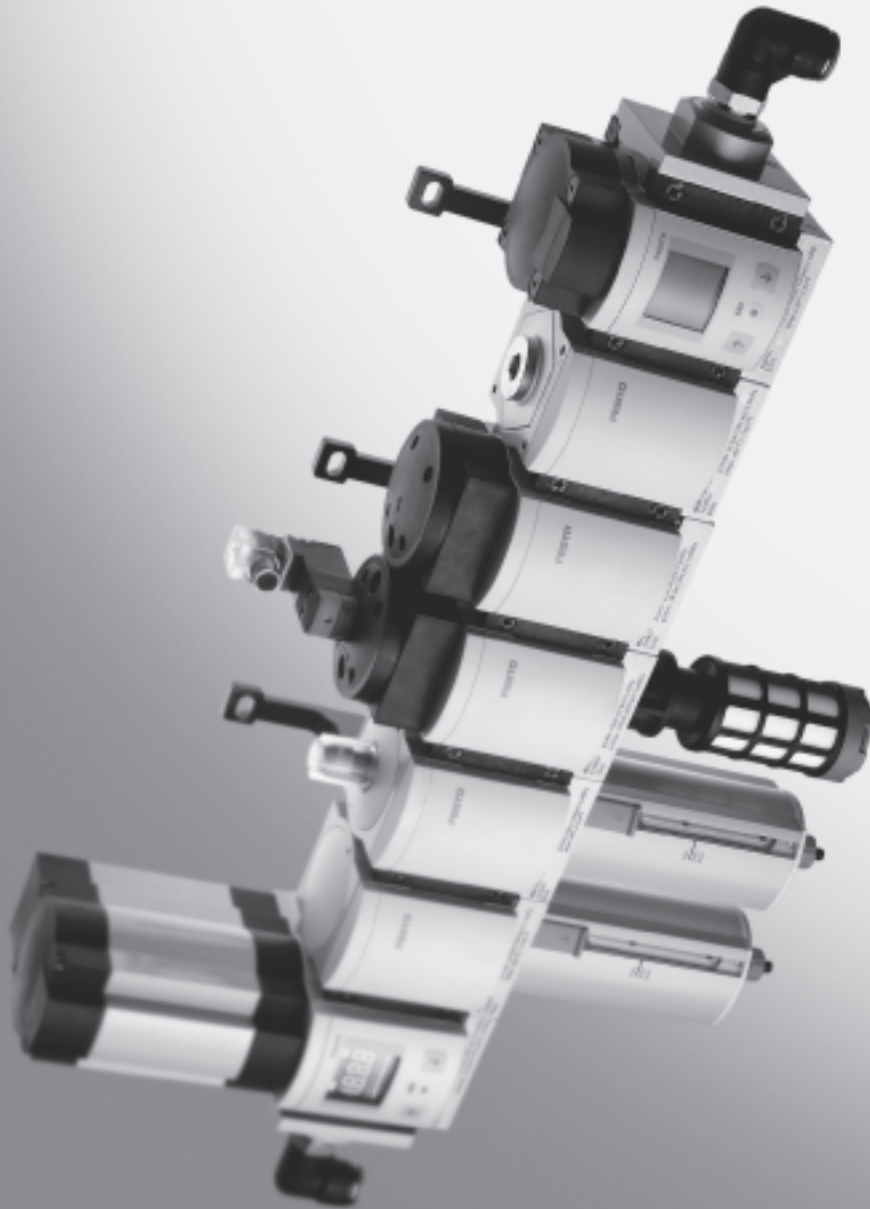


Wide range of configuration options

→ www.festo.com/en/engineering



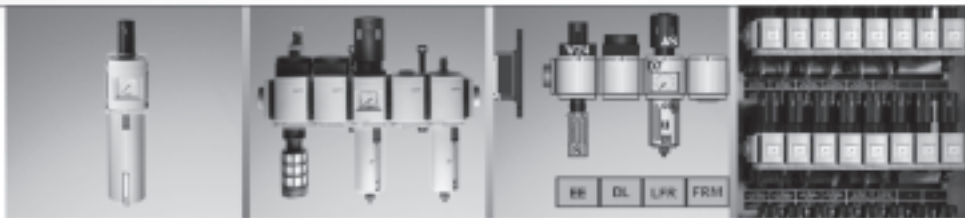
- Easy to assemble thanks to a modular structure
- Three sizes:
 - MS4 – grid dimension 40 mm
 - MS6 – grid dimension 62 mm
 - MS12 – grid dimension 124 mm
- 8 connection sizes: G¹/₈ to G2
- Modern design
- Compact with high flow rates: up to 22,000 l/min with size MS12
- Integrated safety functions
- Broad range of functions: Individual components, preassembled combinations ex-stock, application-specific combinations or complete turnkey solutions

Specified types in accordance with ATEX directive for potentially explosive atmospheres

→ www.festo.com/en/ex

Made-to-measure compressed air – MS series service units

Whether in terms of product range, functionality of components or variety of services, the MS series from Festo offers a fully integrated concept for application-specific solutions to your compressed-air preparation requirements. And the newly integrated remote adjustment and remote monitoring functions open up new dimensions for fault-free operation of your systems.



