

On-off/soft-start valves MS-EM/EE/DL/DE, MS series

FESTO



Festo core product range
Covers 80% of your automation tasks

Worldwide:

Always in stock

Superb:

Festo quality at an attractive price

Easy:

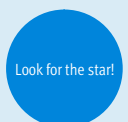
Reduces procurement and storing complexity



Generally ready for shipping ex works in 24 hours
Held in stock in 13 service centres worldwide
More than 2200 product



Generally ready for shipping ex works in 5 days
Assembled for you in 4 service centres worldwide
Up to 6×10^{12} variants per product series



MS series service unit components

Key features



MS series service unit components

Solutions for every application

With its large product range, highly functional components and a wide choice of services, the MS series from Festo offers a complete concept for compressed air preparation. Suitable for simple standard applications as well as application-specific solutions to the highest quality standards.

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, filter, pressure and flow sensors, dryers, sensors and lubricators. All these allow a suitable solution to be assembled for every task. Their modular structure means that the components

are freely combinable. A simple connection system saves time when replacing individual modules without dismantling the entire combination. What's more, many of the components are certified to UL and ATEX.

CAD models and configurator

Convenient aids for planning and selecting application-specific individual devices and combinations. The product configurator lets you configure customised solutions quickly and transfer the order data with no hassle.

Engineering tools

Selection tool for choosing the right service unit without oversizing, and with the right air quality class: www.festo.com/engineering/wartungseinheit



Integrated sensors

Pressure and flow sensors



- Maximum machine availability through controlled processes
- Reliable compressed air preparation and supply for systems
- Integrable 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 units 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 up to 18% smaller size
- Excellent energy efficiency
- Cost-optimised combinations – save up to 30%!

Size differences					
Size	MS2	MS4	MS6	MS9	MS12
Grid dimension [mm]	25	40	62	90	124
Port sizes	M5, QS-6	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]	350	1800	6500	20000	22000

1) Using pressure regulator MS-LR as an example

MS series service unit components

Key features

Note
Information

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

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

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





Structure of a service unit

The order of the individual components within a service unit is relevant for safety and functionality. It is not possible to assemble the service unit components in any order in the flow direction. There are restrictions and rules.

The configurator for service unit MSB is a reliable and convenient way of arranging individual service unit components. This ensures that the applicable rules are complied with. As a result, you get a completely assembled combination with UL or ATEX certification if you need it. When arranging a combination of individually configured and ordered service unit components, the points on the right must be adhered to 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 upstream of an activated carbon filter MS-LFX or membrane air dryer MS-LDM1 in the flow direction
- 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			Connection plate with thread	
				M	G	NPT	G	NPT
Combinations								
Service units MSB-FRC Technical data → Internet: msb								
	Combinations of filter regulator and lubricator	4	-	-	1/8, 1/4	-	-	-
		6	-	-	1/4, 3/8, 1/2	-	-	-
Service units MSB Technical data → Internet: msb								
	7 combinations, predefined	4	-	-	1/4	-	-	-
		6	-	-	1/2	-	-	-
	Combinations freely configurable	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 units MSE6 Technical data → Internet: mse6								
	Combinations with fieldbus connection for measuring pressure, flow rate and consumption	6	-	-	-	-	1/2	-

MS series service unit components

Key features



Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Filter regulators MS-LFR							Technical data → Internet: ms-lfr	
	Filter and pressure regulator in a single device, grade of filtration 5 or 40 µm	2	QS-6	M5	–	–	–	–
		4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Filters MS-LF								
							Technical data → 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								
							Technical data → 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								
							Technical data → 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								
							Technical data → Internet: ms-lws	
	Remove condensed water 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	–

MS series service unit components








Key features

Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Pressure regulators MS-LR Technical data → Internet: ms-lr								
	For setting the required operating pressure, 4 pressure regulation ranges	2	QS-6	M5	–	–	–	–
		4	–	–	1/8, 1/4	–	1/8, 1/4, 3/8	1/8, 1/4, 3/8
		6	–	–	1/4, 3/8, 1/2	–	1/4, 3/8, 1/2, 3/4	1/4, 3/8, 1/2, 3/4
		9	–	–	3/4, 1	3/4, 1	1/2, 3/4, 1, 1 1/4, 1 1/2	1/2, 3/4, 1, 1 1/4, 1 1/2
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Pressure regulators MS-LRB Technical data → Internet: ms-lrb								
	For creating 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 Technical data → Internet: ms-lrp								
	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 Technical data → 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 Technical data → 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 Technical data → Internet: ms-loe								
	Add a precisely adjustable amount of oil to the compressed air. The oil mist component 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	–

MS series service unit components





Key features



Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
Individual devices								
On/off valves MS-EM Technical data → Internet: ms-em								
	Manually operated 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 Technical data → Internet: ms-ee								
	Solenoid 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 Technical data → Internet: ms-dl								
	Pneumatically actuated soft-start valve for slowly 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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Soft-start valves MS-DE Technical data → Internet: ms-de								
	Solenoid actuated soft-start valve for slowly 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
		12	–	–	–	–	1, 1 1/4, 1 1/2, 2	–
Soft-start/quick exhaust valves MS-SV Technical data → 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	–

MS series service unit components

Key features

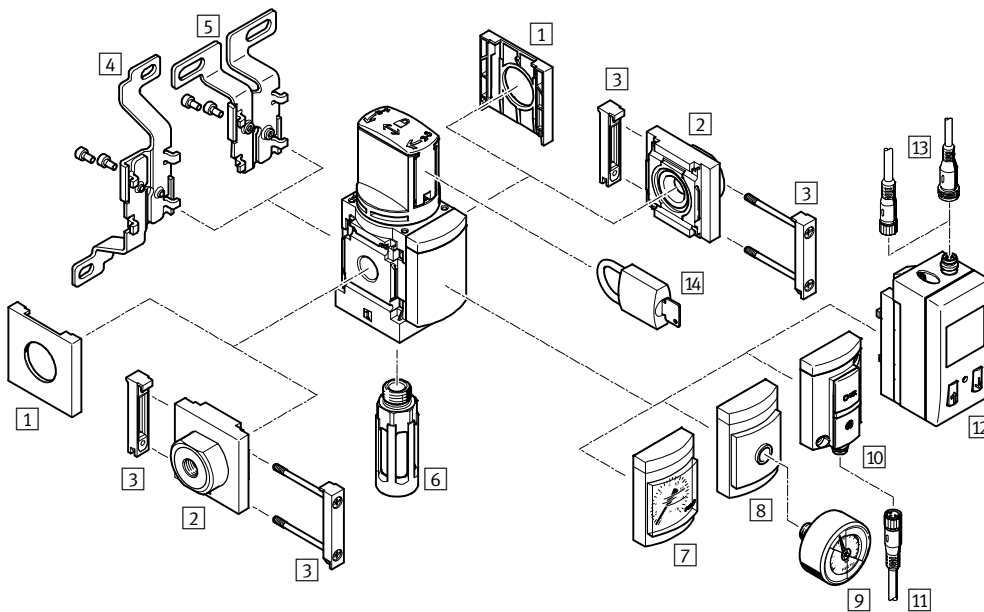
Total product range for MS series service unit components								
Type	Description	Size	Pneumatic connection					
			Push-in connector	Female thread			Connection plate with thread	
				M	G	NPT	G	NPT
Individual devices								
Membrane air dryers MS-LDM1							Technical data → Internet: ms-ldm	
	Wear-free 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								
							Technical data → Internet: ms-frm	
	Compressed air distributor 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								
							Technical data → Internet: ms-frm-frz	
	Compressed air distributor with 4 connections and half the grid dimension width	4	-	-	-	-	-	-
		6	-	-	-	-	-	-
Flow sensors SFAM								
							Technical data → Internet: sfam	
	For absolute flow rate information and accumulated air consumption measurement	6	-	-	-	-	1/2	1/2
		9	-	-	-	-	1, 1 1/2	1, 1 1/2

On-off valves MS4/MS6-EM1, MS series

Peripherals overview



On-off valve MS4/MS6-EM1



Note

Additional accessories:

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

Mounting attachments and accessories

	Individual device	Combination		→ Page/Internet	
		Without connecting plate	With connecting plate		Without connecting plate
1 Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2 Connecting plate-SET MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
Connecting plate-SET MS4/6-AQ...	-	■	-	■	ms4-aq, ms6-aq
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 Silencer U	■	■	■	■	95
7 MS pressure gauge AG/RG	■	■	■	■	16
8 Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	16
9 Pressure gauge MA	■	■	■	■	95
10 Pressure sensor without display AD7 ... AD10	■	■	■	■	16
11 Connecting cable NEBU-M8...-LE3	■	■	■	■	95
12 Pressure sensor with display AD1 ... AD4	■	■	■	■	16
13 Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	95
14 Padlock LRVS-D	■	■	■	■	95
- Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

On-off valves MS4/MS6-EM1, MS series

Type codes

MS 6 - EM1 - 1/2 - S

Series

MS	Standard service unit
----	-----------------------

Size

4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function

EM1	Manually operated on-off valve
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Pneumatic connection

MS4	
1/8	Female thread G1/8
1/4	Female thread G1/4
MS6	
1/4	Female thread G1/4
3/8	Female thread G3/8
1/2	Female thread G1/2

Silencer

	Without silencer
S	Silencer

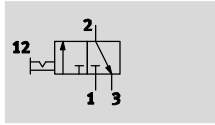
Additional variants can be ordered using the modular system → 16

- Connecting plates
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU certification
- UL certification
- Flow direction

On-off valves MS4/MS6-EM1, MS series

Technical data

Function



- - Flow rate
1,200 ... 8,700 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0 ... 18 bar
- - www.festo.com



- Manually operated on-off valve for pressurising and venting pneumatic installations
- The valve is activated by turning the rotary knob
- At connection 3 there is the facility to attach a silencer and/or to duct the exhaust air
- When the valve is closed, the rotary knob can be secured with a padlock
- Optional pressure gauge
- Optional pressure sensor
- 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	G $\frac{1}{8}$ or G $\frac{1}{4}$	G $\frac{1}{4}$, G $\frac{3}{8}$ or G $\frac{1}{2}$
Connecting plate AG...	G $\frac{1}{8}$, G $\frac{1}{4}$ or G $\frac{3}{8}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$ or G $\frac{3}{4}$
Connecting plate AQ...	NPT $\frac{1}{8}$, NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$	NPT $\frac{1}{4}$, NPT $\frac{3}{8}$, NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$
Pneumatic connection 3	G $\frac{1}{4}$	G $\frac{1}{2}$
Design	Rotary slide valve	
Type of mounting	Via accessories In-line installation	
Assembly position	Any	
Pressure indicator	Via pressure sensor for displaying output pressure via LCD display and electrical output Via pressure sensor for displaying output pressure via operational status indicator and electrical output Via pressure gauge for displaying output pressure Via pressure gauge with red/green scale for displaying output pressure G $\frac{1}{4}$ prepared G $\frac{1}{8}$ prepared	
Valve function	3/2-way valve, bistable	
Exhaust function	No flow control	
Switching position display	Knob actuator direction = flow direction	
Pilot control mode	Direct	
Direction of flow	Non-reversible	

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

Flow rate characteristic values					
Size	MS4		MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
In main flow direction 1 \rightarrow 2	1,200	2,200	3,000	5,500	8,700
In relief direction 2 \rightarrow 3	1,900	1,700	6,800	6,600	6,200
C value [l/s*min]					
In main flow direction 1 \rightarrow 2	4.6	9.0	10.7	21.2	30.8
b value					
In main flow direction 1 \rightarrow 2	0.51	0.39	0.56	0.49	0.57

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

On-off valves MS4/MS6-EM1, MS series

Technical data

Operating and environmental conditions		
Size	MS4	MS6
Operating pressure [bar]	0 ... 14 (0 ... 10) ¹⁾	0 ... 18 (0 ... 10) ¹⁾
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4] Inert gases	
Note on operating/pilot medium	Operation with lubricated medium 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⁾	
Corrosion resistance class CRC ³⁾	2	
Food-safe ⁴⁾	See supplementary material information	
UL certification ⁴⁾	cULus recognized (OL)	

1) Value in brackets applies to MS4/MS6-EM1 with pressure sensor AD... or with UL certification.

2) Value in brackets applies to MS4/MS6-EM1 with pressure sensor AD...

3) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

4) Additional information www.festo.com/sp → Certificates.

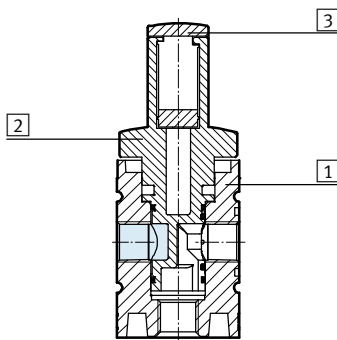
ATEX	
EU certification	EX4
ATEX category gas	II 2G
Ex-ignition protection type gas	Ex h IIC T6 Gb X
ATEX category dust	II 2D
EX-ignition protection type dust	Ex h IIIC T60°C Db X
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
CE mark (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive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

1) Additional information www.festo.com/sp → Certificates.

Weights [g]		
Size	MS4	MS6
On-off valve	190	580
On-off valve with silencer S	210	655

Materials

Sectional view



On-off valve		
1	Body	Die-cast aluminium
2	Rotary valve	PA reinforced
3	Lock slide	PA reinforced
-	Seals	NBR, TPE-U(PU)
Note on materials		RoHS-compliant
		Free of copper and PTFE (not with variants AG or AD...)

On-off valves MS4/MS6-EM1, MS series

Technical data

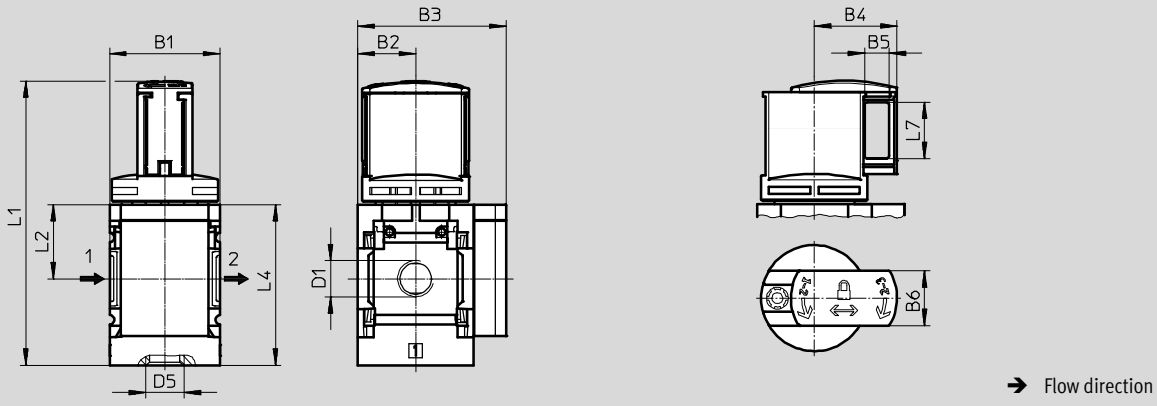


Dimensions – Basic version

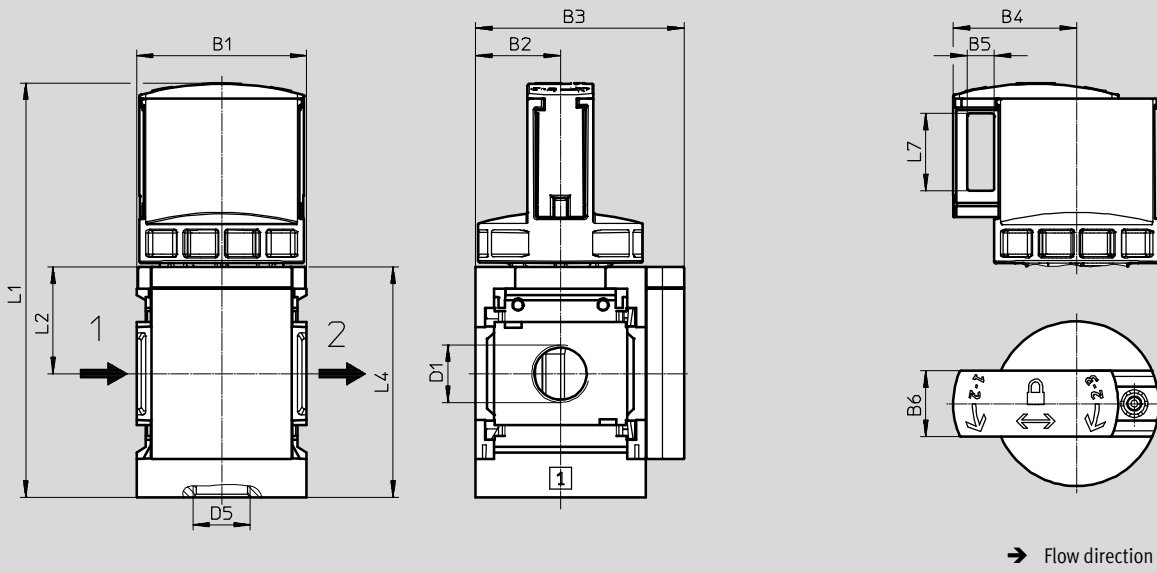
Download CAD data → www.festo.com

With female thread, with cover plate

MS4



MS6



Type	B1	B2	B3	B4	B5	B6	D1	D5	L1	L2	L4	L7
MS4-EM1-1/8	40	21	54	30	9	20	G1/8	G1/4	104	27	59	21
MS4-EM1-1/4							G1/4					
MS6-EM1-1/4	62	31	76	45	10	24	G1/4	G1/2	150.7	39	84.5	28.2
MS6-EM1-3/8							G3/8					
MS6-EM1-1/2							G1/2					

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

On-off valves MS4/MS6-EM1, MS series

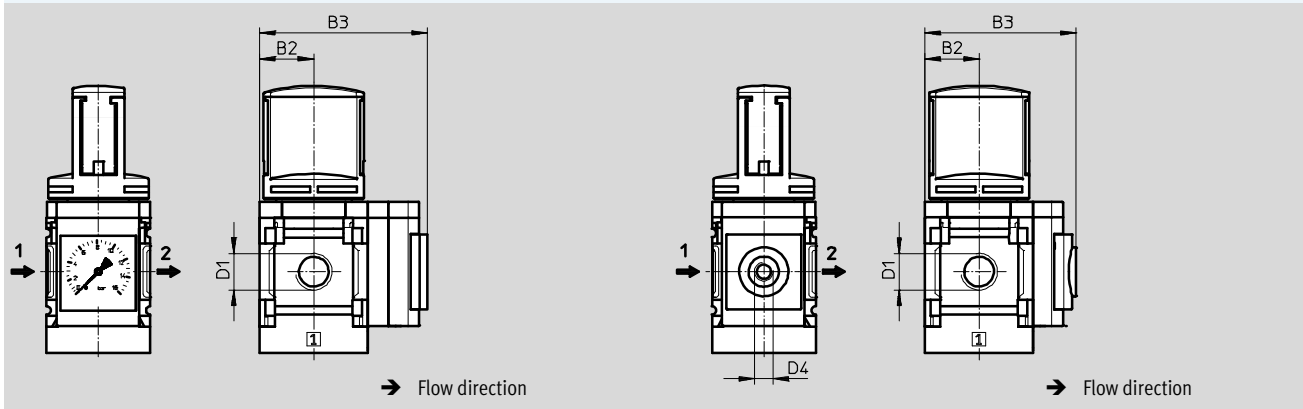
Technical data

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale AG or red-green scale RG, display unit [bar]

Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge



Type	B2	B3	D1	D4
MS4-EM1-1/8-...-AG	21	57	G1/8	-
MS4-EM1-1/4-...-AG			G1/4	
MS4-EM1-1/8-...-RG	21	58.5	G1/8	-
MS4-EM1-1/4-...-RG			G1/4	
MS4-EM1-1/8-...-A8	21	58.5	G1/8	G1/8
MS4-EM1-1/4-...-A8			G1/4	
MS4-EM1-1/8-...-A4	21	58.5	G1/8	G1/4
MS4-EM1-1/4-...-A4			G1/4	
MS6-EM1-1/4-...-AG	31	77	G1/4	-
MS6-EM1-3/8-...-AG			G3/8	
MS6-EM1-1/2-...-AG			G1/2	
MS6-EM1-1/4-...-RG	31	78.5	G1/4	-
MS6-EM1-3/8-...-RG			G3/8	
MS6-EM1-1/2-...-RG			G1/2	
MS6-EM1-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-EM1-3/8-...-A4			G3/8	
MS6-EM1-1/2-...-A4			G1/2	

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

On-off valves MS4/MS6-EM1, MS series



Technical data

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com
 Pressure sensor with LCD display AD1 ... AD4 Technical data → Internet: [sde1](#)

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

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

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

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

→ Flow direction

Pressure sensor with operational status indicator AD7 ... AD10 Technical data → 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 plug M8x1, window comparator, 1 switching output PNP, N/C contact

→ Flow direction

Type	B2	B3	D1	D6	L5	L6
MS4-EM1-1/8-...-AD1/AD2	21	82.6	G1/8	M8x1	35.1	46.7
MS4-EM1-1/4-...-AD1/AD2			G1/4			
MS4-EM1-1/8-...-AD3/AD4	21	82.6	G1/8	M12x1	35.1	55.8
MS4-EM1-1/4-...-AD3/AD4			G1/4			
MS4-EM1-1/8-...-AD7/AD8/AD9/AD10	21	59.1	G1/8	M8x1	-	-
MS4-EM1-1/4-...-AD7/AD8/AD9/AD10			G1/4			
MS6-EM1-1/4-...-AD1/AD2	31	103	G1/4	M8x1	35.1	46.7
MS6-EM1-3/8-...-AD1/AD2			G3/8			
MS6-EM1-1/2-...-AD1/AD2			G1/2			
MS6-EM1-1/4-...-AD3/AD4	31	103	G1/4	M12x1	35.1	55.8
MS6-EM1-3/8-...-AD3/AD4			G3/8			
MS6-EM1-1/2-...-AD3/AD4			G1/2			
MS6-EM1-1/4-...-AD7/AD8/AD9/AD10	31	79	G1/4	M8x1	-	-
MS6-EM1-3/8-...-AD7/AD8/AD9/AD10			G3/8			
MS6-EM1-1/2-...-AD7/AD8/AD9/AD10			G1/2			

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

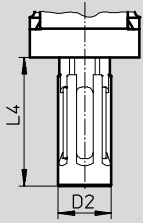
On-off valves MS4/MS6-EM1, MS series

Technical data

FESTO

Dimensions – Silencer

Download CAD data → www.festo.com



Type	D2	L4
MS4-EM1-...-S	20	49
MS6-EM1-...-S	28	109

★ Core product range

Ordering data					
Size	Connection	Standard		With silencer	
		Part No.	Type	Part No.	Type
MS4	G1/4	★ 541258	MS4-EM1-1/4	★ 541259	MS4-EM1-1/4-S
MS6	G1/2	★ 541267	MS6-EM1-1/2	★ 541268	MS6-EM1-1/2-S

Ordering data					
Size	Connection	Standard		With silencer	
		Part No.	Type	Part No.	Type
MS4	G1/8	541262	MS4-EM1-1/8	541263	MS4-EM1-1/8-S
MS6	G1/4	541271	MS6-EM1-1/4	541272	MS6-EM1-1/4-S
	G3/8	541275	MS6-EM1-3/8	541276	MS6-EM1-3/8-S

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

On-off valves MS4/MS6-EM1, MS series

Ordering data – Modular products

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	541266	541279				
	Series	Standard			MS	MS	
	Size	4	6		...		
	Function	On-off valve, manual			-EM1	-EM1	
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	1	- $\frac{1}{8}$		
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	1	- $\frac{1}{4}$		
		–	Female thread G $\frac{3}{8}$	1	- $\frac{3}{8}$		
		–	Female thread G $\frac{1}{2}$	1	- $\frac{1}{2}$		
		Connecting plate G $\frac{1}{8}$	–			-AGA	
		Connecting plate G $\frac{1}{4}$	Connecting plate G $\frac{1}{4}$			-AGB	
		Connecting plate G $\frac{3}{8}$	Connecting plate G $\frac{3}{8}$			-AGC	
		–	Connecting plate G $\frac{1}{2}$			-AGD	
		–	Connecting plate G $\frac{3}{4}$			-AGE	
		Connecting plate NPT $\frac{1}{8}$	–	1		-AQK	
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	1		-AQN	
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	1		-AQP	
		–	Connecting plate NPT $\frac{1}{2}$	1		-AQR	
		–	Connecting plate NPT $\frac{3}{4}$	1		-AQS	

