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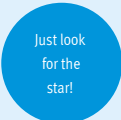
FESTO

★ Festo Core Range
Solves the majority of your automation tasks

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

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

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

Key features

MS series service unit components

Solutions for every application

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

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

Freely combinable function modules

Pressure regulators, on/off and soft-start valves with safety function, filters, pressure and flow sensors, dryers, sensors and lubricators can be assembled into a suitable solution for every task. With the modular structure the components can be combined as required. The simple connection system saves time because replacing individual modules does not require disassembling the entire combination.

Many of the components are also UL and ATEX certified.

CAD models and configurator

Convenient tools for planning and selecting application-specific individual components and combinations. The product configurator lets you configure customised solutions quickly and 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 quality class:

➔ **www.festo.com/engineering/service unit**

Integrated sensors
Pressure and flow sensors

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

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

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

Energy savings
Service unit combinations MSE6

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

Intelligent mix of sizes

- Optimum flow rate with size reduction of 18%
- 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 qnN[1]	[l/min]	1800	6500	20000	22000

1)   Using pressure regulator MS-LR as an example

Key features

Note
Information

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

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

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

Design of a service unit combination

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

The configurator for the service unit combination MSB is a reliable and convenient way of arranging individual service unit components and it ensures compliance with the applicable rules. As a result, you get a completely assembled combination with UL or ATEX certification, if necessary. When arranging a combination of individually configured and ordered service unit components, the points on the right must be complied with under all circumstances.

• Regulators MS-LFR/LR/LRP/LRE 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

Total product range for MS series service unit components

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

Key features

Total product range for MS series service unit components

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Filter regulators MS-LFR							Datasheets ➜ Internet: ms-lfr	
	Filter and pressure regulator in a single device, 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	–
Filters MS-LF							Datasheets ➜ Internet: ms-lf	
	Grade of filtration 5 or 40 µm	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Fine and micro filters MS-LFM							Datasheets ➜ Internet: ms-lfm	
	Grade of filtration 0.01 or 1 µm	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Activated carbon filters MS-LFX							Datasheets ➜ Internet: ms-lfx	
	For removing liquid and gaseous oil particles	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Water separators MS-LWS							Datasheets ➜ Internet: ms-lws	
	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

Total product range for MS series service unit components

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Pressure regulators MS-LR							Datasheets ➔ Internet: ms-lr	
	For setting the required operating pressure, 4 pressure regulation ranges	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Pressure regulators MS-LRB							Datasheets ➔ Internet: ms-lrb	
	For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.	4	–	–	1/4	–	1/8, 1/4, 3/8	–
		6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–
Precision pressure regulators MS-LRP							Datasheets ➔ Internet: ms-lrplrp	
	For precise setting of the required operating pressure, 4 pressure regulation ranges, pressure hysteresis 0.02 bar	6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
Precision pressure regulators MS-LRPB							Datasheets ➔ Internet: ms-lrpb	
	For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.	6	–	–	1/2	–	1/4, 3/8, 1/2, 3/4	–
Electrical pressure regulators MS-LRE							Datasheets ➔ Internet: ms-lre	
	Electrically adjustable pressure regulator, 4 pressure regulation ranges	6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
Lubricators MS-LOE							Datasheets ➔ Internet: ms-loe	
	Add a precisely adjustable amount of oil to the compressed air. The amount of oil mist is proportional to the compressed air flow rate.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–

Key features

Total product range for MS series service unit components

Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connecting plate with thread	
				M	G	NPT	G	NPT
Individual devices								
On/off valves MS-EM								Datasheets ➔ Internet: ms-em
	Manually actuated on/off valve for pressurising and exhausting pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
On/off valves MS-EE								Datasheets ➔ Internet: ms-ee
	Electrically actuated on/off valve for pressurising and exhausting pneumatic installations.	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	–
Soft-start valves MS-DL								Datasheets ➔ Internet: ms-dl
	Pneumatically actuated soft-start valve for slow pressurisation and exhaust of pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Soft-start valves MS-DE								Datasheets ➔ Internet: ms-de
	Electrically actuated soft-start valve for slow pressurisation and exhaust of pneumatic installations.	4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Soft-start/quick exhaust valves MS-SV								Datasheets ➔ Internet: ms-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

Total product range for MS series service unit components

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

Peripherals overview
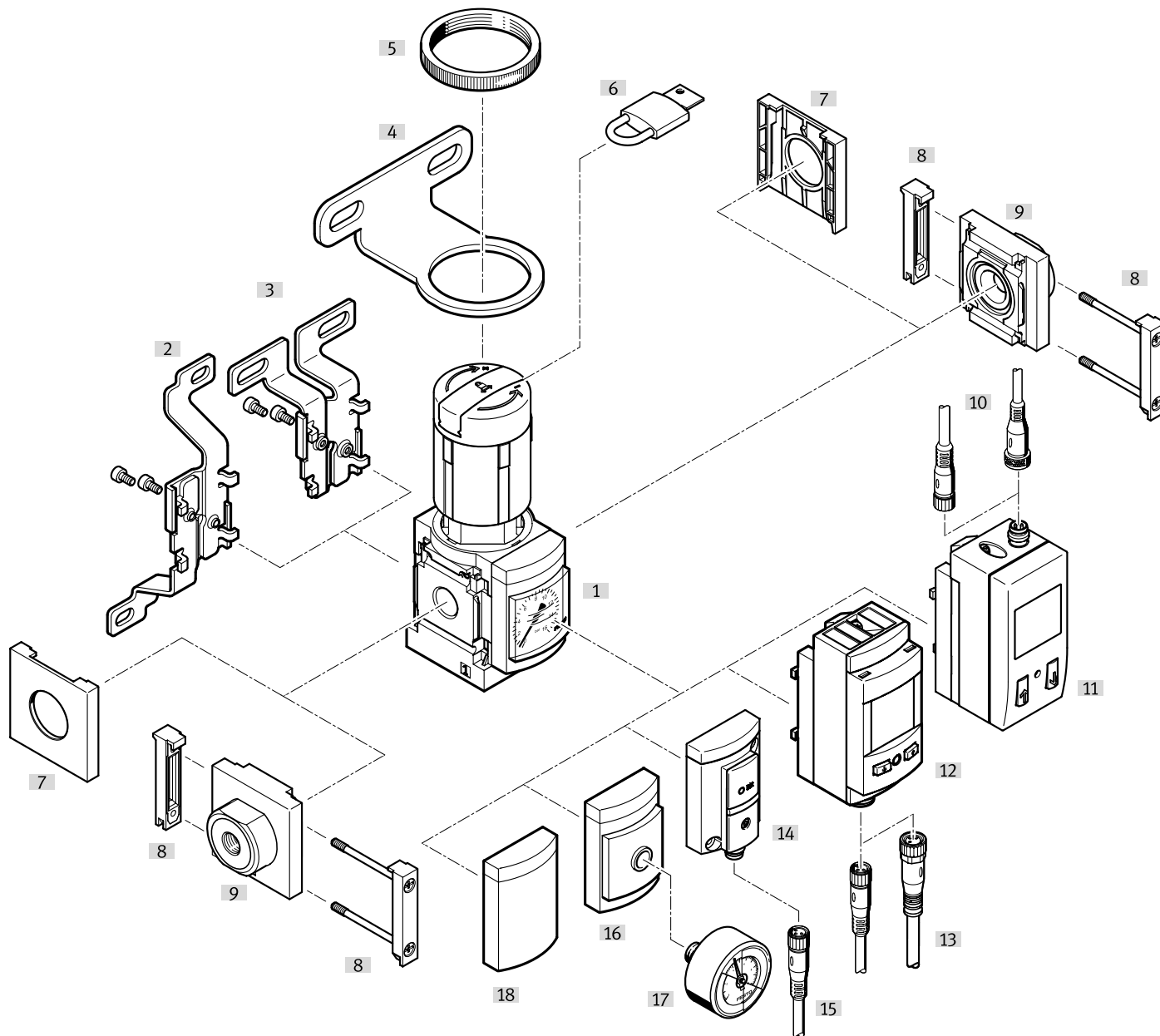
Pressure regulator MS4/MS6-LR

- ⛊ - **Note**

Additional accessories:

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

Pressure regulator with rotary knob pressure gauge

MS4-LR-…-DM2   MS4-LR-…-DM1/MS6-LR-…-DM2
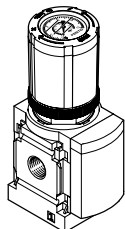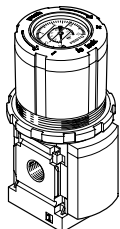
Peripherals overview

Mounting attachments and accessories[1]

		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Pressure regulator MS4/MS6-LR	■	■	■	■	10
[2]	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
[3]	Mounting bracket MS4-WBM	■	■	–	–	ms4-wbm
[4]	Mounting bracket MS4/6-WR	■	■	–	–	ms4-wr, ms6-wr
[5]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[6]	Padlock LRVS-D	■	■	■	■	110
[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]	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	110
[11]	Pressure sensor with display AD1 ... AD4	■	■	■	■	26
[12]	Pressure sensor with LCD display AD11/AD12	■	■	■	■	26
[13]	Connecting cable NEBU-M8...-LE4/NEBU-M12...-LE4	■	■	■	■	110
[14]	Pressure sensor without display AD7 ... AD10	■	■	■	■	26
[15]	Connecting cable NEBU-M8...-LE3	■	■	■	■	110
[16]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	26
[17]	Pressure gauge MA	■	■	■	■	110
[18]	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 NPT1/8
AQN	Sub-base NPT1/4
AQP	Sub-base NPT3/8

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

006	Pressure gauge alternatives
	None
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
RG	Integrated pressure gauge, red/green scale
AD1	Pressure sensor with LCD display, M8 plug, PNP, 3-pin
AD2	Pressure sensor with LCD display, M8 plug, NPN, 3-pin
AD3	Pressure sensor with LCD display, M12 plug, PNP, 4-pin, analogue output 4 ... 20 mA
AD4	Pressure sensor with LCD display, M12 plug, NPN, 4-pin, analogue output 4 ... 20 mA
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

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

016	

Type codes

001	Series	
MS	MS series	

002	Size	
6	Grid dimension 62 mm	

003	Function	
LR	Pressure regulator	

004	Pneumatic connection	
1/4	Female thread G1/4	
3/8	Female thread G3/8	
1/2	Female thread G1/2	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
AQN	Sub-base NPT1/4	
AQP	Sub-base NPT3/8	
AQR	Sub-base NPT1/2	
AQS	Sub-base NPT3/4	

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

006	Pressure gauge alternatives	
	None	
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	
RG	Integrated pressure gauge, red/green scale	
AD1	Pressure sensor with LCD display, M8 plug, PNP, 3-pin	
AD2	Pressure sensor with LCD display, M8 plug, NPN, 3-pin	
AD3	Pressure sensor with LCD display, M12 plug, PNP, 4-pin, ana-logue output 4 … 20 mA	
AD4	Pressure sensor with LCD display, M12 plug, NPN, 4-pin, ana-logue output 4 … 20 mA	
AD7	Pressure sensor with switching display, M8 plug, threshold val-ue comparator, PNP, N/O	
AD8	Pressure sensor with switching display, M8 plug, threshold val-ue comparator, PNP, N/C	
AD9	Pressure sensor with switching display, M8 plug, window com-parator, 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	

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), con-necting plates not required	

013	EU certification	
	None	
EX4	II 2GD	

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

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

016	Version	

Datasheet

With pressure gauge
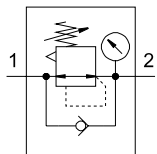
- **▮▮** Flow rate
  1000 ... 7500 l/min

- **▮** Temperature range
  −10 ... +60°C

- **⊥** Operating pressure
  0.8 ... 20 bar

- **⛭** www.festo.com

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

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- High flow rate performance with minimal pressure drop
- Available with and without secondary exhausting
- Actuator lock to protect set values from being adjusted

- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Two pressure gauge connections for different installation options
- Return flow option for exhausting from output 2 to output 1 already integrated

- Optional pressure sensor
- Optional rotary knob pressure gauge
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data

Size			MS4	MS6
Pneumatic connection 1, 2				
Female thread			G1/8 or G1/4	G1/4, G3/8 or G1/2
Connecting plate	[AG...]		G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4
	[AQ...]		1/8 NPT, 1/4 NPT or 3/8 NPT	1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT
Design			Directly actuated diaphragm regulator	
Regulator function			Output pressure constant, with input pressure compensation, with return flow, with/without secondary exhausting	
Type of mounting			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[1]	
	[D6]	[bar]	0.3 ... 7, manually actuated[1]	
	[D7]	[bar]	0.5 ... 12, manually actuated (0.5 ... 10 with pressure sensor or with UL certification)[1]	
	[D8]	[bar]	–	0.5 ... 16, manually actuated (0.5 ... 10 with UL certification)
Max. pressure hysteresis		[bar]	0.25 (0.4 with rotary knob pressure gauge)	
Pressure indicator			Via pressure sensor for displaying the output pressure on LCD display and electrical output	
			Via pressure sensor for displaying the output pressure by switching status indicator and electrical output	
			Via pressure gauge for displaying the output pressure	
			Via pressure gauge with red/green scale for displaying 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 qnN[1] [l/min]

Size		MS4		MS6		
Pneumatic connection		G1/8	G1/4	G1/4	G3/8	G1/2
Pressure regulation range	[D5]	1200[2]	2100[2]	2400[2]	5500[2]	7500[2]
	[D6]	1150	1800	3000	5800	6500
	[D7]	1000	1700[3]	2700	4500	5500
	[D8]	–	–	2200	4000	4500

1) Measured at p1 = 10 bar and p2 = 6 bar, Δp = 1 bar
2) Measured at p1 = 10 bar and p2 = 3 bar, Δp = 1 bar
3) With a rotary knob pressure gauge, q_nN = 800 l/min, $q_{n\,max}$ = 2200 l/min

Operating and environmental conditions

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

1) Value in brackets applies to MS4/MS6-LR with UL certification.
2) Value in brackets applies to MS4/MS6-LR with pressure sensor.
3) Corrosion resistance class CRC 2 to Festo standard FN 940070
   Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
4) Additional information: www.festo.com/sp ➜ Certificates.

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
CE mark (see declaration of conformity)[1]	To EU Explosion Protection Directive (ATEX)

1) Additional information: www.festo.com/sp ➜ Certificates.

Weights [g]

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

Datasheet

Materials
Sectional view

Pressure regulator			
[1]	Housing		Die-cast aluminium
[2]	Rotary knob		PA, POM
	Rotary knob with integrated lock		Aluminium
[3]	Diaphragm		NBR
[4]	Bottom cover		PET
[5]	Springs		Steel
–	Seals		NBR
Note on materials			RoHS-compliant
			Free of copper and PTFE only with cover plate

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

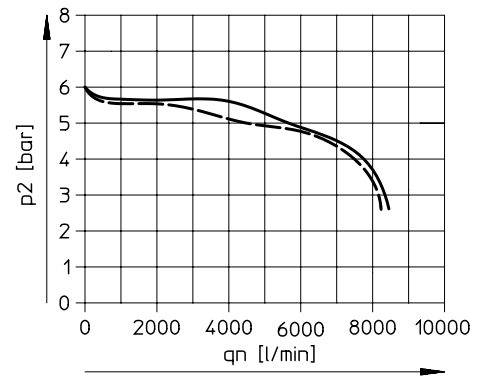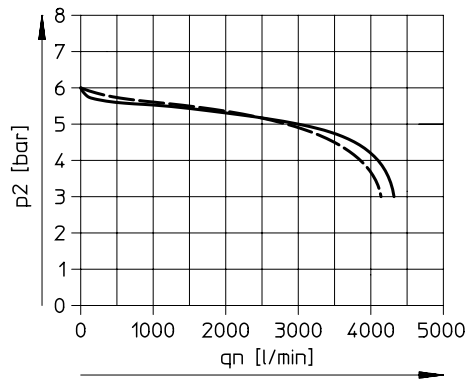|	MS4-LR-1/8	MS4-LR-1/4

Input pressure p1 = 10 bar
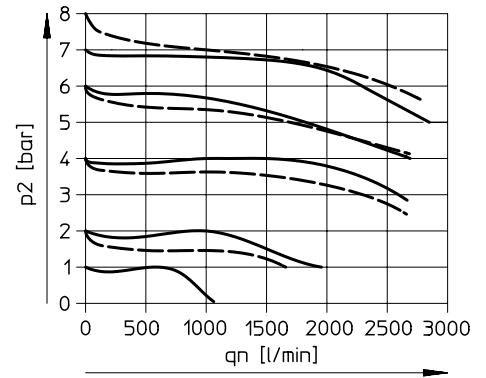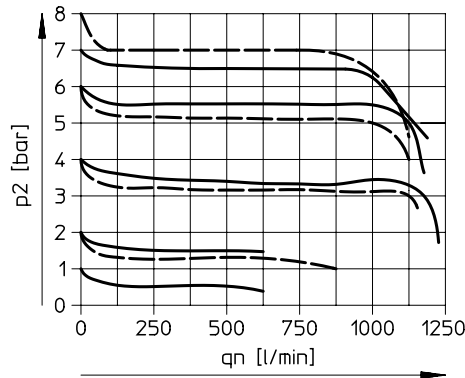
D6: 0.3 ... 7 bar
D7: 0.5 ... 12 bar[1]

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 p1 = 10 bar

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

	MS6-LR-1/2

Input pressure p1 = 10 bar
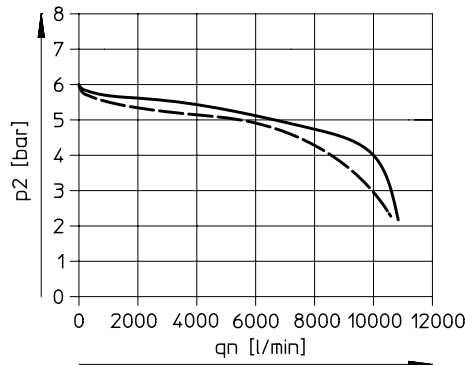
D6: 0.3 ... 7 bar
D7: 0.5 ... 12 bar

Datasheet

Dimensions – Basic version

[ ]   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
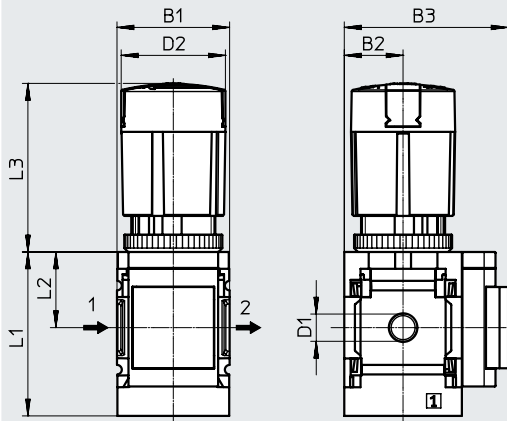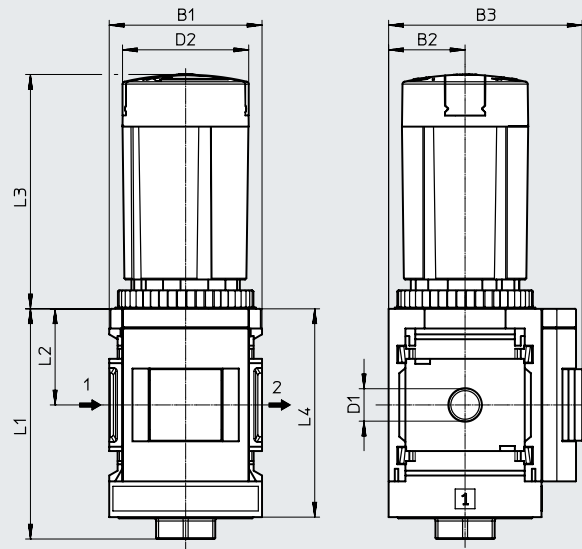
➔   Flow direction

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

⬦ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Alternative mounting position

Download CAD data → www.festo.com

[KD]   Rotary knob underneath

MS4

MS6
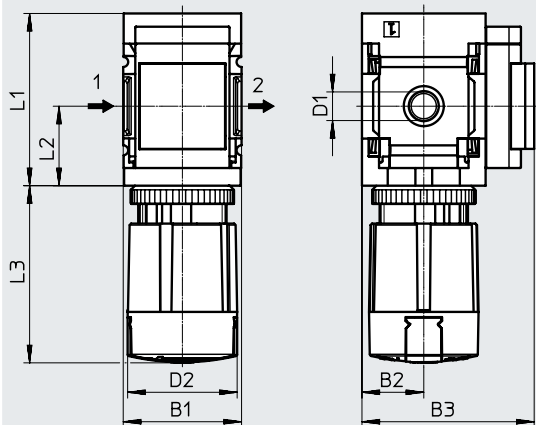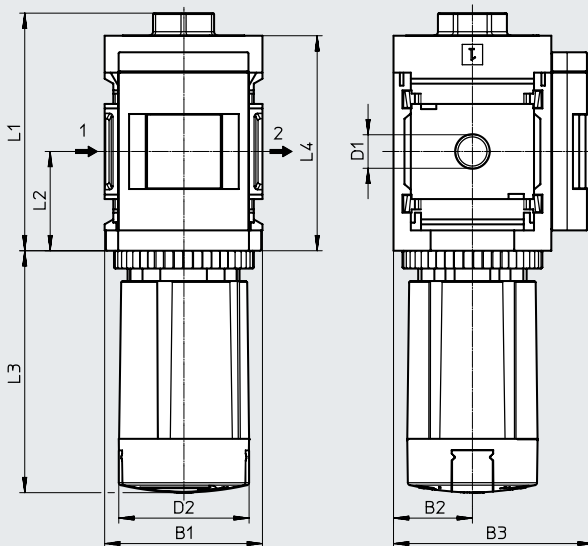
→   Flow direction

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

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

Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[VS]   Cover plate

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

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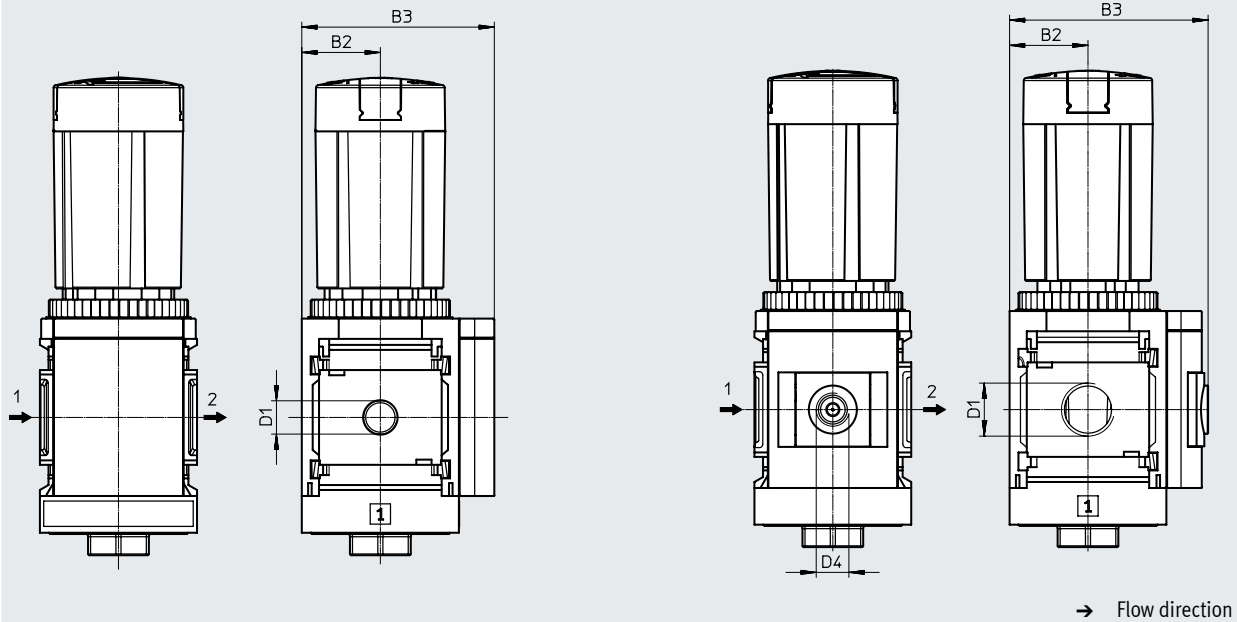
➔   Flow direction

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

[AD1 … 4]   Pressure sensor with LCD display

Download CAD data → www.festo.com

Datasheets → Internet: sde1

Variant AD1:
SDE1-D10-G2-MS-L-P1-M8 with
3-pin M8x1 plug, 1 switching output
PNP

Variant AD2:
SDE1-D10-G2-MS-L-N1-M8 with
3-pin M8x1 plug, 1 switching output
NPN

Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with
4-pin M12x1 plug, 1 switching out-
put PNP and 4 … 20 mA analogue

Variant AD4:
SDE1-D10-G2-MS-L-NI-M12 with
4-pin M12x1 plug, 1 switching out-
put NPN and 4 … 20 mA analogue

→   Flow direction

Type	B2	B3	B5	B6	D6	L5	L6
MS4-LR-…-AD1/AD2	21	82.6	32	32.3	M8x1	35.1	46.7
MS4-LR-…-AD3/AD4	21	82.6	32	32.3	M12x1	35.1	55.8
MS6-LR-…-AD1/AD2	31	103	51	32.3	M8x1	35.1	46.7
MS6-LR-…-AD3/AD4	31	103	51	32.3	M12x1	35.1	55.8

· ⵜ · 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)

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

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

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

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin M8x1 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

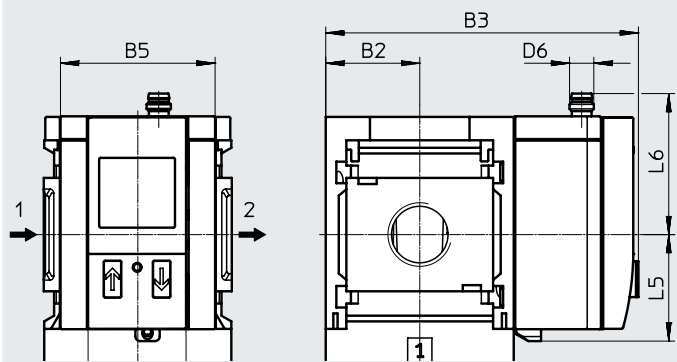⫯ Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pressure gauge alternatives

[AD11/AD12]   Pressure sensor with LCD display

Download CAD data ➜ www.festo.com

Datasheets ➜ Internet: spau

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

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

➜   Flow direction

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

· ⬙ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pneumatic connection

Download CAD data ➔ www.festo.com

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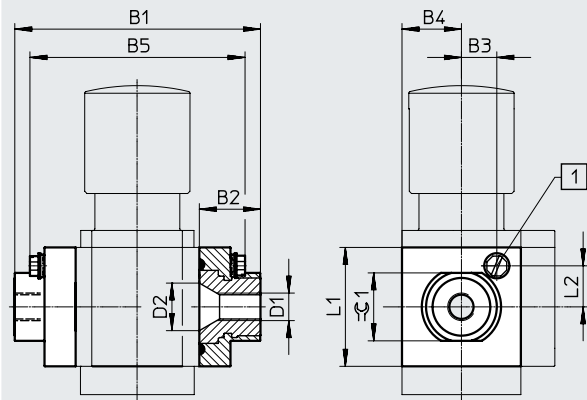
[1]   Earthing screw M4x8 (only with MS4/6-...-EX)

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

Dimensions – Type of mounting

Download CAD data ➔ www.festo.com

[WB]   Mounting bracket

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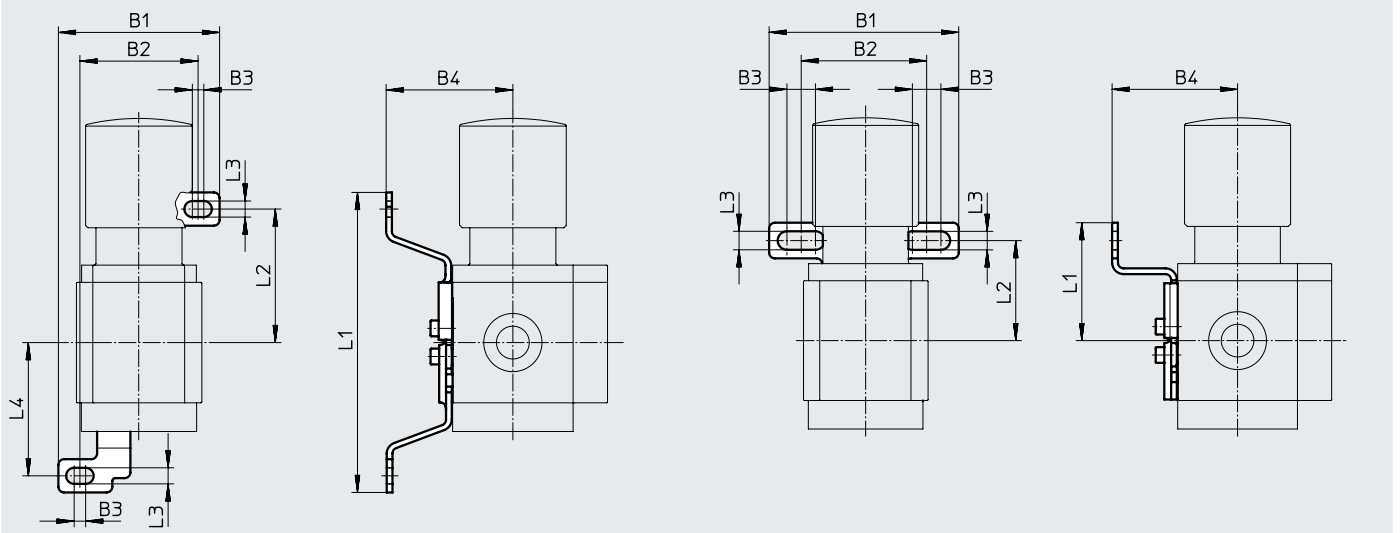
Type	B1	B2	B3	B4	L1	L2	L3	L4
MS4-LR-...-WB	56	41	4	44.2	104.6	46.6	5.6	46.5
MS4-LR-...-WBM	66.5	44	10	44	41.3	35	6.5	–
MS6-LR-...-WB	79.4	62	4.5	53.8	157.6	71	6.6	71

Datasheet

Dimensions – Type of mounting

[WR]   Mounting bracket

Download CAD data ➔ www.festo.com

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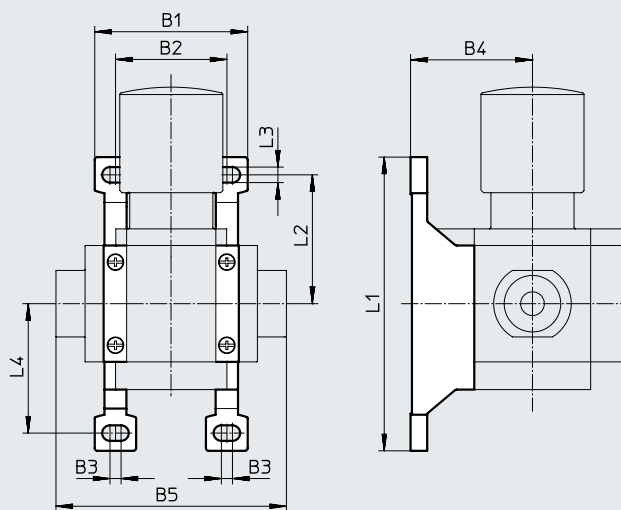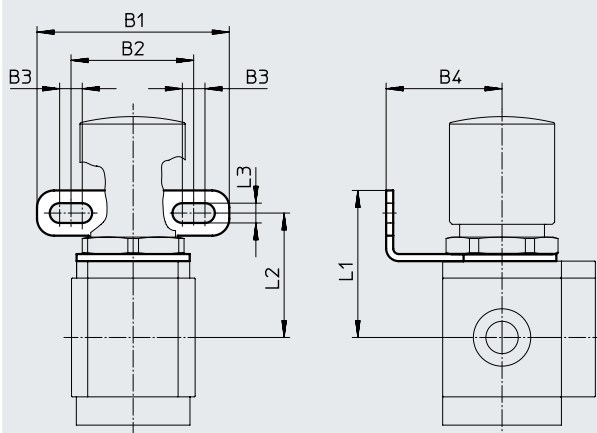
Type	B1	B2	B3	B4	B5	L1	L2	L3	L4
MS4-LR-…-WR	68	44	8	41	–	52	44	7	–
MS4-LR-…-WP	55.2	40.2	4	44	83.4	106	46.5	5.6	46.7
MS6-LR-…-WR	70	42	8.2	40	–	67	57	7.1	–
MS6-LR-…-WP	79	62	4.5	54	115	158	71	6.6	71