Individual modules

combinations ex-stock ...

individually configured,

or a complete solution!

Solutions for every application

From the individual component through preassembled combinations ex-stock and application-specific combinations to turnkey complete solutions.

Simplicity of selection

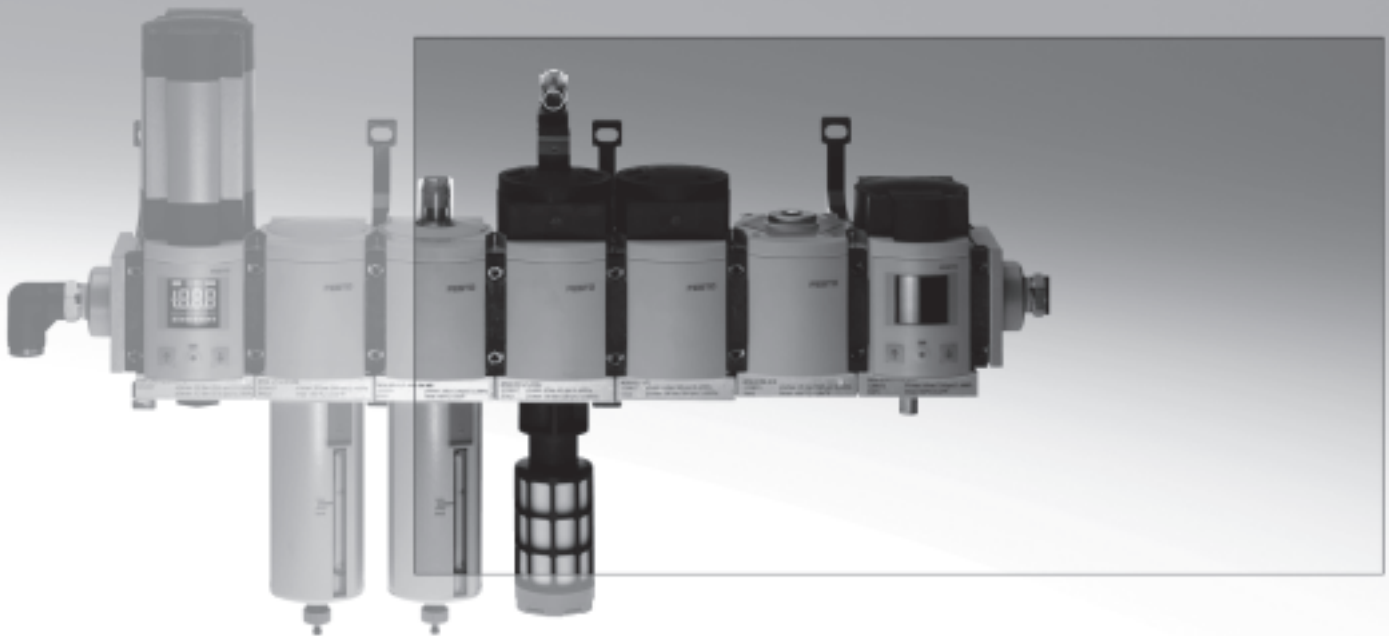
The choice is yours: using the FAST range and its free configurator you can easily configure your individual service units or entire combinations. Within no time at all you will have a solution perfectly tailored to your requirements, ready assembled and tested upon delivery. Alternatively this brochure provides an overview of the full MS series range and its almost limitless possibilities. You can conveniently import the appropriate CAD files directly from the electronic catalogue at any time.

Maximum machine availability through controlled processes

Reliable compressed air supply to systems. Made possible by the ultra-modern functional modules of the MS series with integrated sensors and remote adjustment function.

Performance that yields its own rewards

Maximum flow rates combined with minimum space requirement mean a smaller size can often be used than would be the case with comparable service units. Flow rates up to 22,000 l/min with MS12. This ensures an adequate supply to your actuators and delivers a flow rate performance similar to that of centralised compressed air preparation.