1 $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, **AQK, AQN, AQP, AQR, AQS, AD1 ... AD4, AD7 ... AD10, WPM**
Not with EU certification EX4

- M** Mandatory data
- O** Options

Transfer order code

MS - **EM1** -

On-off valves MS4/MS6-EM1, MS series

Ordering data – Modular products

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
O	Silencer	Silencer			-S		
	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar			-AG		
		Adapter plate for EN pressure gauge 1/8, without pressure gauge	-		-A8		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4		
		Integrated pressure gauge, red-green scale			-RG		
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin		1 2	-AD1		
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin		1 2	-AD2		
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA		1 2	-AD3		
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA		1 2	-AD4		
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact		1 2	-AD7		
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact		1 2	-AD8		
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact		1 2	-AD9		
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact		1 2	-AD10		
		Alternative pressure gauge scale	psi		3	-PSI	
			MPa		4	-MPA	
	Type of mounting	Mounting bracket standard design		5	-WP		
		Mounting bracket for attaching the service units		1 5	-WPM		
		Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required			-WB		
		Mounting bracket centrally at rear (wall mounting top), connecting plates not required		-	-WBM		
	EU certification	II 2GD to EU Explosion Protection Directive (ATEX)			-EX4		
	UL certification	cULus, ordinary location for Canada and USA			-UL1		
	Flow direction	Flow direction from right to left			-Z		

2 AD1 ... AD4, AD7 ... AD10

Measuring range max. 10 bar

5 WP, WPM

Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS

3 PSI

Only with pressure gauge AG

4 MPA

Only with pressure gauge AG or RG

M Mandatory data

O Options

Transfer order code

- [] - [] - [] - [] - [] - [] - []

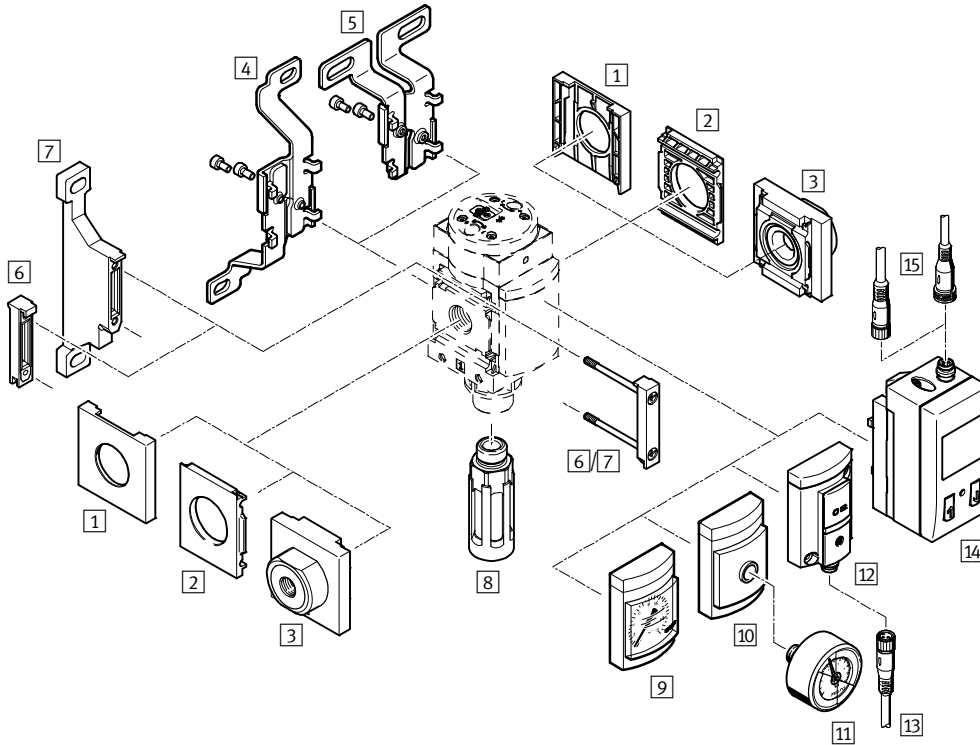
New
MS...-10V24C/10V24D/10V24F

On-off valves MS4/MS6-EE, MS series

Peripherals overview



On-off valve MS4/MS6-EE



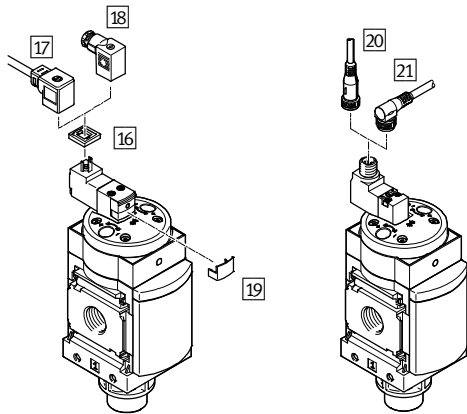
Note

Additional accessories:

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

Supply voltage
 V24/V24P/10V24/10V24C/
 V110/V230

Supply voltage
 10V24D/10V24F/10V24P






On-off valves MS4/MS6-EE, MS series

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	Mounting plate MS4/6-AEND	■ ¹⁾	-	■ ¹⁾	-	ms4-aend, ms6-aend
3	Connecting plate-SET MS4/6-AG...	-	■ ¹⁾	-	■ ¹⁾	ms4-ag, ms6-ag
	Connecting plate-SET MS4/6-AQ...	-	■ ¹⁾	-	■ ¹⁾	ms4-aq, ms6-aq
4	Mounting bracket MS4/6-WB	■	■	-	-	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	-	-	ms4-wbm
6	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
7	Mounting bracket MS4/6-WP	■	■	■	■	ms4-wp, ms6-wp
	Mounting bracket (not illustrated) MS4/6-WPB/WPE/WPM	■	■	■	■	ms4-wp, ms6-wp
8	Silencer U	■	■	■	■	95
9	MS pressure gauge AG/RG	■	■	■	■	28
10	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	28
11	Pressure gauge MA	■	■	■	■	95
12	Pressure sensor without display AD7 ... AD10	■	■	■	■	28
13	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
14	Pressure sensor with display AD1 ... AD4	■	■	■	■	28
15	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	95
16	Illuminating seal MEB-LD	■	■	■	■	94
17	Plug socket with cable KMEB	■	■	■	■	94
18	Plug socket MSSD-EB ²⁾	■	■	■	■	94
19	Locking clip CPV18-HV	■	■	■	■	94
20	Connecting cable NEBU-M12G5	■	■	■	■	95
21	Connecting cable NEBU-M12W5	■	■	■	■	95

1) Module connector MS4/6-MV [6] or mounting bracket MS4/6-WP/WPB/WPE/WPM [7] is required for mounting.

2) For the on-off valve MS...V24P and MS...V24...-EX2 the plug socket is included in scope of delivery.

 **New**

MS...-10V24C/10V24D/10V24F

On-off valves MS4/MS6-EE, MS series

FESTO

Type codes

MS 6 - EE - 1/2 - V110 -

Series

MS	Standard service unit
----	-----------------------

Size

4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function

EE	Solenoid actuated on-off valve
----	--------------------------------

Pneumatic connection

MS4	
1/8	Female thread G1/8
1/4	Female thread G1/4
MS6	
1/4	Female thread G1/4
3/8	Female thread G3/8
1/2	Female thread G1/2

Supply voltage

10V24	Supply voltage 24 V DC
V110	Supply voltage 110 V AC
V230	Supply voltage 230 V AC

Silencer

	Without silencer
S	Silencer

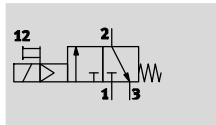
Additional variants can be ordered using the modular system → 28





- Connecting plates
- Supply voltage
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU certification
- UL certification
- Flow direction

On-off valves MS4/MS6-EE, MS series

Technical data

Function




-  - Flow rate
1,000 ... 7,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
4 ... 18 bar
-  - www.festo.com



- Solenoid actuated on-off valve for pressurising and venting pneumatic installations
- With solenoid coil without plug socket
- Three voltage ranges can be selected
- Ducted exhaust possible via a threaded connection with silencer
- Non-detenting and detenting manual override (variant 10V24/10V24F: only non-detenting)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22

General technical data		
Size	MS4	MS6
Pneumatic connection 1, 2	Female thread	G $\frac{1}{8}$ or G $\frac{1}{4}$
	Connecting plate AG...	G $\frac{1}{8}$, G $\frac{1}{4}$ or G $\frac{3}{8}$
	Connecting plate AQ...	NPT $\frac{1}{8}$, NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$
Pneumatic connection 3	G $\frac{1}{4}$	G $\frac{1}{2}$
Design	Piston spool valve	
Type of mounting	Via accessories	
	In-line installation	
Assembly position	Any	
Pressure indicator	Via pressure sensor for displaying output pressure via LCD display and electrical output	
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output	
	Via pressure gauge for displaying output pressure	
	Via pressure gauge with red/green scale for displaying output pressure	
	G $\frac{1}{4}$ prepared	
G $\frac{1}{8}$ prepared		-
Valve function	3/2-way valve, single solenoid, closed	
Exhaust function	Without flow control	
Manual override	10V24/10V24F	Non-detenting
	V24/V24P/10V24P/ V110/V230	Non-detenting and detenting
	10V24C/10V24D	None
Type of reset	Mechanical spring	
Switching position display	Via accessories	
Pilot control mode	Piloted	
Pilot air supply	Internal	
Direction of flow	Non-reversible	

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

On-off valves MS4/MS6-EE, MS series

Technical data

Electrical data		
Coil	V24/V24P	24 V DC: 1.5 W; perm. voltage fluctuations -25%/+10%
characteristics	10V24/10V24C/ 10V24D/10V24F/ 10V24P	24 V DC: 1.8 W; perm. voltage fluctuations -15%/+10%
	V110	110 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; perm. voltage fluctuations ±10%
	V230	230 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; perm. voltage fluctuations -14%/+10%
	Electrical connection	V24/10V24/ 10V24C/V110/ V230
	V24P/10V24D/ 10V24F/10V24P	M12x1 to ISO 20401 suitable to EN 61076-2-101
Protection class for solenoid coil		IP65
Duty cycle	[%]	100

Flow rate characteristic values					
Size	MS4			MS6	
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
In main flow direction 1 \rightarrow 2	1,000	2,000	2,600	5,500	7,000
In relief direction 2 \rightarrow 3	1,600	1,600	7,000	6,200	5,500
C value [l/s*min]					
In main flow direction 1 \rightarrow 2	4.5	9.5	11.0	22.0	29.0
b value					
In main flow direction 1 \rightarrow 2	0.5	0.44	0.5	0.5	0.4

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

Operating and environmental conditions				
Size	MS4		MS6	
Supply voltage	V24/V24P/V110/V230	10V24/10V24C/10V24D/ 10V24F/10V24P	V24/V24P/V110/V230	10V24/10V24C/10V24D/ 10V24F/10V24P
Operating pressure [bar]	4 ... 14 (4 ... 10) ¹⁾	4 ... 10	4 ... 18 (4 ... 10) ¹⁾	4 ... 10
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4] Inert gases			
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)			
Ambient temperature [°C]	-10 ... +60 (0 ... +50) ²⁾	-10 ... +50 (0 ... +50) ²⁾	-10 ... +60 (0 ... +50) ²⁾	-10 ... +50 (0 ... +50) ²⁾
Temperature of medium [°C]	-10 ... +60 (0 ... +50) ²⁾	-10 ... +50 (0 ... +50) ²⁾	-10 ... +60 (0 ... +50) ²⁾	-10 ... +50 (0 ... +50) ²⁾
Corrosion resistance class CRC ³⁾	2			
Food-safe ⁴⁾	See supplementary material information (except solenoid valve)			
UL certification ⁴⁾	cULus recognized (OL)			
KC marking	KC EMC ²⁾			

1) Value in brackets applies to MS4/MS6-EE with pressure sensor AD... with UL certification or with silencer S in combination with EU certification EX2.

2) Value in brackets applies to MS4/MS6-EE with pressure sensor AD... .

3) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

4) Additional information www.festo.com/sp → Certificates.

On-off valves MS4/MS6-EE, MS series

Technical data

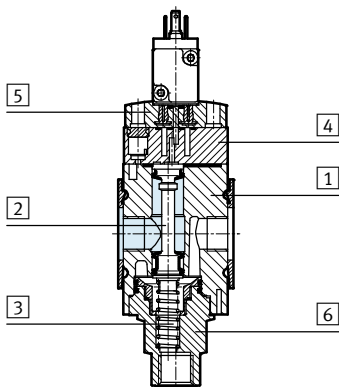
ATEX	
EU certification	EX2
ATEX category gas	II 3G
Ex-ignition protection type gas	Ex nA IIC T4 X Gc
ATEX category dust	II 3D
EX-ignition protection type dust	Ex tc IIIC T105°C X Dc IP65
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
CE mark (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
	To EU EMC Directive
	To EU Low Voltage Directive

1) Additional information www.festo.com/sp → Certificates.

Weights [g]		
Size	MS4	MS6
On-off valve	273	740
On-off valve with silencer S	289	816

Materials

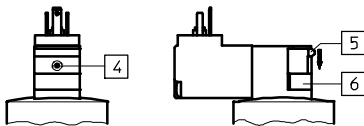
Sectional view




On-off valve		
1	Body	Die-cast aluminium
2	Piston spool	NBR/aluminium
3	Springs	High-alloy stainless steel
4	End cap	PA
5	Top plate	PA
6	Socket end connection	PA
-	Seals	NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE (not with variants AG, V24P, 10V24, 10V24C, 10V24D, 10V24F, 10V24P or AD...)

Manual override

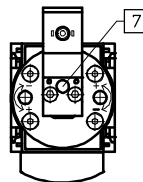
Supply voltage
V24/V24P/V110/V230



 Note

For detenting manual override remove the grey cover plate [6] and press the slide [5] downwards.

Supply voltage
10V24/10V24F/10V24P



- [4] Manual override, non-detenting (delivery status)
- [5] Slide
- [6] Cover plate
- [7] Non-detenting and detenting manual override (variant 10V24/10V24F: only non-detenting)

On-off valves MS4/MS6-EE, MS series

Technical data

Dimensions – Basic version

Download CAD data → www.festo.com

With female thread, with cover plate

Supply voltage
V24/10V24/10V24C/V110/V230

Supply voltage
10V24D/10V24F/10V24P

Supply voltage
V24P

- 1 = Unused
- 2 = Unused
- 3 = com (-)
- 4 = Signal (+) solenoid 14

1 Plug connection to EN 175301-803

2 Solenoid actuator can be repositioned by 180°, i.e. solenoid points to the front

3 PIN only with solenoid actuators 110 V and 230 V

4 Electrical connection M12x1 to ISO 20401 suitable to EN 61076-2-101, version 4 pin for connecting cable NEBU-M12

→ Flow direction

Type	B1	B2		B3		B4	B5	B6	B7	D1	D5	D7
		V24/ V24P/ V110/ V230	10V24/ 10V24C/ 10V24D/ 10V24F/ 10V24P	V24/ V24P/ V110/ V230	10V24/ 10V24C/ 10V24D/ 10V24F/ 10V24P							
MS4-EE-1/8	40	42	35	75	68	21	54	31	11	G1/8	G1/4	M12x1
MS4-EE-1/4										G1/4		
MS6-EE-1/4	62	52	45	97	90	31	76	31	11	G1/4	G1/2	M12x1
MS6-EE-3/8										G3/8		
MS6-EE-1/2										G1/2		

Type	L1					L2	L3	L7		L8	L9	
	V24/ V110/ V230	V24P	V24-EX2	10V24/ 10V24C	10V24D/ 10V24F/ 10V24P			V24P	V24-EX2			
MS4-EE-1/8	142.8	156 ¹⁾	160 ¹⁾	140	145	59	100	8.6	22 ¹⁾	26 ¹⁾	37	26
MS4-EE-1/4												
MS6-EE-1/4	186	199 ¹⁾	203 ¹⁾	183	188	84	143	8.6	22 ¹⁾	26 ¹⁾	37	27.5
MS6-EE-3/8												
MS6-EE-1/2												

1) Measured with plug socket MSSD-EB (included in scope of delivery).

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

On-off valves MS4/MS6-EE, MS series

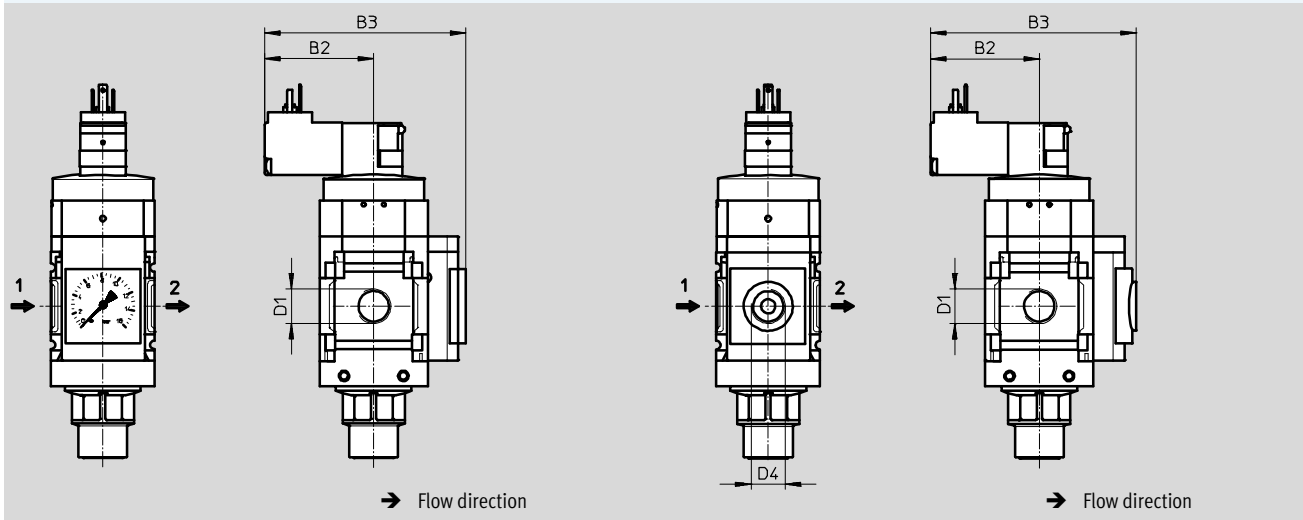
Technical data

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale AG or red-green scale RG, display unit [bar]

Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge



Type	B2	B2	B3	B3	D1	D4
	V24/V24P/ V110/V230	10V24/10V24C/ 10V24D/10V24F/ 10V24P	V24/V24P/ V110/V230	10V24/10V24C/ 10V24D/10V24F/ 10V24P		
MS4-EE-1/8-...-AG	42	35	86	79	G1/8	-
MS4-EE-1/4-...-AG					G1/4	
MS4-EE-1/8-...-RG	42	35	87.5	80.5	G1/8	-
MS4-EE-1/4-...-RG					G1/4	
MS4-EE-1/8-...-A8	42	35	79.5	72.5	G1/8	G1/8
MS4-EE-1/4-...-A8					G1/4	
MS4-EE-1/8-...-A4	42	35	79.5	72.5	G1/8	G1/4
MS4-EE-1/4-...-A4					G1/4	
MS6-EE-1/4-...-AG	52	45	98	91	G1/4	-
MS6-EE-3/8-...-AG					G3/8	
MS6-EE-1/2-...-AG					G1/2	
MS6-EE-1/4-...-RG	52	45	99.5	92.5	G1/4	-
MS6-EE-3/8-...-RG					G3/8	
MS6-EE-1/2-...-RG					G1/2	
MS6-EE-1/4-...-A4	52	45	99.5	92.5	G1/4	G1/4
MS6-EE-3/8-...-A4					G3/8	
MS6-EE-1/2-...-A4					G1/2	

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

On-off valves MS4/MS6-EE, MS series

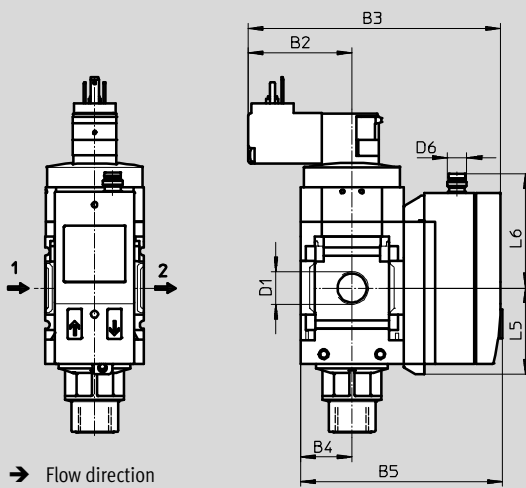
Technical data

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with LCD display AD1 ... AD4

Technical data → Internet: sde1



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

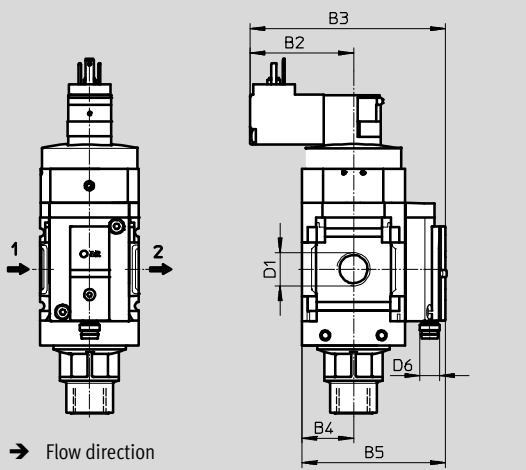
Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with 4-pin plug M12x1, 1 switching output PNP and 4 ... 20 mA analogue

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

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

Pressure sensor with operational status indicator AD7 ... AD10

Technical data → Internet: sde5



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

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

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

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

Type	B2		B3		B4	B5	D1	D6	L5	L6
	V24/ V24P/ V110/ V230	10V24/10V24C/ 10V24D/10V24F/ 10V24P	V24/ V24P/ V110/ V230	10V24/10V24C/ 10V24D/10V24F/ 10V24P						
MS4-EE-1/8-...-AD1/AD2	42	35	103.6	96.6	21	82.6	G1/8	M8x1	35.1	46.7
MS4-EE-1/4-...-AD1/AD2							G1/4			
MS4-EE-1/8-...-AD3/AD4	42	35	103.6	96.6	21	82.6	G1/8	M12x1	35.1	55.8
MS4-EE-1/4-...-AD3/AD4							G1/4			
MS4-EE-1/8-...-AD7/AD8/AD9/AD10	42	35	80.1	73.1	21	59.1	G1/8	M8x1	-	-
MS4-EE-1/4-...-AD7/AD8/AD9/AD10							G1/4			
MS6-EE-1/4-...-AD1/AD2	52	45	124	117	31	103	G1/4	M8x1	35.1	46.7
MS6-EE-3/8-...-AD1/AD2							G3/8			
MS6-EE-1/2-...-AD1/AD2							G1/2			
MS6-EE-1/4-...-AD3/AD4	52	45	124	117	31	103	G1/4	M12x1	35.1	55.8
MS6-EE-3/8-...-AD3/AD4							G3/8			
MS6-EE-1/2-...-AD3/AD4							G1/2			
MS6-EE-1/4-...-AD7/AD8/AD9/AD10	52	45	100	93	31	79	G1/4	M8x1	-	-
MS6-EE-3/8-...-AD7/AD8/AD9/AD10							G3/8			
MS6-EE-1/2-...-AD7/AD8/AD9/AD10							G1/2			

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

On-off valves MS4/MS6-EE, MS series

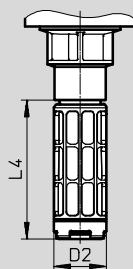
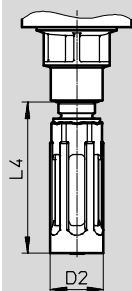
Technical data

Dimensions – Silencer

Download CAD data → www.festo.com

Silencer S

Silencer S with EU certification EX2



Type	D2	L4
MS4-EE-...-S	20	55
MS4-EE-...-S-...-EX2	19	50.7
MS6-EE-...-S	28	108
MS6-EE-...-S-...-EX2	43	80

★ Core product range

Ordering data

Size	Connection	Without silencer		With silencer	
		Part No.	Type	Part No.	Type
Supply voltage 24 V DC					
MS4	G1/4	★ 542578	MS4-EE-1/4-10V24	★ 542598	MS4-EE-1/4-10V24-S
MS6	G1/2	★ 542582	MS6-EE-1/2-10V24	★ 542602	MS6-EE-1/2-10V24-S

