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RAILINE® PNEUMATIC  
MOTION & FLUID  
CONTROL SOLUTIONS

YOU CAN SEE  
OUR THINKING

ENGINEERING ADVANTAGE



ACTUATORS



VALVES



PRESSURE  
SWITCHES AND  
TRANSDUCERS



AIR LINE  
EQUIPMENT



FITTINGS



TUBING



ACCESSORIES

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## CREATING ADVANTAGE WITH PEOPLE, PRODUCTS, INNOVATION AND SERVICE

A WORLD LEADER IN MOTION AND FLUID CONTROL TECHNOLOGIES, NORGREN WORKS CLOSELY WITH CUSTOMERS TO GAIN A DEEPER UNDERSTANDING OF THEIR ENGINEERING NEEDS, AND THEN CONNECTS ITS PEOPLE, PRODUCTS AND EXPERTISE TO GIVE THEIR EQUIPMENT AND THEIR BUSINESS A CLEAR ADVANTAGE



With a sales and service network in 75 countries and manufacturing capability in the USA, Germany, China, UK, Switzerland, Czech Republic, Mexico and Brazil, we have genuine global capability. We also think local and niche: on focusing our resources on delivering a specific product, solution or service to meet our customers' needs. We offer:

→ **HIGH PERFORMANCE PRODUCTS** covering pneumatics, actuators, airline preparation, fittings and valves. We can supply these either singly to meet MRO needs, or combined in powerful customised solutions

→ **EXCEPTIONAL LOCAL SERVICE** delivered through Key Account Management teams and sector specialists committed to understanding and meeting our customers' engineering challenges, wherever they are

→ **INNOVATION & TECHNICAL EXCELLENCE** through four global technical centres and the experience of specialist engineering teams. We have a portfolio of patented solutions, and are always developing new and cost-effective technologies

After more than 30 years of experience in the rail industry we have developed a core set of products 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 -40°C to +80°C
- Voltage tolerance of +/- 30%
- EN61373 Category 1 Class A and B vibration resistance

## RESPONSIBLE BUSINESS THE IMI WAY

WE TAKE OUR RESPONSIBILITIES TO THE ENVIRONMENT AND THE COMMUNITIES IN WHICH WE OPERATE VERY SERIOUSLY. WE BELIEVE THAT THESE RESPONSIBILITIES CAN IMPACT POSITIVELY ON PROFITABILITY, RETURNS TO SHAREHOLDERS, REPUTATION AND GROWTH.

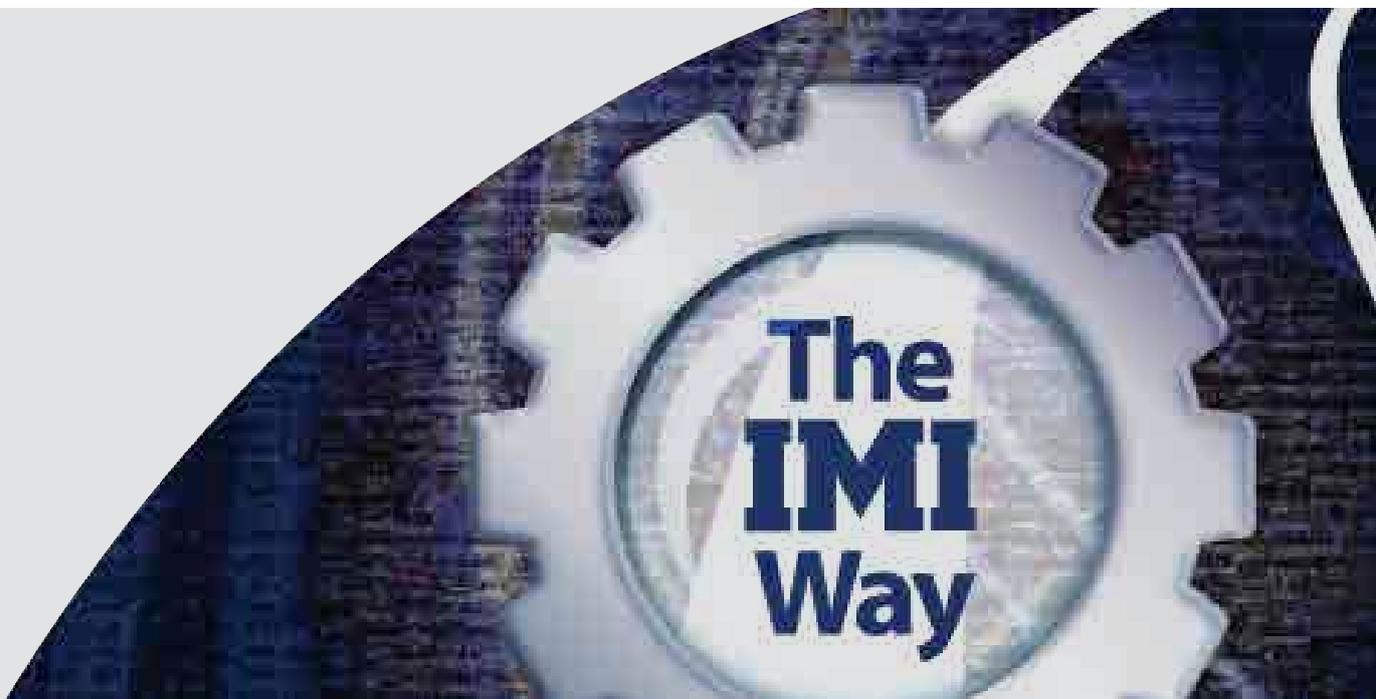
High standards of responsibility are, in our view, compatible with growth and business efficiency. We put particular emphasis on ensuring that our management of social, environmental and economic issues is aligned and integrated with the overall management of the business and we call this 'responsible business'.

Norgren is part of the international engineering group IMI Plc, and our commitment to responsible business starts with the IMI Way, which sets out our core values. Whenever you meet an IMI person you will find someone who:

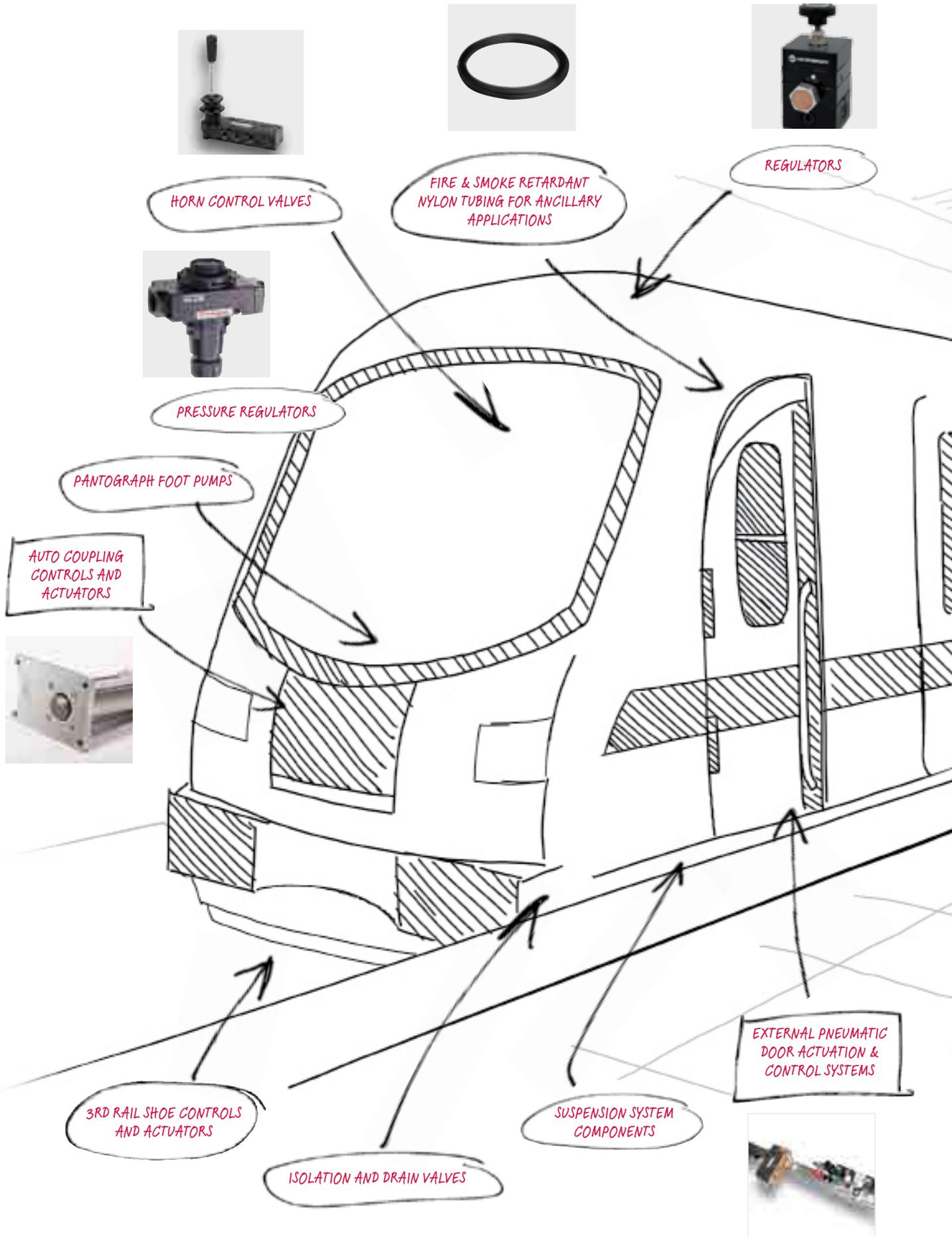
- pursues excellence and delivers results;
- innovates and provides value to our customers;
- acts with integrity

The IMI Way is a driver for responsible growth and directly supports our responsible business priorities:

- Health and Safety
- Supporting our customers' responsible business priorities
- Supply chain risk management
- Energy Efficiency and carbon management



# URBAN TRANSPORTATION



PANTOGRAPH CONTROLS AND ACTUATORS



LIGHT WEIGHT REUSABLE  
COMPRESSION FITTINGS FOR  
RIGID PIPING

PRESSURE SWITCHES

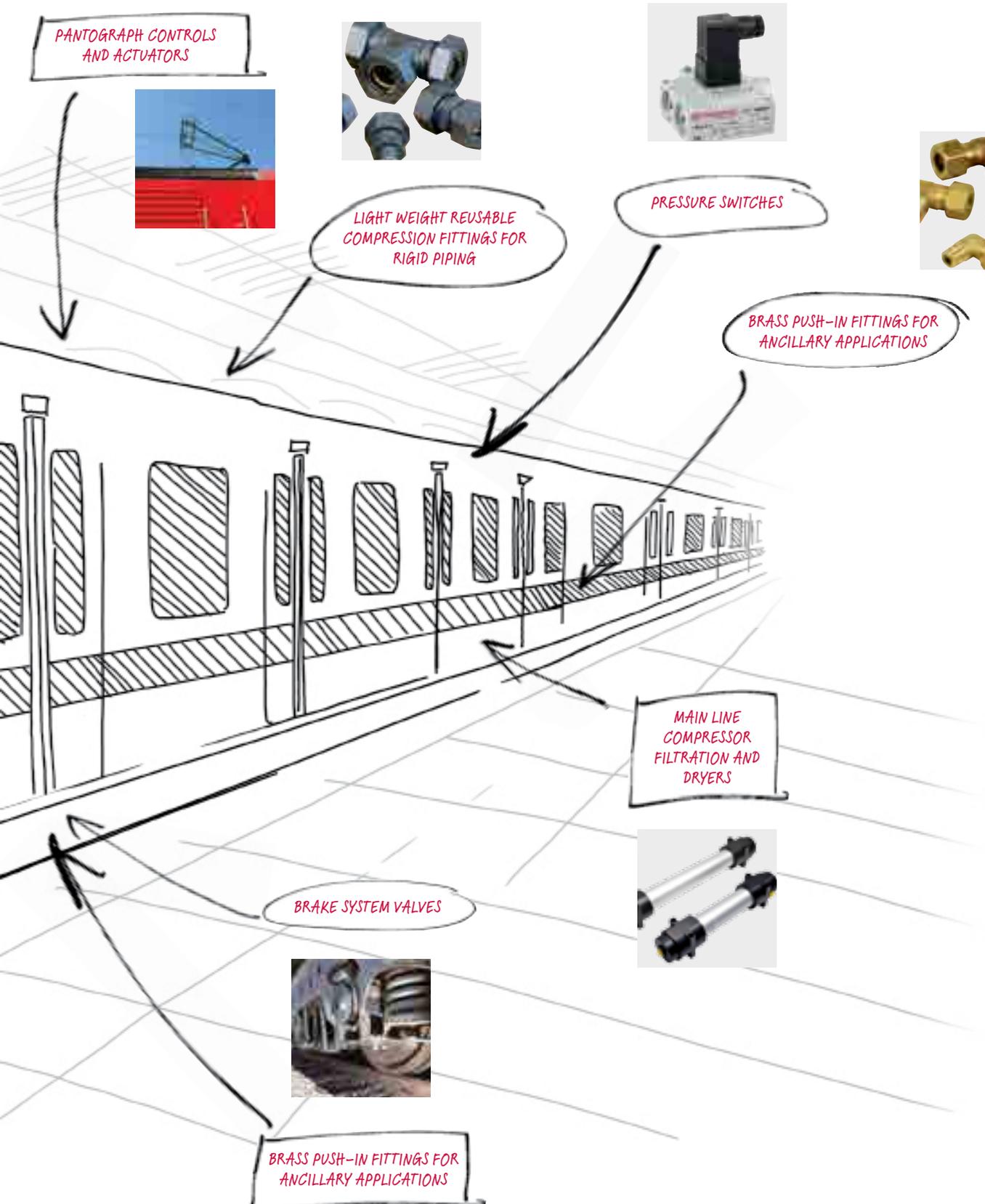
BRASS PUSH-IN FITTINGS FOR  
ANCILLARY APPLICATIONS

MAIN LINE  
COMPRESSOR  
FILTRATION AND  
DRYERS

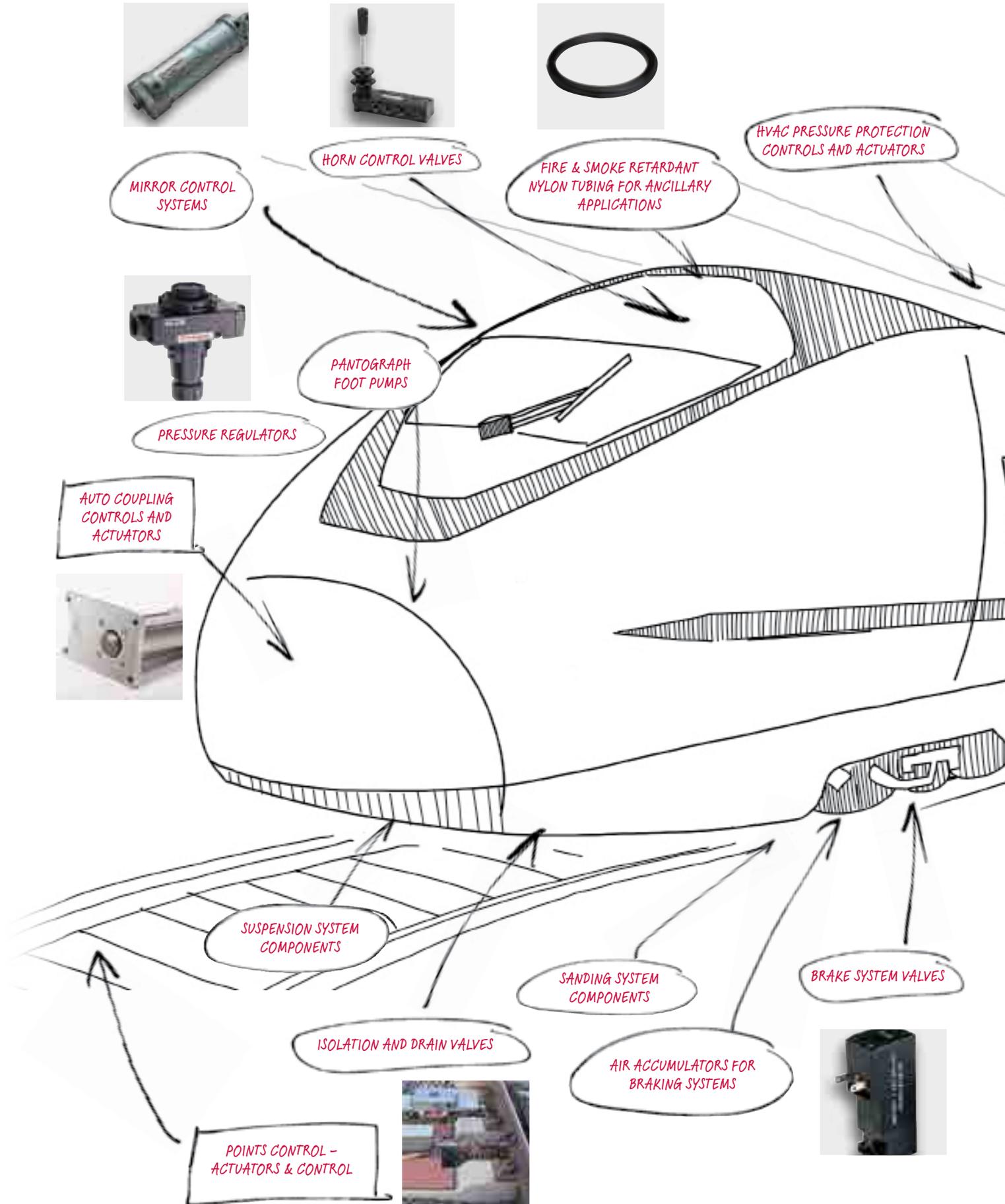
BRAKE SYSTEM VALVES



BRASS PUSH-IN FITTINGS FOR  
ANCILLARY APPLICATIONS



# REGIONAL & HIGH SPEED TRANSPORTATION





PANTOGRAPH CONTROLS  
AND ACTUATORS



LIGHT WEIGHT REUSABLE  
COMPRESSION FITTINGS FOR  
RIGID PIPING



PRESSURE SWITCHES



BRASS PUSH-IN FITTINGS FOR  
ANCILLARY APPLICATIONS

MINIMUM PRESSURE  
VALVES

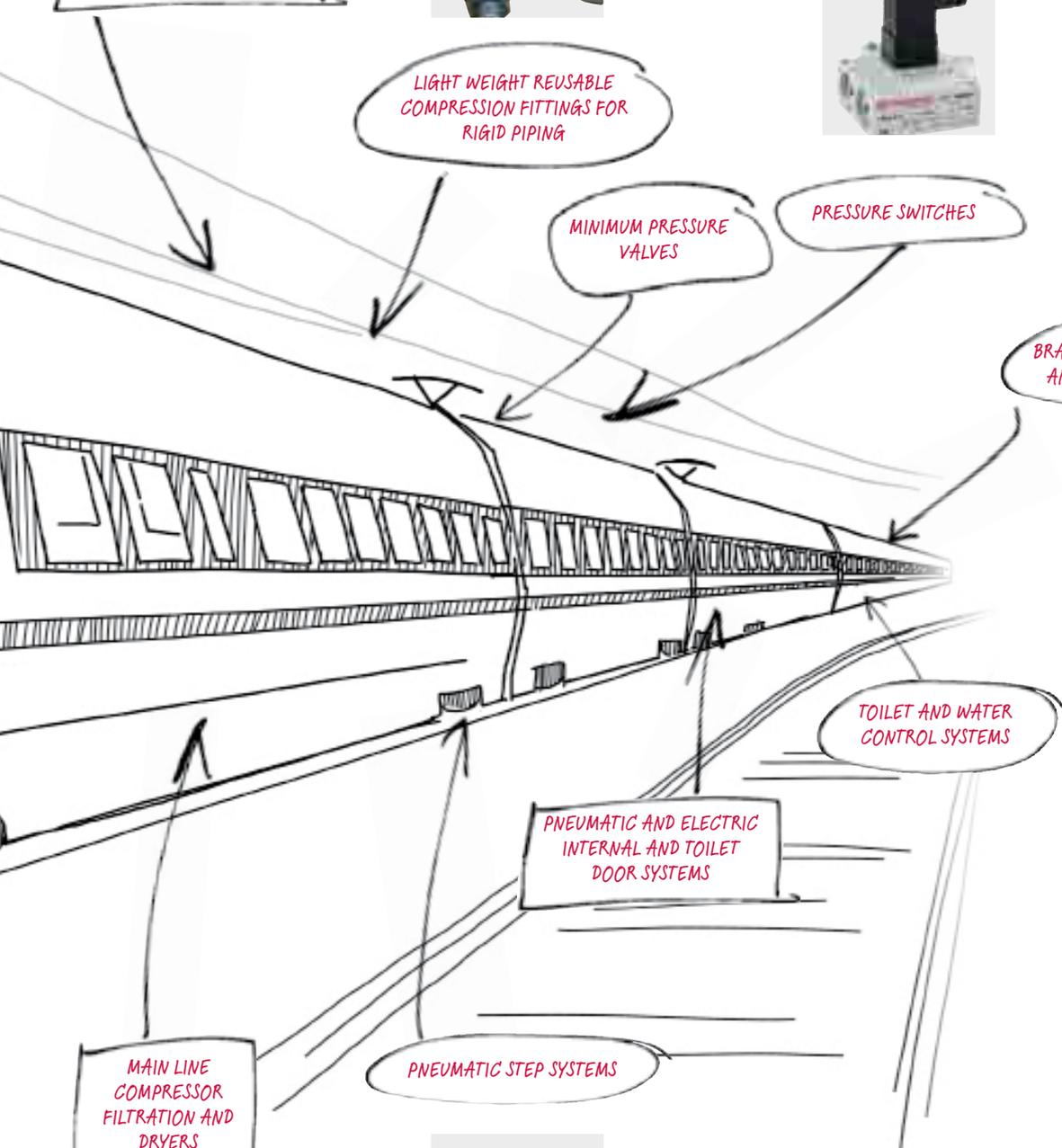
TOILET AND WATER  
CONTROL SYSTEMS

PNEUMATIC AND ELECTRIC  
INTERNAL AND TOILET  
DOOR SYSTEMS



MAIN LINE  
COMPRESSOR  
FILTRATION AND  
DRYERS

PNEUMATIC STEP SYSTEMS



# FREIGHT TRANSPORTATION

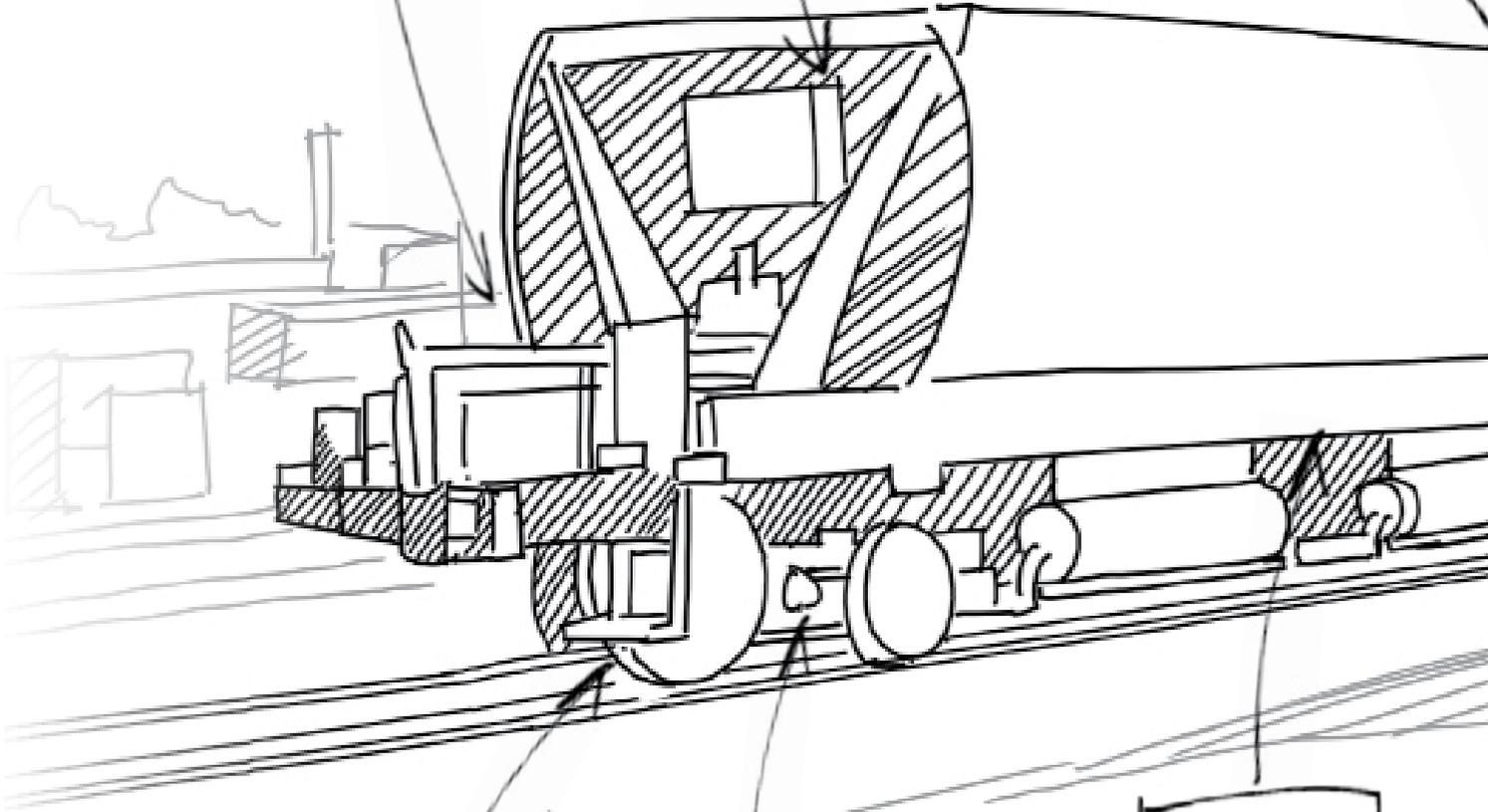


SOLENOID VALVES



PRESSURE REGULATORS & MINIMUM PRESSURE VALVES

LOW POWER SOLENOID VALVES



ISOLATION AND DRAIN VALVES

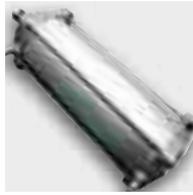


PRESSURE SWITCHES AND REGULATORS FOR ECP BRAKE SYSTEMS AND REMOTE CONTROL DISCHARGE SYSTEMS



CUSTOMISED ACTUATORS FOR BOTTOM DISCHARGE DOOR SYSTEMS AND TOP HATCHES

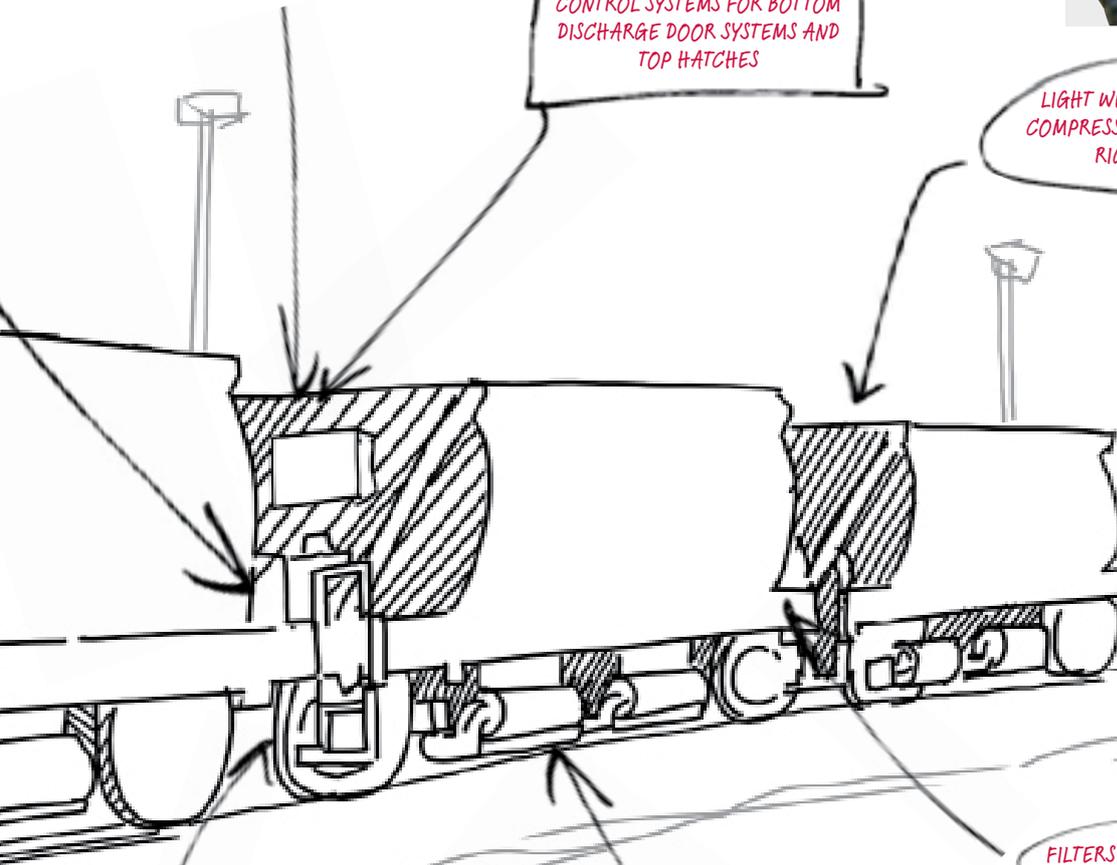




BRASS PUSH-IN FITTINGS & NYLON TUBING FOR ANCILLARY

MANUAL AND REMOTE CONTROL SYSTEMS FOR BOTTOM DISCHARGE DOOR SYSTEMS AND TOP HATCHES

LIGHT WEIGHT REUSABLE COMPRESSION FITTINGS FOR RIGID PIPING



RETARDER CYLINDERS

FILTERS AND Y STRAINERS

AIR ACCUMULATORS FOR BRAKING SYSTEMS



## CREATING ENGINEERING ADVANTAGE WORLDWIDE

### OUR THINKING IS CLEAR

We work closely with our global rail customers to gain a deep understanding of their engineering needs, and then connect our people, products and expertise to give their equipment and their business a clear competitive edge. We call this Engineering Advantage.

Across more than 30 years in the rail industry we have developed a core set of products and technologies proven over millions of miles of reliable service. With a strong reputation and a deep understanding of the technical challenges and legislative framework, our solutions meet unique and specific needs by combining existing and proven technologies in new and innovative ways.

We are well used to designing for the temperature range, voltage tolerance, vibration resistance, and safety needs of the rail industry, and fully understand the challenges, standards and specifications that matter to rail operators and OEMs.





**AUTOMATIC DRAIN VALVES**



**LATCHING CYLINDER IN POINT SWITCHING SYSTEM**

- **AUTOMATIC DRAIN VALVES**  
Designed to remove condensate from compressed air systems, without using electricity.
- **CIRCUIT BREAKER VALVES**  
Developed specifically for use with circuit breakers on electric rail vehicles.
- **AIR DRYERS**  
Innovative new compressed air dryer offering up to 6 years maintenance free life.
- **INTERNAL/EXTERNAL DOOR ACTUATION & CONTROLS**  
Internal & external pneumatic & electrically operated door control systems.
- **MULTI-STAGE FILTRATION**  
Designed to increase reliability and to reduce maintenance and system costs. This proven robust system removes oil, water and carbon particles carried through the vehicle sub-systems.
- **FREEZE PROTECTION VALVES**  
Developed to protect on-board water systems from freezing when stationary, during low temperatures.
- **HORN CONTROL & OPERATION**  
Norgren's rail specification special valves with electrical feedback are suitable for precision horn control and operation.
- **LATCHING CYLINDERS**  
Proven in a wide variety of rail applications, including step systems, freight wagon door systems and point switching systems.
- **MINIMUM PRESSURE VALVES**  
Used where a protected air supply pressure or pressure sensitive signal is required.
- **PRESSURE SWITCHES**  
Suitable for a variety of rail applications including auxiliary systems, door controls, brakes and compressors.
- **LR27H PRECISION REGULATORS**  
A fast response, high flow precision regulator particularly suited to Pantograph applications enables the Pantograph to respond accurately to the height variations on the electric overhead lines. LR27H gives unrivalled overall performance with rapid, quiet and stable operation across a wide temperature range.
- **ROTARY ACTUATORS**  
Rotary actuator solution with feed back to allow entrapment function on metro door equipment.
- **REDUCED FORCE ACTUATORS**  
Developed to allow two forces to be applied to a single door mechanism which meets the high operational usage of external passenger door systems.
- **MIRROR CONTROLS**  
Pneumatic & electric control offering reliable operation and very stable repeatability.
- **LIGHT WEIGHT CORROSION RESISTANT FITTINGS**  
Designed to save weight, they can cope with a wide range of tube materials and thickness. Approximately 65% lighter than brass or stainless steel fittings.

## EXPERTISE IN THE RAIL SECTOR

WE LISTEN TO OUR CUSTOMERS AND WORK  
CLOSELY WITH THEM TO PROVIDE ENGINEERING  
SOLUTIONS WITH ADDED VALUE.

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 **AUSTBRECK** PTY. LTD.  
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**AXTONE**  
RAILWAY COMPONENTS

**BOMBARDIER**



**BRECKNELL  
WILLIS**



**CAF**

CONSTRUCCIONES Y AUXILIAR DE FERROCARRILES S.A.

 **CIMC ROLLING STOCK AUSTRALIA**  
PTY LTD



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中国北车 BEIJING CED RAILWAY ELECTRIC TECH . CO.,LTD.

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

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

 **CSR** 南车长江车辆有限公司  
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# ACTUATORS



## PRODUCTS

1-02	Fast find guide		
1-03	Double acting profile cylinders	Ø 32 ...125 mm	LPRA/182000/M
<b>1-07</b>	<b>Feature page 'Latching cylinder'</b>		
1-08	Double acting cylinders	Ø 32 ... 200 mm	LRA/8000/M
1-16	Heavy duty cylinders	Ø 1 1/4 ... 4"	RM/900/M
<b>1-23</b>	<b>Feature page 'Energy Saving'</b>		
1-24	Heavy duty cylinders	Ø 5 ... 14"	LRM/900
1-30	Double acting cylinders	Ø 4 ... 8"	NFPA
1-36	Double acting roundline cylinders	Ø 32 ...100 mm	LRM/55401/M
<b>1-40</b>	<b>Feature page 'Door controls'</b>		

# FAST FIND GUIDE



**LPRA/182000/M**  
Double acting profile cylinders  
Ø 32 ... 125 mm



Page 1-03

**LRA/8000/M**  
Double acting cylinders  
Ø 32 ... 200 mm



Page 1-08

**RM/900/M**  
Heavy duty cylinders  
Ø 1 1/4 ... 4"



Page 1-16

**LRM/900**  
Heavy duty cylinders  
Ø 5 ... 14"



Page 1-24

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



Page 1-30

**LRM/55401/M**  
Double acting roundline cylinders  
Ø 32 ... 100 mm



Page 1-36

## Double acting profile cylinders LPRA/182000/M Ø 32 ... 125 mm

High performance, stability and reliability

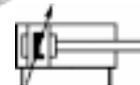
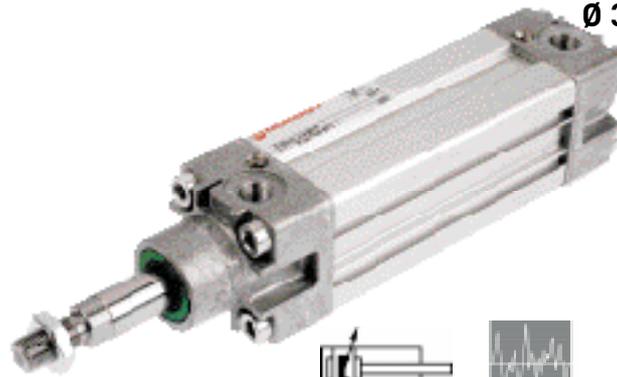
M/50 switches (solid state) can be mounted flush with the profile

Cylinders and mountings conform to ISO 1551 (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 (inch <sup>3</sup> /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 (inch <sup>3</sup> /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	←	→	Strokes (mm)	3000 max.	→
Stainless steel martensitic (standard)	R			Variants (magnetic piston)	Substitute	
Hard chromium plated	C			Standard	M	
Stainless steel austenitic	S			Piston rod bellow	MG	
Thread form (air ports only)	Substitute	←	→	Without cushion	MW	
ISO G parallel	A			Double ended piston rod	JM	
NPT	C			Four-position cylinder	MT	
Cylinder Ø (mm)	Substitute	←	→	Extended piston rod	MU	
032, 040, 050, 063, 080, 100, 125				LP**/182***/MU***/**	→	Extension (mm)

### Standard strokes

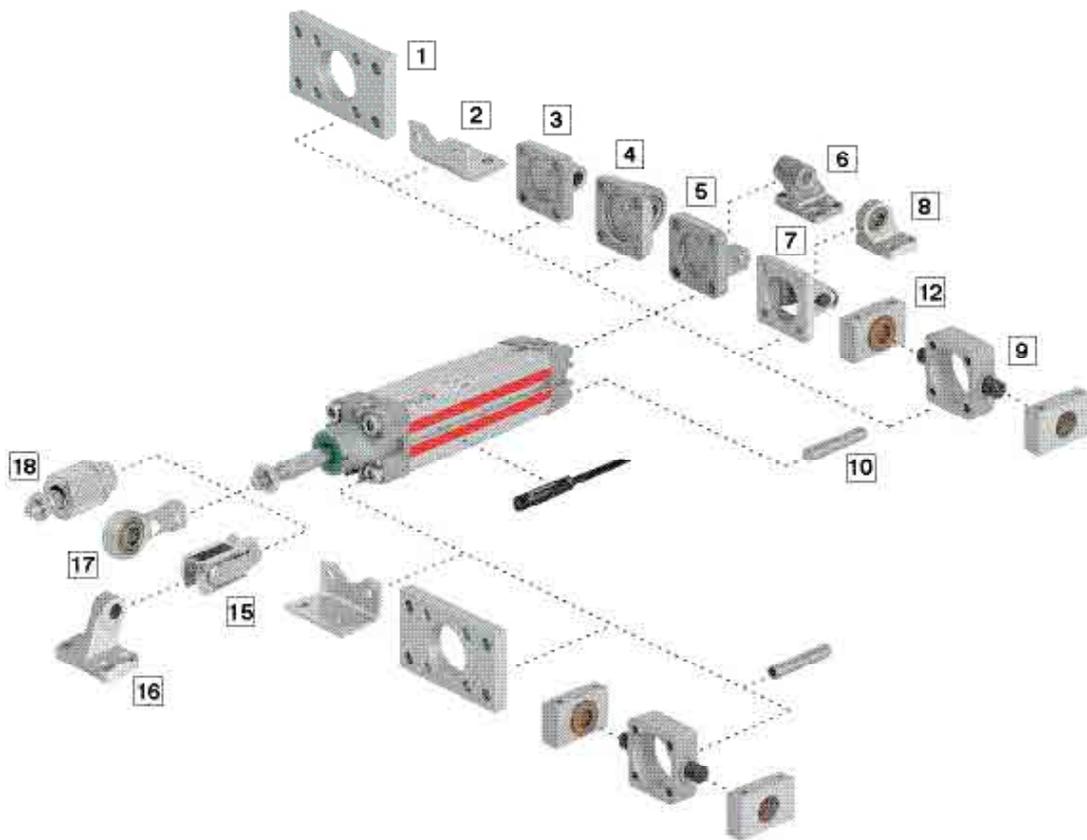
Cylinder Ø (mm)	Strokes (mm)										
	25	50	80	100	125	160	200	250	320	400	500
32	•	•	•	•	•	•	•	•	•	•	•
40	•	•	•	•	•	•	•	•	•	•	•
50	•	•	•	•	•	•	•	•	•	•	•
63	•	•	•	•	•	•	•	•	•	•	•
80	•	•	•	•	•	•	•	•	•	•	•
100	•	•	•	•	•	•	•	•	•	•	•
125	•	•	•	•	•	•	•	•	•	•	•

## 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
	<b>10</b>	<b>18</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>7</b>	<b>15</b>	<b>9</b>
Ø	Page 1-12	Page 1-13	Page 1-13					
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
	<b>3</b>	<b>12</b>	<b>16</b>	<b>6</b>	<b>17</b>	<b>4</b>	<b>8</b>	
Ø	Page 1-14	Page 1-15						
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



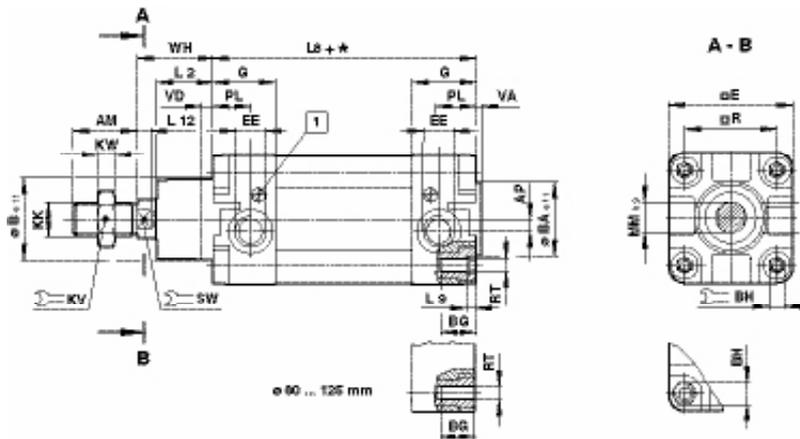
Voltage V d.c.	Current max.	Temperature	LED	Features	Cable length	Cable type	Protection class *1)	Model
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	PNP	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAP/*V
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	NPN	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAN/*V

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

\*1) -40°C ... +80°C protection class IP65; -20°C ... +80°C protection class IP67 and IP68

### Basic dimensions

Dimensions shown in mm  
Projection/First angle



\* stroke

□ 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

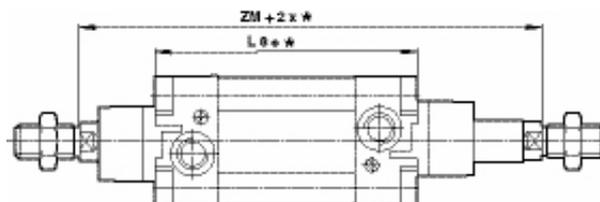
Dimensions shown in mm

#### 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.



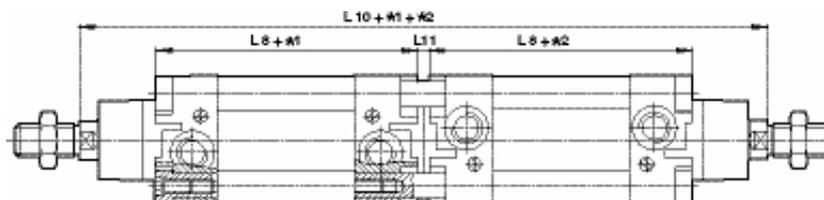
#### LPR./182000/MT – Four-position cylinder

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.



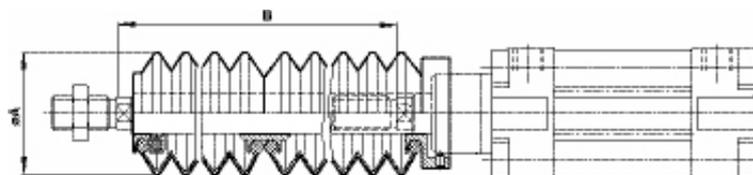
\* stroke length 1 and stroke length 2

#### 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.





## LATCHING CYLINDERS

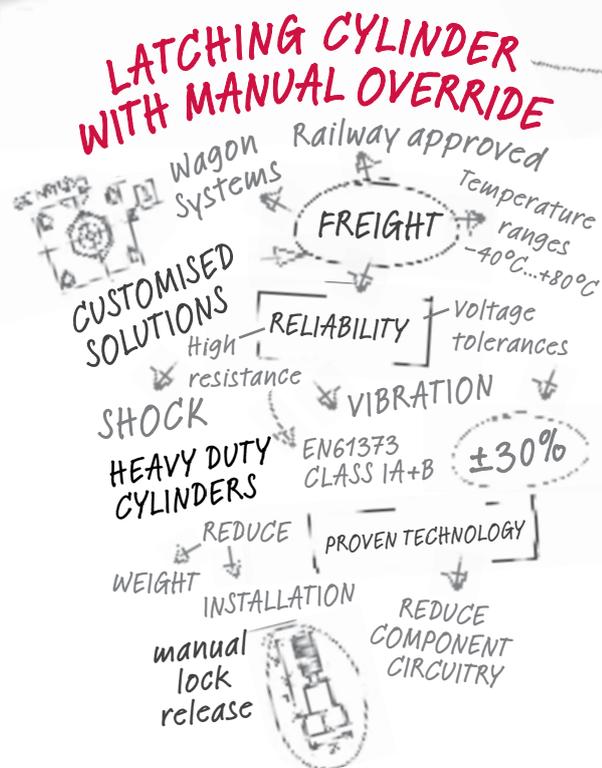
### HEAVY DUTY LATCHING CYLINDERS

Norgren's range of latching cylinders have been proven in a wide variety of rail applications over many years, including step systems, freight wagon door systems and point switching systems.

The high degree of integration reduces the envelope size and allows the customer to significantly reduce installation time.

#### ENGINEERING ADVANTAGE

- High performance, stability & reliability
- Customised solutions
- Wide temperature range
- Shock and vibration tested to EN 61373, Category 1, class A and B



- Proven technology
- Able to positively lock a cylinder in the 'in stroke' and 'out stroke' position
- Safely and securely hold loads in place in the event of air pressure loss or failure
- Manual override to allow manual operation if compressed air not available
- Require only a single control valve to fulfil all functions
- Reduced components circuitry, installation time and weight
- Easy to install and maintain
- Suitable for applications including freight wagon top hatch and discharge doors, 'clawlock' points control, pneumatic step control

## Double acting cylinders

### LRA/8000/M

Ø 32 ... 200 mm

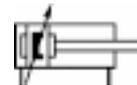
High performance, stability and reliability

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



+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"	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 (inch <sup>3</sup> /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 (inch <sup>3</sup> /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	←	<div style="display: flex; justify-content: space-around;"> <span>L**/8***/**/**</span> </div>	→	Strokes (mm)	3000 max.
Stainless steel martensitic (standard)	R			→	Variants (magnetic piston)	Substitute
Hard chromium plated	C				Standard	M
Stainless steel austenitic	S				Piston rod bellow	MG
Thread form (air ports only)	Substitute	←			Without cushion	MW
ISO G parallel	A				Double ended piston rod	JM
NPT	C				Four-piston cylinder	MT
Cylinder Ø (mm)	Substitute	←		Extended piston rod	MU	
032, 040, 050, 063, 080, 100, 125, 160, 200					L**/8***/MU/**/****	
				↳	Extension (mm)	

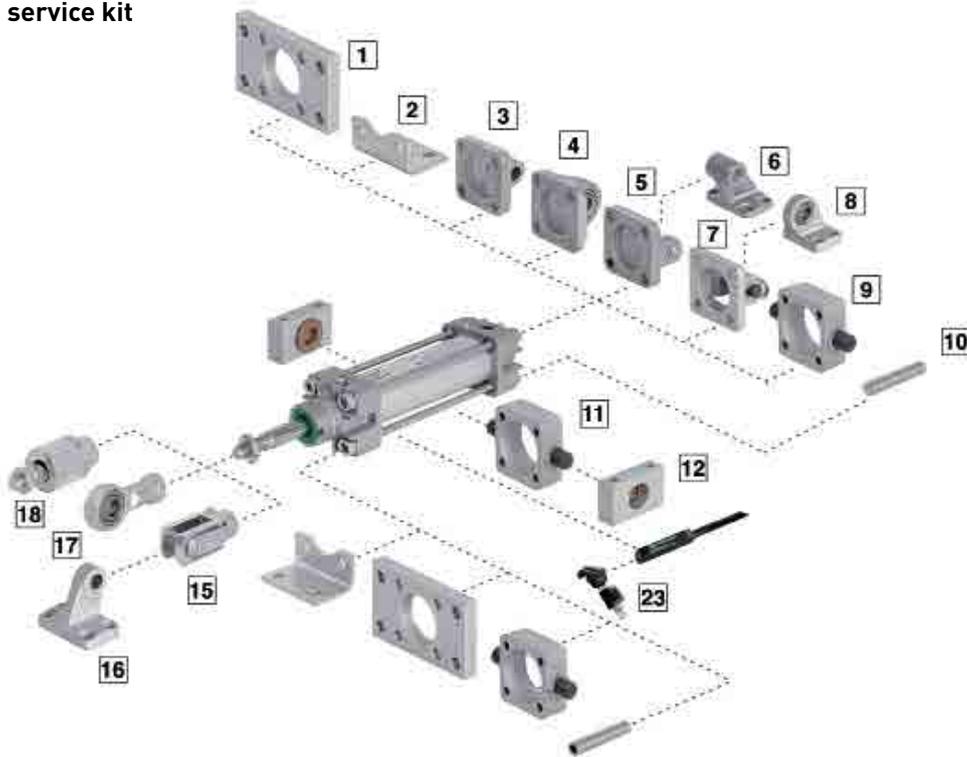
#### Standard strokes

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
	<b>10</b>	<b>18</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>7</b>	<b>15</b>	<b>9</b>	<b>11</b>
Ø	Page 1-12	Page 1-13	Page 1-13	Page 1-13					
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
	<b>3</b>	<b>12</b>	<b>16</b>	<b>6</b>	<b>17</b>	<b>4</b>	<b>8</b>	<b>23</b>	
Ø	Page 1-14	Page 1-15	Page 1-15						
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



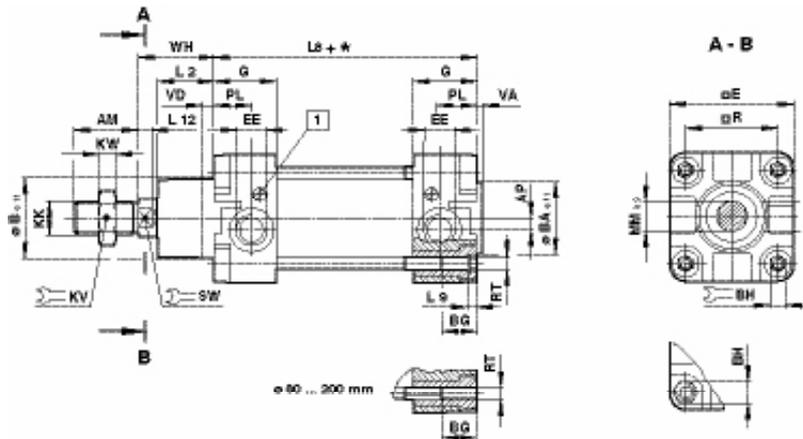
Voltage V d.c.	Current max.	Temperature	LED	Features	Cable length	Cable type	Protection class *1)	Model
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	PNP	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAP/*V
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	NPN	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAN/*V

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

\*1) -40°C ... +80°C protection class IP65; -20°C ... +80°C protection class IP67 and IP68

## Basic dimensions

Dimensions shown in mm  
Projection/First angle



\* stroke

□ cushion screw

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

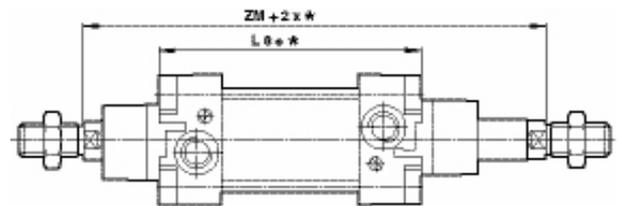
Dimensions shown in mm

#### 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

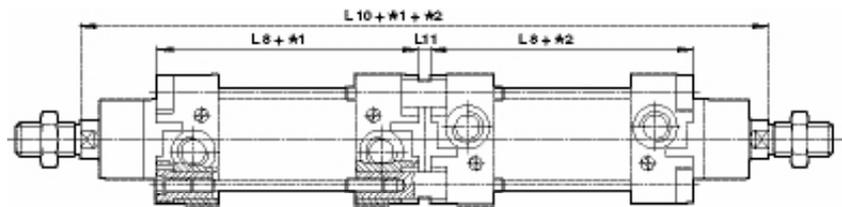
#### LR./8000/MT – Four-position cylinder

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.



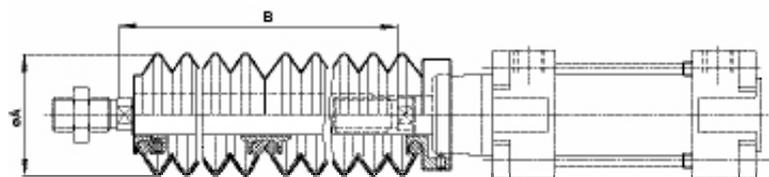
\* stroke length 1 and stroke length 2

#### 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.



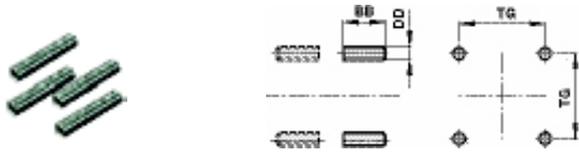
# Mountings for LPRA/182000/M, LRA/8000/M

Ø 32 ... 200 mm

## Mountings

### Front or rear stud mounting A

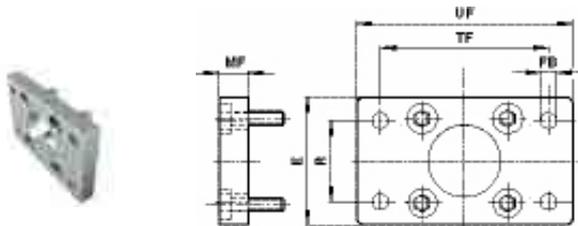
Conforms to ISO 15552, type MX1



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

### Front flange B, G

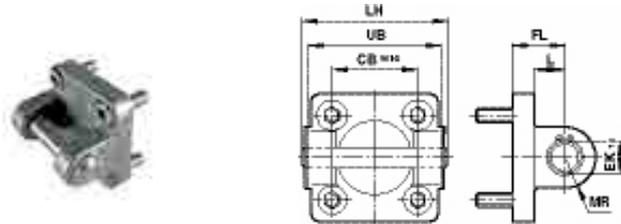
Conforms to ISO 15552, type MF1 and MF2



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

### Rear clevis D

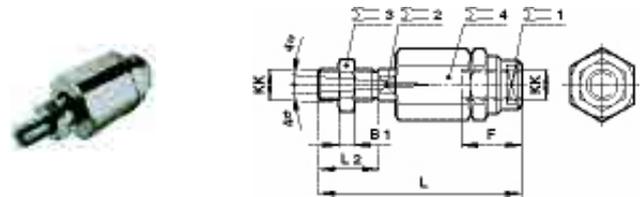
Conforms to ISO 15552, type MP2



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	36	140	25	130	2,70	QM/8125/23
160	90	30	55	37	182	30	170	4,30	QM/8160/23
200	90	30	60	40	182	30	170	6,10	QM/8200/23

### Piston rod swivel AK

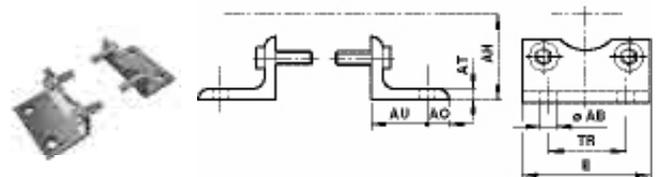
Dimensions shown in mm  
Projection/First angle



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

### Foot mounting C

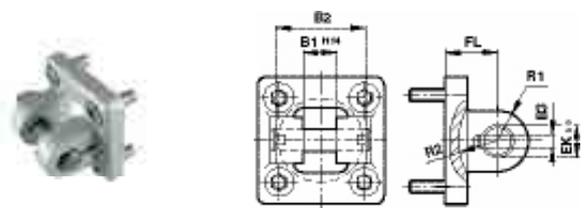
Conforms to ISO 15552, type MS1



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	10	36	9	4	28	53	36	0,18	QA/8040/21
50	10	45	10	5	32	64	45	0,30	QA/8050/21
63	10	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	14,5	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 D2

Conforms to ISO 15552, type AB6

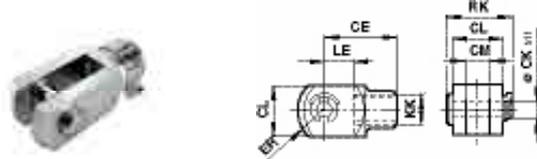


Ø	B1 H14	B2	B3	Ø EK h9	FL	R1	R2	kg	Model (D2)
32	14	34	3,3	10	22	11	17	0,20	QA/8032/42
40	16	40	4,3	12	25	12	20	0,23	QA/8040/42
50	21	45	4,3	16	27	14,5	22	0,36	QA/8050/42
63	21	51	4,3	16	32	18	25	0,55	QA/8063/42
80	25	65	4,3	20	36	22	30	0,90	QA/8080/42
100	25	75	4,3	20	41	22	32	1,45	QA/8100/42
125	37	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

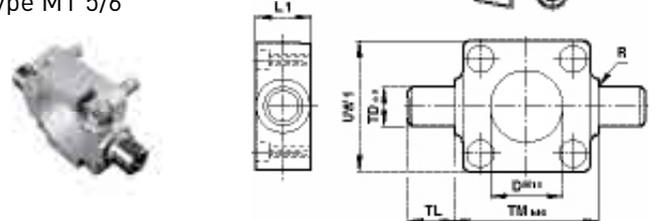


Ø	KK	CE	Ø CKh11	CL	CM	ER	LE	RK	kg	Model (F)
32	M10x1,25	40	10	20	10	16	20	28	0,09	QM/8025/25
40	M12x1,25	48	12	24	12	19	24	32	0,13	QM/8040/25
50/63	M16x1,5	64	16	32	16	25	32	41,5	0,33	QM/8050/25
80/100	M20x1,5	80	20	40	20	32	40	50	0,67	QM/8080/25
125	M27x2	110	30	55	30	45	54	62	1,35	QM/8125/25
160	M36x2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

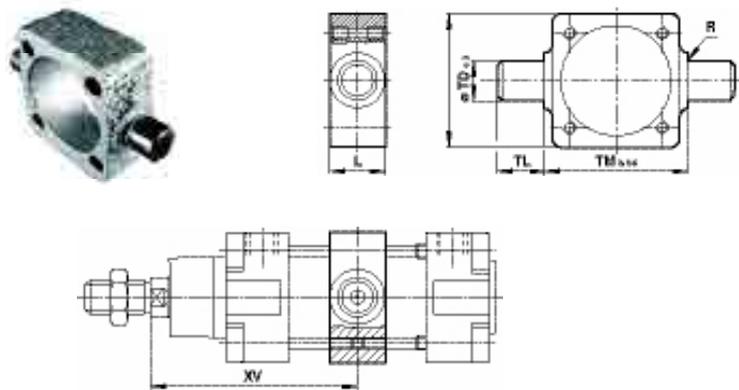
Dimensions shown in mm  
Projection/First angle



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	63,5	82,5	0,16	QA/8032/28
40	24	1,6	16	16	63	58	74	91	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	84	111	0,85	QA/8063/28
80	28	1,6	20	20	110	100	93	127	1,20	QA/8080/28
100	38	2	25	25	132	126	107	133	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

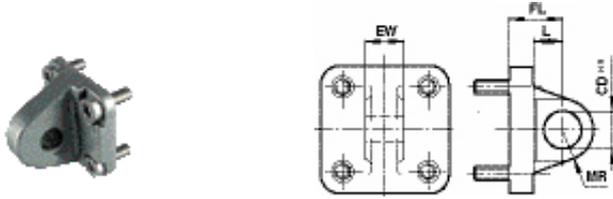
Note: Style 'H': These mountings are only supplied assembled complete with the cylinder. Unless otherwise specified, units will be supplied with dimension 'XV' plus half the stroke length. 'XV' = Distance from the piston rod shoulder to the centre of the mounting.

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

Ø 32 ... 200 mm

### Rear eye R

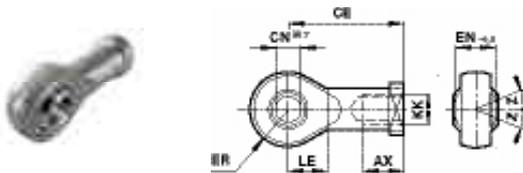
Conforms to ISO 15552, type MP4



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

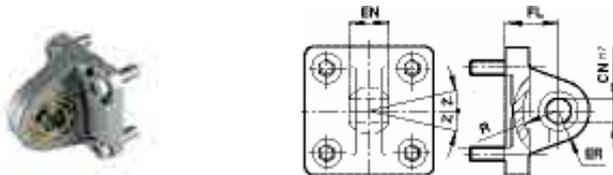
Conforms to DIN ISO 8139



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



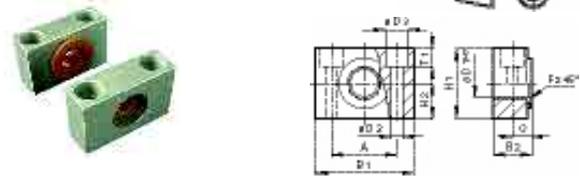
Ø	Ø CNH7	EN	ER	FL	R	Z	kg	Model (UR)
32	10	14	16	22	14,5	13°	0,15	QA/8032/33
40	12	16	19	25	18	13°	0,25	QA/8040/33
50	16	21	21	27	19	13°	0,40	QA/8050/33
63	16	21	24	32	24	15°	0,55	QA/8063/33
80	20	25	28	36	24	15°	0,90	QA/8080/33
100	20	25	30	41	29	15°	1,50	QA/8100/33
125	30	37	40	50	36	15°	2,70	QM/8125/33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

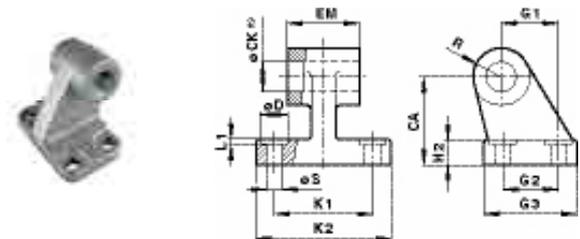
Projection/First angle



Ø	A	B1	B2	C	Ø D1H7	Ø D2	Ø D3	Fx 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

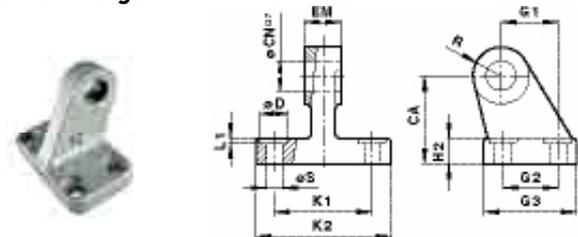
### Wide hinge SW

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



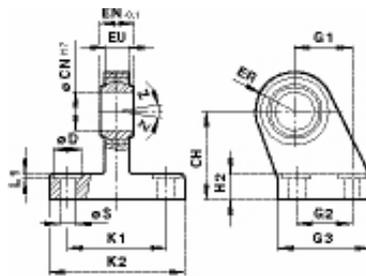
Ø	CA	Ø CNG7	Ø D	H2	EM	G1	G2	G3	K1	K2	L1	R	Ø S	kg	Model (SS)
32	32	10	11	8	10	21	18	31	38	51	1,6	10	6,6	0,15	M/P19931
40	36	12	11	10	12	24	22	35	41	54	1,6	11	6,6	0,20	M/P19932
50	45	10	15	12	16	33	30	45	50	65	1,6	13	9	0,48	M/P19933
63	50	16	15	12	16	37	35	50	52	67	1,6	15	9	0,50	M/P19934
80	63	20	18	14	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

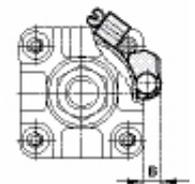
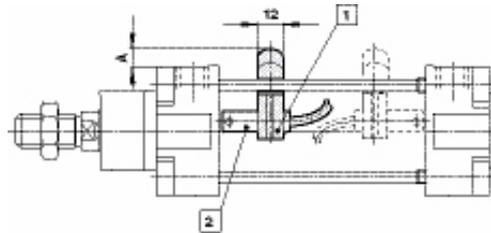


Ø	CH	Ø CNH7	Ø D	EN -0,1	ER	EU	G1	G2	G3	H2	K1	K2	L1	Ø S	Z	kg	Model (US)
32	32	10	11	14	16	10,5	21	18	31	8	38	51	1,6	6,6	13°	0,19	M/P40310
40	36	12	11	16	19	12	24	22	35	10	41	54	1,6	6,6	13°	0,24	M/P40311
50	45	16	15	21	21	15	33	30	45	12	50	65	1,6	9	13°	0,46	M/P40312
63	50	16	15	21	24	15	37	35	50	12	52	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 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



+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	G1/8	G1/4	G1/4	G3/8	G3/8	G3/8
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 (inch <sup>3</sup> /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 (inch <sup>3</sup> /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 1-19	Page 1-19	Page 1-19	Page 1-19	Page 1-20	Page 1-19	Page 1-21	Page 1-20
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 1-20	Page 1-20	Page 1-20	Page 1-21	Page 1-22	Page 1-22	Page 1-22	
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 *1)	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.

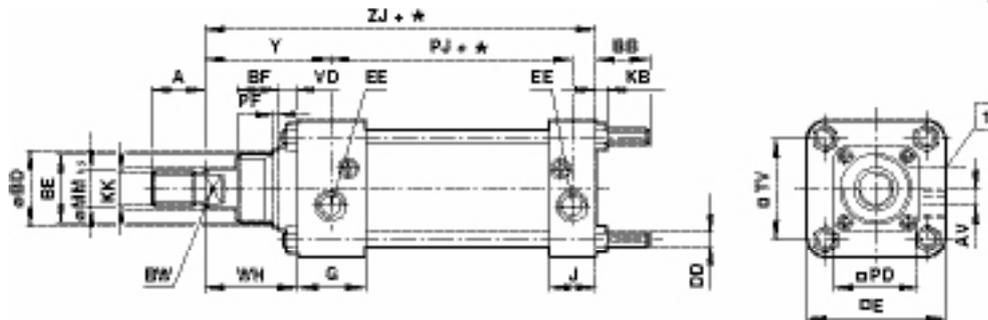
\*1) -40°C ... +80°C protection class IP65; -20°C ... +80°C protection class IP67 and IP68

# 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	G1/8	25	22	5	M10x1,5
1 3/4	19	8,5	26,5	27	M 27 x 2	19	12	M 8	57	G1/4	29	25	6,5	M12x1,75
2	24	7,5	25	34	M 33 x 2	20	17	M 8	63,5	G1/4	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	G3/8	30	25	6,5	M22x2,5
3	33,5	7	33	40	M 39 x 2	25,5	22	M 10	91	G3/8	35	35	8	M22x2,5
4	38	12	32	-	Ø 43	-	27	M 10	114	G3/8	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 kg	RM/940/M/*

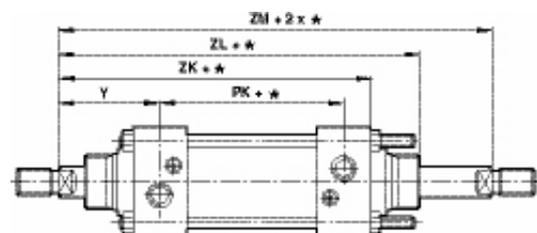
\* Please insert standard stroke length (mm).

## 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

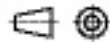
# Heavy duty imperial cylinders RM/900/M

Ø 1 1/4 ... 4"

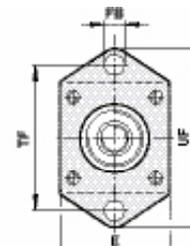
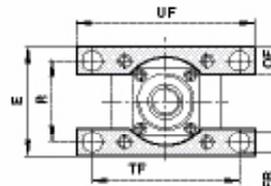
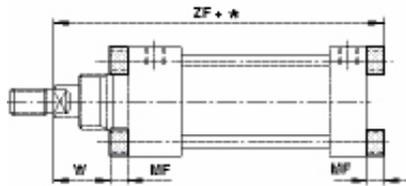
## Mountings

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

Dimensions shown in mm  
Projection/First angle



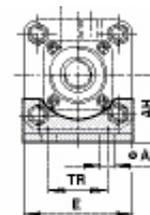
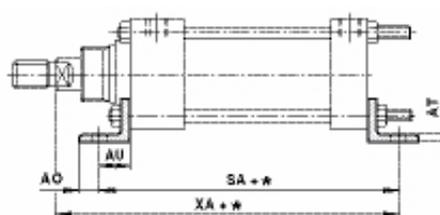
For 9125 cylinder only



\* 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

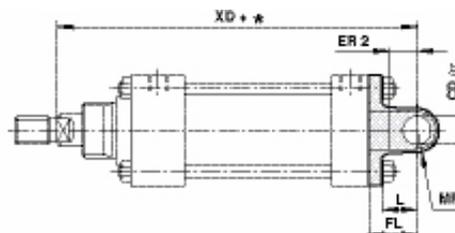
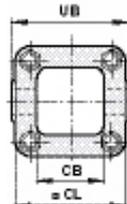
## Foot mounting C



\* 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



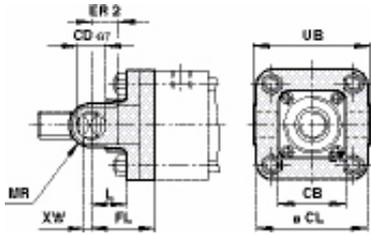
\* stroke

Ø inch	CB	Ø CD67	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	-	244,5	1,25 kg	QM/758

# Heavy duty imperial cylinders RM/900/M

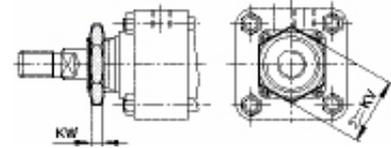
Ø 1 1/4 ... 4"

## Front clevis K



Ø inch	CB	Ø CD67	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

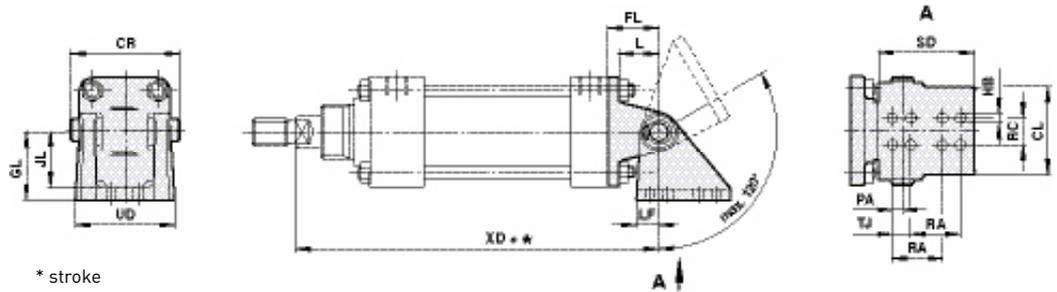
## Nose mounting N



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*

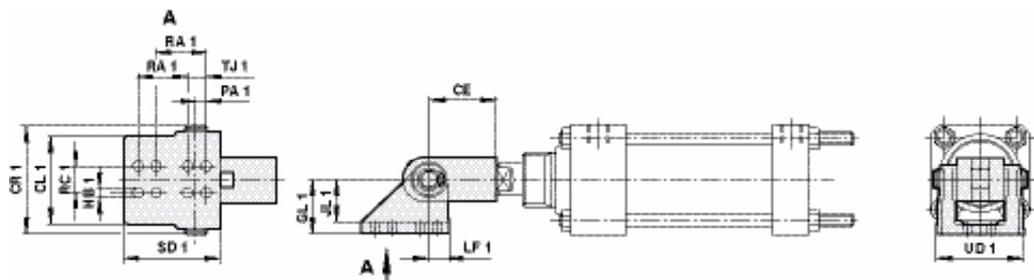
\* These cannot be supplied separately. If a spare Nose Mounting is required, specify basic cylinder reference with 'Q' prefix and -/06 suffix, e.g. QM/940/N/06.

## Rear hinge mounting L



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

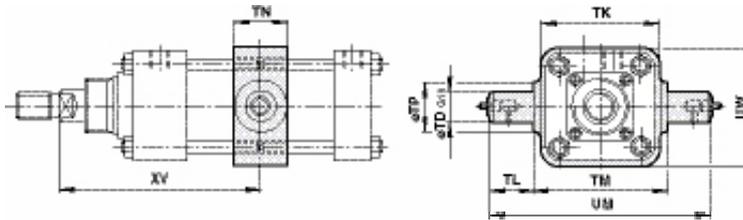


Ø inch	CE	CL 1	CR 1	GL 1	Ø HB 1	JL 1	LF 1	PA 1	RA 1	RC 1	SD 1	TJ 1	UD 1	Weight	Model
1 1/4	25,5	31	39,5	28,5	7,2	20,5	9,5	1,5	25,5	-	41,5	-	-	0,17 kg	QM/393
1 3/4	33,5	32	44,5	32	8,7	25,5	13	5	32	-	47,5	-	-	0,30 kg	QM/923
2	41,5	43	54	32	8,5	24	14	5	32	-	51	-	49	0,40 kg	QM/908
2 1/2	58,5	60	73	47,5	8,5	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

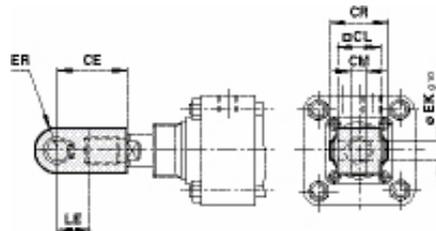


Dimensions shown in mm  
Projection/First angle

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

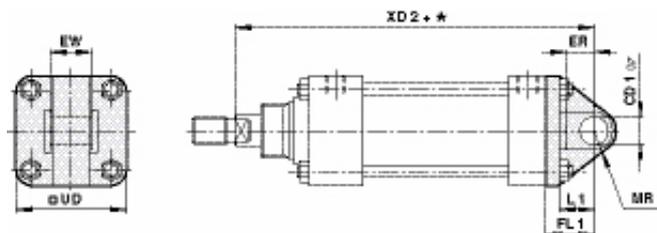
Note: These mountings are only supplied assembled complete with the cylinder.  
Unless otherwise specified, units will be supplied with dimension 'XV' plus half the stroke length. Grease nipple supplied as standard on cylinders 9175 to 940.

