

Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, MS series

FESTO



Festo Core Range
Solves the majority of your automation tasks

With the Festo Core Range, we have selected the most important products and functions from our broad product catalogue, and added the quickest delivery.

Worldwide: Quickest delivery – wherever, whenever
Simply good: Expected high Festo quality
Fast: Easy and fast to select

The Core Range offers you the best value for your automation tasks.

Just look
for the
star!

Key features

Service unit components of the MS series

Solutions for every application

With its large product range, highly effective components and a wide choice of functions, the MS series from Festo offers a complete concept for compressed air preparation. It is suitable for simple standard applications as well as application-specific solutions with very high quality requirements.

Available as individual components, pre-assembled combinations ex-stock, application-specific combinations or complete turnkey solutions. The five sizes in the MS series achieve maximum flow rates with minimum space requirements.

CAD models and configurator

Convenient tools for planning and selecting application-specific individual devices and combinations. The product configurator can be used to configure customised solutions quickly and to transfer the order data without any hassle.

Engineering tools

Selection tool for choosing the right combination of service unit components without oversizing, and with the right air purity class:

→ www.festo.com/engineering/service-unit


Freely combinable function modules

Pressure regulators, on/off and soft-start valves with safety function, filters, pressure and flow sensors, dryers, sensors and lubricators can be assembled into a suitable solution for every task. With the modular structure the components can be combined as required. The simple connection system saves time because there is no need to disassemble the entire combination when replacing individual modules.

Many of the components are also UL and ATEX certified.

Air quality

This program supports configuring an appropriate service unit. Please insert the required air cleanliness either by your application or an ISO code or by direct selection of air filters.

<p>Selection criteria: Application</p> <p>Filter combination is proposed based upon your selected application</p> <p><input type="radio"/> standard pneumatics operation of valves and cylinders, e.g. in automotive industry, secondary packaging</p> <p><input type="radio"/> mining and building industry applications without special air cleanliness requirements</p> <p><input type="radio"/> application of pressure operated tools and machines pneumatic hammer, air engine, positioning with proportional valve</p> <p><input type="radio"/> electronic, flatpanel and solar industry, textile and paper production application with residual oil content <math>< 0.5 \text{ mg/m}^3</math></p> <p><input type="radio"/> painting, powder coating, air bearing application with residual oil content <math>< 0.01 \text{ mg/m}^3</math></p> <p><input type="radio"/> food and beverage industry, optics application with residual oil content <math>< 0.003 \text{ mg/m}^3</math> reduction of oil vapours and aromas</p>	<p>Selection criteria: ISO-class</p> <p>Filter combination is proposed based upon the air cleanliness class according to ISO 8573-1:2010</p> <p>particle : 4 * : oil</p> <p><input type="text" value="4"/> : <input type="text" value="4"/> : <input type="text" value="4"/></p> <p>ISO</p> <p>* Downstream from the compressor the water content is assumed to be ISO class 4, better classes can be achieved by applying an adsorption dryer PDAD or a membrane dryer LDM1</p>	<p>Direct filter selection</p> <p>Independent selection of filter combination</p> <p><input type="checkbox"/> 40 µm Filter</p> <p><input type="checkbox"/> 5 µm Filter</p> <p><input type="checkbox"/> 1 µm Fine Filter</p> <p><input type="checkbox"/> 0.01 µm Micro Filter *</p> <p><input type="checkbox"/> Active Carbon Filter</p>  <p>* To enhance the filter lifetime and in consequence the maintenance interval arrange a 1 µm Fine Filter in front of the 0.01 µm Micro Filter as a preliminary filter.</p>
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Integrated sensors

Pressure and flow sensors

Safety functions

Soft-start/quick exhaust valves
MS6-SV/MS9-SV

Saving energy

Service unit combinations MSE6

Intelligent mix of sizes



- Maximum machine availability thanks to controlled processes
- Reliable air preparation and system supply
- Integrated or stand-alone
- Easy to connect with M8/M12 plug

- Fast and reliable exhausting of systems up to Performance Level e, certified to EN ISO 13849-1
- Integrated soft-start function

- Fully automatic monitoring and regulation of the compressed air supply
- Automatic shut-off of the compressed air in stand-by mode
- Detection and notification of leakages
- Condition monitoring of relevant process data

- Optimum flow rate with a size that is up to 18% smaller
- Excellent energy efficiency
- Cost-optimised combinations – save up to 30%!

Size differences

Size		MS4	MS6	MS9	MS12
Grid dimension	[mm]	40	62	90	124
Connection sizes		G1/8, G1/4, G3/8	G1/4, G3/8, G1/2, G3/4	G1/2, G3/4, G1, G1 1/4, G1 1/2	G1, G1 1/4, G1 1/2, G2
Standard nominal flow rate q _N ¹⁾	[l/min]	1800	6500	20000	22000

1) Using pressure regulator MS-LR as an example

Key features

Note

Information

The next few pages provide a brief overview of the product range for the MS series service unit components.

You can find detailed information and all the technical data in the documentation for the relevant service unit component.

Accessories such as connecting plates or mounting brackets can be ordered either via the configurator or separately.

Design of a service unit combination

The order of the individual service unit components within a combination is relevant for safety and functionality. The service unit components cannot be combined in any order in the flow direction. There are restrictions and rules.





The configurator for the service unit MSB is a reliable and convenient way of combining individual service unit components and ensures compliance with the applicable rules. As a result, you get a fully assembled combination with UL or ATEX certification, if necessary.

When combining a unit from individually configured and ordered service unit components, the points on the right must be adhered to under all circumstances.







- Regulators MS-LFR/LR/LRP are only permissible in the flow direction with the same or decreasing pressure regulation range
- Filters MS-LFR/LF/LFM/LFX are only permissible in the flow direction with an increasing grade of filtration
- Lubricators MS-LOE are not permitted in the flow direction upstream of a filter MS-LFR/LFM/LF/LFX, water separator MS-LWS or membrane air dryer MS-LDM1

- A micro filter MS-LFM must be installed in the flow direction upstream of an activated carbon filter MS-LFX or membrane air dryer MS-LDM1
- A flow sensor SFAM cannot be installed directly downstream of a regulator MS-LFR/LR; a branching module MS-FRM must be positioned between them
- A soft-start/quick exhaust valve MS-SV must be the last service unit component in the flow direction







Product range for service unit components of the MS series

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Combinations								
Service unit combinations MSB-FRC								Datasheets → Internet: msb
	Combinations of filter regulator and lubricator	4	–	–	1/8, 1/4	–	–	–
		6	–	–	1/4, 3/8, 1/2	–	–	–
Service unit combinations MSB								
Service unit combinations MSB								Datasheets → Internet: msb
	Certain predefined combinations	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
	Freely configurable combinations	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
Service unit combinations MSE6								
Service unit combinations MSE6								Datasheets → Internet: mse6
	Combinations with fieldbus connection for measuring pressure, flow rate and consumption	6	–	–	–	–	1/2	–










Key features

Product range for service unit components of the MS series								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Filter regulators MS-LFR Datasheets → Internet: ms2-lfr; ms4-lfr; ms6-lfr; ms9-lfr; ms12-lfr								
	Filter and pressure regulator in a single device, grade of filtration 5 or 40 µm	2	QS-6	M5	–	–	–	–
		4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Filter regulators MS-LFR-B Datasheets → Internet: ms4-lfr-b; ms6-lfr-b								
	Filter and pressure regulator in a single device in polymer housing, grade of filtration 5 or 40 µm	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
Filters MS-LF Datasheets → Internet: ms4-lf; ms6-lf; ms9-lf; ms12-lf								
	Grade of filtration 5 or 40 µm	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Fine and micro filters MS-LFM Datasheets → Internet: ms4-lfm; ms6-lfm; ms9-lfm; ms12-lfm								
	Grade of filtration 0.01 or 1 µm	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Activated carbon filters MS-LFX Datasheets → Internet: ms4-lfx; ms6-lfx; ms9-lfx; ms12-lfx								
	For removing liquid and gaseous oil particles	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Water separators MS-LWS Datasheets → Internet: ms6-lws; ms9-lws; ms12-lws								
	Remove condensate from compressed air, maintenance-free	6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–





Key features

Product range for service unit components of the MS series								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Pressure regulators MS-LR Datasheets → Internet: ms2-lr; ms4-lr; ms6-lr; ms9-lr; ms12-lr								
	For setting the required operating pressure, 4 pressure regulation ranges	2	QS-6	M5	–	–	–	–
		4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Pressure regulators MS-LR-B Datasheets → Internet: ms4-lr-b; ms6-lr-b								
	For setting the required operating pressure, in polymer housing	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
Pressure regulators MS-LRB Datasheets → Internet: ms4-lrb; ms6-lrb								
	For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is at the front or rear.	4	–	–	1/4	–	1/8, 1/4, 3/8	–
		6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–
Precision pressure regulators MS-LRP Datasheets → Internet: ms6-lrp								
	For precisely setting the required operating pressure, 4 pressure regulation ranges, pressure hysteresis 0.02 bar	6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
Precision pressure regulators MS-LRPB Datasheets → Internet: ms6-lrpb								
	For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is at the front or rear.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–
Lubricators MS-LOE Datasheets → Internet: ms4-loe; ms6-loe; ms9-loe; ms12-loe								
	Add a precisely adjustable amount of oil to the compressed air. The amount of oil mist is proportional to the compressed air flow rate.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–

Key features

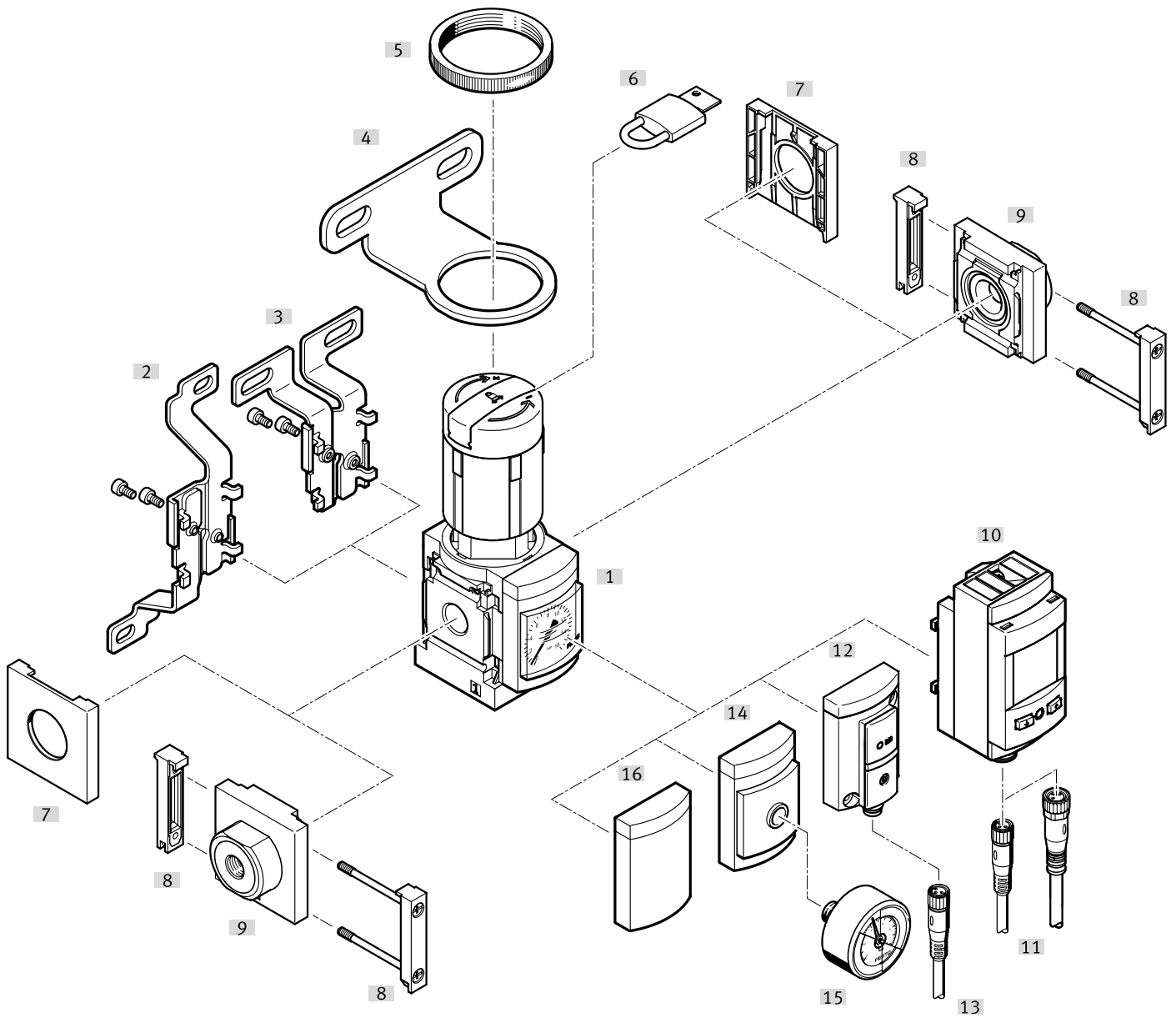
Product range for service unit components of the MS series								
Type	Description	Size	Pneumatic connection			Connecting plate with thread		
			Push-in connector	Female thread		G		NPT
			M	G	NPT	G	NPT	
Individual devices								
On/off valves MS-EM						Datasheets → Internet: ms4-em; ms6-em; ms9-em; ms12-em		
	Manually actuated on/off valve for pressurising and exhausting pneumatic systems.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
On/off valves MS-EE								
On/off valves MS-EE						Datasheets → Internet: ms4-ee; ms6-ee; ms9-ee; ms12-ee		
	Electrically actuated on/off valve for pressurising and exhausting pneumatic systems.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
On/off valves MS-EE-B								
On/off valves MS-EE-B						Datasheets → Internet: ms4-ee-b; ms6-ee-b		
	Electrically actuated on/off valve in polymer housing for pressurising and exhausting pneumatic systems.	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
Soft-start valves MS-DL								
Soft-start valves MS-DL						Datasheets → Internet: ms4-dl; ms6-dl; ms12-dl		
	Pneumatically actuated soft-start valve for slowly pressurising and exhausting pneumatic systems.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Soft-start valves MS-DE								
Soft-start valves MS-DE						Datasheets → Internet: ms4-de; ms6-de; ms12-de		
	Electrically actuated soft-start valve for slowly pressurising and exhausting pneumatic systems.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
On/off valves MS-EDE-B								
On/off valves MS-EDE-B						Datasheets → Internet: ms4-ed-e-b; ms6-ed-e-b		
	Electrically actuated soft-start valve in polymer housing for slowly pressurising and exhausting pneumatic systems.	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
Soft-start/quick exhaust valves MS-SV								
Soft-start/quick exhaust valves MS-SV						Datasheets → Internet: ms6-sv; ms9-sv		
	For building up pressure gradually and reducing pressure quickly and safely in pneumatic piping systems. Up to category 1, PL c.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
	Up to category 3, PL d. Up to category 4, PL e in the case of optional extension.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
	Up to category 4, PL e.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–

Key features

Product range for service unit components of the MS series								
Type	Description	Size	Pneumatic connection				Connecting plate with thread	
			Push-in connector	Female thread			G	NPT
				M	G	NPT		
Individual devices								
Membrane air dryers MS-LDM1						Datasheets → Internet: ms4-ldm; ms6-ldm		
	Wear-free membrane dryer with internal air consumption	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
Branching modules MS-FRM								
						Datasheets → Internet: ms4-frm; ms6-frm; ms9-frm; ms12-frm		
	Compressed air distributors with 4 connections	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	–
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	–
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Distributor blocks MS-FRM-FRZ								
						Datasheets → Internet: ms4-frm-frz; ms6-frm-frz		
	Compressed air distributors with 4 connections and half the grid width	4	–	–	–	–	–	–
		6	–	–	–	–	–	–
Flow sensors SFAM								
						Datasheets → Internet: sfam		
	For absolute flow rate information and cumulative air consumption measurement	6	–	–	–	–	1/2	1/2
		9	–	–	–	–	1, 1 1/2	1, 1 1/2

Peripherals overview

Pressure regulator MS4/MS6-LR



Note

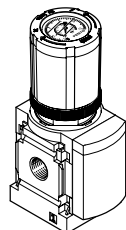
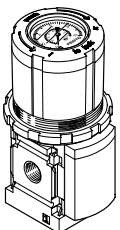
Additional accessories:

- Module connectors for combination with size MS4/MS6 or size MS9
→ Internet: amv, rmv, armv
- Adapters for mounting on profiles
→ Internet: ipm-80, ipm-40-80, ipm-80-80

Pressure regulator with rotary knob pressure gauge

MS4-LR-...-DM2

MS4-LR-...-DM1/MS6-LR-...-DM2



Peripherals overview

Mounting attachments and accessories ¹⁾		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Pressure regulator MS4/MS6-LR	■	■	■	■	10
[2]	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
[3]	Mounting bracket MS4-WBM	■	■	–	–	ms4-wbm
[4]	Mounting bracket MS4/6-WR	■	■	–	–	ms4-wr, ms6-wr
[5]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[6]	Padlock LRVS-D	■	■	■	■	102
[7]	Cover cap MS4/6-END	■	–	■	–	ms4-end, ms6-end
[8]	Module connector MS4/6-MV	–	■	■	■	ms4-mv, ms6-mv
[9]	Connecting plate SET MS4/6-AG...	–	■	–	■	ms4-ag, ms6-ag
	Connecting plate SET MS4/6-AQ...	–	■	–	■	ms4-aq, ms6-aq
[10]	Pressure sensor with LCD display AD11/AD12	■	■	■	■	26
[11]	Connecting cable NEBU-M8...-LE4/NEBU-M12...-LE4	■	■	■	■	102
[12]	Pressure sensor without display AD7 ... AD10	■	■	■	■	26
[13]	Connecting cable NEBU-M8...-LE3	■	■	■	■	102
[14]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	26
[15]	Pressure gauge MA	■	■	■	■	102
[16]	Cover plate VS	■	■	■	■	26
–	Mounting bracket MS4/6-WP/WPB/WPE/WPM	–	■	■	■	ms4-wp, ms6-wp

1) Connecting plates and certain mounting brackets can also be ordered via the modular product system → page 26

Type codes

001 Series	
MS	MS series
002 Size	
4	Grid dimension 40 mm
003 Function	
LR	Pressure regulator
004 Pneumatic connection	
1/8	Female thread G1/8
1/4	Female thread G1/4
AGA	Sub-base G1/8
AGB	Sub-base G1/4
AGC	Sub-base G3/8
AQK	Sub-base 1/8 NPT
AQN	Sub-base 1/4 NPT
AQP	Sub-base 3/8 NPT
005 Pressure regulation range	
D5	0.3 ... 4 bar
D6	0.3 ... 7 bar
D7	0.5 ... 12 bar
006 Pressure gauge alternatives	
	None
A4	Adapter for EN pressure gauge 1/4, without pressure gauge
A8	Adapter for EN pressure gauge 1/8, without pressure gauge
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C
AD9	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
RG	Integrated pressure gauge, red/green scale
VS	Cover plate

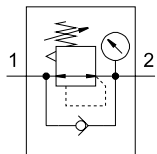
007 Alternative pressure gauge scale	
	MS pressure gauge
PSI	psi
MPA	MPa
008 Secondary exhausting	
	With secondary exhausting
OS	Without secondary exhaust
009 Rotary knob alternative	
	None
LD	Long rotary knob
DM1	Rotary knob pressure gauge, small
DM2	Rotary knob pressure gauge, large
010 Alternative mounting position	
	None
KD	Rotary knob underneath
011 Lockability	
	None
AS	Can be locked using accessories
E11	With integrated lock
012 Type of mounting	
	Without mounting bracket
WR	Mounting bracket with knurled nut on regulator knob
WP	Mounting bracket basic design
WPM	Mounting bracket for hooking in service unit components
WB	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required
WBM	Mounting centrally at rear (wall mounting top), connecting plates not required
013 EU certification	
	None
EX4	II 2GD
014 UL certification	
	None
UL1	cULus ordinary location for Canada and USA
015 Flow direction	
	Flow direction from left to right
Z	Flow direction from right to left





Type codes

001	Series		
MS	MS series		
002	Size		
6	Grid dimension 62 mm		
003	Function		
LR	Pressure regulator		
004	Pneumatic connection		
1/4	Female thread G1/4		
3/8	Female thread G3/8		
1/2	Female thread G1/2		
AGB	Sub-base G1/4		
AGC	Sub-base G3/8		
AGD	Sub-base G1/2		
AGE	Sub-base G3/4		
AQN	Sub-base 1/4 NPT		
AQP	Sub-base 3/8 NPT		
AQR	Sub-base 1/2 NPT		
AQS	Sub-base 3/4 NPT		
005	Pressure regulation range		
D5	0.3 ... 4 bar		
D6	0.3 ... 7 bar		
D7	0.5 ... 12 bar		
D8	0.5 ... 16 bar		
006	Pressure gauge alternatives		
	None		
A4	Adapter for EN pressure gauge 1/4, without pressure gauge		
A8	Adapter for EN pressure gauge 1/8, without pressure gauge		
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O		
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C		
AD9	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O		
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C		
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA		
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA		
RG	Integrated pressure gauge, red/green scale		
VS	Cover plate		
007	Alternative pressure gauge scale		
	MS pressure gauge		
PSI	psi		
MPA	MPa		
008	Secondary exhausting		
	With secondary exhausting		
OS	Without secondary exhaust		
009	Rotary knob alternative		
	None		
LD	Long rotary knob		
DM2	Rotary knob pressure gauge, large		
010	Alternative mounting position		
	None		
KD	Rotary knob underneath		
011	Lockability		
	None		
AS	Can be locked using accessories		
E11	With integrated lock		
012	Type of mounting		
	Without mounting bracket		
WR	Mounting bracket with knurled nut on regulator knob		
WP	Mounting bracket basic design		
WPM	Mounting bracket for hooking in service unit components		
WB	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required		
013	EU certification		
	None		
EX4	II 2GD		
014	UL certification		
	None		
UL1	cULus ordinary location for Canada and USA		
015	Flow direction		
	Flow direction from left to right		
Z	Flow direction from right to left		
016	Version		

Datasheet

With pressure gauge



-  - Flow rate
1000 ... 7500 l/min
-  - Temperature range
-10 ... +60°C
-  - Operating pressure
0.8 ... 20 bar
-  - www.festo.com



The pressure regulator maintains a constant working pressure (secondary side), independently of the pressure fluctuations in the system (primary side) and the air consumption.

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- High flow rate performance with minimal pressure drop
- Available with and without secondary exhausting
- Actuator lock to protect the set values from being adjusted
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Two pressure gauge connections for different installation options
- Return flow option for exhausting from output 2 to output 1 already integrated
- Optional pressure sensor
- Optional rotary knob pressure gauge
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data				
Size	MS4		MS6	
Pneumatic connection 1, 2				
Female thread	G1/8 or G1/4		G1/4, G3/8 or G1/2	
Connecting plate	[AG...]	G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4	
	[AQ...]	1/8 NPT, 1/4 NPT or 3/8 NPT	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT	
Design	Directly actuated diaphragm regulator			
Regulator function	Output pressure constant, with input pressure compensation, with return flow, with/without secondary exhausting			
Type of mounting	Via accessories			
	In-line installation			
	Front panel mounting			
Mounting position	Any			
Actuator lock	Rotary knob with latch			
	Rotary knob with latch, can be locked using accessories			
	Rotary knob with integrated lock			
Pressure regulation range/ actuation	[D5] [bar]	0.3 ... 4, manually actuated ¹⁾		
	[D6] [bar]	0.3 ... 7, manually actuated ¹⁾		
	[D7] [bar]	0.5 ... 12, manually actuated (0.5 ... 10 with pressure sensor or with UL certification) ¹⁾		
	[D8] [bar]		0.5 ... 16, manually actuated (0.5 ... 10 with UL certification)	
Max. pressure hysteresis	[bar]	0.25 (0.4 with rotary knob pressure gauge)		
Pressure indication	Via pressure sensor for indicating the output pressure and electrical output via LCD display			
	Via pressure sensor for indicating the output pressure and electrical output			
	Via pressure gauge for indicating the output pressure			
	Via pressure gauge with red/green scale for indicating the output pressure			
	Via pressure gauge in the rotary knob for displaying the output pressure			
		Prepared for G1/8	-	
		Prepared for G1/4	-	

1) MS4: the pressure regulation range for pressure regulators with rotary knob pressure gauge starts at 0.8 bar.

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]						
Size	MS4			MS6		
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	
Pressure regulation range	[D5]	1200 ²⁾	2100 ²⁾	2400 ²⁾	5500 ²⁾	7500 ²⁾
	[D6]	1150	1800	3000	5800	6500
	[D7]	1000	1700 ³⁾	2700	4500	5500
	[D8]	–	–	2200	4000	4500

- 1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar
2) Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar
3) With a rotary knob pressure gauge, $q_{nN} = 800$ l/min, $q_{n\max} = 2200$ l/min

Operating and environmental conditions			
Size	MS4		MS6
Operating pressure [bar]	0.8 ... 14 (0.8 ... 10) ¹⁾		0.8 ... 20 (0.8 ... 10) ¹⁾
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]		
	Inert gases		
Note on the operating/pilot medium	Lubricated operation possible (in which case lubrication will always be required)		
Ambient temperature [°C]	–10 ... +60 (0 ... +50) ²⁾		
Temperature of medium [°C]	–10 ... +60 (0 ... +50) ²⁾		
Storage temperature [°C]	–10 ... +60		
Corrosion resistance class CRC ³⁾	2		
Food-safe ⁴⁾	See supplementary material information		
UL certification ⁴⁾	c UL us - Recognized (OL)		

- 1) Value in brackets applies to MS4/MS6-LR with UL certification.
2) Value in brackets applies to MS4/MS6-LR with pressure sensor.
3) More information www.festo.com/x/topic/crc
4) More information: www.festo.com/catalogue/ms-lr → Support/Downloads.

ATEX	
EU certification	[EX4]
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion ambient temperature	–10°C ≤ Ta ≤ +60°C
Explosion protection certification outside the EU	EPL Db (GB) EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) ¹⁾	To UK regulations for explosions

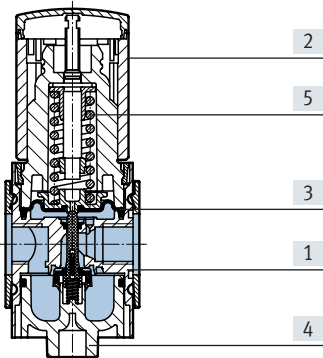
- 1) More information: www.festo.com/catalogue/ms-lr → Support/Downloads.

Weight [g]			
Size	MS4		MS6
Pressure regulator	225		730
Pressure regulator with rotary knob with integrated lock	350		1000
Connecting plates [AG...]/[AQ...]	128		300
Mounting bracket	[WBM]	48	–
	[WB]	46	121
	[WR]	49	90
	[WP]	39	76
	[WPM]	45	144

Datasheet

Materials

Sectional view



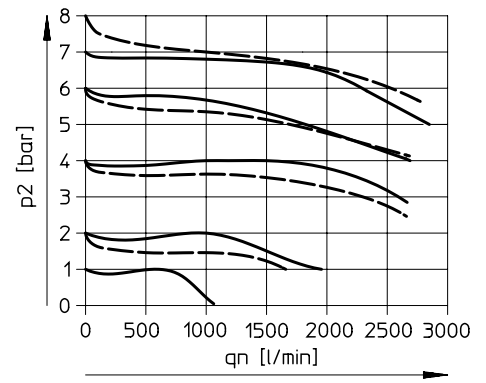
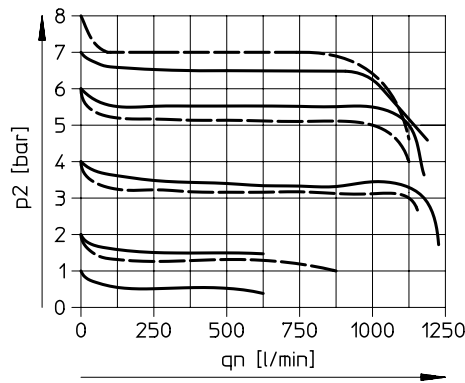
Pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA, POM
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragms	NBR
[4]	Bottom cover	PET
[5]	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

MS4-LR-1/8

MS4-LR-1/4

Input pressure $p_1 = 10$ bar



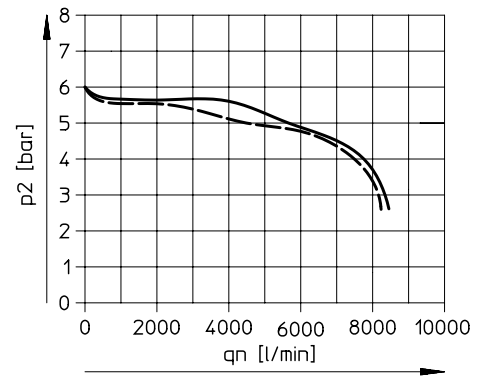
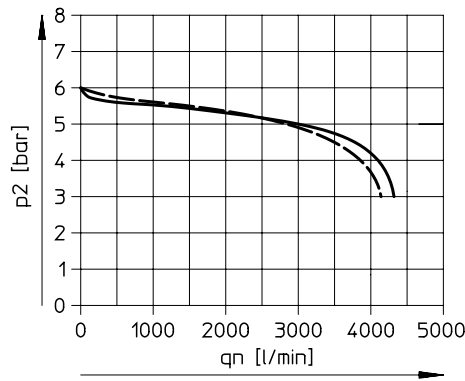
— D6: 0.3 ... 7 bar
 - - - D7: 0.5 ... 12 bar¹⁾

1) There is a higher initial pressure drop in the characteristic curve for variant DM1/DM2.

MS6-LR-1/4

MS6-LR-3/8

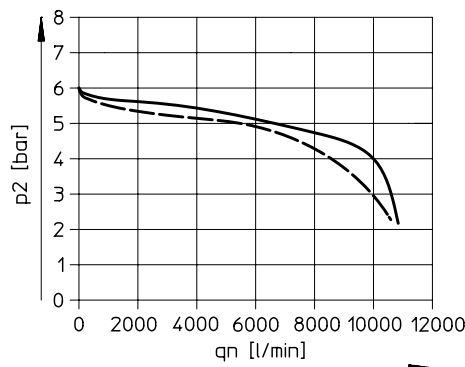
Input pressure $p_1 = 10$ bar



— D6: 0.3 ... 7 bar
 - - - D7: 0.5 ... 12 bar

MS6-LR-1/2

Input pressure $p_1 = 10$ bar



— D6: 0.3 ... 7 bar
 - - - D7: 0.5 ... 12 bar

Datasheet

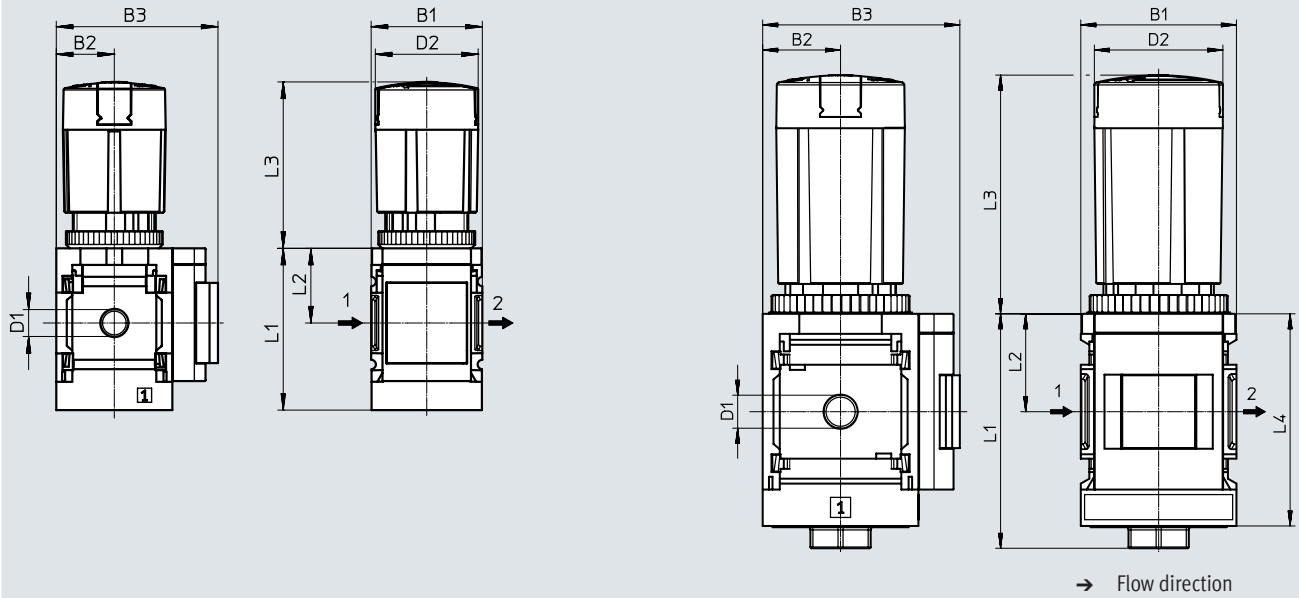
Dimensions – Basic version

Download CAD data → www.festo.com

- [] Integrated MS pressure gauge with standard scale
- [RG] Integrated MS pressure gauge with red/green scale
- [AS] Rotary knob with latch, can be locked using accessories

MS4

MS6



Type	B1	B2	B3		D1	D2 ∅	L1	L2	L3	L4
			Standard scale	Red/green scale						
MS4-LR-1/8	40	21	57	58.5	G1/8	37.2	59	27	60.2	-
MS4-LR-1/4			G1/4							
MS6-LR-1/4	62	31	77	78.5	G1/4	51.2	94	39	95.1	85
MS6-LR-3/8					G3/8					
MS6-LR-1/2					G1/2					

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

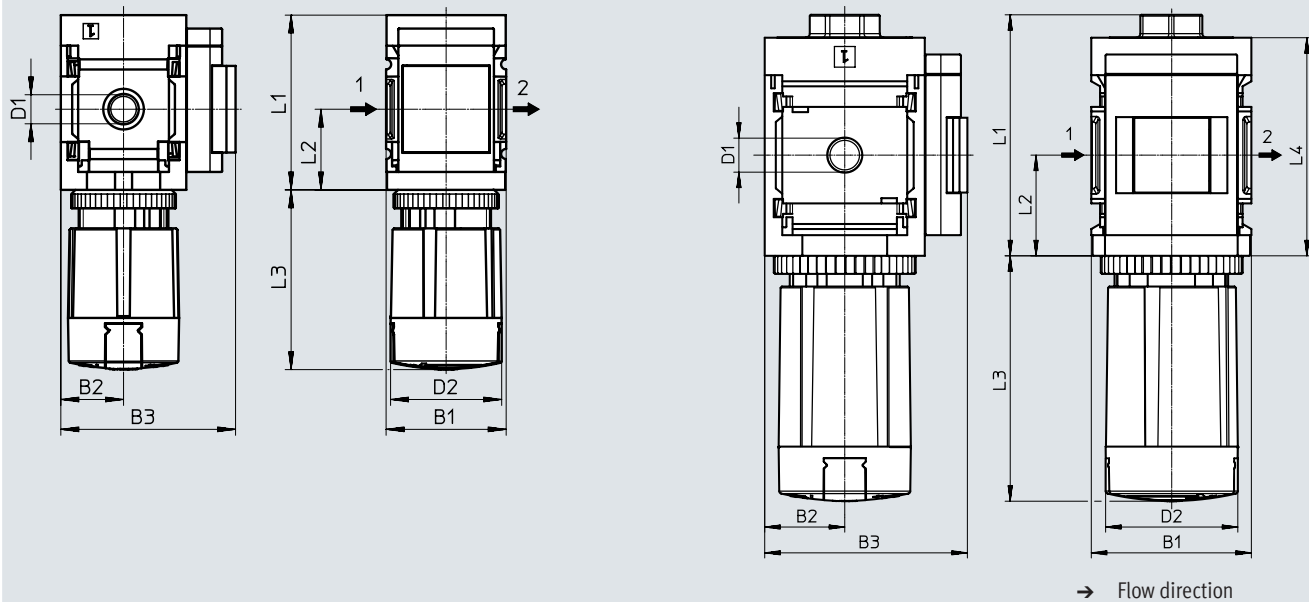
Dimensions – Alternative mounting position