Dimensions – Type of mounting

[WPM]   Mounting bracket

Download CAD data ➔ www.festo.com

MS4

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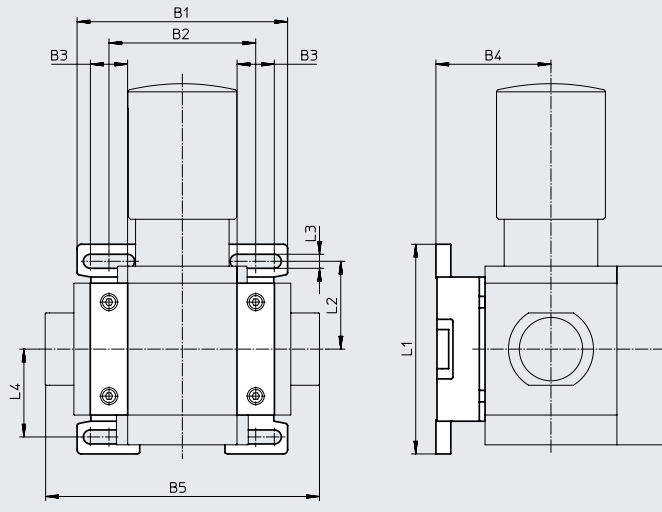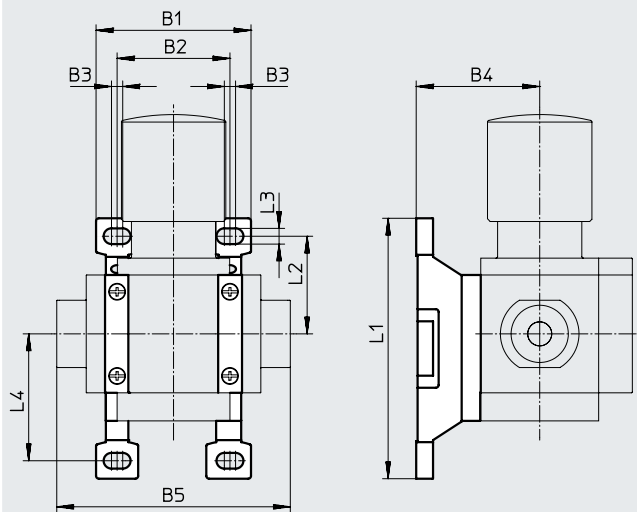
Type	B1	B2	B3	B4	B5	L1	L2	L3	L4
MS4-LR-…-WPM	55.2	40.2	4	44	83.4	92.8	34.8	5.6	45.2
MS6-LR-…-WPM	99	69	17.5	54	129	98.6	41.3	6.6	41.3

Datasheet

Dimensions – Rotary knob   Download CAD data ➜ www.festo.com

For installation into control panel

[ ] Rotary knob with latch   [AS] Rotary knob with latch, can be locked using accessories   [E11] Rotary knob with integrated lock

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

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

[3] For pressure adjustment: fully pull out telescopic rotary knob
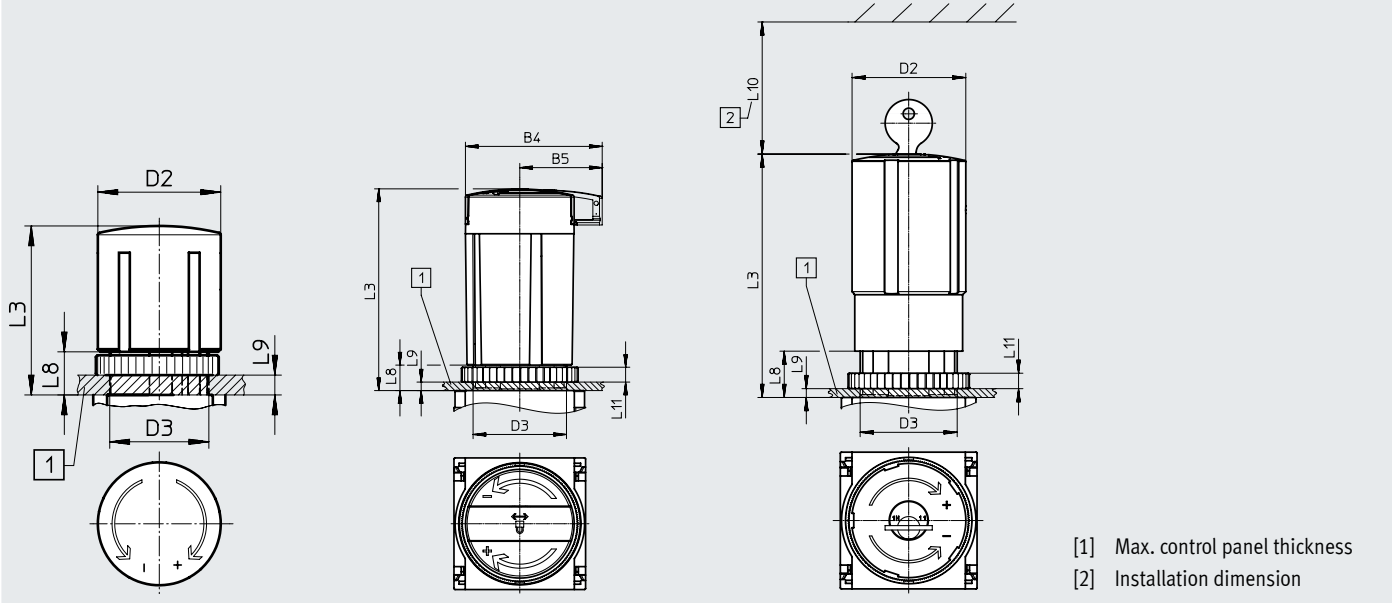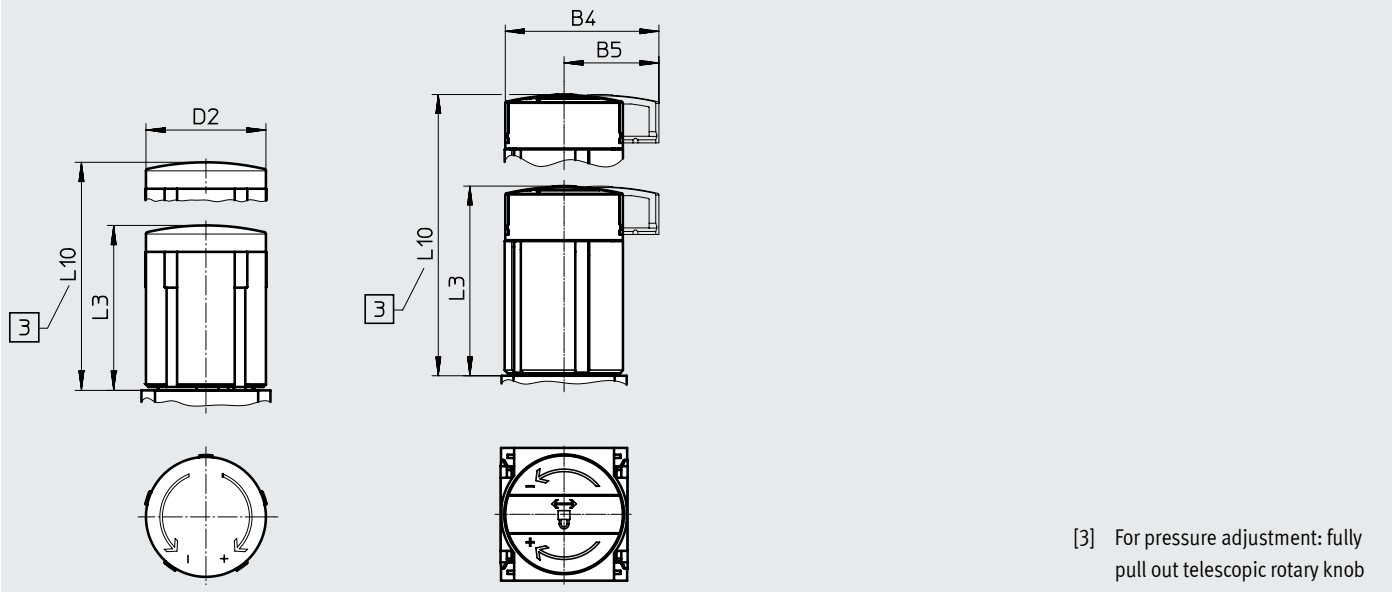
Type	B4	B5	D2	D3	L3	L8	L9	L10
MS4-LR-...	–	–	37.2	M30x1.5	51.1	13	5	–
MS4-LR-...-AS	48.6	30			60.2	13	5	
MS4-LR-...-E11	–	–			76	14	6	60
MS4-LR-...-LD	–	–		–	51.1	–	–	76.8
MS4-LR-...-LD-AS	48.6	30			60			85.7
MS6-LR-...	–	–	51.2	M44x1	86	21	14	–
MS6-LR-...-AS	64.4	38.8			95.1	12	5	
MS6-LR-...-E11	–	–			110	21	14	60
MS6-LR-...-LD	–	–		–	86	–	–	139
MS6-LR-...-LD-AS	64.4	38.8			95.5			148.5

Datasheet

Dimensions – Rotary knob pressure gauge Download CAD data ➔ www.festo.com

[DM1]   Rotary knob pressure gauge, small

[DM2]   Rotary knob pressure gauge, large

MS4

MS4   MS6
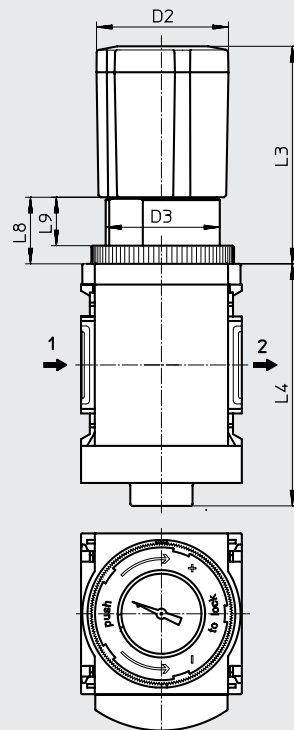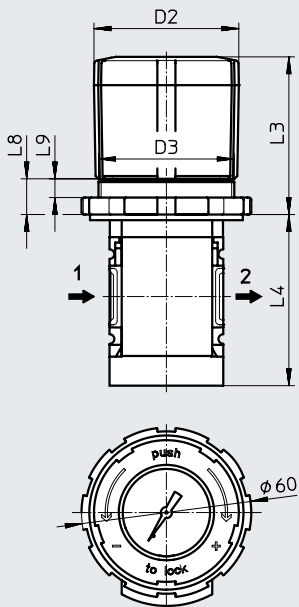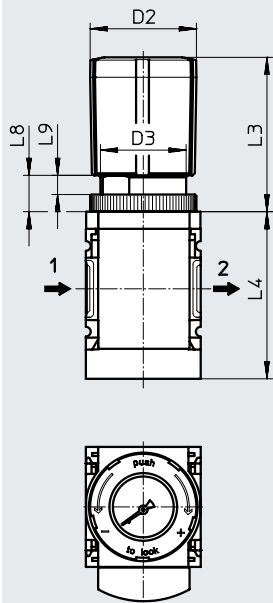
- ▥ -   **Note**

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

➔   Flow direction

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

Datasheet

⭐ Core Range

Ordering data

Size	Connection	Pressure regulation range 0.3 ... 4 bar		Pressure regulation range 0.3 ... 7 bar		Pressure regulation range 0.5 ... 12 bar	
		Part no.	Type	Part no.	Type	Part no.	Type
Integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with latch, can be locked using accessories							
MS4	G1/4	⭐ 529415	MS4-LR-1/4-D5-AS	⭐ 529417	MS4-LR-1/4-D6-AS	⭐ 529419	MS4-LR-1/4-D7-AS
MS6	G1/2	⭐ 529989	MS6-LR-1/2-D5-AS	⭐ 529991	MS6-LR-1/2-D6-AS	⭐ 529993	MS6-LR-1/2-D7-AS

Ordering data

Size	Connection	Pressure regulation range 0.3 ... 4 bar		Pressure regulation range 0.3 ... 7 bar		Pressure regulation range 0.5 ... 12 bar	
		Part no.	Type	Part no.	Type	Part no.	Type
Integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with latch, can be locked using accessories							
MS4	G1/8	529421	MS4-LR-1/8-D5-AS	529423	MS4-LR-1/8-D6-AS	529425	MS4-LR-1/8-D7-AS
MS6	G1/4	529995	MS6-LR-1/4-D5-AS	529997	MS6-LR-1/4-D6-AS	529999	MS6-LR-1/4-D7-AS
	G3/8	530001	MS6-LR-3/8-D5-AS	530003	MS6-LR-3/8-D6-AS	530005	MS6-LR-3/8-D7-AS

Ordering data – Modular product system

Ordering table

Grid dimension [mm]	40	62	Conditions	Code	Enter code
Module no.	**527690**	**527663**			
Series	Standard			**MS**	MS
Size	4	6		**...**	
Function	Pressure regulator			**-LR**	-LR
Pneumatic connection	Female thread G1/8	–	[1]	**-1/8**	
	Female thread G1/4	Female thread G1/4	[1]	**-1/4**	
	–	Female thread G3/8	[1]	**-3/8**	
	–	Female thread G1/2	[1]	**-1/2**	
	Connecting plate G1/8	–		**-AGA**	
	Connecting plate G1/4	Connecting plate G1/4		**-AGB**	
	Connecting plate G3/8	Connecting plate G3/8		**-AGC**	
	–	Connecting plate G1/2		**-AGD**	
	–	Connecting plate G3/4		**-AGE**	
	Connecting plate 1/8 NPT	–	[1]	**-AQK**	
	Connecting plate 1/4 NPT	Connecting plate 1/4 NPT	[1]	**-AQN**	
	Connecting plate 3/8 NPT	Connecting plate 3/8 NPT	[1]	**-AQP**	
	–	Connecting plate 1/2 NPT	[1]	**-AQR**	
	–	Connecting plate 3/4 NPT	[1]	**-AQS**	
Pressure regulation range/actuation	0.3 ... 4 bar, manually actuated			**-D5**	
	0.3 ... 7 bar, manually actuated			**-D6**	
	0.5 ... 12 bar, manually actuated			**-D7**	
	–	0.5 ... 16 bar, manually actuated	[1] [4]	**-D8**	
Pressure gauge alternatives	MS pressure gauge				
	Cover plate			**-VS**	
	Adapter for EN pressure gauge 1/8, without pressure gauge	–		**-A8**	
	Adapter for EN pressure gauge 1/4, without pressure gauge			**-A4**	
	Integrated pressure gauge, red/green scale		[2] [3] [4]	**-RG**	
	Pressure sensor with LCD display, M8 plug, 1 switching output PNP, 3-pin		[1] [2] [5]	**-AD1**	
	Pressure sensor with LCD display, M8 plug, 1 switching output NPN, 3-pin		[1] [2] [5]	**-AD2**	
	Pressure sensor with LCD display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA		[1] [2] [5]	**-AD3**	
	Pressure sensor with LCD display, M12 plug, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA		[1] [2] [5]	**-AD4**	
	Pressure sensor with switching status indicator, M8 plug, threshold value comparator, PNP, N/O contact		[1] [2] [5]	**-AD7**	
	Pressure sensor with switching status indicator, M8 plug, threshold value comparator, PNP, N/C contact		[1] [2] [5]	**-AD8**	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/O contact		[1] [2] [5]	**-AD9**	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/C contact		[1] [2] [5]	**-AD10**	
	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA		[2] [5]	**-AD11**	
	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA		[2] [5]	**-AD12**	

[1]   1/8, 1/4, 3/8, 1/2, AQK, AQN, AQP, AQR, AQS, D8, AD1 ... AD4, AD7 ... AD10, DM1, DM2, KD, E11, WPM — Not with EU EX4 certification.

[2]   RG, AD1 ... AD4, AD7 ... AD10, AD11/AD12, OS, KD, AS, WR, WB — MS4: not with rotary knob alternative DM2. Not with rotary knob alternative DM1.

[3]   RG, OS, KD, AS — MS6: not with rotary knob alternative DM2.

[4]   D8, RG, OS, KD, AS — Measuring range max. 10 bar.

[5]   AD1 ... AD4, AD7 ... AD10, AD11/AD12 — Not with pressure regulation range D8

Ordering data – Modular product system

Ordering table

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

[6] PSI — Not with pressure gauge alternatives VS, A8, A4, RG, AD1 ... AD4, AD7 ... AD10.
[7] MPA — Not with pressure gauge alternatives VS, A8, A4, AD1 ... AD4, AD7 ... AD10.
Not with rotary knob alternative DM1, DM2.
[8] LD, DM1, DM2 — Not with locking option E11.
[9] DM1, DM2 — Only with pressure gauge alternatives VS, A8, A4, AD1 ... AD4, AD7 ... AD10, combinations possible.
[10] KD — Not with pressure gauge alternative RG.
Not with alternative pressure gauge scale MPa.
Not with type of mounting WP.
[11] WR — Not with long rotary knob LD.
[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 to the rear
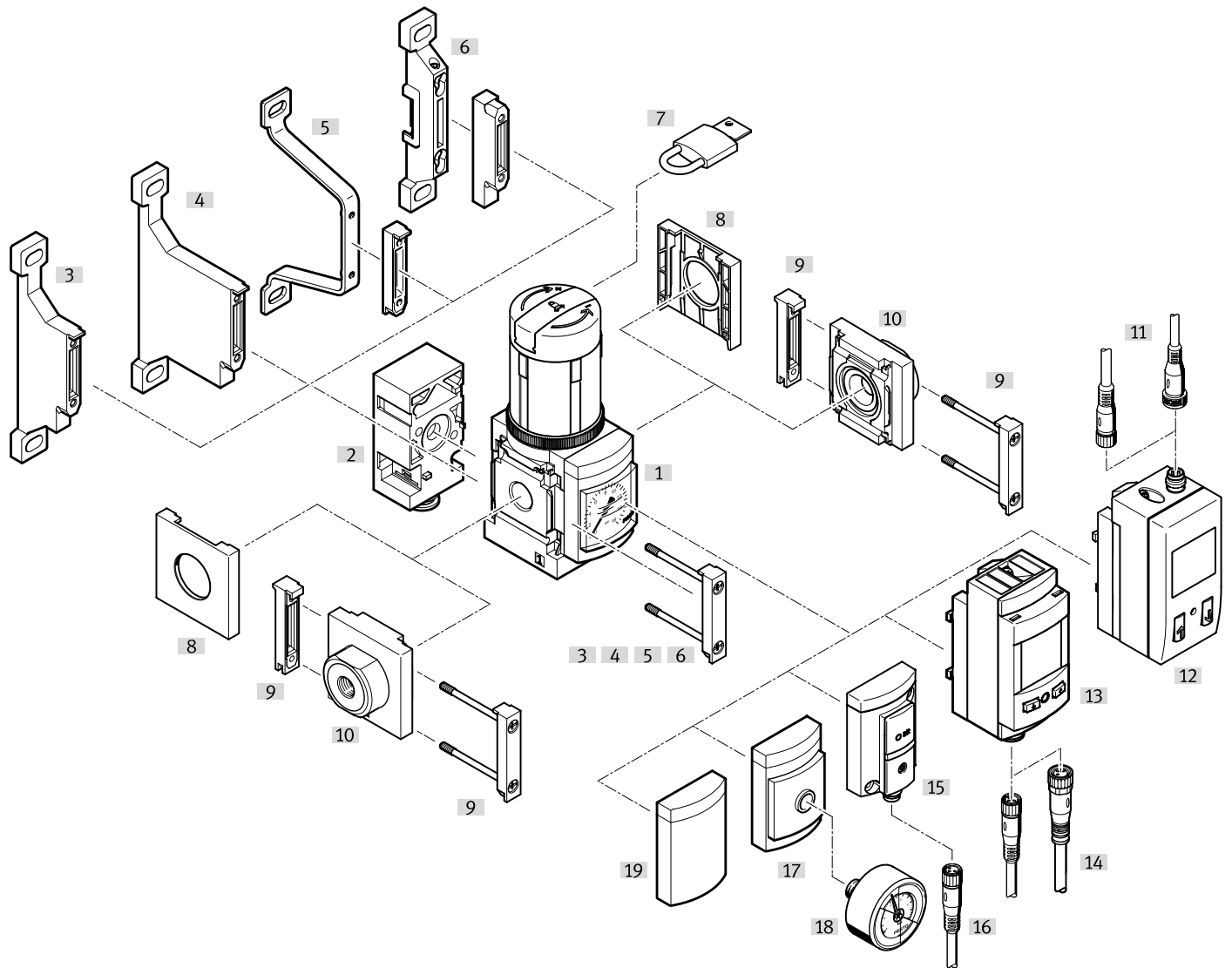
- ⌇ - **Note**

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

Pressure regulator with rotary knob pressure gauge
MS4-LRB-...-DM1/
MS6-LRB-...-DM2

Peripherals overview

Mounting attachments and accessories

		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Pressure regulator MS4/MS6-LRB	■	■	■	■	32
[2]	Angled outlet block B...	■	■	■	■	46
[3]	Mounting bracket MS4/6-WP	–	■	■	■	ms4-wp, ms6-wp
[4]	Mounting bracket MS4/6-WPB	–	■	■	■	ms4-wp, ms6-wp
[5]	Mounting bracket MS4/6-WPE	–	■	■	■	ms4-wp, ms6-wp
[6]	Mounting bracket MS4/6-WPM	–	■	■	■	ms4-wp, ms6-wp
[7]	Padlock LRVS-D	■	■	■	■	110
[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]	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	110
[12]	Pressure sensor with display AD1 ... AD4	■	■	■	■	46
[13]	Pressure sensor with LCD display AD11/AD12	■	■	■	■	46
[14]	Connecting cable NEBU-M8...-LE4/NEBU-M12...-LE4	■	■	■	■	110
[15]	Pressure sensor without display AD7 ... AD10	■	■	■	■	46
[16]	Connecting cable NEBU-M8...-LE3	■	■	■	■	110
[17]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	46
[18]	Pressure gauge MA	■	■	■	■	110
[19]	Cover plate VS	■	■	■	■	46

Peripherals overview

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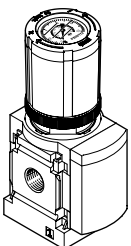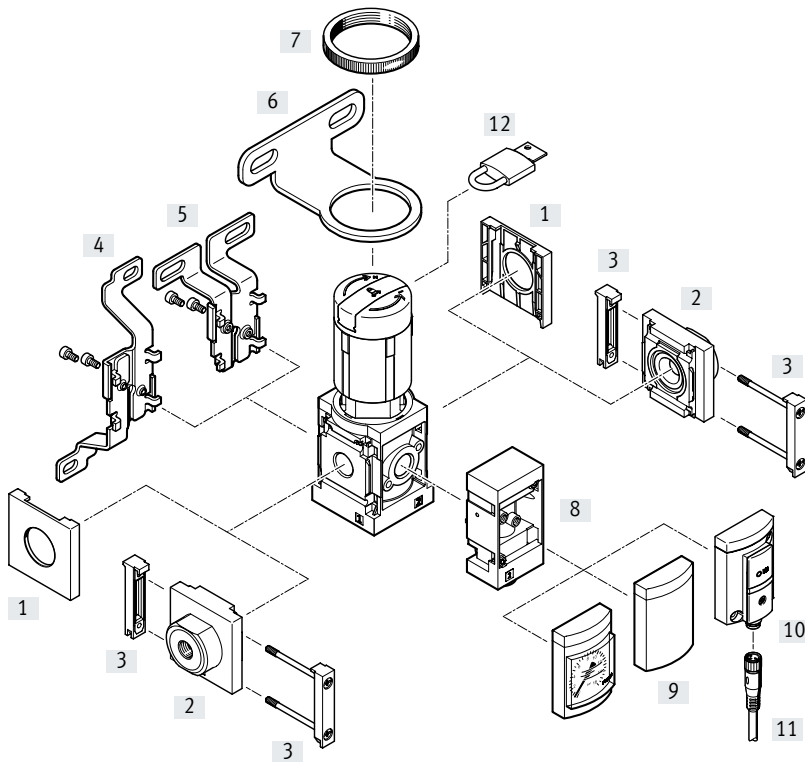

- ▯ - **Note**

Additional accessories:
- Module connector for combination with size MS4/MS6 or size MS9
  ➔ Internet: amv, rmv, armv
- Adapter for mounting on profiles
  ➔ Internet: ipm-80, ipm-40-80, ipm-80-80

Peripherals overview

Mounting attachments and accessories

		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Cover cap MS4/6-END	■	–	■	–	ms4-end, ms6-end
[2]	Connecting plate SET MS4/6-AG...	–	■	–	■	ms4-ag, ms6-ag
[3]	Module connector MS4/6-MV	–	■	■	■	ms4-mv, ms6-mv
[4]	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
[5]	Mounting bracket MS4-WBM	■	■	–	–	ms4-wbm
[6]	Mounting bracket MS4/6-WR	■	■	–	–	ms4-wr, ms6-wr
[7]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[8]	Angled outlet block B...	■	■	■	■	46
[9]	Cover plate VS	■	■	■	■	46
[10]	Pressure sensor without display AD7 ... AD10	■	■	■	■	46
[11]	Connecting cable NEBU-M8...-LE3	■	■	■	■	110
[12]	Padlock LRVS-D	■	■	■	■	110

Type codes

001	Series	
MS	MS series	

002	Size	
4	Grid dimension 40 mm	

003	Function	
LRB	Pressure regulator for manifold assembly	

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

005	Pressure regulation range	
D5	0.3 … 4 bar	
D6	0.3 … 7 bar	
D7	0.5 … 12 bar	

006	Pressure gauge alternatives	
	None	
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	
RG	Integrated pressure gauge, red/green scale	
AD1	Pressure sensor with LCD display, M8 plug, PNP, 3-pin	
AD2	Pressure sensor with LCD display, M8 plug, NPN, 3-pin	
AD3	Pressure sensor with LCD display, M12 plug, PNP, 4-pin, analogue output 4 … 20 mA	
AD4	Pressure sensor with LCD display, M12 plug, NPN, 4-pin, analogue output 4 … 20 mA	
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	

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

008	Secondary exhausting	
	With secondary exhausting	
OS	Without secondary exhaust	

009	Rotary knob alternative	
	None	
LD	Long rotary knob	
DM1	Rotary knob pressure gauge, small	

010	Alternative mounting position	
	None	
KD	Rotary knob underneath	

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

012	Alternative pressure outlet	
	None	
BC	Angled outlet block QS-6	
BD	Angled outlet block QS-8	

013	Type of mounting	
	Without mounting bracket	
WR	Mounting bracket with knurled nut on regulator knob	
WP	Mounting bracket basic design	
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	
WPB	Mounting bracket for large wall gap	

014	EU certification	
	None	
EX4	II 2GD	

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

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

Type codes

001	Series	
MS	MS series	

002	Size	
6	Grid dimension 62 mm	

003	Function	
LRB	Pressure regulator for manifold assembly	

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

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

006	Pressure gauge alternatives	
	None	
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	
RG	Integrated pressure gauge, red/green scale	
AD1	Pressure sensor with LCD display, M8 plug, PNP, 3-pin	
AD2	Pressure sensor with LCD display, M8 plug, NPN, 3-pin	
AD3	Pressure sensor with LCD display, M12 plug, PNP, 4-pin, analogue output 4 … 20 mA	
AD4	Pressure sensor with LCD display, M12 plug, NPN, 4-pin, analogue output 4 … 20 mA	
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	

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

008	Secondary exhausting	
	With secondary exhausting	
OS	Without secondary exhaust	

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

010	Alternative mounting position	
	None	
KD	Rotary knob underneath	

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

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

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

014	EU certification	
	None	
EX4	II 2GD	

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

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

Datasheet

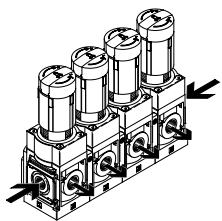**Without pressure gauge**
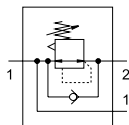
With pressure gauge
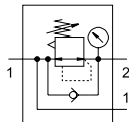
- ‖ - Flow rate
  300 … 7300 l/min

- ▮ - Temperature range
  −10 … +60°C

- ⬓ - Operating pressure
  0.8 … 20 bar

- ⬚ - www.festo.com

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

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

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure regulation ranges
- Actuator lock to protect 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				
Size			MS4	MS6
Pneumatic connection 1				
Female thread			G1/4	G1/2
Connecting plate	[AG…]		G1/8, G1/4 or G3/8	G1/4, G3/8, G1/2 or G3/4
Pneumatic connection 2				
Female thread			G1/4	G1/2
Angled outlet block	[BC]		QS-6	–
	[BD]		QS-8	QS-8
	[BE]		–	QS-10
Design			Directly actuated diaphragm regulator with through compressed air supply	
Regulator function			Output pressure constant, with input pressure compensation, with return flow, with/without secondary exhausting	
Type of mounting			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[1]	
	[D6]	[bar]	0.3 … 7, manually actuated[1]	
	[D7]	[bar]	0.5 … 12, manually actuated (0.5 … 10 with pressure sensor or with UL certification)[1]	
	[D8]	[bar]	–	0.5 … 16, manually actuated (0.5 … 10 with UL certification)
Max. pressure hysteresis	[bar]		0.25	0.25 (0.4 with rotary knob pressure gauge)
Pressure indicator			Via pressure sensor for displaying the output pressure on LCD display and electrical output	
			Via pressure sensor for displaying the output pressure by switching status indicator and electrical output	
			Via pressure gauge for displaying the output pressure	
			Via pressure gauge with red/green scale for displaying 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 qnN[1] [l/min]

Size		MS4			MS6		
		Standard	Angled outlet block		Standard	Angled outlet block	
			[BC]: QS-6	[BD]: QS-8		[BD]: QS-8	[BE]: QS-10
Pressure regulation range	[D5]	1900[2]	300[2]	650[2]	7300[2]	600[2]	750[2]
	[D6]	1700	350	840	6300	880	1000
	[D7]	1500[3]	350	640	5500	800	950
	[D8]	–	–	–	4500	750	850

1) Measured at p1 = 10 bar and p2 = 6 bar, Δp = 1 bar
2) Measured at p1 = 10 bar and p2 = 3 bar, Δp = 1 bar
3) With a rotary knob pressure gauge, q_nN = 800 l/min, $q_{n\,max}$ = 2200 l/min

Operating and environmental conditions

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

1) Value in brackets applies to MS4/MS6-LRB with UL certification.
2) Value in brackets applies to MS4/MS6-LRB with pressure sensor.
3) Corrosion resistance class CRC 2 to Festo standard FN 940070
   Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
4) Additional information: www.festo.com/sp ➜ Certificates.

ATEX

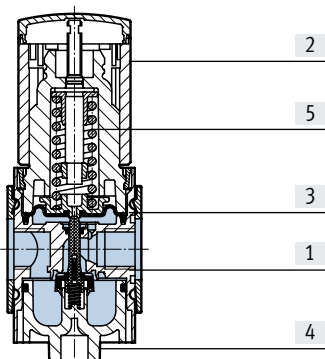| EU certification	[EX4]
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion-proof ambient temperature	−10°C ≤ Ta ≤ +60°C
CE mark (see declaration of conformity)[1]	To EU Explosion Protection Directive (ATEX)

1) Additional information: www.festo.com/sp ➜ Certificates.