### 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



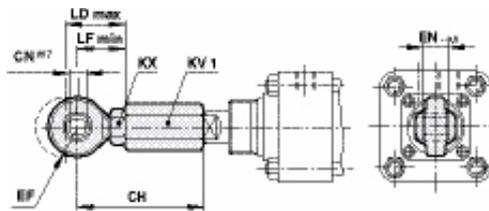
\* stroke

Ø inch	Ø CD 167	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

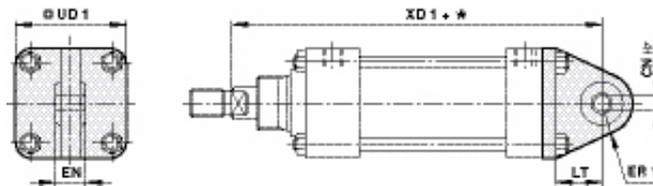
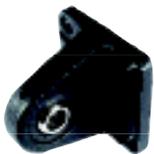


Dimensions shown in mm  
Projection/First angle



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

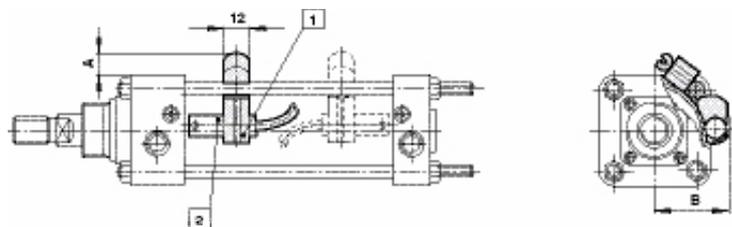


\* stroke

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



REDUCE ENERGY WASTE  
AND CUT COSTS

## ENERGY SAVING IN COMPRESSED AIR SYSTEMS

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 IT* Waste, Energy Consumption, Carbon Emissions

*'It makes sense'*

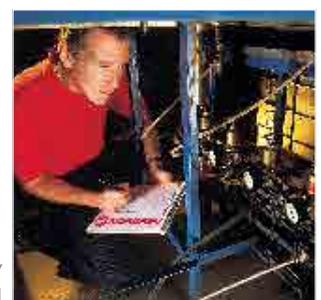
Leakage / Misuse / Over pressurisation /  
Pressure drop / Energy and safety/ Generation

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.

REDUCE ENERGY  
POLLUTION



REDUCE ENERGY  
CONSUMPTION



# Heavy duty imperial cylinders LRM/900

Ø 5" ... 14"



+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	G1/2	G1/2	G3/4	G1	G1	G1
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 (inch <sup>3</sup> /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 (inch <sup>3</sup> /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

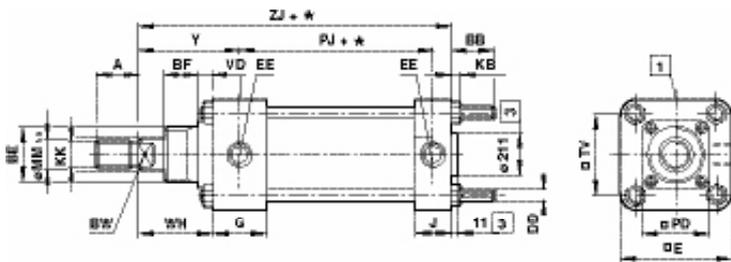
### Ø 5" ... 14"

### Mountings and service kit

Model	B	B+G	C	D	F	G	H
Ø inch	Page 1-26	Page 1-26	Page 1-26	Page 1-27	Page 1-28	Page 1-26	Page 1-28
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 1-27	Page 1-27	Page 1-28	Page 1-27	Page 1-29	Page 1-29	
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	G1/2	41	41	10	M30x3,5
6	47,5	49,5	Ø 58,5	Ø 10	M 16	167	G1/2	41	41	13	M30x3,5
8	57	53,5	Ø 63,5	Ø 10	M 18	219	G3/4	52	52	15	M36x4
10	76	70,5	Ø 77	Ø 10	M 24	270	G1	60	60	19	M48x5
12	76	70,5	Ø 77	Ø 10	M 24	321	G1	60	60	19	M48x5
14	76	93	Ø 89	Ø 10	M 30	375	G1	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"

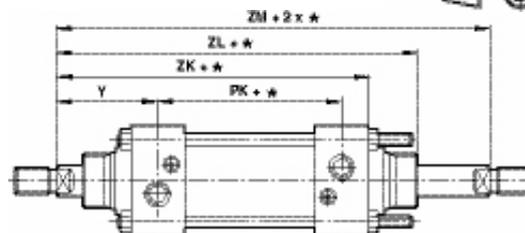
## Cylinder variants

### 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)

Dimensions shown in mm  
Projection/First angle



\* stroke

## Mountings

### Front flange B or rear flange G

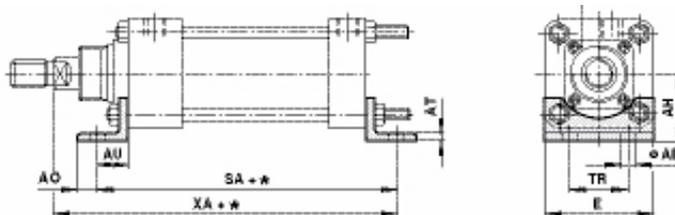
### Front and rear flange BG



\* 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



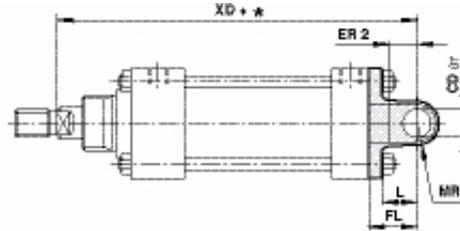
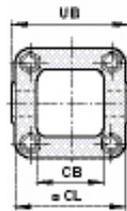
\* stroke

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

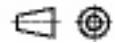
# Heavy duty imperial cylinders LRM/900

Ø 5" ... 14"

## Rear clevis D



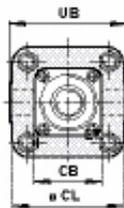
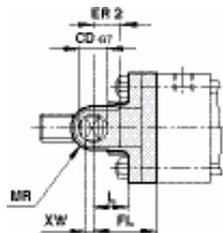
Dimensions shown in mm  
Projection/First angle



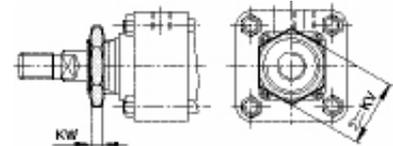
\* stroke

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



## Nose mounting N

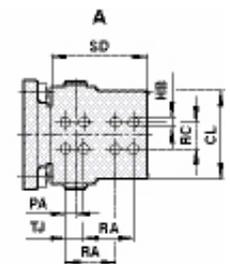
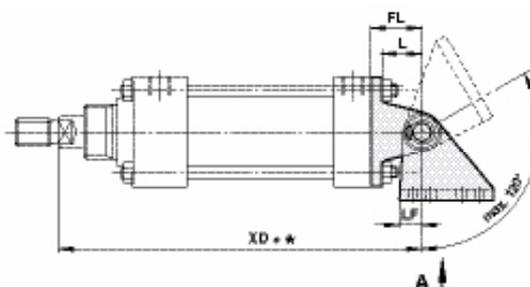
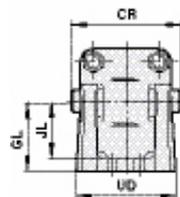


Ø inch	CB	Ø CDG7	CL	ER 2	FL	L	MR	UB	XW	Weight	Model
5	92,1	25	139,5	32	70	44,5	24	152,5	13	2,50 kg	QM/759
6	106,4	32	166,5	35	76	49	29	181	6,5	3,50 kg	QM/761
8	122,2	38	217,5	38	85,5	57	38	237	0	7,00 kg	QM/762

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



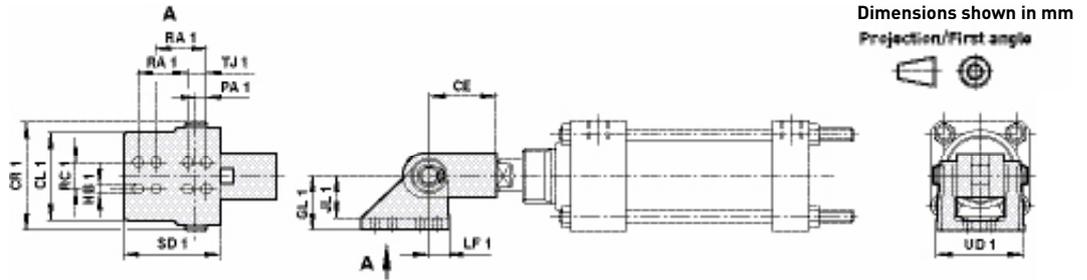
\* stroke

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

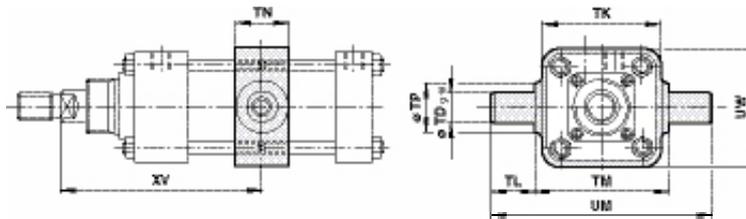
Ø 5" ... 14"

## Rear hinge mounting M



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

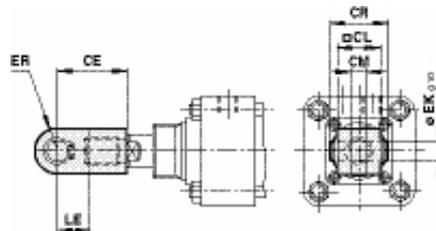
## Centre trunnion H



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

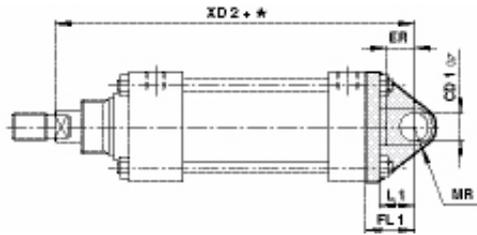
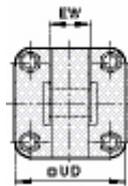


Ø inch	CE	CL	CM	CR	Ø EKg10	ER	LE	Weight	Model
5	79,5	51	20	60	22	25	32	1,25 kg	QM/409
6	79,5	51	20	60	22	25	32	1,25 kg	QM/409
8	95,5	63,5	25	74	25	32	38	1,70 kg	QM/410
10	120,5	76	32	87	32	38	44,5	2,75 kg	QM/411
12	120,5	76	32	87	32	38	44,5	2,75 kg	QM/411
14	120,5	76	32	87	32	38	44,5	4,50 kg	QM/411

# Heavy duty imperial cylinders LRM/900

Ø 5" ... 14"

## Rear eye R



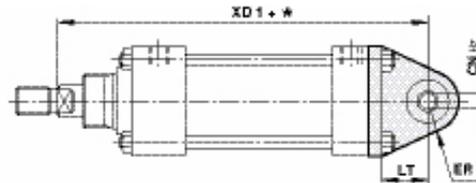
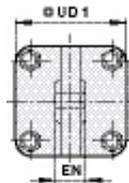
Dimensions shown in mm  
Projection/First angle



\* stroke

Ø inch	Ø CD 167	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



+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

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

A★★77★1-LT-PS-★★-★X★★

Stroke in inch	Substitute
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 1-33	Page 1-33	Page 1-33	Page 1-34	Page 1-34	Page 1-34
4	ABR77B1-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	ABR77B1-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	ABR77C1-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	ABR77C1-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 1-35	Page 1-35	Page 1-33	Page 1-35	
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

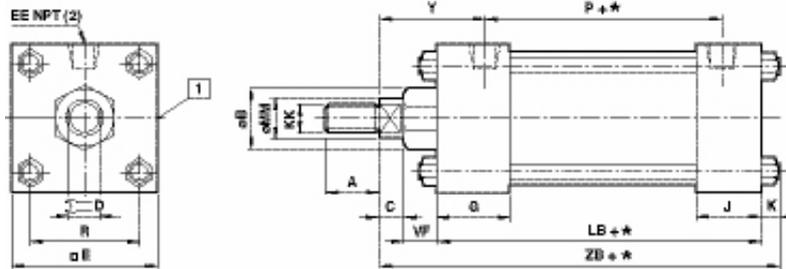
Voltage V d.c.	Current max.	Temperature	LED	Features	Cable length	Cable type	Protection class	Model
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	PNP	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAP/*V
10 ... 30	150 mA	-40 ... +80°C (-40 ... 176°F)	•	NPN	2, 5, 10 m	PVC 3 x 0,25	IP65	M/50/EAN/*V

\* 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)

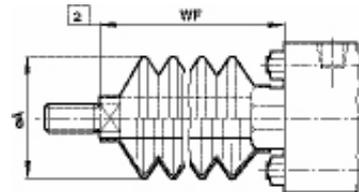
1 Cushion screw

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

A piston rod extension RX (I) 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 (I)	WF retracted
4	3.00	$0.089 \times \text{stroke} + 0.547 = \text{RX value}$	$1.375 + \text{RX value}$
5	3.00	$0.089 \times \text{stroke} + 0.547 = \text{RX value}$	$1.375 + \text{RX value}$
6	3.50	$0.081 \times \text{stroke} + 0.547 = \text{RX value}$	$1.625 + \text{RX value}$
8	3.50	$0.081 \times \text{stroke} + 0.547 = \text{RX value}$	$1.625 + \text{RX value}$



2 Retracted

Example: A1277B1-LT-PB-RB-RX(??)4X5

$0.089 \times 5 + 0.547 = 0.992$ " = piston rod extension

A1277B1-LT-PS-RB-RX(0.992)4x5

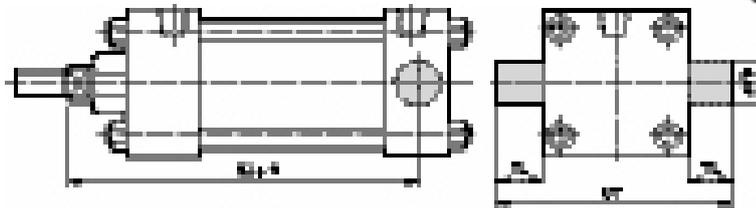
WF = 2.367"

## Double acting imperial cylinders NFPA

Ø 4" ... 8"

### Cylinder with mounting

#### Removable cap trunnion (MT2)



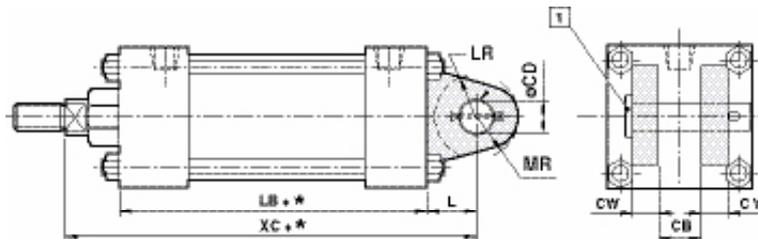
Dimensions shown in inch  
Projection/Third angle

\* 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)

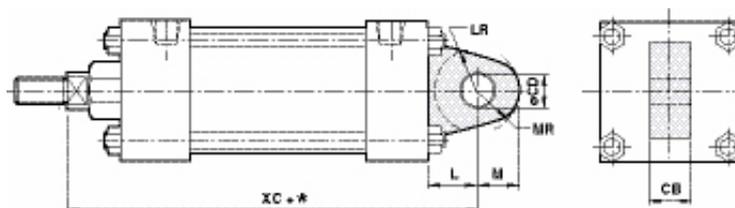


\* stroke

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*

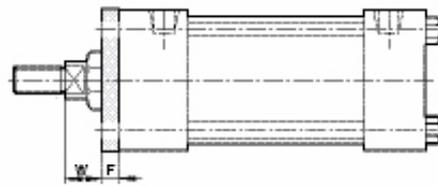
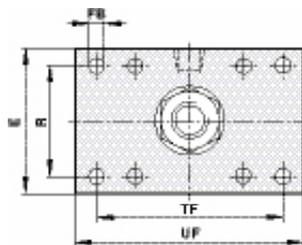
\* Please insert the stroke length in inches

## Double acting imperial cylinders NFPA

Ø 4" ... 8"

### Cylinder with mounting

#### Head rectangular flange mount (MF1) \*1)



Dimensions shown in inch  
Projection/Third angle

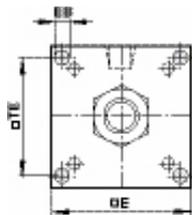


Bore	E	F	FB	R	TF	UF	W (Std.)	Weight lb	Add per inch of stroke lb	Model
4"	4.500	.625	.438	3.323	5.438	6.250	.750	14.8 (6,71 kg)	0.45 (0,21 kg)	A0377B1-LT-PS-4"x*
5"	5.500	.625	.563	4.101	6.625	7.625	.750	22.7 (10,30 kg)	0.51 (0,23 kg)	A0377B1-LT-PS-5"x*
6"	6.500	.750	.563	4.879	7.625	8.625	.875	35.6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

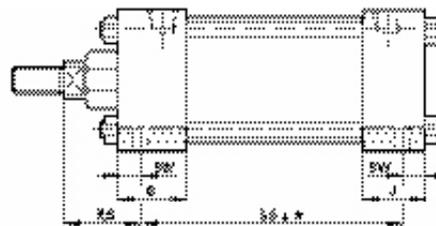
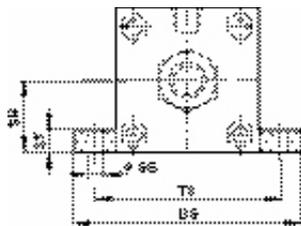


Bore	E	EB	TE	Weight lb	Add per inch of stroke lb	Model
8"	8.500	.688	7.570	40.00 (18,15 kg)	1.06 (0,48 kg)	A0377C1-LT-PS-8"x*

\* 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



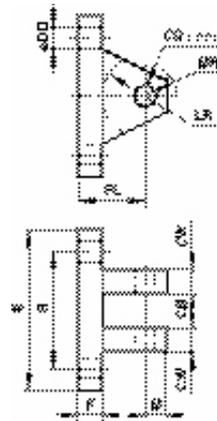
Dimensions shown in inch  
Projection/Third angle



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

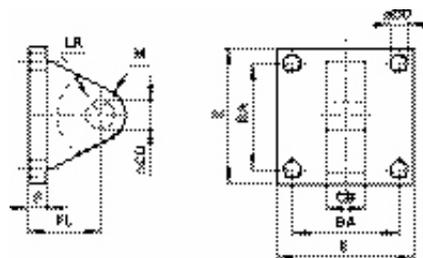
### Norgren clevis bracket



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

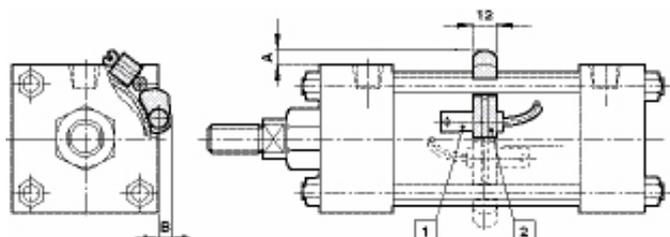


For cyl. Ø	BA	CB	CD	DD	E	F	FL	LR	M	Weight lb	Model (Std.)	Model (Assy.)
4" & 5"	2.563	1.250	.750	.531	3.500	.625	1.875	1.250	.750	9.15 (4,15 kg)	49020	49020A
6" & 8"	3.250	1.500	1.000	.656	4.500	.750	2.250	1.500	1.000	13.45 (6,10 kg)	49019	49019A

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



+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	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2
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 (inch <sup>3</sup> /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 (inch <sup>3</sup> /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)

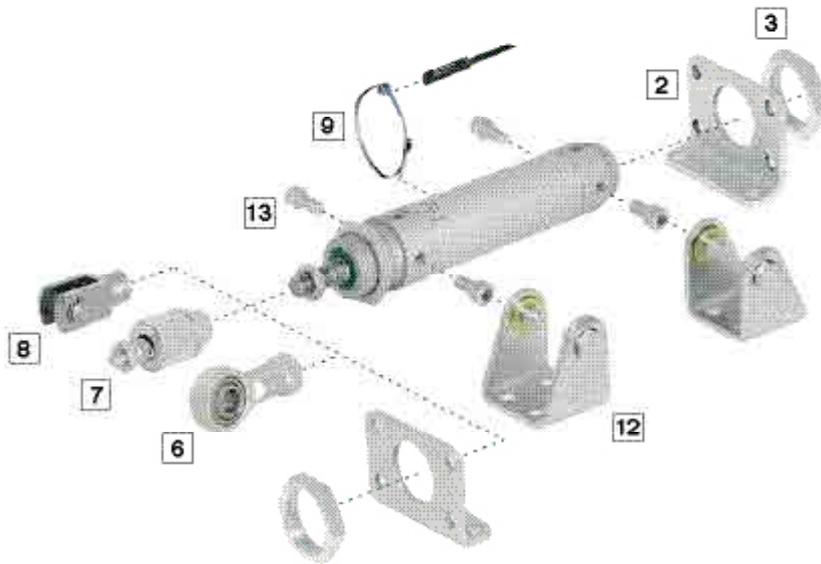
## Standard strokes

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

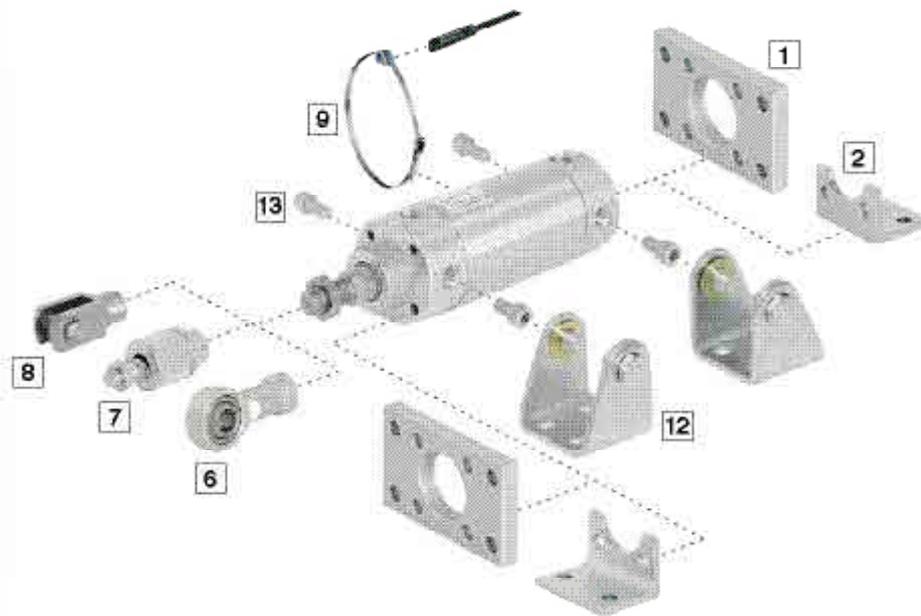
**Double acting roundline cylinders**  
**LRM/55401/M**  
**Ø 32 ... 100 mm**

**Mountings**

Ø 32 ... 63 mm



Ø 80 ... 100 mm



Model	AK	B, G	C	F	H	I	N	UF	Switch mounting	Service kit
	7	1	2	8	13	12	3	6	9	
	Page 1-39	Page 1-39	Page 1-39	Page 1-39	Page 1-40	Page 1-40	Page 1-40	Page 1-40	Page 1-40	
Ø (mm)										
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	LOA/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	LOA/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	LOA/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	LOA/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	LOA/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	LOA/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 *1)	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

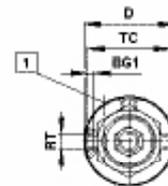
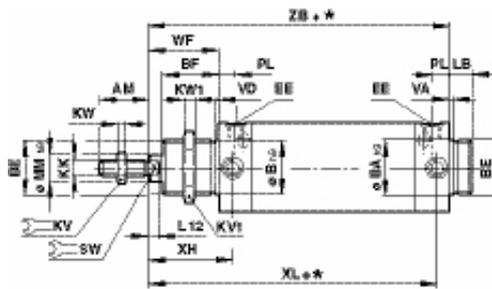
\* Please insert the cable length 2, 5 or 10 m.

\*1) -40°C ... +80°C protection class IP65; -20°C ... +80°C protection class IP67 and IP68

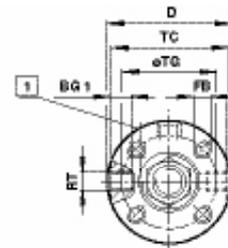
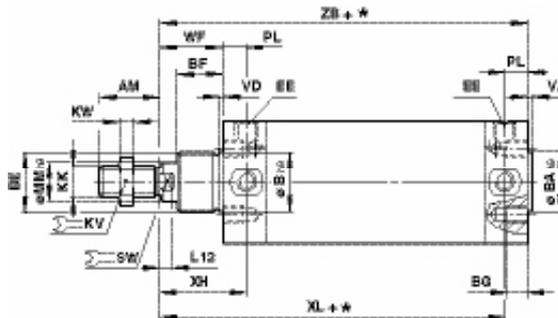
### Basic dimensions

Ø 32 ... 63 mm

Dimensions shown in mm  
Projection/First angle



Ø 80 and 100 mm



\* stroke

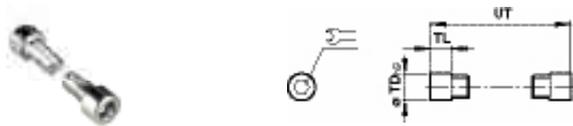
1 Cushion screw

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	G1/8	-	M 10 x 1,25	17	36	5	8	14
40	24	38	M 38 x 1,5	35	-	8	45,5	G1/4	-	M 12 x 1,25	19	46	6	10	16
50	32	45	M 45 x 1,5	38	-	9,5	55,5	G1/4	-	M 16 x 1,5	24	55	8	10	18
63	32	45	M 45 x 1,5	38	-	10	69,5	G3/8	-	M 16 x 1,5	24	55	8	10	18
80	40	55	M 55 x 1,5	45	14	17,5	87,5	G3/8	M8	M 20 x 1,5	30	-	10	-	-
100	40	55	M 55 x 1,5	45	14	21,5	107,5	G1/2	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

### End cover trunnion H

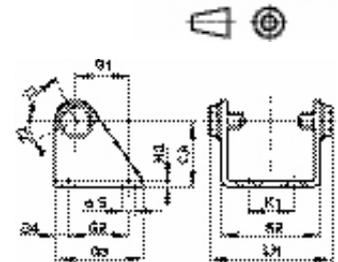


Ø	Ø TDh9	TL	UT	kg	Model
32	10	8	51	5	QM/55232/28
40	12	9,5	63	6	QM/55240/28
50	14	11	76	6	QM/55250/28
63	16	13	93	8	QM/55263/28
80	18	13	111,5	8	QM/55480/28
100	20	13	131,5	10	QM/55410/28

### Rear hinge L

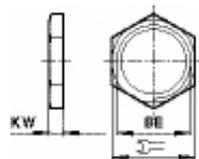


Dimensions shown in mm  
Projection/First angle



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

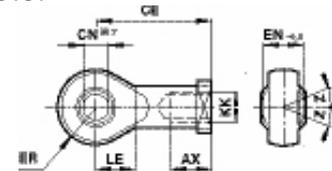
### Nose nut N



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

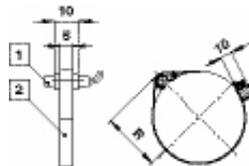
### Universal piston rod eye UF

Conforms to DIN ISO 8139



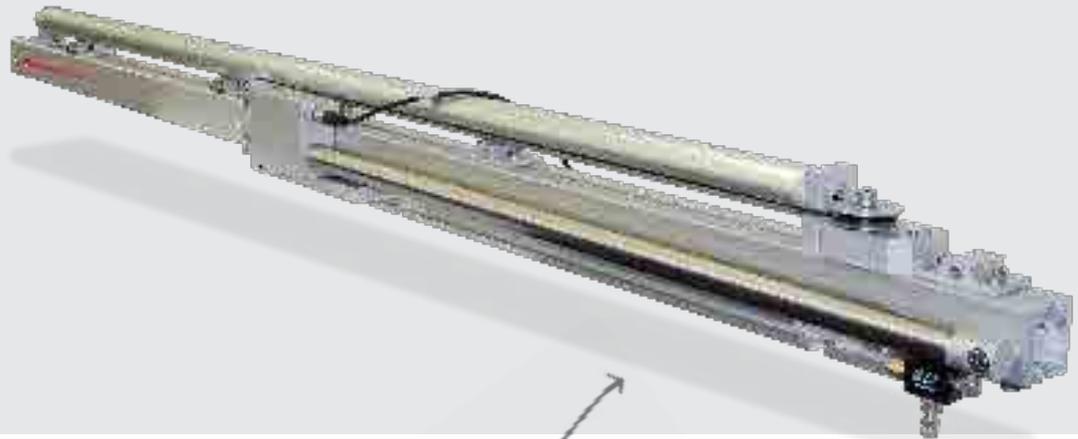
Ø	Thread KK	AX	CE	Ø CNH7	EN-0,1	ER	LE	Z	kg	Model
32	M10x1,25	20	43	10	14	14	15	13°	0,09	QM/8025/32
40	M12x1,25	22	50	12	16	16	17	13°	0,13	QM/8040/32
50/63	M16x1,5	28	64	16	21	21	22	15°	0,33	QM/8050/32
80/100	M20x1,5	33	77	20	25	25	26	15°	0,67	QM/8080/32

### 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



## RAIL DOOR SOLUTIONS

### CUSTOMISED DOOR ACTUATION AND CONTROL

Norgren have been operating in the rail door market since 1987, and currently has more than 17,000 interior door systems and more than 24,000 exterior door actuation and control systems installed on rail cars all over the world, from Siemens' Desiro and ICE fleets to Shanghai's Transrapid maglev train.

Whether external plug door systems for Mainline and High-Speed Trains, external sliding doors for metro cars; or internal pneumatic or electrically operated single leaf and double leaf door control systems – including fire protection capability, Norgren's global experience and expertise sets us apart.

- Reliable access for fast, safe and disabled friendly access
- Sensitive entrapment prevention
- Wide diagnosis capabilities
- Smooth, quiet movement with adjustable speed characteristics
- Flexible control units, easy to program via handheld or PC
- Low maintenance costs
- Retrofit solutions for refurbishment
- Latest Technology

**INTERNAL/EXTERNAL DOOR ACTUATION**

WIDE POWER RANGE

For mainline and high speed trains

ROBUST

OBSTRUCTION DETECTION

Legislation aware

ELECTRICAL & PNEUMATIC

FIELD SERVICEABLE

Maximise space

RELIABLE SAFE

EASY TO MAINTAIN

WIDE DIAGNOSIS CAPABILITIES

40,000 Systems in operation globally

CUSTOM SOLUTIONS

Resistant to environmental impact

Integrated control system

Rodless options

COMPACT - SPACE SAVING

-40°C



# VALVES



## PRODUCTS

2-02	Fast find guide	
2-03	5/2 & 5/3 glandless valves (solenoid and pilot actuated), ISO 1, 2 & 3	RXE & RXP (ISO*STAR)
2-12	2/2, 3/2 way solenoid poppet valves (directly actuated), CNOMO Interface & G1/8 ported	VRW
<b>2-15</b>	<b>Feature page 'Circuit breaker valve'</b>	
2-16	2/2 & 3/2 way direct solenoid operated poppet valves, M12 x 1,5	9011015, 9041015, 9042026
2-18	2/2 & 3/2 Cartridge solenoid valve, Direct integration on to a manifold	VSD
2-20	2/2 & 3/2 Cartridge solenoid valve, Direct integration on to a manifold	RA..., RB... & RC...
2-22	2/2 & 3/2 way solenoid valves (directly actuated), Base mounted	Microsol
2-24	3/2, 2 x 3/2, 5/2 & 5/3 directional control solenoid and pilot valves, 1/4"	VR61
2-38	3/2, 5/2 & 5/3 directional control solenoid valves, Flange version	VR61Z
2-44	3/2 way pilot actuated poppet valves, 1/2" ... 1"	Prospector®
2-46	3/2 & 5/2 pilot actuated spool valves, 1/8" & 1/4"	SUPER X
2-48	3/2, 5/2 & 5/3 manually and mechanically actuated spool valves, 1/8" & 1/4"	SUPER X
2-58	3/2 Heavy duty poppet valves, G1/4	SLV/15293
2-60	2/2 way direct solenoid operated poppet valves, G1/4 or 1/4 NPT	VR95
2-63	3/2 way direct solenoid operated poppet valves, G1/4 or 1/4 NPT	VR96
2-66	3/2 way direct solenoid operated poppet valves, G1/4, 1/4 NPT or flanged with NAMUR interface	VR24
2-71	3/2 way direct solenoid operated poppet valves, Special flange mounting option	VR24Z
2-74	3/2 way direct or indirect solenoid operated poppet valves, G1/2, 1/2 NPT	VR98
2-78	2/2 way valves (direct solenoid actuated seat), 1/8" ... 3/8"	82510, 82610
2-82	2/2 way valves (solenoid actuated diaphragm with forced lifting), 1/4" ... 1/2"	82530
2-84	2/2 way valves (direct solenoid actuated seat), 1/4" & 3/8"	82080
2-86	2/2 way valves (solenoid actuated diaphragm with forced lifting), 1/4" ... 2"	82540
2-90	2/2 way valves (solenoid actuated piston with forced lifting), 1/4" ... 2"	85700
<b>2-93</b>	<b>Feature page 'Freeze protection valves'</b>	
2-94	2/2 way release exhaust valves (pilot actuated), 3/4" & 1"	82900, 83300
2-96	2/2 way valves (pilot actuated), 1/4" ... 1/2"	82710
2-98	2/2 way valves (pilot actuated), 1/8" ... 1/2"	84180, 84190
2-100	2/2 way valves (pilot actuated), 1/2" ... 2"	84500, 84720
2-102	2/2 way valves (pilot actuated), 1/2" ... 2"	82180, 82280
2-104	2 x 2/2 way valves (direct solenoid actuated seat), G3/4 or 3/4 NPT	1405899... & 1405985...
2-106	2/2 way minimum pressure valve, 3/8", 1/2" & 3/4"	NMPV
<b>2-108</b>	<b>Feature page 'Automatic drain valves'</b>	

# FAST FIND GUIDE

VALVES  
2

**RXE & RXP (ISO\*STAR)**

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



Page 2-03

**VRW**

2/2, 3/2 way solenoid poppet valves (directly actuated) CNOMO Interface & G1/8 ported



Page 2-12

**9011015, 9041015, 9042026**

2/2 & 3/2 way direct solenoid operated poppet valve M12 x 1,5



Page 2-16

**VSD**

2/2 & 3/2 Cartridge solenoid valve Direct integration on to a manifold



Page 2-18

**RA..., RB... & RC...**

2/2 & 3/2 Cartridge solenoid valve Direct integration on to a manifold



Page 2-20

**Microsol**

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



Page 2-22

**VR61**

3/2, 2 x 3/2, 5/2 & 5/3 directional control solenoid and pilot valves 1/4"



Page 2-24

**VR61Z**

3/2, 5/2 & 5/3 directional control solenoid valves Flange version



Page 2-38

**Prospector®**

3/2 way pilot actuated poppet valves 1/2" ... 1"



Page 2-44

**SUPER X**

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



Page 2-46

**SUPER X**

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



Page 2-48

**SLV/15293**

3/2 Heavy duty poppet valves G1/4



Page 2-58

**VR95**

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



Page 2-60

**VR96**

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



Page 2-63

**VR24**

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



Page 2-66

**VR24Z**

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



Page 2-71

**VR98**

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



Page 2-74

**82510, 82610**

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



Page 2-78

**82530**

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



Page 2-82

**82080**

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



Page 2-84

**82540**

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



Page 2-86

**85700**

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



Page 2-90

**82900, 83300**

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



Page 2-94

**82710**

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



Page 2-96

**84180, 84190**

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



Page 2-98

**84500, 84720**

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



Page 2-100

**82180, 82280**

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



Page 2-102

**1405899... & 1405985...**

2 x 2/2 way valves (direct solenoid actuated seat) G3/4 or 3/4 NPT



Page 2-104

**NMPV**

2/2 way minimum pressure valve 3/8", 1/2" & 3/4"



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## 5/2 & 5/3 glandless valves (solenoid and pilot actuated) RXE & RXP (ISO\*STAR)

ISO 1, 2 & 3

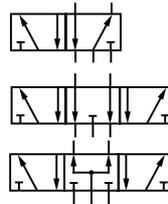
**Specially coated glandless spool and sleeve for long trouble-free life**

**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**



### 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 & 3

**Maximum operating pressure:**

16 bar (232 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).

**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 PTFE coated, matched aluminium  
 Static seals: VMQ and nitrile rubber  
 Plastic parts: POM  
 Screws: Zinc plated  
 Coil: glass reinforced nylon  
 Internal parts: stainless steel  
 Seals: NBR (FKM top seat)

### Technical data – solenoid operators

Type	32 mm solenoid valve with sub base inlet and outlet connections
Circuit function	3/2, Normally closed
Orifice	1,5 mm
Seal material	Flourine rubber
Body material	Brass
Port connection	Exhaust port 1/8" BSP female; 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	4 Watt

Voltage tolerance	±30% of nominal
Electrical connection	DIN EN 175301-803 (DIN 43650) Form A
Manual override	Screw turn and lock *1)
Pressure range	0 ... 16 bar
Kv value	0.05 cubic metres / hour
Weight	0.25 kg
Duty cycle	100% ED
Low voltage directive	2006/95/EC
EMC directive	2004/108/EC
PE directive	97/23/EC
Fire and smoke	NFF 16-101

\*1) Rotational lever or without manual override on request.

### 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 2-04

\*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 & 5/3 glandless valves (solenoid and pilot actuated) RXE & RXP (ISO\*STAR)

### ISO 1, 2 & 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	COE	Internal	Solenoid	Solenoid	2 ... 10	1,00	RXE9773-Z50-*
	2						1,20	RXE9774-Z50-*
	3						1,40	RXE9775-Z50-*
	1	COP	Internal	Solenoid	Solenoid	2 ... 10	1,00	RXE9873-Z50-*
	2						1,20	RXE9874-Z50-*
	3						1,40	RXE9875-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 function: COP = Centre Open Pressure, COE = Centre Open Exhaust

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

Valve function	Substitute	Voltage code	Substitute
5/2 solenoid/solenoid, bistable valve	05	For voltage code please see tables below	
5/2 solenoid/spring, monostable valve	95	<b>Pilot supply *</b>	<b>Substitute</b>
5/3 - COE	97	Internal (double solenoid)	0
5/3 - COP	98	Internal (single solenoid valve, mechanical spring)	1
<b>ISO size</b>	<b>Substitute</b>	External (double solenoid)	5
ISO 1	3	External (single solenoid valve, mechanical spring)	6
ISO 2	4	<b>Integrated flow control</b>	<b>Substitute</b>
ISO 3	5	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 Railline® product range

#### Solenoid pilot valves – voltage codes and part numbering

Voltage	Voltage code – solenoid pilot valve with manual override *1)	Spare – replacement coil part number *1)
12 V d.c.	12S	VRW4204111/12N
24 V d.c.	24S	VRW4204111/24N
37,5 V d.c.	37S	VRW4204111/37N
52 V d.c.	52S	VRW4204111/52N
74 V d.c.	74S	VRW4204111/74N
96 V d.c.	96S	VRW4204111/96N
110 V d.c.	11S	VRW4204111/11N



\*1) Standard manual override is a screw driver turn and lock = S at the last position in the voltage code.

Optional overrides available on request;

None = X

Lever = L

Push button = P

#### Accessories

Connector	Connector with moulded cable
0570275	M/P 43315/1 (1 m)
	M/P 43315/3 (3 m)

## 5/2 & 5/3 glandless valves (solenoid and pilot actuated) RXE & RXP (ISO\*STAR)

ISO 1, 2 & 3

### 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	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
	1	COP	Air	Air	-0,9 ... 16	2 ... 16	0,30	RXP9873-170-00
	2						0,50	RXP9874-170-00
	3						0,70	RXP9875-170-00

5/3 valve mid position function: COP = Centre Open Pressure, COE = Centre Open Exhaust

### Option selector (air pilot actuated valves)

RXP★★7★-1★0-00

Valve function	Substitute	Integrated flow control	Substitute
5/2 pilot/pilot, bistable valve	05	Without - Standard	7
5/2 pilot/spring, monostable valve	95	With	8
5/3 - COE	97		
5/3 - COP	98		
ISO size	Substitute		
ISO 1	3		
ISO 2	4		
ISO 3	5		

## 5/2 & 5/3 glandless valves (solenoid and pilot actuated) RXE & RXP (ISO\*STAR)

### ISO 1, 2 & 3

#### 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 2-09	Page 2-09	Page 2-09	Page 2-09	Page 2-09	Page 2-09	Page 2-09	Page 2-10	Page 2-10	Page 2-10
	G thread	NPT thread	G 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 2-11	Page 2-11	Page 2-11	Page 2-11	Page 2-11	Page 2-11	Page 2-11	Page 2-11	Page 2-11	Page 2-11
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

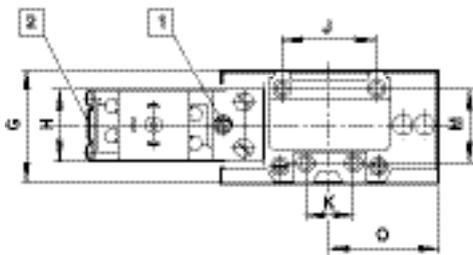
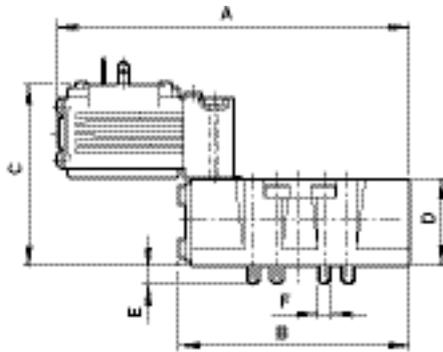
	Blanking plate for VDMA universal sub-bases		Transition plate for VDMA sub-bases		Silencer	
	Page 2-10	Page 2-10	Page 2-10	Page 2-10	Page 2-10	Page 2-10
ISO 1	CQM/22152/3/23	CQM/22152/3/24 (1 to 2)	0015510			
ISO 2	CQM/22253/3/23	CQM/22253/3/24 (2 to 3)				
ISO 3	CQM/22354/3/23	FP8570 (1 to 3)				

\*1) For multipressure systems

## 5/2 & 5/3 glandless valves (solenoid and pilot actuated) RXE & RXP (ISO\*STAR)

ISO 1, 2 & 3

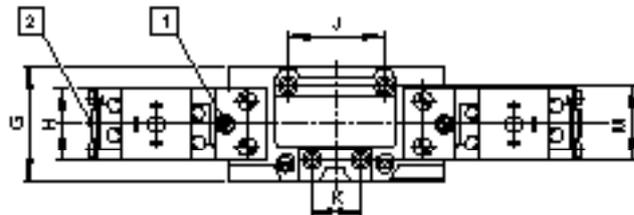
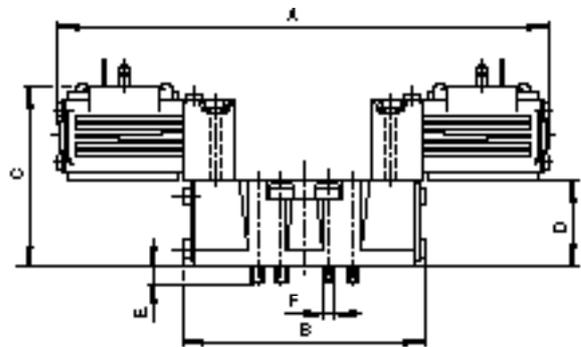
### RXE 957\*-Z models Single CNOMO solenoid pilot valves



1 Manual override

### RXE 057\*-Z, RXE 977\*-Z and RXE 987\*-Z models Double CNOMO solenoid pilot valves

Dimensions shown in mm  
Projection/First angle



### Single CNOMO solenoid pilot valves

ISO size	A	B	C	D	E	F	G	H	J	K	M	O	kg	Model
1	148	88,5	69	33	7,5	M5	42	32	36	18	28	42	0,6	RXE9573-Z...
2	167	112,5	79	42	7	M6	55,5	32	48	24	38	53	0,8	RXE9574-Z...
3	188	135,5	80	43	11,5	M8	62,5	32	64	32	48	65,5	1,0	RXE9575-Z...

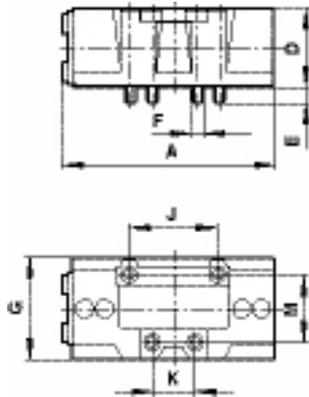
### Double CNOMO solenoid pilot valves

ISO size	A	B	C	D	E	F	G	H	J	K	M	kg	Model
1	206	92	69	33	7,5	M5	42	32	36	18	28	1,0	RXE0573-Z... RXE9773-Z... RXE9873-Z...
2	224	118	79	42	7	M6	55,5	32	48	24	38	1,2	RXE0574-Z... RXE9774-Z... RXE9874-Z...
3	247	140	80	43	11,5	M8	62,5	32	64	32	48	1,4	RXE0575-Z... RXE9775-Z... RXE9875-Z...

**5/2 & 5/3 glandless valves (solenoid and pilot actuated)  
RXE & RXP (ISO\*STAR)**

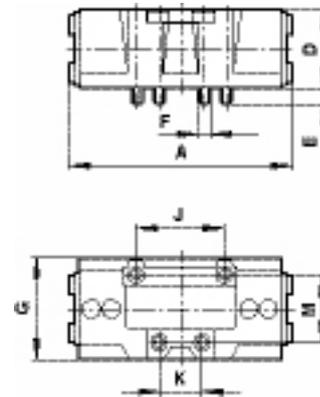
**ISO 1, 2 & 3**

**RXP957\* models  
Single air pilot valve**



**RXP057\*, RXP977\*, RXP987\* 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	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

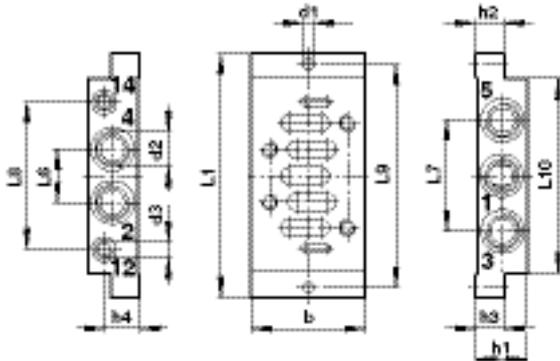
ISO size	A	D	E	F	G	J	K	M	kg	Model
1	88,5	33	7,5	M5	42	36	18	28	0,2	RXP0573-170-00
1	92,5	33	7,5	M5	42	36	18	28	0,3	RXP9773-170-00 RXP9873-170-00
2	111	42	7	M6	55,5	48	24	38	0,4	RXP0574-170-00
2	118	42	7	M6	55,5	48	24	38	0,5	RXP9774-170-00 RXP9874-170-00
3	134	43	11,5	M8	62,5	64	32	48	0,7	RXP0575-170-00
3	134	43	11,5	M8	62,5	64	32	48	0,7	RXP9775-170-00 RXP9875-170-00

## 5/2 & 5/3 glandless valves (solenoid and pilot actuated) RXE & RXP (ISO\*STAR)

ISO 1, 2 & 3

### Sub-bases and end plates

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



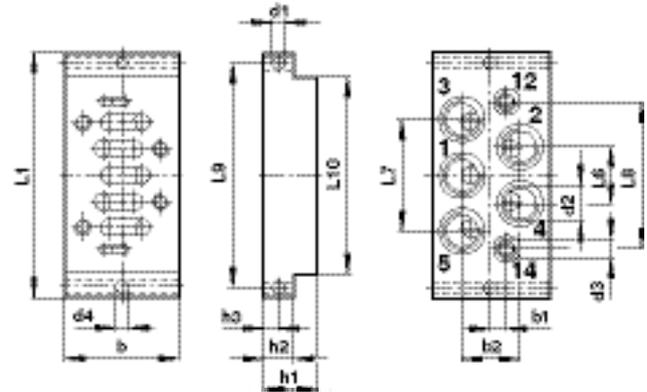
ISO	b	d1	d2	d3	h1	h2	h3	Model
1	48	5,5	1/4"	1/8"	32	10	10,5 (21,5)	#/P19126
2	57	6,6	3/8"	1/8"	40	13	14 (26)	#/P19132
3	71	6,6	1/2"	1/8"	32	18	179	#/P19138

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

( ) Dimension for ports 3 and 5.

# Insert 'M' for ISO G parallel or 'C' for NPT threads

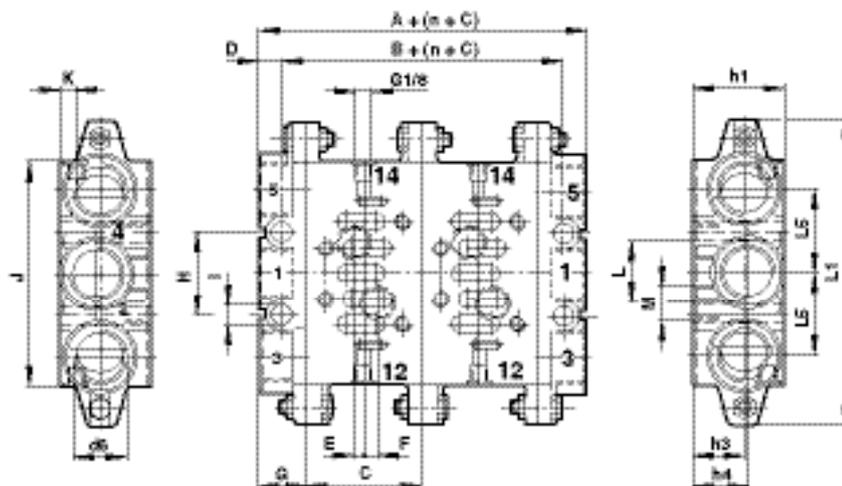
Single station sub-base  
bottom ported (Form B)  
for ISO G and NPT threads



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

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



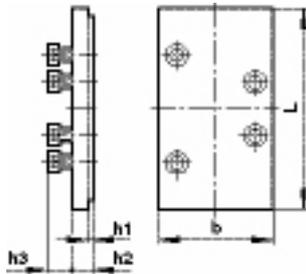
ISO	A	B	C	D	E	F	G	H	I	kg	Model G thread	Model NPT thread
1	44	22	43	11	1,5	7,5	22	28	7	0,24	CQM/22152/3/21	239-238B
2	52	26	56	13	5	6	26	35	9	0,36	CQM/22253/3/21	239-242B
3	60	30	71	15	6	8	30	52	12	0,72	CQM/22354/3/21	239-246B

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 & 5/3 glandless valves (solenoid and pilot actuated)  
RXE & RXP (ISO\*STAR)**

ISO 1, 2 & 3

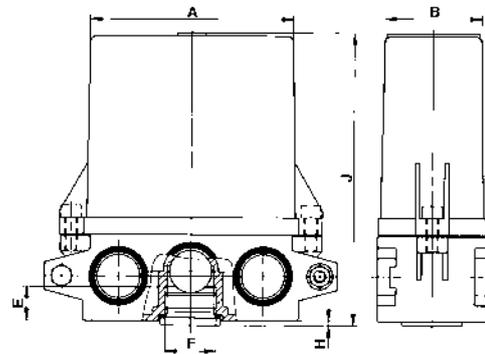
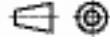
**Blanking plate for VDMA &  
universal sub-bases with ISO G  
and NPT threads**



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

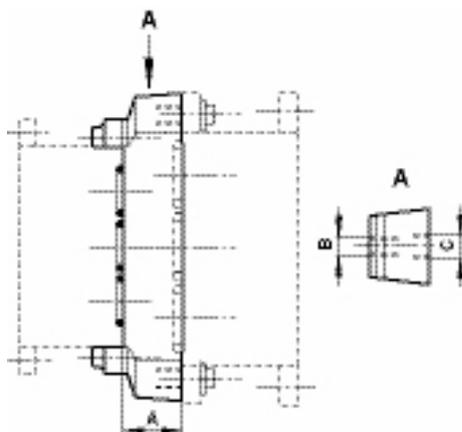
**Silencer for VDMA &  
universal sub-bases with ISO G  
and NPT threads**

Dimensions shown in mm  
Projection/First angle



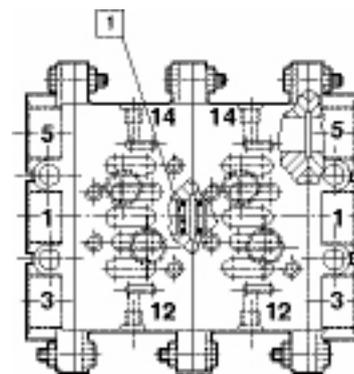
ISO	A	B	E	F	H	J	Model
1	77	38	15	G3/8	2	122	0015510

**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**

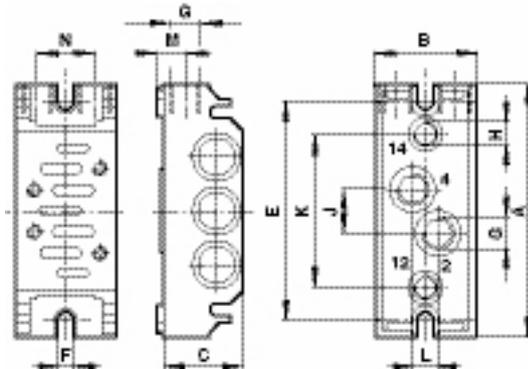


**1** Blanking disc (FP.) or 239-...

## 5/2 & 5/3 glandless valves (solenoid and pilot actuated) RXE & RXP (ISO\*STAR)

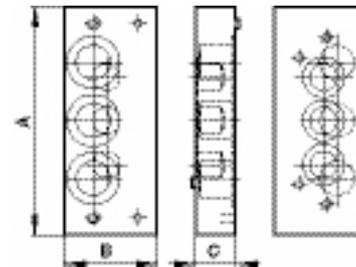
ISO 1, 2 & 3

Universal sub-base options for ISO G threads only  
Modular base with side, end and bottom ports open



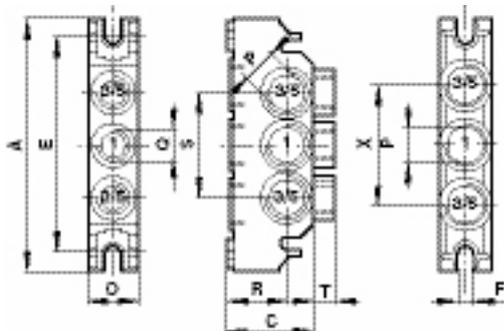
ISO	A	B	C	E	F	G	H	J	K	L	M	N	kg	Model
1	106	43	36	92	5,5	G1/4	G1/8	18	64	11	12	28	0,16	CQM/22152/3/27
2	120	56	43	102	6,5	G3/8	G1/8	24	68	19	15	38	0,35	CQM/22253/3/27

Transition plate from ISO 1 to ISO 2  
Dimensions shown in mm  
Projection/First angle



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

Universal end plate, all ports blocked

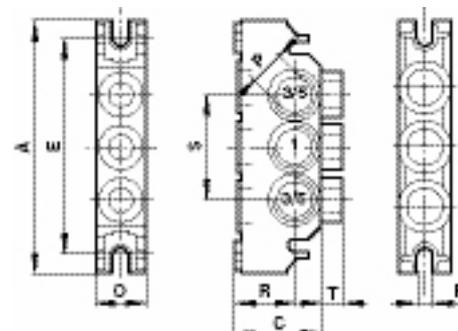


ISO	A	C	E	F	O	P	Q	R	S	T	X	kg	Model
1	106	36	92	5,5	22	G3/8	G1/4	25	44	9	50	0,13	CQM/22152/3/28
2	120	46	102	6,5	29	G1/2	G1/4	31	58	7	58	0,23	CQM/22253/3/28

Drill dimensions for opening ports

G1/4	∅ 8
G3/8	∅ 15
G1/2	∅ 15

Universal end plate, side ports open



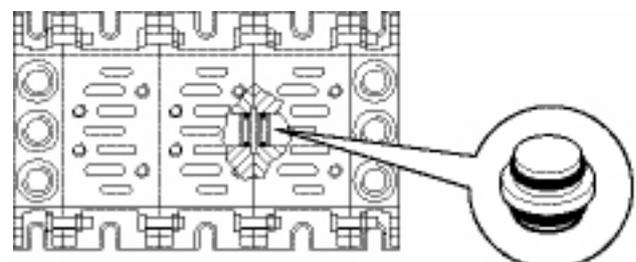
ISO	A	C	E	F	O	P	R	S	T	kg	Model
1	106	36	92	5,5	22	G3/8	25	44	9	0,13	CQM/22152/3/31
2	120	46	102	6,5	29	G1/2	31	58	7	0,23	CQM/22253/3/31

Drill dimensions for opening ports

G1/4	∅ 8
G3/8	∅ 15
G1/2	∅ 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



## 2/2, 3/2 way solenoid poppet valves (directly actuated) VRW

### CNOMO Interface and G1/8 ported

32 mm compact design

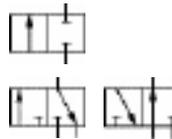
Fully encapsulated coil

Extensive range of power and orifice sizes

Wide voltage tolerance band

Wide temperature range

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



### Technical features

**Medium:**

Compressed air lubricated or non-lubricated

**Operation:**

Solenoid direct operated poppet valve

**Operating pressure:**

0 ... 16 bar (0 ... 232 psi)

**Orifice:**

1 ... 2,5 mm

**Port size/mounting:**

CNOMO Interface and G1/8 ported  
Bottom interface versions available on request.

**Fluid/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**

Valve base:  
Interface: Polyester  
CNOMO: Nylon  
G1/8: epoxy powder coated zinc alloy  
Coil: glass reinforced nylon  
Internal parts: stainless steel  
Seals: NBR (FKM top seat)

### Technical data – solenoid operators

Nominal voltages	12, 24, 37.5, 52, 74, 96, 110 Volts
Power consumption	4, 6 or 8 Watt
Voltage tolerance	±30% of nominal
Duty cycle	100% ED
Opening/closing time	15 ... 30/5 ... 10 ms
Electrical connection	DIN EN 175301-803 (DIN 43650) Form A

Protection class	IP65 (with plug fitted)
Manual override	Screw turn and lock *1)
Low voltage directive	2006/95/EC
EMC directive	2004/108/EC
PE directive	97/23/EC
Fire and smoke	NFF 16-101

\*1) Rotational lever or without manual override on request.

### Technical data - Standard options

Symbol	Basic valve	Function	Power (W)	Orifice (mm)	Flow (l/min)	Operating pressure (bar)	Weight (kg)	Dimension No.	Model
	G1/8	NC	4	1,5	75	16	0,27	1	VRW4101111/**N
	CNOMO	NC	4	1,5	77	16	0,22	2	VRW4104111/**N
	G1/8	NC	8	2,0	104	16	0,27	1	VRW8101121/**N
	CNOMO	NC	8	2,0	89	16	0,22	2	VRW8104121/**N
	G1/8	NC	8	2,5	152	10	0,27	1	VRW8101131/**N
	CNOMO	NC	8	2,5	123	10	0,22	2	VRW8104131/**N
	G1/8	NC	4	1,5	75	16	0,27	3	VRW4201111/**N
	CNOMO	NC	4	1,5	77	16	0,22	4	VRW4204111/**N
	G1/8	NC	8	2,0	104	16	0,27	3	VRW8201121/**N
	CNOMO	NC	8	2,0	89	16	0,22	4	VRW8204121/**N
	G1/8	NC	8	2,5	152	10	0,27	3	VRW8201131/**N
	CNOMO	NC	8	2,5	123	10	0,22	4	VRW8204131/**N

\*\* = Insert voltage code, see page 2-13. Other options are available, please contact our technical service.

## 2/2, 3/2 way solenoid poppet valves (directly actuated)

**VRW**

**CNOMO Interface and G1/8 ported**

### Option selector

Note: Standard available power, and orifice options are listed above

Power	Substitute
4 Watt	4
6 Watt	6
8 Watt	8
Function	Substitute
2/2 Normally closed (NC)	1
3/2 Normally closed (NC)	2
Connection/interface	Substitute
G1/8	1
CNOMO	4
Bottom interface (on request)	
Manual override	Substitute
Screw driver turn lock	1
Lever (on request)	
Push only (on request)	
None (on request)	

VRW★★0★★★1/★★N

Voltage	Substitute
12 V d.c.	12
24 V d.c.	24
37,5 V d.c.	37
52 V d.c.	52
74 V d.c.	74
96 V d.c.	96
110 V d.c.	11
Orifice	Substitute
1,0 mm	0
1,5 mm	1
2,0 mm	2
2,5 mm	3

Note:  
1,0 mm available with 4 Watt  
1,5 mm available with 4 and 6 Watt  
2,0 and 2,5 mm available with 8 Watt

### Accessories

Connector

Connector with moulded cable



0570275

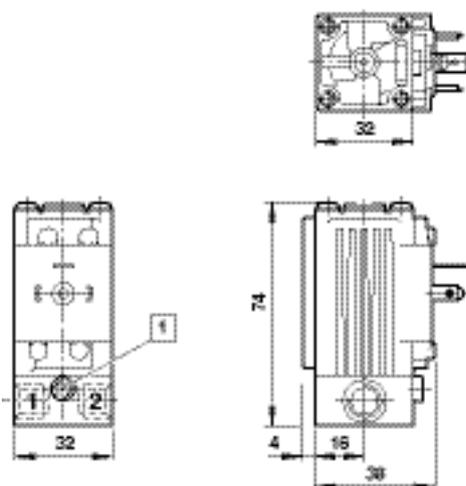
M/P 43315/1 (1 m)

M/P 43315/3 (3 m)

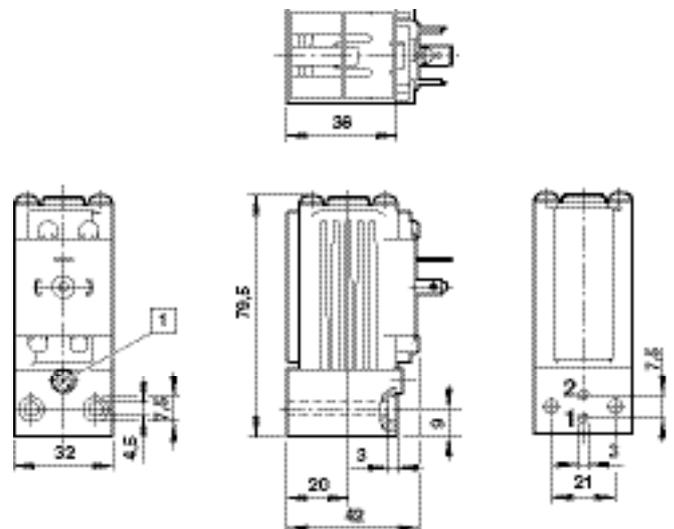
### Dimensions

#### 2/2 way valves

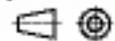
1 G1/8 thread



2 CNOMO Interface



Dimensions shown in mm  
Projection/First angle



☐ Manual override

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

**2/2, 3/2 way solenoid poppet valves (directly actuated)  
VRW**

**CNOMO Interface and G1/8 ported**

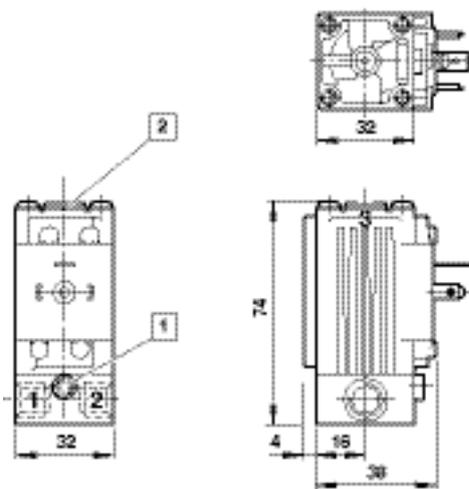
**Dimensions**

**3/2 way valves**

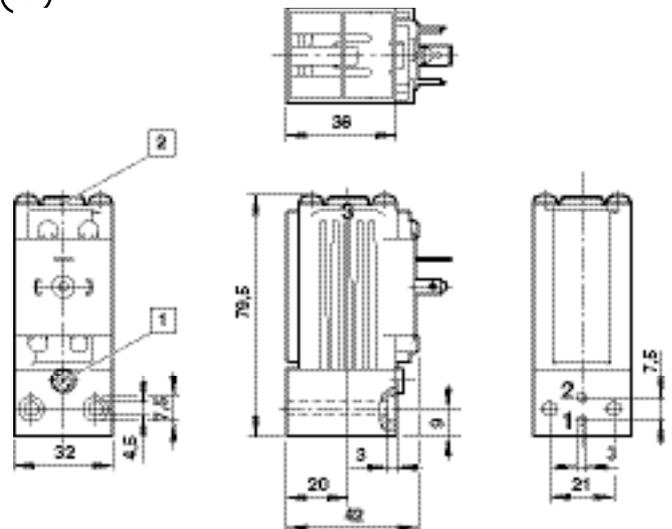
Dimensions shown in mm  
Projection/First angle



**3 G1/8 thread**



**4 CNOMO Interface**



- 1 Manual override
- 2 G1/8 exhaust port

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

## CIRCUIT BREAKER SOLENOID VALVES

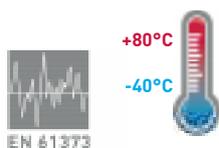
### VR24Z SOLENOID VALVES

Norgren's range of Circuit Breaker Solenoid Valves have been developed specifically for use with circuit breakers on electric rail vehicles. There are many different applications depending on the vehicle, from cam shaft connectors, line breaker connectors, vacuum & air blast circuit breakers and shoe gear controls. All these systems require a special valve and cylinder to engage and disengage the electrical connectors.

- Provide a direct acting, fast response solenoid valve with high reliability and safety
- Proven Norgren technology and suitable for use down to -40°C
- Customisable mountings for fixing holes and air connections



**3/2 SOLENOID OPERATED POPPET VALVE**  
 0 ... 10bar Add-on manual override  
 OUTDOOR USE  
 -40°C...+80°C  
 Aluminium housing  
 Special flange mounting option  
 VIBRATION EN 61373  
 FLOW 340 l/min



- 3/2 way direct solenoid operated poppet valve
- Add-on manual override
- Wide temperature range from -40°C...+80°C
- Suitable for extreme environmental conditions
- Shock and vibration tested to EN 61373, Category 1 class A and B
- Operating pressure: 0...10 bar (0...145 psi)
- Voltage: 24, 36, 72, 110 vdc

For more information go to page 2-71

## 2/2 & 3/2 way direct solenoid operated poppet valves

9011015, 9041015, 9042026

M12 x 1,5

**Robust & flexible valves ideal for use in all applications**

**Stackable - option and easy installation for added flexibility**

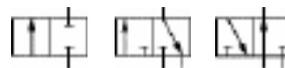
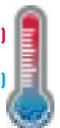
**Wide temperature range**

**Shock/vibration - 10g/500 Hz**



+80°C (+176°F)

-40°C (-40°F)



### Technical features

**Medium:**

Compressed air, filtered, lubricated and non-lubricated

**Operation:**

Direct solenoid operated poppet valves

**Flow direction:**

Optional

**Mounting position:**

Any, but preferably with solenoid vertical

**Flow:**

Gaseous fluids: 340 l/min

**Port size:**

M12 x 1,5

**Orifice:**

3 mm

**Operating pressure:**

0 ... 10 bar (0 ... 145 psi)

**Temperature valve:**

2/2 way valve:

-40 ... +70°C (-40 ... +158°F),

3/2 way valves:

-40 ... +80°C (-40 ... +176°F),

Air supply must be dry enough

to avoid ice formation at

temperatures below +2°C (+35°F).

**Materials**

Housing: die-cast aluminium

Internal parts: stainless steel/steel

Seal: FKM

### Technical data

Symbol	Function	Operating pressure (bar)	Material Seat seal	Temperature*2) (°C)	Manual override	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	2/2 NC	0 ... 10	FKM	-40 ... +70	without	0,443	1	3701	9011015.3701
	3/2 NC	0 ... 10	FKM	-40 ... +80	without	0,443	2	3701	9041015.3701
	3/2 NO	0 ... 10	FKM	-40 ... +80	without	0,445	3	3701	9042026.3701

\*1) x = Insert solenoid code 24 V d.c. = 02400, 48 V d.c.=04800, 110 V d.c.= 11000

### Solenoid operators

	Power consumption (W)	Rated current (mA)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Circuit diagram No.	Model
	13	575 (24 V d.c.) 287 (48 V d.c.) 106 (110 V d.c.)	-40 ... +70	+/- 25	IP 65 (with Connector *5)	Connector DIN EN 175301-803 Form A *6)	0,3	1	3701

\*5) Required connector: type 0570275

\*6) Connector cable gland not supplied, see table »Accessories«

\*7) IP-Protection class according to EN60529

### Circuit diagrams



2/2 & 3/2 way direct solenoid operated poppet valves  
9011015, 9041015, 9042026

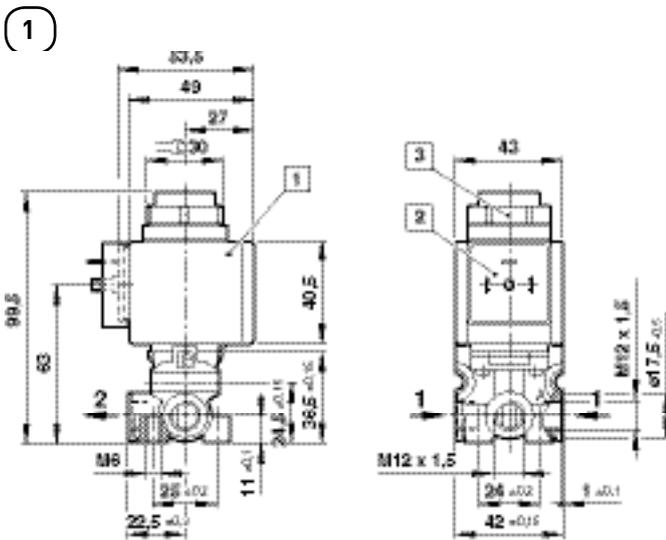
M12 x 1,5

Accessories

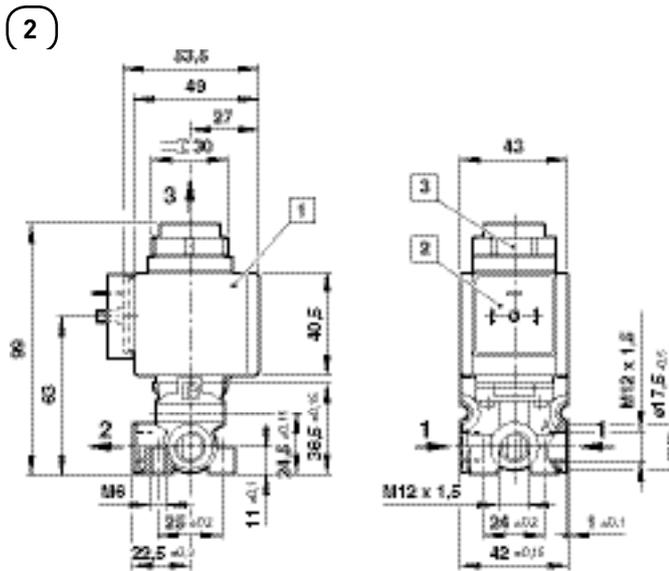


Dimensions  
2/2 way valve

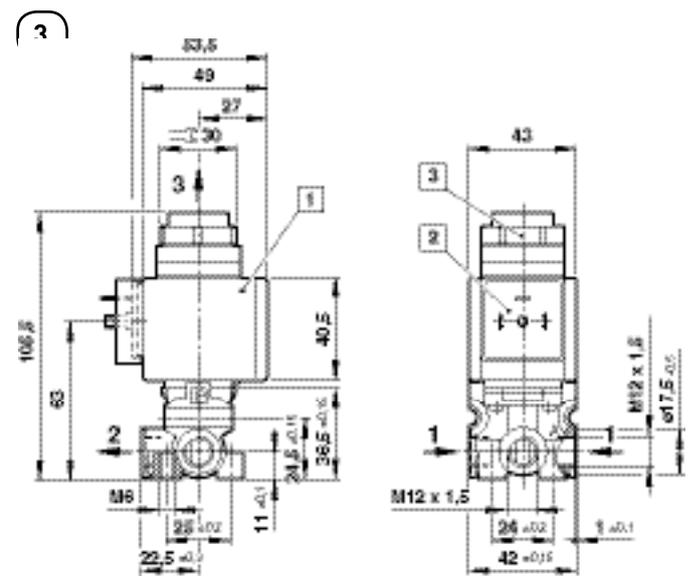
Dimensions shown in mm  
Projection/First angle



3/2 way valve (NC)



3/2 way valve (NO)



## 2/2 & 3/2 Cartridge solenoid valve VSD

Direct integration on to a manifold

- Compact, fully encapsulated assembly
- 2/2 or 3/2 function with collected exhaust
- Maximum protection from vibration and impact damage
- Maximum environmental protection
- Wide temperature range
- Shock vibration tested to EN 61373, Category 1, class A and B



+80°C (+176°F)

-40°C (-40°F)



### Technical features

**Medium:**

Compressed air, filtered, lubricated and non-lubricated  
Light oil, water and other non corrosive liquids and gases

**Operation:**

Poppet valve, directly actuated with spring return

**Operating pressure:**

0 ... 12 bar (0 ... 174 psi)

**Flow:**

See table

**Mounting:**

Direct integration on to a manifold

**Environmental:**

200 hours salt spray

**Life expectancy:**

Typically in excess of 20 million cycles

**Temperature range:**

Supply:

-40°C ... +90°C (-40 ... +194°F)

Ambient:

-40°C ... +80°C (-40 ... +176°F)

Air supply must be dry enough to avoid ice formation at operating temperature.