Download CAD data → www.festo.com

[KD] Rotary knob underneath

MS4

MS6



Type	B1	B2	B3		D1	D2 ∅	L1	L2	L3	L4
			Standard scale	Red/green scale						
MS4-LR-1/8-...-KD	40	21	57	58.5	G1/8	37.2	59	27	60.2	-
MS4-LR-1/4-...-KD					G1/4					
MS6-LR-1/4-...-KD	62	31	77	78.5	G1/4	51.2	94	39	95.1	85
MS6-LR-3/8-...-KD					G3/8					
MS6-LR-1/2-...-KD					G1/2					

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

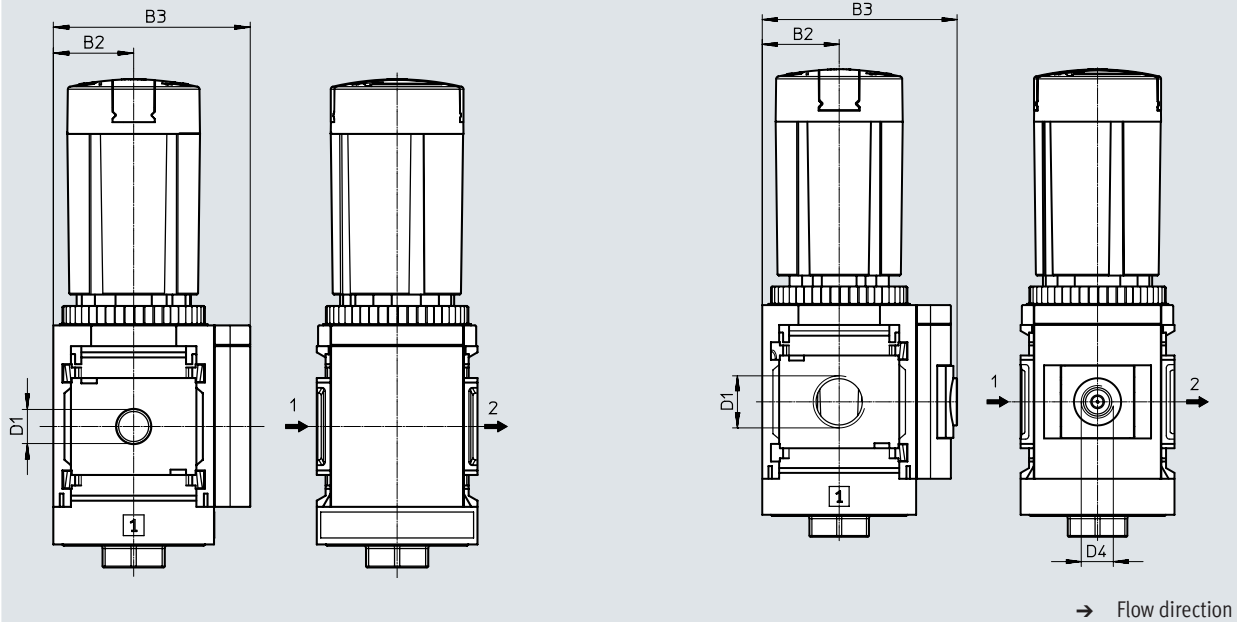
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[VS] Cover plate

- [A8] Adapter for EN pressure gauge 1/8, without pressure gauge
- [A4] Adapter for EN pressure gauge 1/4, without pressure gauge



Type	B2	B3	D1	D4
MS4-LR-1/8-...-VS	21	54	G1/8	-
MS4-LR-1/4-...-VS			G1/4	
MS4-LR-1/8-...-A8	21	58.5	G1/8	G1/8
MS4-LR-1/4-...-A8			G1/4	
MS4-LR-1/8-...-A4	21	58.5	G1/8	G1/4
MS4-LR-1/4-...-A4			G1/4	
MS6-LR-1/4-...-VS	31	76	G1/4	-
MS6-LR-3/8-...-VS			G3/8	
MS6-LR-1/2-...-VS			G1/2	
MS6-LR-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-LR-3/8-...-A4			G3/8	
MS6-LR-1/2-...-A4			G1/2	

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

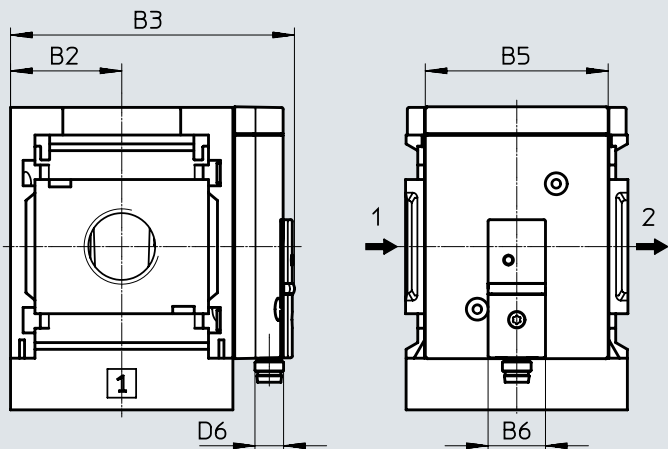
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[AD7 ... 10] Pressure sensor without LCD display (switching status indicator only)

Datasheets → Internet: sde5



Variant AD7:
SDE5-D10-O-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact

Variant AD9:
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

Variant AD8:
SDE5-D10-C-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/C contact

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

→ Flow direction

Type	B2	B3	B5	B6	D6
MS4-LR...-AD7/AD8/AD9/AD10	21	59.1	32	16	M8x1
MS6-LR...-AD7/AD8/AD9/AD10	31	79.1	51	16	M8x1

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

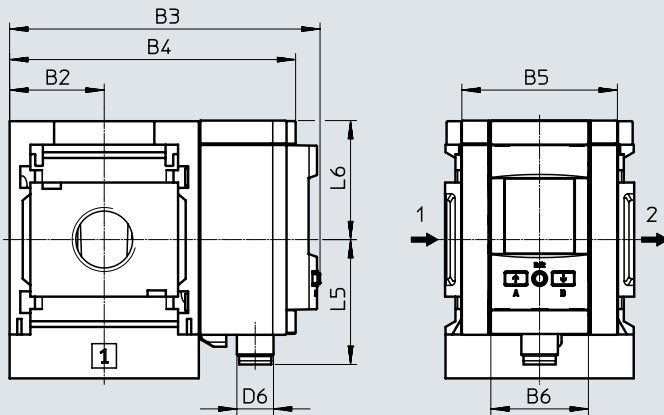
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[AD11/AD12] Pressure sensor with LCD display

Datasheets → Internet: spau



Variant AD11:
 SPAU-P10R-MS-L-PNLK-M12 with
 plug M12, 4-pin, IO-Link®, PNP,
 NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

Variant AD12:
 SPAU-P10R-MS-L-PNLK-M8 with plug
 M8, 4-pin, IO-Link®, PNP, NPN,
 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

→ Flow direction

Type	B2	B3	B4	B5	B6	D6	L5	L6
MS4-LR...-AD11	21	81.2	73.3	32	32	M12x1	41.2	39
MS4-LR...-AD12	21	81.2	73.3	32	32	M8x1	37.9	39
MS6-LR...-AD11	31	101.8	93.7	51	32	M12x1	41.2	39
MS6-LR...-AD12	31	101.8	93.7	51	32	M8x1	37.9	39

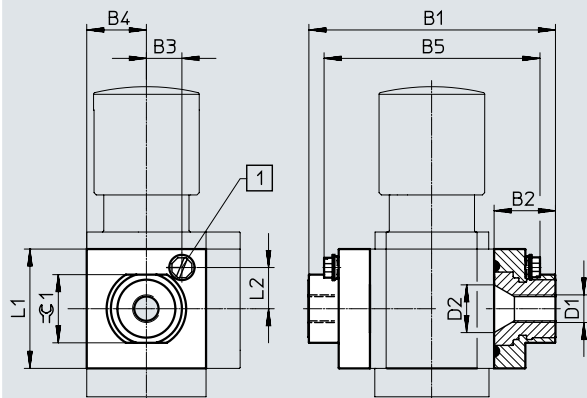
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pneumatic connection

Download CAD data → www.festo.com

[AG...]/[AQ...] Connecting plate



[1] Earthing screw M4x8 (only with MS4/6-...-EX)

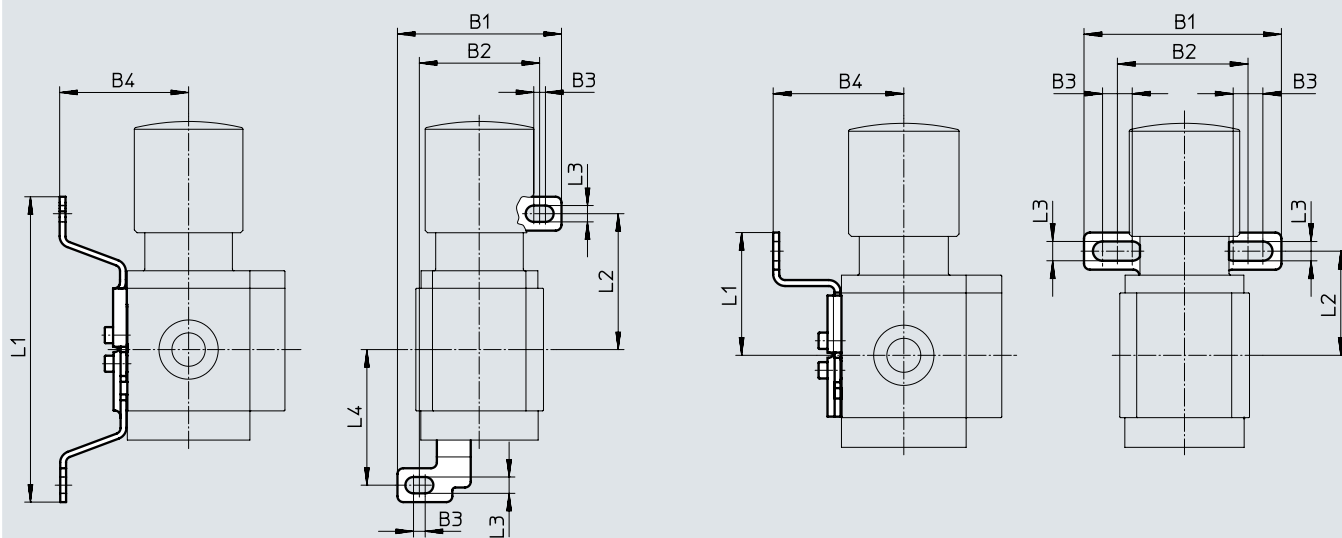
Type	B1	B2	B3	B4	B5	D1	D2	L1	L2	⌀ 1
MS4-LR...-AGA	83.4	21.5	12.5	21	72.5	G1/8	16.8	42	14.5	24
MS4-LR...-AGB						G1/4				21
MS4-LR...-AGC						G3/8				24
MS4-LR...-AQK						1/8-27 NPT				24
MS4-LR...-AQN						1/4-18 NPT				24
MS4-LR...-AQP						3/8-18 NPT				24
MS6-LR...-AGB	115	26.5	20.5	31	98.3	G1/4	24	62	15.5	34
MS6-LR...-AGC						G3/8				34
MS6-LR...-AGD						G1/2				26
MS6-LR...-AGE						G3/4				34
MS6-LR...-AQN						1/4-18 NPT				34
MS6-LR...-AQP						3/8-18 NPT				34
MS6-LR...-AQR						1/2-14 NPT				34
MS6-LR...-AQS						3/4-14 NPT				34

Dimensions – Type of mounting

Download CAD data → www.festo.com

[WB] Mounting bracket

[WBM] Mounting bracket



Type	B1	B2	B3	B4	L1	L2	L3	L4
MS4-LR...-WB	56	41	4	44.2	104.6	46.6	5.6	46.5
MS4-LR...-WBM	66.5	44	10	44	41.3	35	6.5	-
MS6-LR...-WB	79.4	62	4.5	53.8	157.6	71	6.6	71

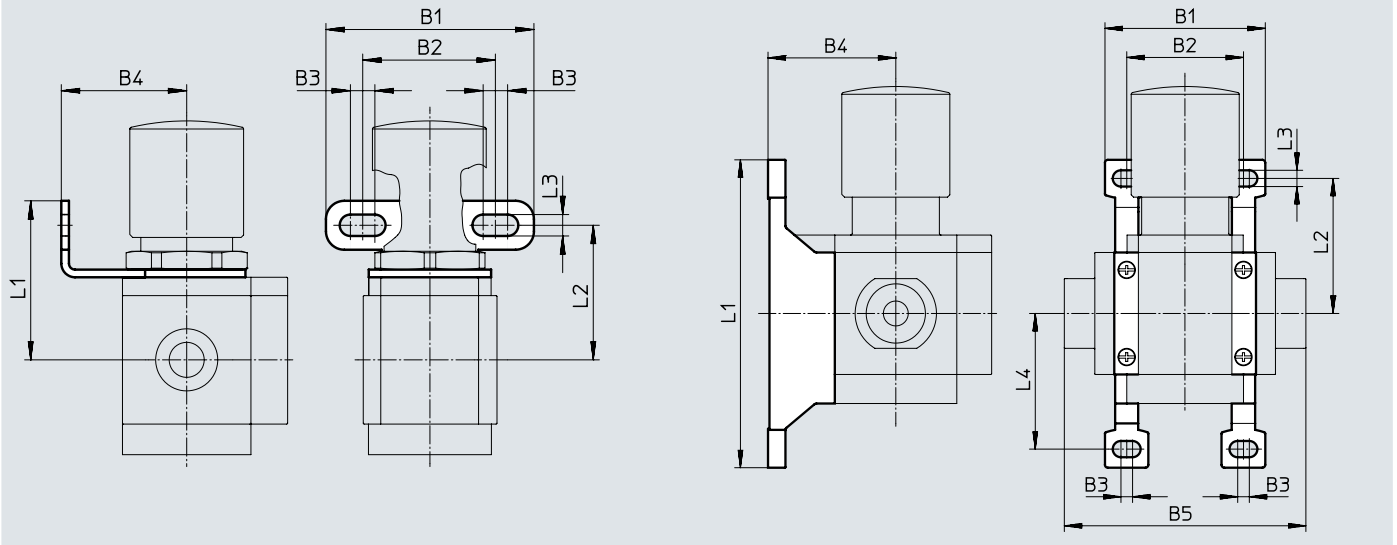
Datasheet

Dimensions – Type of mounting

Download CAD data → www.festo.com

[WR] Mounting bracket

[WP] Mounting bracket



Type	B1	B2	B3	B4	B5	L1	L2	L3	L4
MS4-LR...-WR	68	44	8	41	–	52	44	7	–
MS4-LR...-WP	55.2	40.2	4	44	83.4	106	46.5	5.6	46.7
MS6-LR...-WR	70	42	8.2	40	–	67	57	7.1	–
MS6-LR...-WP	79	62	4.5	54	115	158	71	6.6	71

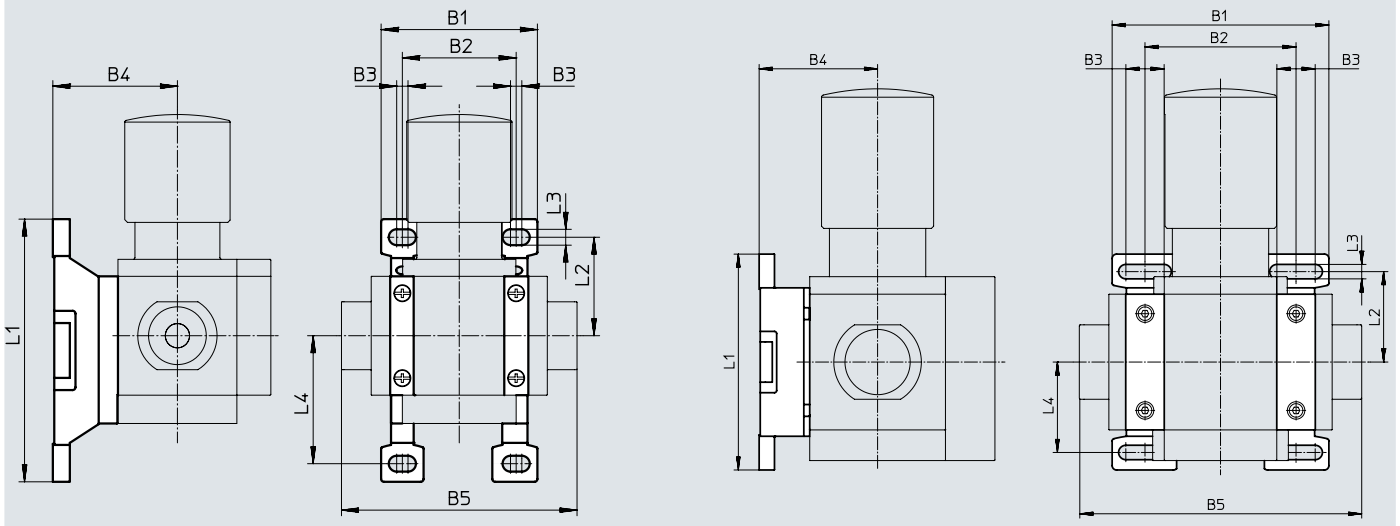
Dimensions – Type of mounting

Download CAD data → www.festo.com

[WPM] Mounting bracket

MS4

MS6



Type	B1	B2	B3	B4	B5	L1	L2	L3	L4
MS4-LR...-WPM	55.2	40.2	4	44	83.4	92.8	34.8	5.6	45.2
MS6-LR...-WPM	99	69	17.5	54	129	98.6	41.3	6.6	41.3

Datasheet

Dimensions – Rotary knob

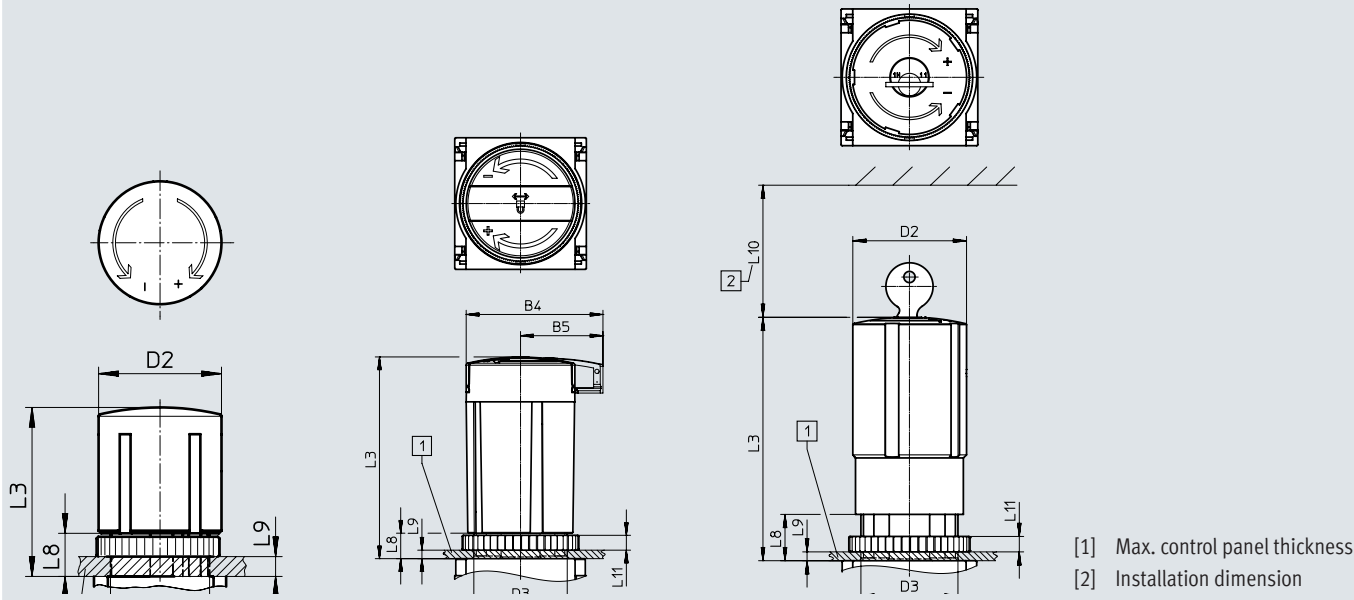
Download CAD data → www.festo.com

For control panel installation

[] Rotary knob with latch

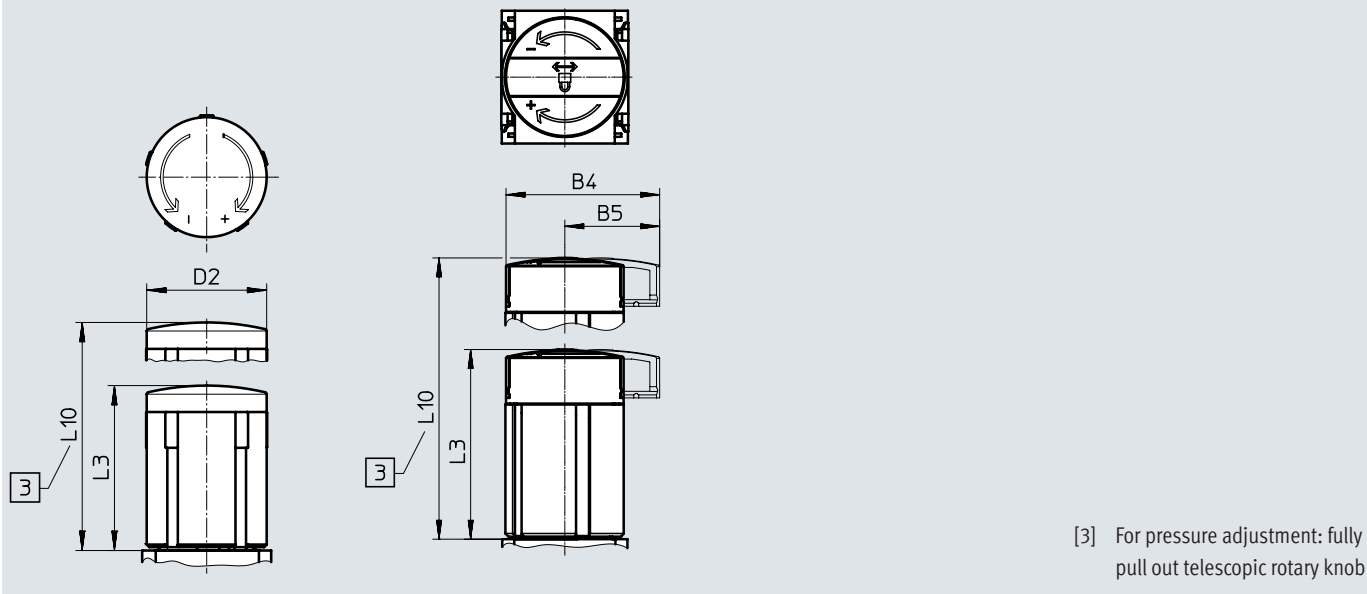
[AS] Rotary knob with latch, can be locked using accessories

[E11] Rotary knob with integrated lock



[LD] Rotary knob, long, with latch

[LD-AS] Rotary knob, long, with latch, can be locked using accessories



Type	B4	B5	D2	D3	L3	L8	L9	L10
MS4-LR...	-	-	37.2	M30x1.5	51.1	13	5	-
MS4-LR...-AS	48.6	30			60.2	13	5	-
MS4-LR...-E11	-	-			76	14	6	60
MS4-LR...-LD	-	-		-	51.1	-	-	76.8
MS4-LR...-LD-AS	48.6	30		-	60	-	-	85.7
MS6-LR...	-	-	51.2	M44x1	86	21	14	-
MS6-LR...-AS	64.4	38.8			95.1	12	5	-
MS6-LR...-E11	-	-			110	21	14	60
MS6-LR...-LD	-	-		-	86	-	-	139
MS6-LR...-LD-AS	64.4	38.8		-	95.5	-	-	148.5

Datasheet

Dimensions – Rotary knob pressure gauge

Download CAD data → www.festo.com

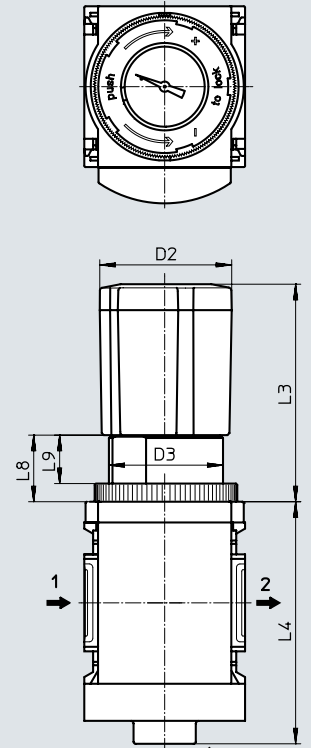
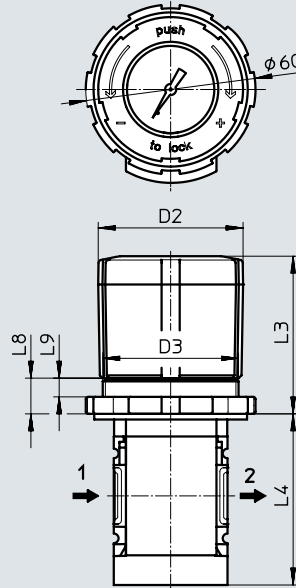
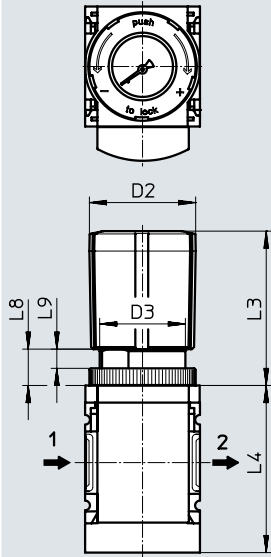
[DM1] Rotary knob pressure gauge, small

[DM2] Rotary knob pressure gauge, large

MS4

MS4

MS6



Note
 Due to the protruding rotary knob, only a distributor block MS4-FRM-FRZ or a branching module MS4-FRM can be mounted as a directly adjacent service unit component.

→ Flow direction

Type	D2	D3	L3	L4	L8	L9
MS4-LR...-DM1	37.2	M30x1.5	54	59	13	6.7
MS4-LR...-DM2	51.2	M48x1.5	56	59	13	7
MS6-LR...-DM2	51	M44x1	84	94	25.4	18.4

Datasheet

★ Core Range

Ordering data							
Pneumatic connection 1	Pressure regulation range	Flow direction	Part no.	Type			
MS4-LR...							
G1/8	0,3 ... 4 bar	From left to right	611432	MS4-LR-1/8-D5-VS-DM1			
			595546	MS4-LR-1/8-D5-VS-DM2			
			8190232	MS4-LR-1/8-D5-VS-OS			
			8190233	MS4-LR-1/8-D5-VS-OS-WR			
			529421	MS4-LR-1/8-D5-AS			
			From right to left	529422	MS4-LR-1/8-D5-AS-Z		
	0,3 ... 7 bar	From left to right	543520	MS4-LR-1/8-D6-WR			
			543519	MS4-LR-1/8-D6-A8			
			8190234	MS4-LR-1/8-D6			
			596080	MS4-LR-1/8-D6-RG			
			564918	MS4-LR-1/8-D6-VS-DM1			
			575246	MS4-LR-1/8-D6-VS-DM2			
			529423	MS4-LR-1/8-D6-AS			
					From right to left	529424	MS4-LR-1/8-D6-AS-Z
	0,5 ... 12 bar	From left to right	611577	MS4-LR-1/8-D7			
			563993	MS4-LR-1/8-D7-VS-DM1			
			529425	MS4-LR-1/8-D7-AS			
					From right to left	529426	MS4-LR-1/8-D7-AS-Z
	G1/4	0,3 ... 4 bar	From left to right	589482	MS4-LR-1/4-D5		
				578556	MS4-LR-1/4-D5-A8		
579184				MS4-LR-1/4-D5-RG			
611015				MS4-LR-1/4-D5-VS-DM1			
594803				MS4-LR-1/4-D5-VS-DM2			
8190235				MS4-LR-1/4-D5-WR			
★ 529415				MS4-LR-1/4-D5-AS			
					From right to left	529416	MS4-LR-1/4-D5-AS-Z
0,3 ... 7 bar				From left to right	611578	MS4-LR-1/4-D6	
					589294	MS4-LR-1/4-D6-A8	
		8190236	MS4-LR-1/4-D6-A8-E11				
		8190237	MS4-LR-1/4-D6-E11				
		8190238	MS4-LR-1/4-D6-E11-WR				
		567523	MS4-LR-1/4-D6-RG				
		8190239	MS4-LR-1/4-D6-RG-E11				
		8190240	MS4-LR-1/4-D6-RG-WR				
		555873	MS4-LR-1/4-D6-VS-DM1				
		555874	MS4-LR-1/4-D6-VS-DM2				
		607246	MS4-LR-1/4-D6-WR				
		★ 529417	MS4-LR-1/4-D6-AS				
			From right to left	529418	MS4-LR-1/4-D6-AS-Z		
0,5 ... 12 bar		From left to right	8190241	MS4-LR-1/4-D7			
			610772	MS4-LR-1/4-D7-A8			
			8190242	MS4-LR-1/4-D7-VS-DM1			
			578847	MS4-LR-1/4-D7-VS-DM2			
			8190243	MS4-LR-1/4-D7-WR			
			★ 529419	MS4-LR-1/4-D7-AS			
					From right to left	529420	MS4-LR-1/4-D7-AS-Z

Datasheet

★ Core Range

Ordering data				
Pneumatic connection 1	Pressure regulation range	Flow direction	Part no.	Type
MS6-LR...				
G1/4	0,3 ... 4 bar	From left to right	529995	MS6-LR-1/4-D5-AS
	0,3 ... 7 bar		529997	MS6-LR-1/4-D6-AS
	0,5 ... 12 bar		529999	MS6-LR-1/4-D7-AS
G3/8	0,3 ... 4 bar	From left to right	530001	MS6-LR-3/8-D5-AS
	0,3 ... 7 bar		530003	MS6-LR-3/8-D6-AS
	0,5 ... 12 bar	From right to left	530004	MS6-LR-3/8-D6-AS-Z
G1/2	0,3 ... 4 bar	From left to right	★ 529989	MS6-LR-1/2-D5-AS
			★ 529991	MS6-LR-1/2-D6-AS
	0,5 ... 12 bar	From right to left	529992	MS6-LR-1/2-D6-AS-Z
		From left to right	★ 529993	MS6-LR-1/2-D7-AS
		From right to left	529994	MS6-LR-1/2-D7-AS-Z

Ordering data – Modular product system

Ordering table		Grid dimension	[mm]	40	62	Conditions	Code	Enter code
Module no.		527690			527663			
Series	Standard						MS	MS
Size	4			6			...	
Function	Pressure regulator						-LR	-LR
Pneumatic connection	Female thread G1/8	–				[1]	-1/8	
	Female thread G1/4	Female thread G1/4				[1]	-1/4	
	–	Female thread G3/8				[1]	-3/8	
	–	Female thread G1/2				[1]	-1/2	
	Connecting plate G1/8	–					-AGA	
	Connecting plate G1/4	Connecting plate G1/4					-AGB	
	Connecting plate G3/8	Connecting plate G3/8					-AGC	
	–	Connecting plate G1/2					-AGD	
	–	Connecting plate G3/4					-AGE	
	Connecting plate 1/8 NPT	–				[1]	-AQK	
	Connecting plate 1/4 NPT	Connecting plate 1/4 NPT				[1]	-AQN	
	Connecting plate 3/8 NPT	Connecting plate 3/8 NPT				[1]	-AQP	
	–	Connecting plate 1/2 NPT				[1]	-AQR	
	–	Connecting plate 3/4 NPT				[1]	-AQS	
Pressure regulation range/actuation	0.3 ... 4 bar, manually actuated						-D5	
	0.3 ... 7 bar, manually actuated						-D6	
	0.5 ... 12 bar, manually actuated						-D7	
	–	0.5 ... 16 bar, manually actuated				[1] [4]	-D8	
Pressure gauge alternatives	MS pressure gauge							
	Cover plate						-VS	
	Adapter for EN pressure gauge 1/8, without pressure gauge	–					-A8	
	Adapter for EN pressure gauge 1/4, without pressure gauge						-A4	
	Integrated pressure gauge, red/green scale					[2] [3] [4]	-RG	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/O contact					[1] [2] [5]	-AD7	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/C contact					[1] [2] [5]	-AD8	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/O contact					[1] [2] [5]	-AD9	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/C contact					[1] [2] [5]	-AD10	
	Pressure sensor with LCD display, plug M12, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA					[2] [5]	-AD11	
	Pressure sensor with LCD display, plug M8, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA					[2] [5]	-AD12	

[1] 1/8, 1/4, 3/8, 1/2, AQK, AQN, AQP, AQR, AQS, D8, AD7 ... AD10, Not with EU EX4 certification.
DM1, DM2, KD, E11, WPM

[2] RG, AD7 ... AD10, AD11/AD12, OS, KD, AS, WR, WB

[3] RG, OS, KD, AS

[4] D8, RG, OS, KD, AS

[5] AD7 ... AD10, AD11/AD12

MS4: not with rotary knob alternative DM2.

Not with rotary knob alternative DM1.

MS6: not with rotary knob alternative DM2.

Measuring range max. 10 bar.