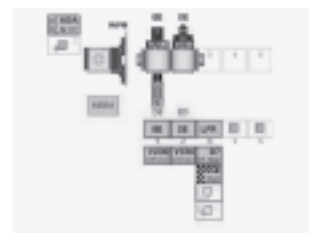
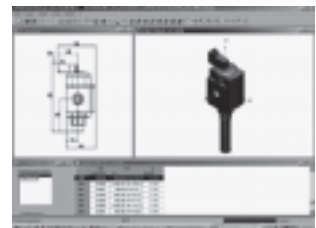


Freely combinable functional modules

All functions of compressed air preparation are brought together in one product range: pressure regulators, on/off and soft/start valves, filters, dryers, sensors and lubricators offer the right solution for every task. Freely combinable thanks to their modular structure.

Free services included

CAD models and a configurator for easy selection of application-specific individual devices and combinations (MSB4 and MSB6) can be found under www.festo.com/ms



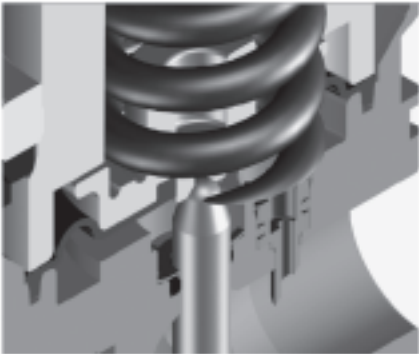
MS series service units – more than standard!



Smartmount connection system

Simply connect the high-precision die-cast aluminium housings in series – no intermediate blocks are needed. The positive-locking connection needs just one seal between the individual service units for leak-free manifold mounting.

Time-saving replacement: individual modules can be replaced without dismantling the entire unit. Easy installation with the wall mounting bracket WPM: simply attach the bracket to the wall and then mount the assembled combination – finished!



Rollflex membrane

The new MS regulator family with fabric-reinforced bellows dramatically increases flow rate performance – and also service life. The end result is an even more reliable compressed air supply for your actuators.



One Seal return venting

Avoid the “Monday morning effect” with integrated return venting. This system also saves the return flow components thanks to the return venting function of the regulator via the main seat integrated as standard.

Integrated safety and reliability

The locking filter bowls – optionally in metal design – offer maximum safety for man and machine while the lockable valves fitted as standard provide maximum control of the operating

pressure. Also available soft-start valves, filter pollution indicator and fully automatic condensate drain for reliable operation of your system.



MS series service units

Product range overview



MS series service units

2.0

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]						Grade of filtration [µm]						
				0.05	0.05	0.1	0.3	0.1	0.5	0.01	1	5	40			
										
Code			AG...	D2	D4	D5	D6	D7	D8	A	B	C	E			
Service units																
MSB-FRC		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	■	■		
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	-	■	■	
		12	-													
Service unit combinations (further variants can be ordered using the configurator → www.festo.com/en/engineering)																
MSB		4	G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	-	■	■	
		6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	-	-	■	■
		12	-													
Individual devices																
Filter regulators MS-LFR		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-	■	■	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-	-	■	■
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	■	■	■	-	-	-	-	■	■
Filters MS-LF		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	■	■	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-	■	■
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-	■	■
Fine and micro filters MS-LFM		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	■	■	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	■	■	-	-	-	
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	-	-	-	
Active carbon filter MS-LFX		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-	-	
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-	-	
Pressure regulators MS-LR		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-	-	-	
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-	-	-	
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	■	■	■	-	-	-	-	-	
Pressure regulators MS-LRB		4	G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-	-	-	
		6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-	-	-	
		12	-													
Precision pressure regulators MS-LRP		4	-													
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-	-	-	
		12	-													
Precision pressure regulators MS-LRPB		4	-													
		6	G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-	-	-	
		12	-													

MS series service units

Product range overview



Type	Size	Bowl guard		Condensate drain				Pressure display				Actuator lock		Options		→Page	
		Plastic bowl guard	Metal bowl	Manual rotary	Semi-automatic	Fully automatic	External, fully automatic, electrical	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G 1/8	Adapter plate for EN pressure gauge G 1/4	Pressure sensor with display	Rotary knob, lockable	Rotary knob, long	Silencer		Flow direction from right to left
Code		R	U	M	H	V	E...	VS	AG	A8	A4	AD...	AS	LD	S	Z	
Service units																	
MSB-FRC	4	■	-	■	-	■	-	-	■	-	-	-	■	-	-	■	3/2.11-0
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Service unit combinations																	
MSB	4	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	3/2.11-0
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Individual devices																	
Filter regulators MS-LFR	4	■	■	■	■	■	-	■	■	■	■	■	■	■	-	■	3/2.12-1
	6	■	■	■	■	■	■	■	■	-	■	■	■	■	-	■	
	12	-	■	■	-	■	■	■	■	-	■	-	■	■	-	■	3/2.22-0
Filters MS-LF	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	3/2.13-0, 3/2.13-2
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	3/2.23-0, 3/2.23-2
Fine and micro filters MS-LFM	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	3/2.13-0, 3/2.13-10
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	3/2.23-0, 3/2.23-7
Active carbon filter MS-LFX	4	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	3/2.13-0, 3/2.13-22
	6	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	3/2.23-0, 3/2.23-14
Pressure regulators MS-LR	4	-	-	-	-	-	-	■	■	■	■	■	■	■	-	■	3/2.14-0
	6	-	-	-	-	-	-	■	■	-	■	■	■	■	-	■	
	12	-	-	-	-	-	-	■	■	-	■	-	■	■	-	■	3/2.24-0
Pressure regulators MS-LRB	4	-	-	-	-	-	-	■	■	■	■	■	■	■	-	■	3/2.14-12
	6	-	-	-	-	-	-	■	■	-	■	■	■	■	-	■	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Precision pressure regulators MS-LRP	4	-	-	-	-	-	-	■	-	■	■	■	■	■	-	■	3/2.14-24
	6	-	-	-	-	-	-	■	-	■	■	■	■	■	-	■	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Precision pressure regulators MS-LRPB	4	-	-	-	-	-	-	■	-	■	■	■	■	■	-	■	3/2.14-38
	6	-	-	-	-	-	-	■	-	■	■	■	■	■	-	■	
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