Weights [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
		Free of copper and PTFE only with cover plate

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

Input pressure p1 = 10 bar

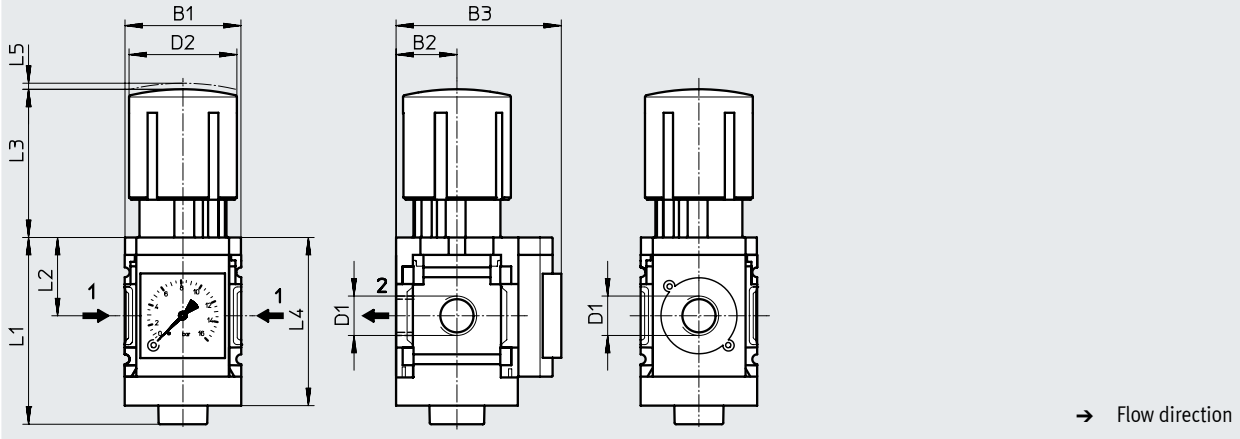MS4-LRB-1/4

MS6-LRB-1/2

—— [D6]: 0.3 ... 7 bar
- - - [D7]: 0.5 ... 12 bar[1]
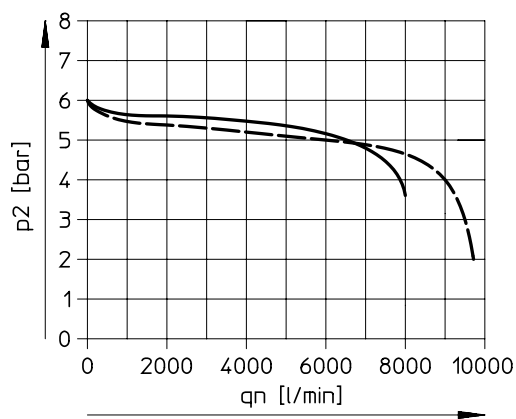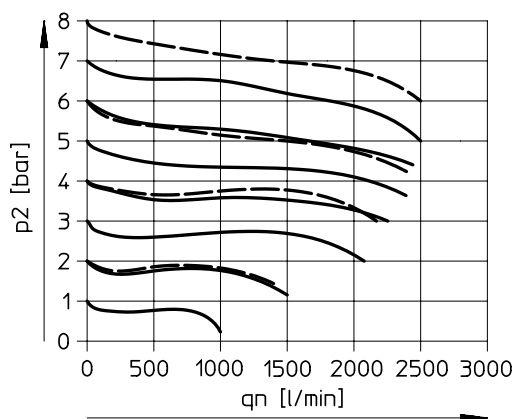
1) There is a higher initial pressure drop in the characteristic curve for variant DM1.

Datasheet

Dimensions – Basic version

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

→   Flow direction

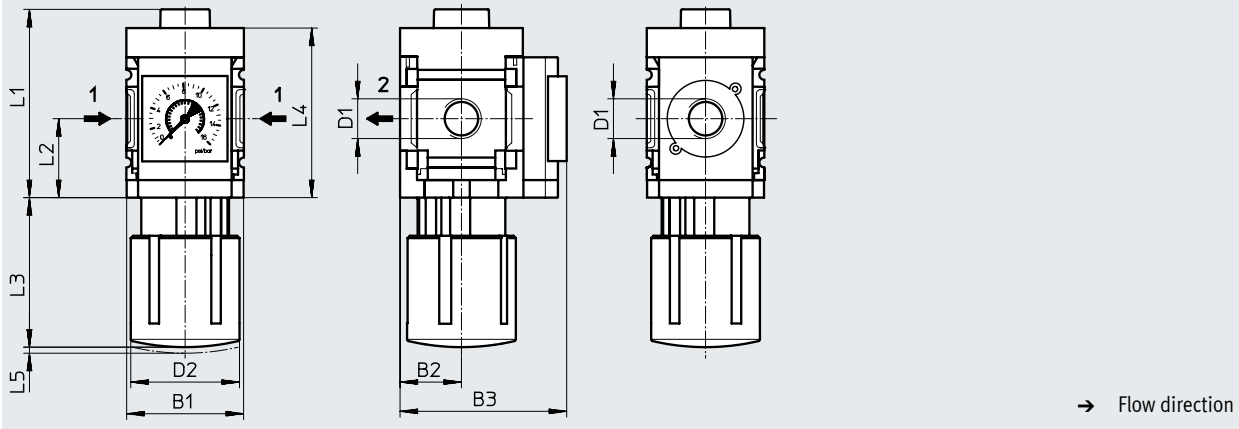| Type	B1	B2	B3 Pressure gauge		D1	D2	L1	L2	L3	L4	L5
			Standard scale	Red/green scale							
MS4-LRB-1/4	40	21	57	58.5	G1/4	37.2	64.4	27	60.3	58.5	2
MS6-LRB-1/2	62	31	77	78.5	G1/2	51.2	94	39	95.1	85	5

⸕ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Alternative mounting position

Download CAD data ➔ www.festo.com

[KD]   Rotary knob underneath

➔   Flow direction

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

⊦ Note: this product conforms to ISO 1179-1 and ISO 228-1.
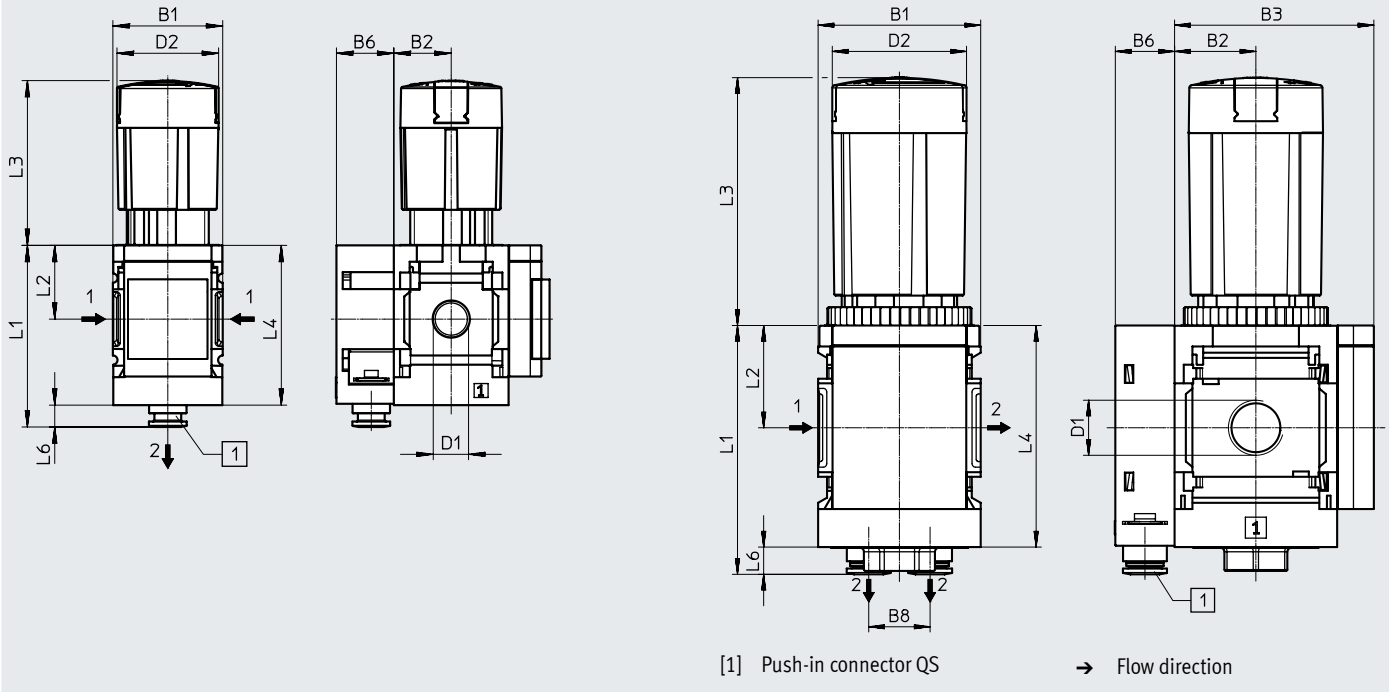
Datasheet

Dimensions – Angled outlet block

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

[ ]   Pressure output to the rear

MS4

MS6

[1]   Push-in connector QS

→   Flow direction

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

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

Datasheet

Dimensions – Angled outlet block
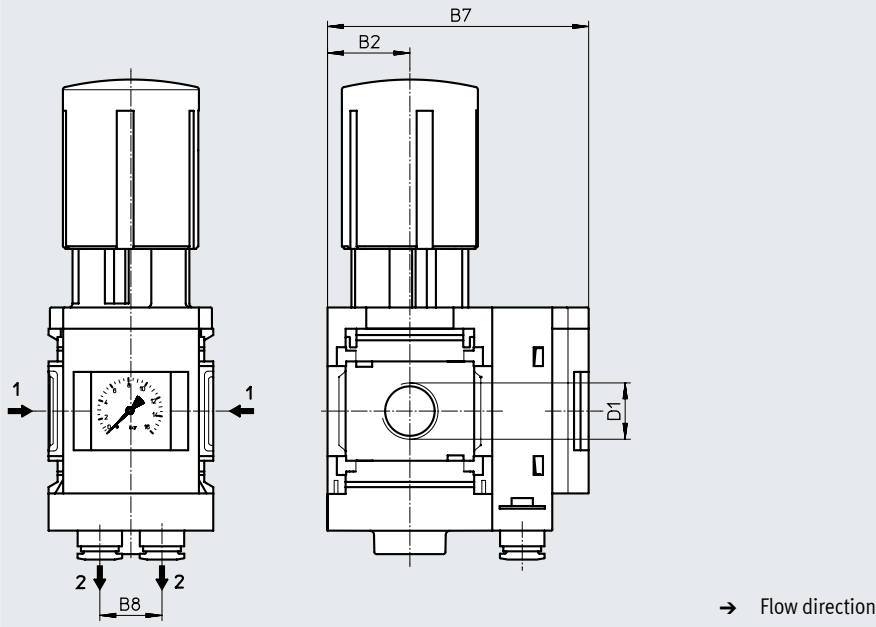
Download CAD data ➔ www.festo.com

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

[Z]   Pressure output to front

MS4 (not illustrated)

MS6

➔   Flow direction

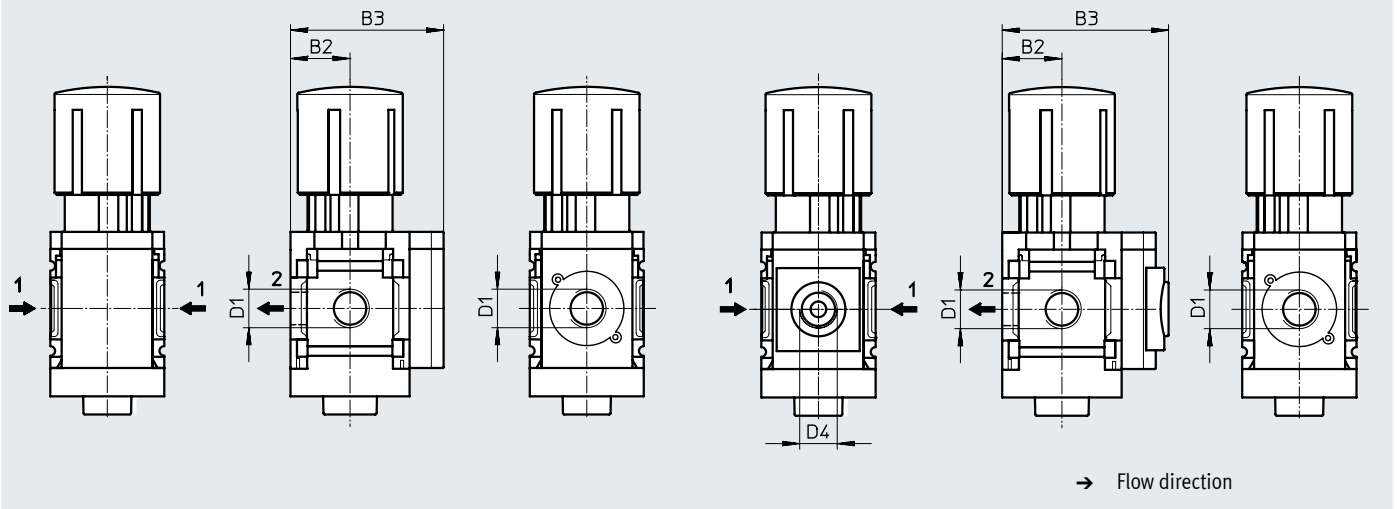| Type	B2	B7	B8	D1
MS4-LRB-1/4-...-BC/BD	21	75	–	G1/4
MS6-LRB-1/2-...-BD/BE	31	99	23.4	G1/2

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

Datasheet

Dimensions – Pressure gauge alternatives

[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-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

[AD1 … 4]   Pressure sensor with LCD display

Variant AD1:
SDE1-D10-G2-MS-L-P1-M8 with
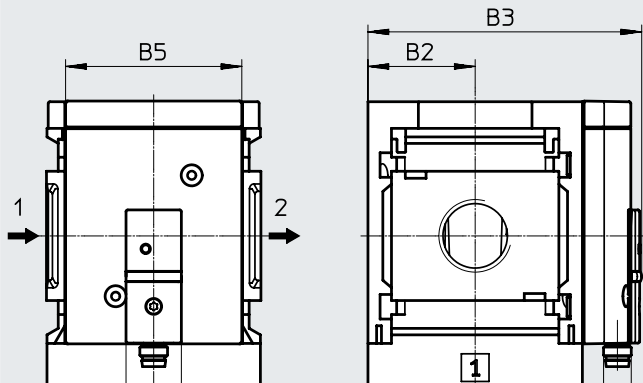3-pin M8x1 plug, 1 switching output
PNP

Variant AD2:
SDE1-D10-G2-MS-L-N1-M8 with
3-pin M8x1 plug, 1 switching output
NPN

Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with
4-pin M12x1 plug, 1 switching out-
put PNP and 4 … 20 mA analogue

Variant AD4:
SDE1-D10-G2-MS-L-NI-M12 with
4-pin M12x1 plug, 1 switching out-
put NPN and 4 … 20 mA analogue

→   Flow direction

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

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

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

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

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

→   Flow direction

Type	B2	B3	B5	B6	D6	L5	L6
MS4-LR-…-AD1/AD2	21	82.6	32	32.3	M8x1	35.1	46.7
MS4-LR-…-AD3/AD4	21	82.6	32	32.3	M12x1	35.1	55.8
MS4-LR-…-AD7/AD8/AD9/AD10	21	59.1	32	16	M8x1	–	–
MS6-LR-…-AD1/AD2	31	103	51	32.3	M8x1	35.1	46.7
MS6-LR-…-AD3/AD4	31	103	51	32.3	M12x1	35.1	55.8
MS6-LR-…-AD7/AD8/AD9/AD10	31	79.1	51	16	M8x1	–	–

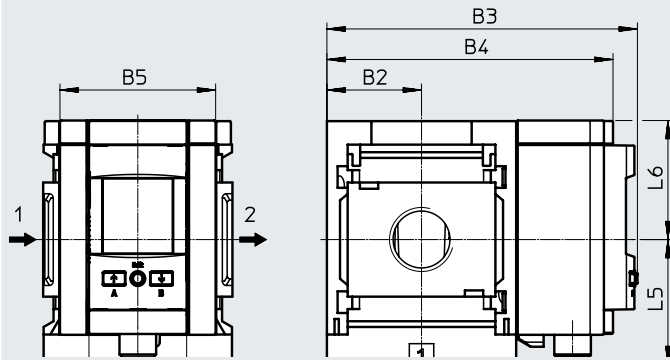⫟ Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data ➔ www.festo.com

[AD11/AD12]   Pressure sensor with LCD display

Datasheets ➔ Internet: spau

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

Variant AD12:
SPAU-P10R-MS-L-PNLK-M8 with M8
plug, 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

For installation into control panel

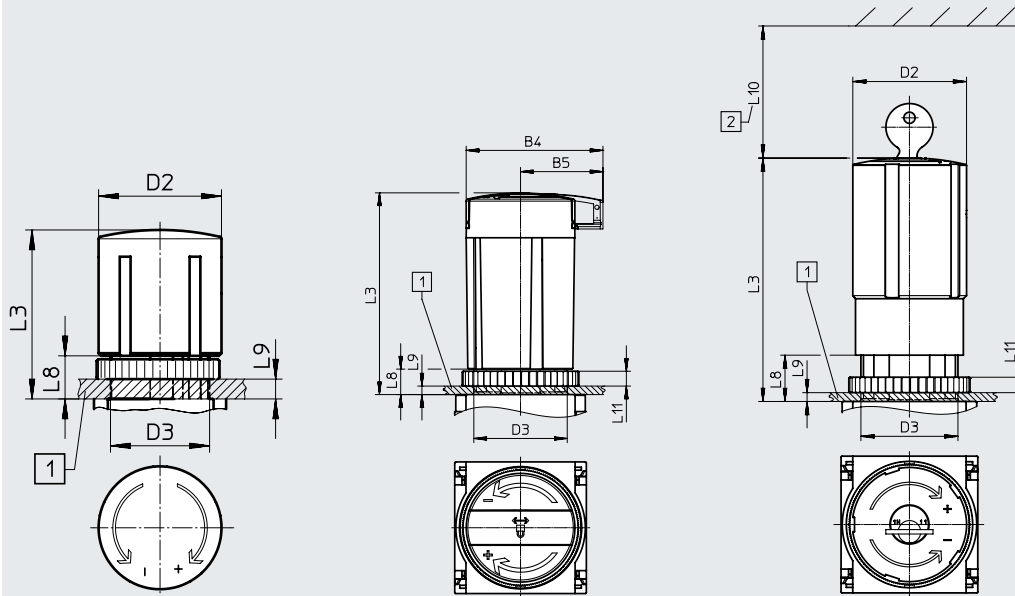Download CAD data ➔ www.festo.com

[ ]   Rotary knob with latch

[AS]   Rotary knob with latch, can be locked using accessories
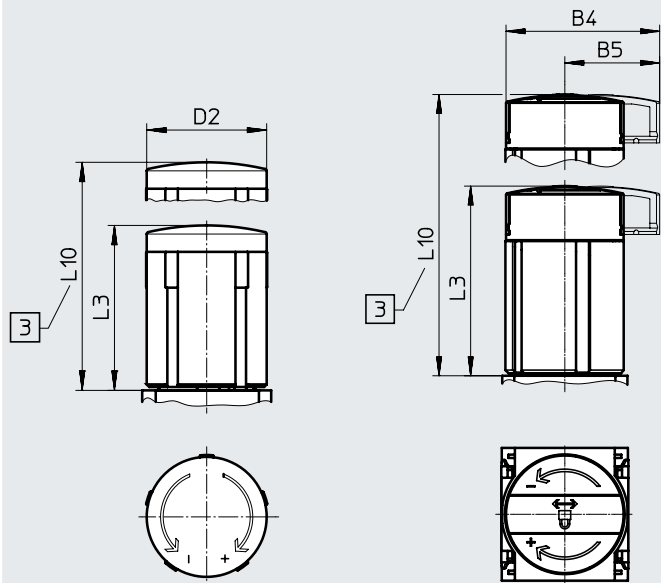
[E11]   Rotary knob with integrated lock

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

[LD]   Rotary knob, long, with latch

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

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

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

Datasheet

Dimensions – Rotary knob pressure gauge

Download CAD data ➔ www.festo.com

[DM1] Rotary knob pressure gauge, small

[DM2] Rotary knob pressure gauge, large
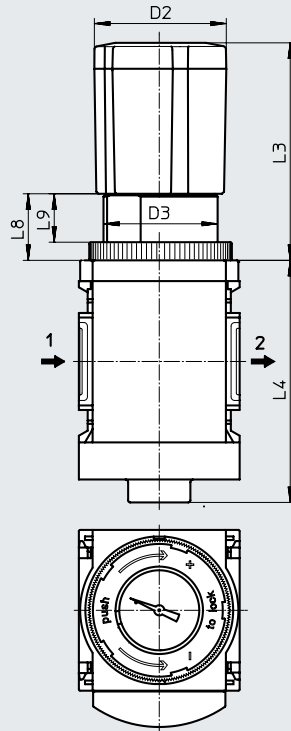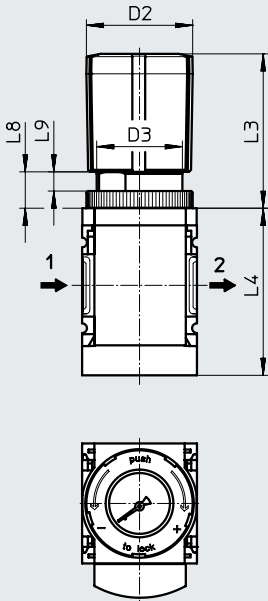
➔ Flow direction

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

Ordering data

Rotary knob with latch, can be locked using accessories

Size	Connection	Pressure regulation range 0.3 … 4 bar		Pressure regulation range 0.3 … 7 bar		Pressure regulation range 0.5 … 12 bar	
		Part no.	Type	Part no.	Type	Part no.	Type
Integrated MS pressure gauge with standard scale, display unit [bar], pressure output to the rear without angled outlet block							
MS4	G1/4	529473	MS4-LRB-1/4-D5-AS	529479	MS4-LRB-1/4-D6-AS	529485	MS4-LRB-1/4-D7-AS
MS6	G1/2	530322	MS6-LRB-1/2-D5-AS	530328	MS6-LRB-1/2-D6-AS	530334	MS6-LRB-1/2-D7-AS
Integrated MS pressure gauge with standard scale, display unit [bar], pressure output to the rear with angled outlet block QS-8							
MS4	G1/4	529474	MS4-LRB-1/4-D5-AS-BD	529480	MS4-LRB-1/4-D6-AS-BD	529486	MS4-LRB-1/4-D7-AS-BD
MS6	G1/2	–	–	530329	MS6-LRB-1/2-D6-AS-BD	530335	MS6-LRB-1/2-D7-AS-BD
Adapter A8 for EN pressure gauge 1/8, pressure output to the rear without angled outlet block							
MS4	G1/4	529471	MS4-LRB-1/4-D5-A8-AS	529477	MS4-LRB-1/4-D6-A8-AS	529483	MS4-LRB-1/4-D7-A8-AS
Adapter A4 for EN pressure gauge 1/4, pressure output to the rear without angled outlet block							
MS6	G1/2	530320	MS6-LRB-1/2-D5-A4-AS	530326	MS6-LRB-1/2-D6-A4-AS	530332	MS6-LRB-1/2-D7-A4-AS

Ordering data – Modular product system

Ordering table

Grid dimension [mm]	40	62	Conditions	Code	Enter code
Module no.	**527692**	**527665**			
Series	Standard			**MS**	MS
Size	4	6		**...**	
Function	Pressure regulator for manifold assembly			**-LRB**	-LRB
Pneumatic connection	Female thread G1/4	–	[1]	**-1/4**	
	–	Female thread G1/2	[1]	**-1/2**	
	Connecting plate G1/8	–		**-AGA**	
	Connecting plate G1/4	Connecting plate G1/4		**-AGB**	
	Connecting plate G3/8	Connecting plate G3/8		**-AGC**	
	–	Connecting plate G1/2		**-AGD**	
	–	Connecting plate G3/4		**-AGE**	
Pressure regulation range/actuation	0.3 … 4 bar, manually actuated			**-D5**	
	0.3 … 7 bar, manually actuated			**-D6**	
	0.5 … 12 bar, manually actuated			**-D7**	
	–	0.5 … 16 bar, manually actuated	[1] [2]	**-D8**	
Pressure gauge alternatives	MS pressure gauge				
	Cover plate		[3]	**-VS**	
	Adapter for EN pressure gauge 1/8, without pressure gauge	–	[4]	**-A8**	
	Adapter for EN pressure gauge 1/4, without pressure gauge		[4]	**-A4**	
	Integrated pressure gauge, red/green scale		[2]	**-RG**	
	Pressure sensor with LCD display, M8 plug, 1 switching output PNP, 3-pin		[1] [4] [5]	**-AD1**	
	Pressure sensor with LCD display, M8 plug, 1 switching output NPN, 3-pin		[1] [4] [5]	**-AD2**	
	Pressure sensor with LCD display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 … 20 mA		[1] [4] [5]	**-AD3**	
	Pressure sensor with LCD display, M12 plug, 1 switching output NPN, 4-pin, analogue output 4 … 20 mA		[1] [4] [5]	**-AD4**	
	Pressure sensor with switching status indicator, M8 plug, threshold value comparator, PNP, N/O contact		[1] [5] [6]	**-AD7**	
	Pressure sensor with switching status indicator, M8 plug, threshold value comparator, PNP, N/C contact		[1] [5] [6]	**-AD8**	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/O contact		[1] [5] [6]	**-AD9**	
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/C contact		[1] [5] [6]	**-AD10**	
	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]	**-AD11**	
	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]	**-AD12**	
Alternative pressure gauge scale	MS pressure gauge, bar				
	psi		[7]	**-PSI**	
	MPa		[8]	**-MPA**	

[1] 1/4, 1/2, D8, AD1 … AD4, AD7 … AD10, AD11/AD12, DM1, DM2, KD, E11, WPM   Not with EU EX4 certification.

[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, AD1 … AD4, AD11/AD12   Not with outlet direction Z.
     In combination with outlet direction Z only with alternative mounting position KD.

[5] AD1 … AD4, AD7 … AD10, AD11/AD12   Measuring range max. 10 bar.
     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, AD1 … AD4, 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, AD1 … AD4, 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.
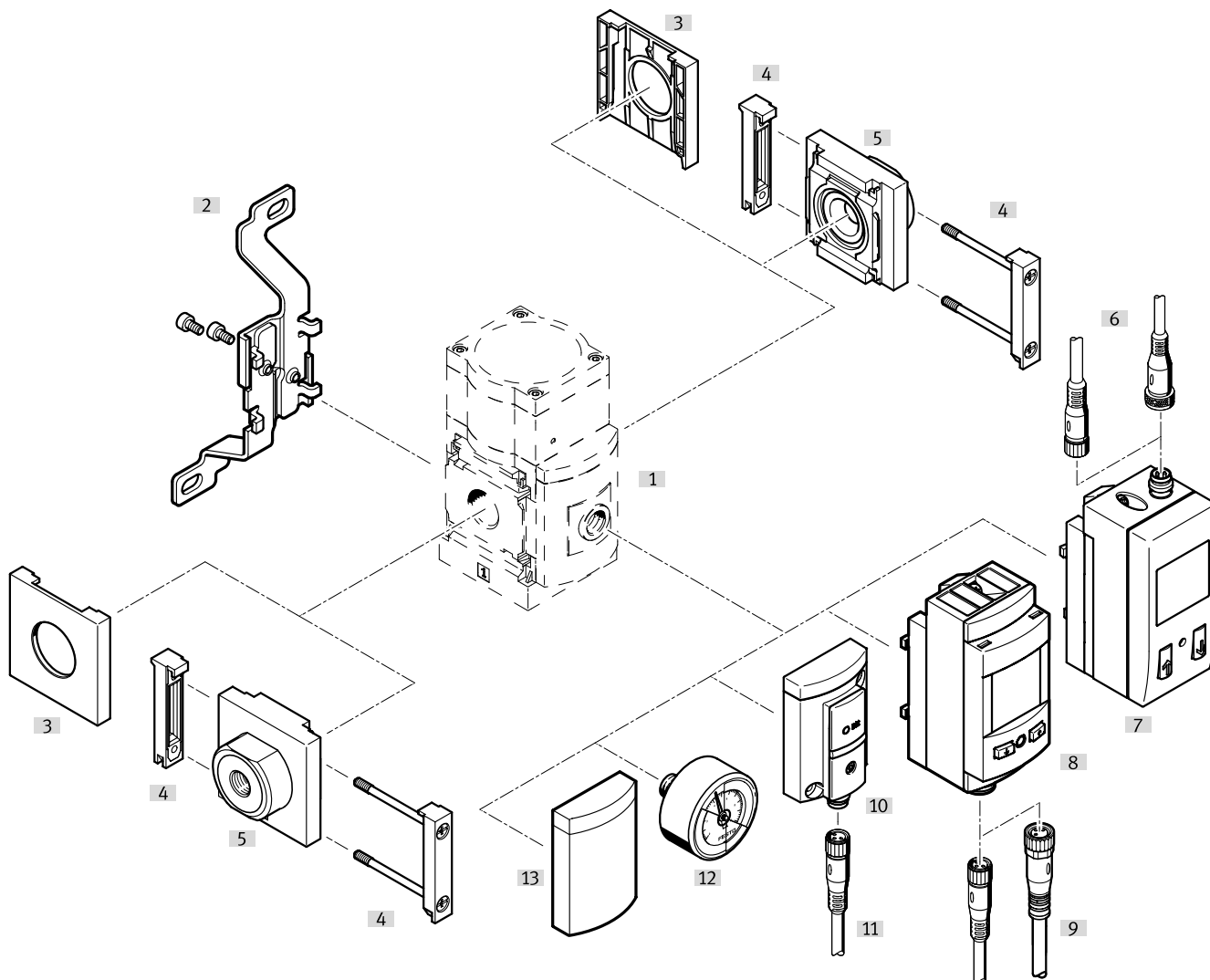
Ordering data – Modular product system

Ordering table

Grid dimension [mm]	40	62	Conditions	Code	Enter code
Secondary exhausting	With secondary exhausting				
	Without secondary exhausting		[2]	**-OS**	
Rotary knob alternatives	Without				
	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	Without				
	Rotary knob underneath		[1] [2] [11]	**-KD**	
Locking option	Without				
	Lockable using accessories		[2]	**-AS**	
	With integrated lock		[1]	**-E11**	
Pressure output (p$_{max}$ = 10 bar)	Without				
	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 attaching service unit components		[1] [12] [14]	**-WPM**	
	Mounting bracket for large wall gap		[14] [16]	**-WPB**	
	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required		[12]	**-WB**	
	Mounting bracket centrally at 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 to the rear				
	Pressure output to front (without angled outlet block, without pressure output)			**-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, AD1 … AD4, 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, AD1, AD2, AD3, AD4 only with outlet direction Z.
[12]	WR, WPM, WB, WBM	In combination with outlet direction Z not with alternative mounting position KD.
[13]	WR	Only with outlet direction Z.
		Not with rotary knob alternative LD.
[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
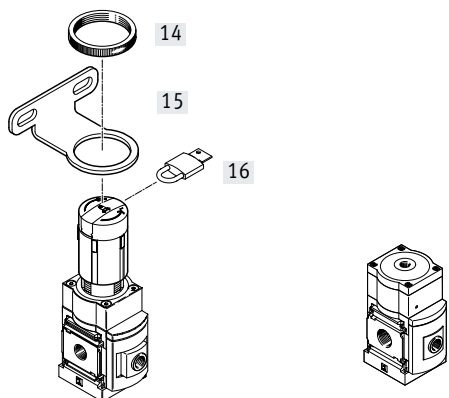
Precision pressure regulator MS6-LRP

-☀- **Note**

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

Manually actuated	Pneumatically actuated

Peripherals overview

Mounting attachments and accessories

		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	62
[2]	Mounting bracket MS6-WB	■	■	–	–	ms6-wb
[3]	Cover cap MS6-END	■	–	■	–	ms6-end
[4]	Module connector MS6-MV	–	■	■	■	ms6-mv
[5]	Connecting plate SET MS6-AG...	–	■	–	■	ms6-ag
	Connecting plate SET MS6-AQ...	–	■	–	■	ms6-aq
[6]	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	110
[7]	Pressure sensor with display AD1 ... AD4	■	■	■	■	62
[8]	Pressure sensor with LCD display AD11/AD12	■	■	■	■	62
[9]	Connecting cable NEBU-M8...-LE4/NEBU-M12...-LE4	■	■	■	■	110
[10]	Pressure sensor without display AD7 ... AD10	■	■	■	■	62
[11]	Connecting cable NEBU-M8...-LE3	■	■	■	■	110
[12]	Precision pressure gauge A8M/MAP	■	■	■	■	62, 110
[13]	Cover plate VS	■	■	■	■	62
[14]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[15]	Mounting bracket MS6-WR	■	■	–	–	ms6-wr
[16]	Padlock LRVS-D	■	■	■	■	110
–	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	
AQN	Sub-base NPT1/4	
AQP	Sub-base NPT3/8	
AQR	Sub-base NPT1/2	
AQS	Sub-base NPT3/4	

005	Pressure regulation range	
D2	0.05 … 0.7 bar	
D4	0.05 … 2.5 bar	
D5	0.1 … 4 bar	
D7	0.1 … 12 bar	
PO	Max. 12 bar, pneumatically actuated (pressure range determined by pilot regulator)	

006	Pressure gauge alternatives	
VS	Cover plate	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge	
A8M	Adapter for EN pressure gauge 1/8, with precision pressure gauge	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
AD1	Pressure sensor with LCD display, M8 plug, PNP, 3-pin	
AD2	Pressure sensor with LCD display, M8 plug, NPN, 3-pin	
AD3	Pressure sensor with LCD display, M12 plug, PNP, 4-pin, analogue output 4 … 20 mA	
AD4	Pressure sensor with LCD display, M12 plug, NPN, 4-pin, analogue output 4 … 20 mA	
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	

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

- ▮▮ - Flow rate
800 ... 5000 l/min

- ▯ - Temperature range
−10 ... +60°C

Pressure regulation range/actuation, pneumatically actuated

- ⏚ - Operating pressure
1 ... 14 bar

- 🧰 - www.festo.com
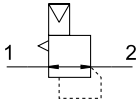
The precision pressure regulator is suitable for sensitive applications requiring a pressure hysteresis of 0.02 bar. The output pressure p2 can be set within the pressure regulation range either manually using the rotary knob or pneumatically via pilot pressure p12 by an external pilot regulator (where possible using a precision pressure regulator). When switching off the input pressure p1, the output pressure p2 is exhausted via connection 3 (secondary exhausting).