Not with pressure regulation range D8

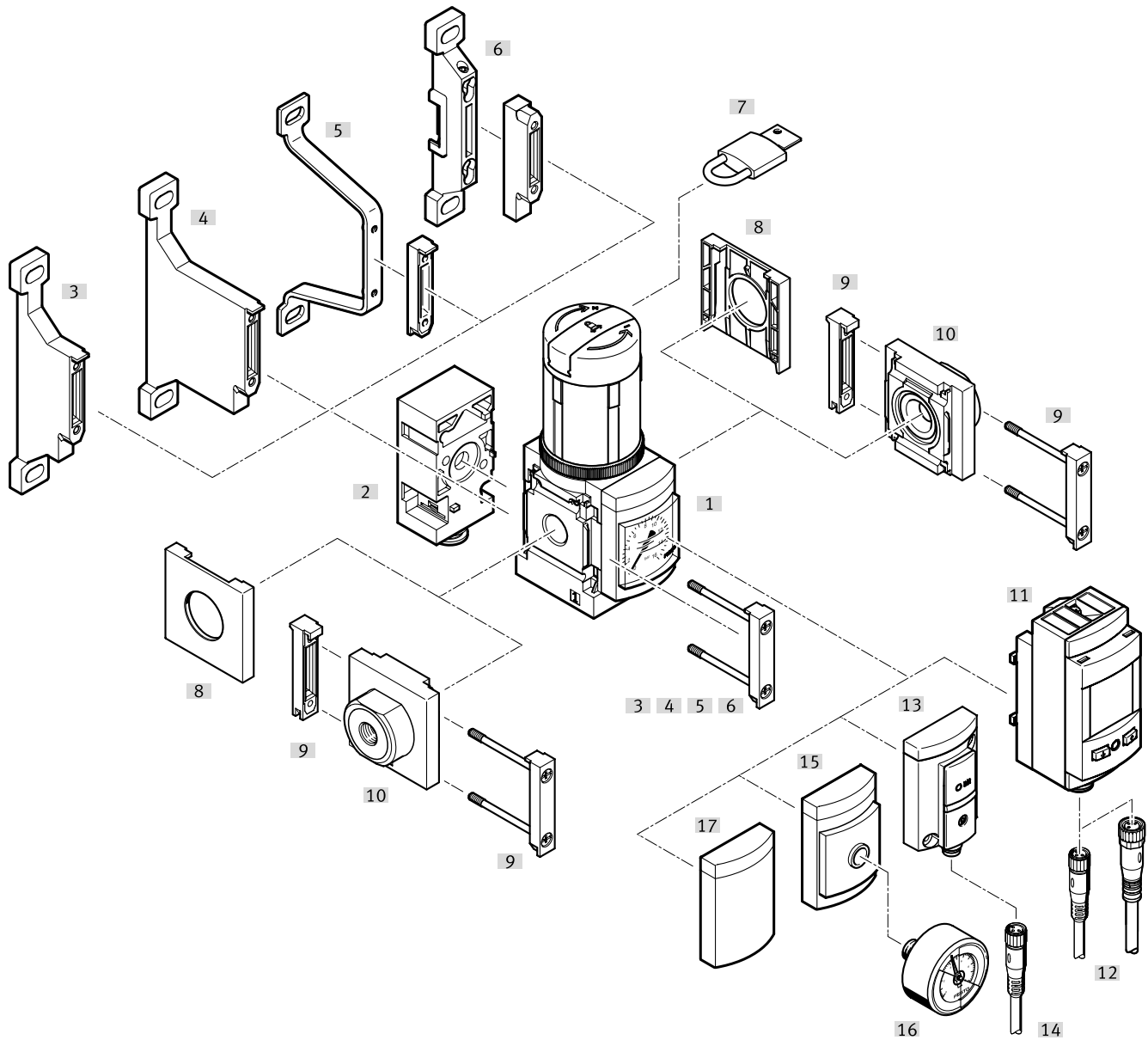
Ordering data – Modular product system


Ordering table		Grid dimension	[mm]	40	62	Conditions	Code	Enter code
Alternative pressure gauge scale	MS pressure gauge, bar							
	psi					[6]	-PSI	
	MPa					[7]	-MPA	
Secondary exhausting	With secondary exhausting							
	Without secondary exhausting					[2] [3] [4]	-OS	
Rotary knob alternative	None							
	Long rotary knob					[8]	-LD	
	Rotary knob pressure gauge, small			–		[1] [8] [9]	-DM1	
	Rotary knob pressure gauge, large					[1] [8] [9]	-DM2	
Alternative mounting position	None							
	Rotary knob underneath					[1] [2] [3] [4] [10]	-KD	
Locking option	None							
	Lockable using accessories					[2] [3] [4]	-AS	
	With integrated lock					[1]	-E11	
Type of mounting	Without mounting bracket							
	Mounting bracket with knurled nut for regulator head					[2] [11]	-WR	
	Mounting bracket standard design					[12]	-WP	
	Mounting bracket for hooking in service unit components					[1] [12]	-WPM	
	Mounting bracket centrally at the rear (wall mounting top and bottom), connecting plates not required					[2]	-WB	
	Mounting bracket centrally at the rear (wall mounting top), connecting plates not required			–			-WBM	
EU certification	None							
	II 2GD to EU Explosion Protection Directive (ATEX)						-EX4	
UL certification	None							
	cULus, ordinary location for Canada and USA						-UL1	
Flow direction	Flow direction from left to right							
	Flow direction from right to left						-Z	

- [6] PSI Not with pressure gauge alternatives VS, A8, A4, RG, AD7 ... AD10.
 [7] MPA Not with pressure gauge alternatives VS, A8, A4, AD7 ... AD10.
 Not with rotary knob alternative DM1, DM2.
 [8] LD, DM1, DM2 Not with locking option E11.
 [9] DM1, DM2 Can only be combined with pressure gauge alternatives VS, A8, A4, AD7 ... AD10.
 [10] KD Not with pressure gauge alternative RG.
 Not with alternative pressure gauge scale MPa.
 Not with mounting type WP.
 [11] WR Not with long rotary knob LD or rotary knob alternative DM2.
 [12] WP, WPM Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS.

Peripherals overview

Pressure regulator MS4/MS6-LRB with pressure output at the rear



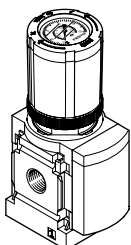
 **Note**

Additional accessories:

- Module connectors for combination with size MS4/MS6 or size MS9
→ Internet: amv, rmv, armv
- Adapters for mounting on profiles
→ Internet: ipm-80, ipm-40-80, ipm-80-80

Pressure regulator with rotary knob pressure gauge

MS4-LRB-...-DM1/
MS6-LRB-...-DM2

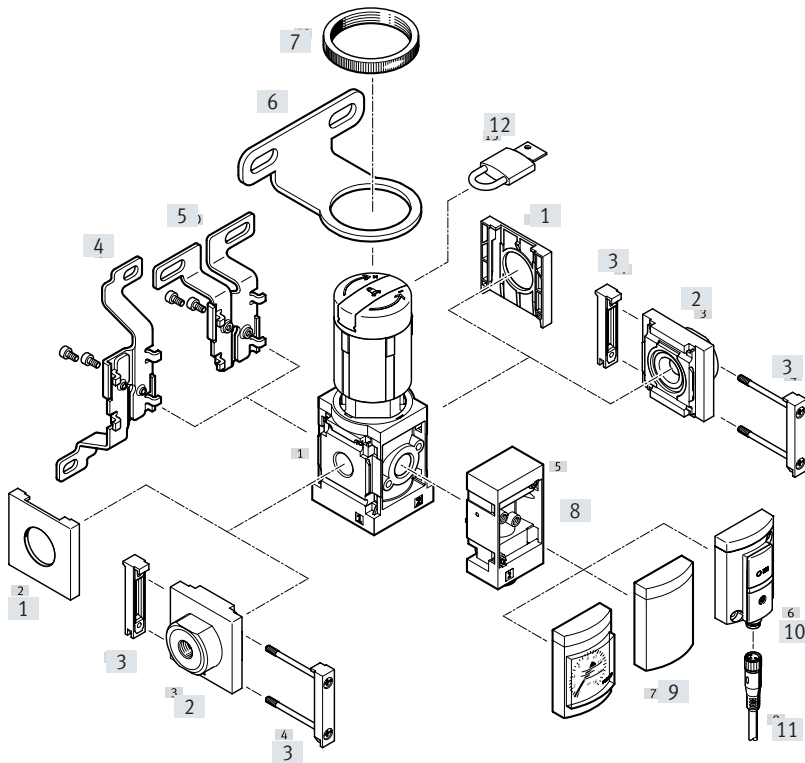


Peripherals overview

Mounting attachments and accessories		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Pressure regulator MS4/MS6-LRB	■	■	■	■	32
[2]	Angled outlet block B...	■	■	■	■	46
[3]	Mounting bracket MS4/6-WP	-	■	■	■	ms4-wp, ms6-wp
[4]	Mounting bracket MS4/6-WPB	-	■	■	■	ms4-wp, ms6-wp
[5]	Mounting bracket MS4/6-WPE	-	■	■	■	ms4-wp, ms6-wp
[6]	Mounting bracket MS4/6-WPM	-	■	■	■	ms4-wp, ms6-wp
[7]	Padlock LRVS-D	■	■	■	■	102
[8]	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
[9]	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
[10]	Connecting plate SET MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
[11]	Pressure sensor with LCD display AD11/AD12	■	■	■	■	46
[12]	Connecting cable NEBU-M8...-LE4/NEBU-M12...-LE4	■	■	■	■	102
[13]	Pressure sensor without display AD7 ... AD10	■	■	■	■	46
[14]	Connecting cable NEBU-M8...-LE3	■	■	■	■	102
[15]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	46
[16]	Pressure gauge MA	■	■	■	■	102
[17]	Cover plate VS	■	■	■	■	46

Peripherals overview

Pressure regulator MS4/MS6-LRB with pressure output at the front



Note

Additional accessories:

- Module connectors for combination with size MS4/MS6 or size MS9
 - Internet: amv, rmv, armv
- Adapters for mounting on profiles
 - Internet: ipm-80, ipm-40-80, ipm-80-80

Peripherals overview

Mounting attachments and accessories		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Cover cap MS4/6-END	■	–	■	–	ms4-end, ms6-end
[2]	Connecting plate SET MS4/6-AG...	–	■	–	■	ms4-ag, ms6-ag
[3]	Module connector MS4/6-MV	–	■	■	■	ms4-mv, ms6-mv
[4]	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
[5]	Mounting bracket MS4-WBM	■	■	–	–	ms4-wbm
[6]	Mounting bracket MS4/6-WR	■	■	–	–	ms4-wr, ms6-wr
[7]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[8]	Angled outlet block B...	■	■	■	■	46
[9]	Cover plate VS	■	■	■	■	46
[10]	Pressure sensor without display AD7 ... AD10	■	■	■	■	46
[11]	Connecting cable NEBU-M8...-LE3	■	■	■	■	102
[12]	Padlock LRVS-D	■	■	■	■	102

Type codes

001	Series	
MS	MS series	
002	Size	
4	Grid dimension 40 mm	
003	Function	
LRB	Pressure regulator for manifold assembly	
004	Pneumatic connection	
1/4	Female thread G1/4	
AGA	Sub-base G1/8	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
005	Pressure regulation range	
D5	0.3 ... 4 bar	
D6	0.3 ... 7 bar	
D7	0.5 ... 12 bar	
006	Pressure gauge alternatives	
	None	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge	
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O	
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C	
AD9	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O	
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C	
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA	
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA	
RG	Integrated pressure gauge, red/green scale	
VS	Cover plate	
007	Alternative pressure gauge scale	
	MS pressure gauge	
PSI	psi	
MPA	MPa	

008	Secondary exhausting	
	With secondary exhausting	
OS	Without secondary exhaust	
009	Rotary knob alternative	
	None	
LD	Long rotary knob	
DM1	Rotary knob pressure gauge, small	
010	Alternative mounting position	
	None	
KD	Rotary knob underneath	
011	Lockability	
	None	
AS	Can be locked using accessories	
E11	With integrated lock	
012	Alternative pressure outlet	
	None	
BC	Angled outlet block QS-6	
BD	Angled outlet block QS-8	
013	Type of mounting	
	Without mounting bracket	
WR	Mounting bracket with knurled nut on regulator knob	
WP	Mounting bracket basic design	
WPB	Mounting bracket for large wall gap	
WPM	Mounting bracket for hooking in service unit components	
WB	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required	
WBM	Mounting centrally at rear (wall mounting top), connecting plates not required	
014	EU certification	
	None	
EX4	II 2GD	
015	UL certification	
	None	
UL1	cULus ordinary location for Canada and USA	
016	Outlet direction	
	Pressure output to the rear	
Z	Pressure output to the front	

Type codes

001	Series
MS	MS series

002	Size
6	Grid dimension 62 mm

003	Function
LRB	Pressure regulator for manifold assembly

004	Pneumatic connection
1/2	Female thread G1/2
AGB	Sub-base G1/4
AGC	Sub-base G3/8
AGD	Sub-base G1/2
AGE	Sub-base G3/4

005	Pressure regulation range
D5	0.3 ... 4 bar
D6	0.3 ... 7 bar
D7	0.5 ... 12 bar
D8	0.5 ... 16 bar

006	Pressure gauge alternatives
	None
A4	Adapter for EN pressure gauge 1/4, without pressure gauge
A8	Adapter for EN pressure gauge 1/8, without pressure gauge
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C
AD9	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
RG	Integrated pressure gauge, red/green scale
VS	Cover plate

007	Alternative pressure gauge scale
	MS pressure gauge
PSI	psi
MPA	MPa

008	Secondary exhausting
	With secondary exhausting
OS	Without secondary exhaust

009	Rotary knob alternative
	None
LD	Long rotary knob
DM2	Rotary knob pressure gauge, large

010	Alternative mounting position
	None
KD	Rotary knob underneath

011	Lockability
	None
AS	Can be locked using accessories
E11	With integrated lock

012	Alternative pressure outlet
	None
BD	Angled outlet block QS-8
BE	Angled outlet block QS-10

013	Type of mounting
	Without mounting bracket
WR	Mounting bracket with knurled nut on regulator knob
WP	Mounting bracket basic design
WPM	Mounting bracket for hooking in service unit components
WB	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required
WBM	Mounting centrally at rear (wall mounting top), connecting plates not required

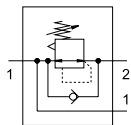
014	EU certification
	None
EX4	II 2GD

015	UL certification
	None
UL1	cULus ordinary location for Canada and USA

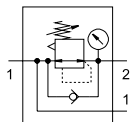
016	Outlet direction
	Pressure output to the rear
Z	Pressure output to the front





Datasheet

Without pressure gauge



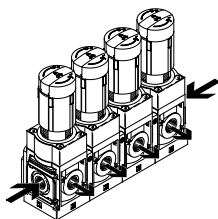
With pressure gauge



-  Flow rate
300 ... 7300 l/min
-  Temperature range
-10 ... +60°C
-  Operating pressure
0.8 ... 20 bar
-  www.festo.com



Several pressure regulators mounted next to one another to form a regulator manifold:



The pressure regulator is suitable for manifold assemblies with through air supply, for configuring a regulator manifold with separate, independent pressure regulation ranges. The pressure output is to the front or rear.

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure regulation ranges
- Actuator lock to protect the set values from being adjusted
- Available with and without secondary exhausting
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Return flow option for exhausting from output 2 to output 1 already integrated
- Optional pressure sensor
- Optional rotary knob pressure gauge
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data			MS4	MS6
Size			MS4	MS6
Pneumatic connection 1				
Female thread			G1/4	G1/2
Connecting plate	[AG...]		G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4
Pneumatic connection 2				
Female thread			G1/4	G1/2
Angled outlet block	[BC]		QS-6	-
	[BD]		QS-8	QS-8
	[BE]		-	QS-10
Design			Directly actuated diaphragm regulator with through compressed air supply	
Regulator function			Output pressure constant, with input pressure compensation, with return flow, with/without secondary exhausting	
Type of mounting			Via accessories In-line installation Front panel mounting	
Mounting position			Any	
Actuator lock			Rotary knob with latch Rotary knob with latch, can be locked using accessories Rotary knob with integrated lock	
Pressure regulation range/actuation	[D5]	[bar]	0.3 ... 4, manually actuated ¹⁾	
	[D6]	[bar]	0.3 ... 7, manually actuated ¹⁾	
	[D7]	[bar]	0.5 ... 12, manually actuated (0.5 ... 10 with pressure sensor or with UL certification) ¹⁾	
	[D8]	[bar]		0.5 ... 16, manually actuated (0.5 ... 10 with UL certification)
Max. pressure hysteresis		[bar]	0.25	0.25 (0.4 with rotary knob pressure gauge)
Pressure indication			Via pressure sensor for indicating the output pressure and electrical output via LCD display Via pressure sensor for indicating the output pressure and electrical output Via pressure gauge for indicating the output pressure Via pressure gauge with red/green scale for indicating the output pressure Via pressure gauge in the rotary knob for displaying the output pressure Prepared for G1/8	
			Prepared for G1/4	-

1) MS4: the pressure regulation range for pressure regulators with rotary knob pressure gauge starts at 0.8 bar.

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]							
Size	MS4				MS6		
	Standard	Angled outlet block		Standard	Angled outlet block		
		[BC]: QS-6	[BD]: QS-8		[BD]: QS-8	[BE]: QS-10	
Pressure regulation range	[D5]	1900 ²⁾	300 ²⁾	650 ²⁾	7300 ²⁾	600 ²⁾	750 ²⁾
	[D6]	1700	350	840	6300	880	1000
	[D7]	1500 ³⁾	350	640	5500	800	950
	[D8]	–	–	–	4500	750	850

- 1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar
2) Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar
3) With a rotary knob pressure gauge, $q_{nN} = 800$ l/min, $q_{n\max} = 2200$ l/min

Operating and environmental conditions		
Size	MS4	MS6
Operating pressure [bar]	0.8 ... 14 (0.8 ... 10) ¹⁾	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
	Inert gases	
Note on the operating/ pilot medium	Lubricated operation possible (in which case lubrication will always be required)	
Ambient temperature [°C]	–10 ... +60 (0 ... +50) ²⁾	
Temperature of medium [°C]	–10 ... +60 (0 ... +50) ²⁾	
Storage temperature [°C]	–10 ... +60	
Corrosion resistance class CRC ³⁾	2	
Food-safe ⁴⁾	See supplementary material information	
UL certification ⁴⁾	c UL us - Recognized (OL)	

- 1) Value in brackets applies to MS4/MS6-LRB with UL certification.
2) Value in brackets applies to MS4/MS6-LRB with pressure sensor.
3) More information www.festo.com/x/topic/crc
4) More information: www.festo.com/catalogue/ms-lrb → Support/Downloads.

ATEX	
EU certification	[EX4]
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion ambient temperature	–10°C ≤ Ta ≤ +60°C
Explosion protection certification outside the EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) ¹⁾	To UK regulations for explosions

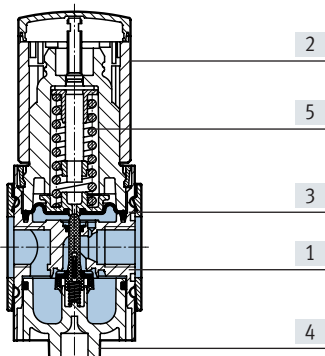
- 1) More information: www.festo.com/catalogue/ms-lrb → Support/Downloads.

Weight [g]		
Size	MS4	MS6
Pressure regulator	222	747
Pressure regulator with rotary knob with integrated lock	347	1017

Datasheet

Materials

Sectional view



Pressure regulator (manifold assembly)

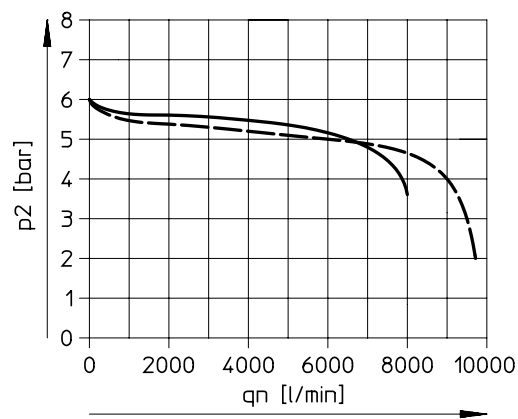
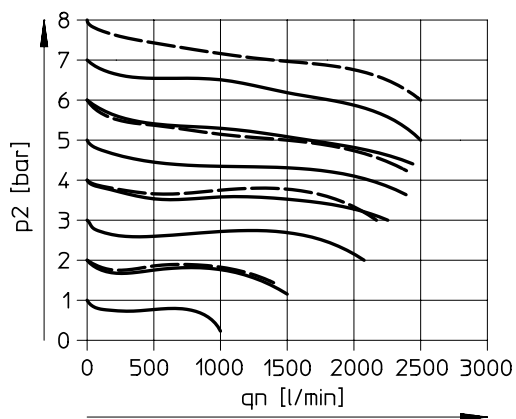
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA, POM
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragm	NBR
[4]	Bottom cover	PET
[5]	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

MS4-LRB-1/4

MS6-LRB-1/2

Input pressure $p_1 = 10$ bar



— [D6]: 0.3 ... 7 bar
 - - - [D7]: 0.5 ... 12 bar¹⁾

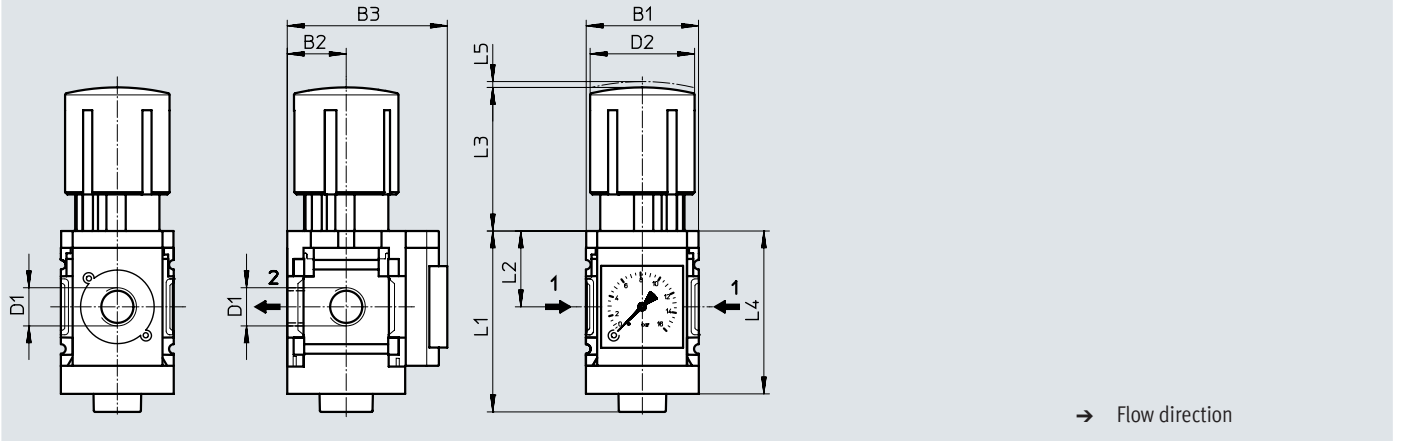
1) There is a higher initial pressure drop in the characteristic curve for variant DM1.

Datasheet

Dimensions – Basic version

Download CAD data → www.festo.com

- [] Integrated MS pressure gauge with standard scale
- [RG] Integrated MS pressure gauge with red/green scale
- [] Rotary knob with latch



Type	B1	B2	B3		D1	D2	L1	L2	L3	L4	L5
			Pressure gauge								
			Standard scale	Red/green scale							
MS4-LRB-1/4	40	21	57	58.5	G1/4	37.2	64.4	27	60.3	58.5	2
MS6-LRB-1/2	62	31	77	78.5	G1/2	51.2	94	39	95.1	85	5

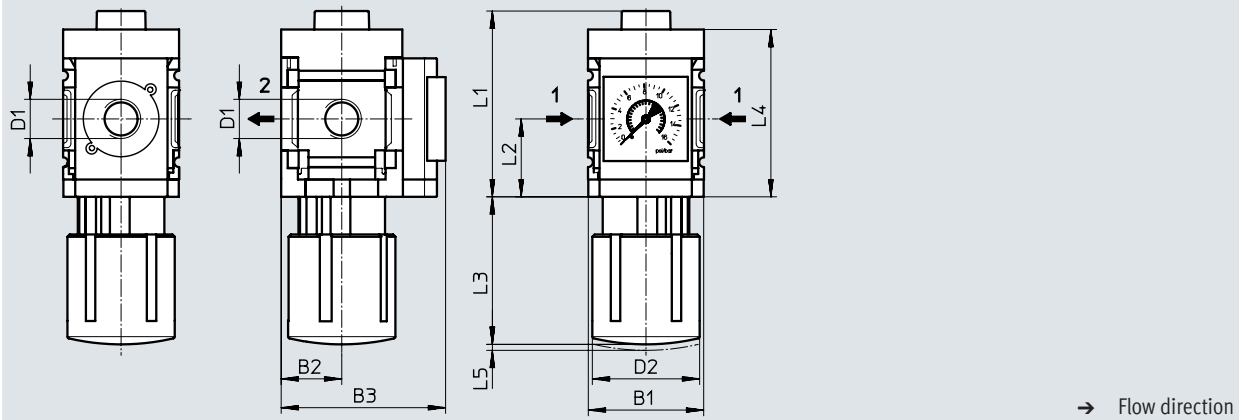
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Alternative mounting position

Download CAD data → www.festo.com

[KD] Rotary knob underneath



→ Flow direction

Type	B1	B2	B3	D1	D2	L1	L2	L3	L4	L5
MS4-LRB-1/4-...-KD	40	21	57	G1/4	37.2	64.4	27	60.3	58.5	2
MS6-LRB-1/2-...-KD	62	31	77	G1/2	51.2	94	39	95.1	85	5

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Angled outlet block

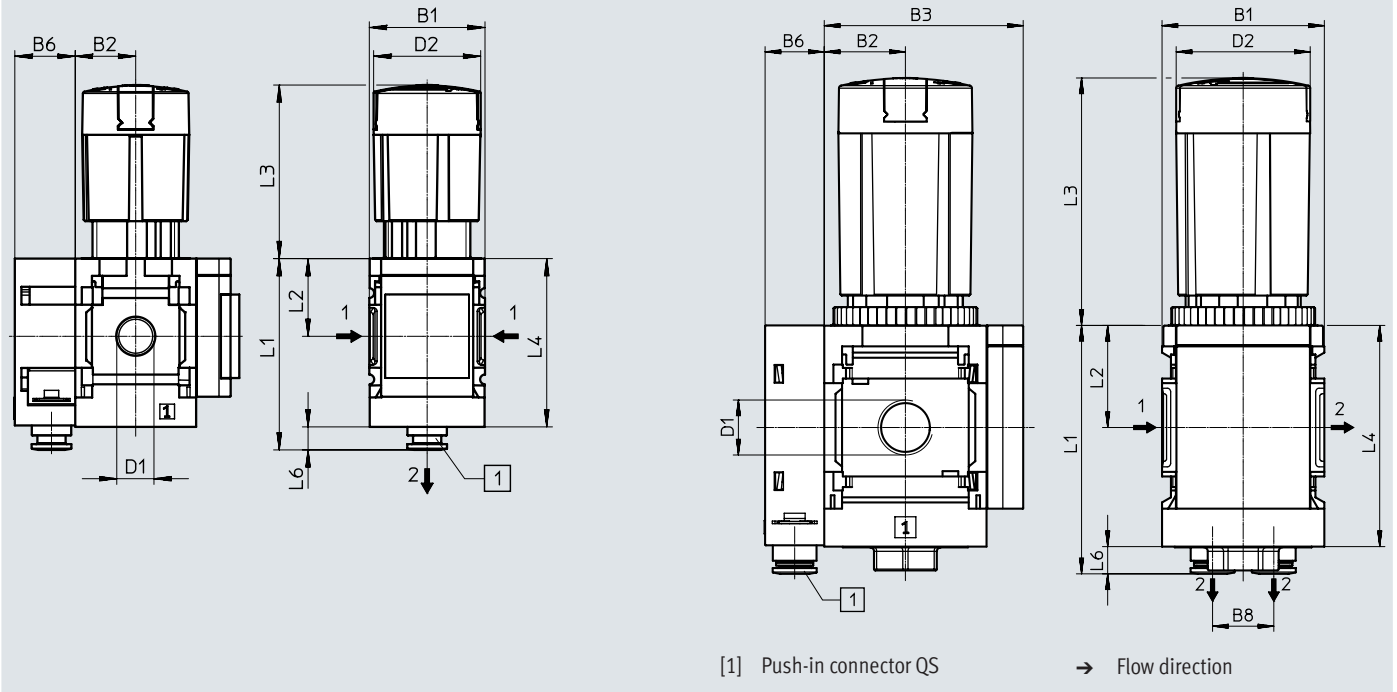
Download CAD data → www.festo.com

[BC]/[BD]/[BE] Angled outlet block

[] Pressure output at the rear

MS4

MS6



Type	B1	B2	B3	B6	B8	D1	D2 ∅	L1	L2	L3	L4	L6
MS4-LRB-1/4-...-BC/BD	40	21	57	21	–	G1/4	37.2	66.5	27	60.3	58.5	8
MS6-LRB-1/2-...-BD/BE	62	31	77	23	23.4	G1/2	51.2	94.9	39	95.1	85	10.4

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Angled outlet block

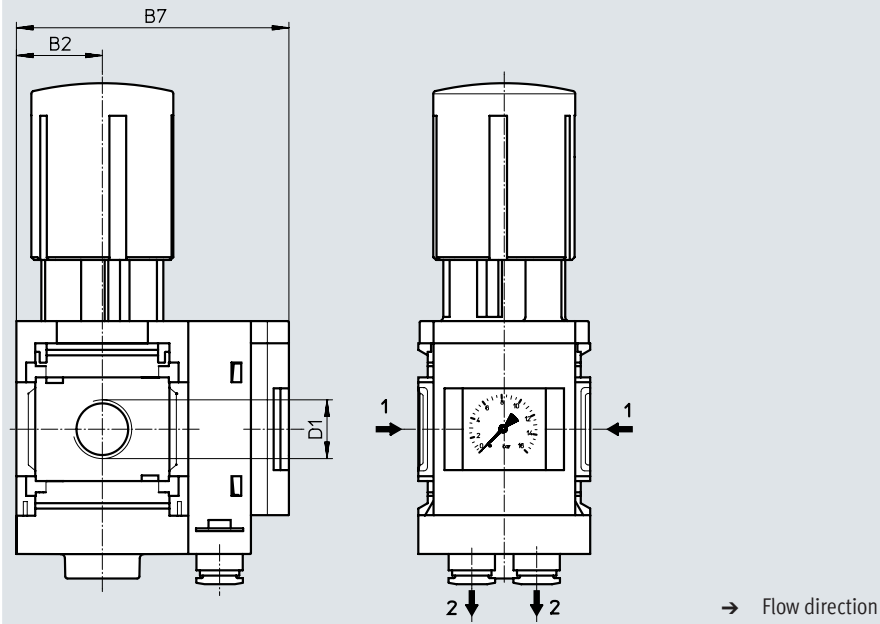
Download CAD data → www.festo.com

[BC]/[BD]/[BE] Angled outlet block

[Z] Pressure output to front

MS4 (not shown)

MS6



Type	B2	B7	B8	D1
MS4-LRB-1/4-...-BC/BD	21	75	–	G1/4
MS6-LRB-1/2-...-BD/BE	31	99	23.4	G1/2

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

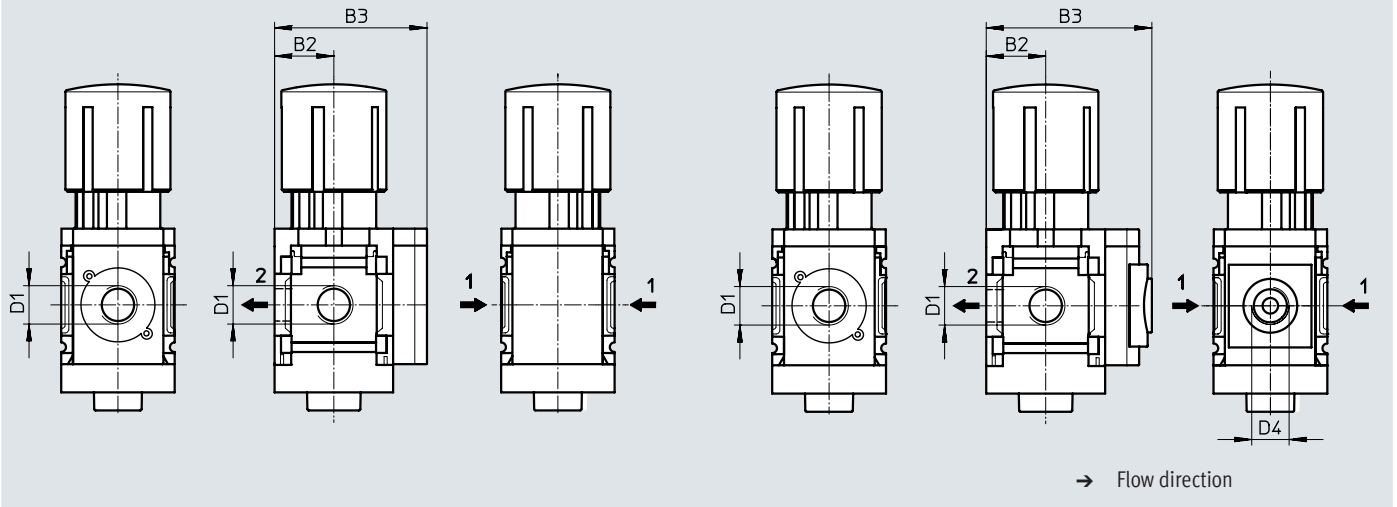
Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[VS] Cover plate

[A8] Adapter for EN pressure gauge 1/8, without pressure gauge

[A4] Adapter for EN pressure gauge 1/4, without pressure gauge

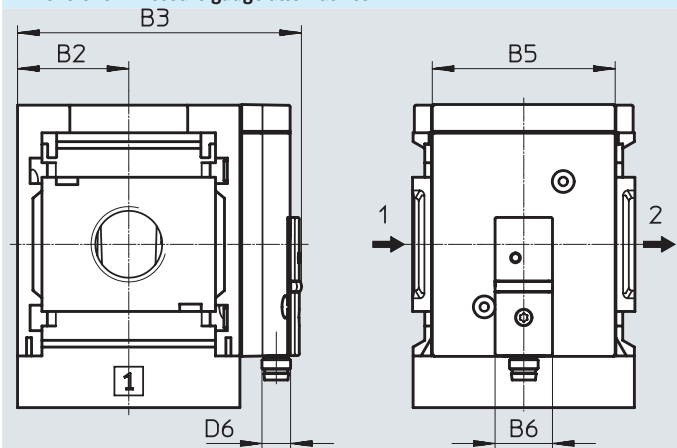


Type	B2	B3	D1	D4
MS4-LRB-1/4-...-VS	21	54	G1/4	-
MS4-LRB-1/4-...-A8	21	58.5	G1/4	G1/8
MS4-LRB-1/4-...-A4	21	58.5	G1/4	G1/4
MS6-LRB-1/2-...-VS	31	76	G1/2	-
MS6-LRB-1/2-...-A4	31	78.5	G1/2	G1/4

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pressure gauge alternatives



Download CAD data → www.festo.com

Variant AD7:
SDE5-D10-0-...-P-M8 with 3-pin plug
M8x1, threshold value comparator,
1 switching output PNP, N/O contact

