

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

**FESTO**



## 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 for application-specific solutions with very high-quality requirements.

Available as individual components, pre-assembled combinations ex-stock, application-specific combinations or complete ready-to-install solutions. The five sizes of 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 service unit combination without oversizing, and with the right air purity class:

→ [www.festo.com/engineering/wartungseinheit](http://www.festo.com/engineering/wartungseinheit)

### Freely combinable functional 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. Thanks to 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.

##### Selection criteria: Application

Filter combination is proposed based upon your selected application

- standard pneumatics operation of valves and cylinders, e.g. in automotive industry, secondary packaging
- mining and building industry applications without special air cleanliness requirements
- application of pressure operated tools and machines pneumatic hammer, air engine, positioning with proportional valve
- electronic, flatpanel and solar industry, textile and paper production application with residual oil content <math>< 0.5 \text{ mg/m}^3</math>
- painting, powder coating, air bearing application with residual oil content <math>< 0.01 \text{ mg/m}^3</math>
- food and beverage industry, optics application with residual oil content <math>< 0.003 \text{ mg/m}^3</math> reduction of oil vapours and aromas

##### Selection criteria: ISO-class

Filter combination is proposed based upon the air cleanliness class according to ISO 8573-1:2010

particle : 4 \* : oil



##### Direct filter selection

Independent selection of filter combination

- 40 µm Filter
- 5 µm Filter
- 1 µm Fine Filter
- 0.01 µm Micro Filter \*
- Active Carbon Filter



\* 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

\* 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.

### 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 compressed air supply
- Compressed air is automatically shut off 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 $q_{N1}$ <sup>1)</sup>	[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 components of the MS series service units.

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.

#### Designing a service unit combination







The order of the individual components within a service unit 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 combination MSB is a reliable and convenient way of combining the 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 MS series								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
<b>Combinations</b>								
<b>Service unit combinations MSB-FRC</b>								Datasheets → Internet: msb
	Combinations of filter regulator and lubricator	4	–	–	1/8, 1/4	–	–	–
		6	–	–	1/4, 3/8, 1/2	–	–	–
<b>Service unit combinations MSB</b>								
<b>Service unit combinations MSB</b>								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
<b>Service unit combinations MSE6</b>								
<b>Service unit combinations MSE6</b>								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 MS series								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Filter regulators MS-LFR</b> <span style="float: right;">Datasheets → Internet: ms2-lfr; ms4-lfr; ms6-lfr; ms9-lfr; ms12-lfr</span>								
	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	–
<b>Filter regulators MS-LFR-B</b> <span style="float: right;">Datasheets → Internet: ms4-lfr-b; ms6-lfr-b</span>								
	Filter and pressure regulator in a single device in polymer housing, grade of filtration 5 or 40 µm	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
<b>Filters MS-LF</b> <span style="float: right;">Datasheets → Internet: ms4-lf; ms6-lf; ms9-lf; ms12-lf</span>								
	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	–
<b>Fine and micro filters MS-LFM</b> <span style="float: right;">Datasheets → Internet: ms4-lfm; ms6-lfm; ms9-lfm; ms12-lfm</span>								
	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	–
<b>Activated carbon filters MS-LFX</b> <span style="float: right;">Datasheets → Internet: ms4-lfx; ms6-lfx; ms9-lfx; ms12-lfx</span>								
	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	–
<b>Water separator MS-LWS</b> <span style="float: right;">Datasheets → Internet: ms6-lws; ms9-lws; ms12-lws</span>								
	Removes 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 MS series								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Pressure regulators MS-LR</b> <span style="float: right;">Datasheets → Internet: ms2-lr; ms4-lr; ms6-lr; ms9-lr; ms12-lr</span>								
	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	–
<b>Pressure regulators MS-LR-B</b> <span style="float: right;">Datasheets → Internet: ms4-lr-b; ms6-lr-b</span>								
	For setting the required operating pressure, in polymer housing	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
<b>Pressure regulators MS-LRB</b> <span style="float: right;">Datasheets → Internet: ms4-lrb; ms6-lrb</span>								
	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	–
<b>Precision pressure regulators MS-LRP</b> <span style="float: right;">Datasheets → Internet: ms6-lrp</span>								
	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
<b>Precision pressure regulators MS-LRPB</b> <span style="float: right;">Datasheets → Internet: ms6-lrpb</span>								
	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	–
<b>Lubricators MS-LOE</b> <span style="float: right;">Datasheets → Internet: ms4-loe; ms6-loe; ms9-loe; ms12-loe</span>								
	Add a precisely dosed 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

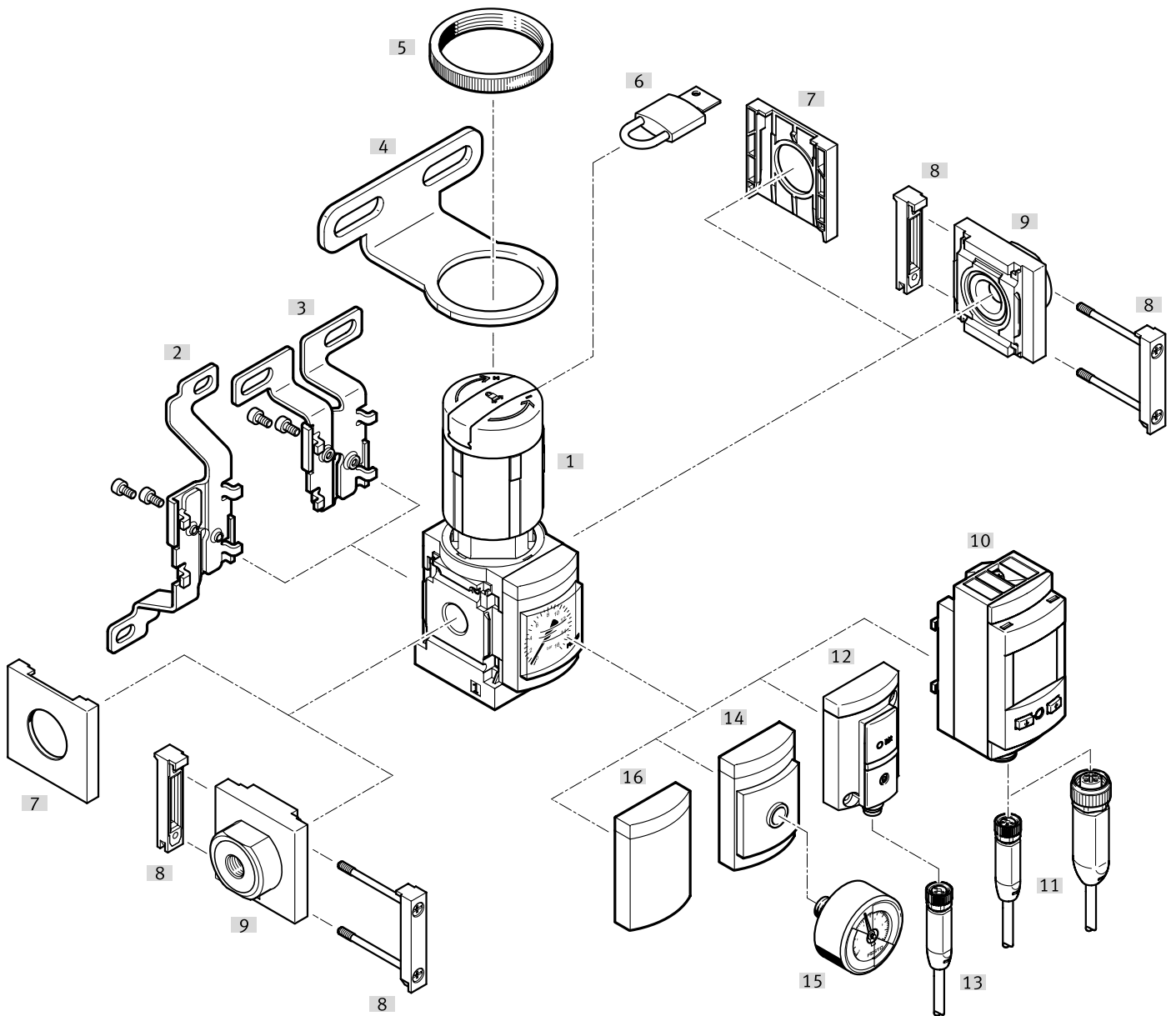
Product range for service unit components MS series								
Type	Description	Size	Pneumatic connection			Connecting plate with thread		
			Push-in connector	Female thread		G		NPT
			M	G	NPT	G	NPT	
<b>Individual devices</b>								
<b>On/off valves MS-EM</b>						Datasheets → Internet: ms4-em; ms6-em; 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	–
<b>On/off valves MS-EE</b>								
<b>On/off valves MS-EE</b>						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	–
<b>On/off valves MS-EE-B</b>								
<b>On/off valves MS-EE-B</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	–	–	–
<b>Soft-start valves MS-DL</b>								
<b>Soft-start valves MS-DL</b>						Datasheets → Internet: ms4-dl; ms6-dl; ms12-dl		
	Pneumatically actuated soft-start valve for slowly pressurising 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	–
<b>Soft-start valves MS-DE</b>								
<b>Soft-start valves MS-DE</b>						Datasheets → Internet: ms4-de; ms6-de; ms12-de		
	Electrically actuated soft-start valve for slowly pressurising 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	–
<b>On/off valves MS-EDE-B</b>								
<b>On/off valves MS-EDE-B</b>						Datasheets → Internet: ms4-edeb; ms6-edeb		
	Electrically actuated soft-start valve in polymer housing for slowly pressurising and exhausting pneumatic systems.	4	–	–	1/4	–	–	–
		6	–	–	1/2	–	–	–
<b>Soft-start/quick exhaust valves MS-SV</b>								
<b>Soft-start/quick exhaust valves MS-SV</b>						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 MS series								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
<b>Individual devices</b>								
<b>Membrane air dryer MS-LDM1</b> <span style="float: right;">Datasheets → Internet: ms4-ldm; ms6-ldm</span>								
	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
<b>Branching modules MS-FRM</b> <span style="float: right;">Datasheets → Internet: ms4-frm; ms6-frm; ms9-frm; ms12-frm</span>								
	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	–
<b>Distributor blocks MS-FRM-FRZ</b> <span style="float: right;">Datasheets → Internet: ms4-frm-frz; ms6-frm-frz</span>								
	Compressed air distributors with 4 connections and half the grid width	4	–	–	–	–	–	–
		6	–	–	–	–	–	–
<b>Flow sensors SFAM</b> <span style="float: right;">Datasheets → Internet: sfam</span>								
	For absolute flow rate information and cumulative air consumption measurement	6	–	–	–	–	1/2	1/2
		9	–	–	–	–	1, 1 1/2	1, 1 1/2
<b>Proportional-pressure regulator VPPE</b> <span style="float: right;">Datasheets → Internet: vppe</span>								
	Piloted pressure regulator with or without display	6	–	–	–	–	–	–
		9	–	–	–	–	–	–

## Peripherals overview

### Pressure regulator MS4/MS6-LR



 **Note**

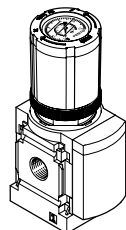
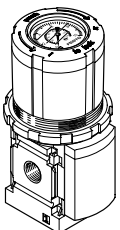
Additional accessories:

- 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 <sup>1)</sup>		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Pressure regulator MS4/MS6-LR	■	■	■	■	8
[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	■	■	■	■	106
[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 NEBA-M8...-LE4/NEBA-M12...-LE4	■	■	■	■	106
[12]	Pressure sensor without display AD7 ... AD10	■	■	■	■	26
[13]	Connecting cable NEBA-M8...-LE3	■	■	■	■	106
[14]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	26
[15]	Pressure gauge MA	■	■	■	■	106
[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 range/actuation
D5	0.3 ... 4 bar, manually actuated
D6	0.3 ... 7 bar, manually actuated
D7	0.5 ... 12 bar, manually actuated

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

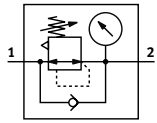
## Type codes





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
AGF	Sub-base G1
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 range/actuation	
D5	0.3 ... 4 bar, manually actuated
D6	0.3 ... 7 bar, manually actuated
D7	0.5 ... 12 bar, manually actuated
D8	0.5 ... 16 bar, manually actuated
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

## Datasheet

With pressure gauge



-  Flow rate  
1000 ... 7500 l/min
-  Temperature range  
-10 ... +60 °C
-  Operating pressure  
0.8 ... 20 bar
-  [www.festo.com](http://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 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, G3/4 or G1
	[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	With 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 <sup>1)</sup>	
	[D6] [bar]	0.3 ... 7, manually actuated <sup>1)</sup>	
	[D7] [bar]	0.5 ... 12, manually actuated (0.5 ... 10 with pressure sensor or with UL certification) <sup>1)</sup>	
	[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	With pressure sensor for indicating the output pressure via LCD display and electrical output		
	With pressure sensor for indicating the output pressure via the switching status indicator and electrical output		
	Via pressure gauge for displaying the output pressure		
	With 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	G3/8	G1/4	G3/8	G1/2	G3/4	
Pressure regulation range	[D5]	1200 <sup>2)</sup>	2100 <sup>2)</sup>	–	2400 <sup>2)</sup>	5500 <sup>2)</sup>	7500 <sup>2)</sup>	–
	[D6]	1150	1800	1800	3000	5800	6500	6500
	[D7]	1000	1700 <sup>3)</sup>	1700	2700	4500	5500	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		MS4	MS6
Operating pressure	[bar]	0.8 ... 14 (0.8 ... 10) <sup>1)</sup>	0.8 ... 20 (0.8 ... 10) <sup>1)</sup>
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 lubricated operation will always be required)	
Ambient temperature	[°C]	–10 ... +60 (0 ... +50) <sup>2)</sup>	
Temperature of medium	[°C]	–10 ... +60 (0 ... +50) <sup>2)</sup>	
Storage temperature	[°C]	–10 ... +60	
Corrosion resistance class CRC <sup>3)</sup>		2	
Food safe <sup>4)</sup>		See supplementary material information	
UL certification <sup>4)</sup>		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](http://www.festo.com/x/topic/crc)  
4) More information: [www.festo.com/catalogue/ms-lr](http://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-proof 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) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK explosion regulations

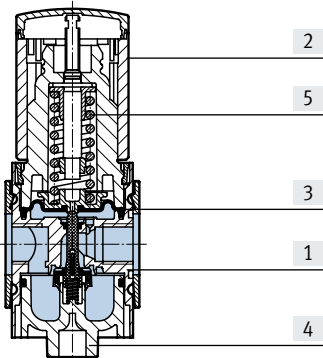
- 1) More information: [www.festo.com/catalogue/ms-lr](http://www.festo.com/catalogue/ms-lr) → Support/Downloads.

Weight [g]		MS4	MS6
Pressure regulator		225	730
Pressure regulator with rotary knob with integrated lock		350	1000
Pressure regulator with connecting plates		355	1030
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



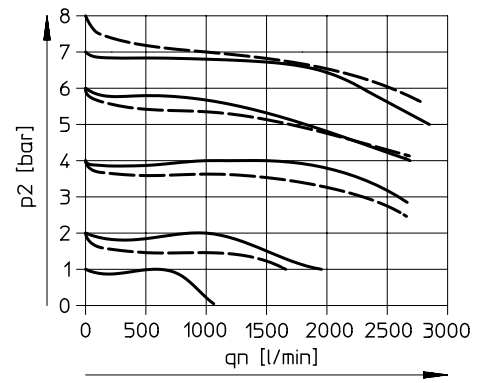
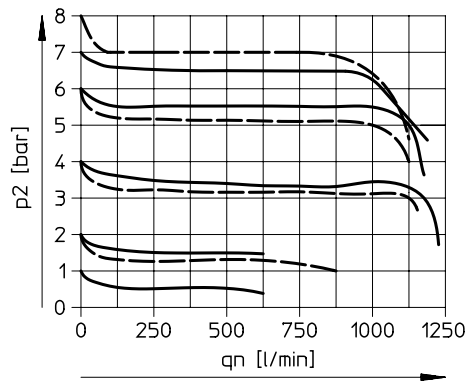
Pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA, POM
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragms	NBR
[4]	Bottom cover	PET
[5]	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

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



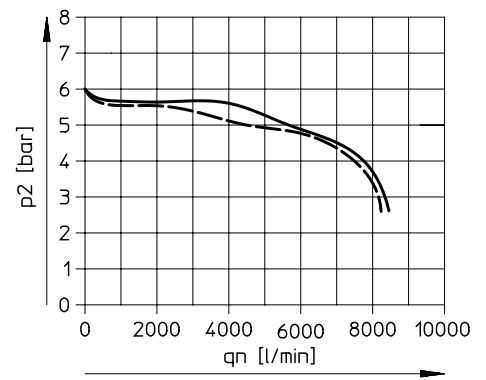
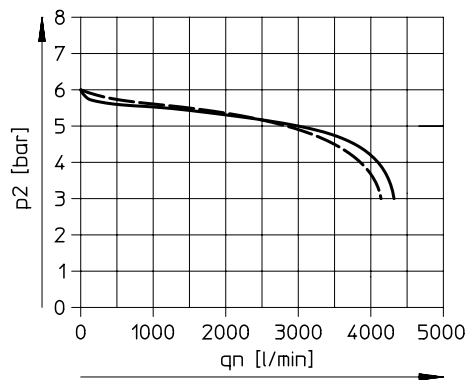
— D6: 0.3 ... 7 bar  
 - - - D7: 0.5 ... 12 bar<sup>1)</sup>

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

MS6-LR-1/4

MS6-LR-3/8

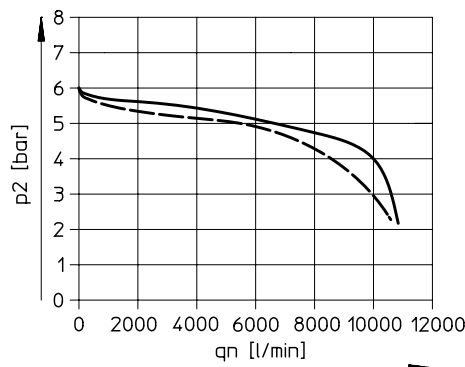
Input pressure  $p_1 = 10$  bar



— 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

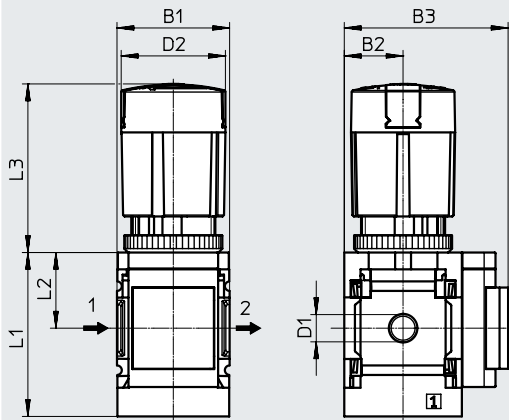
# Datasheet

## Dimensions – Basic version

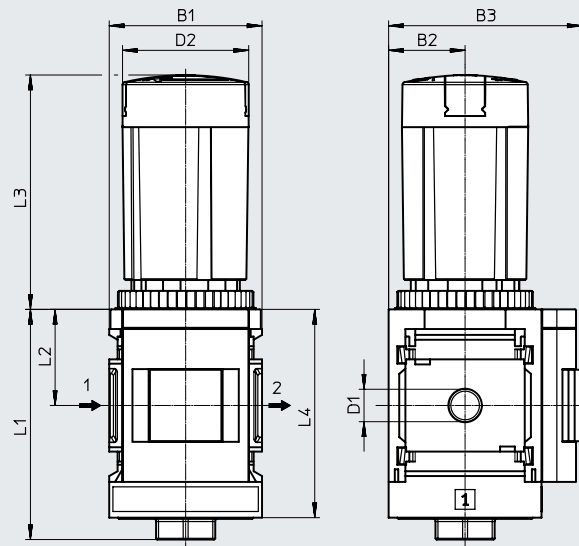
Download CAD data → [www.festo.com](http://www.festo.com)

- [ ] 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



→ Flow direction

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.

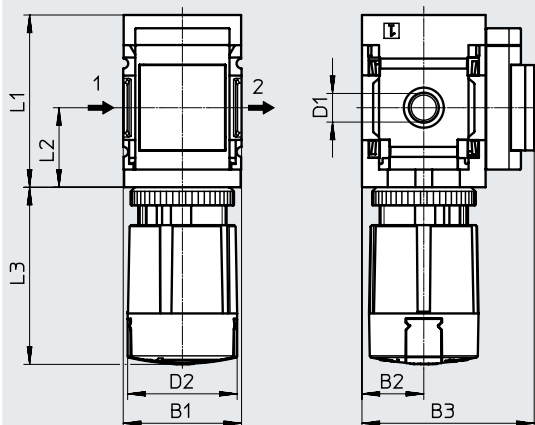
Datasheet

Dimensions – Alternative mounting position

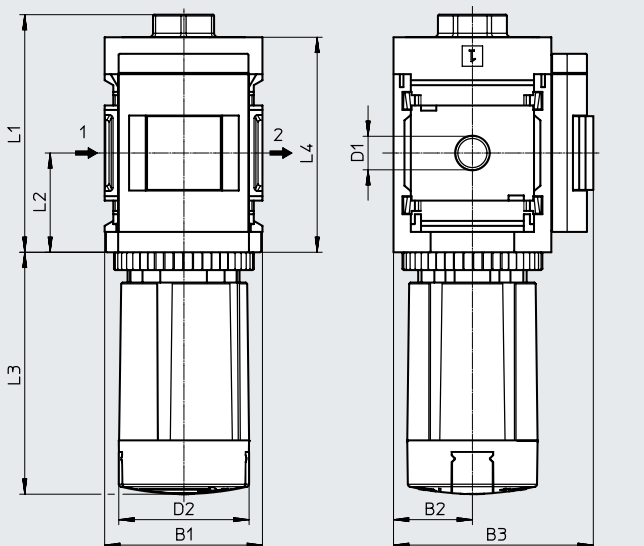
Download CAD data → [www.festo.com](http://www.festo.com)

[KD] Rotary knob underneath

MS4



MS6



→ Flow direction

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

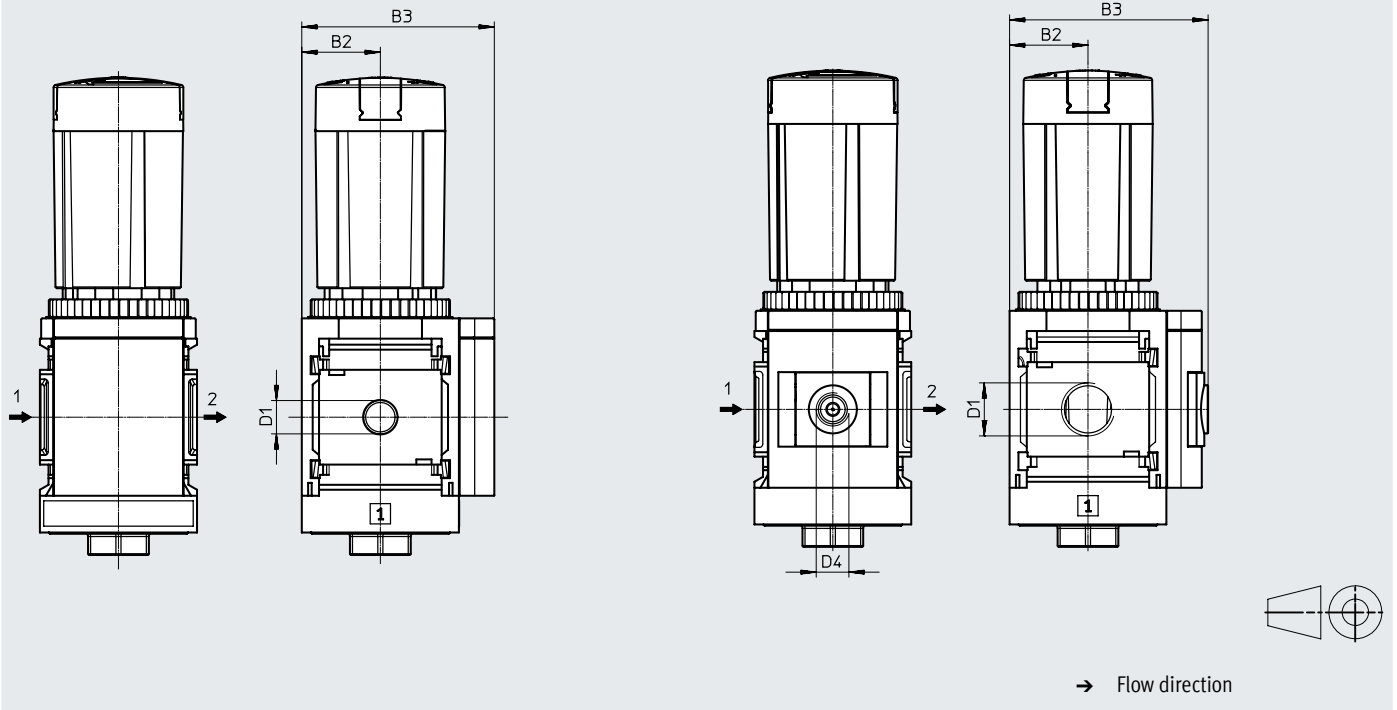
Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://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



→ Flow direction

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.

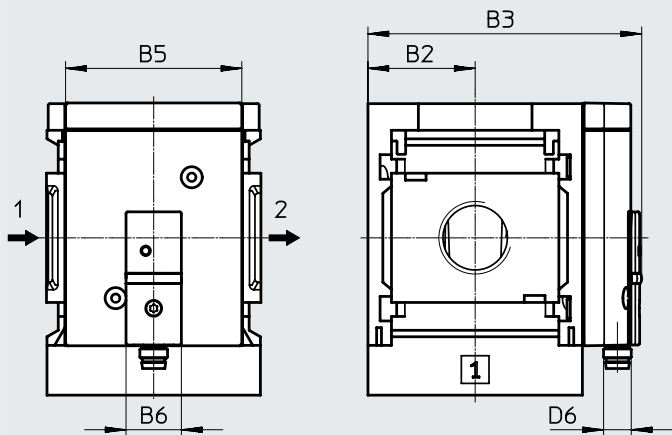
Datasheet

**Dimensions – Pressure gauge alternatives**

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

Download CAD data → [www.festo.com](http://www.festo.com)

Datasheets → Internet: sde5



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

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

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

Variant AD10:  
SDE5-D10-C3-...-P-M8 with 1x 3-pin M8 plug, 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.