Ordering data

Size	Connection	Without silencer		With silencer	
		Part No.	Type	Part No.	Type
Supply voltage 24 V DC					
MS4	G1/8	542580	MS4-EE-1/8-10V24	542600	MS4-EE-1/8-10V24-S
MS6	G1/4	542584	MS6-EE-1/4-10V24	542604	MS6-EE-1/4-10V24-S
	G3/8	542586	MS6-EE-3/8-10V24	542606	MS6-EE-3/8-10V24-S
Supply voltage 110 V AC					
MS4	G1/4	529535	MS4-EE-1/4-V110	538719	MS4-EE-1/4-V110-S
MS6	G1/2	529823	MS6-EE-1/2-V110	538731	MS6-EE-1/2-V110-S
Supply voltage 230 V AC					
MS4	G1/4	529537	MS4-EE-1/4-V230	-	-
MS6	G1/2	529825	MS6-EE-1/2-V230	-	-

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

On-off valves MS4/MS6-EE, MS series

Ordering data – Modular products

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	527709		527682			
	Series	Standard			MS	MS	
	Size	4	6		...		
	Function	On-off valve, electrical			-EE	-EE	
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	1	-$\frac{1}{8}$		
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	1	-$\frac{1}{4}$		
		–	Female thread G $\frac{3}{8}$	1	-$\frac{3}{8}$		
		–	Female thread G $\frac{1}{2}$	1	-$\frac{1}{2}$		
		Connecting plate G $\frac{1}{8}$	–			-AGA	
		Connecting plate G $\frac{1}{4}$	Connecting plate G $\frac{1}{4}$			-AGB	
		Connecting plate G $\frac{3}{8}$	Connecting plate G $\frac{3}{8}$			-AGC	
		–	Connecting plate G $\frac{1}{2}$			-AGD	
		–	Connecting plate G $\frac{3}{4}$			-AGE	
		Connecting plate NPT $\frac{1}{8}$	–	1		-AQK	
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	1		-AQN	
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	1		-AQP	
		–	Connecting plate NPT $\frac{1}{2}$	1		-AQR	
		–	Connecting plate NPT $\frac{3}{4}$	1		-AQS	
	Supply voltage	24 V DC (pin allocation to EN 175301) 4 ... 14 bar 4 ... 18 bar			-V24		
		24 V DC, M12x1 to ISO 20401 suitable to EN 61076-2-101 4 ... 14 bar 4 ... 18 bar		1	-V24P		
		24 V DC (pin allocation to EN 175301), 4 ... 10 bar, non-detenting manual override		1 2	-10V24		
		24 V DC (pin allocation to EN 175301), 4 ... 10 bar, none manual override		1 2	-10V24C		
		24 V DC, M12x1 to ISO 20401 suitable to EN 61076-2-101, 4 ... 10 bar, none manual override		1 2	-10V24D		
		24 V DC, M12x1 to ISO 20401 suitable to EN 61076-2-101, 4 ... 10 bar, non-detenting manual override		1 2	-10V24F		
		24 V DC, M12x1 to ISO 20401 suitable to EN 61076-2-101, 4 ... 10 bar, non-detenting and detenting manual override		1 2	-10V24P		
		110 V AC (pin allocation to EN 175301) 4 ... 14 bar 4 ... 18 bar		1	-V110		
		230 V AC (pin allocation to EN 175301) 4 ... 14 bar 4 ... 18 bar		1	-V230		

1 $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, **AQK, AQN, AQP, AQR, AQS, V24P, 10V24, 10V24C, 10V24D, 10V24F, 10V24P, V110, V230, AD1 ... AD4, AD7 ... AD10, WPM**
Not with EU certification EX2

2 **10V24, 10V24C, 10V24D, 10V24F, 10V24P**
Max. operating pressure 10 bar

M Mandatory data
O Options

Transfer order code

MS - **EE** -

**New****MS...-10V24C/10V24D/10V24F****FESTO****On-off valves MS4/MS6-EE, MS series**

Ordering data – Modular products

Ordering table		40	62	Condi- tions	Code	Enter code	
Grid dimension	[mm]						
0	Silencer	Silencer		3	-S		
	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar			-AG		
		Adapter plate for EN pressure gauge 1/8, without pressure gauge	–		-A8		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4		
		Integrated pressure gauge, red-green scale			-RG		
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin			1 4	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin			1 4	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			1 4	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			1 4	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact			1 4	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact			1 4	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact			1 4	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact			1 4	-AD10	
		Alternative pressure gauge scale	psi		5	-PSI	
	MPa			6	-MPA		
	Type of mounting	Mounting bracket standard design		7	-WP		
		Mounting bracket for attaching the service units		1 7	-WPM		
		Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required				-WB	
		Mounting bracket centrally at rear (wall mounting top), connecting plates not required	–			-WBM	
	EU certification	II 3GD to EU Explosion Protection Directive (ATEX)			-EX2		
	UL certification	cULus, ordinary location for Canada and USA		8	-UL1		
	Flow direction	Flow direction from right to left			-Z		

3 S Max. operating pressure 10 bar in combination with EU certification EX2**4 AD1 ... AD4, AD7 ... AD10**
Measuring range max. 10 bar**5 PSI** Only in combination with pressure gauge AG**6 MPA** Only in combination with pressure gauge AG or RG**7 WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS**8 UL1** Not with supply voltage V110, V230**M** Mandatory data**0** Options

Transfer order code

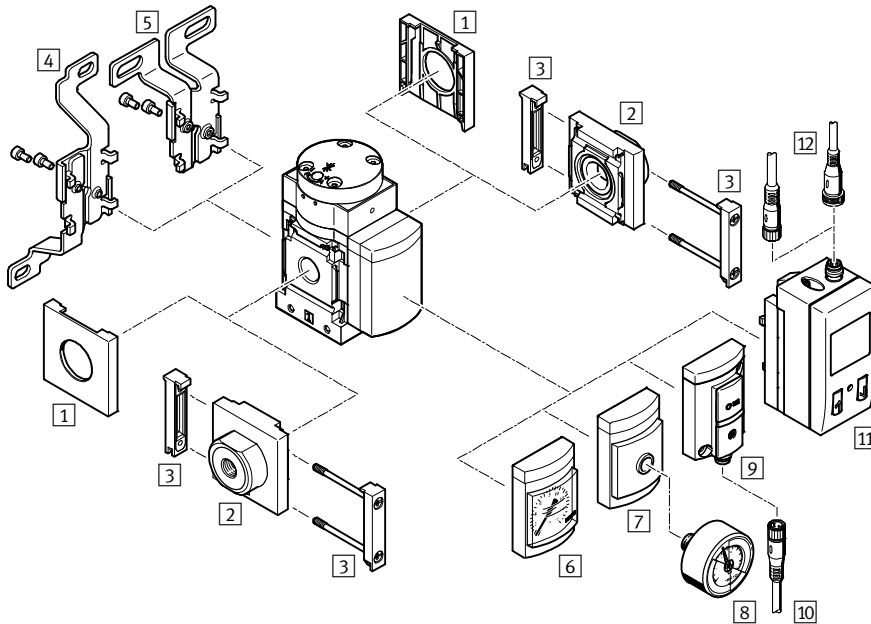
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Soft-start valves MS4/MS6-DL, MS series

Peripherals overview



Soft-start valve MS4/MS6-DL



Note

Additional accessories:

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

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
	Connecting plate-SET MS4/6-AQ...	-	■	-	■	ms4-aq, ms6-aq
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	MS pressure gauge AG/RG	■	■	■	■	38
7	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	38
8	Pressure gauge MA	■	■	■	■	95
9	Pressure sensor without display AD7 ... AD10	■	■	■	■	38
10	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
11	Pressure sensor with display AD1 ... AD4	■	■	■	■	38
12	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	95
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

Soft-start valves MS4/MS6-DL, MS series

Type codes

MS	6	-	DL	-	1/2
----	---	---	----	---	-----

Series	
MS	Standard service unit

Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function	
DL	Pneumatically actuated soft-start valve

Pneumatic connection	
MS4	
1/8	Female thread G1/8
1/4	Female thread G1/4
MS6	
1/4	Female thread G1/4
3/8	Female thread G3/8
1/2	Female thread G1/2

Additional variants can be ordered using the modular system → 38

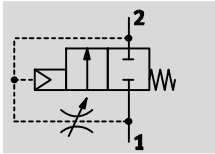
- Connecting plates
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU certification
- UL certification
- Flow direction




Soft-start valves MS4/MS6-DL, MS series

Technical data

FESTO

Function



-  Flow rate
1,000 ... 6,450 l/min
-  Temperature range
-10 ... +60 °C
-  Operating pressure
4 ... 18 bar



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap. The output pressure p2 rises slowly in accordance with the restrictor setting. The main seat opens when the switch-through pressure is reached.

- Pneumatically actuated soft-start valve for slowly pressurising and venting pneumatic installations (for use with on-off valves EM1 and EE)
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- Pressure switching approx. 50% of operating pressure
- Adjustable switching time delay
- Optional pressure sensor
- 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	G $\frac{1}{8}$ or G $\frac{1}{4}$	G $\frac{1}{4}$, G $\frac{3}{8}$ or G $\frac{1}{2}$
Connecting plate AG...	G $\frac{1}{8}$, G $\frac{1}{4}$ or G $\frac{3}{8}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$ or G $\frac{3}{4}$
Connecting plate AQ...	NPT $\frac{1}{8}$, NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$	NPT $\frac{1}{4}$, NPT $\frac{3}{8}$, NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$
Design	Piston poppet valve	
Type of mounting	Via accessories In-line installation	
Assembly position	Any	
Pressure indicator	Via pressure sensor for displaying output pressure via LCD display and electrical output Via pressure sensor for displaying output pressure via operational status indicator and electrical output Via pressure gauge for displaying output pressure Via pressure gauge with red/green scale for displaying output pressure G $\frac{1}{4}$ prepared G $\frac{1}{8}$ prepared	
Valve function	2/2-way valve	
Exhaust function	Flow control	
Type of reset	Mechanical spring	
Pilot control mode	Direct	
Pilot air supply	External	
Direction of flow	Non-reversible	

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

Soft-start valves MS4/MS6-DL, MS series

Technical data

Flow rate characteristic values					
Size	MS4		MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
In main flow direction 1 \rightarrow 2	1,000	2,000	2,800	5,050	6,450
In relief direction 2 \rightarrow 1	1,000	2,000	2,800	5,050	6,400
C value [l/s*min]					
In main flow direction 1 \rightarrow 2	4.6	9.6	11.22	21.05	28.97
b value					
In main flow direction 1 \rightarrow 2	0.5	0.45	0.54	0.48	0.39

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

Operating and environmental conditions	
Size	MS4
Operating pressure [bar]	4 ... 14 (4 ... 10) ¹⁾
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4] Inert gases
Note on operating/pilot medium	Operation with lubricated medium 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⁾
Corrosion resistance class CRC ³⁾	2
Food-safe ⁴⁾	See supplementary material information
UL certification ⁴⁾	cULus recognized (OL)

1) Value in brackets applies to MS4/MS6-DL with pressure sensor AD... or with UL certification.

2) Value in brackets applies to MS4/MS6-DL with pressure sensor AD...

3) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

4) Additional information www.festo.com/sp → Certificates.

ATEX	
EU certification	EX4
ATEX category gas	II 2G
Ex-ignition protection type gas	Ex h IIC T6 Gb X
ATEX category dust	II 2D
EX-ignition protection type dust	Ex h IIIC T60°C Db X
ATEX 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.

Soft-start valves MS4/MS6-DL, MS series

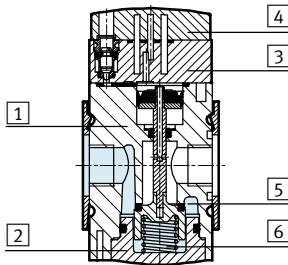
Technical data



Weights [g]		
Size	MS4	MS6
Soft-start valve	213	650

Materials

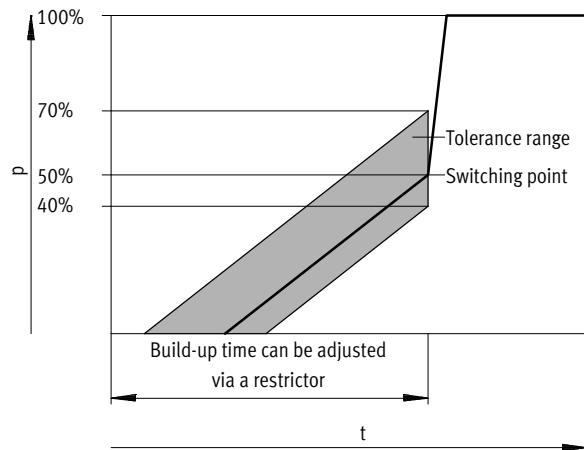
Sectional view



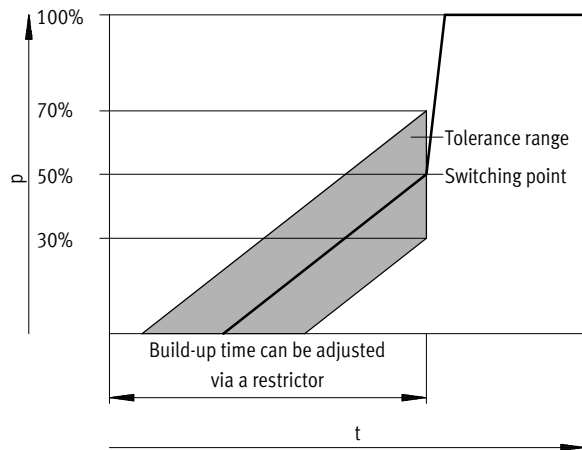
Soft-start valve		
1	Body	Die-cast aluminium
2	Base	PET
3	End cap	PA
4	Top plate	PA
5	Seat	Aluminium
6	Springs	Spring steel
-	Seals	NBR
Note on materials		RoHS-compliant Free of copper and PTFE (not with variants AG or AD...)

Switching point – Pressure p as a function of time t

MS4



MS6



- - Note
The tolerance specification +20%/-10% of the switching point refers to the operating pressure p1.
Example: at an operating pressure of 4 bar a switching point of 1.6 bar to 2.8 bar is permitted.

- - Note
The tolerance specification +20%/-20% of the switching point refers to the operating pressure p1.
Example: at an operating pressure of 4 bar a switching point of 1.2 bar to 2.8 bar is permitted.

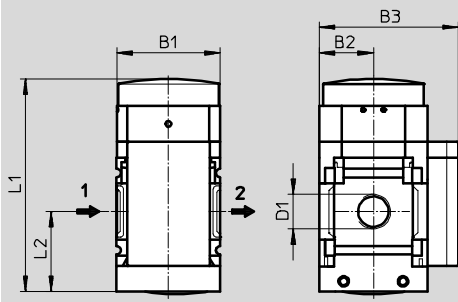
Soft-start valves MS4/MS6-DL, MS series

Technical data

Dimensions – Basic version

Download CAD data → www.festo.com

With female thread, with cover plate



→ Flow direction

Type	B1	B2	B3	D1	L1	L2
MS4-DL-1/8	40	21	54	G1/8	83.2	31.5
MS4-DL-1/4				G1/4		
MS6-DL-1/4	62	31	76	G1/4	108	46
MS6-DL-3/8				G3/8		
MS6-DL-1/2				G1/2		

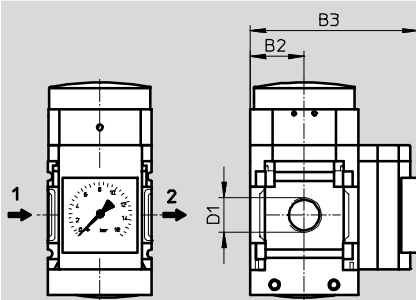
Note: This product conforms to ISO 1179-1 and to ISO 228-1

Dimensions – Pressure gauge/pressure gauge alternatives

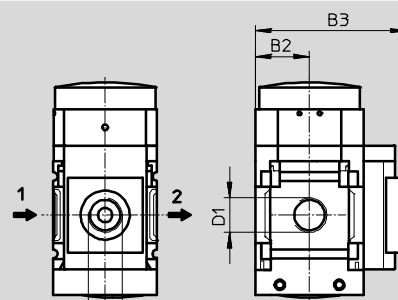
Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale AG or red-green scale RG, display unit [bar]

Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge



→ Flow direction



→ Flow direction

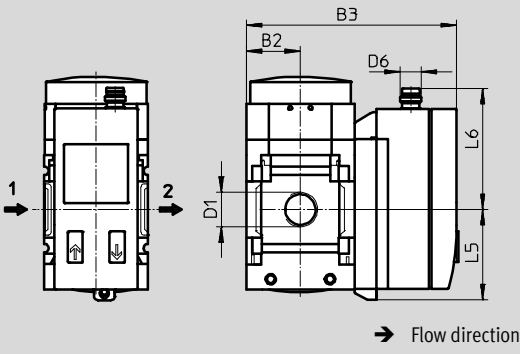
Type	B2	B3	D1	D4
MS4-DL-1/8-...-AG	21	57	G1/8	-
MS4-DL-1/4-...-AG			G1/4	
MS4-DL-1/8-...-RG	21	58.5	G1/8	-
MS4-DL-1/4-...-RG			G1/4	
MS4-DL-1/8-...-A8	21	58.5	G1/8	G1/8
MS4-DL-1/4-...-A8			G1/4	
MS4-DL-1/8-...-A4	21	58.5	G1/8	G1/4
MS4-DL-1/4-...-A4			G1/4	
MS6-DL-1/4-...-AG	31	77	G1/4	-
MS6-DL-3/8-...-AG			G3/8	
MS6-DL-1/2-...-AG			G1/2	
MS6-DL-1/4-...-RG	31	78.5	G1/4	-
MS6-DL-3/8-...-RG			G3/8	
MS6-DL-1/2-...-RG			G1/2	
MS6-DL-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-DL-3/8-...-A4			G3/8	
MS6-DL-1/2-...-A4			G1/2	

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

Soft-start valves MS4/MS6-DL, MS series

Technical data

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com
 Pressure sensor with LCD display AD1 ... AD4 Technical data → Internet: sde1



→ Flow direction

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

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

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

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

Type	B2	B3	D1	D6	L5	L6
MS4-DL-1/8-...-AD1/AD2	21	82.6	G1/8	M8x1	35.1	46.7
MS4-DL-1/4-...-AD1/AD2			G1/4			
MS4-DL-1/8-...-AD3/AD4	21	82.6	G1/8	M12x1	35.1	55.8
MS4-DL-1/4-...-AD3/AD4			G1/4			
MS6-DL-1/4-...-AD1/AD2	31	103	G1/4	M8x1	35.1	46.7
MS6-DL-3/8-...-AD1/AD2			G3/8			
MS6-DL-1/2-...-AD1/AD2			G1/2			
MS6-DL-1/4-...-AD3/AD4	31	103	G1/4	M12x1	35.1	55.8
MS6-DL-3/8-...-AD3/AD4			G3/8			
MS6-DL-1/2-...-AD3/AD4			G1/2			

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

Soft-start valves MS4/MS6-DL, MS series

Technical data

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com

Pressure sensor with operational status indicator AD7 ... AD10 Technical data → 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 plug M8x1, window comparator, 1 switching output PNP, N/C contact

Type	B2	B3	D1	D6
MS4-DL-1/8-...-AD7/AD8/AD9/AD10	21	59.1	G1/8	M8x1
MS4-DL-1/4-...-AD7/AD8/AD9/AD10			G1/4	
MS6-DL-1/4-...-AD7/AD8/AD9/AD10	31	79	G1/4	M8x1
MS6-DL-3/8-...-AD7/AD8/AD9/AD10			G3/8	
MS6-DL-1/2-...-AD7/AD8/AD9/AD10			G1/2	

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

★ Core product range

Ordering data			
Size	Connection	Part No.	Type
MS4	G1/4	★ 529531	MS4-DL-1/4
MS6	G1/2	★ 529817	MS6-DL-1/2

Ordering data			
Size	Connection	Part No.	Type
MS4	G1/8	529533	MS4-DL-1/8
MS6	G1/4	529819	MS6-DL-1/4
	G3/8	529821	MS6-DL-3/8

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

Soft-start valves MS4/MS6-DL, MS series

Ordering data – Modular products

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	527711	527684				
	Series	Standard			MS	MS	
	Size	4	6		...		
	Function	Soft-start valve, pneumatic			-DL	-DL	
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	1	-$\frac{1}{8}$		
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	1	-$\frac{1}{4}$		
		–	Female thread G $\frac{3}{8}$	1	-$\frac{3}{8}$		
		–	Female thread G $\frac{1}{2}$	1	-$\frac{1}{2}$		
		Connecting plate G $\frac{1}{8}$	–			-AGA	
		Connecting plate G $\frac{1}{4}$	Connecting plate G $\frac{1}{4}$			-AGB	
		Connecting plate G $\frac{3}{8}$	Connecting plate G $\frac{3}{8}$			-AGC	
		–	Connecting plate G $\frac{1}{2}$			-AGD	
		–	Connecting plate G $\frac{3}{4}$			-AGE	
		Connecting plate NPT $\frac{1}{8}$	–	1		-AQK	
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	1		-AQN	
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	1		-AQP	
		–	Connecting plate NPT $\frac{1}{2}$	1		-AQR	
		–	Connecting plate NPT $\frac{3}{4}$	1		-AQS	

1 $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, **AQK, AQN, AQP, AQR, AQS, AD1 ... AD4, AD7 ... AD10, WPM**
Not with EU certification EX4

- M** Mandatory data
- O** Options

Transfer order code

MS - **DL**

Soft-start valves MS4/MS6-DL, MS series

Ordering data – Modular products

Ordering table								
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code		
0	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar			-AG			
		Adapter plate for EN pressure gauge 1/8, without pressure gauge		-		-A8		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge					-A4	
		Integrated pressure gauge, red-green scale					-RG	
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin				1 2	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin				1 2	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA				1 2	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA				1 2	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact				1 2	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact				1 2	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact				1 2	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact				1 2	-AD10	
		Alternative pressure gauge scale	psi			3	-PSI	
			MPa			4	-MPA	
Type of mounting	Mounting bracket standard design				5	-WP		
	Mounting bracket for attaching the service units				1 5	-WPM		
	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required					-WB		
	Mounting bracket centrally at rear (wall mounting top), connecting plates not required		-			-WBM		
EU certification	II 2GD to EU Explosion Protection Directive (ATEX)				-EX4			
UL certification	cULus, ordinary location for Canada and USA				-UL1			
Flow direction	Flow direction from right to left				-Z			

2 AD1 ... AD4, AD7 ... AD10

Measuring range max. 10 bar

5 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS

3 PSI Only with pressure gauge AG

4 MPA Only with pressure gauge AG or RG

M Mandatory data

0 Options

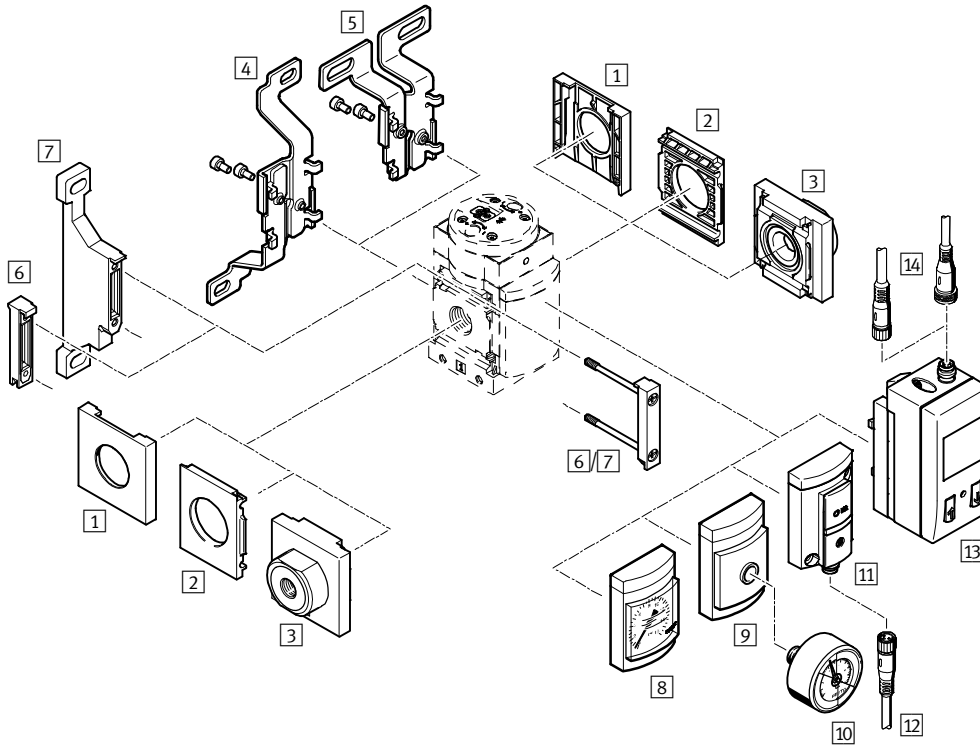
Transfer order code

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Soft-start valves MS4/MS6-DE, MS series

Peripherals overview

Soft-start valve MS4/MS6-DE



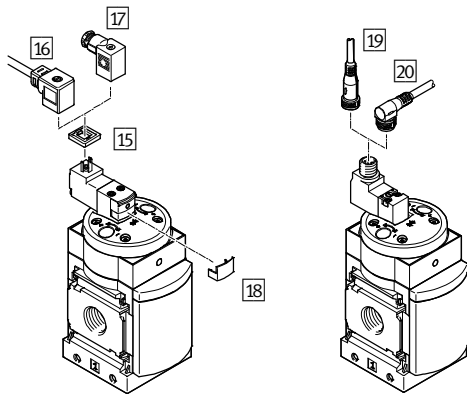
Note

Additional accessories:

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

Supply voltage
V24/10V24/V110/V230

Supply voltage
10V24P



Soft-start valves MS4/MS6-DE, MS series

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	Mounting plate MS4/6-AEND	■ ¹⁾	–	■ ¹⁾	–	ms4-aend, ms6-aend
3	Connecting plate-SET MS4/6-AG...	–	■ ¹⁾	–	■ ¹⁾	ms4-ag, ms6-ag
	Connecting plate-SET MS4/6-AQ...	–	■ ¹⁾	–	■ ¹⁾	ms4-aq, ms6-aq
4	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	–	–	ms4-wbm
6	Module connector MS4/6-MV	–	■	■	■	ms4-mv, ms6-mv
7	Mounting bracket MS4/6-WP	■	■	■	■	ms4-wp, ms6-wp
	Mounting bracket (not illustrated) MS4/6-WPB/WPE/WPM	■	■	■	■	ms4-wp, ms6-wp
8	MS pressure gauge AG/RG	■	■	■	■	50
9	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	50
10	Pressure gauge MA	■	■	■	■	95
11	Pressure sensor without display AD7 ... AD10	■	■	■	■	50
12	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
13	Pressure sensor with display AD1 ... AD4	■	■	■	■	50
14	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	95
15	Illuminating seal MEB-LD	■	■	■	■	94
16	Plug socket with cable KMEB	■	■	■	■	94
17	Plug socket MSSD-EB	■	■	■	■	94
18	Locking clip CPV18-HV	■	■	■	■	94
19	Connecting cable NEBU-M12G5	■	■	■	■	95
20	Connecting cable NEBU-M12W5	■	■	■	■	95

1) Module connector MS4/6-MV [6] or mounting bracket MS4/6-WP/WPB/WPE/WPM [7] is required for mounting.