MS series service units

Product range overview



MS series service units

2.0

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]				Supply voltage				
				0.3 ... 4	0.3 ... 7	0.5 ... 12	0.5 ... 16	24 V DC, connection pattern to EN 175301	24 V DC, connection pattern M12 to DESINA	110 V AC, connection pattern to EN 175301	230 V AC, connection pattern to EN 175301	
Code			AG...	D5	D6	D7	D8	V24	V24P	V110	V230	
Individual devices												
Electrical pressure regulators MS-LRE		4	–									
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	■	■	■	■	–	–	–	–
		12	–									
Lubricator MS-LOE		4	G $\frac{1}{8}$, G $\frac{1}{4}$	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	–	–	–	–
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	–	–	–	–
		12	–	G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$, G2	–	–	–	–	–	–	–	–
Manual on-off valves MS-EM(1)		4	G $\frac{1}{8}$, G $\frac{1}{4}$	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	–	–	–	–
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	–	–	–	–
		12	–	G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$, G2	–	–	–	–	–	–	–	–
Electrical on-off valves MS-EE		4	G $\frac{1}{8}$, G $\frac{1}{4}$	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	■	–	■	■
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	■	–	■	■
		12	–	G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$, G2	–	–	–	–	■	■	■	■
Pneumatic soft-start valves MS-DL		4	G $\frac{1}{8}$, G $\frac{1}{4}$	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	–	–	–	–
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	–	–	–	–
		12	–	G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$, G2	–	–	–	–	–	–	–	–
Electrical soft-start valves MS-DE		4	G $\frac{1}{8}$, G $\frac{1}{4}$	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	■	–	■	■
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	■	–	■	■
		12	–	G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$, G2	–	–	–	–	■	■	■	■
Soft start and exhaust valves MS-SV		4	–									
		6	G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	■	–	–	–
		12	–									
Membrane air dryers MS-LDM1		4	G $\frac{1}{8}$, G $\frac{1}{4}$	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	–	–	–	–
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	–	–	–	–
		12	–									

MS series service units

Product range overview



Type	Size	Bowl guard		Pressure display					Options		→Page
		Plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G 1/8	Adapter plate for EN pressure gauge G 1/4	Pressure sensor with display	Silencer	Flow direction from right to left	
Individual devices											
Electrical pressure regulators MS-LRE	4	-									3/2.14-52
	6	-	-	■	■	-	■	-	-	■	
	12	-									
Lubricator MS-LOE	4	■	■	-	-	-	-	-	-	■	3/2.15-0
	6	■	■	-	-	-	-	-	-	■	
	12	-	■	-	-	-	-	-	-	■	3/2.25-0
Manual on-off valves MS-EM(1)	4	-	-	■	■	■	■	■	■	■	3/2.16-0, 3/2.16-3
	6	-	-	■	■	-	■	■	■	■	
	12	-	-	■	■	-	■	-	■	■	3 / 2.26-1, 3 / 2.26-4
Electrical on-off valves MS-EE	4	-	-	■	■	■	■	■	■	■	3/2.16-0, 3/2.16-8
	6	-	-	■	■	-	■	■	■	■	
	12	-	-	■	■	-	■	-	■	■	3 / 2.26-1, 3 / 2.26-8
Pneumatic soft-start valves MS-DL	4	-	-	■	■	■	■	■	-	■	3/2.16-0, 3/2.16-16
	6	-	-	■	■	-	■	■	-	■	
	12	-	-	■	■	-	■	-	-	■	3 / 2.26-1, 3 / 2.26-12
Electrical soft-start valves MS-DE	4	-	-	■	■	■	■	■	-	■	3/2.16-0, 3/2.16-21
	6	-	-	■	■	-	■	■	-	■	
	12	-	-	■	■	-	■	-	-	■	3 / 2.26-1, 3 / 2.26-16
Soft start and exhaust valves MS-SV	4	-									3/2.16-28
	6	-	-	■	■	-	■	■	■	■	
	12	-									
Membrane air dryers MS-LDM1	4	-	■	-	-	-	-	-	-	■	3/2.17-0
	6	-	■	-	-	-	-	-	-	■	
	12	-									