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- High flow rate performance with minimal pressure drop
- High secondary exhausting for ultra-fast reaction times
- Actuator lock to protect set values from being adjusted

- Four pressure regulation ranges: 0.05 ... 0.7 bar, 0.05 ... 2.5 bar, 0.1 ... 4 bar and 0.1 ... 12 bar
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data			
Size			MS6
Pneumatic connection 1, 2			
Female thread			G1/4, G3/8 or G1/2
Connecting plate	[AG...]		G1/4, G3/8, G1/2 or G3/4
	[AQ...]		1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT
Pneumatic connection 3 (secondary exhausting)			G1/4
Pilot air port 12			G1/8 (MS6-LRP-...-PO)
Design			Piloted precision diaphragm regulator
Regulator function			Output pressure constant, with secondary exhausting
Type of mounting			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[1]	[D2]	[bar]	0.05 ... 0.7, manually actuated
	[D4]	[bar]	0.05 ... 2.5, manually actuated
	[D5]	[bar]	0.1 ... 4, manually actuated
	[D7]	[bar]	0.1 ... 12, manually actuated (0.1 ... 10 with pressure sensor or with UL certification)
	[PO]	[bar]	0.1 ... 12, pneumatically actuated (0.1 ... 10 with pressure sensor or with UL certification)
Max. pressure hysteresis		[bar]	0.02
Pressure indicator			Via pressure sensor for displaying the output pressure on LCD display and electrical output
			Via pressure sensor for displaying the output pressure by 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]/[PO]: 0.1 … 12 bar
Standard nominal flow rate qnN [l/min]					
$q_{nN\,1 \rightarrow 2}$	G1/4	800[1]	1100[2]	1400[3]	3000[4]
	G3/8	1100[1]	1400[2]	1700[3]	3300[4]
	G1/2	1600[1]	2300[2]	3000[3]	5000[4]
Secondary exhaust flow rate [l/min]					
$q_{n\,2 \rightarrow 3}$		≥ 220[5]	≥ 450[6]	≥ 650[7]	≥ 900[8]

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

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

Operating and environmental conditions

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

1) Value in brackets applies to MS6-LRP with UL certification.
2) Value in brackets applies to MS6-LRP with pressure sensor.
3) Corrosion resistance class CRC 2 to Festo standard FN 940070
   Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
4) Additional information: www.festo.com/sp ➜ Certificates.

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
CE mark (see declaration of conformity)[1]	To EU Explosion Protection Directive (ATEX)

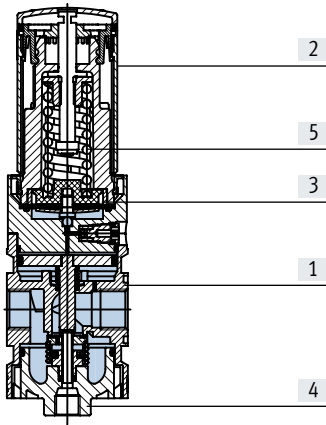1) Additional information: www.festo.com/sp ➜ Certificates.

Weights [g]

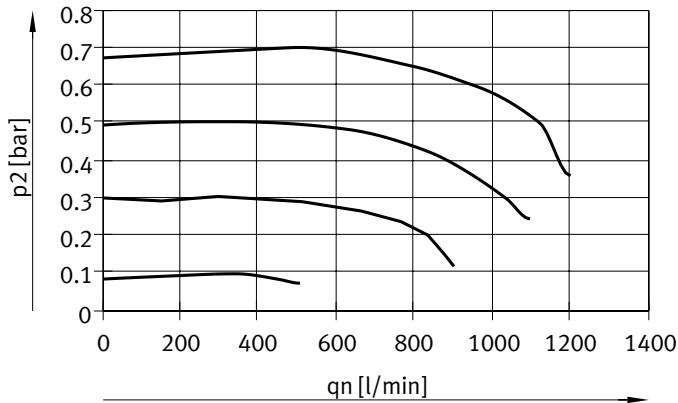|	
Precision pressure regulator	1000
Precision pressure regulator with rotary knob with integrated lock	1120

Datasheet

Materials

Sectional view

		Precision pressure regulator	
	[1]	Housing	Die-cast aluminium
	[2]	Rotary knob	PA, POM
		Rotary knob with integrated lock	Aluminium
	[3]	Diaphragm	NBR
	[4]	Bottom cover	PC
	[5]	Springs	Steel
	–	Seals	NBR
	Note on materials		RoHS-compliant
			Free of copper and PTFE (not with adapter for EN pressure gauge 1/8, with precision pressure gauge or pressure sensor)

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

MS6-LRP-1/4-D2

[D2]: 00.5 ... 0.7 bar

MS6-LRP-3/8-D2
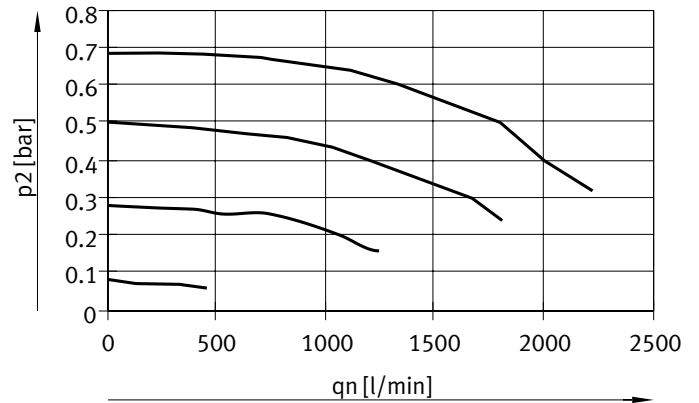
[D2]: 00.5 ... 0.7 bar

MS6-LRP-1/2-D2
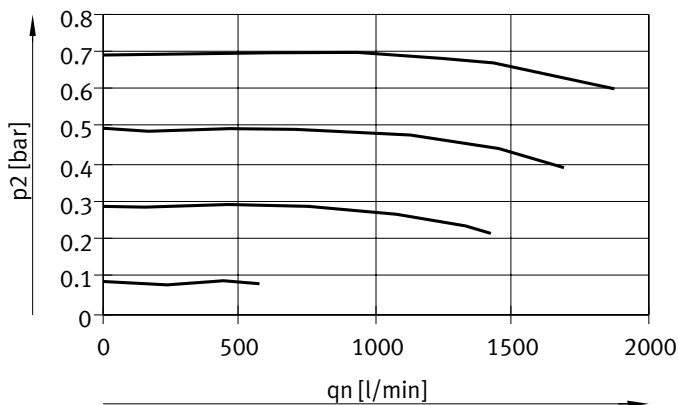
[D2]: 00.5 ... 0.7 bar

MS6-LRP-1/4-D4/D5
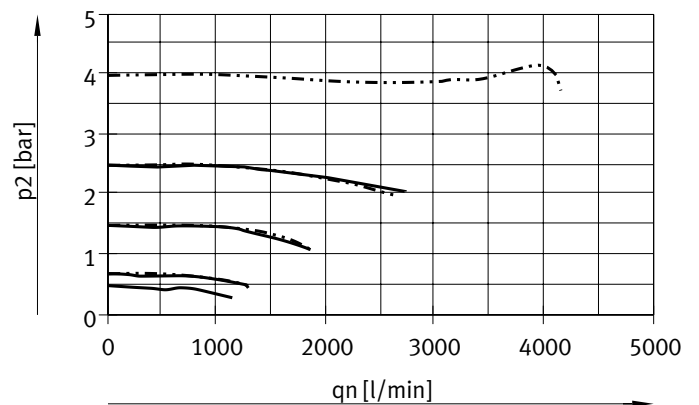
[D4]: 00.5 ... 2.5 bar
[D5]: 0.1 ... 4 bar

Datasheet

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

MS6-LRP-3/8-D4/D5

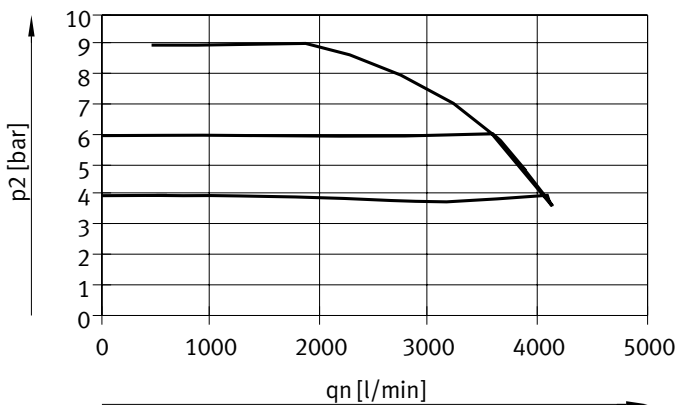MS6-LRP-1/2-D4/D5

——— [D4]: 00.5 ... 2.5 bar
·—··—··— [D5]: 0.1 ... 4 bar
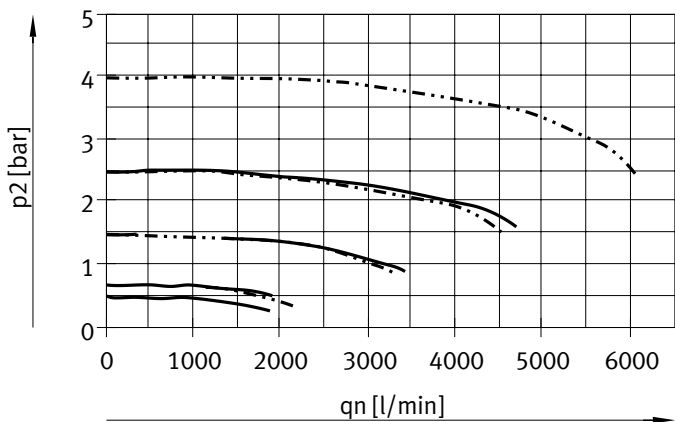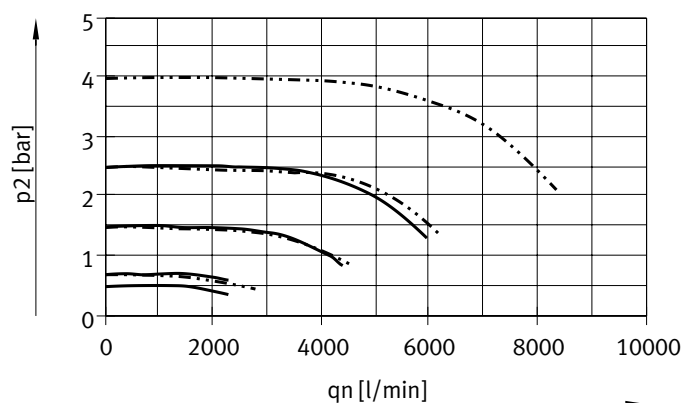
——— [D4]: 00.5 ... 2.5 bar
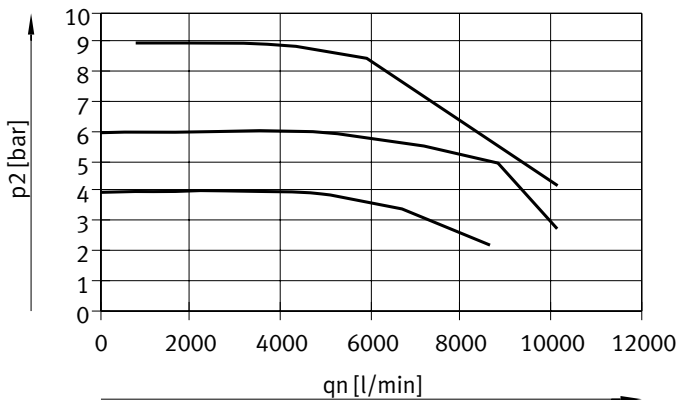·—··—··— [D5]: 0.1 ... 4 bar

MS6-LRP-1/4-D7/PO

MS6-LRP-3/8-D7/PO
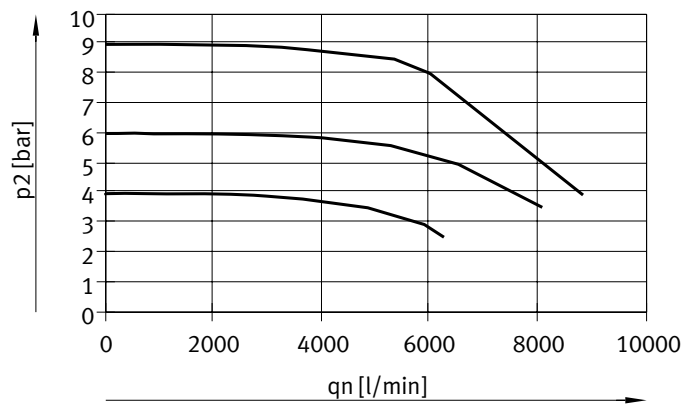
——— [D7]/[PO]: 0.1 ... 12 bar
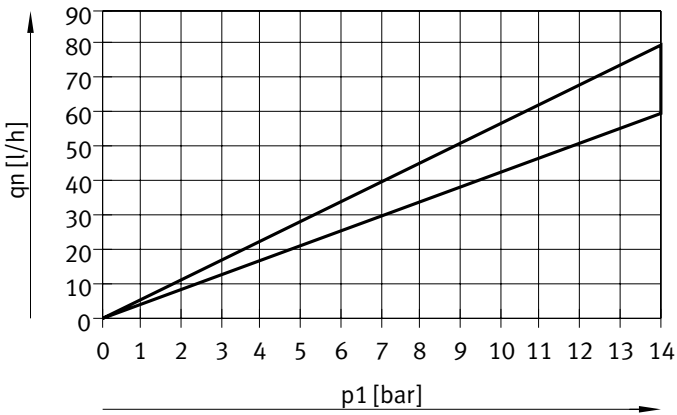
——— [D7]/[PO]: 0.1 ... 12 bar

MS6-LRP-1/2-D7/PO
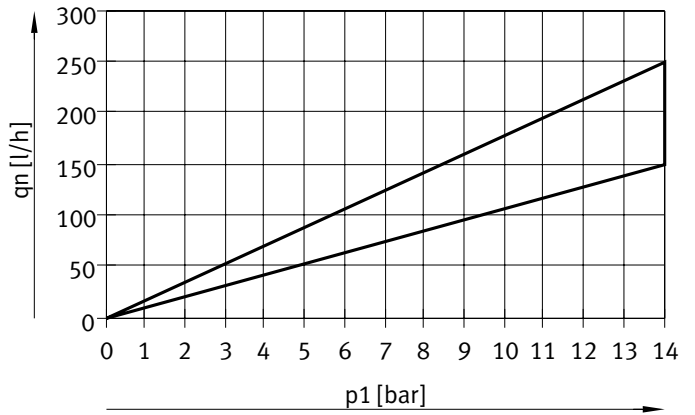
——— [D7]/[PO]: 0.1 ... 12 bar

Datasheet

Internal air consumption qn as a function of input pressure p1

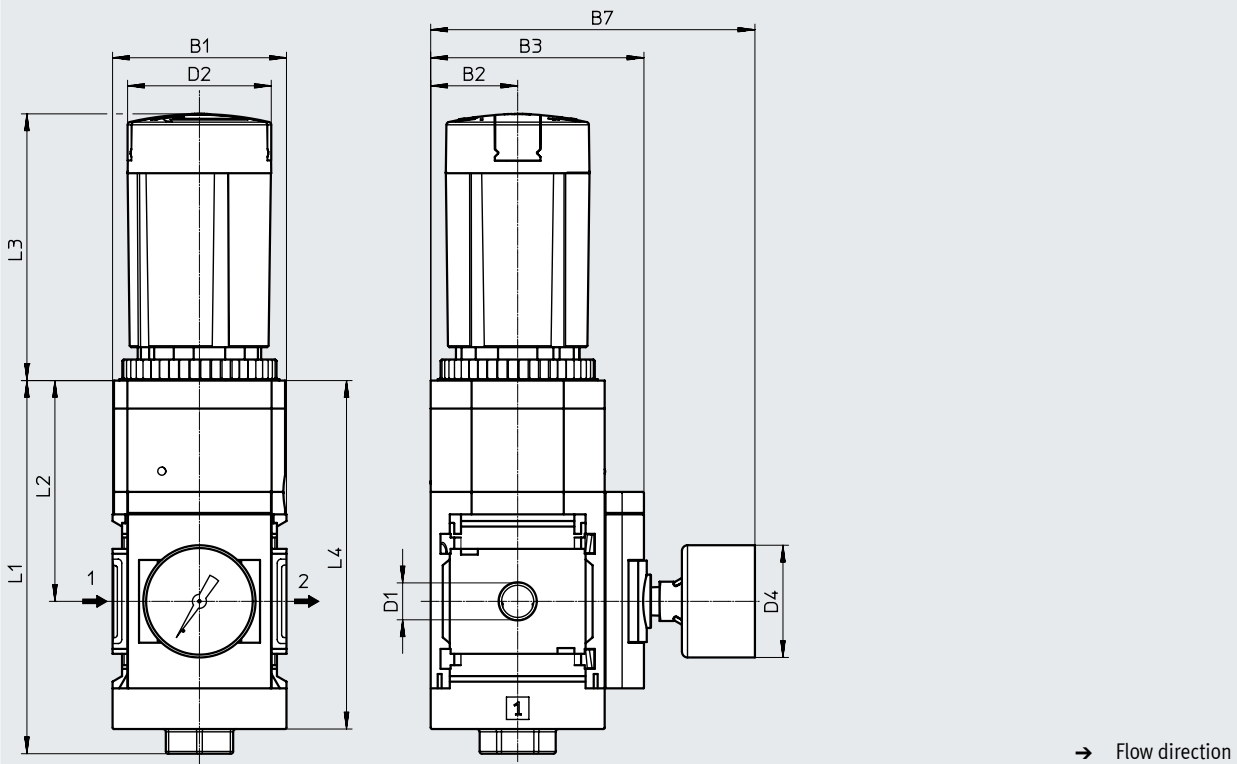MS6-LRP-...-D2/D4

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

Dimensions

Download CAD data → www.festo.com

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

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

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

→   Flow direction

Type	B1	B2	B3	B7	D1	D2 ∅	D4 ∅	L1	L2	L3	L4
MS6-LRP-1/4-D2/D4/D5/D7-A8M-AS					G1/4						
MS6-LRP-3/8-D2/D4/D5/D7-A8M-AS	62	31	76	116	G3/8	51.2	40	133	78	95.1	124
MS6-LRP-1/2-D2/D4/D5/D7-A8M-AS					G1/2						

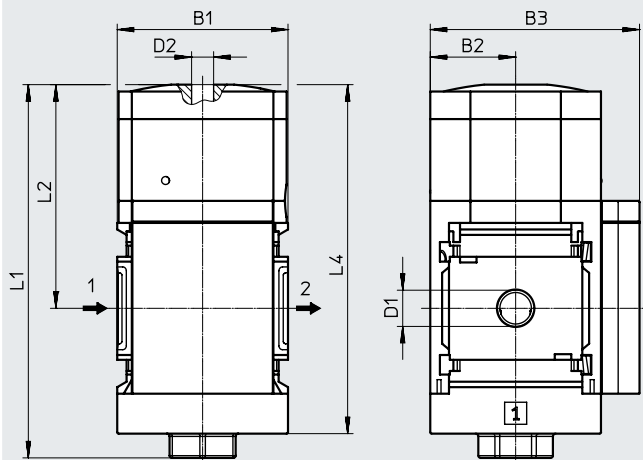· ⫞ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions Download CAD data ➔ www.festo.com

[PO]   Pressure regulation range, pneumatically actuated
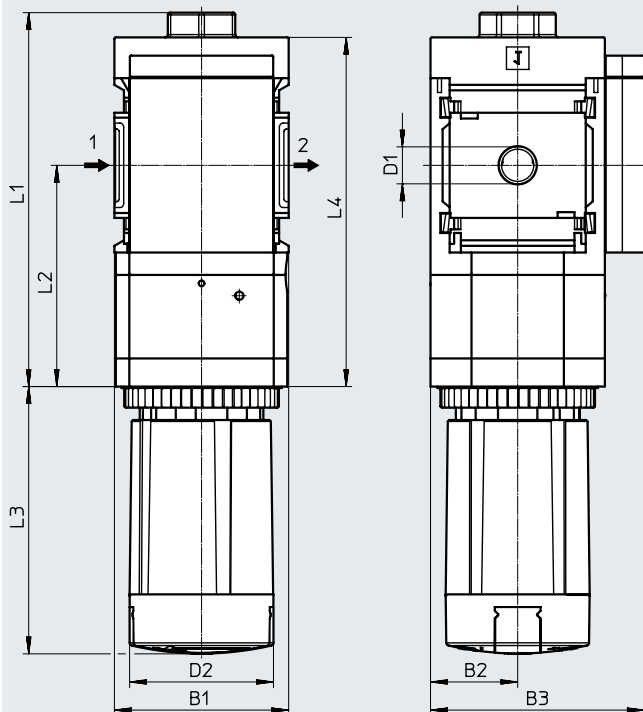
[VS]   Cover plate

➔   Flow direction

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

· ⧙ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Dimensions – Alternative mounting position Download CAD data ➔ www.festo.com

[KD]   Rotary knob underneath

➔   Flow direction

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

· ⧙ · Note: this product conforms to ISO 1179-1 and ISO 228-1.
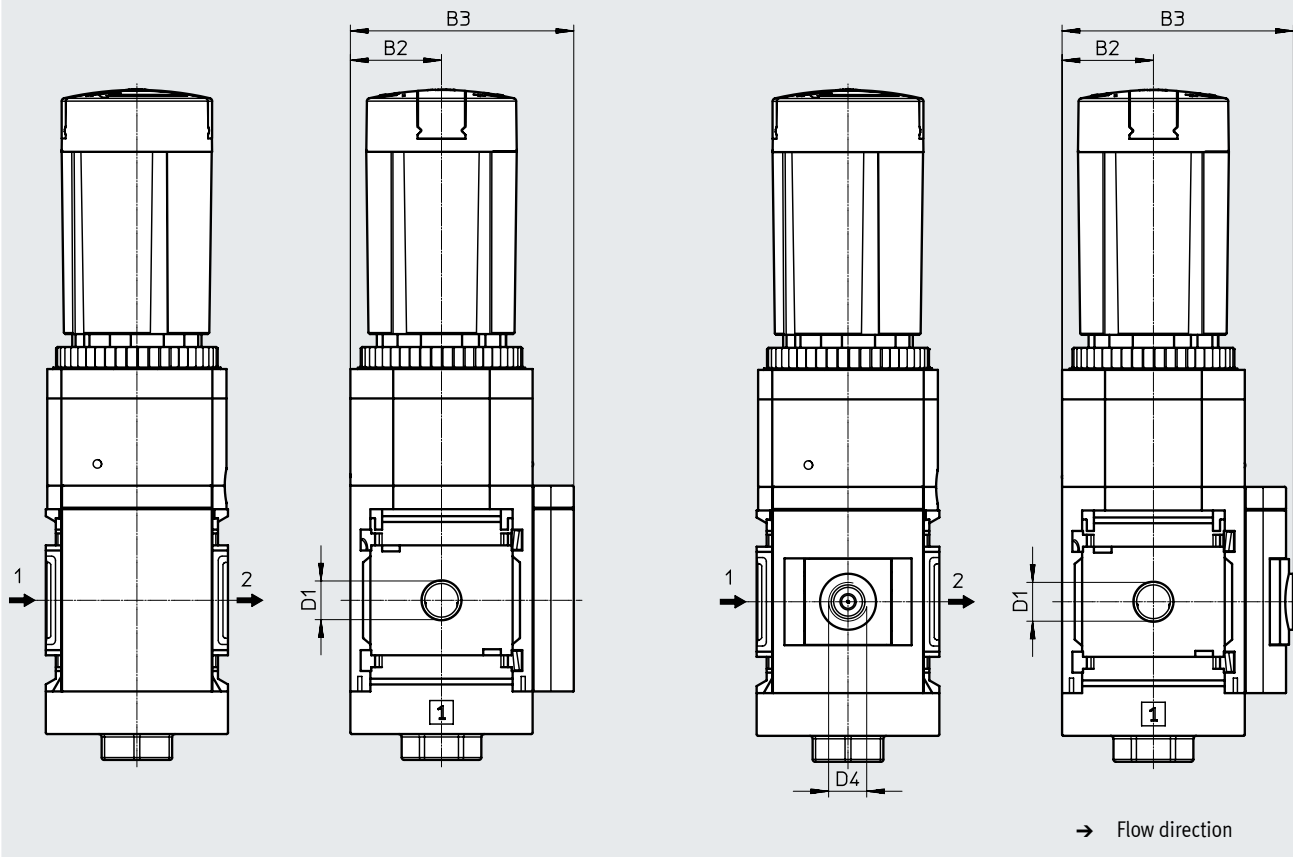
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data ➔ www.festo.com

[VS]   Cover plate

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

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

➔   Flow direction

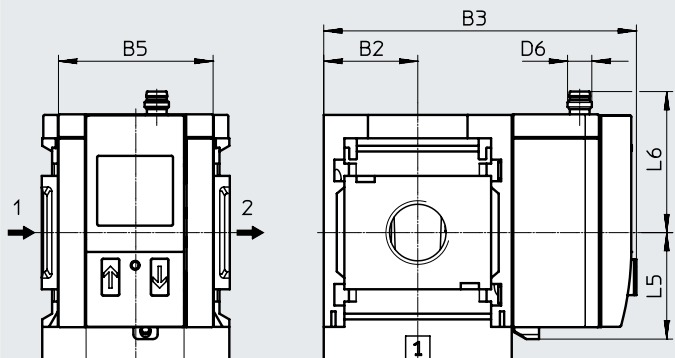| Type	B2	B3	D1	D4
MS6-LRP-1/4-...-VS	31	76	G1/4	–
MS6-LRP-3/8-...-VS			G3/8	
MS6-LRP-1/2-...-VS			G1/2	
MS6-LRP-1/4-...-A8	31	78.5	G1/4	G1/8
MS6-LRP-3/8-...-A8			G3/8	
MS6-LRP-1/2-...-A8			G1/2	
MS6-LRP-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-LRP-3/8-...-A4			G3/8	
MS6-LRP-1/2-...-A4			G1/2	

⫯ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

[AD1 ... 4]   Pressure sensor with LCD display

Datasheets → Internet: sde1

Variant AD1:
SDE1-D10-G2-MS-L-P1-M8 with 3-pin M8x1 plug, 1 switching output PNP

Variant AD2:
SDE1-D10-G2-MS-L-N1-M8 with 3-pin M8x1 plug, 1 switching output NPN

Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with 4-pin M12x1 plug, 1 switching output PNP and 4 ... 20 mA analogue

Variant AD4:
SDE1-D10-G2-MS-L-NI-M12 with 4-pin M12x1 plug, 1 switching output NPN and 4 ... 20 mA analogue
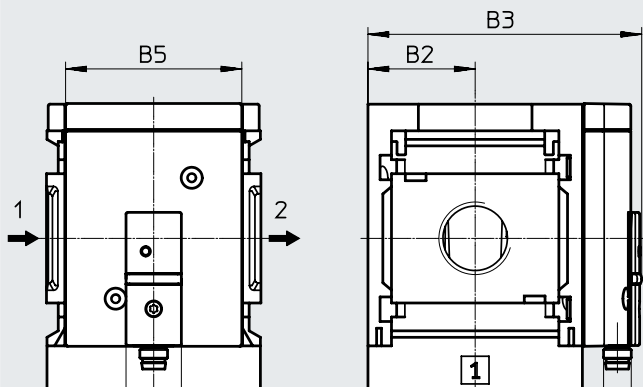
→   Flow direction

Type	B2	B3	B5	B6	D6	L5	L6
MS6-LRP-...-AD1/AD2	31	103	51	32.3	M8x1	35.1	46.7
MS6-LRP-...-AD3/AD4	31	103	51	32.3	M12x1	35.1	55.8

· ⫯ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

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

Datasheets → Internet: sde5

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

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

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

Variant AD10:
SDE5-D10-C3-...-P-M8 with 3-pin M8x1 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

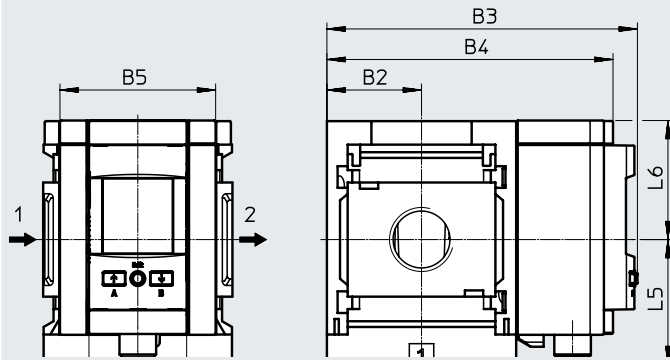· ⫯ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data ➔ www.festo.com

[AD11/AD12] Pressure sensor with LCD display

Datasheets ➔ Internet: spau

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

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

➔ Flow direction

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

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

Datasheet

Dimensions – Rotary knob
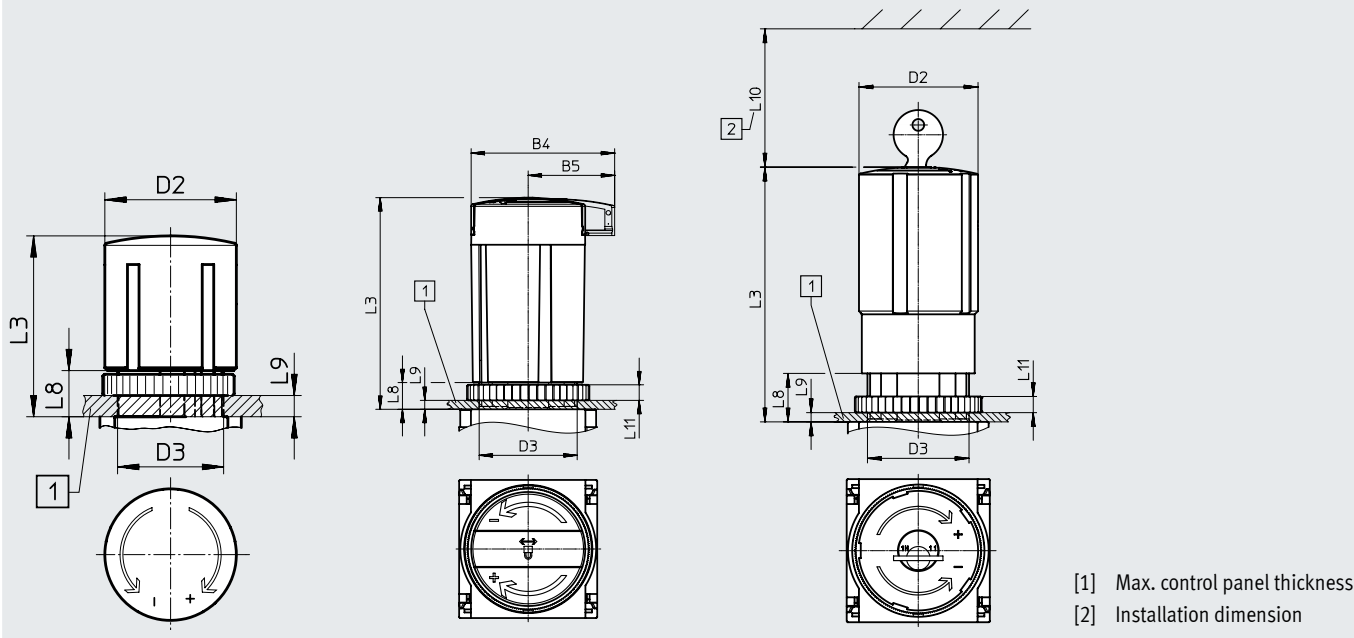
For installation into control panel