**Materials**

Valve base: moulded PBT

Coil: glass reinforced PET (UL94 V0)

Armature: stainless iron

Stem tube: stainless steel

Springs: stainless steel

Seals: nitrile rubber

### Technical data – solenoid operators

Nominal voltages	12, 24, 110 Volts
Power consumption	3,4 or 4,7 Watt
Voltage tolerance	± 25% of nominal
Duty cycle	100% ED

Opening/closing time	10 ... 20/5 ... 10 ms
Protection Class	IP 65 (DIN 40 050) with cable clamp, IP69 with DIN connector
Coil	Fully encapsulated
Electrical Connections	Flying leads (length approx. 520 mm)

### Technical data

Symbol	Power (W)	Orifice (mm)	Flow (l/min)	Operating pressure (bar)	Weight (g)	Model
	3,4	1,0	31	10	84	VSD2CAD4-K19*K
	4,7	1,0	31	12	84	VSD2CAD4-K1V*K
	4,7	1,6	80	3	84	VSD2CAG4-K1V*K
	3,4	1,0	31	10	84	VSD7CAD4-K19*K
	3,4	1,6	80	3	84	VSD7CAG4-K19*K
	4,7	1,0	31	12	84	VSD7CAD4-K1V*K
	4,7	1,6	80	3	84	VSD7CAG4-K1V*K

\* = Insert voltage code, see below

### Option selector

Function	Substitute
2/2 Normally closed (NC)	2
3/2 Normally closed (NC)	7
Orifice	Substitute
1,0 mm	D
1,6 mm	G

VSD★CA★4-K1★ ★ ★

Electrical connection	Substitute
Flying leads	K
Corresponding to DIN 72585-A1-2-1	3
Voltage	Substitute
12 V d.c.	2
24 V d.c.	3
110 V d.c. *1)	7
Power	Substitute
3,4 Watt	9
4,7 Watt	V

\*1) For DIN connector only

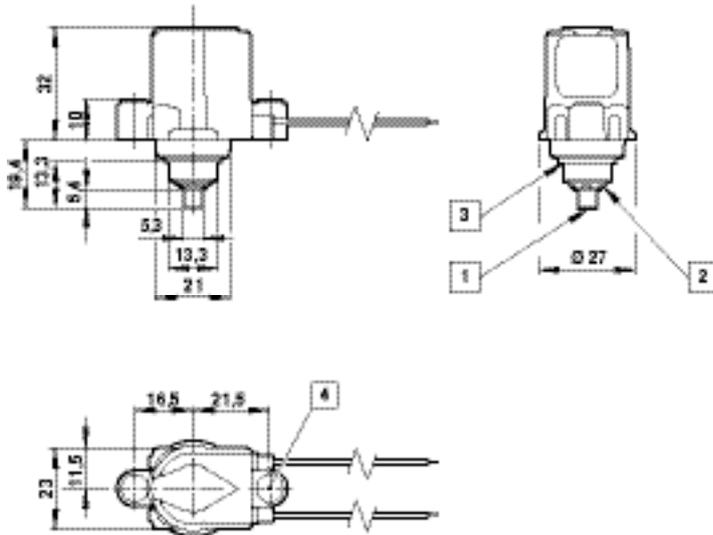
## 2/2 & 3/2 Cartridge solenoid valve VSD

### Direct integration on to a manifold

#### Dimensions

#### Flying lead type

Dimensions shown in mm  
Projection/First angle

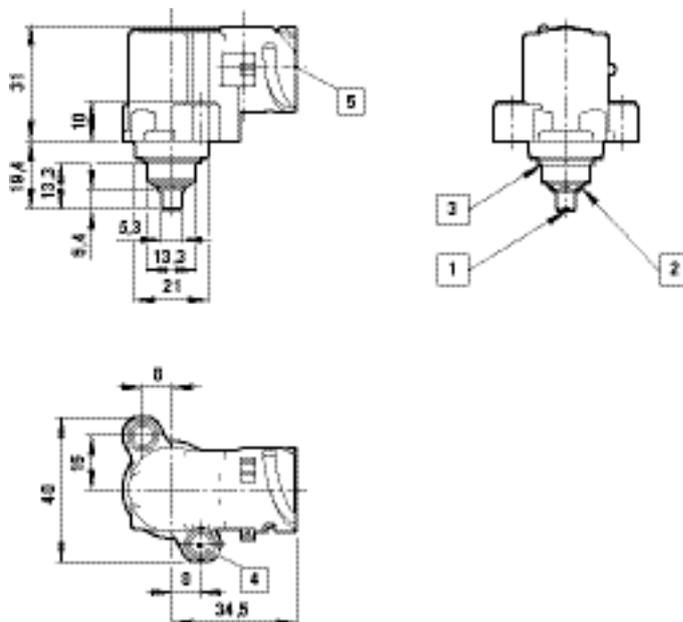


	2/2 way	3/2 way
1	Port 1 Delivery	Port 1 Inlet
2	Port 2 Inlet	Port 2 Delivery
3	Port 3 Not used	Port 3 Exhaust

4 Fastening screws not supplied.  
Use M4 screws and suitable washers.

Note: Installation drawings available on request!

#### DIN connector type



	2/2 way	3/2 way
1	Port 1 Delivery	Port 1 Inlet
2	Port 2 Inlet	Port 2 Delivery
3	Port 3 Not used	Port 3 Exhaust

4 Fastening screws not supplied.  
Use M4 screws and suitable washers.

5 Electrical connection corresponding to  
DIN 72585-A1-2-1, connector not supplied.

Note: Installation drawings available on request!

## 2/2 & 3/2 Cartridge solenoid valve RA..., RB... & RC...

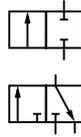
### Direct integration on to a manifold

Simple, compact design and construction

2/2 or 3/2 function with collected exhaust

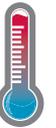
Quick easy installation

Maximum protection from vibration and impact damage



+70°C (+158°F)

-40°C (-40°F)



### Technical features

#### Medium:

Neutral gaseous and liquid fluids, air compatibility is based on combination of body and seal materials

#### Operation:

Poppet valve, directly actuated with spring return

#### Operating pressure:

0 ... 12 bar (0 ... 175 psi)

#### Mounting:

Direct integration with customers manifold

#### Temperature range:

-40°C ... +70°C (-40 ... +158°F)

Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

#### Materials

Valve base: Brass, stainless steel  
Plunger: PTFE coated  
Springs: stainless steel  
Terminals: Tin-plated brass  
Cable: PTFE Per MIL-W-16578  
Type 'E'  
Seals: FKM

### Technical data – solenoid operators

Nominal voltages	12, 24, 37, 100 Volts
Power consumption	see table below
Voltage tolerance	±30% of nominal
Duty cycle	Continuous

Coil	Fully encapsulated, dry coil
Electrical Connections	Terminals: Flying leads (length approx. 305 mm)

### Technical data

Symbol	Orifice (mm)	Orifice (inch)	Operating pressure (bar)	Operating pressure (psi)	Voltage (normal)	Power (W)	Coil construction	Weight (kg)	Drawing no.	Model
	3	0,12	10	150	37 V d.c.	14	Class 'N'	0,15	1	RC212215-0221-37VDC *2
	2,4	0,093	11	160	12 V d.c.	5	Class 'H'	0,15	2	RA221114-2201-12VDC *3
	2,4	0,093	11	160	24 V d.c.	5	Class 'H'	0,15	2	RA221114-2201-24VDC *3
	1,2	0,046	12	175	37 V d.c.	9	Class 'H'	0,15	3	RB322131-2221-37VDC *2
	1,2	0,046	8,7	127	100 V d.c.	14	Class 'N'	0,15	3	RC222231-2221-100VDC *2

\*2) Electrical connection: Terminals

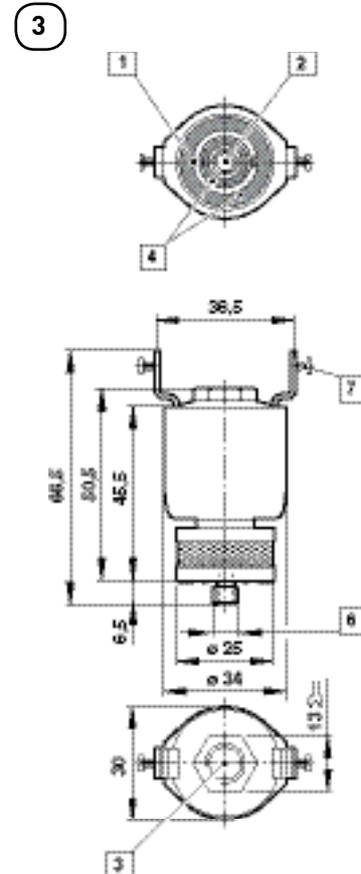
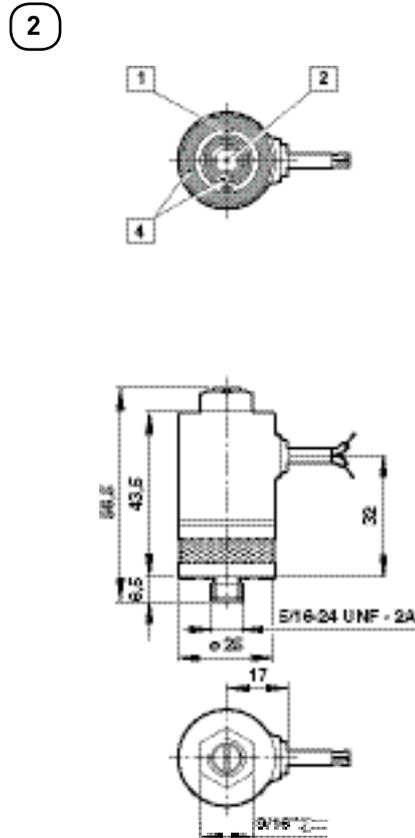
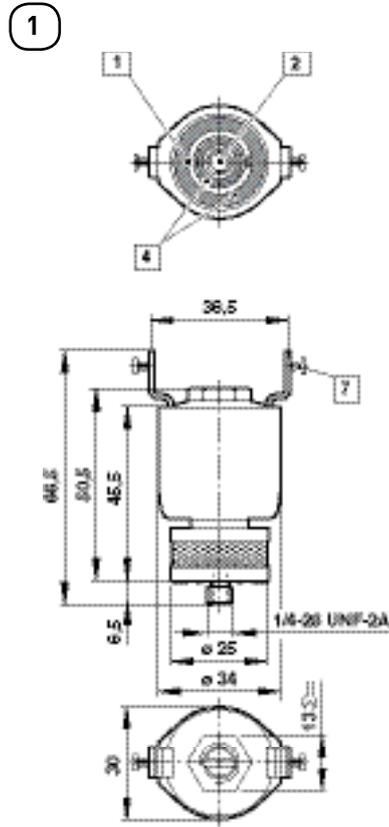
\*3) Electrical connection: Flying leads

**2/2 & 3/2 Cartridge solenoid valve  
RA..., RB... & RC...**  
**Direct integration on to a manifold**

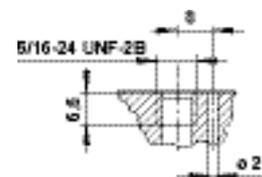
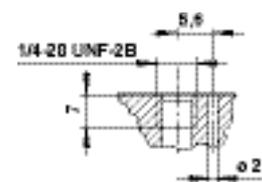
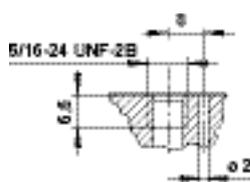
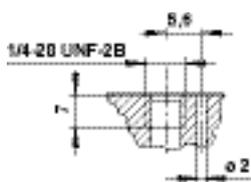
**Dimensions**

**Valves**

Dimensions shown in mm  
Projection/First angle



**Customer interface**



- 1 Inlet port
- 2 Outlet port
- 3 Exhaust port
- 4 'O'-rings, standard in scope of delivery
- 5 Terminals 8-32 UNC-2B
- 6 Model RB322131-2221-37 V d.c. (5/16-24 UNF-2A)  
Model RC222231-2221-100 V d.c. (1/4-28 UNF-2A)
- 7 Screws (8-32 UNC-2B) and lock washer (#8) included standard delivery

## 2/2 & 3/2 way solenoid valves (directly actuated)

### Microsol

#### 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



+80°C (+176°F)

-45°C (-49°F)



#### Technical features

##### Medium:

Compressed air, filtered, lubricated or non-lubricated, 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

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

**Accessories**

Electrical connector

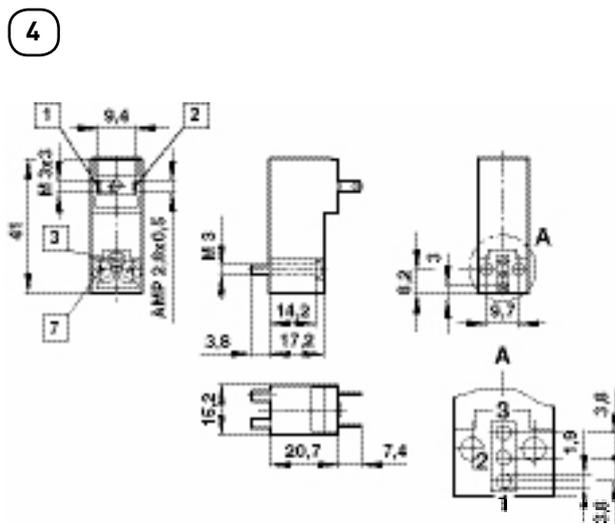
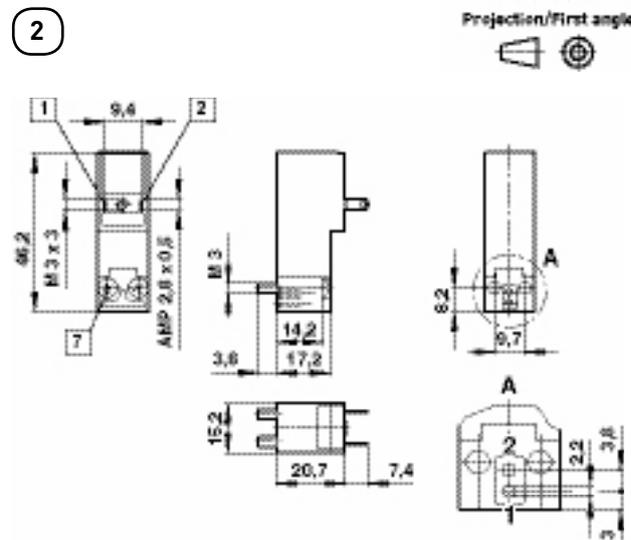
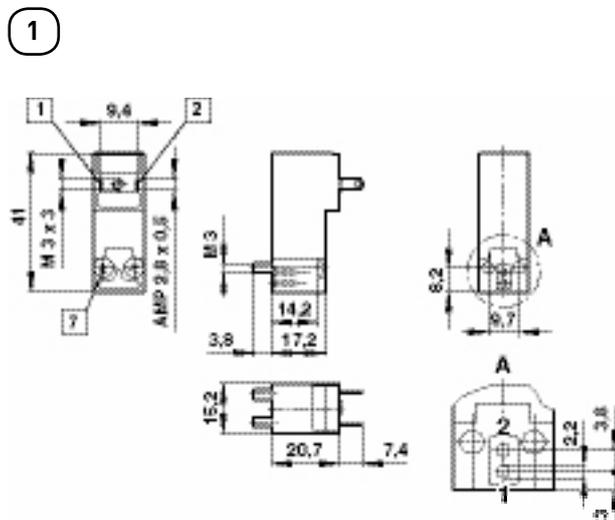


Single connector

M/P43082

**Dimensions**

Dimensions shown in mm  
Projection/First angle



- 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 & 5/3 directional control solenoid and pilot valves

VR61

1/4"

### High flow rate

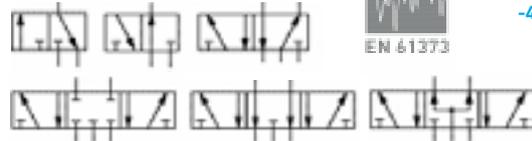
Proven sealing system using Herion experience in the chemical and process industry

### Maintenance-free

### Optional manual overrides

### Wide temperature range

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



+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

Other port sizes on request

#### Operating pressure:

Solenoid actuated:

3 ... 10 bar (43,5 ... 145 psi)

Solenoid actuated with external

supply: -0,9 ... 10 bar

(-13 ... 145 psi)

Pilot actuated: -0,9 ... 10 bar

(-13 ... 145 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, aluminium

Static and dynamic seals: NBR

Screws: zinc plated

Springs: stainless steel

### Technical data for solenoid

Voltage tolerance	± 30%
Power consumption	4,5 ... 5,4 W (12, 24, 36, 72, 85, 110 V d.c.), details see page 2-27
Rating	100 % ED
Protection class	IP 65 with sealed plugs (ISO 6952)
Manual override	Push only - Standard
Solenoid	4 x 90° rotatable
Solenoid plug interface	Type A, EN 175301-803 (DIN 43650)
Material	Thermosat (body), NBR (seals)

## 3/2, 2 x 3/2, 5/2 & 5/3 directional control solenoid and pilot valves

VR61

1/4"

### 3/2 directional control valves, solenoid actuated

Symbol	Size	Function	Actuation/return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Pilot pressure *1) (bar)	Weight (kg)	Drawing No.	Model
	G1/4	NC	Solenoid/spring	internal	1300	3 ... 10	-	0,29	1	VR61B417A-D#*
	1/4 NPT	NC	Solenoid/spring	internal	1300	3 ... 10	-	0,29	1	VR61R417A-D#*
	G1/4	NO	Solenoid/spring	internal	1300	3 ... 10	-	0,29	1	VR61B317A-D#*
	1/4 NPT	NO	Solenoid/spring	internal	1300	3 ... 10	-	0,29	1	VR61R317A-D#*
	G1/4	NC	Solenoid/air-spring	internal	1300	3 ... 10	-	0,29	3	VR61B413A-D#*
	1/4 NPT	NC	Solenoid/air-spring	internal	1300	3 ... 10	-	0,29	3	VR61R413A-D#*
	G1/4	NO	Solenoid/air-spring	internal	1300	3 ... 10	-	0,29	5	VR61B313A-D#*
	1/4 NPT	NO	Solenoid/air-spring	internal	1300	3 ... 10	-	0,29	5	VR61R313A-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#*
	G1/4	NC	Solenoid/solenoid	internal	1300	3 ... 10	-	0,38	7	VR61B411A-D#*
	1/4 NPT	NC	Solenoid/solenoid	internal	1300	3 ... 10	-	0,38	7	VR61R411A-D#*

### 2 x 3/2 directional control valves, solenoid actuated, Fluid/Ambient temperature -20 ... +65°C (-4 ... +149°F) only

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	3 ... 10	0,43	13	VR61BA11A-D#*
	1/4 NPT	NC/NC	Solenoid/solenoid	internal	950	3 ... 10	0,43	13	VR61RA11A-D#*
	G1/4	NO/NO	Solenoid/solenoid	internal	950	3 ... 10	0,43	13	VR61BB11A-D#*
	1/4 NPT	NO/NO	Solenoid/solenoid	internal	950	3 ... 10	0,43	13	VR61RB11A-D#*
	G1/4	NO/NC	Solenoid/solenoid	internal	950	3 ... 10	0,43	13	VR61BC11A-D#*
	1/4 NPT	NO/NC	Solenoid/solenoid	internal	950	3 ... 10	0,43	13	VR61RC11A-D#*

# Insert code for manual override. Note: Standard option is 3 = push only, see page 2-27

\* Insert voltage code from table on page 2-27

\*1) However > operating pressure

NC = Normally closed

NO = Normally open

NC/NC = Both valves normally closed (port P)

NO/NO = Both valves normally open (port P)

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

## 3/2, 2 x 3/2, 5/2 & 5/3 directional control solenoid and pilot valves

VR61

1/4"

### 5/2 directional control valves, solenoid actuated

Symbol	Size	Actuation/return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Pilot pressure *1) (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#*
	G1/4	Solenoid/air-spring	internal	1300	3 ... 10	-	0,33	11	VR61B513A-D#*
	1/4 NPT	Solenoid/air-spring	internal	1300	3 ... 10	-	0,33	11	VR61R513A-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#*
	G1/4	Solenoid/solenoid	internal	1300	3 ... 10	-	0,42	13	VR61B511A-D#*
	1/4 NPT	Solenoid/solenoid	internal	1300	3 ... 10	-	0,42	13	VR61R511A-D#*

### 5/3 directional control valves, solenoid actuated

Symbol	Size	Function	Actuation/ return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Pilot pressure *1) (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#*
	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#*
	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#*
	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#*
	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#*
	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#*

# Insert code for manual override. Note: Standard option is 3 = push only, see page 2-27

\* Insert voltage code from table on page 2-27

\*1) However > operating pressure

APB = All ports blocked

COE = Centre open exhaust

COP = Centre open pressure

## 3/2, 2 x 3/2, 5/2 & 5/3 directional control solenoid and pilot valves

VR61

1/4"

### Option selector (solenoid actuated valves) VR61★★★★A-D★★★★N

Thread sizes	Substitute
G1/4	B
1/4 NPT	R
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	
12 V d.c.	22	
24 V d.c.	23	
36 V d.c.	24	
72 V d.c.	2A	
85 V d.c.	2C	
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 voltage codes

Voltage	Part number code	Power consumption
12 V d.c.	22N	5,2 W
24 V d.c.	23N	4,5 W
36 V d.c.	24N	4,7 W
72 V d.c.	2AN	4,8 W
85 V d.c.	2CN	5,4 W
110 V d.c.	27N	5,3 W



Solenoids comply with ROHS directive 2011/165/EU  
Coils are CE marked in accordance with low voltage directive 2007/95/EG

### 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 & 5/3 directional control solenoid and pilot valves

VR61

1/4"

### 3/2 directional control valves, pilot actuated

Symbol	Size	Function	Actuation/ return	Flow (l/min)	Operating pressure (bar)	Pilot pressure *1) (bar)	Weight (kg)	Drawing No.	Model
	G1/4	NC	Air/spring	1300	-0,9 ... 10	3 ... 10	0,21	33	VR61B4D7A-XA090
	1/4 NPT	NC	Air/spring	1300	-0,9 ... 10	3 ... 10	0,21	33	VR61R4D7A-XP090
	G1/4	NO	Air/spring	1300	-0,9 ... 10	3 ... 10	0,21	33	VR61B3D7A-XA090
	1/4 NPT	NO	Air/spring	1300	-0,9 ... 10	3 ... 10	0,21	33	VR61R3D7A-XP090
	G1/4	NC	Air/air	1300	-0,9 ... 10	3 ... 10	0,21	37	VR61B4DDA-XA020
	1/4 NPT	NC	Air/air	1300	-0,9 ... 10	3 ... 10	0,21	37	VR61R4DDA-XP020

### 2 x 3/2 directional control valves, pilot actuated, Fluid/Ambient temperature -20 ... +65°C (-4 ... +149°F) only

Symbol	Size	Function	Actuation/ return	Flow (l/min)	Operating pressure (bar)	Pilot pressure *1) (bar)	Weight (kg)	Drawing No.	Model
	G1/4	NC/NC	Air/air	950	3 ... 10	3 ... 10	0,28	43	VR61BADDA-XA020
	1/4 NPT	NC/NC	Air/air	950	3 ... 10	3 ... 10	0,28	43	VR61RADDA-XP020
	G1/4	NO/NO	Air/air	950	3 ... 10	3 ... 10	0,28	43	VR61BBDDBA-XA020
	1/4 NPT	NO/NO	Air/air	950	3 ... 10	3 ... 10	0,28	43	VR61RBDDBA-XP020
	G1/4	NO/NC	Air/air	950	3 ... 10	3 ... 10	0,28	43	VR61BCDDA-XA020
	1/4 NPT	NO/NC	Air/air	950	3 ... 10	3 ... 10	0,28	43	VR61RCDDA-XP020

### 5/2 directional control valves, pilot actuated

Symbol	Size	Actuation/ return	Flow (l/min)	Operating pressure (bar)	Pilot pressure *1) (bar)	Weight (kg)	Drawing No.	Model
	G1/4	Air/spring	1300	-0,9 ... 10	3 ... 10	0,26	41	VR61B5D7A-XA090
	1/4 NPT	Air/spring	1300	-0,9 ... 10	3 ... 10	0,26	41	VR61R5D7A-XP090
	G1/4	Air/air	1300	-0,9 ... 10	3 ... 10	0,27	43	VR61B5DDA-XA020
	1/4 NPT	Air/air	1300	-0,9 ... 10	3 ... 10	0,27	43	VR61R5DDA-XP020

\*1) However > operating pressure

NC = Normally closed

NO = Normally open

NC/NC = Both valves normally closed (port P)

NO/NO = Both valves normally open (port P)

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

## 3/2, 2 x 3/2, 5/2 & 5/3 directional control solenoid and pilot valves VR61 1/4"

### 5/3 directional control valves, pilot actuated

Symbol	Size	Function	Actuation/ return	Flow (l/min)	Operating pressure (bar)	Pilot pressure *1) (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
	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
	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

\*1) However > operating pressure

APB = All ports blocked

COE = Centre open exhaust

COP = Centre open pressure

### Option selector (pilot actuated valves)

VR61★★D★A-X★★★0

Thread sizes	Substitute
G1/4	B
1/4 NPT	R
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

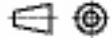
Actuation/return	Substitute
Air/air	02
Air/spring	09
Pilot thread	Substitute
G1/8	A
1/8 NPT	P
Actuation/return	Substitute
Air/air	D
Air/spring	7

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

VR61

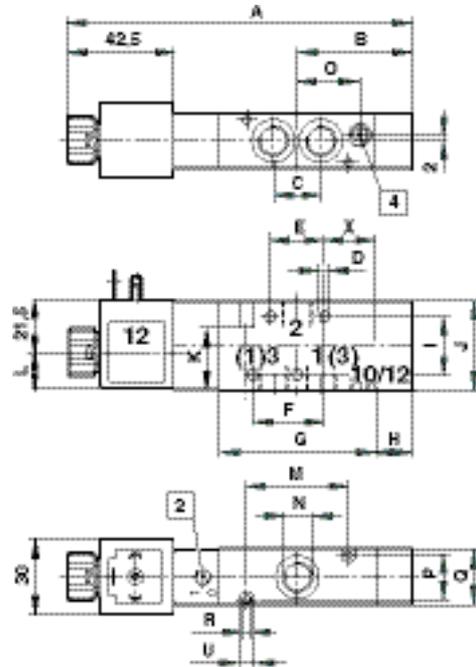
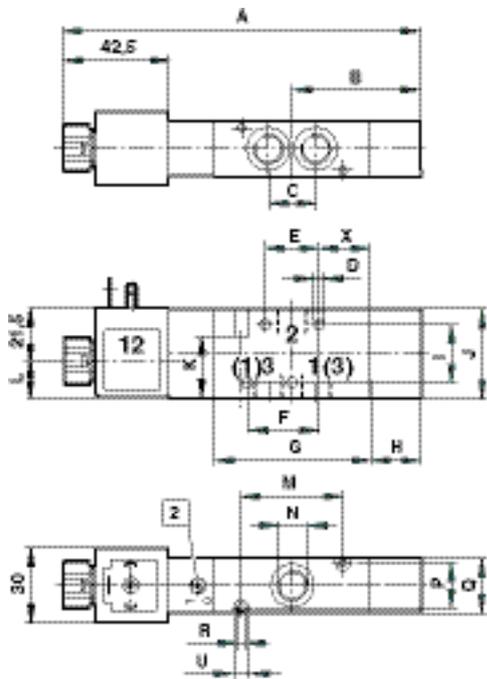
1/4"

Dimensions shown in mm  
Projection/First angle



1

3



2 Manual override

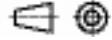
4 External pilot port, M5 or 10-32 UNF

No.	A	B	C	ØD	E	F	G	H	I	J	K	L	M	N	O	P	Q	ØR	ØU	X	Model
1	154	53	21	4,5	24	—	74	16	41	55	—	32	—	1/4"	—	—	30	—	—	25	VR61#317A-...
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-...
1	154	53	21	4,5	24	—	74	16	41	55	—	32	—	1/4"	—	—	30	—	—	25	VR61#417A-...
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-...

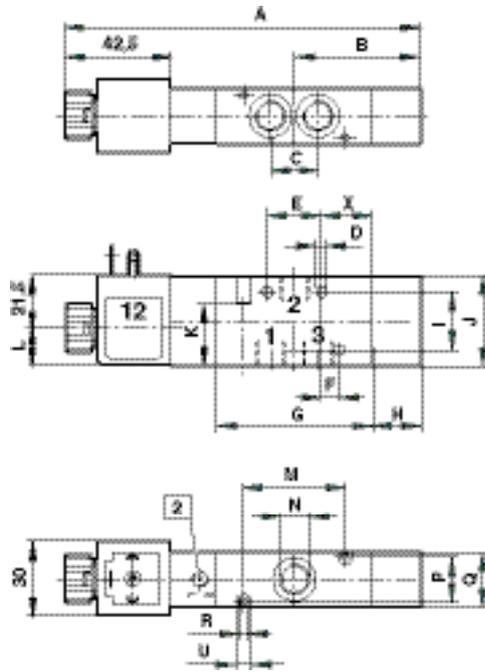
# = 'B' for ISO G and 'R' for NPT threads

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

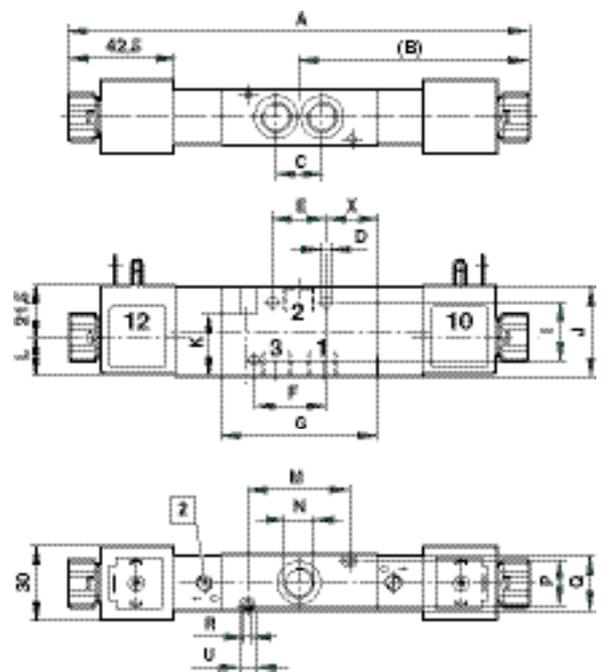
Dimensions shown in mm  
Projection/First angle



5



7



2 Manual override

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-...
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-...

# = 'B' for ISO G and 'R' for NPT threads

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

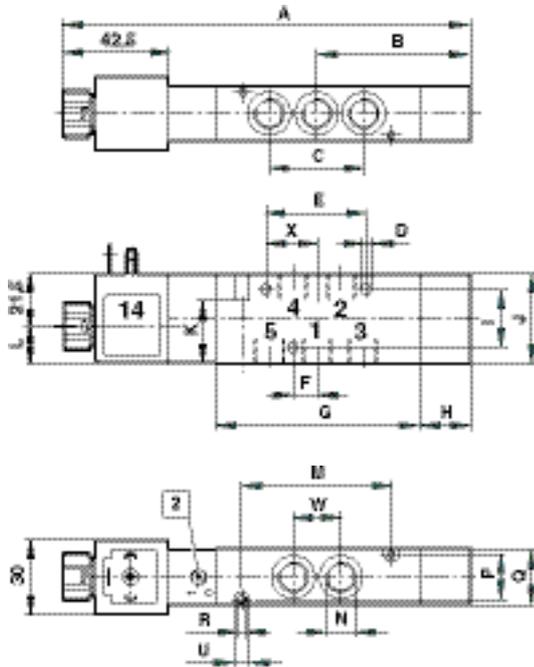
VR61

1/4"

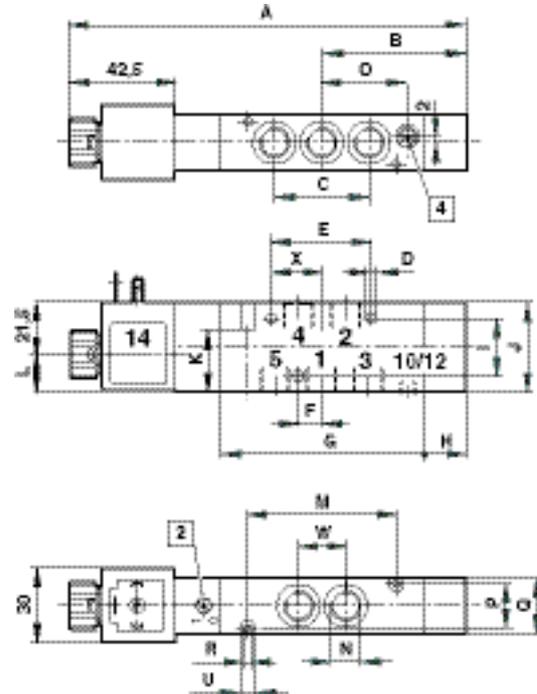
Dimensions shown in mm  
Projection/First angle



9



11



- 2 Manual override
- 4 External pilot port, M5 or 10-32 UNF

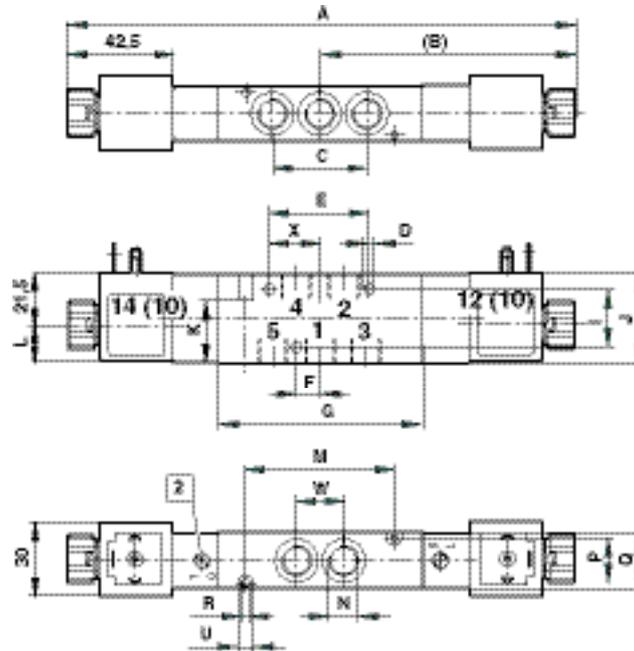
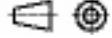
No.	A	B	C	ØD	E	F	G	H	I	J	K	L	M	N	O	P	Q	ØR	ØU	W	X	Model
9	174	63	42	4,5	44	10	94	16	36	55	—	32	—	1/4"	—	—	30	—	—	21	22	VR61#517A-...
11	161	53	42	4,5	44	10	90	8	26	40	28	17	66	1/4"	—	20	25	3,2	6,5	21	22	VR61#513A-...
11	161	53	42	4,5	44	10	90	8	26	40	28	17	66	1/4"	39	20	25	3,2	6,5	21	22	VR61#523A-...

# = 'B' for ISO G and 'R' for NPT threads

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

13

Dimensions shown in mm  
Projection/First angle



2 Manual override

No.	A	B	C	ØD	E	F	G	I	J	K	L	M	N	P	Q	ØR	ØU	W	X	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-...

# Insert 'B' for ISO G and 'R' for NPT threads

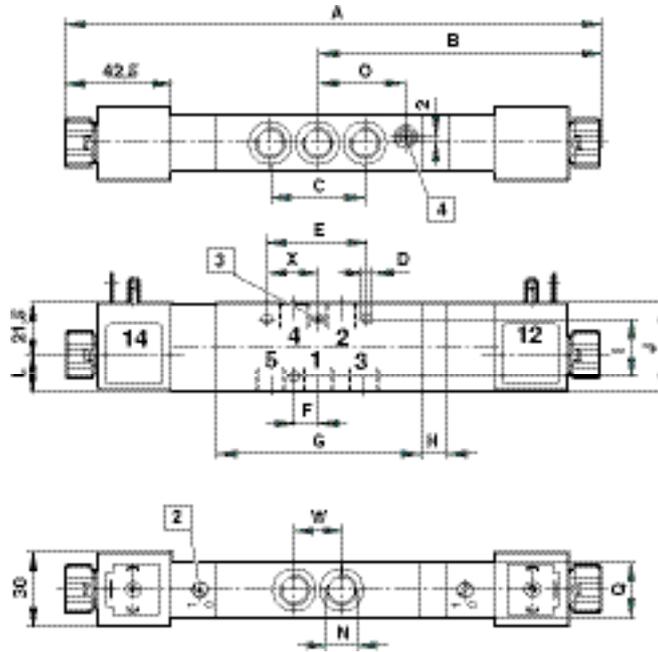
3/2, 2 x 3/2, 5/2 & 5/3 directional control solenoid and pilot valves

VR61

1/4"

15

Dimensions shown in mm  
Projection/First angle



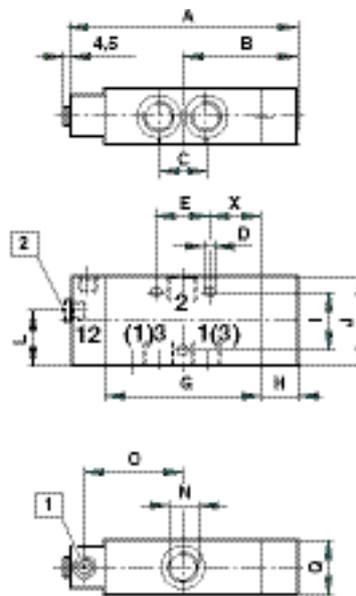
- 2 Manual override
- 4 External pilot port, M5 or 10-32 UNF

No.	A	B	C	Ø D	E	F	G	H	I	J	L	N	O	Q	W	X	Model
15	239	128,5	42	4,5	44	10	94	18	36	55	23	1/4"	—	30	21	22	VR61#611A-...
																	VR61#711A-...
																	VR61#811A-...
																	VR61#622A-...
15	239	128,5	42	4,5	44	10	94	18	36	55	23	1/4"	41	30	21	22	VR61#722A-...
																	VR61#822A-...

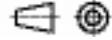
# Insert 'B' for ISO G and 'R' for NPT threads

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

33



Dimensions shown in mm  
Projection/First angle

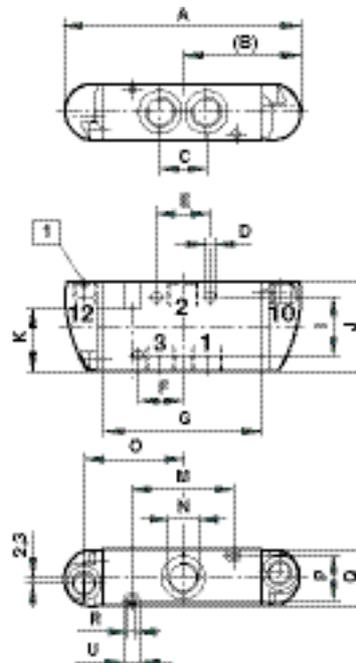


- 1 Pilot ports G1/8 or 1/8-27 NPT
- 2 Alternative pilot ports G1/8 or 1/8-27 NPT

No.	A	B	C	Ø D	E	G	H	I	J	L	N	O	Q	X	Model
33	110	53	21	4,5	24	74	16	41	55	33,5	1/4"	47	30	25	VR61#4D7A-... VR61#3D7A-...

# = 'B' for ISO G and 'R' for NPT threads

37



No.	A	B	C	D	E	F	G	I	J	K	M	N	O	P	Q	R	U	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-...

# = 'B' for ISO G and 'R' for NPT threads

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

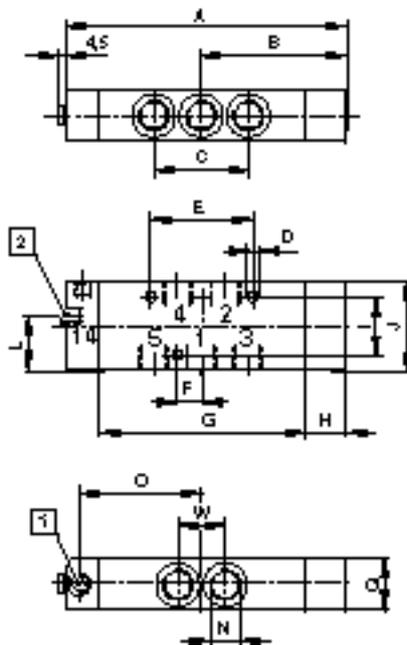
VR61

1/4"

Dimensions shown in mm  
Projection/First angle



41

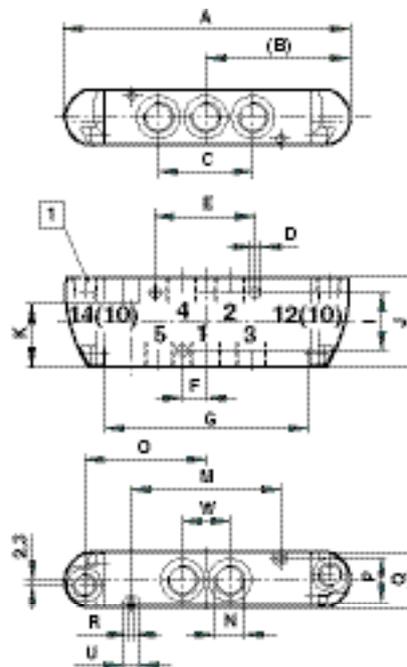


- 1 Pilot ports G1/8 or 1/8-27 NPT
- 2 Alternative pilot ports G1/8 or 1/8-27 NPT

No.	A	B	C	D	E	F	G	H	I	J	L	N	O	Q	W	Model
41	130	63	42	4,5	44	10	94	16	36	55	33,5	1/4"	57	30	21	VR61#507A-...

# = 'B' for ISO G and 'R' for NPT threads

43



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

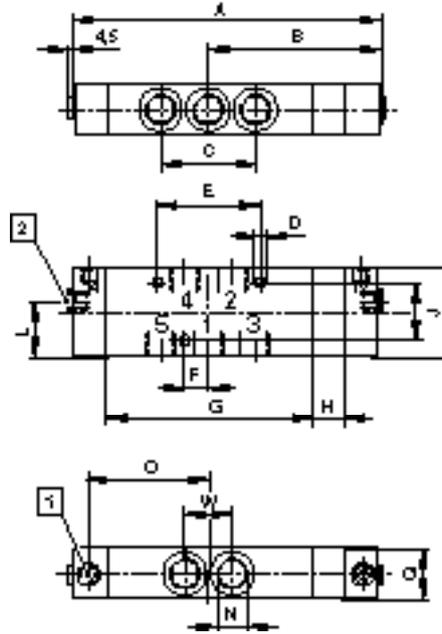
No.	A	B	C	D	E	F	G	I	J	K	M	N	O	P	Q	R	U	W	Model
43	124	62	42	4,5	44	10	90	26	40	28	66	1/4"	53	20	25	3,2	6,5	21	VR61#5DDA-... VR61#ADDA-... VR61#BDDA-... VR61#CDDA-...

# = 'B' for ISO G and 'R' for NPT threads

3/2, 2 x 3/2, 5/2 & 5/3 directional control solenoid and pilot valves  
**VR61**  
 1/4"

46

Dimensions shown in mm  
 Projection/First angle



- 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	L	N	O	Q	W	Model
46	161	85	42	4,5	44	10	94	18	36	55	33,5	1/4"	57	30	21	VR61#6DDA-...
																VR61#7DDA-...
																VR61#8DDA-...

# = 'B' for ISO G and 'R' for NPT threads

## 3/2, 5/2 & 5/3 directional control solenoid valves VR61Z

### Flange version

#### High flow rate

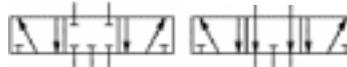
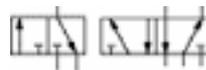
Proven sealing system using Herion experience in the chemical and process industry

#### Maintenance-free

#### Optional manual overrides

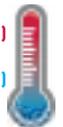
#### Wide temperature range

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



+65°C (+149°F)

-40°C (-40°F)



### Technical features

#### Medium:

Filtered, lubricated or non-lubricated compressed air

#### Actuation:

Solenoid controlled

#### Mounting position:

Spring return valves horizontal preferable

#### Air ports:

Flange pattern, see page 2-41 ... 2-43

#### Operating pressure:

Solenoid actuated:

3 ... 10 bar (43,5 ... 145 psi)

Details on the following pages

#### Flow direction:

Internal pilot: Supply must be port 1

#### 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, aluminium

Static and dynamic seals: NBR

Screws: zinc plated

Springs: stainless steel

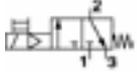
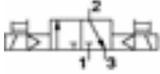
### Technical data for solenoid

Voltage tolerance	± 30%
Power consumption	4,5 ... 5,4 W (12, 24, 36, 72, 85, 110 V d.c.), details see page 2-40
Rating	100 % ED
Protection class	IP 65 with sealed plugs (ISO 6952)
Manual override	Push only - Standard
Solenoid	4 x 90° rotatable
Solenoid plug interface	Type A, EN 175301-803 (DIN 43650)
Material	Thermosat (body), NBR (seals)

## 3/2, 5/2 & 5/3 directional control solenoid valves VR61Z

### Flange version

#### 3/2 directional control valves, solenoid actuated

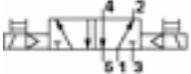
Symbol	Size	Function	Actuation/return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	Flange	NC	Solenoid/spring	internal	1300	3 ... 10	-	0,29	1	VR61Z417A-D#*
	Flange	NC	Solenoid/solenoid	internal	1300	3 ... 10	-	0,38	2	VR61Z411A-D#*

# Insert code for manual override. Note: Standard option is 3 = push only, see page 2-40

\* Insert voltage code from table on page 2-40

NC = Normally closed

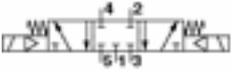
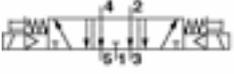
#### 5/2 directional control valves, solenoid actuated

Symbol	Size	Actuation/return	Pilot supply	Flow (l/min)	Operating pressure (bar)	Pilot pressure (bar)	Weight (kg)	Drawing No.	Model
	Flange	Solenoid/spring	internal	1300	3 ... 10	-	0,29	3	VR61Z517A-D#*
	Flange	Solenoid/solenoid	internal	1300	3 ... 10	-	0,42	4	VR61Z511A-D#*

# Insert code for manual override. Note: Standard option is 3 = push only, see page 2-40

\* Insert voltage code from table on page 2-40

#### 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
	Flange	APB	Solenoid/solenoid	internal	950	3 ... 10	-	0,47	5	VR61Z611A-D#*
	Flange	COE	Solenoid/solenoid	internal	950	3 ... 10	-	0,47	5	VR61Z711A-D#*
	Flange	COP	Solenoid/solenoid	internal	950	3 ... 10	-	0,47	5	VR61Z811A-D#*

# Insert code for manual override. Note: Standard option is 3 = push only, see page 2-40

\* Insert voltage code from table on page 2-40

APB = All ports blocked

COE = Centre open exhaust

COP = Centre open pressure

## 3/2, 5/2 & 5/3 directional control solenoid valves VR61Z

### Flange version

#### Option selector (solenoid actuated valves) VR61Z\*\*\*A-D\*\*\*N

Function	Substitute
3/2 - NC	4
5/2	5
5/3 - APB	6
5/3 - COE	7
5/3 - COP	8

Voltage	Substitute
12 V d.c.	22
24 V d.c.	23
36 V d.c.	24
72 V d.c.	2A
85 V d.c.	2C
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/spring	Internal	17

#### Selection of voltage codes

Voltage	Part number code	Power consumption
12 V d.c.	22N	5,2 W
24 V d.c.	23N	4,5 W
36 V d.c.	24N	4,7 W
72 V d.c.	2AN	4,8 W
85 V d.c.	2CN	5,4 W
110 V d.c.	27N	5,3 W



Solenoids comply with ROHS directive 2011/165/EU  
Coils are CE marked in accordance with  
low voltage directive 2007/95/EG

#### Accessories

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



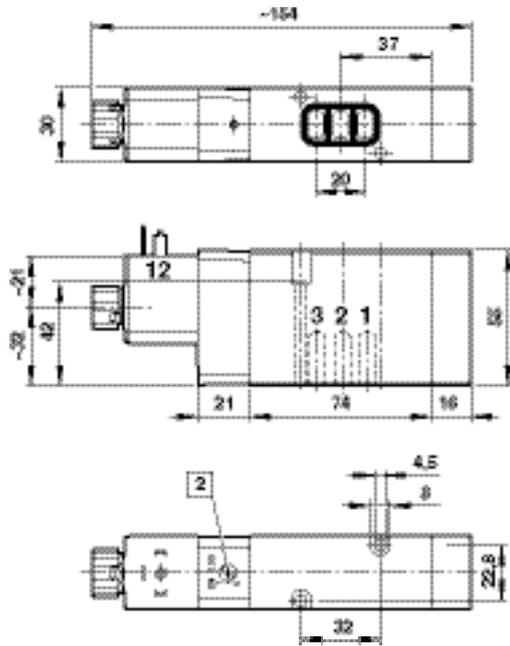
0570275  
12 ... 250 V a.c./d.c.

3/2, 5/2 & 5/3 directional control solenoid valves  
VR61Z

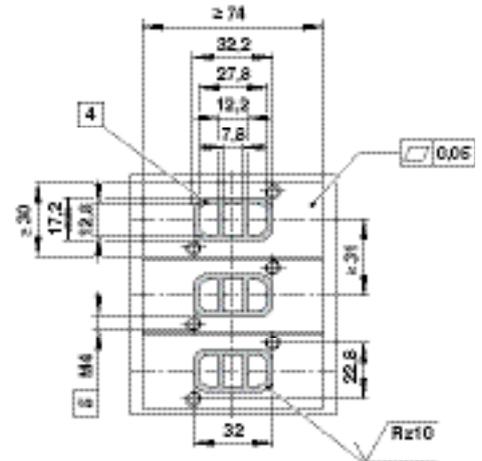
Flange version

Dimensions shown in mm  
Projection/First angle

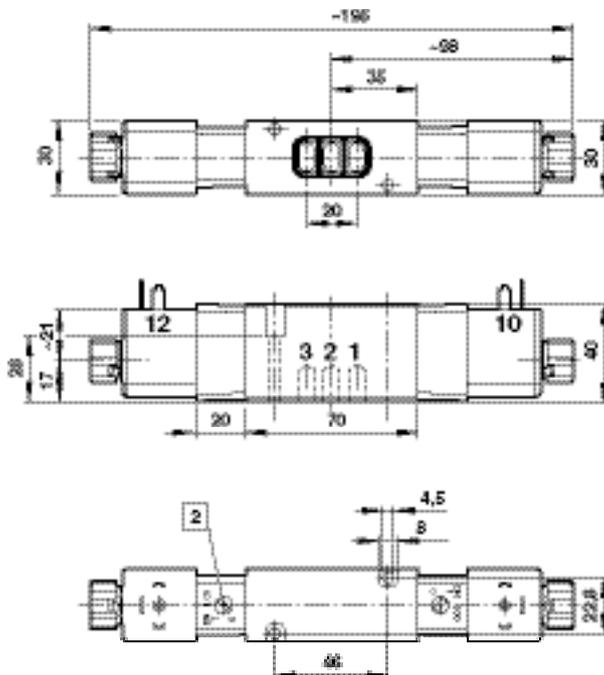
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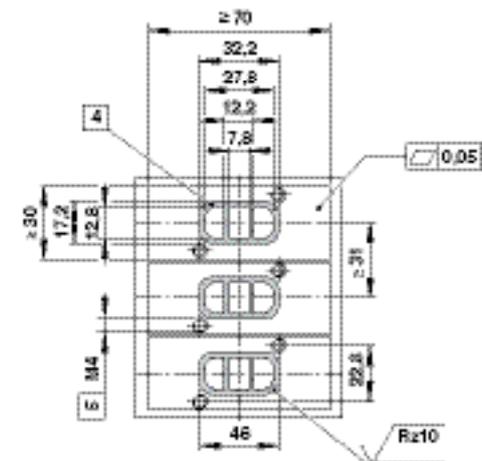
Flange pattern



2



Flange pattern

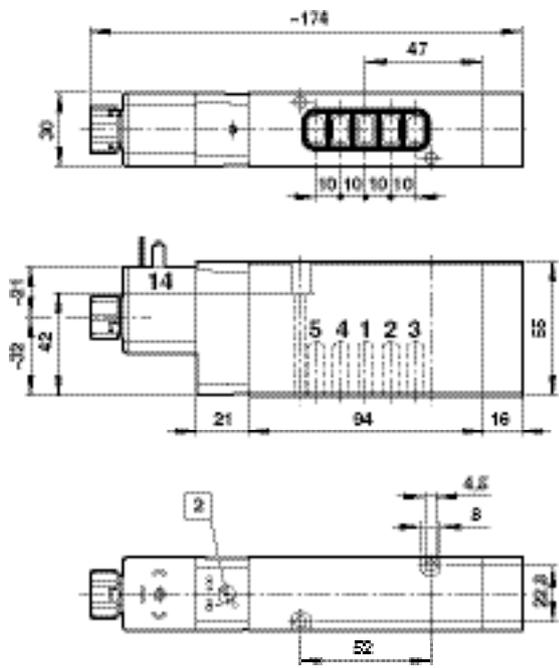


- 2 Manual override
- 4 Sealing area
- 5 9 mm deep

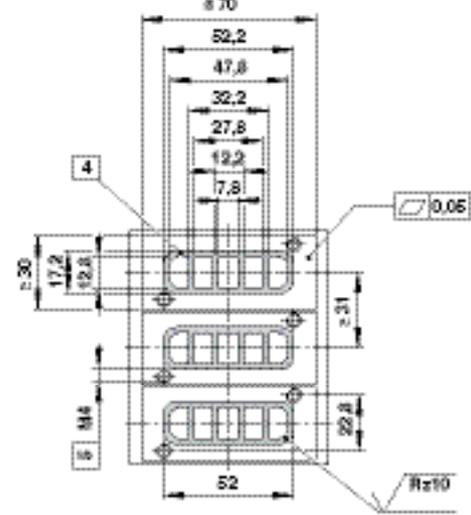
3/2, 5/2 & 5/3 directional control solenoid valves  
VR61Z

Flange version

3



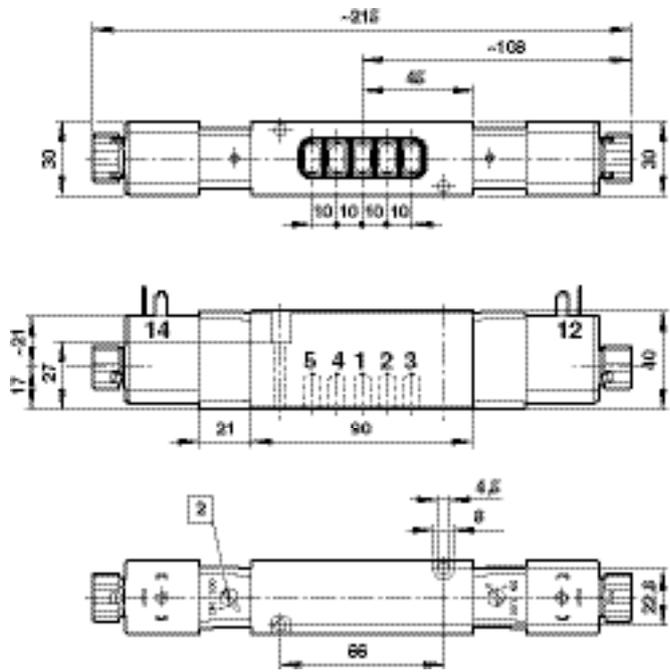
Flange pattern



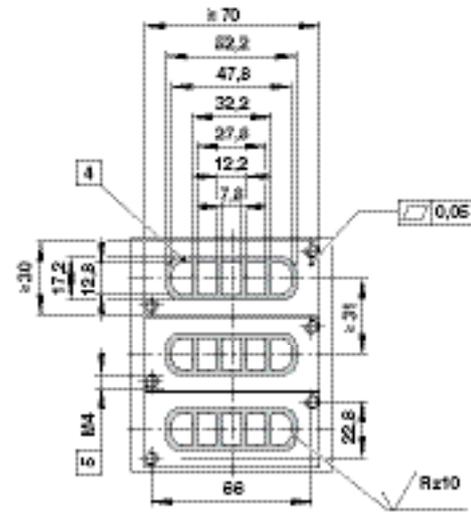
Dimensions shown in mm  
Projection/First angle



4



Flange pattern



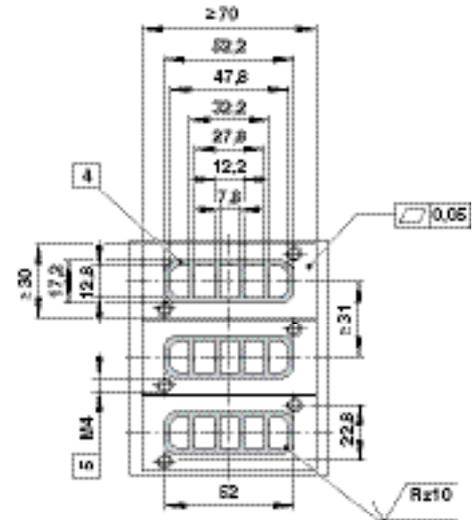
- 2 Manual override
- 4 Sealing area
- 5 9 mm deep

3/2, 5/2 & 5/3 directional control solenoid valves  
VR61Z

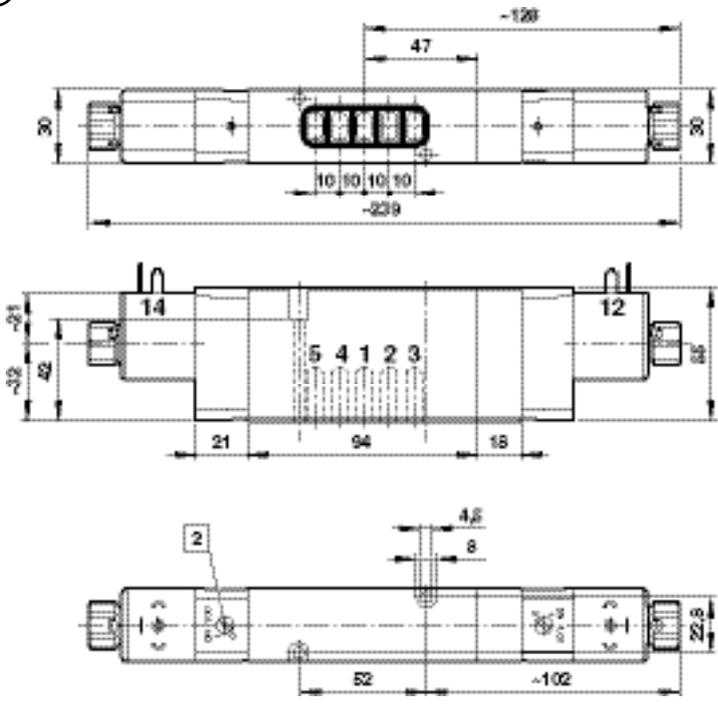
Flange version

Dimensions shown in mm  
Projection/First angle

Flange pattern



5



- 2 Manual override
- 4 Sealing area
- 5 9 mm deep

## 3/2 way pilot actuated poppet valves

Prospector®

1/2" ... 1"

Exceptionally high flow

High reliability

Durable, robust construction

Reversible seals

Solenoid options available on request

Wide temperature range

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



+79°C (+174°F)

-40°C (-40°F)



### Technical features

**Medium:**

Filtered and lubricated or non-lubricated compressed air

**Mounting:**

Through-holes in valve body

**Operating pressure:**

0 ... 20 bar (0 ... 290 psi)

**Ambient temperature:**

-40 ... +79°C (-40 ... +174°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

### 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	VRDA024H-RAJ
	1/2	1/2 PTF	NC	5,717	0,96	VRD1024H-RA9
	1/2	G3/4	NC	6,111	0,96	VRDA025H-RAJ
	1/2	3/4 PTF	NC	6,111	0,96	VRD1025H-RA9
	1	G1	NC	14,391	1,86	VRDA036H-RAA
	1	1 PTF	NC	14,391	1,86	VRD1036H-RA1

### Option selector

VRD★0★★H-RA★

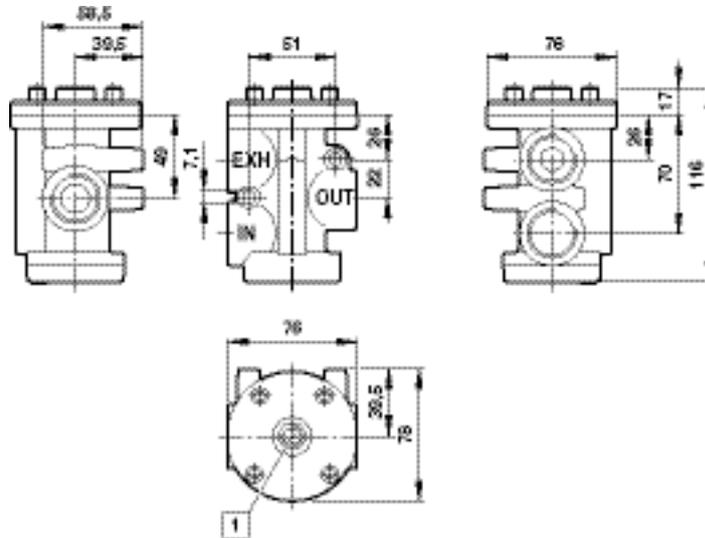
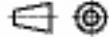
Thread form	Substitute
ISO G parallel	A
PTF	1

Thread	Substitute
G1/2 & G3/4	J
1/2 PTF & 3/4 PTF	9
G1	A
1 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

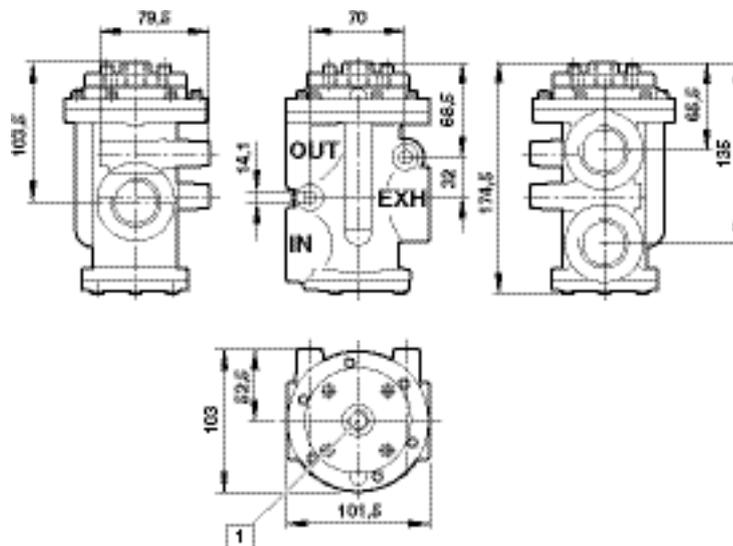
**3/2 way pilot actuated poppet valves  
Prospector®  
1/2" ... 1"**

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

Dimensions shown in mm  
Projection/First angle



**1" valve size, pilot valve  
Port size: 1"**



□ Pilot port G1/4 or 1/4 PTF

## 3/2 & 5/2 pilot actuated spool valves SUPER X

1/8" & 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



+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	Model
							No.	
	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	Model
							No.	
	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 & 5/2 pilot actuated spool valves  
SUPER X  
1/8" & 1/4"**

**Option selector**

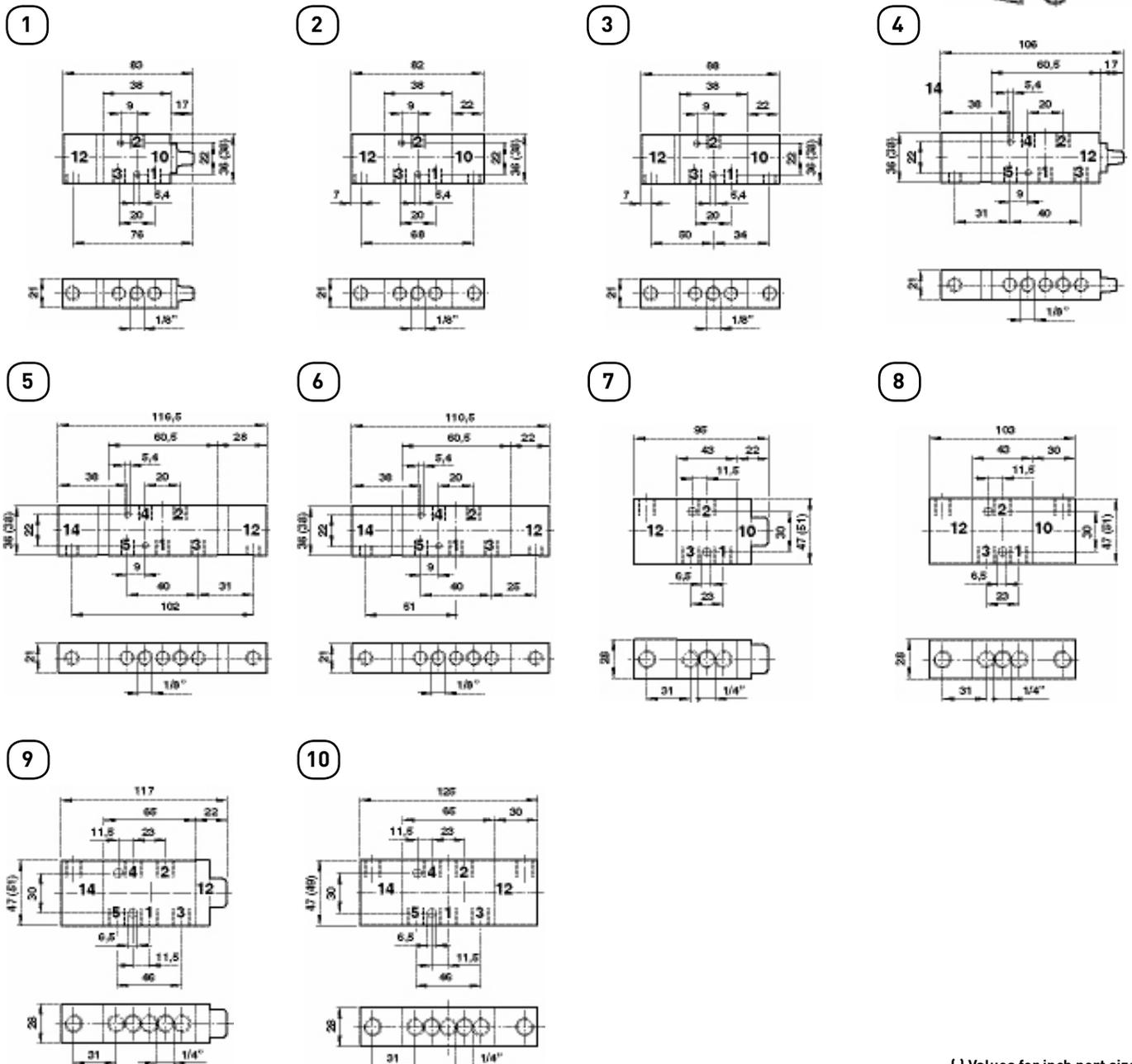
VR★30★★★★2

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**

Dimensions shown in mm  
Projection/First angle



( ) Values for inch port size

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

1/8" & 1/4"

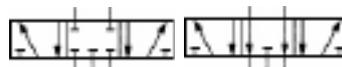
Wide range of operators

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



+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 & 5/3 manually and mechanically actuated spool valves SUPER X

### 1/8" & 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 knob/set reset	Black	- 0,9 ... 10	31	0,29	VR03 8408 02	10	VR03 0419 02
	1/8 PTF	Rotary knob/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 22
	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 & 5/3 manually and mechanically actuated spool valves SUPER X

1/8" & 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 22	
	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	

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

1/8" & 1/4"

### 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 & 5/3 manually and mechanically actuated spool valves SUPER X

## 1/8" & 1/4"

### Option selector

VR\*\*\*\*\*2

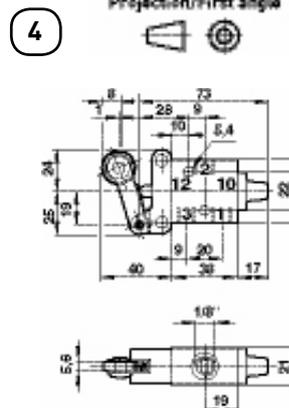
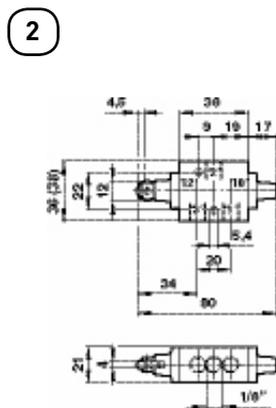
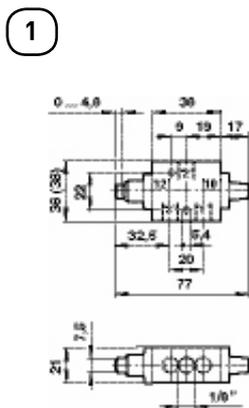
Function	Substitute
3/2	030
5/2	X30
5/3	X33
Air port	Substitute
1/8"	4
1/4"	6
3/2 Mechanical actuated valves	Substitute
Plunger/spring	00
Roller/spring	02
Roller lever (heavy duty)/spring	93
3/2 Manual actuated valves	Substitute
Button/spring (Black)	04
Button/spring (Green)	06
Button/spring (Red)	05
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



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

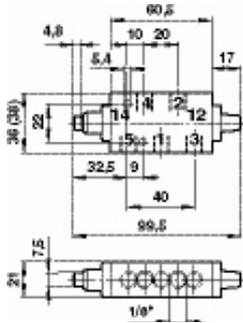
Recommended cam rise: max. 4,5 mm  
Cam angle of approach: 30° max.  
Cam speed: max. 8 m/min  
Operating speed: 300 cpm

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

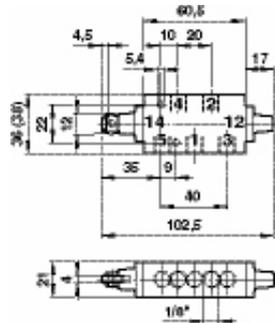
## 3/2, 5/2 & 5/3 manually and mechanically actuated spool valves SUPER X 1/8" & 1/4"

5



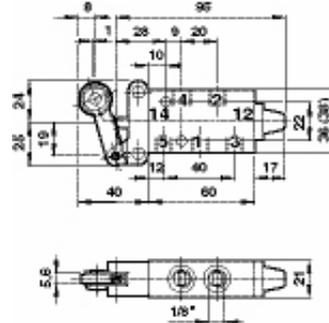
Full movement: 4,8 mm  
The plunger on this valve is designed for axial loading only.

6



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

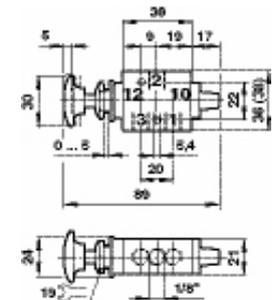
7



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

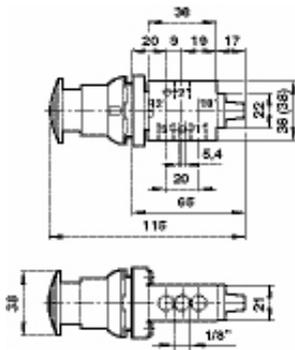
8

Dimensions shown in mm  
Projection/First angle



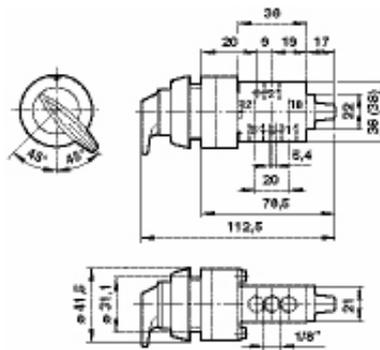
These valves are suitable for panel mounting by means of an optional nut and washer, reference 03 0430 00;  
Panel hole: Ø 15 mm;  
Panel thickness: 5 mm maximum.

9



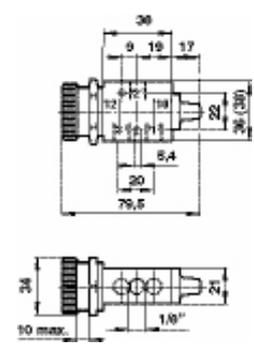
These valves are suitable for panel mounting.  
Panel hole: Ø 32,1 mm; panel thickness: 6 mm maximum

10



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

11



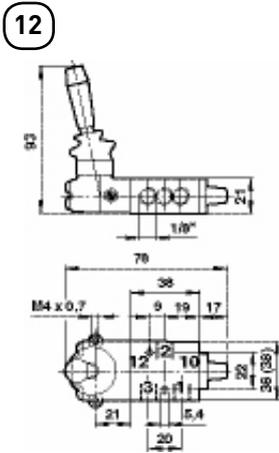
These valves are suitable for panel mounting.  
Panel hole: Ø 31 mm  
Panel thickness: 10 mm maximum.

( ) Values for inch port size

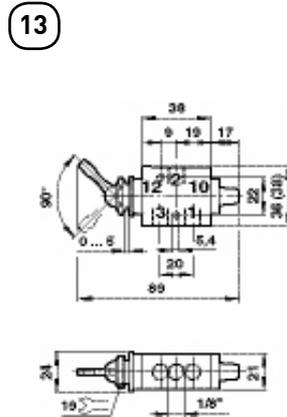
**3/2, 5/2 & 5/3 manually and mechanically actuated spool valves**  
**SUPER X**  
**1/8" & 1/4"**

VALVES  
2

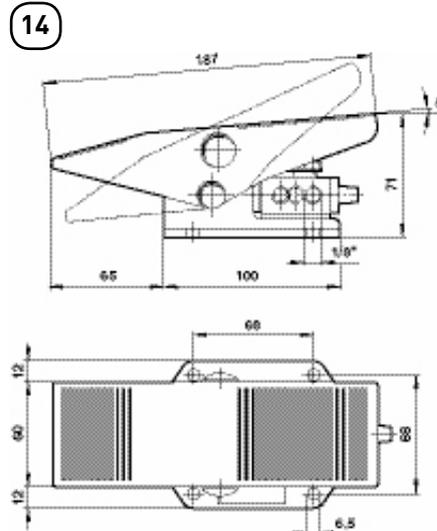
Dimensions shown in mm  
Projection/First angle



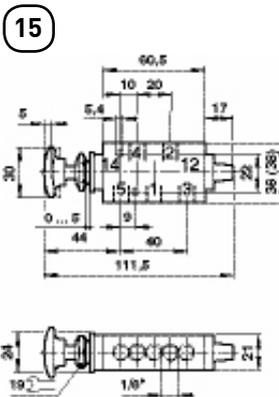
Model VR03 0437 02 features a positive detent in each position and is suitable for panel mounting by means of a bezel kit, reference 03 3437 64.  
Panel hole:  $\varnothing$  24 mm  
Panel thickness: 8 mm maximum.



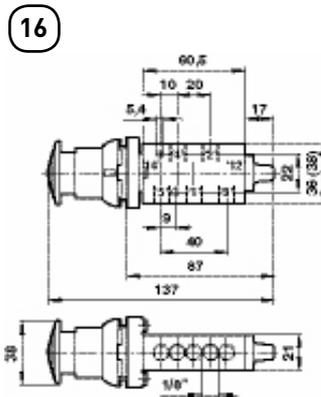
This valve is suitable for panel mounting.  
Panel hole:  $\varnothing$  15 mm;  
Panel thickness: 5 mm maximum.



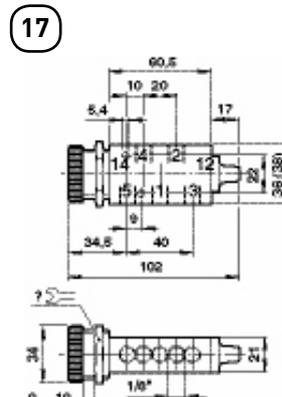
A foot guard is available for this valve, reference 03 0480 60.



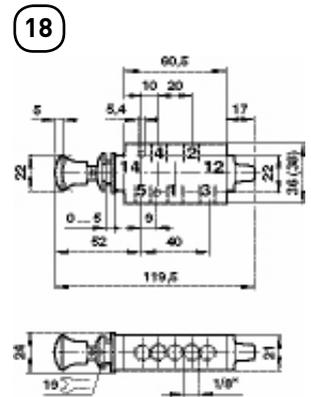
These valves are suitable for panel mounting by means of an optional nut and washer, reference 03 0430 00;  
Panel hole:  $\varnothing$  15 mm;  
Panel thickness: 5 mm maximum.



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



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

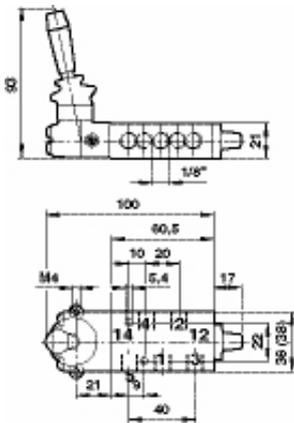


This valve is suitable for panel mounting by means of an optional nut and washer, reference 03 0430 00.  
Panel hole:  $\varnothing$  15 mm  
Panel thickness: 5 mm maximum.

[ ] Values for inch port size

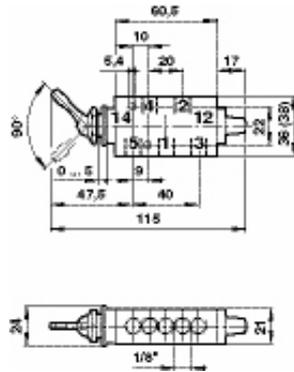
**3/2, 5/2 & 5/3 manually and mechanically actuated spool valves  
SUPER X  
1/8" & 1/4"**

19



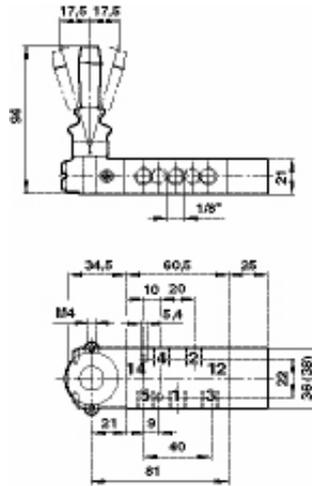
Both models are suitable for panel mounting by means of a bezel kit, reference 03 3437 64.  
Panel hole:  $\varnothing$  24 mm;  
Panel thickness: 8 mm maximum.