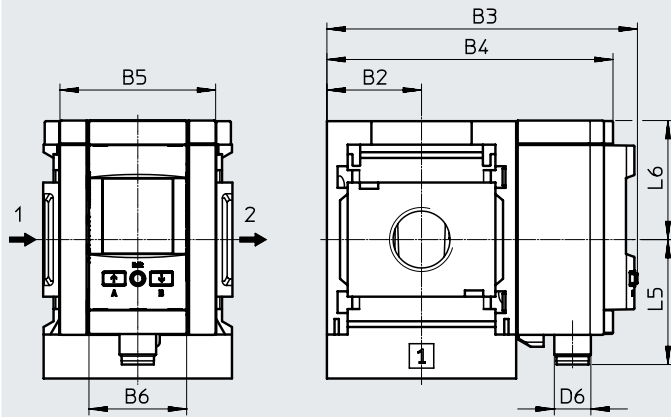
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://www.festo.com)

[AD11/AD12] Pressure sensor with LCD display

Datasheets → Internet: spau

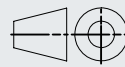


Variant AD11:

SPAU-P10R... (10 bar) for pressure range D5/D6  
 SPAU-P12R... (12 bar) for pressure range D7  
 SPAU-P16R... (16 bar) for pressure range D8  
 with plug M12, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

Variant AD12:

SSPAU-P10R... (10 bar) for pressure range D5/D6  
 SPAU-P12R... (12 bar) for pressure range D7  
 SPAU-P16R... (16 bar) for pressure range D8  
 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

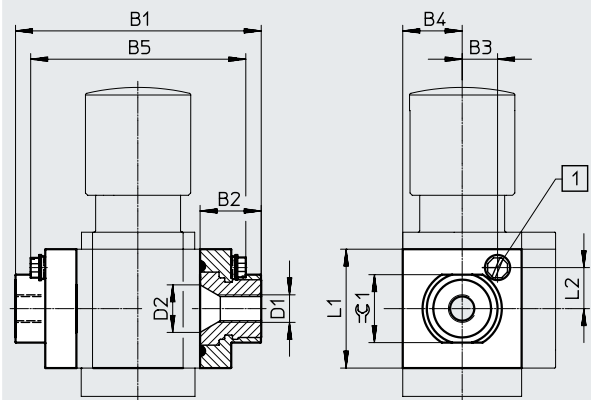
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pneumatic connection

Download CAD data → [www.festo.com](http://www.festo.com)

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



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

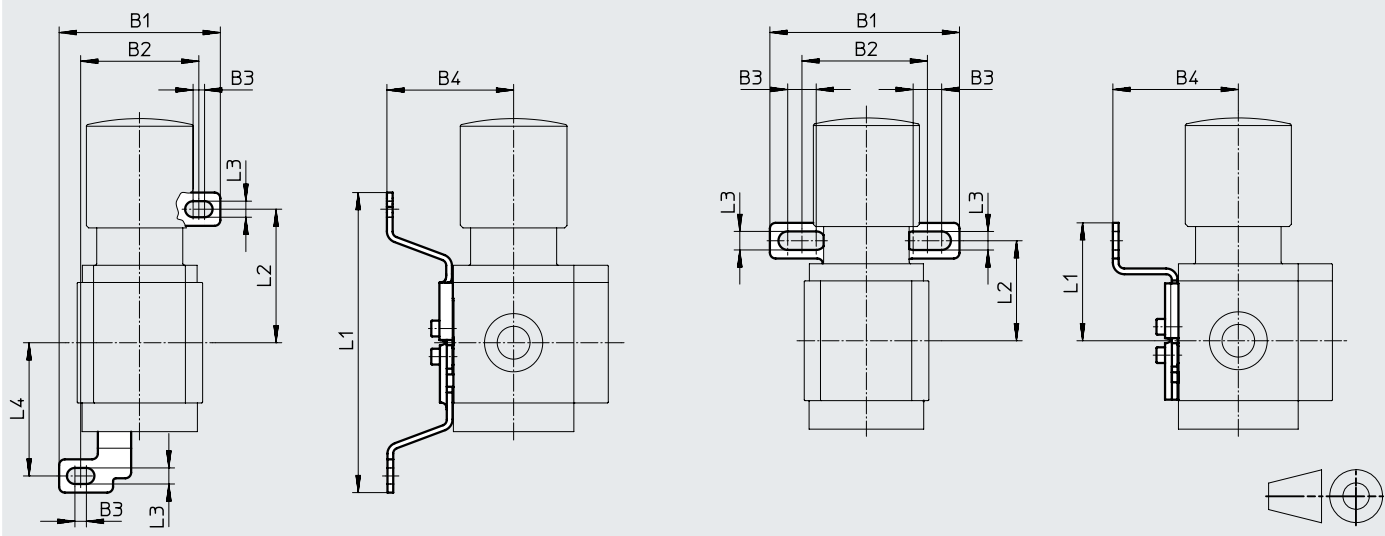
Type	B1	B2	B3	B4	B5	D1	D2	L1	L2	⌀ 1
MS4-LR...-AGA	83.4	21.5	12.5	21	72.5	G1/8	16.8	42	14.5	24
MS4-LR...-AGB						G1/4				21
MS4-LR...-AGC						G3/8				24
MS4-LR...-AQK						1/8-27 NPT				24
MS4-LR...-AQN						1/4-18 NPT				24
MS4-LR...-AQP						3/8-18 NPT				24
MS6-LR...-AGB	115	26.5	20.5	31	98.3	G1/4	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](http://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

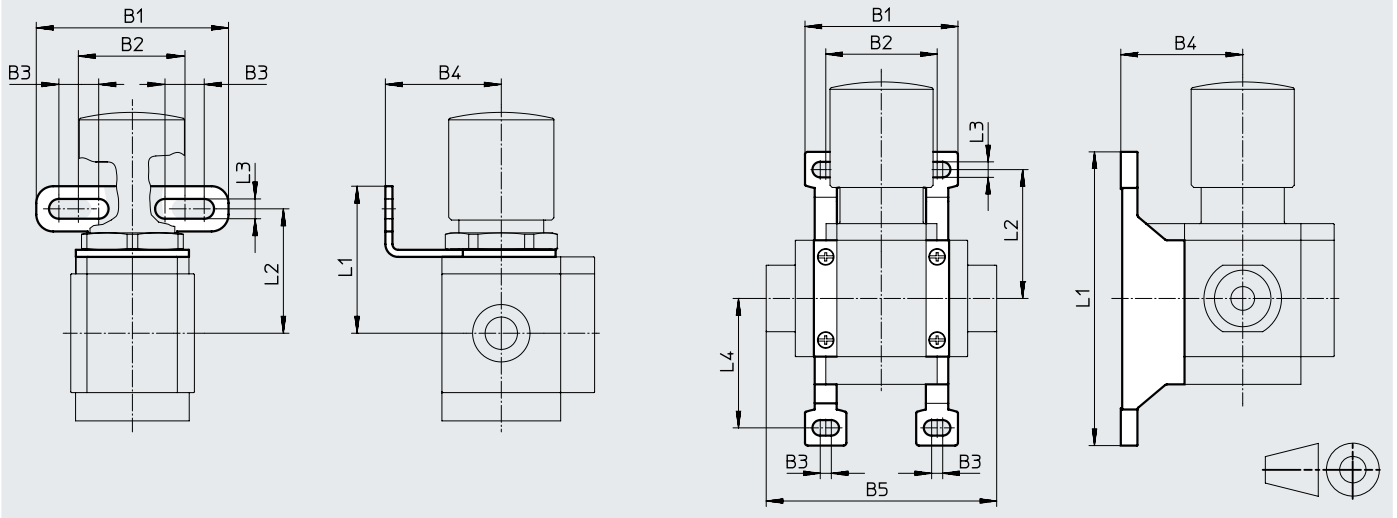
Datasheet

Dimensions – Type of mounting

Download CAD data → [www.festo.com](http://www.festo.com)

[WR] Mounting bracket

[WP] Mounting bracket



Type	B1	B2	B3	B4	B5	L1	L2	L3	L4
MS4-LR...-WR	68	38	14	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	38.2	14.2	40	–	67	57	7.1	–
MS6-LR...-WP	79	62	4.5	54	115	158	71	6.6	71

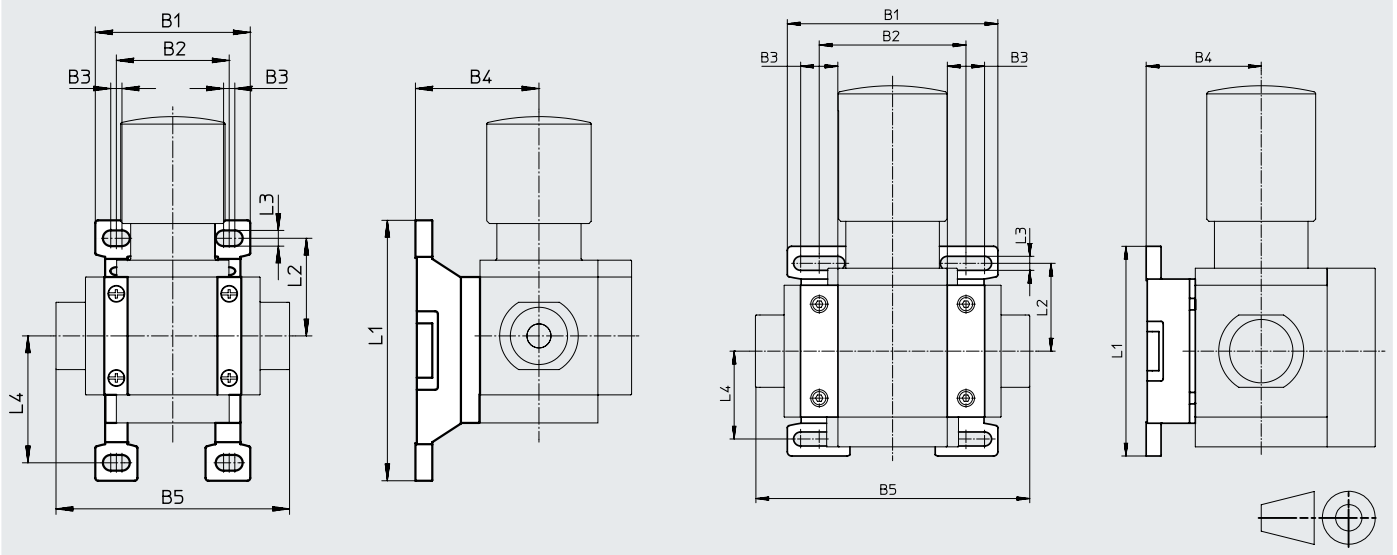
Dimensions – Type of mounting

Download CAD data → [www.festo.com](http://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

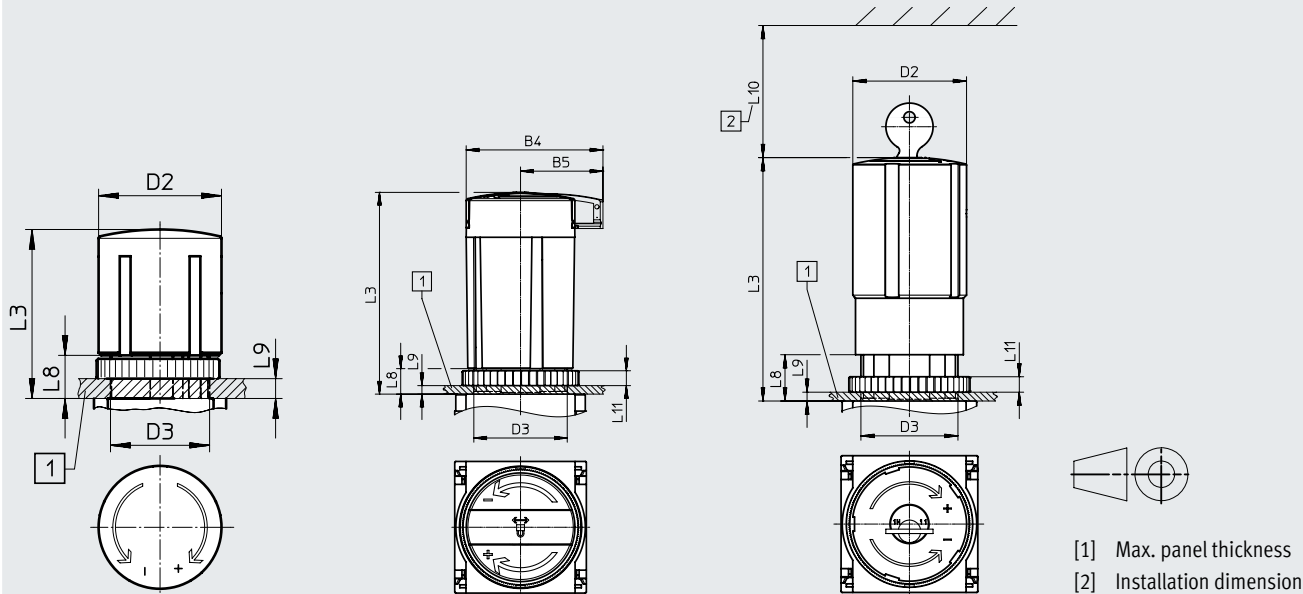
Download CAD data → [www.festo.com](http://www.festo.com)

For control panel installation

[ ] Rotary knob with latch

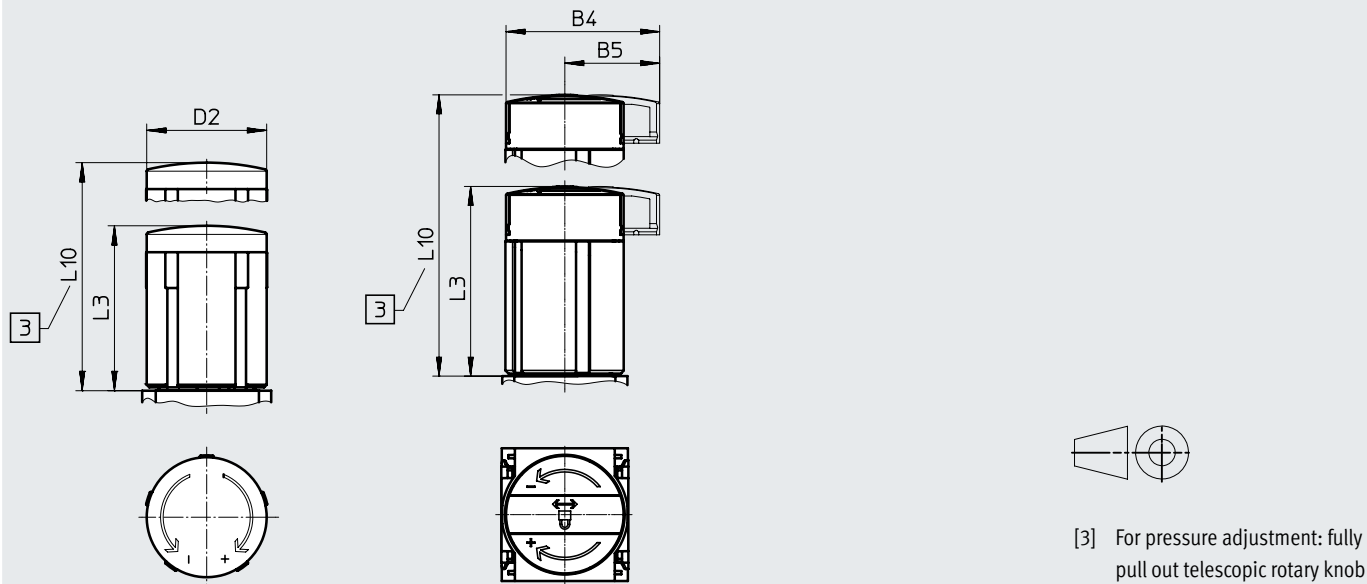
[AS] Rotary knob with latch, can be locked using accessories

[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](http://www.festo.com)

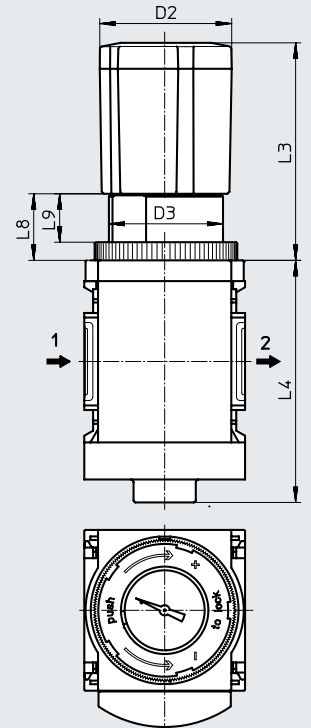
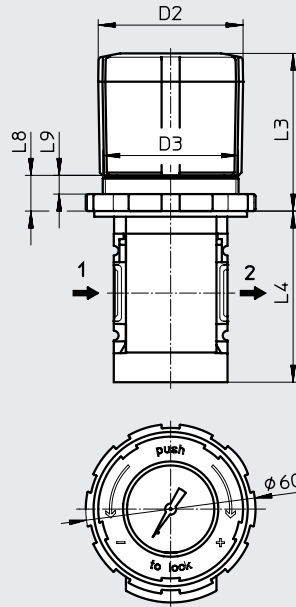
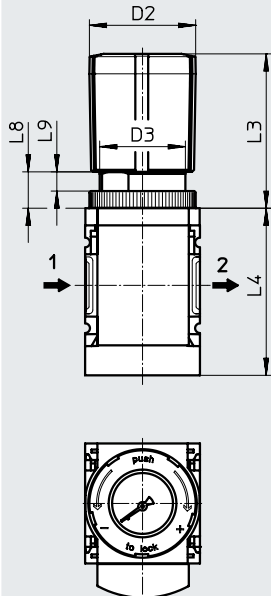
[DM1] Rotary knob pressure gauge, small

[DM2] Rotary knob pressure gauge, large

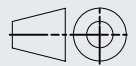
MS4

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

Ordering data								
Pneumatic connection 1	Pressure regulation range	Flow direction	Part no.	Type				
<b>MS4-LR...</b>								
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					
	8232814		MS4-LR-1/8-D6-MPA					
	8232813		MS4-LR-1/8-D6-E11					
	8232816		MS4-LR-1/8-D6-VS-E11					
		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			
				8232818	MS4-LR-1/8-D7-MPA			
		8232819		MS4-LR-1/8-D7-VS				
		8232817		MS4-LR-1/8-D7-E11				
				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							
8232808	MS4-LR-1/4-D6-VS-E11							
	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				
	8232810			MS4-LR-1/4-D7-MPA				
	8232809			MS4-LR-1/4-D7-E11				
	8232812	MS4-LR-1/4-D7-VS-E11						
		From right to left		529420	MS4-LR-1/4-D7-AS-Z			

## Datasheet

Ordering data				
Pneumatic connection 1	Pressure regulation range	Flow direction	Part no.	Type
<b>MS4-LR... (with connecting plates)</b>				
G3/8	0.3 ... 7 bar	From left to right	8232823	MS4-LR-AGC-D6-VS
			8232820	MS4-LR-AGC-D6
			8232821	MS4-LR-AGC-D6-MPA
			8232822	MS4-LR-AGC-D6-MPA-AS
	0.5 ... 12 bar	From left to right	8232825	MS4-LR-AGC-D7-MPA-AS
			8232826	MS4-LR-AGC-D7-VS
G1	0.3 ... 7 bar	From left to right	8232997	MS6-LR-AGF-D6
			8232998	MS6-LR-AGF-D6-MPA
			8232999	MS6-LR-AGF-D6-VS
	0.5 ... 12 bar	From left to right	8233000	MS6-LR-AGF-D7
			8233001	MS6-LR-AGF-D7-MPA
			8233002	MS6-LR-AGF-D7-VS
<b>Ordering data</b>				
Pneumatic connection 1	Pressure regulation range	Flow direction	Part no.	Type
<b>MS6-LR...</b>				
G1/4	0.3 ... 4 bar	From left to right	529995	MS6-LR-1/4-D5-AS
			529997	MS6-LR-1/4-D6-AS
			8232984	MS6-LR-1/4-D6-MPA
	0.3 ... 7 bar		8232985	MS6-LR-1/4-D6-VS
			529999	MS6-LR-1/4-D7-AS
			8232987	MS6-LR-1/4-D7-VS
G3/8	0.3 ... 4 bar	From left to right	530001	MS6-LR-3/8-D5-AS
			530003	MS6-LR-3/8-D6-AS
			8232988	MS6-LR-3/8-D6-MPA
	0.3 ... 7 bar	From right to left	8232989	MS6-LR-3/8-D6-VS
			530004	MS6-LR-3/8-D6-AS-Z
			530005	MS6-LR-3/8-D7-AS
G1/2	0.3 ... 4 bar	From left to right	529989	MS6-LR-1/2-D5-AS
			529991	MS6-LR-1/2-D6-AS
			8232980	MS6-LR-1/2-D6-VS
	0.3 ... 7 bar	From right to left	529992	MS6-LR-1/2-D6-AS-Z
			529993	MS6-LR-1/2-D7-AS
			8232982	MS6-LR-1/2-D7-MPA
0.5 ... 12 bar	From left to right	8232981	MS6-LR-1/2-D7-E11	
		529994	MS6-LR-1/2-D7-AS-Z	
		0.5 ... 12 bar	From right to left	8232991
529993	MS6-LR-1/2-D7-AS			
8232982	MS6-LR-1/2-D7-MPA			
<b>MS6-LR... (with connecting plates)</b>				
G3/4	0.3 ... 7 bar	From left to right	8232992	MS6-LR-AGE-D6
			8232993	MS6-LR-AGE-D6-MPA
	0.5 ... 12 bar		8232996	MS6-LR-AGE-D7-VS
			8232994	MS6-LR-AGE-D7
			8232995	MS6-LR-AGE-D7-MPA

## Ordering data – Modular product system

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

[1] 1/8, 1/4, 3/8, 1/2, AQK, AQN, AQP, AQR, AQS, D8, AD7 ... AD10, DM1, DM2, KD, E11, WPM

Not with EU EX4 certification.

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

MS4: not with rotary knob alternative DM2.

[3] RG, OS, KD, AS

Not with rotary knob alternative DM1.

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

MS6: not with rotary knob alternative DM2.

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

Measuring range max. 10 bar.

Not with pressure regulation range D8

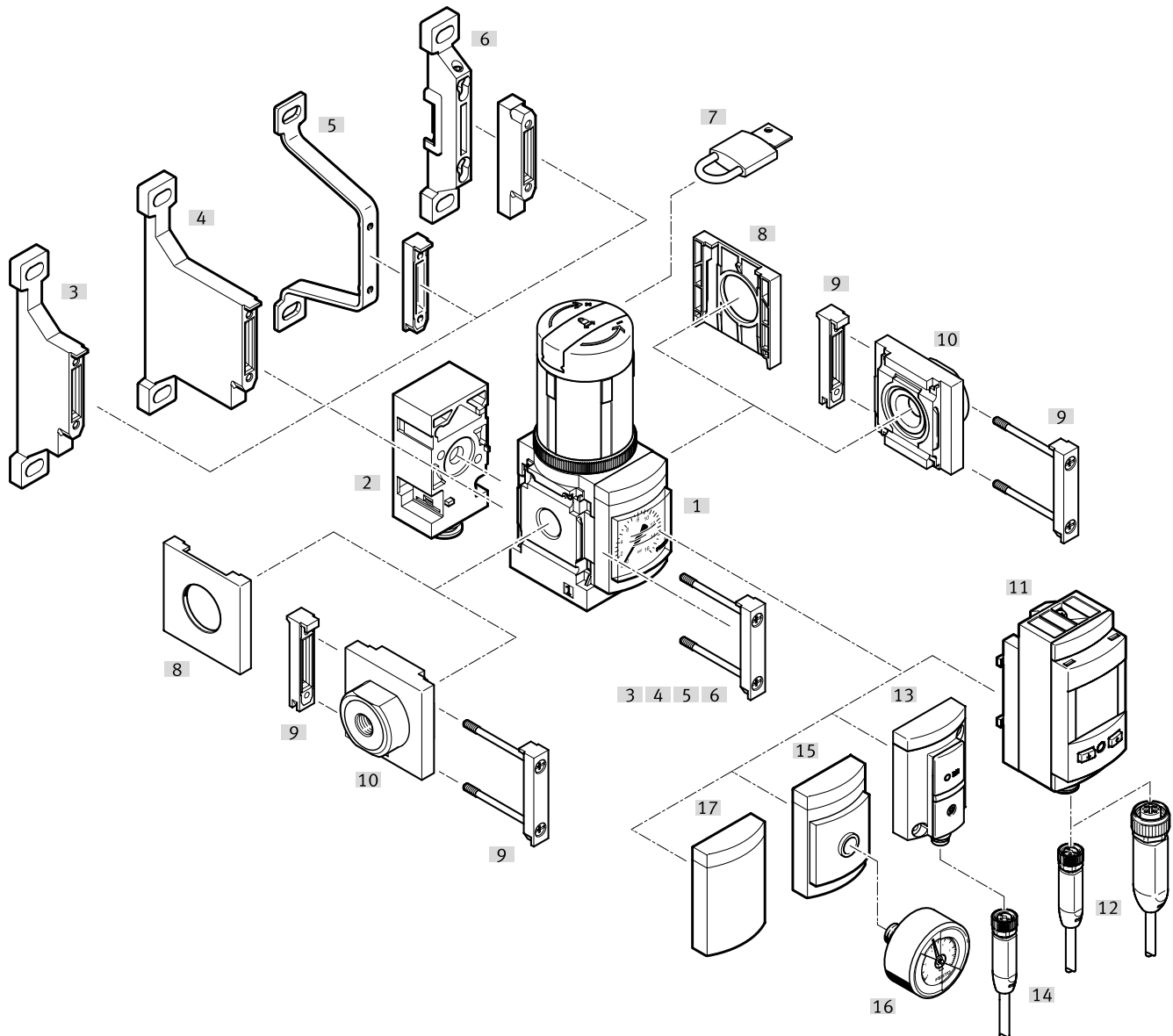
## Ordering data – Modular product system

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

- [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



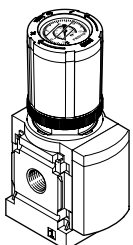
 **Note**

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

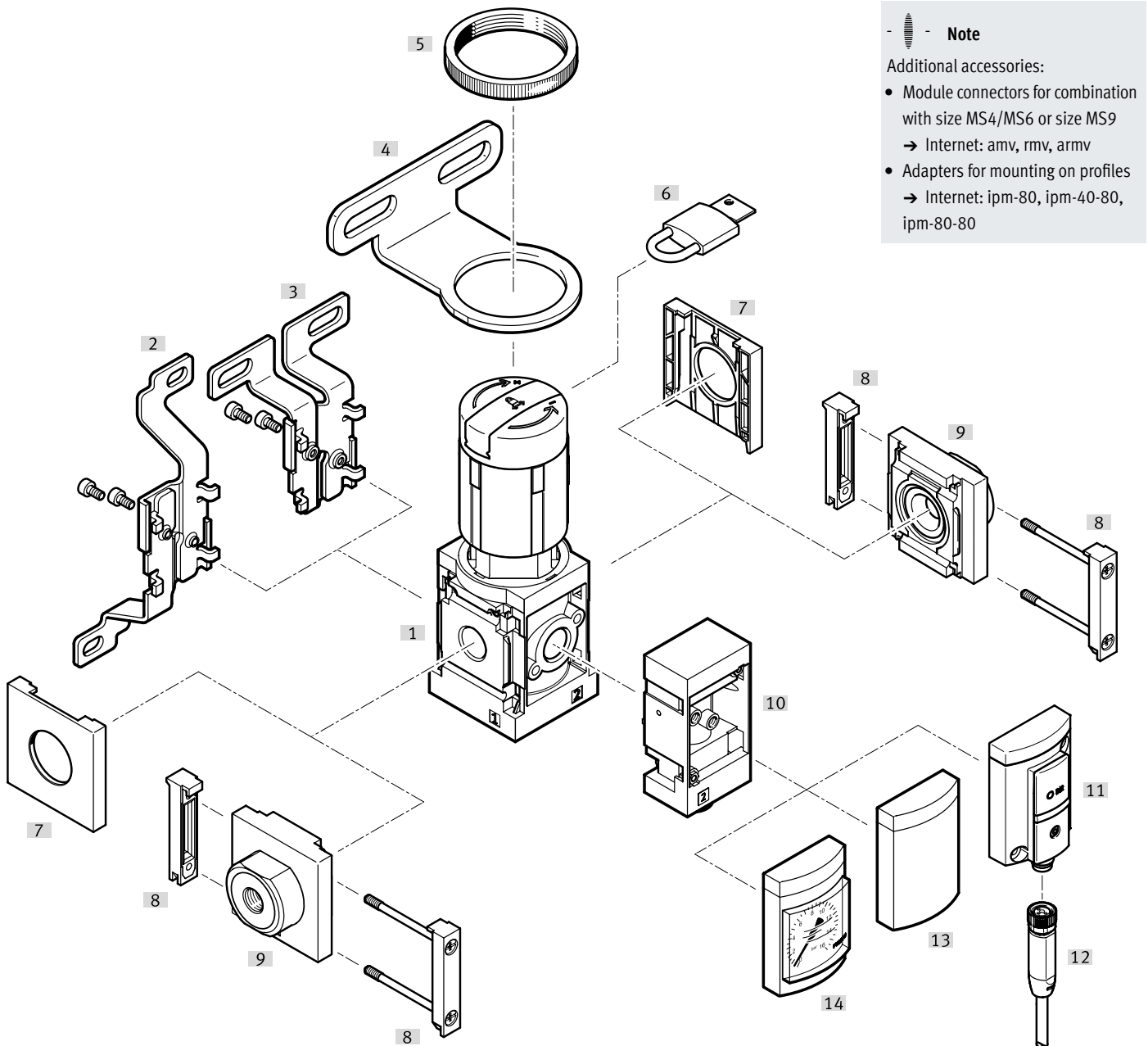


## Peripherals overview

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	■	■	■	■	28
[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	■	■	■	■	106
[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 NEBA-M8...-LE4/NEBA-M12...-LE4	■	■	■	■	106
[13]	Pressure sensor without display AD7 ... AD10	■	■	■	■	46
[14]	Connecting cable NEBA-M8...-LE3	■	■	■	■	106
[15]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	46
[16]	Pressure gauge MA	■	■	■	■	106
[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]	Pressure regulator MS4/MS6-LRB	■	■	■	■	30
[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	■	■	■	■	106
[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
[10]	Angled outlet block B...	■	■	■	■	46
[11]	Pressure sensor without display AD7 ... AD10	■	■	■	■	46
[12]	Connecting cable NEBA-M8...-LE3	■	■	■	■	106
[13]	Cover plate VS	■	■	■	■	46
[14]	MS pressure gauge (included in the scope of delivery)	■	■	■	■	–

## Type codes

<b>001</b>	<b>Series</b>
<b>MS</b>	MS series

<b>002</b>	<b>Size</b>
<b>4</b>	Grid dimension 40 mm

<b>003</b>	<b>Function</b>
<b>LRB</b>	Pressure regulator for manifold assembly

<b>004</b>	<b>Pneumatic connection</b>
<b>1/4</b>	Female thread G1/4
<b>AGA</b>	Sub-base G1/8
<b>AGB</b>	Sub-base G1/4
<b>AGC</b>	Sub-base G3/8

<b>005</b>	<b>Pressure regulation range</b>
<b>D5</b>	0.3 ... 4 bar
<b>D6</b>	0.3 ... 7 bar
<b>D7</b>	0.5 ... 12 bar

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

<b>007</b>	<b>Alternative pressure gauge scale</b>
	MS pressure gauge
<b>PSI</b>	psi
<b>MPa</b>	MPa

<b>008</b>	<b>Secondary exhausting</b>
	With secondary exhausting
<b>OS</b>	Without secondary exhaust

<b>009</b>	<b>Rotary knob alternative</b>
	None
<b>LD</b>	Long rotary knob
<b>DM1</b>	Rotary knob pressure gauge, small

<b>010</b>	<b>Alternative mounting position</b>
	None
<b>KD</b>	Rotary knob underneath

<b>011</b>	<b>Lockability</b>
	None
<b>AS</b>	Can be locked using accessories
<b>E11</b>	With integrated lock

<b>012</b>	<b>Alternative pressure outlet</b>
	None
<b>BC</b>	Angled outlet block QS-6
<b>BD</b>	Angled outlet block QS-8

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

<b>014</b>	<b>EU certification</b>
	None
<b>EX4</b>	II 2GD

<b>015</b>	<b>UL certification</b>
	None
<b>UL1</b>	cULus ordinary location for Canada and USA

<b>016</b>	<b>Outlet direction</b>
	Pressure output to the rear
<b>Z</b>	Pressure output to the front

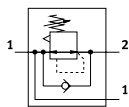
## Type codes

001 Series	
<b>MS</b>	MS series
002 Size	
<b>6</b>	Grid dimension 62 mm
003 Function	
<b>LRB</b>	Pressure regulator for manifold assembly
004 Pneumatic connection	
<b>1/2</b>	Female thread G1/2
<b>AGB</b>	Sub-base G1/4
<b>AGC</b>	Sub-base G3/8
<b>AGD</b>	Sub-base G1/2
<b>AGE</b>	Sub-base G3/4
<b>AGF</b>	Sub-base G1
005 Pressure regulation range	
<b>D5</b>	0.3 ... 4 bar
<b>D6</b>	0.3 ... 7 bar
<b>D7</b>	0.5 ... 12 bar
<b>D8</b>	0.5 ... 16 bar
006 Pressure gauge alternatives	
	None
<b>A4</b>	Adapter for EN pressure gauge 1/4, without pressure gauge
<b>A8</b>	Adapter for EN pressure gauge 1/8, without pressure gauge
<b>AD7</b>	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/O
<b>AD8</b>	Pressure sensor with switching display, M8 plug, threshold value comparator, PNP, N/C
<b>AD9</b>	Pressure sensor with switching display, M8 plug, window comparator, PNP, N/O
<b>AD10</b>	Pressure sensor with operational status indicator, M8 plug, window comparator, PNP, N/C
<b>AD11</b>	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
<b>AD12</b>	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0...10 V, 1...5 V, 4...20 mA
<b>RG</b>	Integrated pressure gauge, red/green scale
<b>VS</b>	Cover plate
007 Alternative pressure gauge scale	
	MS pressure gauge
<b>PSI</b>	psi
<b>MPA</b>	MPa

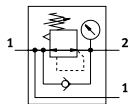
008 Secondary exhausting	
	With secondary exhausting
<b>OS</b>	Without secondary exhaust
009 Rotary knob alternative	
	None
<b>LD</b>	Long rotary knob
<b>DM2</b>	Rotary knob pressure gauge, large
010 Alternative mounting position	
	None
<b>KD</b>	Rotary knob underneath
011 Lockability	
	None
<b>AS</b>	Can be locked using accessories
<b>E11</b>	With integrated lock
012 Alternative pressure outlet	
	None
<b>BD</b>	Angled outlet block QS-8
<b>BE</b>	Angled outlet block QS-10
013 Type of mounting	
	Without mounting bracket
<b>WR</b>	Mounting bracket with knurled nut on regulator knob
<b>WP</b>	Mounting bracket basic design
<b>WPM</b>	Mounting bracket for hooking in service unit components
<b>WB</b>	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required
<b>WBM</b>	Mounting centrally at rear (wall mounting top), connecting plates not required
014 EU certification	
	None
<b>EX4</b>	II 2GD
015 UL certification	
	None
<b>UL1</b>	cULus ordinary location for Canada and USA
016 Outlet direction	
	Pressure output to the rear
<b>Z</b>	Pressure output to the front





## Datasheet

Without pressure gauge



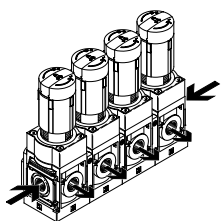
With pressure gauge



-  Flow rate  
300 ... 7300 l/min
-  Temperature range  
-10 ... +60 °C
-  Operating pressure  
0.8 ... 20 bar
-  [www.festo.com](http://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, G3/4 or G1
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			With 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 <sup>1)</sup>	
	[D6]	[bar]	0.3 ... 7, manually actuated <sup>1)</sup>	
	[D7]	[bar]	0.5 ... 12, manually actuated (0.5 ... 10 with pressure sensor or with UL certification) <sup>1)</sup>	
	[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			With pressure sensor for indicating the output pressure via LCD display and electrical output With pressure sensor for indicating the output pressure via the switching status indicator and electrical output Via pressure gauge for displaying the output pressure With 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 <sup>2)</sup>	300 <sup>2)</sup>	650 <sup>2)</sup>	7300 <sup>2)</sup>	600 <sup>2)</sup>	750 <sup>2)</sup>
	[D6]	1700	350	840	6300	880	1000
	[D7]	1500 <sup>3)</sup>	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) <sup>1)</sup>	
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 lubricated operation will always be required)	
Ambient temperature [°C]	–10 ... +60 (0 ... +50) <sup>2)</sup>	
Temperature of medium [°C]	–10 ... +60 (0 ... +50) <sup>2)</sup>	
Storage temperature [°C]	–10 ... +60	
Corrosion resistance class CRC <sup>3)</sup>	2	
Food safe <sup>4)</sup>	See supplementary material information	
UL certification <sup>4)</sup>	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](http://www.festo.com/x/topic/crc)  
4) More information: [www.festo.com/catalogue/ms-lrb](http://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-proof 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) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK explosion regulations

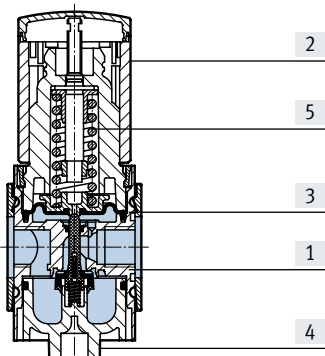
- 1) More information: [www.festo.com/catalogue/ms-lrb](http://www.festo.com/catalogue/ms-lrb) → Support/Downloads.