[ ] Rotary knob with latch

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

[E11] Rotary knob with integrated lock

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

[LD] Rotary knob, long, with latch

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

[3] For pressure adjustment: fully pull out telescopic rotary knob
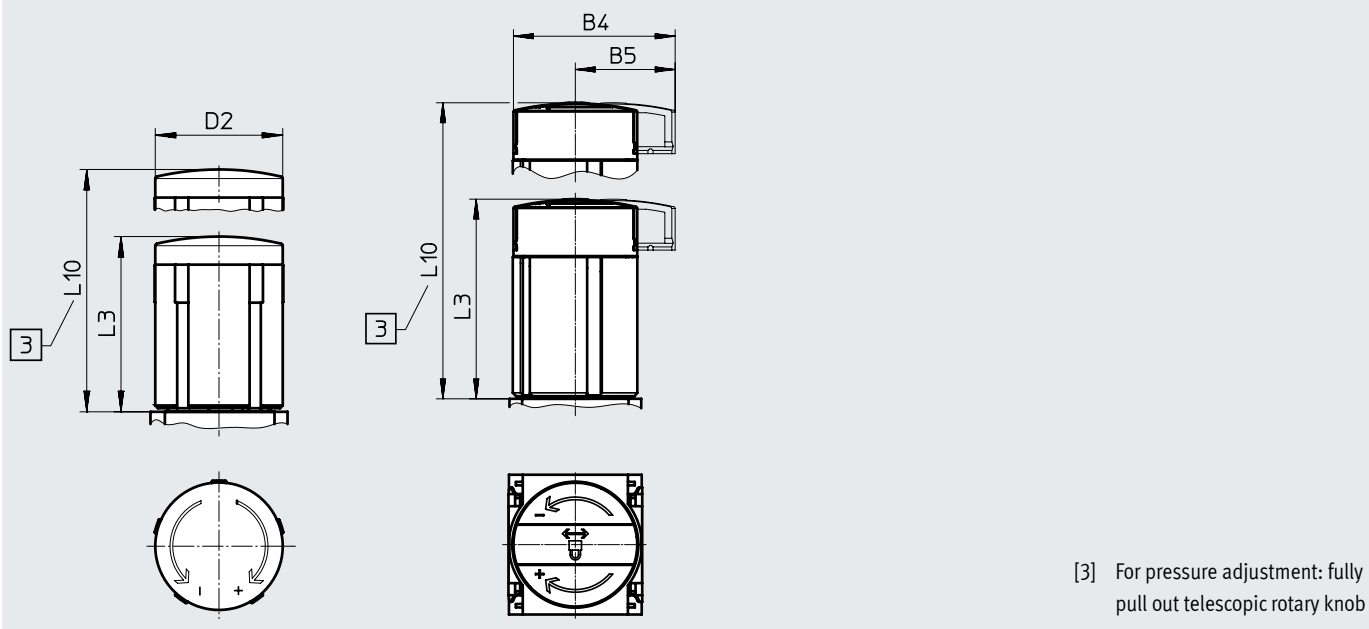
Type	B4	B5	D2	D3	L3	L8	L9	L10
MS6-LRP-...	–	–	51.2	M44x1	86	21	14	–
MS6-LRP-...-AS	64.4	38.8			95.1	12	5	
MS6-LRP-...-E11	–	–			110	21	14	60
MS6-LRP-...-LD	–	–		–	86	–	–	139
MS6-LRP-...-LD-AS	64.4	38.8			95.5			148.5

Datasheet

Ordering data
Adapter for EN pressure gauge 1/8, rotary knob with detent

Size	Connection	Part no.	Type
Pressure regulation range 0.05 … 0.7 bar, manually actuated			
MS6	G1/4	**538004**	**MS6-LRP-1/4-D2-A8**
	G3/8	**538012**	**MS6-LRP-3/8-D2-A8**
	G1/2	**538020**	**MS6-LRP-1/2-D2-A8**
Pressure regulation range 0.05 … 2.5 bar, manually actuated			
MS6	G1/4	**538006**	**MS6-LRP-1/4-D4-A8**
	G3/8	**538014**	**MS6-LRP-3/8-D4-A8**
	G1/2	**538022**	**MS6-LRP-1/2-D4-A8**
Pressure regulation range 0.1 … 4 bar, manually actuated			
MS6	G1/4	**538008**	**MS6-LRP-1/4-D5-A8**
	G3/8	**538016**	**MS6-LRP-3/8-D5-A8**
	G1/2	**538024**	**MS6-LRP-1/2-D5-A8**
Pressure regulation range 0.1 … 12 bar, manually actuated			
MS6	G1/4	**538010**	**MS6-LRP-1/4-D7-A8**
	G3/8	**538018**	**MS6-LRP-3/8-D7-A8**
	G1/2	**538026**	**MS6-LRP-1/2-D7-A8**

Ordering data – Modular product system

Ordering table

Grid dimension [mm]	62	Conditions	Code		Enter code
Module no.	**538028**				
Series	Standard		**MS**		MS
Size	6		**6**		6
Function	Precision pressure regulator		**-LRP**		-LRP
Pneumatic connection	Female thread G1/4	[1]	**- 1/4**		
	Female thread G3/8	[1]	**-3/8**		
	Female thread G1/2	[1]	**- 1/2**		
	Connecting plate G1/4		**-AGB**		
	Connecting plate G3/8		**-AGC**		
	Connecting plate G1/2		**-AGD**		
	Connecting plate G3/4		**-AGE**		
	Connecting plate NPT1/4	[1]	**-AQN**		
	Connecting plate NPT3/8	[1]	**-AQP**		
	Connecting plate NPT1/2	[1]	**-AQR**		
	Connecting plate NPT3/4	[1]	**-AQS**		
Pressure regulation range/actuation	0.05 ... 0.7 bar, manually actuated		**-D2**		
	0.05 ... 2.5 bar, manually actuated		**-D4**		
	0.1 ... 4 bar, manually actuated		**-D5**		
	0.1 ... 12 bar, manually actuated		**-D7**		
	0.1 ... 12 bar, pneumatically actuated (pressure range determined by pilot regulator)	[1] [2]	**-PO**		
Pressure gauge alternatives	Cover plate		**-VS**		
	Adapter for EN pressure gauge 1/8, without pressure gauge		**-A8**		
	Adapter for EN pressure gauge 1/8, with precision pressure gauge		**-A8M**		
	Adapter for EN pressure gauge 1/4, without pressure gauge		**-A4**		
	Pressure sensor with LCD display, M8 plug, 1 switching output PNP, 3-pin	[1] [3]	**-AD1**		
	Pressure sensor with LCD display, M8 plug, 1 switching output NPN, 3-pin	[1] [3]	**-AD2**		
	Pressure sensor with LCD display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA	[1] [3]	**-AD3**		
	Pressure sensor with LCD display, M12 plug, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA	[1] [3]	**-AD4**		
	Pressure sensor with switching status indicator, M8 plug, threshold value comparator, PNP, N/O contact	[1] [4]	**-AD7**		
	Pressure sensor with switching status indicator, M8 plug, threshold value comparator, PNP, N/C contact	[1] [4]	**-AD8**		
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/O contact	[1] [4]	**-AD9**		
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/C contact	[1] [4]	**-AD10**		
	Pressure sensor with LCD display, M12 plug, 4-pin, IO-Link, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[3]	**-AD11**		
	Pressure sensor with LCD display, M8 plug, 4-pin, IO-Link, PNP, NPN, 0 ... 10 V, 1 ... 5 V, 4 ... 20 mA	[3]	**-AD12**		

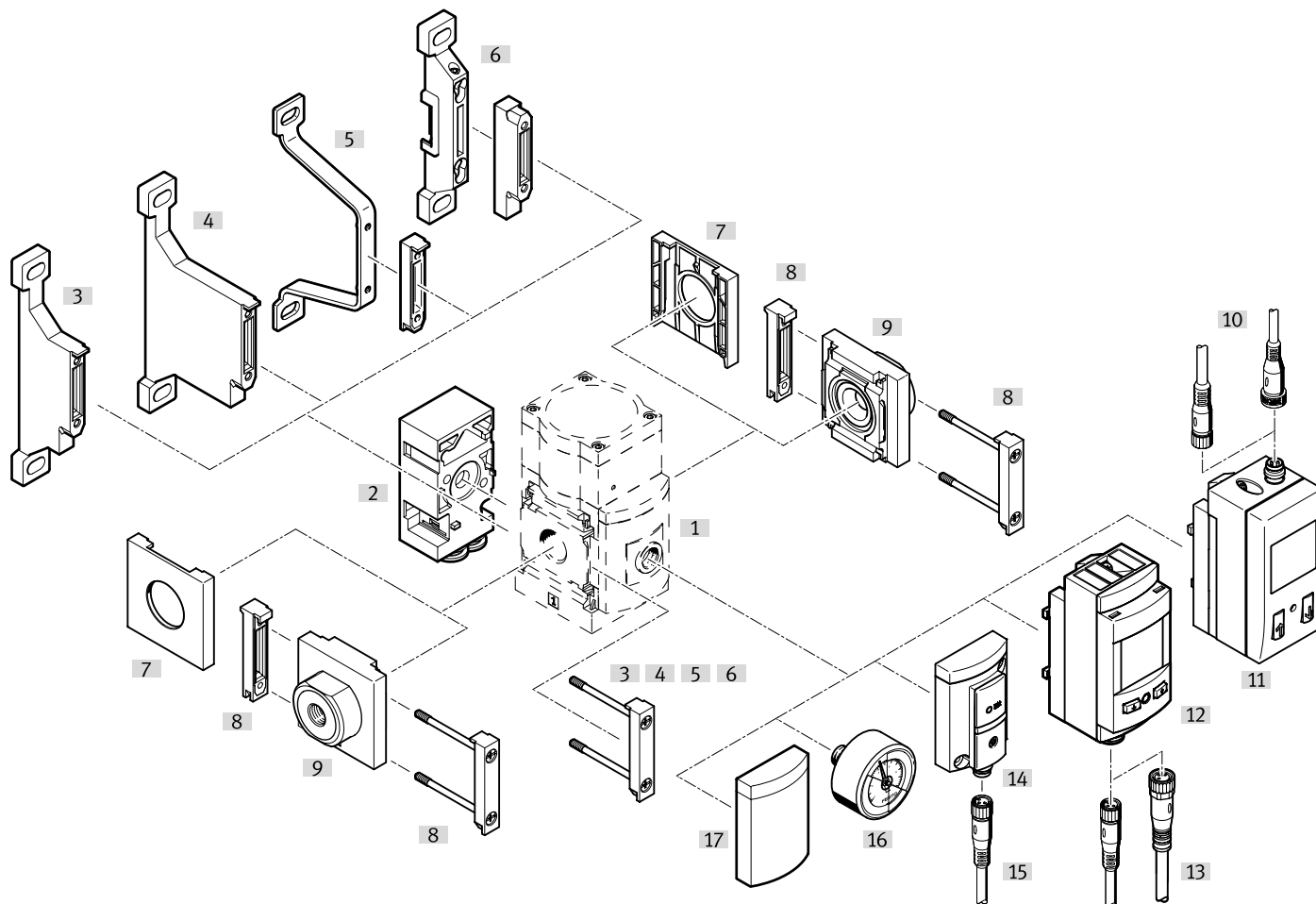|		
[1]	1/4, 3/8, 1/2, AQN, AQP, AQR, AQS, PO, AD1 ... AD4, AD7 ... AD10, KD, E11, WPM	Not with EU EX4 certification.
[2]	PO	Not with rotary knob alternative LD.
		Not with locking options AS, E11.
		Not with type of mounting WR.
[3]	AD1 ... AD4, AD11/AD12	Measuring range max. 10 bar.
		Not with pressure regulation range/actuation D2, D4.
[4]	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 alternatives	Without			
	Long rotary knob	[5]	**-LD**	
Alternative mounting position	Without			
	Rotary knob underneath	[1] [6]	**-KD**	
Locking option	Without			
	Lockable using accessories		**-AS**	
	With integrated lock	[1]	**-E11**	
Type of mounting	Without mounting bracket			
	Mounting bracket with knurled nut for regulator head	[7]	**-WR**	
	Mounting bracket standard design	[8]	**-WP**	
	Mounting bracket for attaching service unit components	[1] [8]	**-WPM**	
	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required		**-WB**	
EU certification	None			
	II 2GD to EU Explosion Protection Directive (ATEX)		**-EX4**	
UL certification	None			
	cULus, ordinary location for Canada and USA		**-UL1**	
Flow direction	Flow direction from left to right			
	Flow direction from right to left		**-Z**	

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

Peripherals overview

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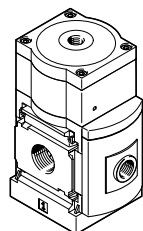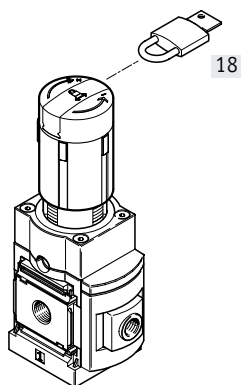

- ‑ ⚕ ‑ **Note**

Additional accessories:
- Module connector for combination with size MS4/MS6 or size MS9
   ➔ Internet: amv, rmv, armv
- Adapter for mounting on profiles
   ➔ Internet: ipm-80, ipm-40-80, ipm-80-80

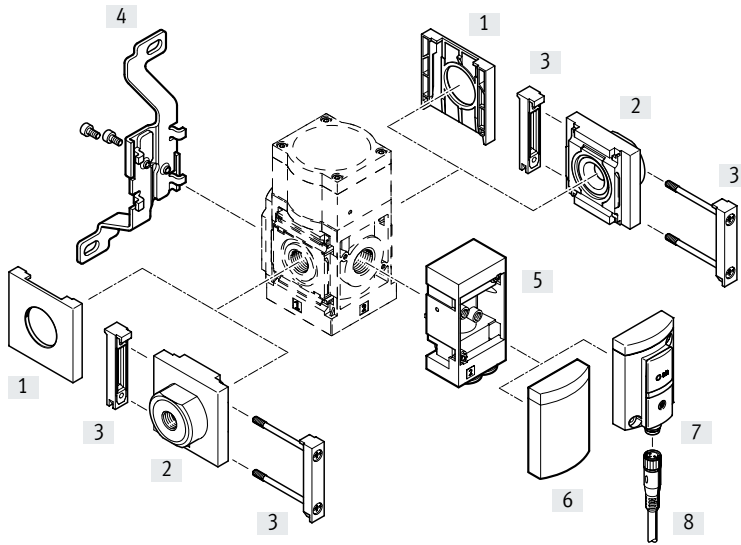Manually actuated   Pneumatically actuated

Peripherals overview

Mounting attachments and accessories

		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Adapter for EN pressure gauge 1/8, 1/4 A8/A4	■	■	■	■	78
[2]	Angled outlet block B…	■	■	■	■	78
[3]	Mounting bracket MS6-WP	–	■	■	■	ms6-wp
[4]	Mounting bracket MS6-WPB	–	■	■	■	ms6-wp
[5]	Mounting bracket MS6-WPE	–	■	■	■	ms6-wp
[6]	Mounting bracket MS6-WPM	–	■	■	■	ms6-wp
[7]	Cover cap MS6-END	■	–	■	–	ms6-end
[8]	Module connector MS6-MV	–	■	■	■	ms6-mv
[9]	Connecting plate SET MS6-AG…	–	■	–	■	ms6-ag
[10]	Connecting cable NEBU-M8…-LE3/NEBU-M12…-LE4	■	■	■	■	110
[11]	Pressure sensor with display AD1 … AD4	■	■	■	■	78
[12]	Pressure sensor with LCD display AD11/AD12	■	■	■	■	78
[13]	Connecting cable NEBU-M8…-LE4/NEBU-M12…-LE4	■	■	■	■	110
[14]	Pressure sensor without display AD7 … AD10	■	■	■	■	78
[15]	Connecting cable NEBU-M8…-LE3	■	■	■	■	110
[16]	Precision pressure gauge A8M/MAP	■	■	■	■	78, 110
[17]	Cover plate VS	■	■	■	■	78
[18]	Padlock LRVS-D	■	■	■	■	110

Peripherals overview

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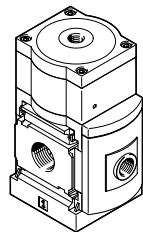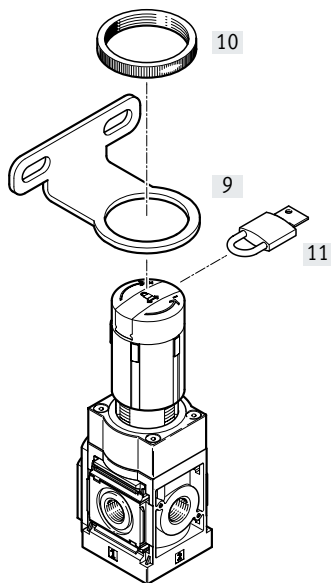

- ⏚ - **Note**

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

Manually actuated   Pneumatically actuated

→ Internet: www.festo.com/catalogue/...   Subject to change – 2021/10

Peripherals overview

Mounting attachments and accessories		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Cover cap MS6-END	■	–	■	–	ms6-end
[2]	Connecting plate SET MS6-AG...	–	■	–	■	ms6-ag
[3]	Module connector MS6-MV	–	■	■	■	ms6-mv
[4]	Mounting bracket MS6-WB	■	■	–	–	ms6-wb
[5]	Angled outlet block B...	■	■	■	■	78
[6]	Cover plate VS	■	■	■	■	78
[7]	Pressure sensor without display AD7 ... AD10	■	■	■	■	78
[8]	Connecting cable NEBU-M8...-LE3	■	■	■	■	110
[9]	Mounting bracket MS6-WR	■	■	–	–	ms6-wr
[10]	Knurled nut (included in the scope of delivery) MS-LR	■	■	–	–	–
[11]	Padlock LRVS-D	■	■	■	■	110

Type codes

001	Series	
MS	MS series	

002	Size	
6	Grid dimension 62 mm	

003	Function	
LRPB	Precision pressure regulator for manifold installation	

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

005	Pressure regulation range	
D2	0.05 … 0.7 bar	
D4	0.05 … 2.5 bar	
D5	0.1 … 4 bar	
D7	0.1 … 12 bar	
PO	Max. 12 bar, pneumatically actuated (pressure range determined by pilot regulator)	

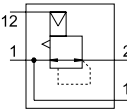| 006	Pressure gauge alternatives	
VS	Cover plate	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge	
A8M	Adapter for EN pressure gauge 1/8, with precision pressure gauge	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
AD1	Pressure sensor with LCD display, M8 plug, PNP, 3-pin	
AD2	Pressure sensor with LCD display, M8 plug, NPN, 3-pin	
AD3	Pressure sensor with LCD display, M12 plug, PNP, 4-pin, analogue output 4 … 20 mA	
AD4	Pressure sensor with LCD display, M12 plug, NPN, 4-pin, analogue output 4 … 20 mA	
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	

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	
WPM	Mounting bracket for hooking in service unit components	
WB	Mounting centrally at rear (wall mounting top and bottom), connecting plates not required	
WPB	Mounting bracket for large wall gap	

012	EU certification	
	None	
EX4	II 2GD	

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

| 014	Flow 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

- ▮▮ - Flow rate
1600 ... 5000 l/min

- ▮ - Temperature range
−10 ... +60°C

- ⏚ - Operating pressure
1 ... 14 bar

- 🧰 - www.festo.com
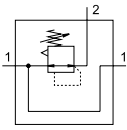
Several precision pressure regulators mounted next to one another to form a regulator manifold:
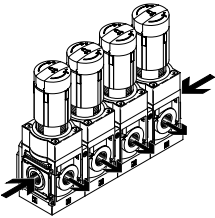
The precision pressure regulator is suitable for sensitive applications requiring a hysteresis of 0.02 bar.

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 switching off the input pressure p1, the output pressure p2 is exhausted via connection 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 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			
Female thread			G1/2
Connecting plate	[AG...]		G1/4, G3/8, G1/2 or G3/4
Pneumatic connection 2			
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 pressure 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[1]	[D2]	[bar]	0.05 ... 0.7, manually actuated
	[D4]	[bar]	0.05 ... 2.5, manually actuated
	[D5]	[bar]	0.1 ... 4, manually actuated
	[D7]	[bar]	0.1 ... 12, manually actuated (0.1 ... 10 with pressure sensor AD... or with UL certification)
	[PO]	[bar]	0.1 ... 12, pneumatically actuated (0.1 ... 10 with pressure sensor AD... or with UL certification)
Max. pressure hysteresis		[bar]	0.02

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

⫚ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

General technical data

Size	MS6
Pressure indicator	Via pressure sensor for displaying the output pressure on LCD display and electrical output
	Via pressure sensor for displaying the output pressure by 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 qnN [l/min]				
$q_{nN\,1 \rightarrow 2}$ G1/2	1600[1]	2300[2]	3000[3]	5000[4]
Secondary exhaust flow rate [l/min]				
$q_{n\,2 \rightarrow 3}$	≥ 220[5]	≥ 450[6]	≥ 650[7]	≥ 900[8]

1)	Measured at p1 = 10 bar and p2 = 0.5 bar, Δp = 0.1 bar	5)	Measured at p1 = 10 bar and p2 = 0.7 bar, Δp2 = 0.1 bar
2)	Measured at p1 = 10 bar and p2 = 1.5 bar, Δp = 0.1 bar	6)	Measured at p1 = 10 bar and p2 = 2.5 bar, Δp2 = 0.1 bar
3)	Measured at p1 = 10 bar and p2 = 2.5 bar, Δp = 0.1 bar	7)	Measured at p1 = 10 bar and p2 = 4.0 bar, Δp2 = 0.1 bar
4)	Measured at p1 = 10 bar and p2 = 6.0 bar, Δp = 0.1 bar	8)	Measured at p1 = 10 bar and p2 = 6.0 bar, Δp2 = 0.1 bar

Operating and environmental conditions

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

1) Value in brackets applies to MS6-LRPB with UL certification.
2) Value in brackets applies to MS6-LRPB with pressure sensor.
3) Corrosion resistance class CRC 2 to Festo standard FN 940070
   Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
4) Additional information: www.festo.com/sp ➔ Certificates.

ATEX

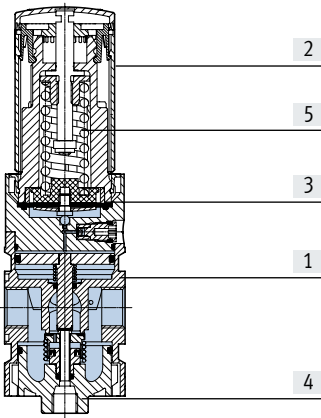| EU certification	[EX4]
ATEX category for gas	II 2G
Type of (ignition) protection for gas	Ex h IIC T6 Gb X
ATEX category for dust	II 2D
Type of (ignition) protection for dust	Ex h IIIC T60°C Db X
Explosion-proof ambient temperature	−10°C ≤ Ta ≤ +60°C
CE mark (see declaration of conformity)[1]	To EU Explosion Protection Directive (ATEX)

1) Additional information: www.festo.com/sp ➔ Certificates.

Weights [g]

Precision pressure regulator	1000
Precision pressure regulator with rotary knob with integrated lock	1120

Datasheet

Materials
Sectional view

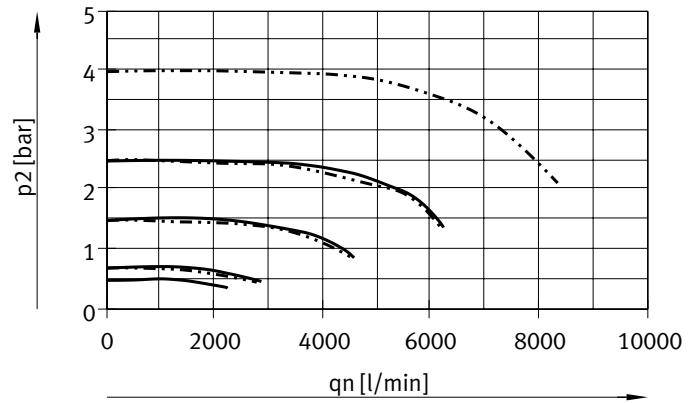| Precision pressure regulator (manifold assembly)		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA, POM
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragm	NBR
[4]	Bottom cover	PC
[5]	Springs	Steel
–	Seals	NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE (not with adapter for EN pressure gauge 1/8, with precision pressure gauge or pressure sensor)

Standard flow rate qn as a function of output pressure p2 (p1 = 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
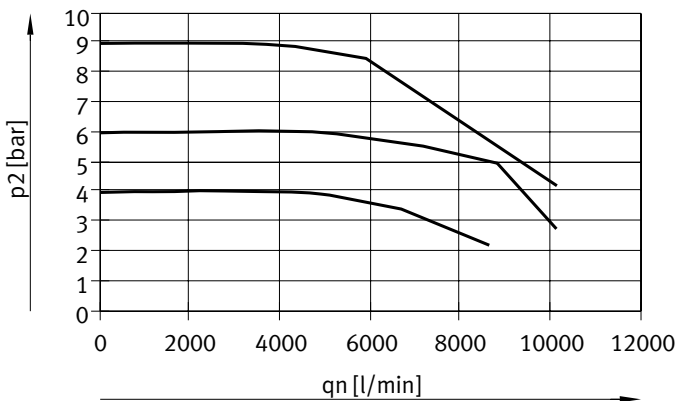
[D7]/[PO]: 0.1 ... 12 bar

➔ **Internet: www.festo.com/catalogue/...**
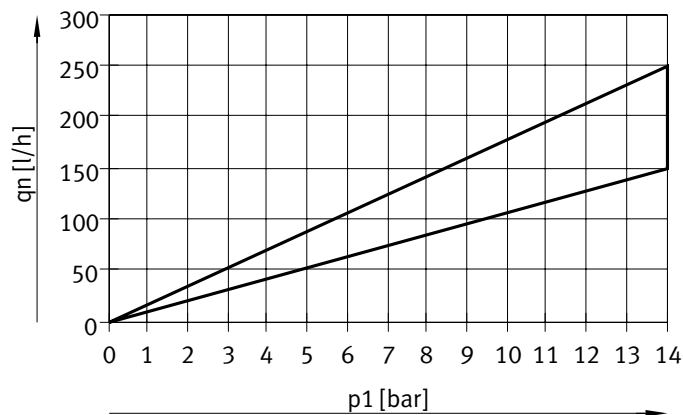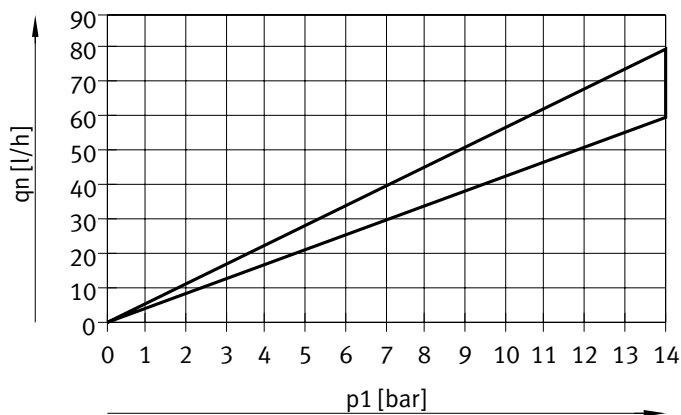
Datasheet

Internal air consumption qn as a function of input pressure p1

MS6-LRPB-...-D2/D4

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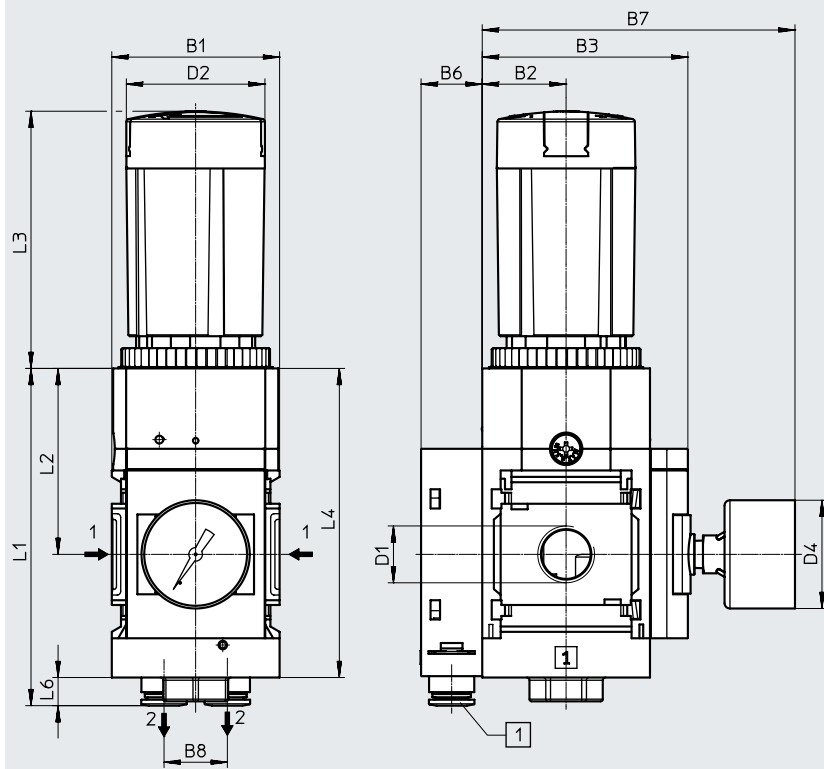

Dimensions

Download CAD data ➔ www.festo.com

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

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

[BD]/[BE]   Angled outlet block

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

[1]   Push-in connector

➔   Flow direction

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

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

Datasheet

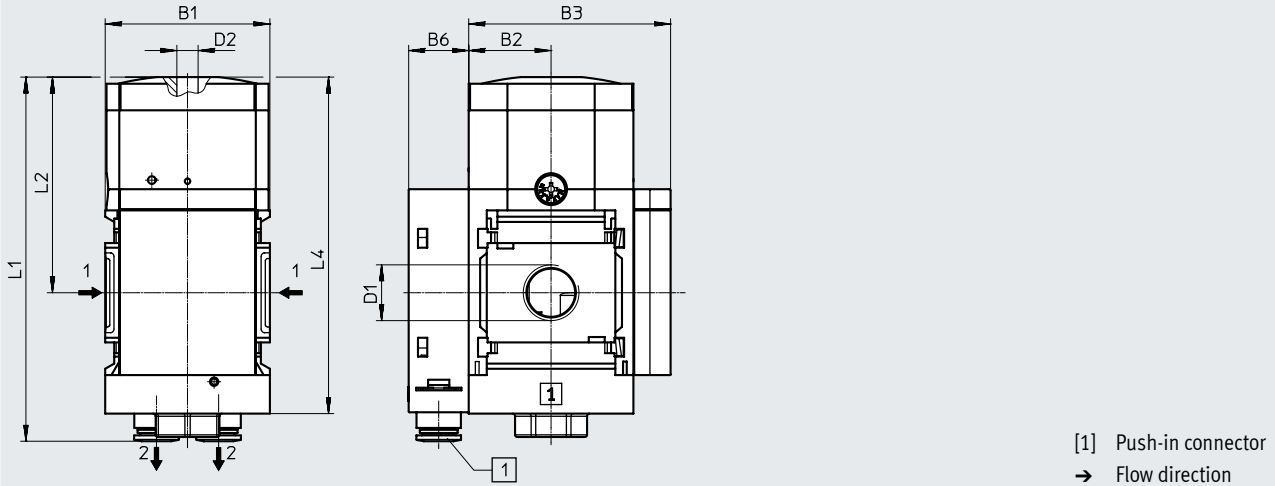**Dimensions** Download CAD data → www.festo.com

[PO]   Pressure regulation range, pneumatically actuated
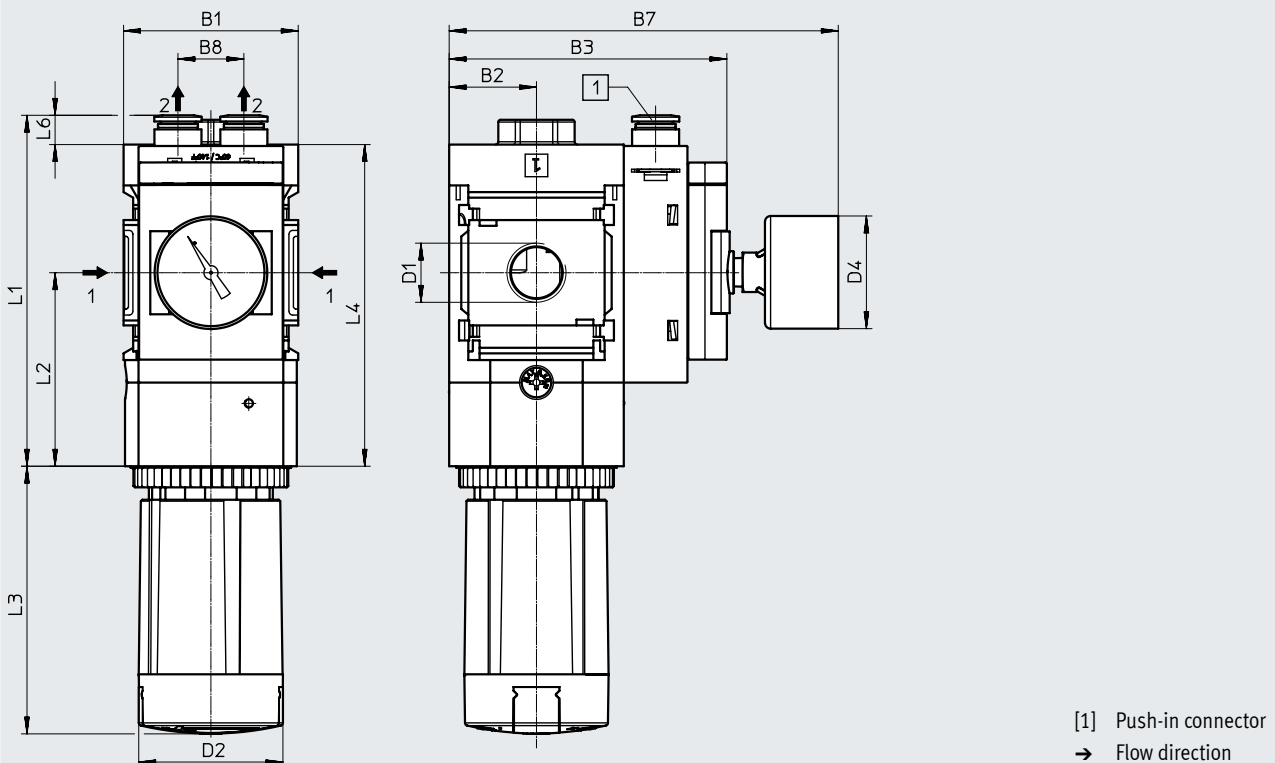
[VS]   Cover plate