20



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

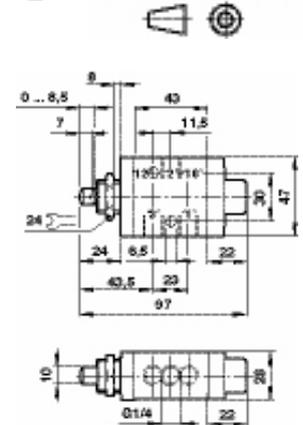
21



Panel hole:  $\varnothing$  24 mm;  
Panel thickness: 8 mm maximum.

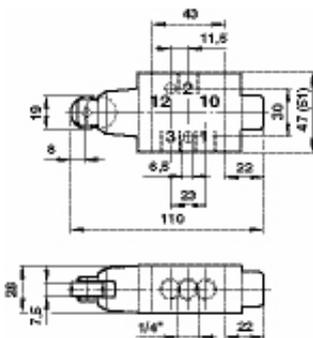
22

Dimensions shown in mm  
Projection/First angle



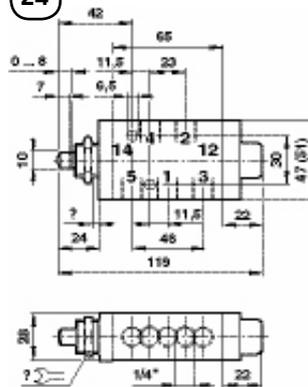
The plunger on this valve is designed for axial loading only.

23



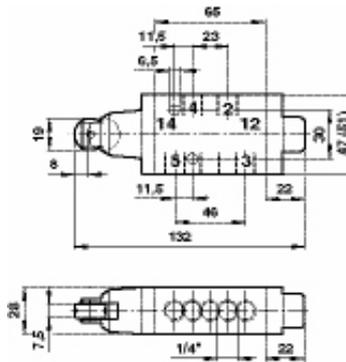
Cam angle of approach:  
45° maximum  
Cam speed: 6 m/min. maximum  
Operating speed: 200 cpm

24



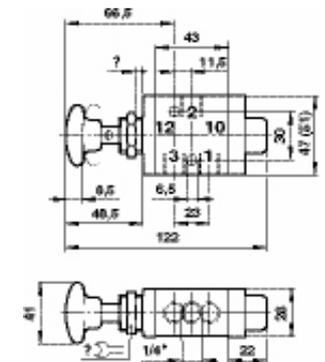
The plunger on this valve is designed for axial loading only.

25



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

26



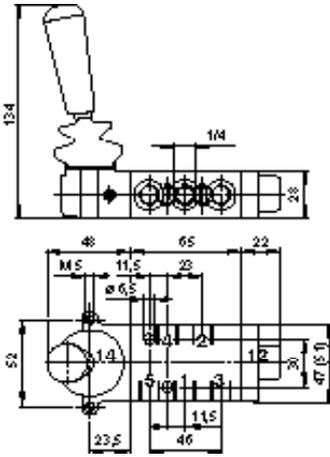
This valve is suitable for panel mounting and includes a nut and washer.  
Panel hole:  $\varnothing$  21 mm;  
Panel thickness: 8 mm maximum.

[ ] Values for inch port size



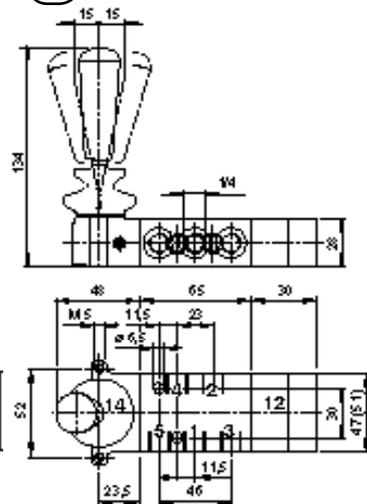
3/2, 5/2 & 5/3 manually and mechanically actuated spool valves  
SUPER X  
1/8" & 1/4"

33



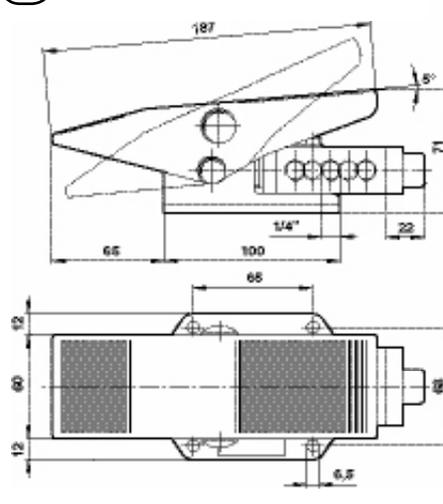
Model VRX3 0677 02 features a positive detent in each position.  
Panel hole: Ø 31 mm;  
Panel thickness: 8 mm maximum.

34



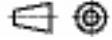
Panel hole: Ø 31 mm  
Panel thickness: 8 mm maximum.

35



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

Dimensions shown in mm  
Projection/First angle



( ) 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

New - Low temperature  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) in preparation - contact Norgren technical service for more information



$+75^{\circ}\text{C}$  ( $+167^{\circ}\text{F}$ )

$+5^{\circ}\text{C}$  ( $+41^{\circ}\text{F}$ )



### 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 ... 10 bar (10 ... 145 psi)

NO 0,7 ... 7 bar (10 ... 101 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:**

$+5$  ...  $75^{\circ}\text{C}$  ( $+41$  ...  $+167^{\circ}\text{F}$ )

**Materials**

Body, poppet and lever: brass

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 ... 10 NO 0,7 ... 7	0,99	SLV/15293



## 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<sup>-3</sup> 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



+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:

3 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

Seals: EPDM

other see option selector

Inner parts: steel 1.4104 (430 F), brass

### Technical data

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	VR95B1613-01XXP
	1/4 NPT	0 ... 10	EPDM	brass	-40 ... +80	0,21	1	0700 or 5220	VR95R1613-01XXP

\*1) xx = Insert solenoid code on 13th digit and voltage code on 14th digit, see below!

\*2) Depending on solenoid system, see page 2-61

### Option selector

VR95★1613-01★★P

Port size	Substitute	Voltage	Substitute
G1/4	B	24 V d.c.	3
1/4 NPT	R	36 V d.c.	4
		72 V d.c.	A
		110 V d.c.	7
		Solenoids	Substitute
		5220	1
		0700	3

Additional versions on request

## 2/2 way direct solenoid operated poppet valves VR95

G1/4 or 1/4 NPT

### Solenoid operators

	Power consumption	Rated current	Temperature range	Voltage tolerance	Protection class *7)	Electrical connection	Weight	Dimension	Circuit diagram	Model	Code
	24 V d.c. (W)	24 V d.c. (mA)	(°C)	(%)			(kg)	No.	No.		
	16,9	703 (24 V d.c.) 425 (36 V d.c.) *10) 193 (72 V d.c.) *10) 139 (110 V d.c.)	-25 ... +40 -25 ... +60	+20/-30 (+15/-32) +10/-30 (+6/-32) ( ) for 37,5 and 74 V d.c. only	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0700	3
	8,9	369 (24 V d.c.) 222 (36 V d.c.) *10) 120 (72 V d.c.) *10) 69 (110 V d.c.)	-40 ... +80	±30 (+25/-32) ( ) for 37,5 and 74 V d.c. only	IP 65	M20 x 1,5 *6)	0,500	6	4	5220 *8)	1

\*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

\*10) Voltage range: 36 ... 37,5 d.c. and 72 ... 74 V d.c.

### Accessories

#### Cable gland



Page 2-62

Thread	Cable Ø	Material	Model
M 20x1,5	5,0...9,0 mm	PA, UL94 V0	0110854
M 20x1,5	6,0...12 mm	PA, UL94 V0	0110855

#### Connector



0570275

### Dimensions

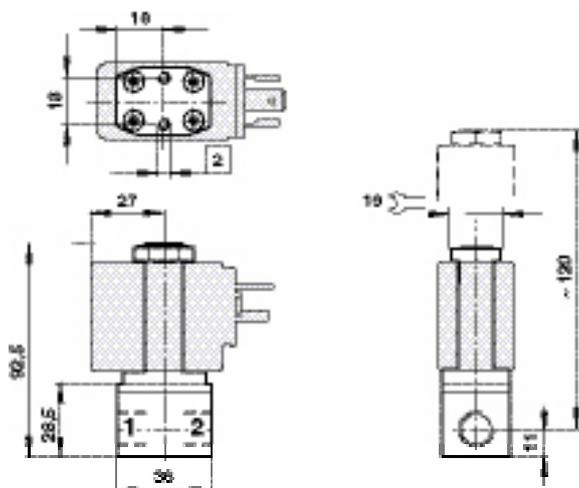
#### Valves

Dimensions shown in mm

Projection/First angle



1



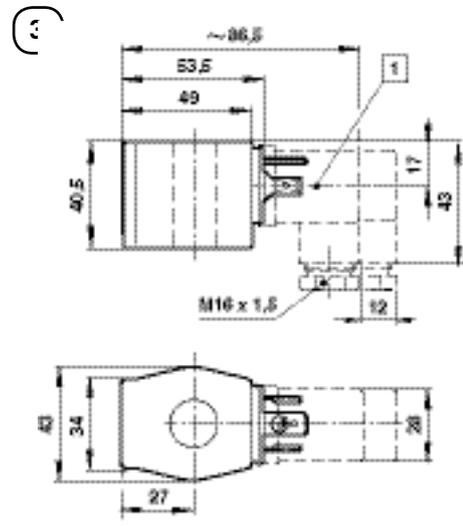
2) M4 x 6 mm deep

## 2/2 way direct solenoid operated poppet valves VR95

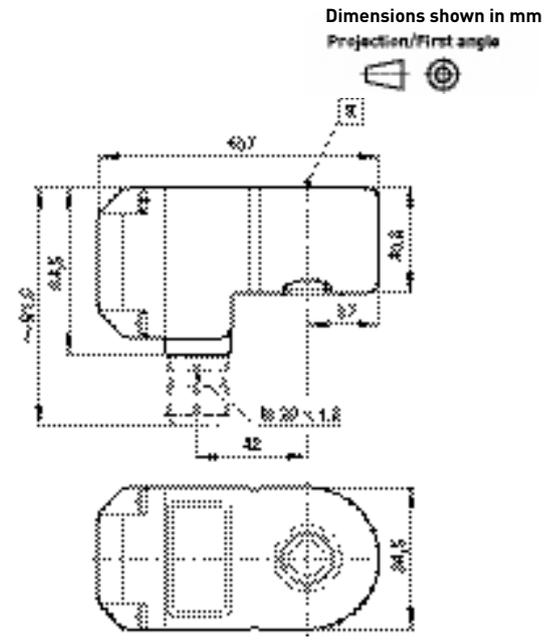
G1/4 or 1/4 NPT

### Dimensions

#### Solenoids



6



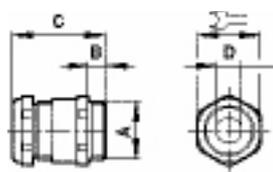
1 Connector can be indexed by 4x90°

2 Ø 13 (with spacer tube)

### Circuit diagrams



### Cable gland



For cable Ø	A	B	C		Model
5 ... 9	M20 x 1,5	9	36	24	0110854
6 ... 12	M20 x 1,5	9	36	24	0110855

## 3/2 way direct solenoid operated poppet valves VR96

G1/4 or 1/4 NPT

**Working from 0 bar up**

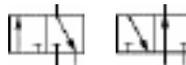
**Short switching times**

**Suited for fine vacuum down to**  
1,33 • 10<sup>-3</sup> 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**



### 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:**

See table below

**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

Seals: EPDM

Inner parts: steel 1.4104 (430 F), brass

### Technical data

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
	G1/4	4	350	10	EPDM	brass	-40 ... +80	0,32	1	0800 or 5270	VR96B4614-01XXP
	1/4 NPT	4	350	10	EPDM	brass	-40 ... +80	0,32	1	0800 or 5270	VR96R4614-01XXP
	G1/4	3	200	0 ... 9	EPDM	brass	-40 ... +80	0,50	2	0700 or 5220	VR96B3613-91XXP
	1/4 NPT	3	200	0 ... 9	EPDM	brass	-40 ... +80	0,50	2	0700 or 5220	VR96R3613-91XXP

\*1) xx = Insert solenoid code on 13th digit and voltage code on 14th digit, see below!

\*2) Depending on solenoid system, see page 2-64.

### Option selector

VR96★★61★-★1★★P

Port size	Substitute
G1/4	B
1/4 NPT	R
Function	Substitute
NO	3
NC	4
Orifice (mm)	Substitute
3	3
4 (NC only)	4

Additional versions on request

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, for orifice 3 mm only	1
5270, for orifice 4 mm only	2
0700, for orifice 3 mm only	3
0800, for orifice 4 mm only	4
Operating pressure	See table

## 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. (mA)	Temperature range	Voltage tolerance	Protection class *7)	Electrical connection	Weight (kg)	Dimension	Circuit diagram No.	Model	Code
			(°C)	(%)				No.			
	16,9	703 (24 V d.c.) 425 (36 V d.c.) *10 193 (72 V d.c.) *10 139 (110 V d.c.)	-25 ... +40 -25 ... +60	+20/-30 (+15/-32) +10/-30 (+6/-32) ( ) for 37,5 and 74 V d.c. only	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0700	3
	16,9	703 (24 V d.c.) 425 (36 V d.c.) *10 193 (72 V d.c.) *10 139 (110 V d.c.)	-25 ... +40 -25 ... +60	+20/-30 (+15/-32) +10/-30 (+6/-32) ( ) for 37,5 and 74 V d.c. only	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	4
	8,9	369 (24 V d.c.) 222 (36 V d.c.) *10 120 (72 V d.c.) *10 69 (110 V d.c.)	-40 ... +80 -40 ... +80	±30 (+25/-32) +30/-20 (+25/-22) *11) ( ) for 37,5 and 74 V d.c. only	IP 65	M20 x 1,5 *6)	0,500	6	4	5220 *8)	1
	8,9	369 (24 V d.c.) 222 (36 V d.c.) *10 120 (72 V d.c.) *10 69 (110 V d.c.)	-40 ... +80 -40 ... +80	±30 (+25/-32) +30/-20 (+25/-22) *11) ( ) for 37,5 and 74 V d.c. only	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

\*10) Voltage range: 36 ... 37,5 d.c. and 72 ... 74 V d.c.

\*11) For NO function only

### Accessories

#### Cable gland



Page 2-64

Thread

Cable Ø

Material

Model

M 20x1,5

5,0...9,0 mm

PA, UL94 V0

0110854

M 20x1,5

6,0...12 mm

PA, UL94 V0

0110855

#### Connector

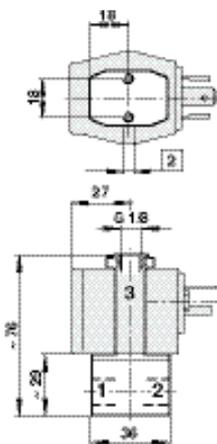


0570275

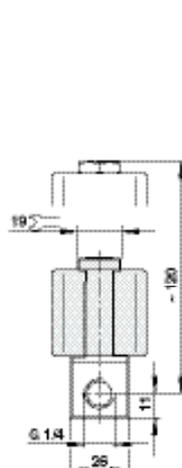
### Dimensions

#### Valves

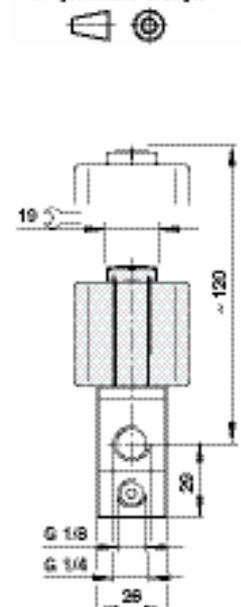
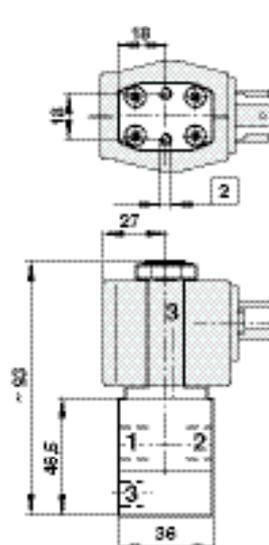
1



2



Projection/First angle



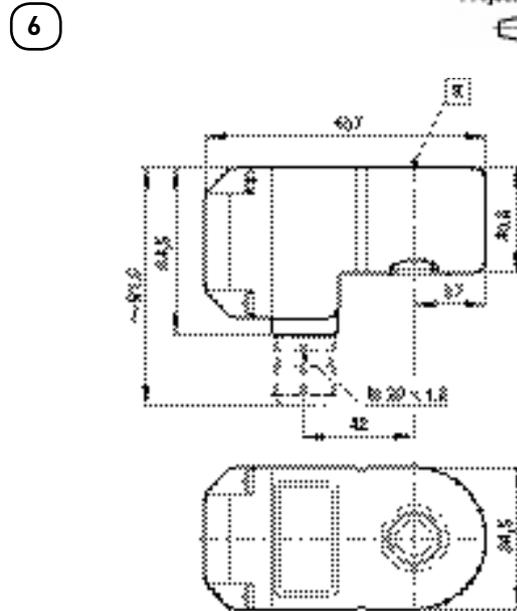
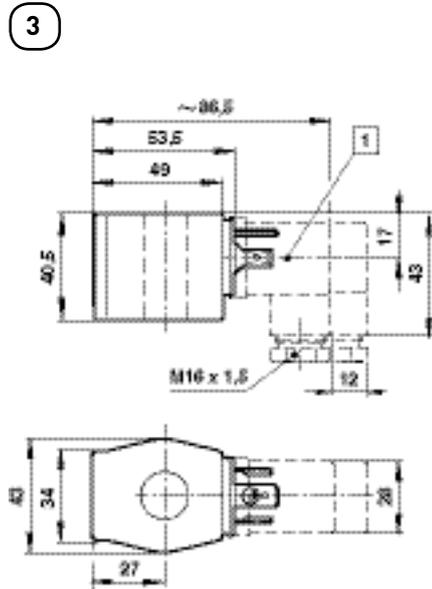
2) M4 x 6 mm deep

## 3/2 way direct solenoid operated poppet valves VR96

G1/4 or 1/4 NPT

### Solenoids

Dimensions shown in mm  
Projection/First angle

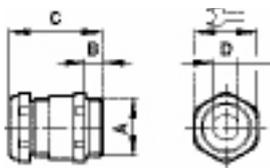


- 1 Connector can be indexed by 4x90°
- 2 Ø 16 or 13 (with spacer tube)

### Circuit diagrams



### Cable gland



For cable Ø	A	B	C		Model
5 ... 9	M20 x 1,5	9	36	24	0110854
6 ... 12	M20 x 1,5	9	36	24	0110855

## 3/2 way direct solenoid operated poppet valves VR24

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

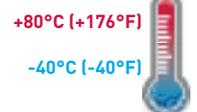
Valve switches at power failure into starting position (mechanical spring return)

Add-on manual override optional

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



### Technical features

#### Medium:

Compressed air, filtered, non-lubricated and dry  
Other gas 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: VMQ  
Inner parts: stainless steel, brass

### Technical data

#### 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	VMQ	-40 ... +80	without	0,65	1	0800 or 5270	VR24B9665-01XXP
	1/4 NPT	0 ... 10	VMQ	-40 ... +80	without	0,65	1	0800 or 5270	VR24R9665-01XXP
	G1/4	0 ... 10	VMQ	-40 ... +80	push only	0,70	2	0800 or 5270	VR24B9665-03XXP
	1/4 NPT	0 ... 10	VMQ	-40 ... +80	push only	0,70	2	0800 or 5270	VR24R9665-03XXP
	G1/4	0 ... 10	VMQ	-40 ... +80	turn and lock	0,70	3	0800 or 5270	VR24B9665-02XXP
	1/4 NPT	0 ... 10	VMQ	-40 ... +80	turn and lock	0,70	3	0800 or 5270	VR24R9665-02XXP

#### Namur version, hard anodized aluminium valves

Symbol	Port size	Operating pressure (bar)	Material Seat seal	Temperature *2) (°C)	Manual override *3)	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	G1/4	0 ... 10	VMQ	-40 ... +80	without	0,65	4	0800 or 5270	VR24U9565-01XXP
	1/4 NPT	0 ... 10	VMQ	-40 ... +80	without	0,65	4	0800 or 5270	VR24W9565-01XXP

\*1) xx = Insert solenoid code on 13th digit and voltage code on 14th digit, see page 2-67

\*2) Depending on solenoid system, see page 2-67

\*3) Push only and turn and lock on request

## 3/2 way direct solenoid operated poppet valves VR24

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

### Option selector

VR24★9★65-0★ ★★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, Namur only	5
Brass, G1/4, 1/4 NPT only	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 (Namur standard)	1
Push and turn	2
Push only	3

### Solenoid operators

	Power consumption 24 V d.c. (W)	Rated current (m A)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model	Code
	16,9	703 (24 V d.c.) 425 (36 V d.c.) *10 193 (72 V d.c.) *10 139 (110 V d.c.)	-25 ... +40 -25 ... +60	+20/-30 (+15/-32) +10/-30 (+6/-32) ( ) for 37,5 and 74 V d.c. only	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	4
	8,9	369 (24 V d.c.) 222 (36 V d.c.) *10 120 (72 V d.c.) *10 69 (110 V d.c.)	-40 ... +60 -40 ... +80	±30 (+25/-32) +30/-20 (+25/-22) ( ) for 37,5 and 74 V d.c. only	IP 65	M20 x 1,5 *6)	0,50	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

\*10) Voltage range: 36 ... 37,5 d.c. and 72 ... 74 V d.c.

### Accessories

#### Cable gland



#### Page 2-70

Thread	Cable Ø	Material	Model
M 20x1,5	5,0...9,0 mm	PA, UL94 V0	0110854
M 20x1,5	6,0...12 mm	PA, UL94 V0	0110855

#### Connector



0570275

#### Silencer \*1)



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T40C2800 (G1/4)  
MS002A (1/4 NPT)

#### Exhaust guard \*2)



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0613422 (G1/4, 1/4 NPT)

#### Manual override (without detent)



Page 2-68

0600205

#### Manual override (with detent)



Page 2-68

0601765

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

#### Flange plate



Page 2-70

0612790 (NAMUR single connection plate)

0612791 (NAMUR-rip use in combination with 0612790, Alu)

#### Yoke



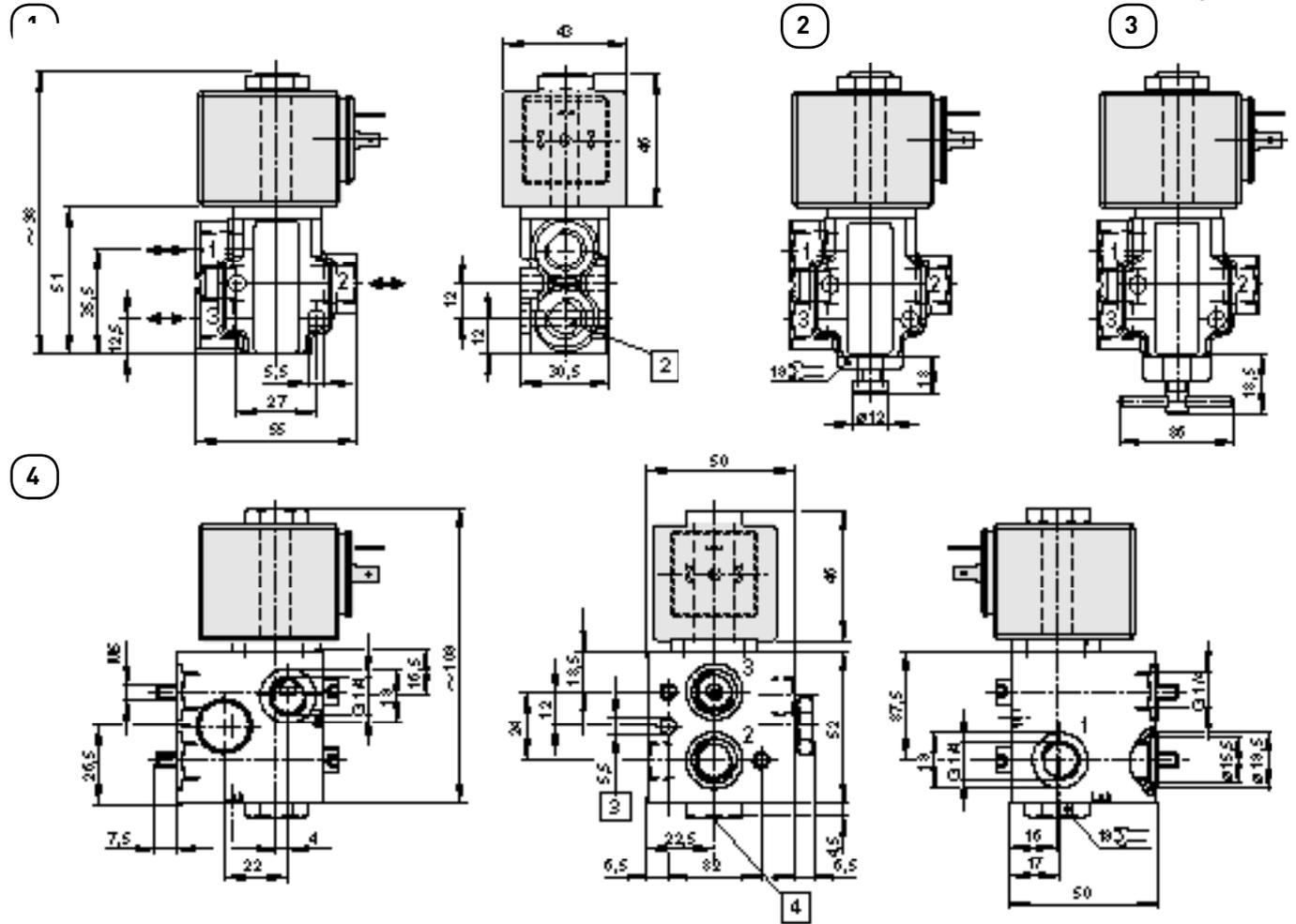
Page 2-70

0540593

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

**Dimensions  
Valves**

Dimensions shown in mm  
Projection/First angle

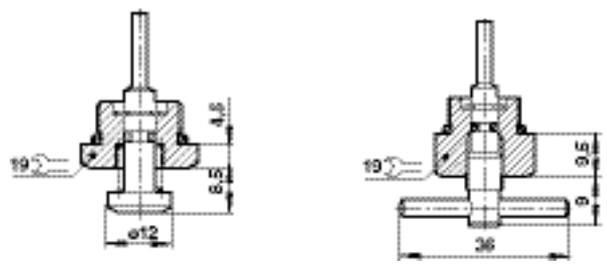


☐ Add-on manual override

**Add-on manual override**

Without detent  
Model: 0600205

With detent  
Model: 0601765



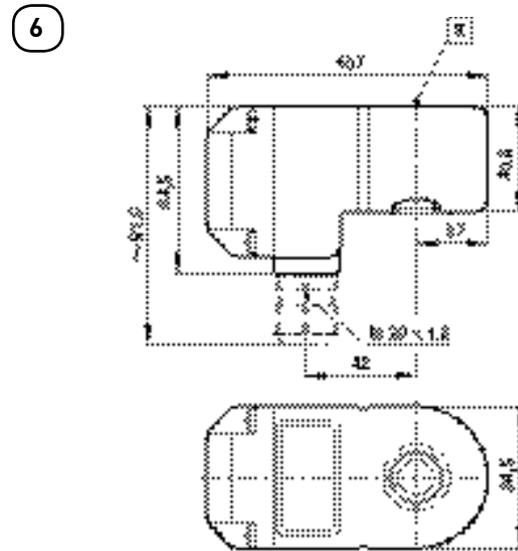
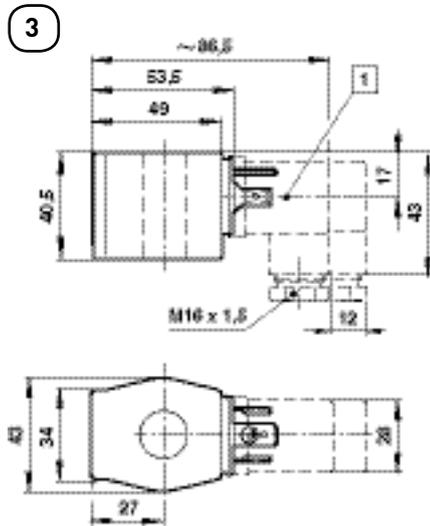
## 3/2 way direct solenoid operated poppet valves VR24

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

### Dimensions

#### Solenoids

Dimensions shown in mm  
Projection/First angle

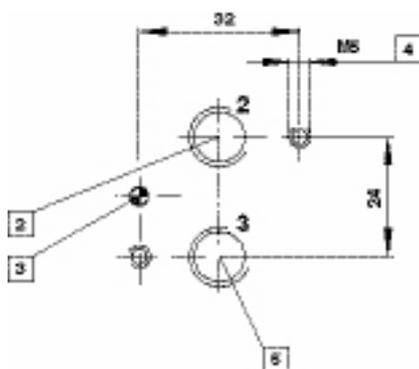


- 1 Connector can be indexed by 4 x 90°
- 2 Ø 16 or 13 (with spacer tube)

### Circuit diagrams



### NAMUR hole pattern, driving side



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

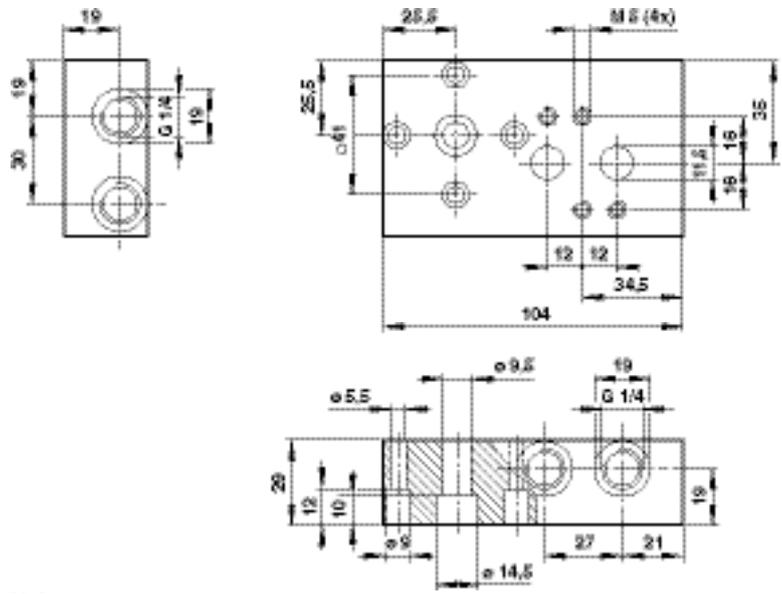
NAMUR quick exhaust module for a better kv-value by exhaust see data sheet 7502144

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

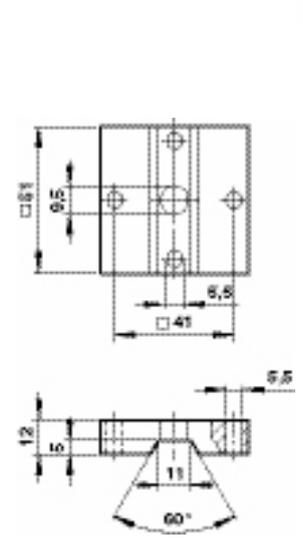
## 3/2 way direct solenoid operated poppet valves VR24

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

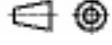
Single connection plate  
Type: 0612790



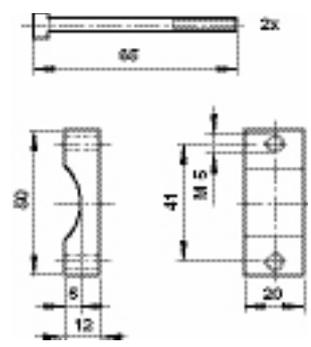
NAMUR slot  
Type: 0612791



Dimensions shown in mm  
Projection/First angle



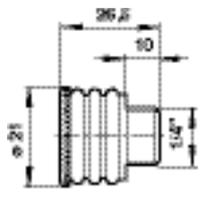
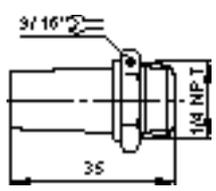
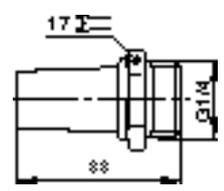
Yoke  
Type: 0540593



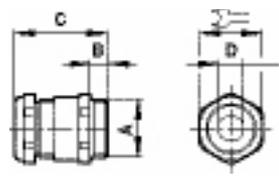
Silencer  
Model: T40C2800

MS002A

Exhaust guard  
Model: 0613422



Cable gland



For cable Ø	A	B	C		Model
5 ... 9	M20 x 1,5	9	36	24	0110854
6 ... 12	M20 x 1,5	9	36	24	0110855

## 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

Wide temperature range

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



+80°C (+176°F)

-40°C (-40°F)



### Technical features

#### Medium:

Compressed air, filtered, non-lubricated and dry  
Other gases 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 ... +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: hard anodized aluminium  
Seal: VMQ  
Inner parts: stainless steel, brass

### Technical data

Symbol	Port size 1 & 2	3	Operating pressure bar	Material Seat seal	Temperature *2) (°C)	Manual override *3)	Weight (kg)	Dimension No.	Solenoid group	Model *1)
	Flange	G1/8	0 ... 10	VMQ	-40 ... +80	without	0,65	1	0800 or 5270	VR24Z9565-01XXP

\*1) xx = Insert solenoid code on 13th digit and voltage code on 14th digit, see below!

\*2) Depending on solenoid system, see page 2-72

\*3) Push only and turn and lock on request

### 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 (mA)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model	Code
	16,9	703 (24 V d.c.) 425 (36 V d.c.) *10 193 (72 V d.c.) *10 139 (110 V d.c.)	-25 ... +40 -25 ... +60	+20/-30 (+15/-32) +10/-30 (+6/-32) ( ) for 37,5 and 74 V d.c. only	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	4
	8,9	369 (24 V d.c.) 222 (36 V d.c.) *10 120 (72 V d.c.) *10 69 (110 V d.c.)	-40 ... +60 -40 ... +80	±30 (+25/-32) +30/-20 (+25/-22) ( ) for 37,5 and 74 V d.c. only	IP 65	M20 x 1,5 *6)	0,50	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

\*10) Voltage range: 36 ... 37,5 d.c. and 72 ... 74 V d.c.

#### Accessories

##### Cable gland



Page 2-73

Thread

Cable Ø

Material

Model

M 20x1,5

5,0...9,0 mm

PA, UL94 V0

0110854

M 20x1,5

6,0...12 mm

PA, UL94 V0

0110855

##### Connector

##### Silencer \*1)

##### Exhaust guard \*2), \*3)

##### Manual override (without detent)

##### Manual override (with detent)



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0570275

T40C1800 (G1/8)  
MS001A (1/8 NPT)

0613421 (G1/4, 1/4 NPT)

0600205

0601765

\*1) For indoor use

\*2) For outdoor use

\*3) Please order the connector 160231828 (from G1/8 to G1/4) separately

#### Dimensions

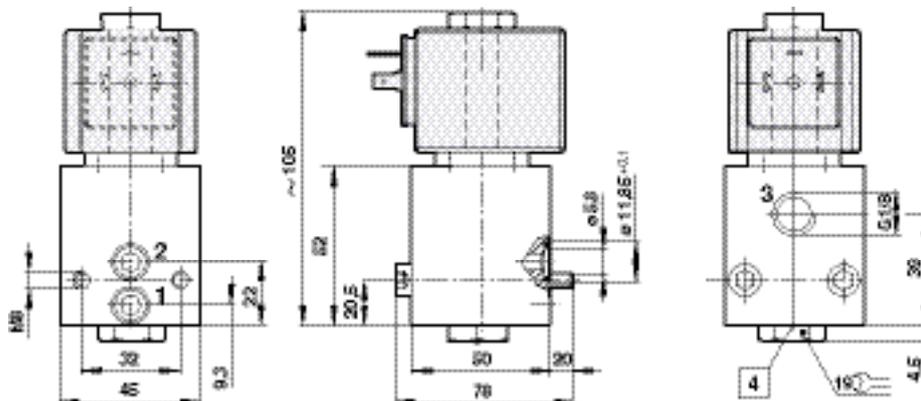
##### Valves

Dimensions shown in mm

Projection/First angle



1



1 Add-on manual override, below

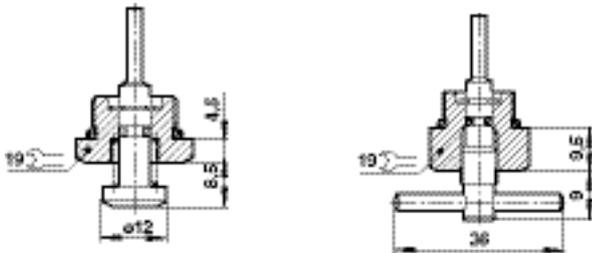
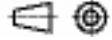
## 3/2 way direct solenoid operated poppet valves VR24Z9565 (previously 1025392) Special flange mounting option

### Add-on manual override

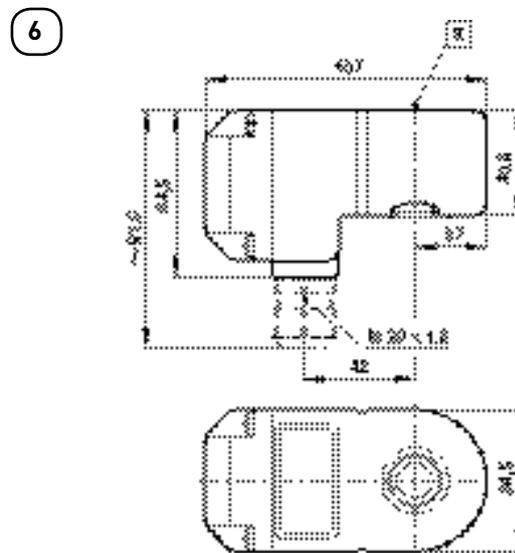
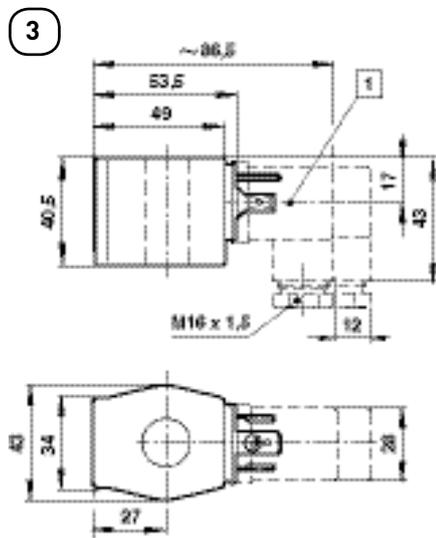
Without detent  
Model: 0600205

With detent  
Model: 0601765

Dimensions shown in mm  
Projection/First angle

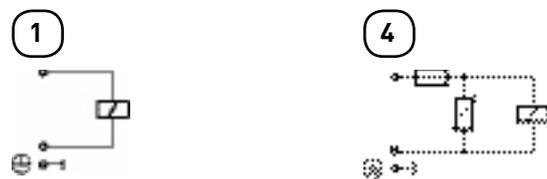


### Solenoids

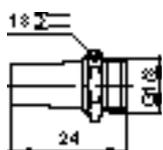


- 1 Connector can be indexed by 4x90°
- 2  $\varnothing 16$  or 13 (with spacer tube)

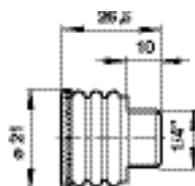
### Circuit diagrams



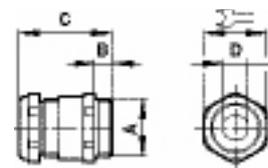
Silencer  
Model: T40C1800



Exhaust guard  
Model: 0613422



Cable gland



For cable $\varnothing$	A	B	C		Model
5 ... 9	M20 x 1,5	9	36	24	0110854
6 ... 12	M20 x 1,5	9	36	24	0110855

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

G1/2, 1/2 NPT

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



+60°C (+140°F)

-40°C (-40°F)



### Technical features

**Medium:**

Compressed air, filtered, non-lubricated and dry

**Operation:**

Direct solenoid operated poppet valves

**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

**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 NBR)

Inner parts: stainless steel, brass

### Technical data

#### 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	without	0,90	1	0800 or 5270	VR98D9678-01XXP
	1/2 NPT	0 ... 10	SNBR	-40 ... +60	without	0,90	1	0800 or 5270	VR98T9678-01XXP

\*1) xx = Insert voltage code on 14th digit, see below

\*2) Depending on solenoid system, see page 2-75

### Option selector

VR98★9678-01★★P

Port size	Substitute
G1/2	D
1/2 NPT	T

Additional versions on request

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

## 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 (m A)	Temperature range (°C)	Voltage tolerance (%)	Protection class *7)	Electrical connection	Weight (kg)	Dimension No.	Circuit diagram No.	Model	Code
	16,9	703 (24 V d.c.) 425 (36 V d.c.) *10) 193 (72 V d.c.) *10) 139 (110 V d.c.)	-25 ... +40 -25 ... +60	±20 (+15/-22) *9) +10/-20 (+6/-22) *9) ( ) for 37,5 and 74 V d.c. only	IP 65 (with Connector) *5)	Connector DIN EN 175301-803 Form A *6)	0,26	3	1	0800	4
	8,9	369 (24 V d.c.) 222 (36 V d.c.) *10) 120 (72 V d.c.) *10) 69 (110 V d.c.)	-40 ... +60 -40 ... +80	+30/-15 (+25/-17) +30/-10 (+25/-12) ( ) for 37,5 and 74 V d.c. only	IP 65	M20 x 1,5 *6)	0,50	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

\*9) Working pressure applied to port 3: -16%

\*10) Voltage range: 36 ... 37,5 d.c. and 72 ... 74 V d.c.

### Accessories

#### Cable gland



#### Page 2-77

Thread	Cable Ø	Material	Model
M 20x1,5	5,0...9,0 mm	PA, UL94 V0	0110854
M 20x1,5	6,0...12 mm	PA, UL94 V0	0110855

#### Connector

#### Silencer \*1)

#### Exhaust guard \*2)



#### Page 2-77

#### Page 2-77

0570275	T40C4800 (G1/2) MS004A (1/2 NPT)	0613423 (G1/2, 1/2NPT)
---------	-------------------------------------	------------------------

\*1) For indoor use only

\*2) For outdoor use

\*3) Useable with the indirect atuuated valves only.

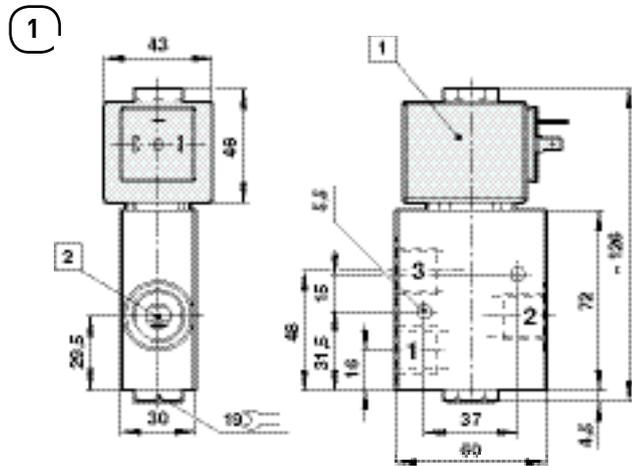
## 3/2 way direct or indirect solenoid operated poppet valves

VR98

G1/2, 1/2 NPT

### Dimensions

#### Valves



- 1 Solenoid optional turnable
- 2 Working port G1/2 or 1/2 NPT

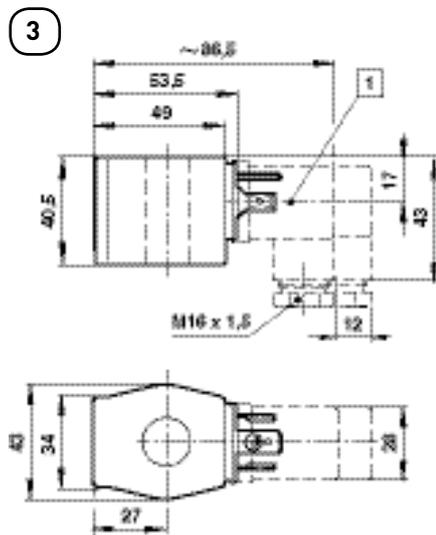
Dimensions shown in mm

Projection/First angle

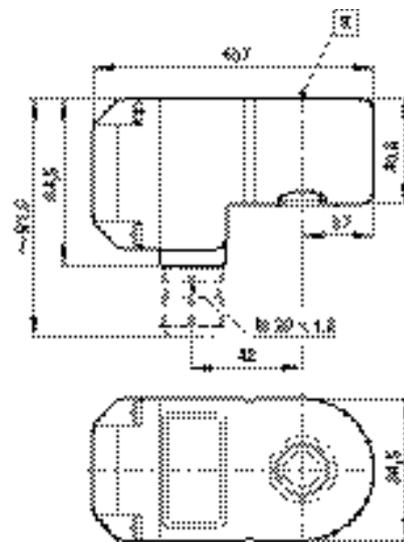


### Dimensions

#### Solenoids



6



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

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

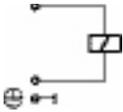
G1/2, 1/2 NPT

Circuit diagrams

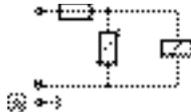
Dimensions shown in mm  
Projection/First angle



1



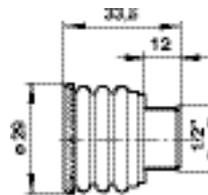
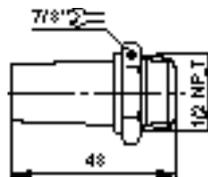
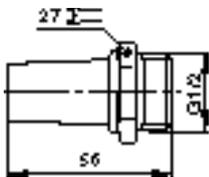
4



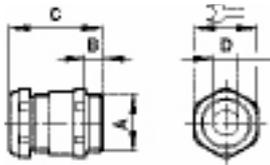
Silencer  
Model: T40C4800

Model: MS004A

Exhaust guard  
Model: 0613423



Cable gland



For cable Ø	A	B	C		Model
5 ... 9	M20 x 1,5	9	36	24	0110854
6 ... 12	M20 x 1,5	9	36	24	0110855

## 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



+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 (m³/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 2-80

## 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 <sup>3</sup> /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 2-80

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

82510, 82610

1/8" ... 3/8"

### Option selector

8 ★ ★ ★ ★ ★ ★ ★ ★ . ★ ★ ★ ★ ★ ★ ★ ★ . ★ ★ ★ ★ ★ ★ ★ ★

Series	Substitute
82... (ISO G thread, brass and stainless steel) and (NPT thread, brass only)	2
84... (NPT thread, stainless steel only)	4
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

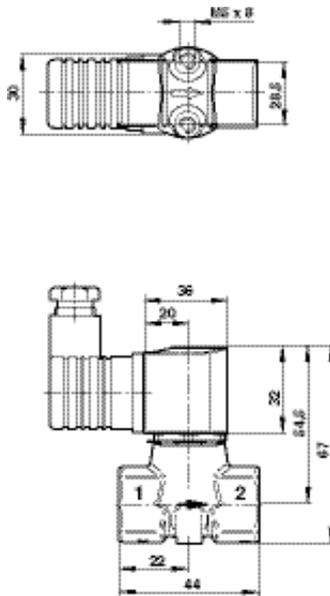
### Voltage and frequency codes solenoid 9151 series solenoid system

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

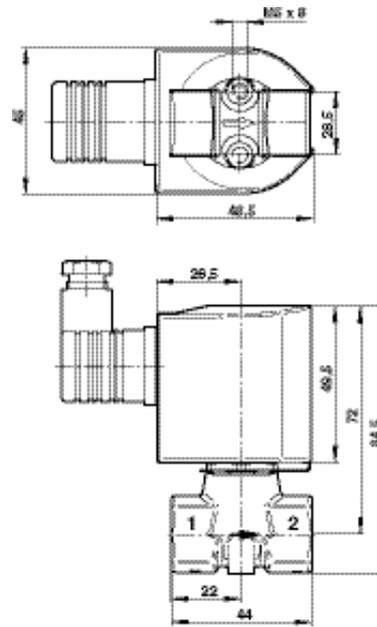
2/2 way valves (direct solenoid actuated seat)  
82510, 82610  
1/8" ... 3/8"

Basic dimensions

9101



9151



Dimensions shown in mm  
Projection/First angle



Special applications

Symbol	Application	Port size	Orifice (mm)	Body material	Flow kv value (m <sup>3</sup> /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)

82530

1/4" ... 1/2"

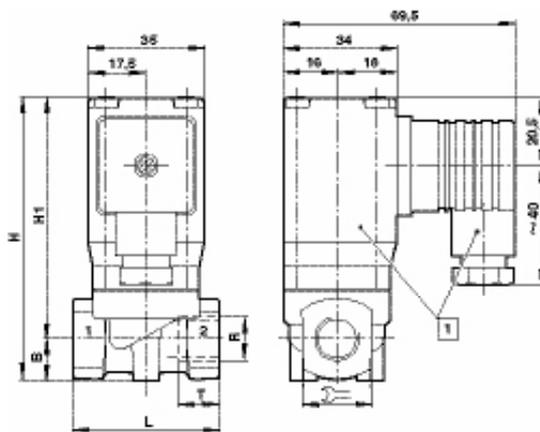
### Voltage and frequency codes

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 (m³/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



+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 (m³/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

xxxx Please insert voltage and frequency codes from page 2-87

**Option selector**

8208★ ★ ★ . ★ ★ ★ ★ . ★ ★ ★ ★ ★ ★

<table border="1"> <tr> <th>Port size</th> <th>Substitute</th> </tr> <tr> <td>1/4"</td> <td>0</td> </tr> <tr> <td>3/8"</td> <td>1</td> </tr> <tr> <th>Orifice</th> <th>Substitute</th> </tr> <tr> <td>3 mm</td> <td>0</td> </tr> <tr> <td>4,5 mm</td> <td>6</td> </tr> <tr> <td>6 mm</td> <td>7</td> </tr> <tr> <td>8 mm</td> <td>8</td> </tr> <tr> <th>Valve options</th> <th>Substitute</th> </tr> <tr> <td>Seat seal FPM</td> <td>3</td> </tr> <tr> <td>Seat seal PTFE</td> <td>6</td> </tr> </table>	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	<table border="1"> <tr> <th>Frequency</th> <th>Substitute</th> </tr> <tr> <td>See table frequency codes</td> <td>xx</td> </tr> <tr> <th>Voltage</th> <th>Substitute</th> </tr> <tr> <td>See table voltage codes</td> <td>xxx</td> </tr> <tr> <th>Solenoid system</th> <th>Substitute</th> </tr> <tr> <td>Standard for V d.c.</td> <td>8050</td> </tr> <tr> <td>Standard for V a.c.</td> <td>8051</td> </tr> </table>	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
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"

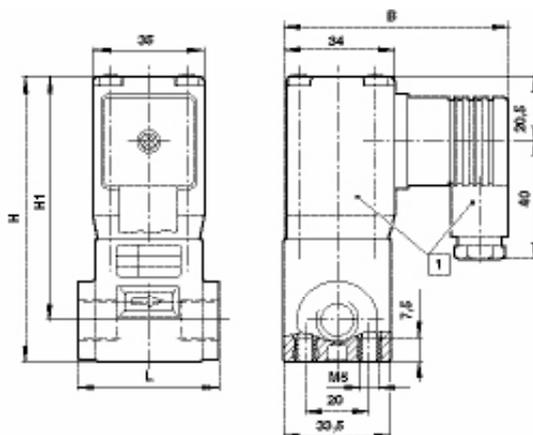
### Voltage and frequency codes 8050 and 8051 series solenoid system

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



### 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

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

### Special applications

Symbol	Application	Port size	Orifice (mm)	Flow kv value (m <sup>3</sup> /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



+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 ... G2 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 <sup>3</sup> /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"

### 2/2 way valves

Symbol	Size	Orifice (mm)	Flow kv value (m <sup>3</sup> /h)	Operating pressure (bar)	Weight (kg)	Model	
						Solenoid in V d.c.	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

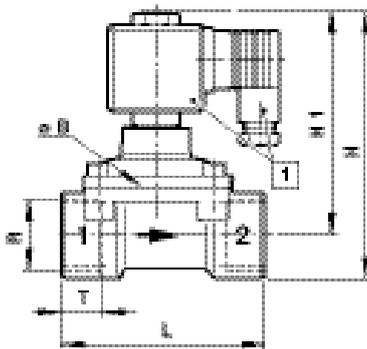
xxxxx Insert voltage and frequency codes.

### 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 <sup>3</sup> /h)	Operating pressure (bar)	Weight (kg)	Model	
						Solenoid in V d.c.	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
	G2	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

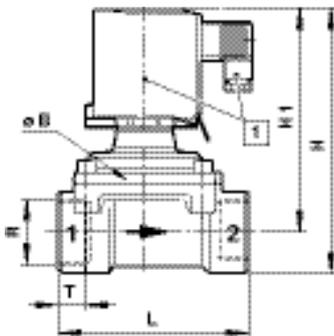
xxxxx Please insert voltage and frequency codes.

### 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
G2	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"

- 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



Special application



+90°C (+194°F)

-20°C (-4°F)



### Technical features

<b>Medium:</b> Neutral gases and liquids e. g. air, water, oil	<b>Port size:</b> G1/4 ... G2 or 1/4 NPT ... 2 NPT
<b>Operation:</b> Solenoid operated	<b>Operating pressure:</b> 0 ... 25 bar/40 bar optional (0 ... 363 psi/580 psi optional)
<b>Mounting:</b> Internal threads	

**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 <sup>3</sup> /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"

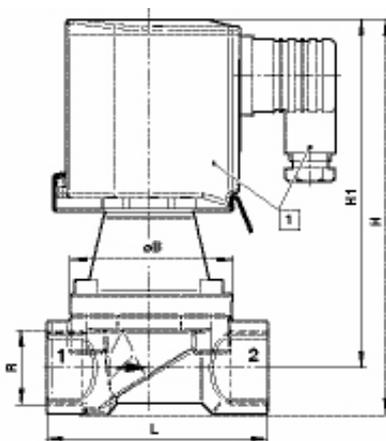
#### Option selector

857\*\*\*\*\*.\*\*\*\*\*.\*\*\*\*\*

<b>Thread form</b>	Substitute
ISO G parallel	0
NPT	1
<b>Port size</b>	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
<b>Valve options</b>	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

<b>Frequency</b>	Substitute
See table frequency codes	xx
<b>Voltage</b>	Substitute
See table Voltage codes	xxx
<b>Solenoid system</b>	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 <sup>3</sup> /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 <sup>3</sup> /h)	Operating pressure (bar)	Weight (kg)	Model	
						Solenoid in V d.c.	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
	G2	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

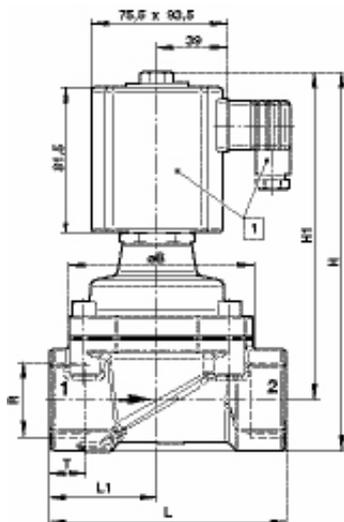
xxxxx Insert voltage and frequency codes

### 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
G2	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)

## FREEZE PROTECTION VALVES

FREEZE PROTECTION VALVE (FPV) MANIFOLD PROTECTS UPSTREAM PIPING AND COMPONENTS FROM FREEZING

Norgren's high-performance Freeze Protection Valves have been developed to protect on-board water systems from freezing when stationary, during low temperatures.

- Designed to automatically drain onboard water systems when the water temperature is close to freezing point
- Proven technology
- Designed for endurance in the most demanding conditions (-40°C...+80°C)
- Highly responsive to temperature changes
- Rapidly detects the water temperature rather than the ambient temperature for improved accuracy and faster response
- Inlet pressure has no effect on thermal set point
- Low power consumption - No override heating element required
- Very stable temperature set-point (>10 years)
- Cartridge solution allows easy maintenance without disturbing pipe work
- Easily retro-fitted into existing applications



**AUTOMATIC DRAIN VALVE WITH OVERRIDE**

Cartridge solution - easy maintenance

Proven technology

Improved accuracy

HIGH LIFE CYCLE -40°C...+80°C

appropriate for extreme temperatures

Suitable for retrofit

LOW POWER CONSUMPTION

MINIMISES SERVICE INTERVALS

FASTER RESPONSE

FOR TANK DRAINING



For more product information visit page 2-104

## 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



### 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:**

83300:

-40 ... +85°C (-40 ... +185°F)

82900 (standard):

-20 ... +85°C (-4 ... +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 <sup>3</sup> /h)	Operating pressure (bar)	Weight (kg)	Model
	G3/4	Aluminium	18	0,4 ... 8	0,30	8290300.0000.00000
	3/4 NPT	Aluminium	22	0,4 ... 8	0,26	8290400.0000.00000
	G1	Stainless steel	18	0,4 ... 8	0,75	8330300.0000.00000
	1 NPT	Stainless steel	22	0,4 ... 8	0,70	8330400.0000.00000

### Special applications

Symbol	Application	Port size	Body material	Flow kv value (m <sup>3</sup> /h)	Operating pressure (bar)	Weight (kg)	Model
	Adapted switching speed	G3/4	Aluminium, anodized	18	0,4 ... 8	0,30	8590103.0000.00000

### Option selector

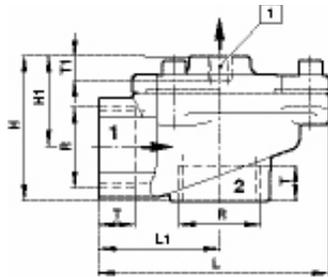
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Material/thread	Substitute	Valve options	Substitute
Aluminium/ISO G parallel	290	NC (normally closed) Standard	00
Aluminium/NPT	291	Ambient temperature (82900 only) -40 ... +85°C (-40 ... +185°F)	71
Stainless steel/ISO G parallel	330	Port size	Substitute
Stainless steel/NPT	331	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



### 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 (m³/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 (m³/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)**

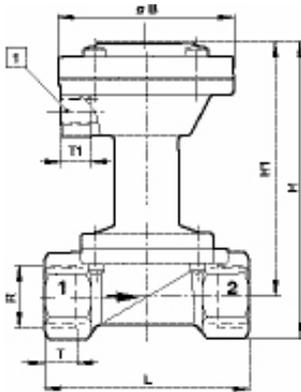
**82710**

**1/4" ... 1/2"**

**Basic dimensions**

Dimensions shown in mm

**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

1 Pilot port G1/8 or 1/8 NPT

## 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



### 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 (m³/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 (m³/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

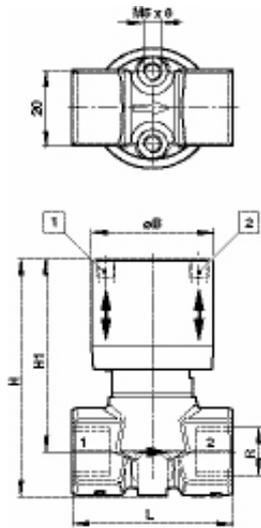
### Option selector

84★★★★★.0000.00000

Material/thread	Substitute	Orifice	Substitute
Brass/ISO G parallel	18	2 mm	00
Brass/NPT	38	4 mm	20
Stainless steel/ISO G parallel	19	6 mm	40
Stainless steel/NPT	39	10 mm	60
Port size	Substitute		
1/8"	8		
1/4"	0		
3/8"	1		
1/2"	2		

## 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



### Technical features

**Medium:**

Neutral gases and liquids

**Operation:**

Remote pilot operated

**Mounting:**

Internal threads

**Port size:**

G1/2 ... G2 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 <sup>2</sup> /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
	G2	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

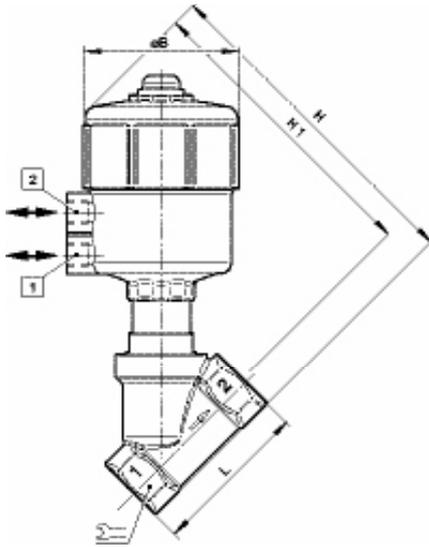
Actuator size	Substitute
Ø 50 (G)	72
Ø 50 (NPT)	73
Ø 70 (G)	50
Ø 70 (NPT)	51
Port size	Substitute
1/2"	2
3/4"	3
1"	4
1 1/4"	5
1 1/2"	6
2"	7

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



+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 ... G2 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 (m³/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
G2	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 (m³/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"

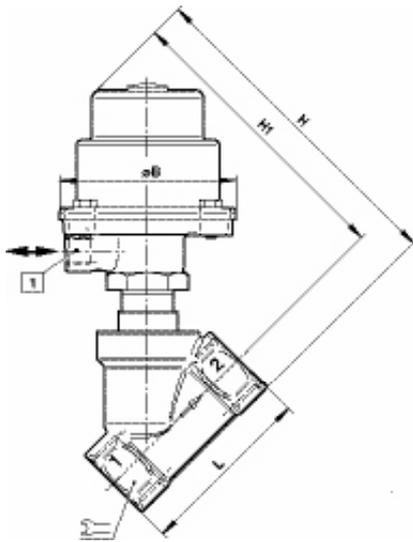
### Option selector

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
G2	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
G2	50	163,0	270	235	150	70	8228700.0000.00000
2 NPT	50	163,0	270	235	150	70	8229700.0000.00000

## 2 x 2/2 way valves (direct solenoid actuated seat) 1405899... & 1405985...

G3/4 or 3/4 NPT

Freeze protection valve for automatic  
water tank draining

Direct acting

Wide temperature range

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



### Technical features

**Medium:**

Water

**Operation:**

Fluid temperature controlled,  
automatic tank draining valve

**Mounting:**

Optional, solenoid preferably  
mounted vertical on top

**Port size:**

G3/4 or 3/4 NPT

**Flow direction:**

Determined (P » A)

**Operating pressure:**

0 ... 3,5 bar (0 ... 51 psi)

**Fluids:**

Up to 25 mm<sup>2</sup>/s (cSt)

**Fluid temperature:**

+3°C (38°F)

**Ambient temperature:**

-25 ... +80°C (-13 ... +176°F)

**Storage temperature:**

-40 ... +80°C (-40 ... +176°F)

**Materials**

Body: CW 617N

Core and core tube: stainless steel

Internal parts: stainless steel,

PTFE and PVDF

Seat seal: EPDM

### 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 <sup>3</sup> /h)	Operating pressure (bar)	Voltage	Weight (kg)	Model
	G3/4	15	2	0 ... 3,5	d.c. only	2,6	1405985.8302.xxxxx
	3/4 NPT	15	2	0 ... 3,5	d.c. only	2,6	1405899.8302.xxxxx
	G3/4	15	2	0 ... 3,5	a.c. only	2,6	1405985.8306.xxxxx
	3/4 NPT	15	2	0 ... 3,5	a.c. only	2,6	1405899.8306.xxxxx

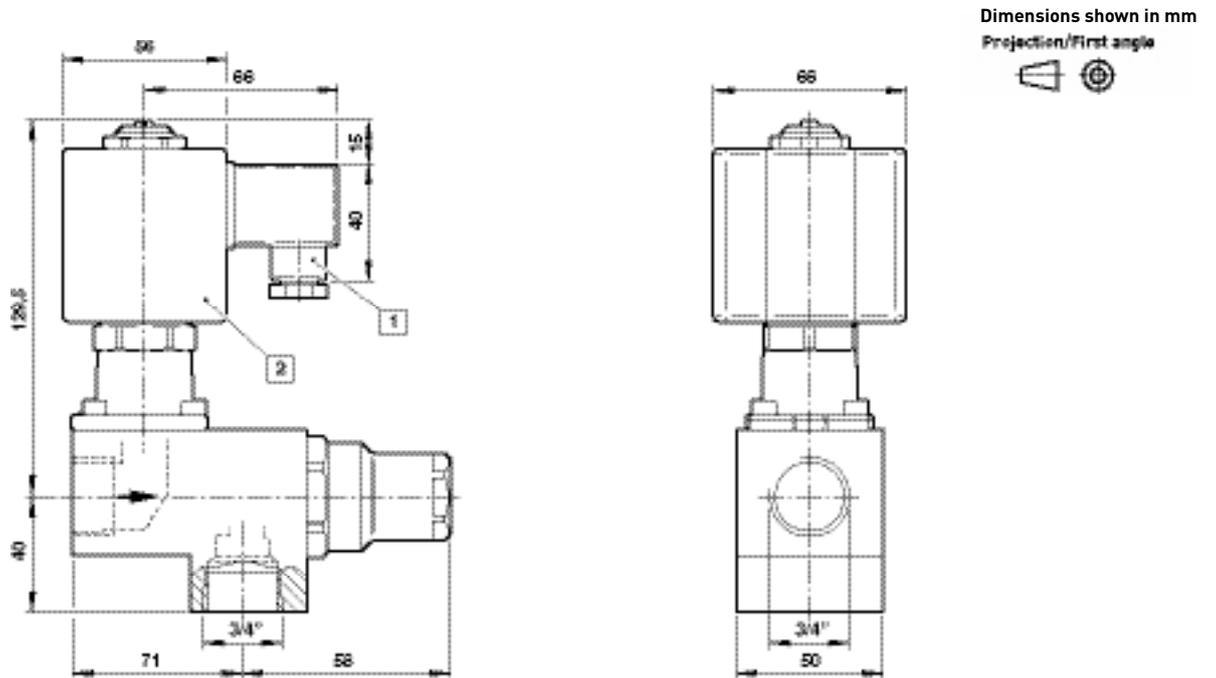
xxxxx Please insert voltage and frequency codes see below

### Voltage and frequency codes

Code Voltage	Code Frequency	Voltage	Frequency	Power consumption Inrush	Power consumption Hold
024	00	24 V d.c.	—	14 W	14 W
036	00	36 V d.c.	—	14 W	14 W
110	00	110 V d.c.	—	14 W	14 W
024	50	24 V a.c.	50 Hz	16 VA	16 VA
110	50	110 V a.c.	50 Hz	16 VA	16 VA
230	50	230 V a.c.	50 Hz	16 VA	16 VA
120	60	120 V a.c.	60 Hz	16 VA	16 VA
220	60	220 V a.c.	60 Hz	16 VA	16 VA

**2 x 2/2 way valves (direct solenoid actuated seat)  
1405899... & 1405985...**

**G3/4 or 3/4 NPT**



- 1 Connector rotatable 4 x 90°
- 2 Solenoid rotatable 360°

## 2/2 way minimum pressure valve NMPV

3/8", 1/2" & 3/4"

The valve fully opens when supply pressure is higher than setting point, otherwise closed (low hysteresis)

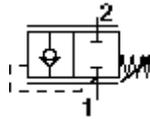
Integral non-return valve as standard

Optional sub-base version available

Setting point can be locked

Wide temperature range

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



+180°C (+356°F)

-10°C (14°F)



### Technical features

**Medium:**

Compressed air

**Maximum inlet pressure:**

30 bar (435 psi)

**Set pressure range:**

2 ... 7,5 bar (29 ... 109 psi)

**Flow:**

2000 l/min at P1 = 8,5 bar (123 psi),  
set pressure = 6,5 bar (94 psi)

**Port sizes:**

G3/8, G1/2 & G3/4  
3/8 NPT, 1/2 NPT & 3/4 NPT

**Mounting position:**

Optional

**Fluid/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: hard anodized aluminium  
Bonnet & adjusting screw: stainless steel 316 (1.4404)  
Internal parts: steel, aluminium  
Seal: NBR

### Technical data, standard model with non-return valve

Symbol	Port size	Set pressure (bar)	Weight (kg)	Model *
	G3/8	7,5 <sup>+0.3</sup> bar (109 <sup>+4.35</sup> psi)	0,913	NMPV-P3G-75N
	G1/2	7,5 <sup>+0.3</sup> bar (109 <sup>+4.35</sup> psi)	0,905	NMPV-P4G-75N
	G3/4	7,5 <sup>+0.3</sup> bar (109 <sup>+4.35</sup> psi)	0,890	NMPV-P6G-75N
	3/8 NPT	7,5 <sup>+0.3</sup> bar (109 <sup>+4.35</sup> psi)	0,913	NMPV-P3A-75N
	1/2 NPT	7,5 <sup>+0.3</sup> bar (109 <sup>+4.35</sup> psi)	0,905	NMPV-P4A-75N
	3/4 NPT	7,5 <sup>+0.3</sup> bar (109 <sup>+4.35</sup> psi)	0,890	NMPV-P6A-75N

\* Please order mounting nut or nut with bracket separately

### Option selector

NMPV-★ ★ ★ ★ - ★ ★ ★ ★

Interface	Substitute
Inline (standard)	P
Sub-base (on request)	N
Port size	Substitute
3/8"	3
1/2"	4
3/4"	6
Thread form	Substitute
ISO G parallel	G
NPT	A

Non-return option	Substitute
With (standard)	N
Without	X
Set pressure *	Substitute
No setting	00
6,5 <sup>+0.3</sup> bar (94 <sup>+4.35</sup> psi)	65
6,7 <sup>+0.3</sup> bar (97 <sup>+4.35</sup> psi)	67
7,5 <sup>+0.3</sup> bar (109 <sup>+4.35</sup> psi)	75

\* Other set pressures available on request

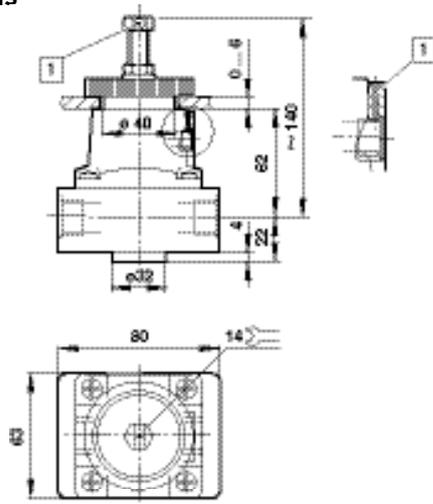
**2/2 way minimum pressure valve  
NMPV  
3/8", 1/2" & 3/4"**

**Accessories**

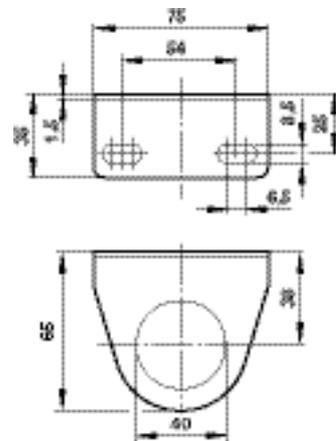
Dimensions shown in mm  
Projection/First angle



**Dimensions**



**Neck mounting bracket**



1 Hole for seal wire



## AUTOMATIC DRAIN VALVES

NEW LEVEL SENSED CONDENSATE VALVE – NO ELECTRICITY REQUIRED

Designed to remove condensate from compressed air systems, without using electricity. The discharge process is automatic and is based on a newly developed 2/2 way level controlled valve principle.

Ideally suited for applications where power is not available, too expensive or unstable.

After long vehicle trials, this product has proven to be extremely reliable and improve life cycles.