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)

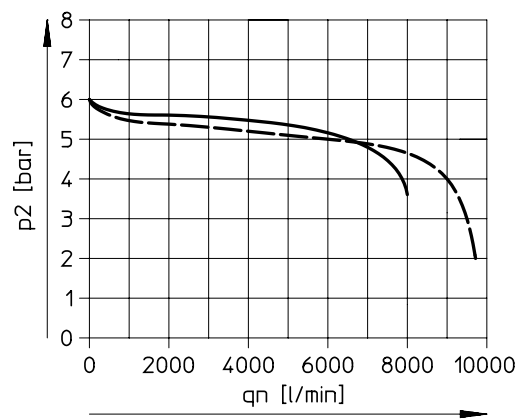
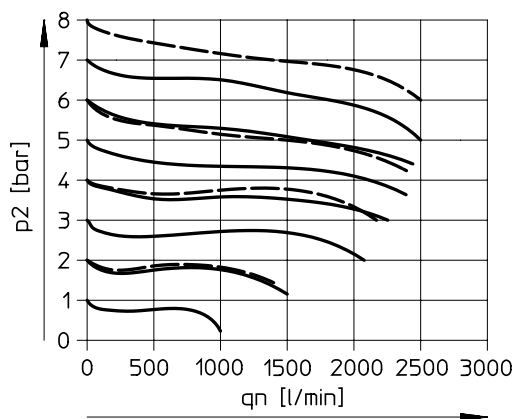
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA, POM
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragm	NBR
[4]	Bottom cover	PET
[5]	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

### 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 bar<sup>1)</sup>

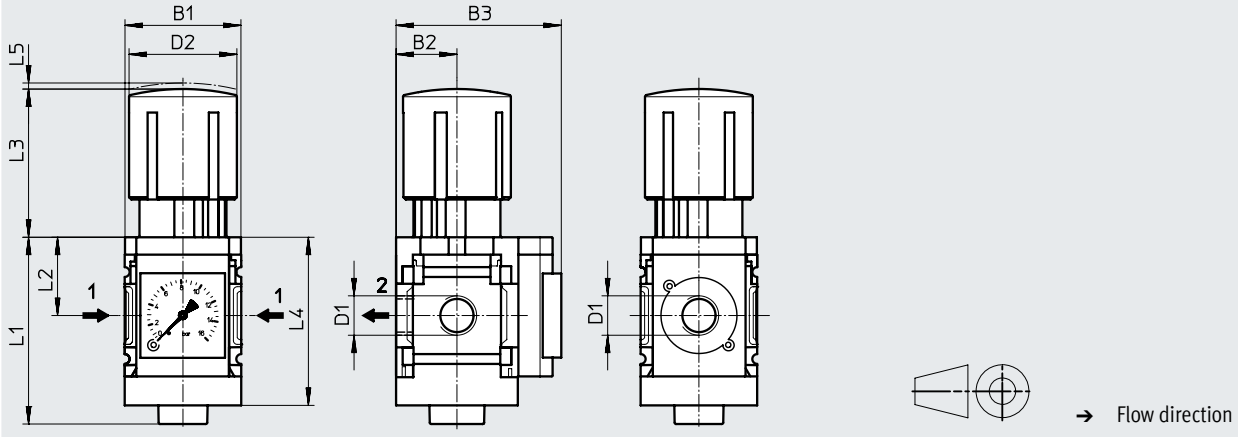
1) There is a higher initial pressure drop in the characteristic curve for variant DM1.

## Datasheet

### Dimensions – Basic version

Download CAD data → [www.festo.com](http://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
			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

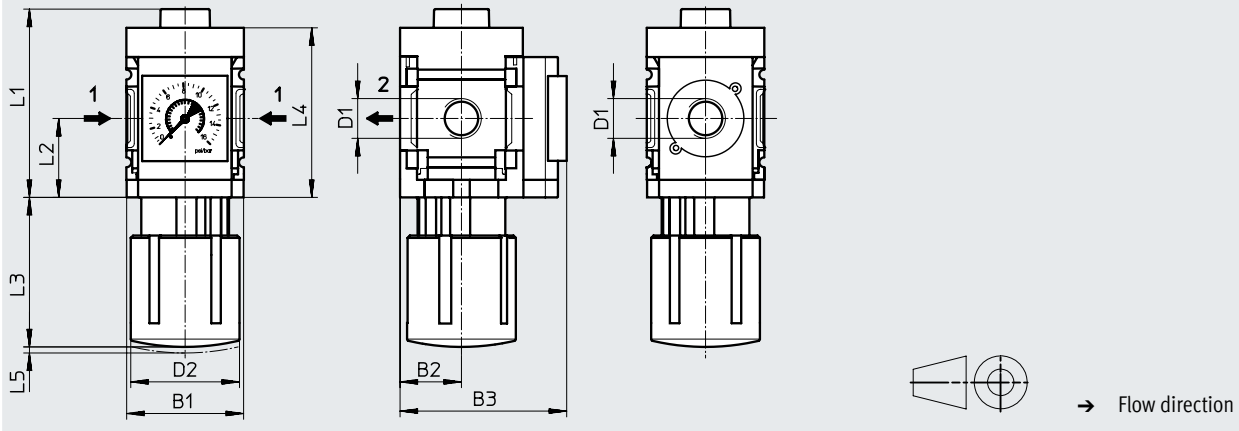
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Alternative mounting position

Download CAD data → [www.festo.com](http://www.festo.com)

[KD] Rotary knob underneath



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

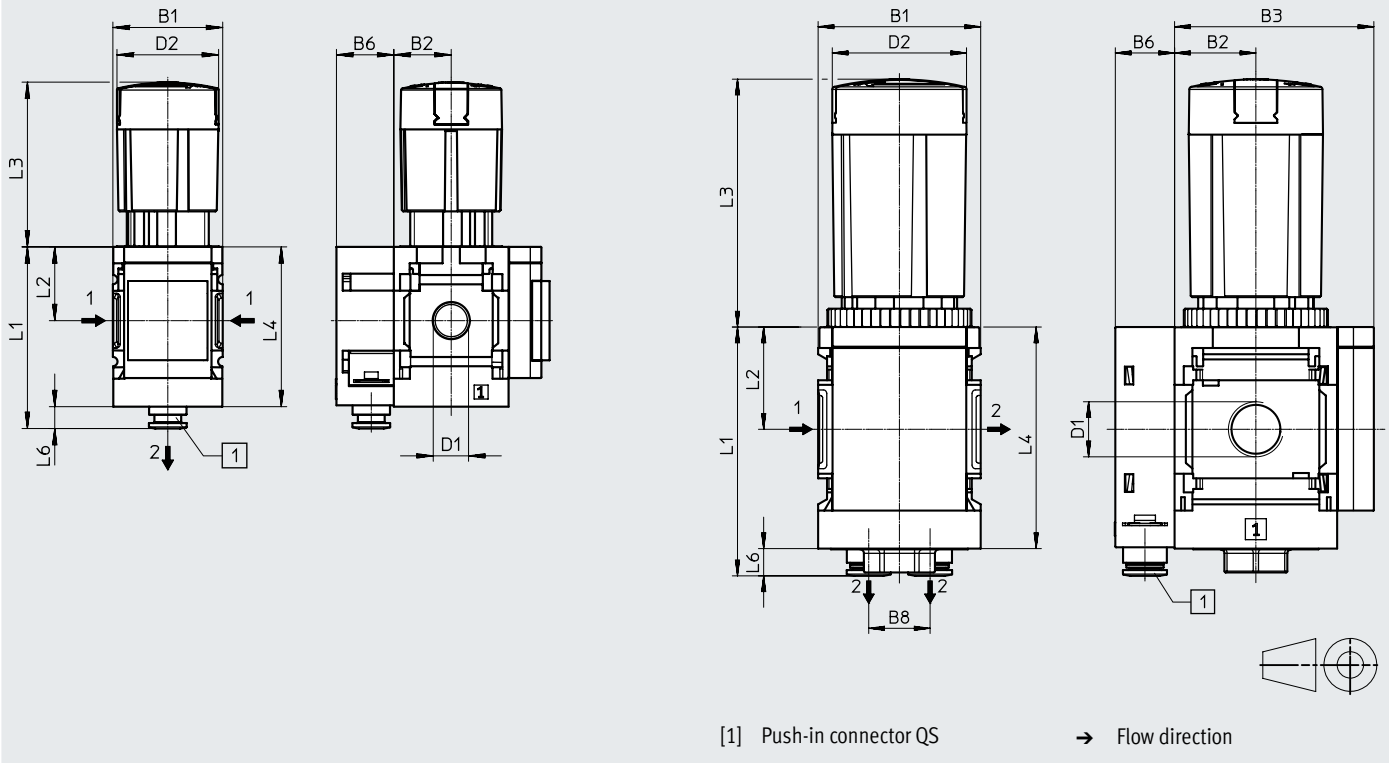
Download CAD data → [www.festo.com](http://www.festo.com)

[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

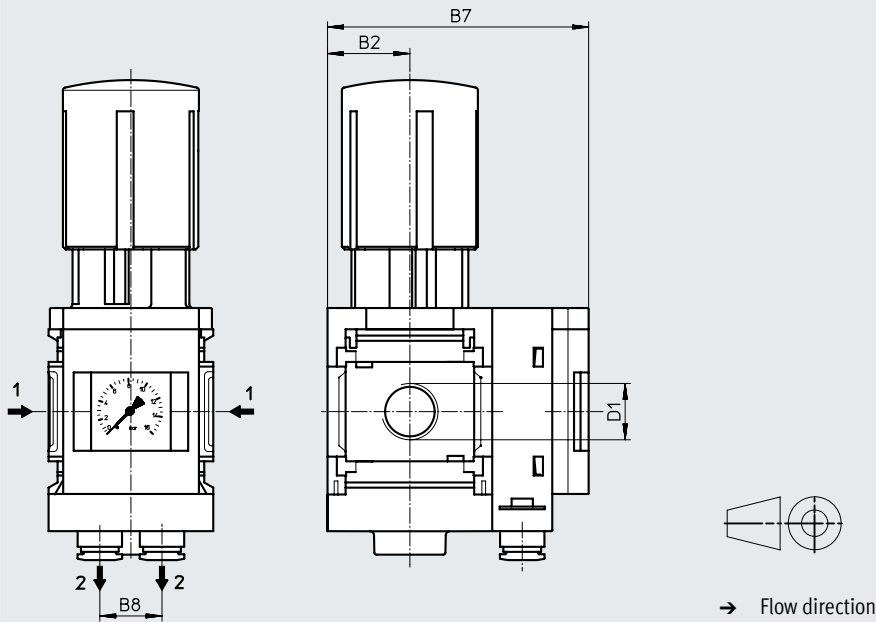
Download CAD data → [www.festo.com](http://www.festo.com)

[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

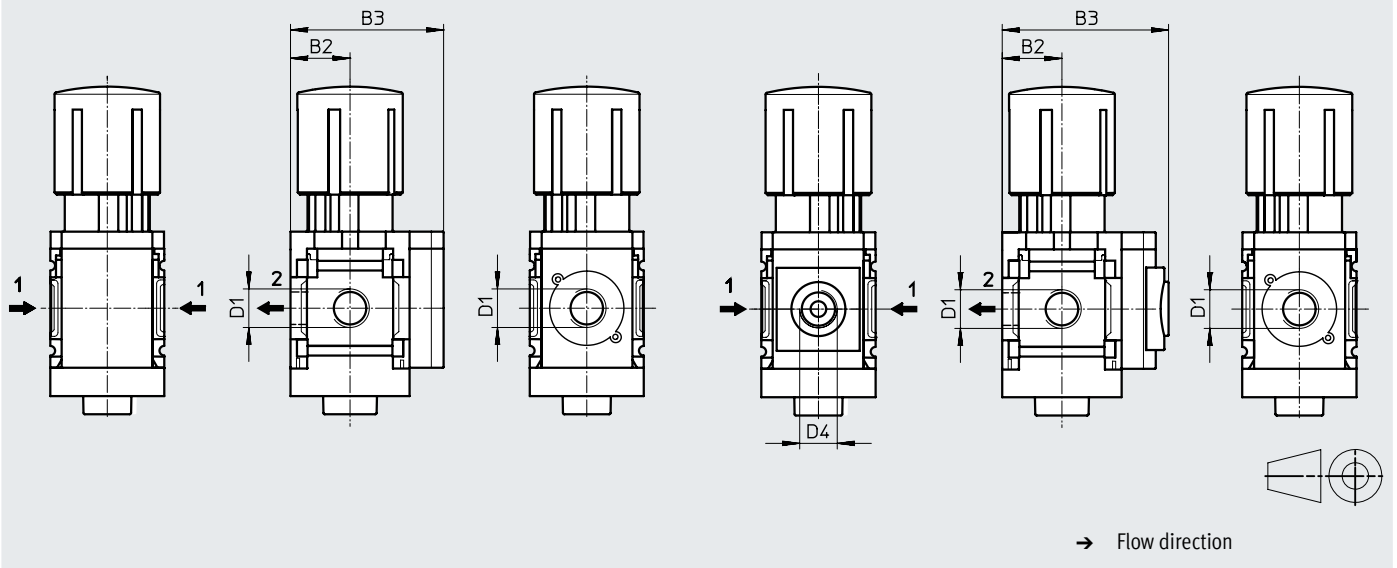
Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://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.

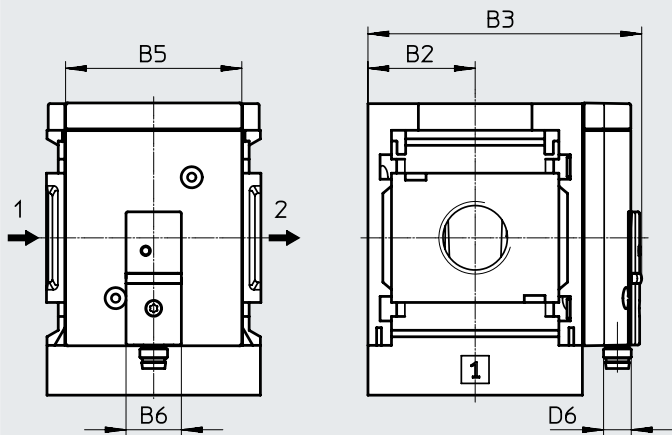
Datasheet

**Dimensions – Pressure gauge alternatives**

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

Download CAD data → [www.festo.com](http://www.festo.com)

Datasheets → Internet: sde5



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

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

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

Variant AD10:  
SDE5-D10-C3-...-P-M8 with 1x 3-pin  
M8 plug, 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.

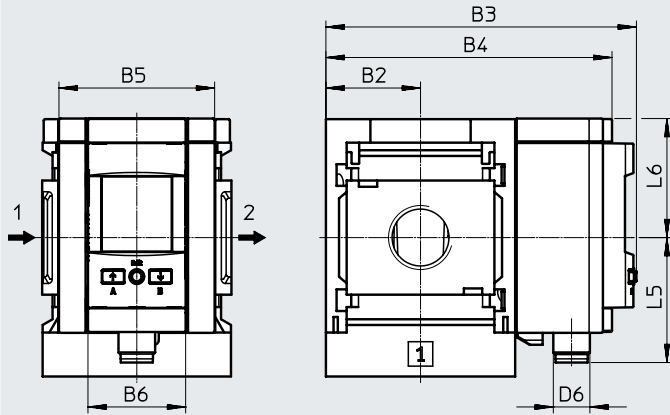
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://www.festo.com)

[AD11/AD12] Pressure sensor with LCD display

Datasheets → Internet: spau

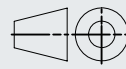


Variant AD11:

SPAU-P10R... (10 bar) for pressure range D5/D6  
 SPAU-P12R... (12 bar) for pressure range D7  
 SPAU-P16R... (16 bar) for pressure range D8  
 with plug M12, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA

Variant AD12:

SPAU-P10R... (10 bar) for pressure range D5/D6  
 SPAU-P12R... (12 bar) for pressure range D7  
 SPAU-P16R... (16 bar) for pressure range D8  
 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

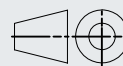
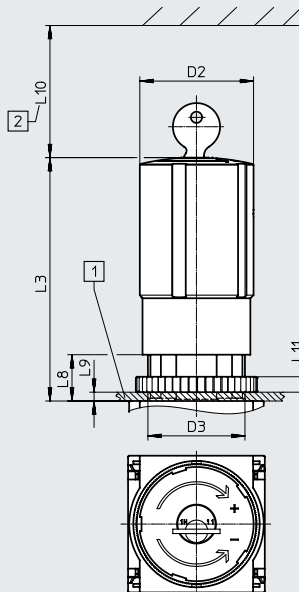
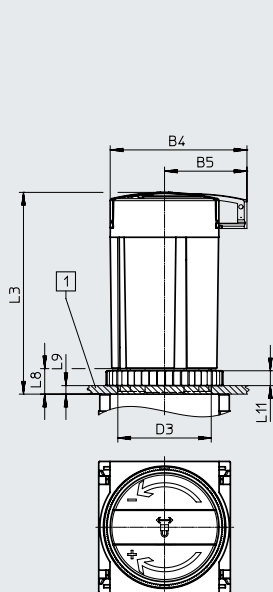
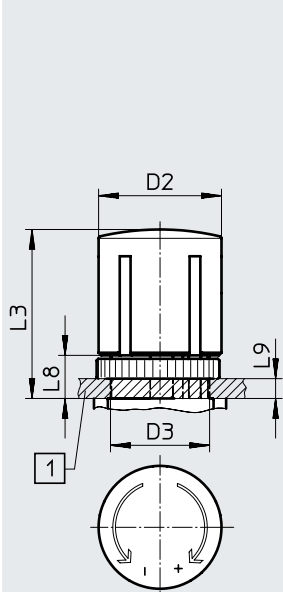
Download CAD data → [www.festo.com](http://www.festo.com)

For control panel installation

[ ] Rotary knob with latch

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

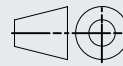
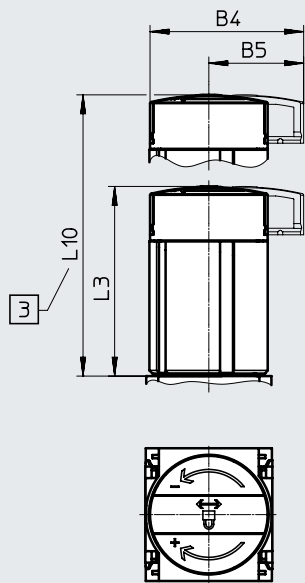
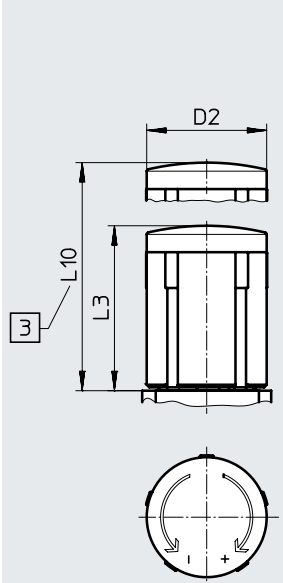
[E11] Rotary knob with integrated lock



- [1] Max. 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

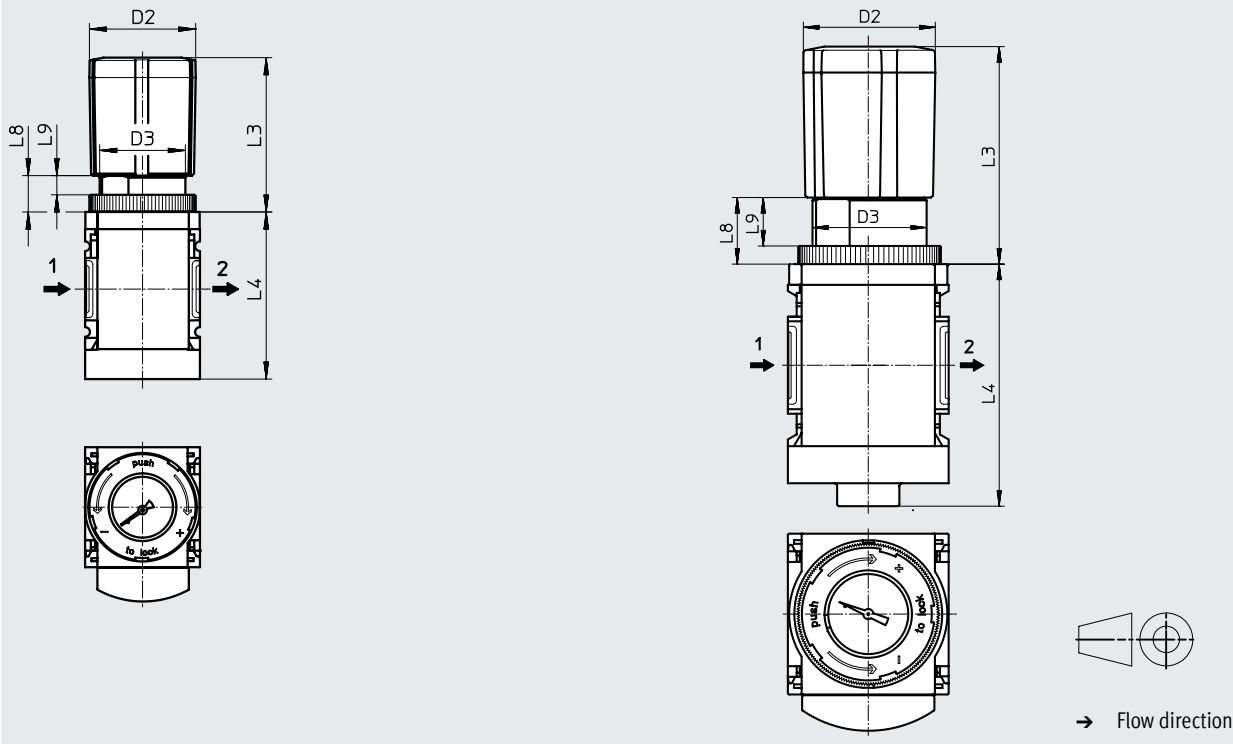
Datasheet

Dimensions – Rotary knob pressure gauge

Download CAD data → [www.festo.com](http://www.festo.com)

[DM1] Rotary knob pressure gauge, small

[DM2] Rotary knob pressure gauge, large



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
<b>MS4-LRB...</b>				
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	
<b>MS6-LRB...</b>				
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.		<b>527692</b>	<b>527665</b>				
Series		Standard			<b>MS</b>	MS	
Size		4	6		...		
Function		Pressure regulator for manifold assembly			<b>-LRB</b>	-LRB	
Pneumatic connection	Female thread G1/4		–	[1]	<b>-1/4</b>		
	–		Female thread G1/2	[1]	<b>-1/2</b>		
	Connecting plate G1/8		–		<b>-AGA</b>		
	Connecting plate G1/4		Connecting plate G1/4		<b>-AGB</b>		
	Connecting plate G3/8		Connecting plate G3/8		<b>-AGC</b>		
	–		Connecting plate G1/2		<b>-AGD</b>		
	–		Connecting plate G3/4		<b>-AGE</b>		
	–		Connecting plate G1		<b>-AGF</b>		
Pressure regulation range/actuation	0.3 ... 4 bar, manually actuated				<b>-D5</b>		
	0.3 ... 7 bar, manually actuated				<b>-D6</b>		
	0.5 ... 12 bar, manually actuated				<b>-D7</b>		
	–		0.5 ... 16 bar, manually actuated	[1] [2]	<b>-D8</b>		
Pressure gauge alternatives	MS pressure gauge						
	Cover plate			[3]	<b>-VS</b>		
	Adapter for EN pressure gauge 1/8, without pressure gauge		–	[4]	<b>-A8</b>		
	Adapter for EN pressure gauge 1/4, without pressure gauge			[4]	<b>-A4</b>		
	Integrated pressure gauge, red/green scale			[2]	<b>-RG</b>		
	Pressure sensor with switching status indicator, plug M8, threshold value comparator, PNP, N/O contact				[1] [5] [6]	<b>-AD7</b>	
	Pressure sensor with switching status indicator, plug M8, threshold value comparator, PNP, N/C contact				[1] [5] [6]	<b>-AD8</b>	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/O contact				[1] [5] [6]	<b>-AD9</b>	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/C contact				[1] [5] [6]	<b>-AD10</b>	
	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA				[1] [4] [5]	<b>-AD11</b>	
	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA				[1] [4] [5]	<b>-AD12</b>	
	Alternative pressure gauge scale	MS pressure gauge, bar					
psi				[7]	<b>-PSI</b>		
MPa				[8]	<b>-MPA</b>		

[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, Not with outlet direction Z.  
AD11/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.