Variant AD9:
SDE5-D10-03-...-P-M8 with 3-pin
plug M8x1, window comparator,
1 switching output PNP, N/O contact

Variant AD8:
SDE5-D10-C-...-P-M8 with 3-pin plug
M8x1, threshold value comparator,
1 switching output PNP, N/C contact

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin
plug M8x1, window comparator,
1 switching output PNP, N/C contact

→ Flow direction

Type	B2	B3	B5	B6	D6	L5	L6
MS4-LR ...-AD7/AD8/AD9/AD10	21	59.1	32	16	M8x1	-	-
MS6-LR ...-AD7/AD8/AD9/AD10	31	79.1	51	16	M8x1	-	-

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

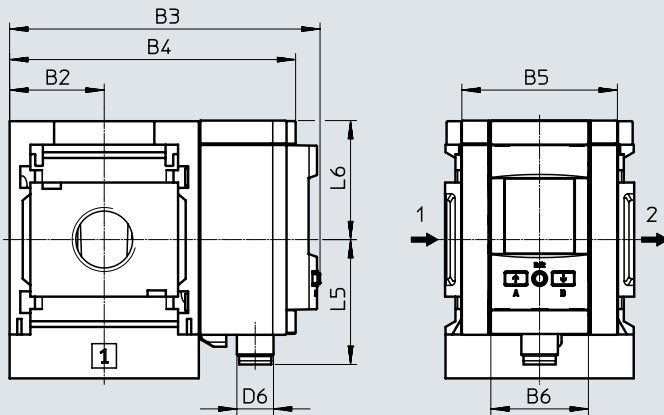
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[AD11/AD12] Pressure sensor with LCD display

Datasheets → Internet: spau



Variant AD11:

SPAU-P10R-MS-L-PNLK-M12 with plug M12, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

Variant AD12:

SPAU-P10R-MS-L-PNLK-M8 with plug M8, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

→ Flow direction

Type	B2	B3	B4	B5	B6	D6	L5	L6
MS4-LR...-AD11	21	81.2	73.3	32	32	M12x1	41.2	39
MS4-LR...-AD12	21	81.2	73.3	32	32	M8x1	37.9	39
MS6-LR...-AD11	31	101.8	93.7	51	32	M12x1	41.2	39
MS6-LR...-AD12	31	101.8	93.7	51	32	M8x1	37.9	39

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Rotary knob

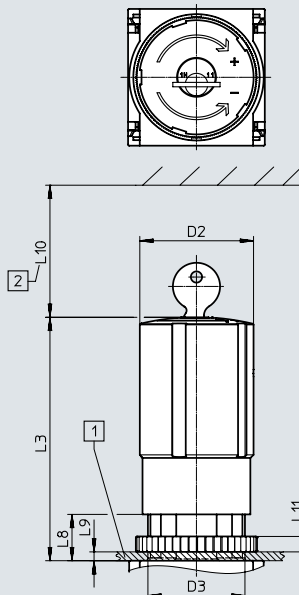
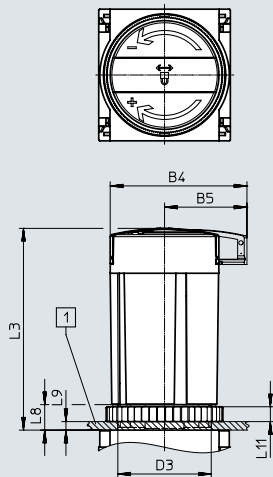
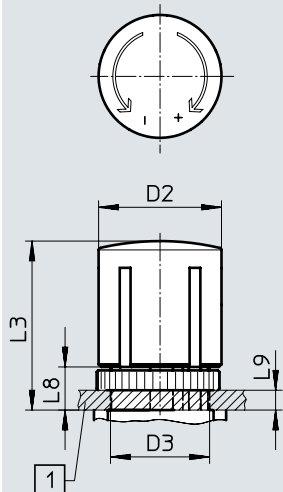
Download CAD data → www.festo.com

For control panel installation

[] Rotary knob with latch

[AS] Rotary knob with latch, can be locked using accessories

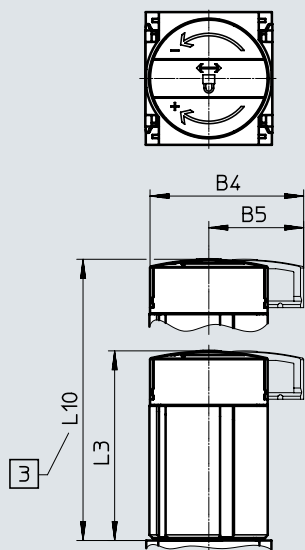
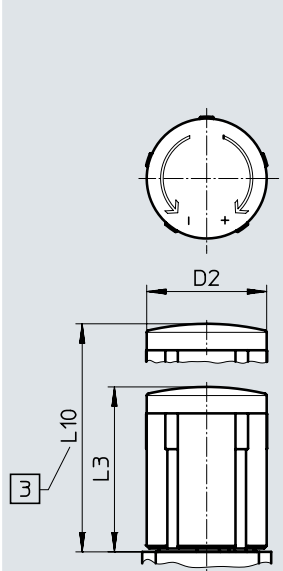
[E11] Rotary knob with integrated lock



- [1] Max. control panel thickness
- [2] Installation dimension

[LD] Rotary knob, long, with latch

[LD-AS] Rotary knob, long, with latch, can be locked using accessories



- [3] For pressure adjustment: fully pull out telescopic rotary knob

Type	B4	B5	D2	D3	L3	L8	L9	L10
MS4-LRB-...	-	-	37.2	M30x1.5	51.1	13	5	-
MS4-LRB-...-AS	48.6	30			60.2	13	5	-
MS4-LRB-...-E11	-	-			76	14	6	60
MS4-LRB-...-LD	-	-		-	51.1	-	-	76.8
MS4-LRB-...-LD-AS	48.6	30		-	60	-	-	85.7
MS6-LRB-...	-	-	51.2	M44x1	86	21	14	-
MS6-LRB-...-AS	64.4	38.8			95.1	12	5	-
MS6-LRB-...-E11	-	-			110	21	14	60
MS6-LRB-...-LD	-	-		-	86	-	-	139
MS6-LRB-...-LD-AS	64.4	38.8		-	95.5	-	-	148.5

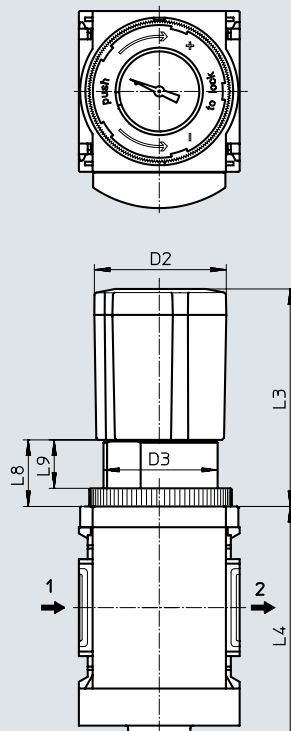
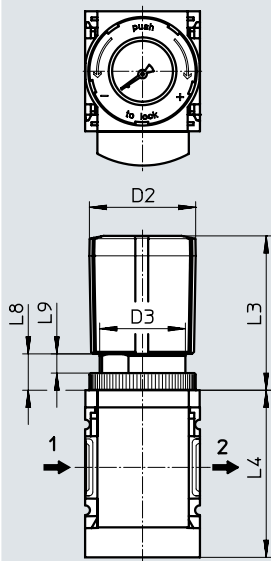
Datasheet

Dimensions – Rotary knob pressure gauge

Download CAD data → www.festo.com

[DM1] Rotary knob pressure gauge, small

[DM2] Rotary knob pressure gauge, large



→ Flow direction

Type	D2	D3	L3	L4	L8	L9
MS4-LRB-...-DM1	37.2	M30x1.5	54	58.5	13	6.7
MS6-LRB-...-DM2	51	M44x1	84	94	25	18

Ordering data

Pneumatic connection 1	Pressure regulation range	Flow direction	Part no.	Type
MS4-LRB...				
G1/4	0.3 ... 4 bar	From left to right	529471	MS4-LRB-1/4-D5-A8-AS
		From left to right	529473	MS4-LRB-1/4-D5-AS
		From left to right	529474	MS4-LRB-1/4-D5-AS-BD
	0.3 ... 7 bar	From left to right	529477	MS4-LRB-1/4-D6-A8-AS
		From left to right	529479	MS4-LRB-1/4-D6-AS
		From left to right	529480	MS4-LRB-1/4-D6-AS-BD
		From right to left	529481	MS4-LRB-1/4-D6-AS-BD-Z
		From right to left	529482	MS4-LRB-1/4-D6-VS-AS-Z
	0.5 ... 12 bar	From left to right	529483	MS4-LRB-1/4-D7-A8-AS
		From left to right	529485	MS4-LRB-1/4-D7-AS
From left to right		529486	MS4-LRB-1/4-D7-AS-BD	
MS6-LRB...				
G1/2	0.3 ... 4 bar	From left to right	530322	MS6-LRB-1/2-D5-AS
		From left to right	530320	MS6-LRB-1/2-D5-A4-AS
	0.3 ... 7 bar	From left to right	530326	MS6-LRB-1/2-D6-A4-AS
		From left to right	530328	MS6-LRB-1/2-D6-AS
		From left to right	530329	MS6-LRB-1/2-D6-AS-BD
		From right to left	530330	MS6-LRB-1/2-D6-AS-BD-Z
	0.5 ... 12 bar	From left to right	530332	MS6-LRB-1/2-D7-A4-AS
		From left to right	530334	MS6-LRB-1/2-D7-AS
		From left to right	530335	MS6-LRB-1/2-D7-AS-BD

Ordering data – Modular product system

Ordering table		Grid dimension	[mm]	40	62	Conditions	Code	Enter code
Module no.		527692			527665			
Series	Standard						MS	MS
Size	4			6			...	
Function	Pressure regulator for manifold assembly						-LRB	-LRB
Pneumatic connection	Female thread G1/4	–				[1]	-1/4	
	–	Female thread G1/2				[1]	-1/2	
	Connecting plate G1/8	–					-AGA	
	Connecting plate G1/4	Connecting plate G1/4					-AGB	
	Connecting plate G3/8	Connecting plate G3/8					-AGC	
	–	Connecting plate G1/2					-AGD	
	–	Connecting plate G3/4					-AGE	
Pressure regulation range/actuation	0.3 ... 4 bar, manually actuated						-D5	
	0.3 ... 7 bar, manually actuated						-D6	
	0.5 ... 12 bar, manually actuated						-D7	
	–	0.5 ... 16 bar, manually actuated				[1] [2]	-D8	
Pressure gauge alternatives	MS pressure gauge							
	Cover plate					[3]	-VS	
	Adapter for EN pressure gauge 1/8, without pressure gauge	–				[4]	-A8	
	Adapter for EN pressure gauge 1/4, without pressure gauge					[4]	-A4	
	Integrated pressure gauge, red/green scale					[2]	-RG	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/O contact					[1] [5] [6]	-AD7	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/C contact					[1] [5] [6]	-AD8	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/O contact					[1] [5] [6]	-AD9	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/C contact					[1] [5] [6]	-AD10	
	Pressure sensor with LCD display, plug M12, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA					[1] [4] [5]	-AD11	
	Pressure sensor with LCD display, plug M8, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA					[1] [4] [5]	-AD12	
	Alternative pressure gauge scale	MS pressure gauge, bar						
psi						[7]	-PSI	
MPa						[8]	-MPA	

[1] 1/4, 1/2, D8, Not with EU EX4 certification.
AD7 ... AD10,
AD11/AD12, DM1,
DM2, KD, E11,
WPM

[2] D8, RG, OS, KD, AS Not with rotary knob pressure gauge DM1, DM2.

[3] VS Must be selected if outlet direction Z is selected without alternative mounting position KD and without pressure output BC, BD, BE.
Must be selected if alternative mounting position KD is selected without outlet direction Z and without pressure output BC, BD, BE.

[4] A8, A4, AD11/ Not with outlet direction Z.
AD12 In combination with outlet direction Z only with alternative mounting position KD.

[5] AD7 ... AD10, Measuring range max. 10 bar.
AD11/AD12 Not with pressure regulation range D8.

[6] AD7 ... AD10 In combination with outlet direction Z only with pressure output BC, BD, BE or in combination with outlet direction Z only with alternative mounting position KD.

[7] PSI Not with pressure gauge alternatives VS, A8, A4, RG, AD7 ... AD10.
In combination with outlet direction Z only with pressure output BC, BD, BE.

[8] MPA Not with pressure gauge alternatives VS, A8, A4, AD7 ... AD10.
Not with alternative mounting position KD.
Not with rotary knob alternative DM1, DM2.
In combination with outlet direction Z only with pressure output BC, BD, BE.

Ordering data – Modular product system

Ordering table		40	62	Conditions	Code	Enter code
Grid dimension	[mm]					
Secondary exhausting	With secondary exhausting					
	Without secondary exhausting			[2]	-OS	
Rotary knob alternative	None					
	Long rotary knob			[9]	-LD	
	Rotary knob pressure gauge, small		-	[1] [9] [10]	-DM1	
	-		Rotary knob pressure gauge, large	[1] [9] [10]	-DM2	
Alternative mounting position	None					
	Rotary knob underneath			[1] [2] [11]	-KD	
Locking option	None					
	Lockable using accessories			[2]	-AS	
	With integrated lock			[1]	-E11	
Pressure output ($p_{max} = 10$ bar)	None					
	Angled outlet block QS-6		-		-BC	
	Angled outlet block QS-8		Angled outlet block QS-8		-BD	
	-		Angled outlet block QS-10		-BE	
Type of mounting	Without mounting bracket					
	Mounting bracket with knurled nut for regulator head			[12] [13]	-WR	
	Mounting bracket standard design			[14] [15]	-WP	
	Mounting bracket for hooking in service unit components			[1] [12] [14]	-WPM	
	Mounting bracket for large wall gap			[14] [16]	-WPB	
	Mounting bracket centrally at the rear (wall mounting top and bottom), connecting plates not required			[12]	-WB	
	Mounting bracket centrally at the rear (wall mounting top), connecting plates not required		-	[12]	-WBM	
EU certification	None					
	II 2GD to EU Explosion Protection Directive (ATEX)				-EX4	
UL certification	None					
	cULus, ordinary location for Canada and USA				-UL1	
Outlet direction	Pressure output at the rear					
	Pressure output at the front (without angled outlet block, no pressure gauge)				-Z	

[9] LD, DM1, DM2 Not with locking option E11.

[10] DM1, DM2 Can only be selected in combination with pressure gauge alternatives VS, A4, AD7 ... AD10.

[11] KD Not with alternative pressure gauge scale MPa.

In combination with alternative pressure gauge scale PSI only with outlet direction Z and/or only with pressure output BC, BD, BE.

Not with mounting type WP, WPB.

In combination with mounting type WR, WPM, WB, WBM not with outlet direction Z.

Not with pressure gauge alternative RG.

In combination with pressure gauge alternatives A8, A4, only with outlet direction Z.

[12] WR, WPM, WB, WBM In combination with outlet direction Z not with alternative mounting position KD.

[13] WR

Only with outlet direction Z.

Not with long rotary knob LD or rotary knob alternative DM2.

[14] WP, WPM, WPB Only with connecting plate AGA, AGB, AGC, AGD, AGE.

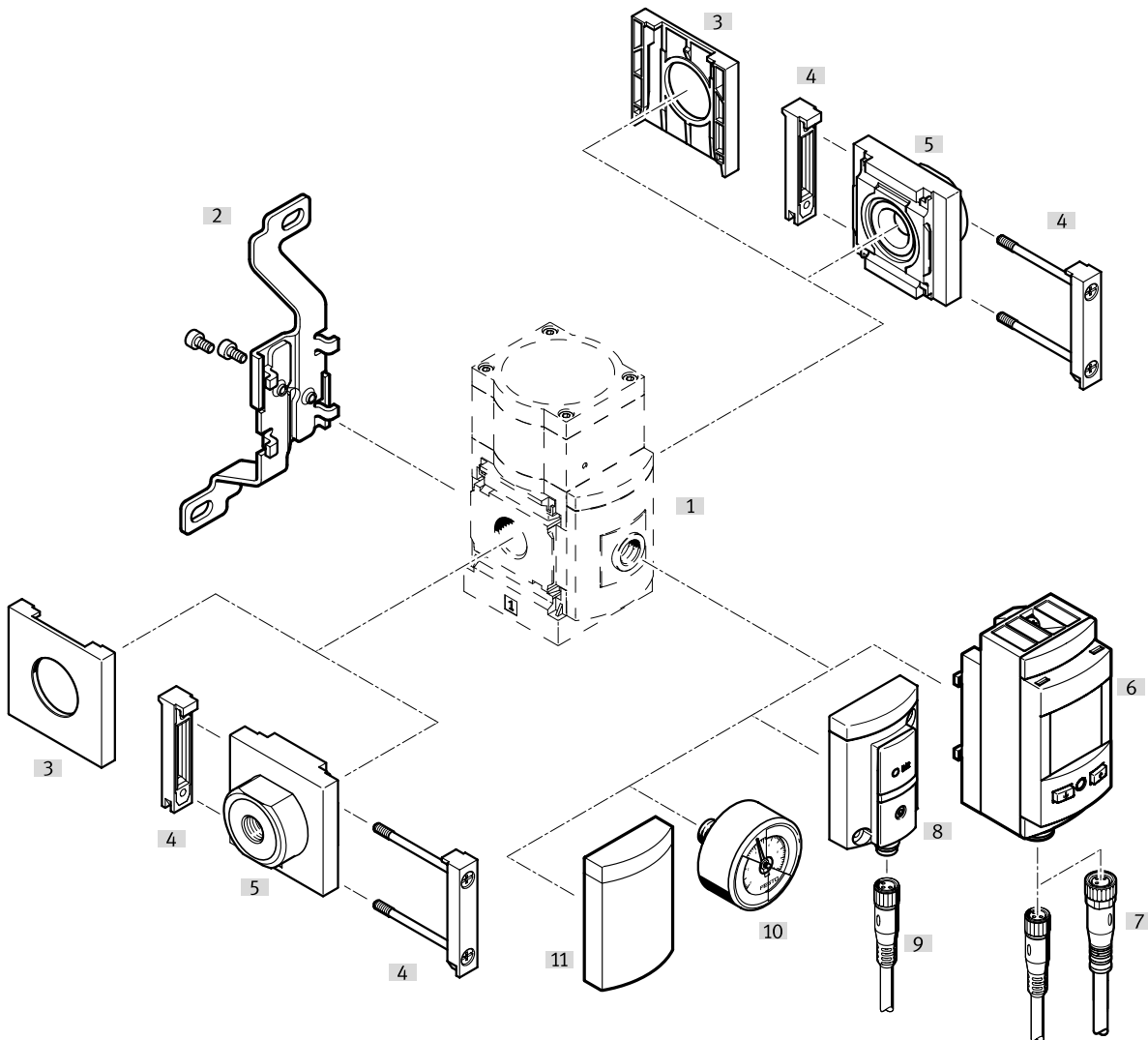
[15] WP Only with outlet direction Z and/or only with pressure output BC, BD, BE.

[16] WPB Not with outlet direction Z.

Not with pressure output BC, BD, BE.

Peripherals overview

Precision pressure regulator MS6-LRP



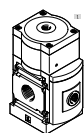
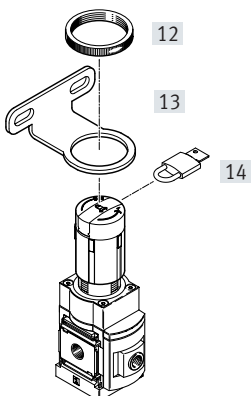
Note

Additional accessories:

- Module connectors for combination with size MS4/MS6 or size MS9
→ Internet: amv, rmv, armv
- Adapters for mounting on profiles
→ Internet: ipm-80, ipm-40-80, ipm-80-80

Manually actuated

Pneumatically actuated



Peripherals overview

Mounting attachments and accessories		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	62
[2]	Mounting bracket MS6-WB	■	■	–	–	ms6-wb
[3]	Cover cap MS6-END	■	–	■	–	ms6-end
[4]	Module connector MS6-MV	–	■	■	■	ms6-mv
[5]	Connecting plate SET MS6-AG...	–	■	–	■	ms6-ag
	Connecting plate SET MS6-AQ...	–	■	–	■	ms6-aq
[6]	Pressure sensor with LCD display AD11/AD12	■	■	■	■	62
[7]	Connecting cable NEBU-M8...-LE4/NEBU-M12...-LE4	■	■	■	■	102
[8]	Pressure sensor without display AD7 ... AD10	■	■	■	■	62
[9]	Connecting cable NEBU-M8...-LE3	■	■	■	■	102
[10]	Precision pressure gauge A8M/MAP	■	■	■	■	62, 102
[11]	Cover plate VS	■	■	■	■	62
[12]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[13]	Mounting bracket MS6-WR	■	■	–	–	ms6-wr
[14]	Padlock LRVS-D	■	■	■	■	102
–	Mounting bracket MS6-WP/WPB/WPE/WPM	–	■	■	■	ms6-wp

Type codes

001 Series	
MS	MS series
002 Size	
6	Grid dimension 62 mm
003 Function	
LRP	Precision pressure regulator
004 Pneumatic connection	
1/4	Female thread G1/4
3/8	Female thread G3/8
1/2	Female thread G1/2
AGB	Sub-base G1/4
AGC	Sub-base G3/8
AGD	Sub-base G1/2
AGE	Sub-base G3/4
005 Pressure regulation range	
D2	0.05 ... 0.7 bar
D4	0.05 ... 2.5 bar
D5	0.1 ... 4 bar
D7	0.1 ... 12 bar
P0	Max. 12 bar, pneumatically actuated (pressure range determined by pilot regulator)
006 Pressure gauge alternatives	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge
A8	Adapter for EN pressure gauge 1/8, without pressure gauge
A8M	Adapter for EN pressure gauge 1/8, with precision pressure gauge
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C
AD9	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
VS	Cover plate

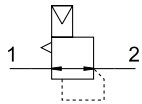
007 Rotary knob alternative	
	None
LD	Long rotary knob
008 Alternative mounting position	
	None
KD	Rotary knob underneath
009 Lockability	
	None
AS	Can be locked using accessories
E11	With integrated lock
010 Type of mounting	
	Without mounting bracket
WR	Mounting bracket with knurled nut on regulator knob
WP	Mounting bracket basic design
WPM	Mounting bracket for hooking in service unit components
WB	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required
011 EU certification	
	None
EX4	II 2GD
012 UL certification	
	None
UL1	cULus ordinary location for Canada and USA
013 Flow direction	
	Flow direction from left to right
Z	Flow direction from right to left





Datasheet

Pressure regulation range/actuation, manually actuated



Pressure regulation range/actuation, pneumatically actuated



-  Flow rate
800 ... 5000 l/min
-  Temperature range
-10 ... +60°C
-  Operating pressure
1 ... 14 bar
-  www.festo.com



The precision pressure regulator is suitable for sensitive applications requiring a pressure hysteresis of 0.02 bar. The output pressure p2 can be set within the pressure regulation range either manually using the rotary knob or pneumatically via pilot pressure p12 by an external pilot regulator (where possible using a precision pressure regulator). When the input pres-

sure p1 is switched off, the output pressure p2 is exhausted via port 3 (secondary exhausting).

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- High flow rate performance with minimal pressure drop
- High secondary exhausting for ultra-fast reaction times
- Actuator lock to protect the set values from being adjusted
- Four pressure regulation ranges: 0.05 ... 0.7 bar, 0.05 ... 2.5 bar, 0.1 ... 4 bar and 0.1 ... 12 bar
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data			
Size			MS6
Pneumatic connection 1, 2			
Female thread			G1/4, G3/8 or G1/2
Connecting plate	[AG...]		G1/4, G3/8, G1/2 or G3/4
	[AQ...]		1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT
Pneumatic connection 3 (secondary exhausting)			G1/4
Pilot air port 12			G1/8 (MS6-LRP-...-PO)
Design			Piloted precision diaphragm regulator
Regulator function			Output pressure constant, with secondary exhausting
Type of mounting			Via accessories In-line installation Front panel mounting
Mounting position			Any
Actuator lock			Rotary knob with latch Rotary knob with latch, can be locked using accessories Rotary knob with integrated lock
Pressure regulation range/actuation ¹⁾	[D2]	[bar]	0.05 ... 0.7, manually actuated
	[D4]	[bar]	0.05 ... 2.5, manually actuated
	[D5]	[bar]	0.1 ... 4, manually actuated
	[D7]	[bar]	0.1 ... 12, manually actuated (0.1 ... 10 with pressure sensor or with UL certification)
	[PO]	[bar]	0.1 ... 12, pneumatically actuated (0.1 ... 10 with pressure sensor or with UL certification)
Max. pressure hysteresis		[bar]	0.02
Pressure indication			Via pressure sensor for indicating the output pressure and electrical output via LCD display Via pressure sensor for indicating the output pressure and electrical output Via precision pressure gauge for indicating the output pressure Prepared for G1/8 Prepared for G1/4

1) [D2]/[D4]/[D5]/[D7]: input pressure p1 ≥ output pressure p2 + 1 bar.
[PO]: pilot pressure p12 = output pressure p2 + max. 0.5 bar

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Flow rates					
Pressure regulation range		[D2]: 0.05 ... 0.7 bar	[D4]: 0.05 ... 2.5 bar	[D5]: 0.1 ... 4 bar	[D7]/[P0]: 0.1 ... 12 bar
Standard nominal flow rate q_{nN} [l/min]					
q _{nN} 1 → 2	G1/4	800 ¹⁾	1100 ²⁾	1400 ³⁾	3000 ⁴⁾
	G3/8	1100 ¹⁾	1400 ²⁾	1700 ³⁾	3300 ⁴⁾
	G1/2	1600 ¹⁾	2300 ²⁾	3000 ³⁾	5000 ⁴⁾
Secondary exhaust flow rate [l/min]					
q _n 2 → 3		≥ 220 ⁵⁾	≥ 450 ⁶⁾	≥ 650 ⁷⁾	≥ 900 ⁸⁾

- 1) Measured at p₁ = 10 bar and p₂ = 0.5 bar, Δp = 0.1 bar
 2) Measured at p₁ = 10 bar and p₂ = 1.5 bar, Δp = 0.1 bar
 3) Measured at p₁ = 10 bar and p₂ = 2.5 bar, Δp = 0.1 bar
 4) Measured at p₁ = 10 bar and p₂ = 6.0 bar, Δp = 0.1 bar

- 5) Measured at p₁ = 10 bar and p₂ = 0.7 bar, Δp₂ = 0.1 bar
 6) Measured at p₁ = 10 bar and p₂ = 2.5 bar, Δp₂ = 0.1 bar
 7) Measured at p₁ = 10 bar and p₂ = 4.0 bar, Δp₂ = 0.1 bar
 8) Measured at p₁ = 10 bar and p₂ = 6.0 bar, Δp₂ = 0.1 bar

Operating and environmental conditions	
Operating pressure [bar]	1 ... 14 (1 ... 10) ¹⁾
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
	Inert gases
Note on the operating/pilot medium	Lubricated operation not possible
Ambient temperature [°C]	-10 ... +60 (0 ... +50) ²⁾
Temperature of medium [°C]	-10 ... +60 (0 ... +50) ²⁾
Storage temperature [°C]	-10 ... +60
Corrosion resistance class CRC ³⁾	2
UL certification ⁴⁾	c UL us - Recognized (OL)

- 1) Value in brackets applies to MS6-LRP with UL certification.
 2) Value in brackets applies to MS6-LRP with pressure sensor.
 3) More information www.festo.com/x/topic/crc
 4) More information: www.festo.com/catalogue/ms6-lrp → Support/Downloads.

ATEX	
EU certification	[EX4]
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion ambient temperature	-10°C ≤ T _a ≤ +60°C
Explosion protection certification outside the EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) ¹⁾	To UK regulations for explosions

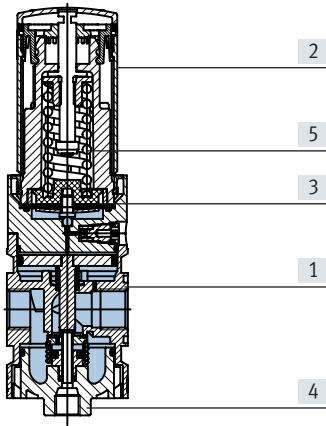
- 1) More information: www.festo.com/catalogue/ms6-lrp → Support/Downloads.

Weight [g]	
Precision pressure regulator	1000
Precision pressure regulator with rotary knob with integrated lock	1120

Datasheet

Materials

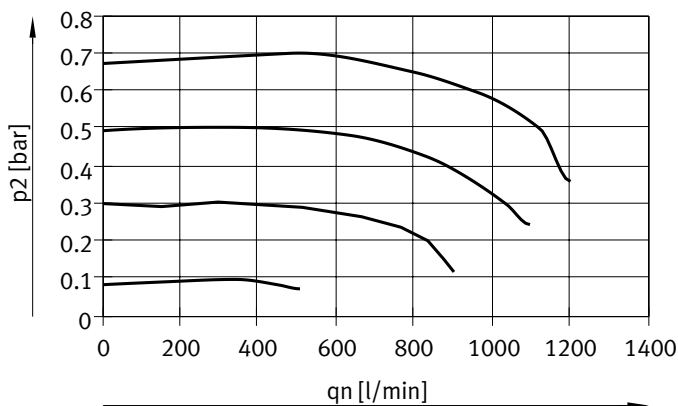
Sectional view



Precision pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA, POM
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragms	NBR
[4]	Bottom cover	PC
[5]	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant
PWIS conformity		VDMA24364-B1/B2-L

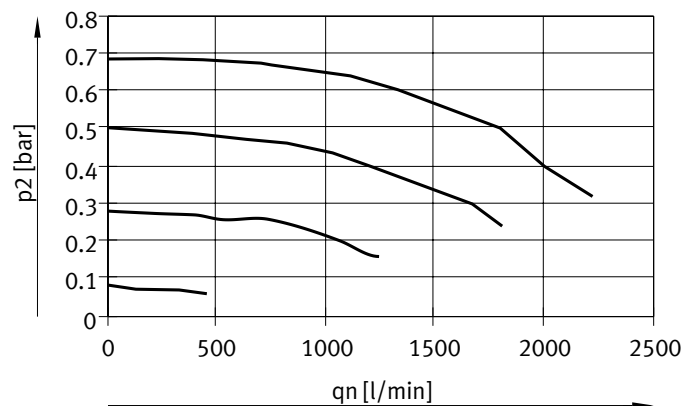
Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

MS6-LRP-1/4-D2



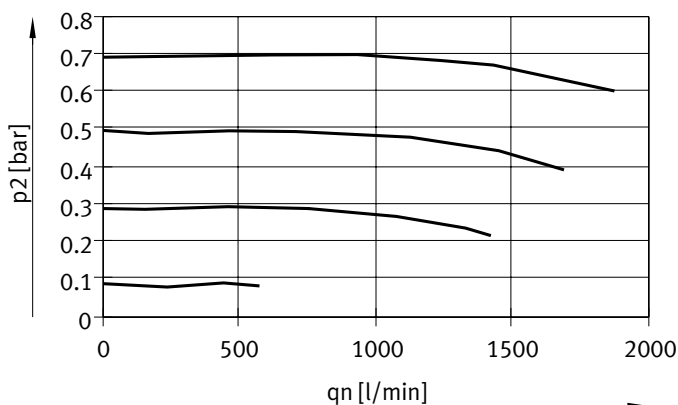
— [D2]: 0.05 ... 0.7 bar

MS6-LRP-3/8-D2



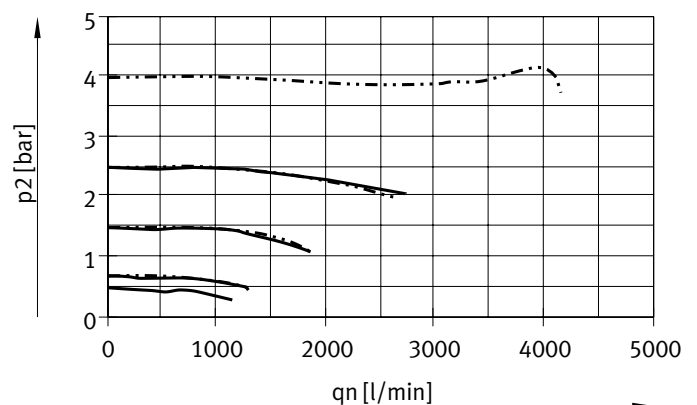
— [D2]: 0.05 ... 0.7 bar

MS6-LRP-1/2-D2



— [D2]: 0.05 ... 0.7 bar

MS6-LRP-1/4-D4/D5



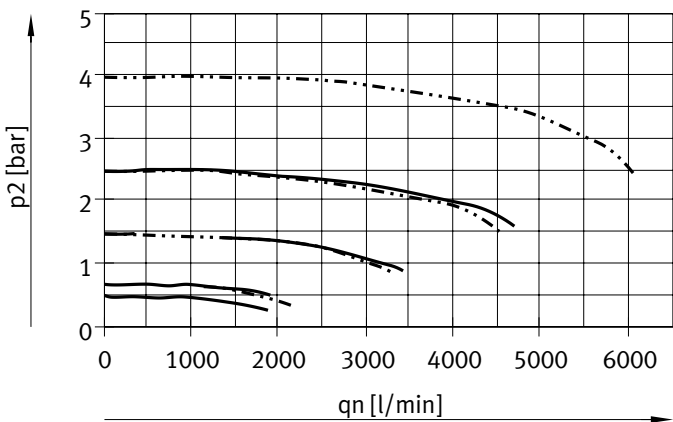
— [D4]: 0.05 ... 2.5 bar

- - - [D5]: 0.1 ... 4 bar

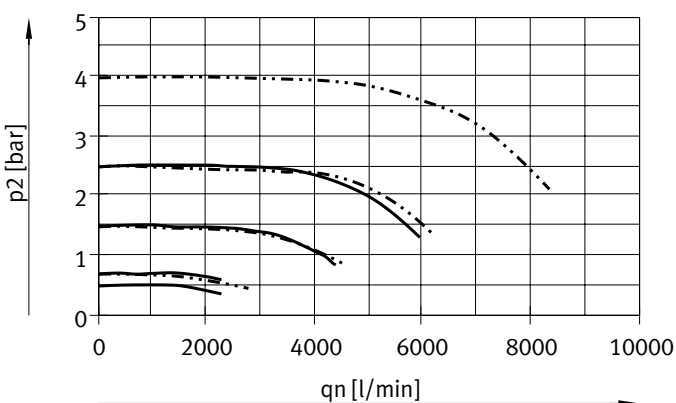
Datasheet

Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

MS6-LRP-3/8-D4/D5



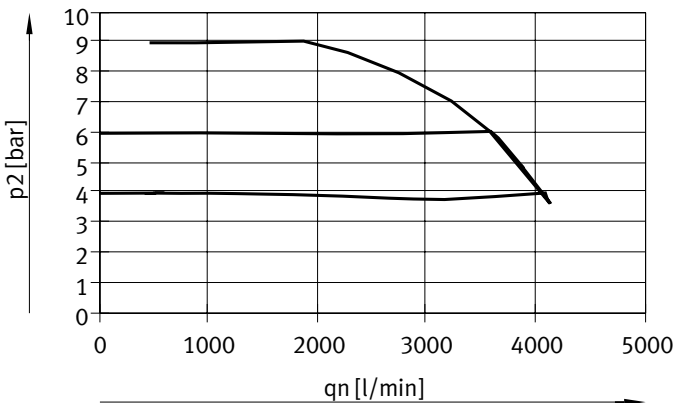
MS6-LRP-1/2-D4/D5



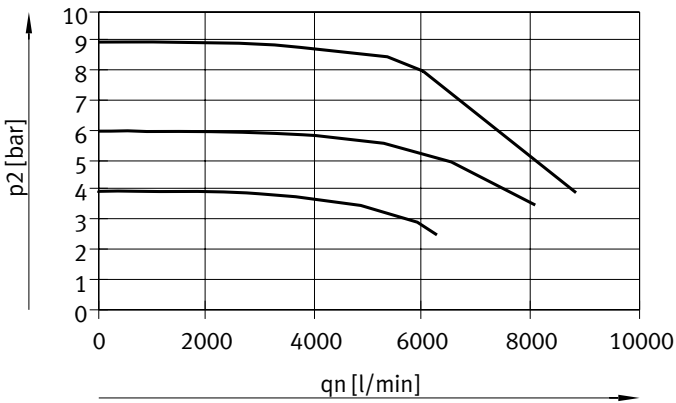
— [D4]: 0.05 ... 2.5 bar
 - · - · - [D5]: 0.1 ... 4 bar