- Automatically removes condensate from compressed air systems
- Reduced operating costs - no additional energy needed
- Reduced stocking costs – 1 model covers 100m<sup>3</sup>/min
- Easy to install and service
- Integrated strainer
- Top and side inlets available
- Condensate viewing sight port
- Robust aluminium housing
- Ball cock system technology

**AUTOMATIC DRAIN VALVE FOR RESERVOIR DISCHARGE**

Condensate viewing sight port

Easy to install and service

Compact design

TOP AND SIDE INLETS AVAILABLE

ROBUST ALUMINIUM HOUSING –40°C...+80°C

Integrated strainer

ENVIRONMENTALLY FRIENDLY

SAVE COSTS



### TECHNICAL SPECIFICATIONS

→ Maximum compressor capacity	100 m <sup>3</sup> /min
→ System pressure	3 – 16 bar
→ Valve type	Ball cock direct acting
→ Valve orifice	4.5 mm
→ Valve seals	FPM
→ Inlet/outlet connection	½" (BSP or NPT)
→ Medium temperature	+1°C...+50°C
→ Ambient temperature	-40°C...+80°C

# PRESSURE SWITCHES AND TRANSDUCERS



## PRODUCTS

3-02	Fast find guide		
3-03	Electro-mechanical pneumatic pressure switches	G1/4, 1/4 NPT, flange	18D-LT x2
3-08	Allfluid electronic pressure sensor	G1/4	19S
3-10	Electronic pressure switch	G1/4	G/61D-14-12-024-I
<b>3-12</b>	<b>Feature page '21D Pressure Switch'</b>		

# FAST FIND **GUIDE**



**18D-LT x2**  
Electro-mechanical pneumatic pressure switches  
G1/4, 1/4 NPT, flange



Page 3-03

**19S**  
Allfluid electronic pressure sensor  
G1/4



Page 3-08

**G/61D-14-12-024-I**  
Electronic pressure switch  
G1/4



Page 3-10

## Electro-mechanical pneumatic pressure switches 18D-LT x2

G1/4, 1/4 NPT, flange

**Microswitch with gold plated contacts**

**High number of switching cycles**

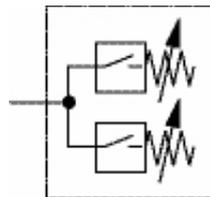
**Microswitch approved by UL and CSA**

**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**



+85°C (+185°F)

-40°C (-40°F)



### Technical features

#### Medium:

For neutral, gaseous and liquid fluids, non-combustible

#### Operation:

Diaphragm

#### 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)

#### Media viscosity:

Up to 1000 mm<sup>2</sup>/s

#### Switching pressure difference/hysteresis:

Fixed

#### Life cycle of mechanical parts:

10<sup>6</sup> 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

#### Operating temperature range:

Fluid/Ambient (reliability)

Standard:

-40 ... +85°C (-40 ... +185°F)

Optional:

-55 ... +85°C (-67 ... +185°F)

Air supply must be dry enough

to avoid ice formation at

temperatures below +2°C (+35°F)

#### Materials

Housing: Aluminium (brass)

Seals: EPDM

### Technical data

#### Thread port connection – plug included in scope of supply

Pressure range *1)	switch A (bar)	switch B (bar)	Max. over pressure *2)	Switching cycles (l/min)	Materials		Port size	Weight (kg)	Drawing No.	Model
					press sensor body	seals				
0,2 ... 2	0,2 ... 2	0,2 ... 2	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440202*A00
0,5 ... 8	0,5 ... 8	0,5 ... 8	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440808*A00
1 ... 10	1 ... 10	1 ... 10	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#441010*A00
1 ... 16	1 ... 16	1 ... 16	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#441616*A00
0,2 ... 2	0,2 ... 2	0,5 ... 8	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440208*A00
0,2 ... 2	0,2 ... 2	1 ... 10	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440210*A00
0,2 ... 2	0,2 ... 2	1 ... 16	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440216*A00
0,5 ... 8	0,5 ... 8	1 ... 10	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440810*A00
0,5 ... 8	0,5 ... 8	1 ... 16	26	100	Aluminium, anodized	EPDM, VMQ	Female, 1/4"	0,5	4	DS-M2#440816*A00

#### Flange connection – plug included in scope of supply

Pressure range *1)	switch A (bar)	switch B (bar)	Max. over pressure *2)	Switching cycles (l/min)	Materials		Port size	Weight (kg)	Drawing No.	Model
					press sensor body	seals				
0,2 ... 2	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	0,5 ... 8	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40808*A00
1 ... 10	1 ... 10	1 ... 10	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF41010*A00
1 ... 16	1 ... 16	1 ... 16	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF41616*A00
0,2 ... 2	0,2 ... 2	0,5 ... 8	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40208*A00
0,2 ... 2	0,2 ... 2	1 ... 10	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40210*A00
0,2 ... 2	0,2 ... 2	1 ... 16	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40216*A00
0,5 ... 8	0,5 ... 8	1 ... 10	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40810*A00
0,5 ... 8	0,5 ... 8	1 ... 16	26	100	AL, anodized	EPDM, VMQ, NBR	Flange	0,5	5	DS-M2FF40816*A00

\* Please insert X, Y, O or C for electrical switching function

\*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 'G' for ISO G, 'N' for NPT thread

Switching pressure difference see table on page 3-04

## Electro-mechanical pneumatic pressure switches

### 18D-LT x2

G1/4, 1/4 NPT, flange

#### Option selector

DS-M2\*\*\*\*\*A00

Thread form	Substitute
ISO G	G
NPT	N
Flange	F
Port size	Substitute
1/4"	4
Flange	F
Temperature range (°C)	Substitute
-40 ... +85 (standard)	4
-55 ... +85 (optional) *	5

\* Not at all pressure ranges are available contact Norgren

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		
Pressure range switch 'A' (bar)	Substitute		
0,2 ... 2	02		
0,5 ... 8	08		
1,0 ... 10	10		
1,0 ... 16	16		

#### 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



0574767 (brass)

0550083 (stainless steel)

Surge damper



0574773 (brass)

0553258 (stainless steel)

Connector (included as standard in scope of supply of switch)



0570110

#### Switching function

	<p>Switch A: NO Terminals 1 - 2: Contacts closed on rising pressure. Switch B: NC Terminals 1 - 3: Contacts closed on falling pressure.</p>
	<p>Switch A: NC Terminals 1 - 2: Contacts closed on falling pressure. Switch B: NO Terminals 1 - 3: Contacts closed on rising pressure.</p>
	<p>Switch A: NC Terminals 1 - 2: Contacts closed on falling pressure. Switch B: NC Terminals 1 - 3: Contacts closed on falling pressure.</p>
	<p>Switch A: NO Terminals 1 - 2: Contacts closed on rising pressure. Switch B: NO Terminals 1 - 3: Contacts closed on rising pressure.</p>

## Electro-mechanical pneumatic pressure switches 18D-LT x2

G1/4, 1/4 NPT, flange

### Switching capacity

#### Commutator with gold plated contacts

Current type	Load type *2)	U min [V]	Max. permissible persistent current I <sub>max</sub> [A] at U *1)					Electrical life-time
			M 12x1 30 V	DIN EN 175301-803, Form A				
			30 V	30 V	48 V	125 V	250 V	
AC	ohmic, inductive	6	0,1	0,1	0,1	0,1	0,1	≥ 2 x 10 <sup>5</sup> Switching cycles
DC	ohmic, inductive	6	0,1	0,1	—	—	—	

Reference number: 20/min, Reference temperature: +20°C.

I<sub>min</sub> = 1 mA at 24 V DC or 5 mA at 6 V DC.

\*1) Higher currents (5 A max) will cause a reduction of the durability of the micro-switch contacts. Furthermore additional measurements has to be taken to fulfil the EMV regulation 2004/108/EG by the manufacturer.

\*2) Spark quenching/overload protection will be necessary using inductive loads.

### Recommended circuit

#### Spark quenching and EMV intrinsically safe

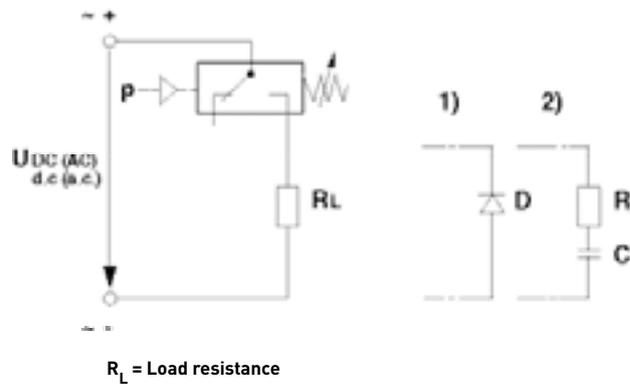
1. Quick diode (D) with  $t_v \leq 200$  ns, parallel to inductive load.

2. RC link in parallel to load in parallel to switching contact.

Dimensioning principles:

$R_L$  in  $\Omega$   $\approx$   $0,2 \times R_{Load}$  in  $\Omega$

$C$  in  $[\mu F]$   $\approx$   $I_{Load}$  in [A]



## Electro-mechanical pneumatic pressure switches

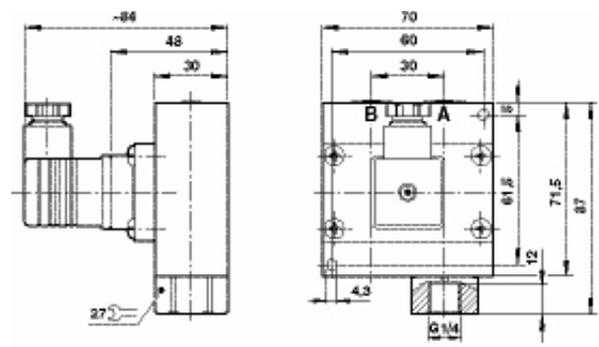
18D-LT x2

G1/4, 1/4 NPT, flange

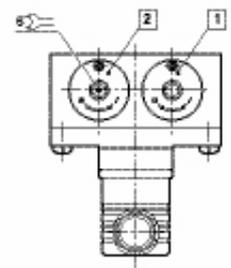
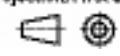
### Dimensions

G1/4 or 1/4 NPT

4



Dimensions shown in mm  
Projection/First angle



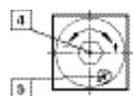
- 1 Switch A
- 2 Switch B

### Adjustable switch point

After releasing the locking screw

Clockwise rotation = increasing switch point

Anti-clockwise rotation = decreasing the switch point



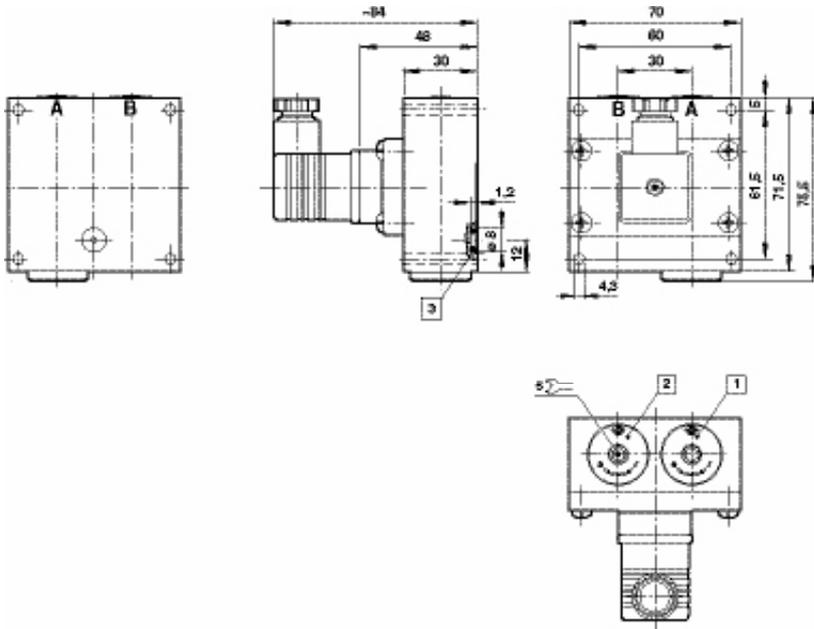
- 4 Switch point screw
- 5 Locking screw

**Electro-mechanical pneumatic pressure switches**  
**18D-LT x2**  
**G1/4, 1/4 NPT, flange**

**Flange**

Dimensions shown in mm  
Projection/First angle

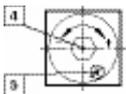
5



- 1 Switch A
- 2 Switch B
- 3 O-ring 5 x 1,5

**Adjustable switch point**

After releasing the locking screw  
Clockwise rotation = increasing switch point  
Anti-clockwise rotation = decreasing the switch point



- 4 Switch point screw
- 5 Locking screw

## Allfluid electronic pressure sensor

### 19S

### G1/4

**Robust sensor for hydraulic/fluid applications**

**Small, space saving stainless steel construction**

**Excellent long-term stability**

**Wide temperature range**

**Shock tested to ICE 60068-2-27 (6g)**

**Vibration tested to ICE 60068-2-6 (20g)**



+125°C (+257°F)

-40°C (-40°F)



### Technical data

#### Medium:

Neutral and aggressive gases or fluids

#### Pressure ranges:

0 ... 50 bar (0 ... 725 psi)

#### Port size:

G1/4

#### Output signal:

4 ... 20 mA (2-wire technology)

0 ... 10 V (3-wire technology)

#### Supply voltage (PIN 1):

9 ... 36 V d.c. (2-wire technology)

14 ... 36 V d.c. (3-wire technology)

#### Electrical connection:

M12 x 1

#### Hysteresis and repeatability

accuracy:

< ± 0,5% FS

#### Residual ripple (max.):

10% (within supply voltage) at 50 Hz

#### Linearity analogue port:

< ± 0,5% FS

#### Load resistance:

See diagram

#### Interference emission:

EN 50081-1

#### Interference immunity:

EN 50082-2

#### Degree of protection:

IP67 acc to EN 60529

(with plug mounted)

#### Long term drift:

< ± 0.2% FS / a

#### EMC:

EN 61000-6-2 and EN 61000-6-3 conforming to RL 2004/108/EC

#### Fluid/Ambient temperature:

Fluid: -40 ... +150°C (-40 ... +302°F)

Ambient:

-40 ... +125°C (-40 ... +257°F)

Air supply must be dry enough to

avoid ice formation at

temperatures below +2°C (+35°F)

#### Temperature sensitivity:

< ± 1.0% FS,

0... +80°C (0 ... 176°F)

< ± 1.5% FS,

-25... +100°C (-13 ... 212°F)

< ± 2.5% FS,

-40... +125°C (-40 ... 257°F)

#### Materials

Housing: stainless steel 1.4301

Medium contacting parts:

stainless steel 1.4548/FKM

### Technical data

Symbol	Port size	Measuring range *2) (relative pressure) (bar)	Max. over pressure (bar)	Output signal		Technology	Weight (kg)	Model *1)
				(mA)	(V)			
	G1/4	0 ... 10	40	4 ... 20	—	2-wire	0,05	0862062
	G1/4	0 ... 25	40	4 ... 20	—	2-wire	0,05	0862162
	G1/4	0 ... 50	100	4 ... 20	—	2-wire	0,05	0862262
	G1/4	0 ... 10	40	—	0 ... 10	3-wire	0,05	0862362
	G1/4	0 ... 25	40	—	0 ... 10	3-wire	0,05	0862462
	G1/4	0 ... 50	100	—	0 ... 10	3-wire	0,05	0862562

\*1) Connector not included. Please see page 3-09.

\*2) Alternative ranges available on request.

# Allfluid electronic pressure sensor 19S G1/4

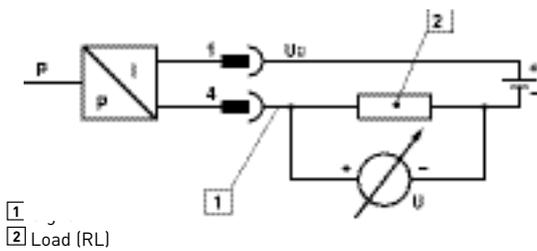
## Accessories

Connector M 12 x 1 90°	90°	straight	straight
			
0523058 (2 m cable length, 4-core) 0523053 (5 m cable length, 4-core)	0523056 (without cable)	0523057 (2 m cable length, 4-core) 0523052 (5 m cable length, 4-core)	0523055 (without cable)

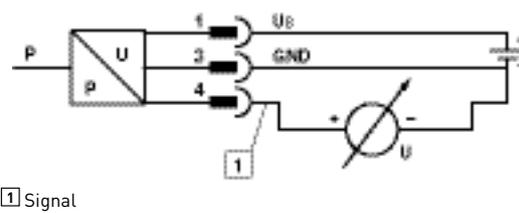
## Electrical connection M 12 x 1

Electrical connection, M 12 x 1, PIN-No.	2-wire		3-wire	
	1	2	3	4
 + UB	1	2	1	2
GND	-	3	3	4
Signal	4	4	4	4

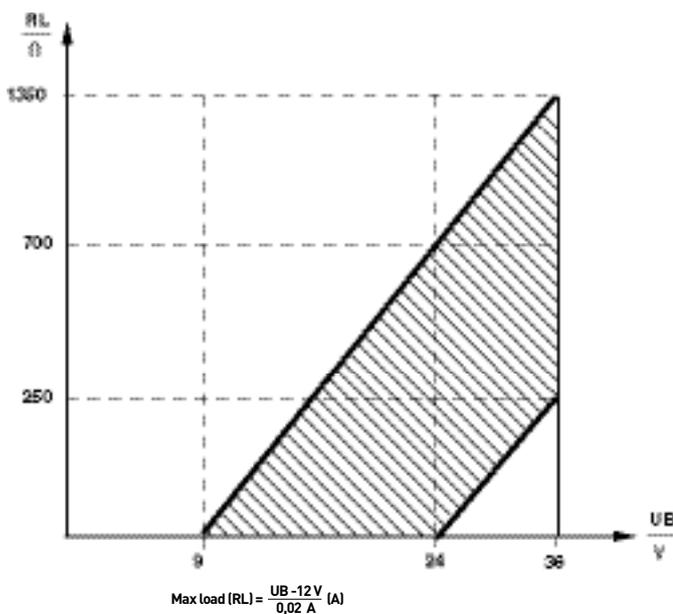
## Electrical diagram for 2-wire versions 4 ... 20 mA



## Electrical diagram for 3-wire versions 0 ... 10 V

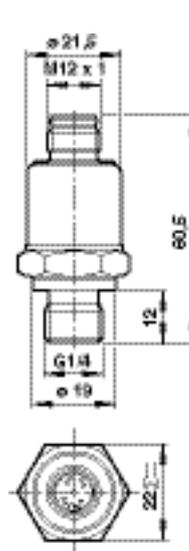


## Characteristic load curve



## Basic dimensions

Dimensions shown in mm  
Projection/First angle



## Electronic pressure switch

G/61D-14-12-024-I

G1/4

**Fast error detection via multi-colour display**

**Easy to use pressure switch with clear display and intuitive programming**

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



### Technical feature

**Medium:**

Neutral gaseous and liquids, non-combustible

**Pressure ranges:**

0 ... 12 bar [0 ... 174 psi]  
[25 bar [362 psi] overloaded]

**Mounting:**

Optional

**Port size:**

G1/4

**Supply voltage:**

24 V d.c. [18 ... 32 V d.c.]

**Switching current:**

1,3 A [output 1]

**Current consumption:**

< 80 mA

**Switching time:**

≤ 5 ms

**Switch output:**

Short circuit protection

**Switching pressure difference/hysteresis:**

Programmable (option: preadjusted)

**Electrical connection:**

M 12 x 1

**Accuracy:**

≤ 2% FS\* [incl. temperature drift]

**Repeatability:**

< ± 0,2% FS\*

**Linearity analogue port:**

< ± 0,2% FS\*

**Switchlogic programmable:**

NO/NC (pins can be individually programmed to NC or NO)

**Display:**

LED for switch status: ON = green; OFF = red

**Degree of protection:**

IP67 acc to EN 60529 (with plug mounted)

**Ambient/fluid temperature:**

-25 ... +70°C [-13 ... 158°F]

Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

**Temperature sensitivity:**

< ± 0,2% FS\*

**Materials**

Housing: plastic  
Sub-base: aluminium  
Connector (M12 x 1): nickel plated brass  
Seals: FKM

\* full scale

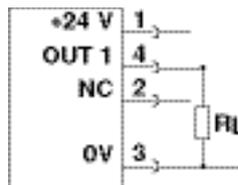
### Technical data

Symbol	Port size	Measuring range *2) (relative pressure) (bar)	Value max. (bar)	Weight (kg)	Model *1)
	G1/4	0 ... 12	25	0,14	G/61D-14-12-024-I

\*1) Plug not included. Please see page 3-11

### Electrical connection M 12 x 1

Electrical connection M 12 x 1 PIN-No.	Signal	Cable
1	+UB 24 V d.c.	brown
2	NC	white
3	0 V (GND)	blue
4	Out 1	black

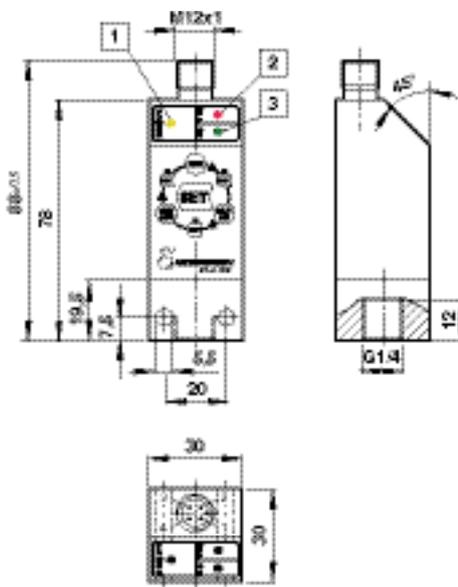


**Electronic pressure switch**  
**G/61D-14-12-024-I**  
**G1/4**

**Accessories**

Connector M 12 x 1 90°	90°	straight	straight
			
0523058 (2 m cable length, 4-core) 0523053 (5 m cable length, 4-core)	0523056 (without cable)	0523057 (2 m cable length, 4-core) 0523052 (5 m cable length, 4-core)	0523055 (without cable)

**Dimensions**



Coming soon...



## 21D MODULAR PRESSURE SWITCH

21D MECHANICAL HEAVY DUTY PRESSURE SWITCH

- Excellent repeatability
- Flexible, modular mounting system – multiple mounting positions
- Interchangeable with existing rail standard pressure switches
- Optional factory pre-set options available
- Long term set point stability
- Independently adjustable set and reset point
- Multiple switch options



- Suitable for a variety of rail applications including auxiliary systems, door controls, brakes and compressors
- For use in areas of vibration
- Wide temperature range from -40 to +85°C
- Shock and vibration tested to EN 61373, Category 1, Class A and B

**CONTROLS & MONITOR SYSTEM PRESSURE**

Robust construction Heavy duty

Multiple applications

Latest technology  
Interchangeable -40°C...+85°C Long life  
Corrosion Resistance

MECHANICAL LOW TEMPERATURE  
21D | INTERCHANGEABLE | COMPACT

Reliable EN 61373 Modular

EFFICIENT Flexible DURABLE  
0-10 bar



# AIR LINE EQUIPMENT



## PRODUCTS

4-02	Fast find guide		
4-03	General purpose filter	1/4" ... 3/4"	Excelon® Quikclamp system LF72G, LF73G, LF74G
4-06	Oil removal filter	1/2" & 3/4"	Excelon® Quikclamp system LF74H
4-08	Pressure regulator	1/4" ... 3/4"	Excelon® Quikclamp system LR72G, LR73G, LR74G
4-12	Filter regulator	1/4" ... 3/4"	Excelon® Quikclamp system LB72G, LB73G, LB74G
4-16	General purpose filter	1/4" ... 1 1/2"	Olympian Plus plug-in system LF64G, LF68E
4-21	Oil removal (coalescing) filter	3/8" ... 1 1/2"	Olympian Plus plug-in system LF64H, LF68H
4-26	Pressure regulator	1/4" ... 1 1/2"	Olympian Plus plug-in system LR64G, LR68G
4-31	Filter/regulator	1/4" ... 1 1/2"	Olympian Plus plug-in system LB64G, LB68G
<b>4-37</b>	<b>Feature page 'Multi-stage filtration'</b>		
4-38	General purpose filter	1/8" & 1/4"	Miniature series LF07
4-40	General purpose regulator	1/8" & 1/4"	Miniature series LR07
4-42	General purpose filter/regulator	1/8" & 1/4"	Miniature series LB07
4-44	General purpose filter	3/4" ... 1 1/2"	LF17
4-46	Oil removal (coalescing) filter	3/4", 1" & 1 1/4"	LF46
4-48	General purpose regulator	3/4", 1", 1 1/4" & 1 1/2"	LR17
4-50	High flow pressure regulator	1/2" ... 1"	L20AG
<b>4-53</b>	<b>Feature page 'LR27H Precision Regulator'</b>		
4-54	High-flow precision pressure regulator	G1/4, 1/4 NPT or interface version	LR27H
4-57	Precision pressure regulator	G1/4	LR27
4-59	Compact interface mount regulator		SLA/15542
4-60	Pressure relief valves	1/4" ... 3/4"	Excelon® Quikclamp system LV72G, LV74G
4-64	Pressure relief valves	R1/4	1002
4-65	3 way proportional pressure control valve	G1/4, 1/4 NPT or manifold	LVP50
4-68	Gauge	1/8" & 1/4"	18-013-...
4-69	Stainless steel heavy duty gauge	R1/8 & 1/4 PTF	18-013-914/915
<b>4-70</b>	<b>Feature page 'AMT Dryer'</b>		

# FAST FIND GUIDE



**Excelon® Quikclamp system LF72G, LF73G, LF74G**

General purpose filter  
1/4" ... 3/4"



Page 4-03

**Excelon® Quikclamp system LF74H**

Oil removal filter  
1/2" & 3/4"



Page 4-06

**Excelon® Quikclamp system LR72G, LR73G, LR74G**

Pressure regulator  
1/4" ... 3/4"



Page 4-08

**Excelon® Quikclamp system LB72G, LB73G, LB74G**

Filter regulator  
1/4" ... 3/4"



Page 4-12

**Olympian Plus plug-in system LF64G, LF68E**

General purpose filter  
1/4" ... 1 1/2"



Page 4-16

**Olympian Plus plug-in system LF64H, LF68H**

Oil removal (coalescing) filter  
3/8" ... 1 1/2"



Page 4-21

**Olympian Plus plug-in system LR64G, LR68G**

Pressure regulator  
1/4" ... 1 1/2"



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**Olympian Plus plug-in system LB64G, LB68G**

Filter/regulator  
1/4" ... 1 1/2"



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**Miniature series LF07**

General purpose filter  
1/8" & 1/4"



Page 4-38

**Miniature series LR07**

General purpose regulator  
1/8" & 1/4"



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**Miniature series LB07**

General purpose filter/regulator  
1/8" & 1/4"



Page 4-42

**LF17**

General purpose filter  
3/4" ... 1 1/2"



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**LF46**

Oil removal (coalescing) filter  
3/4", 1" & 1 1/4"



Page 4-46

**LR17**

General purpose regulator  
3/4", 1", 1 1/4" & 1 1/2"



Page 4-48

**L20AG**

High flow pressure regulator  
1/2" ... 1"



Page 4-50

**LR27H**

High-flow precision pressure regulator  
G1/4, 1/4 NPT or interface version



Page 4-54

**LR27**

Precision pressure regulator  
G1/4



Page 4-57

**SLA/15542**

Compact interface mount regulator



Page 4-59

**Excelon® Quikclamp system LV72G, LV74G**

Pressure relief valves  
1/4" ... 3/4"



Page 4-60

**1002**

Pressure relief valves  
R1/4



Page 4-64

**LVP50**

3 way proportional pressure control valve  
G1/4, 1/4 NPT or manifold



Page 4-65

**18-013-...**

Gauge  
1/8" & 1/4"



Page 4-68

**18-013-914/915**

Stainless steel heavy duty gauge  
R1/8 & 1/4 PTF



Page 4-69

# 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



LF72G

+65°C (+150°F)  
-40°C (-40°F)



LF73G  
LF74G

+80°C (+175°F)  
-40°C (-40°F)



EN 61373

### 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*		Weight		Model with G-thread		Model with PTF-thread	
	dm <sup>3</sup> /s	scfm	kg	lb	40 µm	5 µm	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	Filter element	Substitute
72	2	5 µm	1
73	3	25 µm (optional)	2
74	4	40 µm	3
Port size	Substitute	Bowl with liquid level indicator	Substitute
1/4" (72 & 73)	2	Metal (73/74)	D
3/8"	3	Long metal with liquid indicator (72)	E
1/2" (73 & 74)	4		
3/4" (74)	6		
Threads form	Substitute		
PTF	A		
ISO G parallel	G		

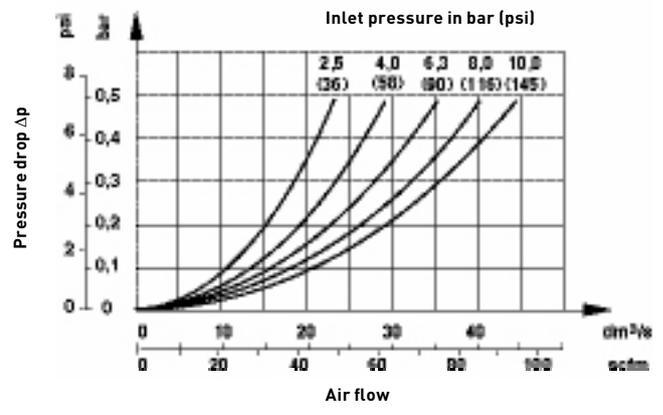
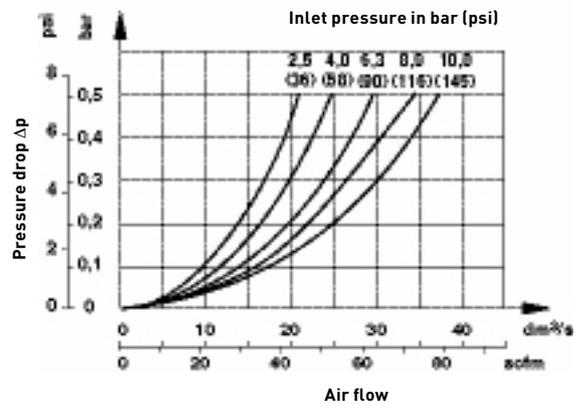
**General purpose filter**  
**Excelon® Quikclamp system LF72G, LF73G, LF74G**

**1/4" ... 3/4"**

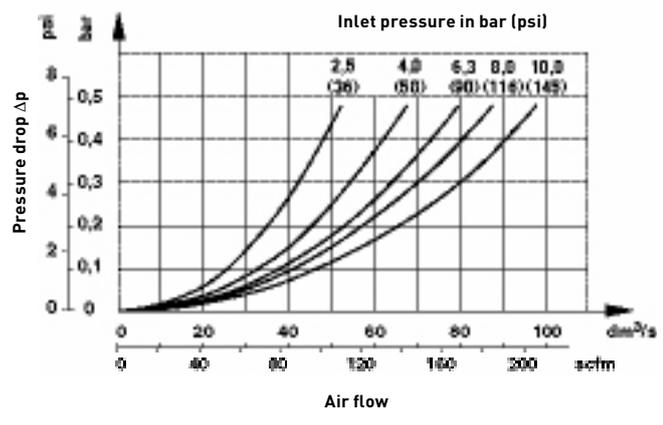
**Flow characteristics**

**LF72G – Port size 1/4", 40 µm element**

**LF73G – Port size 3/8", 40 µm element**



**LF74G – Port size 1/2", 40 µm element**

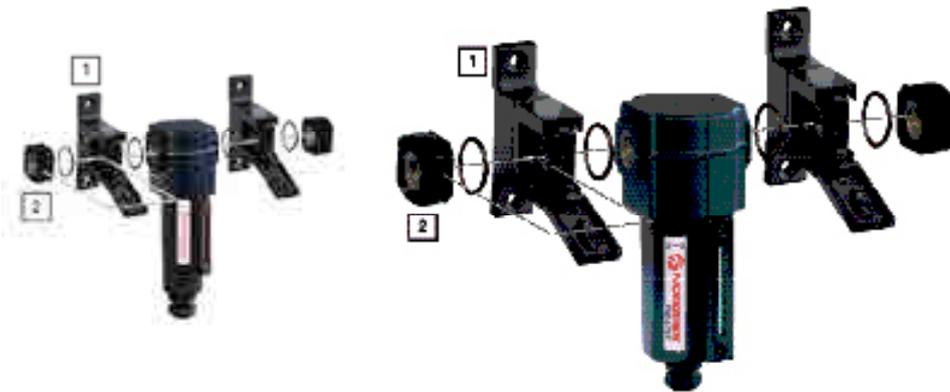


**General purpose filter**  
**Excelon® Quikclamp system LF72G, LF73G, LF74G**  
**1/4" ... 3/4"**

**Accessories**

**72 series**

**73/74 series**

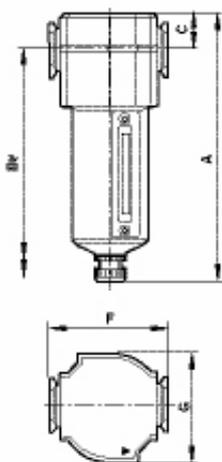


	Quikclamp with wall bracket*	Quikclamp*	Service kit	Replacement elements	
Series	1			5 µm	40 µm
72	4214-58	4214-57	4380-502	5925-03	5925-02
73	4314-63	4314-62	4380-607	4438-01	4438-03
74	4314-63	4314-62	4380-701	4438-04	4438-05

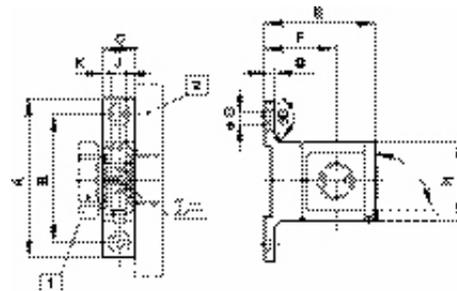
	Quikmount pipe adaptor ISO G parallel thread	PTF-thread	
Series	2	2	
72	1/4"	4215-08	4215-02
72	3/8"	4215-09	4215-03
73 & 74	1/4"	4315-09	4315-01
73 & 74	3/8"	4315-10	4315-02
73 & 74	1/2"	4315-11	4315-03
73 & 74	3/4"	4315-12	4315-04

\* Please use a Quikmount pipe adaptor if the Quikclamp be mounted at inlet or outlet side.

**Basic dimensions**

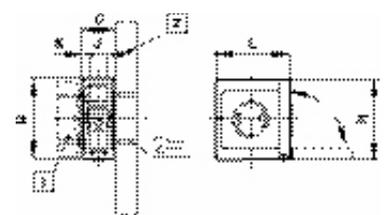


**Quikclamp® with wall bracket**



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®**



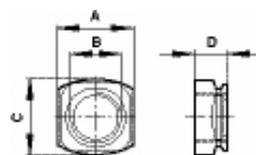
Series	C	H	J	K	L	⌀
72	14,5	36,5	6,5	4	36,5	3
73/74	24,5	51	13,5	5,5	46	4

1 Quikmount pipe adaptor  
2 Excelon® unit

# 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

**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



### 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/m<sup>3</sup> at +20°C with an inlet concentration of 17 mg/m<sup>3</sup>.

**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* dm <sup>3</sup> /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

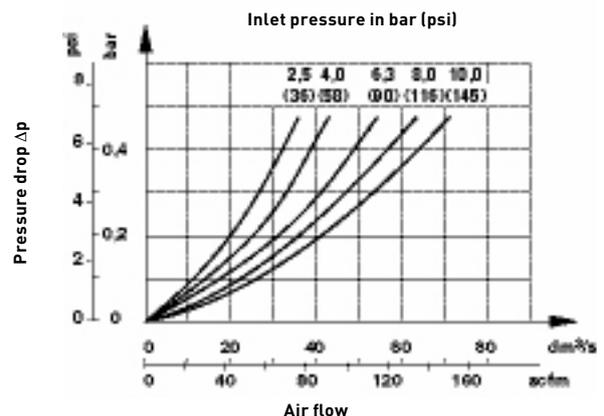
Threads form	Substitute
PTF	A
ISO G parallel	G

### Typical performance characteristics

Inlet pressure bar	psi	Maximum flow dm <sup>3</sup> /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

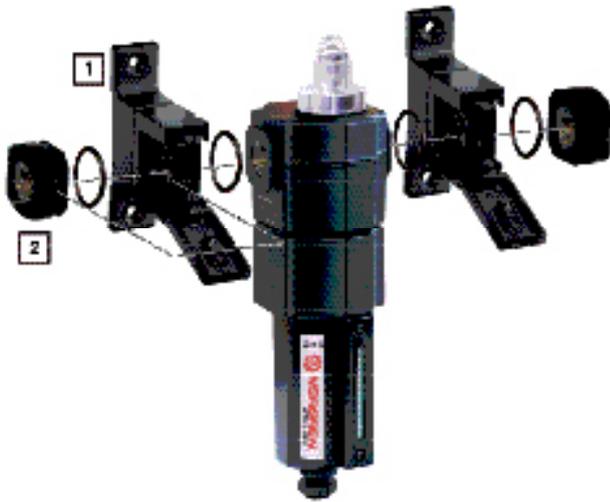
\* Maximum flow to maintain stated oil removal performance

### Flow characteristics



# Oil removal filter Excelon® Quikclamp system LF74H 1/2" & 3/4"

## Accessories

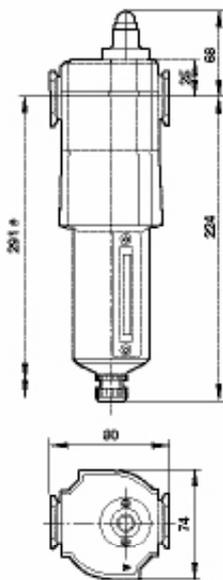


Quikclamp with wall bracket*	Quikclamp*	Service kit
		
<b>1</b>		
4314-63	4314-62	4380-731 Seal and element 4344-04 Oil removal element

\* Please use a Quikmount pipe adaptor if the Quikclamp is mounted at inlet or outlet side.

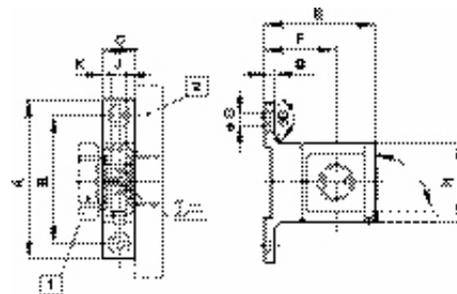
Port size	Quikmount pipe adaptor ISO G parallel thread	PTF-thread
		
	<b>2</b>	<b>2</b>
1/4"	4315-09	4315-01
3/8"	4315-10	4315-02
1/2"	4315-11	4315-03
3/4"	4315-12	4315-04

## Basic dimensions



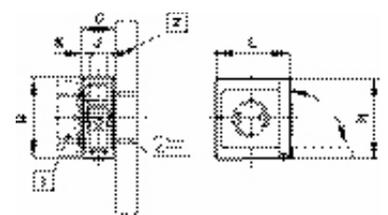
# Minimum clearance required to remove bowl

## Quikclamp® with wall bracket



A	B	C	Ø D	E	F	G	H	J	K	
102	83	24,5	6,5	74	51	6,5	51	13,5	5,5	4

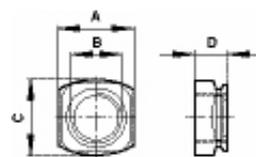
## Quikclamp®



**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



### 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).

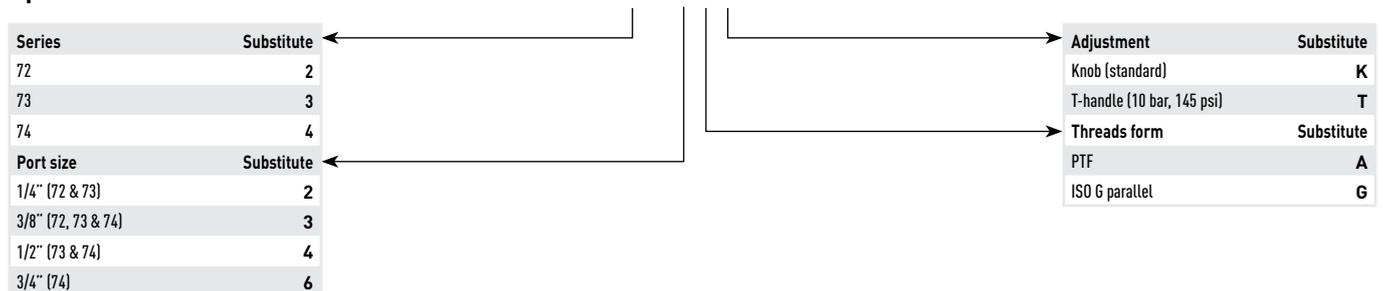
**Materials**  
LR72  
Body: zinc  
Bonnet & bottom plug: acetal  
Valve: brass  
Elastomers: nitrile  
LR73G  
Body: aluminium  
Bonnet: zinc  
Valve: brass  
Bottom plug: acetal  
Elastomers: nitrile  
LR74G  
Body & bonnet: aluminium  
Valve: brass  
Bottom plug: acetal  
Elastomers: nitrile

### Technical data

Air port	Flow* dm³/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.

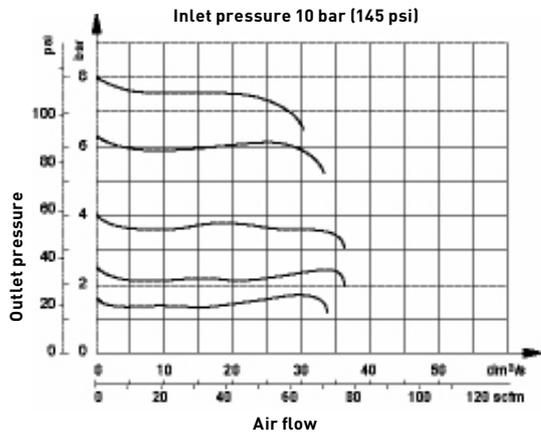
### Option selector



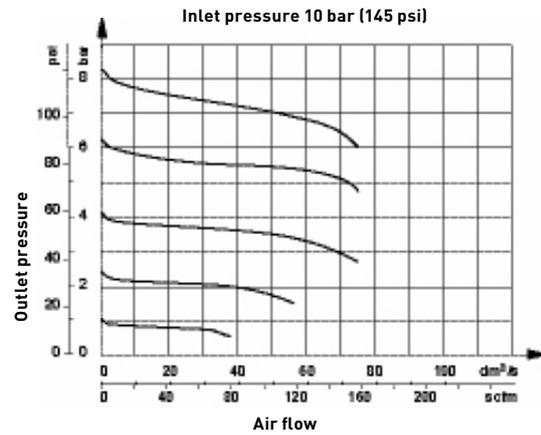
Pressure regulator  
Excelon® Quikclamp system LR72G, LR73G, LR74G  
1/4" ... 3/4"

Flow characteristics

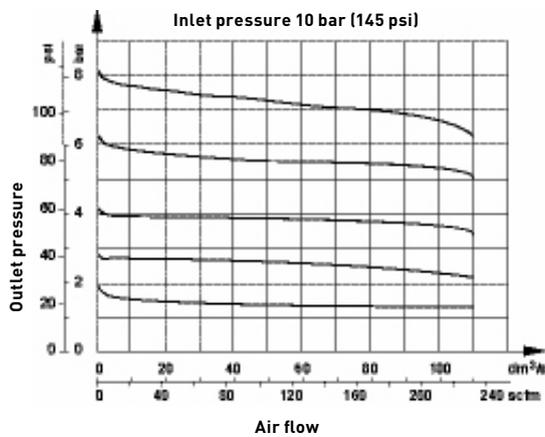
LR72G – Port size 1/4",  
regulating range 0,3 ... 10 bar (5 ... 145 psi)



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)



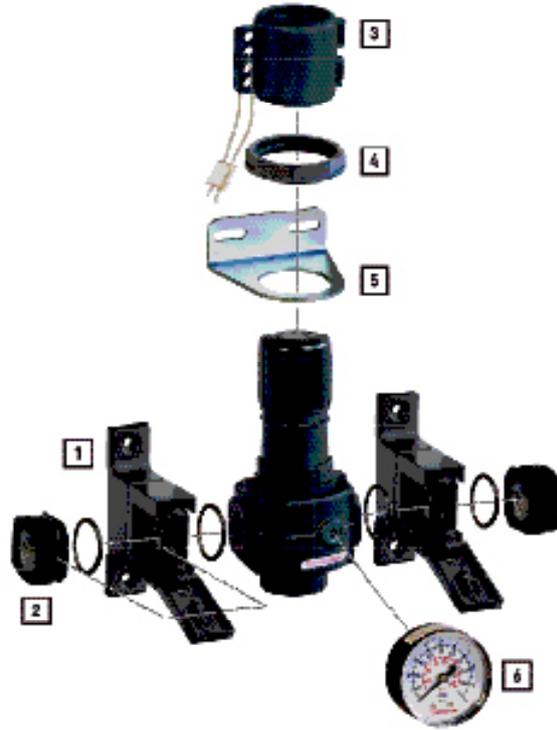
# Pressure regulator Excelon® Quikclamp system LR72G, LR73G, LR74G 1/4" ... 3/4"

## 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.

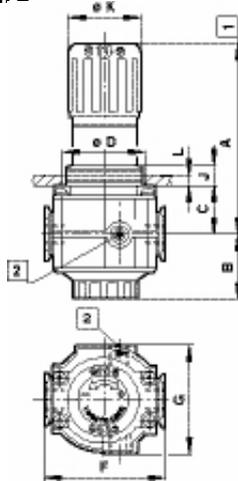
Series	Port size	Quikmount pipe adaptor ISO G parallel thread	PTF-thread
		 2	 2
72	1/4"	4215-08	4215-02
72	3/8"	4215-09	4215-03
73 & 74	1/4"	4315-09	4315-01
73 & 74	3/8"	4315-10	4315-02
73 & 74	1/2"	4315-11	4315-03
73 & 74	3/4"	4315-12	4315-04

Series	Port size	Gauge (for full technical specification see page 4-68/69)		Diameter	Model
		 6 Pressure range in bar	 6 Pressure range in psi		
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"

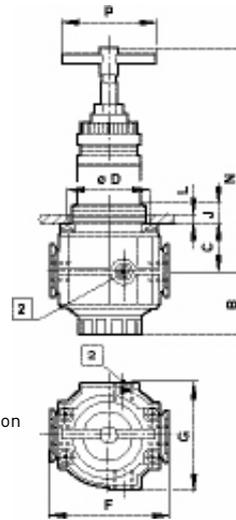
Basic dimensions

Standard



- 1 Reduces by 4 mm with knob in locked position
- 2 Gauge port

T-handle

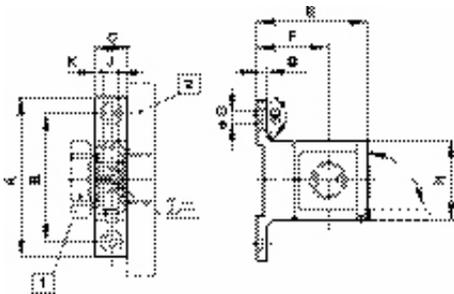


Dimensions shown in mm  
Projection/First angle



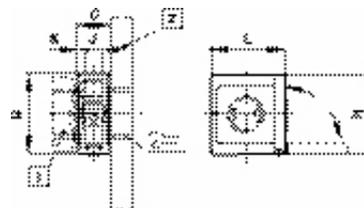
Series	A	B	C	F	G	Ø D	J	Ø K	L	N	P
72	73	33	26	50	48	40	12	35	0 ... 4	102	63
73	96	39	31	68	62	48	11	42	2 ... 6	103	63
74	127	43	31	80	74	52	19	47	2 ... 6	151	63

Quikclamp® with wall bracket



Series	A	B	C	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

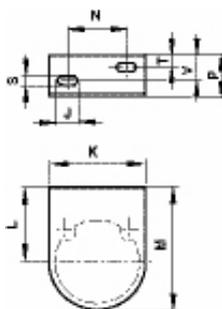
Quikclamp®



- 1 Quikmount pipe adaptor
- 2 Excelon® unit

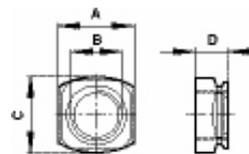
Series	C	H	J	K	L	⌀
72	14,5	36,5	6,5	4	36,5	3
73/74	24,5	51	13,5	5,5	46	4

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

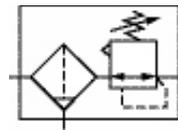
Quick release bayonet bowl

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



+65°C (+150°F)

-40°C (-40°F)



LB73G  
LB74G

+80°C (+175°F)

-40°C (-40°F)



### 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* dm³/s	scfm	Weight		Model with G-thread		Model with PTF-thread	
			kg	lb	40 µm	5 µm	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**

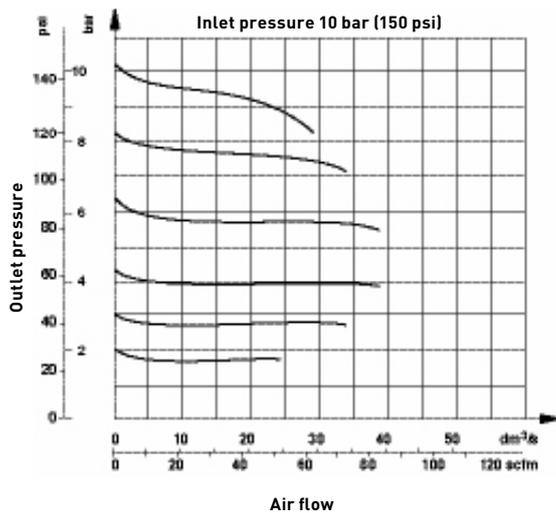
LB7★G-★★★-M★★-RMN

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

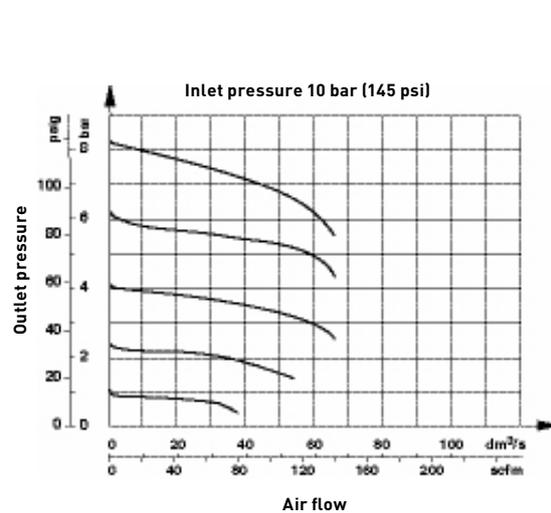
Filter element	Substitute
5 µm	1
25 µm (optional)	2
40 µm	3
Bowl with liquid level indicator	Substitute
Metal (73/74)	D
Long metal with liquid indicator (72)	E
Adjustment	Substitute
Knob (standard)	K
T-handle (10 bar, 145 psi)	T

**Flow characteristics**

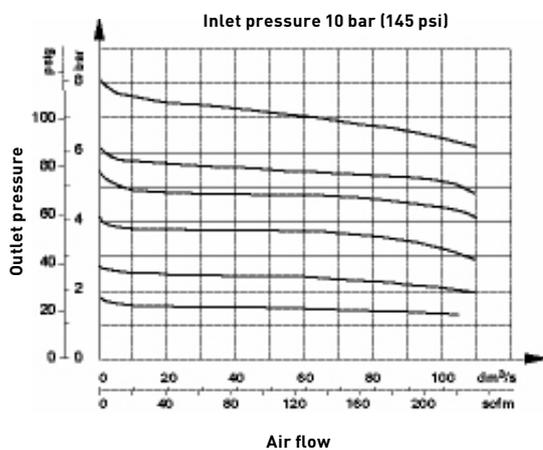
**LB72G – Port size 1/4", pressure range 0,3 ... 10 bar (5 ... 145 psi), 40 µm element**



**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"

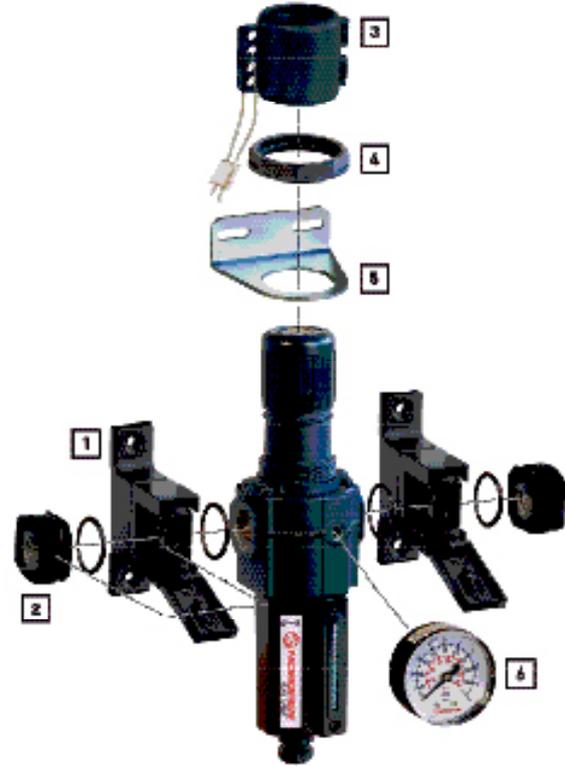
## Accessories

### 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	PTF-thread
			
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 4-68/69)

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

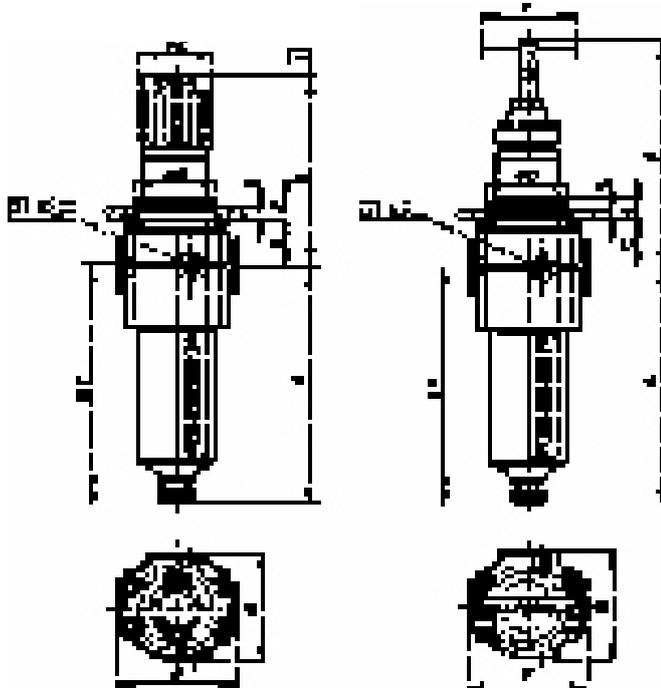
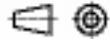
# Filter regulator Excelon® Quikclamp system LB72G, LB73G, LB74G 1/4" ... 3/4"

## Basic dimensions

### Standard

### T-handle

Dimensions shown in mm  
Projection/First angle

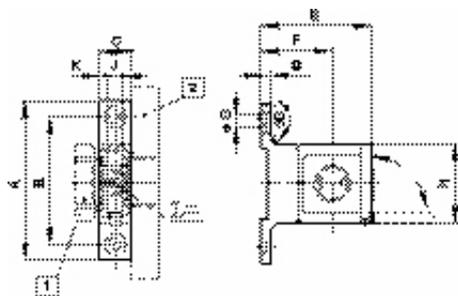


# Minimum clearance required to remove bowl

- 1 Reduces by 4 mm with knob in locked position
- 2 Gauge port

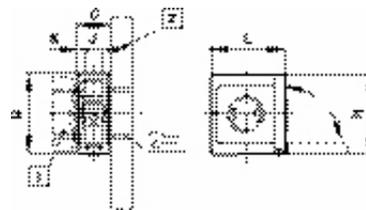
Series	A	B	C	D	E	F	G	J	K	L	N	P
72	127	176	26	40	73	50	48	12	35	0...4	95	63
73	150	198	31	48	96	68	62	11	42	2...6	103	63
74	170	221	31	52	127	80	74	19	47	2...6	151	63

## Quikclamp® with wall bracket



Series	A	B	C	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

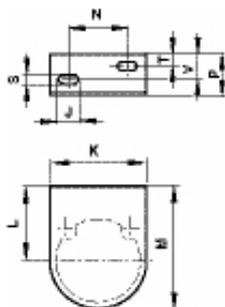
## Quikclamp®



- 1 Quikmount pipe adaptor
- 2 Excelon® unit

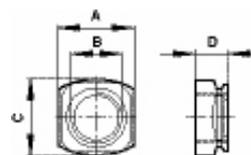
Series	C	H	J	K	L	⌀
72	14,5	36,5	6,5	4	36,5	3
73/74	24,5	51	13,5	5,5	46	4

## 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

## 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**



+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 40 µm		Model with PTF-thread 40 µm	
	dm <sup>3</sup> /s	scfm	kg	lb	5 µm	5 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 40 µm		Model with PTF-thread 40 µm	
	dm <sup>3</sup> /s	scfm	kg	lb	5 µm	5 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-★★★

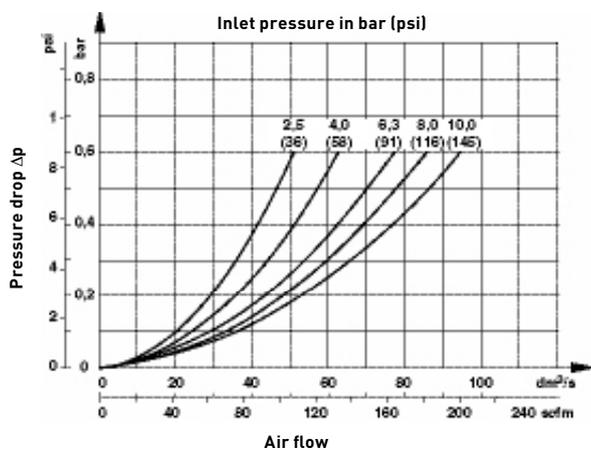
Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Without yoke	N
Threads form	Substitute
PTF or without yoke (N in 6th position), drain thread = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), drain thread = ISO RC	N

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

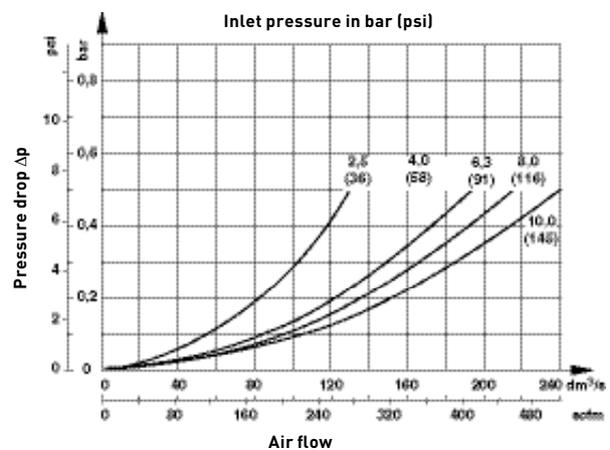
\* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

### 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**



	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
Thread	<b>5</b>		<b>5</b>	
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 connector kits as standard.

	Models with G-threads End connector kit	Models with G-threads Rear entry bracket kit	Models with PTF-threads End connector kit
Thread	<b>2</b>	<b>8</b>	<b>2</b>
3/4"	74505-53	18-026-981	74505-55

**Others**

Bracket mounting	Nut	Service kit, manual drain	Service kit, open ended adaptor	Service kit, automatic drain
<b>1</b>	<b>4</b>			
74504-50	74502-89	LF64G-KITM05 (5 µm) LF64G-KITM25 (25 µm) LF64G-KITM40 (40 µm)	LF64G-KITN05 (5 µm) LF64G-KITN25 (25 µm) LF64G-KITN40 (40 µm)	LF64G-KITA05 (5 µm) LF64G-KITA25 (25 µm) LF64G-KITA40 (40 µm)

# General purpose filter Olympian Plus plug-in system LF64G, LF68E 1/4" ... 1 1/2"

## Accessories 68 series



	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
Thread	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

	Models with G-thread End connector kit	Models with PTF-thread End connector kit	Without thread Single yoke	Bracket mounting
Thread	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

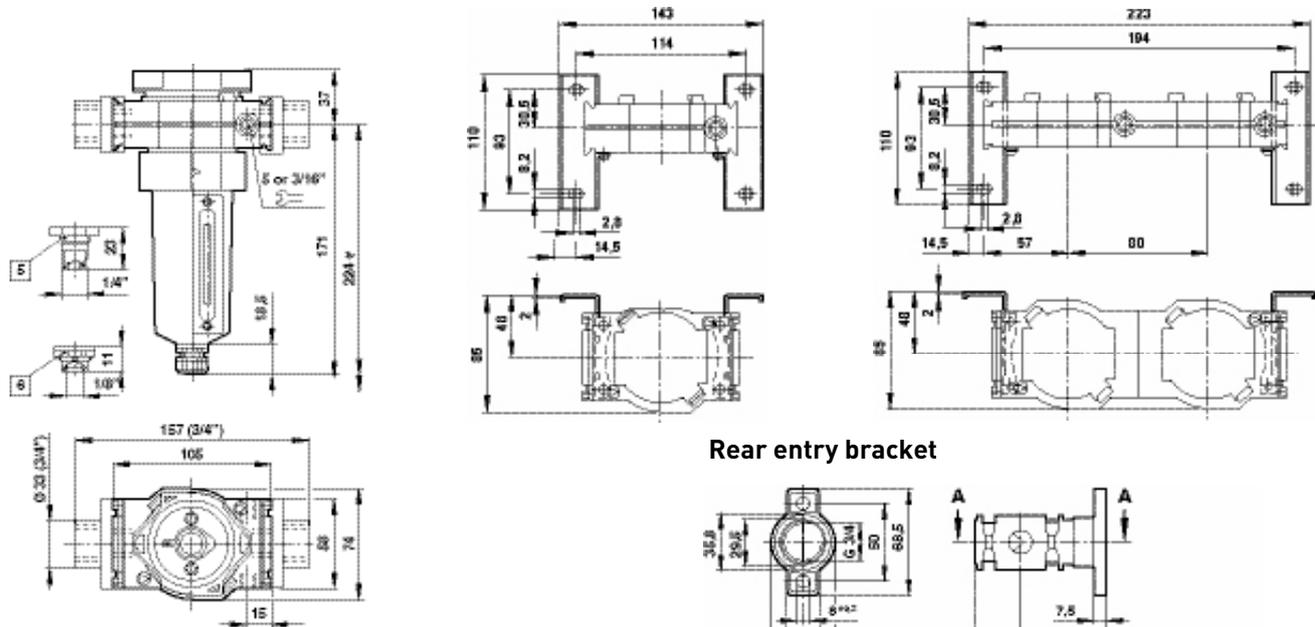
	Nut	Service kit, manual drain	Service kit, open ended adaptor	Service kit, automatic drain
Thread	4			
5520-89		LF68G-KITM05 (5 µm)	LF68G-KITN05 (5 µm)	LF68G-KITA05 (5 µm)
		LF68G-KITM25 (25 µm)	LF68G-KITN25 (25 µm)	LF68G-KITA25 (25 µm)
		LF68G-KITM40 (40 µm)	LF68G-KITN40 (40 µm)	LF68G-KITA40 (40 µm)

**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



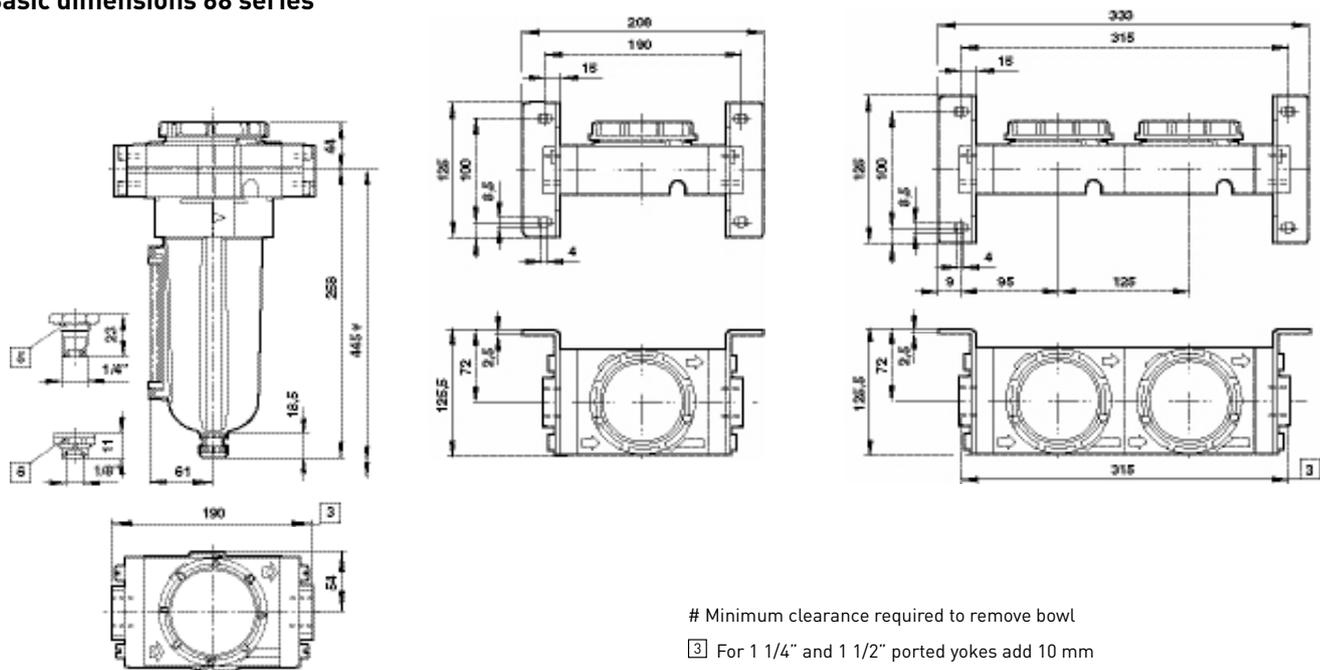
**Rear entry bracket**

# Minimum clearance required to remove bowl

- 5 Open ended adaptor (optional)
- 6 Automatic drain (optional)

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)**



+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/m<sup>3</sup> at +20°C with an inlet concentration of 17 mg/m<sup>3</sup>.

**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* dm <sup>3</sup> /s	scfm	Weight		Model with G-thread	Model with PTF-thread
			kg	lb		
3/8"	28	59	1,70	3.74	LF64H-3GD-MDO	LF64H-3AD-MDO
1/2"	28	59	1,67	3.68	LF64H-4GD-MDO	LF64H-4AD-MDO
3/4"	28	59	2,01	4.43	LF64H-6GD-MDO	LF64H-6AD-MDO
Without yoke					LF64H-NND-MDO	LF64H-NND-MDO

\* To maintain stated oil content at 6,3 bar (90 psi) inlet pressure.

Air port	Max. flow at 6,3 bar* dm <sup>3</sup> /s	scfm	Weight		Model with G-thread	Model with PTF-thread
			kg	lb		
3/4"	35	74	2,66	5.86	LF68H-6GD-MUO	LF68H-6AD-MUO
1"	60	127	2,60	5.73	LF68H-8GD-MUO	LF68H-8AD-MUO
1 1/4"	60	127	2,60	5.73	LF68H-AGD-MUO	LF68H-AAD-MUO
1 1/2"	60	127	2,60	5.73	LF68H-BGD-MUO	LF68H-BAD-MUO
Without yoke					LF68H-NND-MUO	LF68H-NND-MUO

# 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

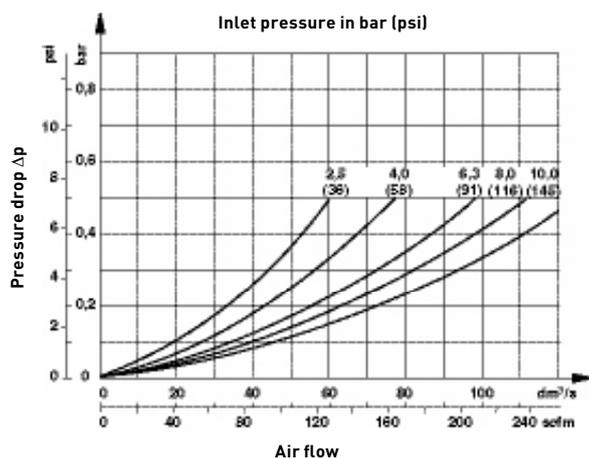
\* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

## Typical performance characteristics

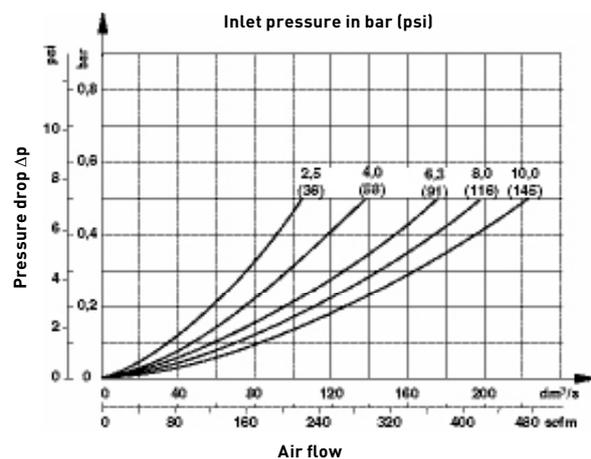
Series	Air port	Maximum flow to maintain stated oil removal performance					
		1 bar	3 bar	5 bar	6,3 bar	7 bar	9 bar
LF64H	1/2"	11,2 (24)	19,3 (41)	24,9 (53)	28 (59)	29,5 (63)	33,5 (71)
LF68H	1"	24 (51)	41 (87)	53 (122)	60 (127)	63 (133)	72 (153)

## 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**



	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
Thread	<b>5</b>		<b>5</b>	
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 connector kits as standard.

	Models with G-thread End connector kit	Models with G-thread Rear entry bracket kit	Models with PTF-threads End connector kit
Thread	<b>2</b>	<b>8</b>	<b>2</b>
3/4"	74505-53	18-026-981	74505-55

**Others**

Bracket mounting	Nut	Service kit, manual drain	Service kit, open ended adaptor	Service kit, automatic drain
<b>1</b>	<b>4</b>			
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**



	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
Thread	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

	Models with G-thread End connector kit	Models with PTF-thread End connector kit	Without thread Single yoke	Bracket mounting
Thread	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

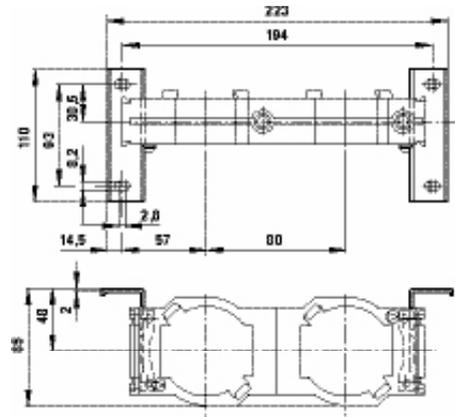
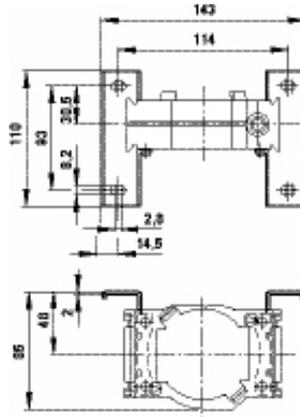
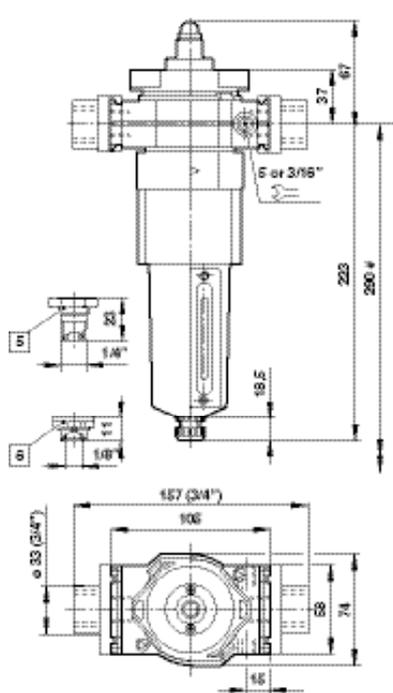
**Others**

Nut	Service kit, manual drain	Service kit, open ended adaptor	Service kit, automatic drain
4	LF68H-KITMOC	LF68H-KITNOC	LF68H-KITAOC
5520-89			

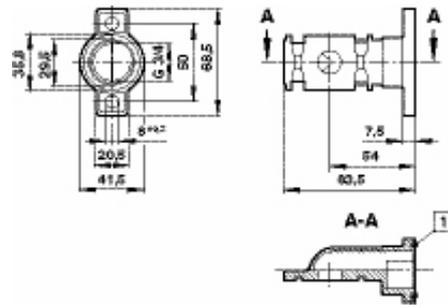
## Oil removal (coalescing) filter Olympian Plus plug-in system LF64H, LF68H 3/8" ... 1 1/2"

### Basic dimensions 64 series

Dimensions shown in mm  
Projection/First angle



### Rear entry bracket

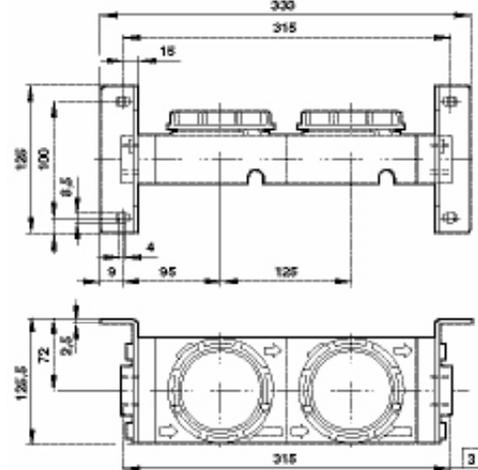
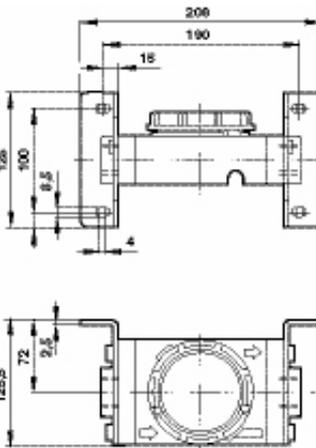
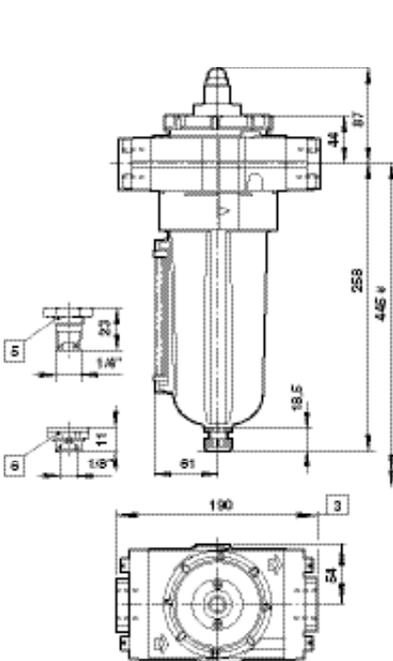


# Minimum clearance required to remove bowl

- 5 Open ended adaptor (optional)
- 6 Automatic drain (optional)

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



+80°C (+176°F)

-40°C (-40°F)



## 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 <sup>3</sup> /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 <sup>3</sup> /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

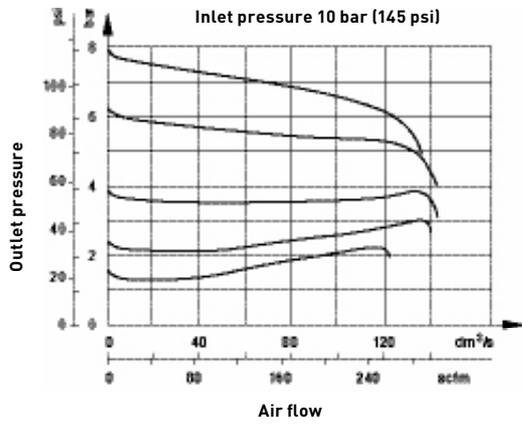
Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Without yoke	N

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

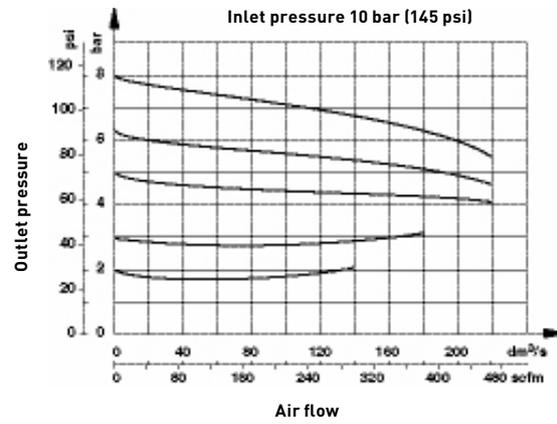
**Pressure regulator**  
**Olympian Plus plug-in system LR64G, LR68G**  
**1/4" ... 1 1/2"**

**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**



	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
Thread	5		5	
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 connector kits as standard.