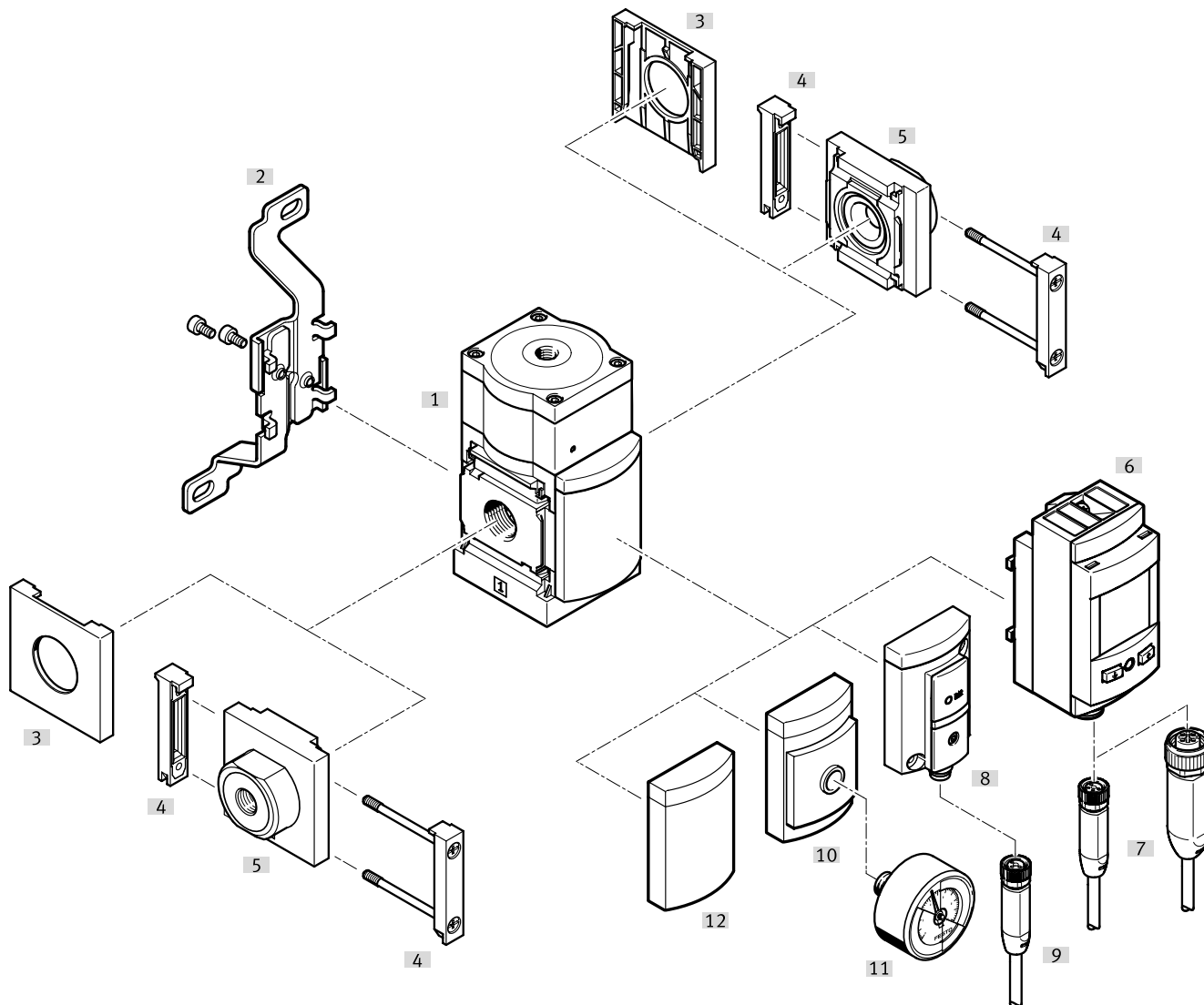
## Ordering data – Modular product system

Ordering table		Grid dimension	[mm]	40	62	Conditions	Code	Enter code
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.  
In combination with outlet direction Z not with alternative mounting position KD.
- [12] WR, WPM, WB, WBM Only with outlet direction Z.
- [13] WR 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**

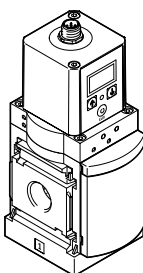
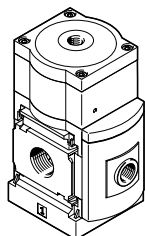
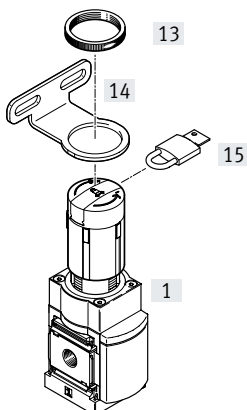
Additional accessories:

- 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

Electrically 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]	Precision pressure regulator MS6-LRP	■	■	■	■	48
[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 NEBA-M8...-LE4/NEBA-M12...-LE4	■	■	■	■	106
[8]	Pressure sensor without display AD7 ... AD10	■	■	■	■	62
[9]	Connecting cable NEBA-M8...-LE3	■	■	■	■	106
[10]	Adapter for EN pressure gauge 1/8, 1/4 A8/A8M/A4	■	■	■	■	79
[11]	Precision pressure gauge A8M/MAP	■	■	■	■	62, 106
[12]	Cover plate VS	■	■	■	■	62
[13]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[14]	Mounting bracket MS6-WR	■	■	–	–	ms6-wr
[15]	Padlock LRVS-D	■	■	■	■	106
–	Mounting bracket MS6-WP/WPB/WPE/WPM	–	■	■	■	ms6-wp

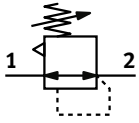
## Type codes

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
AGF	Sub-base G1
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
PE10	0.1 ... 10 bar electrically actuated (pilot control using proportional-pressure regulator with LED indicator, 7-segment), set-point 0 ... 10V
PI10	0.1 ... 10 bar electrically actuated (pilot control using proportional-pressure regulator with LED indicator, 7-segment), set-point 4 ... 20mA
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

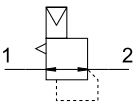
007 Rotary knob alternative	
	None
LD	Long rotary knob
008 Alternative mounting position	
	None
KD	Rotary knob underneath
009 Lockability	
	None
AS	Can be locked using accessories
E11	With integrated lock
010 Type of mounting	
	Without mounting bracket
WR	Mounting bracket with knurled nut on regulator 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](http://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 pres-

sure 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
- High flow rate 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, G3/4 or G1
	[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	With 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 <sup>1)</sup>	[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	With pressure sensor for indicating the output pressure via LCD display and electrical output	
	With pressure sensor for indicating the output pressure via the switching status indicator 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	
<b>Standard nominal flow rate q<sub>nN</sub> [l/min]</b>					
q <sub>nN</sub> 1 → 2	G1/4	800 <sup>1)</sup>	1100 <sup>2)</sup>	1400 <sup>3)</sup>	3000 <sup>4)</sup>
	G3/8	1100 <sup>1)</sup>	1400 <sup>2)</sup>	1700 <sup>3)</sup>	3300 <sup>4)</sup>
	G1/2	1600 <sup>1)</sup>	2300 <sup>2)</sup>	3000 <sup>3)</sup>	5000 <sup>4)</sup>
<b>Secondary exhaust flow rate [l/min]</b>					
q <sub>n</sub> 2 → 3	≥ 220 <sup>5)</sup>	≥ 450 <sup>6)</sup>	≥ 650 <sup>7)</sup>	≥ 900 <sup>8)</sup>	

- 1) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 0.5 bar, Δp = 0.1 bar  
 2) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 1.5 bar, Δp = 0.1 bar  
 3) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 2.5 bar, Δp = 0.1 bar  
 4) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 6.0 bar, Δp = 0.1 bar

- 5) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 0.7 bar, Δp<sub>2</sub> = 0.1 bar  
 6) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 2.5 bar, Δp<sub>2</sub> = 0.1 bar  
 7) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 4.0 bar, Δp<sub>2</sub> = 0.1 bar  
 8) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 6.0 bar, Δp<sub>2</sub> = 0.1 bar

Operating and environmental conditions	
Operating pressure	[MPa] 0.1 ... 1.4 (0.1 ... 1) <sup>1)</sup> (0.35 ... 1.1) <sup>2)</sup>
	[bar] 1 ... 14 (1 ... 10) <sup>1)</sup> (3.5 ... 11) <sup>2)</sup>
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) <sup>3)</sup>
Temperature of medium	[°C] -10 ... +60 (0 ... +50) <sup>3)</sup>
Storage temperature	[°C] -10 ... +60
Corrosion resistance class CRC <sup>4)</sup>	2
UL certification <sup>5)</sup>	c UL us - Recognized (OL)

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

Electrical data	
Pressure regulation range	[PE10]   [PI10]
Operating voltage range DC	[V] 21.6 ... 26.4
Max. electrical power consumption	[W] 4.2
Max. current consumption	[A] 0.16
Nominal operating voltage DC	[V] 24 (Plug connector, M12x1, 5-pin, A-coded)
Residual ripple	10%
Analogue input signal range	
[V]	0 ... 10   -
[mA]	-   4 ... 20

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-proof 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) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK explosion regulations

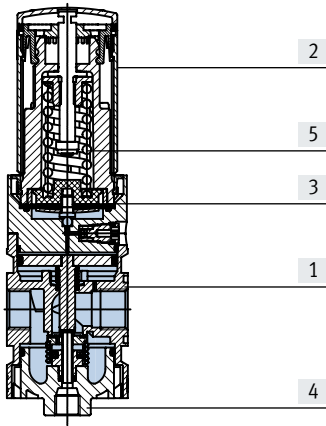
- 1) More information: [www.festo.com/catalogue/ms6-lrp](http://www.festo.com/catalogue/ms6-lrp) → Support/Downloads.

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

## Datasheet

### Materials

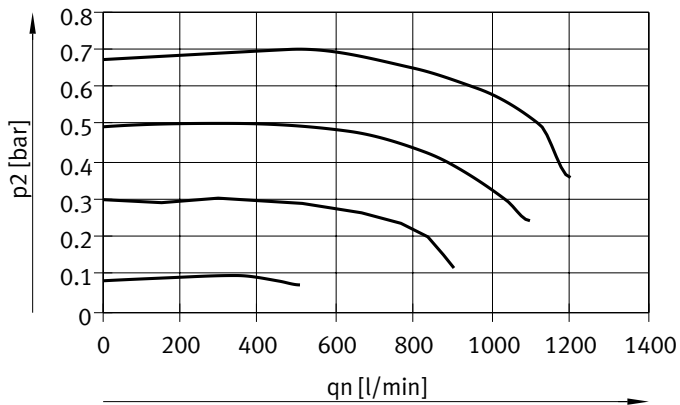
Sectional view



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
	LABS (PWIS) conformity	VDMA24364-B1/B2-L

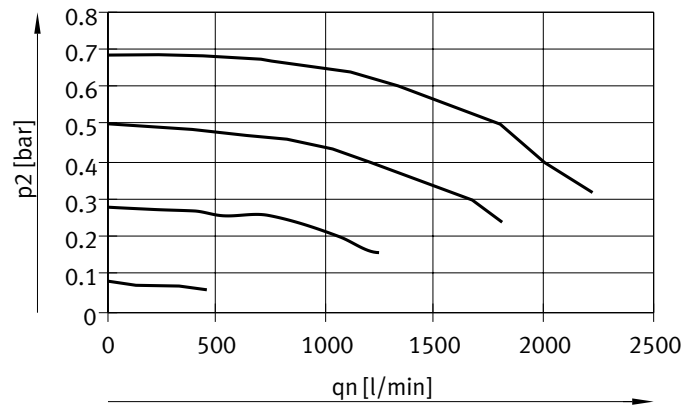
### Standard flow rate $q_n$ as a function of output pressure $p_2$ ( $p_1 = 10$ bar)

MS6-LRP-1/4-D2



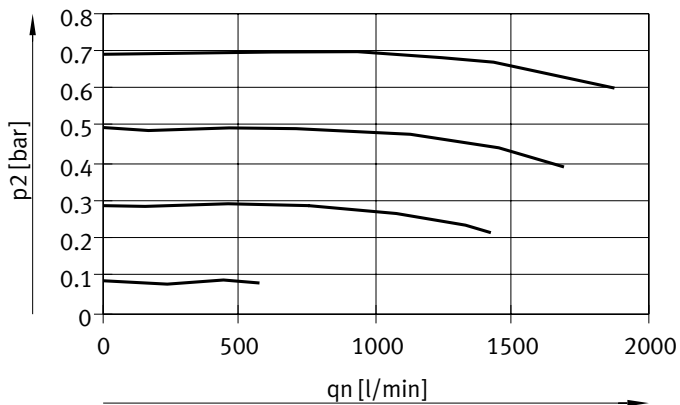
— [D2]: 0.05 ... 0.7 bar

MS6-LRP-3/8-D2



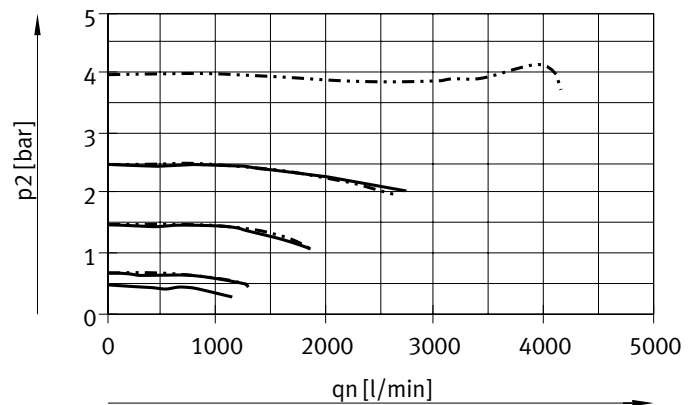
— [D2]: 0.05 ... 0.7 bar

MS6-LRP-1/2-D2



— [D2]: 0.05 ... 0.7 bar

MS6-LRP-1/4-D4/D5



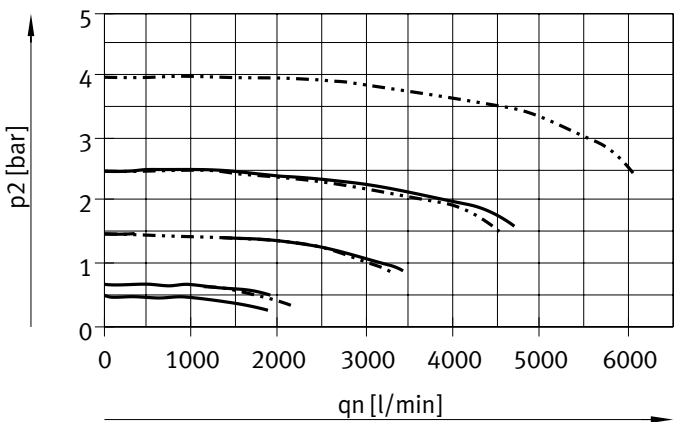
— [D4]: 0.05 ... 2.5 bar

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

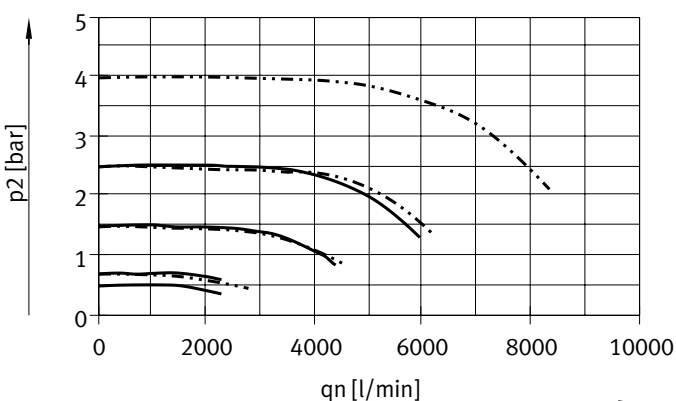
Datasheet

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

MS6-LRP-3/8-D4/D5



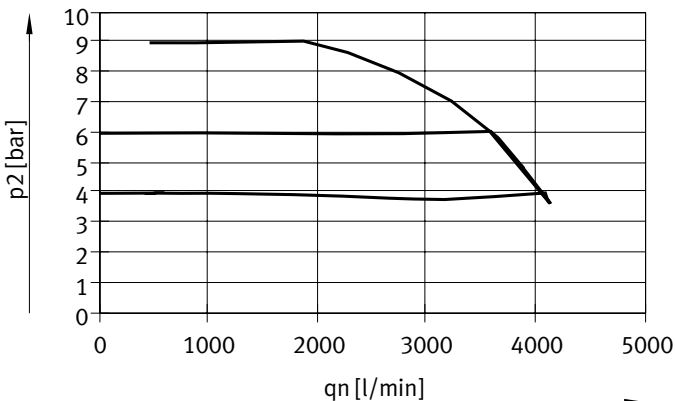
MS6-LRP-1/2-D4/D5



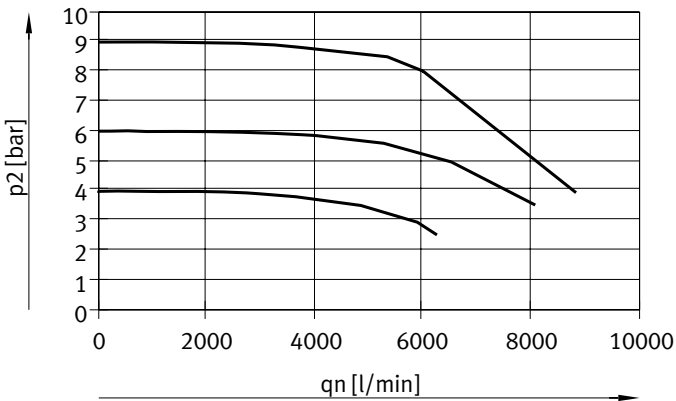
— [D4]: 0.05 ... 2.5 bar  
 - · - · - [D5]: 0.1 ... 4 bar

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

MS6-LRP-1/4-D7/PO



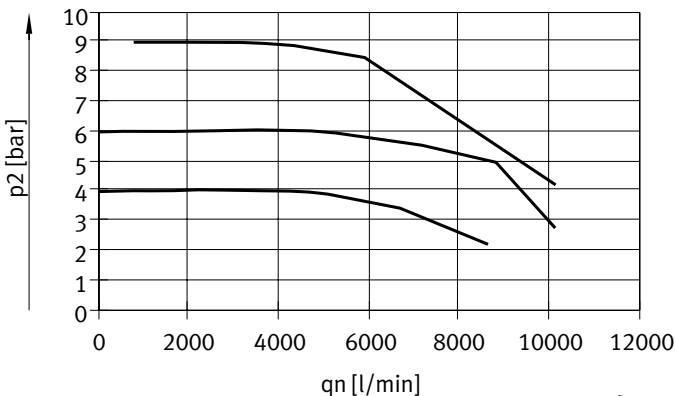
MS6-LRP-3/8-D7/PO



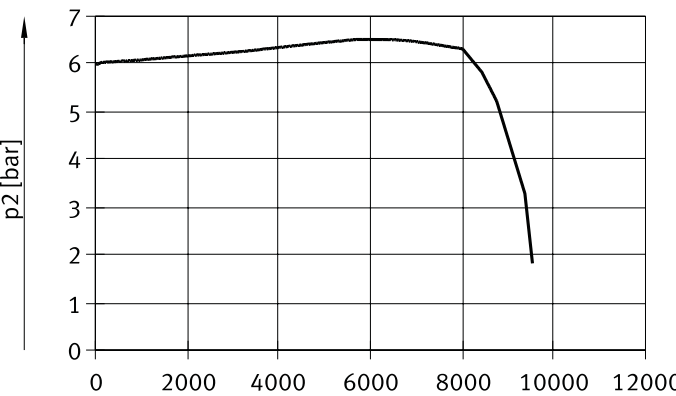
— [D7]/[PO]: 0.1 ... 12 bar

— [D7]/[PO]: 0.1 ... 12 bar

MS6-LRP-1/2-D7/PO



MS6-LRP-1/2-PE10/PI10



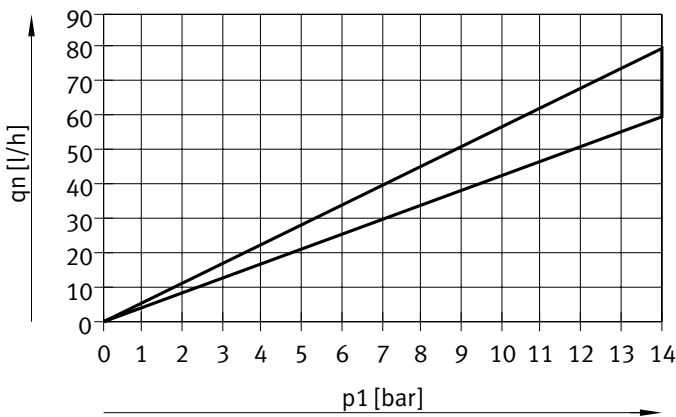
— [D7]/[PO]: 0.1 ... 12 bar

— [PE10]/[PI10]: 0.01 ... 1 MPa

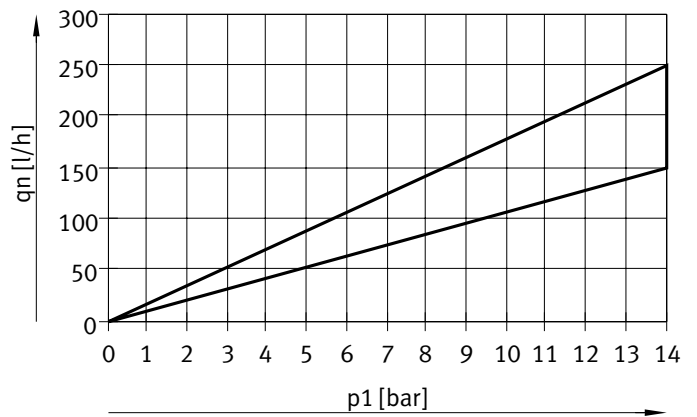
## Datasheet

### Internal air consumption $q_n$ as a function of input pressure $p_1$

MS6-LRP...-D2/D4



MS6-LRP...-D5/D7/PO/PE10/PI10



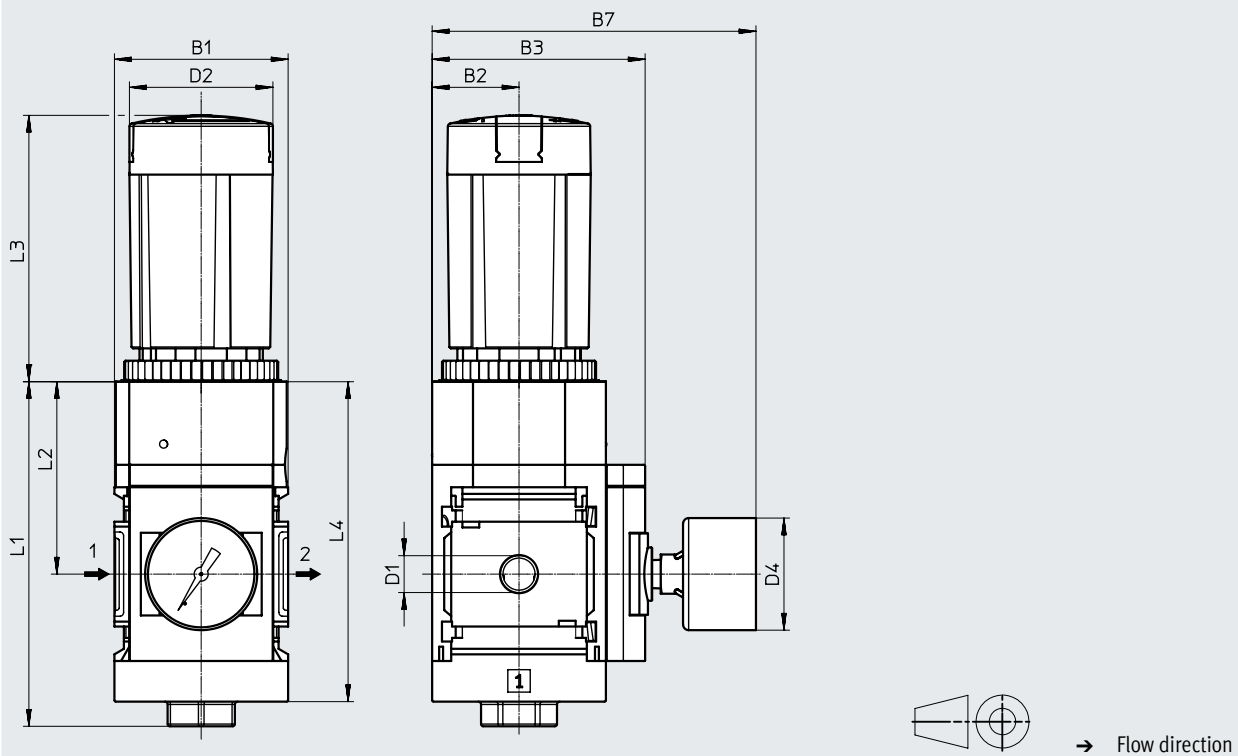
### Dimensions

Download CAD data → [www.festo.com](http://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



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.

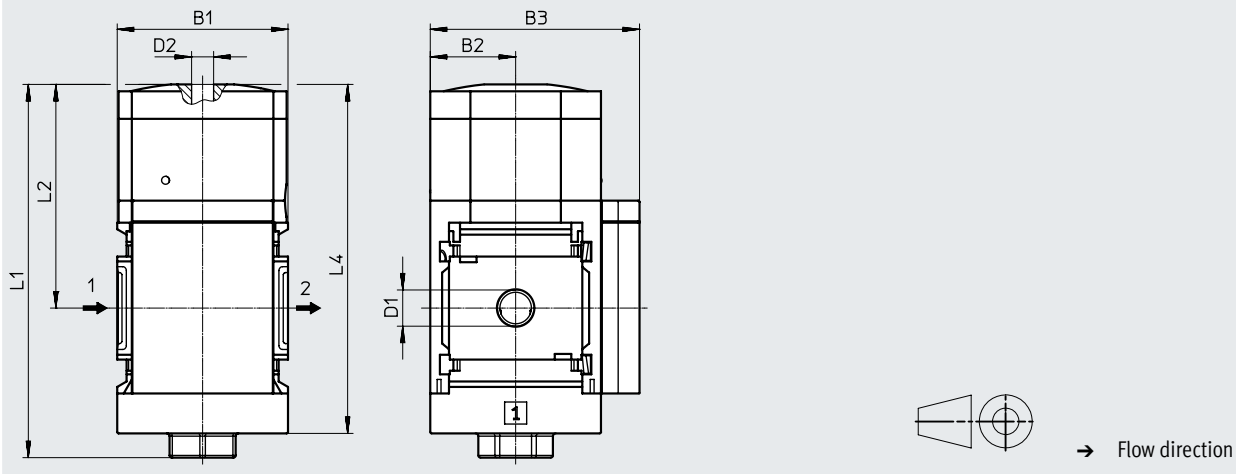
## Datasheet

### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[PO] Pressure regulation range, pneumatically actuated

[VS] Cover plate



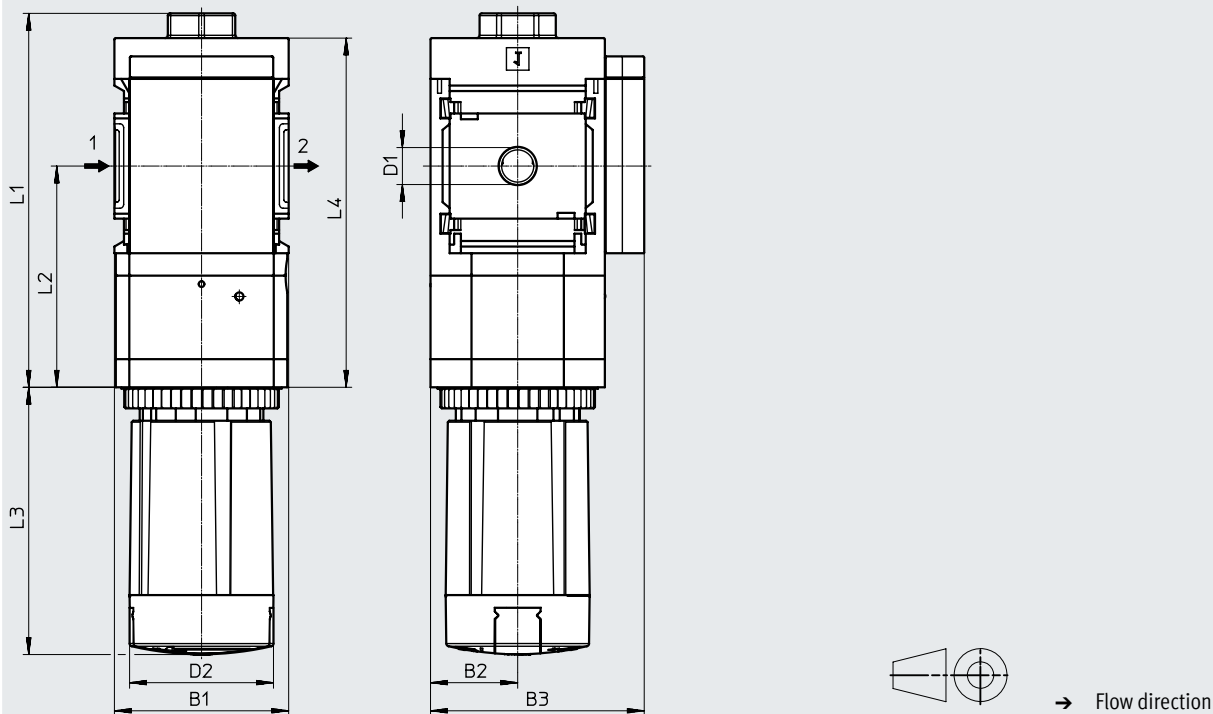
Type	B1	B2	B3	D1	D2	L1	L2	L4
MS6-LRP-1/4-PO-VS	62	31	76	G1/4	G1/8	136	81	127
MS6-LRP-3/8-PO-VS				G3/8				
MS6-LRP-1/2-PO-VS				G1/2				

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

### Dimensions – Alternative mounting position

Download CAD data → [www.festo.com](http://www.festo.com)

[KD] Rotary knob underneath



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

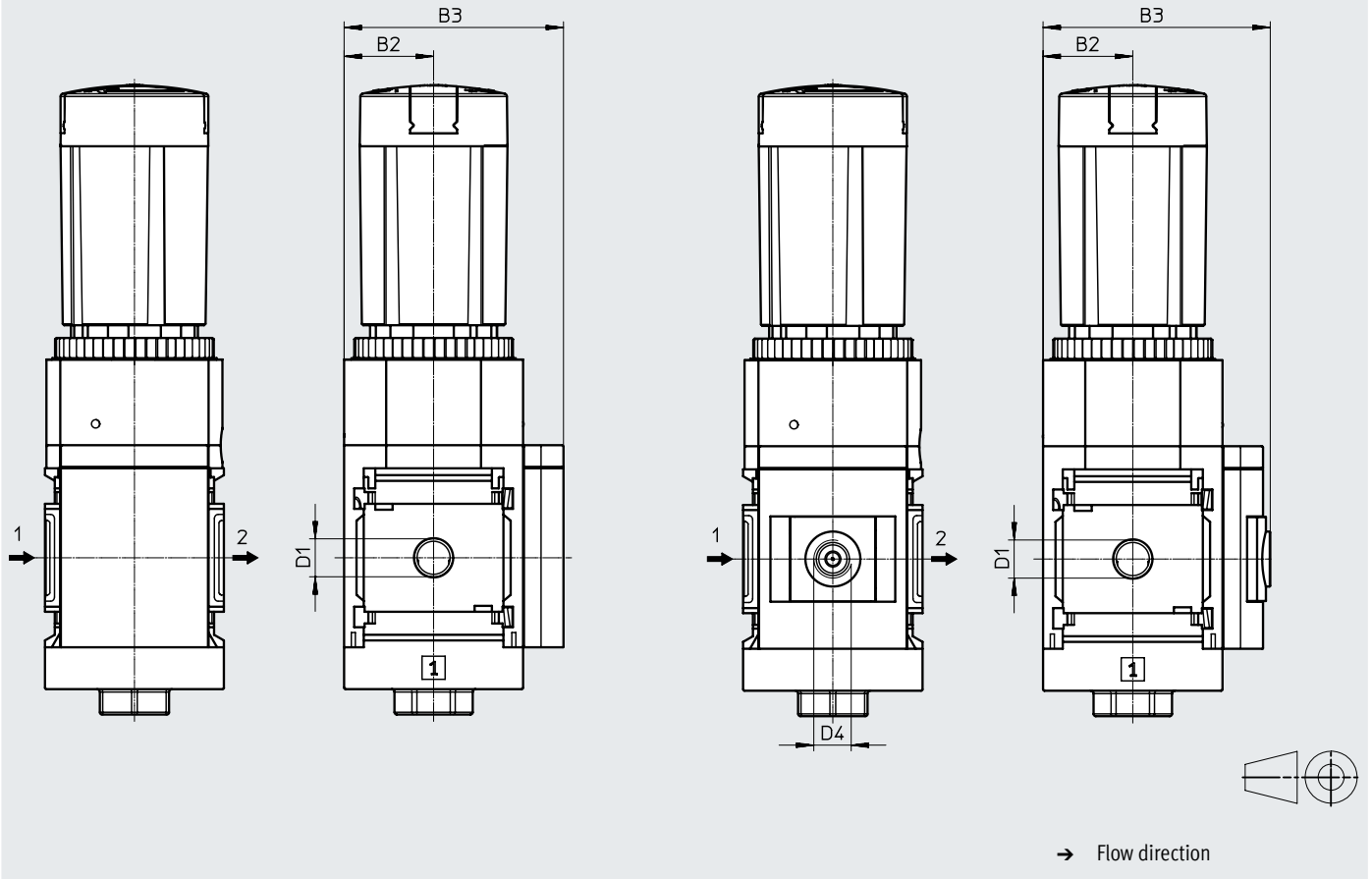
Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://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.