— [D4]: 0.05 ... 2.5 bar
 - · - · - [D5]: 0.1 ... 4 bar

MS6-LRP-1/4-D7/PO



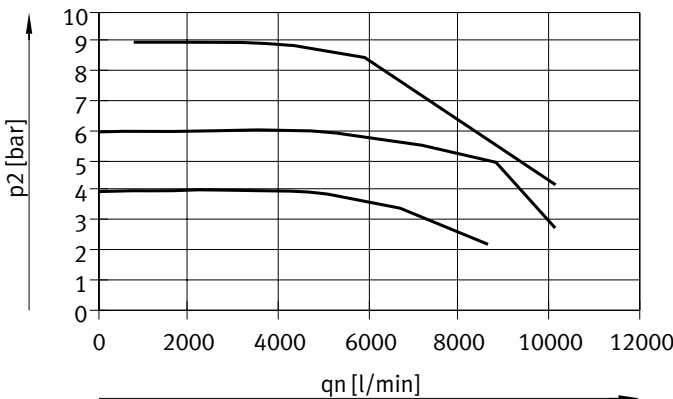
MS6-LRP-3/8-D7/PO



— [D7]/[PO]: 0.1 ... 12 bar

— [D7]/[PO]: 0.1 ... 12 bar

MS6-LRP-1/2-D7/PO



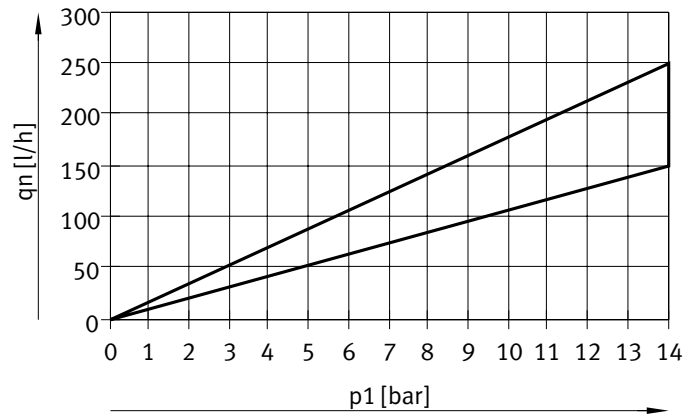
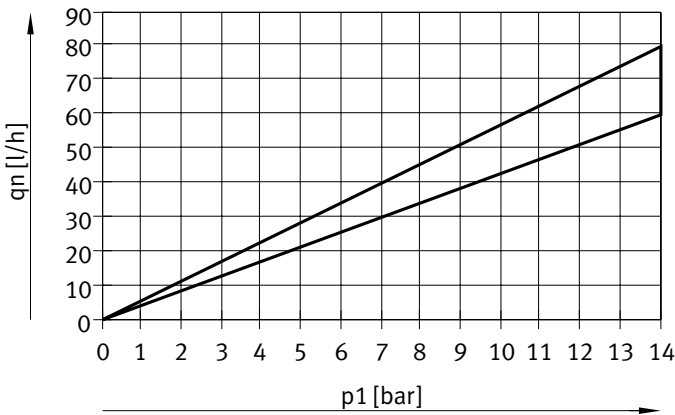
— [D7]/[PO]: 0.1 ... 12 bar

Datasheet

Internal air consumption q_n as a function of input pressure p_1

MS6-LRP...-D2/D4

MS6-LRP...-D5/D7/PO



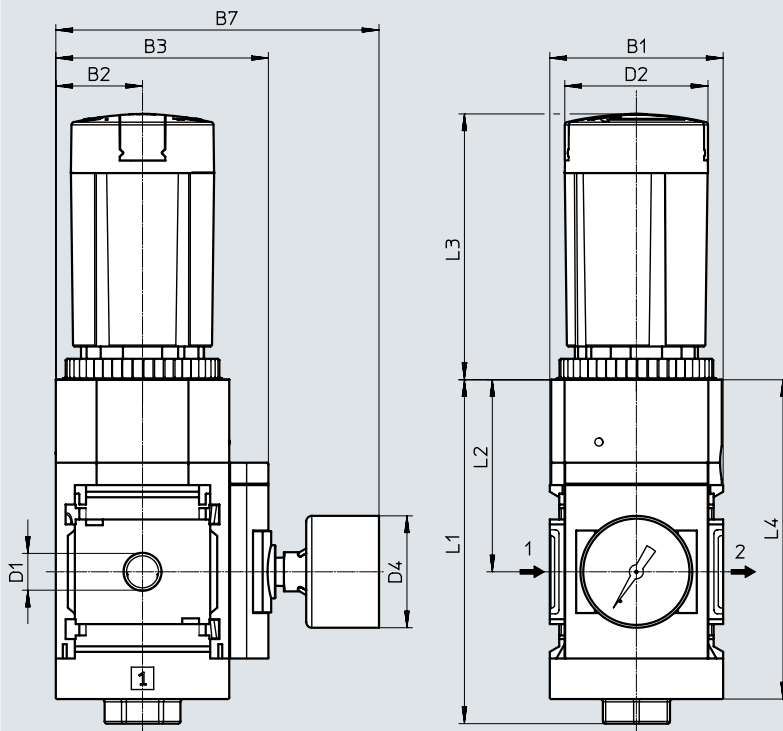
Dimensions

Download CAD data → www.festo.com

[D2]/[D4]/[D5]/[D7] Pressure regulation range, manually actuated

[A8M] Adapter for EN pressure gauge 1/8, with precision pressure gauge

[AS] Rotary knob with latch, can be locked using accessories



→ Flow direction

Type	B1	B2	B3	B7	D1	D2 ∅	D4 ∅	L1	L2	L3	L4
MS6-LRP-1/4-D2/D4/D5/D7-A8M-AS	62	31	76	116	G1/4	51,2	40	123	68	95,5	114
MS6-LRP-3/8-D2/D4/D5/D7-A8M-AS					G3/8						
MS6-LRP-1/2-D2/D4/D5/D7-A8M-AS					G1/2						

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

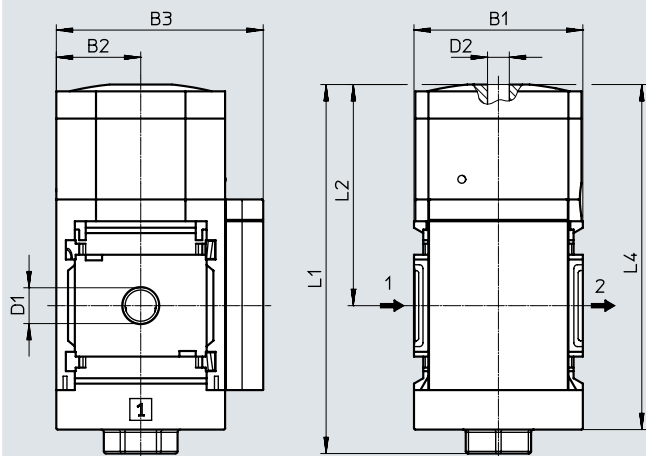
Datasheet

Dimensions

Download CAD data → www.festo.com

[PO] Pressure regulation range, pneumatically actuated

[VS] Cover plate



→ Flow direction

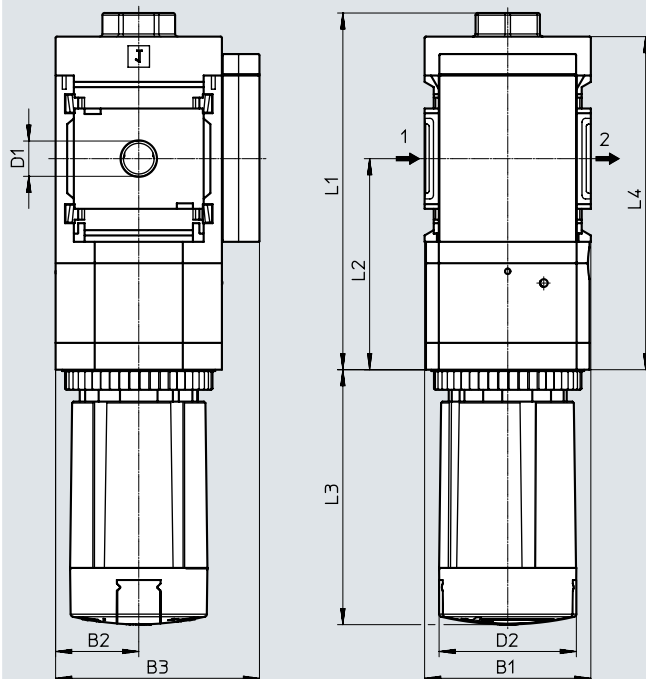
Type	B1	B2	B3	D1	D2	L1	L2	L4
MS6-LRP-1/4-PO-VS	62	31	76	G1/4	G1/8	136	81	127
MS6-LRP-3/8-PO-VS				G3/8				
MS6-LRP-1/2-PO-VS				G1/2				

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Dimensions – Alternative mounting position

Download CAD data → www.festo.com

[KD] Rotary knob underneath



→ Flow direction

Type	B1	B2	B3	D1	D2 ∅	L1	L2	L3	L4
MS6-LRP-1/4-...KD	62	31	76	G1/4	51.2	133	78	95.1	124
MS6-LRP-3/8-...KD				G3/8					
MS6-LRP-1/2-...KD				G1/2					

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

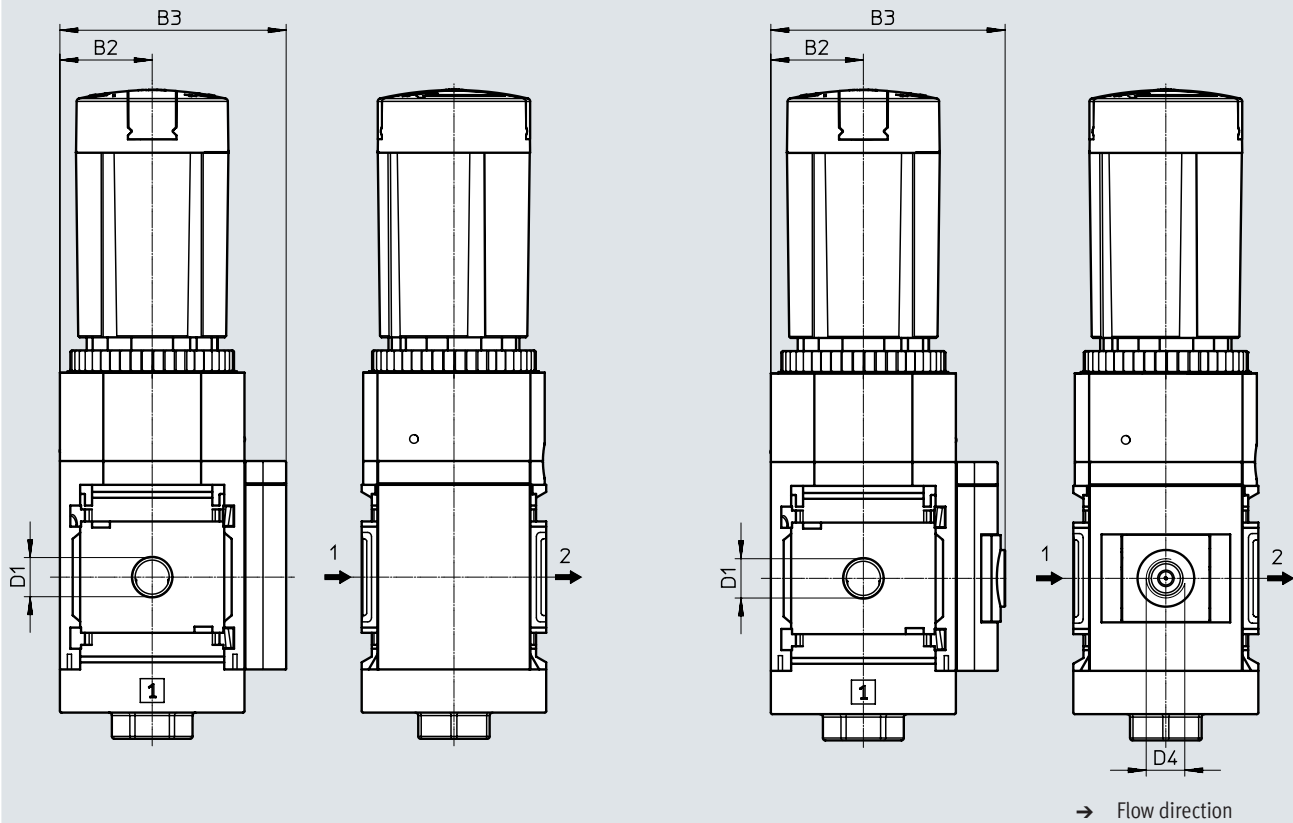
Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[VS] Cover plate

[A8] Adapter for EN pressure gauge 1/8, without pressure gauge

[A4] Adapter for EN pressure gauge 1/4, without pressure gauge



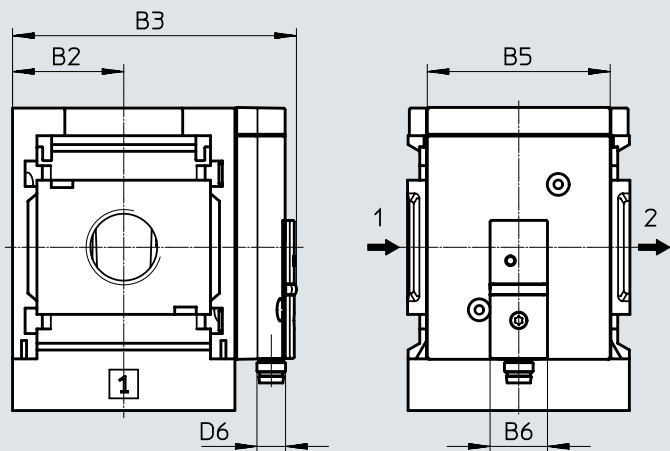
Type	B2	B3	D1	D4
MS6-LRP-1/4-...-VS	31	76	G1/4	-
MS6-LRP-3/8-...-VS			G3/8	
MS6-LRP-1/2-...-VS			G1/2	
MS6-LRP-1/4-...-A8	31	78.5	G1/4	G1/8
MS6-LRP-3/8-...-A8			G3/8	
MS6-LRP-1/2-...-A8			G1/2	
MS6-LRP-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-LRP-3/8-...-A4			G3/8	
MS6-LRP-1/2-...-A4			G1/2	

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

[AD7 ... 10] Pressure sensor without LCD display (switching status indicator only)

Datasheets → Internet: sde5



Variant AD7:
SDE5-D10-O-...-P-M8 with 3-pin plug
M8x1, threshold value comparator,
1 switching output PNP, N/O contact

Variant AD9:
SDE5-D10-O3-...-P-M8 with 3-pin
plug M8x1, window comparator,
1 switching output PNP, N/O contact

Variant AD8:
SDE5-D10-C-...-P-M8 with 3-pin plug
M8x1, threshold value comparator,
1 switching output PNP, N/C contact

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin
plug M8x1, window comparator,
1 switching output PNP, N/C contact

→ Flow direction

Type	B2	B3	B5	B6	D6
MS6-LRP:...AD7/AD8/AD9/AD10	31	79.1	51	16	M8x1

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

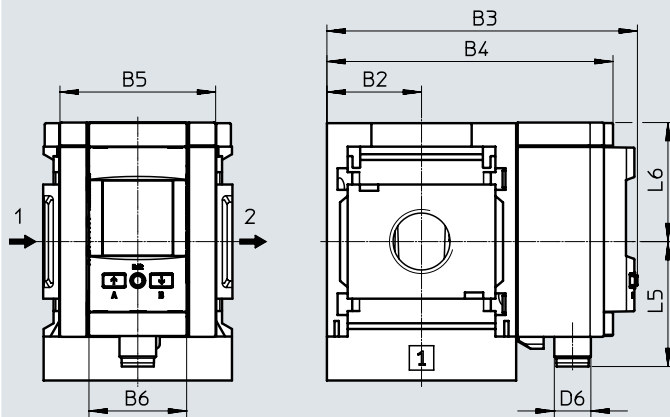
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[AD11/AD12] Pressure sensor with LCD display

Datasheets → Internet: spau



Variant AD11:
 SPAU-P10R-MS-L-PNLK-M12 with
 plug M12, 4-pin, IO-Link®, PNP,
 NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

Variant AD12:
 SPAU-P10R-MS-L-PNLK-M8 with plug
 M8, 4-pin, IO-Link®, PNP, NPN,
 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

→ Flow direction

Type	B2	B3	B4	B5	B6	D6	L5	L6
MS6-LRP-...AD11	31	101.8	93.7	51	32	M12x1	41.2	39
MS6-LRP-...AD12	31	101.8	93.7	51	32	M8x1	37.9	39

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Rotary knob

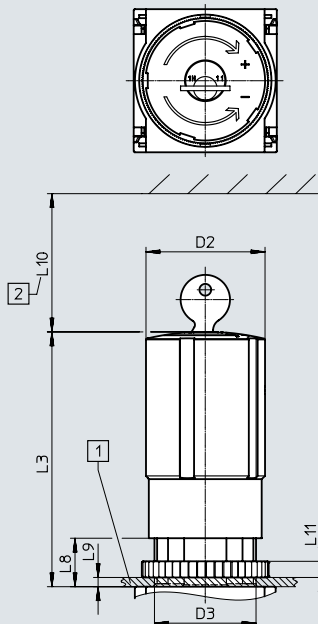
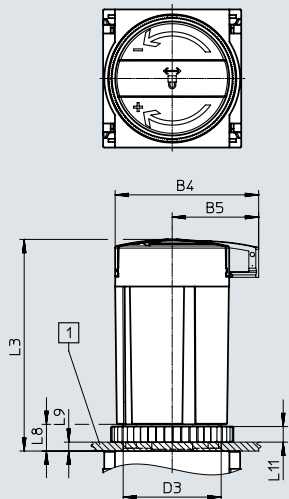
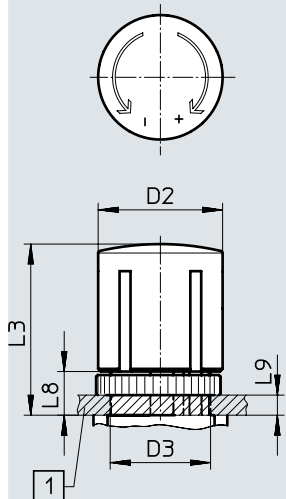
Download CAD data → www.festo.com

For control panel installation

[] Rotary knob with latch

[AS] Rotary knob with latch, can be locked using accessories

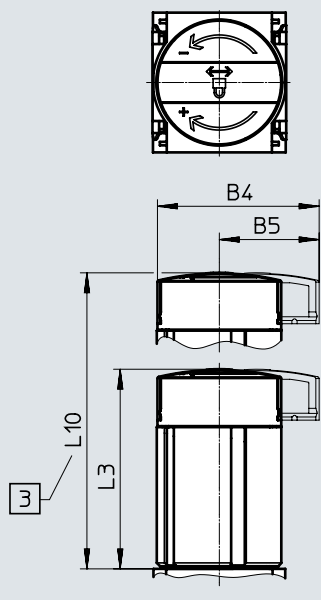
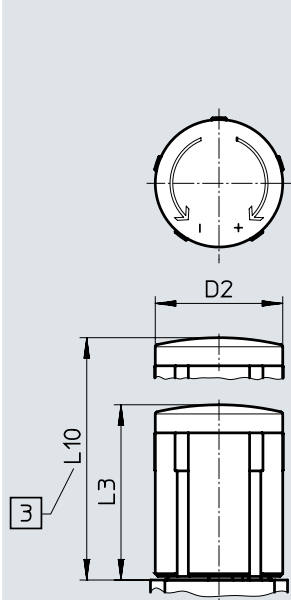
[E11] Rotary knob with integrated lock



[1] Max. control panel thickness
[2] Installation dimension

[LD] Rotary knob, long, with latch

[LD-AS] Rotary knob, long, with latch, can be locked using accessories



[3] For pressure adjustment: fully pull out telescopic rotary knob

Type	B4	B5	D2	D3	L3	L8	L9	L10
MS6-LRP...	-	-	51.2	M44x1	86	21	14	-
MS6-LRP...-AS	64.4	38.8			95.1	12	5	
MS6-LRP...-E11	-	-			110	21	14	
MS6-LRP...-LD	-	-		-	-	-	139	
MS6-LRP...-LD-AS	64.4	38.8	-	-	95.5	-	-	148.5

Datasheet

Ordering data				
Pneumatic connection 1	Pressure regulation range	Flow direction	Part no.	Type
MS6-LRP...				
G1/4	0.05 ... 0.7 bar	From left to right	538004	MS6-LRP-1/4-D2-A8
	0.05 ... 2.5 bar	From left to right	538006	MS6-LRP-1/4-D4-A8
	0.1 ... 4 bar	From left to right	538008	MS6-LRP-1/4-D5-A8
	0.1 ... 12 bar	From left to right	538010	MS6-LRP-1/4-D7-A8
G3/8	0.05 ... 0.7 bar	From left to right	538012	MS6-LRP-3/8-D2-A8
	0.05 ... 2.5 bar	From left to right	538014	MS6-LRP-3/8-D4-A8
	0.1 ... 4 bar	From left to right	538016	MS6-LRP-3/8-D5-A8
	0.1 ... 12 bar	From left to right	538018	MS6-LRP-3/8-D7-A8
G1/2	0.05 ... 0.7 bar	From left to right	538020	MS6-LRP-1/2-D2-A8
	0.05 ... 2.5 bar	From left to right	538022	MS6-LRP-1/2-D4-A8
	0.1 ... 4 bar	From left to right	538024	MS6-LRP-1/2-D5-A8
	0.1 ... 12 bar	From left to right	538026	MS6-LRP-1/2-D7-A8

Ordering data – Modular product system

Ordering table		Conditions	Code	Enter code
Grid dimension [mm]	62			
Module no.	538028			
Series	Standard		MS	MS
Size	6		6	6
Function	Precision pressure regulator		-LRP	-LRP
Pneumatic connection	Female thread G1/4	[1]	-1/4	
	Female thread G3/8	[1]	-3/8	
	Female thread G1/2	[1]	-1/2	
	Connecting plate G1/4		-AGB	
	Connecting plate G3/8		-AGC	
	Connecting plate G1/2		-AGD	
	Connecting plate G3/4		-AGE	
	Connecting plate NPT1/4	[1]	-AQN	
	Connecting plate NPT3/8	[1]	-AQP	
	Connecting plate NPT1/2	[1]	-AQR	
	Connecting plate NPT3/4	[1]	-AQS	
Pressure regulation range/actuation	0.05 ... 0.7 bar, manually actuated		-D2	
	0.05 ... 2.5 bar, manually actuated		-D4	
	0.1 ... 4 bar, manually actuated		-D5	
	0.1 ... 12 bar, manually actuated		-D7	
	0.1 ... 12 bar, pneumatically actuated (pressure range determined by pilot regulator)	[1] [2]	-PO	
Pressure gauge alternatives	Cover plate		-VS	
	Adapter for EN pressure gauge 1/8, without pressure gauge		-A8	
	Adapter for EN pressure gauge 1/8, with precision pressure gauge		-A8M	
	Adapter for EN pressure gauge 1/4, without pressure gauge		-A4	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/O contact	[1] [4]	-AD7	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/C contact	[1] [4]	-AD8	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/O contact	[1] [4]	-AD9	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/C contact	[1] [4]	-AD10	
	Pressure sensor with LCD display, plug M12, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[3]	-AD11	
	Pressure sensor with LCD display, plug M8, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[3]	-AD12	

[1] 1/4, 3/8, 1/2, Not with EU EX4 certification.
 AQN, AQP, AQR,
 AQS, PO,
 AD7 ... AD10, KD,
 E11, WPM

[2] PO Not with rotary knob alternative LD.
 Not with locking options AS, E11.
 Not with mounting type WR.

[3] AD11/AD12 Measuring range max. 10 bar.

[4] AD7 ... AD10 Not with pressure regulation range/actuation D2, D4.
 Measuring range max. 10 bar.
 Not with pressure regulation range/actuation D2.

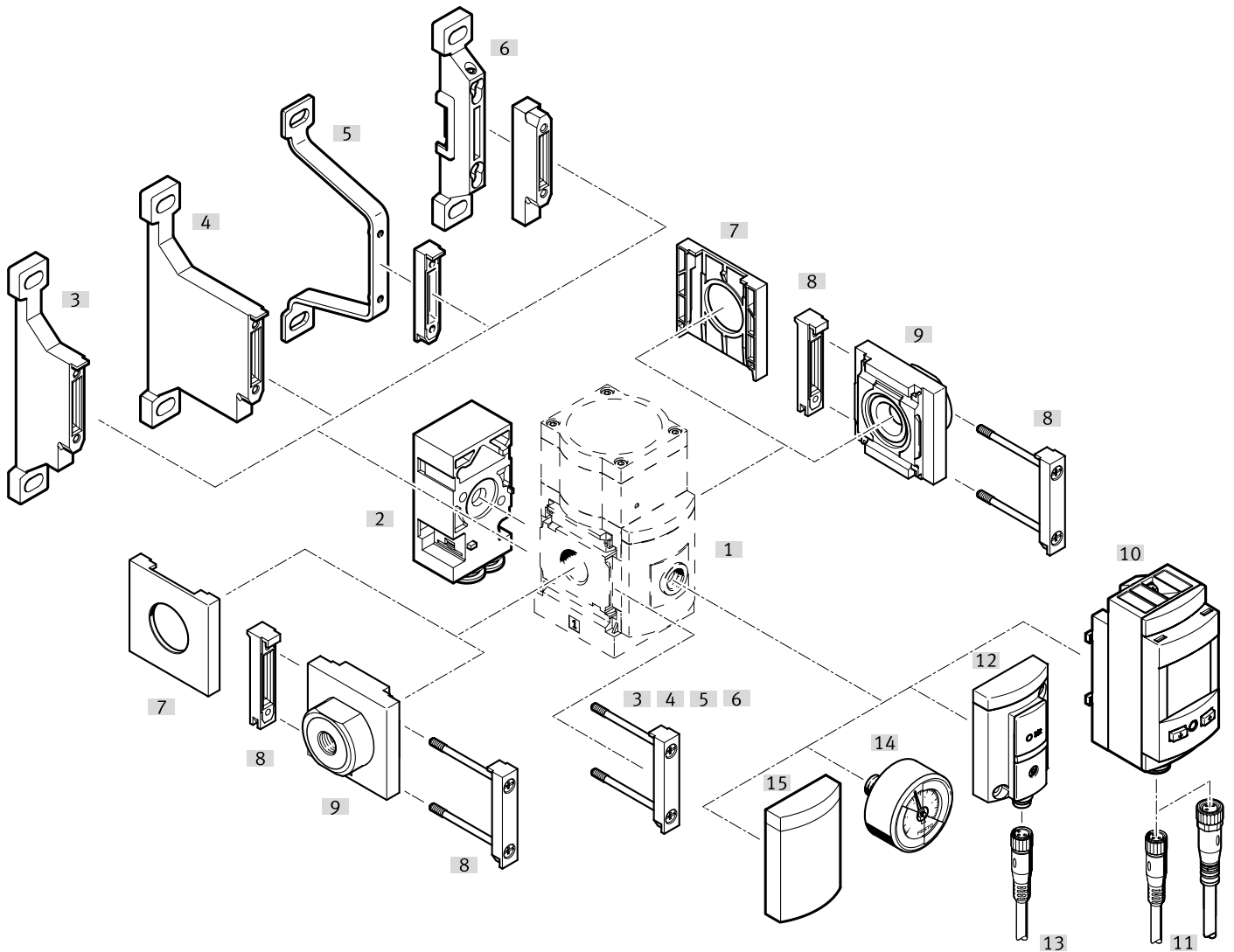
Ordering data – Modular product system


Ordering table		Grid dimension [mm]	62	Conditions	Code	Enter code
Rotary knob alternative	None					
	Long rotary knob			[5]	-LD	
Alternative mounting position	None					
	Rotary knob underneath			[1] [6]	-KD	
Locking option	None					
	Lockable using accessories				-AS	
	With integrated lock			[1]	-E11	
Type of mounting	Without mounting bracket					
	Mounting bracket with knurled nut for regulator head			[7]	-WR	
	Mounting bracket standard design			[8]	-WP	
	Mounting bracket for hooking in service unit components			[1] [8]	-WPM	
	Mounting bracket centrally at the rear (wall mounting top and bottom), connecting plates not required				-WB	
EU certification	None					
	II 2GD to EU Explosion Protection Directive (ATEX)				-EX4	
UL certification	None					
	cULus, ordinary location for Canada and USA				-UL1	
Flow direction	Flow direction from left to right					
	Flow direction from right to left				-Z	

- [5] LD Not with locking option E11.
 [6] KD Not with mounting type WP.
 [7] WR Not with rotary knob alternative LD.
 [8] WP, WPM Only with connecting plate AGB, AGC, AGD, AGE, AQN, AQP, AQR or AQS.

Peripherals overview

Precision pressure regulator MS6-LRPB with pressure output at the rear



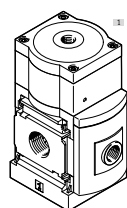
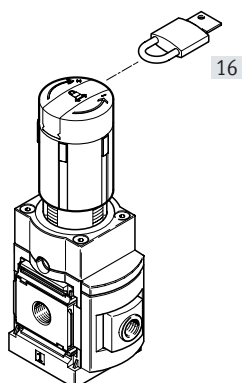
 **Note**

Additional accessories:

- Module connectors for combination with size MS4/MS6 or size MS9
→ Internet: amv, rmv, armv
- Adapters for mounting on profiles
→ Internet: ipm-80, ipm-40-80, ipm-80-80

Manually actuated

Pneumatically actuated

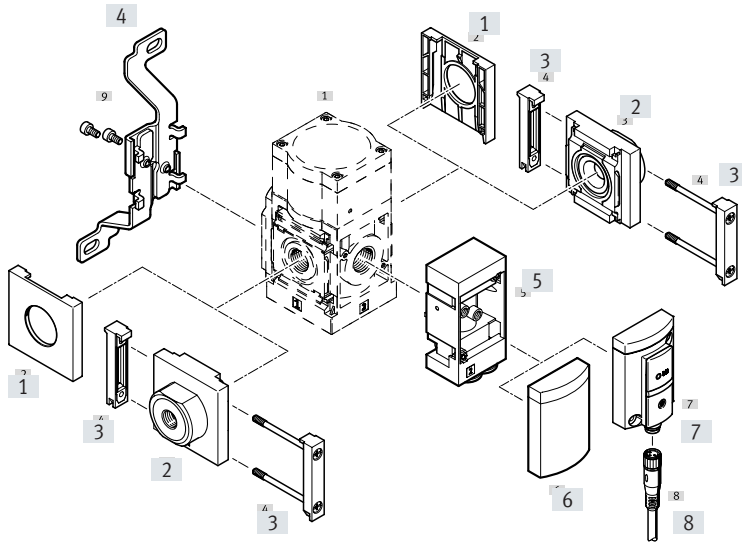


Peripherals overview

Mounting attachments and accessories		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	78
[2]	Angled outlet block B...	■	■	■	■	78
[3]	Mounting bracket MS6-WP	–	■	■	■	ms6-wp
[4]	Mounting bracket MS6-WPB	–	■	■	■	ms6-wp
[5]	Mounting bracket MS6-WPE	–	■	■	■	ms6-wp
[6]	Mounting bracket MS6-WPM	–	■	■	■	ms6-wp
[7]	Cover cap MS6-END	■	–	■	–	ms6-end
[8]	Module connector MS6-MV	–	■	■	■	ms6-mv
[9]	Connecting plate SET MS6-AG...	–	■	–	■	ms6-ag
[10]	Pressure sensor with LCD display AD11/AD12	■	■	■	■	78
[11]	Connecting cable NEBU-M8...-LE4/NEBU-M12...-LE4	■	■	■	■	102
[12]	Pressure sensor without display AD7 ... AD10	■	■	■	■	78
[13]	Connecting cable NEBU-M8...-LE3	■	■	■	■	102
[14]	Precision pressure gauge A8M/MAP	■	■	■	■	78, 102
[15]	Cover plate VS	■	■	■	■	78
[16]	Padlock LRVS-D	■	■	■	■	102

Peripherals overview

Precision pressure regulator MS6-LRPB with pressure output at the front



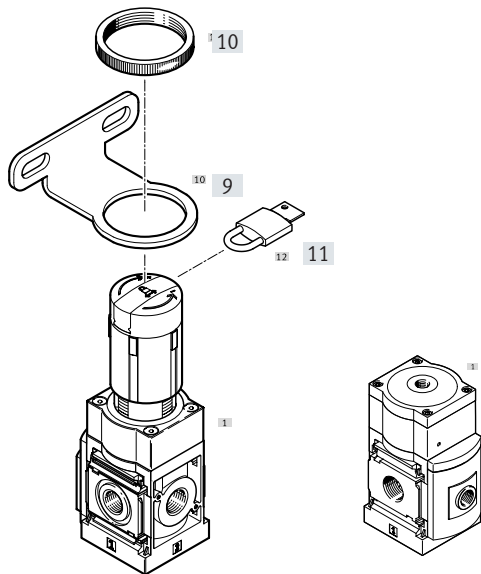
Note

Additional accessories:

- Module connectors for combination with size MS4/MS6 or size MS9
 - Internet: amv, rmv, armv
- Adapters for mounting on profiles
 - Internet: ipm-80, ipm-40-80, ipm-80-80

Manually actuated

Pneumatically actuated



Peripherals overview

Mounting attachments and accessories		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Cover cap MS6-END	■	–	■	–	ms6-end
[2]	Connecting plate SET MS6-AG...	–	■	–	■	ms6-ag
[3]	Module connector MS6-MV	–	■	■	■	ms6-mv
[4]	Mounting bracket MS6-WB	■	■	–	–	ms6-wb
[5]	Angled outlet block B...	■	■	■	■	78
[6]	Cover plate VS	■	■	■	■	78
[7]	Pressure sensor without display AD7 ... AD10	■	■	■	■	78
[8]	Connecting cable NEBU-M8...-LE3	■	■	■	■	102
[9]	Mounting bracket MS6-WR	■	■	–	–	ms6-wr
[10]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[11]	Padlock LRVS-D	■	■	■	■	102

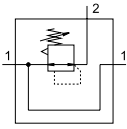
Type codes

001	Series
MS	MS series
002	Size
6	Grid dimension 62 mm
003	Function
LRPB	Precision pressure regulator for manifold installation
004	Pneumatic connection
1/2	Female thread G1/2
AGB	Sub-base G1/4
AGC	Sub-base G3/8
AGD	Sub-base G1/2
AGE	Sub-base G3/4
005	Pressure regulation range
D2	0.05 ... 0.7 bar
D4	0.05 ... 2.5 bar
D5	0.1 ... 4 bar
D7	0.1 ... 12 bar
PO	Max. 12 bar, pneumatically actuated (pressure range determined by pilot regulator)
006	Pressure gauge alternatives
A4	Adapter for EN pressure gauge 1/4, without pressure gauge
A8	Adapter for EN pressure gauge 1/8, without pressure gauge
A8M	Adapter for EN pressure gauge 1/8, with precision pressure gauge
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C
AD9	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C
AD11	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
AD12	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
VS	Cover plate

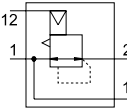
007	Rotary knob alternative
	None
LD	Long rotary knob
008	Alternative mounting position
	None
KD	Rotary knob underneath
009	Lockability
	None
AS	Can be locked using accessories
E11	With integrated lock
010	Alternative pressure outlet
	None
BD	Angled outlet block QS-8
BE	Angled outlet block QS-10
011	Type of mounting
	Without mounting bracket
WR	Mounting bracket with knurled nut on regulator knob
WP	Mounting bracket basic design
WPB	Mounting bracket for large wall gap
WPM	Mounting bracket for hooking in service unit components
WB	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required
012	EU certification
	None
EX4	II 2GD
013	UL certification
	None
UL1	cULus ordinary location for Canada and USA
014	Outlet direction
	Pressure output to the rear
Z	Pressure output to the front

Datasheet

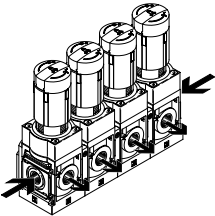
Pressure regulation range/actuation, manually actuated







Pressure regulation range/actuation, pneumatically actuated



Several precision pressure regulators mounted next to one another to form a regulator manifold:



The precision pressure regulator is suitable for sensitive applications requiring a hysteresis of 0.02 bar.