	Models with G-thread End connector kit	Models with G-thread Rear entry bracket kit	Models with PTF-threads End connector kit
Thread	2		2
3/4"	74505-53	18-026-981	74505-55

**Others**

Bracket mounting	Nut	Tamper resistant cap & seal wire	Service kit
1	4	3	LR64G-KITR
74504-50	74502-89	4355-51	

Gauge (for full technical specification see page 4-68/69)					
Series	Port size	Pressure range in bar	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**



	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
Thread	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

	Models with G-thread End connector kit	Models with PTF-thread End connector	Bracket mounting	Without thread Single yoke
Thread	2		1	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	Tamper resistant cap & seal wire	Service kit
		
4	3	
5520-89	4355-51	LR68G-KITR

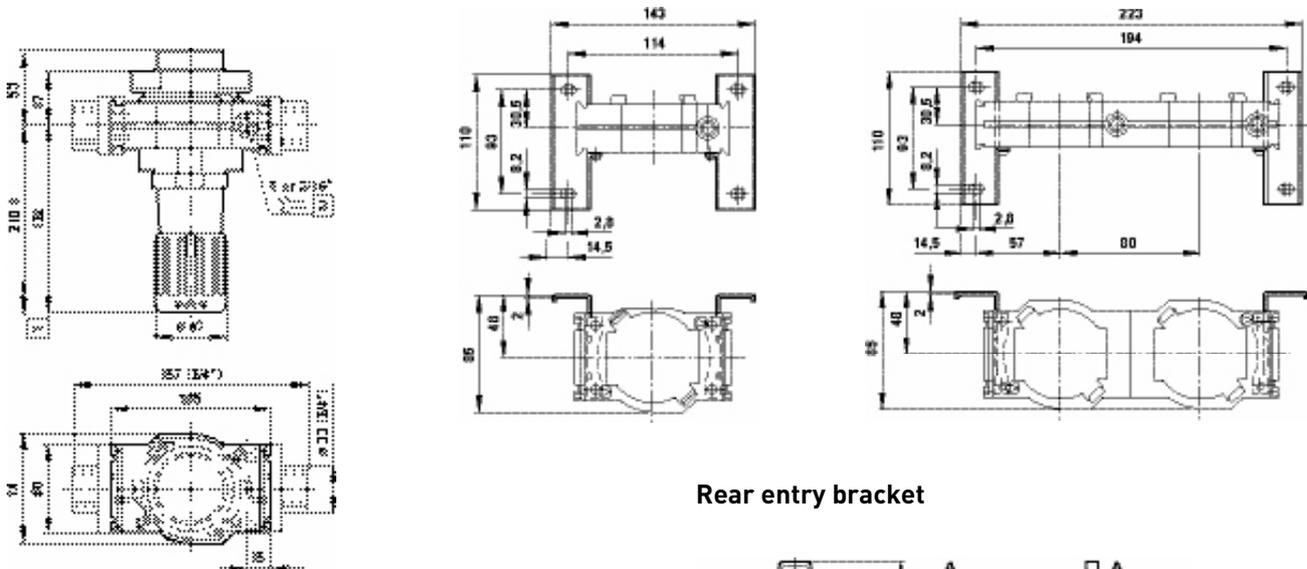
Gauge (for full technical specification see page 4-68/69)					
Series	Port size	Pressure range in bar	Pressure range in psi	Diameter	Model
68 (ISO G main port)	Rc 1/8	0 ... 10		50 mm	18-013-013
68 (PTF main port)	1/8 PTF		0 ... 160	2"	18-013-212

**Pressure regulator  
Olympian Plus plug-in system LR64G, LR68G**

1/4" ... 1 1/2"

**Basic dimensions 64 series**

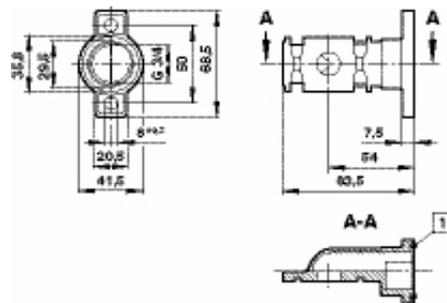
Dimensions shown in mm  
Projection/First angle



# Minimum clearance required to remove unit from yoke

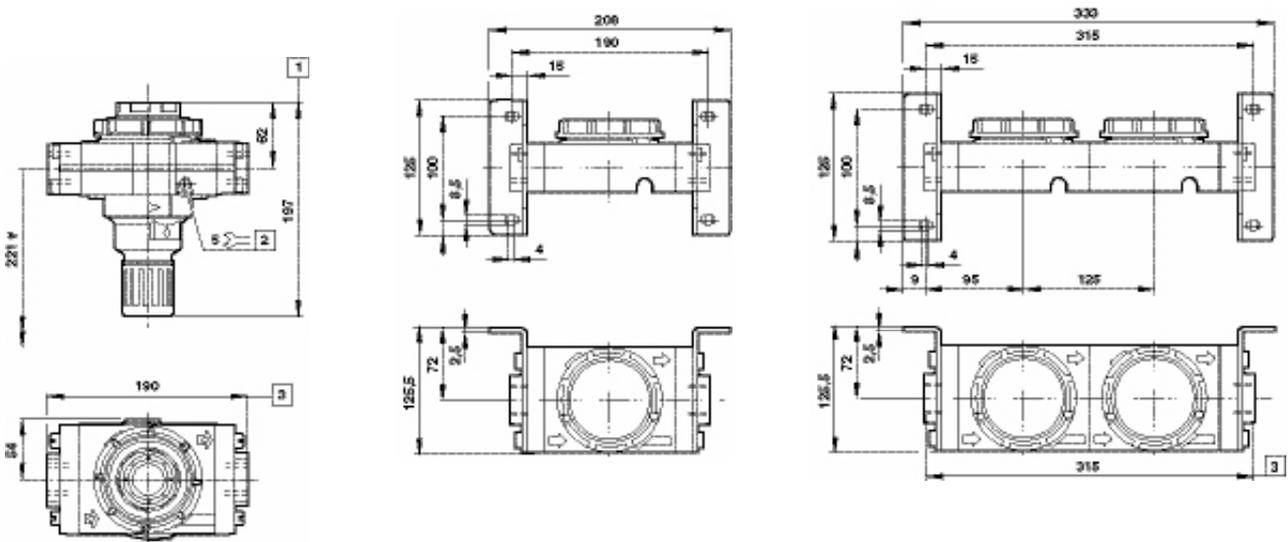
- 1 Reduces by 4 mm with knob in locked position
- 2 Gauge port

**Rear entry bracket**



- 1 'O'-ring (included in scope of supply of bracket)

**Basic dimensions 68 series**

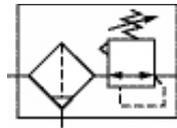


# Minimum clearance required to remove unit from yoke

- 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**



+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 <sup>3</sup> /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 <sup>3</sup> /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**

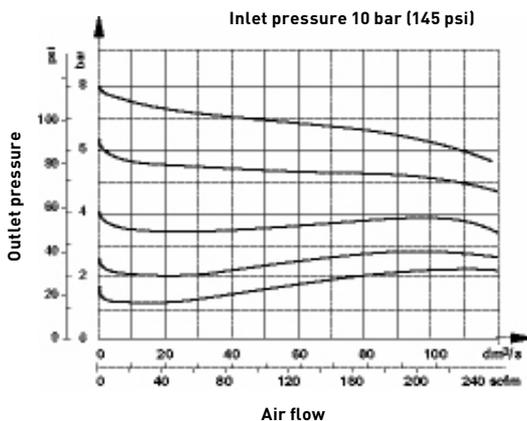
Port size	Substitute
3/4"	6
1"	8
1 1/4"	A
1 1/2"	B
Without yoke	N
Threads form	Substitute
PTF or without yoke (N in 6th position), drain and gauge threads = PTF	A
ISO G parallel	G
Without yoke (N in 6th position), drain and gauge threads = ISO Rc	N

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*

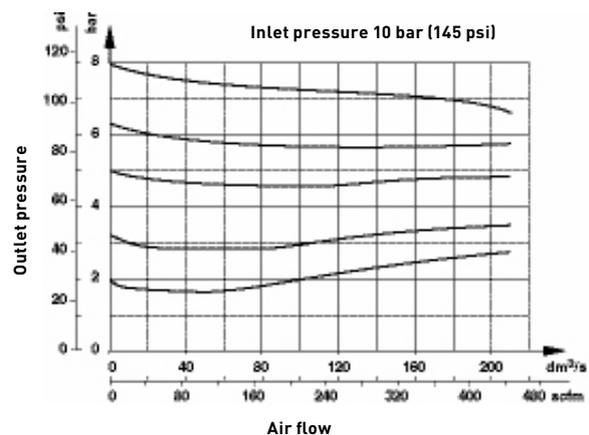
\* For temperature range -25 ... 80°C only, shock and vibration, contact Norgren

## 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



	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
Thread	<b>5</b>		<b>5</b>	
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 connector kits as standard.

	Models with G-thread End connector kit	Models with G-thread Rear entry bracket kit	Models with PTF-thread End connector kit
Thread	<b>2</b>	<b>8</b>	<b>2</b>
3/4"	74505-53	18-026-981	74505-55

	Bracket mounting	Nut	Tamper resistant cap & seal wire
	<b>1</b>	<b>4</b>	<b>3</b>
	74504-50	74502-89	4355-51

## Others

Gauge  
(for full technical specification see page 4-68/69)

Series	Port size	Pressure range in bar	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
	<b>6</b>	<b>6</b>
	LB64G-KITM05R (5 µm)	LB64G-KITA05R (5 µm)
	LB64G-KITM25R (25 µm)	LB64G-KITA25R (25 µm)
	LB64G-KITM40R (40 µm)	LB64G-KITA40R (40 µm)

**Filter/regulator  
Olympian Plus plug-in system LB64G, LB68G**

1/4" ... 1 1/2"

**Accessories 68 series**



	Models with G-thread Single yoke	Double yoke	Models with PTF-thread Single yoke	Double yoke
Thread	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

	Models with G-thread End connector kit	Bracket mounting	Models with PTF-thread End connector	Without thread Single yoke
Thread	2	1	2	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
			
<b>4</b>	<b>3</b>		
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)

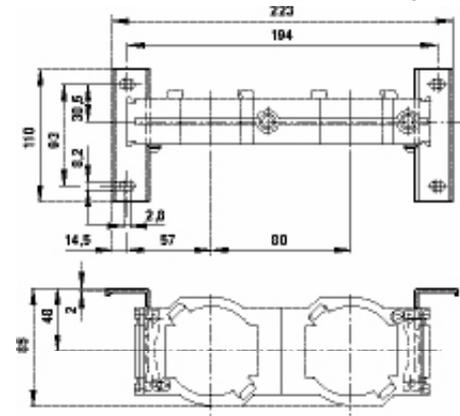
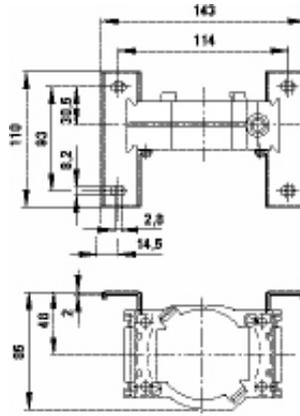
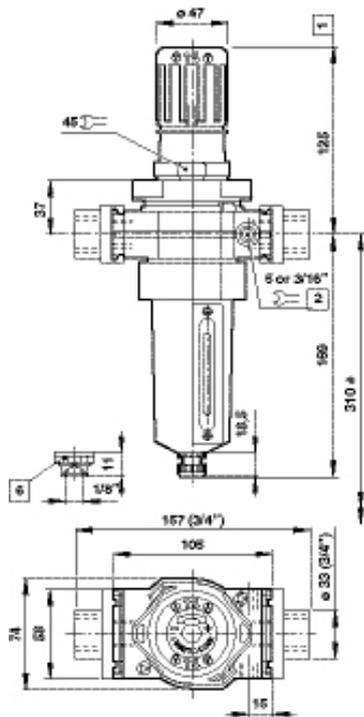
Gauge  
(for full technical specification see page 4-68/69)

Series	Port size	 <b>6</b> Pressure range in bar	 <b>6</b> 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"**

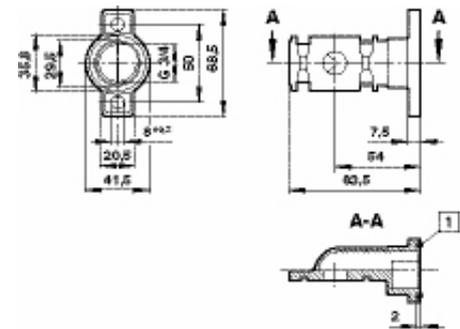
**Basic dimensions 64 series**

Dimensions shown in mm  
Projection/First angle



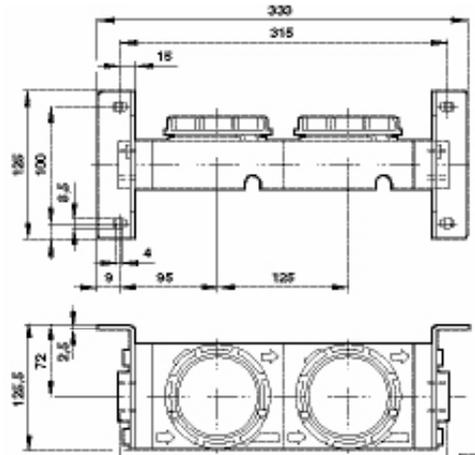
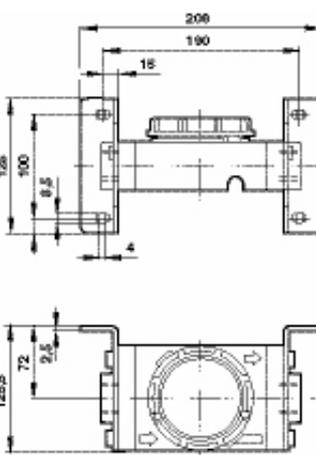
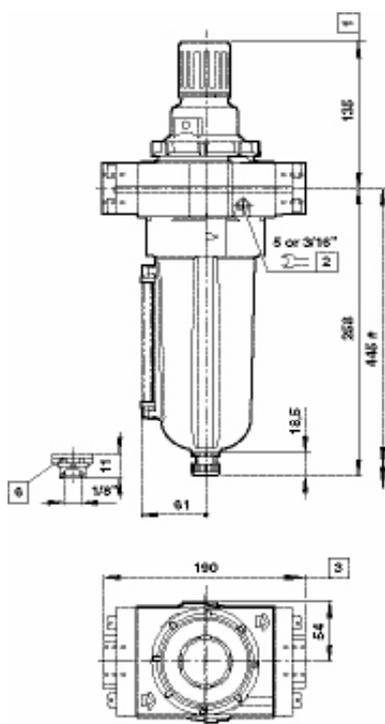
- # Minimum clearance required to remove bowl
- 1 Reduces by 4 mm with knob in locked position
  - 2 Gauge port
  - 3 Automatic drain (optional)

**Rear entry bracket**



- 1 'O'-ring (included in scope of supply of bracket)

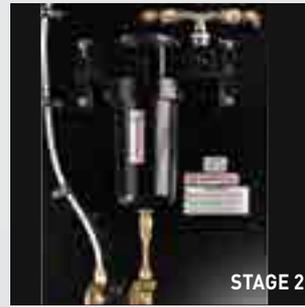
**Basic dimensions 68 series**



- # 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
  - 3 Automatic drain (optional)



STAGE 1



STAGE 2



STAGE 3

## MULTI-STAGE FILTRATION

OIL FREE COMPRESSED AIR FOR AUXILIARY RAIL SYSTEMS, BRAKE VALVES AND DOOR VALVE EQUIPMENT

Norgren is one of the largest suppliers of rail vehicle air preparation equipment in the world, helping to overcome the demanding requirements of continued safety and operating reliability. Air preparation systems are configured to meet the increasing operational challenges experienced with the air supply onboard vehicles due to age, and extreme environmental factors including vibration, temperature and air quality.

Norgren's air preparation technology is reliable, robust and designed with minimum pressure drop thus achieving energy efficiency as well as optimised running costs and compressor loading.

### MULTI STAGE FILTRATION SYSTEMS

- Ensures optimal air condition, increased reliability and protection of downstream equipment & applications e.g. braking systems, pantograph operation and automatic doors
- Oil and particles removed from downstream to achieve ISO 8573-1 standards
- High temperature filters to remove hot oil and carbon particles
- Fine particle removal filter to give a final air quality of 0.01 micron
- New high performance coalescing and activated carbon filters
- Easy installation and maintenance
- Cost effective over the full life cycle
- Shock and vibration tested to BS EN 61373
- Suitable for all environments - 40°C...+80°C

**SPECIALISED MULTI-STAGE FILTRATION SYSTEMS**

For auxiliary rail systems, Excellent filtration performance  
brakes and door

Cost effective

VIBRATION TESTED TO EN 61373

-40°C...+80°C

EASY INSTALLATION AND MAINTENANCE

Save RELIABLE time



## 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



### 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 dm <sup>3</sup> /s*	scfm	Weight		Model with G-thread		Model with PTF-thread	
			kg	lb	40 µm	5 µm	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

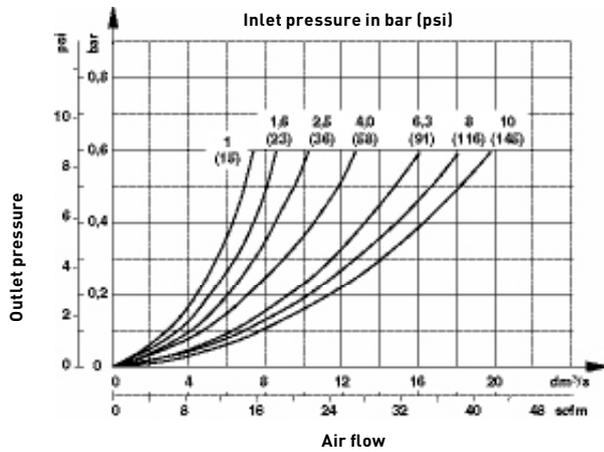
  

Filter element	Substitute
5 µm	1
40 µm	3

**General purpose filter  
Miniature series LF07  
1/8" & 1/4"**

**Flow characteristics**

LF07 – Port size 1/4", 40 µm element



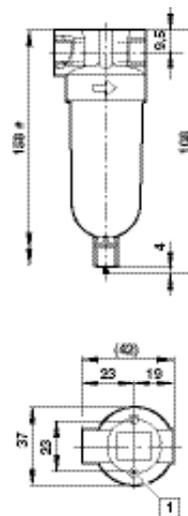
Dimensions shown in mm  
Projection/First angle



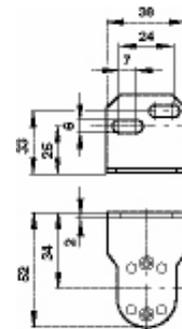
**Accessories**



**Basic dimensions**



**Wall mounting bracket**



**Wall mounting bracket and body screws**



1

5939-06

**Service kit**



3652-23 (5 µm – black)  
3652-24 (40 µm – green)

**Replacement drain**



773-07

# Minimum clearance required to remove bowl

□ Mounting holes

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**

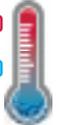
**Wide temperature range**

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



+65°C (+150°F)

-40°C (-40°F)



### 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*		Weight		Model with G-thread	Model with PTF-thread
	dm <sup>3</sup> /s	scfm	kg	lb		
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

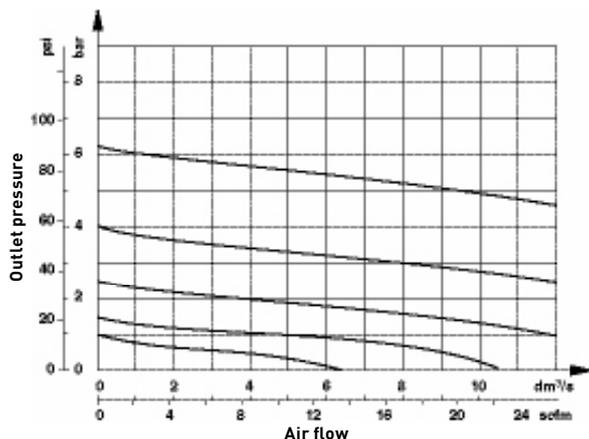
LR07-★00-RNM★

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"**

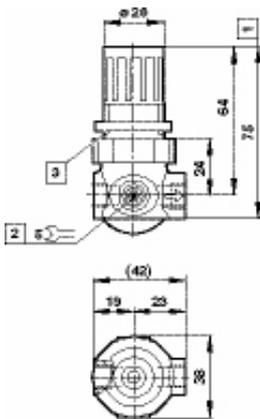
**Accessories**



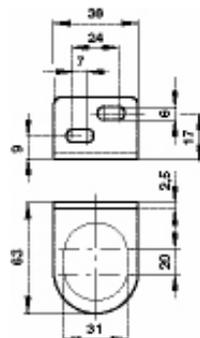
Wall mounting bracket and panel nut	Panel nut	Service kit
		
<b>1 4</b>	<b>4</b>	
18-025-004	2962-04	3407-A2

Series	Port size	Gauge (for full technical specification see page 4-68/69)		Diameter	Model
		Pressure range in bar	Pressure range in psi		
07 (ISO G main port)	Rc 1/8	 <b>6</b> 0 ... 10	 <b>6</b> 0 ... 160	40 mm	18-013-989
07 (PTF main port)	1/8 PTF			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

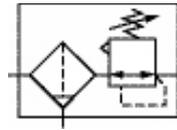
Standard relieving models allow reduction of outlet pressure even when the system is dead-ended

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



+65°C (+150°F)

-40°C (-40°F)



### 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* dm <sup>3</sup> /s	scfm	Weight		Model with G-thread		Model with PTF-thread	
			kg	lb	40 µm	5 µm	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.

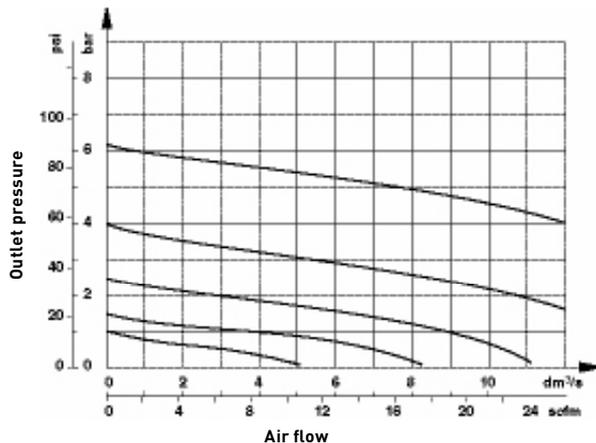
### Option selector

LB07-★33-M★M★

Port size	Substitute	Threads	Substitute
1/8"	1	PTF	A
1/4"	2	ISO G parallel	G
Filter element	Substitute		
5 µm	1		
40 µm	3		

### Flow characteristics

LB07 – Port size: 1/4", element: 40 µm, inlet pressure: 10 bar (145 psi), range: 0,3 ... 7 bar (5 ... 100 psi)



**General purpose filter/regulator  
Miniature series LB07  
1/8" & 1/4"**

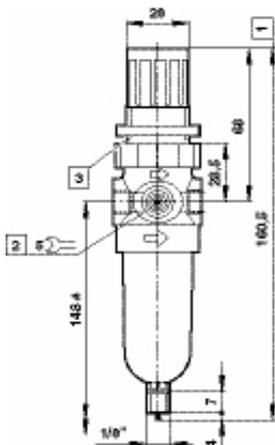
**Accessories**



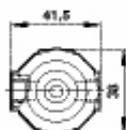
Wall mounting bracket and panel nut	Panel nut	Service kit	Replacement drain
			
1 4	4	Type	
18-025-004	2962-04	5 µm	3820-15
		40 µm	3820-17

Gauge (for full technical specification see page 4-68/69)					
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

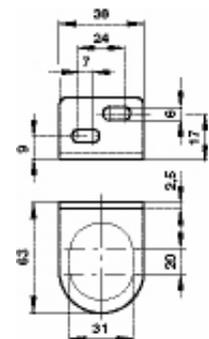
**Basic dimensions**



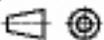
- 1 Reduces by 4 mm with knob in locked position
- 2 Gauge port
- 3 Panel mounting hole diameter 30 mm, Panel thickness 0 ... 6 mm
- # Minimum clearance required to remove bowl



**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



+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)

**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: aluminum

Bowl sight glass: pyrex

Elastomers: nitrile

Filter element: sintered bronze

### Technical data

Port size	Flow dm <sup>3</sup> /s *	scfm	Weight		Model with ISO G or BSPP threads		Model with PTF-threads	
			kg	lb	40 µm	5 µm	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

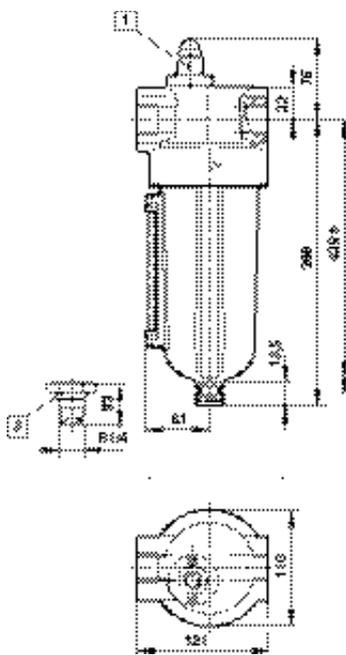
**General purpose filter  
LF17  
3/4" ... 1 1/2"**

**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
- 2 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**



EN 61373



**Install an LF17 filter with a 5 µm filter element upstream of the LF46 filter for maximum service life.**

### 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

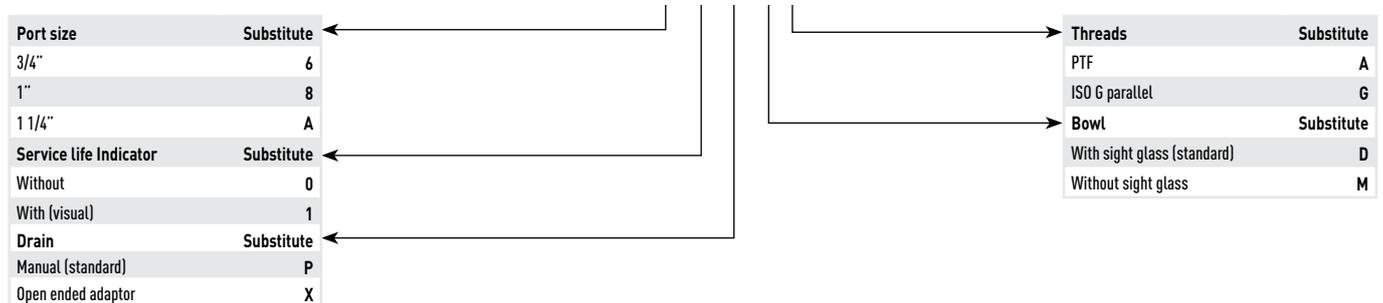
### Technical data

Port size	Max. flow*		Weight		Model with ISO G parallel threads	Model with PTF-threads
	dm <sup>3</sup> /s	scfm	kg	lb		
3/4"	42	90	4,11	9,06	LF46-601-PODG	LF46-601-PODA
1"	59	125	4,05	8,92	LF46-801-PODG	LF46-801-PODA
1 1/4"	59	125	4,29	9,45	LF46-A01-PODG	LF46-A01-PODA

\* 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★★**

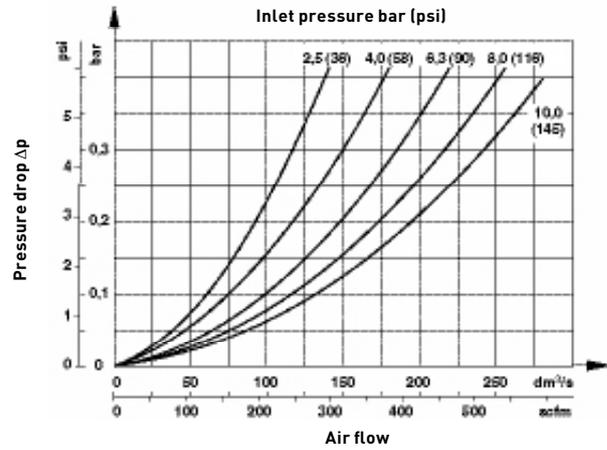
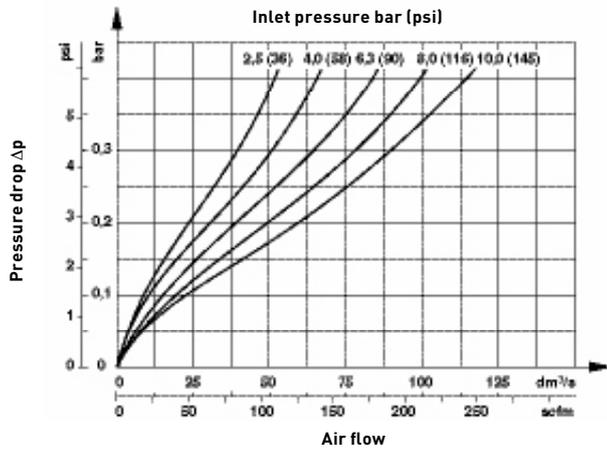


**Oil removal (coalescing) filter  
LF46  
3/4", 1" 1 1/4"**

**Flow characteristics**

Port size: 1", oil stated element

Dry element



1 Max flow to maintain stated oil removal performance

**Spares**

Service kit  
O-rings and gaskets



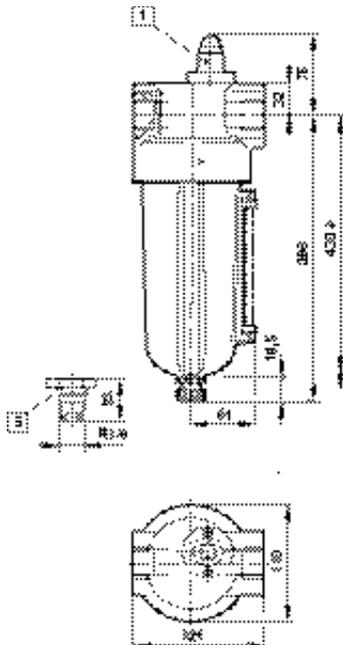
5351-05

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" & 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



+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*		Weight		Model with ISO G or BSPP-thread	Model with PTF-thread
	dm <sup>3</sup> /s	scfm	kg	lb		
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

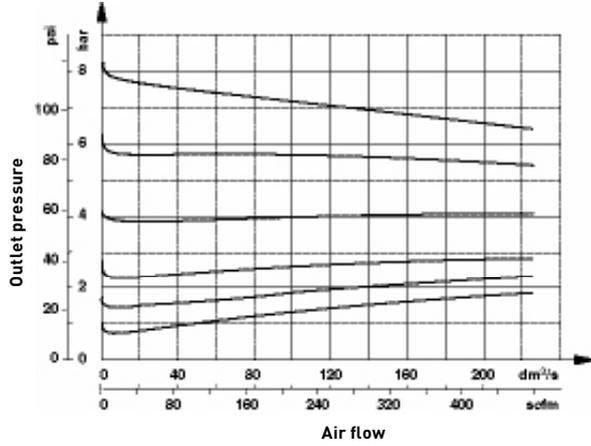
Threads	Substitute
PTF	A
BSPP (1 1/2" ported units only)	C
ISO G parallel (not available with 1-1/2" ported units)	G
Pressure adjustment ranges*	Substitute
0,3 ... 3,5 bar (5 ... 50 psi)	E
0,3 ... 8,5 bar (5 ... 125 psi)	L

\* 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" & 1 1/2"

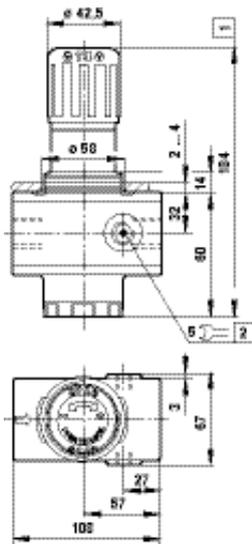
**Typical performance characteristics**

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 4-68/69)



6

6

Series	Port size	Pressure range in bar	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



### 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		Pressure range (bar)*	Relieving	Weight		Model with ISO G-thread	Model with PTF-thread
	dm <sup>3</sup> /s	scfm			kg	lb		
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

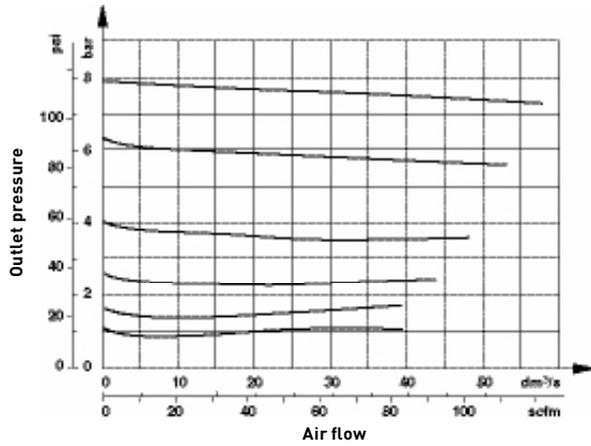
\* Outlet pressure can be adjusted to pressures in excess of, and less than, those specified. Do not use these units to control pressures outside of the specified ranges.

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

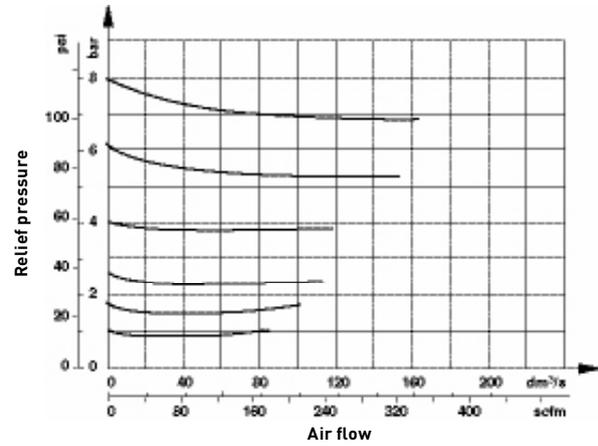
**High flow pressure regulator  
L20AG  
1/2" ... 1"**

**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**



1

**Service kit**



18-001-005 (1/2" body only)  
18-001-029

20AG-X4-101 (1/2" body only)  
20AG-X8-101

**Gauge**  
for full technical  
specification see page  
4-68/69)



6

Pressure  
range in bar



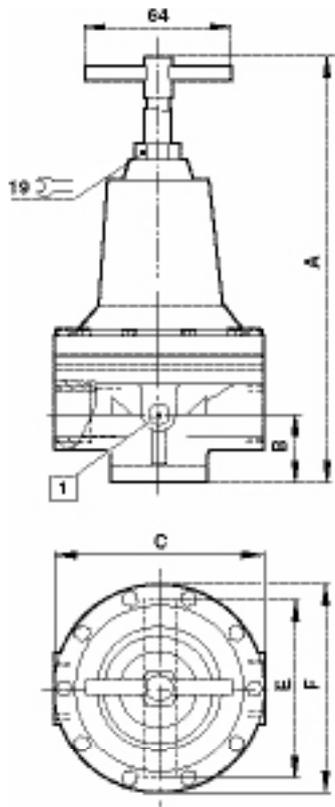
6

Pressure  
range in psi

Series	Port size	Pressure range in bar	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	2"	18-013-204
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"**

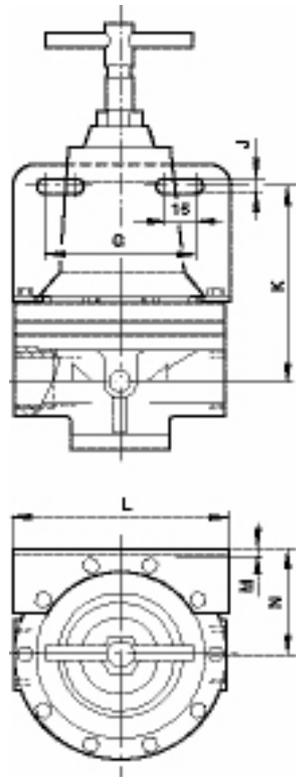
**Dimensions**



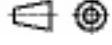
1 Gauge port

Series	A	B	C	E	Ø F
L20AG-X4G	162	36	86	82	83
L20AG-X6G	190	41	124	108	124
L20AG-X8G	190	41	124	108	124

**Bracket mounting**



Dimensions shown in mm  
Projection/First angle



Series	G	J	K	L	M	N
L20AG-X4G	63	5	73	83	2	57
L20AG-X6G	98	8	76	124	2	75
L20AG-X8G	98	8	76	124	2	75



## LR27H HIGH PRECISION REGULATOR

HIGH FLOW PRECISION REGULATOR FOR PANTOGRAPH SYSTEMS

### CUSTOMER CHALLENGE

- Pantograph systems are expected to work harder as train manufacturers continue to develop faster trains. If the pantograph is detached from the wire arcing can occur, reducing the life of the wire and carbon strip.

### NORGREN SOLUTION

Norgren's LR27H high flow precision regulator is a fast response, high flow precision regulator which enables the Pantograph to respond to the height variations on the electric overhead lines.

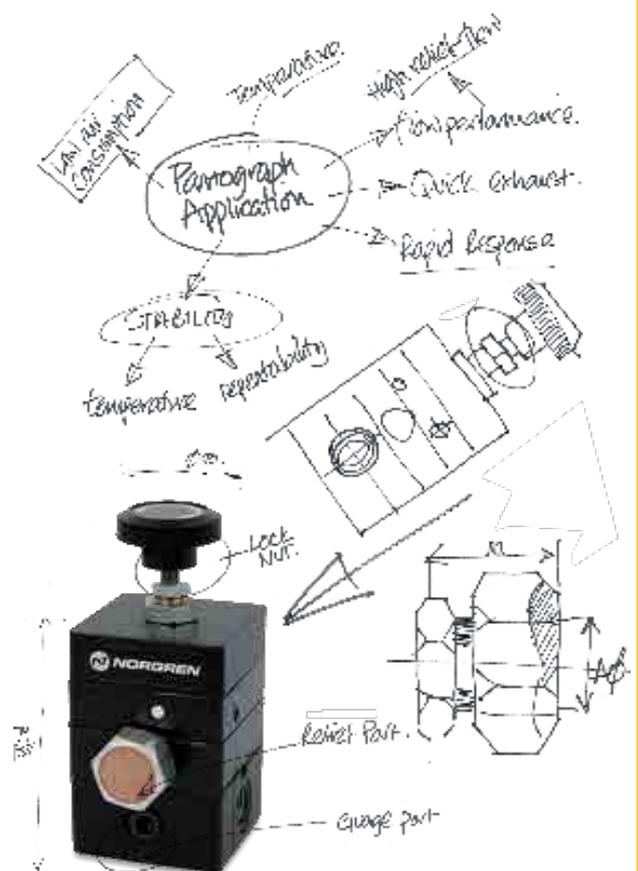
- Fast response
- Quiet exhaust
- Performs within temperature requirements
- Excellent performance at low temperatures
- Fine pressure control adjustment
- Low air consumption

The pressure regulator is the heart of the Pantograph system, as it regulates and maintains the force of the carbon strip onto the overhead wires. As the wires are mounted between supports, the pantograph needs to extend and retract with the height variations of the wires. The faster the train, the faster the reaction time.

The Norgren solution provides an unrivalled overall performance with rapid, quiet and stable operation across a wide temperature range.

### TECHNICAL SPECIFICATIONS

- Operating pressure: 10 bar max
- Flow: 1600 l/min
- Operating temperature: -40°C to +85°C
- Air consumption: 4 l/min



## High-flow precision pressure regulator LR27H

G1/4, 1/4 NPT or interface version

- Ideally suited to pantograph application
- High-precision manual pressure regulator
- Highly sensitive and accurate
- Perfect for dead-end applications
- Excellent long term stability
- Very high forward and relief flow capability
- Optional quick exhaust function
- Wide temperature range
- Shock and vibration tested to EN 61373, Category 1, class A and B



### Technical features

**Medium:**

Oil free, dry compressed air, filtered to better than 25 µm  
Note: for use with gases other than compressed air please consult NORGREN technical department.

**Operation:**

Optional - see option selector for details

**Flow Capacity:**

Up to 1500 l/min.

**Pressure:**

Maximum inlet pressure: 10 bar (145 psi)  
At least 0.2bar (3 psi) above output pressure

**Working pressure range:**

1 ... 8 bar (15 ... 120 psi)

**Ports:**

G1/4 and 1/4 NPT

**Air Consumption:**

Typically < 4,0 l/min

**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 die casting, black powder coated  
Pilot operator and sub base interface plate are anodised aluminium, black powder coated  
Elastomers: reinforced nylon  
Pressure capsule: beryllium copper

### Technical data, standard version, left relief port position with filter

Symbol	Port size	Gauge	Weight (kg)	Model
	G1/4	Without	0,890	LR27H-200-RNLG-S1
	1/4 NPT	Without	0,890	LR27H-200-RNLA-S1

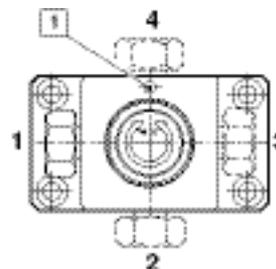
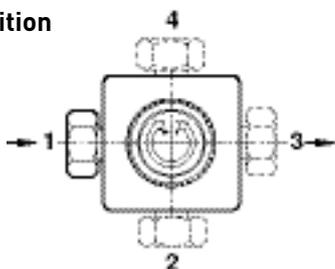
### Option selector

Function	Substitute
Standard	None
Quick Exhaust	Q
Mounting	Substitute
Subbase	0
1/4"Port	2
Operation	Substitute
Standard	00
Gearbox operated (6:1 ratio)	10
Pilot operated	34

LR27H★ - ★★\*- RNL★ - ★★

Relief port position	Substitute
Left	1
Front	2
Right	3
Back	4
Filter	Substitute
Without	N
With	S
Thread	Substitute
ISO G Parallel	G
NPT	A

### Relief port position

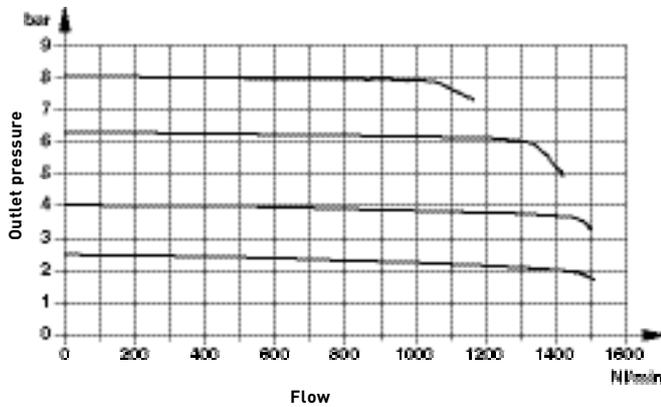


Location pin hole

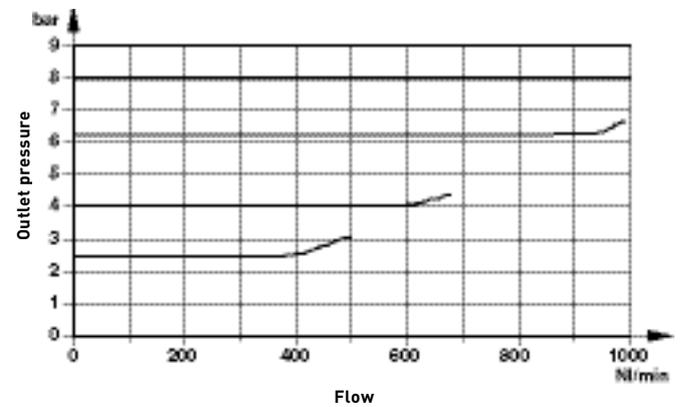
## High-flow precision pressure regulator LR27H G1/4, 1/4 NPT or interface version

### Flow characteristics

#### Forward flow (Inlet pressure 10 bar)



#### Relief flow (Inlet pressure 10 bar)



### Accessories

Gauge  
(for full technical  
specification see  
page 4-68/69)



Series	Port size	Diameter	Pressure range (bar)	Pressure range (psi)	Model
LR27H (ISO G port)	R 1/8	40 mm	0 ... 10	0 ... 140	18-013-989 *
LR27H (NPT port)	1/4 PTF	2"	0 ... 11	0 ... 160	18-013-209

\* Please order a BSP connector 160232818 (G1/4 o/f to G1/8 i/f) separately

#### Exhaust filter

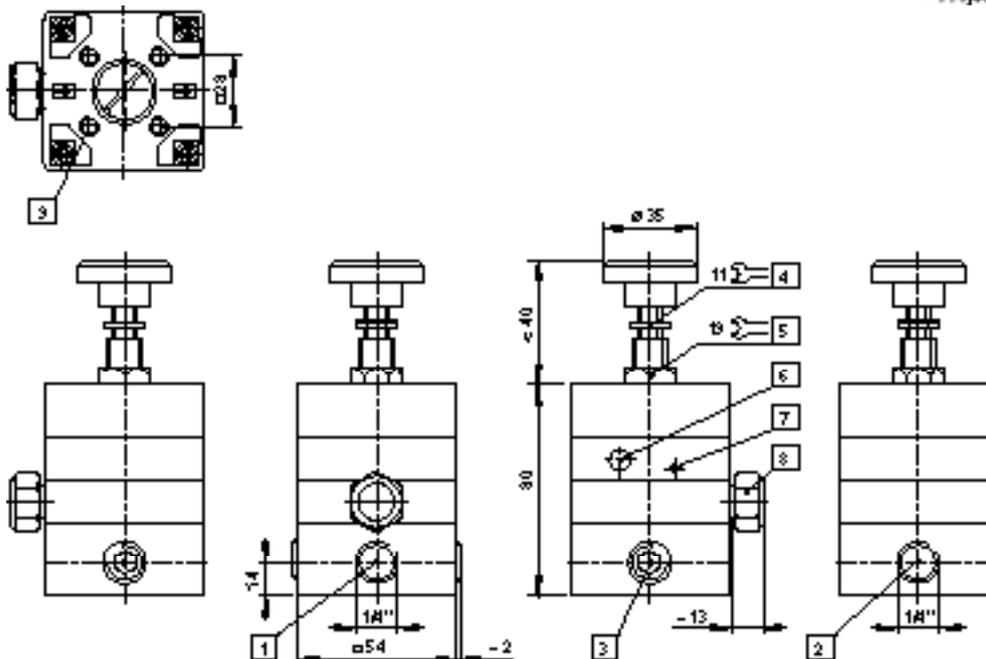


Series	Model
LR27H (ISO G port)	M/1512
LR27H (NPT port)	MV002A

### Dimensions

#### Standard (typical for other inline versions)

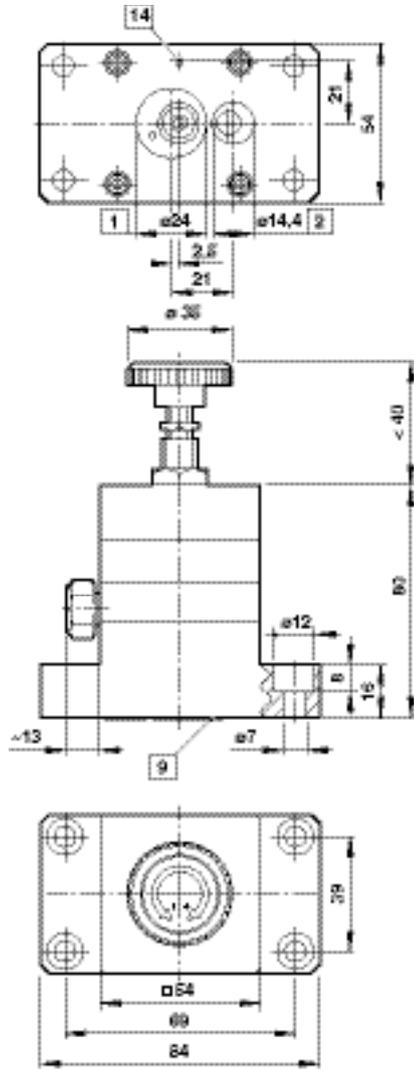
Dimensions shown in mm  
Projection/First angle



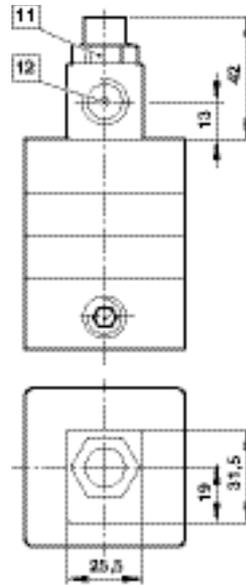
- |                |                                  |
|----------------|----------------------------------|
| 1 Inlet port   | 6 Bleed hole                     |
| 2 Working port | 7 Quick exhaust pilot vent       |
| 3 Gauge port   | 8 Relief port                    |
| 4 Locknut      | 9 Mounting threads M5, 8 mm deep |
| 5 Mounting nut |                                  |

**High-flow precision pressure regulator  
LR27H**  
G1/4, 1/4 NPT or interface version

**Sub base version**

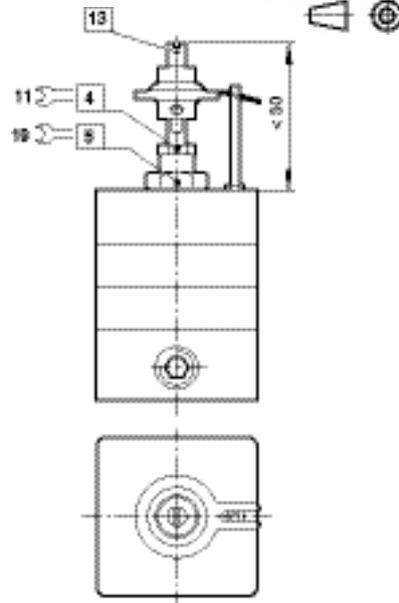


**Pilot operated**



**Gearbox operated**

Dimensions shown in mm  
Projection/First angle



- 1 Inlet port, 2,1 mm deep
- 2 Working port, 2,1 mm deep
- 4 Locknut
- 5 Mounting nut
- 9 Two O-Rings are supplied
- 11 Cap nut, A/F 20 mm
- 12 Pilot port 1/4" rotatable 4 x 90° positions
- 13 Adjusting screw
- 14 Location pin hole, Ø 2 mm, 3 mm deep

# Precision pressure regulator

## LR27

### G1/4

- 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:**

Oil free, dry air filtered to 25 µm  
 Note: for use with gases other than compressed air please consult NORGREN

**Operation:**

Handwheel 2,5 ... 3 turns

**Inlet pressure:**

At least 0,2 bar (3 psi) above max required output pressure, up to a maximum of 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 per bar of supply pressure change.

**Hysteresis & repeatability:**

Typically < 0,05% at mid range

**Fluid/Ambient temperature:**

-40 ... +70°C (-40 ... +158°F)

Air supply must be dry enough to avoid ice formation at

temperatures below +2°C (+35°F)

**Materials**

Body: passivated zinc

Internal springs: stainless steel

Elastomers: nitrile

### Technical data

Pressure range (bar)	Air consumption (l/min)	Weight		Model with ISO G-thread	Model with NPT thread
		kg	lb		
0,14 ... 2,0	Typically < 2	0,72	1,58	LR27-200-RNCG	LR27-200-RNCR
0,14 ... 4,0	Typically < 2	0,72	1,58	LR27-200-RNFG	LR27-200-RNFR
0,14 ... 8,0	Typically < 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

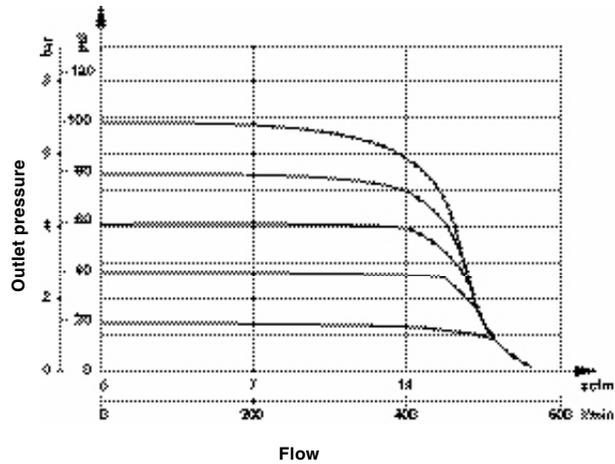
## Precision pressure regulator

LR27

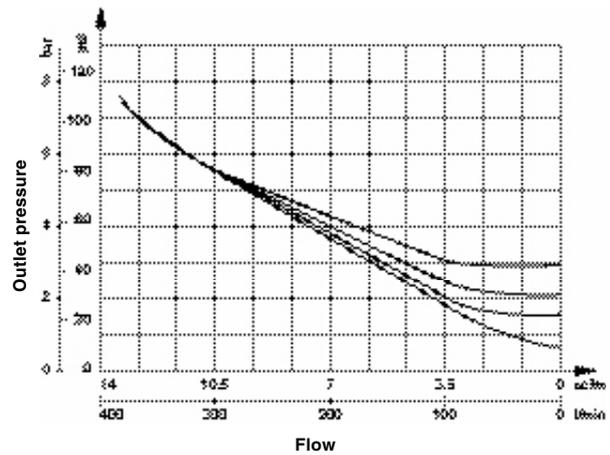
G1/4

### Flow characteristics

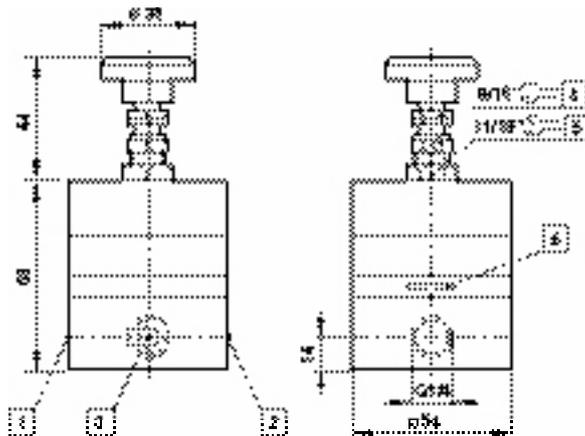
Forward flow (supply pressure 7 bar)



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 ( $\varnothing$  11,5 required for panel mounting)
- 6 Exhaust

## Compact interface mount regulator SLA/15542

### Compact Design

Wide temperature and pressure range

Pre-set versions available on request

Complete with mounting screws and O Rings

Shock & Vibration resistant to EN 61373, Category 1, Class A & B

Special 40°C (-40°F) option available - contact Norgren technical service



### 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

#### Filtration:

Installation of at least a 40 µm prefilter is recommended

#### 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/low temp. nitrile

Elastomers: nitrile and EPDM

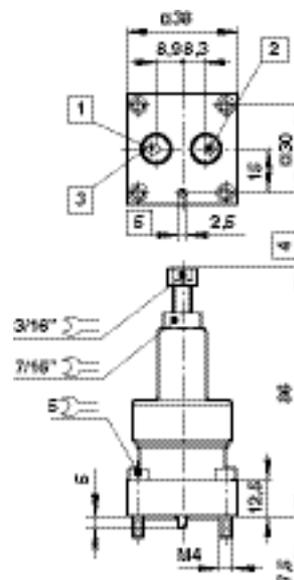
### Technical data

Port size	Flow* dm <sup>3</sup> /s	scfm	Weight		Model
			kg	lb	
Interface	5	11	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.

### 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)  
included in the scope of supply
- 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		Model with ISO G-thread	Model with PTF-thread
	kg	lb		
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

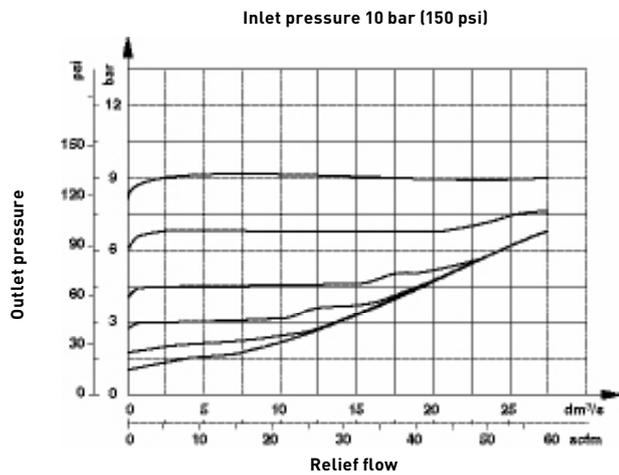
Series	Substitute
72	2
74	4
Port size	Substitute
1/4" (72)	2
3/8" (72 + 73)	3
1/2" (74)	4
3/4" (74)	6

Adjustment	Substitute
Knob (standard)	K
T-handle (10 bar, 145 psi)	T
Threads form	Substitute
PTF	A
ISO G parallel	G

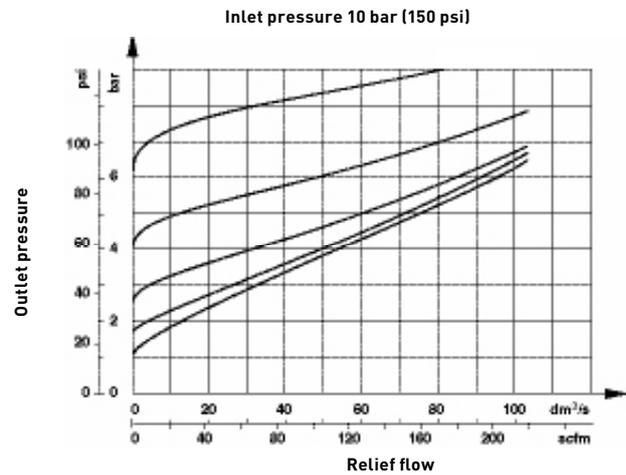
Pressure relief valves  
Excelon® Quikclamp system LV72G, LV74G  
1/4" ... 3/4"

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

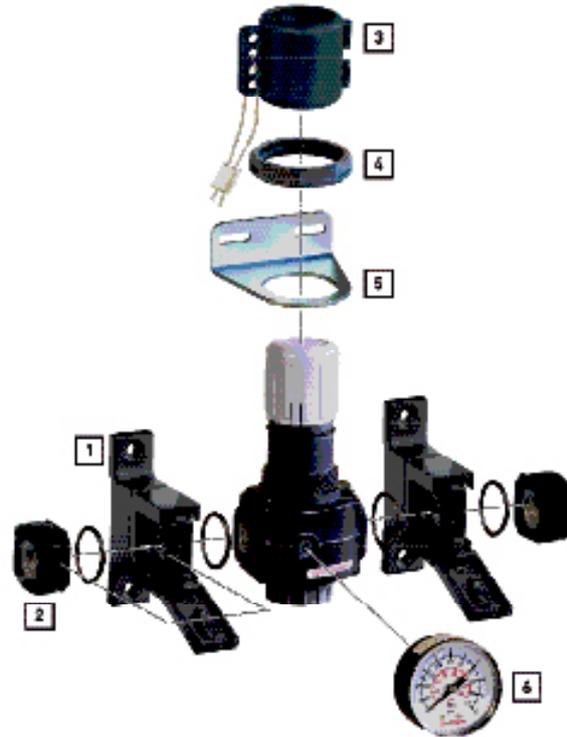
1/4" ... 3/4"

### 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
72	 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.

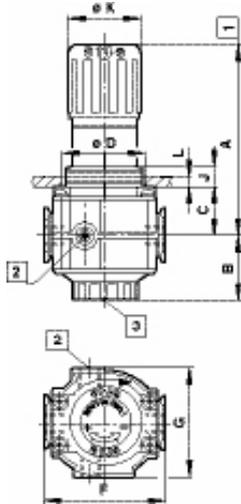
Series	Quikmount pipe adaptor ISO G parallel thread		PTF-thread	
	Port size	2	Port size	2
72	1/4"	4215-08	1/4"	4215-02
72	3/8"	4215-09	3/8"	4215-03
74	1/4"	4315-09	1/4"	4315-01
74	3/8"	4315-10	3/8"	4315-02
74	1/2"	4315-11	1/2"	4315-03
74	3/4"	4315-12	3/4"	4315-04

Series	Port size	Gauge (for full technical specification see page 4-68/69)		Diameter	Model
		Pressure range in bar	Pressure range in psi		
72 (ISO G main port)	Rc 1/8	0 ... 10	0 ... 160	40 mm	18-013-989
72 (PTF main port)	1/8 PTF	0 ... 10	0 ... 160	1 1/2"	18-013-212
74 (ISO G main port)	Rc 1/8	0 ... 10	0 ... 160	50 mm	18-013-013
74 (PTF main port)	1/4 PTF	0 ... 10	0 ... 160	2"	18-013-209

## Pressure relief valves Excelon® Quikclamp system LV72G, LV74G 1/4" ... 3/4"

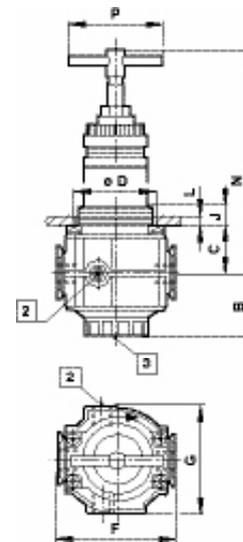
### Basic dimensions

#### Standard



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
74	127	43	31	80	74	52	19	47	2 ... 6	151	63

#### T-handle

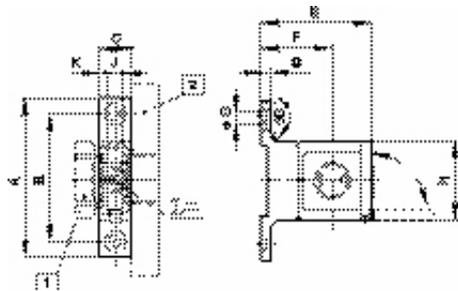


Dimensions shown in mm  
Projection/First angle



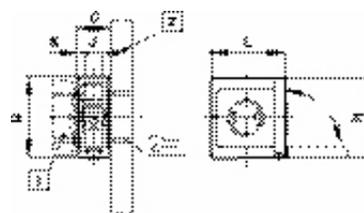
- 1 Reduces by 4 mm with knob in locked position
- 2 Gauge port
- 3 Exhaust port Rc 1/4, 1/4 PTF for LV72G only

#### Quikclamp® with wall bracket



Series	A	B	C	ØD	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

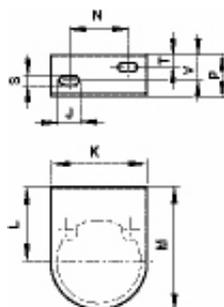
#### Quikclamp®



- 1 Quikmount pipe adaptor
- 2 Excelon® unit

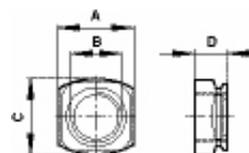
Series	C	H	J	K	L	↺
72	14,5	36,5	6,5	4	36,5	3
74	24,5	51	13,5	5,5	46	4

#### 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

## Pressure relief valves

1002

R1/4

Simple, compact design and construction

Protect compressed air systems from over-pressurisation

Quick & easy installation

Very wide temperature range

Optional manual pull ring



+230°C (+446°F)

-40°C (-40°F)



### Technical features

**Medium:**

Compressed air only

**Operation:**

Poppet valve, directly actuated with spring return

**Recommended operating pressure:**

- 0,14 ... 1,6 bar [2 ... 23 psi]
- 1,6 ... 2,5 bar [23 ... 36 psi]
- 2 ... 6,3 bar [29 ... 91 psi]
- 6,3 ... 14 bar [91 ... 203 psi]

Note: Use of this unit outside of its recommended operating pressure range could lead to product malfunction and should not be attempted.

**Accuracy limitation:**

- ± 25% of relief setting
- Port size: R 1/4

**Flow:**

See table

**Mounting position:**

Vertical

**Temperature range:**

- 40°C ... +230°C [-40 ... +446°F]
- Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

**Materials**

- Body and adjusting cap: brass
- Ball seal: stainless steel

### Technical data - standard, without pull ring

Symbol	Port size	Recommended pressure (bar)	Weight (kg)	Model
	R1/4	6,3 ... 14	0,11	1002/BR000

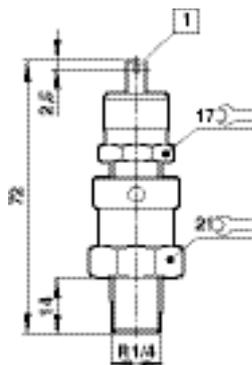
### Option selector

1002/B★00★

Recommended operating pressure	Substitute
2,0 ... 6,3 bar	G
0,14 ... 1,6 bar	M
1,6 ... 2,5 bar	P
6,3 ... 14 bar	R

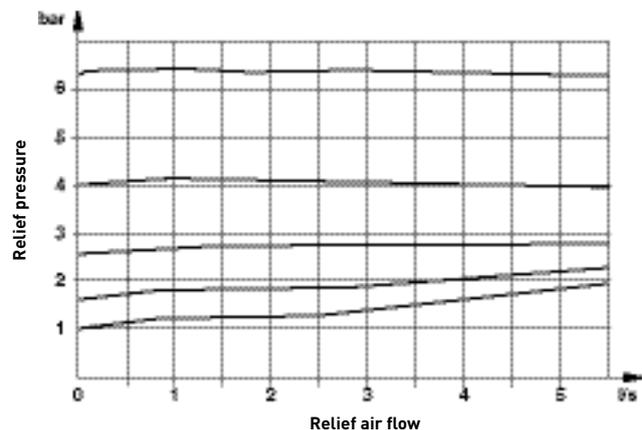
Pull ring	Substitute
Without	0
With	8

### Dimensions



1 Ø 3 mm hole for pull ring

### Relief air flow characteristics



## 3 way proportional pressure control valve LVP50

G1/4, 1/4 NPT or manifold

**Closed-loop air piloted proportional pressure control valve**

**High flow**

**Excellent performance characteristics**

**Fast response time**

**Adjustable gain and pressure range**

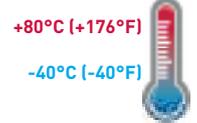
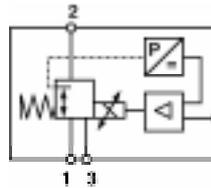
**Low power consumption**

**Feedback signal**

**Manifold mountable**

**Wide temperature range**

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



### Technical features

**Medium:**

Compressed dry air, oil free filtered to 5 µm

**Operation:**

Air piloted spool valve with integrated electronic pressure control

**Output (nominal) pressure:**

0 ... 10 bar, (0 ... 150 psi)

**Supply pressure:**

Minimum 2 bar above maximum output required, 12 bar max.

**Air 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

**Fluid/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 sensitivity:**

Typically better than 0.03% span/°C (0 ... +50°C, +32 ... +120°F), < 5% span (extended range -40 ... +80°C, -40 ... +176°F)

**Degree of protection:**

IP65 in normal operation [exhaust and baffle protected from water ingress at temperatures <+5°C, (<+41°F)]

**Linearity:**

< 1%

**Hysteresis and deadband:**

< 1%

**Response time:**

< 80 ms (from 10 ... 90% of output pressure into a 0,1 litre load).

**Vibration & shock immunity:**

< 3% span  
0,75 m/s<sup>2</sup>, 5 ... 150Hz,  
1 m/s<sup>2</sup>, 5 ... 150Hz

**Weight:**

0,55 kg

**Materials**

Body: Aluminium  
Lid: Zinc die cast,  
Front cover and End cap: Nylon

**Maintenance:**

No maintenance required

**Calibration:**

Gain, Span, Zero

### Electrical details

Electromagnetic compatibility	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, <±1% Accuracy
Connections	M12x1, 5-pin

### Option selector

LVP50\*\*\*\*\*11HSR

Output pressure	Substitute
0 ... 2 bar/30 psi	02
0 ... 6 bar/90 psi	06
0 ... 10 bar/150 psi	10
Unit for pressure	Substitute
bar	B
psi	P

Input signal	Substitute
0 ... 10 V	1
4 ... 20 mA	4
Port size	Substitute
G1/4	J
NPT 1/4	K
Manifold	X

## 3 way proportional pressure control valve LVP50

G1/4, 1/4 NPT or manifold

### Connecting plugs

Elbow connector M12 x 1



Page 4-67  
0250081

### Manifold mount assembly to ISO 2 sub base

Single manifold



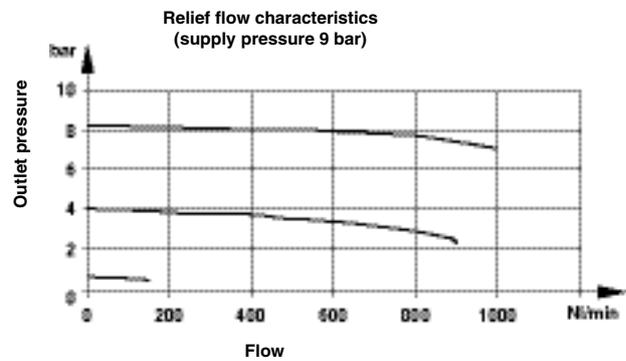
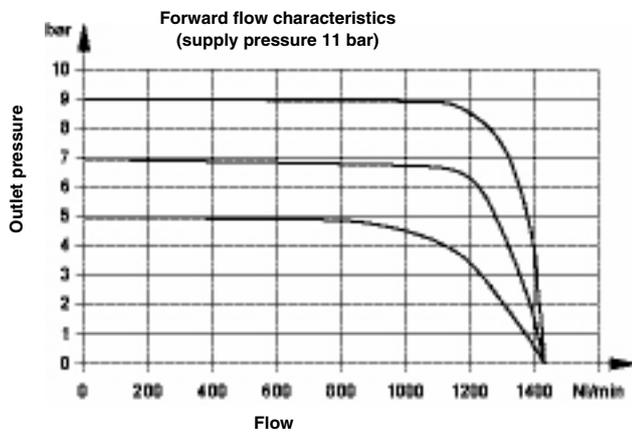
Page 467  
ZZ5M00

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	Control signal (+VE)
4	Common (supply signal and feedback return)
5	Chassis

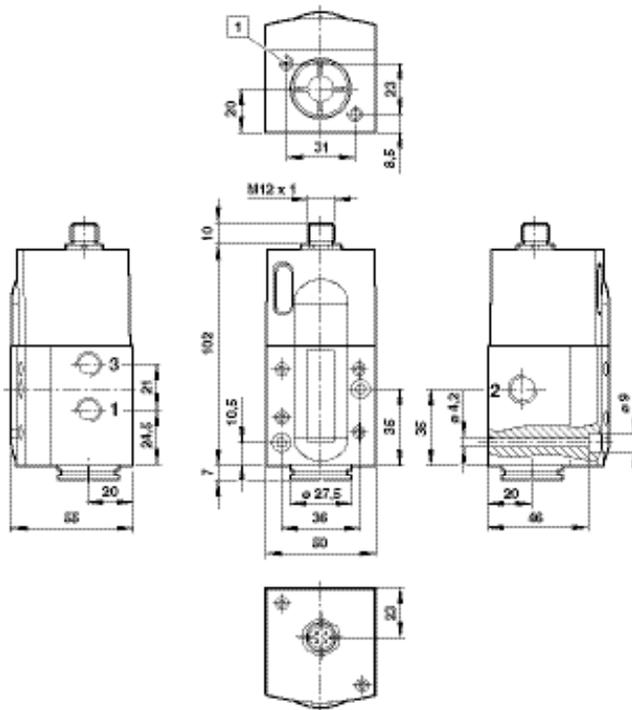
### Characteristic curves



## 3 way proportional pressure control valve LVP50

G1/4, 1/4 NPT or manifold

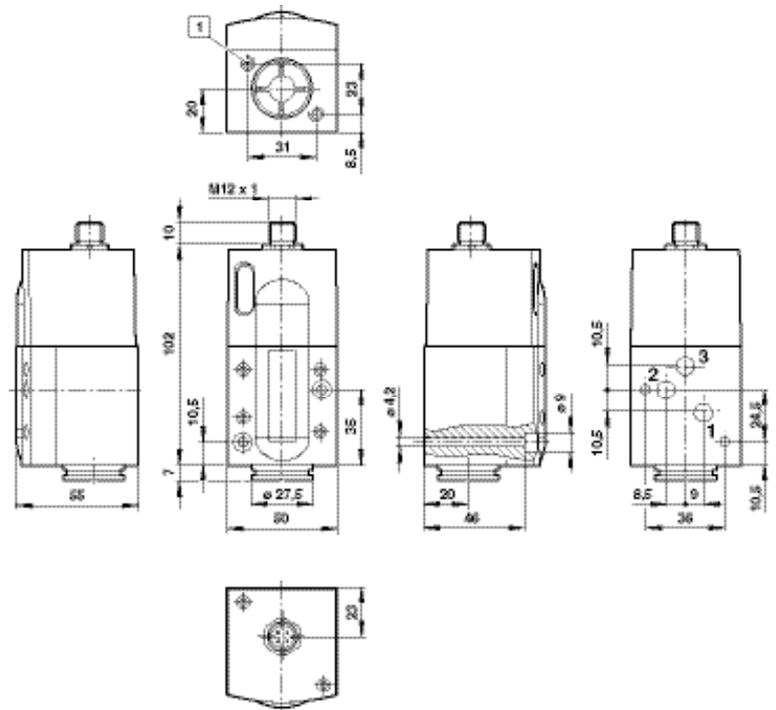
### Basic dimensions LVP50



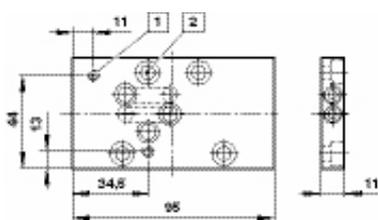
1 M5 x 8 mm deep

### VP50 with manifold surface

Dimensions shown in mm  
Projection/First angle

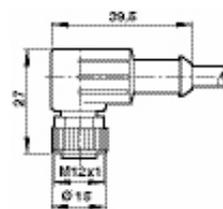


### Manifold mount assembly to ISO 2 sub base included all seals and screws



- 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,  
5 m cable length, A coded  
Model: 0250081

**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



+65°C (+150°F)  
-40°C (-40°F)



**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 NPT

**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

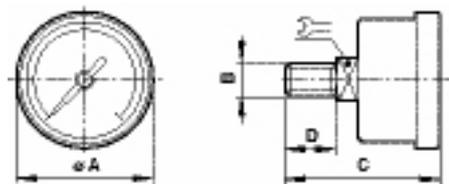
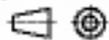
**Technical data**

Port size	Diameter	Pressure range	Face	Model
Rc1/8	40 mm	0 ... 10 bar	White, black & red lettering	18-013-989
Rc1/8	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**

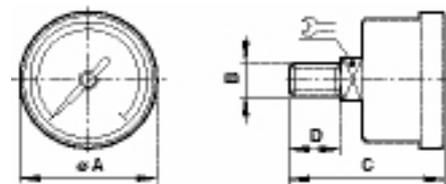
**Gauge – metric, white face**

Dimensions shown in mm  
Projection/First angle



**Gauge – inch, black face**

Dimensions shown in inch  
Projection/First angle



Ø A	B	C	D	$\frac{D}{\phi}$	Model
40	R1/8	44	10	14	18-013-989
50	R1/8	48	14	14	18-013-013

Ø A	B	C	D	$\frac{D}{\phi}$	Model
1 1/2	1/8 PTF	1.60	0.97	0.43	18-013-212
2	1/4 PTF	1.73	1.03	0.55	18-013-209

# Stainless steel heavy duty gauge 18-013-914/915 R1/8 & 1/4 PTF

- Ideally suited for use in harsh environments
- Vibration and pulsation resistant
- Restricted orifice
- Enclosure rating - IP65
- Stainless steel case with brass and stainless steel internals
- Wide temperature range



### Technical features

**Medium:**  
Compressed air, oil and gases or liquids which do not corrode copper alloys

**Pressure range:**  
0 ... 11 bar (0 ... 160 psi)

**Port connections:**  
R1/8 and 1/4 PTF

**Accuracy:**  
± 2,5% of full scale value

**Enclosure rating:**  
IP65

**Fluid/Ambient temperature:**  
-40 ... +93°C (-40 ... +200°F)

Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

**Materials**

Case and ring:  
Stainless steel (304 SS)

Lens: Polycarbonate

Movements: Stainless steel/brass

Gaskets: NBR/Silicone

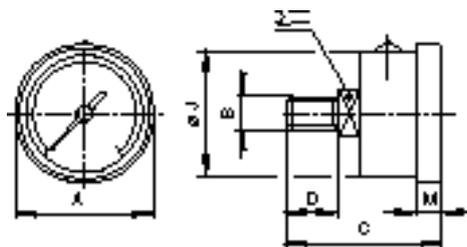
### Technical data

	Port size	Diameter	Pressure range	Face	Weight (kg)	Model
	Rc1/8	50 mm	0 ... 11 bar	White, black & red lettering	0,10	18-013-914
	1/8 PTF	2"	0 ... 160 psi	Black, red & white lettering	0,10	18-013-916

### Dimensions

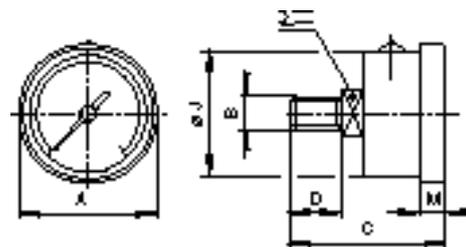
Gauge – bar, white face

Dimensions shown in mm  
Projection/First angle



Gauge – psi, black face

Dimensions shown in inch  
Projection/First angle



Ø A	B	C	D	Ø J	M		Model
57,5	Rc1/8	55	8	51,5	5	14	18-013-914

Ø A	B	C	D	Ø J	M		Model
2.26	1/8 PTF	2.158	0.512	2.027	0.199	9/16	18-013-916



## INNOVATIVE COMPRESSED AIR DRYERS

### ADSORBENT MEDIA TUBE (AMT) DRYER

- Offers significant benefits over conventional air dryers
- Utilises conventional desiccant adsorbent material packaged into a tube structure
- Patented Adsorbent Media Tube (AMT) technology
- Trouble-free life between major overhaul schedules
- Up to 6 years maintenance free life (18,000 usage hours)
- Improved drying performance compared to current market offering
- Significant weight reduction compared with a conventional dryer
- Up to 25% more energy efficient
- Total flexibility in mounting orientation
- Reduced air purge requirement
- Robust, durable and compact solution
- Vibration tested to BS EN 61373:2010
- Ambient operating temperature range of -50°C...+80°C

**UP TO 6 YEARS MAINTENANCE FREE LIFE**  
(18,000 usage hours)

TOTAL FLEXIBILITY IN MOUNTING ORIENTATION

FAIL-SAFE

Provides reliable and effective air drying

Improved drying performance

VIBRATION TESTED TO EN 61373:2010

Reduced air purge consumption

Significant weight reduction

-50°C ... +80°C

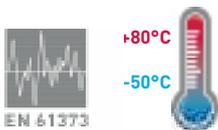
ROBUST, DURABLE AND COMPACT SOLUTION

OUTSTANDING VIBRATION SUPPRESSION

Up to 25% more energy efficient



COMPLETE PACKAGE customised dryer system with multi-stage filtration



# FITTINGS



## PRODUCTS

5-02 Fast find guide

### 5-03 Feature page 'Railline® Fittings'

5-04	Aluminium (light weight) compression fittings	Ø 6 ... 42 mm tube size, BSPP & BSPT thread	82A series
5-06	Brass compression fittings	Ø 6 ... 42 mm tube size, BSPP & BSPT thread	82 series
5-08	Aluminium (light weight) compression fittings	Ø 1/8" ... 2" nominal pipe size, BSPP & BSPT thread	83A series
5-10	Brass compression fittings	Ø 1/8" ... 2" nominal pipe size, BSPP & BSPT thread	83 series
5-12	Aluminium (light weight) compression fittings	Ø 1/8" ... 2" nominal pipe size, NPT thread	83A series
5-14	Brass compression fittings	Ø 1/8" ... 2" nominal pipe size, NPT thread	83 series
5-16	Commercial vehicle push-in fittings	Ø 6 ... 18 mm tube size	Fleetfit
5-20	Commercial vehicle push-in fittings	Ø 1/4" ... 3/4" tube size, BSP & NPT threads	Fleetfit
5-24	Push-in fittings	Ø 4 ... 14 mm tube size, BSP threads	Pneufit
5-36	Push-in fittings	Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads	Pneufit
5-45	M5, 1/8" ... 1"	BSP & HOSE	

# FAST FIND GUIDE



FITTINGS

5

**82A series**  
Aluminium (light weight) compression fittings  
Ø 6 ... 42 mm tube size, BSPP & BSPT thread

Page 5-04

**82 series**  
Brass compression fittings  
Ø 6 ... 42 mm tube size, BSPP & BSPT thread

Page 5-06

**83A series**  
Aluminium (light weight) compression fittings  
Ø 1/8" ... 2" nominal pipe size, BSPP & BSPT thread

Page 5-08

**83 series**  
Brass compression fittings  
Ø 1/8" ... 2" nominal pipe size, BSPP & BSPT thread

Page 5-10

**83A series**  
Aluminium (light weight) compression fittings  
Ø 1/8" ... 2" nominal pipe size, NPT thread

Page 5-12

**83 series**  
Brass compression fittings  
Ø 1/8" ... 2" nominal pipe size, NPT thread

Page 5-14

**Fleetfit**  
Commercial vehicle push-in fittings  
Ø 6 ... 18 mm tube size

Page 5-16

**Fleetfit**  
Commercial vehicle push-in fittings  
Ø 1/4" ... 3/4" tube size, BSP & NPT threads

Page 5-20

**Pneufit**  
Push-in fittings  
Ø 4 ... 14 mm tube size, BSP threads

Page 5-24

**Pneufit**  
Push-in fittings  
Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

Page 5-36

**BSP & HOSE**  
M5, 1/8" ... 1"

Page 5-45



## 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.



## Aluminium (light weight) compression fittings 82A series

Ø 6 ... 42 mm tube size, BSPP & 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



+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 & BSPP)

#### tubing:

Designed for use with: Copper tube to BS 2871 Stainless steel tube to AISI 304 & 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 & clamping: Brass, white galvanized '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		

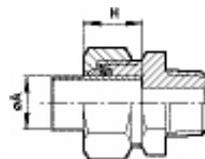
Torque settings based on Railway applications up to 15 bar for use with stainless steel tube

#### Tube stop position

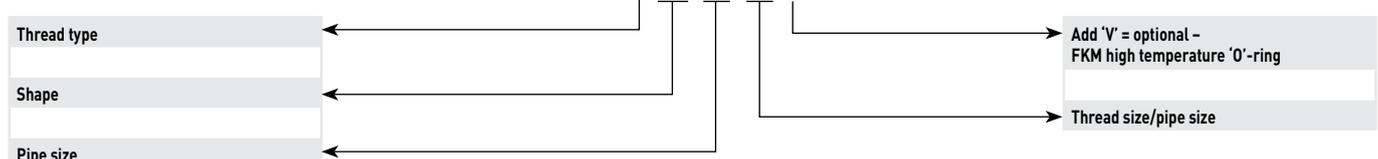
Ø A	H	Ø A	H
6	16,0	22	19,5
8	17,0	25	21,0
10	18,5	28	22,5
12	18,0	30	23,0
14	18,0	32	23,5
15	18,5	35	23,5
16	20,5	38	27,0
18	19,5	42	26,5
20	19,5		

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

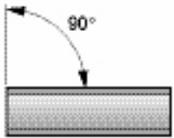


### Option selector

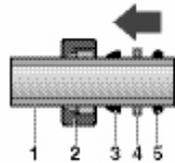


## Aluminium (light weight) compression fittings 82A series Ø 6 ... 42 mm tube size, BSPP & BSPT thread

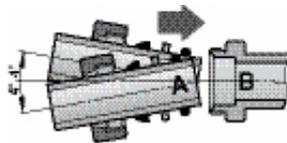
### Method of assembly



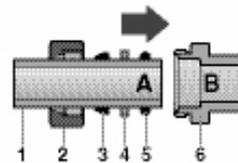
1. Ensure that the end of the tube is cut square and is free from burrs.