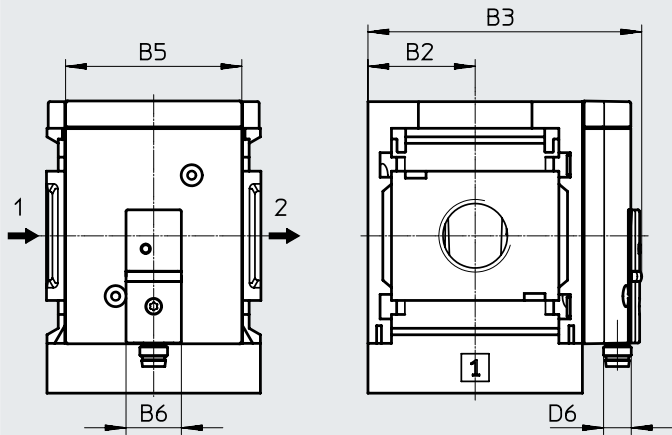
## Datasheet

### Dimensions – Pressure gauge alternatives

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

Download CAD data → [www.festo.com](http://www.festo.com)

Datasheets → Internet: sde5



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

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

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

Variant AD10:  
SDE5-D10-C3-...-P-M8 with 1x 3-pin M8 plug, 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

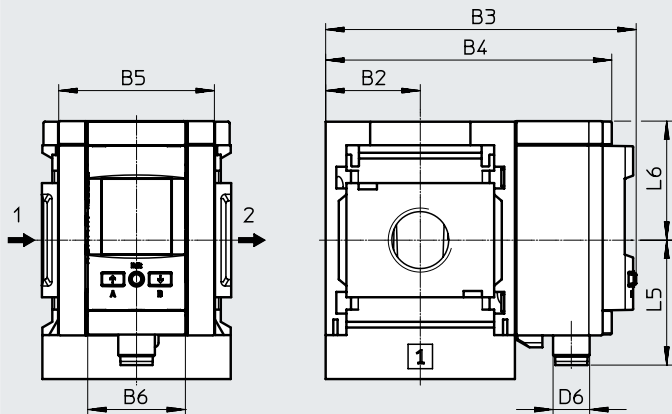
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

### Dimensions – Pressure gauge alternatives

[AD11/AD12] Pressure sensor with LCD display

Download CAD data → [www.festo.com](http://www.festo.com)

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.

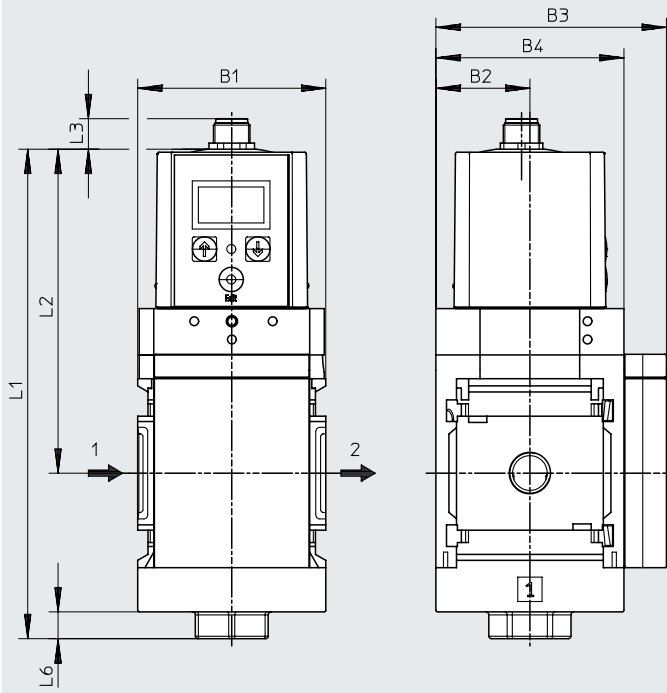
Datasheet

**Dimensions – Electrically actuated VPPE pilot control**

Download CAD data → [www.festo.com](http://www.festo.com)

[PE10/PI10] Proportional-pressure regulator with LED display

Datasheets → Internet: vppe



Variant PE10:  
electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) 0 ... 10 V

Variant PI10:  
electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment)  
setpoint value 4 ... 20 mA

Plug connector, M12x1, 5-pin, A-coded

→ Flow direction

Type	B1	B2	B3	B4	L1	L2	L3	L6
MS6-LRP-...-PE10/PI10	62	31	76	62	161	106	10	9

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

Datasheet

Dimensions – Rotary knob

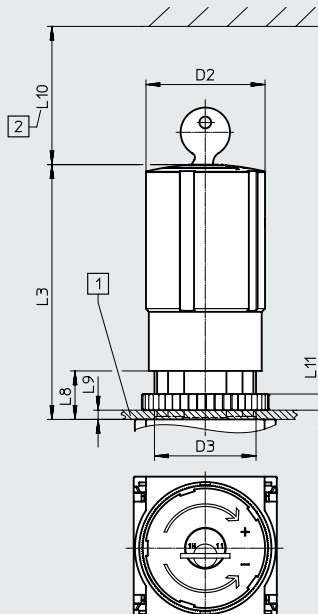
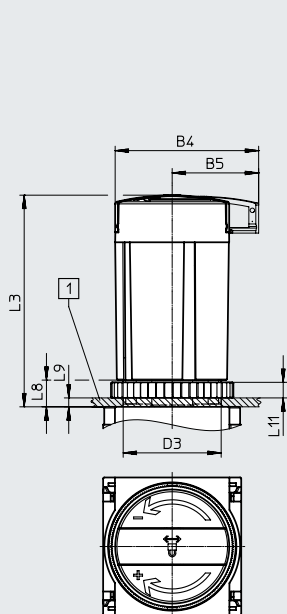
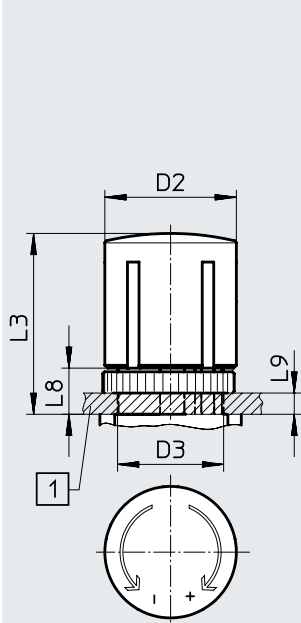
Download CAD data → [www.festo.com](http://www.festo.com)

For control panel installation

[ ] Rotary knob with latch

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

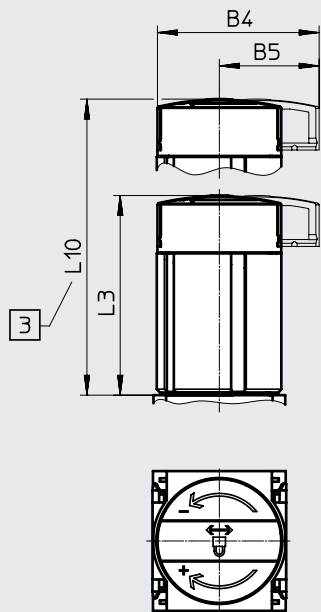
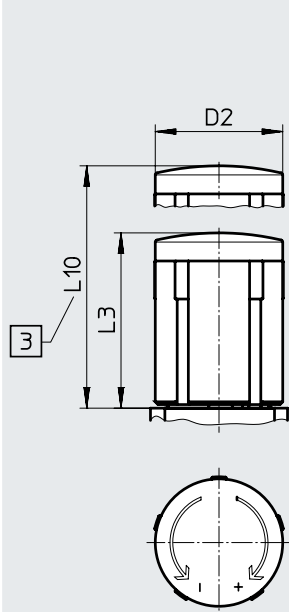
[E11] Rotary knob with integrated lock



[1] Max. 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	-	-	51.2	-	86	-	-	139
MS6-LRP...-LD-AS	64.4	38.8			95.5	-	-	148.5

## Datasheet

Ordering data					
Pneumatic connection 1	Pressure regulation range	Analogue input signal range	Flow direction	Part no.	Type
<b>Manually actuated</b>					
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
			From right to left	538011	MS6-LRP-1/4-D7-A8-Z
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
			From right to left	538023	MS6-LRP-1/2-D4-A8-Z
	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
<b>Electrically actuated</b>					
G1/2	0.01 ... 1 MPa	0 ... 10 V	From left to right	8203861	MS6-LRP-1/2-PE10-VS
	0.01 ... 1 MPa	4 ... 20 mA	From left to right	8203862	MS6-LRP-1/2-PI10-VS

## Ordering data – Modular product system

Ordering table		Grid dimension [mm]	62	Conditions	Code	Enter code
Module no.	<b>538028</b>					
Series	Standard				<b>MS</b>	MS
Size	6				<b>6</b>	6
Function	Precision pressure regulator				<b>-LRP</b>	-LRP
Pneumatic connection	Female thread G1/4		[1]		<b>-1/4</b>	
	Female thread G3/8		[1]		<b>-3/8</b>	
	Female thread G1/2		[1]		<b>-1/2</b>	
	Connecting plate G1/4				<b>-AGB</b>	
	Connecting plate G3/8				<b>-AGC</b>	
	Connecting plate G1/2				<b>-AGD</b>	
	Connecting plate G3/4				<b>-AGE</b>	
	Connecting plate G1				<b>-AGF</b>	
	Connecting plate NPT1/4		[1]		<b>-AQN</b>	
	Connecting plate NPT3/8		[1]		<b>-AQP</b>	
	Connecting plate NPT1/2		[1]		<b>-AQR</b>	
	Connecting plate NPT3/4		[1]		<b>-AQS</b>	
	Pressure regulation range/actuation	0.05 ... 0.7 bar, manually actuated				<b>-D2</b>
0.05 ... 2.5 bar, manually actuated					<b>-D4</b>	
0.1 ... 4 bar, manually actuated					<b>-D5</b>	
0.1 ... 12 bar, manually actuated					<b>-D7</b>	
0.1 ... 12 bar, pneumatically actuated (pressure range determined by pilot regulator)			[1] [2]		<b>-PO</b>	
0.01 ... 1 MPa, electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) 0 ... 10 V			[3]		<b>-PE10</b>	
0.01 ... 1 MPa, electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) setpoint value 4 ... 20 mA			[3]		<b>-PI10</b>	
Pressure gauge alternatives	Cover plate				<b>-VS</b>	
	Adapter for EN pressure gauge 1/8, without pressure gauge				<b>-A8</b>	
	Adapter for EN pressure gauge 1/8, with precision pressure gauge				<b>-A8M</b>	
	Adapter for EN pressure gauge 1/4, without pressure gauge				<b>-A4</b>	
	Pressure sensor with switching status indicator, plug M8, threshold value comparator, PNP, N/O contact		[1] [5]		<b>-AD7</b>	
	Pressure sensor with switching status indicator, plug M8, threshold value comparator, PNP, N/C contact		[1] [5]		<b>-AD8</b>	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/O contact		[1] [5]		<b>-AD9</b>	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/C contact		[1] [5]		<b>-AD10</b>	
	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA		[4]		<b>-AD11</b>	
	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA		[4]		<b>-AD12</b>	

- [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] PE10, PI10 Not with WR, AS, E11, EX4, UL1, LD
- [4] AD11/AD12 Measuring range max. 10 bar.  
 Not with pressure regulation range/actuation D2, D4.
- [5] AD7 ... AD10 Measuring range max. 10 bar.  
 Not with pressure regulation range/actuation D2.

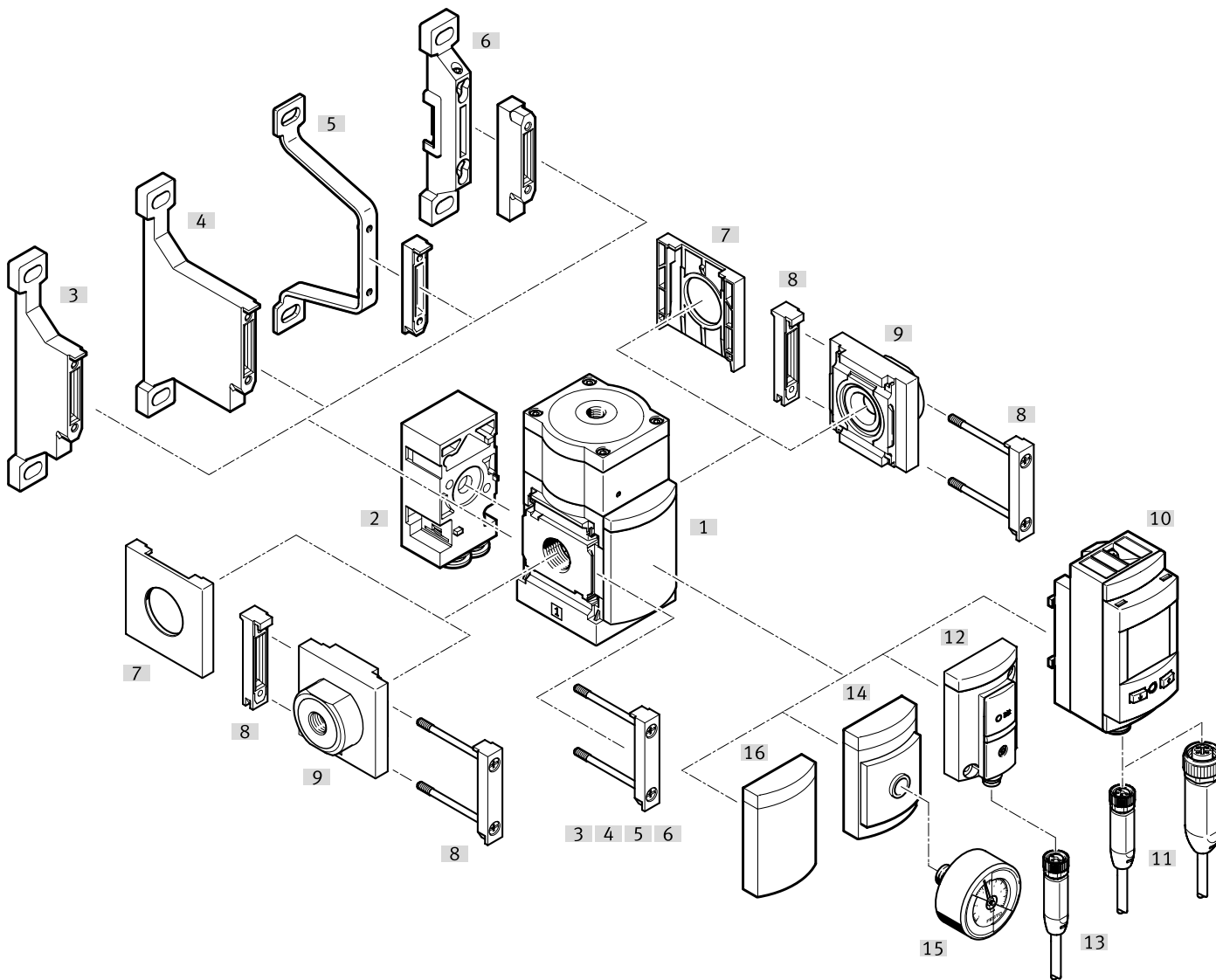
## Ordering data – Modular product system

Ordering table		Grid dimension [mm]	62	Conditions	Code	Enter code
Rotary knob alternative	None					
	Long rotary knob			[6]	<b>-LD</b>	
Alternative mounting position	None					
	Rotary knob underneath			[1] [7]	<b>-KD</b>	
Locking option	None					
	Lockable using accessories				<b>-AS</b>	
	With integrated lock			[1]	<b>-E11</b>	
Type of mounting	Without mounting bracket					
	Mounting bracket with knurled nut for regulator head			[8]	<b>-WR</b>	
	Mounting bracket standard design			[9]	<b>-WP</b>	
	Mounting bracket for hooking in service unit components			[1] [9]	<b>-WPM</b>	
	Mounting bracket centrally at the rear (wall mounting top and bottom), connecting plates not required				<b>-WB</b>	
EU certification	None					
	II 2GD to EU Explosion Protection Directive (ATEX)				<b>-EX4</b>	
UL certification	None					
	cULus, ordinary location for Canada and USA				<b>-UL1</b>	
Flow direction	Flow direction from left to right					
	Flow direction from right to left				<b>-Z</b>	

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

## Peripherals overview

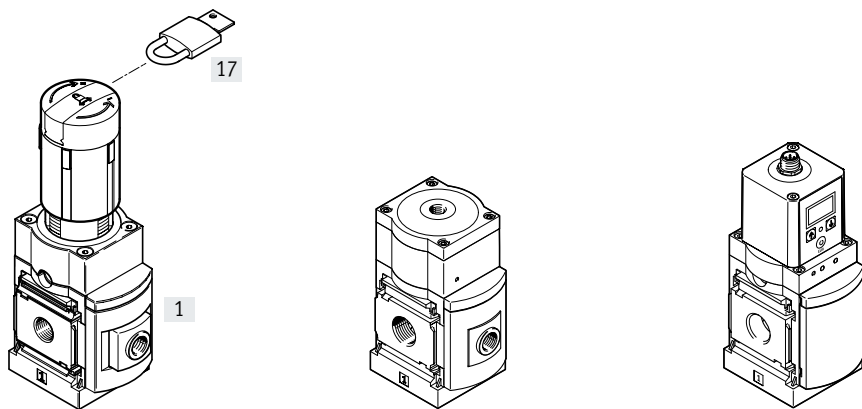
Precision pressure regulator MS6-LRPB with pressure output at the rear



Manually actuated

Pneumatically actuated

Electrically 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]	Precision pressure regulator MS6-LRPB	■	■	■	■	64
[2]	Angled outlet block B...	■	■	■	■	79
[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	■	■	■	■	79
[11]	Connecting cable NEBA-M8...-LE4/NEBA-M12...-LE4	■	■	■	■	106
[12]	Pressure sensor without display AD7 ... AD10	■	■	■	■	79
[13]	Connecting cable NEBA-M8...-LE3	■	■	■	■	106
[14]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	79
[15]	Precision pressure gauge A8M/MAP	■	■	■	■	79, 106
[16]	Cover plate VS	■	■	■	■	79
[17]	Padlock LRVS-D	■	■	■	■	106


**Note**

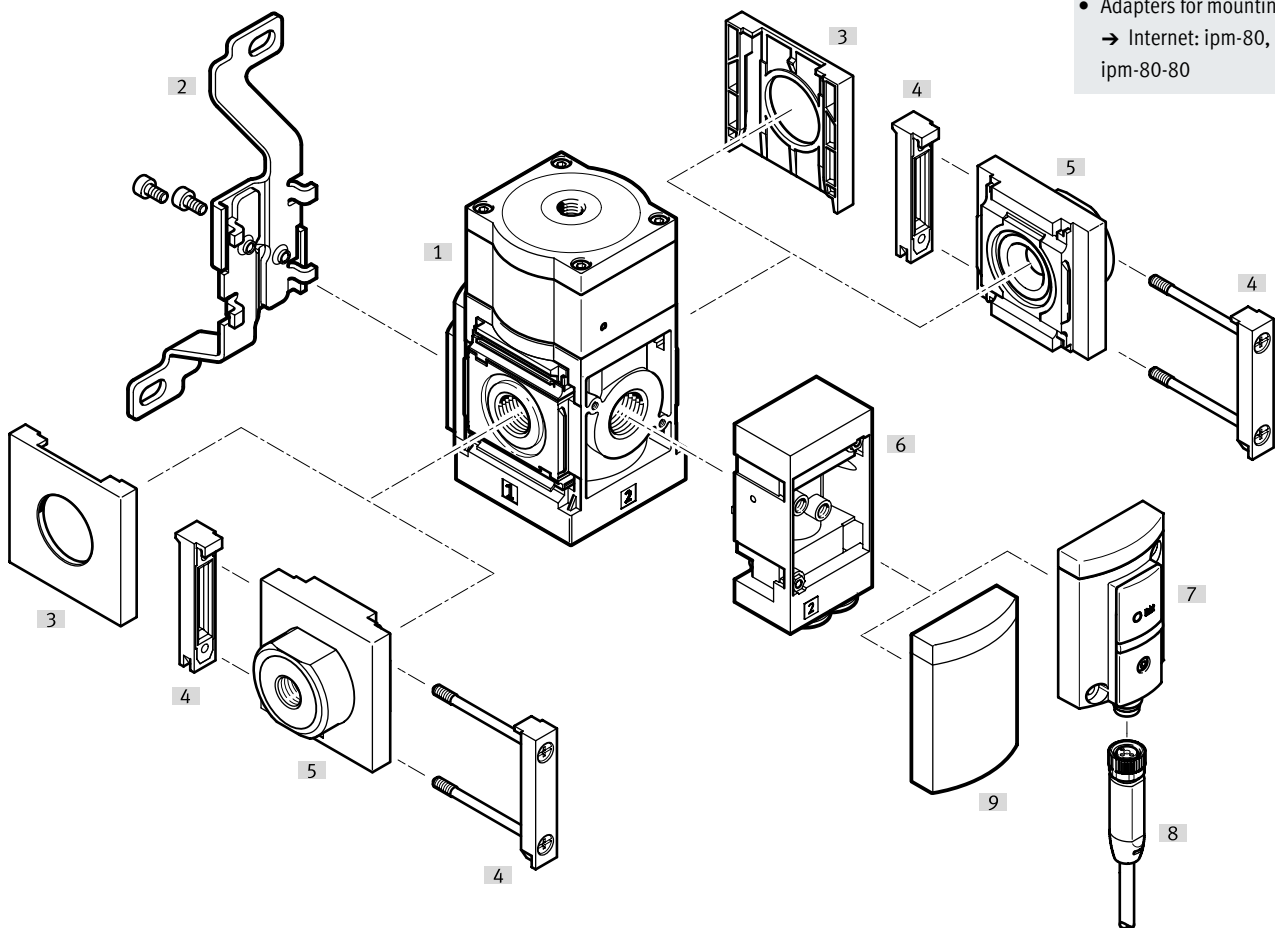
Additional accessories:

- 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

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

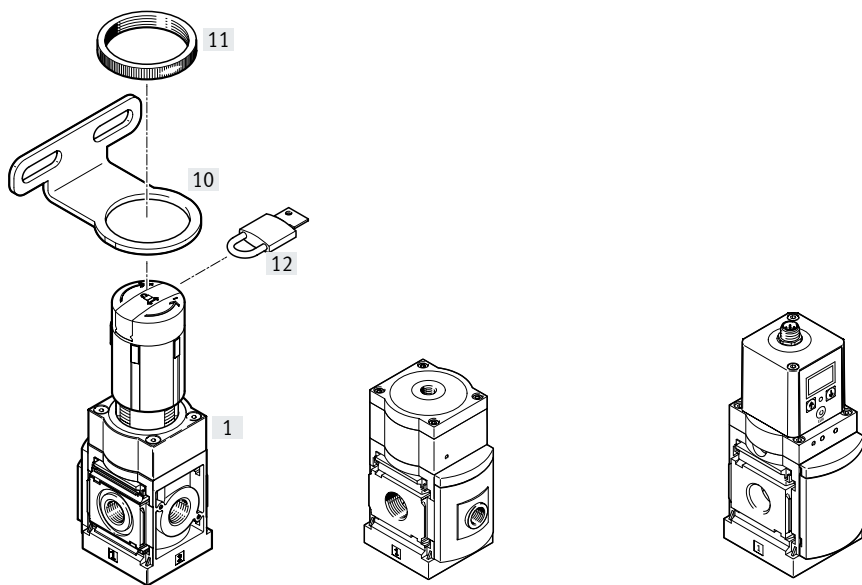
 **Note**  
 Additional accessories:  
 • Module connectors for combination with size MS4/MS6 or size MS9  
   → Internet: amv, rmv, armv  
 • Adapters for mounting on profiles  
   → Internet: ipm-80, ipm-40-80, ipm-80-80



Manually actuated

Pneumatically actuated

Electrically 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]	Precision pressure regulator MS6-LRPB	■	■	■	■	64
[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
[6]	Angled outlet block B...	■	■	■	■	79
[7]	Pressure sensor without display AD7 ... AD10	■	■	■	■	79
[8]	Connecting cable NEBA-M8...-LE3	■	■	■	■	106
[9]	Cover plate VS	■	■	■	■	79
[10]	Mounting bracket MS6-WR	■	■	–	–	ms6-wr
[11]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[12]	Padlock LRVS-D	■	■	■	■	106

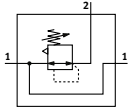
## Type codes

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
AGF	Sub-base G1
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
PE10	0.1 ... 10 bar electrically actuated (pilot control using proportional-pressure regulator with LED indicator, 7-segment), set-point 0 ... 10V
PI10	0.1 ... 10 bar electrically actuated (pilot control using proportional-pressure regulator with LED indicator, 7-segment), set-point 4 ... 20mA
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

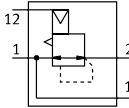
007 Rotary knob alternative	
	None
LD	Long rotary knob
008 Alternative mounting position	
	None
KD	Rotary knob underneath
009 Lockability	
	None
AS	Can be locked using accessories
E11	With integrated lock
010 Alternative pressure outlet	
	None
BD	Angled outlet block QS-8
BE	Angled outlet block QS-10
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

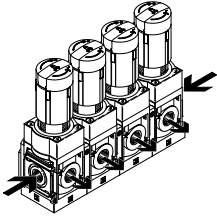
Pressure regulation range/actuation, manually actuated







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](http://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, G3/4 or G1	
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	With 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 <sup>1)</sup>	[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	With pressure sensor for indicating the output pressure via LCD display and electrical output
	With pressure sensor for indicating the output pressure via the switching status indicator and electrical output
	Via pressure gauge for displaying 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 <sup>1)</sup>	2300 <sup>2)</sup>	3000 <sup>3)</sup>
				5000 <sup>4)</sup>
Secondary exhaust flow rate [l/min]				
$q_{n2} \rightarrow 3$		$\geq 220$ <sup>5)</sup>	$\geq 450$ <sup>6)</sup>	$\geq 650$ <sup>7)</sup>
				$\geq 900$ <sup>8)</sup>

- 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	[MPa]	0.1 ... 1.4 (0.1 ... 1) <sup>1)</sup> (0.35 ... 1.1) <sup>2)</sup>
	[bar]	1 ... 14 (1 ... 10) <sup>1)</sup> (3.5 ... 11) <sup>2)</sup>
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) <sup>2)</sup>
Temperature of medium	[°C]	-10 ... +60 (0 ... +50) <sup>2)</sup>
Storage temperature	[°C]	-10 ... +60
Corrosion resistance class CRC <sup>3)</sup>		2
UL certification <sup>4)</sup>		c UL us - Recognized (OL)

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

Electrical data			
Pressure regulation range	[PE10]	[PI10]	
Operating voltage range DC	[V]	21.6 ... 26.4	
Max. electrical power consumption	[W]	4.2	
Max. current consumption	[A]	0.16	
Nominal operating voltage DC	[V]	24 (Plug connector, M12x1, 5-pin, A-coded)	
Residual ripple		10%	
Analogue input signal range			
	[V]	0 ... 10	-
	[mA]	-	4 ... 20

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-proof 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) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK explosion regulations

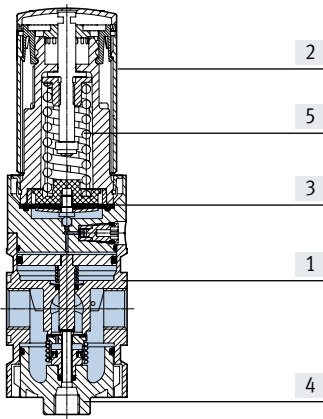
- 1) More information: [www.festo.com/catalogue/ms6-lrpb](http://www.festo.com/catalogue/ms6-lrpb) → Support/Downloads.