MS series service units

Product range overview



MS series service units

2.0

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]				Supply voltage				
				0.3	0.3	0.5	0.5	24 V DC, connection pattern to EN 175301	24 V DC, connection pattern M12 to DESINA	110 V AC, connection pattern to EN 175301	230 V AC, connection pattern to EN 175301	
Code			AG...	D5	D6	D7	D8	V24	V24P	V110	V230	
Individual devices												
Branching modules MS-FRM		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-
Distributor blocks MS-FRM-FRZ		4	G1/4	-	-	-	-	-	-	-	-	-
		6	G1/2	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-
Flow sensors MS-SFE		4	-	-	-	-	-	-	-	-	-	-
		6	G1/2	G1/2	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-

MS series service units

Product range overview



Type	Size	Pressure display					Switch output		Options		→Page
		Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G 1/8	Adapter plate for EN pressure gauge G 1/4	Pressure sensor with display	2x PNP	2x NPN	Silencer	Flow direction from right to left	
		VS	AG	A8	A4	AD...	P2	N2	S	Z	
Individual devices											
Branching modules MS-FRM	4	■	■	■	■	■	-	-	-	■	3/2.18-0
	6	■	■	-	■	■	-	-	-	■	
	12	■	-	-	-	-	-	-	-	-	3 / 2.28-0
Distributor blocks MS-FRM-FRZ	4	-	-	-	-	-	-	-	-	-	3/2.18-10
	6	-	-	-	-	-	-	-	-	-	
	12	-	-	-	-	-	-	-	-	-	
Flow sensors MS-SFE	4	-	-	-	-	-	-	-	-	-	3 / 2.19-0
	6	-	-	-	-	-	■	■	-	■ ¹⁾	
	12	-	-	-	-	-	-	-	-	-	