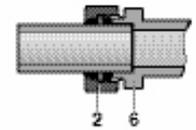
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignment is not higher than  $\pm 4^\circ$ .



4. Move the pipe head (A) with all components assembled as shown towards the casing abutment (B). In pipe fittings 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)	Straight adaptor (parallel)	Female adaptor (parallel)	Straight union (equal)	Straight union (unequal)	Bulkhead union	Cap	Straight stem connector (taper)	Straight stem connector (parallel)
82A125	82A225	82A226	82A020	82A020	82A029	82A012	82A115	82A215

### Elbow adaptors and connectors

Union elbow (equal)	Union elbow (unequal)	90° Elbow adaptor (taper)	90° Elbow adaptor female (taper)
82A040	82A040	82A145	82A246

### Tee adaptors and connectors

Union tee (equal)	Union tee (unequal)	Tee adaptor (taper)	Tee adaptor female (taper)
82A060	82A060	82A165	82A266

### Accessories

Tubing nut	Split ring	Tubing washer	Tubing 'O'-ring	Thread 'O'-ring
82A0F4	82A0J1	82A0E7	8000K	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 & 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°



+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 & BSPP)

**Tubing:**

Designed for use with:  
Copper tube to BS 2871  
Stainless steel tube to AISI 304 & 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 & clamping: brass, white galvanized  
'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		

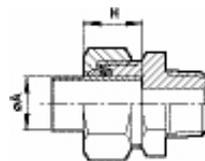
Torque settings based on Railway applications up to 15 bar for use with stainless steel tube

#### Tube stop position

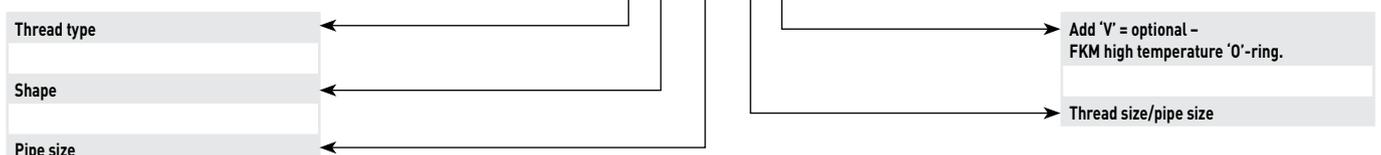
Ø A	H	Ø A	H
6	16,0	22	19,5
8	17,0	25	21,0
10	18,5	28	22,5
12	18,0	30	23,0
14	18,0	32	23,5
15	18,5	35	23,5
16	20,5	38	27,0
18	19,5	42	26,5
20	19,5		

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



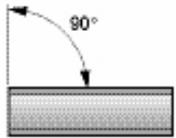
### Option selector



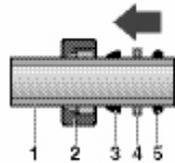
## Brass compression fittings 82 series

Ø 6 ... 42 mm tube size, BSPP & BSPT thread

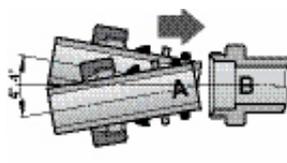
### Method of assembly



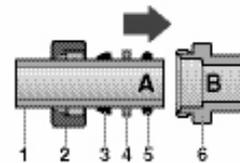
1. Ensure that the end of the tube is cut square and is free from burrs.



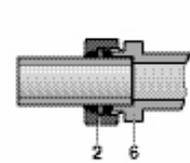
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignment is not higher than  $\pm 4^\circ$ .



4. Move the pipe head (A) with all components assembled as shown towards the casing abutment (B). In pipe fittings 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)	Straight adaptor (parallel)	Female adaptor (parallel)	Straight union (equal)	Straight union (unequal)	Bulkhead union	Cap	Straight stem connector (taper)	Straight stem connector (parallel)
82125	82225	82226	82020	82020	82029	82012	82115	82215

### Elbow adaptors and connectors

Union elbow (equal)	Union elbow (unequal)	90° Elbow adaptor (taper)	90° Elbow adaptor female (taper)
82040	82040	82145	82246

### Tee adaptors and connectors

Union tee (equal)	Union tee (unequal)	Tee adaptor (taper)	Tee adaptor female (taper)
82060	82060	82165	82266

### Accessories

Tube nut 820F4	Split ring 820J1	Tube washer 820E7	Tube '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 & 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



+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 & BSPP)

**Tubeing:**

Designed for use with: Copper tube to BS 2871 Nylon - PA12 (tube support required), stainless steel tube to AISI 304 & 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**

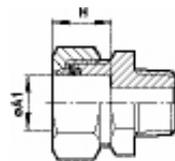
Body & Nut: AL2 Aluminium with PA20 anodic treatment to HB 175 hardness Washer & clamping: brass, white galvanized 'O'-Ring: HNBR - colour coded yellow

### 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

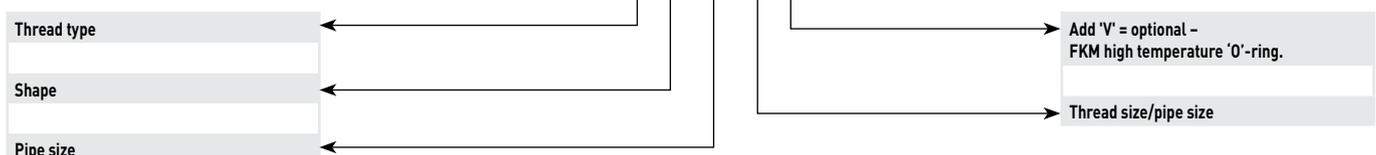


#### Tube stop position and tube outside diameter details

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

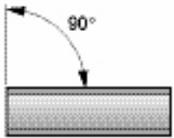
### Option selector



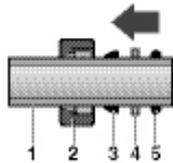
## Aluminium (light weight) compression fittings 83A series

Ø 1/8" ... 2" nominal pipe size, BSPP & BSPT thread

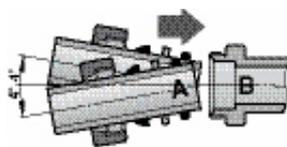
### Method of assembly



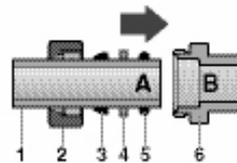
1. Ensure that the end of the tube is cut square and is free from burrs.



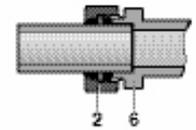
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignment is not higher than  $\pm 4^\circ$ .



4. Move the pipe head (A) with all components assembled as shown towards the casing abutment (B). In pipe fittings 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)	Straight adaptor (parallel)	Female adaptor (parallel)	Straight union (equal)	Straight union (unequal)	Bulkhead union	Cap	Straight stem connector (taper)	Straight stem connector (parallel)
83A125	83A225	83A226	83A020	83A020	83A029	83A012	83A115	83A215

### Elbow adaptors and connectors

Union elbow (equal)	Union elbow (unequal)	90° Elbow adaptor (taper)	90° Elbow adaptor female (taper)
83A040	83A040	83A145	83A246

### Tee adaptors and connectors

Union tee (equal)	Union tee (unequal)	Tee adaptor (taper)	Tee adaptor female (taper)
83A060	83A060	83A165	83A266

### Accessories

Tubing nut	Split ring	Tubing washer	Tubing 'O'-ring	Thread 'O'-ring
83A0F4	83A0J1	83A0E7	8000K	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 & 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°



+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 & BSPP]

**Tubing:**

Designed for use with: Copper tube to BS 2871 Nylon - PA12 (tube support required), stainless steel tube to AISI 304 & 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**

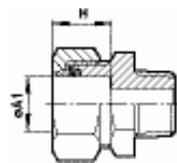
Body & nut: brass Washer & clamping: brass 'O'-Ring: HNBR - colour coded yellow

### 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

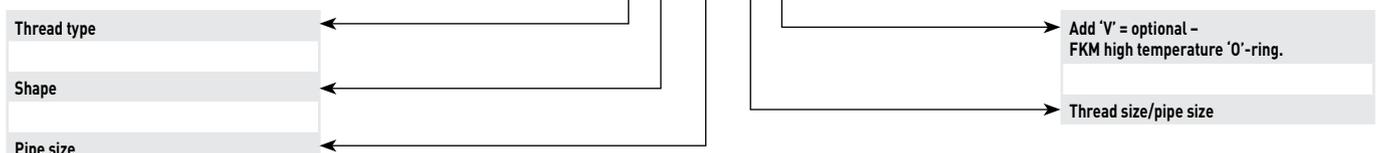


#### Tube stop position and tube outside diameter details

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

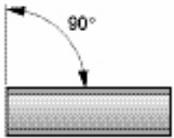
### Option selector



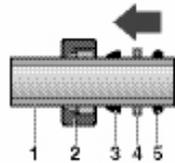
## Brass compression fittings 83 series

Ø 1/8" ... 2" nominal pipe size, BSPP & BSPT thread

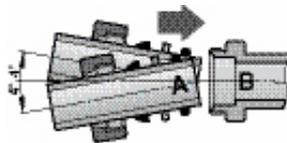
### Method of assembly



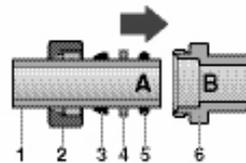
1. Ensure that the end of the tube is cut square and is free from burrs.



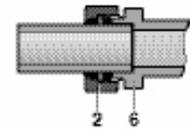
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignment is not higher than  $\pm 4^\circ$ .



4. Move the pipe head (A) with all components assembled as shown towards the casing abutment (B). In pipe fittings 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)	Straight adaptor (parallel)	Female adaptor (parallel)	Straight union (equal)	Straight union (unequal)	Bulkhead union	Cap	Straight stem connector (taper)	Straight stem connector (parallel)
83125	83225	83226	83020	83020	83029	83012	83115	83215

### Elbow adaptors and connectors

Union elbow (equal)	Union elbow (unequal)	90° Elbow adaptor (taper)	90° Elbow adaptor female (taper)
83040	83040	83145	83246

### Tee adaptors and connectors

Union tee (equal)	Union tee (unequal)	Tee adaptor (taper)	Tee adaptor female (taper)
83060	83060	83165	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



+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 & BSPP)

#### Tubing:

Designed for use with: Copper tube to BS 2871 Nylon - PA12 (tube support required), stainless steel tube to AISI 304 & 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

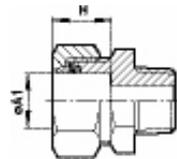
Body & Nut: AL2 Aluminium with PA20 anodic treatment to HB 175 hardness Washer & clamping: brass, white galvanized 'O'-Ring: HNBR - colour coded yellow

### 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

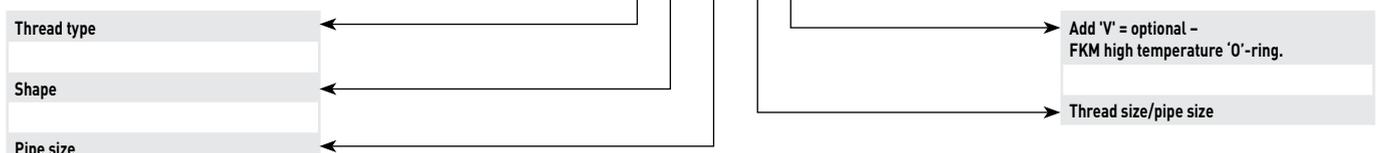


#### Tube stop position and tube outside diameter details

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

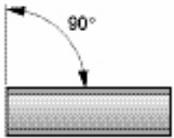
The information provided in this table are typical values as dimension H will vary slightly with torque applied to the nut. For fittings without tube stops such as straight connector and bulkheads the above tube insertion depths are also applicable.

### Option selector

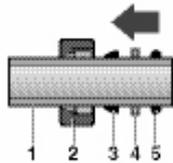


## Aluminium (light weight) compression fittings 83A series Ø 1/8" ... 2" nominal pipe size, NPT thread

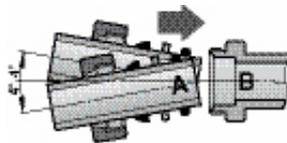
### Method of assembly



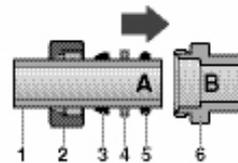
1. Ensure that the end of the tube is cut square and is free from burrs.



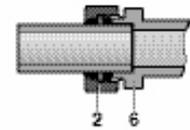
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignment is not higher than  $\pm 4^\circ$ .



4. Move the pipe head (A) with all components assembled as shown towards the casing abutment (B). In pipe fittings 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 (equal)  
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°



+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) 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 & BSPP]

**Tubing:**

Designed for use with:  
Copper tube to BS 2871  
Nylon - PA12 (tube support required), stainless steel tube to AISI 304 & 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**

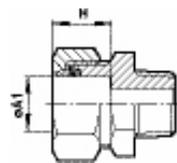
Body & nut: brass  
Washer & clamping: brass  
'O'-Ring: HNBR - colour coded yellow

#### 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

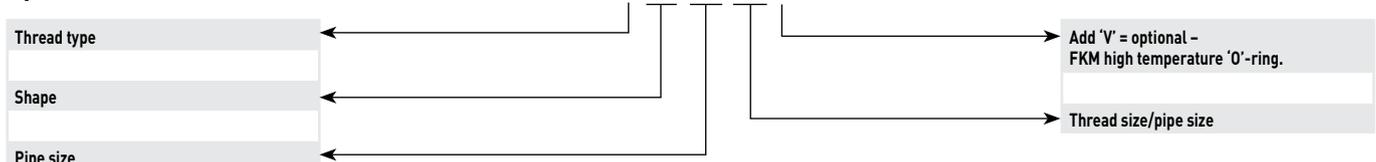


#### Tube stop position and tube outside diameter details

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

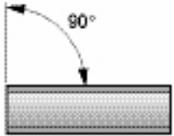
#### Option selector



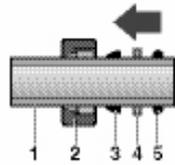
## Brass compression fittings 83 series

Ø 1/8" ... 2" nominal pipe size, NPT thread

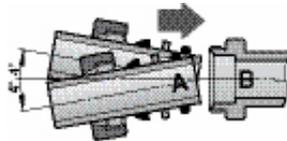
### Method of assembly



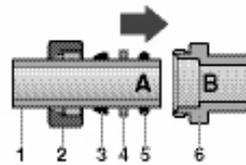
1. Ensure that the end of the tube is cut square and is free from burrs.



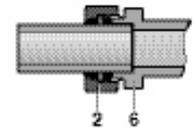
2. Slide the nut (2) onto the pipe (1) from right to left. Slide the split ring (3) onto the pipe (1) from right to left keeping the smaller edge towards the nut (2). Slide the washer (4) onto the pipe (1) from right to left. Slide the 'O'-ring (5) onto the pipe (1) from right to left. N.B. The pipe head must be deburred to ensure the 'O'-ring is not damaged.



3. Before installing the pipe fittings, check that the pipes misalignment is not higher than  $\pm 4^\circ$ .



4. Move the pipe head (A) with all components assembled as shown towards the casing abutment (B). In pipe fittings 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 (equal)  
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



+100°C (+212°F)

-40°C (-40°F)

### 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.

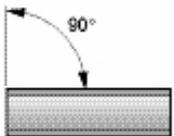
#### Additional ranges:

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.

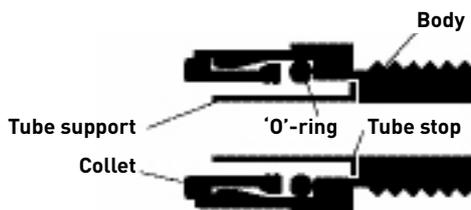


3. Continue pushing the tube through the 'O'-ring until it bottoms on the tube stop. Then pull back on the tube to reinforce the collet gripping action.



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.

## Commercial vehicle push-in fittings Fleetfit

Ø 6 ... 18 mm tube size

### Straight adaptors and connectors

Straight adaptor (metric) 974666	Straight adaptor (BSP taper) 974530	Straight connector (equal) 974503	Reducing straight connector 974504
Page 5-17	Page 5-17	Page 5-19	Page 5-19

### Elbow adaptors and connector

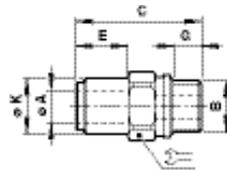
Swivel elbow adaptor (metric) 974521	Universal hobbs elbow adaptor (metric) 974138	Swivel elbow adaptor (BSP parallel) 974104	Elbow adaptor (BSP taper) 974330	Elbow connector 974511
Page 5-18	Page 5-18	Page 5-18	Page 5-18	Page 5-18

### Tee connectors

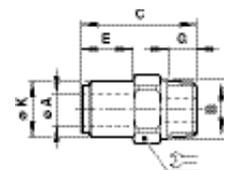
Tee connector (equal) 974514	Reducing tee connector 974588
Page 5-19	Page 5-19

### Dimensions

#### Straight adaptor metric thread



#### Straight adaptor BSP taper thread



Dimensions shown in mm

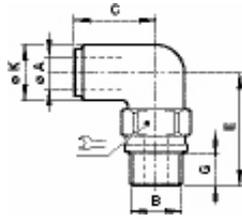
O/D Tube							Model
A	B	C	E	G	Ø K		
6	M10 x 1,0	28,5	13,5	8,0	13,0	14	97466631
6	M12 x 1,5	30,5	11,5	10,0	13,0	17	97466633
6	M14 x 1,5	31,5	13,5	10,0	13,0	19	97466634
6	M16 x 1,5	27,5	7,5	10,0	13,0	22	97466635
6	M22 x 1,5	30,5	5,0	12,0	13,0	27	97466638
8	M10 x 1,0	29,5	12,5	8,0	15,0	17	97466641
8	M12 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

O/D Tube							Model
A	Taper B	C	E	G	Ø K		
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

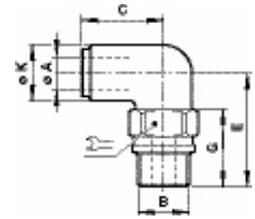
Ø 6 ... 18 mm tube size

### Swivel elbow adaptor metric thread



O/D Tube							Model
A	B	C	E	G	ØK	Symbol	
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

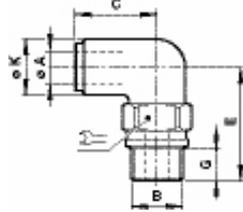
### Universal hobbs elbow adaptor metric thread



Dimensions shown in mm

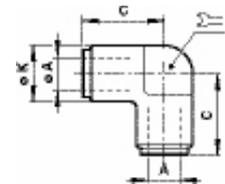
O/D Tube							Model
A	B	C	E	G	ØK	Symbol	
6	M10 x 1,0	23,5	26,0	16,0	14,0	15	97413831
6	M12 x 1,5	23,5	29,0	19,0	14,0	17	97413833
6	M16 x 1,5	24,5	34,0	21,5	17,5	24	97413835
6	M22 x 1,5	28,5	41,5	25,0	26,0	30	97413838
8	M12 x 1,5	25,5	31,5	19,0	17,5	17	97413843
8	M16 x 1,5	25,5	34,0	21,5	17,5	24	97413845
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

### Swivel elbow adaptor BSP parallel thread



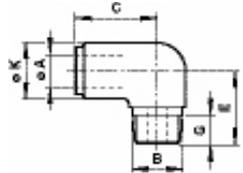
O/D Tube	BSP parallel					Model	
A	B	C	E	G	ØK	Symbol	
6	R1/8	21,0	23,0	7,0	12,0	15,0	97410404
10	R1/4	27,5	31,0	10,0	15,0	19,0	97410412

### Elbow connector



O/D Tube				Model
A	C	ØK	Symbol	
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

### Elbow adaptor BSP taper thread

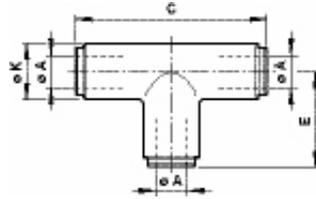


O/D Tube	BSP Taper					Model
A	B	C	E	G	ØK	
6	R1/8	20,5	20,0	9,5	14,0	97433004
6	R1/4	22,0	22,0	11,0	16,0	97433010
8	R1/4	23,0	22,0	11,0	16,0	97433011
10	R1/4	25,0	24,0	11,0	17,5	97433012
12	R1/4	30,0	27,0	11,0	24,0	97433013
12	R1/2	30,5	31,0	16,0	24,0	97433030

## Commercial vehicle push-in fittings Fleetfit

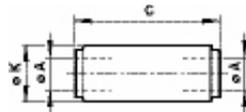
Ø 6 ... 18 mm tube size

### 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

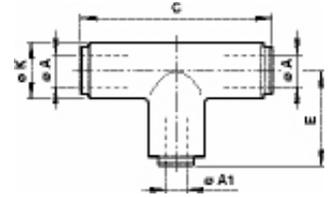
### Equal straight connector



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

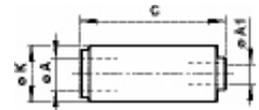
### Reducing tee connector

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 & 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)

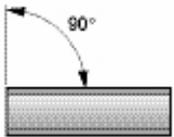
#### Swivel fittings:

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.

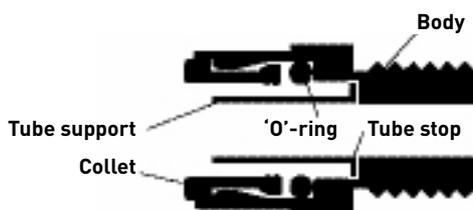


3. Continue pushing the tube through the 'O'-ring until it bottoms on the tube stop. Then pull back on the tube to reinforce the collet teeth gripping action.



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.

#### '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.

#### Collet

The purpose of the collet is to grip the tube and ensure it is retained by the fitting at all times.

## Commercial vehicle push-in fittings Fleetfit

Ø 1/4" ... 3/4" tube size, BSP G1NPT threads

### Straight adaptors and connectors

<b>Straight adaptor (NPTF)</b> 95453  Page 5-19	<b>Straight adaptor (metric)</b> 944666  Page 5-19	<b>Straight adaptor (BSP taper)</b> 944530  Page 5-20	<b>Equal straight connector</b> 944503  Page 5-20	<b>Reducing straight connector</b> 944504  Page 5-20
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### Elbow adaptors and connector

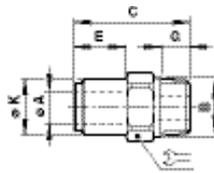
<b>Elbow adaptor (NPTF)</b> 954331  Page 5-22	<b>Elbow adaptor (BSP taper)</b> 944330  Page 5-22	<b>Universal hobbs elbow adaptor (metric)</b> 944138  Page 5-23	<b>Equal elbow connector</b> 944511  Page 5-23
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### Teel connectors

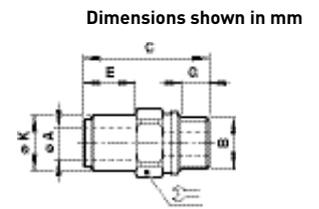
<b>Equal tee connector</b> 944514  Page 5-21	<b>Reducing tee connector</b> 944588  Page 5-21
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### Dimensions

#### Straight adaptor NPTF thread



#### Straight adaptor Metric thread



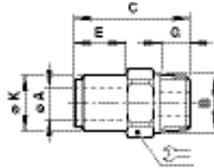
O/D Tube A	NPTF B	C	E	G	ØK		Model
3/16"	1/8"	25,8	10,8	9,5	11,7	1/2"	95453003
1/4"	1/8"	26,3	10,8	9,5	12,7	1/2"	95453004
1/4"	1/4"	29,8	9,3	14,3	12,7	9/16"	95453010
1/4"	3/8"	30,5	8,0	14,3	12,7	1 1/16"	95453018
3/8"	1/8"	33,6	17,1	9,5	16,5	1 1/16"	95453006
3/8"	1/4"	37,6	16,1	14,3	16,5	1 1/16"	95453012
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

O/D Tube A	Thread B	C	E	G	ØK		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

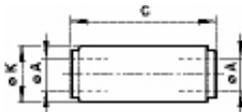
Ø 1/4" ... 3/4" tube size, BSP & NPT threads

### Straight adaptor BSP taper thread



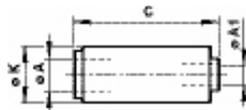
O/D Tube A	B	C	E	G	Ø K		Model
1/4"	1/8"	26,5	10,5	9,5	12,5	13	94453004
1/4"	1/4"	27,0	9,5	11,0	12,5	14	94453010
3/8"	1/8"	33,5	17,0	9,5	16,5	17	94453006
3/8"	1/4"	39,5	19,0	11,0	20,0	22	94453012
3/8"	3/8"	34,5	13,5	12,5	16,5	17	94453020
3/8"	1/2"	34,0	9,0	16,0	16,5	22	94453029
1/2"	1/4"	39,5	19,0	11,0	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



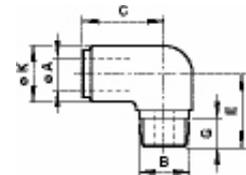
O/D Tube A	C	Ø K	Model
1/4"	35,6	13,0	94450304
3/8"	44,1	17,0	94450306
1/2"	51,1	20,5	94450307
5/8"	61,5	25,5	94450308
3/4"	63,0	30,0	94450309

### Reducing straight connector



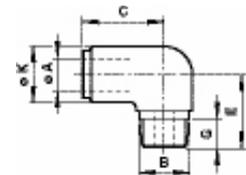
O/D Tube A	O/D Tube Ø A1	C	Ø K	Model
1/4"	3/16"	36,0	13,0	94450437
3/8"	3/16"	43,0	17,0	94450439
3/8"	1/4"	43,5	17,0	94450448
1/2"	3/8"	48,5	20,5	94450464

### Elbow adaptor NPTF thread



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



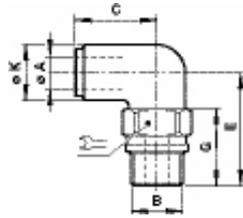
O/D Tube A	BSP taper B	C	E	G	Ø K	Model
1/4"	1/8"	20,5	20,0	9,5	14,3	94433004
1/4"	1/4"	21,8	22,0	11,1	15,9	94433010
3/8"	1/4"	25,1	24,0	11,1	17,5	94433012
3/8"	3/8"	26,1	27,5	12,7	20,0	94433020
3/8"	1/2"	30,1	31,0	15,9	23,8	94433029
1/2"	1/4"	30,1	27,0	11,1	23,8	94433013
1/2"	3/8"	30,1	28,5	12,7	23,8	94433021
1/2"	1/2"	30,6	31,0	15,9	23,8	94433030

Dimensions shown in mm

## Commercial vehicle push-in fittings Fleetfit

Ø 1/4" ... 3/4" tube size, BSP & NPT threads

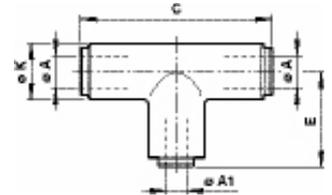
### Universal hobbs elbow adaptor Metric thread



O/D Tube A	Thread B	C	E	G	Ø K	M	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

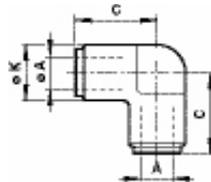
### Reducing tee connector

Dimensions shown in mm



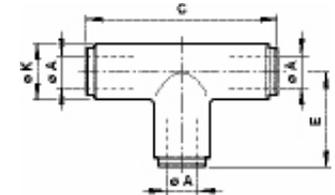
O/D Tube A	O/D Tube A1	O/D Tube A2	C	E	Ø K	Model
3/8"	1/4"	1/4"	51,0	23,5	17,0	94458816
3/8"	3/8"	1/4"	55,0	23,5	17,0	94458801
3/8"	3/8"	1/2"	60,0	32,5	20,5	94458802
1/2"	3/8"	3/8"	62,5	30,0	20,5	94458804
1/2"	1/2"	3/16"	64,0	24,5	20,5	94458803
1/2"	1/2"	1/4"	64,0	25,0	20,5	94458810
1/2"	1/2"	3/8"	62,0	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:

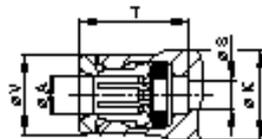
Nylon 11 or 12, Polyurethane and other plasticised or unplasticised tubing which conforms to the tolerances specified in BS 5409, Part 1, 1976, light and normal duty, DIN 73378, DIN 74234, NFE 49-100

#### 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



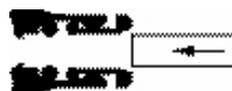
\*1) Dimensions here and in the individual tables refer to the collet being in the 'IN' position.

\*2) Dimensions here (minimum bore diameter) are common per tube size for all Connectors, elbows and Tees unless otherwise stated.

### 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.

### Option selector

Thread type	←	10 ★★★★★★	→	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 	Straight connector (tube to tube) 10020 	Straight stem connector 10022 	Reducing/expanding connector 10023 	Bulkhead connector (tube to tube) 10029 	Mixed bulkhead connector 10031 	Straight stem adaptor (BSP taper) 10115 
Page 5-26	Page 5-26	Page 5-26	Page 5-26	Page 5-27	Page 5-27	Page 5-27

### Elbow adaptors, connectors and banjos

Straight stem adaptor (BSP parallel) 10215 	Straight adaptor (BSP taper) 10125 	Straight adaptor (BSP parallel) 10225 	Female straight adaptor (female parallel BSP) 10226 	Elbow connector 10040 	Stem elbow connector 10043 	Bulkhead swivel elbow connector 10049 
Page 5-27	Page 5-28	Page 5-28	Page 5-28	Page 5-29	Page 5-29	Page 5-29

Elbow adaptor (BSP taper) 10145 	90° Swivel elbow adaptor (BSP taper) 10147 	90° Swivel elbow adaptor (BSP parallel) 10247 	Extended swivel elbow adaptor (BSP taper) 10154 	45° Swivel elbow adaptor (BSP parallel) 10257 	Elbow banjo assembly (non-Regulating BSP parallel) 10A51 	Elbow banjo assembly (regulating-out BSP parallel) 10K51 
Page 5-29	Page 5-30	Page 5-30	Page 5-30	Page 5-30	Page 5-31	Page 5-31

### Tee adaptors, connectors and banjos, 'Y' adaptors and connectors, 4-way connectors

Tee connector (tube x 3) 10060 	Tee adaptor (BSP taper) 10165 	Swivel tee adaptor (BSP taper) 10167 	Swivel tee adaptor (BSP parallel) 10267 	Tee banjo assembly (non-regulating parallel thread) 10A71 	Fixed side tee adaptor (BSP taper) 10175 	Swivel tee adaptor (BSP taper) 10168 	Swivel tee adaptor (BSP parallel) 10268 	4-way connector (tube x 4) 10090 
Page 5-31	Page 5-31	Page 5-32	Page 5-32	Page 5-32	Page 5-32	Page 5-33	Page 5-33	Page 5-33

### Banjo bodies and bolts

Elbow banjo body 10051 	Tee banjo body 10071 	Banjo bolt (non-regulating single stacking) 20A00 	Banjo bolt (non-regulating double stacking BSP parallel) 20B00 	Banjo bolt (non-regulating triple stacking BSP parallel) 20C00 	Banjo bolt (non-regulating single stacking with top port BSP parallel) 20*00 	Banjo bolt (regulating single stacking) 20*00 
Page 5-33	Page 5-34	Page 5-34	Page 5-34	Page 5-34	Page 5-34	Page 5-34/35

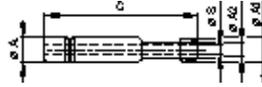
### Accessories, manifolds

Silencer (plug in) 10011 	Plug (acetel) 11004 
Page 5-35	Page 5-35

**Push-in fittings**  
**Pneufit**

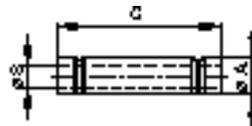
Ø 4 ... 14 mm tube size, BSP threads

**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

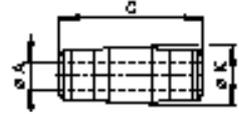
**Straight stem connector**  
**10022**



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

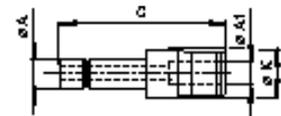
**Straight connector, tube to tube**  
**10020**

Dimensions shown in mm



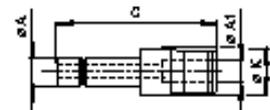
Ø A	C	Ø K	Model
4	30	10	100200400
5	32	11	100200500
6	33,5	12	100200600
8	35,5	14	100200800
10	44,5	17	100201000
12	51,5	20,5	100201200
14	52,5	21	100201400

**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**

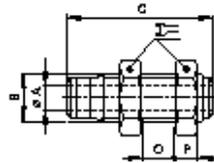


Ø A	Ø A1	C	Ø K	Model
4	6	35	12	100230406
6	8	37,5	14	100230608

## Push-in fittings Pneufit

Ø 4 ... 14 mm tube size, BSP threads

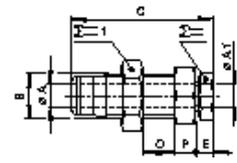
**Bulkhead connector, tube to tube**  
10029



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

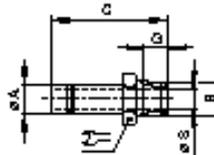
**Mixed bulkhead connector**  
10031

Dimensions shown in mm



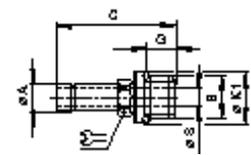
Ø A & Ø A1	B	C	E	O	P			Model
4	M12x1,0	27	6	9,5	9	8	17	100310404
6	M15x1,0	29,5	7	9,5	10	13	22	100310606
8	M18x1,5	33,5	8	11	10	13	24	100310808
10	M20x1,5	40	8	14,5	11	17	27	100311010
12	M24x1,5	44	9	17,5	11	19	30	100311212
14	M26x1,5	46	11,5	18,5	11	22	32	100311414

**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

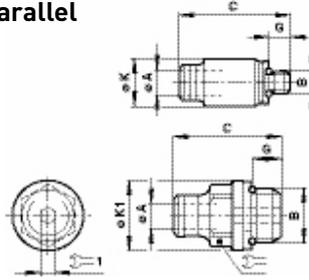


Ø A	B	C	G	Ø K1	Ø S		Model
4	G1/8	29	5	13,5	2,1	8	102150418
4	G1/4	33	7,5	17,5	2,1	10	102150428
5	G1/8	30,5	5	13,5	3,3	8	102150518
5	G1/4	34	7,5	17,5	3,3	10	102150528
6	G1/8	31	5	13,5	4	8	102150618
6	G1/4	34,5	7,5	17,5	4	10	102150628
8	G1/8	32,5	5	13,5	5	10	102150818
8	G1/4	35,5	7,5	17,5	6	10	102150828
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**

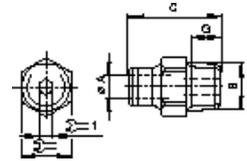
**Straight adaptor, BSP parallel  
10225**



Ø A	B	C	G	Ø K	Ø K1	1	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

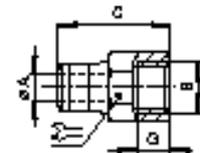
**Straight adaptor, BSP taper  
10125**

Dimensions shown in mm



Ø A	B	C	G	1	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**

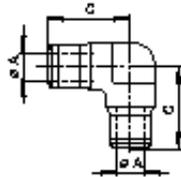


Ø A	B	C	G	1	Model
4	M5	22,5	5	10	102260405
4	G1/8	24,5	7,5	13	102260418
4	G1/4	29	5	17	102260428
5	M5	23,5	7,5	10	102260505
5	G1/8	25,5	7,5	13	102260518
5	G1/4	29,5	7,5	17	102260528
6	G1/8	26	11	13	102260618
6	G1/4	30,5	11	17	102260628
8	G1/8	27	11	13	102260818
8	G1/4	31,5	11	17	102260828
10	G1/4	36,5	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

## Push-in fittings Pneufit

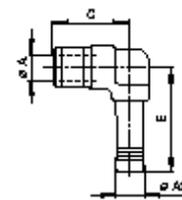
Ø 4 ... 14 mm tube size, BSP threads

### 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

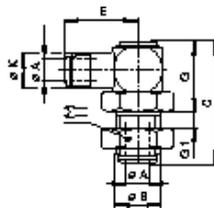
### Stem elbow connector 10043



Dimensions shown in mm

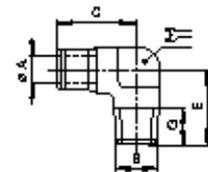
Ø A	Ø A1	C	E	Model
4	4	9,5	25	100430400
6	6	19	27,5	100430600
8	8	21	29,5	100430800
8	5	19,5	30	100430805

### 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

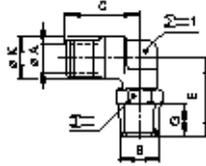


Ø A	B	C	E	G		Model
4	R1/8	15	17	7,5	7	101450418
4	R1/4	20	18	11	11	101450428
5	R1/8	15,5	18,5	7,5	7	101450518
5	R1/4	20	20	11	11	101450528
6	R1/8	16	19,5	7,5	8	101450618
6	R1/4	20	20	11	11	101450628
8	R1/8	17	21,5	7,5	11	101450818
8	R1/4	20	21,5	11	11	101450828
8	R3/8	23	22	12,5	13	101450838
8	R1/2	29	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

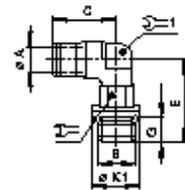
### 90° Swivel elbow adaptor, BSP taper 10147



Ø A	B	C	E	G	Ø K	1	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

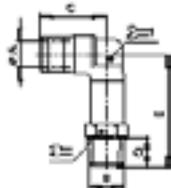
### 90° Swivel elbow adaptor, BSP parallel 10247

Dimensions shown in mm



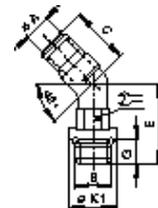
Ø A	B	C	E	G	Ø K1	1	1	Model
4	M3	17	16	3,5	-	8	7	102470403
4	M5	17	19	4	8	8	7	102470405
4	G1/8	17	22	5,5	14	11	7	102470418
4	G1/4	17	25,5	8	18	11	7	102470428
5	M5	18,5	20	4	8	8	9	102470505
5	G1/8	18,5	22,5	5,5	14	11	9	102470518
5	G1/4	18,5	26	8	18	11	9	102470528
6	M5	19,5	20,5	4	8	8	9	102470605
6	G1/8	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	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

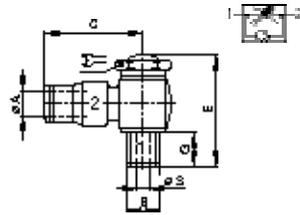


Ø A	B	C	E	G	Ø K1	1	Model
6	G1/8	17,5	19,5	5	14	11	102570618
6	G1/4	17,5	23	7,5	18	11	102570628
8	G1/8	19,5	20,5	5	14	11	102570818
8	G1/4	19,5	26	7,5	18	17	102570828

## Push-in fittings Pneufit

Ø 4 ... 14 mm tube size, BSP threads

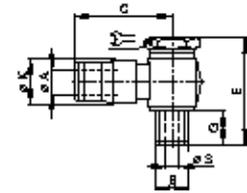
### Elbow banjo assembly, regulating-out BSP parallel 10K51



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

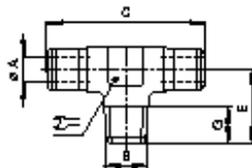
### Elbow banjo assembly, non-regulating BSP parallel 10A51

Dimensions shown in mm



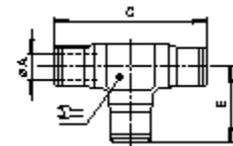
Ø A	B	C	E	G	Ø K	Ø S		Model
4	M5	18,5	22	4	9,5	2,5	8	10A510405
4	G1/8	20,5	30	6	11	5	14	10A510418
5	M5	20	22	4	11	2,5	8	10A510505
5	G1/8	21,5	30	6	11,5	5	14	10A510518
6	G1/8	23,5	30	6	12,5	5	14	10A510618
6	G1/4	24	34	7,5	13	8,5	17	10A510628
8	G1/8	23,5	30	6	14	5	14	10A510818
8	G1/4	24,5	34	7,5	14	8,5	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

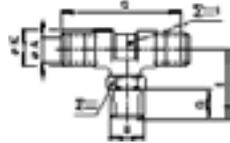


Ø A	C	E		Model
4	34	17	7	100600400
5	37	18,5	7	100600500
6	39	19,5	8	100600600
8	42,5	21,5	11	100600800
10	53,5	26,5	13	100601000
12	63,5	31,5	16	100601200
14	66,5	33	17	100601400

## Push-in fittings Pneufit

Ø 4 ... 14 mm tube size, BSP threads

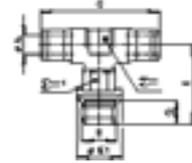
### Swivel tee adaptor, BSP taper 10167



Ø A	B	C	E	G	Ø K	1	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

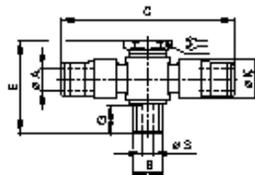
### Swivel tee adaptor, BSP parallel 10267

Dimensions shown in mm



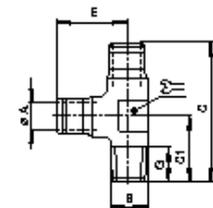
Ø A	B	C	E	G	Ø K1	1	1	Model
4	M3	34	16	3,5	-	7	8	102670403
4	M5	34	19,5	4	8	7	8	102670405
4	G1/8	34	22	5,5	14	7	11	102670418
5	M5	37	20	4	8	9	8	102670505
5	G1/8	37	22	5,5	14	9	11	102670518
5	G1/4	37	26	8	18	9	11	102670528
6	M5	39	20,5	4	8	9	8	102670605
6	G1/8	39	23	5,5	14	9	11	102670618
6	G1/4	39	26,5	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	1	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

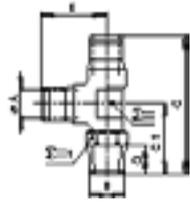


Ø A	B	C	C1	E	G	1	Model
4	R1/8	32	15	17	7,5	7	101750418
5	R1/8	34	15,5	18,5	7,5	7	101750518
5	R1/4	40	20	20	11	11	101750528
6	R1/8	35,5	16	19,5	7,5	8	101750618
6	R1/4	40	20	20	11	11	101750628
8	R1/8	38	17	21,5	7,5	11	101750818
8	R1/4	41,5	20	21,5	11	11	101750828
8	R3/8	45,5	23,5	22	12,5	13	101750838
10	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

## Push-in fittings Pneufit

Ø 4 ... 14 mm tube size, BSP threads

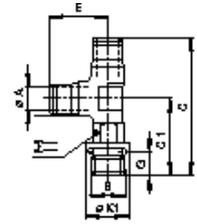
Swivel tee adaptor, BSP taper  
10168



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

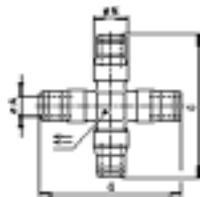
Swivel tee adaptor, BSP parallel  
10268

Dimensions shown in mm



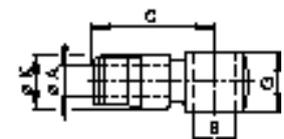
Ø A	B	C	C1	E	G	Ø K1		Model
4	M3	34	17	17	3,5	-	8	102680403
4	M5	36,5	19,5	17	4	8	8	102680405
4	G1/8	38,5	22	17	5,5	14	11	102680418
5	M5	39	20	18,5	4	8	8	102680505
5	G1/8	40,5	22,5	18,5	5,5	14	11	102680518
5	G1/4	44,5	26	18,5	8	18	11	102680528
6	G1/8	42,5	23	19,5	5,5	14	11	102680618
6	G1/4	46	26,5	19,5	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

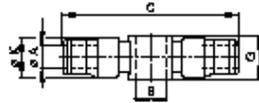


Ø A	B for screw	C	G	Ø K	Model
4	M5	18,5	12,5	9,5	100510405
4	G1/8	20,5	14	11	100510418
5	M5	20	12,5	11	100510505
5	G1/8	21,5	14	11,5	100510518
6	M5	22	12,5	12,5	100510605
6	G1/8	23,5	14	12,5	100510618
6	G1/4	24	16	13	100510628
8	G1/8	23,5	14	14	100510818
8	G1/4	24,5	16	14	100510828
8	G3/8	26,5	20,5	16,5	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

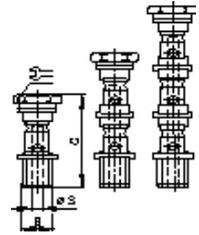
**Tee banjo body  
10071**



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



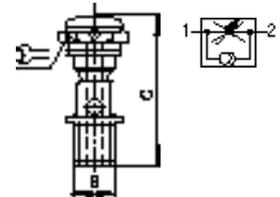
B	C	Ø S	Execution	E	Model
M5	22	2,5	single	8	20A000005
G1/8	29	5	single	14	20A000018
G1/4	33	8,5	single	17	20A000028
G3/8	41	10	single	22	20A000038
G1/2	49	11,5	single	27	20A000048
M5	34,5	2,5	double	8	20B000005
G1/8	46,5	5	double	14	20B000018
G1/4	52,5	8,5	double	17	20B000028
G3/8	64	10	double	22	20B000038
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	Ø S	E	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**

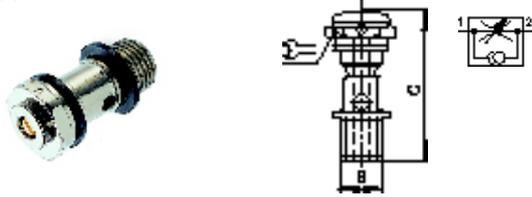


B	C	Triple	E	Model
M5	27,5	10 bar	8	20K000005
G1/8	34	10 bar	14	20K000018
G1/4	36,5	10 bar	17	20K000028
G3/8	51,5	10 bar	22	20K000038
G1/2	57	10 bar	27	20K000048

## Push-in fittings Pneufit

Ø 4 ... 14 mm tube size, BSP threads

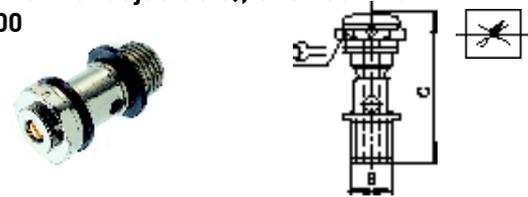
Regulating out banjo bolts single stacking,  
(screwdriver adjustable), reg in  
20L00



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

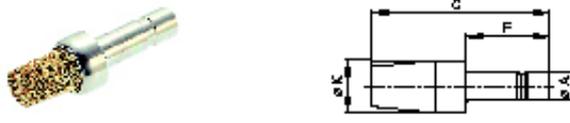
Regulating out banjo bolts  
single stacking  
(screwdriver adjustable), bi-directional  
20M00

Dimensions shown in mm



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 & 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

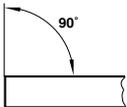
##### Tubing types:

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

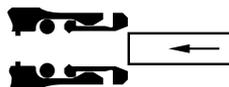
##### Materials

Body: nickel plated brass or glass filled nylon  
Collet: nickel plated brass  
'O'-ring: silicone free nitrile rubber (FPM optional)  
Washer: plastic sealing (parallel threads)  
Thread sealant: Non-PTFE

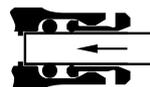
#### Method of assembly



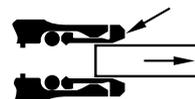
1. Ensure that the end of the tube is cut square and is free from burrs.



2. Push the tube through the collet into the fitting.

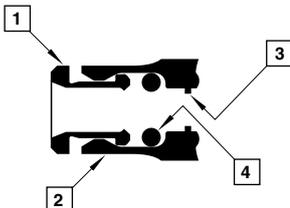


3. Continue pushing the tube through the 'O'-ring until it bottoms on the tube stop then pull back.



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

## Push-in fittings Pneufit

Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

### Straight adaptors, connectors and plugs

<p>Straight adaptor MM O/D tube to NPTF (male) thread 10425/12425</p>  <p>Page 5-38</p>	<p>Straight adaptor Inch O/D tube to BSPT thread 10125/12125</p>  <p>Page 5-38</p>	<p>Straight adaptor O/D tube to male NPTF taper 12425</p>  <p>Page 5-39</p>	<p>Straight adaptor O/D tube to male metric thread 12225/10225</p>  <p>Page 5-39</p>	<p>Straight adaptor O/D tube to female NPTF thread 12426</p>  <p>Page 5-39</p>	<p>Stem adaptor MM O/D stem to NPTF (male) thread 10415/12415</p>  <p>Page 5-39</p>	<p>Stem adaptor Inch O/D stem to BSPT thread 10115/12115</p>  <p>Page 5-39</p>	<p>Straight stem adaptor O/D tube stem to taper NPTF thread 12415</p>  <p>Page 5-40</p>
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<p>Straight connector Inch tube to MM tube 10020/12037</p>  <p>Page 5-40</p>	<p>Straight connector O/D tube to O/D tube 12020</p>  <p>Page 5-40</p>	<p>Bulkhead connector O/D tube to O/D tube 12029</p>  <p>Page 5-40</p>	<p>Expanding 12023</p>  <p>Page 5-40</p>	<p>Tube end expander/ reducer, tube stem to O/D tube 12023</p>  <p>Page 5-40</p>	<p>Straight stem connector 12022</p>  <p>Page 5-41</p>	<p>Plug 12004</p>  <p>Page 5-41</p>	<p>Plug 13004</p>  <p>Page 5-41</p>	<p>Stem tailpiece adaptor, O/D tube stem to hose bore 12019</p>  <p>Page 5-41</p>
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### Elbow adaptors, connectors and banjos

<p>Fixed elbow adaptor O/D tube to male BSPT thread 12145</p>  <p>Page 5-41</p>	<p>Fixed elbow adaptor O/D tube to male NPTF thread 12445</p>  <p>Page 5-42</p>	<p>Swivel male elbow O/D tube to male NPTF thread 12447</p>  <p>Page 5-42</p>	<p>Swivel elbow adaptor O/D tube to male BSPT thread 12147/10147</p>  <p>Page 5-42</p>	<p>Extended swivel elbow adaptor, O/D tube to male NPTF thread 12454</p>  <p>Page 5-43</p>	<p>Elbow connector O/D tube to O/D tube 12040</p>  <p>Page 5-43</p>
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### Tee adaptors, connectors and banjos

<p>Swivel tee adaptor O/D tube to male taper BSP thread 12167/10167</p>  <p>Page 5-43</p>	<p>Swivel male centre tee O/D tube to male NPTF thread 12467</p>  <p>Page 5-43</p>	<p>Tee connector O/D tube to O/D tube 12060</p>  <p>Page 5-43</p>	<p>Swivel side tee adaptor O/D tube to male taper BSP thread 12168/10168</p>  <p>Page 5-44</p>	<p>Swivel male side tee O/D tube to male taper NPTF thread 12468</p>  <p>Page 5-44</p>
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## Push-in fittings Pneufit

Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

### Typical dimensions

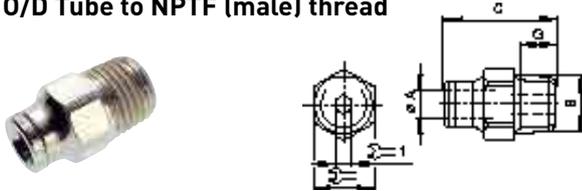
Dimensions shown in inch



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

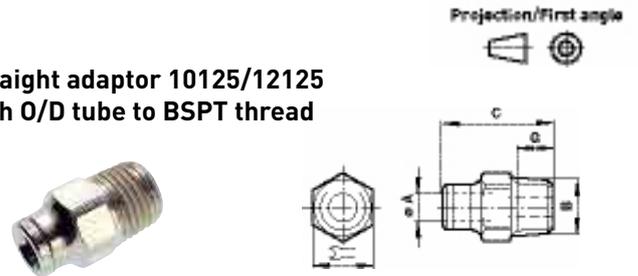
### Dimensions

**Straight adaptor 10425/12425**  
MM O/D Tube to NPTF (male) thread



O/D Tube A mm	Thread B	C	G			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

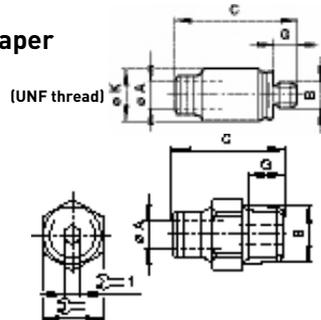


O/D Tube A	Thread B	C	G		Model
1/8"	R1/8	0.79	0.3	0.39	121250118
1/8"	R1/4	0.89	0.44	0.55	121250128
5/32"	R1/8	0.81	0.3	0.39	101250418
5/32"	R1/4	0.91	0.44	0.55	101250428
1/4"	R1/8	0.91	0.3	0.43	121250418
1/4"	R1/4	0.99	0.44	0.55	121250428
1/4"	R3/8	1.01	0.5	0.67	121250438
5/16"	R1/8	1.05	0.3	0.51	101250818
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

## Push-in fittings Pneufit

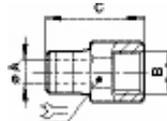
Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

### 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

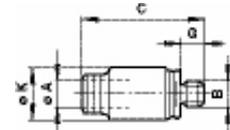
### Straight adaptor 12426 O/D tube to female NPTF thread



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

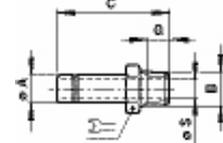
### Straight adaptor 12225/10225 O/D tube to male metric thread

Dimensions shown in inch



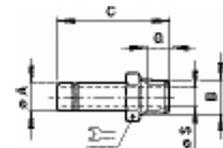
O/D Tube A	Thread B	C	G	Ø K	Model
1/8"	M5 x 0.8	0.78	0.2	0.31	122250105
5/32"	M5 x 0.8	0.84	0.2	0.35	102250405
3/16"	M5 x 0.8	0.9	0.2	0.39	122250305
1/4"	M5 x 0.8	0.94	0.2	0.43	122250405

### 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

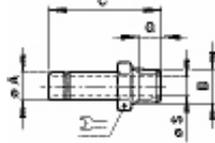


O/D Tube A	Thread B	C	G	Ø S		Model
5/32"	1/8 NPT	1.18	0.3	0.08	0.39	101150418
5/32"	1/4 NPT	1.32	0.44	0.08	0.55	101150428
1/4"	1/8 NPT	1.26	0.3	0.16	0.47	121150418
1/4"	1/4 NPT	1.4	0.44	0.16	0.55	121150428
5/16"	1/8 NPT	1.3	0.3	0.2	0.55	101150818
5/16"	1/4 NPT	1.44	0.44	0.2	0.55	101150828
3/8"	1/4 NPT	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**

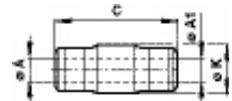
Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

**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"
5/32"	1/8 NPT	1.25	0.37	0.08	7/16"
5/32"	1/4 NPT	1.45	0.56	0.08	9/16"
1/4"	1/8 NPT	1.33	0.37	0.16	7/16"
1/4"	1/4 NPT	1.52	0.56	0.16	9/16"
5/16"	1/8 NPT	1.37	0.37	0.19	7/16"
5/16"	1/4 NPT	1.56	0.56	0.19	9/16"
3/8"	1/4 NPT	1.74	0.56	0.3	9/16"
3/8"	3/8 NPT	1.82	0.56	0.3	11/16"
1/2"	3/8 NPT	1.95	0.56	0.35	11/16"
1/2"	1/2 NPT	2.15	0.75	0.35	7/8"

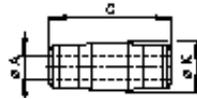
**Straight connector 10020/12037**  
inch tube to mm tube



Dimensions shown in inch

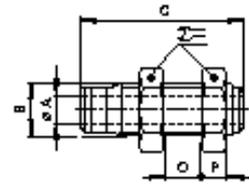
O/D Tube A	O/D Tube A1	C	Ø K	Model
5/32"	4 mm	1.17	0.35	100200400
3/16"	5 mm	1.26	0.43	120370305
1/4"	6 mm	1.28	0.47	120370406
5/16"	8 mm	1.35	0.55	100200800
3/8"	10 mm	1.71	0.66	120370610
1/2"	12 mm	1.98	0.81	120370712

**Straight connector 12020**  
O/D tube to O/D tube



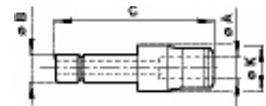
O/D Tube A	C	Ø K	Model
1/8"	1.15	0.35	120200100
5/32"	1.17	0.39	120200200
3/16"	1.26	0.43	120200300
1/4"	1.28	0.47	120200400
5/16"	1.35	0.55	120200500
3/8"	1.71	0.67	120200600
1/2"	1.98	0.81	120200700

**Bulkhead connector 12029**  
O/D tube to O/D tube

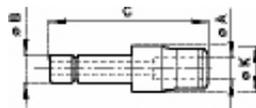


O/D Tube A	Thread B	C	O	P	Model
1/8"	M10 x 1.0	1.15	0.47	0.20	0.55
5/32"	M10 x 1.0	1.18	0.47	0.20	0.55
3/16"	M12 x 1.0	1.26	0.55	0.20	0.67
1/4"	M14 x 1.5	1.38	0.59	0.24	0.75
5/16"	M16 x 1.5	1.42	0.63	0.24	0.87
3/8"	M20 x 1.5	1.69	0.55	0.28	1.06
1/2"	M24 x 1.5	1.97	0.59	0.28	1.18

**Tube end reducer 12023**  
tube stem to O/D tube



**Tube end expander**  
tube stem to O/D tube 12023



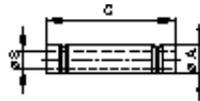
O/D Tube A	Stem O/D B	C	Ø K	Model
1/4"	1/8"	1.34	0.47	120230104
1/4"	5/32"	1.38	0.47	120230204
1/4"	3/16"	1.4	0.47	120230304

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

## Push-in fittings Pneufit

Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

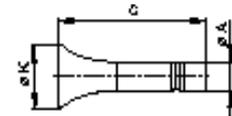
### Straight stem connector 12022



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

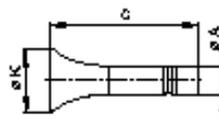
### Plug 12004 (Nickel plated brass)

Dimensions shown in inch



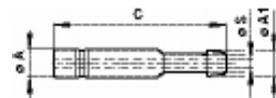
O/D Tube A	C	Ø K	Model
1/8"	1.02	0.34	120040100
5/32"	1.04	0.38	120040200
3/16"	1.1	0.42	120040300
1/4"	1.12	0.46	120040400
5/16"	1.16	0.5	120040500
3/8"	1.34	0.61	120040600
1/2"	1.48	0.66	120040700

### Plug 13004 (Plastic)



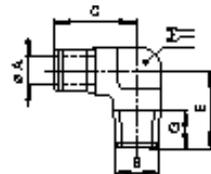
O/D Tube A	C	Ø K	Model
5/32"	1.04	0.38	130040200
3/16"	1.1	0.41	130040300
1/4"	1.12	0.46	130040400
5/16"	1.16	0.5	130040500
3/8"	1.34	0.61	130040600
1/2"	1.48	0.65	130040700

### Stem tailpiece adaptor 12019 O/D tube stem to hose bore



O/D Tube A	A1 mm	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

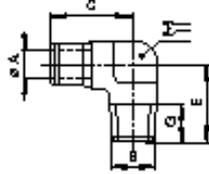


O/D Tube A	Thread B	C	E	G	Ø A	Model
1/8"	R1/8	0.66	0.63	0.34	0.27	121450118
3/16"	R1/8	0.72	0.65	0.34	0.27	121450318
1/4"	R1/8	0.77	0.67	0.34	0.42	121450418
3/16"	R1/4	0.78	0.8	0.44	0.38	121450328

## Push-in fittings Pneufit

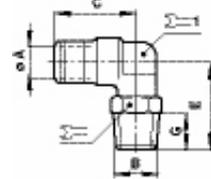
Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

### 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

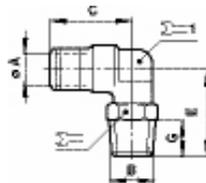
### Swivel male elbow 12447 O/D tube to male NPTF thread



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"	124470110
1/8"	1/8 NPT	0.63	0.82	0.37	7/16"	124470118
1/8"	1/4 NPT	0.68	1.07	0.37	9/16"	124470128
5/32"	10-32 UNF	0.67	0.77	0.2	5/16"	124470210
5/32"	1/8 NPT	0.67	0.86	0.37	7/16"	124470218
5/32"	1/4 NPT	0.67	1.07	0.56	9/16"	124470228
3/16"	1/8 NPT	0.72	0.88	0.37	7/16"	124470318
3/16"	1/4 NPT	0.72	1.09	0.56	9/16"	124470328
1/4"	1/8 NPT	0.77	0.9	0.37	7/16"	124470418
1/4"	1/4 NPT	0.77	1.11	0.56	9/16"	124470428
1/4"	3/8 NPT	0.8	1.15	0.56	3/4"	124470438
5/16"	1/8 NPT	0.84	0.96	0.37	9/16"	124470518
5/16"	1/4 NPT	0.84	1.15	0.56	9/16"	124470528
3/8"	1/8 NPT	1.05	1.05	0.37	9/16"	124470618
3/8"	1/4 NPT	1.05	1.26	0.56	11/16"	124470628
3/8"	3/8 NPT	1.05	1.26	0.56	3/4"	124470638
3/8"	1/2 NPT	1.05	1.48	0.75	7/8"	124470648
1/2"	1/4 NPT	1.25	1.37	0.56	3/4"	124470728
1/2"	3/8 NPT	1.25	1.41	0.56	3/4"	124470738
1/2"	1/2 NPT	1.25	1.62	0.75	7/8"	124470748

### Swivel elbow adaptor 12147/10147 O/D tube to male BSPT thread

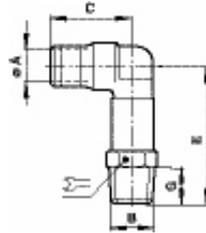


O/D Tube A	Thread B	C	E	G		Model
1/8"	R1/8	0.63	0.86	0.34	0.39	121470118
5/32"	R1/8	0.66	0.81	0.3	0.39	101400418
3/16"	R1/8	0.73	0.86	0.34	0.43	121470318
1/4"	R1/8	0.77	0.88	0.34	0.43	121470418
5/16"	R1/8	0.84	0.91	0.34	0.55	101470818
5/32"	R1/4	0.66	0.95	0.44	0.55	101470428
3/16"	R1/4	0.72	1.04	0.44	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

## Push-in fittings Pneufit

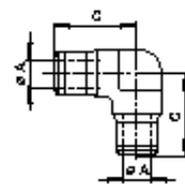
Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

### 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

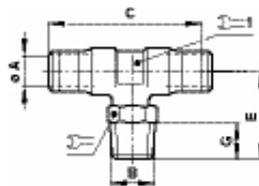
### Elbow connector 12040 O/D tube to O/D tube



Dimensions shown in inch

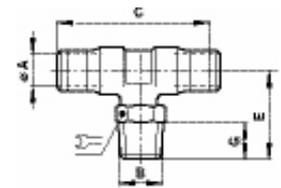
O/D Tube A	C	Model
1/8"	0.65	120400100
5/32"	0.67	120400200
3/16"	0.72	120400300
1/4"	0.77	120400400
5/16"	0.84	120400500
3/8"	1.05	120400600
1/2"	1.25	120400700

### Swivel tee adaptor 12167/10167 O/D tube to male taper BSP thread



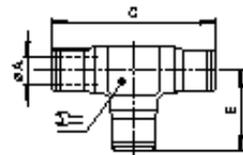
O/D Tube A	Thread B	C	E	G			Model
5/32"	R1/8	1.33	0.81	0.34	0.39	0.28	101670418
1/4"	R1/8	1.54	0.88	0.34	0.34	0.35	121670418
5/32"	R1/4	1.33	0.95	0.44	0.55	0.28	101670428
1/4"	R1/4	1.54	0.99	0.44	0.43	0.35	121670428
3/8"	R1/4	2.1	1.13	0.44	0.43	0.52	121670618
1/2"	R1/4	2.5	1.25	0.44	0.43	0.63	121670728
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

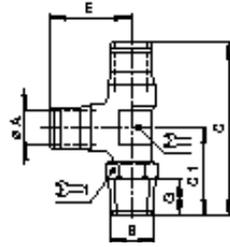


O/D Tube A	C	E	Ø K		Model
1/8"	1.26	0.63	0.32	0.2	120600100
5/32"	1.34	0.67	0.4	0.28	120600200
3/16"	1.44	0.72	0.44	0.28	120600300
1/4"	1.54	0.77	0.48	0.31	120600400
5/16"	1.68	0.84	0.56	0.43	120600500
3/8"	2.1	1.05	0.67	0.52	120600600
1/2"	2.5	1.25	0.81	0.63	120600700

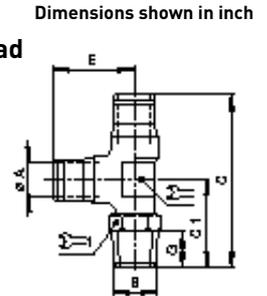
**Push-in fittings**  
**Pneufit**

Ø 1/8" ... 1/2", Ø 4 ... 12 mm tube size, BSP & NPT threads

**Swivel side tee adaptor, O/D tube to male taper**  
**BSP thread**  
**12168/10168**



**Swivel male side tee adaptor, O/D tube to male taper NPTF thread**  
**12468**



O/D Tube A	Thread B	C	C1	E	G			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

O/D Tube A	Thread B	C	C1	E	G			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 (Acetal for M5 items)

## BSP & HOSE

### M5, 1/8" ... 1"

#### Straight adaptors, connectors and plugs

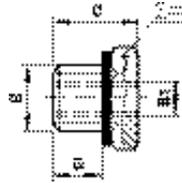
BSP connector - reducer 16023	BSP connector - expander 16023	BSP connector - reducer 15023	BSP connector - expander 15023	Bulkhead connector 16029	Sleeve adaptor 16022	Adaptor NPTF - BSPT 15423	Adaptor BSPT - NPTF 17223	
								
Page 5-47	Page 5-47	Page 5-47	Page 5-47	Page 5-48	Page 5-48	Page 5-48	Page 5-48	
Nipple adaptor 15020	Nipple adaptor 16020	Nipple adaptor 15420	Flat union 15033	Plug 15005	Plug 16005	Plug 25013	Hose adaptor 29117	Hose adaptor 29217
								
Page 5-48	Page 5-49	Page 5-50	Page 5-50	Page 5-50				

#### Elbow adaptors and T-connectors

Elbow 16042	Elbow 15043	Elbow 15040	Tee connector 16062	Tee 15060	Tee 15069
					
Page 5-50	Page 5-50	Page 5-51	Page 5-51	Page 5-51	Page 5-51

#### Elbow banjos

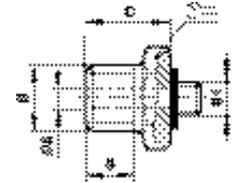
Cross 16092	Cross block 16094	Manifold 34050	Elbow banjo assembly regulating out 14451	Elbow banjo assembly non-regulating 14452	Elbow banjo body 16051
					
Page 5-51	Page 5-51	Page 5-51	Page 5-52	Page 5-52	Page 5-52

**BSP connector – reducer 16023**  
**ISO G parallel thread with seal**


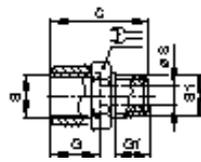
B	B1	C	G		Model
G1/8	M5	10,5	6	14	160231805
G1/4	M5	15,5	7,5	17	160232805
G1/4	G1/8	13	8	17	160232818
G3/8	G1/8	14	9	19	160233818
G3/8	G1/4	14	9	19	160233828
G1/2	G1/8	15,5	10	24	160234818
G1/2	G1/4	15,5	10	24	160234828
G1/2	G3/8	15,5	10	24	160234838
G3/4	G1/4	23	14	32	160236828
G3/4	G3/8	17,5	12	30	160236838
G3/4	G1/2	17,5	12	30	160236848

**BSP connector – expander 16023**  
**ISO G parallel thread with seal**

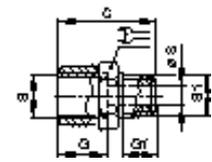
Dimensions shown in mm



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

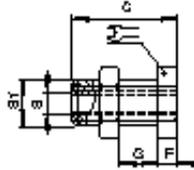
**BSP connector – expander 15023**  
**ISO R taper thread**