## Datasheet

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

### Materials

Sectional view

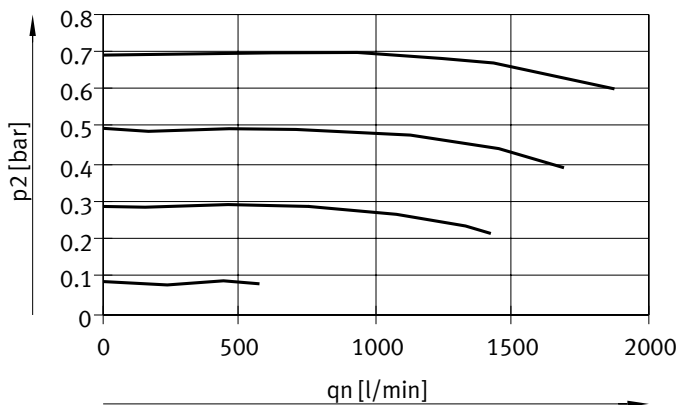


Precision pressure regulator (manifold assembly)

[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
	LABS (PWIS) conformity	VDMA24364-B1/B2-L

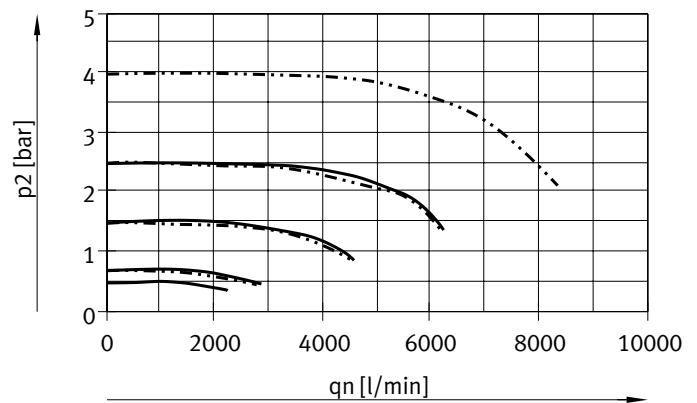
### Standard flow rate $q_n$ as a function of output pressure $p_2$ ( $p_1 = 10$ bar)

MS6-LRPB-1/2-D2



— [D2]: 0.05 ... 0.7 bar

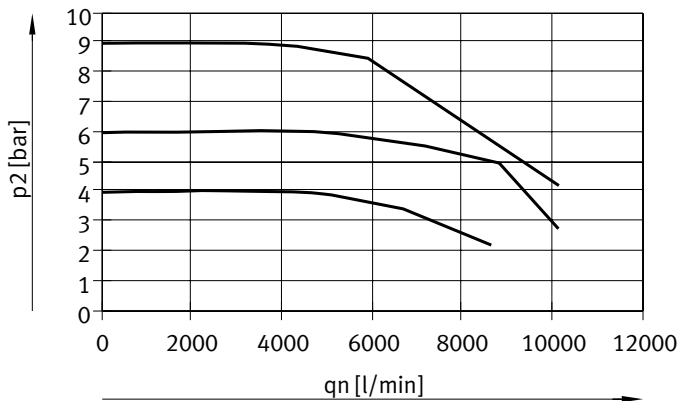
MS6-LRPB-1/2-D4/D5



— [D4]: 0.05 ... 2.5 bar

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

MS6-LRPB-1/2-D7/PO

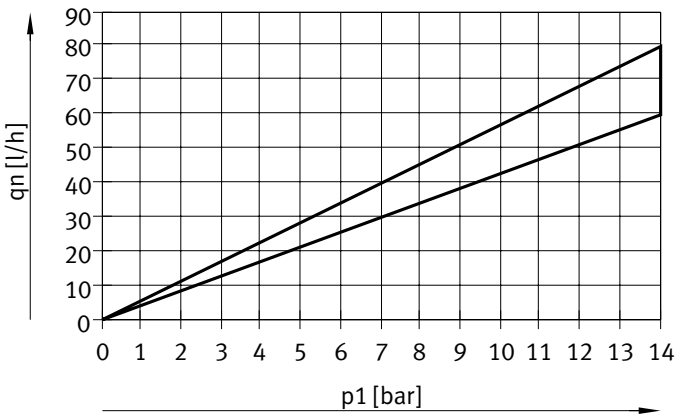


— [D7]/[PO]: 0.1 ... 12 bar

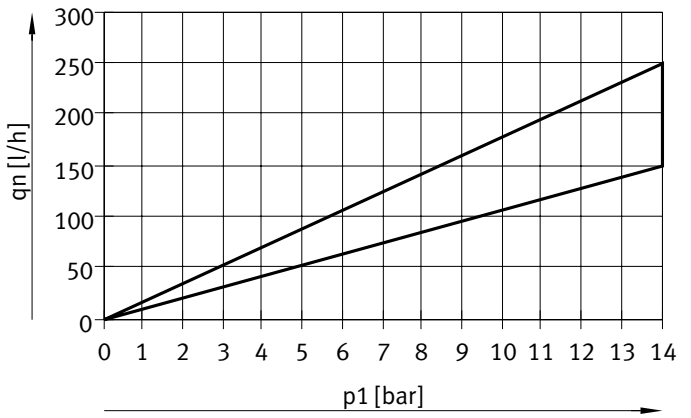
Datasheet

Internal air consumption  $q_n$  as a function of input pressure  $p_1$

MS6-LRPB...-D2/D4



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



Dimensions

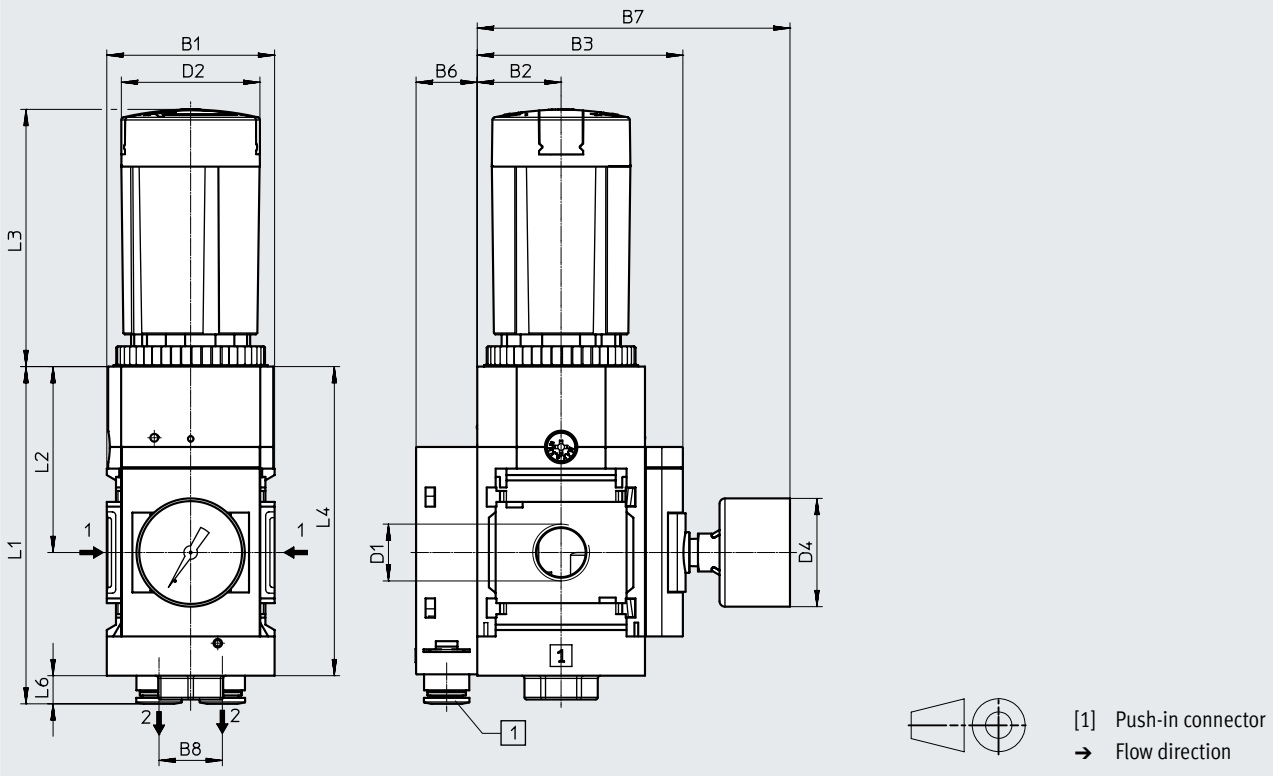
Download CAD data → [www.festo.com](http://www.festo.com)

[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

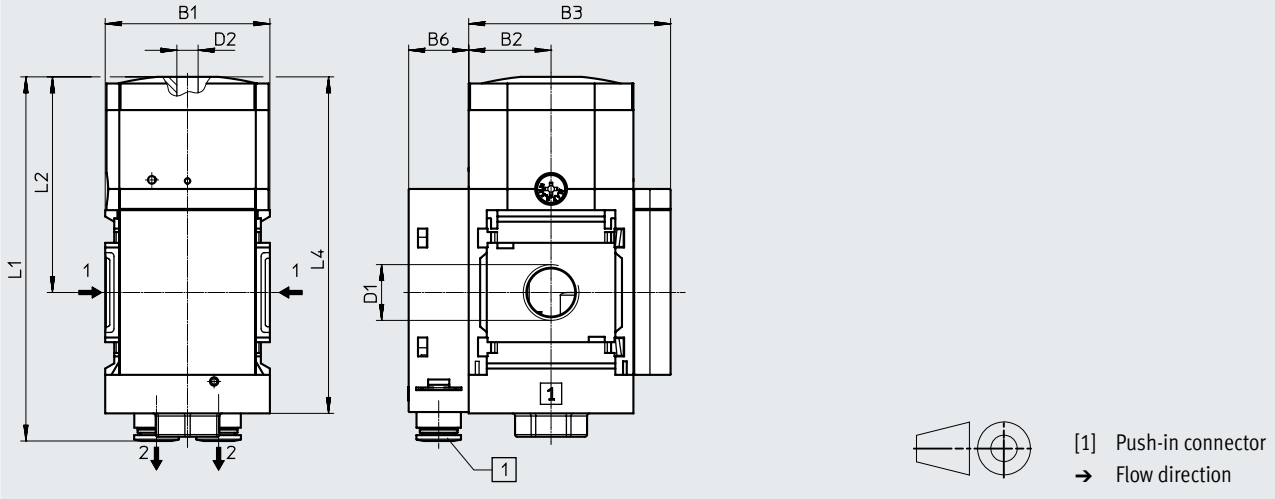
Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

[PO] Pressure regulation range, pneumatically actuated

[VS] Cover plate

[BD]/[BE] Angled outlet block



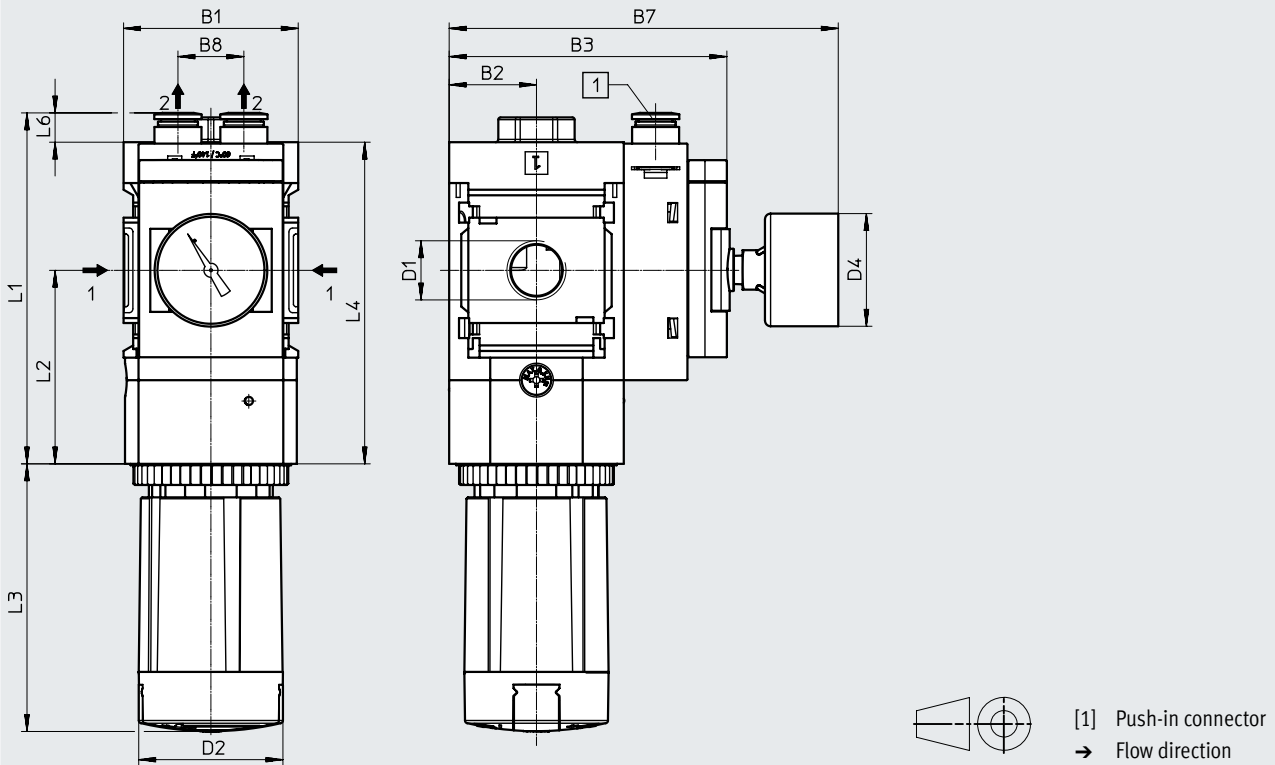
Type	B1	B2	B3	B6	D1	D2	L1	L2	L4
MS6-LRPB-1/2-PO-VS-BD/BE	62	31	76	23	G1/2	G1/8	137	81	127

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

Dimensions – Alternative mounting position

Download CAD data → [www.festo.com](http://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

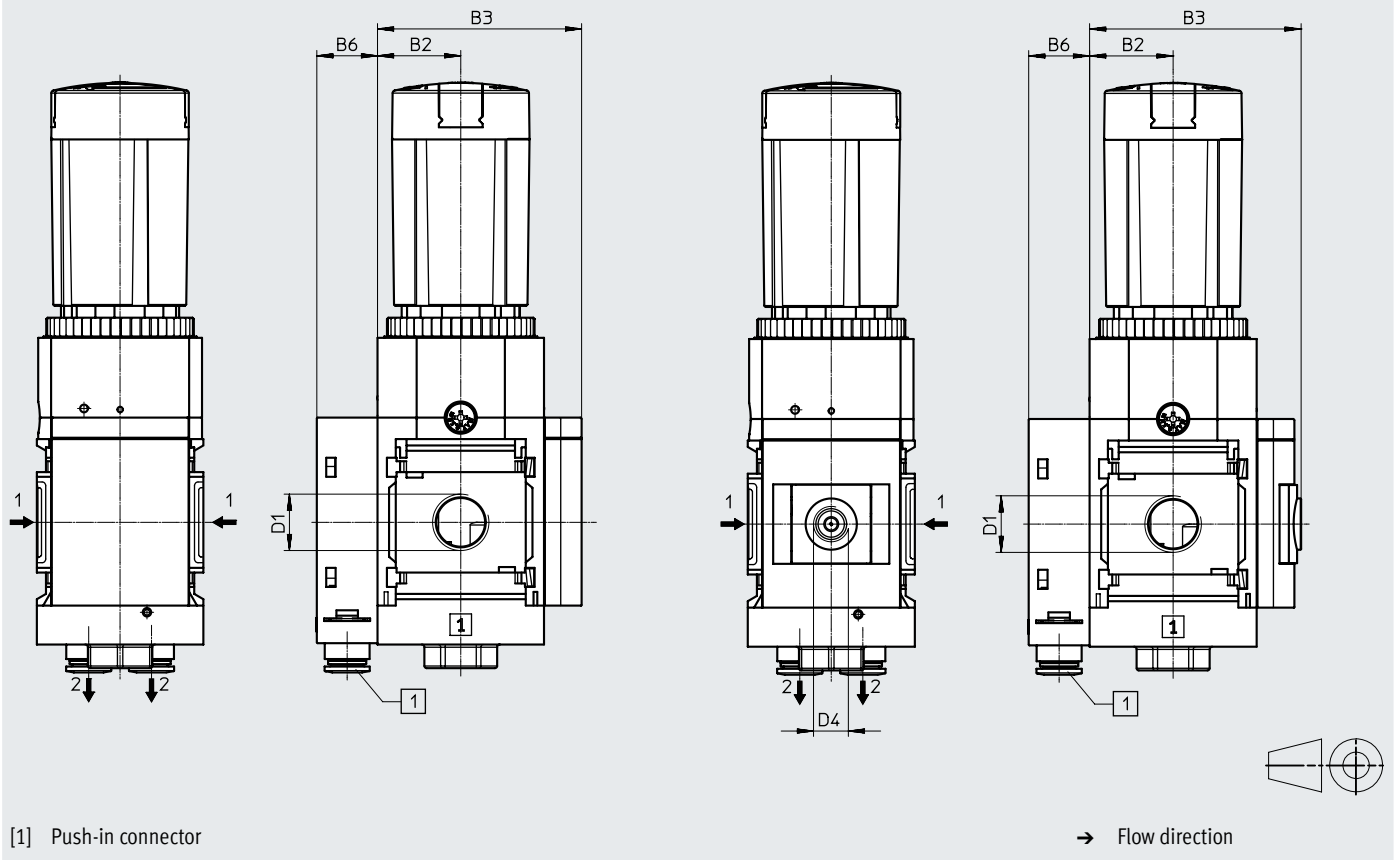
### Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://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	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.

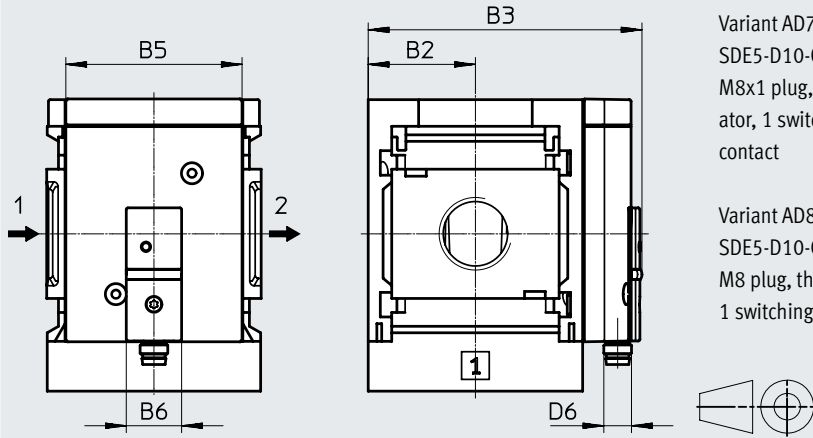
Datasheet

**Dimensions – Pressure gauge alternatives**

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

Download CAD data → [www.festo.com](http://www.festo.com)

Datasheets → Internet: sde5



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

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

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

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

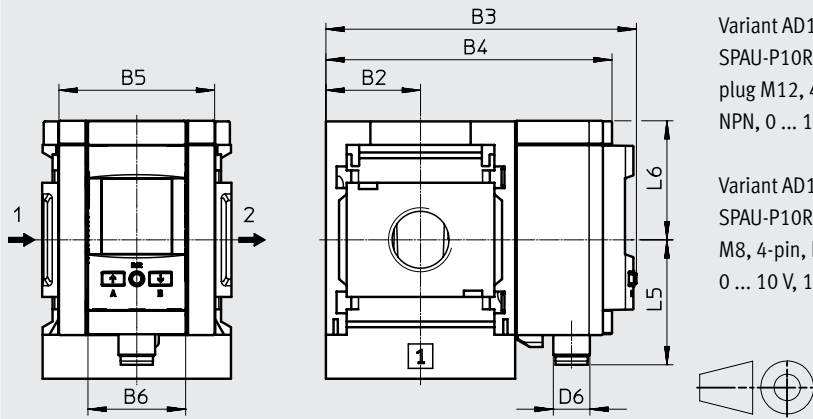
→ Flow direction

Type	B2	B3	B5	B6	D6
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

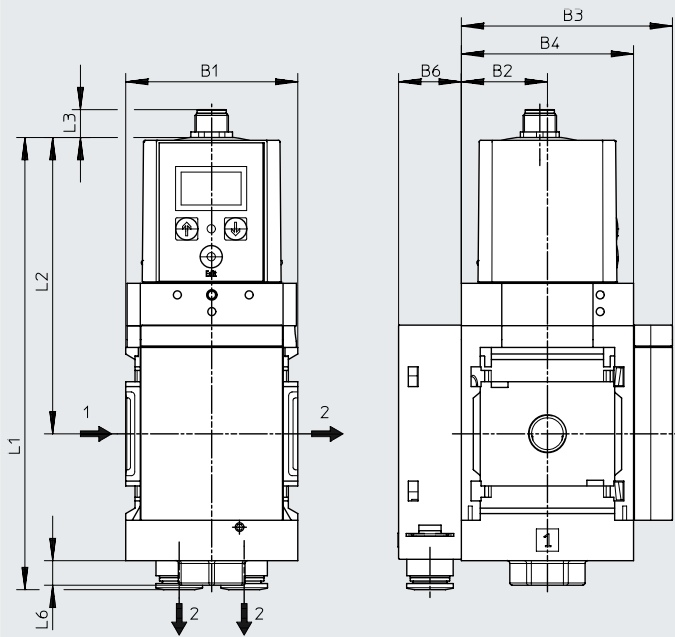
Datasheet

**Dimensions – Electrically actuated VPPE pilot control**

Download CAD data → [www.festo.com](http://www.festo.com)

[PE10/PI10] Proportional-pressure regulator with LED display  
(with pressure output)

Datasheets → Internet: vppe



Variant PE10:  
electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) 0 ... 10 V

Variant PI10:  
electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment)  
setpoint value 4 ... 20 mA

Plug connector, M12x1, 5-pin, A-coded

Type	B1	B2	B3	B4	B6	L1	L2	L3	L6
MS6-LRPB-...-PE10/PI10	62	31	76	62	23	162	106	10	9

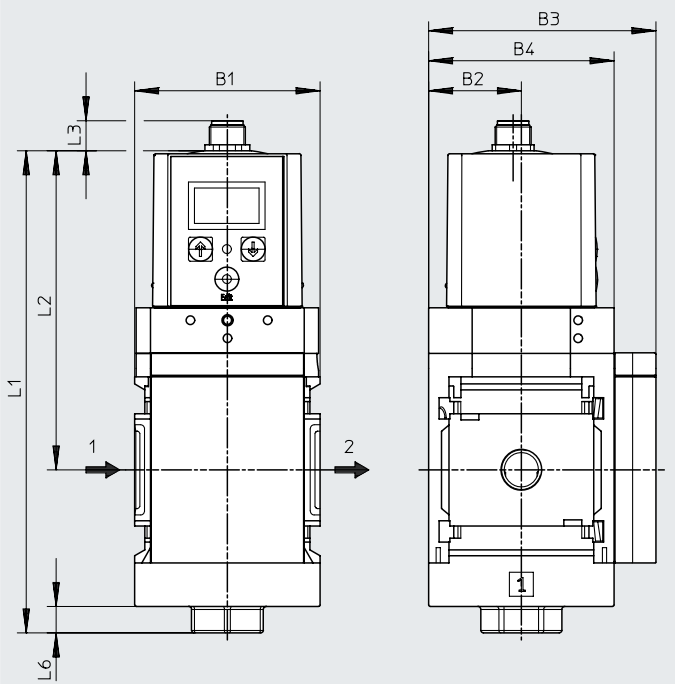
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

**Dimensions – Electrically actuated VPPE pilot control**

Download CAD data → [www.festo.com](http://www.festo.com)

[PE10/PI10] Proportional-pressure regulator with LED display  
(without pressure output)

Datasheets → Internet: vppe



Variant PE10:  
electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) 0 ... 10 V

Variant PI10:  
electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment)  
setpoint value 4 ... 20 mA

Type	B1	B2	B3	B4	L1	L2	L3	L6
MS6-LRPB-...-PE10/PI10	62	31	76	62	161	106	10	9

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

Datasheet

Dimensions – Rotary knob

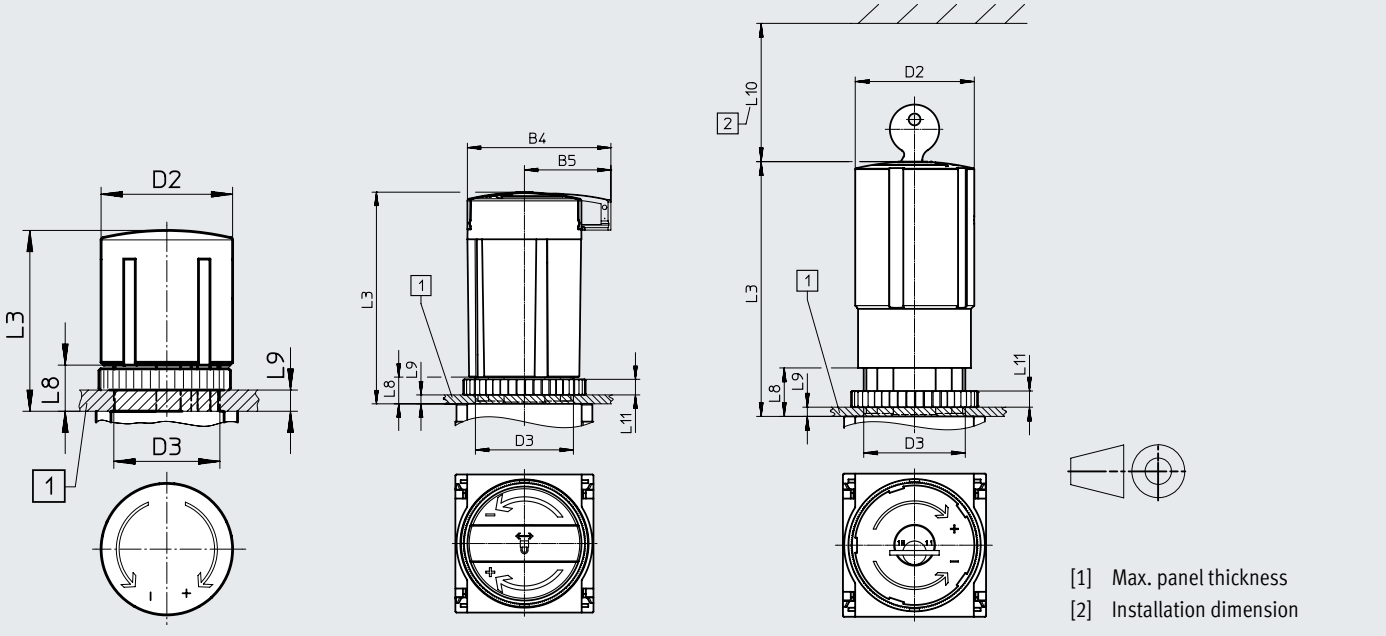
For control panel installation

Download CAD data → [www.festo.com](http://www.festo.com)

[ ] Rotary knob with latch

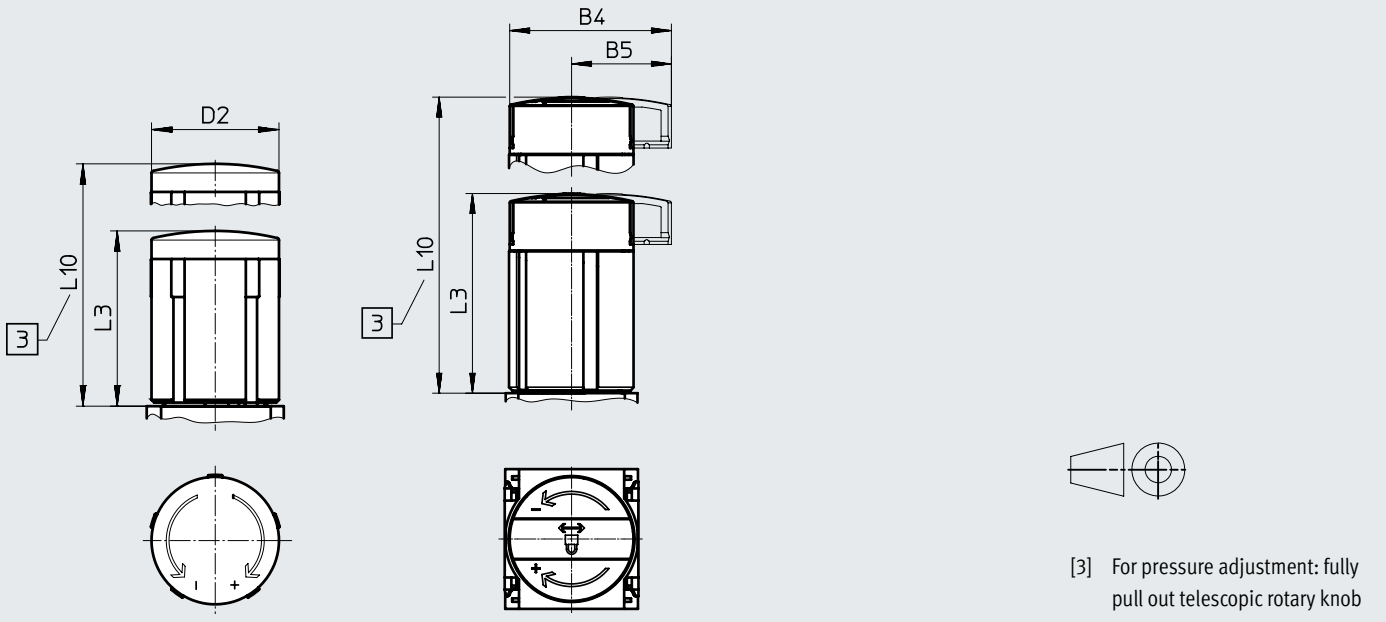
[AS] Rotary knob with latch, can be locked using accessories

[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
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	-	-	51.2	-	86	-	-	139
MS6-LRPB...-LD-AS	64.4	38.8			95.5			148.5

## Datasheet

<b>Ordering data</b>					
Pneumatic connection 1	Pressure regulation range	Analogue input signal range	Flow direction	Part no.	Type
<b>Manually actuated</b>					
G1/2	0.05 ... 0.7 bar	–	From left to right	<b>534865</b>	<b>MS6-LRPB-1/2-D2-A8-BD</b>
	0.05 ... 2.5 bar	–	From left to right	<b>534914</b>	<b>MS6-LRPB-1/2-D4-A8</b>
	0.1 ... 4 bar	–	From left to right	<b>534917</b>	<b>MS6-LRPB-1/2-D5-A8</b>
	0.1 ... 12 bar	–	From left to right	<b>534874</b>	<b>MS6-LRPB-1/2-D7-A8-BD</b>
<b>Electrically actuated</b>					
G1/2	0.01 ... 1 MPa	0 ... 10 V	From left to right	<b>8203863</b>	<b>MS6-LRPB-1/2-PE10-VS</b>
	0.01 ... 1 MPa	4 ... 20 mA	From left to right	<b>8203864</b>	<b>MS6-LRPB-1/2-PI10-VS</b>

## Ordering data – Modular product system

Ordering table		Conditions	Code	Enter code
Grid dimension [mm]	62			
Module no.	<b>535007</b>			
Series	Standard		<b>MS</b>	MS
Size	6		<b>6</b>	6
Function	Precision pressure regulator for manifold assembly		<b>-LRPB</b>	-LRPB
Pneumatic connection	Female thread G1/2	[1]	<b>-1/2</b>	
	Connecting plate G1/4		<b>-AGB</b>	
	Connecting plate G3/8		<b>-AGC</b>	
	Connecting plate G1/2		<b>-AGD</b>	
	Connecting plate G3/4		<b>-AGE</b>	
	Connecting plate G1		<b>-AGF</b>	
Pressure regulation range/actuation	0.05 ... 0.7 bar, manually actuated		<b>-D2</b>	
	0.05 ... 2.5 bar, manually actuated		<b>-D4</b>	
	0.1 ... 4 bar, manually actuated		<b>-D5</b>	
	0.1 ... 12 bar, manually actuated		<b>-D7</b>	
	0.1 ... 12 bar, pneumatically actuated (pressure range determined by pilot regulator)	[1] [2]	<b>-PO</b>	
	0.01 ... 1 MPa, electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) 0 ... 10 V	[3]	<b>-PE10</b>	
	0.01 ... 1 MPa, electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) setpoint value 4 ... 20 mA	[3]	<b>-PI10</b>	
Pressure gauge alternatives	Cover plate	[4]	<b>-VS</b>	
	Adapter for EN pressure gauge 1/8, without pressure gauge	[5]	<b>-A8</b>	
	Adapter for EN pressure gauge 1/8, with precision pressure gauge	[5]	<b>-A8M</b>	
	Adapter for EN pressure gauge 1/4, without pressure gauge	[5]	<b>-A4</b>	
	Pressure sensor with switching status indicator, plug M8, threshold value comparator, PNP, N/O contact	[1] [6] [7]	<b>-AD7</b>	
	Pressure sensor with switching status indicator, plug M8, threshold value comparator, PNP, N/C contact	[1] [6] [7]	<b>-AD8</b>	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/O contact	[1] [6] [7]	<b>-AD9</b>	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/C contact	[1] [6] [7]	<b>-AD10</b>	
	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[1] [5] [6]	<b>-AD11</b>	
	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link®, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[1] [5] [6]	<b>-AD12</b>	

- [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] PE10, PI10 Not with LD, WR, AS, E11, EX4, UL1
- [4] 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.
- [5] A8, A8M, A4, AD11/AD12 In combination with outlet direction Z only with alternative mounting position KD.
- [6] AD7 ... AD10, AD11/AD12 Measuring range max. 10 bar. Not with pressure regulation range/actuation D2, D4.
- [7] 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