Soft-start valves MS4/MS6-DE, MS series

FESTO

Type codes

		MS	6	-	DE	-	1/2	-	V110
Series									
MS	Standard service unit								
Size									
4	Grid dimension 40 mm								
6	Grid dimension 62 mm								
Service function									
DE	Solenoid actuated soft-start valve								
Pneumatic connection									
MS4									
1/4	Female thread G1/4								
MS6									
1/4	Female thread G1/4								
3/8	Female thread G3/8								
1/2	Female thread G1/2								
Supply voltage									
10V24	Supply voltage 24 V DC								
V110	Supply voltage 110 V AC								
V230	Supply voltage 230 V AC								

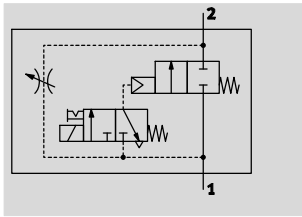
Additional variants can be ordered using the modular system → 50

- Female thread
- Connecting plates
- Supply voltage
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU certification
- UL certification
- Flow direction

Soft-start valves MS4/MS6-DE, MS series

Technical data

Function



- Flow rate
1,000 ... 6,450 l/min
- Temperature range
-10 ... +60 °C
- Operating pressure
4 ... 18 bar
- www.festo.com



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap. The output pressure p2 rises slowly in accordance with the restrictor setting. Only the air flow from the restrictor is available when the solenoid valve is not actuated. The main seat is only opened by energising the solenoid valve.

When the solenoid valve is switched off, the main seat is closed and only the air flow from the flow control valve is available. The solenoid valve should remain switched on in order to vent a system as this increases the flow rate from 2 and 1 and reduces the exhaust time.

- Solenoid actuated soft-start valve for slowly pressurising and venting pneumatic installations
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- With solenoid coil without plug socket
- Switch-through pressure can be precisely controlled using a solenoid valve
- Adjustable switching time delay
- Three voltage ranges can be selected
- Non-detenting and detenting manual override (variant 10V24: only non-detenting)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22

General technical data		
Size	MS4	MS6
Pneumatic connection 1, 2		
Female thread	G $\frac{1}{8}$ or G $\frac{1}{4}$	G $\frac{1}{4}$, G $\frac{3}{8}$ or G $\frac{1}{2}$
Connecting plate AG...	G $\frac{1}{8}$, G $\frac{1}{4}$ or G $\frac{3}{8}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$ or G $\frac{3}{4}$
Connecting plate AQ...	NPT $\frac{1}{8}$, NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$	NPT $\frac{1}{4}$, NPT $\frac{3}{8}$, NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$
Design	Piston poppet valve	
Type of mounting	Via accessories In-line installation	
Assembly position	Any	
Pressure indicator	Via pressure sensor for displaying output pressure via LCD display and electrical output Via pressure sensor for displaying output pressure via operational status indicator and electrical output Via pressure gauge for displaying output pressure Via pressure gauge with red/green scale for displaying output pressure G $\frac{1}{4}$ prepared G $\frac{1}{8}$ prepared	
Valve function	2/2-way valve	
Manual override	10V24 Non-detenting V24/10V24P/V110/V230 Non-detenting and detenting	
Signal status display	Via accessories	
Type of reset	Mechanical spring	
Pilot control mode	Piloted	
Pilot air supply	Internal	
Direction of flow	Non-reversible	

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

Soft-start valves MS4/MS6-DE, MS series

Technical data

FESTO

Electrical data		
Coil characteristics	V24	24 V DC: 1.5 W; perm. voltage fluctuations -25%/+10%
	10V24, 10V24P	24 V DC: 1.8 W; perm. voltage fluctuations -15%/+10%
	V110	110 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; perm. voltage fluctuations ±10%
	V230	230 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; perm. voltage fluctuations -14%/+10%
Electrical connection	V24, 10V24, V110, V230	Plug, square design to EN 175301-803, type C
	10V24P	M12x1 to IEC 61076-2-101
Protection class solenoid coil		IP65
Duty cycle	[%]	100

Flow rate characteristic values					
Size	MS4		MS6		
Pneumatic connection	G $\frac{3}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
In main flow direction 1 \rightarrow 2	1,000	2,000	2,700	5,050	6,450
In relief direction 2 \rightarrow 1 ²⁾	1,000	2,000	2,600	5,050	6,400
C value [l/s*min]					
In main flow direction 1 \rightarrow 2	4.6	9.6	11.22	21.05	28.97
b value					
In main flow direction 1 \rightarrow 2	0.5	0.45	0.54	0.48	0.39

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

2) For energised solenoid valve.

Operating and environmental conditions				
Size	MS4		MS6	
Supply voltage	V24/V110/V230	10V24/10V24P	V24/V110/V230	10V24/10V24P
Operating pressure [bar]	4 ... 14 (4 ... 10) ¹⁾	4 ... 10	4 ... 18 (4 ... 10) ¹⁾	4 ... 10
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4] Inert gases			
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)			
Ambient temperature [°C]	-10 ... +60 (0 ... +50) ²⁾	-10 ... +50 (0 ... +50) ²⁾	-10 ... +60 (0 ... +50) ²⁾	-10 ... +50 (0 ... +50) ²⁾
Temperature of medium [°C]	-10 ... +60 (0 ... +50) ²⁾	-10 ... +50 (0 ... +50) ²⁾	-10 ... +60 (0 ... +50) ²⁾	-10 ... +50 (0 ... +50) ²⁾
Corrosion resistance class CRC ³⁾	2			
Food-safe ⁴⁾	See supplementary material information (except solenoid valve)			
UL certification ⁴⁾	cULus recognized (OL)			
KC marking	KC EMC ²⁾			

1) Value in brackets applies to MS4/MS6-DE with pressure sensor AD... or with UL certification.

2) Value in brackets applies to MS4/MS6-DE with pressure sensor AD... .

3) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

4) Additional information www.festo.com/sp → Certificates.

Soft-start valves MS4/MS6-DE, MS series

Technical data

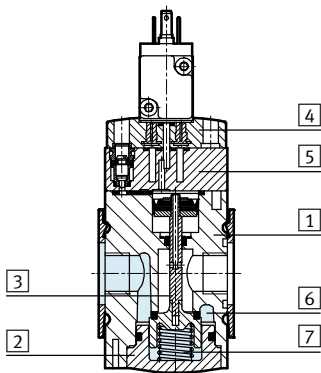
ATEX	
EU certification	EX2
ATEX category gas	II 3G
Ex-ignition protection type gas	Ex nA IIC T4 X Gc
ATEX category dust	II 3D
EX-ignition protection type dust	Ex tc IIIC T105°C X Dc IP65
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
CE mark (see declaration of conformity) ¹⁾	To EU Explosion Protection Directive (ATEX)
	To EU EMC Directive
	To EU Low Voltage Directive

1) Additional information www.festo.com/sp → Certificates.

Weights [g]		
Size	MS4	MS6
Soft-start valve	263	680

Materials

Sectional view



Soft-start valve		
1	Body	Die-cast aluminium
2	Base	PET
3	Valve stem	Aluminium
4	End cap	PA
5	Top plate	PA
6	Seat	Aluminium
7	Springs	Spring steel
-	Seals	NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE (not with variants AG, 10V24, 10V24P or AD...)

Soft-start valves MS4/MS6-DE, MS series

Technical data

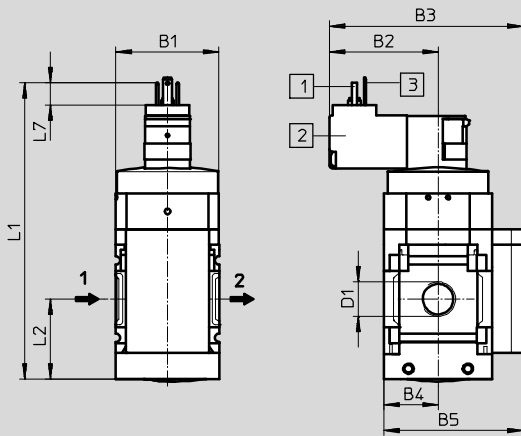


Dimensions – Basic version

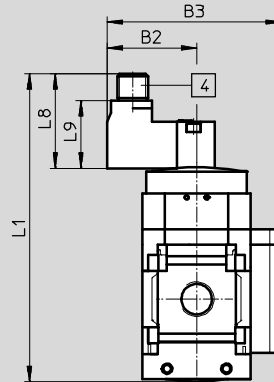
Download CAD data → www.festo.com

With female thread, with cover plate

Supply voltage V24/10V24/V110/V230



Supply voltage 10V24P

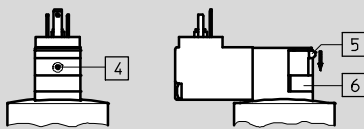


- 1 = Unused
- 2 = Unused
- 3 = com (-)
- 4 = Signal (+) solenoid 14

- 1 Plug connection to EN 175301-803
- 2 Solenoid actuator can be repositioned by 180°, i.e. solenoid points to the front
- 3 PIN only with solenoid actuators 110 V and 230 V
- 4 Electrical connection to IEC 61076-2-101, plug M12x1, 2 pin for connecting cable NEBU-M12

→ Flow direction

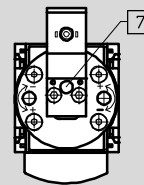
Supply voltage V24/V110/V230



- Note

For detenting manual override remove the grey cover plate [6] and press the slide [5] downwards.

Supply voltage 10V24/10V24P



- 4 Manual override, non-detenting (delivery status)
- 5 Slide
- 6 Cover plate
- 7 Non-detenting and detenting manual override (variant 10V24: only non-detenting)

Type	B1	B2		B3		B4	B5	D1
		V24/ V110/ V230	10V24/ 10V24P	V24/ V110/ V230	10V24/ 10V24P			
MS4-DE-1/8	40	42.2	34.9	75.2	67.9	21	54	G1/8
MS4-DE-1/4								G1/4
MS6-DE-1/4	62	52	44	97	89	31	76	G1/4
MS6-DE-3/8								G3/8
MS6-DE-1/2								G1/2

Type	L1			L2	L7	L8	L9
	V24/ V110/ V230	10V24	10V24P				
MS4-DE-1/8	115.4	112.9	117.8	31.5	8.6	36.7	26.1
MS4-DE-1/4							
MS6-DE-1/4	149	147	152	46	8.6	37	26
MS6-DE-3/8							
MS6-DE-1/2							

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

Soft-start valves MS4/MS6-DE, MS series

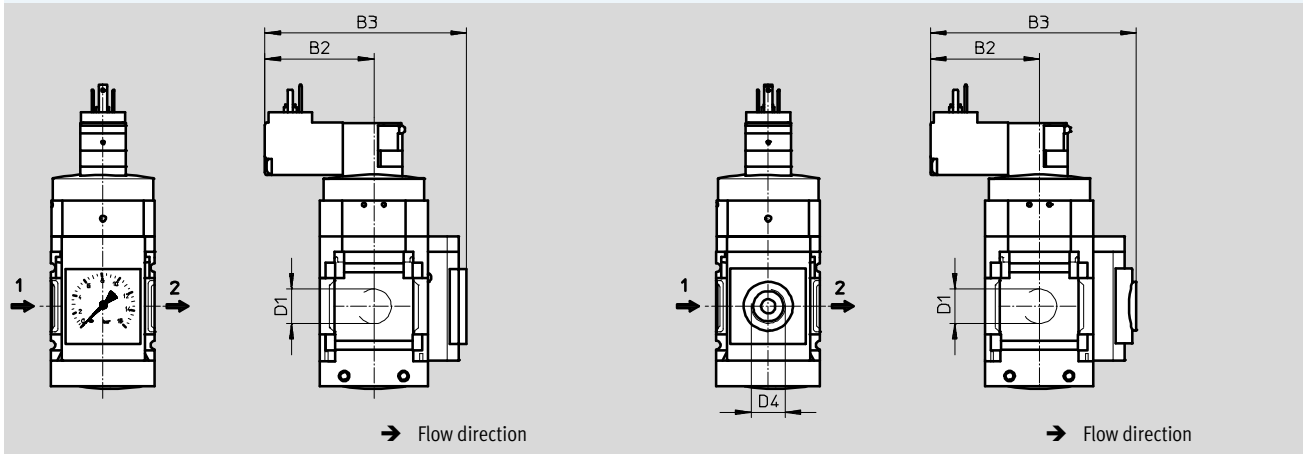
Technical data

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale AG or red-green scale RG, display unit [bar]

Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge



Type	B2		B3		D1	D4
	V24/V110/V230	10V24/10V24P	V24/V110/V230	10V24/10V24P		
MS4-DE-1/8-...-AG	42.2	34.9	78.2	70.9	G1/8	-
MS4-DE-1/4-...-AG			79.7	72.4	G1/4	
MS4-DE-1/8-...-RG	42.2	34.9	79.7	72.4	G1/8	-
MS4-DE-1/4-...-RG			79.7	72.4	G1/4	
MS4-DE-1/8-...-A8	42.2	34.9	79.7	72.4	G1/8	G1/8
MS4-DE-1/4-...-A8					G1/4	
MS4-DE-1/8-...-A4	42.2	34.9	79.7	72.4	G1/8	G1/4
MS4-DE-1/4-...-A4					G1/4	
MS6-DE-1/4-...-AG	52	44	98	90	G1/4	-
MS6-DE-3/8-...-AG					G3/8	
MS6-DE-1/2-...-AG					G1/2	
MS6-DE-1/4-...-RG	52	44	99.5	91.5	G1/4	-
MS6-DE-3/8-...-RG					G3/8	
MS6-DE-1/2-...-RG					G1/2	
MS6-DE-1/4-...-A4	52	44	99.5	91.5	G1/4	G1/4
MS6-DE-3/8-...-A4					G3/8	
MS6-DE-1/2-...-A4					G1/2	

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

Soft-start valves MS4/MS6-DE, MS series

Technical data

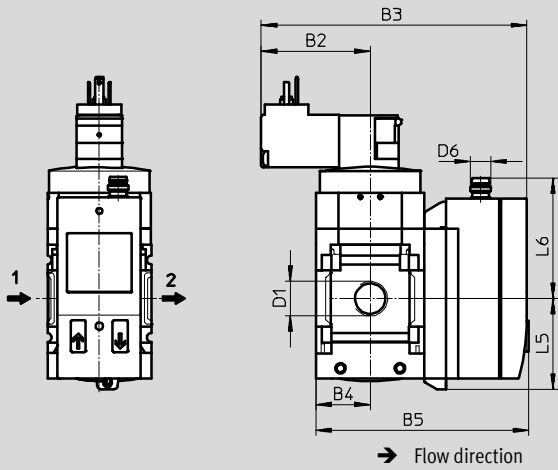


Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with LCD display AD1 ... AD4

Technical data → Internet: sde1



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

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

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

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

Type	B2		B3		B4	B5	D1	D6	L5	L6
	V24/ V110/ V230	10V24/ 10V24P	V24/ V110/ V230	10V24/ 10V24P						
MS4-DE-1/8-...-AD1/AD2	42.2	34.9	103.8	96.5	21	82.6	G1/8	M8x1	35.1	46.7
MS4-DE-1/4-...-AD1/AD2							G1/4			
MS4-DE-1/8-...-AD3/AD4	42.2	34.9	103.8	96.5	21	82.6	G1/8	M12x1	35.1	55.8
MS4-DE-1/4-...-AD3/AD4							G1/4			
MS6-DE-1/4-...-AD1/AD2	52	44	124	116	31	103	G1/4	M8x1	35.1	46.7
MS6-DE-3/8-...-AD1/AD2							G3/8			
MS6-DE-1/2-...-AD1/AD2							G1/2			
MS6-DE-1/4-...-AD3/AD4	52	44	124	116	31	103	G1/4	M12x1	35.1	55.8
MS6-DE-3/8-...-AD3/AD4							G3/8			
MS6-DE-1/2-...-AD3/AD4							G1/2			

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

Soft-start valves MS4/MS6-DE, MS series

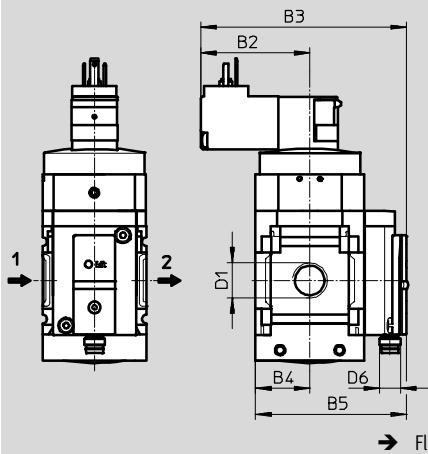
Technical data

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with operational status indicator AD7 ... AD10

Technical data → Internet: sde5



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

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

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

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

Type	B2		B3		B4	B5	D1	D6
	V24/ V110/ V230	10V24/ 10V24P	V24/ V110/ V230	10V24/ 10V24P				
MS4-DE-1/8-...-AD7/AD8/AD9/AD10	42.2	34.9	80.3	73	21	59.1	G1/8	M8x1
MS4-DE-1/4-...-AD7/AD8/AD9/AD10							G1/4	
MS6-DE-1/4-...-AD7/AD8/AD9/AD10	52	44	100	92	31	79	G1/4	M8x1
MS6-DE-3/8-...-AD7/AD8/AD9/AD10							G3/8	
MS6-DE-1/2-...-AD7/AD8/AD9/AD10							G1/2	

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

Ordering data

Size	Connection	Supply voltage 24 V DC		Supply voltage 110 V AC		Supply voltage 230 V AC	
		Part No.	Type	Part No.	Type	Part No.	Type
MS4	G1/4	542558	MS4-DE-1/4-10V24	529519	MS4-DE-1/4-V110	529521	MS4-DE-1/4-V230
MS6	G1/4	542564	MS6-DE-1/4-10V24	-	-	-	-
	G3/8	542566	MS6-DE-3/8-10V24	-	-	-	-
	G1/2	542562	MS6-DE-1/2-10V24	529799	MS6-DE-1/2-V110	529801	MS6-DE-1/2-V230

Soft-start valves MS4/MS6-DE, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527713		527686		
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Soft-start valve, electrical			-DE	-DE
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	1	-$\frac{1}{8}$	
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	1	-$\frac{1}{4}$	
		–	Female thread G $\frac{3}{8}$	1	-$\frac{3}{8}$	
		–	Female thread G $\frac{1}{2}$	1	-$\frac{1}{2}$	
		Connecting plate G $\frac{1}{8}$	–		-AGA	
		Connecting plate G $\frac{1}{4}$	Connecting plate G $\frac{1}{4}$		-AGB	
		Connecting plate G $\frac{3}{8}$	Connecting plate G $\frac{3}{8}$		-AGC	
		–	Connecting plate G $\frac{1}{2}$		-AGD	
		–	Connecting plate G $\frac{3}{4}$		-AGE	
		Connecting plate NPT $\frac{1}{8}$	–	1	-AQK	
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	1	-AQN	
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	1	-AQP	
		–	Connecting plate NPT $\frac{1}{2}$	1	-AQR	
		–	Connecting plate NPT $\frac{3}{4}$	1	-AQS	
		Supply voltage	24 V DC (pin allocation to EN 175301) 4 ... 14 bar		4 ... 18 bar	
	24 V DC (pin allocation to EN 175301) 4 ... 10 bar		4 ... 10 bar	1 2	-10V24	
	24 V DC, M12 to IEC 61076-2-101 4 ... 10 bar		4 ... 10 bar	1 2	-10V24P	
	110 V AC (pin allocation to EN 175301) 4 ... 14 bar		4 ... 18 bar	1	-V110	
	230 V AC (pin allocation to EN 175301) 4 ... 14 bar		4 ... 18 bar	1	-V230	
	4 ... 14 bar		4 ... 18 bar			

- 1** $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, **AQK, AQN, AQP, AQR, AQS, 10V24, 10V24P, V110, V230, AD1 ... AD4, AD7 ... AD10, WPM**
Not with EU certification EX2
- 2** **10V24, 10V24P**
Max. operating pressure 10 bar

- M** Mandatory data
O Options

Transfer order code

MS - **DE** - -

Soft-start valves MS4/MS6-DE, MS series

Ordering data – Modular products

Ordering table								
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code		
0	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar			-AG			
		Adapter plate for EN pressure gauge 1/8, without pressure gauge		-		-A8		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4		
		Integrated pressure gauge, red-green scale				-RG		
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin				1 3	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin				1 3	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA				1 3	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA				1 3	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact				1 3	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact				1 3	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact				1 3	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact				1 3	-AD10	
		Alternative pressure gauge scale	psi			4	-PSI	
			MPa			5	-MPA	
Type of mounting	Mounting bracket standard design				6	-WP		
	Mounting bracket for attaching the service units				1 6	-WPM		
	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required					-WB		
	Mounting bracket centrally at rear (wall mounting top), connecting plates not required		-			-WBM		
EU certification	II 3GD to EU Explosion Protection Directive (ATEX)					-EX2		
UL certification	cULus, ordinary location for Canada and USA			7		-UL1		
Flow direction	Flow direction from right to left					-Z		

3 AD1 ... AD4, AD7 ... AD10
Measuring range max. 10 bar

4 PSI Only in combination with pressure gauge AG
 5 MPA Only in combination with pressure gauge AG or RG
 6 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS
 7 UL1 Not with supply voltage V110, V230