[BD]/[BE]   Angled outlet block

[1]   Push-in connector

→   Flow direction

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

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

Dimensions – Alternative mounting position Download CAD data → www.festo.com

[KD]   Rotary knob underneath

[1]   Push-in connector

→   Flow direction

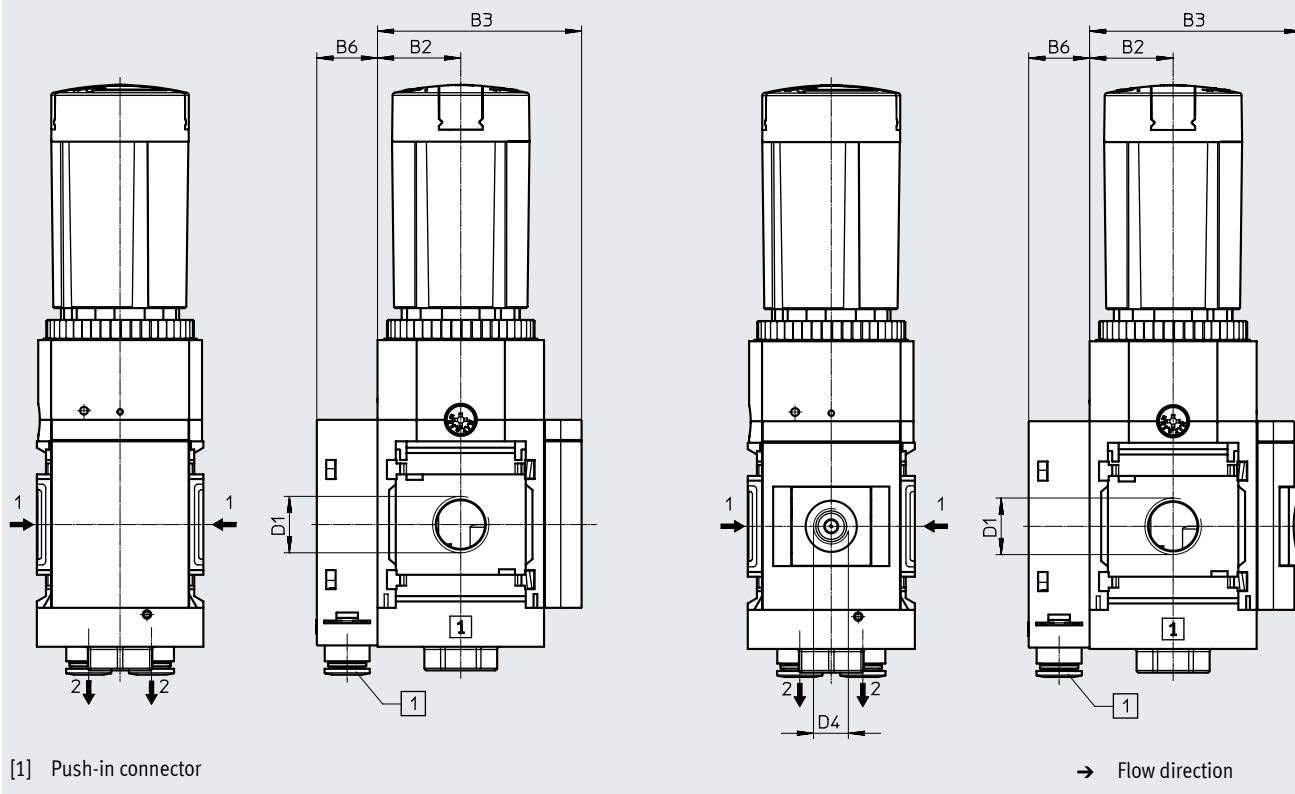| Type	B1	B2	B3	B7	B8	D1	D2 ⌀	D4 ⌀	L1	L2	L3	L4	L6
MS6-LRPB-1/2-...-KD	62	31	99	138	23.4	G1/2	51.2	40	124	68	95.1	114	10

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

Datasheet

Dimensions – Pressure gauge alternatives

[VS]   Cover plate

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

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

[1]   Push-in connector

➔   Flow direction

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

[AD1 ... 4]   Pressure sensor with LCD display

Variant AD1:
SDE1-D10-G2-MS-L-P1-M8 with 3-pin M8x1 plug, 1 switching output PNP

Variant AD2:
SDE1-D10-G2-MS-L-N1-M8 with 3-pin M8x1 plug, 1 switching output NPN

Variant AD3:
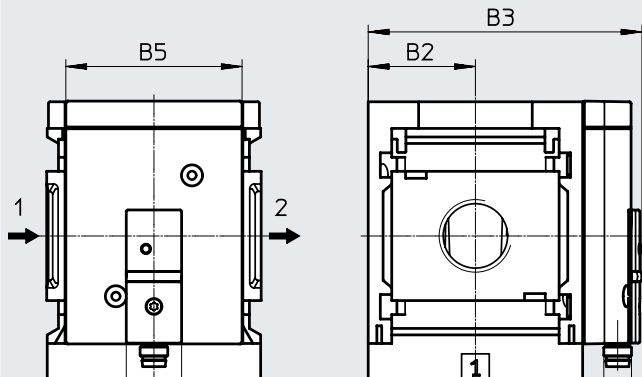SDE1-D10-G2-MS-L-PI-M12 with 4-pin M12x1 plug, 1 switching output PNP and 4 ... 20 mA analogue

Variant AD4:
SDE1-D10-G2-MS-L-NI-M12 with 4-pin M12x1 plug, 1 switching output NPN and 4 ... 20 mA analogue

➔ Flow direction

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

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

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

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

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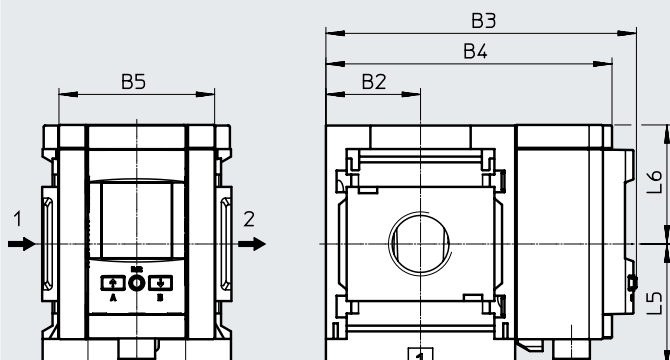SDE5-D10-C3-...-P-M8 with 3-pin M8x1 plug, window comparator, 1 switching output PNP, N/C contact

➔ Flow direction

Type	B2	B3	B5	B6	D6	L5	L6
MS6-LRPB-...-AD1/AD2	31	103	51	32.3	M8x1	35.1	46.7
MS6-LRPB-...-AD3/AD4	31	103	51	32.3	M12x1	35.1	55.8
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

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

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

➔ Flow direction

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

Datasheet

Dimensions – Rotary knob

For installation into control panel

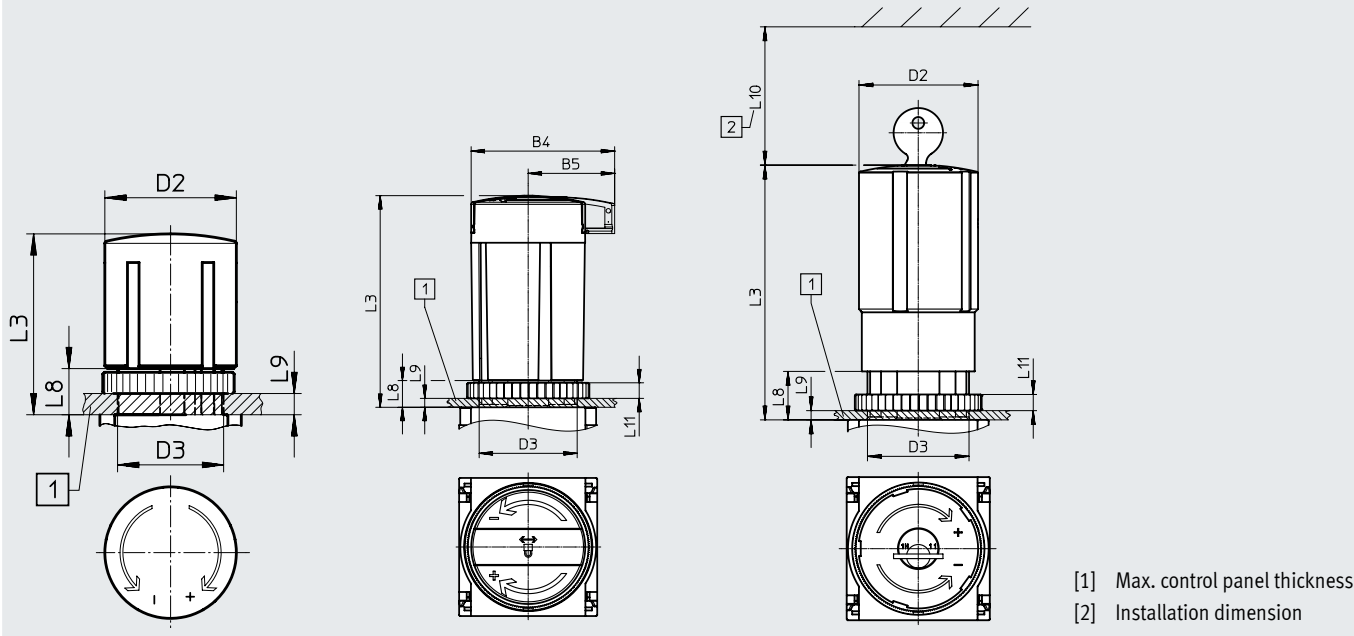Download CAD data ➔ www.festo.com

[ ]   Rotary knob with latch

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

[E11] Rotary knob with integrated lock

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

[LD]   Rotary knob, long, with latch

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

[3] For pressure adjustment: fully pull out telescopic rotary knob
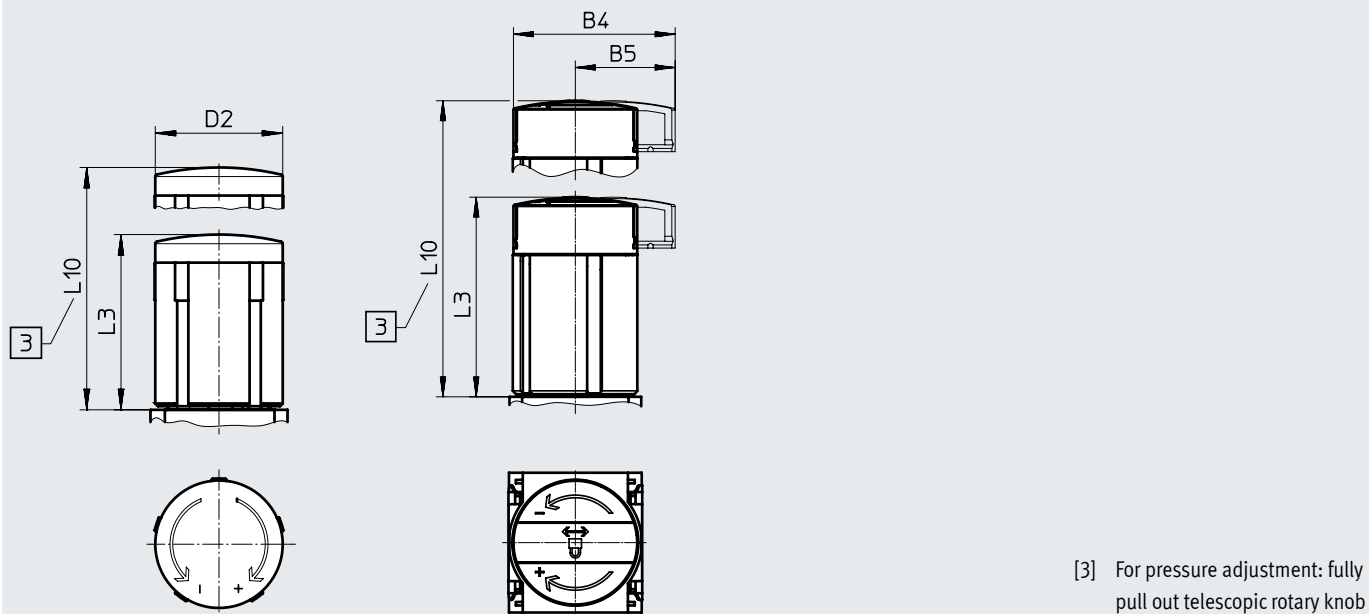
Type	B4	B5	D2	D3	L3	L8	L9	L10
MS6-LRPB-...	–	–			86	21	14	–
MS6-LRPB-...-AS	64.4	38.8		M44x1	95.1	12	5	
MS6-LRPB-...-E11	–	–	51.2		110	21	14	60
MS6-LRPB-...-LD	–	–		–	86	–	–	139
MS6-LRPB-...-LD-AS	64.4	38.8			95.5			148.5

Datasheet

Ordering data			
Adapter for EN pressure gauge 1/8, rotary knob with latch, pressure output to the rear without angled outlet block			
Size	Connection	Part no.	Type
Pressure regulation range 0.05 … 2.5 bar, manually actuated			
MS6	G1/2	**534914**	**MS6-LRPB-1/2-D4-A8**
Pressure regulation range 0.1 … 4 bar, manually actuated			
MS6	G1/2	**534917**	**MS6-LRPB-1/2-D5-A8**

Ordering data			
Adapter for EN pressure gauge 1/8, rotary knob with latch, pressure output to the rear with angled outlet block QS-8			
Size	Connection	Part no.	Type
Pressure regulation range 0.05 … 0.7 bar, manually actuated			
MS6	G1/2	**534865**	**MS6-LRPB-1/2-D2-A8-BD**
Pressure regulation range 0.1 … 12 bar, manually actuated			
MS6	G1/2	**534874**	**MS6-LRPB-1/2-D7-A8-BD**

Ordering data – Modular product system

Ordering table

Grid dimension [mm]	62	Conditions	Code		Enter code
Module no.	**535007**				
Series	Standard		**MS**		MS
Size	6		**6**		6
Function	Precision pressure regulator for manifold assembly		**-LRPB**		-LRPB
Pneumatic connection	Female thread G1/2	[1]	**- 1/2**		
	Connecting plate G1/4		**-AGB**		
	Connecting plate G3/8		**-AGC**		
	Connecting plate G1/2		**-AGD**		
	Connecting plate G3/4		**-AGE**		
Pressure regulation range/actuation	0.05 … 0.7 bar, manually actuated		**-D2**		
	0.05 … 2.5 bar, manually actuated		**-D4**		
	0.1 … 4 bar, manually actuated		**-D5**		
	0.1 … 12 bar, manually actuated		**-D7**		
	0.1 … 12 bar, pneumatically actuated (pressure range determined by pilot regulator)	[1] [2]	**-PO**		
Pressure gauge alternatives	Cover plate	[3]	**-VS**		
	Adapter for EN pressure gauge 1/8, without pressure gauge	[4]	**-A8**		
	Adapter for EN pressure gauge 1/8, with precision pressure gauge	[4]	**-A8M**		
	Adapter for EN pressure gauge 1/4, without pressure gauge	[4]	**-A4**		
	Pressure sensor with LCD display, M8 plug, 1 switching output PNP, 3-pin	[1] [4] [5]	**-AD1**		
	Pressure sensor with LCD display, M8 plug, 1 switching output NPN, 3-pin	[1] [4] [5]	**-AD2**		
	Pressure sensor with LCD display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 … 20 mA	[1] [4] [5]	**-AD3**		
	Pressure sensor with LCD display, M12 plug, 1 switching output NPN, 4-pin, analogue output 4 … 20 mA	[1] [4] [5]	**-AD4**		
	Pressure sensor with switching status indicator, M8 plug, threshold value comparator, PNP, N/O contact	[1] [5] [6]	**-AD7**		
	Pressure sensor with switching status indicator, M8 plug, threshold value comparator, PNP, N/C contact	[1] [5] [6]	**-AD8**		
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/O contact	[1] [5] [6]	**-AD9**		
	Pressure sensor with switching status indicator, M8 plug, window comparator, PNP, N/C contact	[1] [5] [6]	**-AD10**		
	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]	**-AD11**		
	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]	**-AD12**		

[1] 1/2, PO, AD1 … AD4, 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 type of mounting WR.

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

[4] A8, A8M, A4, AD1 … AD4, AD11/AD12   In combination with outlet direction Z only with alternative mounting position KD.

[5] AD1 … AD4, AD7 … AD10, AD11/AD12   Measuring range max. 10 bar.
   Not with pressure regulation range/actuation D2, D4.

[6] AD7 … AD10   In combination with outlet direction Z only with alternative pressure output BD, BE or in combination with outlet direction Z only with alternative mounting position KD
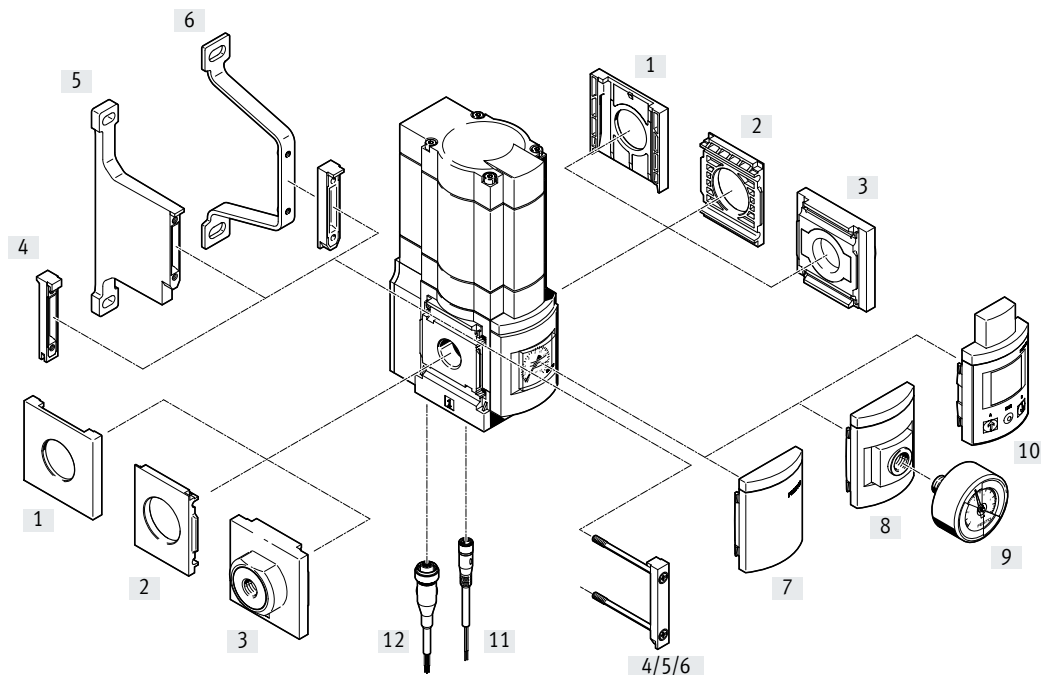
Ordering data – Modular product system

Ordering table

Grid dimension [mm]	62	Conditions	Code	Enter code
Rotary knob	Standard			
	Long rotary knob	[7]	**-LD**	
Alternative mounting position	Without			
	Rotary knob underneath	[1] [8]	**-KD**	
Locking option	Without			
	Lockable using accessories		**-AS**	
	With integrated lock	[1]	**-E11**	
Alternative pressure output (p max = 10 bar)	Without			
	Angled outlet block QS-8		**-BD**	
	Angled outlet block QS-10		**-BE**	
Type of mounting	Without mounting bracket			
	Mounting bracket with knurled nut for regulator head	[9] [10]	**-WR**	
	Mounting bracket standard design	[11] [12]	**-WP**	
	Mounting bracket for attaching service unit components	[1] [9] [11]	**-WPM**	
	Mounting bracket for large wall gap	[11] [13]	**-WPB**	
	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required	[9]	**-WB**	
EU certification	None			
	II 2GD to EU Explosion Protection Directive (ATEX)		**-EX4**	
UL certification	None			
	cULus, ordinary location for Canada and USA		**-UL1**	
Outlet direction	Pressure output to the rear			
	Pressure output to front (without angled outlet block, without pressure output)		**-Z**	

[7] LD   Not with locking option E11.
[8] KD   In combination with pressure gauge alternatives A8, A4, AD1 … AD4, AD7 … AD10, only with outlet direction Z.
[9] WR, WB, WPM Only with outlet direction Z.
              Not with alternative mounting position KD.
[10] WR   Only with outlet direction Z.
              Not with long rotary knob LD.
[11] WP, WPM, WPB Only with connecting plate AGB, AGC, AGD or AGE.
[12] WP   Not with alternative mounting position KD.
              Either only with outlet direction Z or only with alternative pressure output BD, BE.
[13] WPB   Not with alternative mounting position KD.
              Not with alternative pressure output BD, BE.
              Not with outlet direction Z.

Peripherals overview

Electrical pressure regulator MS6-LRE

Mounting attachments and accessories

		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
[1]	Cover cap MS6-END	–	–	■	–	ms6-end
[2]	Mounting plate MS6-AEND	■1)	–	■2)	–	ms6-aend
[3]	Connecting plate SET MS6-AG...	–	■1)	–	■2)	ms6-ag
	Connecting plate SET MS6-AQ...	–	■1)	–	■2)	ms6-aq
[4]	Module connector MS6-MV	–	–	■	■	ms6-mv
[5]	Mounting bracket MS6-WPB	■	■	■	■	ms6-wpb
[6]	Mounting bracket MS6-WPE	■	■	■	■	ms6-wpe
[7]	Cover plate VS	■	■	■	■	87
[8]	Adapter for EN pressure gauge 1/4 A4	■	■	■	■	87
[9]	Pressure gauge MA	■	■	■	■	110
[10]	Operating unit with display OP	■	■	■	■	87
[11]	Connecting cable NEBU-M8...-LE3	■	■	■	■	110
[12]	Connecting cable NEBU-M12...-LE5	■	■	■	■	110

1) Mounting bracket MS6-WPB/WPE is required for mounting.
2) Module connector MS6-MV or mounting bracket MS6-WPB/WPE is required for mounting.

Type codes

001	Series	
MS	MS series	

002	Size	
6	Grid dimension 62 mm	

003	Function	
LRE	Electric pressure regulator	

004	Pneumatic connection	
1/4	Female thread G1/4	
3/8	Female thread G3/8	
1/2	Female thread G1/2	
AGB	Sub-base G1/4	
AGC	Sub-base G3/8	
AGD	Sub-base G1/2	
AGE	Sub-base G3/4	
AQN	Sub-base NPT1/4	
AQP	Sub-base NPT3/8	
AQR	Sub-base NPT1/2	
AQS	Sub-base NPT3/4	

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

006	Pressure gauge alternatives	
	None	
VS	Cover plate	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	
RG	Integrated pressure gauge, red/green scale	
OP	Operating unit with display	

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

008	Secondary exhausting	
	With secondary exhausting	
OS	Without secondary exhaust	

009	Electrically controlled pressure output	
	None	
PI	Plug, M8, 3-pin, I out	
PU	Plug, M8, 3-pin, V out	

010	Sensor cable	
	None	
SK2	Plug socket, M8, with cable, 2.5 m	
SK5	Plug socket, M8, with cable, 5 m	

011	Supply cable	
	None	
VK2	Plug socket, M12, with cable 2.5 m	
VK5	Plug socket, M12, with cable, 5 m	

012	Type of mounting	
	Without mounting bracket	
WBE	Mounting bracket for large wall gap with low loads	
WPB	Mounting bracket for large wall gap	

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

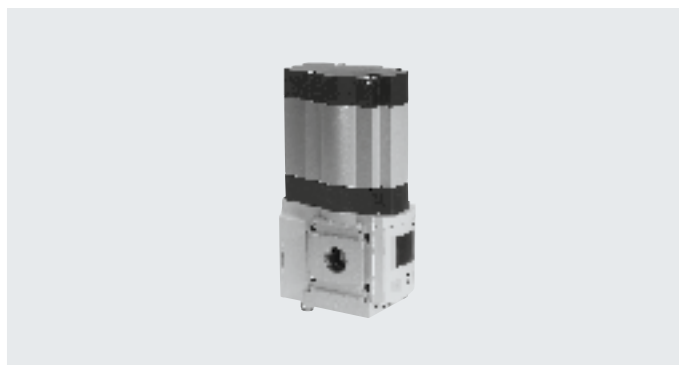| 014	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

Datasheet

With pressure gauge
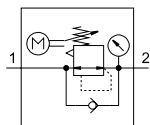
With pressure gauge and integrated pressure sensor
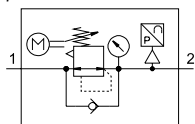
- ‖ - Flow rate
  2200 ... 7500 l/min

- 🌡 - Temperature range
  0 ... +50°C

- ⏚ - Operating pressure
  0.8 ... 20 bar

- ⬍ - **Note**

The electrical pressure regulator is not suitable for creating electrical control loops.

The electrical pressure regulator maintains incoming compressed air at the set output pressure. The electrical pressure regulator maintains a constant output pressure independent of pressure fluctuations and air consumption.

The integrated electrical drive unit is used to set the output pressure indirectly. The drive unit can be controlled either via the digital inputs on the M12 plug or via the optional operator unit.

This determines the direction of rotation of the drive unit, enabling the output pressure to be adjusted in an increasing or decreasing direction.
In the event of a power failure, the last drive unit setting, or the output pressure, is saved. Pneumatic pressure regulation continues to function.

- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Optional operator unit with display
- Optional integrated pressure sensor with electrical output
- Constant output pressure even in the event of a power failure due to the fail-safe function
- Available with or without secondary exhausting

General technical data

Size			MS6
Pneumatic connection 1, 2			
Female thread			G1/4, G3/8 or G1/2
Connecting plate	[AG...]		G1/4, G3/8, G1/2 or G3/4
	[AQ...]		1/4 NPT, 3/8 NPT, 1/2 NPT or 3/4 NPT
Design			Electrically adjustable pressure regulator
Regulator function			Output pressure constant, with input pressure compensation, with/without secondary exhausting
Type of mounting			With accessories
			In-line installation
Mounting position			Any, preferably vertical
Pressure regulation range	[D5]	[bar]	0.3 ... 4
	[D6]	[bar]	0.3 ... 7
	[D7]	[bar]	0.5 ... 12
	[D8]	[bar]	0.5 ... 16
Max. pressure hysteresis		[bar]	0.25
Pressure indicator			With pressure gauge
			With operator unit

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

Datasheet

Standard nominal flow rate qnN[1] [l/min]

Pneumatic connection		G1/4	G3/8	G1/2
Pressure regulation range	[D5]	2400[2]	5500[2]	7500[2]
	[D6]	3000	5800	6500
	[D7]	2700	4500	5500
	[D8]	2200	4000	4500

1) Measured at p1 = 10 bar and p2 = 6 bar, Δp = 1 bar
2) Measured at p1 = 10 bar and p2 = 3 bar, Δp = 1 bar

Electrical data

		without integrated pressure sensor	with integrated pressure sensor	
			[PI] (I out)	[PU] (U out)
Analogue output	[V]	–	–	0 … 10
	[mA]	–	4 … 20	–
Analogue outputs, absolute accuracy at 25°C	[%]	–	±3	±3
Cable interface	Inputs	M12x1 plug, 5-pin		
	Outputs	–	M8x1 plug, 3-pin	
Design of inputs		To IEC 61131-2, no galvanic isolation		
Nominal operating voltage	[V DC]	24		
Permissible voltage fluctuations	[%]	±10		
Current consumption at nominal operating voltage	[A]	Max. 1		
Current consumption	[A]	Max. 3.5 at 24 V DC		
Control duration at 25°C	[s]	Max. 90[1]		
Short circuit current rating		For all electrical connections		
Degree of protection		IP65		

1) A ratio of control duration to interval of 1:3 must be maintained to prevent overheating of the drive.

Operating and environmental conditions

Operating pressure	[bar]	0.8 … 20 (0.8 … 10)[1]
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
		Inert gases
Note on the operating/pilot medium		Lubricated operation possible (in which case lubricated operation will always be required)
Ambient temperature	[°C]	0 … +50
Temperature of medium	[°C]	0 … +50
Storage temperature	[°C]	−10 … +50
Corrosion resistance class CRC[2]		2
CE mark (see declaration of conformity)[3]		To EU EMC Directive
Suitability for use in the food industry[4]		See supplementary material information
UL certification[4]		c UL us - Recognized (OL)

1) Value in brackets applies to MS6-LRE with UL certification.
2) Corrosion resistance class CRC 2 to Festo standard FN 940070

   Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
3) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➔ Certificates.

   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.
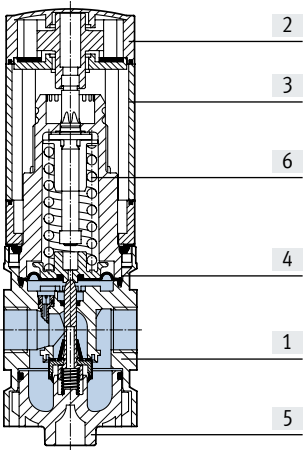4) Additional information: www.festo.com/sp ➔ Certificates.