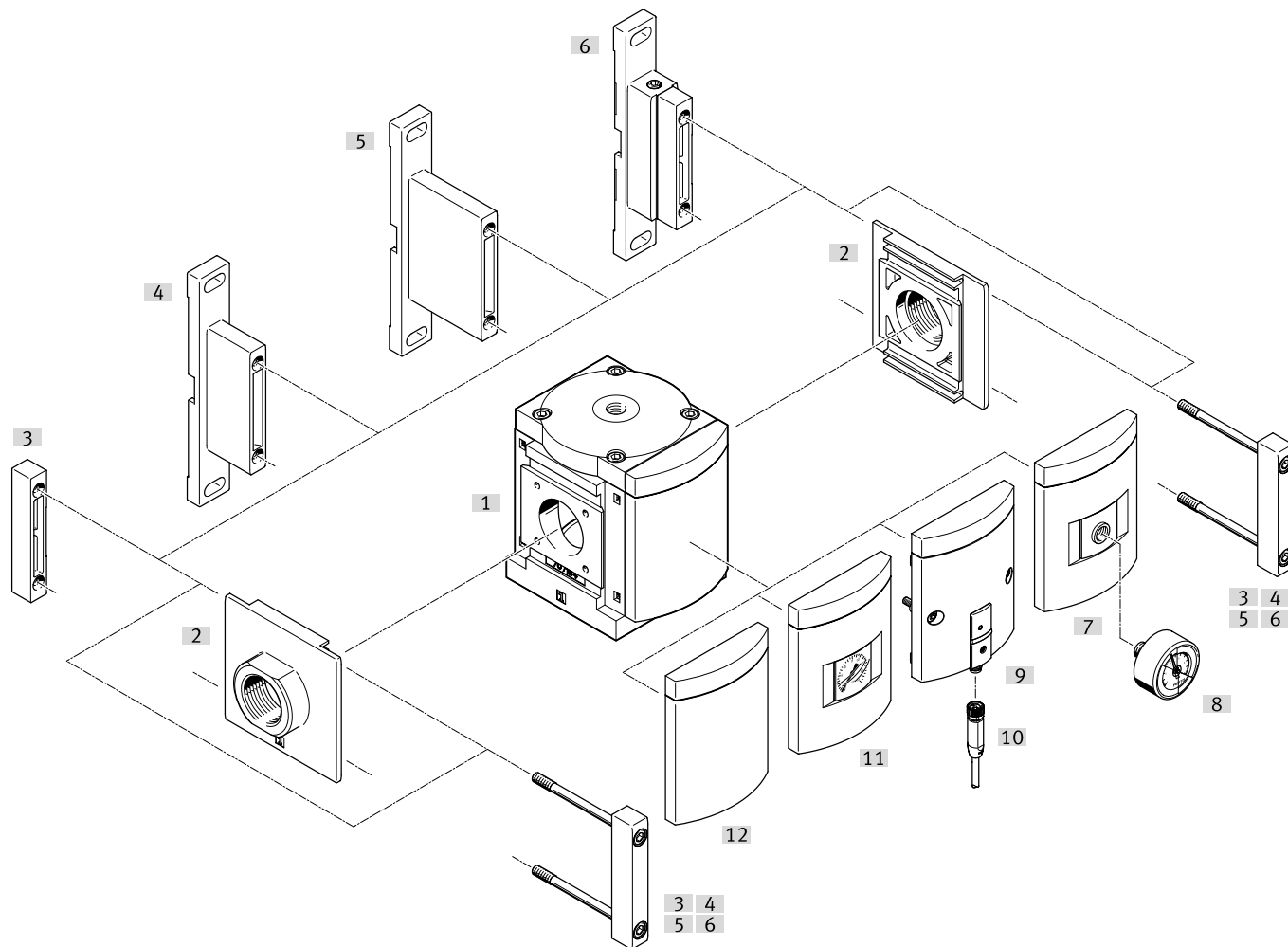
Ordering table		Grid dimension [mm]	62	Conditions	Code	Enter code
Rotary knob	Standard					
	Long rotary knob			[8]	<b>-LD</b>	
Alternative mounting position	None					
	Rotary knob underneath			[1] [9]	<b>-KD</b>	
Locking option	None					
	Lockable using accessories				<b>-AS</b>	
	With integrated lock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


- [8] LD Not with locking option E11.  
 [9] KD In combination with pressure gauge alternatives A8, A4, AD7 ... AD10 only with outlet direction Z.  
 [10] WR, WB, WPM Only with outlet direction Z.  
 Not with alternative mounting position KD.  
 [11] WR Only with outlet direction Z.  
 Not with long rotary knob LD.  
 [12] WP, WPM, WPB Only with connecting plate AGB, AGC, AGD or AGE.  
 [13] WP Not with alternative mounting position KD.  
 Either only with outlet direction Z or only with alternative pressure output BD, BE.  
 [14] 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

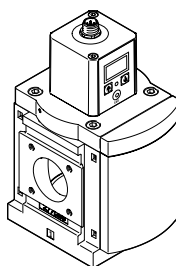
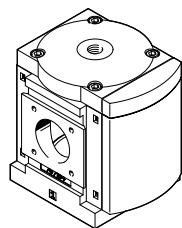
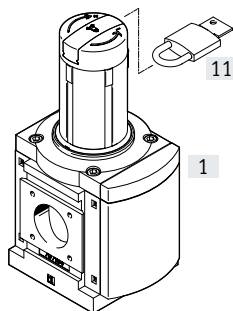


 - **Note**  
 Additional accessories:  
 • Module connectors for combination with size MS6, MS9 or MS12  
 → Internet: rmv, armv

Manually actuated

Pneumatically actuated

Electrically 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 certification	With EU certification		
[1]	Pressure regulator MS9-LR	■	■	■	■	82
[2]	Connecting plate SET MS9-AG...	–	■	■	■	ms9-ag
	Connecting plate SET MS9-AQ...	–	■	–	■	ms9-aq
[3]	Module connector MS9-MV	–	–	–	■	ms9-mv
[4]	Mounting bracket MS9-WP	■	■	■	■	ms9-wp
[5]	Mounting bracket MS9-WPB	■	■	■	■	ms9-wp
[6]	Mounting bracket MS9-WPM	■	■	–	■	ms9-wp
[7]	Adapter for EN pressure gauge 1/4 A4	■	■	■	■	94
[8]	Pressure gauge MA	■	■	■	■	106
[9]	Pressure sensor without display AD7 ... AD10	■	■	–	■	94
[10]	Connecting cable NEBA-M8...-LE3	■	■	–	■	106
[11]	MS pressure gauge AG	■	■	■	■	94
[12]	Cover plate VS	■	■	■	■	94
[13]	Padlock LRVS-D	■	■	■	■	106

## 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	Connecting plate G1 1/4
AGH	Connecting plate G1 1/2
N3/4	Female thread 3/4 NPT
N1	Female thread 1 NPT
AQR	Sub-base 1/2 NPT
AQS	Sub-base 3/4 NPT
AQT	Sub-base 1 NPT
AQU	Sub-base 1 1/4 NPT
AQV	Sub-base 1 1/2 NPT
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
PE	0.1 ... 10 bar electrically actuated (pilot control using proportional-pressure regulator with LED indicator, 7-segment), set-point 0 ... 10V
PI	0.1 ... 10 bar electrically actuated (pilot control using proportional-pressure regulator with LED indicator, 7-segment), set-point 4 ... 20mA
PO	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)

006	Regulator type
	Pilot actuated
DI	Directly actuated

007	Pressure gauge alternatives
A4	Adapter for EN pressure gauge 1/4, 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
AG	MS pressure gauge
RG	Integrated pressure gauge, red/green scale
VS	Cover plate

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

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
WPB	Mounting bracket for large wall gap
WPM	Mounting bracket for hooking in service unit components

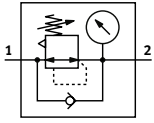
013	EU certification
	None
EX4	II 2GD





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

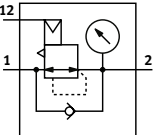
## Datasheet

Pressure regulation range/actuation, manually actuated

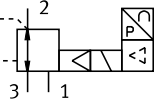


-  - Flow rate  
11000 ... 26000 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Operating pressure  
1 ... 20 bar
-  - [www.festo.com](http://www.festo.com)

Pressure regulation range/actuation, pneumatically actuated



Pressure regulation range/actuation, electrically actuated



The pressure regulator maintains a 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 with minimal pressure drop
- Piloted or directly actuated diaphragm regulator or piloted precision piston 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]/[NG]	-
Pilot air port 12			G1/4 (MS9-LR...-PO)
Design			Piloted diaphragm regulator
			Directly actuated diaphragm regulator
			Piloted precision piston 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			With accessories
			In-line installation
			Front panel mounting
Mounting position			Any <sup>1)</sup>
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 <sup>2)</sup>
	[PE10]	[MPa]	0.01 ... 1, electrically actuated (piloted using proportional pressure regulator), 0 ... 10 V
Max. pressure hysteresis	[...]	[bar]	0.4
	[PE/PI10]	[bar]	0.05

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	With pressure sensor for indicating the output pressure via the switching status indicator and electrical output
	Via pressure gauge for displaying the output pressure
	With 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		Piloted precision piston regulator	
Pneumatic connection		G3/4, NPT3/4	G1, NPT1	G3/4, NPT3/4	G1, NPT1	G3/4, NPT3/4	G1, NPT1
Pressure regulation range	[D5]	19000 <sup>3)</sup>	26000 <sup>3)</sup>	14000 <sup>3)</sup>	20000 <sup>3)</sup>	–	–
	[D6]	17000	20000	14000	11000	–	–
	[D7]	17000	20000	–	–	–	–
	[D8]	17000	20000	–	–	–	–
	[PO]	21000	25000	–	–	–	–
	[PE10]	–	–	–	–	–	–
	[PI10]	–	–	–	–	–	–

- 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 / actuation		[ ]	[EX4]	Electrically actuated
Operating pressure	[bar]	1 ... 20		6 ... 11
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 lubricated operation will always be required)	Lubricated operation not possible	
Ambient temperature	[°C]	–10 ... +60 (0 ... +50) <sup>1)</sup>		0 ... +60
Temperature of medium	[°C]	–10 ... +60 (0 ... +50) <sup>1)</sup>		+10 ... +50
Storage temperature	[°C]	–10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>		2 - Moderate corrosion stress		
UL certification <sup>3)</sup>		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](http://www.festo.com/x/topic/crc)
- 3) More information: [www.festo.com/catalogue/ms9-lr](http://www.festo.com/catalogue/ms9-lr) → Support/Downloads.

Electrical data			
Pressure regulation range		[PE10]	[PI10]
Operating voltage range DC	[V]	21.6 ... 26.4	
Max. electrical power consumption	[W]	4.2	
Max. current consumption	[A]	0.16	
Nominal operating voltage DC	[V]	24 (Plug connector, M12x1, 5-pin, A-coded)	
Residual ripple		10%	
Analogue input signal range			
	[V]	0 ... 10	–
	[mA]	–	4 ... 20

## Datasheet

<b>ATEX</b>	
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-proof 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) <sup>1)</sup>	To EU Explosion Protection Directive (ATEX)
UKCA marking (see declaration of conformity) <sup>1)</sup>	To UK explosion regulations

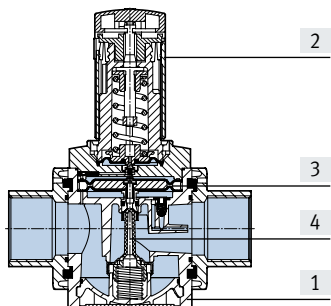
1) More information: [www.festo.com/catalogue/ms9-lr](http://www.festo.com/catalogue/ms9-lr) → Support/Downloads.

<b>Weight [g]</b>	
Pressure regulator	1400
Pressure regulator with rotary knob with integrated lock	1700

# Datasheet

## Materials

Sectional view

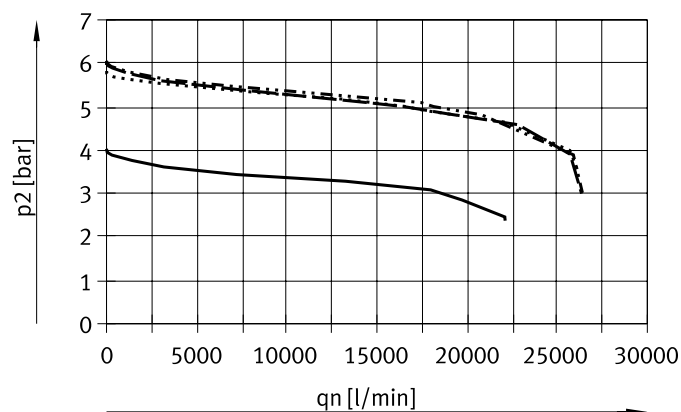


Pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragm	NBR
[4]	Valve tappet	Wrought aluminium alloy, NBR, POM
-	Covering	Reinforced PA
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
-	Seals	NBR
Note on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

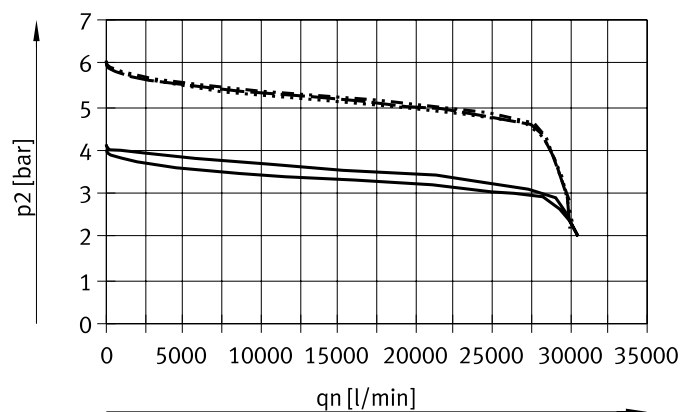
## Standard flow rate $q_n$ as a function of output pressure $p_2$ ( $p_1 = 10$ bar)

Piloted diaphragm regulator

Pneumatic connection G3/4, NPT3/4



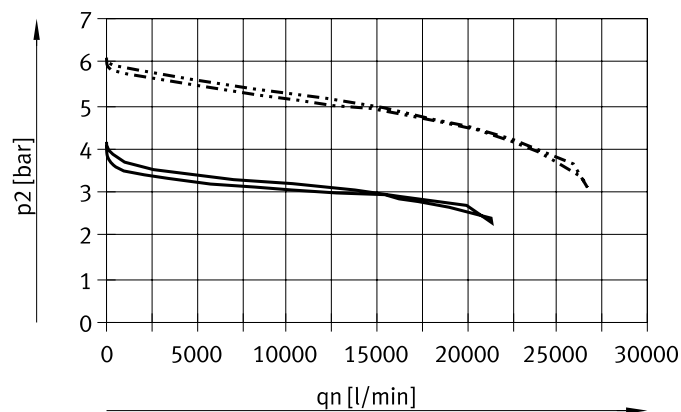
Pneumatic connection G1, NPT1



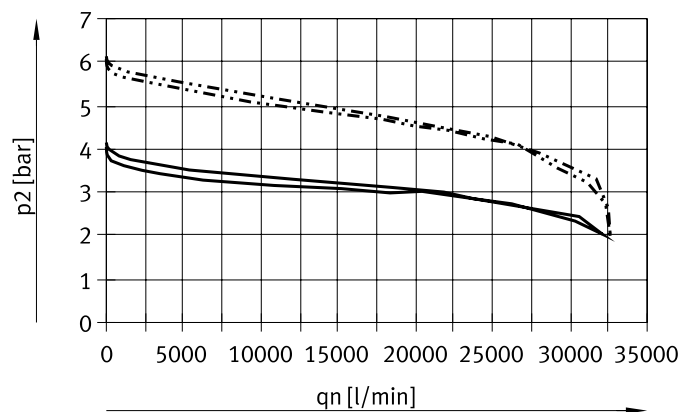
— [D5]: 0.5 ... 4 bar      - - - [D7]: 0.5 ... 12 bar  
 - · - · - [D6]: 0.5 ... 7 bar      · · · · · [D8]: 0.5 ... 16 bar

Directly actuated diaphragm regulator

Pneumatic connection G3/4, NPT3/4



Pneumatic connection G1, NPT1

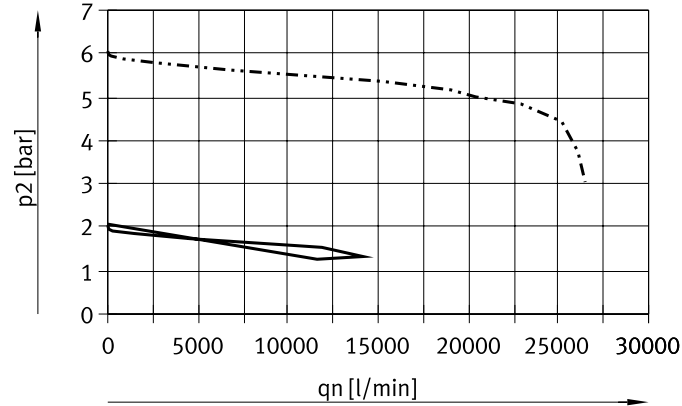


— [D5]: 0.5 ... 4 bar  
 - · - · - [D6]: 0.5 ... 7 bar

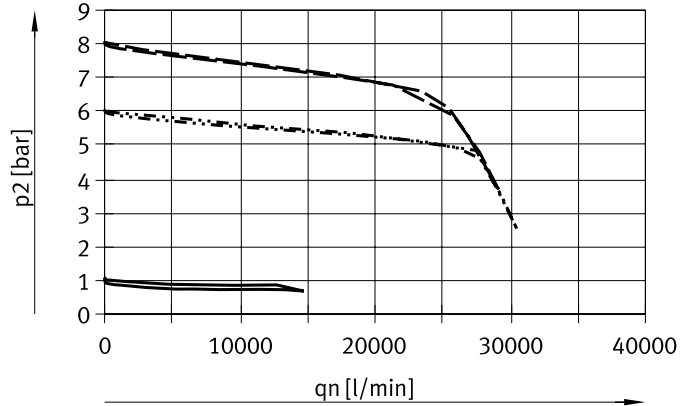
Datasheet

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

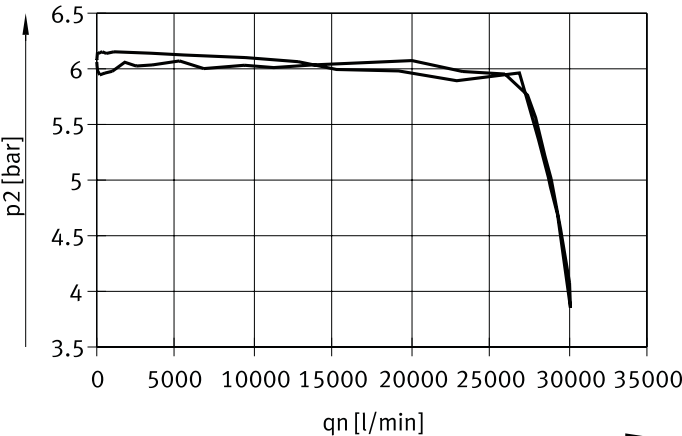
External pilot regulator  
 Pressure regulation range, pneumatically actuated  
 Pneumatic connection G3/4, NPT3/4



Pneumatic connection G1, NPT1



Electrically actuated VPPE pilot control  
 Pneumatic connection G1, NPT1



MS9-LR-1-PE/PI (6 bar)

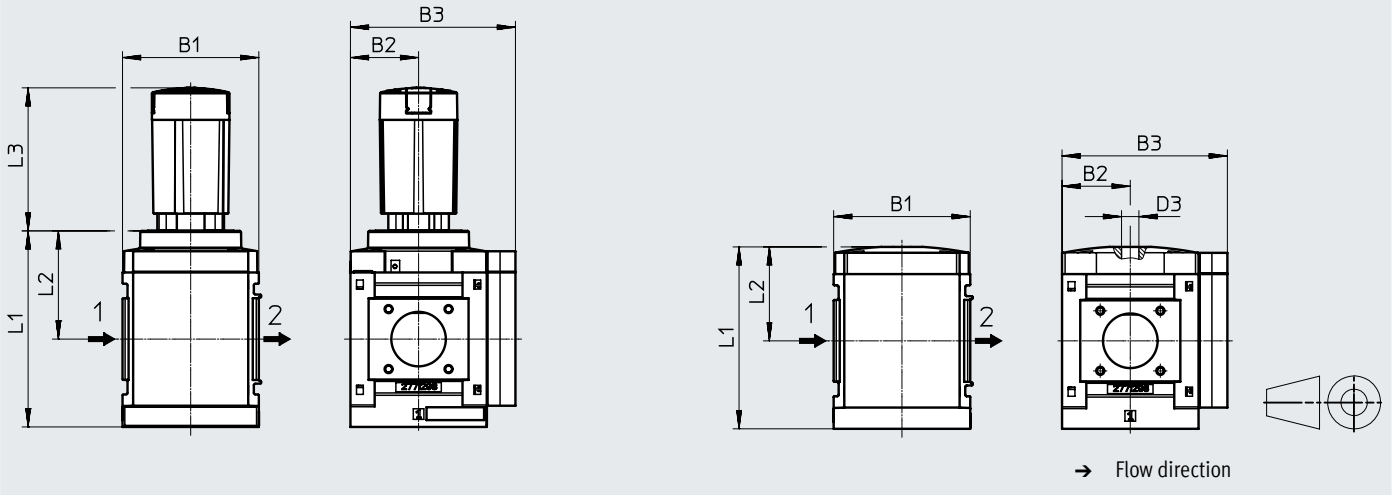
Datasheet

**Dimensions – Basic version**

Download CAD data → [www.festo.com](http://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



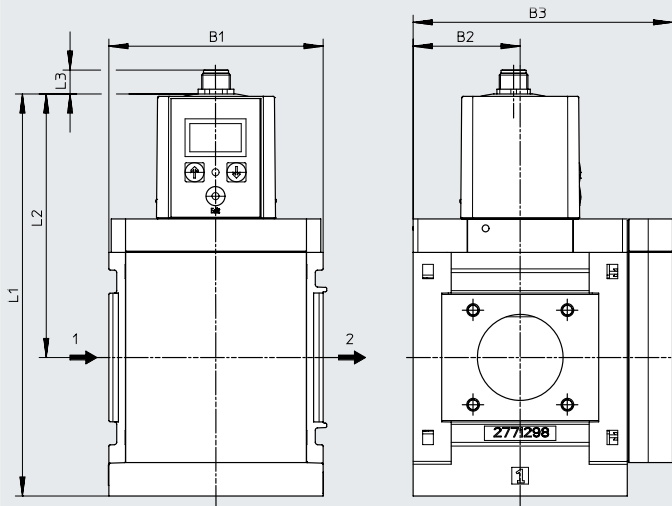
Type	B1	B2	B3	D3	L1		L2		L3
					Piloted	Directly actuated	Piloted	Directly actuated	
MS9-LR-G/NG-D5/D6/D7/D8	90	45	109	-	129	122	71.4	64	94.5
MS9-LR-G/NG-PO				G1/4	120	-	62	-	-

**Dimensions – Electrically actuated VPPE pilot control**

Download CAD data → [www.festo.com](http://www.festo.com)

[PE10/PI10] Proportional-pressure regulator with LED display  
 (without pressure output)

Datasheets → Internet: vppe



Variant PE10:  
 electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) 0 ... 10 V

Variant PI10:  
 electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment)  
 setpoint value 4 ... 20 mA

Plug connector, M12x1, 5-pin, A-coded

Type	B1	B2	B3	L1	L2	L3
MS9-LR-...-PE10/PI10	90	45	109	168	~110	10

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

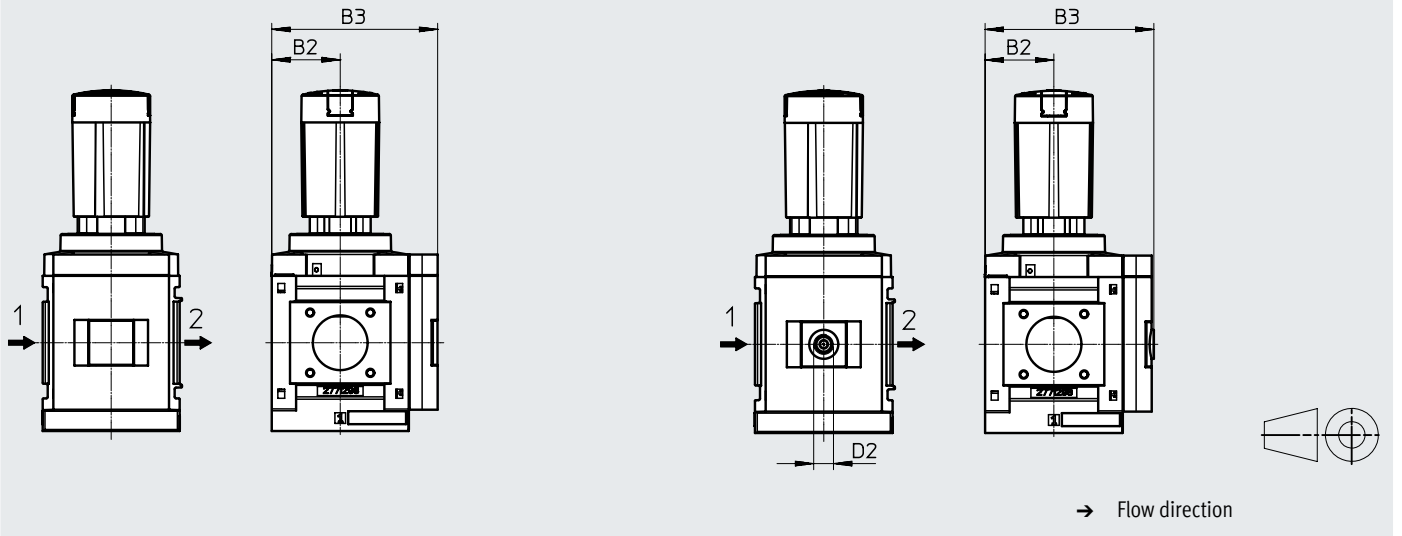
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://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

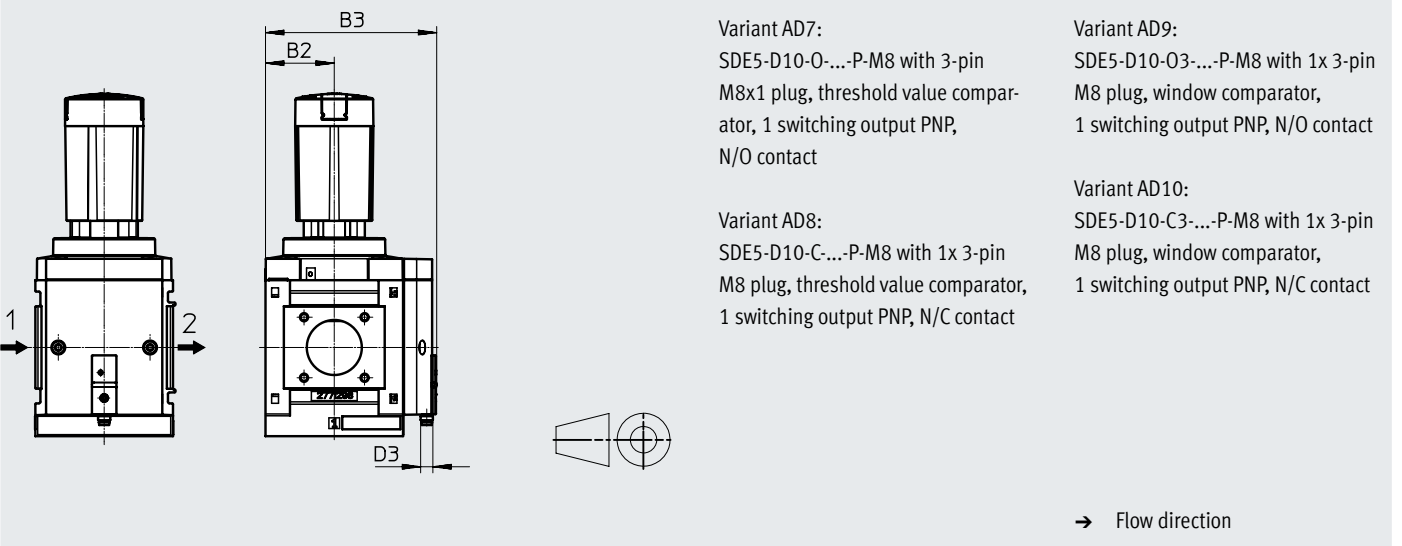
† Note: This product conforms to ISO 1179-1 and ISO 228-1.

Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://www.festo.com)

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

Datasheets → [Internet:sde5](http://Internet:sde5)



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

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

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

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

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

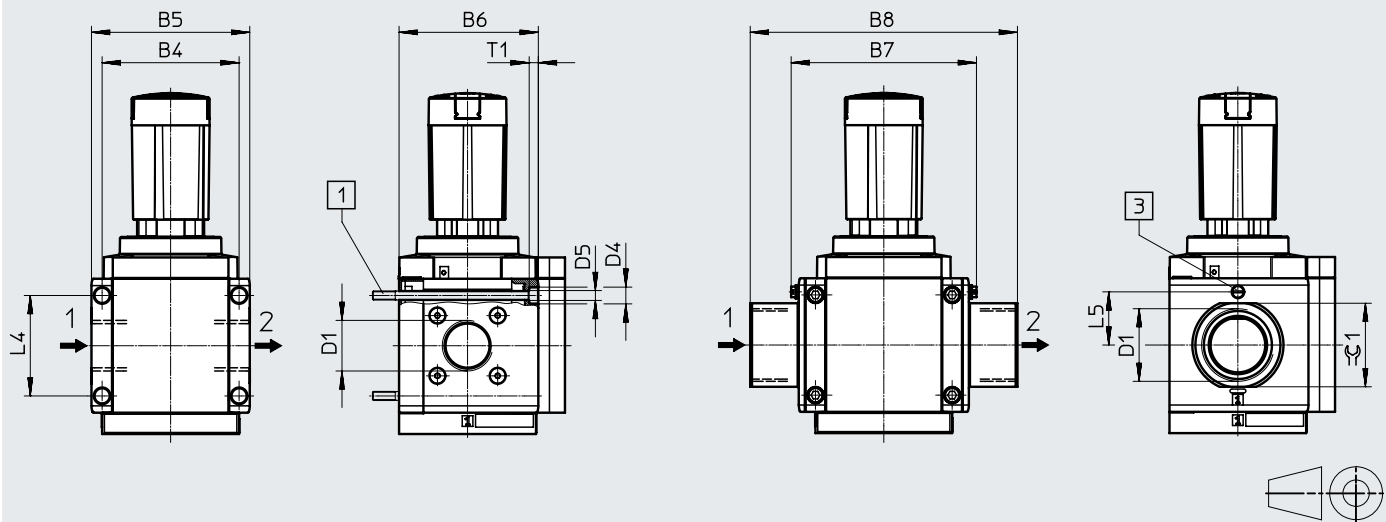
Datasheet

Dimensions – Connecting thread/connecting plate

Download CAD data → [www.festo.com](http://www.festo.com)

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

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



[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							G1/2						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.