-  Flow rate
1600 ... 5000 l/min
-  Temperature range
-10 ... +60°C
-  Operating pressure
1 ... 14 bar
-  www.festo.com

The output pressure p2 can be set within the pressure regulation range either manually using the rotary knob or pneumatically via pilot pressure p12 by an external pilot regulator (where possible using a precision pressure regulator). When the input pressure p1 is switched off, the output pressure p2 is exhausted via port 3 (secondary exhausting).



- Good regulation characteristics with minimal hysteresis and input pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure regulation ranges
- Actuator lock to protect the set values from being adjusted
- Four pressure regulation ranges: 0.05 ... 0.7 bar, 0.05 ... 2.5 bar, 0.1 ... 4 bar and 0.1 ... 12 bar
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data		
Size	MS6	
Pneumatic connection 1	MS6	
Female thread	G1/2	
Connecting plate [AG...]	G1/4, G3/8, G1/2 or G3/4	
Pneumatic connection 2	MS6	
Female thread	G1/2	
Angled outlet block [BD]	QS-8	
[BE]	QS-10	
Pneumatic connection 3	G1/4	
Pilot air port 12	G1/8 (MS6-LRPB-...-PO)	
Design	Piloted precision diaphragm regulator with through compressed air supply	
Regulator function	Output pressure constant, with secondary exhausting	
Type of mounting	Via accessories In-line installation Front panel mounting	
Mounting position	Any	
Actuator lock	Rotary knob with latch Rotary knob with latch, can be locked using accessories Rotary knob with integrated lock	
Pressure regulation range/actuation ¹⁾	[D2] [bar]	0.05 ... 0.7, manually actuated
	[D4] [bar]	0.05 ... 2.5, manually actuated
	[D5] [bar]	0.1 ... 4, manually actuated
	[D7] [bar]	0.1 ... 12, manually actuated (0.1 ... 10 with pressure sensor AD... or with UL certification)
	[PO] [bar]	0.1 ... 12, pneumatically actuated (0.1 ... 10 with pressure sensor AD... or with UL certification)
Max. pressure hysteresis	[bar]	0.02

1) [D2]/[D4]/[D5]/[D7]: input pressure p1 ≥ output pressure p2 + 1 bar.
[PO]: pilot pressure p12 = output pressure p2 + max. 0.5 bar

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

General technical data	
Size	MS6
Pressure indication	Via pressure sensor for indicating the output pressure and electrical output via LCD display
	Via pressure sensor for indicating the output pressure and electrical output
	Via pressure gauge for indicating the output pressure
	Prepared for G1/8
	Prepared for G1/4

Flow rates				
Pressure regulation range	[D2]: 0.05 ... 0.7 bar	[D4]: 0.05 ... 2.5 bar	[D5]: 0.1 ... 4 bar	[D7]/[PO]: 0.1 ... 12 bar
Standard nominal flow rate q_{nN} [l/min]				
$q_{nN 1 \rightarrow 2}$	G1/2	1600 ¹⁾	2300 ²⁾	3000 ³⁾
				5000 ⁴⁾
Secondary exhaust flow rate [l/min]				
$q_{n 2 \rightarrow 3}$		≥ 220 ⁵⁾	≥ 450 ⁶⁾	≥ 650 ⁷⁾
				≥ 900 ⁸⁾

- 1) Measured at $p_1 = 10$ bar and $p_2 = 0.5$ bar, $\Delta p = 0.1$ bar
- 2) Measured at $p_1 = 10$ bar and $p_2 = 1.5$ bar, $\Delta p = 0.1$ bar
- 3) Measured at $p_1 = 10$ bar and $p_2 = 2.5$ bar, $\Delta p = 0.1$ bar
- 4) Measured at $p_1 = 10$ bar and $p_2 = 6.0$ bar, $\Delta p = 0.1$ bar

- 5) Measured at $p_1 = 10$ bar and $p_2 = 0.7$ bar, $\Delta p_2 = 0.1$ bar
- 6) Measured at $p_1 = 10$ bar and $p_2 = 2.5$ bar, $\Delta p_2 = 0.1$ bar
- 7) Measured at $p_1 = 10$ bar and $p_2 = 4.0$ bar, $\Delta p_2 = 0.1$ bar
- 8) Measured at $p_1 = 10$ bar and $p_2 = 6.0$ bar, $\Delta p_2 = 0.1$ bar

Operating and environmental conditions	
Operating pressure [bar]	1 ... 14 (1 ... 10) ¹⁾
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
	Inert gases
Note on the operating/pilot medium	Lubricated operation not possible
Ambient temperature [°C]	-10 ... +60 (0 ... +50) ²⁾
Temperature of medium [°C]	-10 ... +60 (0 ... +50) ²⁾
Storage temperature [°C]	-10 ... +60
Corrosion resistance class CRC ³⁾	2
UL certification ⁴⁾	c UL us - Recognized (OL)

- 1) Value in brackets applies to MS6-LRPB with UL certification.
- 2) Value in brackets applies to MS6-LRPB with pressure sensor.
- 3) More information www.festo.com/x/topic/crc
- 4) More information: www.festo.com/catalogue/ms6-lrpb → Support/Downloads.

ATEX	
EU certification	[EX4]
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion ambient temperature	$-10^\circ\text{C} \leq T_a \leq +60^\circ\text{C}$
Explosion protection certification outside the EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) ¹⁾	To UK regulations for explosions

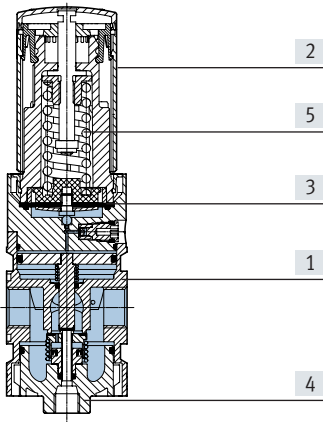
- 1) More information: www.festo.com/catalogue/ms6-lrpb → Support/Downloads.

Weight [g]	
Precision pressure regulator	1000
Precision pressure regulator with rotary knob with integrated lock	1120

Datasheet

Materials

Sectional view

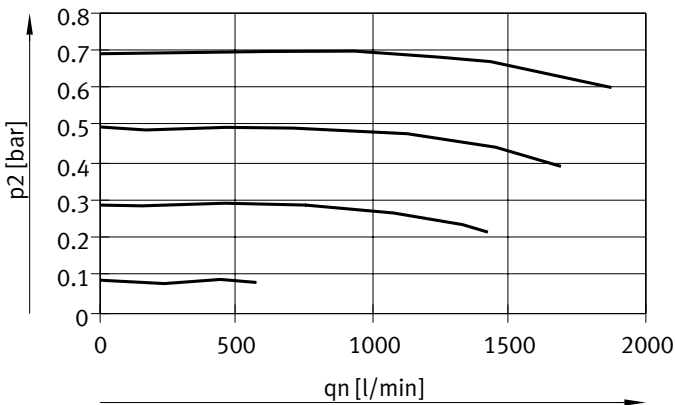


Precision pressure regulator (manifold assembly)

[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA, POM
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragm	NBR
[4]	Bottom cover	PC
[5]	Springs	Steel
-	Seals	NBR
	Note on materials	RoHS-compliant
	PWIS conformity	VDMA24364-B1/B2-L

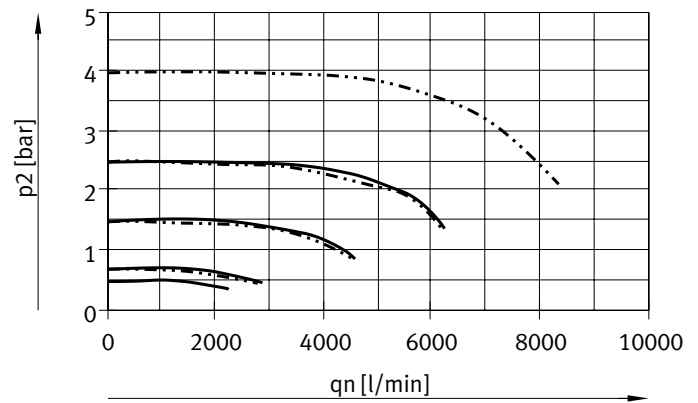
Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

MS6-LRPB-1/2-D2



— [D2]: 0.05 ... 0.7 bar

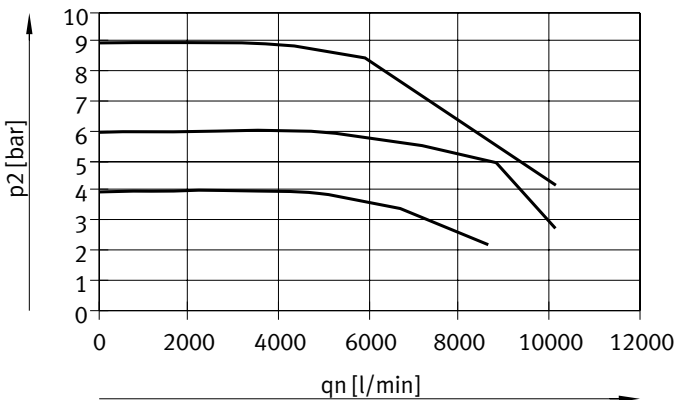
MS6-LRPB-1/2-D4/D5



— [D4]: 0.05 ... 2.5 bar

- · - · - · [D5]: 0.1 ... 4 bar

MS6-LRPB-1/2-D7/PO

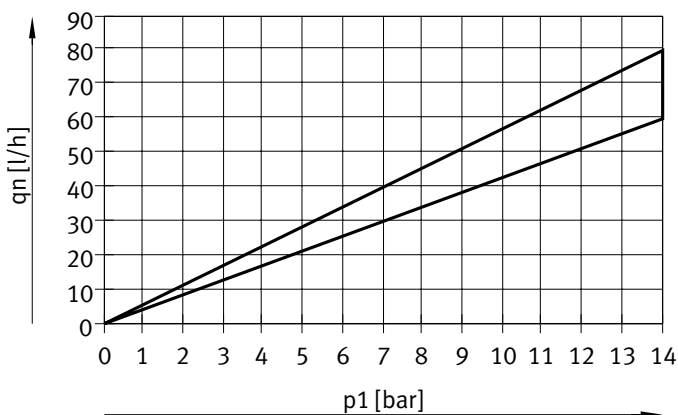


— [D7]/[PO]: 0.1 ... 12 bar

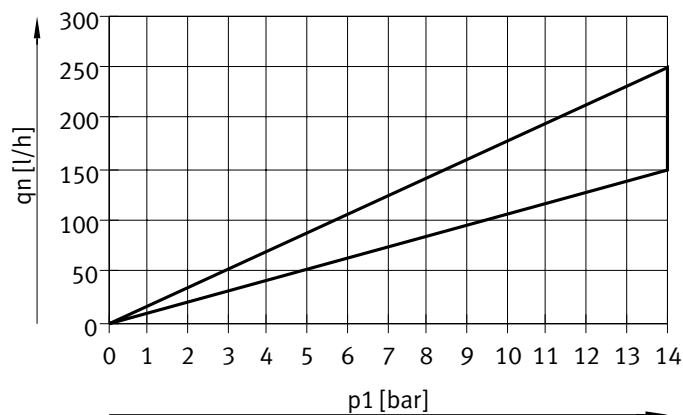
Datasheet

Internal air consumption q_n as a function of input pressure p_1

MS6-LRPB-...-D2/D4



MS6-LRPB-...-D5/D7/PO



Dimensions

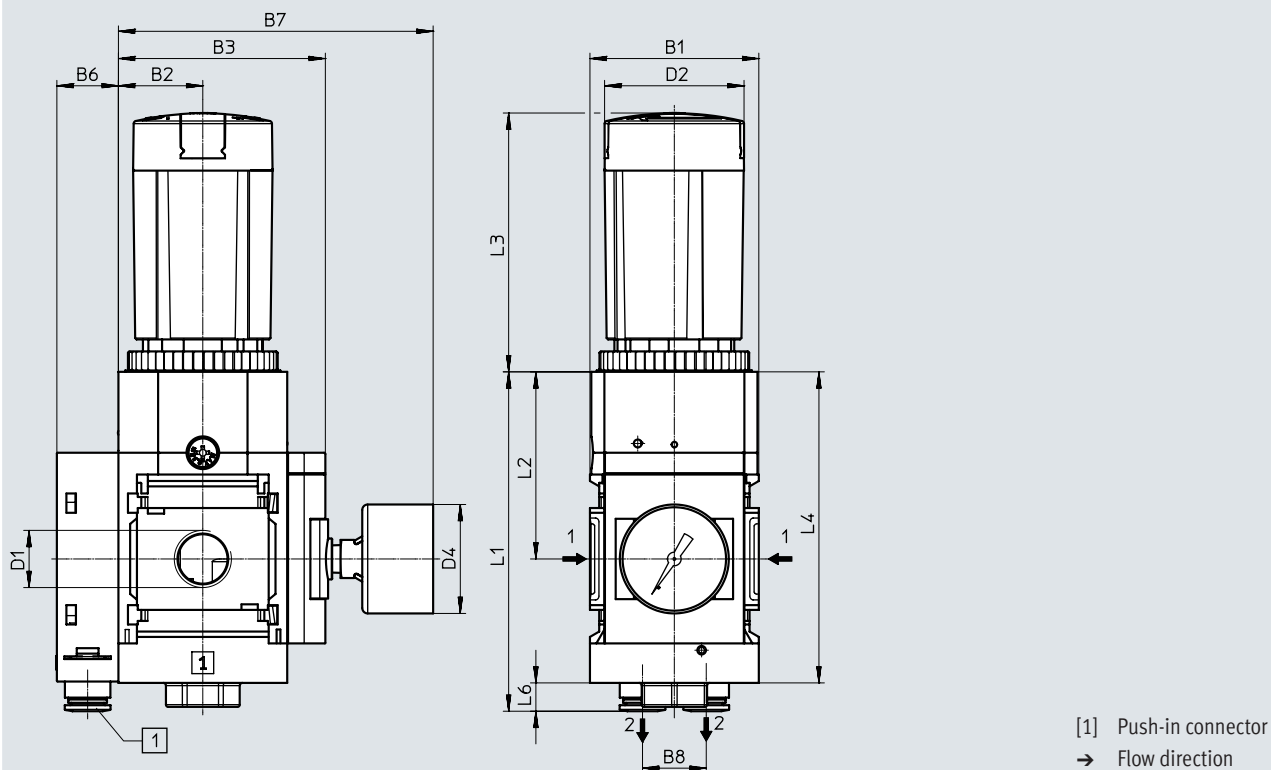
Download CAD data → www.festo.com

[D2]/[D4]/[D5]/[D7] Pressure regulation range, manually actuated

[A8M] Adapter for EN pressure gauge 1/8, with precision pressure gauge

[BD]/[BE] Angled outlet block

[AS] Rotary knob with latch, can be locked using accessories



Type	B1	B2	B3	B6	B7	B8	D1	D2 ∅	D4 ∅	L1	L2	L3	L4	L6
MS6-LRPB-1/2-D2/D4/D5/D7-A8M-BD/BE-AS	62	31	76	23	115	23.4	G1/2	51.2	40	124	68	95.1	114	10

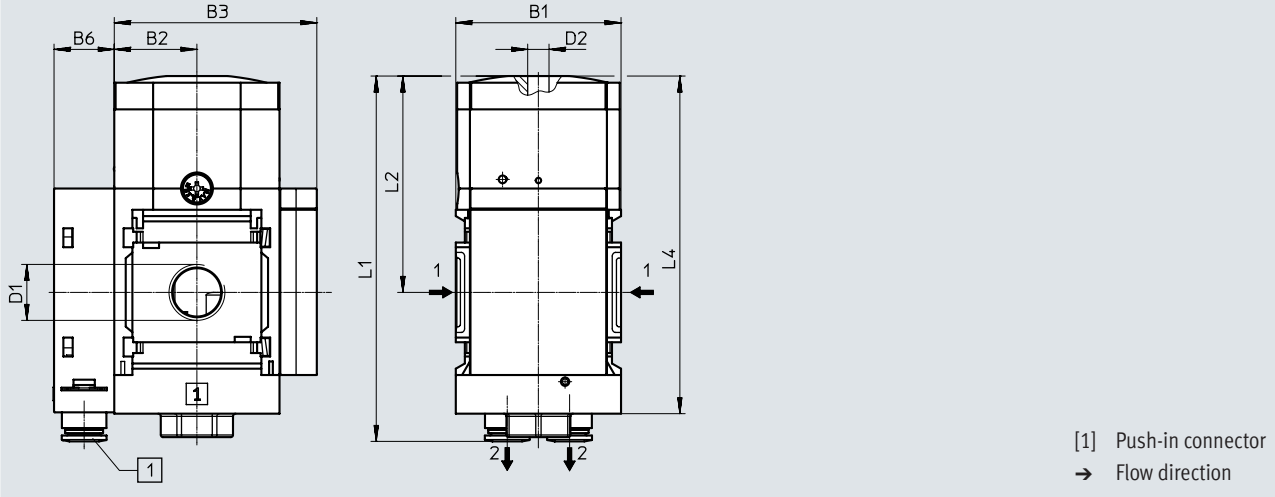
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions

Download CAD data → www.festo.com

- [PO] Pressure regulation range, pneumatically actuated
- [VS] Cover plate
- [BD]/[BE] Angled outlet block



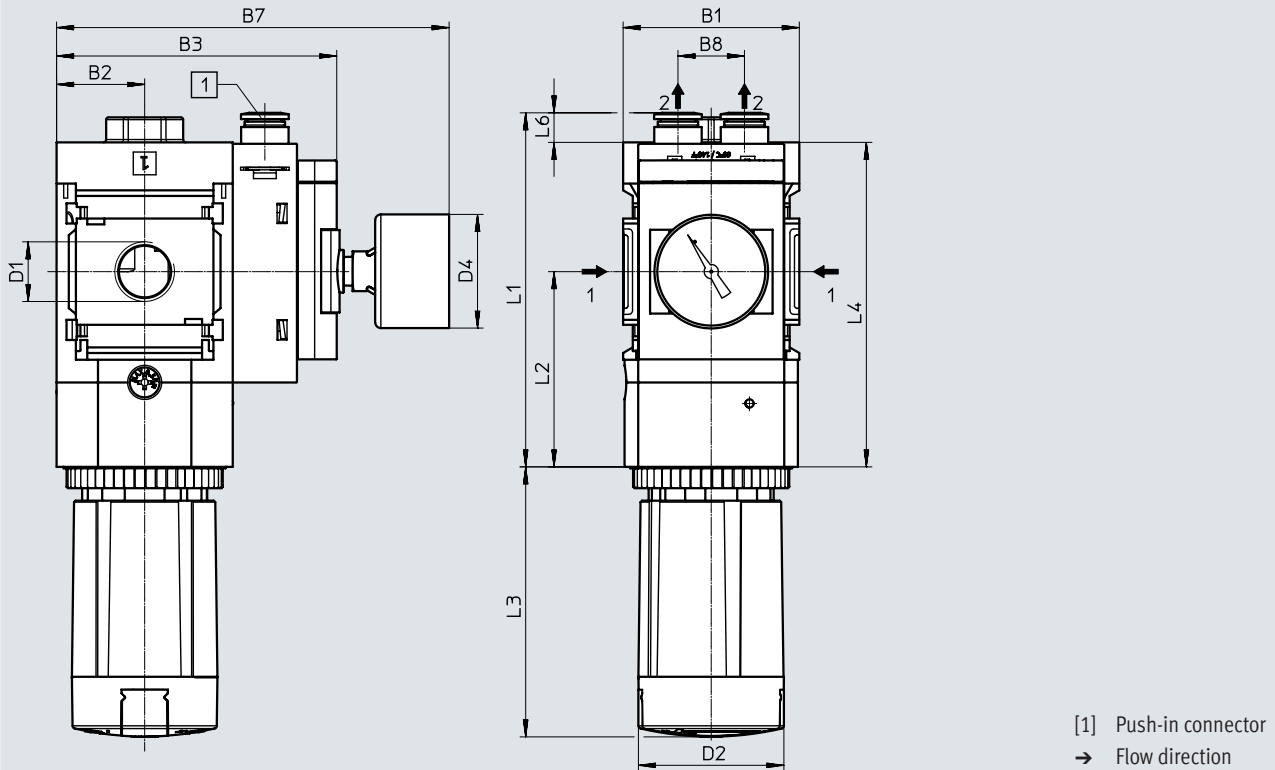
Type	B1	B2	B3	B6	D1	D2	L1	L2	L4
MS6-LRPB-1/2-PO-VS-BD/BE	62	31	76	23	G1/2	G1/8	137	81	127

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Dimensions – Alternative mounting position

Download CAD data → www.festo.com

- [KD] Rotary knob underneath



Type	B1	B2	B3	B7	B8	D1	D2	D4	L1	L2	L3	L4	L6
MS6-LRPB-1/2-...-KD	62	31	99	138	23.4	G1/2	51.2	40	124	68	95.1	114	10

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

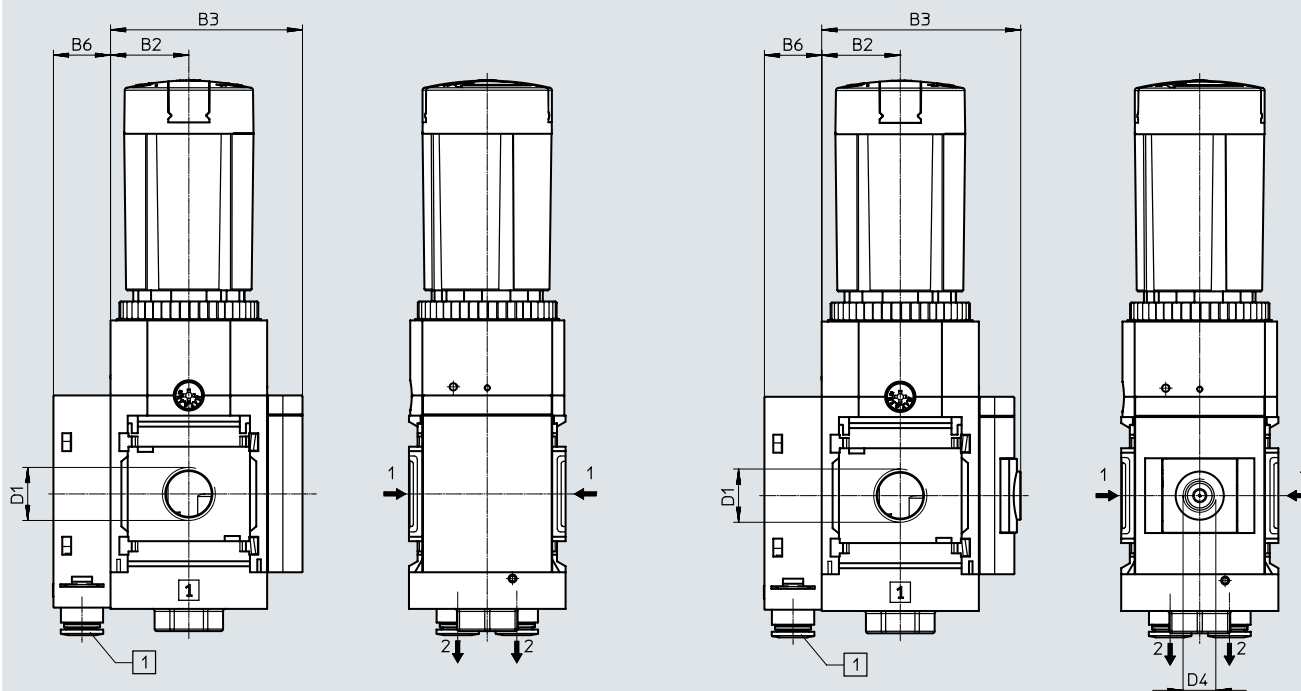
Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[VS] Cover plate

[A8] Adapter for EN pressure gauge 1/8, without pressure gauge

[A4] Adapter for EN pressure gauge 1/4, without pressure gauge



[1] Push-in connector

→ Flow direction

Type	B2	B3	B6	D1	D4
MS6-LRPB-1/2-...-VS		76			-
MS6-LRPB-1/2-...-A8	31	78.5	23	G1/2	G1/8
MS6-LRPB-1/2-...-A4		78.5			G1/4

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

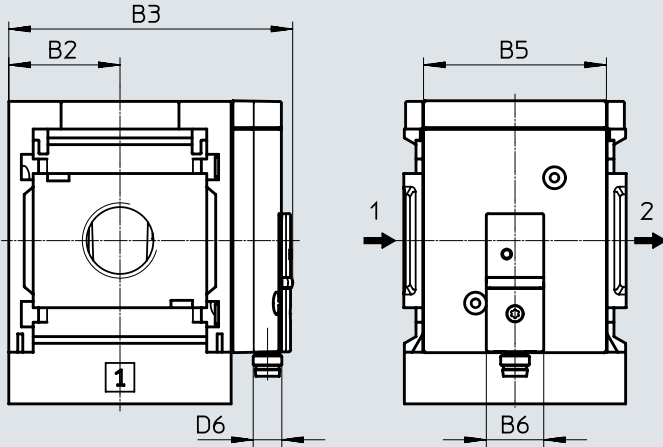
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[AD7 ... 10] Pressure sensor without LCD display (switching status indicator only)

Datasheets → Internet: sde5



Variant AD7:
SDE5-D10-O-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact

Variant AD9:
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

Variant AD8:
SDE5-D10-C-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/C contact

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

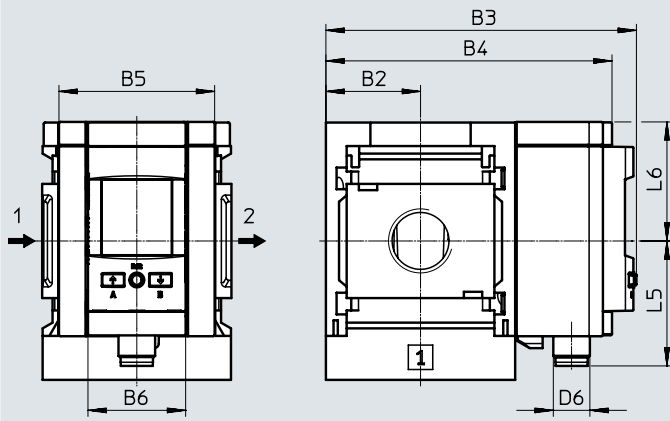
→ Flow direction

Type	B2	B3	B5	B6	D6	L5	L6
MS6-LRPB-...-AD7/AD8/AD9/AD10	31	79.1	51	16	M8x1	-	-

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

[AD11/AD12] Pressure sensor with LCD display

Datasheets → Internet: spau



Variant AD11:
SPAU-P10R-MS-L-PNLK-M12 with plug M12, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

Variant AD12:
SPAU-P10R-MS-L-PNLK-M8 with plug M8, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

→ Flow direction

Type	B2	B3	B4	B5	B6	D6	L5	L6
MS6-LRPB-...-AD11	31	101.8	93.7	51	32	M12x1	41.2	39
MS6-LRPB-...-AD12	31	101.8	93.7	51	32	M8x1	37.9	39

Datasheet

Dimensions – Rotary knob

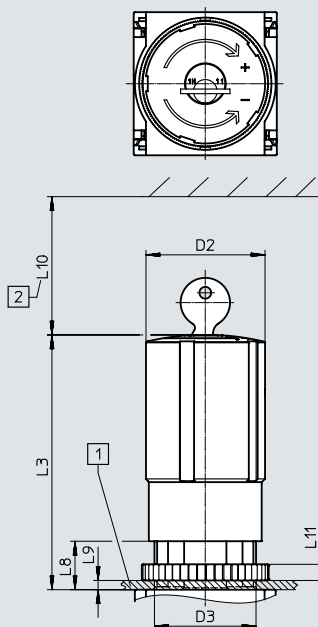
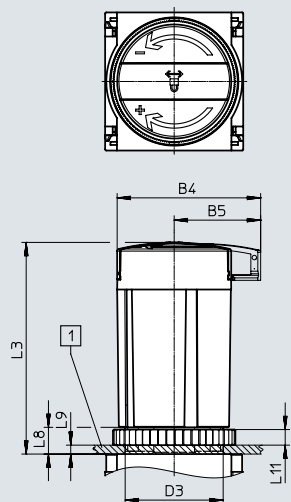
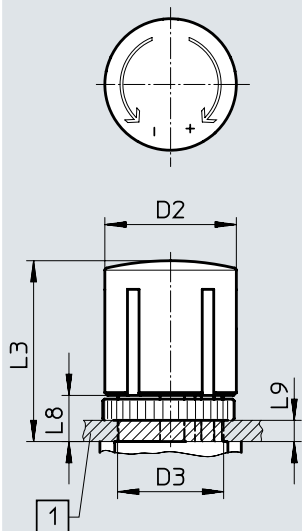
Download CAD data → www.festo.com

For control panel installation

[] Rotary knob with latch

[AS] Rotary knob with latch, can be locked using accessories

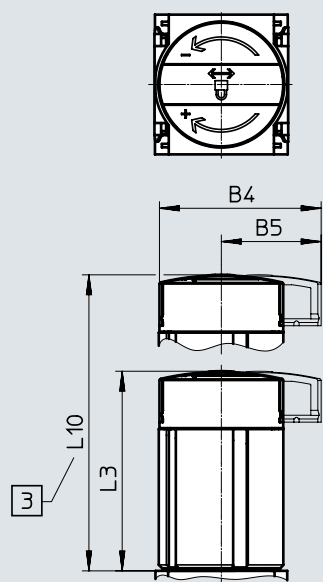
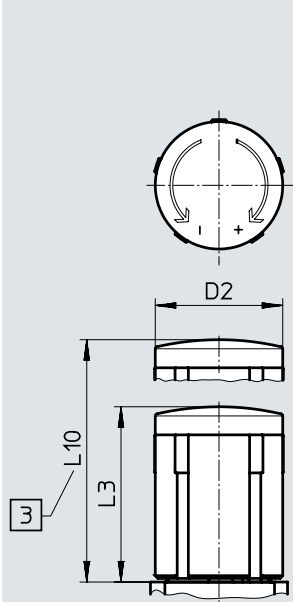
[E11] Rotary knob with integrated lock



[1] Max. control panel thickness
[2] Installation dimension

[LD] Rotary knob, long, with latch

[LD-AS] Rotary knob, long, with latch, can be locked using accessories



[3] For pressure adjustment: fully pull out telescopic rotary knob

Type	B4	B5	D2	D3	L3	L8	L9	L10
MS6-LRPB-...	-	-	51.2	M44x1	86	21	14	-
MS6-LRPB-...-AS	64.4	38.8			95.1	12	5	
MS6-LRPB-...-E11	-	-			110	21	14	
MS6-LRPB-...-LD	-	-		-	-	-	139	
MS6-LRPB-...-LD-AS	64.4	38.8	-	-	95.5	-	-	148.5

Datasheet

Ordering data				
Pneumatic connection 1	Pressure regulation range	Flow direction	Part no.	Type
MS6-LRPB...				
G1/2	0.05 ... 0.7 bar	From left to right	534865	MS6-LRPB-1/2-D2-A8-BD
	0.05 ... 2.5 bar	From left to right	534914	MS6-LRPB-1/2-D4-A8
	0.1 ... 4 bar	From left to right	534917	MS6-LRPB-1/2-D5-A8
	0.1 ... 12 bar	From left to right	534874	MS6-LRPB-1/2-D7-A8-BD

Ordering data – Modular product system

Ordering table		Conditions	Code	Enter code
Grid dimension [mm]	62			
Module no.	535007			
Series	Standard		MS	MS
Size	6		6	6
Function	Precision pressure regulator for manifold assembly		-LRPB	-LRPB
Pneumatic connection	Female thread G1/2	[1]	-1/2	
	Connecting plate G1/4		-AGB	
	Connecting plate G3/8		-AGC	
	Connecting plate G1/2		-AGD	
	Connecting plate G3/4		-AGE	
Pressure regulation range/actuation	0.05 ... 0.7 bar, manually actuated		-D2	
	0.05 ... 2.5 bar, manually actuated		-D4	
	0.1 ... 4 bar, manually actuated		-D5	
	0.1 ... 12 bar, manually actuated		-D7	
	0.1 ... 12 bar, pneumatically actuated (pressure range determined by pilot regulator)	[1] [2]	-PO	
Pressure gauge alternatives	Cover plate	[3]	-VS	
	Adapter for EN pressure gauge 1/8, without pressure gauge	[4]	-A8	
	Adapter for EN pressure gauge 1/8, with precision pressure gauge	[4]	-A8M	
	Adapter for EN pressure gauge 1/4, without pressure gauge	[4]	-A4	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/O contact	[1] [5] [6]	-AD7	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/C contact	[1] [5] [6]	-AD8	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/O contact	[1] [5] [6]	-AD9	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/C contact	[1] [5] [6]	-AD10	
	Pressure sensor with LCD display, plug M12, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[1] [4] [5]	-AD11	
	Pressure sensor with LCD display, plug M8, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[1] [4] [5]	-AD12	

[1] 1/2, PO, AD7 ... AD10, AD11/AD12, KD, E11, WPM Not with EU EX4 certification.