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

## BSP & HOSE

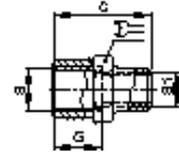
### M5, 1/8" ... 1"

#### 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

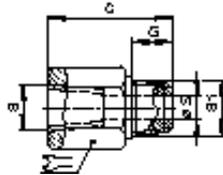
#### Sleeve adaptor 16022 ISO G parallel thread



Dimensions shown in mm

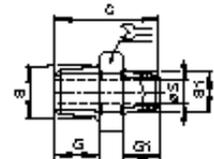
B	B1	C	G		Model
M5	M5	11	11	8	160220505
G1/8	M5	13	7,5	14	160221805
G1/8	G1/8	15	15	14	160221818
G1/4	G1/8	19	9,5	17	160222818
G1/4	G1/4	22	22	17	160222828
G3/8	G1/8	20	10,5	22	160223818
G3/8	G1/4	23	10,5	22	160223828
G3/8	G3/8	24	24	22	160223838
G1/2	G1/8	24	13	24	160224818
G1/2	G1/4	25	13	24	160224828
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

#### Adaptor 15423 NPTF – BSPT thread



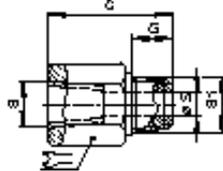
B	B1	C	G	Ø S		Model
1/8 NPT	R1/8	27,5	9,5	4,5	15	154231818
1/4 NPT	R1/4	36	11	7,5	19	154232828
3/8 NPT	R3/8	38	12,5	9,5	22	154233838
1/2 NPT	R1/2	47	16	13	27	154234848
3/4 NPT	R3/4	50	19	17,5	36	154236868

#### Nipple adaptor 15020 ISO R taper thread

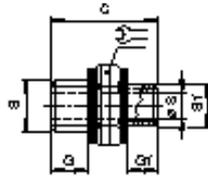


B	B1	C	G	G1	Ø S		Model
R1/8	R1/8	19,5	7,5	7,5	5,5	12	150201818
R1/4	R1/8	23,5	11	7,5	5,5	14	150202818
R1/4	R1/4	27	11	11	6,4	14	150202828
R3/8	R1/8	24	11,5	7,5	5,5	17	150203818
R3/8	R1/4	27,5	11,5	11	8	17	150203828
R3/8	R3/8	28	11,5	11,5	11	17	150203838
R1/2	R1/8	27	14	7,5	5,5	22	150204818
R1/2	R1/4	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

#### Adaptor 17223 BSPT – NPTF thread



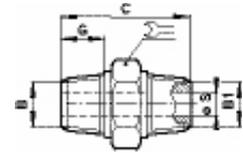
B	B1	C	G	Ø S		Model
R1/4	1/4 NPT	33,5	14,5	7,5	19	172232828
R3/8	3/8 NPT	33,5	14,5	9,5	24	172233838
R1/2	1/2 NPT	44	19	12,5	27	172234848

**Nipple adaptor 16020**  
**ISO G parallel thread with seal**


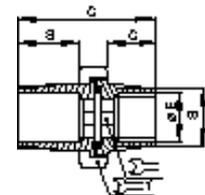
B	B1	C	G	G1	Ø S		Model
M5	M5	11,5	4	4	2	8	160200505
G1/8	M5	14,5	6	4	2	14	160201805
G1/8	G1/8	16,5	6	6	5,5	14	160201818
G1/4	G1/8	19	8	6	5,5	17	160202818
G1/4	G1/4	21	8	8	8	17	160202828
G3/8	G1/4	22	9	8	8	19	160203828
G3/8	G3/8	23	9	9	11	19	160203838
G1/2	G1/4	23,5	10	8	8	24	160204828
G1/2	G3/8	24,5	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

**Nipple adaptor 15420**  
**NPT thread**

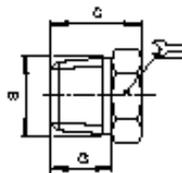
Dimensions shown in mm



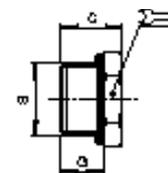
B	B1	C	Ø D	G	G1		Model
1/8 NPT	R1/8	27	4,5	9,5	9,5	11	154201818
1/4 NPT	R1/4	3,5	7,5	11	14,5	14	154202828
3/8 NPT	R3/8	37	9,5	12,5	14,5	17	154203838
1/2 NPT	R1/2	46,5	12,5	16	19	22	154204848
3/4 NPT	R3/4	47,5	17,5	19	19	27	154206868

**Flat union 15033**  
**ISO R taper thread**


B	C	E	F			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 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

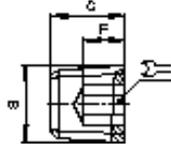
**Plug 16005**  
**ISO G parallel thread with seal**


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

**BSP & HOSE**

**M5, 1/8" ... 1"**

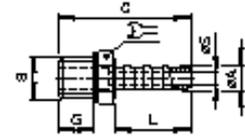
**Plug 25013**  
ISO R taper thread



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

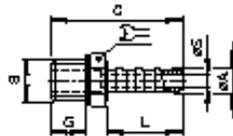
**Hose adaptor 29217**  
metric and ISO G parallel thread  
with seal

Dimensions shown in mm



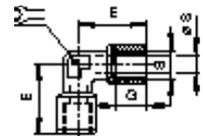
Ø A	B	C	G	L	Ø S min.	⌀	Model
2,5	M3	14	3,5	7,5	1,8	5	292170203
3	M5	15,5	3,5	7,5	2	8	292170305
3	G1/8	21	7,5	7,5	2	14	292170318
4	G1/8	36,5	7,5	22,5	3,3	14	292170418
4	G1/4	40,5	10	22,5	3,3	19	292170428
5	G1/8	36,5	7,5	22,5	4	14	292170518
6	G1/8	36,5	7,5	22,5	5	14	292170618
6	G1/4	40,5	10	22,5	5	19	292170628
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

**Hose adaptor 29117**  
ISO R taper thread



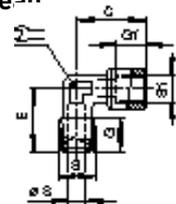
Ø A	B	C	G	L	Ø S min.	⌀	Model
4	R1/8	32	7,5	19,5	3,2	12	291170418
6	R1/8	32	7,5	19,5	3,2	12	291170618
6	R1/4	35,5	11	19,5	3,2	14	291170628
6	R3/8	42,5	14,5	22,5	5	17	291170638
7	R1/8	32	7,5	19,5	5	12	291170718
7	R1/4	35,5	11	19,5	6	14	291170728
7	R3/8	36	11,5	19,5	6	17	291170738
8	R1/4	35,5	11	19,5	7,5	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

**Elbow 16042**  
ISO G parallel thread



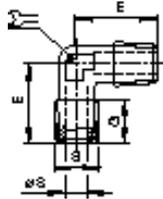
B	E	G	Ø S	⌀	Model
G1/8	21	7	5,5	12	160420018
G1/4	25,5	9,5	8	13	160420028
G3/8	28	11,5	11	16	160420038
G1/2	32	15	15	20	160420048
G3/4	36,5	14,5	19	27	160420068

**Elbow 15043**  
ISO G parallel and ISO R taper thread



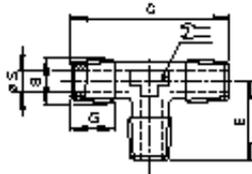
B	B1	C	E	G	G1	Ø S	⌀	Model
R1/8	G1/8	21	18,5	8	7	5,5	12	150430018
R1/4	G1/4	25,5	24	11	9,5	8	13	150430028
R3/8	G3/8	28	27	11,5	11,5	11	16	150430038
R1/2	G1/2	32	29,5	14	13	15	20	150430048
R3/4	G3/4	36,5	32	14,5	14,5	19	27	150430068

**Elbow 15040**  
ISO R taper thread



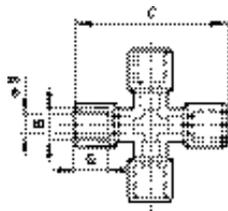
B	E	G	ØS	Symbol	Model
R1/8	18,5	7,5	6	12	150400018
R1/4	24	11	8	13	150400028
R3/8	27	12	11	16	150400038
R1/2	29,5	14	15	20	150400048

**Tee 15060**  
ISO R taper thread



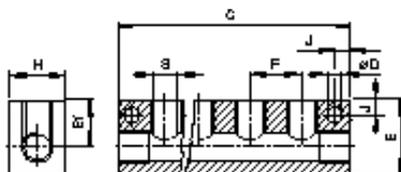
B	C	E	G	ØS	Symbol	Model
R1/4	46	23	11	8	13	150600028

**Cross 16092**  
ISO G parallel thread



B	C	G	ØS	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 outlets: 4**

B	C	ØD	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

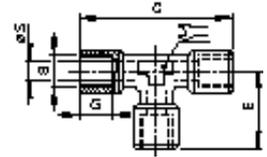
**Numbers of outlets: 6**

B	C	ØD	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

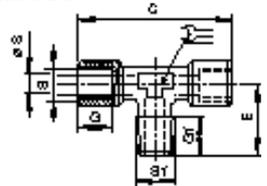


Dimensions shown in mm



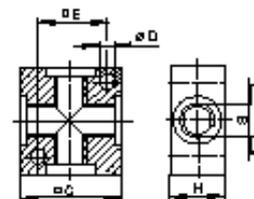
B	C	E	G	ØS	Symbol	Model
G1/8	39	19,5	8,5	6	12	160620018
G1/4	49	14,5	11	8	13	160620028
G3/8	54	27	12	11	16	160620038
G1/2	64	29	15	15	20	160620048
G3/4	73	36,5	14,5	19	27	160620068

**Tee 15069**  
ISO G parallel and ISO R taper thread



B	B1	C	E	G	G1	ØS	Symbol	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

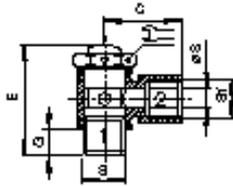


B	C	ØD	E	H	Model
G1/8	25	4,5	17,5	16	160940018
G1/4	40	5,5	27	20	160940028
G3/8	50	5,5	35	25	160940038
G1/2	50	5,5	35	32	160940048

**BSP & HOSE**

**M5, 1/8" ... 1"**

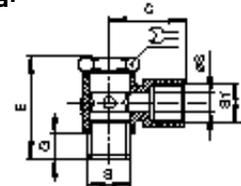
**Elbow banjo assembly 16K51**  
regulating out, operating pressure 10 bar,  
ISO G parallel thread with seal



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

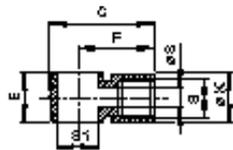
**Elbow banjo assembly 16A51**  
non-regulating  
ISO G parallel thread with seal

Dimensions shown in mm



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



## PRODUCTS

6-02	Fast find guide		
6-03	Nylon tube	Ø 3 ... 16 mm	PA2
6-05	Nylon tube	Ø 1/8" ... 3/4"	PB
6-06	Rail vehicle approved fire and smoke resistant nylon tube	Ø 6 ... 12 mm	LPA2, LPA3
<b>6-08</b>	<b>Feature page 'Rail industry innovation'</b>		

# FAST FIND **GUIDE**



TUBING

6

**PA2**

Nylon tube  
Ø 3 ... 16 mm



Page 6-03

**PB**

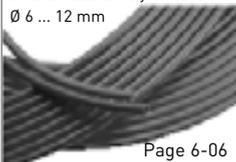
Nylon tube  
Ø 1/8" ... 3/4"



Page 6-05

**LPA2, LPA3**

Rail vehicle approved fire and  
smoke resistant nylon tube  
Ø 6 ... 12 mm



Page 6-06

# 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



## 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 radii

	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, multiply working pressure at -40 ... +20°C by factor given in table  
Maximum continuous working temperature: +80°C

### Accessories

Tubing channels			Tube clips – single sided			Tube cutter	
Model	Tube Ø	No. of channels	Model	Tube Ø	Number of tubes	Model	Description
100HA0600	6	10	34021804	6	1	M/3314	Cutter
100HA0800	8	10	34021904	6	2	39012010	Replacement blade (pack of 10)
100H61200	12	6	34021805	8	1	39012061	Replacement blade (1-off)
			34021905	8	2		
			34021806	10	1		
			34021906	10	2		
			34021807	12	1		
			34021907	12	2		
			34021508	16	1		

# Nylon tube PB

Ø 1/8" ... 3/4"

- Strong, lightweight and flexible
- Available in a range of colours for ease of identification
- Meets UL 94HB flammability standard
- Heat and UV light stabilized
- Resistant to corrosion and stress cracking
- Supplied in 100 ft. (30m) coils packed in polyethylene bags



+20°C (+68°F)

-40°C (-40°F)



## Technical features

### Medium:

Compressed air, nitrogen and inert gases  
Consult our Technical Service for use with other fluids

### Operating pressure range:

Refer to specific tube size below  
**Diameter tolerances:**  
+0,002"; - 0,004"

### Temperature range:

-50°C ... +90°C refer below for further information

### Material

Nylon PA11, hardness:  
78 Rockwell R

## Technical data

Colour	Length (ft.)	O/D I/D tube 1/8"	3/16"	1/4"	5/16"	3/8"	1/2"
			0,093"	0,138"	0,180"	0,232"	0,275"
Natural	100' coils	PB0051100	PB0053100	PB0054100	PB0055100	PB0056100	PB0057100
Black	100' coils	PB0751100	PB0753100	PB0754100	PB0755100	PB0756100	PB0757100
Blue	100' coils	PB0551100	PB0553100	PB0554100	PB0555100	PB0556100	PB0557100
Red	100' coils	PB0151100	PB0153100	PB0154100	PB0155100	PB0156100	PB0157100

## Option selector

PB0★5★100

Colour	Substitute
Natural	0
Red	1
Blue	5
Black	7

Outer diameter	Substitute
1/8"	1
3/16"	3
1/4"	4
5/16"	5
3/8"	6
1/2"	7

## Maximum operating pressure (normal temperature range), bend radii and weight

		Ø 1/8"	Ø3/16"	Ø1/4"	Ø5/16"	Ø3/8"	Ø1/2"
		Max pressure	at 25°C	18 bar	17,3 bar	19,3 bar	16 bar
	at 65°C	10,7bar	10,7bar	11,3 bar	9,3 bar	10 bar	93 bar
Min. bend radius		1/2"	5/8"	1"	1 1/2"	1 1/2"	2 1/4"
Weight (100' coils)		0,113 kg	0,249 kg	0,513 kg	0,744 kg	1,111 kg	1,869 kg

Pressure factor of safety 4:1

Consult our technical service for maximum operating pressures outside ranges stated above

## 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
34021907	1/2"	2

### 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	60
8	1	6	19	57	80
8	1,5	5	30	90	80
10	1	8	14	42	110
12	1,5	9	19	57	110

\* Multiply by factors in the below table for use at higher temperatures

### Pressure/temperature conversion 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

Flamability 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

## RAIL INDUSTRY INNOVATION

### MODULAR 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.

### MULTI-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.



MODULAR DOOR CONTROL ASSEMBLY  
courtesy of Train Door Solutions Ltd. (TDS)



MULTI-STAGE  
FILTRATION SYSTEM



ALUMINIUM FITTINGS ARE  
65% LIGHTER

# ACCESSORIES



## PRODUCTS

7-02 Fast find guide

**7-03 Feature page 'Global reach - Global manufacturing and support'**

7-04	Block form flow regulators (uni-directional)	1/8" & 1/4"	LT1000
7-06	Block form flow regulators (bi-directional)	1/8" & 1/4"	LT1100
7-08	Quick exhaust valves	1/8" & 1/4"	LT70
7-10	Heavy duty non-return valves	1/4" ... 1"	LS/520, LC/520
7-11	Shuttle valves ('OR' logic function)	1/8" & 1/4"	LT65
7-12	Quietaire sintered bronze silencers	M5, 1/8" ... 1"	T40
7-14	Heavy duty silencers	1/8" ... 2"	MA & MB
7-16	Exhaust filter	G1/8 ... G1	M/1500
7-17	Exhaust guard	1/4" & 1/2"	0613422, 0613423
7-18	Ball valves	G1/8 ... G3	60 series
7-24	Ball valves	G1/4 or interface version	T10
7-27	Strainer	G1/4 ... G2	0310000

# FAST FIND GUIDE



**LT1000**  
Block form flow regulators  
(uni-directional)  
1/8" & 1/4"



Page 7-04

**LT1100**  
Block form flow regulators  
(bi-directional)  
1/8" & 1/4"



Page 7-06

**LT70**  
Quick exhaust valves  
1/8" & 1/4"



Page 7-08

**LS/520, LC/520**  
Heavy duty non-return valves  
1/4" ... 1"



Page 7-10

**LT65**  
Shuttle valves  
(‘OR’ logic function)  
1/8" & 1/4"



Page 7-11

**T40**  
Quietaire sintered bronze  
silencers  
M5, 1/8" ... 1"



Page 7-12

**MA & MB**  
Heavy duty silencers  
1/8" ... 2"



Page 7-14

**M/1500**  
Exhaust filter  
G1/8 ... G1



Page 7-16

**0613422, 0613423**  
Exhaust guard  
1/4" & 1/2"



Page 7-17

**60 series**  
Ball valves  
G1/8 ... G3



Page 7-18

**T10**  
Ball valves  
G1/4 or interface version



Page 7-24

**0310000**  
Strainer  
G1/4 ... G2



Page 7-27



- Norgren Sales and Manufacturing Locations
- Norgren Sales Locations
- Norgren Technical Centres

## GLOBAL REACH GLOBAL MANUFACTURING AND SUPPORT

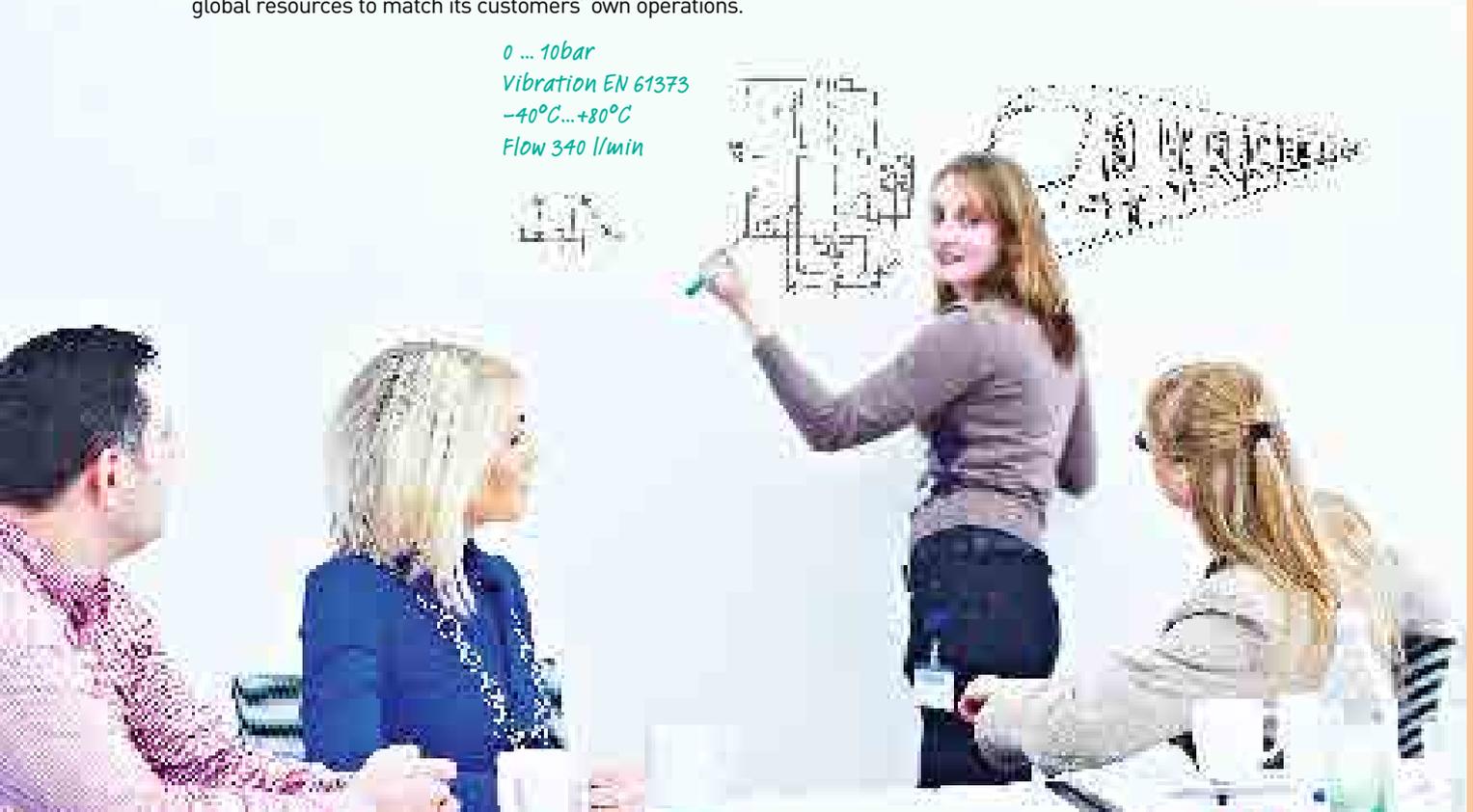
“SALES AND MANUFACTURING FACILITIES IN 75 COUNTRIES GIVE US THE GLOBAL REACH, UNDERSTANDING AND CAPABILITIES THAT CUSTOMERS LOOK FOR”

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.

→ 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.

0 ... 10bar  
Vibration EN 61373  
-40°C...+80°C  
Flow 340 l/min



## 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



+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 dm <sup>3</sup> /s.bar	Cv	Kv m <sup>3</sup> /h	Free flow factor C dm <sup>3</sup> /s	Cv	Kv m <sup>3</sup> /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

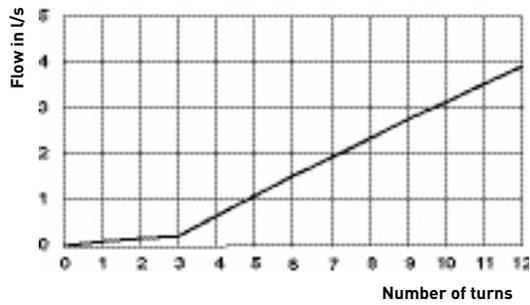
Thread form	Substitute
ISO G parallel	C
NPT	A

Port size	Substitute
1/8"	18
1/4"	28

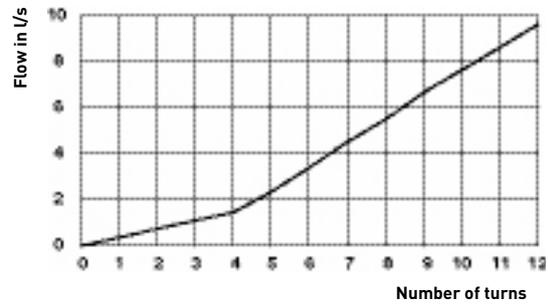
**Block form flow regulators (uni-directional)**  
**LT1000**  
**1/8" & 1/4"**

**Flow vs turns at 6 bar – flow in dm<sup>3</sup>/s**

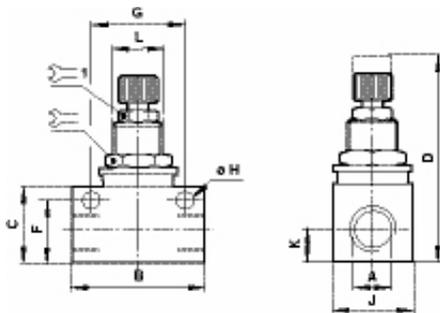
**1/8" version**



**1/4" version**



**Dimensions**



Dimensions shown in mm  
Projection/First angle



A	B	C	D	F	G	H	J	K	L			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



### 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		Kv m <sup>3</sup> /h	Min. operating pressure (bar)	Opening pressure (bar)	Weight (kg)	Model
		C dm <sup>3</sup> /s.bar	Cv					
	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

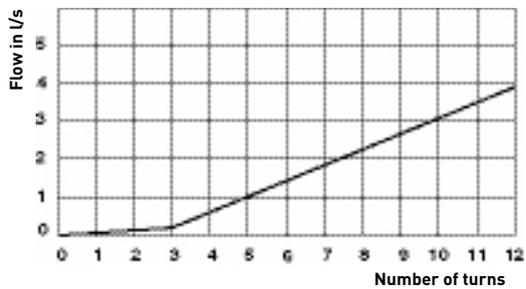
Thread form	Substitute
ISO G parallel	C
NPT	A

Port size	Substitute
1/8"	18
1/4"	28

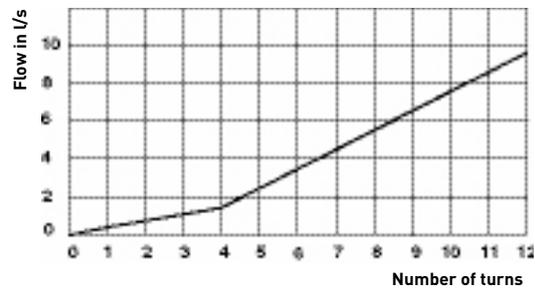
**Block form flow regulators (bi-directional)  
LT1100  
1/8" & 1/4"**

**Flow vs turns at 6 bar – flow in dm<sup>3</sup>/s**

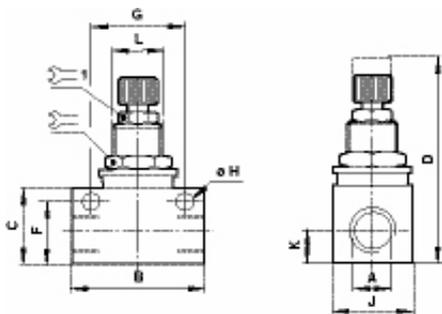
**1/8" version**



**1/4" version**



**Dimensions**



Dimensions shown in mm  
Projection/First angle



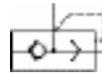
A	B	C	D	F	G	H	J	K	L	⌀	⌀ <sub>1</sub>	Panel hole	Max. panel thickness	Model
1/8"	34,0	20,0	51,0	16,5	24,0	4,5	16,0	8,0	M12 x 1	14	9	12,5	4,0	LT1100#1800
1/4"	45,0	25,4	61,5	20,8	32,0	4,5	19	9,5	M14 x 1	17	9	14,5	4,0	LT1100#2800

# Please insert 'C' for ISO G and 'A' for NPT thread

## Quick exhaust valve LT70

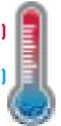
1/8" & 1/4"

- 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



+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)		Flow factor Cv		Flow at 6 bar operating pressure (m³/h)		Weight		Spare kits	Model with ISO G-threads	Model with NPT-threads
		1-2	2-3	1-2	2-3	1-2	2-3	kg	lb			
	1/8"	1,06	1,23	0,9	1,8	95,80	110,9	0,15	0,33	LT70C1800KO	LT70C1800	LT70A1800
	1/4"	2,23	2,46	1,9	2,5	201,6	221,8	0,13	0,29	LT70C2800KO	LT70C2800	LT70A2800

\*1) Measured in m³/h

### Option selector

LT70★★800

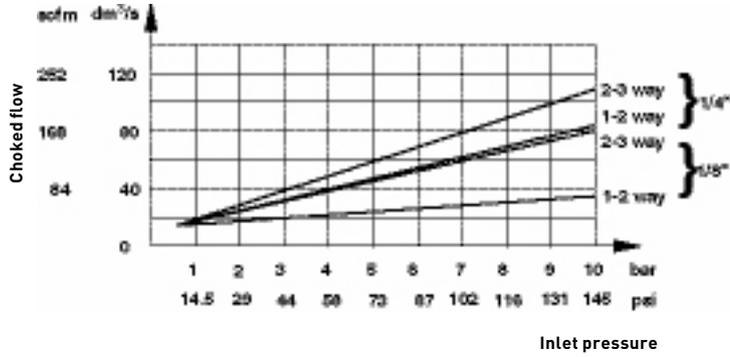
Thread form	Substitute
NPT	A
ISO G parallel	C

Port size	Substitute
1/8"	1
1/4"	2

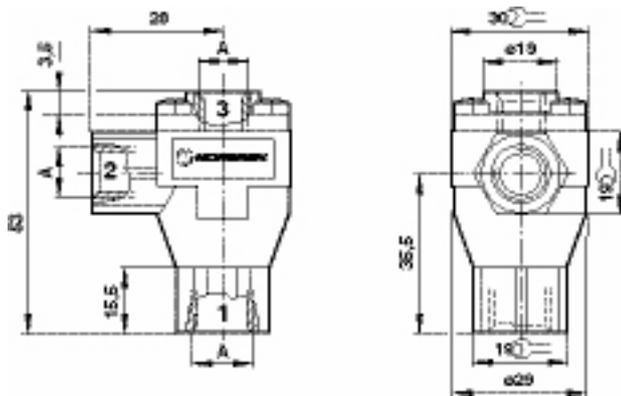
**Quick exhaust valve  
LT70  
1/8" & 1/4"**

**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 insert '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



### 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 dm <sup>3</sup> /s.bar	Cv	Kv m <sup>3</sup> /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
	3/4 NPT	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

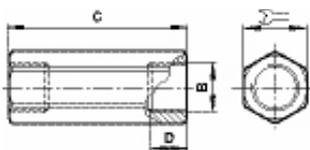
L★5★★

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

1/8" & 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



+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)

### Port size:

G1/8, G1/4, 1/8 NPT or 1/4 NPT

### Mounting:

Line mounted

### 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

1/8" version

Body: zinc alloy

Ball: chrome

Valve seat: brass

1/4" version

Body: brass

Ball: stainless steel

Seat: brass

Seals: low nitrile

## Technical data

Symbol	Port size	C dm <sup>3</sup> /s.bar	Cv	Kv m <sup>3</sup> /h	Flow at 6 - 5 bar (l/min)	Weight (kg)	Model
	G1/8	1,7	0,42	0,36	412	0,055	LT65C1800
	1/8 NPT	1,7	0,42	0,36	412	0,055	LT65A1800
	G1/4	2,6	0,64	0,56	631	0,42	LT65C2800
	1/4 NPT	2,6	0,64	0,56	631	0,42	LT65A2800

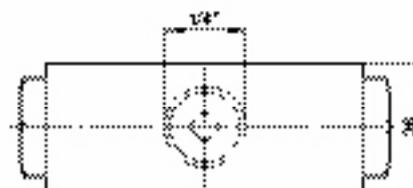
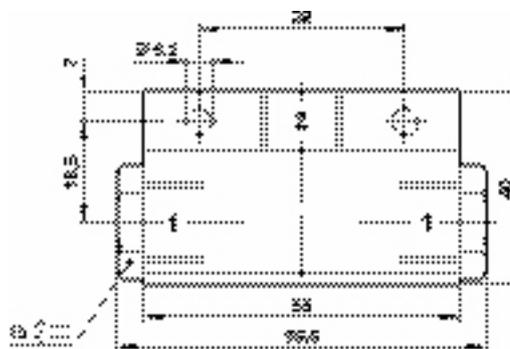
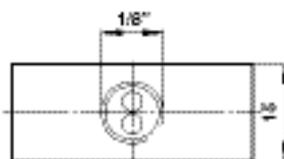
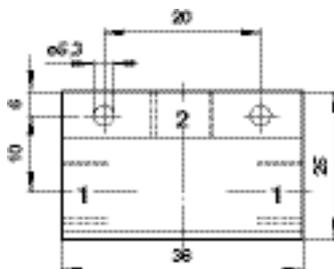
## Option selector

LT65★☆☆00

Thread form	Substitute
NPT	A
ISO G parallel	C

Port size	Substitute
1/8"	18
1/4"	28

## 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



+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)		Weight		Model with ISO G-threads BSPP	Model with ISO R-threads BSPT
				0,7 bar	6 bar	kg	lb		
	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<sup>3</sup>/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

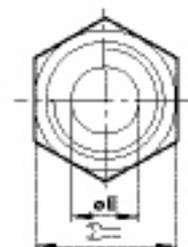
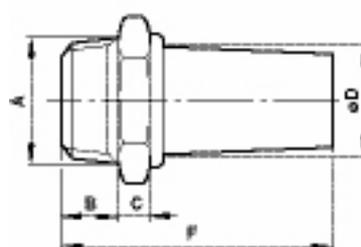
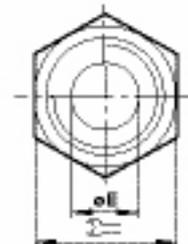
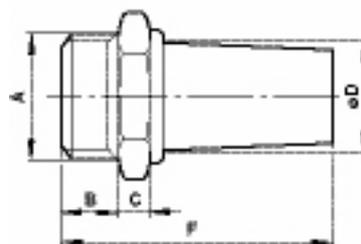
M5, 1/8" ... 1"

### Dimensions

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

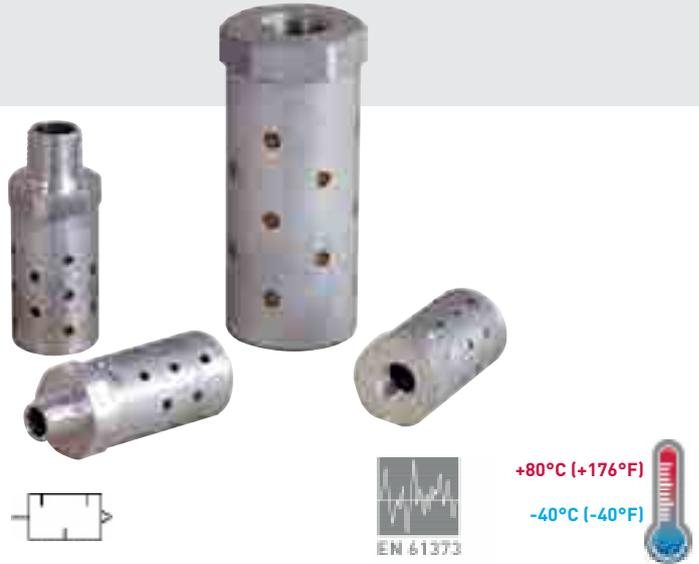
Dimensions shown in mm  
Projection/First angle



## 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



+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<sup>3</sup>/(s.bar)

\*2) Measured in m<sup>3</sup>/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

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

MB★★★★

Thread form	Substitute
NPT	A
ISO R	B

# Heavy duty silencers MA & MB series 1/8" ... 2"

## Female thread

MA★★★★

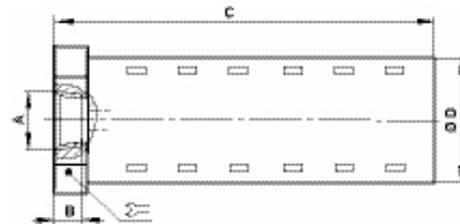
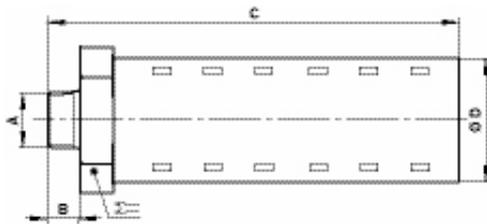
Port size	Substitute
1/8"	001
1/4"	002
3/8"	003
1/2"	004
3/4"	006
1"	008
1 1/4"	010
1 1/2"	012
2"	016

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#

# Thread form: A = NPT, B = ISO R

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#

# Thread form: A = NPT, B = ISO Rc, C = 1 1/4" ... 2" only

## 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



+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

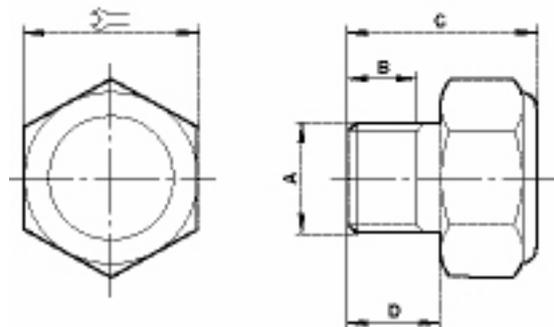
	Port size	Flow factor		Weight		Model
		Cv	Kv *1)	kg	lb	
	G1/8	0,49	0,426	0,006	0.013	M/1511
	G1/4	1,37	1,19	0,018	0.040	M/1512
	G1/2	2,75	2,39	0,030	0.066	M/1514
	G3/4	5,05	4,39	0,050	0.110	M/1516
	G1	6,47	5,62	0,091	0.200	M/1518

\*1) Measured in m<sup>3</sup>/h

### Dimensions

A	B	C	D		Model
G1/8	6	16	8	15	M/1511
G1/4	8	22	10	23,5	M/1512
G1/2	10,5	25	13	30,5	M/1514
G3/4	14	31	16	42,5	M/1516
G1	15	35	19	47	M/1518

Dimensions shown in mm  
Projection/First angle



**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



+80°C (+176°F)

-55°C (-67°F)



**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:**

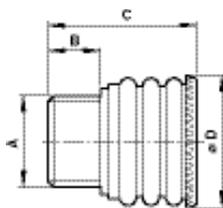
-55 ... +80°C (-67 ... +176°F)

**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

**Ball valves**  
**60 series**  
**G1/8 ... G3**

**Ideally suited for most general purpose 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 pressure and temperature range**



**Technical features**

**Medium:**

Compressed air, water, inert gases and any other fluid compatible with the valve materials

**Port size:**

Mini G1/8 ... G1/2  
Standard G1/8 ... G3  
3-way G1/4 ... G3/4

**Operating pressure:**

See individual details

**Fluid/Ambient temperature:**

-30 ... +220°C (-22 ... +428°F), details, see table on page 7-19  
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F)

**Materials**

Body, seats and seals: see table below  
Handle with PVC grip: zinc plated steel (plastic handle on mini ball range)

## Ball valves 60 series G1/8 ... G3

Symbol	Port size	Series #	Type	Material Body/Body finish	Seats/seals	Operating pressure (bar)	Temperature (°C)	Thread standard	Dimension No.	Model
	G1/8	6011	Mini	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 10	-10 ... +90	ISO 228/1	1	601112118
	G1/4	6011	Mini	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 10	-10 ... +90	ISO 228/1	1	601112128
	G3/8	6011	Mini	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 10	-10 ... +90	ISO 228/1	1	601112138
	G1/2	6011	Mini	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 10	-10 ... +90	ISO 228/1	1	601112148
	G1/8	6011	Mini *1)	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 10	-10 ... +90	ISO 228/1	2	601112218
	G1/4	6011	Mini *1)	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 10	-10 ... +90	ISO 228/1	2	601112228
	G3/8	6011	Mini *1)	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 10	-10 ... +90	ISO 228/1	2	601112238
	G1/2	6011	Mini *1)	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 10	-10 ... +90	ISO 228/1	2	601112248
	G1/4	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	602112128
	G3/8	6021	Standard	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 40	-20 ... +60	ISO 7/1	3	602112138
	G1/2	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	602112148
	G3/4	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	602112168
	G1	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	602112188
	G1 1/4	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	6021121A8
	G1 1/2	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	6021121B8
	G2	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	6021121C8
	G2 1/2	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	6021121D8
	G3	6021	Standard	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	3	6021121E8
	G1/4	6021	Standard *1)	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	4	602112228
	G3/8	6021	Standard *1)	Brass/Nickel plated	PTFE (virgin)/NBR	- 0,4 ... 40	-20 ... +60	ISO 7/1	4	602112238
	G1/2	6021	Standard *1)	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	4	602112248
	G3/4	6021	Standard *1)	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	4	602112268
	G1	6021	Standard *1)	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	4	602112288
	G1 1/4	6021	Standard *1)	Brass/Nickel plated	PTFE (virgin)/ EPDM + HNBR	- 0,4 ... 40	-15 ... +90	ISO 7/1	4	6021122A8
	G1/4	6021	Three way	Brass/Nickel plated	PTFE/PTFE FKM	0 ... 25	-15 ... +120	ISO 7/1	5	602114428
	G3/8	6021	Three way	Brass/Nickel plated	PTFE/PTFE FKM	0 ... 25	-15 ... +120	ISO 7/1	5	602114438
	G1/2	6021	Three way	Brass/Nickel plated	PTFE/PTFE FKM	0 ... 25	-15 ... +120	ISO 7/1	5	602114448
	G3/4	6021	Three way	Brass/Nickel plated	PTFE/PTFE FKM	0 ... 16	-15 ... +120	ISO 7/1	5	602114468
	G1/4	6021	Exhausting	Brass/Nickel plated	PTFE (virgin)/PTFE	0,5 ... 12	0 ... +60	ISO 7/1	6	602113128EX
	G3/8	6021	Exhausting	Brass/Nickel plated	PTFE (virgin)/PTFE	0,5 ... 12	0 ... +60	ISO 7/1	6	602113138EX
	G1/2	6021	Exhausting	Brass/Nickel plated	PTFE (virgin)/PTFE	0,5 ... 12	0 ... +60	ISO 7/1	6	602113148EX
	G3/4	6021	Exhausting	Brass/Nickel plated	PTFE (virgin)/PTFE	0,5 ... 12	0 ... +60	ISO 7/1	6	602113168EX
	G1	6021	Exhausting	Brass/Nickel plated	PTFE (virgin)/PTFE	0,5 ... 12	0 ... +60	ISO 7/1	6	602113188EX
	G1 1/4	6021	Exhausting	Brass/Nickel plated	PTFE (virgin)/PTFE	0,5 ... 12	0 ... +60	ISO 7/1	6	6021131A8EX
	G1/4	6018	Lockable exhausting	Brass/Nickel plated	PTFE glass filled/PTFE carbon filled	0 ... 14	-10 ... +100	ISO 228/1	7	601812128
	G3/8	6018	Lockable exhausting	Brass/Nickel plated	PTFE glass filled/PTFE carbon filled	0 ... 14	-10 ... +100	ISO 228/1	7	601812138
	G1/2	6018	Lockable exhausting	Brass/Nickel plated	PTFE glass filled/PTFE carbon filled	0 ... 14	-10 ... +100	ISO 228/1	7	601812148
	G3/4	6018	Lockable exhausting	Brass/Nickel plated	PTFE glass filled/PTFE carbon filled	0 ... 14	-10 ... +100	ISO 228/1	7	601812168
	G1	6018	Lockable exhausting	Brass/Nickel plated	PTFE glass filled/PTFE carbon filled	0 ... 14	-10 ... +100	ISO 228/1	7	601812188
	G1 1/4	6018	Lockable exhausting	Brass/Nickel plated	PTFE glass filled/PTFE carbon filled	0 ... 14	-10 ... +100	ISO 228/1	7	6018121A8
	G1/4	6251	Heavy duty	Steel/Zinc phosphate	PTFE (reinforced)/PTFE (reinforced)	-0,8 ... 138	-28 ... +218	ISO 228/1	8	625112128
	G3/8	6251	Heavy duty	Steel/Zinc phosphate	PTFE (reinforced)/PTFE (reinforced)	-0,8 ... 138	-28 ... +218	ISO 228/1	8	625112138
	G1/2	6251	Heavy duty	Steel/Zinc phosphate	PTFE (reinforced)/PTFE (reinforced)	-0,8 ... 138	-28 ... +218	ISO 228/1	8	625112148
	G3/4	6251	Heavy duty	Steel/Zinc phosphate	PTFE (reinforced)/PTFE (reinforced)	-0,8 ... 138	-28 ... +218	ISO 228/1	8	625112168
	G1	6251	Heavy duty	Steel/Zinc phosphate	PTFE (reinforced)/PTFE (reinforced)	-0,8 ... 138	-28 ... +218	ISO 228/1	8	625112188

# Typical applications

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.

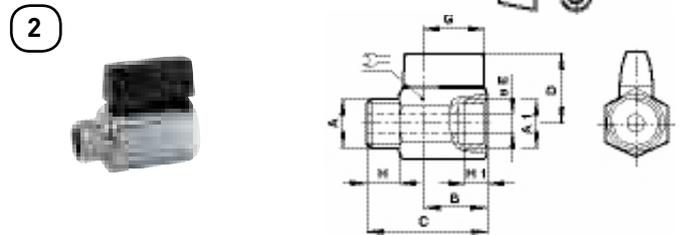
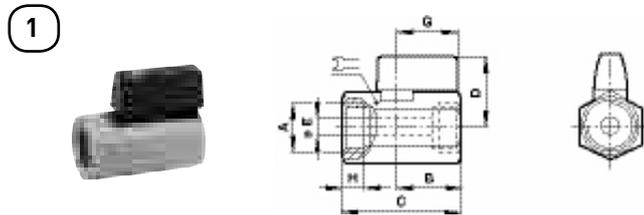
6021: Medium duty in-line brass ball valves for most applications. Available as a standard valve, a three way diverting valve or with a downstream exhaust option.

6251: Heavy duty ball valve, two piece bar stock construction

\*1) Male/female thread

**Ball valves**  
**60 series**  
**G1/8 ... G3**

**Dimensions**  
**6011 series, mini ball**



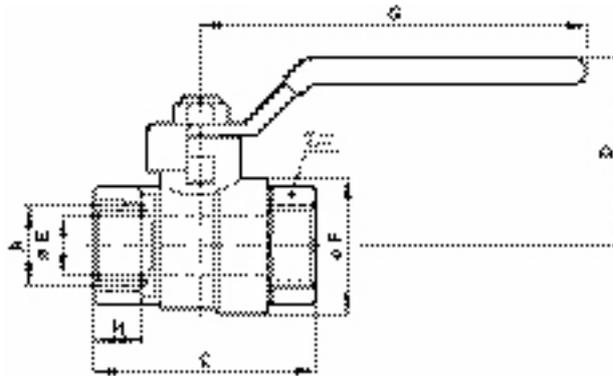
**Reduced bore, female/female**

A	B	C	D	ØE	G	H	☞	Weight (kg)	Model
G1/8	18	36	22	5,5	19	9	19	0,08	601112118
G1/4	18	36	22	5,5	19	9	19	0,07	601112128
G3/8	21	41	24	8	19	9	21	0,09	601112138
G1/2	25	48	30	10	22	10	25	0,14	601112148

**Reduced bore, male/female**

A	A1	B	C	D	ØE	G	H	H1	☞	Weight (kg)	Model
G1/8	G1/8	20	37	22	5,5	19	9	9	19	0,6	601112218
G1/4	G1/4	20	37	22	5,5	19	9	9	19	0,6	601112228
G3/8	G3/8	21	41	24	8	19	9	9	21	0,8	601112238
G1/2	G1/2	25	48	30	10	22	11	11	25	0,13	601112248

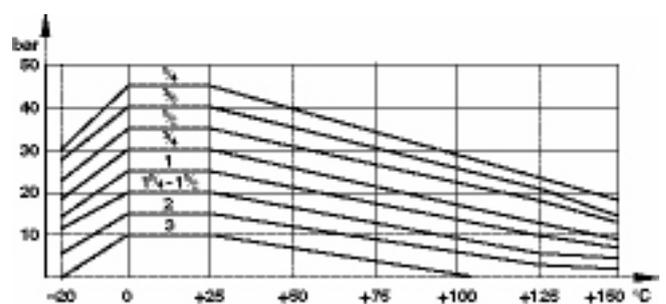
**6021 series, Standard ball valves**



**Full bore, female/female**

A	C	D	ØE	ØF	G	H	☞	Weight (kg)	Model
G1/4	48	36	8	23	85	12	18	0,13	602112128
G3/8	49	36	10	24	85	12	21	0,15	602112138
G1/2	60	40	15	30	85	15	25	0,20	602112148
G3/4	69	47	20	38	105	16,3	31	0,34	602112168
G1	83	51	25	46	105	19,1	38	0,47	602112188
G1 1/4	96	63	32	58	130	21,4	47	0,80	6021121A8
G1 1/2	106	69	40	70	130	22	54	1,14	6021121B8
G2	129	83	50	86	165	25,7	66	2,03	6021121C8
G2 1/2	159	99	65	111	248	30,2	85	3,85	6021121D8
G3	182	110	80	135	248	33,3	100	6,00	6021121E8

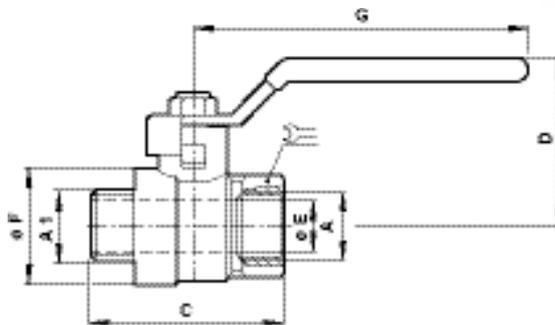
**Pressure/temperature diagram**



**Ball valves  
60 series  
G1/8 ... G3**

**6021 series, Standard ball valves**

4



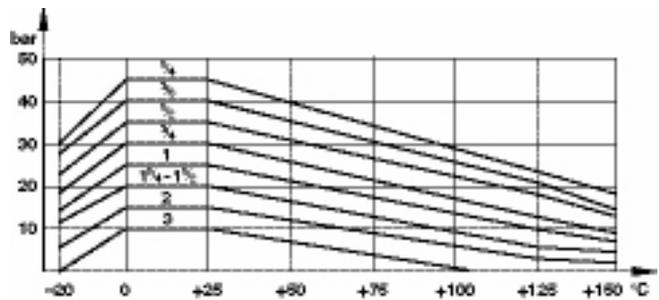
Dimensions shown in mm  
Projection/First angle



**Full bore, male/female**

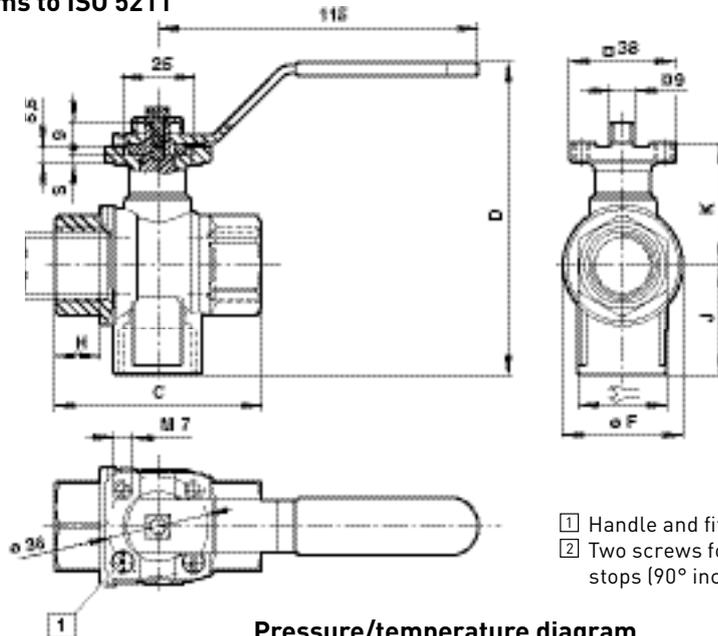
A	A1	C	D	Ø E	Ø F	G		Weight (kg)	Model
G1/4	G1/4	50	36	8	23	85	18	0,13	602112228
G3/8	G3/8	54	36	10	24	85	21	0,16	602112238
G1/2	G1/2	65	40	15	30	85	25	0,22	602112248
G3/4	G3/4	75	47	20	38	105	31	0,37	602112268
G1	G1	86	51	25	46	105	38	0,51	602112288
G1 1/4	G1 1/4	99	63	32	58	130	47	0,87	6021122A8

**Pressure/temperature diagram**



**6021 series, 3-way ball valve conforms to ISO 5211**

5



- 1 Handle and fitting kit supplied loose
- 2 Two screws for dead stops (90° increments)

**3-way full bore**

A	C	D	Ø F	H	J	K		Weight (kg)	Model
G1/4	52	60	28	11	26	29	22	0,33	602114428
G3/8	52	60	28	11,5	26	29	22	0,31	602114438
G1/2	64	62	34,5	15	33,5	32	27	0,43	602114448
G3/4	74	43	43	16	39,5	42	32	0,57	602114468

**Pressure/temperature diagram**



## Ball valves

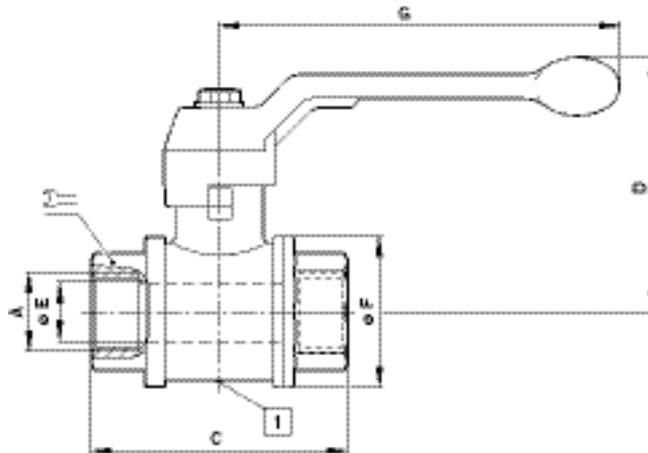
### 60 series

#### G1/8 ... G3

#### 6021 series, Exhausting ball valve

Dimensions shown in mm

6



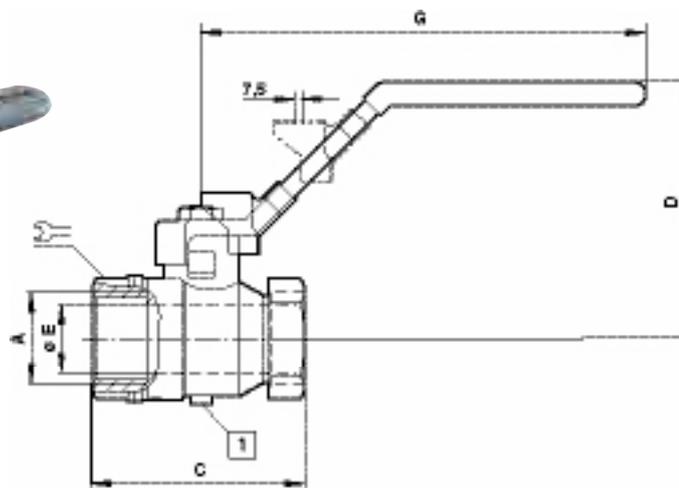
#### Full bore, female/female

1 Ø 2,5 mm exhaust port

A	C	D	Ø E	Ø F	G		Weight (kg)	Model
G1/4	52	61	8	29	100	22	0,26	602113128EX
G3/8	54	61	10	29	100	22	0,23	602113138EX
G1/2	69	64	15	36	100	27	0,37	602113148EX
G3/4	77	76	20	45	120	33	0,63	602113168EX
G1	89	80	25	54	120	40	0,91	602113188EX
G1 1/4	103	98	32	65	150	50	1,55	6021131A8EX
G1 1/2	114	104	40	79	150	-	2,30	6021131B8EX

#### 6018 series, Lockable exhausting ball valve

7



1 M5

#### Full bore, female/female

A	C	D	Ø E	G		Weight (kg)	Model
G1/4	44	45	8	93	20	0,17	601812128
G3/8	44	45	9	93	20	0,16	601812138
G1/2	58	50	14	93	24	0,24	601812148
G3/4	64	57	19	114	30	0,37	601812168
G1	81	61	24	114	40	0,62	601812188

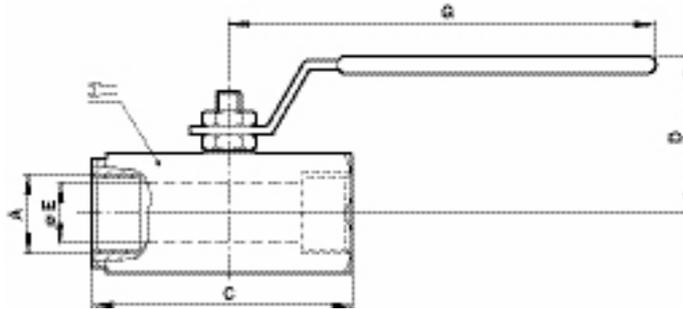
Lever lockable only in closed position. Standard handle accepts Ø 7 mm shackle. Test specification differs from standard. Please consult our Technical Service for further details.

**Ball valves  
60 series  
G1/8 ... G3**

**6251 series, Carbon steel ball valve**

Dimensions shown in mm

8



A	C	D	Ø E	G		Weight (kg)	Model
G1/4	50	41	10	96	25	0,27	625112128
G3/8	50	41	10	99	25	0,27	625112138
G1/2	63	43	13	96	32	0,36	625112148
G3/4	75	52	17	129	37	0,64	625112168
G1	88	58	22	129	44	1,09	625112188

To order 'Tee' handled version change 4th character to 2

## Ball valves

### T10

#### G1/4 or interface version

Low operating forces

High durability

Easy installation, simple operation and maintenance free

Full bore passage to maximise flow rate

Wide pressure and temperature range



#### Technical features

**Medium:**

Compressed air, water, inert gases and any other fluid compatible with the valve materials

**Operating pressure:**

0 ... 12 bar

**Port size:**

1/4 and interface, alternative port sizes on request

**Interface valve with position switch**

**Switching element:**

Microswitch

**Voltage:**

250 V a.c. max

**Current:**

6 A max

**Protection class:**

IP65 (DIN 40 050) with connector

**Electrical connection:**

DIN EN 175301-803 (DIN 43650)

Form A

**Fluid/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 end connectors:

Aluminium

Handle: zinc alloy

Seat: PTFE

'O' rings: synthetic rubber

#### Technical data - Standard options

Symbol	Port size	Version	Position indicator	Weight (kg)	Dimension No.	Model
	G1/4	exhausting	none	0,2	1	T10-210-D2BG *1)
	G1/4	full bore	none	0,3	2	T10-220-D2BG
	Interface	exhausting	none	0,4	3	T10-N10-D2BN
	Interface	exhausting	integrate	0,5	4	T10-N30-D2BN

Note:

Different sizes and locking/latching lever handles available on request

\*1) Maybe 2/2 function achievable by plugging exhaust ports.

#### Accessories

Silencer	Plug Maybe 2/2 function achievable by plugging exhaust ports	Connector	Connector with moulded cable
T40C0500 (M5)	160050005	0570275	M/P 43315/1 (1 m)
T40C2800 (G1/4)			M/P 43315/3 (3 m)
MS002A (1/4 NPT)			

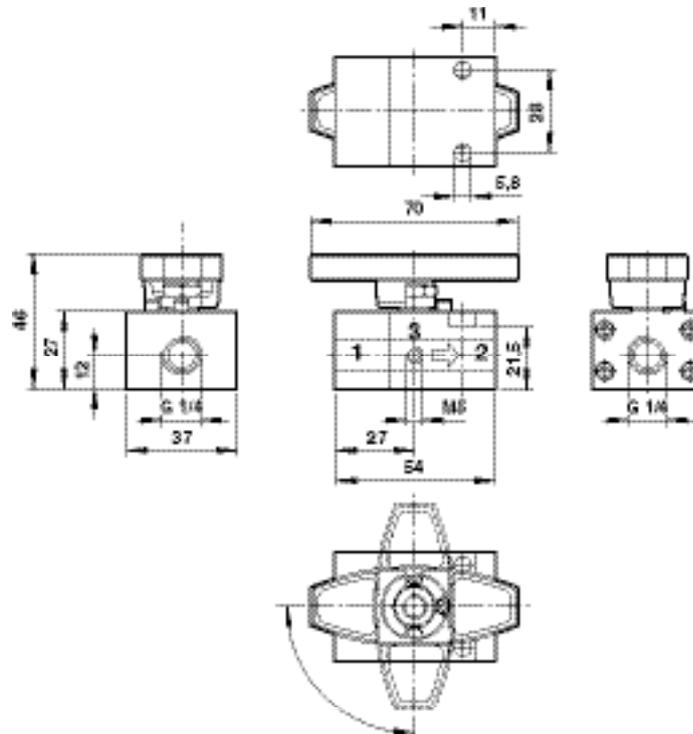
**Ball valves  
T10**

**G1/4 or interface version**

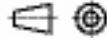
**Dimensions**

**3/2 way valves**

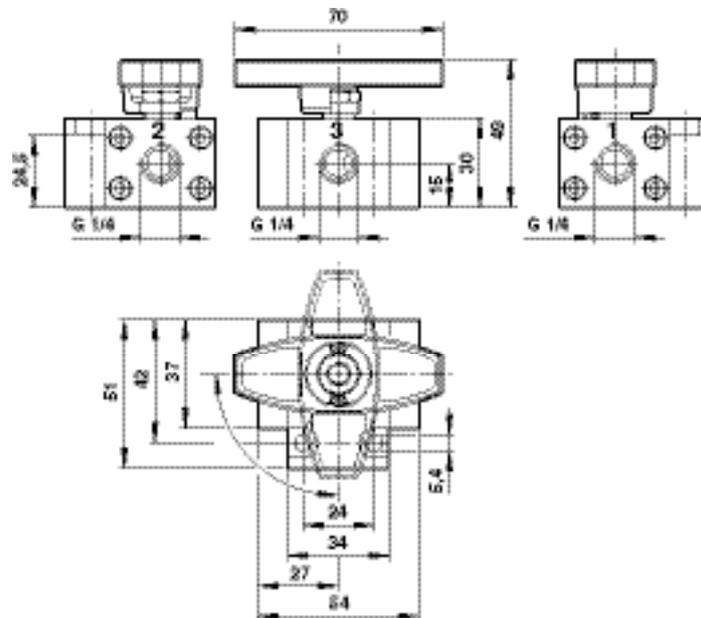
**1 G1/4 thread**



Dimensions shown in mm  
Projection/First angle



**2 G1/4 thread, full bore**

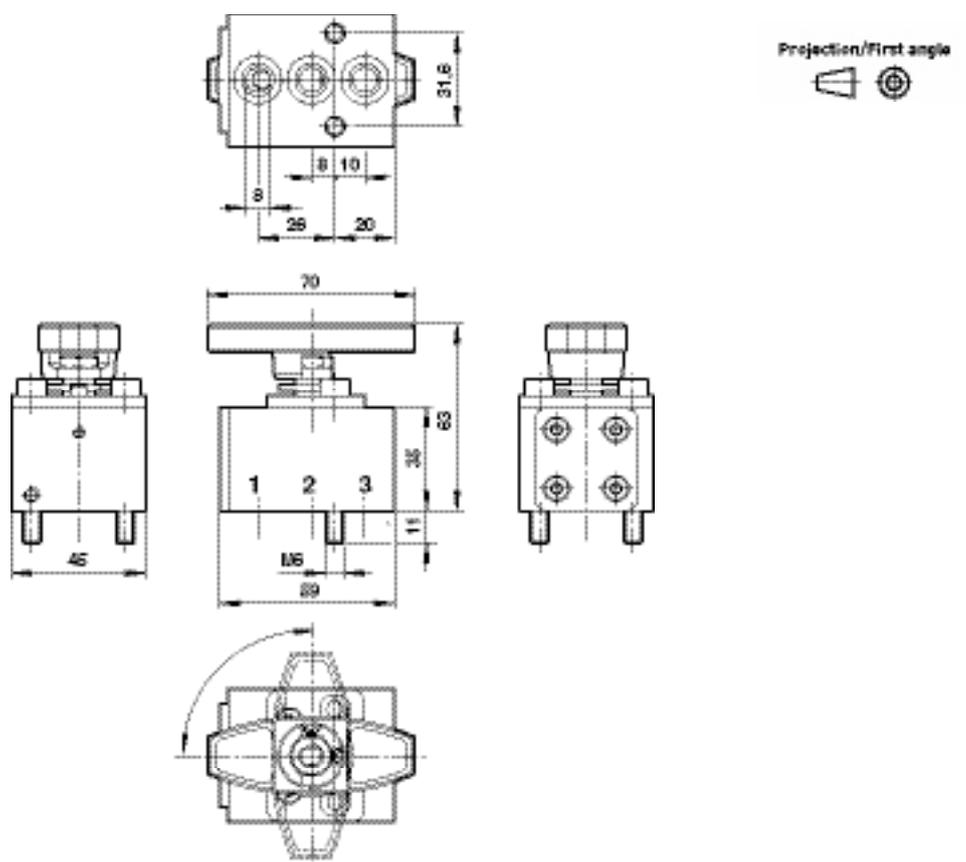


**Ball valves**

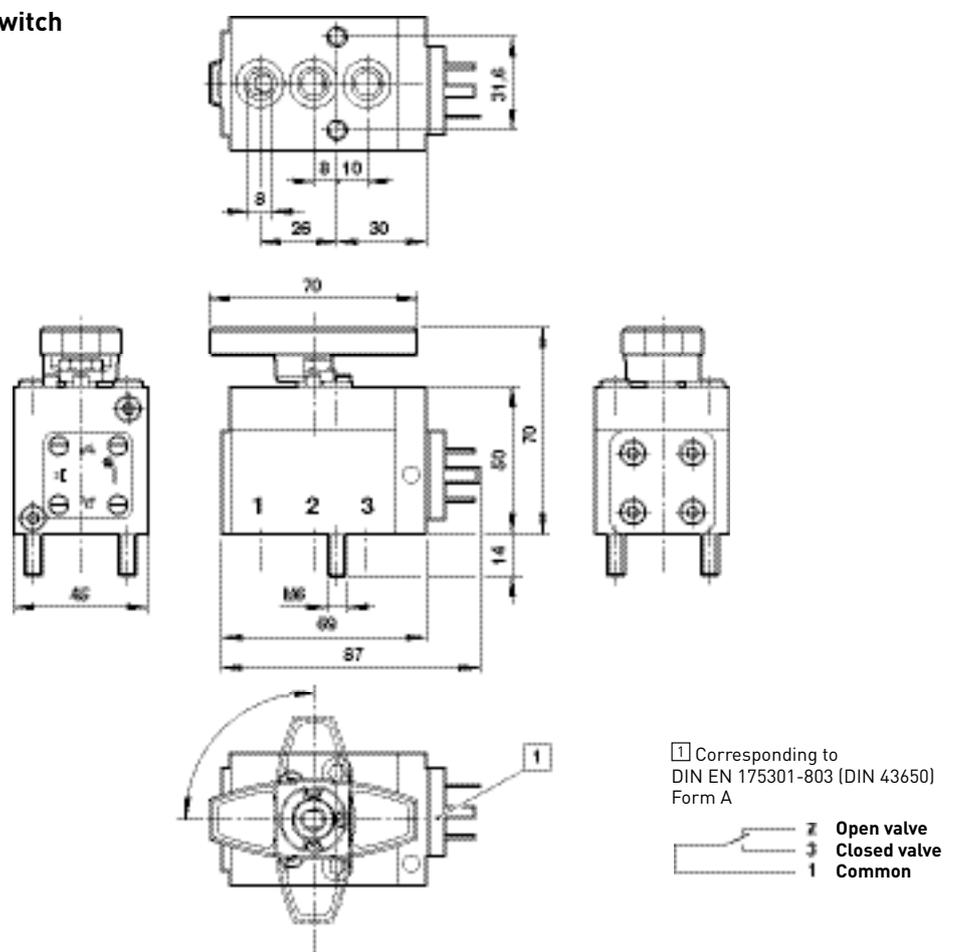
**T10**

**G1/4 or interface version**

**3 Interface**



**4 Interface with position switch**



# Strainer 0310000 G1/4 ... G2

**Compact design**

**Wide temperature range**

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



## Technical features

### Medium:

Neutral, semi-neutral and acid/alkaline gases and liquids

### Application:

Strainers are built into pipelines upstream of controls, measuring instruments etc, to protect the equipment against clogging and breakdown.

### Operating pressure:

0 ... 16 and 0 ... 100 bar  
(0 ... 232 and 0 ... 1450 psi)

### Operating viscosity:

160 mm<sup>2</sup>/s max.

### Flow direction:

Indicated by arrow

### Mounting position:

Filter element tilted downwards

### Fluid temperature:

-40 ... +100°C (-40 ... +212°F)

Air supply must be dry enough

to avoid ice formation at

temperatures below +2°C (+35°F).

### Materials

See table

## Technical data

### Strainer for neutral and semi-neutral gases and liquids

Symbol	Port size	Orifice (mm)	Operating pressure (bar)	Mesh size (mm)	Materials Body	Plug	Seals	Mesh	Weight (kg)	Spare filters	Model	
	G1/4	6	0 ... 16	0,15	Brass	Brass	NBR	1.4301	0,43	1105085	0310040	
	G1/4	6	0 ... 16	0,35	Brass	Brass	NBR	1.4301	0,43	1105086	0310041	
	G3/8	10	0 ... 16	0,15	Brass	Brass	NBR	1.4301	0,41	1105085	0310140	
	G3/8	10	0 ... 16	0,35	Brass	Brass	NBR	1.4301	0,41	1105086	0310141	
	G1/2	12	0 ... 16	0,15	Brass	Brass	NBR	1.4301	0,37	1105085	0310240	
	G1/2	12	0 ... 16	0,35	Brass	Brass	NBR	1.4301	0,37	1105086	0310241	
	G3/4	20	0 ... 16	0,15	Brass	Brass	NBR	1.4301	1,17	1105091	0310340	
	G3/4	20	0 ... 16	0,35	Brass	Brass	NBR	1.4301	1,17	1105092	0310341	
	G1	25	0 ... 16	0,15	Brass	Brass	NBR	1.4301	1,03	1105091	0310440	
	G1	25	0 ... 16	0,35	Brass	Brass	NBR	1.4301	1,03	1105092	0310441	
	Rp1 1/4	32	0 ... 16	0,25	0,50	Brass, nickel plated	Brass, nickel plated	NBR	1.4401	1,12	1105184	0311702
	Rp1 1/4	32	0 ... 16	0,50	0,50	Brass, nickel plated	Brass, nickel plated	NBR	1.4401	1,12	1105181	0311701
	Rp1 1/2	40	0 ... 16	0,25	0,50	Brass, nickel plated	Brass, nickel plated	NBR	1.4401	1,38	1105185	0311802
	Rp1 1/2	40	0 ... 16	0,50	0,50	Brass, nickel plated	Brass, nickel plated	NBR	1.4401	1,38	1105182	0311801
	Rp2	50	0 ... 16	0,25	0,50	Brass, nickel plated	Brass, nickel plated	NBR	1.4401	2,51	1105186	0311902
	Rp2	50	0 ... 16	0,50	0,50	Brass, nickel plated	Brass, nickel plated	NBR	1.4401	2,51	1105183	0311901

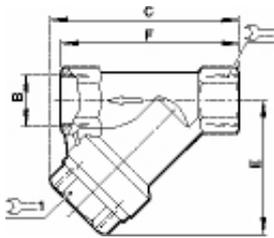
### Strainer for acid and alkaline gases and liquids

Symbol	Port size	Orifice (mm)	Operating pressure (bar)	Mesh size (mm)	Materials Body	Plug	Seals	Mesh	Weight (kg)	Spare filters	Model
	G1/2	12	0 ... 100	0,05	Brass, nickel plated	Brass, nickel plated	FKM/PTFE	1.4301	0,37	1102066	0313252
	G1/2	12	0 ... 100	0,15	Brass, nickel plated	Brass, nickel plated	FKM/PTFE	1.4301	0,37	1102067	0313250
	G1/2	12	0 ... 100	0,35	Brass, nickel plated	Brass, nickel plated	FKM/PTFE	1.4301	0,37	1102068	0313251
	G3/4	20	0 ... 100	0,05	Brass, nickel plated	Brass, nickel plated	FKM/PTFE	1.4301	1,17	1102069	0313352
	G3/4	20	0 ... 100	0,15	Brass, nickel plated	Brass, nickel plated	FKM/PTFE	1.4301	1,17	1102070	0313350
	G3/4	20	0 ... 100	0,35	Brass, nickel plated	Brass, nickel plated	FKM/PTFE	1.4301	1,17	1102071	0313351

**Strainer**  
**0310000**  
**G1/4 ... G2**

**Dimensions**

Dimensions shown in mm



**Dimensions**

B	C	E*	F			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
Rp1 1/4	110	76	110	50	30	0311702
Rp1 1/4	110	76	110	50	30	0311701
Rp1 1/2	120	84	120	55	30	0311802
Rp1 1/2	120	84	120	55	30	0311801
Rp2	150	102	150	70	36	0311902
Rp2	150	102	150	70	36	0311901

\* Sufficient clearance (pipe center to floor 2x dimension 'E') must be allowed for removal of the filter element.

## Resistance list

Fluid	Chemical formula	Concentration %	Temperature °C	+ = qualified
Aeroshell Fluid 4	-	100	80	+
Ethanol	C <sub>2</sub> H <sub>5</sub> OH	96	60	+
Äthylglykol	C <sub>2</sub> H <sub>5</sub> -O-CH <sub>2</sub> -CH <sub>2</sub> OH	100	60	+
Ethylene glykol	(CH <sub>2</sub> OH) <sub>2</sub>	100	60	+
Amylalkohol	C <sub>5</sub> H <sub>11</sub> OH	100	60	+
Barium hydroxide	Ba(OH) <sub>2</sub>	all	80	+
Benzine	-	-	20	+
Benzol	C <sub>6</sub> H <sub>6</sub>	100	80	+
Benzyl alcohol	C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> OH	100	80	+
Borax	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> ·10H <sub>2</sub> O	all	80	+
Brake fluid such as ATE-SL	-	100	80	+
Butane	C <sub>4</sub> H <sub>10</sub>	100	20	+
Butadiene	H <sub>2</sub> C=CH-CH=CH <sub>2</sub>	100	20	+
n-butanol	C <sub>4</sub> H <sub>9</sub> OH	100	60	+
Chloroform	CHCl <sub>3</sub>	100	60	+
Diesel	-	-	150	+
Pressure air	-	-	180	+
Formaldehyd	HCHO	37	20	+
Freon				
R 11	CCl <sub>3</sub> F	100	60	+
R 12	CCl <sub>2</sub> F <sub>2</sub>	100	60	+
R 13	CClF <sub>3</sub>	100	20	+
R 14	CF <sub>4</sub>	100	20	+
R 113	CCl <sub>2</sub> F-CClF <sub>2</sub>	100	20	+
R 114	CClF <sub>2</sub> -CClF <sub>2</sub>	100	80	+
R 115	CClF <sub>2</sub> -CF <sub>3</sub>	100	60	+
Fyrquel	-	100	-	+
Glycerin	C <sub>3</sub> H <sub>7</sub> (OH) <sub>3</sub>	100	120	+
Gear fluid ATF	-	100	130	+
Helium	He	100	200	+
Fued oil	-	100	150	+
Hexane	C <sub>6</sub> H <sub>14</sub>	100	20	+
Methanol	CH <sub>3</sub> OH	100	60	+
Pertroleum	-	-	150	+
Sodium carbonate	Na <sub>2</sub> CO <sub>3</sub>	20	80	+
Caustic soda	NaOH	10	20	+
Sodium sulphate	Na <sub>2</sub> SO <sub>4</sub>	20	60	+
Perchloräthylene	CCl <sub>2</sub> =CCl <sub>2</sub>	100	80	+
Phenol	C <sub>6</sub> H <sub>5</sub> OH	90	80	+
Propane	C <sub>3</sub> H <sub>8</sub>	100	20	+
n-Propanol	C <sub>3</sub> H <sub>7</sub> OH	100	80	+
Dioxygen <sup>1)</sup>	O <sub>2</sub>	100	20	+
Toluol	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>	100	20	+
Trichloräthylene	CHCl=CCl <sub>2</sub>	100	80	+
Water	H <sub>2</sub> O	-	100	+
Water vapour	H <sub>2</sub> O	-	120	+
Hydrogen peroxide	H <sub>2</sub> O <sub>2</sub>	30	20	+
Xylol	C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	100	60	+

<sup>1)</sup> Oil and grease free

Equipment life may be influenced by operation in different pressure, temperature and concentration ranges and by additives, contamination and deposits. If in doubt, tests should be carried out under operating conditions. Enquiries or orders for equipment should include precise details of the media and operating conditions whenever possible. No warranty is implied by the information provided in the resistance table.

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