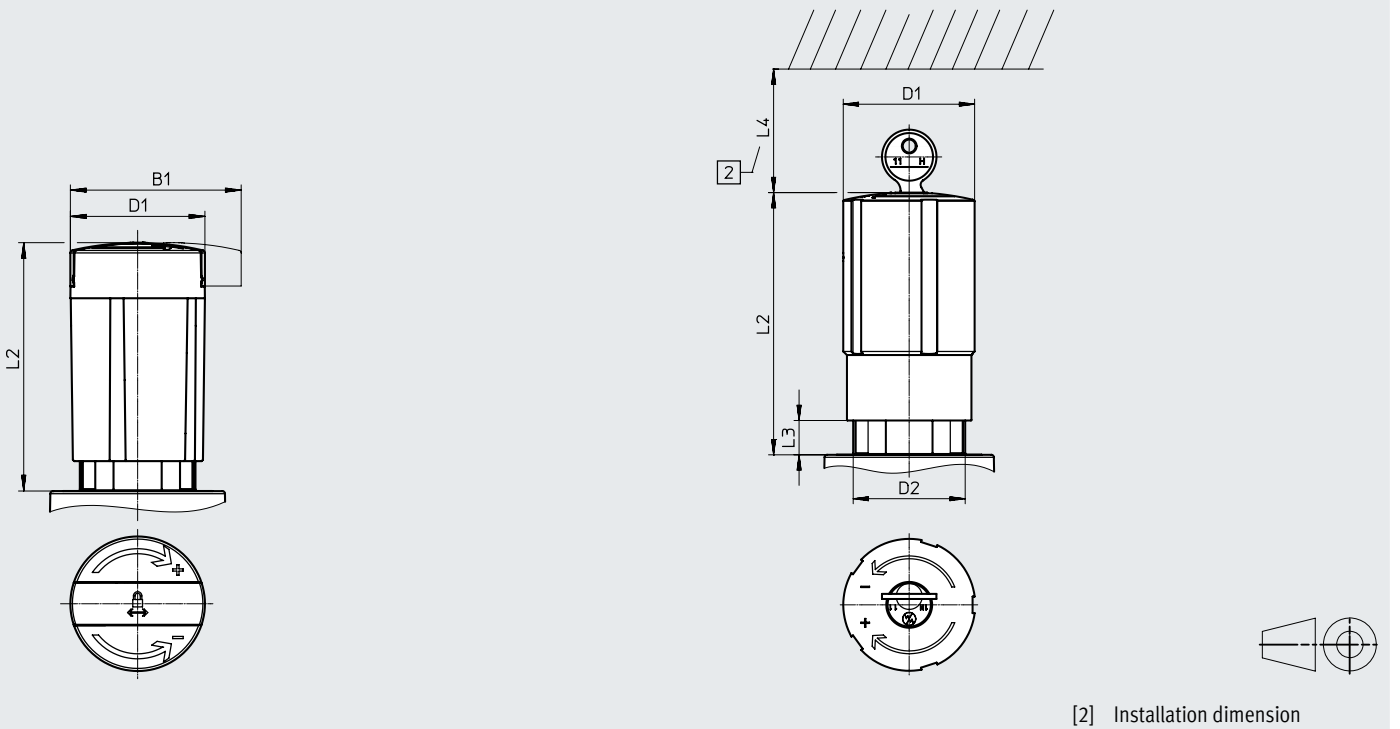
Datasheet

Dimensions – Rotary knob

Download CAD data → [www.festo.com](http://www.festo.com)

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

[E11] Rotary knob with integrated lock



[2] Installation dimension

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	Analogue input signal range	Flow direction	Part no.	Type
<b>Manually actuated</b>					
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
	0.5 ... 7 bar	–	From left to right	564137	MS9-LR-G-D6-DI-AG-BAR-AS
		–	From left to right	564142	MS9-LR-NG-D6-DI-AG-PSI-AS
<b>Electrically actuated</b>					
Piloted precision piston regulator	0.01 ... 1 MPa	0 ... 10 V	From left to right	8203866	MS9-LR-G-PE10-VS
	0.01 ... 1 MPa	4 ... 20 mA	From left to right	8203865	MS9-LR-G-PI10-VS

## Ordering data – Modular product system

Ordering table		Grid dimension [mm]	90	Conditions	Code	Enter code
Module no.	<b>562530</b>					
Series	Standard				<b>MS</b>	MS
Size	9				<b>9</b>	9
Function	Pressure regulator				<b>-LR</b>	-LR
Pneumatic connection	Female thread G3/4		[1]		<b>-3/4</b>	
	Female thread G1		[1]		<b>-1</b>	
	Connecting plate G1/2				<b>-AGD</b>	
	Connecting plate G3/4				<b>-AGE</b>	
	Connecting plate G1				<b>-AGF</b>	
	Connecting plate G1 1/4				<b>-AGG</b>	
	Connecting plate G1 1/2				<b>-AGH</b>	
	Female thread 3/4 NPT		[1]		<b>-N3/4</b>	
	Female thread 1 NPT		[1]		<b>-N1</b>	
	Connecting plate 1/2 NPT		[1]		<b>-AQR</b>	
	Connecting plate 3/4 NPT		[1]		<b>-AQS</b>	
	Connecting plate 1 NPT		[1]		<b>-AQT</b>	
	Connecting plate 1 1/4 NPT		[1]		<b>-AQU</b>	
	Connecting plate 1 1/2 NPT		[1]		<b>-AQV</b>	
	Module without connecting thread, without connecting plate		[1]		<b>-G</b>	
	Module without connecting thread, without connecting plate (inch)		[1]		<b>-NG</b>	
Pressure regulation range/actuation	0.5 ... 4 bar, manually actuated				<b>-D5</b>	
	0.5 ... 7 bar, manually actuated				<b>-D6</b>	
	0.5 ... 12 bar, manually actuated				<b>-D7</b>	
	0.5 ... 16 bar, manually actuated		[1]		<b>-D8</b>	
	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)		[2]		<b>-PO</b>	
	0.01 ... 1 MPa, electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) 0 ... 10 V		[3]		<b>-PE10</b>	
	0.01 ... 1 MPa, electrically actuated (pilot control using proportional-pressure regulator with LED display, 7-segment) setpoint value 4 ... 20 mA		[3]		<b>-PI10</b>	
Regulator type	Piloted					
	Directly actuated		[4]		<b>-DI</b>	
Pressure gauge/pressure gauge alternatives	MS pressure gauge				<b>-AG</b>	
	Cover plate				<b>-VS</b>	
	Adapter for EN pressure gauge 1/4, without pressure gauge				<b>-A4</b>	
	Integrated pressure gauge, red/green scale		[5]		<b>-RG</b>	
	Pressure sensor with switching status indicator, plug M8, threshold value comparator, PNP, N/O contact		[1] [6]		<b>-AD7</b>	
	Pressure sensor with switching status indicator, plug M8, threshold value comparator, PNP, N/C contact		[1] [6]		<b>-AD8</b>	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/O contact		[1] [6]		<b>-AD9</b>	
Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/C contact		[1] [6]		<b>-AD10</b>		

[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] PE10, PI10 Not with DI, OS, E11, AS, EX4, UL1

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

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

[6] 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	[7]				<b>-PSI</b>	
	MPa	[7]				<b>-MPA</b>	
	bar	[7]				<b>-BAR</b>	
Secondary exhausting	With secondary exhausting						
	Without secondary exhausting	[8]				<b>-OS</b>	
Alternative mounting position	None						
	Rotary knob underneath (connection underneath with PO)					<b>-KD</b>	
Locking option	Without (locking option AS is predefined)						
	Lockable using accessories					<b>-AS</b>	
	With integrated lock	[1]				<b>-E11</b>	
Type of mounting	Without mounting bracket						
	Mounting bracket standard design	[9]				<b>-WP</b>	
	Mounting bracket for hooking in service unit components	[1] [9]				<b>-WPM</b>	
	Mounting bracket for large wall gap	[9]				<b>-WPB</b>	
EU certification	None						
	II 2GD to EU Explosion Protection Directive (ATEX)					<b>-EX4</b>	
UL certification	None						
	cULus, ordinary location for Canada and USA					<b>-UL1</b>	
Flow direction	Flow direction from left to right						
	Flow direction from right to left					<b>-Z</b>	

[7] **PSI, MPA, BAR**

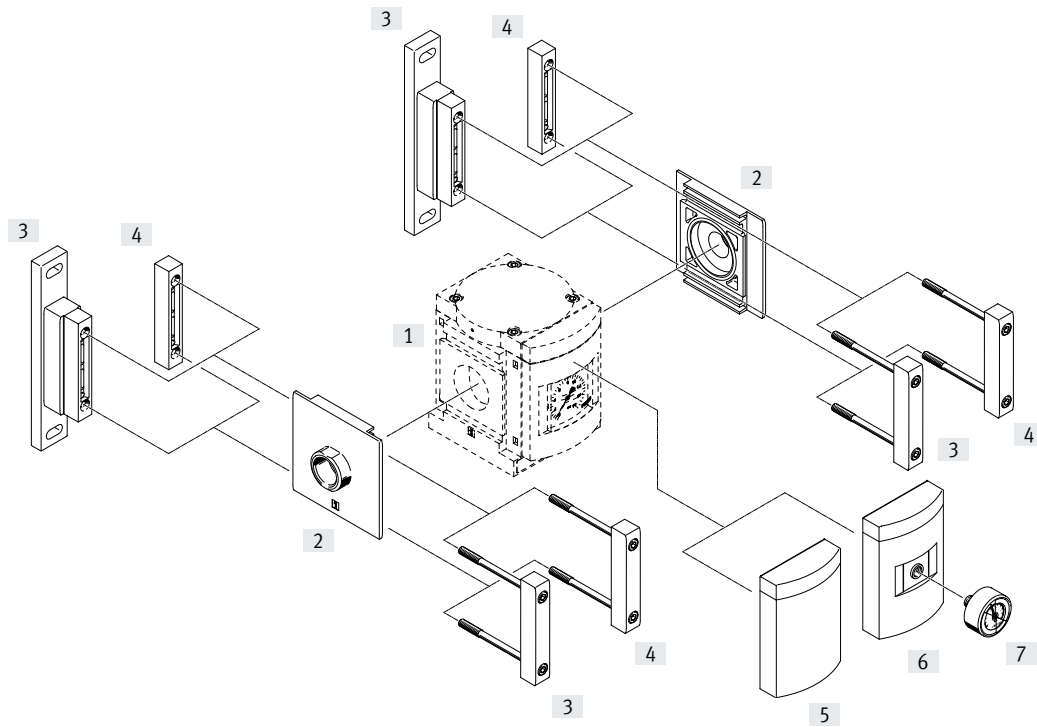
Not with pressure gauge alternatives VS, A4, AD7, AD8, AD9, AD10

[8] **OS** Only with regulator type D1[9] **WP, WPM, WPB**

Not with pneumatic connection G, NG

## Peripherals overview

### Pressure regulator MS12-LR

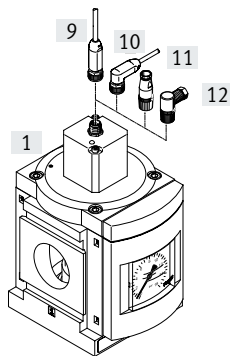
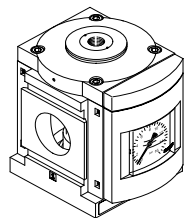
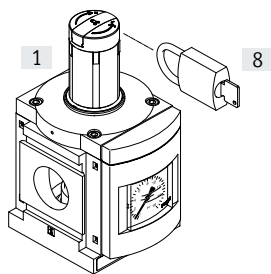


**Note**  
 Additional accessories:  
 • Module connectors for combination with size MS9 → Internet: armv

Manually actuated

Pneumatically actuated

Electrically actuated



## Peripherals overview

Mounting attachments and accessories		→ Page/Internet
[1]	Pressure regulator MS12-LR	96
[2]	Connecting plate SET MS12-AG...	ms12-ag
[3]	Mounting bracket MS12-WP	ms12-wp
[4]	Module connector MS12-MV	ms12-mv
[5]	Cover plate VS	105
[6]	Adapter for EN pressure gauge 1/4 A4	105
[7]	Pressure gauge MA	106
[8]	Padlock LRVS-D	106
[9]	Connecting cable NEBA-M12G...-LE4	106
[10]	Connecting cable NEBA-M12W...-LE4	106
[11]	Sensor socket NECB-M12G4-C2	106
[12]	Angled plug socket NECB-M12W4-C2	106

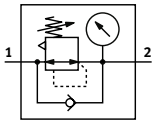
## Type codes

001	Series
<b>MS</b>	MS series
002	Size
<b>12</b>	Grid dimension 124 mm
003	Function
<b>LR</b>	Pressure regulator
004	Pneumatic connection
<b>AGF</b>	Sub-base G1
<b>AGG</b>	Connecting plate G1 1/4
<b>AGH</b>	Connecting plate G1 1/2
<b>AGI</b>	Sub-base G2
<b>G</b>	Module without connecting thread, without sub-base
005	Pressure range/actuation
<b>D6</b>	0.3 ... 7 bar, manually actuated
<b>D7</b>	0.5 ... 12 bar, manually actuated
<b>D8</b>	0.5 ... 16 bar, manually actuated
<b>PE6</b>	0.15 ... 6 bar, solenoid actuated (pilot control by proportional-pressure regulator)
<b>PO</b>	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)

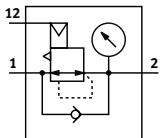
006	Pressure gauge alternatives
	None
<b>A4</b>	Adapter for EN pressure gauge 1/4, without pressure gauge
<b>VS</b>	Cover plate
007	Alternative pressure gauge scale
	MS pressure gauge
<b>PSI</b>	psi
<b>MPA</b>	MPa
008	Rotary knob alternative
	None
<b>LD</b>	Long rotary knob
009	Type of mounting
	Without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

## Datasheet

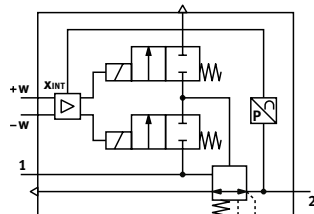
Pressure regulation range/actuation, manually actuated







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](http://www.festo.com)



The pressure regulator maintains a 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, pneumatically via pilot pressure  $p_{12}$  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  $p_2$  is exhausted via port 3 (secondary exhausting).

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- High flow rate 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		With 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 <sup>1)</sup>	Manually actuated <sup>1)</sup>	Manually actuated <sup>1)</sup>	Pneumatically actuated <sup>1)</sup>	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] <sup>1)</sup>	[PE6] <sup>2)</sup>
<b>Standard nominal flow rate qnN<sup>3)</sup> [l/min]</b>		
q <sub>nN</sub> 1 → 2	G1	13000
	G1 1/4	13500
	G1 1/2	16000
	G2	22000
<b>Secondary exhaust flow rate [l/min]</b>		
q <sub>n</sub> 2 → 3	≤ 600	≤ 600

1) Measured at p<sub>1</sub> = 10 bar and p<sub>2</sub> = 6 bar, Δp = 0.5 bar

2) Measured at p<sub>1</sub> = 7 bar and p<sub>2</sub> = 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 <sup>1)</sup>		2
CE marking (see declaration of conformity) <sup>2)</sup>	-	To EU EMC Directive To EU RoHS Directive
UKCA marking (see declaration of conformity) <sup>2)</sup>	-	To UK EMC regulations To UK RoHS regulations
KC marking	-	KC EMC

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

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

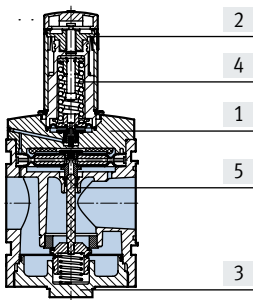
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

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

Datasheet

Materials

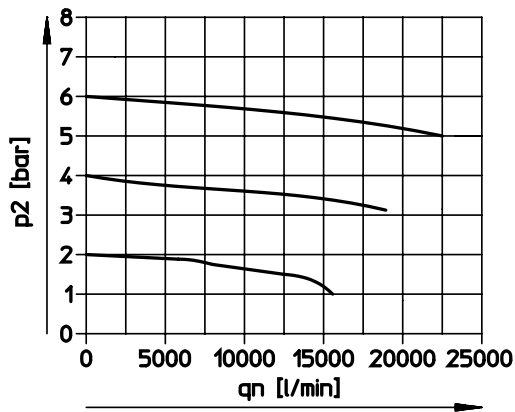
Sectional view



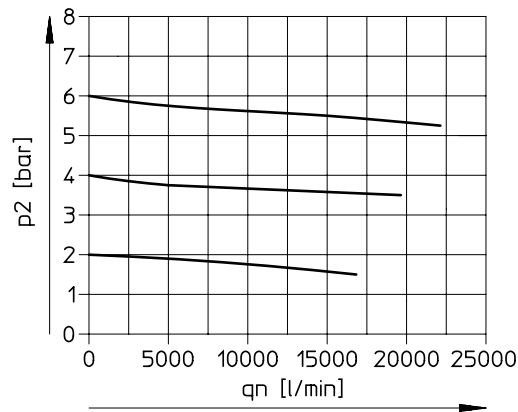
Pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	Reinforced PA, POM
	Rotary knob with integrated lock	Wrought aluminium alloy
[3]	Bottom cover	Wrought aluminium alloy
[4]	Spring	Spring steel
[5]	Valve tappet	Wrought aluminium alloy, NBR, high-alloy stainless steel
-	Seals, diaphragm	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)

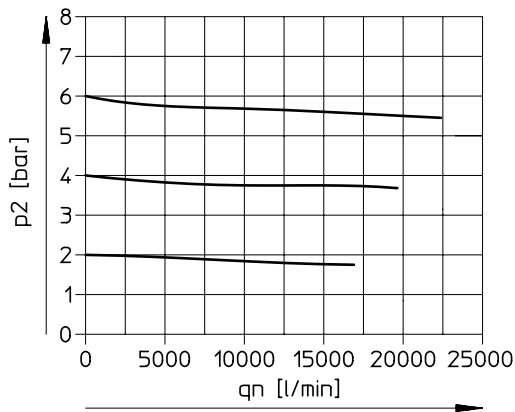
Pneumatic connection G1 with connecting plate  
MS12-AGF



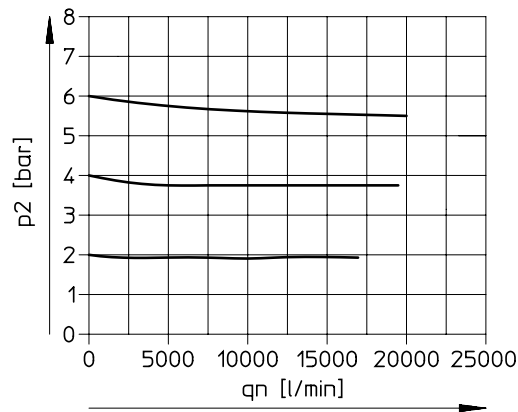
Pneumatic connection G1 1/4 with connecting plate  
MS12-AGG



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



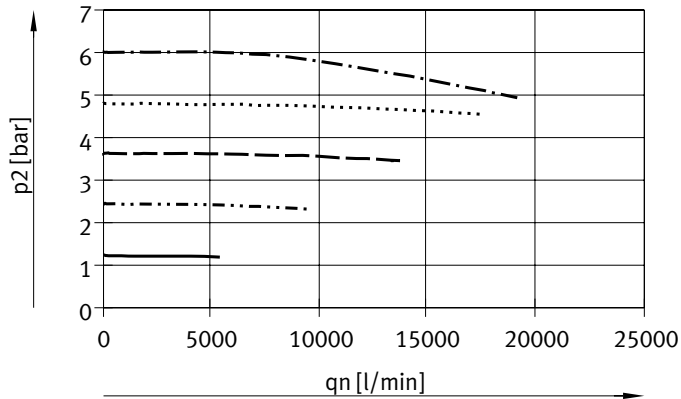
Pneumatic connection G2 with connecting plate  
MS12-AGI



## Datasheet

### Standard flow rate $q_n$ as a function of output pressure $p_2$ ( $p_1 = 7$ bar) (MS12-LR...-PE6 only)

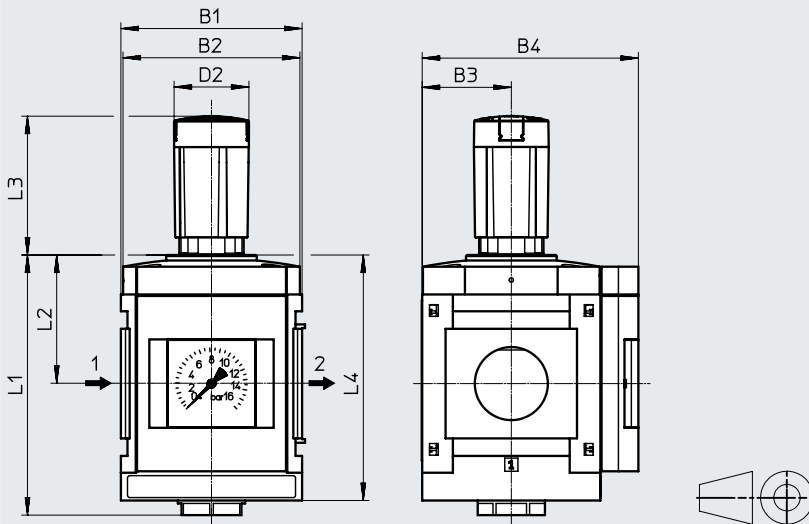
Pneumatic connection G1 1/2 with connecting plate MS12-AGH



### Dimensions – Basic version

Download CAD data → [www.festo.com](http://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

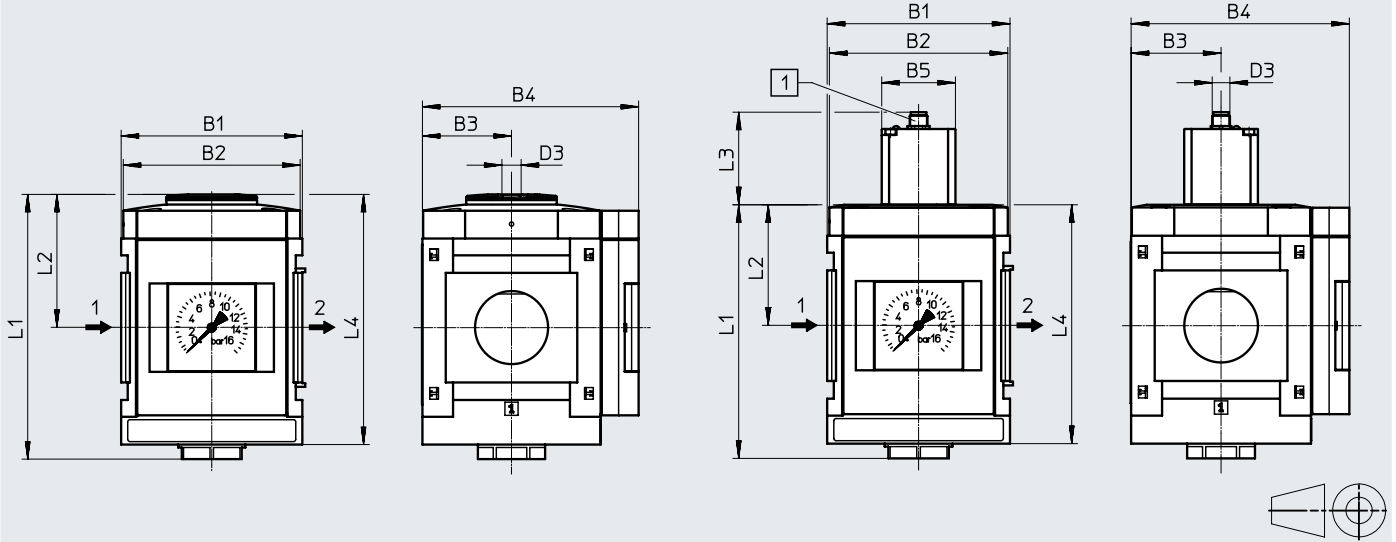
Datasheet

Dimensions – Pressure regulation range

Download CAD data → [www.festo.com](http://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



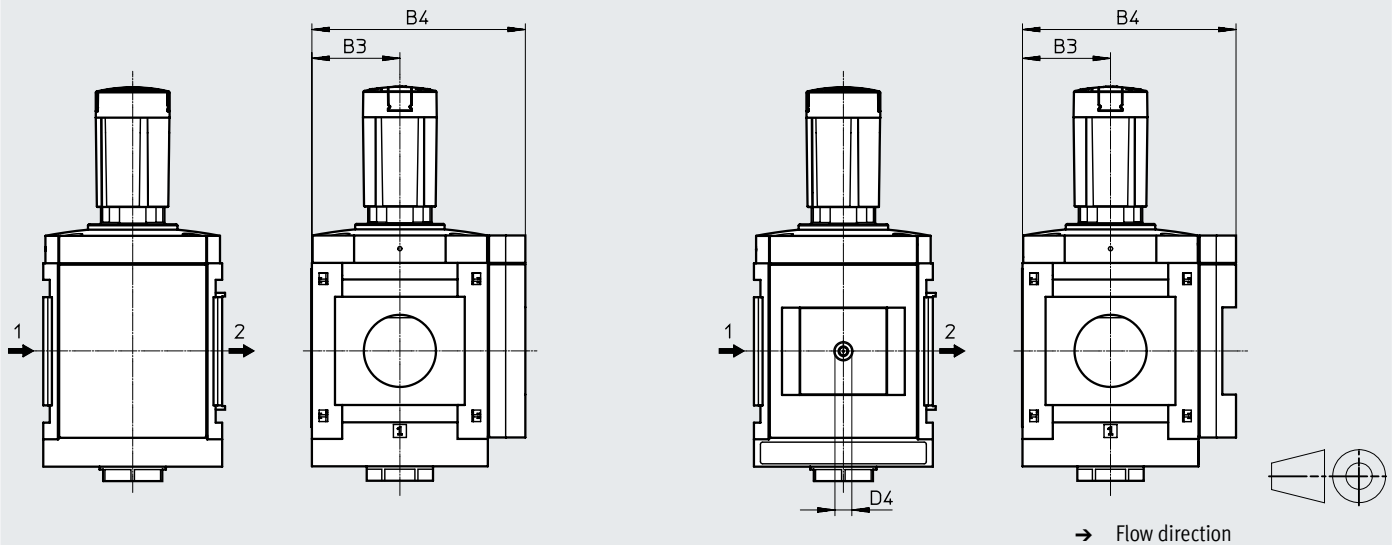
- [1] Suitable for
    - Connecting cable NEBA-M12G...-LE4/NEBA-M12W...-LE4
    - Sensor socket NECB-M12G4-C2
    - Angled plug socket NECB-M12W4-C2
- Flow direction

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](http://www.festo.com)

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



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.

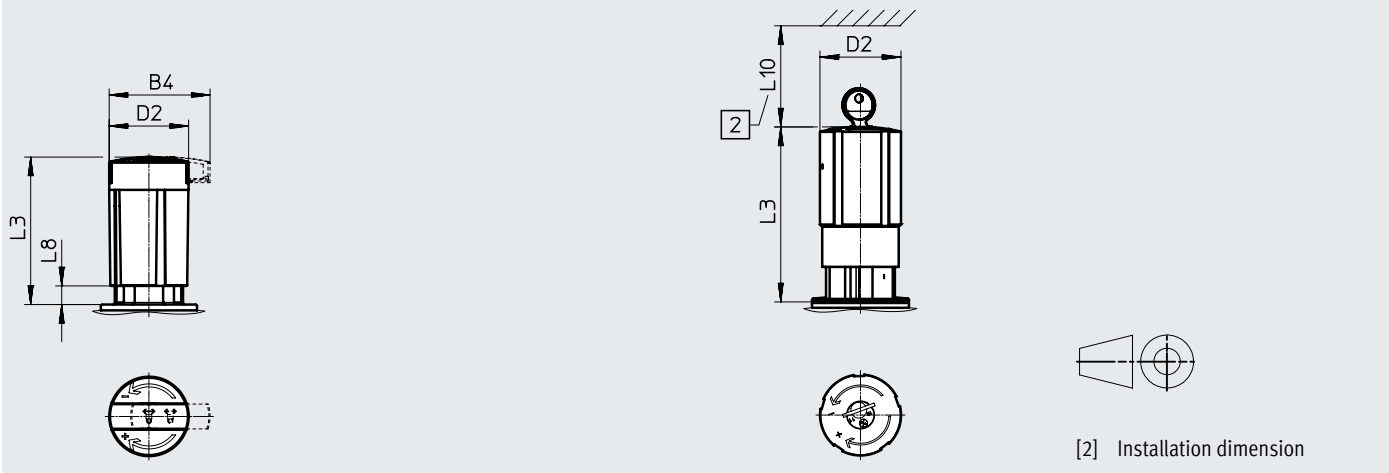
# Datasheet

## Dimensions – Rotary knob

Download CAD data → [www.festo.com](http://www.festo.com)

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

[E11] Rotary knob with integrated lock



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
<b>MS12-LR...</b>				
Piloted diaphragm regulator	0.15 ... 6 bar	From left to right	<b>564888</b>	<b>MS12-LR-G-PE6</b>
	0.5 ... 12 bar	From left to right	<b>537148</b>	<b>MS12-LR-G-D7-LD-AS</b>
Diaphragm regulator	0.5 ... 16 bar	From left to right	<b>541680</b>	<b>MS12-LR-G-PO</b>


## Ordering data – Modular product system

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

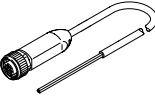
- [1] PO, PE6 Not with rotary knob alternative LD.  
Not with locking option AS.
- [2] PO, PE6, LD Not with locking option E11.
- [3] PSI, MPA Not with pressure gauge alternatives VS, A4.
- [4] Must be selected if pressure regulation range/actuation PO, PE6 is selected.  
Not with pressure regulation 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

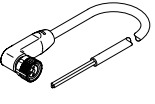
### Ordering data – Pressure gauge MA

	Nominal size	Pneumatic connection	Display range		Part no.	Type
			[bar]	[psi]		
	<b>Pressure gauge MA, EN 837-1</b>					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
	<b>Pressure gauge MA, EN 837-1, with red/green range</b>					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
	<b>Precision pressure gauge MAP, EN 837-1</b>					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 cables NEBA, straight

	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length [m]	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Open end	4	2.5	8078239	NEBA-M12G5-U-2.5-N-LE4
				5	8078240	NEBA-M12G5-U-5-N-LE4
	M8x1, A-coded, to EN 61076-2-104		3	8078223	NEBA-M8G3-U-2.5-N-LE3	
			5	8078224	NEBA-M8G3-U-5-N-LE3	
			4	8078227	NEBA-M8G4-U-2.5-N-LE4	
			2.5	8078227	NEBA-M8G4-U-2.5-N-LE4	


### Ordering data – Connecting cables NEBA, angled

	Electrical connection 1, connector system	Electrical connection 2, connector system	Electrical connection 2, number of connections/cores	Cable length [m]	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	Open end	4	2.5	8078248	NEBA-M12W5-U-2.5-N-LE4
				5	8078249	NEBA-M12W5-U-5-N-LE4
	M8x1, A-coded, to EN 61076-2-104		3	8078230	NEBA-M8W3-U-2.5-N-LE3	
			5	8078231	NEBA-M8W3-U-5-N-LE3	
			4	8078233	NEBA-M8W4-U-2.5-N-LE4	
			2.5	8078233	NEBA-M8W4-U-2.5-N-LE4	

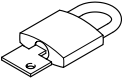
### Ordering data – Sensor socket NECB

	Electrical connection	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	8162290	NECB-M12G4-C2

### Ordering data – Angled plug socket NECB

	Electrical connection	Part no.	Type
	M12x1, A-coded to EN 61076-2-101	8162292	NECB-M12W4-C2

### Ordering data – Padlock LRVS-D

	Weight [g]	Part no.	Type
	120	193786	LRVS-D