M Mandatory data
 0 Options

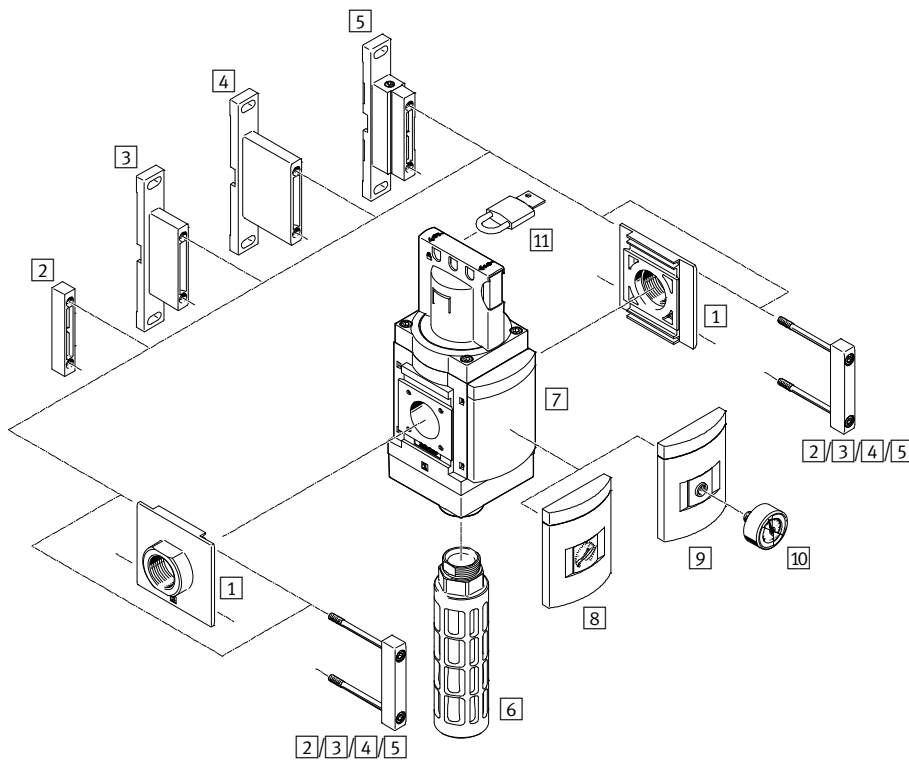
Transfer order code


- [] - [] - [] - [] - [] - []

On-off valves MS9-EM, MS series

Peripherals overview

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-  - Note

Additional accessories:

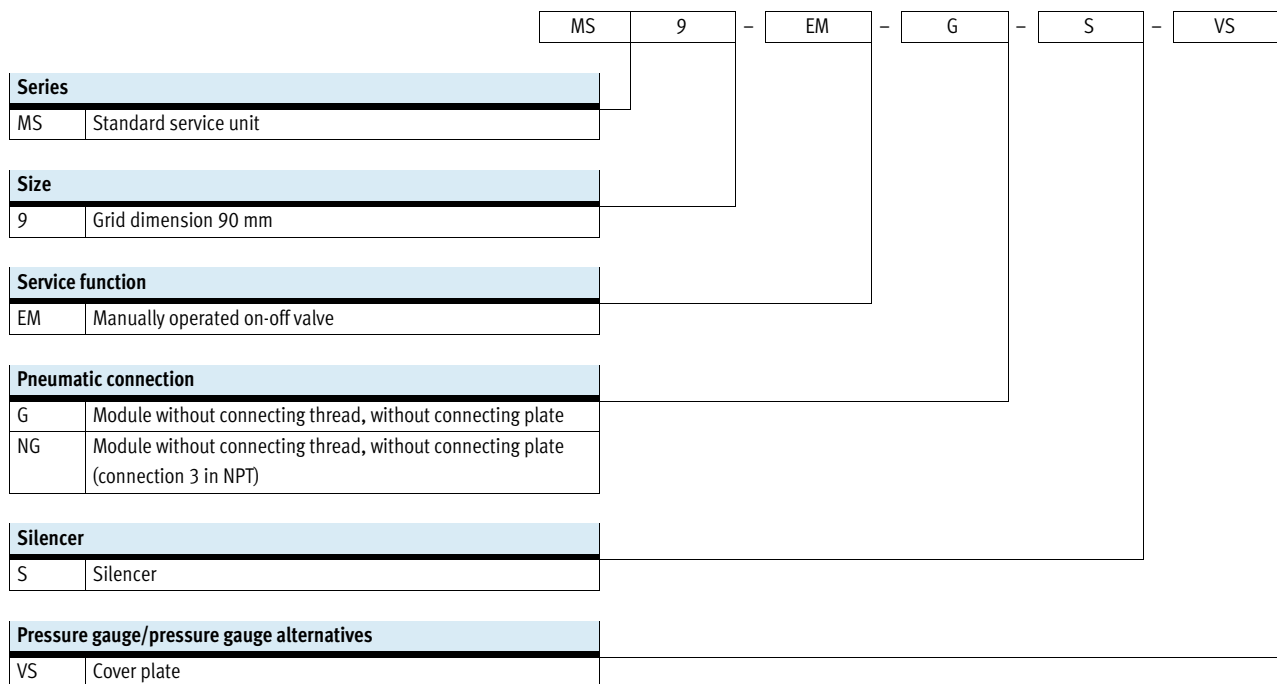
- Module connector for combinations with size MS6, MS9 or size MS12
- ➔ Internet: rmv, armv

Mounting attachments and accessories						
	Individual component	Combination			➔ Page/ Internet	
		With female thread 3/4/1/N3/4/N1	With connecting plate AG.../AQ... Without EU certification EX4	With EU certification EX4		Module without connecting thread, without connecting plate G/NG
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	■	■	■	■ ¹⁾	ms9-wp
4	Mounting bracket MS9-WPB	■	■	■	■ ¹⁾	ms9-wp
5	Mounting bracket MS9-WPM	■	■	-	■	ms9-wp
6	Silencer U	■	■	■	■	95
7	Cover plate VS	■	■	■	■	59
8	MS pressure gauge AG/RG	■	■	■	■	59
9	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	59
10	Pressure gauge MA	■	■	■	■	95
11	Padlock LRVS-D	■	■	■	■	95

1) The screws for the wall bracket on the reverse side are partially covered by the housing of this service unit. Depending on the configuration of the service unit combination, the screws will no longer be accessible. The mounting bracket MS9-WPM is therefore recommended for wall mounting. It can be used to attach a fully assembled combination to the pre-mounted wall bracket.

On-off valves MS9-EM, MS series

Type codes



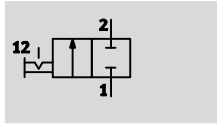
Additional variants can be ordered using the modular system → 59

- Pneumatic connection
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Valve function
- Type of mounting
- EU certification
- UL certification
- Flow direction

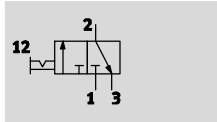
On-off valves MS9-EM, MS series





Technical data

2/2-way valve, bistable



3/2-way valve, bistable



-  - Flow rate
8,000 ... 18,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0 ... 20 bar
-  - www.festo.com



- Manually operated on-off valve for pressurising and venting pneumatic installations
- Ducted exhaust possible via a threaded connection with silencer
- The switching position is immediately recognisable
- Actuator secured by locking the rotary knob
- Commercially available padlock can be used for security
- Optional pressure gauge
- 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	G $\frac{3}{4}$, G1, NPT $\frac{3}{4}$ or NPT1
Connecting plate AG...	G $\frac{1}{2}$, G $\frac{3}{4}$, G1, G1 $\frac{1}{4}$ or G1 $\frac{1}{2}$
Connecting plate AQ...	NPT $\frac{1}{2}$, NPT $\frac{3}{4}$, NPT1, NPT1 $\frac{1}{4}$ or NPT1 $\frac{1}{2}$
Module without connecting thread/plate G/NG	-
Pneumatic connection 3	
	G1 (pneumatic connection 1, 2: $\frac{3}{4}$ /1/AG.../G)
	G1 (pneumatic connection 1, 2: N $\frac{3}{4}$ /N1/AQ.../NG with silencer S)
	NPT1-11 $\frac{1}{2}$ (pneumatic connection 1, 2: N $\frac{3}{4}$ /N1/AQ... without silencer S)
Design	Piston spool valve
Type of mounting	Via accessories In-line installation
Mounting position	Any
Regulator lock	Rotary knob with detent
Pressure display	Via pressure gauge for displaying output pressure Via pressure gauge with red/green scale for displaying output pressure G $\frac{1}{4}$ prepared
Valve function	2/2-way valve, bistable 3/2-way valve, bistable
Exhaust air function	No flow control
Reset method	Forced
Type of control	Direct
Sealing principle	Soft

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

On-off valves MS9-EM, MS series

Technical data

Flow rate characteristic values								
Pneumatic connection	Female thread		Connecting plate					None
	G $\frac{3}{4}$ /NPT $\frac{3}{4}$	G1/NPT1	AGD/AQR	AGE/AQS	AGF/AQT	AGG/AQU	AGH/AQV	G/NG
Standard nominal flow rate qnN ¹⁾ [l/min]								
In main flow direction 1 → 2	14,500	18,000	8,000	14,000	18,000	18,000	18,000	18,000
In relief direction 2 → 3	14,900	14,100	16,500	14,400	13,800	13,200	13,200	14,100
C value [l/s*min]								
In main flow direction 1 → 2	59.59	76.90	32.75	57.50	75.65	75.51	75.17	–
In relief direction 2 → 3	55.11	53.54	56.22	54.07	52.73	51.06	51.36	–
b value								
In main flow direction 1 → 2	0.41	0.37	0.45	0.39	0.38	0.39	0.38	–
In relief direction 2 → 3	0.50	0.48	0.60	0.49	0.47	0.45	0.44	–

1) Measured at p1 = 6 bar and p2 = 5 bar, Δp = 1 bar

Operating and environmental conditions	
Operating pressure [bar]	0 ... 20
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	–10 ... +60
Temperature of medium [°C]	–10 ... +60
Corrosion resistance class CRC ¹⁾	2
Noise level [dB (A)]	93 ²⁾ with silencer
UL certification ³⁾	cULus recognized (OL)

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Venting at 10 bar at a distance of 1 m.

3) Additional information www.festo.com/sp → Certificates.

ATEX	
EU certification	EX4
ATEX category gas	II 2G
Ex-ignition protection type gas	Ex h IIC T6 Gb X
ATEX category dust	II 2D
EX-ignition protection type dust	Ex h IIIC T60°C Db X
ATEX 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.

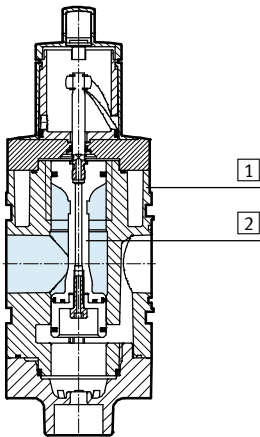
Weight [g]	
On-off valve	2,200
On-off valve with silencer S	2,400

On-off valves MS9-EM, MS series

Technical data

Materials

Sectional view

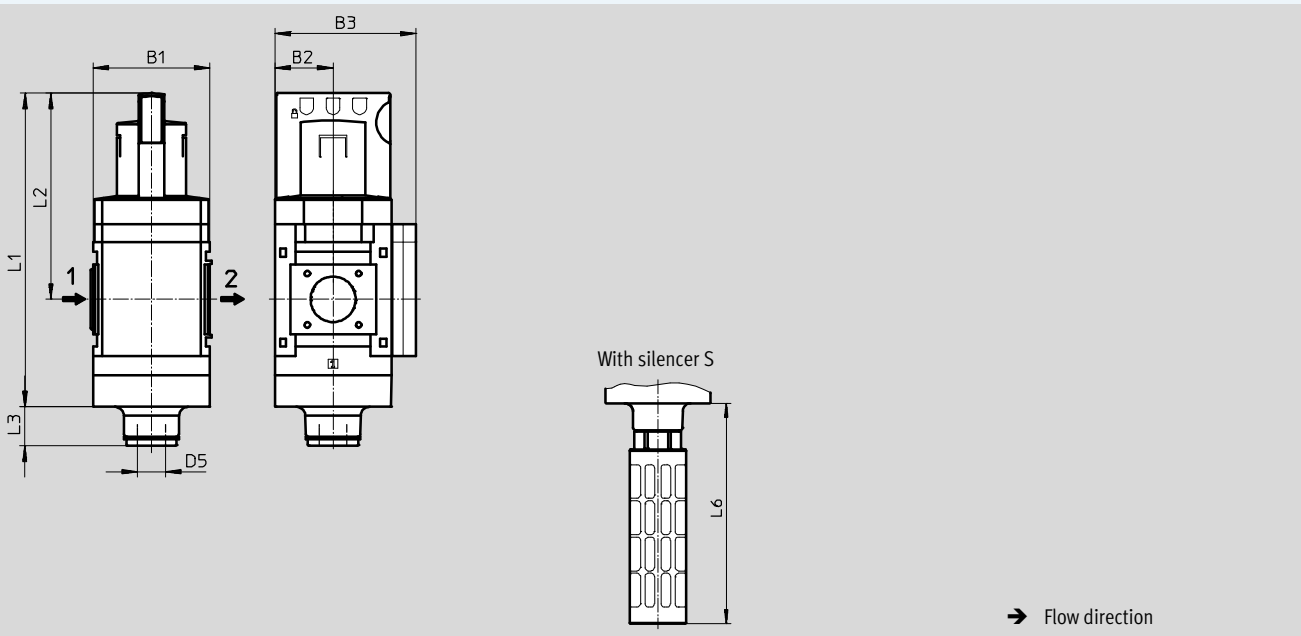


On-off valve		
1	Housing	Die-cast aluminium
2	Piston spool	POM
-	Seals	NBR
Note on materials		RoHS-compliant

Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G/NG, cover plate VS



Type	B1	B2	B3	D5	L1	L2	L3		L6
							2/2-way valve	3/2-way valve	
MS9-EM-G/NG	90	45	109	G1	242	159	30	23	189

On-off valves MS9-EM, MS series

Technical data

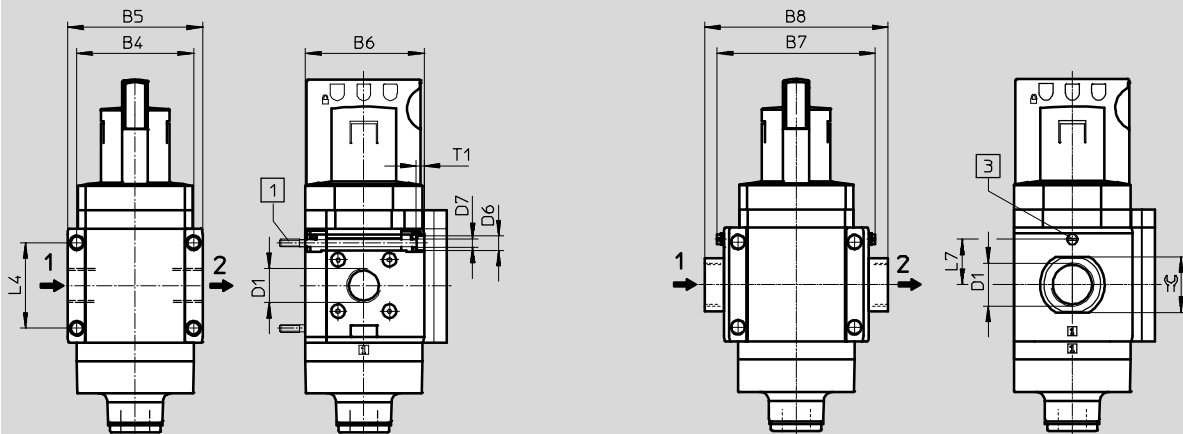
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Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

With female thread 3/4/1/N3/4/N1

With connecting plate AG.../AQ...



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

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

→ Flow direction

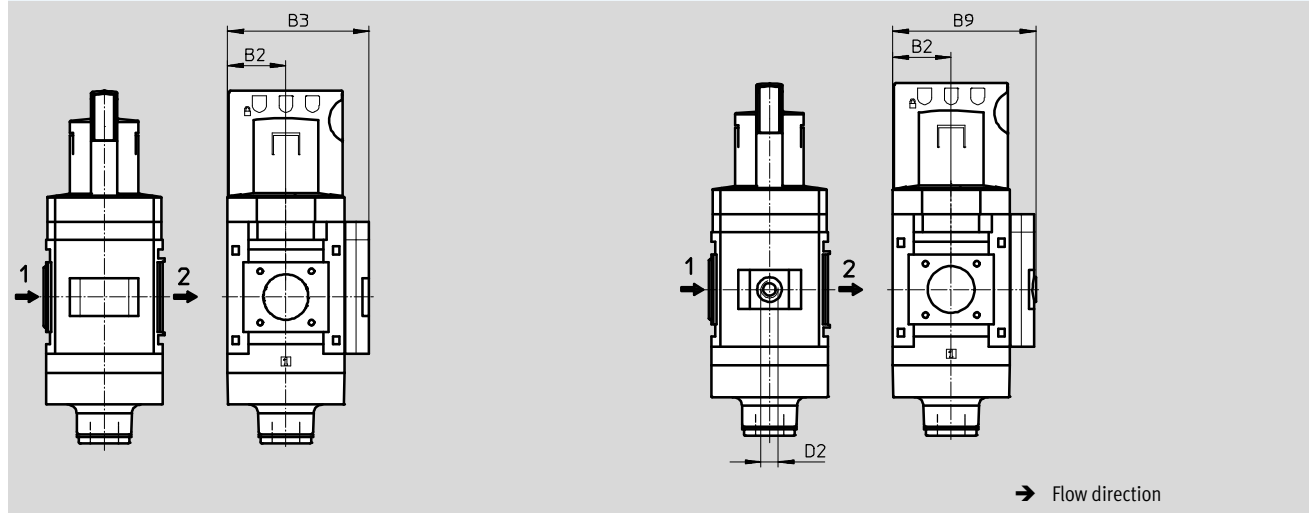
Type	B4	B5	B6	B7		B8	D1	D6	D7	L4	L7		T1	≅												
					EX4							EX4														
MS9-EM-3/4	90	104	91.5	-	-	-	G3/4	11	6.5	66	-	6	-	-												
MS9-EM-1							G1																			
MS9-EM-AGD	-	-	-	112	122	-	G1/2	-	-	-	35	-	-	30												
MS9-EM-AGE							G3/4							36												
MS9-EM-AGF							G1							41												
MS9-EM-AGG							G1 1/4							50												
MS9-EM-AGH							G1 1/2							55												
MS9-EM-N3/4							90							104	91.5	-	-	-	NPT3/4-14	11	6.5	66	-	6	-	-
MS9-EM-N1	NPT1-11 1/2																									
MS9-EM-AQR	-	-	-	112	-	-	NPT1/2-14	-	-	-	-	-	-	30												
MS9-EM-AQS							NPT3/4-14							36												
MS9-EM-AQT							NPT1-11 1/2							41												
MS9-EM-AQU							NPT1 1/4-11 1/2							50												
MS9-EM-AQV							-							-	-	-	-	-	NPT1 1/2-11 1/2	-	-	-	-	-	-	55
																			NPT1 1/2-11 1/2							

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

On-off valves MS9-EM, MS series

Technical data

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com
 Integrated MS pressure gauge with standard scale AG or red/green scale RG Adapter plate A4 for EN pressure gauge 1/4, without pressure gauge



Type	B2	B3	B9	D2
MS9-EM-...-AG/RG	45	109	-	-
MS9-EM-...-A4		-	110	G1/4

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

Ordering data		
3/2-way valve, with silencer		
Size	Part No.	Type
Cover plate		
MS9	562952	MS9-EM-G-S-VS
Pneumatic connection 3 in NPT, cover plate		
MS9	562954	MS9-EM-NG-S-VS

On-off valves MS9-EM, MS series

Ordering data – Modular products

Ordering table		Grid dimension [mm]	90	Condi-tions	Code	Enter code
M	Module No.	562178				
	Series	Standard			MS	MS
	Size	9			9	9
	Function	Manual on-off valve			-EM	-EM
	Pneumatic connection	Female thread G $\frac{3}{4}$		1	-$\frac{3}{4}$	
		Female thread G1		1	-1	
		Connecting plate G $\frac{1}{2}$			-AGD	
		Connecting plate G $\frac{3}{4}$			-AGE	
		Connecting plate G1			-AGF	
		Connecting plate G1 $\frac{1}{4}$			-AGG	
		Connecting plate G1 $\frac{1}{2}$			-AGH	
		Female thread NPT $\frac{3}{4}$		1	-N$\frac{3}{4}$	
		Female thread NPT1		1	-N1	
		Connecting plate NPT $\frac{1}{2}$		1	-AQR	
		Connecting plate NPT $\frac{3}{4}$		1	-AQS	
		Connecting plate NPT1		1	-AQT	
		Connecting plate NPT1 $\frac{1}{4}$		1	-AQU	
		Connecting plate NPT1 $\frac{1}{2}$		1	-AQV	
		Module without connecting thread, without connecting plate		1	-G	
		Module without connecting thread, without connecting plate (connection 3 in NPT)		1	-NG	
O		Silencer	Silencer			-S
M	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar			-AG	
		Cover plate			-VS	
		Adapter plate for EN pressure gauge $\frac{1}{4}$, without pressure gauge			-A4	
		Integrated pressure gauge, red/green scale		2	-RG	
O	Alternative pressure gauge scale	psi		3	-PSI	
		MPa		3	-MPA	
		bar		3	-BAR	
	Valve function	Standard (3/2-way valve)			-	
		2/2-way valve			4	-2
	Type of mounting	Mounting bracket standard design			5	-WP
		Mounting bracket for attaching the service units			1 5	-WPM
		Mounting bracket for large wall gap			5	-WPB
	EU certification	II 2GD to EU Explosion Protection Directive (ATEX)			-EX4	
	UL certification	cULus, ordinary location for Canada and USA			-UL1	
	Flow direction	Flow direction from right to left			-Z	

1 $\frac{3}{4}$, 1, N $\frac{3}{4}$, N1, AQR, AQS, AQT, AQU, AQV, G, NG, WPM

Not with EU certification EX4

3 PSI, MPA, BAR

Not with pressure gauge/pressure gauge alternatives VS, A4

2 RG

Not with alternative pressure gauge scale PSI
PSI scale serves only as an auxiliary scale

4 2

Not with silencer S

5 WP, WPM, WPB

Not with pneumatic connection G, NG

M Mandatory data

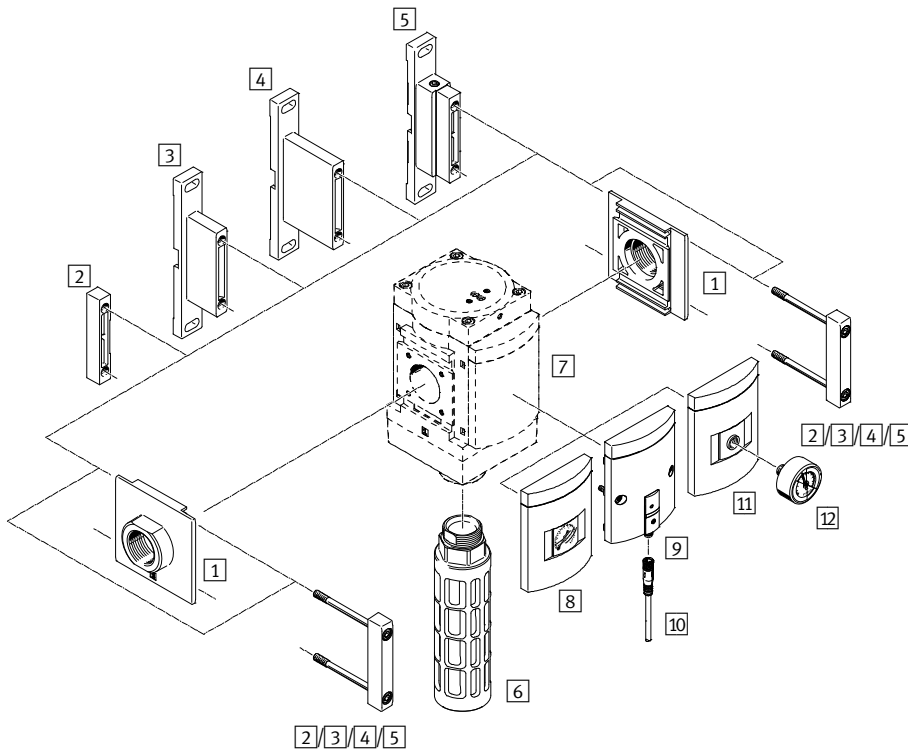
O Options


Transfer order code

562178 MS 9 - EM - - - - - - - - - - - - - - - - - -

On-off valves MS9-EE, MS series

Peripherals overview

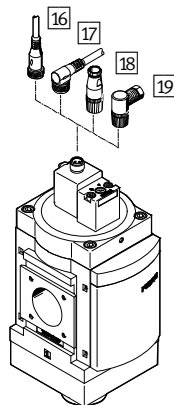
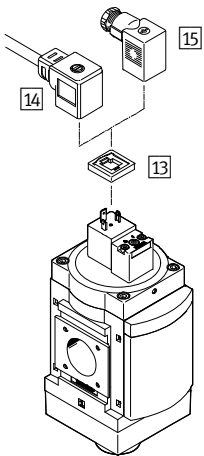


-  - Note

Additional accessories:
 - Module connector for combinations with size MS6, MS9 or size MS12
 → Internet: rmv, armv

Supply voltage
 V24/V110/V230

Supply voltage
 V24P



On-off valves MS9-EE, MS series

Peripherals overview

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Mounting attachments and accessories					
		Individual component		Combination Module without connect- ing thread, without connecting plate G/NG	→ Page/ Internet
		With female thread 3/4/1/N3/4/N1	With connecting plate AG.../AQ... Without EU certification EX2		
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	■	■	■ ¹⁾	ms9-wp
4	Mounting bracket MS9-WPB	■	■	■ ¹⁾	ms9-wp
5	Mounting bracket MS9-WPM	■	■	-	ms9-wp
6	Silencer U	■	■	■	95
7	Cover plate VS	■	■	■	68
8	MS pressure gauge AG/RG	■	■	■	68
9	Pressure sensor without display AD7	■	■	■	68
10	Connecting cable NEBU-M8...-LE3	■	■	■	95
11	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	68
12	Pressure gauge MA	■	■	■	95
13	Illuminating seal MC-LD	■	■	-	94
14	Connecting cable KMC	■	■	-	94
15	Plug socket MSSD-C	■	■	■ Included in scope of delivery	94
16	Connecting cable NEBU-M12G5	■	■	-	95
17	Connecting cable NEBU-M12W5	■	■	-	95
18	Sensor socket SIE-GD	■	■	-	95
19	Angled plug socket SIE-WD	■	■	-	95

1) The screws for the wall bracket on the reverse side are partially covered by the housing of this service unit. Depending on the configuration of the service unit combination, the screws will no longer be accessible. The mounting bracket MS9-WPM is therefore recommended for wall mounting. It can be used to attach a fully assembled combination to the pre-mounted wall bracket.

