416 1800
Fax: +86 21 2416 1900
rail@norgren.com.cn

CROATIA
Tel: +386 4 5317550
Fax: +386 (64) 7000949
info@si.norgren.com

CZECH REPUBLIC & SLOVAKIA
Tel: +420 465 612 879
Fax: +420 465 612 908
info@cz.norgren.com

DENMARK
Tel: +45 44 91 41 66
Fax: +45 44 91 15 60
norgren@norgren.dk

FINLAND
Tel: +358 95 712 140
Fax: +358 95 712 1440
arki@norgren.fi

FRANCE
Tel: +33 1 60 04 95 95
Fax: +33 1 60 43 18 86
norgren@norgren.fr

GERMANY
Tel: +49 2802 49–0
Fax: +49 2802 49356
info@norgren.de

HONG KONG
Tel: +852 2492 7608
Fax: +852 2498 5878
enquiry@norgren.com.hk

HUNGARY
Tel: +36 1 284 9000
Fax: +36 1 284 8980
info@norgren.hu

INDIA
Tel: +91-120-4089500
Fax: +91-120-4089599
enquiry@norgren.co.in

IRELAND
Tel: +353 1 8300 288
Fax: +353 1 8300 082
dublin@norgren.com

ITALY
Tel: +39 039 60 631
Fax: +39 039 60 63 301
info@norgrenitalia.it

JAPAN
Tel: +81 6 6876 8913
Fax: +81 6 6876 8929
toiawase@norgren.co.jp

MALAYSIA
Tel: +60 3 5121 9255
Fax: +60 3 5121 2889
sales@norgren.com.my

MEXICO
Tel: +52 55 1500 64 00
Fax: +52 55 1500 64 30
neumatica@norgren.com.mx

NETHERLANDS
Tel: +31 (0)36 548 6828
Fax: +31 (0)36 548 6838
enquiry@nl.norgren.com

NEW ZEALAND
Tel: +64 9 579 0189
Fax: +64 9 526 3398
enquiry@norgren.co.nz

NORWAY
Tel: +47 22 90 80 80
Fax: +47 22 90 80 81
norgren@norgren.no

POLAND
Tel: +48 22 518 9530
Fax: +48 22 518 9531
biuro@.norgren.pl

ROMANIA
Tel: +40 31 425 17 06
Fax: +40 31 425 17 08
office@norgren.ro

RUSSIA
Tel: +7 499 729 56 09
Fax: +7 499 729 57 49
sales@norgren-imi.ru

SINGAPORE
Tel: +65 6862 1811
Fax: +65 6862 1886
sales@norgren.com.sg

SLOVENIA
Tel: +386 4 531 7550
Fax: +386 4 531 7555
info@si.norgren.com

SPAIN
Tel: +34 93 748 9800
Fax: +34 93 783 0838
norgren@norgren.es

SWEDEN
Tel: +46 40 59 51 00
Fax: +46 40 49 50 90
info@norgren.se

SWITZERLAND
Tel: +41 71 973 82 00
Fax: +41 71 973 82 01
norgren@norgren.ch

TAIWAN
Tel: +886 33162673
Fax: +886 33162910
enquiry@norgren.com.tw

THAILAND
Tel: +66 2750 3598/99
Fax: +66 2750 3855
sales@norgren.co.th

UK
Tel: +44 1543 265 000
Fax: +44 1543 265 811
enquiry@uk.norgren.com

USA
Tel: +1 303 794 2611
Fax: +1 303 798 4856
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