1) Can only be ordered using the configurator → www.festo.com/en/engineering

Service unit combinations MSB4/MSB6, MS series



Product range overview

MS4/MS6 series service units
Service units

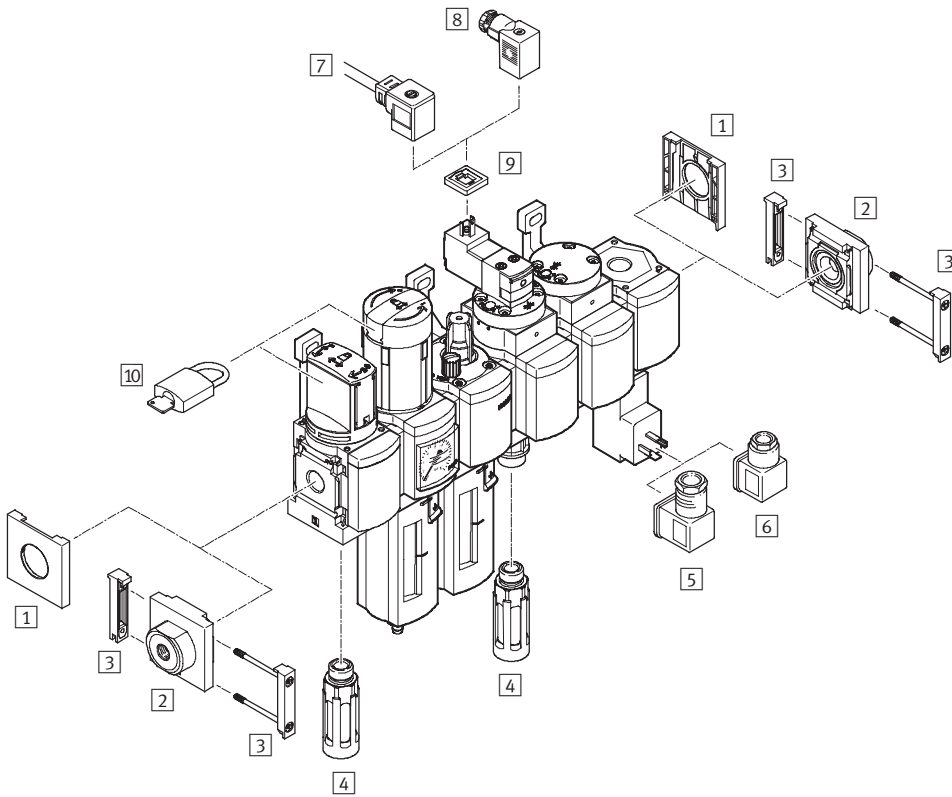
2.11


Combinations						
consisting of:						
On-off valve manually actuated	EM1	-	■	-	■	■
Filter regulator with pressure gauge, lockable	LFR	■	■	■	■	■
Pressure regulator with pressure gauge, lockable	LR	-	-	-	-	-
Filter	LF	-	-	-	-	-
Lubricator	LOE	■	■	■	■	-
On-off valve solenoid actuated	EE	-	-	■	■	-
Soft-start valve pneumatically actuated	DL	-	-	■	■	-
Branching module with pressure switch	FRM	-	■	-	■	-
Mounting bracket	WP	-	■	■	■	■
Type codes → Page		3/2.11-2	3/2.11-10	3/2.11-10	3/2.11-10	3/2.11-10
Technical data → Page		3/2.11-3	3/2.11-11	3/2.11-14	3/2.11-18	3/2.11-22

Combinations						
consisting of:						
On-off valve manually actuated	EM1	-	■	■	■	-
Filter regulator with pressure gauge, lockable	LFR	■	■	■	■	-
Pressure regulator with pressure gauge, lockable	LR	-	-	-	-	■
Filter	LF	-	-	-	-	■
Lubricator	LOE	-	-	-	■	■
On-off valve solenoid actuated	EE	■	-	■	-	-
Soft-start valve pneumatically actuated	DL	■	-	■	-	-
Branching module with pressure switch	FRM	-	■	■	-	-
Mounting bracket	WP	■	■	■	■	■
Type codes → Page		3/2.11-10	3/2.11-10	3/2.11-10	3/2.11-10	3/2.11-10
Technical data → Page		3/2.11-25	3/2.11-29	3/2.11-32	3/2.11-36	3/2.11-39

Service unit combinations MSB4/MSB6, MS series

Peripherals overview



-  - Note
 The choice of accessories depends on the selected service unit combination.
 Range of accessories
 → Peripherals pages of the individual devices

Mounting attachments and accessories		→ Page
1	Cover cap MS4/6-END	3/2.31-3
2	Connecting plate MS4/6-AG...	3/2.31-2
3	Module connector MS4/6-MV	3/2.31-9
4	Silencer U	3/2.31-25
5	Angled socket PEV-¼-WD-LED	3/2.31-23
6	Plug socket MSSD-C-4P	3/2.31-23
7	Plug socket with cable KMEB	3/2.31-23
8	Plug socket MSSD-EB	3/2.31-23
9	Illuminating seal MEB-LD	3/2.31-23
10	Padlock LRVS-D	3/2.31-25
-	Mounting bracket (for service unit MSB-FRC) MS4/6-WP/WPB/WPM	3/2.31-7, 3/2.31-8

Service units MSB4/MSB6-FRC, MS series

Type codes



MS4/MS6 series service units
Service units

2.11

MSB 6 - 3/8 - FRC2:J6 M1

Series	
MSB	Service unit

Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm

Pneumatic connection	
1/8	Thread G1/8
1/4	Thread G1/4
3/8	Thread G3/8
1/2	Thread G1/2

Service unit consisting of:	
<ul style="list-style-type: none"> • Filter regulator with pressure gauge, lockable standard type rotary knob • Lubricator 	

Pressure regulation range 0.3 ... 7 bar	
Plastic bowl guard	
FRC3:J7	Grade of filtration 5 µm, manual rotary condensate drain
FRC4:J8	Grade of filtration 5 µm, fully automatic condensate drain
FRC1:J5	Grade of filtration 40 µm, manual rotary condensate drain
FRC2:J6	Grade of filtration 40 µm, fully automatic condensate drain

Pressure regulation range 0.5 ... 12 bar	
Plastic bowl guard	
FRC7:J3	Grade of filtration 5 µm, manual rotary condensate drain
FRC8:J4	Grade of filtration 5 µm, fully automatic condensate drain
FRC5:J1	Grade of filtration 40 µm, manual rotary condensate drain
FRC6:J2	Grade of filtration 40 µm, fully automatic condensate drain

Metal bowl	
FRC11:J9	Grade of filtration 5 µm, manual rotary condensate drain
FRC12:J10	Grade of filtration 5 µm, fully automatic condensate drain
FRC9:J11	Grade of filtration 40 µm, manual rotary condensate drain
FRC10:J12	Grade of filtration 40 µm, fully automatic condensate drain