On-off valves MS9-EE, MS series

Type codes

MS 9 - EE - G - V24 - S - VS

Series	
MS	Standard service unit
Size	
9	Grid dimension 90 mm
Service function	
EE	Solenoid actuated on-off valve
Pneumatic connection	
G	Module without connecting thread, without connecting plate
NG	Module without connecting thread, without connecting plate (connection 3 in NPT)
Supply voltage	
V24	Supply voltage 24 V DC
Silencer	
S	Silencer
Pressure gauge/pressure gauge alternatives	
VS	Cover plate

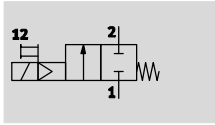
Additional variants can be ordered using the modular system → 68

- Pneumatic connection
- Supply voltage
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Valve function
- Type of mounting
- EU certification
- UL certification
- Flow direction

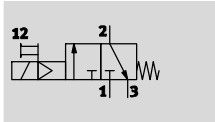
On-off valves MS9-EE, MS series

Technical data

2/2-way valve, single solenoid, closed



3/2-way valve, single solenoid, closed



- - Flow rate
8,000 ... 18,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
3.5 ... 16 bar
- - www.festo.com



- Solenoid actuated on-off valve for pressurising and venting pneumatic installations
- Ducted exhaust possible via a threaded connection with silencer
- With solenoid coil without plug socket
- 3 voltage ranges can be selected
- Non-detenting or detenting manual override
- Optional pressure gauge
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22 (plug socket MSSD-C-24V-EX is included in the scope of delivery)

General technical data	
Pneumatic connection 1, 2	
Female thread	G3/4, G1, NPT3/4 or NPT1
Connecting plate AG...	G1/2, G3/4, G1, G1 1/4 or G1 1/2
Connecting plate AQ...	NPT1/2, NPT3/4, NPT1, NPT1 1/4 or NPT1 1/2
Module without connecting thread/plate G/NG	–
Pneumatic connection 3	G1 (pneumatic connection 1, 2: 3/4/1/AG.../G) G1 (pneumatic connection 1, 2: N3/4/N1/AQ.../NG with silencer S) NPT1-1 1/2 (pneumatic connection 1, 2: N3/4/N1/AQ... without silencer S)
Design	Piston spool valve
Type of mounting	Via accessories In-line installation
Mounting position	Any
Pressure display	Via pressure sensor for displaying output pressure via operational status indicator and electrical output Via pressure gauge for displaying output pressure Via pressure gauge with red/green scale for displaying output pressure G1/4 prepared
Valve function	2/2-way valve, single solenoid, closed 3/2-way valve, single solenoid, closed
Exhaust air function	No flow control
Manual override	Non-detenting and detenting
Reset method	Mechanical spring
Type of control	Piloted
Pilot air supply	Internal
Sealing principle	Soft

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

On-off valves MS9-EE, MS series

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Technical data

Electrical data		
Coil characteristics	V24/V24P	24 V DC: 4.5 W; perm. voltage fluctuations $\pm 10\%$
	V110	110 V AC: 50 Hz; pick-up power 11.5 W; holding power 8.9 W; perm. voltage fluctuations $\pm 10\%$ 110 V AC: 60 Hz; pick-up power 9.5 W; holding power 6.2 W; perm. voltage fluctuations $\pm 10\%$
	V230	230 V AC: 50 Hz; pick-up power 11.5 W; holding power 9.1 W; perm. voltage fluctuations $\pm 10\%$ 230 V AC: 60 Hz; pick-up power 9.5 W; holding power 6.4 W; perm. voltage fluctuations $\pm 10\%$
Electrical connection	V24/V110/V230	Plug socket, square design to EN 175301-803, type A
	V24P	Plug M12, 4-pin to DESINA
Protection class for solenoid coil	IP65	
Duty cycle	[%]	100

Flow rate characteristic values								
Pneumatic connection	Female thread		Connecting plate					None
	G $\frac{3}{4}$ /NPT $\frac{3}{4}$	G1/NPT1	AGD/AQR	AGE/AQS	AGF/AQT	AGG/AQU	AGH/AQV	G/NG
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]								
In main flow direction 1 \rightarrow 2	14,500	18,000	8,000	14,000	18,000	18,000	18,000	18,000
In relief direction 2 \rightarrow 3	14,900	14,100	16,500	14,400	13,800	13,200	13,200	14,100
C value [l/s*min]								
In main flow direction 1 \rightarrow 2	59.59	76.90	32.75	57.50	75.65	75.51	75.17	–
In relief direction 2 \rightarrow 3	55.11	53.54	56.22	54.07	52.73	51.06	51.36	–
b value								
In main flow direction 1 \rightarrow 2	0.41	0.37	0.45	0.39	0.38	0.39	0.38	–
In relief direction 2 \rightarrow 3	0.50	0.48	0.60	0.49	0.47	0.45	0.44	–

1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

Operating and environmental conditions	
Operating pressure [bar]	3.5 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	2
Noise level [dB (A)]	93 ²⁾ with silencer
UL certification ³⁾	cULus recognized (OL)

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) Venting at 10 bar at a distance of 1 m.

3) Additional information www.festo.com/sp → Certificates.

ATEX	
EU certification	EX2
ATEX category gas	II 3G
Ex-ignition protection type gas	Ex nA IIC T5 X Gc
ATEX category dust	II 3D
EX-ignition protection type dust	Ex tc IIIC T85°C X Dc IP65
ATEX ambient temperature	-10 °C \leq Ta \leq +50 °C
CE mark (see declaration of conformity ¹⁾)	To EU Explosion Protection Directive (ATEX)

1) Additional information www.festo.com/sp → Certificates.

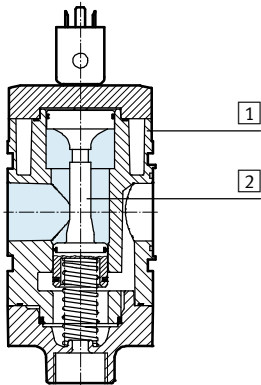
On-off valves MS9-EE, MS series

Technical data

Weight [g]	
On-off valve	2,100
On-off valve with silencer S	2,300

Materials

Sectional view



On-off valve		
1	Housing	Die-cast aluminium
2	Piston spool	POM
-	Seals	NBR
Note on materials		RoHS-compliant

Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G/NG, cover plate VS

Supply voltage V24/V110/V230 Supply voltage V24P

1 = Connected to 2
 2 = Connected to 1
 3 = com (-)
 4 = Signal (+)

With silencer S

- 1 Plug connection to EN 175301-803
- 2 Plug connection M12, 4-pin to DESINA for connecting cable NEBU-M12
- 3 Manual override

→ Flow direction

Type	B1	B2	B3	D2	D5	L1	L2	L3		L4	L5	L6
								2/2-way valve	3/2-way valve			
MS9-EE-G/NG-V24/V110/V230	90	45	109	-	G1	161	83	30	23	36	12	189
MS9-EE-G/NG-V24P				M12x1						39	10	

On-off valves MS9-EE, MS series

Technical data

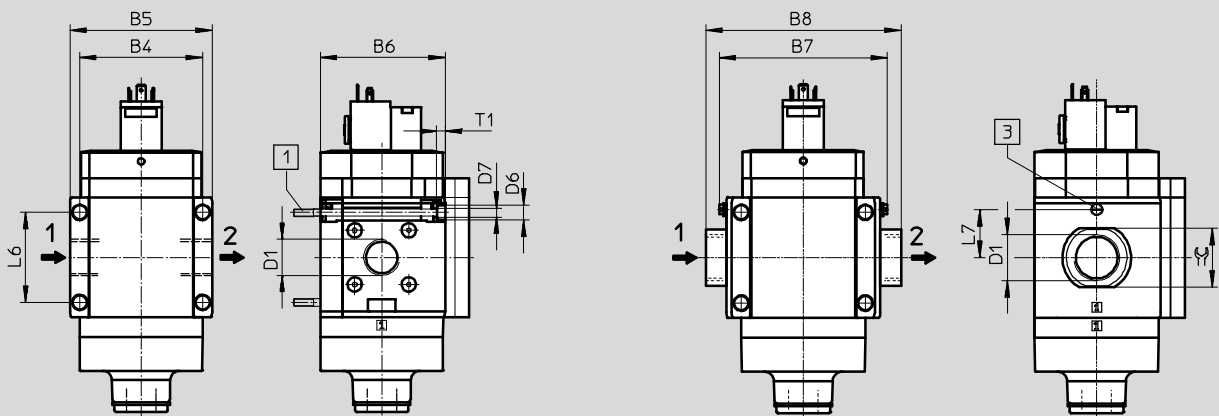
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Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

With female thread 3/4"/1/N3/4"/N1

With connecting plate AG.../AQ...



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

3 Earthing screw M4x8 (only with MS9-...-EX2)

→ Flow direction

Type	B4	B5	B6	B7		B8	D1	D6	D7	L6	L7		T1	≙										
					EX2							EX2												
MS9-EE-3/4	90	104	91.5	-	-	-	G3/4	11	6.5	66	-	6	-											
MS9-EE-1							G1																	
MS9-EE-AGD	-	-	-	112	122	-	G1/2	-	-	-	35	-	30											
MS9-EE-AGE							G3/4						36											
MS9-EE-AGF							G1						41											
MS9-EE-AGG							G1 1/4						50											
MS9-EE-AGH							G1 1/2						55											
MS9-EE-N3/4							90						104	91.5	-	-	-	NPT3/4-14	11	6.5	66	-	6	-
MS9-EE-N1	NPT1-11 1/2																							
MS9-EE-AQR	-	-	-	112	-	-	NPT1/2-14	-	-	-	-	-	30											
MS9-EE-AQS							NPT3/4-14						36											
MS9-EE-AQT							NPT1-11 1/2						41											
MS9-EE-AQU							NPT1 1/4-11 1/2						50											
MS9-EE-AQV							162						176	NPT1 1/2-11 1/2	-	-	-	-	-	-	-	-	-	55

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

On-off valves MS9-EE, MS series

Technical data

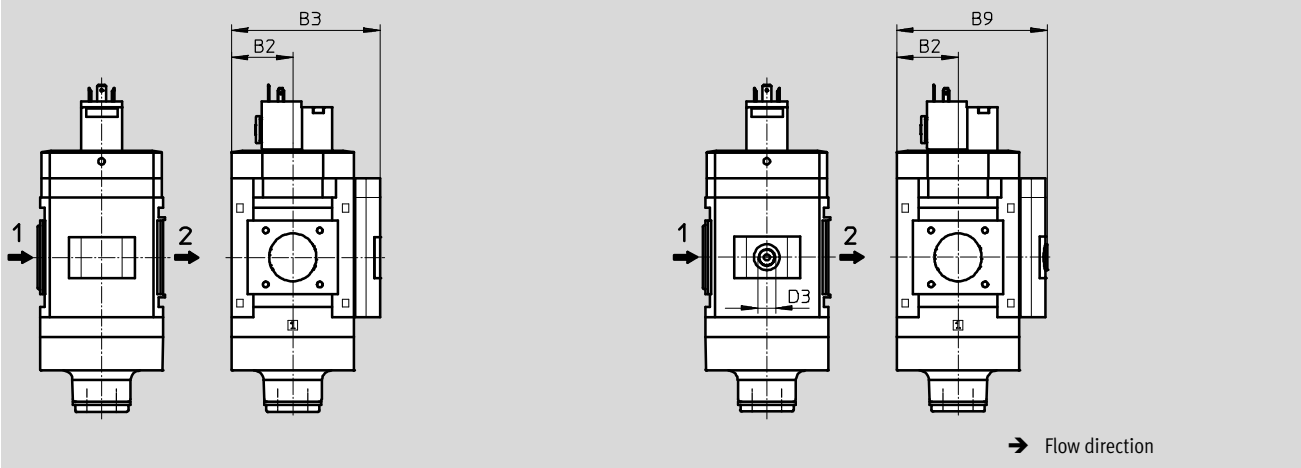
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Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale AG or red/green scale RG

Adapter plate A4 for EN pressure gauge 1/4, without pressure gauge



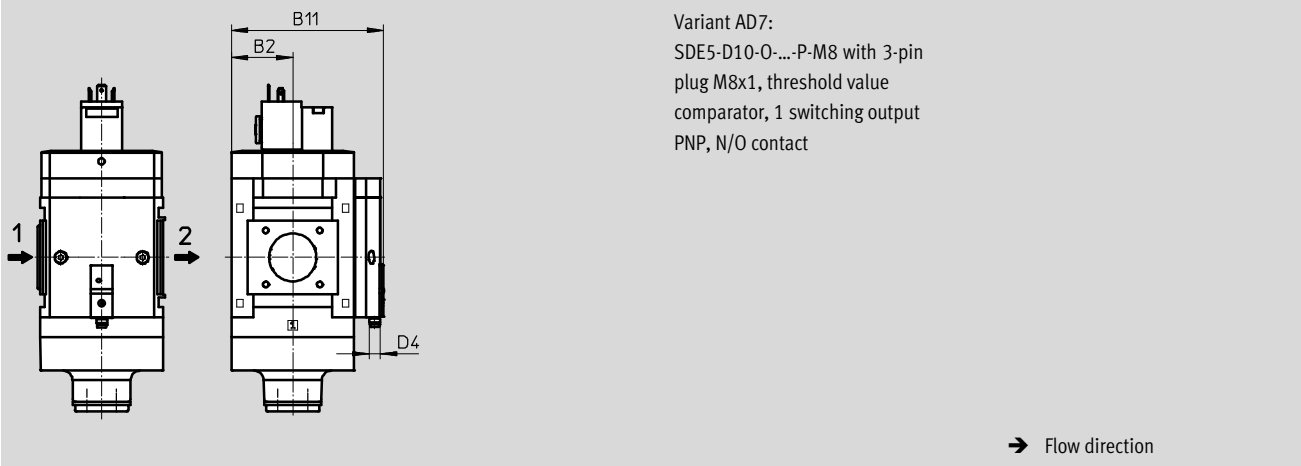
Type	B2	B3	B9	D3
MS9-EE-...-AG/RG	45	109	-	-
MS9-EE-...-A4		-	110	G1/4

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

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with operational status indicator AD7



Type	B2	B11	D4
MS9-EE-...-AD7	45	112	M8x1

Ordering data

3/2-way valve, with silencer, supply voltage 24 V DC

Size	Part No.	Type
Cover plate		
MS9	562940	MS9-EE-G-V24-S-VS
Pneumatic connection 3 in NPT, cover plate		
MS9	562946	MS9-EE-NG-V24-S-VS

On-off valves MS9-EE, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	90	Condi- tions	Code	Enter code	
M	Module No.	562177				
	Series	Standard		MS	MS	
	Size	9		9	9	
	Function	Electrical on-off valve		-EE	-EE	
	Pneumatic connection	Female thread G $\frac{3}{4}$	1	-$\frac{3}{4}$		
		Female thread G1	1	-1		
		Connecting plate G $\frac{1}{2}$		-AGD		
		Connecting plate G $\frac{3}{4}$		-AGE		
		Connecting plate G1		-AGF		
		Connecting plate G1 $\frac{1}{4}$		-AGG		
		Connecting plate G1 $\frac{1}{2}$		-AGH		
		Female thread NPT $\frac{3}{4}$	1	-N$\frac{3}{4}$		
		Female thread NPT1	1	-N1		
		Connecting plate NPT $\frac{1}{2}$	1	-AQR		
		Connecting plate NPT $\frac{3}{4}$	1	-AQS		
		Connecting plate NPT1	1	-AQT		
		Connecting plate NPT1 $\frac{1}{4}$	1	-AQU		
		Connecting plate NPT1 $\frac{1}{2}$	1	-AQV		
		Module without connecting thread, without connecting plate	1	-G		
		Module without connecting thread, without connecting plate (connection 3 in NPT)	1	-NG		
		Supply voltage	24 V DC (pin allocation to EN 175301), 16 bar		-V24	
			24 V DC plug (connection pattern M12 to DESINA), 16 bar	1	-V24P	
	110 V AC (pin allocation to EN 175301), 16 bar		1	-V110		
	230 V AC (pin allocation to EN 175301), 16 bar		1	-V230		

1 $\frac{3}{4}$, 1, N $\frac{3}{4}$, N1, AQR, AQS, AQT, AQU, AQV, G, NG, V24P, V110, V230, AD7, WPM
Not with EU certification EX2

- M** Mandatory data
- O** Options

Transfer order code

562177 MS 9 - EE - [] - []

On-off valves MS9-EE, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	90	Condi- tions	Code	Enter code
O	Silencer	Silencer		-S	
M	Pressure gauge/pressure gauge alternatives	MS pressure gauge		-AG	
		Cover plate		-VS	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4	
		Integrated pressure gauge, red/green scale	2	-RG	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	1 3	-AD7	
O	Alternative pressure gauge scale	psi	4	-PSI	
		MPa	4	-MPA	
		bar	4	-BAR	
Valve function	Standard (3/2-way valve)			-	
	2/2-way valve	5		-2	
Type of mounting	Mounting bracket standard design	6		-WP	
	Mounting bracket for attaching the service units	1 6		-WPM	
	Mounting bracket for large wall gap	6		-WPB	
EU certification	II 3GD to EU Explosion Protection Directive (ATEX)			-EX2	
UL certification	cULus, ordinary location for Canada and USA	7		-UL1	
Flow direction	Flow direction from right to left			-Z	

- 1** 3/4, 1, N3/4, N1, AQR, AQS, AQT, AQU, AQV, G, NG, V24P, V110, V230, AD7, WPM
Not with EU certification EX2
- 2** RG
Not with alternative pressure gauge scale PSI
PSI scale serves only as an auxiliary scale
- 3** AD7
Measuring range max. 10 bar
- 4** PSI, MPA, BAR
Not with pressure gauge/pressure gauge alternatives VS, A4, AD7

- 5** 2
Not with silencer S
- 6** WP, WPM, WPB
Not with pneumatic connection G, NG
- 7** UL1
Not with supply voltage V110, V230

- M** Mandatory data
- O** Options

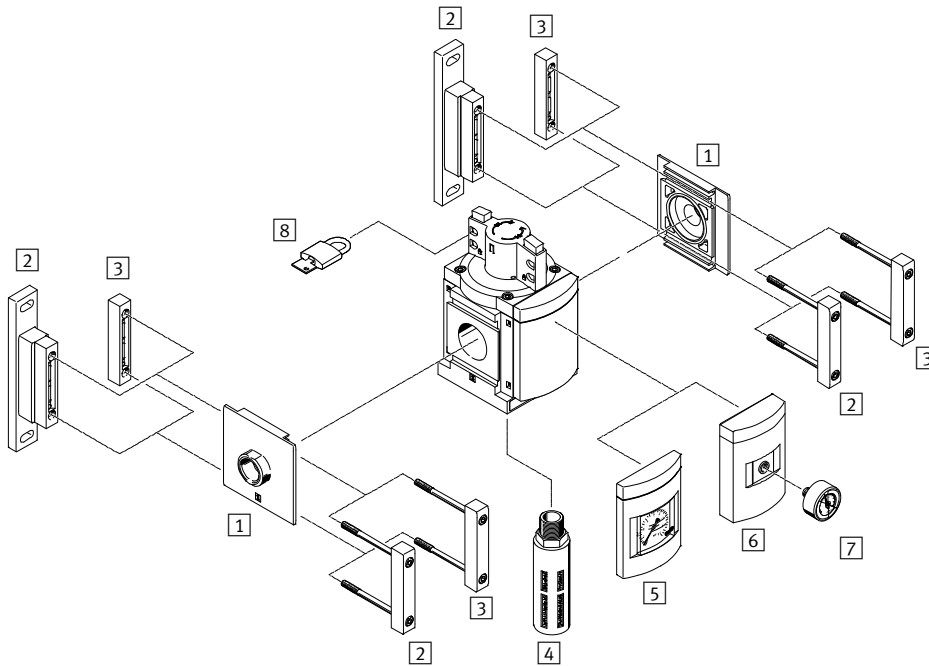
Transfer order code

- [] [] - [] [] - [] [] - [] [] - [] [] - [] [] - [] []

On-off valves MS12-EM, MS series

Peripherals overview

On-off valves MS12-EM



-  - Note

Additional accessories:

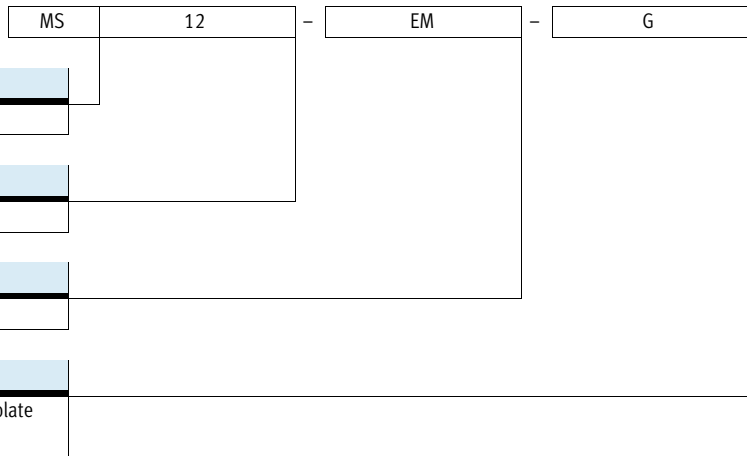
- Module connector for combination with size MS9 → Internet: armv

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	Silencer U	95
5	MS pressure gauge AG	75
6	Adapter for EN pressure gauge 1/4 A4	75
7	Pressure gauge MA	95
8	Padlock LRVS-D	95

On-off valves MS12-EM, MS series

Type codes



Further variants can be ordered using the modular system → 75

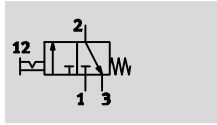
- Pneumatic connection
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Flow direction