Datasheet

Weights [g]

Electrical pressure regulator	1280

Materials

Sectional view

Electrical pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Drive housing	PA-reinforced
[3]	Profile housing	Wrought aluminium alloy
[4]	Diaphragm	NBR
[5]	Bottom cover	Fibreglass-reinforced PET
[6]	Springs	Steel
–	Operator unit	PA
–	Seals	NBR

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

MS6-LRE-1/4

MS6-LRE-3/8

——— [D6]: 0.3 ... 7 bar
– – – [D7]: 0.5 ... 12 bar

MS6-LRE-1/2

——— [D6]: 0.3 ... 7 bar
– – – [D7]: 0.5 ... 12 bar

Datasheet

Dimensions – Basic version

[ ]   Integrated MS pressure gauge with standard scale

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

➜ Flow direction
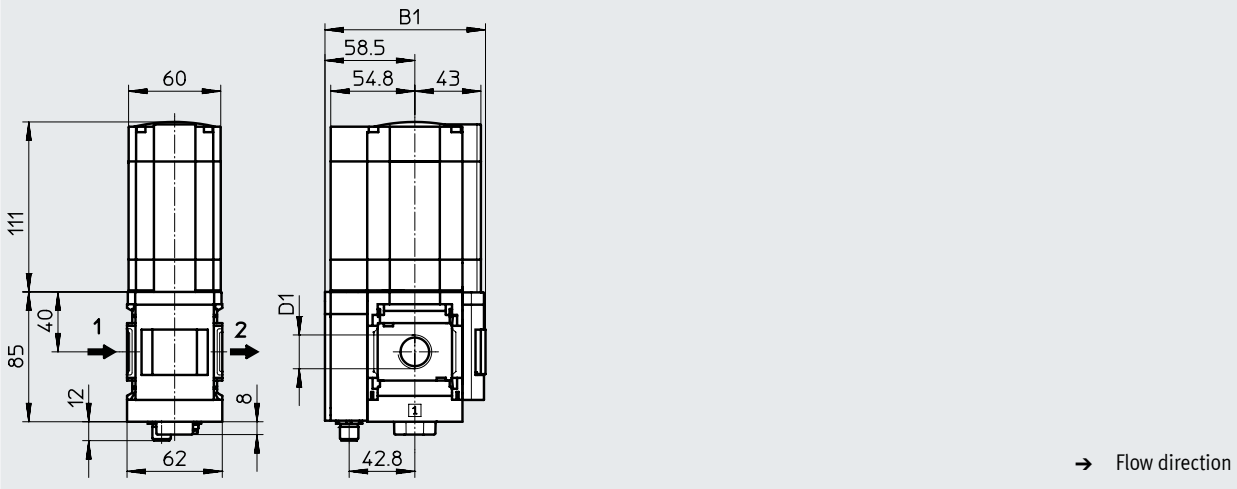
Type	B1		D1
	Pressure gauge		
	Standard scale	Red/green scale	
MS6-LRE-1/4			G1/4
MS6-LRE-3/8	104.5	106	G3/8
MS6-LRE-1/2			G1/2

⊣⊢ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Dimensions – Pressure gauge alternatives

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

➜ Flow direction   ➜ Flow direction
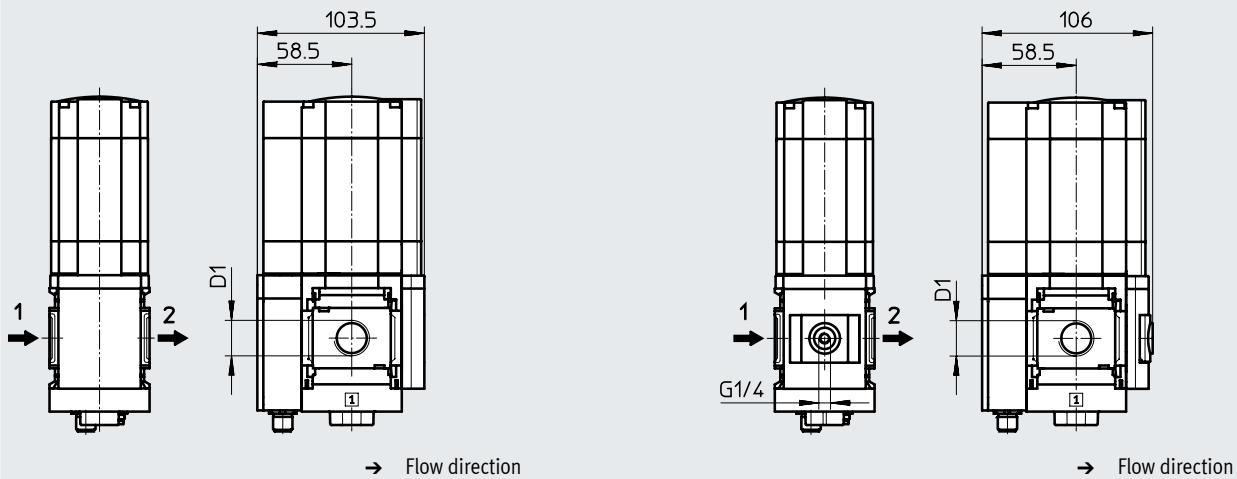
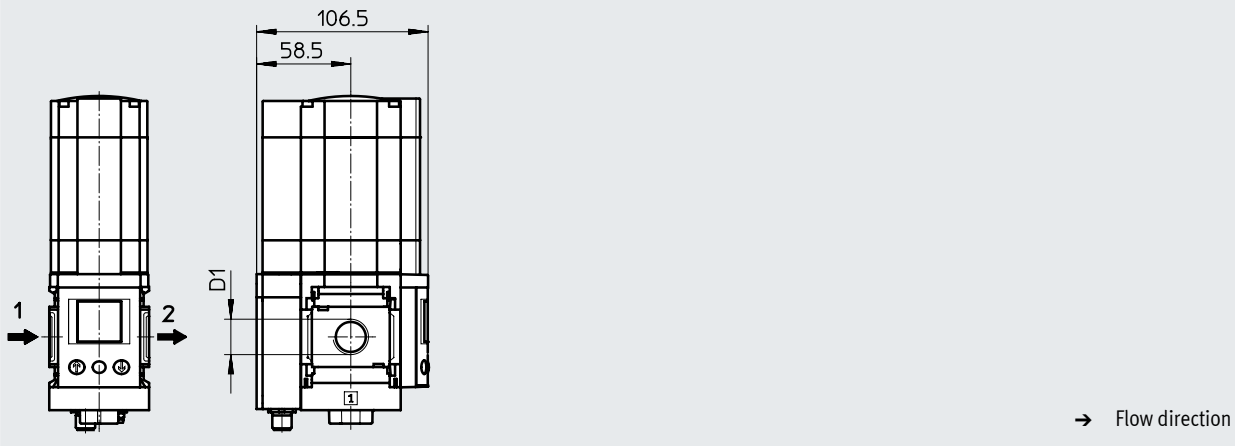| Type	D1
MS6-LRE-1/4	G1/4
MS6-LRE-3/8	G3/8
MS6-LRE-1/2	G1/2

⊣⊢ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data ➜ www.festo.com

[OP]   Operator unit with display

106.5
58.5
D1
1   2

➜   Flow direction

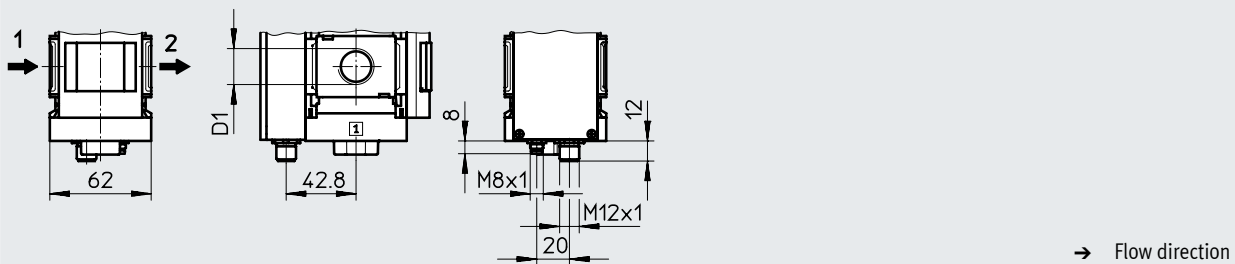| Type	D1
MS6-LRE-1/4	G1/4
MS6-LRE-3/8	G3/8
MS6-LRE-1/2	G1/2

⌀ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Dimensions – Electrical pressure output

Download CAD data ➜ www.festo.com

[PI]   Integrated pressure sensor with analogue current output
[PU]   Integrated pressure sensor with analogue voltage output

1   2
D1
62
42.8
8
12
M8x1
M12x1
20

➜   Flow direction

Ordering data

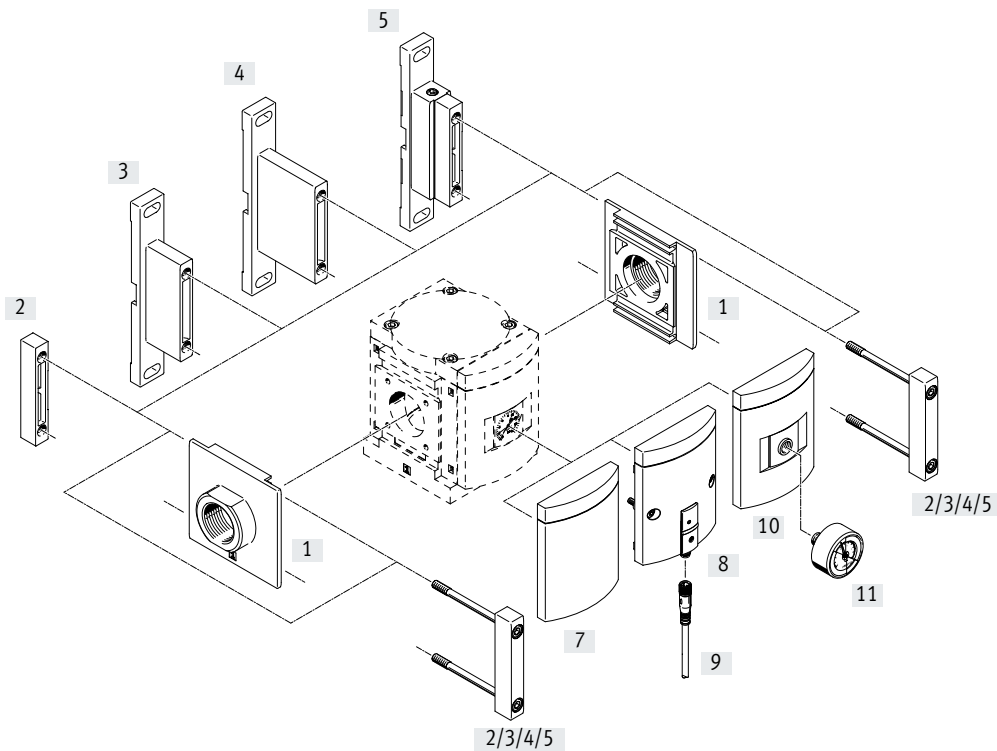| Size	Connection	Pressure regulation range 0.3 … 7 bar		Pressure regulation range 0.5 … 12 bar	
		Part no.	Type	Part no.	Type
Integrated MS pressure gauge with standard scale, display unit [bar]					
MS6	G1/4	–	–	535364	MS6-LRE-1/4-D7
	G1/2	535348	MS6-LRE-1/2-D6	–	–
Integrated MS pressure gauge with standard scale, display unit [bar], electrical pressure output (integrated pressure sensor with voltage output), plug M8x1, 3-pin					
MS6	G1/4	535362	MS6-LRE-1/4-D6-PU	–	–

Ordering data – Modular product system

Ordering table

Grid dimension [mm]	62	Conditions	Code		Enter code
Module no.	**535191**				
Series	Standard		**MS**		MS
Size	6		**6**		6
Function	Electrical pressure regulator		**-LRE**		-LRE
Pneumatic connection	Female thread G1/4		**-1/4**		
	Female thread G3/8		**-3/8**		
	Female thread G1/2		**-1/2**		
	Connecting plate G1/4		**-AGB**		
	Connecting plate G3/8		**-AGC**		
	Connecting plate G1/2		**-AGD**		
	Connecting plate G3/4		**-AGE**		
	Connecting plate 1/4 NPT		**-AQN**		
	Connecting plate 3/8 NPT		**-AQP**		
	Connecting plate 1/2 NPT		**-AQR**		
	Connecting plate 3/4 NPT		**-AQS**		
Pressure regulation range	0.3 … 4 bar		**-D5**		
	0.3 … 7 bar		**-D6**		
	0.5 … 12 bar		**-D7**		
	0.5 … 16 bar		**-D8**		
Pressure gauge alternatives	MS pressure gauge				
	Cover plate		**-VS**		
	Adapter for EN pressure gauge 1/4, without pressure gauge		**-A4**		
	Integrated pressure gauge, red/green scale		**-RG**		
	Operating unit with display	[1]	**-OP**		
Alternative pressure gauge scale	MS pressure gauge, bar				
	psi	[2]	**-PSI**		
	MPa	[2]	**-MPA**		
Secondary exhausting	With secondary exhausting				
	Without secondary exhausting		**-OS**		
Electrical pressure output	Without				
	Plug, M8, 3-pin, analogue current output I_{out}		**-PI**		
	Plug, M8, 3-pin, analogue voltage output U_{out}		**-PU**		
Sensor cable	Without				
	Plug socket, M8, with cable, 2.5 m	[1]	**-SK2**		
	Plug socket, M8, with cable, 5 m	[1]	**-SK5**		
Supply cable	Without				
	Plug socket, M12, with cable, 2.5 m		**-VK2**		
	Plug socket, M12, with cable, 5 m		**-VK5**		
Type of mounting	Without mounting bracket				
	Mounting bracket for large wall gap with low loads	[3]	**-WBE**		
	Mounting bracket for large wall gap	[4]	**-WPB**		
UL certification	None				
	cULus, ordinary location for Canada and USA		**-UL1**		
Flow direction	Flow direction from left to right				
	Flow direction from right to left		**-Z**		

[1] OP, SK2, SK5   Only with electrical pressure output PI, PU.
[2] PSI, MPA   Not with pressure gauge alternatives VS, A4, RG, OP.
[3] WBE   Only with female thread 1/4, 3/8, 1/2.
[4] WPB   Only with connecting plate AGB, AGC, AGD, AGE, AQN, AQP, AQR or AQS.
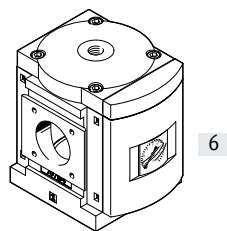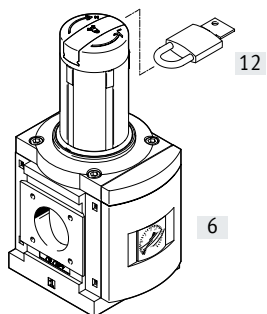
Peripherals overview

Pressure regulator MS9-LR

Manually actuated   **Pneumatically actuated**

Peripherals overview

Mounting attachments and accessories

		Individual device			Combination	→ Page/ Internet
		With female thread	With connecting plate		Module without connecting thread, without connecting plate	
			Without EU certification	With EU certification		
[1]	Connecting plate SET MS9-AG...	–	■	■	■	ms9-ag
	Connecting plate SET MS9-AQ...	–	■	–	■	ms9-aq
[2]	Module connector MS9-MV	–	–	–	■	ms9-mv
[3]	Mounting bracket MS9-WP	■	■	■	■	ms9-wp
[4]	Mounting bracket MS9-WPB	■	■	■	■	ms9-wp
[5]	Mounting bracket MS9-WPM	■	■	–	■	ms9-wp
[6]	MS pressure gauge AG	■	■	■	■	98
[7]	Cover plate VS	■	■	■	■	98
[8]	Pressure sensor without display AD7 ... AD10	■	■	–	■	98
[9]	Connecting cable NEBU-M8...-LE3	■	■	–	■	110
[10]	Adapter for EN pressure gauge 1/4 A4	■	■	■	■	98
[11]	Pressure gauge MA	■	■	■	■	110
[12]	Padlock LRVS-D	■	■	■	■	110

Type codes

001	Series	
MS	MS series	

002	Size	
9	Grid dimension 90 mm	

003	Function	
LR	Pressure regulator	

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

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

006	Regulator type	
	Pilot actuated	
DI	Directly actuated	

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

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

009	Secondary exhausting	
	With secondary exhausting	
OS	Without secondary exhaust	

010	Alternative mounting position	
	None	
KD	Rotary knob underneath	

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

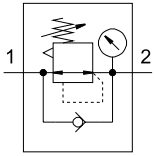| 012	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	
WPM	Mounting bracket for hooking in service unit components	
WPB	Mounting bracket for large wall gap	

013	EU certification	
	None	
EX4	II 2GD	

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

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

Datasheet

Pressure regulation range/actuation, manually actuated

Pressure regulation range/actuation, pneumatically actuated

- ▮▮ - Flow rate
11000 ... 26000 l/min

- 🌡 - Temperature range
−10 ... +60°C

- ⚓ - Operating pressure
1 ... 20 bar

- 🧰 - www.festo.com

The pressure regulator maintains an essentially constant output pressure p2 independent of pressure fluctuations in the system and air consumption. The output pressure p2 can be set within the pressure regulation range either manually using the rotary knob or pneumatically via pilot pressure p12 by an external pilot regulator. When switching off the operating pressure, the output pressure p2 is exhausted via connection 3 (secondary exhausting).

- Good regulation characteristics with minimal hysteresis and input pressure compensation
- High flow rate performance with minimal pressure drop
- Piloted or directly actuated diaphragm regulator
- Four pressure regulation ranges: 0.5 ... 4 bar, 0.5 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Available with or without secondary exhausting

- Actuator lock to protect 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
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[1]
Actuator lock			Rotary knob with latch, can be locked using accessories
			Rotary knob with integrated lock
Pressure regulation range/ actuation	[D5]	[bar]	0.5 ... 4, manually actuated
	[D6]	[bar]	0.5 ... 7, manually actuated
	[D7]	[bar]	0.5 ... 12, manually actuated (0.5 ... 10 with pressure sensor)
	[D8]	[bar]	0.5 ... 16, manually actuated (0.5 ... 10 with pressure sensor)
	[PO]	[bar]	0.5 ... 16, pneumatically actuated[2]
Max. pressure hysteresis		[bar]	0.4

1) The pressure regulator must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.
2) Output pressure p2 corresponds roughly to the applied pilot pressure p12.

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

Datasheet

General technical data

Pressure indicator	Via pressure sensor for displaying the output pressure by switching status indicator and electrical output
	Via pressure gauge for displaying the output pressure
	Via pressure gauge with red/green scale for displaying the output pressure
	Prepared for G1/4

Standard nominal flow rate qnN[1)2)] [l/min]

Design		Piloted diaphragm regulator		Directly actuated diaphragm regulator DI	
Pneumatic connection		G3/4, NPT3/4	G1, NPT1	G3/4, NPT3/4	G1, NPT1
Pressure regulation range	[D5]	19000[3)]	26000[3)]	14000[3)]	20000[3)]
	[D6]	17000	20000	14000	11000
	[D7]	17000	20000	–	–
	[D8]	17000	20000	–	–
	[PO]	21000	25000	–	–

1) All values ±15%
2) Measured at p1 = 10 bar and p2 = 6 bar, Δp = 1 bar
3) Measured at p1 = 10 bar and p2 = 4 bar, Δp = 1 bar

Operating and environmental conditions

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

1) Value in brackets applies to MS9-LR with pressure sensor.
2) Corrosion resistance class CRC 2 to Festo standard FN 940070
   Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
3) Additional information: www.festo.com/sp ➜ Certificates.

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
CE mark (see declaration of conformity)[1)]	To EU Explosion Protection Directive (ATEX)

1) Additional information: www.festo.com/sp ➜ Certificates.

Weights [g]

Pressure regulator	1400
Pressure regulator with rotary knob with integrated lock	1700

Datasheet

Materials
Sectional view
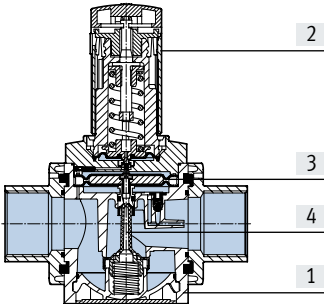
Pressure regulator		
[1]	Housing	Die-cast aluminium
[2]	Rotary knob	PA
	Rotary knob with integrated lock	Aluminium
[3]	Diaphragm	NBR
[4]	Valve tappet	Wrought aluminium alloy, NBR, POM
−	Cover	PA-reinforced
−	Connecting plate, module connector, mounting bracket	Die-cast aluminium
−	Seals	NBR
Note on materials		RoHS-compliant

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

Piloted diaphragm regulator

Pneumatic connection G3/4, NPT3/4

Pneumatic connection G1, NPT1
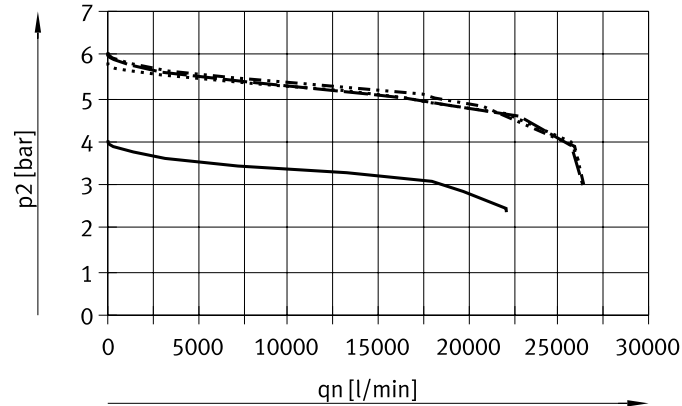
——— [D5]: 0.5 … 4 bar	– – – [D7]: 0.5 … 12 bar
–··–··– [D6]: 0.5 … 7 bar	·········· [D8]: 0.5 … 16 bar
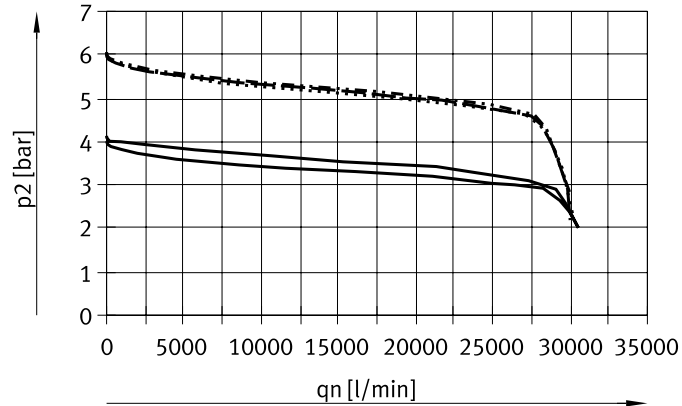
Directly actuated diaphragm regulator

Pneumatic connection G3/4, NPT3/4

Pneumatic connection G1, NPT1

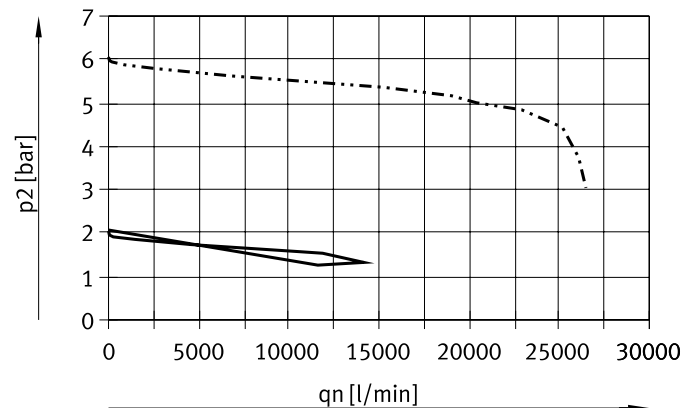| |
|---|
| ——— [D5]: 0.5 … 4 bar |
| –··–··– [D6]: 0.5 … 7 bar |
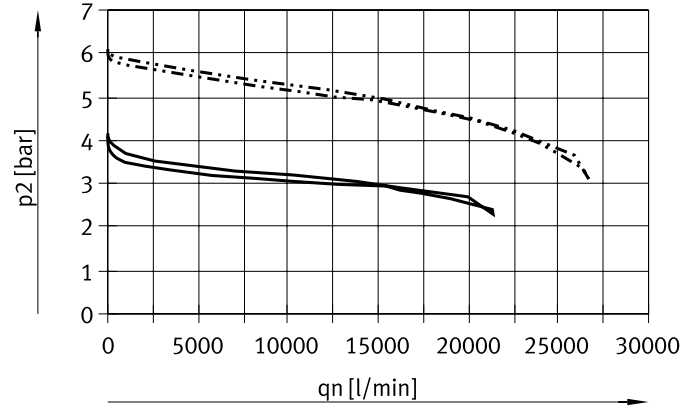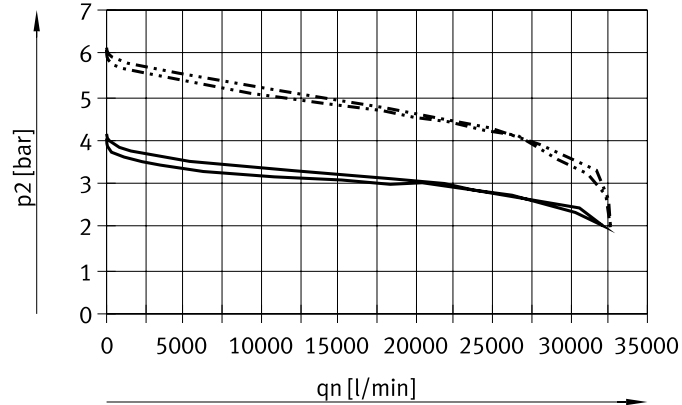
Datasheet

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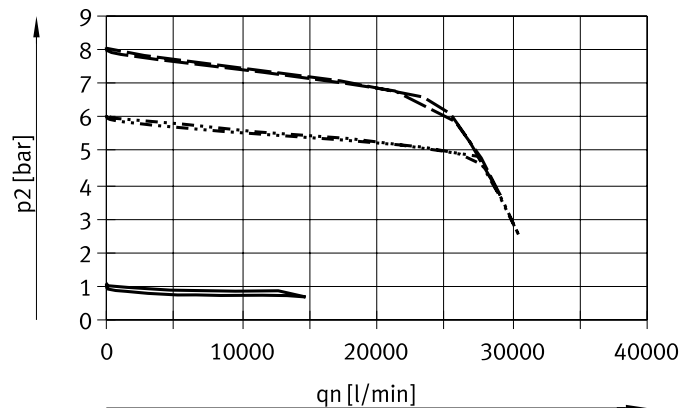
External pilot regulator

Pressure regulation range, pneumatically actuated

Pneumatic connection G3/4, NPT3/4

Pneumatic connection G1, NPT1

Dimensions – Basic version

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

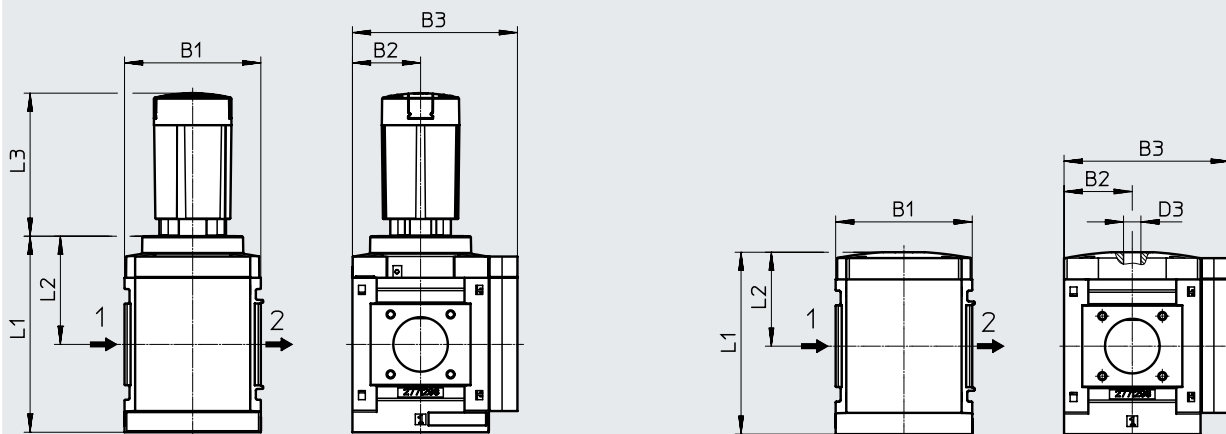[G]/[NG]   Module without connecting thread, without connecting plate

[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

➔   Flow direction

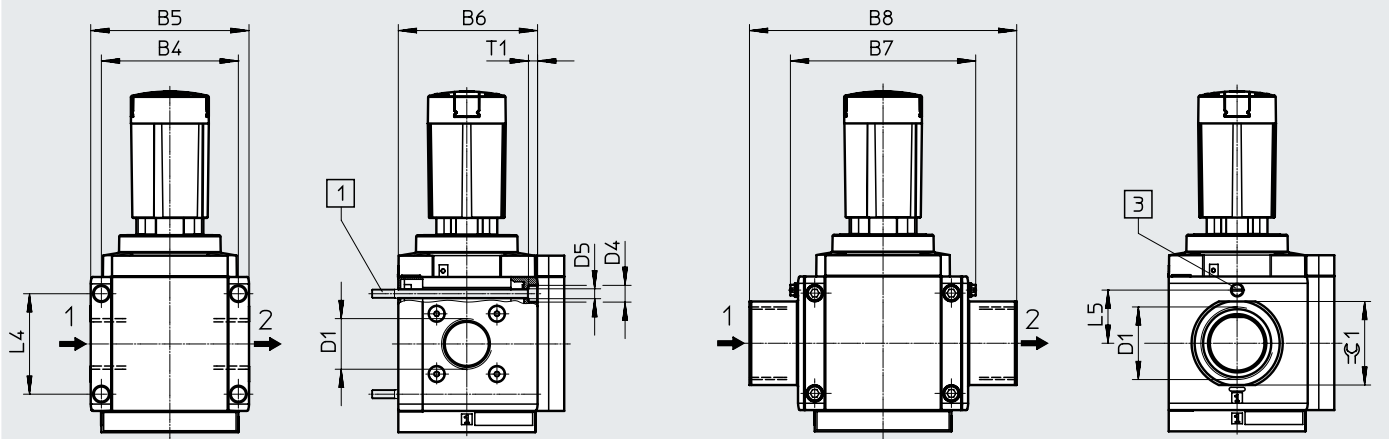| Type	B1	B2	B3	D3	L1		L2		L3
					Piloted	Directly actuated	Piloted	Directly actuated	
MS9-LR-G/NG-D5/D6/D7/D8	90	45	109	–	129	122	71.4	64	94.5
MS9-LR-G/NG-PO				G1/4	120	–	62	–	–

Datasheet

Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

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

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

[1]   Retaining screw M6xmin. 90 to DIN 912 (not 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	[EX4]	B8	D1	D4	D5	L4	L5	[EX4]	T1	⌇1
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	G1/2	–	–	–	35		–	30
MS9-LR-AGE						132	G3/4							36
MS9-LR-AGF						142	G1							41
MS9-LR-AGG						162	G1 1/4							50
MS9-LR-AGH						176	G1 1/2							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	1/2 NPT	–	–	–	35		–	30
MS9-LR-AQS						132	3/4 NPT							36
MS9-LR-AQT						142	1 NPT							41
MS9-LR-AQU						162	1 1/4 NPT							50
MS9-LR-AQV						176	1 1/2 NPT							55

⫯ · Note: this product conforms to ISO 1179-1 and ISO 228-1.
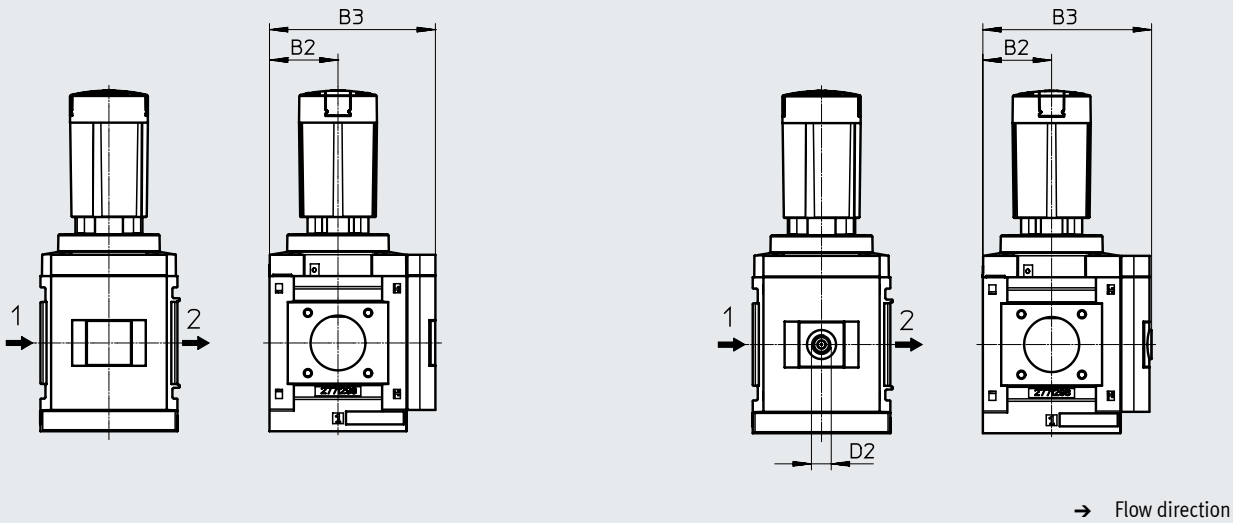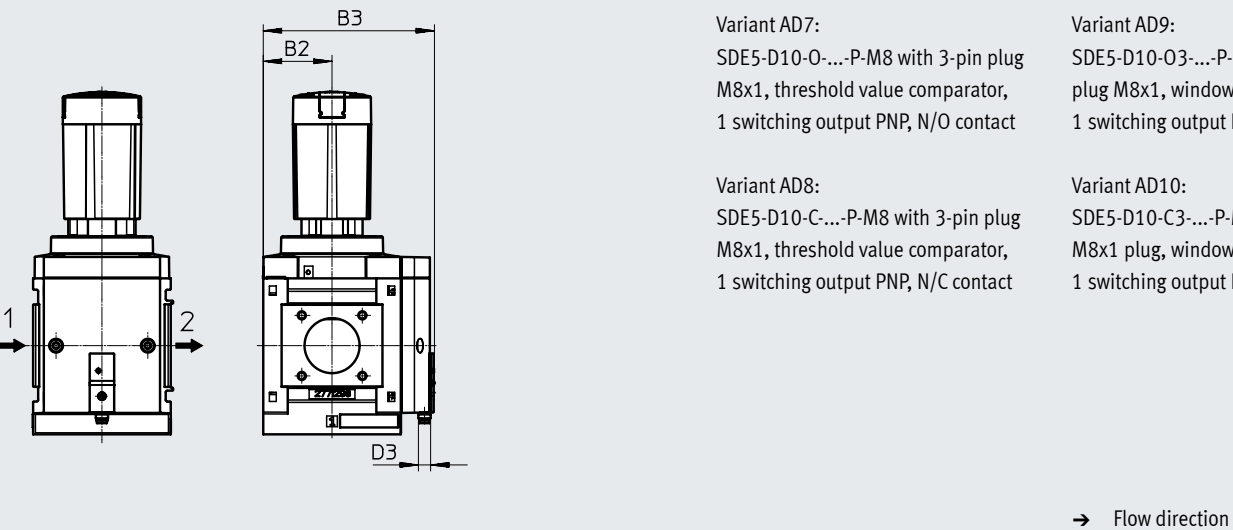
Datasheet