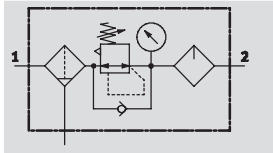
Lubricators	
M1	Plastic bowl guard
M2	Metal bowl

Service units MSB4/MSB6-FRC, MS series

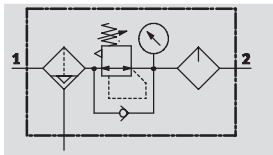
Technical data




Function

With condensate drain
manual rotary



With condensate drain
fully automatic



-  - Flow rate
800 ... 4,800 l/min
-  - Temperature range
-10 ... +60 °C
-  - Input pressure
1.5 ... 20 bar



- Filter, regulator and lubricator function in a single unit
- High flow rate and highly efficient removal of contaminants
- Good regulating characteristics with minimal pressure hysteresis
- Setting values are secured by locking the rotary knob
- Lockable rotary knob
- Two pressure regulation ranges: 0.3 ... 7 bar and 0.5 ... 12 bar
- Choice of filter cartridges: 5 µm or 40 µm
- With manual or integrated, fully automatic condensate drain

General technical data					
Size	MSB4		MSB6		
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Design	Filter regulator with pressure gauge Proportional standard mist lubricator				
Regulating function	With primary pressure compensation With secondary venting With return flow function Output pressure constant				
Type of mounting	Via accessories				
Assembly position	Vertical $\pm 5^\circ$				
Grade of filtration [µm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1) 40 (air purity class at the output 5.7.- to DIN ISO 8573-1)				
Bowl guard	Plastic bowl guard -		Plastic bowl guard Metal bowl guard		
Condensate drains	Manual rotary Fully automatic				
Actuator lock	Rotary knob with integrated lock				
Pressure regulation range [bar]	0.3 ... 7 0.5 ... 12				
Pressure indicator	With pressure gauge				

-  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Service units MSB4/MSB6-FRC, MS series

Technical data



MS4/MS6 series service units
Service units

2.11

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]						
Size	MSB4			MSB6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
Pressure regulation range 0.3... 7 bar						
Grade of filtration	5 μ m	900	1,300	2,000	4,400	4,600
	40 μ m	950	1,400	2,100	4,600	4,800
Pressure regulation range 0.5... 12 bar						
Grade of filtration	5 μ m	800	850	1,700	3,400	3,600
	40 μ m	850	900	1,900	3,500	3,700

1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar.

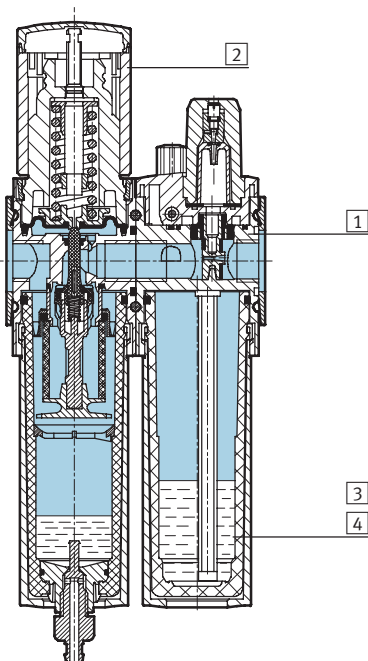
Operating and environmental conditions				
Condensate drains		Manual rotary		Fully automatic
Size	MSB4	MSB6	MSB4	MSB6
Supply pressure [bar]	1.5 ... 14		1.5 ... 12	
Operating medium	Compressed air			
Ambient temperature [°C]	-10 ... +60		+5 ... +60	
Temperature of medium [°C]	-10 ... +60		+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60	
Corrosion resistance	CRC ¹⁾		2	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]		
Size	MSB4	MSB6
With plastic bowl guard	500	1,495
With metal bowl guard	-	1,713

Materials

Sectional view



Service unit	
1	Body Die-cast aluminium
2	Regulating knob Polyamide/polyacetate
3	Plastic bowl guard Polycarbonate
4	Metal bowl guard Wrought aluminium alloy
-	Seals Nitrile rubber

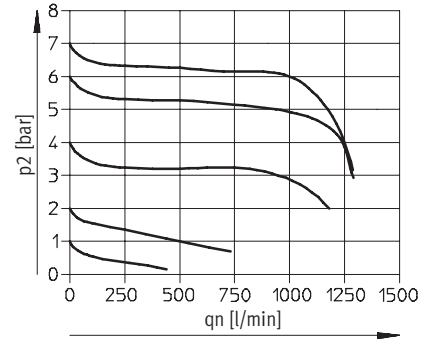
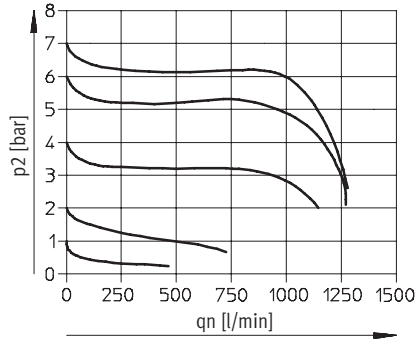
Service units MSB4/MSB6-FRC, MS series