On-off valves MS12-EM, MS series

Technical data

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Function



- - Flow rate
25,000 ... 32,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0 ... 20 bar
- - www.festo.com



- Manually operated on-off valve for pressurising and venting pneumatic installations
- Ducted exhaust possible via a threaded connection with silencer
- The switching position is immediately recognisable
- Actuator secured by locking the rotary knob
- Commercially available padlock can be used for security

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	-
Pneumatic connection 3	G1
Design	Piston spool valve
Type of mounting	Via accessories In-line installation
Assembly position	Any
Valve function	3/2-way valve, bistable
Exhaust function	Without flow control
Switching position display	Knob actuator direction = flow direction
Type of actuation	Direct
Direction of flow	Non-reversible

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

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]	
In main flow direction 1 \rightarrow 2	25,000 ... 32,000
In relief direction 2 \rightarrow 3	13,000

1) Measured at $p_1 = 6$ bar and $\Delta p = 1$ bar

Operating and environmental conditions		
Operating pressure	[bar]	0 ... 20
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [-:-:-]
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

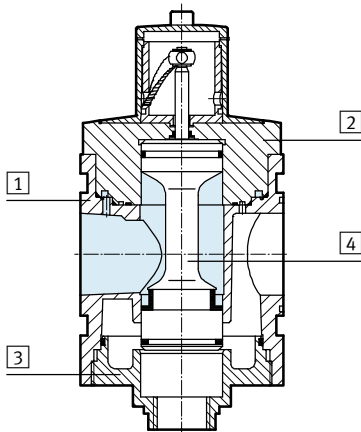
On-off valves MS12-EM, MS series

Technical data

Weights [g]	
On-off valve	3,900
On-off valve with silencer S	4,000

Materials

Sectional view

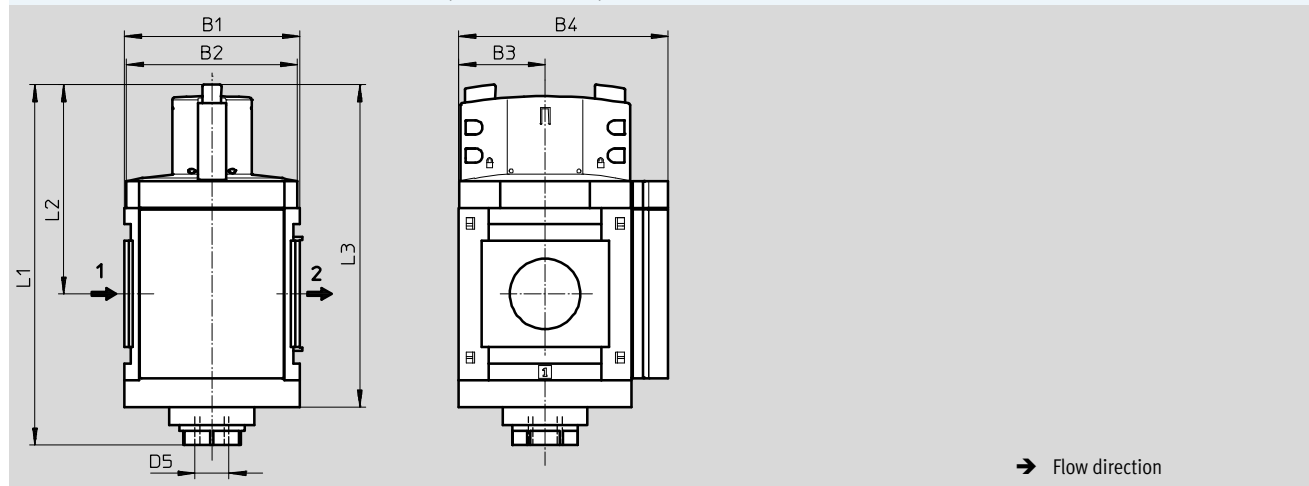


On-off valve		
1	Body	Die-cast aluminium
2	Cap, top	Aluminium
3	Cap, bottom	Aluminium
4	Valve spool	Stainless steel, POM, NBR
-	Springs	Steel
-	Covers/cover plates	PA
-	Seals	NBR
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
Note on materials		Free of copper and PTFE (not with variant AG)

Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G, with cover plate

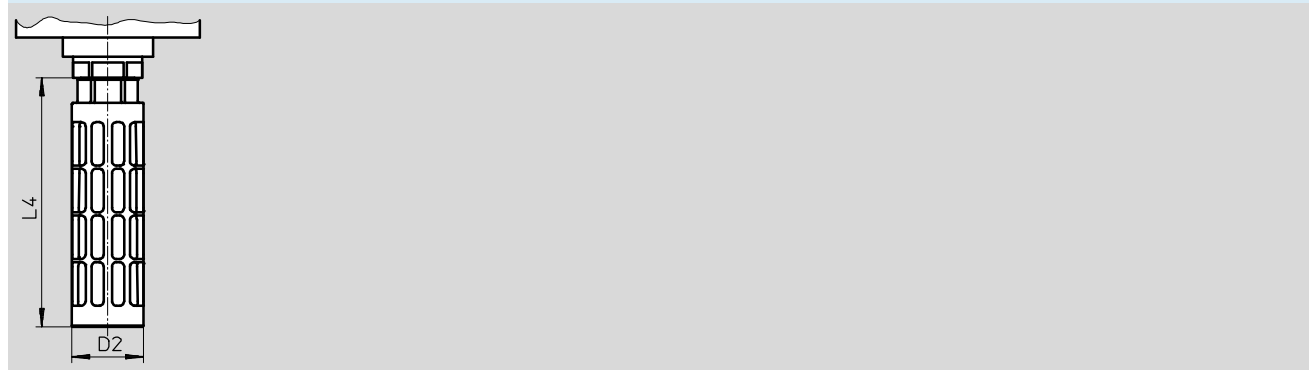


Type	B1	B2	B3	B4	L1	L2	L3	D5
MS12-EM-G	124	122	61	148	255	148	228	G1

On-off valves MS12-EM, MS series

Technical data

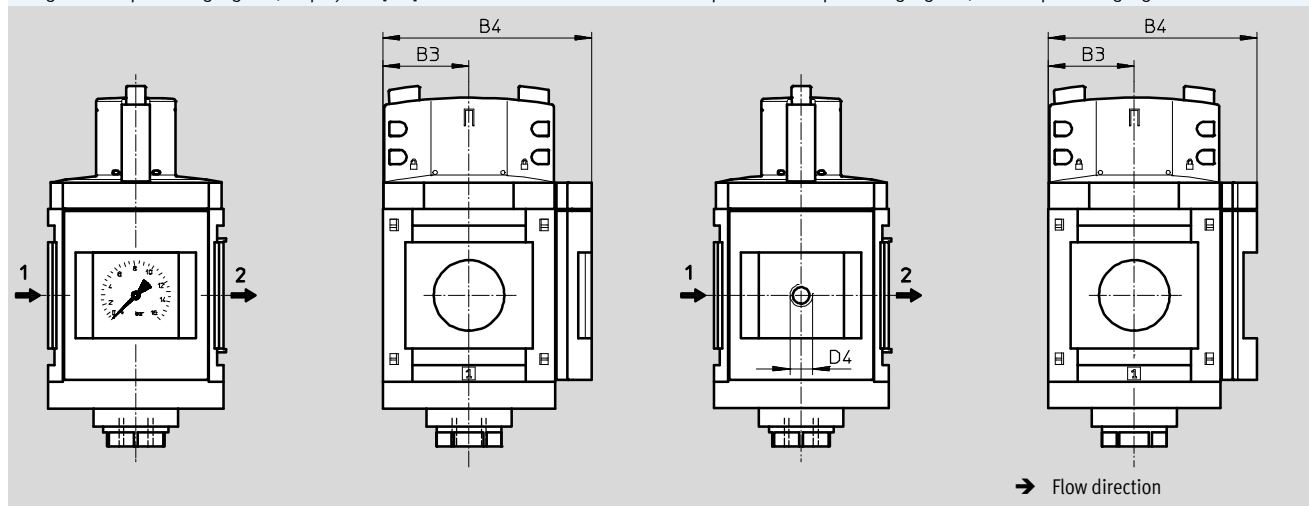
Dimensions – Silencer Download CAD data → www.festo.com



Type	D2 Ø	L4
MS12-EM-...-S	47.8	165.5

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar] Adapter A4 for EN pressure gauge 1/4, without pressure gauge



Type	B3	B4	D4
MS12-EM-...-AG	61	148	–
MS12-EM-...-A4	61	148	G1/4

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

Ordering data

Size	Part No.	Type
MS12	541495	MS12-EM-G

On-off valves MS12-EM, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535031			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	On-off valve, manual		-EM	-EM
	Pneumatic connection	Connecting plate G1		-AGF	
		Connecting plate G1¼		-AGG	
		Connecting plate G1½		-AGH	
		Connecting plate G2		-AGI	
		Module without connecting thread, without connecting plate		-G	
O	Silencer	Silencer		-S	
	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar		-AG	
		Adapter plate for EN pressure gauge ¼, without pressure gauge		-A4	
	Alternative pressure gauge scale	psi	1	-PSI	
		MPa	1	-MPA	
	Type of mounting	Mounting bracket standard design	2	-WP	
	Flow direction	Flow direction from right to left		-Z	

1 **PSI, MPA** Only with pressure gauge AG.

2 **WP** Only with connecting plate AGF, AGG, AGH or AGI.

M Mandatory data

O Options

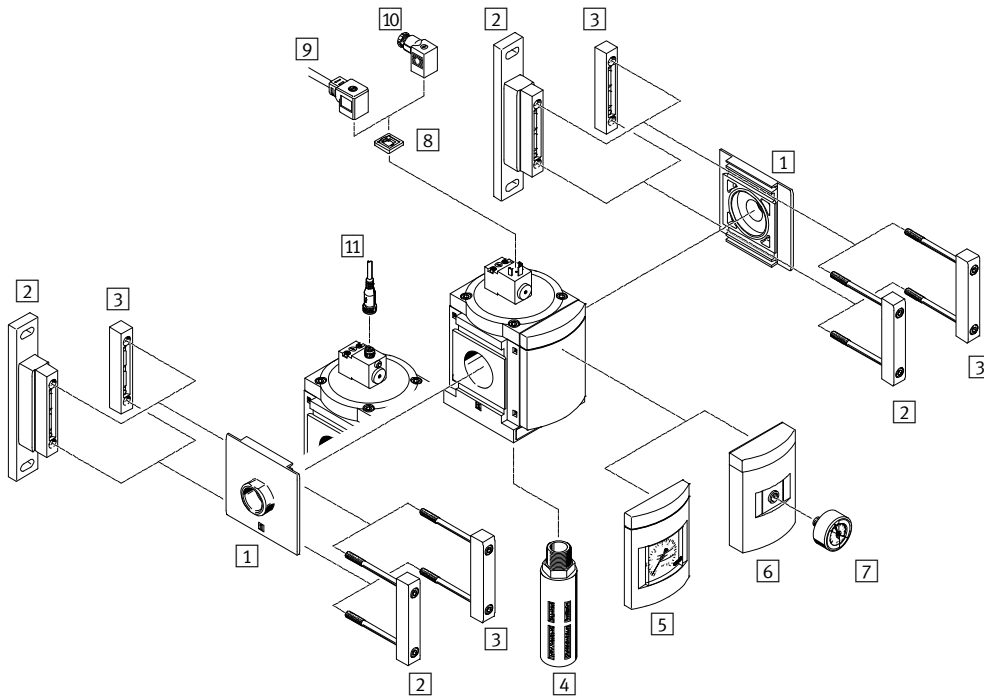
Transfer order code

535031 MS 12 - EM - [] - [] - [] - [] - [] - []

On-off valves MS12-EE, MS series

Peripherals overview

On-off valves MS12-EE

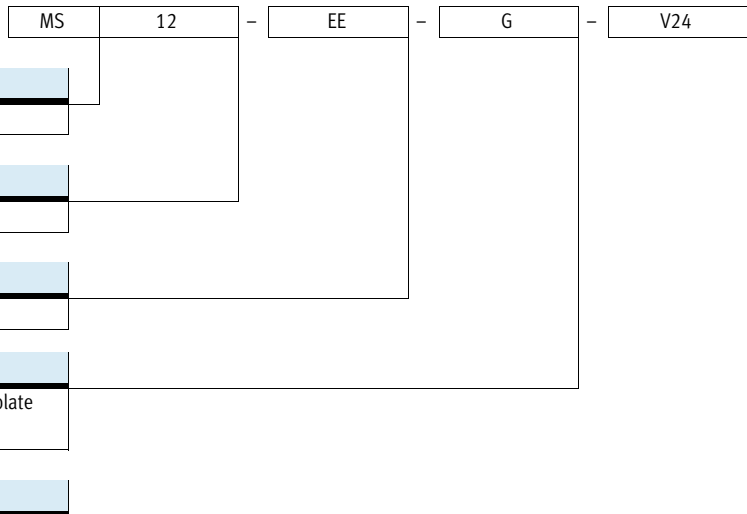


Note
Additional accessories:
– Module connector for combination with size MS9 → Internet: armv

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	Silencer U	95
5	MS pressure gauge AG	81
6	Adapter for EN pressure gauge 1/4 A4	81
7	Pressure gauge MA	95
8	Illuminating seal MC-LD	94
9	Connecting cable KMC	94
10	Plug socket MSSD-C	94
11	Connecting cable NEBU-M12...-LE4	95

On-off valves MS12-EE, MS series

Type codes



Further variants can be ordered using the modular system → 81

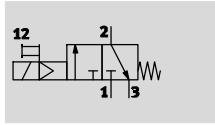
- Pneumatic connection
- Supply voltage
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Flow direction

On-off valves MS12-EE, MS series

Technical data

FESTO

Function



- - Flow rate
25,000 ... 32,000 l/min
- - Temperature range
-10 ... +50 °C
- - Operating pressure
3 ... 16 bar
- - www.festo.com



- Solenoid actuated on-off valve for pressurising and venting pneumatic installations
- With solenoid coil without plug socket
- Three voltage ranges can be selected
- Ducted exhaust possible via a threaded connection with silencer
- Non-detenting and detenting manual override

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	–
Pneumatic connection 3	G1
Design	Piston spool valve
Type of mounting	Via accessories In-line installation
Assembly position	Any
Valve function	3/2-way valve, single solenoid, closed
Exhaust function	Without flow control
Type of reset	Mechanical spring
Switching position display	Via accessories LED (with variant V24P)
Type of actuation	Piloted
Pilot air supply	Internal
Direction of flow	Non-reversible

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

Electrical data		
Coil characteristics	V24/V24P	24 V DC: 4.5 W; perm. voltage fluctuations ±10%
	V110	110 V AC: 50 Hz; pick-up power 11.5 W; holding power 8.9 W; perm. voltage fluctuations ±10% 110 V AC: 60 Hz; pick-up power 9.5 W; holding power 6.2 W; perm. voltage fluctuations ±10%
	V230	230 V AC: 50 Hz; pick-up power 11.5 W; holding power 9.1 W; perm. voltage fluctuations ±10% 230 V AC: 60 Hz; pick-up power 9.5 W; holding power 6.4 W; perm. voltage fluctuations ±10%
Electrical connection	V24/V110/V230	Plug, square design to EN 175301-803, type A
	V24P	Plug M12, 4-pin to DESINA
Protection class for solenoid coil		IP65
Duty cycle	[%]	100

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]	
In main flow direction 1 → 2	25,000 ... 32,000
In relief direction 2 → 3	8,900

1) Measured at $p_1 = 6$ bar and $\Delta p = 1$ bar

On-off valves MS12-EE, MS series

Technical data

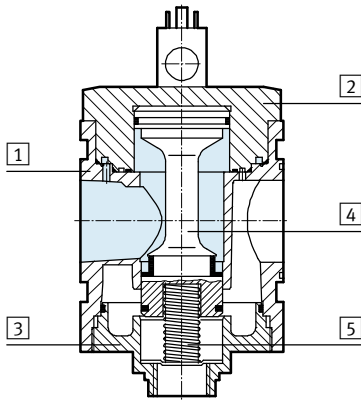
Operating and environmental conditions	
Operating pressure [bar]	3 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
	Inert gases
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	-10 ... +50
Temperature of medium [°C]	-10 ... +50
Corrosion resistance CRC ¹⁾	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Weights [g]	
On-off valve	3,800
On-off valve with silencer S	3,900

Materials

Sectional view



On-off valve	
1 Body	Die-cast aluminium
2 Cap, top	Aluminium
3 Cap, bottom	Aluminium
4 Valve spool	Stainless steel, POM, NBR
5 Springs	Steel
- Covers/cover plates	PA
- Seals	NBR
- Connecting plate, module connector, mounting bracket	Die-cast aluminium
Note on materials	Free of copper and PTFE (not with variant AG)

Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G, with cover plate

MS12-EE-G-V24/V110/V230

MS12-EE-G-V24P

1 = Connected to 2
 2 = Connected to 1
 3 = com (-)
 4 = Signal (+)

1 Plug connection to EN 175301-803
 3 Plug connection M12, 4-pin to DESINA for connecting cable NEBU-M12

→ Flow direction

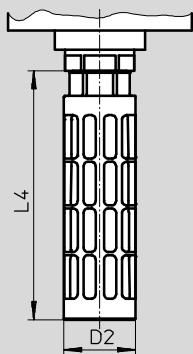
Type	B1	B2	B3	B4	L1	L2	L3	L4	L5	D5
MS12-EE-G-V24/V110/V230	124	122	61	148	237	130	162	35.7	12.3	G1
MS12-EE-G-V24P								36	10	

On-off valves MS12-EE, MS series

Technical data

Dimensions – Silencer

Download CAD data → www.festo.com



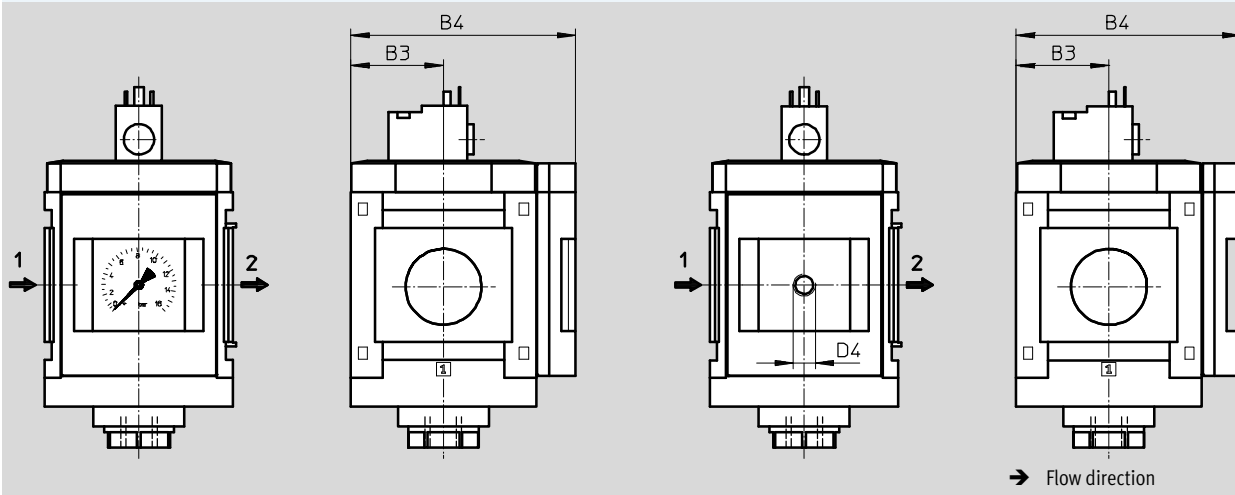
Type	D2 Ø	L4
MS12-EE-...-S	47.8	165.5

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



Type	B3	B4	D4
MS12-EE-...-AG	61	148	-
MS12-EE-...-A4	61	148	G1/4

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

Ordering data

Size	Supply voltage 24 V DC	
	Part No.	Type
MS12	541496	MS12-EE-G-V24

On-off valves MS12-EE, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	124	Condi-tions	Code	Enter code
M	Module No.	535032			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	On-off valve, electrical		-EE	-EE
	Pneumatic connection	Connecting plate G1		-AGF	
		Connecting plate G1¼		-AGG	
		Connecting plate G1½		-AGH	
		Connecting plate G2		-AGI	
		Module without connecting thread, without connecting plate		-G	
	Supply voltage	24 V DC (connection pattern to EN 175301), 16 bar		-V24	
		24 V DC plug (connection pattern M12 to DESINA), 16 bar		-V24P	
		110 V AC (connection pattern to EN 175301), 16 bar		-V110	
		230 V AC (connection pattern to EN 175301), 16 bar		-V230	
O	Silencer	Silencer		-S	
	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar		-AG	
		Adapter plate for EN pressure gauge ¼, without pressure gauge		-A4	
	Alternative pressure gauge scale	psi	1	-PSI	
		MPa	1	-MPA	
	Type of mounting	Mounting bracket standard design	2	-WP	
	Flow direction	Flow direction from right to left		-Z	

1 PSI, MPA Only with pressure gauge AG.

2 WP Only with connecting plate AGF, AGG, AGH or AGI.

M Mandatory data

O Options

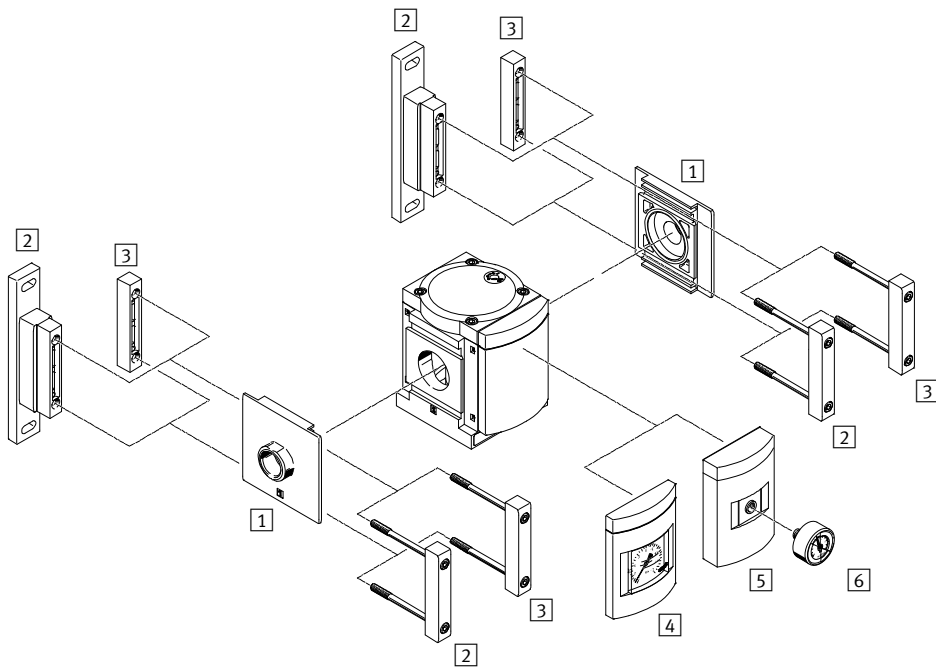
Transfer order code


535032 **MS** **12** - **EE** - [] - [] - [] - [] - [] - [] - [] - []

Soft-start valves MS12-DL, MS series

Peripherals overview

Soft-start valves MS12-DL



-  - Note
 Additional accessories:
 - Module connector for combination with size MS9 → Internet: armv

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	MS pressure gauge AG	87
5	Adapter for EN pressure gauge 1/4 A4	87
6	Pressure gauge MA	95

Soft-start valves MS12-DL, MS series

Type codes

		MS	12	-	DL	-	G
Series							
MS	Standard service unit						
Size							
12	Grid dimension 124 mm						
Service function							
DL	Soft-start valve, pneumatically actuated						
Pneumatic connection							
G	Module without connecting thread, without connecting plate Connecting plates → Accessories						

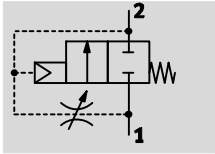
Further variants can be ordered using the modular system → 87

- Pneumatic connection
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Flow direction

Soft-start valves MS12-DL, MS series

Technical data

Function



- - Flow rate
25,000 ... 42,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
2 ... 20 bar
- - www.festo.com



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap.

The output pressure p2 rises slowly in accordance with the restrictor setting. The main seat opens when the switch-through pressure is reached.