[2] PO Not with long rotary knob LD. Not with locking options AS, E11. Not with mounting type WR.

[3] VS Must be selected with outlet direction Z without alternative mounting position KD or without alternative pressure output BD, BE. Must be selected with alternative mounting position KD without outlet direction Z or without alternative pressure output BD, BE.

[4] A8, A8M, A4, AD11/AD12 In combination with outlet direction Z only with alternative mounting position KD.

[5] AD7 ... AD10, AD11/AD12 Measuring range max. 10 bar. Not with pressure regulation range/actuation D2, D4.

[6] AD7 ... AD10 In combination with outlet direction Z only with alternative pressure output BD, BE or in combination with outlet direction Z only with alternative mounting position KD

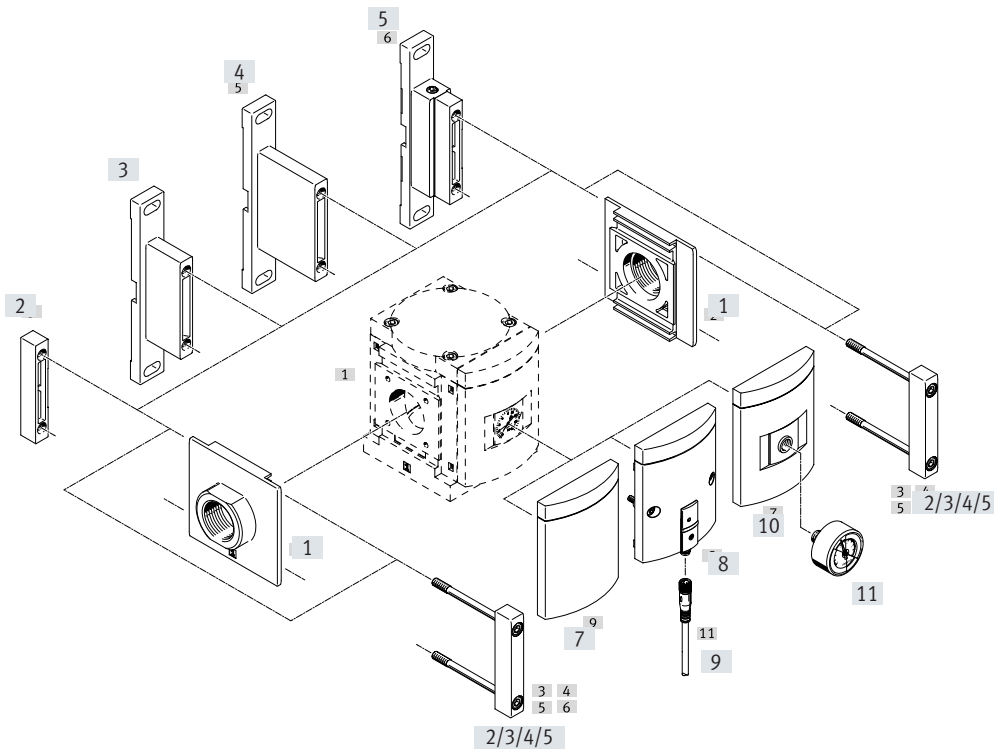
Ordering data – Modular product system

Ordering table		Grid dimension	[mm]	62	Conditions	Code	Enter code
Rotary knob	Standard						
	Long rotary knob			[7]		-LD	
Alternative mounting position	None						
	Rotary knob underneath			[1] [8]		-KD	
Locking option	None						
	Lockable using accessories					-AS	
	With integrated lock			[1]		-E11	
Alternative pressure output (p max = 10 bar)	None						
	Angled outlet block QS-8					-BD	
	Angled outlet block QS-10					-BE	
Type of mounting	Without mounting bracket						
	Mounting bracket with knurled nut for regulator head			[9] [10]		-WR	
	Mounting bracket standard design			[11] [12]		-WP	
	Mounting bracket for hooking in service unit components			[1] [9] [11]		-WPM	
	Mounting bracket for large wall gap			[11] [13]		-WPB	
	Mounting bracket centrally at the rear (wall mounting top and bottom), connecting plates not required			[9]		-WB	
EU certification	None						
	II 2GD to EU Explosion Protection Directive (ATEX)					-EX4	
UL certification	None						
	cULus, ordinary location for Canada and USA					-UL1	
Outlet direction	Pressure output at the rear						
	Pressure output at the front (without angled outlet block, no pressure gauge)					-Z	

- [7] LD Not with locking option E11.
- [8] KD In combination with pressure gauge alternatives A8, A4, AD7 ... AD10 only with outlet direction Z.
- [9] WR, WB, WPM Only with outlet direction Z.
Not with alternative mounting position KD.
- [10] WR Only with outlet direction Z.
Not with long rotary knob LD.
- [11] WP, WPM, WPB Only with connecting plate AGB, AGC, AGD or AGE.
- [12] WP Not with alternative mounting position KD.
Either only with outlet direction Z or only with alternative pressure output BD, BE.
- [13] WPB Not with alternative mounting position KD.
Not with alternative pressure output BD, BE.
Not with outlet direction Z.

Peripherals overview

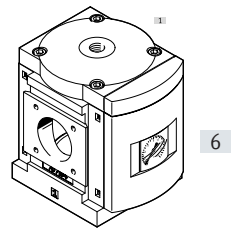
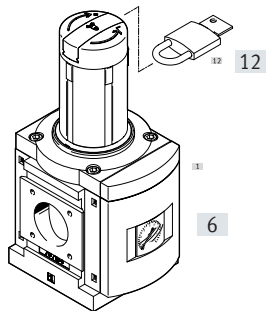
Pressure regulator MS9-LR



Note
 Additional accessories:
 • Module connectors for combination with size MS6, MS9 or MS12
 → Internet: rmv, armv

Manually actuated

Pneumatically actuated



Peripherals overview

Mounting attachments and accessories		Individual device			Combination Module without connecting thread, without connecting plate	→ Page/ Internet
		With female thread	With connecting plate			
			Without EU certifica- tion	With EU certification		
[1]	Connecting plate SET MS9-AG...	–	■	■	■	ms9-ag
	Connecting plate SET MS9-AQ...	–	■	–	■	ms9-aq
[2]	Module connector MS9-MV	–	–	–	■	ms9-mv
[3]	Mounting bracket MS9-WP	■	■	■	■	ms9-wp
[4]	Mounting bracket MS9-WPB	■	■	■	■	ms9-wp
[5]	Mounting bracket MS9-WPM	■	■	–	■	ms9-wp
[6]	MS pressure gauge AG	■	■	■	■	90
[7]	Cover plate VS	■	■	■	■	90
[8]	Pressure sensor without display AD7 ... AD10	■	■	–	■	90
[9]	Connecting cable NEBU-M8...-LE3	■	■	–	■	102
[10]	Adapter for EN pressure gauge 1/4 A4	■	■	■	■	90
[11]	Pressure gauge MA	■	■	■	■	102
[12]	Padlock LRVS-D	■	■	■	■	102

Type codes

001	Series
MS	MS series

002	Size
9	Grid dimension 90 mm

003	Function
LR	Pressure regulator

004	Pneumatic connection
3/4	Female thread G3/4
1	Female thread G1
AGD	Sub-base G1/2
AGE	Sub-base G3/4
AGF	Sub-base G1
AGG	Sub-base G11/4
AGH	Sub-base G11/2
N3/4	NPT3/4
N1	NPT1
AQR	Sub-base NPT1/2
AQS	Sub-base NPT3/4
AQT	Sub-base NPT1
AQU	Sub-base NPT11/4
AQV	Sub-base NPT11/2
G	Module without connecting thread, without sub-base
NG	Module without connecting thread, without sub-base (inch)

005	Pressure regulation range
D5	0.3 ... 4 bar
D6	0.3 ... 7 bar
D7	0.5 ... 12 bar
D8	0.5 ... 16 bar
PO	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)

006	Regulator type
	Pilot actuated
DI	Directly actuated

007	Pressure gauge alternatives
AG	MS pressure gauge
VS	Cover plate
A4	Adapter for EN pressure gauge 1/4, without pressure gauge
RG	Integrated pressure gauge, red/green scale
AD7	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O
AD8	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C
AD9	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O
AD10	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C

008	Alternative pressure gauge scale
	MS pressure gauge
PSI	psi
MPA	MPa
BAR	bar

009	Secondary exhausting
	With secondary exhausting
OS	Without secondary exhaust

010	Alternative mounting position
	None
KD	Rotary knob underneath

011	Lockability
	None
AS	Can be locked using accessories
E11	With integrated lock

012	Type of mounting
	Without mounting bracket
WP	Mounting bracket basic design
WPM	Mounting bracket for hooking in service unit components
WPB	Mounting bracket for large wall gap

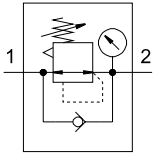
013	EU certification
	None
EX4	II 2GD

014	UL certification
	None
UL1	cULus ordinary location for Canada and USA

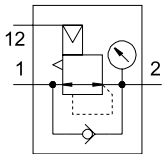
015	Flow direction
	Flow direction from left to right
Z	Flow direction from right to left





Datasheet

Pressure regulation range/actuation, manually actuated



Pressure regulation range/actuation, pneumatically actuated



-  Flow rate
11000 ... 26000 l/min
-  Temperature range
-10 ... +60°C
-  Operating pressure
1 ... 20 bar
-  www.festo.com



The pressure regulator maintains an essentially constant output pressure p_2 , independently of pressure fluctuations in the system and air consumption. The output pressure p_2 can be set within the pressure regulation range either manually using the rotary knob or pneumatically via pilot pressure p_{12} by an external pilot regulator. When the operating pressure is switched off, the output pressure p_2 is exhausted via port 3 (secondary exhausting).

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- High flow rate performance with minimal pressure drop
- Piloted or directly actuated diaphragm regulator
- Four pressure regulation ranges: 0.5 ... 4 bar, 0.5 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Available with or without secondary exhausting
- Actuator lock to protect the set values from being adjusted
- Return flow option for exhausting from output 2 to output 1 already integrated
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data			
Pneumatic connection 1, 2		Female thread	
		G3/4 or G1	
Connecting plate		[AG...]	G1/2, G3/4, G1, G1 1/4 or G1 1/2
		[AQ...]	1/2 NPT, 3/4 NPT, 1 NPT, 1 1/4 NPT or 1 1/2 NPT
Module without connecting thread/connecting plate		[G]/[ING]	–
Pilot air port 12		G1/4 (MS9-LR-...-PO)	
Design		Piloted diaphragm regulator	
		Directly actuated diaphragm regulator	
Regulator function	Piloted	Output pressure constant, with return flow, with input pressure compensation, with secondary exhausting	
	Directly actuated	Output pressure constant, with return flow, with/without secondary exhausting	
Type of mounting		Via accessories	
		In-line installation	
		Front panel mounting	
Mounting position		Any ¹⁾	
Actuator lock		Rotary knob with latch, can be locked using accessories	
		Rotary knob with integrated lock	
Pressure regulation range/actuation	[D5]	[bar]	0.5 ... 4, manually actuated
	[D6]	[bar]	0.5 ... 7, manually actuated
	[D7]	[bar]	0.5 ... 12, manually actuated (0.5 ... 10 with pressure sensor)
	[D8]	[bar]	0.5 ... 16, manually actuated (0.5 ... 10 with pressure sensor)
	[PO]	[bar]	0.5 ... 16, pneumatically actuated ²⁾
Max. pressure hysteresis		[bar]	0.4

1) The pressure regulator must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.

2) Output pressure p_2 corresponds roughly to the applied pilot pressure p_{12} .

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

General technical data	
Pressure indication	Via pressure sensor for indicating the output pressure and electrical output
	Via pressure gauge for indicating the output pressure
	Via pressure gauge with red/green scale for indicating the output pressure
	Prepared for G1/4

Standard nominal flow rate $q_{nN}^{1)2)}$ [l/min]					
Design		Piloted diaphragm regulator		Directly actuated diaphragm regulator DI	
Pneumatic connection		G3/4, NPT3/4	G1, NPT1	G3/4, NPT3/4	G1, NPT1
Pressure regulation range	[D5]	19000 ³⁾	26000 ³⁾	14000 ³⁾	20000 ³⁾
	[D6]	17000	20000	14000	11000
	[D7]	17000	20000	–	–
	[D8]	17000	20000	–	–
	[PO]	21000	25000	–	–

- 1) All values $\pm 15\%$
- 2) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar
- 3) Measured at $p_1 = 10$ bar and $p_2 = 4$ bar, $\Delta p = 1$ bar

Operating and environmental conditions		
EU certification	[]	[EX4]
Operating pressure [bar]	1 ... 20	
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
	Inert gases	
Note on the operating/pilot medium	Lubricated operation possible (in which case lubrication will always be required)	Lubricated operation not possible
Ambient temperature [°C]	–10 ... +60 (0 ... +50) ¹⁾	
Temperature of medium [°C]	–10 ... +60 (0 ... +50) ¹⁾	
Storage temperature [°C]	–10 ... +60	
Corrosion resistance class CRC ²⁾	2	
UL certification ³⁾	c UL us - Recognized (OL)	

- 1) Value in brackets applies to MS9-LR with pressure sensor.
- 2) More information www.festo.com/x/topic/crc
- 3) More information: www.festo.com/catalogue/ms9-lr → Support/Downloads.

ATEX	
EU certification	[EX4]
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion ambient temperature	$-10^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
Explosion protection certification outside the EU	EPL Db (GB)
	EPL Gb (GB)
CE marking (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) ¹⁾	To UK regulations for explosions

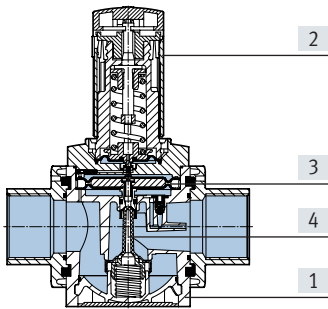
- 1) More information: www.festo.com/catalogue/ms9-lr → Support/Downloads.

Weight [g]	
Pressure regulator	1400
Pressure regulator with rotary knob with integrated lock	1700

Datasheet

Materials

Sectional view

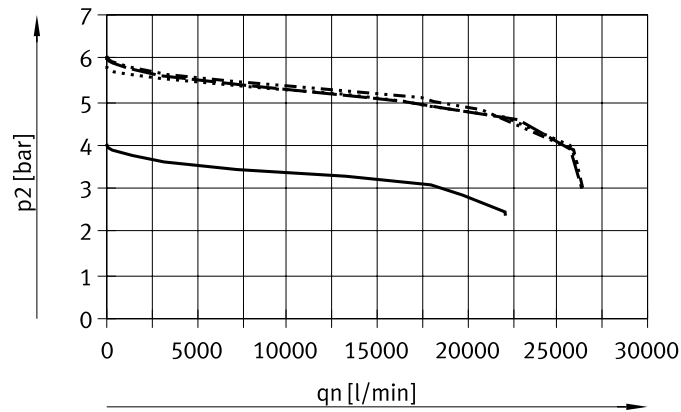


Pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragm	NBR
[4]	Valve tappet	Wrought aluminium alloy, NBR, POM
-	Covering	Reinforced PA
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
-	Seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

Standard flow rate qn as a function of output pressure p2 (p1 = 10 bar)

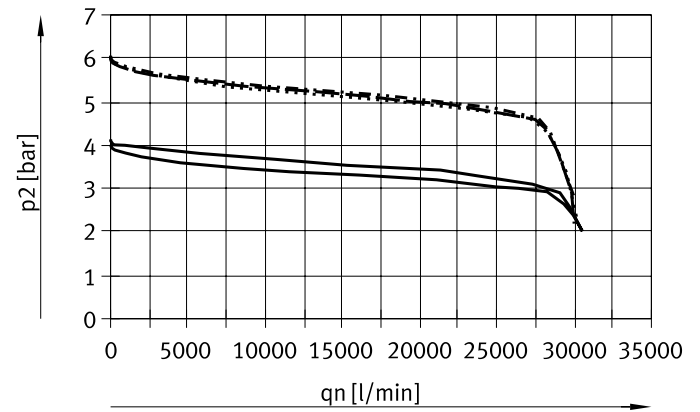
Piloted diaphragm regulator

Pneumatic connection G3/4, NPT3/4



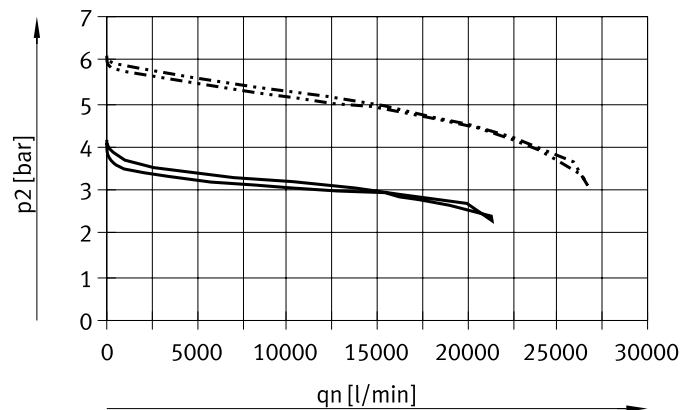
— [D5]: 0.5 ... 4 bar - - - [D7]: 0.5 ... 12 bar
 - · - · [D6]: 0.5 ... 7 bar ····· [D8]: 0.5 ... 16 bar

Pneumatic connection G1, NPT1



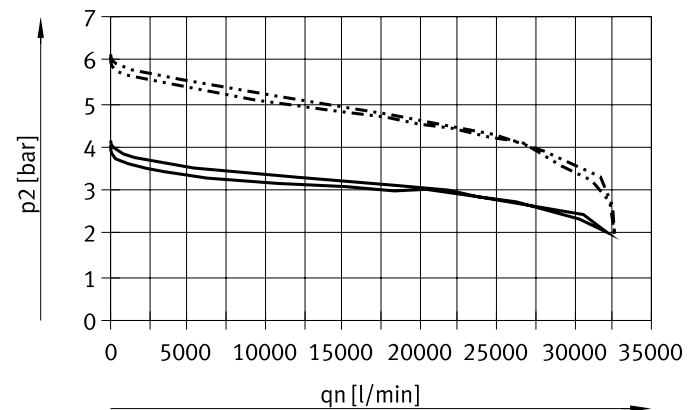
Directly actuated diaphragm regulator

Pneumatic connection G3/4, NPT3/4



— [D5]: 0.5 ... 4 bar
 - · - · [D6]: 0.5 ... 7 bar

Pneumatic connection G1, NPT1



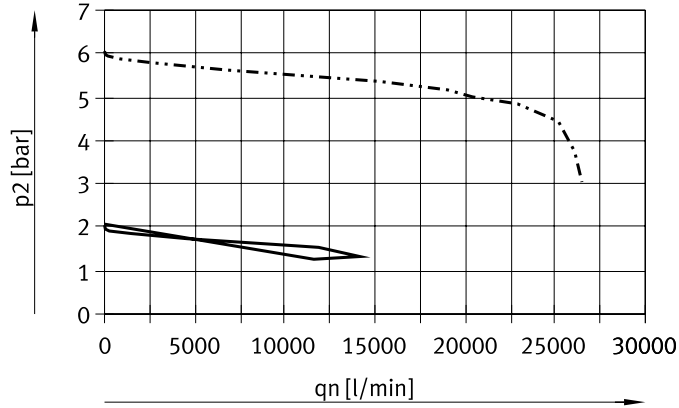
Datasheet

Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

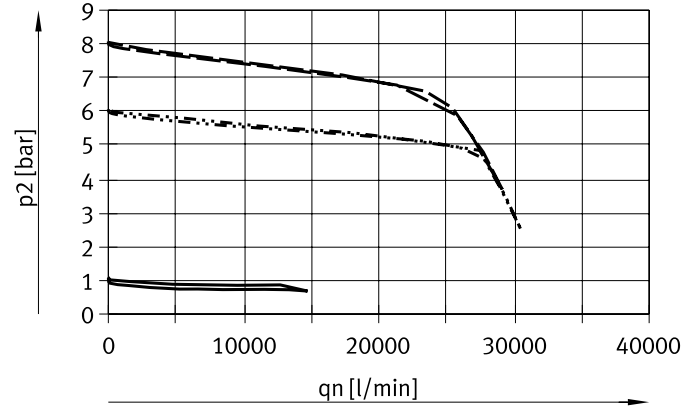
External pilot regulator

Pressure regulation range, pneumatically actuated

Pneumatic connection G3/4, NPT3/4



Pneumatic connection G1, NPT1



Dimensions – Basic version

Download CAD data → www.festo.com

[D5]/[D6]/[D7]/[D8] Pressure regulation range, manually actuated

[G]/[NG] Module without connecting thread, without connecting plate

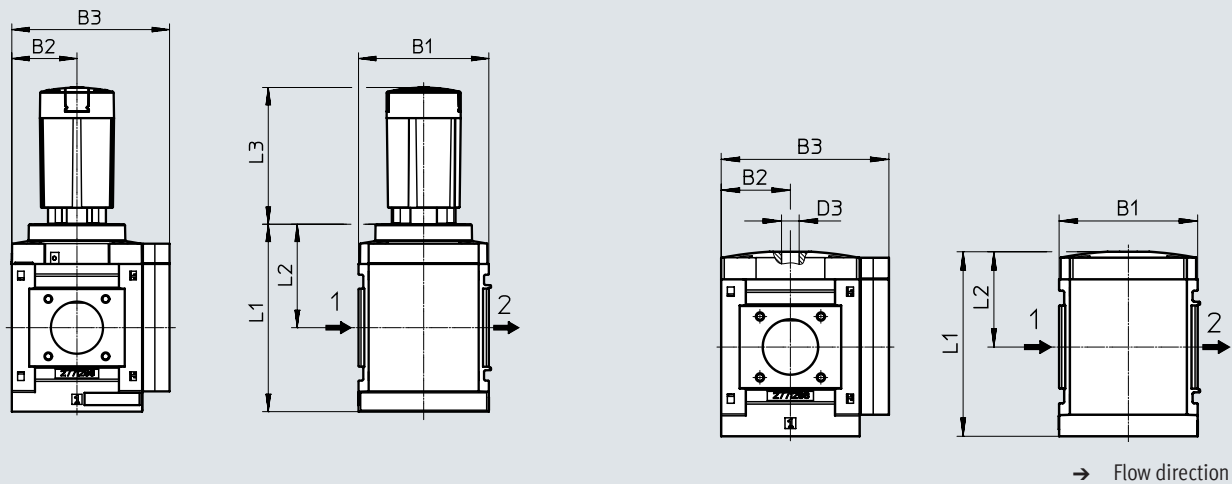
[VS] Cover plate

[AS] Rotary knob with latch, can be locked using accessories

[PO] Pressure regulation range, pneumatically actuated

[G]/[NG] Module without connecting thread, without connecting plate

[VS] Cover plate



Type	B1	B2	B3	D3	L1		L2		L3
					Piloted	Directly actuated	Piloted	Directly actuated	
MS9-LR-G/NG-D5/D6/D7/D8	90	45	109	–	129	122	71.4	64	94.5
MS9-LR-G/NG-PO				G1/4	120	–	62	–	–

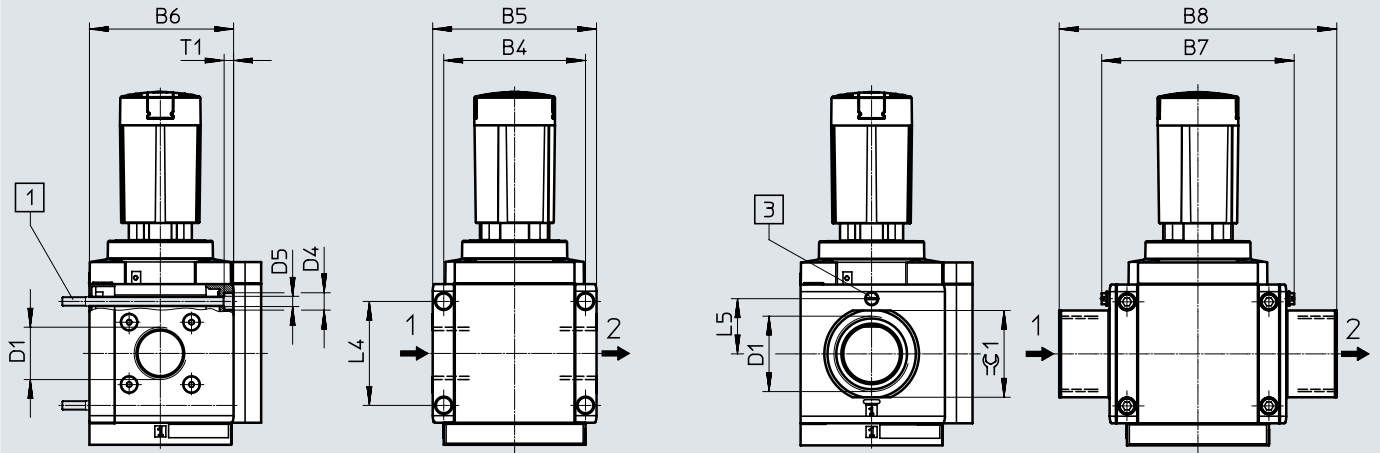
Datasheet

Dimensions – Connecting thread/connecting plate

[3/4]/[1]/[N3/4]/[N1] Female thread

[AG...]/[AQ...] Connecting plate

Download CAD data → www.festo.com



[1] Retaining screw M6xmin. 90 to DIN 912 (not included in the scope of delivery) for wall mounting without mounting bracket

[3] Earthing screw M4x8 (only with MS9-...-EX4)

→ Flow direction

Type	B4	B5	B6	B7		B8	D1	D4	D5	L4	L5	T1	≈ 1
					[EX4]						[EX4]		
MS9-LR-3/4	90	104	91.5	-	-	-	G3/4	11	6.5	66	-	6	-
MS9-LR-1							G1						
MS9-LR-AGD	-	-	-	112	122	-	132	-	-	-	35	-	30
MS9-LR-AGE							132						36
MS9-LR-AGF							142						41
MS9-LR-AGG							162						50
MS9-LR-AGH							176						55
MS9-LR-N3/4	90	104	91.5	-	-	-	3/4 NPT	11	6.5	66	-	6	-
MS9-LR-N1							1 NPT						
MS9-LR-AQR	-	-	-	112	122	-	132	-	-	-	35	-	30
MS9-LR-AQS							132						36
MS9-LR-AQT							142						41
MS9-LR-AQU							162						50
MS9-LR-AQV							176						55

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

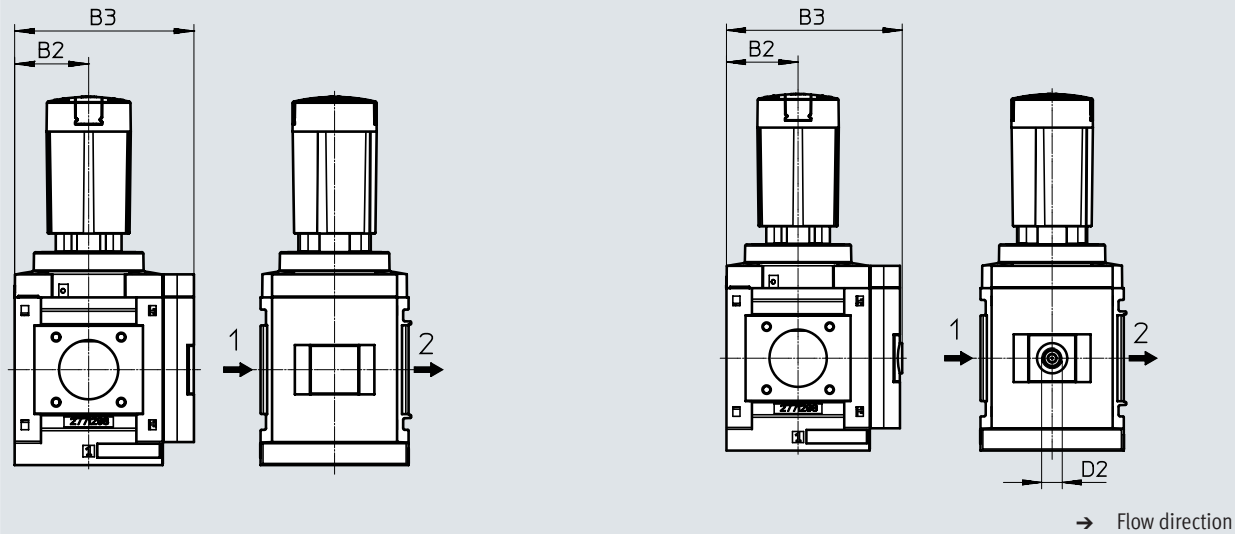
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

- [AG] Integrated MS pressure gauge with standard scale
- [RG] Integrated MS pressure gauge with red/green scale

- [A4] Adapter for EN pressure gauge 1/4, without pressure gauge



Type	B2	B3	D2
MS9-LR...-AG/RG	45	109	-
MS9-LR...-A4		110	G1/4

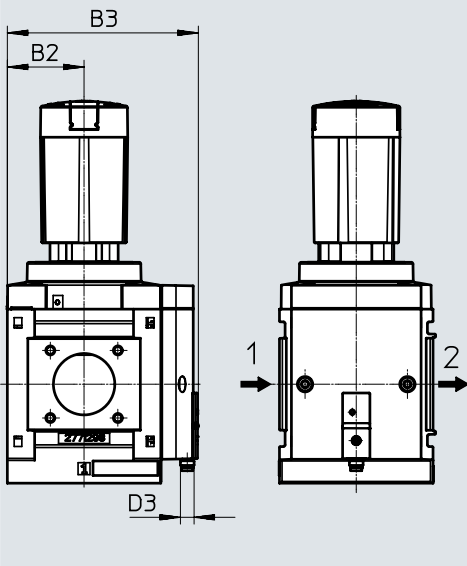
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

- [AD7 ... 10] Pressure sensor without LCD display (switching status indicator only)

Datasheets → Internet: sde5



Variant AD7:
SDE5-D10-0-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact

Variant AD9:
SDE5-D10-03-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

Variant AD8:
SDE5-D10-C-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/C contact

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

Type	B2	B3	D3
MS9-LR...-AD7/AD8/AD9/AD10	45	112	M8

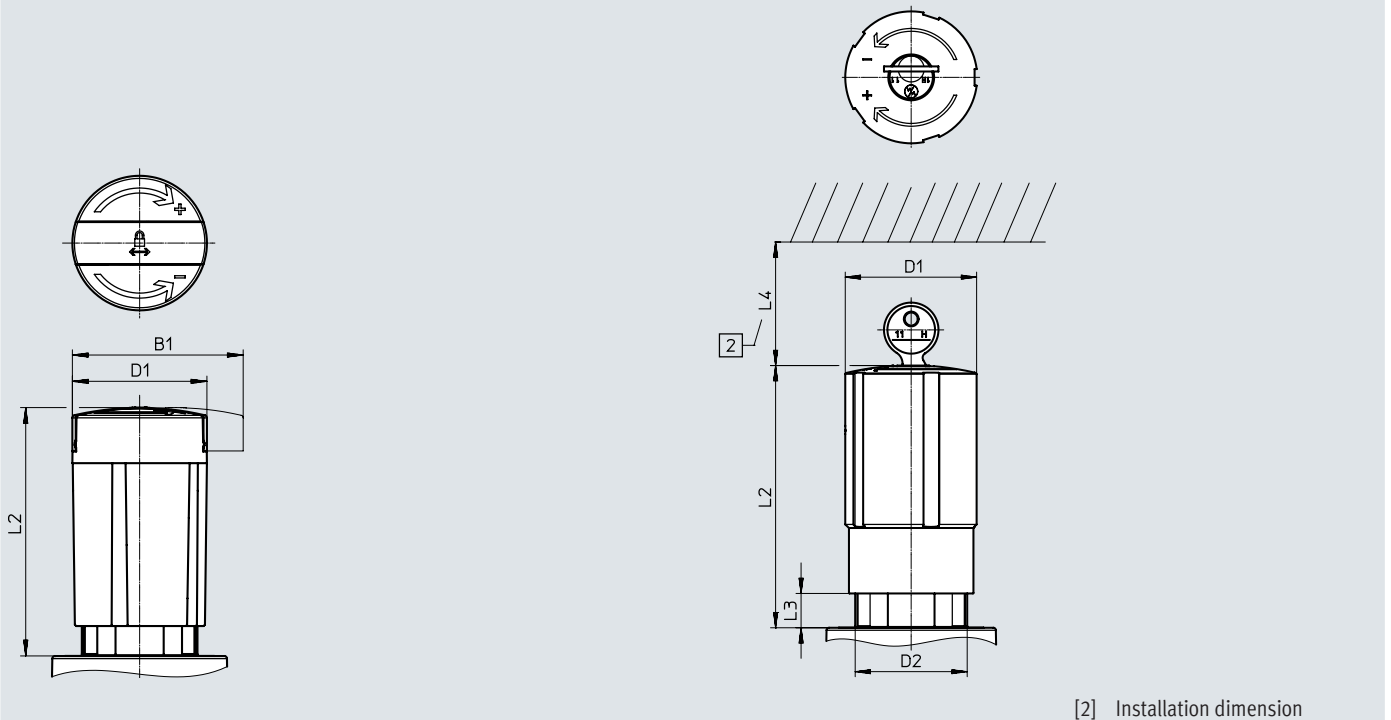
Datasheet

Dimensions – Rotary knob

Download CAD data → www.festo.com

[AS] Rotary knob with latch, can be locked using accessories

[E11] Rotary knob with integrated lock



Type	B1	D1	D2	L2	L3	L4
MS9-LR...AS	64.4	51.2	–	94.5	–	–
MS9-LR...E11	–		M44x1	103.5	13.5	60

Ordering data

Design	Pressure regulation range	Flow direction	Part no.	Type
MS9-LR...				
Piloted diaphragm regulator	0.5 ... 4 bar	From left to right	564134	MS9-LR-G-D5-AG-BAR-AS
	0.5 ... 7 bar	From left to right	564136	MS9-LR-G-D6-AG-BAR-AS
	0.5 ... 12 bar	From left to right	564138	MS9-LR-G-D7-AG-BAR-AS
Directly actuated diaphragm regulator	0.5 ... 4 bar	From left to right	564135	MS9-LR-G-D5-DI-AG-BAR-AS
		From left to right	564140	MS9-LR-NG-D5-DI-AG-PSI-AS
		From left to right	564137	MS9-LR-G-D6-DI-AG-BAR-AS
	0.5 ... 7 bar	From left to right	564142	MS9-LR-NG-D6-DI-AG-PSI-AS

Ordering data – Modular product system

Ordering table		Conditions	Code	Enter code
Grid dimension	[mm] 90			
Module no.	562530			
Series	Standard		MS	MS
Size	9		9	9
Function	Pressure regulator		-LR	-LR
Pneumatic connection	Female thread G3/4	[1]	-3/4	
	Female thread G1	[1]	-1	
	Connecting plate G1/2		-AGD	
	Connecting plate G3/4		-AGE	
	Connecting plate G1		-AGF	
	Connecting plate G1 1/4		-AGG	
	Connecting plate G1 1/2		-AGH	
	Female thread 3/4 NPT	[1]	-N3/4	
	Female thread 1 NPT	[1]	-N1	
	Connecting plate 1/2 NPT	[1]	-AQR	
	Connecting plate 3/4 NPT	[1]	-AQS	
	Connecting plate 1 NPT	[1]	-AQT	
	Connecting plate 1 1/4 NPT	[1]	-AQU	
	Connecting plate 1 1/2 NPT	[1]	-AQV	
	Module without connecting thread, without connecting plate	[1]	-G	
	Module without connecting thread, without connecting plate (inch)	[1]	-NG	
Pressure regulation range/actuation	0.5 ... 4 bar, manually actuated		-D5	
	0.5 ... 7 bar, manually actuated		-D6	
	0.5 ... 12 bar, manually actuated		-D7	
	0.5 ... 16 bar, manually actuated	[1]	-D8	
	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)	[2]	-PO	
Regulator type	Piloted			
	Directly actuated	[3]	-DI	
Pressure gauge/pressure gauge alternatives	MS pressure gauge		-AG	
	Cover plate		-VS	
	Adapter for EN pressure gauge 1/4, without pressure gauge		-A4	
	Integrated pressure gauge, red/green scale	[4]	-RG	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/O contact	[1] [5]	-AD7	
	Pressure sensor with status indicator, plug M8, threshold value comparator, PNP, N/C contact	[1] [5]	-AD8	
	Pressure sensor with status indicator, plug M8, window comparator, PNP, N/O contact	[1] [5]	-AD9	
Pressure sensor with status indicator, plug M8, window comparator, PNP, N/C contact	[1] [5]	-AD10		

[1] 3/4, 1, N3/4, N1, Not with EU EX4 certification
AQR, AQS, AQT,
AQU, AQV, G, NG,
D8, AD7, AD8,
AD9, AD10, E11,
WPM

[2] PO Not with regulator type DI.
Not with locking options AS, E11.