Dimensions – Pressure gauge alternatives

Download CAD data ➜ www.festo.com

[AG] Integrated MS pressure gauge with standard scale

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

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

➜ Flow direction

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

Datasheets ➜ Internet: sde5

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

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

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

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

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

➜ Flow direction

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

Datasheet

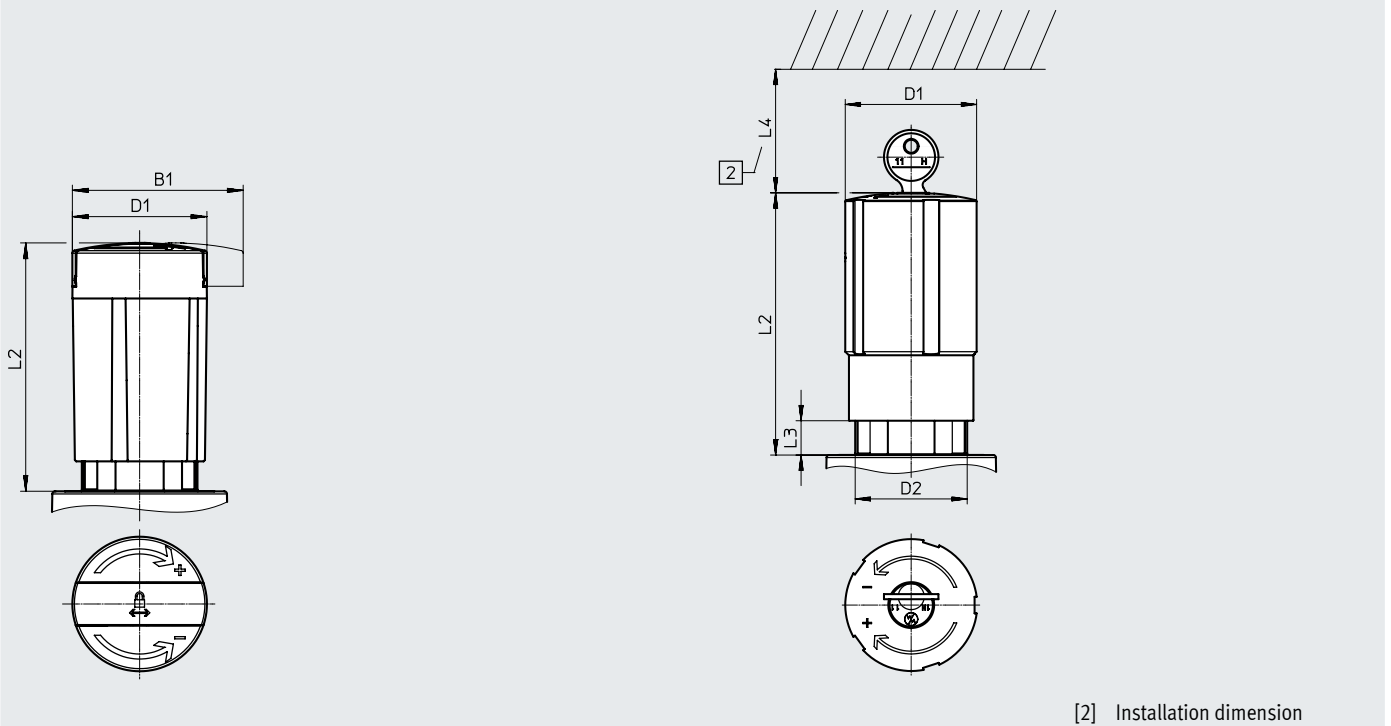**Dimensions – Rotary knob**　　　　　　　　　　　　　　　　　　　　　　　　Download CAD data ➔ www.festo.com

[AS]　Rotary knob with latch, can be locked using accessories　　　　[E11]　Rotary knob with integrated lock

[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

Size	Piloted diaphragm regulator		Directly actuated diaphragm regulator	
	Part no.	Type	Part no.	Type
Pressure regulation range 0.5 … 4 bar, manually actuated, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with latch, can be locked using accessories				
MS9	564134	MS9-LR-G-D5-AG-BAR-AS	564135	MS9-LR-G-D5-DI-AG-BAR-AS
Pressure regulation range 0.5 … 4 bar, manually actuated, integrated MS pressure gauge with standard scale, display unit [psi], rotary knob with latch, can be locked using accessories				
MS9	–	–	564140	MS9-LR-NG-D5-DI-AG-PSI-AS
Pressure regulation range 0.5 … 7 bar, manually actuated, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with latch, can be locked using accessories				
MS9	564136	MS9-LR-G-D6-AG-BAR-AS	564137	MS9-LR-G-D6-DI-AG-BAR-AS
Pressure regulation range 0.5 … 7 bar, manually actuated, integrated MS pressure gauge with standard scale, display unit [psi], rotary knob with latch, can be locked using accessories				
MS9	–	–	564142	MS9-LR-NG-D6-DI-AG-PSI-AS
Pressure regulation range 0.5 … 12 bar, manually actuated, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with latch, can be locked using accessories				
MS9	564138	MS9-LR-G-D7-AG-BAR-AS	–	–

Ordering data – Modular product system

Ordering table

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

[1] 3/4, 1, N3/4, N1, Not with EU EX4 certification
     AQR, AQS, AQT,
     AQU, AQV, G, NG,
     D8, AD7, AD8,
     AD9, AD10, E11,
     WPM
[2] PO   Not with regulator type DI.
                   Not with locking options AS, E11.
[3] DI   Not with pressure regulation range D7, D8.
[4] RG   Not with alternative pressure gauge scale PSI, PSI scale serves only as an auxiliary scale.
[5] AD7 … AD10   Measuring range max. 10 bar.

Ordering data – Modular product system

Ordering table

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

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

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

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

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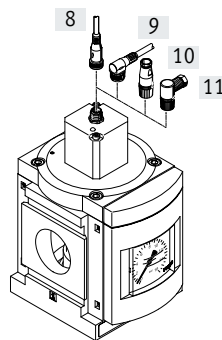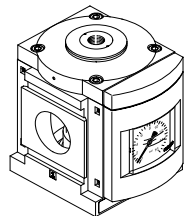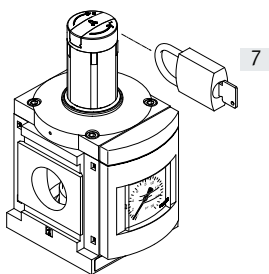
Peripherals overview

Pressure regulator MS12-LR
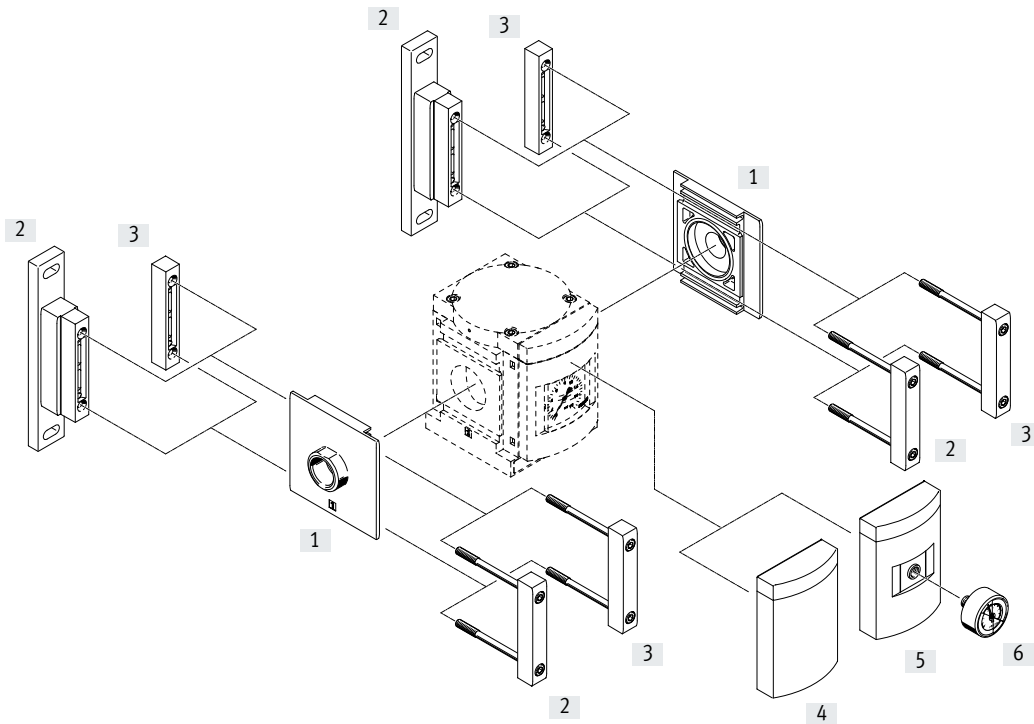
Manually actuated	Pneumatically actuated	Electrically actuated

Peripherals overview

Mounting attachments and accessories		→ Page/Internet
[1]	Connecting plate SET MS12-AG...	ms12-ag
[2]	Mounting bracket MS12-WP	ms12-wp
[3]	Module connector MS12-MV	ms12-mv
[4]	Cover plate VS	109
[5]	Adapter for EN pressure gauge 1/4 A4	109
[6]	Pressure gauge MA	110
[7]	Padlock LRVS-D	110
[8]	Connecting cable NEBU-M12G...-LE4	110
[9]	Connecting cable NEBU-M12W...-LE4	110
[10]	Sensor socket SIE-GD	110
[11]	Angled plug socket SIE-WD	110

Type codes

001	Series	
MS	MS series	

002	Size	
12	Grid dimension 124 mm	

003	Function	
LR	Pressure regulator	

004	Pneumatic connection	
AGF	Sub-base G1	
AGG	Sub-base G11/4	
AGH	Sub-base G11/2	
AGI	Sub-base G2	
G	Module without connecting thread, without sub-base	

005	Pressure regulation range	
D6	0.3 ... 7 bar	
D7	0.5 ... 12 bar	
D8	0.5 ... 16 bar	
PO	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)	
PE6	0.15 ... 6 bar, solenoid actuated (pilot control by proportional-pressure regulator)	

006	Pressure gauge alternatives	
	None	
VS	Cover plate	
A4	Adapter for EN pressure gauge 1/4, without pressure gauge	

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

008	Rotary knob alternative	
	None	
LD	Long rotary knob	

009	Type of mounting	
	Without mounting bracket	
WP	Mounting bracket basic design	

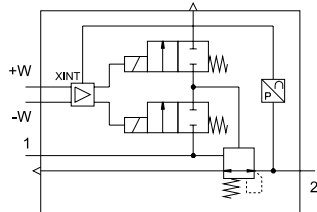| 010	Flow direction	
	Flow direction from left to right	
Z	Flow direction from right to left	

Datasheet

Pressure regulation range/actuation,
manually actuated
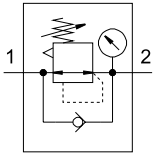
Pressure regulation range/actuation,
pneumatically actuated
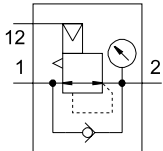
Pressure regulation range/actuation,
electrically actuated

- ❚❚ - Flow rate
12000 ... 22000 l/min

- ❚ - Temperature range
−10 ... +60°C

- ⏚ - Operating pressure
0.8 ... 21 bar

- 🧰 - www.festo.com

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

MS12-LR-...-D6/D7/D8   MS12-LR-...-PO   MS12-LR-...-PE6

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

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

General technical data			
Pneumatic connection 1, 2			
Connecting plate	[AG...]		G1, G1 1/4, G1 1/2 or G2
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 input 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/ actuation	[D6]	[bar]	0.3 ... 7, manually actuated[1]
	[D7]	[bar]	0.5 ... 12, manually actuated[1]
	[D8]	[bar]	0.5 ... 16, manually actuated[1]
	[PO]	[bar]	0.5 ... 16, pneumatically actuated[1]
	[PE6]	[bar]	0.15 ... 6, electrically actuated
Max. pressure hysteresis		[bar]	0.4 (MS12-LR-...-D6/D7/D8/PO)
			0.04 (MS12-LR-...-PE6)
Pressure indicator			With pressure gauge

1)   Prerequisite: $P_1 = P_2 + 1$ bar.

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

Datasheet

Flow rates

Pressure regulation range/actuation		[D6]/[D7]/[D8]/[PO][1]	[PE6][2]
Standard nominal flow rate qnN[3] [l/min]			
$q_{nN\,1\to2}$	G1	13000	12000
	G1 1/4	13500	12500
	G1 1/2	16000	15000
	G2	22000	21000
Secondary exhaust flow rate [l/min]			
$q_{n\,2\to3}$		≤ 600	≤ 600

1) Measured at p1 = 10 bar and p2 = 6 bar, Δp = 0.5 bar
2) Measured at p1 = 7 bar and p2 = 6 bar, Δp = 0.5 bar
3) Dependent on the selected connecting plate; must be ordered separately as an accessory ➜ Internet: ms12-ag

Electrical data

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

Operating and environmental conditions

Pressure regulation range/actuation		[D6]/[D7]/[D8]/[PO]	[PE6]
Operating pressure	[bar]	0.8 … 21	1.15 … 8
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
		Inert gases	
Ambient temperature	[°C]	−10 … +60	+10 … +50
Temperature of medium	[°C]	−10 … +60	+10 … +50
Storage temperature	[°C]	−10 … +60	
Corrosion resistance class CRC[1]		2	
CE mark (see declaration of conformity)[3]		–	To EU EMC Directive[2]
KC mark		–	KC EMC

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
    Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp ➜ Certificates.
    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.
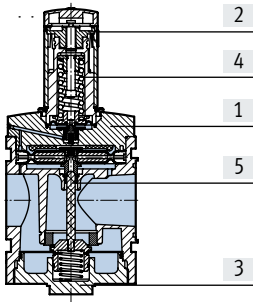3) Additional information: www.festo.com/sp ➜ Certificates.

Weights [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
		Free of copper and PTFE only with cover plate

Standard flow rate qn as a function of output pressure p2 (p1 = 10 bar) (MS12-LR-...-D6/D7/D8/PO only)

Pneumatic connection G1 with connecting plate MS12-AGF

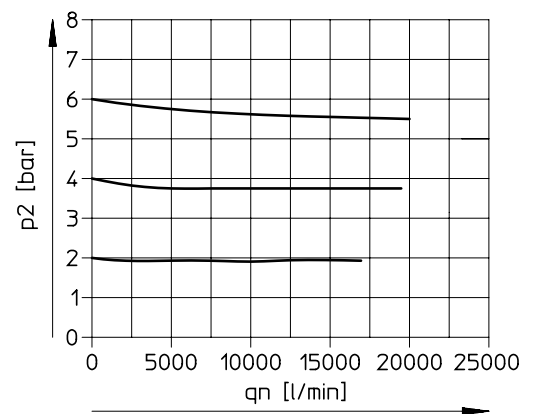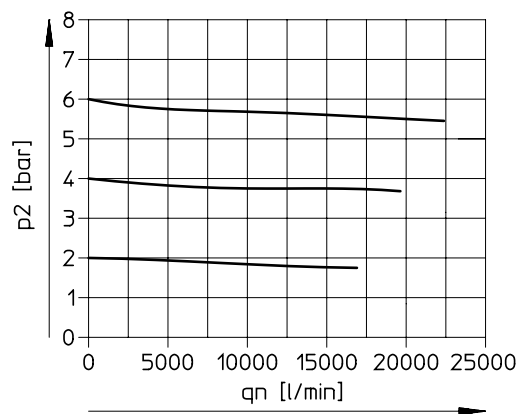Pneumatic connection G1 1/4 with connecting plate MS12-AGG

Input pressure p1 = 10 bar
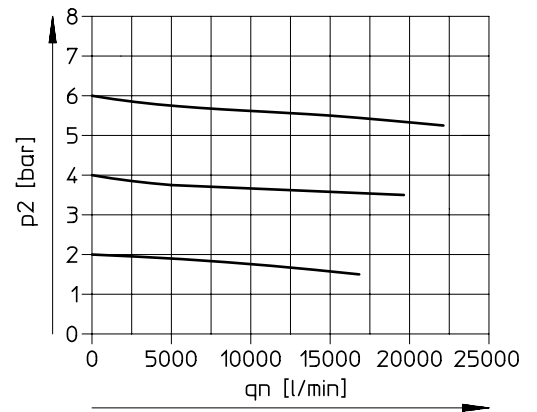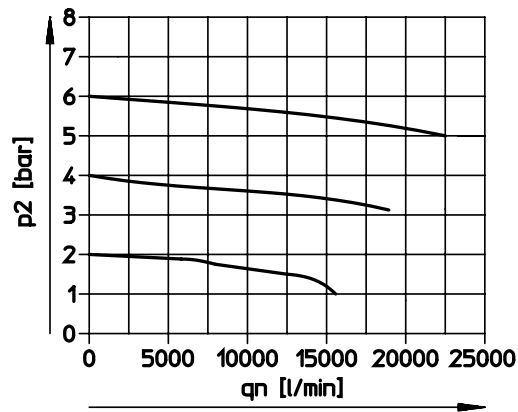
Pneumatic connection G1 1/2 with connecting plate MS12-AGH
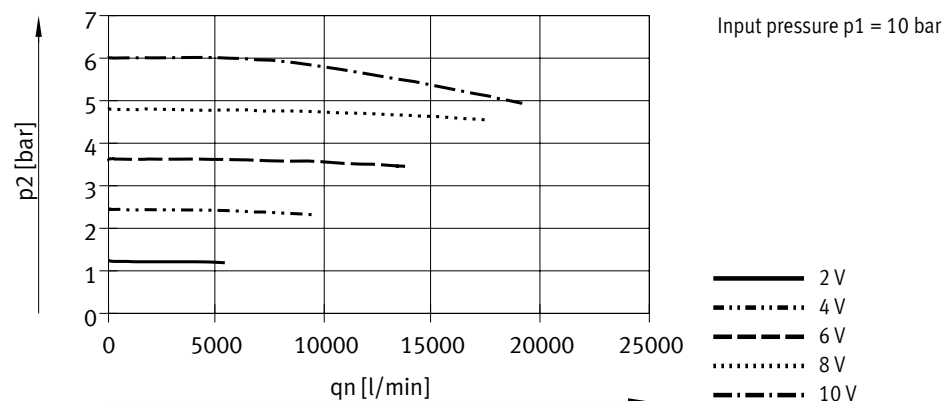
Pneumatic connection G2 with connecting plate MS12-AGI

Input pressure p1 = 10 bar

Datasheet

**Standard flow rate qn as a function of output pressure p2 (p1 = 7 bar) (MS12-LR-...-PE6 only)**
Pneumatic connection G1 1/2 with connecting plate MS12-AGH

Input pressure p1 = 10 bar

——	2 V
—··—··—	4 V
– – –	6 V
··········	8 V
—·—·—	10 V

Dimensions – Basic version

Download CAD data ➔ www.festo.com

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

[G]   Module without connecting thread, without connecting plate

[ ]   Integrated MS pressure gauge with standard scale

[LD-AS]   Rotary knob, long, with latch, can be locked using accessories
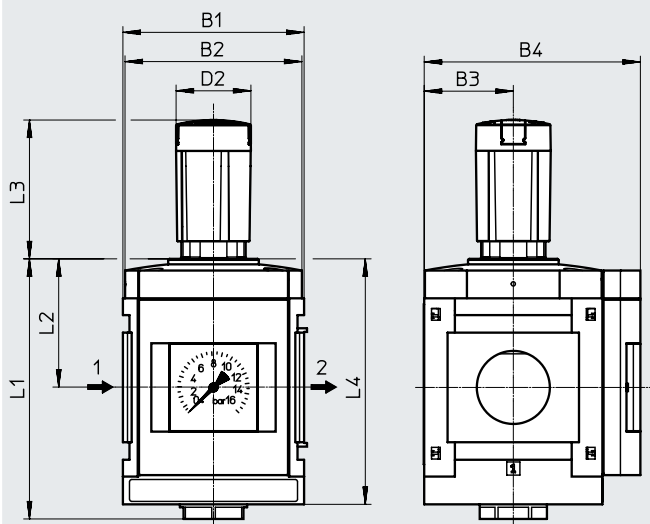
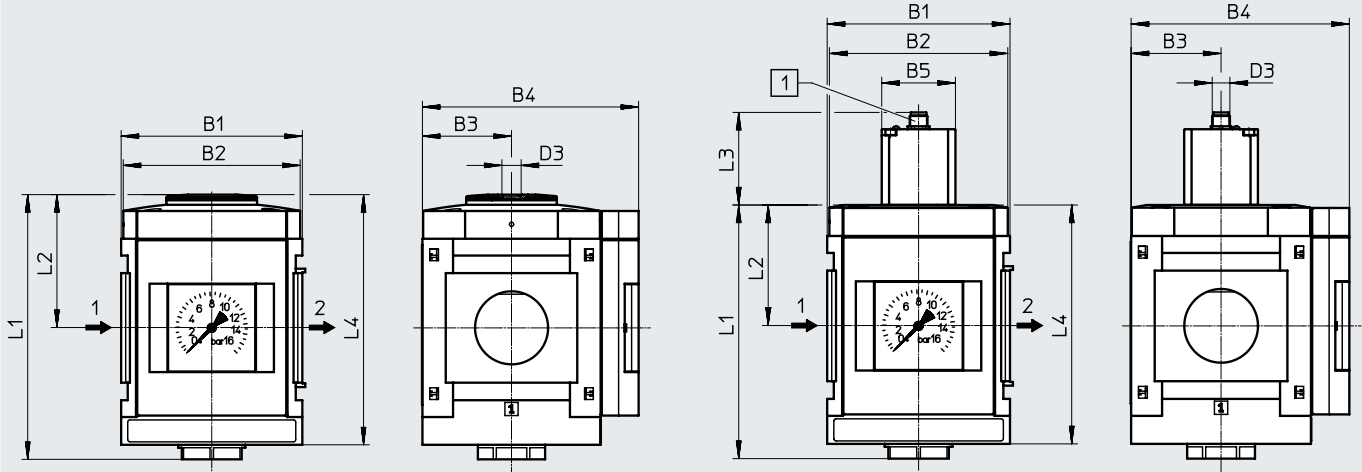| Type	B1	B2	B3	B4	D2 ∅	L1	L2	L3	L4
MS12-LR-...-D6/D7/D8	124	122	61	148	51.2	178	88	95	168

Datasheet

Dimensions – Pressure regulation range Download CAD data ➔ www.festo.com

[PO] Pressure regulation range, pneumatically actuated

[G] Module without connecting thread, without connecting plate

[ ] Integrated MS pressure gauge with standard scale

[PE6] Pressure regulation range, electrically actuated

[G] Module without connecting thread, without connecting plate

[ ] Integrated MS pressure gauge with standard scale

[1] Suitable for

– Connecting cable NEBU-M12G...-LE4/ NEBU-M12W...-LE4

– Sensor socket SIE-GD

– Angled plug socket SIE-WD-TR

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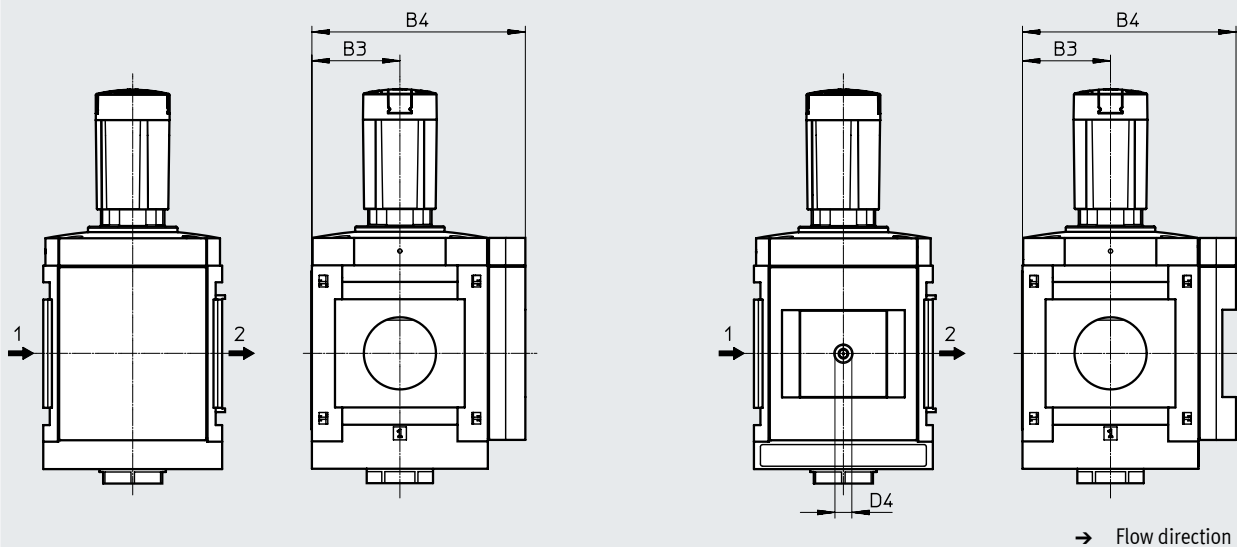
Type	B1	B2	B3	B4	B5	D3	L1	L2	L3	L4
MS12-LR-...-PO	124	122	61	148	–	G1/4	181	91	–	171
MS12-LR-...-PE6					50	M12	172	82	62.7	162

Dimensions – Pressure gauge alternatives Download CAD data ➔ www.festo.com

[VS] Cover plate

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

➔ Flow direction

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

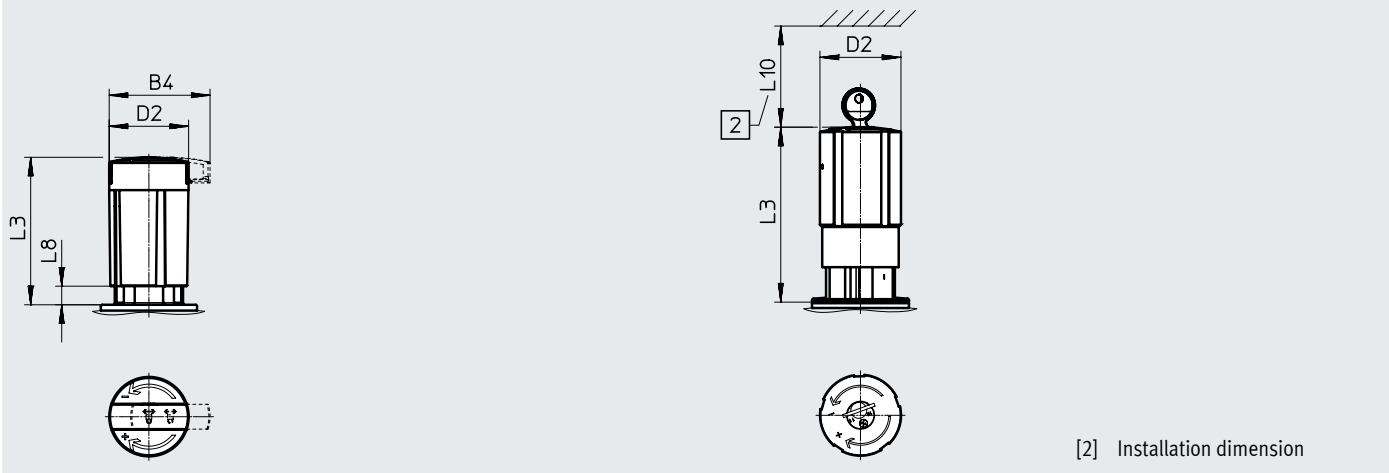⫯ · Note: this product conforms to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Rotary knob

Download CAD data ➔ www.festo.com

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

[E11] Rotary knob with integrated lock

[2] Installation dimension

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

Ordering data

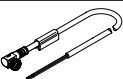| Size	Part no.	Type
Pressure regulation range 0.5 ... 12 bar, manually actuated, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob, long, with latch, can be locked using accessories		
MS12	537148	MS12-LR-G-D7-LD-AS
Pressure regulation range 0.5 ... 16 bar, pneumatically actuated, integrated MS pressure gauge with standard scale, display unit [bar]		
MS12	541680	MS12-LR-G-PO
Pressure regulation range 0.15 ... 6 bar, electrically actuated, integrated MS pressure gauge with standard scale, display unit [bar]		
MS12	564888	MS12-LR-G-PE6

Ordering data – Modular product system

Ordering table

Grid dimension [mm]	124	Conditions	Code		Enter code
Module no.	**535021**				
Series	Standard		**MS**		MS
Size	12		**12**		12
Function	Pressure regulator		**-LR**		-LR
Pneumatic connection	Connecting plate G1		**-AGF**		
	Connecting plate G1 1/4		**-AGG**		
	Connecting plate G1 1/2		**-AGH**		
	Connecting plate G2		**-AGI**		
	Module without connecting thread, without connecting plate		**-G**		
Pressure regulation range/actuation	0.3 … 7 bar, manually actuated		**-D6**		
	0.5 … 12 bar, manually actuated		**-D7**		
	0.5 … 16 bar, manually actuated		**-D8**		
	Max. 16 bar, pneumatically actuated (pressure range determined by pilot regulator)	[1] [2]	**-PO**		
	0.15… 6 bar, electrically actuated (pilot control via proportional pressure regulator)	[1] [2]	**-PE6**		
Pressure gauge alternatives	MS pressure gauge				
	Cover plate		**-VS**		
	Adapter for EN pressure gauge 1/4, without pressure gauge		**-A4**		
Alternative pressure gauge scale	MS pressure gauge, bar				
	psi	[3]	**-PSI**		
	MPa	[3]	**-MPA**		
Rotary knob alternatives	Without				
	Long rotary knob	[2]	**-LD**		
Locking option	Without	[4]			
	Lockable using accessories	[5]	**-AS**		
	With integrated lock		**-E11**		
Type of mounting	Without mounting bracket				
	Mounting bracket standard design	[6]	**-WP**		
Flow direction	Flow direction from left to right				
	Flow direction from right to left		**-Z**		

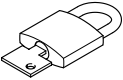|		
[1]	PO, PE6	Not with rotary knob alternative LD.
		Not with locking option AS.
[2]	PO, PE6, LD	Not with locking option E11.
[3]	PSI, MPA	Not with pressure gauge alternatives VS, A4.
[4]		Must be selected if pressure regulation range/actuation PO, PE6 is selected.
		Not with pressure regulation range/actuation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

Accessories

Ordering data – Pressure gauge MA

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

Ordering data – Connecting cable NEBU-M8   Datasheets ➜ Internet: nebu

	Electrical connection	Number of wires	Cable length [m]	Part no.	Type
	M8x1, straight socket	3	2.5	★ 541333	NEBU-M8G3-K-2.5-LE3
			5	★ 541334	NEBU-M8G3-K-5-LE3
	M8x1, angled plug socket	3	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5	★ 541341	NEBU-M8W3-K-5-LE3

Ordering data – Connecting cable NEBU-M12   Datasheets ➜ Internet: nebu

	Electrical connection	Number of wires	Cable length [m]	Part no.	Type
	M12x1, straight socket	4	2.5	★ 550326	NEBU-M12G5-K-2.5-LE4
			5	★ 541328	NEBU-M12G5-K-5-LE4
		5	2.5	541330	NEBU-M12G5-K-2.5-LE5
			5	541331	NEBU-M12G5-K-5-LE5
	M12x1, angled plug socket	4	2.5	550325	NEBU-M12W5-K-2.5-LE4
			5	541329	NEBU-M12W5-K-5-LE4

Ordering data – Sensor socket SIE-GD   Datasheets ➜ Internet: sie-gd

	Electrical connection	Part no.	Type
	M12x1, 4-pin	**18494**	**SIE-GD**

Ordering data – Angled plug socket SIE-WD   Datasheets ➜ Internet: sie-wd

	Electrical connection	Part no.	Type
	M12x1, 4-pin	**12956**	**SIE-WD-TR**

Ordering data – Padlock LRVS-D

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