- Pneumatically actuated soft-start valve for slowly pressurising and venting pneumatic installations (for use with on-off valves EM and EE)
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- Pressure switching approx. 50% of operating pressure
- Adjustable switching time delay

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	-
Design	Piston poppet valve
Type of mounting	Via accessories In-line installation
Assembly position	Any
Valve function	2/2-way valve
Exhaust function	Flow control
Type of reset	Mechanical spring
Type of actuation	Direct
Pilot air supply	Internal
Direction of flow	Non-reversible

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

Standard nominal flow rate qnN ¹⁾ [l/min]	
In main flow direction 1 → 2	25,000 ... 42,000
In relief direction 2 → 1	25,000 ... 42,000

1) Measured at p1 = 6 bar and p2 = 5 bar, Δp = 1 bar

Soft-start valves MS12-DL, MS series

Technical data

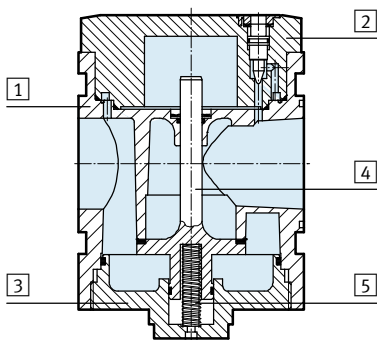
Operating and environmental conditions	
Operating pressure [bar]	2 ... 20
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:--:--]
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance CRC ¹⁾	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Weights [g]	
Soft-start valve	3,600

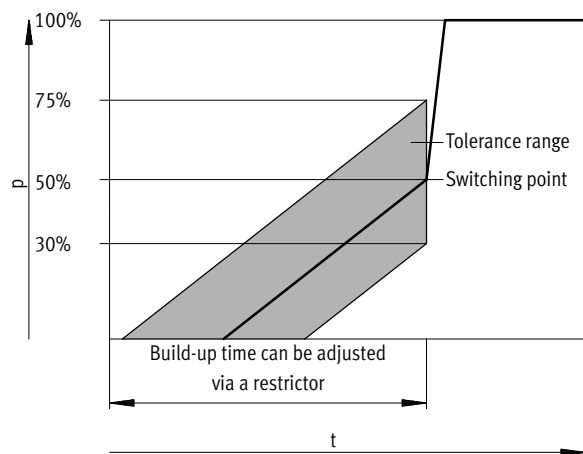
Materials

Sectional view



Soft-start valve		
1	Body	Die-cast aluminium
2	Cap, top	Aluminium
3	Cap, bottom	Aluminium
4	Valve stem	Aluminium, NBR
5	Springs	Steel
-	Covers/cover plates	PA
-	Seals	NBR
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
Note on materials		Free of copper and PTFE (not with variant AG)

Switching point – Pressure p as a function of time t



Note

The tolerance specification +25%/-20% of the switching point refers to the operating pressure p1.

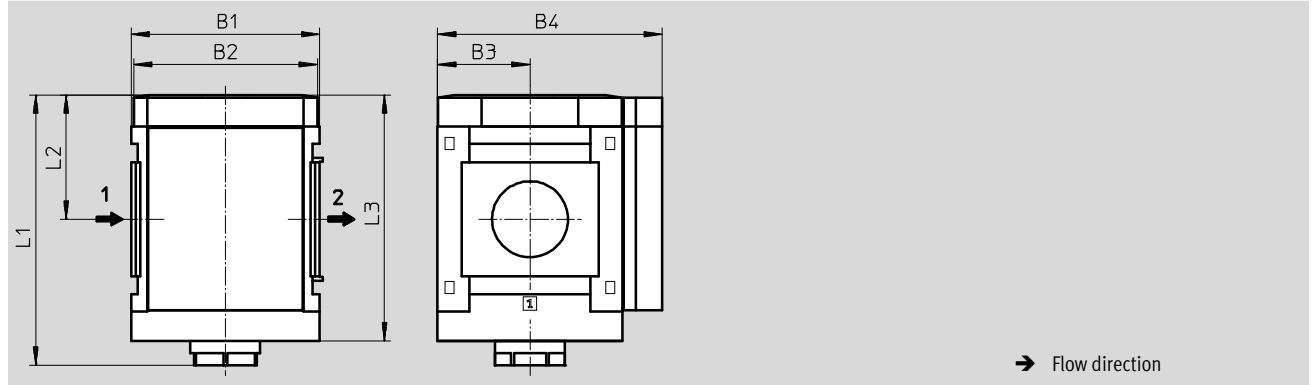
Example: at an operating pressure of 4 bar a switching point of 1.2 bar to 3.0 bar is permitted.

Soft-start valves MS12-DL, MS series

Technical data

Dimensions – Basic version Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G, with cover plate

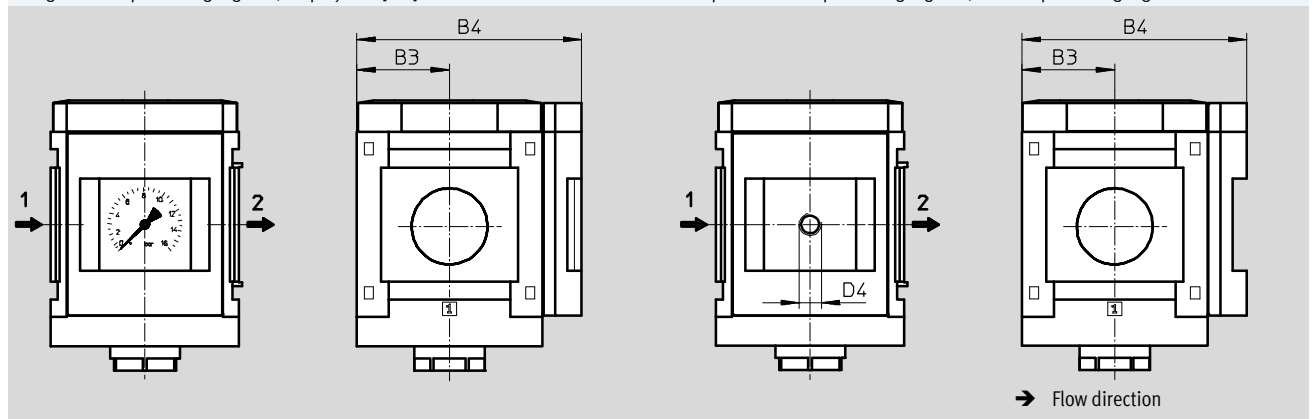


Type	B1	B2	B3	B4	L1	L2	L3
MS12-DL-G	124	122	61	148	178	82	162

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



Type	B3	B4	D4
MS12-DL-...-AG	61	148	-
MS12-DL-...-A4	61	148	G1/4

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

Ordering data		
Size	Part No.	Type
MS12	541497	MS12-DL-G

Soft-start valves MS12-DL, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535033			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	Soft-start valve, pneumatic		-DL	-DL
	Pneumatic connection	Connecting plate G1		-AGF	
		Connecting plate G1¼		-AGG	
		Connecting plate G1½		-AGH	
		Connecting plate G2		-AGI	
		Module without connecting thread, without connecting plate		-G	
O	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar		-AG	
		Adapter plate for EN pressure gauge ¼, without pressure gauge		-A4	
	Alternative pressure gauge scale	psi	1	-PSI	
		MPa	1	-MPA	
	Type of mounting	Mounting bracket standard design	2	-WP	
	Flow direction	Flow direction from right to left		-Z	

1 **PSI, MPA** Only with pressure gauge AG.

2 **WP** Only with connecting plate AGF, AGG, AGH or AGI.

M Mandatory data

O Options

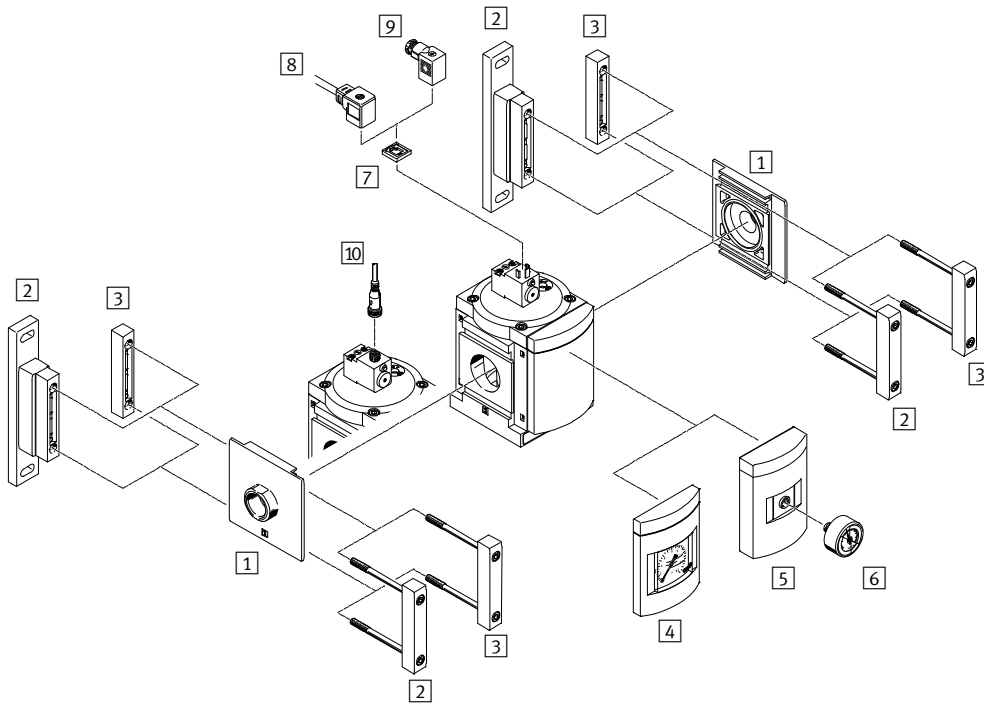
Transfer order code


535033 MS 12 - DL - [] - [] - [] - []

Soft-start valves MS12-DE, MS series

Peripherals overview

Soft-start valves MS12-DE



 Note
 Additional accessories:
 – Module connector for combination with size MS9 → Internet: armv

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	MS pressure gauge AG	93
5	Adapter for EN pressure gauge 1/4 A4	93
6	Pressure gauge MA	95
7	Illuminating seal MC-LD	94
8	Connecting cable KMC	94
9	Plug socket MSSD-C	94
10	Connecting cable NEBU-M12...-LE4	95

Soft-start valves MS12-DE, MS series

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Type codes

		MS	12	-	DE	-	G	-	V24
Series									
MS	Standard service unit								
Size									
12	Grid dimension 124 mm								
Service function									
DE	Soft-start valve, solenoid actuated								
Pneumatic connection									
G	Module without connecting thread, without connecting plate Connecting plates → Accessories								
Supply voltage									
V24	Supply voltage 24 V DC								

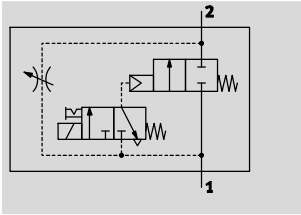
Further variants can be ordered using the modular system → 93





- Pneumatic connection
- Supply voltage
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Flow direction

Soft-start valves MS12-DE, MS series

Technical data

Function



-  Flow rate
25,000 ... 42,000 l/min
-  Temperature range
-10 ... +50 °C
-  Operating pressure
3 ... 16 bar
-  www.festo.com



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap. The output pressure p2 rises slowly in accordance with the restrictor setting. Only the air flow from the restrictor is available when the solenoid valve is not actuated. The main seat is only opened by energising the solenoid valve.

When the solenoid valve is switched off, the main seat is closed and only the air flow from the flow control valve is available. The solenoid valve should remain switched on in order to vent a system as this increases the flow rate from 2 and 1 and reduces the exhaust time.

- Solenoid actuated soft-start valve for slowly pressurising and venting pneumatic installations
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- With solenoid coil without plug socket
- Switch-through pressure can be exactly controlled using a solenoid valve
- Adjustable switching time delay
- Three voltage ranges can be selected
- Non-detenting and detenting manual override

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	–
Design	Piston poppet valve
Type of mounting	Via accessories In-line installation
Assembly position	Any
Valve function	2/2-way valve
Exhaust function	Flow control
Type of reset	Mechanical spring
Signal status display	Via accessories LED (with variant V24P)
Type of actuation	Piloted
Pilot air supply	Internal
Direction of flow	Non-reversible

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

Electrical data		
Coil characteristics	V24	24 V DC: 8.4 W 42 V AC: 50 Hz, pick-up power 14 VA, holding power 10 VA 42 V AC: 60 Hz, pick-up power 12 VA, holding power 7 VA
	V24P	24 V DC
	V110	110 V AC
	V230	230 V AC
	Electrical connection	V24/V110/V230 V24P
Protection class for solenoid coil		IP65
Duty cycle	[%]	100

Soft-start valves MS12-DE, MS series

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]	
In main flow direction 1 \rightarrow 2	25,000 ... 42,000
In relief direction 2 \rightarrow 1 ²⁾	25,000 ... 42,000

- 1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar
 2) For energised solenoid valve

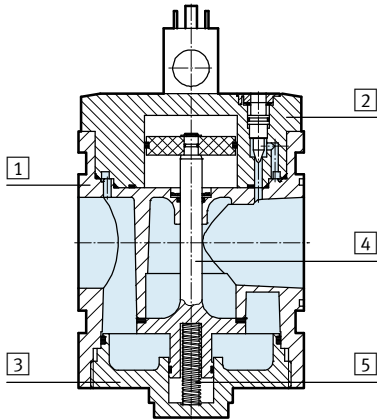
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [---:--]
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Weights [g]	
Soft-start valve	3,800

Materials

Sectional view



Soft-start valve		
1	Body	Die-cast aluminium
2	Cap, top	Aluminium
3	Cap, bottom	Aluminium
4	Valve stem	Aluminium, NBR
5	Springs	Steel
-	Covers/cover plates	PA
-	Seals	NBR
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
Note on materials		Free of copper and PTFE (not with variant AG)

Soft-start valves MS12-DE, MS series

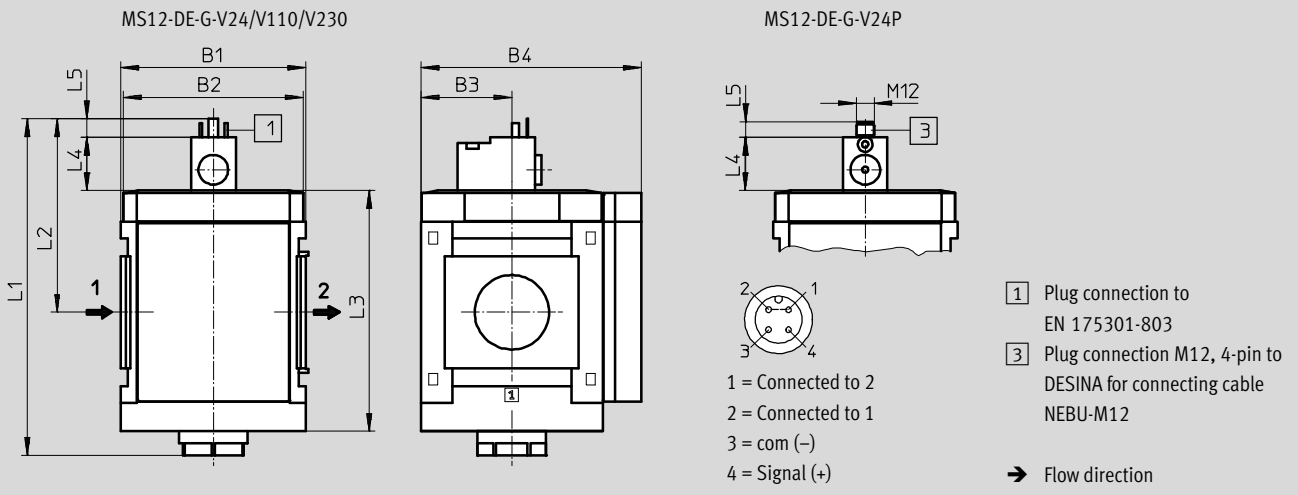
Technical data



Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G, with cover plate



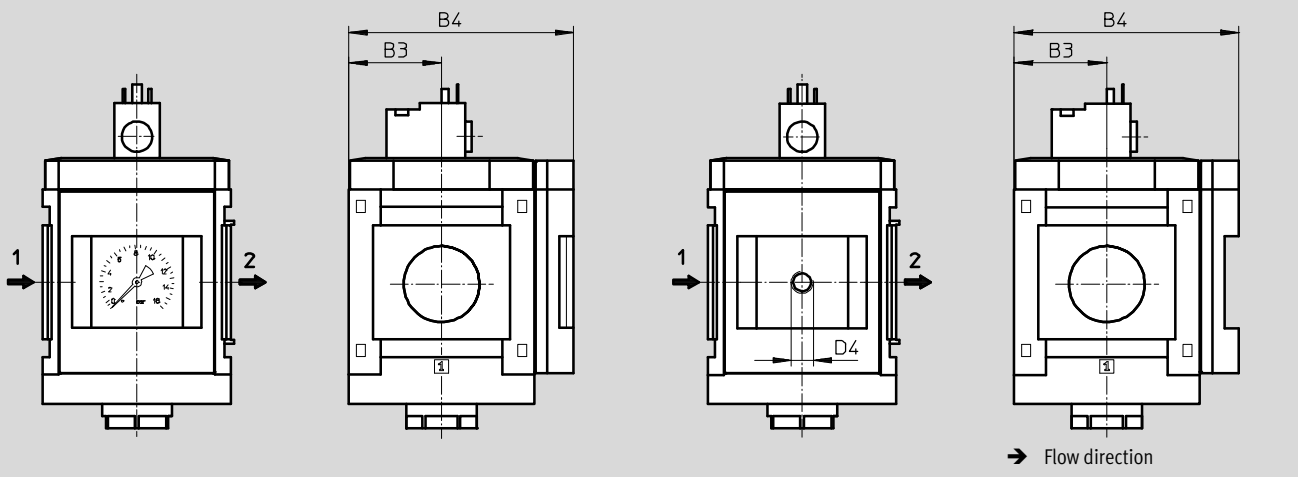
Type	B1	B2	B3	B4	L1	L2	L3	L4	L5
MS12-DE-G-V24/V110/V230	124	122	61	148	226	130	162	35.7	12.3
MS12-DE-G-V24P								36	10

Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



Type	B3	B4	D4
MS12-DE-...-AG	61	148	-
MS12-DE-...-A4	61	148	G1/4

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

Ordering data

Size	Supply voltage 24 V DC	
	Part No.	Type
MS12	541498	MS12-DE-G-V24

Soft-start valves MS12-DE, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535034			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	Soft-start valve, electrical		-DE	-DE
	Pneumatic connection	Connecting plate G1		-AGF	
		Connecting plate G1¼		-AGG	
		Connecting plate G1½		-AGH	
		Connecting plate G2		-AGI	
		Module without connecting thread, without connecting plate		-G	
	Supply voltage	24 V DC (connection pattern to EN 175301), 16 bar		-V24	
		24 V DC plug (connection pattern M12 to DESINA), 16 bar		-V24P	
		110 V AC (connection pattern to EN 175301), 16 bar		-V110	
		230 V AC (connection pattern to EN 175301), 16 bar		-V230	
O	Pressure gauge/pressure gauge alternatives	MS pressure gauge, bar		-AG	
		Adapter plate for EN pressure gauge ¼, without pressure gauge		-A4	
	Alternative pressure gauge scale	psi	1	-PSI	
		MPa	1	-MPA	
	Type of mounting	Mounting bracket standard design	2	-WP	
	Flow direction	Flow direction from right to left		-Z	

1 **PSI, MPA** Only with pressure gauge AG.

2 **WP** Only with connecting plate AGF, AGG, AGH or AGI.

M Mandatory data

O Options


Transfer order code

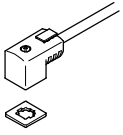
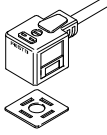
535034 MS 12 - DE - [] - [] - [] - [] - [] - []


On-off/soft-start valves MS-EM/EE/DL/DE, MS series


FESTO

Accessories

Ordering data – Plug socket MSSD					Technical data → Internet: mssd	
	Description		Electrical connection	Cable connection	Part No.	Type
	for MS4/6-EE/DE	–	3-pin	Screw terminal	★ 151687	MSSD-EB
			4-pin	Insulation displacement connector	192745	MSSD-EB-S-M14
	for MS9-EE, for MS12-EE/DE	–	3-pin	Screw terminal	570367	MSSD-EB-M12-24VDC-SD-EX
			4-pin	Insulation displacement connector	34583	MSSD-C
		For use in the explosion protection area			192748	MSSD-C-S-M16

Ordering data – Plug socket with cable KMEB/connecting cable KMC							Technical data → Internet: kmeb, kmc	
	Description	Operating voltage range	Electrical connection	Switching status display	Cable length [m]	Part No.	Type	
	for MS4/6-EE/DE	24 V DC	2-pin	LED	2.5	547268	KMEB-3-24-2,5-LED	
				–	5	547269	KMEB-3-24-5-LED	
			–	2.5	547270	KMEB-3-24-2,5		
				5	547271	KMEB-3-24-5		
		230 V AC	3-pin	LED	2.5	★ 151688	KMEB-1-24-2,5-LED	
				–	5	151689	KMEB-1-24-5-LED	
			–	10	193457	KMEB-1-24-10-LED		
				2.5	151690	KMEB-1-230AC-2,5		
	for MS9-EE, for MS12-EE/DE	24 V DC	3-pin	LED	2.5	30931	KMC-1-24DC-2,5-LED	
					5	30933	KMC-1-24DC-5-LED	
					10	193459	KMC-1-24-10-LED	
		230 V AC	3-pin	–	2.5	30932	KMC-1-230AC-2,5	
					5	30934	KMC-1-230AC-5	

Ordering data – Illuminating seal MEB-LD/MC-LD				Technical data → Internet: meb, mc	
	Description	Operating voltage range	Part No.	Type	
	for plug socket with cable KMEB and plug socket MSSD-EB	12 ... 24 V DC	151717	MEB-LD-12-24DC	
		230 V DC/AC ±10%	151718	MEB-LD-230AC	
	for connecting cable KMC and plug socket MSSD-C	12 ... 24 V DC	19145	MC-LD-12-24DC	
		230 V DC/AC ±10%	19146	MC-LD-230AC	

Ordering data – Locking clip CPV18-HV				Technical data → Internet: cpv18-hv	
	Description	Part No.	Type	PU ¹⁾	
	for MS4/6-EE/DE-...-V24	Cover for manual override, the clip prevents actuation	530056	CPV18-HV	10

1) Packaging unit quantity

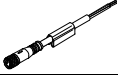

Festo core product range


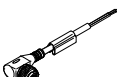
- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days


On-off/soft-start valves MS-EM/EE/DL/DE, MS series


FESTO


Accessories


Ordering data – Connecting cable NEBU-M8				Technical data → 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 socket	3	2.5	★ 541338	NEBU-M8W3-K-2.5-LE3
			5	★ 541341	NEBU-M8W3-K-5-LE3

Ordering data – Connecting cable NEBU-M12				Technical data → 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
	M12x1, angled socket	4	2.5	550325	NEBU-M12W5-K-2.5-LE4
			5	541329	NEBU-M12W5-K-5-LE4

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

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

Ordering data – Silencer U			Technical data → Internet: u	
	Description	Pneumatic connection	Part No.	Type
	for MS4-EM1/EE	G $\frac{1}{4}$	★ 6842	U- $\frac{1}{4}$ -B
	for MS6-EM1/EE	G $\frac{1}{2}$	★ 6844	U- $\frac{1}{2}$ -B
	for MS9/12-EM/EE	G1	151990	U-1-B

Ordering data – Pressure gauge MA							
	Nominal size	Pneumatic connection	Indicating range		Part No.	Type	
			[bar]	[psi]			
	Pressure gauge MA, EN 837-1					Technical data → Internet: ma	
	40	R $\frac{1}{4}$	0 ... 16	0 ... 232	187080	MA-40-16-R $\frac{1}{4}$ -EN	
		G $\frac{1}{4}$	0 ... 16	0 ... 232	183901	MA-40-16-G $\frac{1}{4}$ -EN	
	Pressure gauge MA, EN 837-1, with red-green range					Technical data → Internet: ma	
40	R $\frac{1}{8}$	0 ... 16	–	525726	MA-40-16-R $\frac{1}{8}$ -E-RG		
50	R $\frac{1}{4}$	0 ... 16	–	525729	MA-50-16-R $\frac{1}{4}$ -E-RG		

Ordering data – Padlock LRV5-D		
	Weight [g]	Part No. Type
	120	193786 LRV5-D

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days