[3] DI Not with pressure regulation range D7, D8.

[4] RG Not with alternative pressure gauge scale PSI, PSI scale is only used as an auxiliary scale.

[5] AD7 ... AD10 Measuring range max. 10 bar.

Ordering data – Modular product system

Ordering table		Grid dimension [mm]	90	Conditions	Code	Enter code
Alternative pressure gauge scale	psi			[6]	-PSI	
	MPa			[6]	-MPA	
	bar			[6]	-BAR	
Secondary exhausting	With secondary exhausting					
	Without secondary exhausting			[7]	-OS	
Alternative mounting position	None					
	Rotary knob underneath (connection underneath with PO)				-KD	
Locking option	Without (locking option AS is predefined)					
	Lockable using accessories				-AS	
	With integrated lock			[1]	-E11	
Type of mounting	Without mounting bracket					
	Mounting bracket standard design			[8]	-WP	
	Mounting bracket for hooking in service unit components			[1] [8]	-WPM	
	Mounting bracket for large wall gap			[8]	-WPB	
EU certification	None					
	II 2GD to EU Explosion Protection Directive (ATEX)				-EX4	
UL certification	None					
	cULus, ordinary location for Canada and USA				-UL1	
Flow direction	Flow direction from left to right					
	Flow direction from right to left				-Z	

[1] 3/4, 1, N3/4, N1, AQR, AQS, AQT, AQU, AQV, G, NG, D8, AD7, AD8, AD9, AD10, E11, WPM
Not with EU EX4 certification

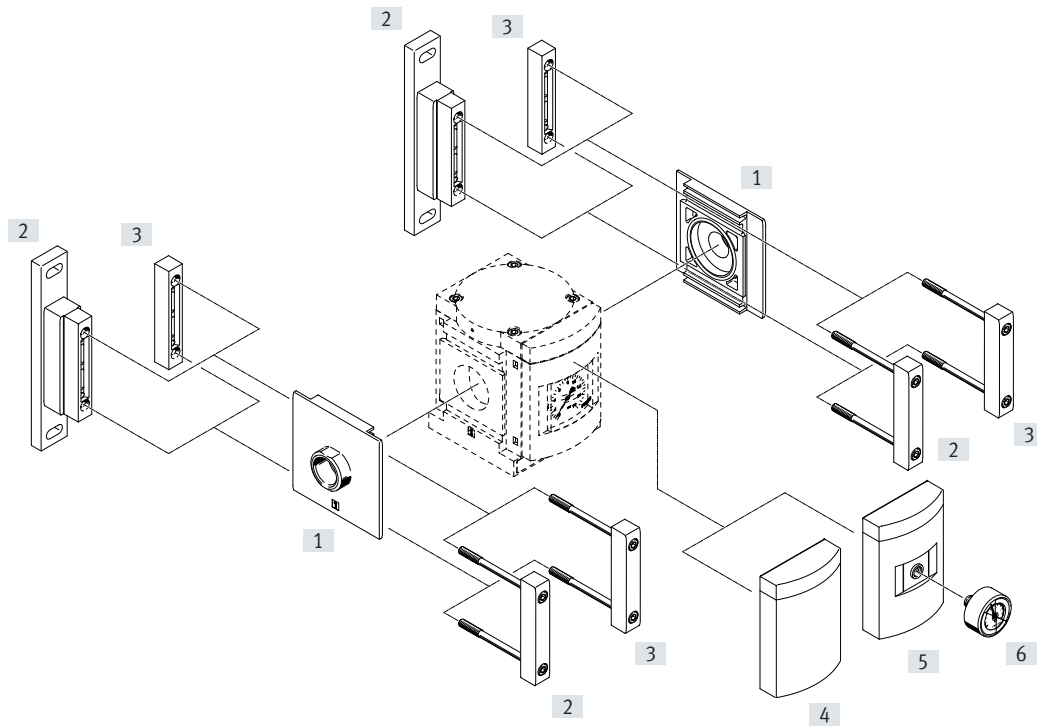
[6] **PSI, MPA, BAR**
Not with pressure gauge alternatives VS, A4, AD7, AD8, AD9, AD10

[7] **OS** Only with regulator type DI

[8] **WP, WPM, WPB**
Not with pneumatic connection G, NG

Peripherals overview

Pressure regulator MS12-LR

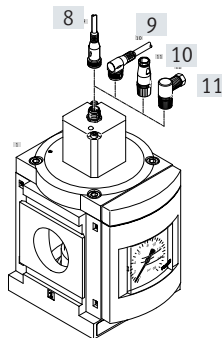
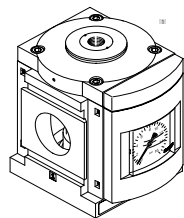
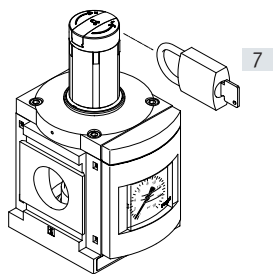


Note
 Additional accessories:
 • Module connectors for combination with size MS9 → Internet: armv

Manually actuated

Pneumatically actuated

Electrically actuated



Peripherals overview

Mounting attachments and accessories		→ Page/Internet
[1]	Connecting plate SET MS12-AG...	ms12-ag
[2]	Mounting bracket MS12-WP	ms12-wp
[3]	Module connector MS12-MV	ms12-mv
[4]	Cover plate VS	101
[5]	Adapter for EN pressure gauge 1/4 A4	101
[6]	Pressure gauge MA	102
[7]	Padlock LRVS-D	102
[8]	Connecting cable NEBU-M12G...-LE4	102
[9]	Connecting cable NEBU-M12W...-LE4	102
[10]	Sensor socket SIE-GD	102
[11]	Angled plug socket SIE-WD	102

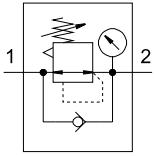
Type codes

001	Series	
MS	MS series	
002	Size	
12	Grid dimension 124 mm	
003	Function	
LR	Pressure regulator	
004	Pneumatic connection	
AGF	Sub-base G1	
AGG	Sub-base G11/4	
AGH	Sub-base G11/2	
AGI	Sub-base G2	
G	Module without connecting thread, without sub-base	
005	Pressure regulation range	
D6	0.3 ... 7 bar	
D7	0.5 ... 12 bar	
D8	0.5 ... 16 bar	
PO	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)	
PE6	0.15 ... 6 bar, solenoid actuated (pilot control by proportional-pressure regulator)	

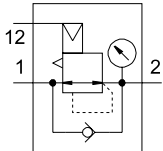
006	Pressure gauge alternatives	
	None	
VS	Cover plate	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
007	Alternative pressure gauge scale	
	MS pressure gauge	
PSI	psi	
MPA	MPa	
008	Rotary knob alternative	
	None	
LD	Long rotary knob	
009	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
010	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

Datasheet

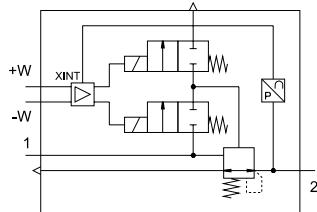
Pressure regulation range/actuation, manually actuated







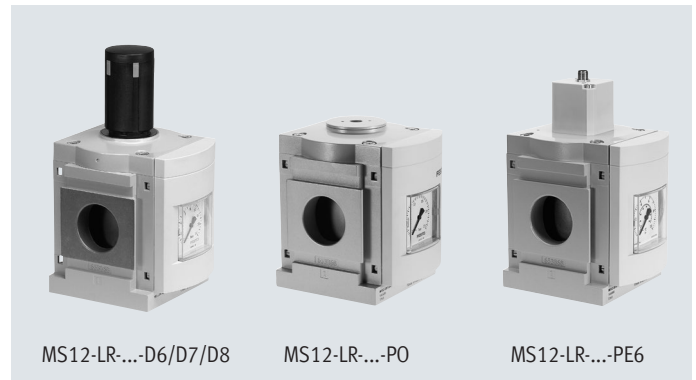
Pressure regulation range/actuation, pneumatically actuated



Pressure regulation range/actuation, electrically actuated



-  - Flow rate
12000 ... 22000 l/min
-  - Temperature range
-10 ... +60°C
-  - Operating pressure
0.08 ... 2.1 MPa
-  - www.festo.com



The pressure regulator maintains an essentially constant output pressure p2, independently of pressure fluctuations in the system and air consumption. The output pressure p2 can be set within the pressure regulation range either manually using the rotary knob, pneumatically via pilot pressure p12 by an external pilot regulator, or electrically via setpoint signals.

When the operating pressure or the voltage for the setpoint signals is switched off, the output pressure p2 is exhausted via port 3 (secondary exhausting).

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- High flow rate performance with minimal pressure drop
- Actuator lock to protect the set values from being adjusted
- With secondary exhausting
- Pressure gauge connection for different fitting options

General technical data						
Pressure regulation range/actuation		[D6]	[D7]	[D8]	[PO]	[PE6]
Pneumatic connection 1, 2		G1, G1 1/4, G1 1/2 or G2				
Connecting plate [AG...]		-				
Module without connecting thread/connecting plate [G]		-				
Pilot air port 12		G1/4 (MS12-LR-...-PO)				
Design		Pressure regulator with/without pressure gauge				
		Piloted diaphragm regulator (MS12-LR-...-D6/D7/D8/PE6)				
		Diaphragm regulator (MS12-LR-...-PO)				
Regulator function		Output pressure constant, with primary pressure compensation, with return flow, with secondary exhausting				
Type of mounting		Via accessories				
		In-line installation				
Mounting position		Any				
Actuator lock		Rotary knob with latch, can be locked using accessories				
		Rotary knob with integrated lock				
Pressure regulation range	[MPa]	0.03 ... 0.7	0.05 ... 1.2	0.05 ... 1.6	0.05 ... 1.6	0.015 ... 0.6
	[bar]	0.3 ... 7	0.5 ... 12	0.5 ... 16	0.5 ... 16	0.15 ... 6
	[psi]	4.35 ... 102	7.25 ... 174	7.25 ... 232	7.25 ... 232	2.175 ... 87
Actuation		Manually actuated ¹⁾	Manually actuated ¹⁾	Manually actuated ¹⁾	Pneumatically actuated ¹⁾	Electrically actuated
Max. pressure hysteresis	[MPa]	0.04				0.004
	[bar]	0.4				0.04
	[psi]	5.8				0.58
Pressure indication		With pressure gauge				

1) Prerequisite $P_1 = P_2 + 1 \text{ bar}$.

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Flow rates		
Pressure regulation range/actuation	[D6]/[D7]/[D8]/[PO] ¹⁾	[PE6] ²⁾
Standard nominal flow rate qnN³⁾ [l/min]		
q _{nN} 1 → 2	G1	13000
	G1 1/4	13500
	G1 1/2	16000
	G2	22000
Secondary exhaust flow rate [l/min]		
q _n 2 → 3	≤ 600	≤ 600

1) Measured at p₁ = 10 bar and p₂ = 6 bar, Δp = 0.5 bar

2) Measured at p₁ = 7 bar and p₂ = 6 bar, Δp = 0.5 bar

3) Dependent on the selected connecting plate; must be ordered separately as an accessory → Internet: ms12-ag

Electrical data		
Pressure regulation range/actuation		[PE6]
Operating voltage range	[V DC]	21.6 ... 26.4
Nominal operating voltage	[V DC]	24
Residual ripple	[%]	10
Analogue input signal range	[V]	0 ... 10
Max. current consumption	[A]	0.15
Max. electrical power consumption	[W]	3.6
Degree of protection		IP65

Operating and environmental conditions		
Pressure regulation range/actuation	[D6]/[D7]/[D8]/[PO]	[PE6]
Operating pressure	[MPa]	0.08 ... 2.1
	[bar]	0.8 ... 21
	[psi]	11.6 ... 304.5
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]	
	Inert gases	
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Storage temperature	[°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾		2
CE marking (see declaration of conformity) ²⁾	-	To EU EMC Directive To EU RoHS Directive
UKCA marking (see declaration of conformity) ²⁾	-	To UK EMC regulations To UK RoHS regulations
KC marking	-	KC EMC

1) More information www.festo.com/x/topic/crc

2) More information: www.festo.com/catalogue/ms12-lr → Support/Downloads.

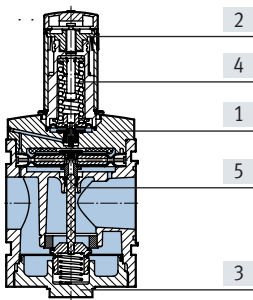
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Weight [g]	
Pressure regulator	4000
Pressure regulator with rotary knob with integrated lock	4300

Datasheet

Materials

Sectional view



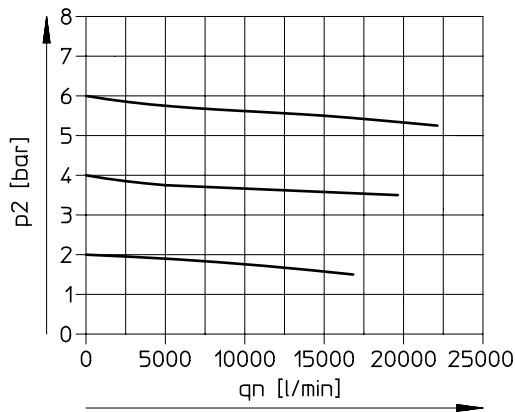
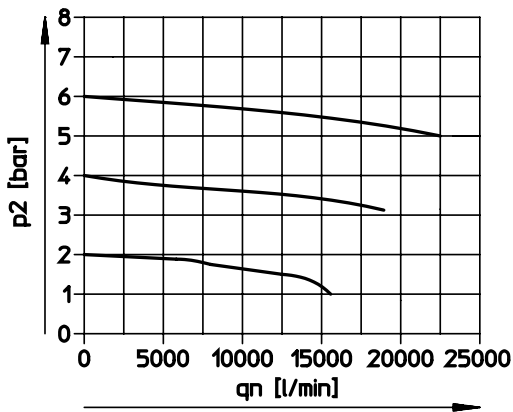
Pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	Reinforced PA, POM
	Rotary knob with integrated lock	Wrought aluminium alloy
[3]	Bottom cover	Wrought aluminium alloy
[4]	Spring	Spring steel
[5]	Valve tappet	Wrought aluminium alloy, NBR, high-alloy stainless steel
-	Seals, diaphragm	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar) (MS12-LR-...-D6/D7/D8/PO only)

Pneumatic connection G1 with connecting plate MS12-AGF

Pneumatic connection G1 1/4 with connecting plate MS12-AGG

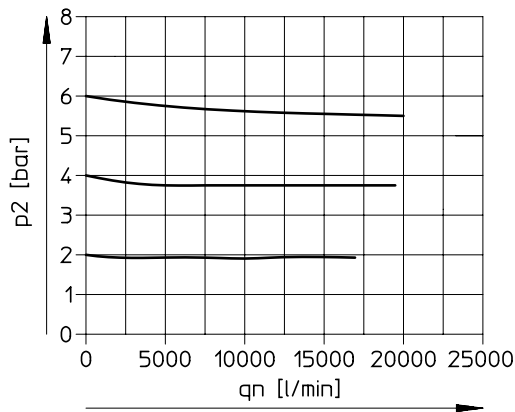
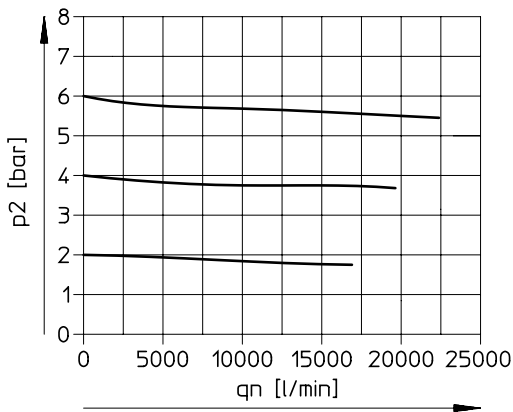
Input pressure $p_1 = 10$ bar



Pneumatic connection G1 1/2 with connecting plate MS12-AGH

Pneumatic connection G2 with connecting plate MS12-AGI

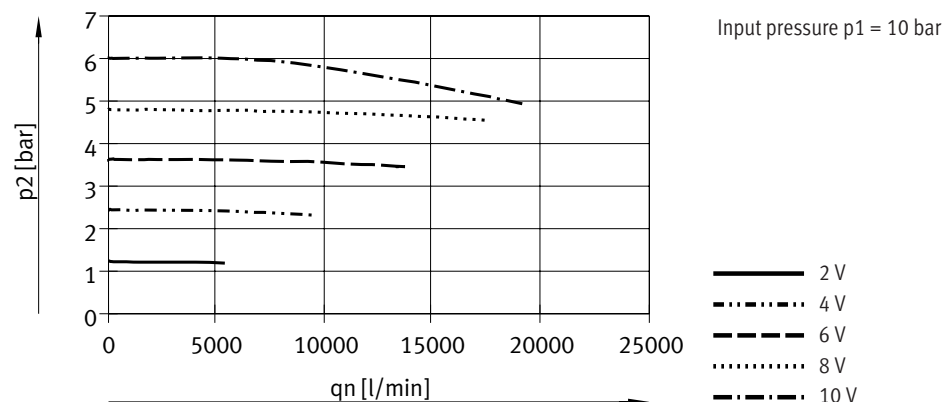
Input pressure $p_1 = 10$ bar



Datasheet

Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar) (MS12-LR-...-PE6 only)

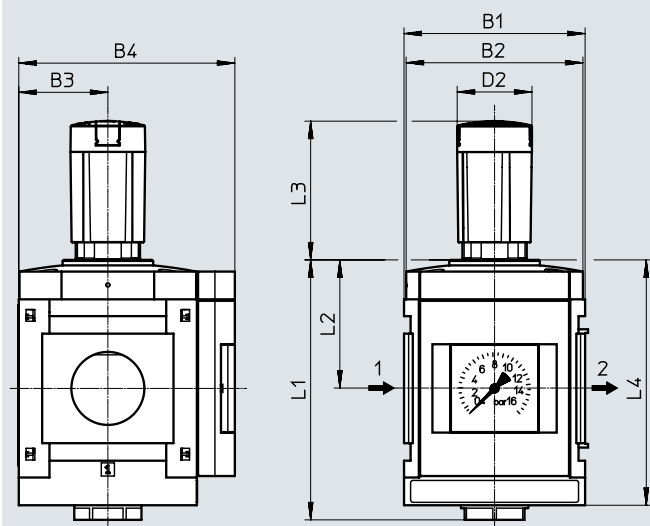
Pneumatic connection G1 1/2 with connecting plate MS12-AGH



Dimensions – Basic version

Download CAD data → www.festo.com

- [D6]/[D7]/[D8] Pressure regulation range, manually actuated
- [G] Module without connecting thread, without connecting plate
- [] Integrated MS pressure gauge with standard scale
- [LD-AS] Rotary knob, long, with latch, can be locked using accessories



Type	B1	B2	B3	B4	D2 ∅	L1	L2	L3	L4
MS12-LR-...-D6/D7/D8	124	122	61	148	51.2	178	88	95	168

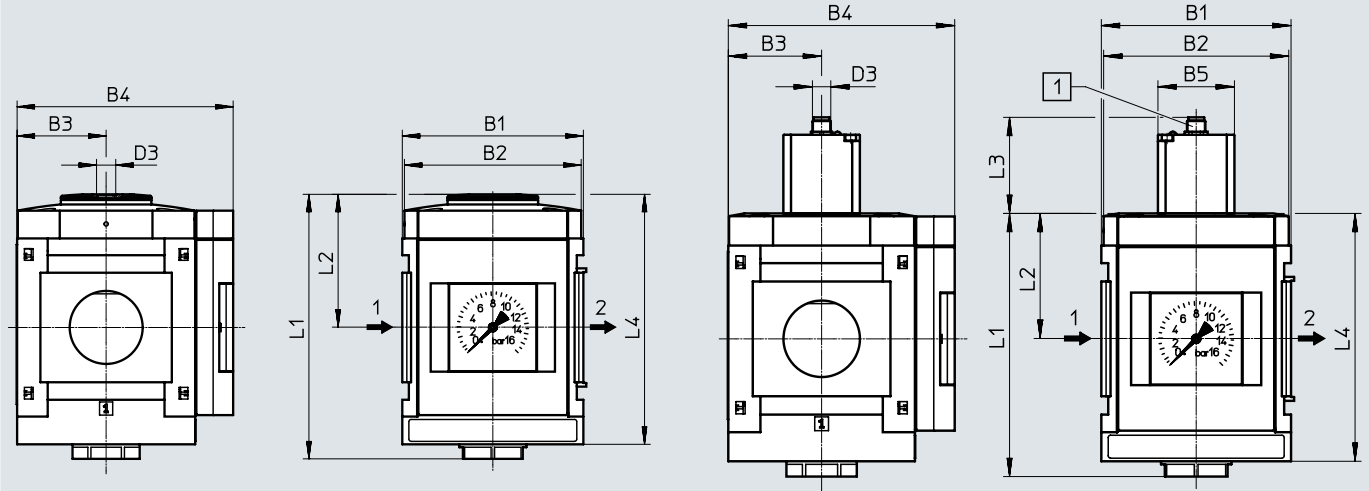
Datasheet

Dimensions – Pressure regulation range

Download CAD data → www.festo.com

- [PO] Pressure regulation range, pneumatically actuated
- [G] Module without connecting thread, without connecting plate
- [] Integrated MS pressure gauge with standard scale

- [PE6] Pressure regulation range, electrically actuated
- [G] Module without connecting thread, without connecting plate
- [] Integrated MS pressure gauge with standard scale



- [1] Suitable for
 - Connecting cable NEBU-M12G...-LE4/ NEBU-M12W...-LE4
 - Sensor socket SIE-GD
 - Angled plug socket SIE-WD-TR

→ Flow direction

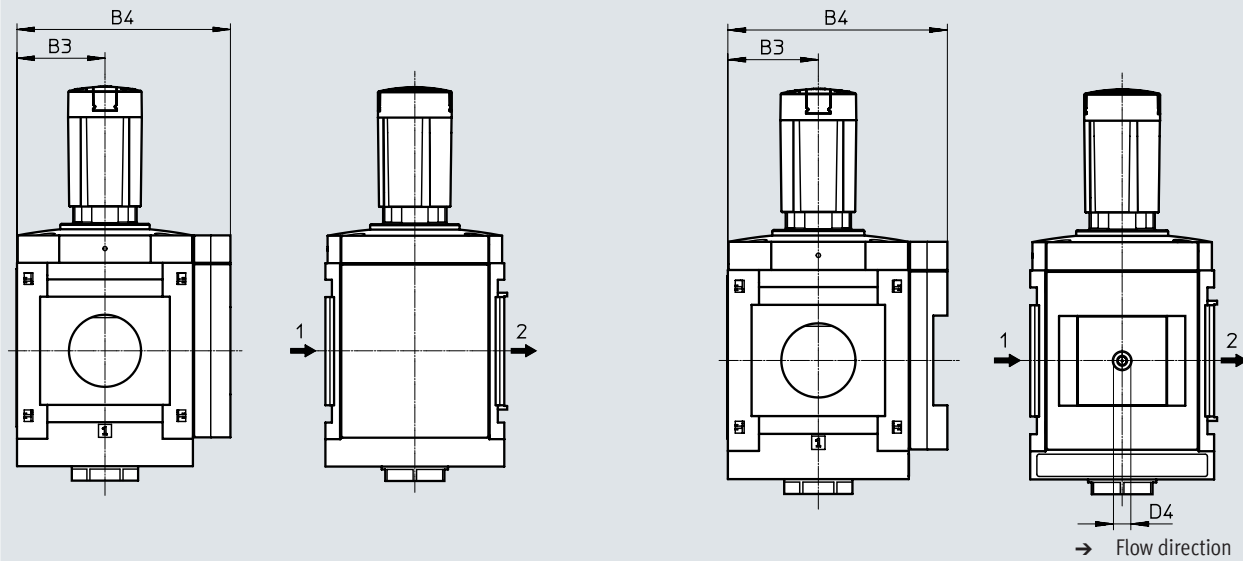
Type	B1	B2	B3	B4	B5	D3	L1	L2	L3	L4
MS12-LR...-PO	124	122	61	148	–	G1/4	181	91	–	171
MS12-LR...-PE6					50	M12	172	82	62.7	162

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

- [VS] Cover plate

- [A4] Adapter for EN pressure gauge 1/4, without pressure gauge



→ Flow direction

Type	B3	B4	D4
MS12-LR...-VS	61	148	–
MS12-LR...-A4	61	148	G1/4

† Note: This product conforms to ISO 1179-1 and ISO 228-1.

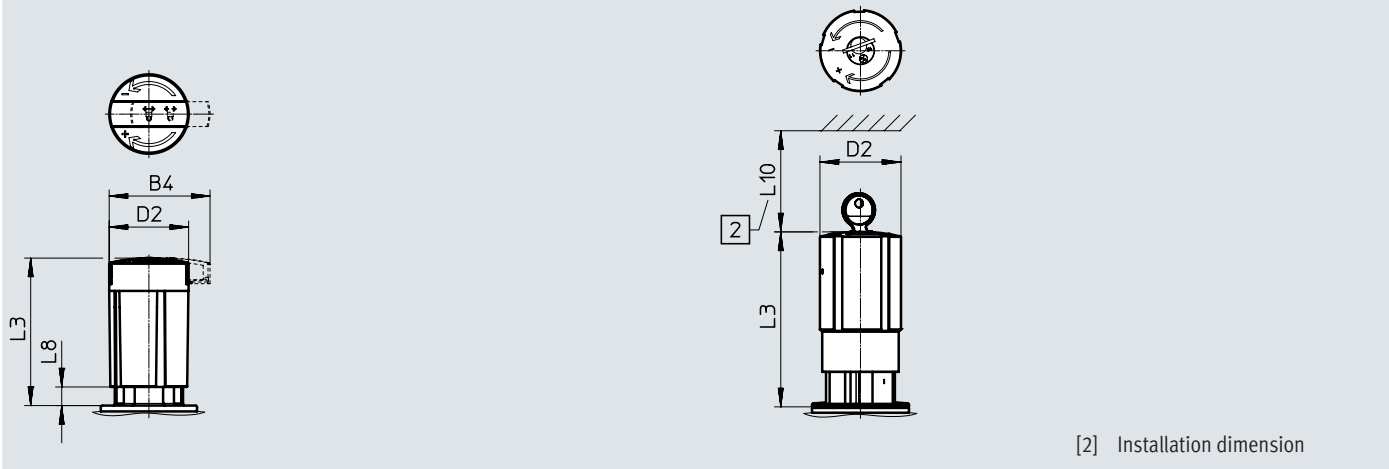
Datasheet

Dimensions – Rotary knob

Download CAD data → www.festo.com

[LD-AS] Rotary knob, long, with latch, can be locked using accessories

[E11] Rotary knob with integrated lock



[2] Installation dimension

Type	B4	D2 ∅	L3	L8	L10
MS12-LR-...-LD-AS	64.4	51.2	95	12	–
MS12-LR-...-E11	–	51.8	112	–	60

Ordering data


Design	Pressure regulation range	Flow direction	Part no.	Type
MS12-LR...				
Piloted diaphragm regulator	0.15 ... 6 bar	From left to right	564888	MS12-LR-G-PE6
	0.5 ... 12 bar	From left to right	537148	MS12-LR-G-D7-LD-AS
Diaphragm regulator	0.5 ... 16 bar	From left to right	541680	MS12-LR-G-PO

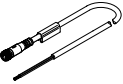
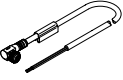
Ordering data – Modular product system

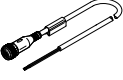

Ordering table		Grid dimension [mm]	124	Conditions	Code	Enter code
Module no.	535021					
Series	Standard				MS	MS
Size	12				12	12
Function	Pressure regulator				-LR	-LR
Pneumatic connection	Connecting plate G1				-AGF	
	Connecting plate G1 1/4				-AGG	
	Connecting plate G1 1/2				-AGH	
	Connecting plate G2				-AGI	
	Module without connecting thread, without connecting plate				-G	
Pressure regulation range/actuation	0.3 ... 7 bar, manually actuated				-D6	
	0.5 ... 12 bar, manually actuated				-D7	
	0.5 ... 16 bar, manually actuated				-D8	
	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)		[1] [2]		-PO	
	0.15... 6 bar, electrically actuated (pilot control using proportional pressure regulator)		[1] [2]		-PE6	
Pressure gauge alternatives	MS pressure gauge					
	Cover plate				-VS	
	Adapter for EN pressure gauge 1/4, without pressure gauge				-A4	
Alternative pressure gauge scale	MS pressure gauge, bar					
	psi		[3]		-PSI	
	MPa		[3]		-MPA	
Rotary knob alternative	None					
	Long rotary knob		[2]		-LD	
Locking option	None		[4]			
	Lockable using accessories		[5]		-AS	
	With integrated lock				-E11	
Type of mounting	Without mounting bracket					
	Mounting bracket standard design		[6]		-WP	
Flow direction	Flow direction from left to right					
	Flow direction from right to left				-Z	


- [1] PO, PE6 Not with rotary knob alternative LD.
Not with locking option AS.
- [2] PO, PE6, LD Not with locking option E11.
- [3] PSI, MPA Not with pressure gauge alternatives VS, A4.
- [4] Must be selected if pressure regulation range/actuation PO, PE6 is selected.
Not with pressure regulation range/actuation D6, D7, D8.
Not with rotary knob alternative LD.
- [5] AS Only with rotary knob alternative LD.
- [6] WP Only with connecting plate AGF, AGG, AGH or AGI.


Accessories

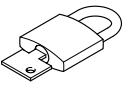
Ordering data – Pressure gauge MA						
	Nominal size	Pneumatic connection	Display range		Part no.	Type
			[bar]	[psi]		
	Pressure gauge MA, EN 837-1					Datasheets → Internet: ma
	40	R1/4	0 ... 16	0 ... 232	187080	MA-40-16-R1/4-EN
		G1/4	0 ... 16	0 ... 232	183901	MA-40-16-G1/4-EN
	Pressure gauge MA, EN 837-1, with red/green range					Datasheets → Internet: ma
	40	R1/8	0 ... 16	–	525726	MA-40-16-R1/8-E-RG
	50	R1/4	0 ... 16	–	525729	MA-50-16-R1/4-E-RG
	Precision pressure gauge MAP, EN 837-1					Datasheets → Internet: map
	40	R1/8	0 ... 1	0 ... 15	161126	MAP-40-1-1/8-EN
			0 ... 4	0 ... 58	162842	MAP-40-4-1/8-EN
			0 ... 6	0 ... 87	161127	MAP-40-6-1/8-EN
0 ... 16			0 ... 232	161128	MAP-40-16-1/8-EN	

Ordering data – Connecting cable NEBU-M8					Datasheets → Internet: nebu
	Electrical connection	Number of wires	Cable length [m]	Part no.	Type
	M8x1, straight socket	3	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5	★ 541334	NEBU-M8G3-K-5-LE3
		4	2.5	541342	NEBU-M8G4-K-2.5-LE4
	M8x1, angled socket	3	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5	★ 541341	NEBU-M8W3-K-5-LE3
		4	2.5	541344	NEBU-M8W4-K-2.5-LE4

Ordering data – Connecting cable NEBU-M12					Datasheets → Internet: nebu
	Electrical connection	Number of wires	Cable length [m]	Part no.	Type
	M12x1, straight socket	4	2.5	★ 550326	NEBU-M12G5-K-2.5-LE4
			5	★ 541328	NEBU-M12G5-K-5-LE4
		5	2.5	541330	NEBU-M12G5-K-2.5-LE5
			5	541331	NEBU-M12G5-K-5-LE5
			5	541331	NEBU-M12G5-K-5-LE5
	M12x1, angled socket	4	2.5	550325	NEBU-M12W5-K-2.5-LE4
			5	541329	NEBU-M12W5-K-5-LE4

Ordering data – Sensor socket SIE-GD				Datasheets → Internet: sie-gd
	Electrical connection	Part no.	Type	
	M12x1, 4-pin	18494	SIE-GD	

Ordering data – Angled plug socket SIE-WD				Datasheets → Internet: sie-wd
	Electrical connection	Part no.	Type	
	M12x1, 4-pin	12956	SIE-WD-TR	

Ordering data – Padlock LRVS-D			
	Weight [g]	Part no.	Type
	120	193786	LRVS-D