Technical data



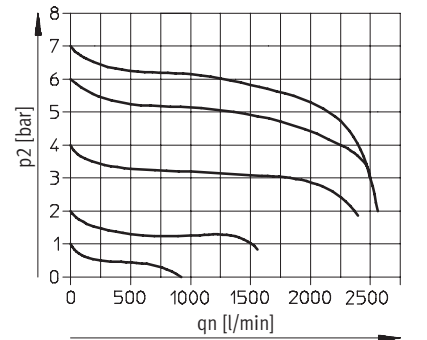
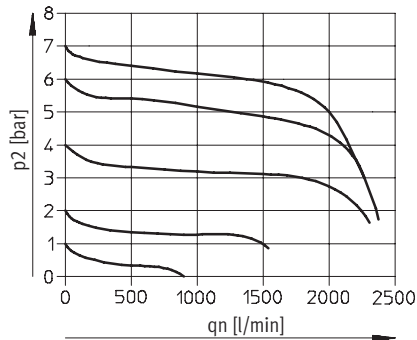
Standard flow rate q_n as a function of output pressure p_2
 Pressure regulation range 0.3 ... 7 bar Grade of filtration 5 μm Grade of filtration 40 μm
 MSB4-1/8

Primary pressure $p_1 = 10$ bar



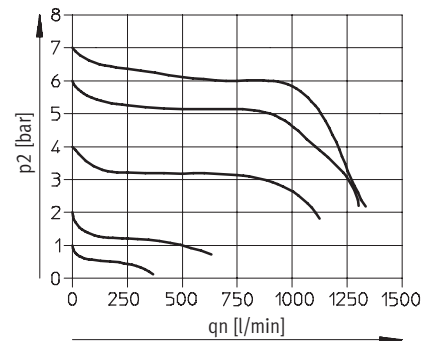
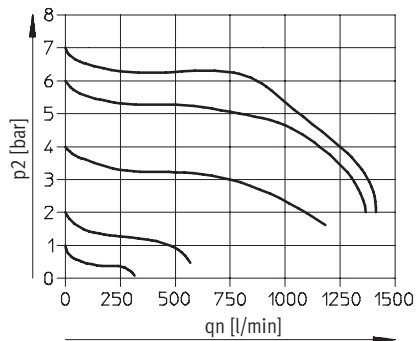
MSB4-1/4

Primary pressure $p_1 = 10$ bar



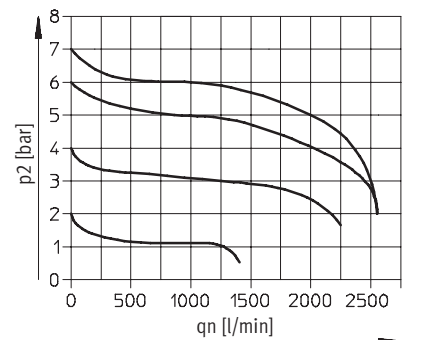
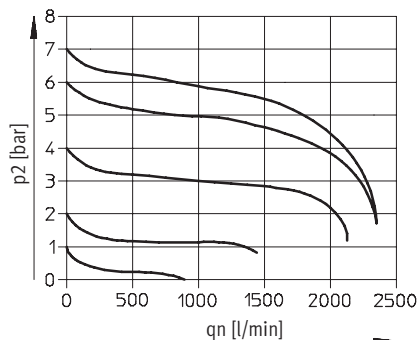
Pressure regulation range 0.5 ... 12 bar Grade of filtration 5 μm Grade of filtration 40 μm
 MSB4-1/8

Primary pressure $p_1 = 10$ bar



MSB4-1/4

Primary pressure $p_1 = 10$ bar



Service units MSB4/MSB6-FRC, MS series

Technical data



MS4/MS6 series service units
Service units

Standard flow rate q_n as a function of output pressure p_2

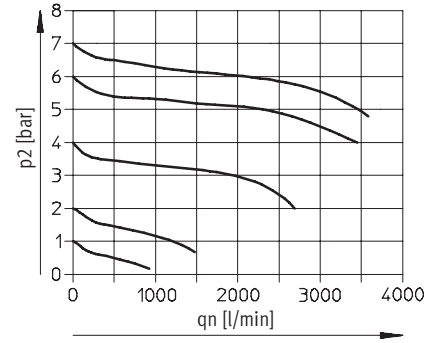
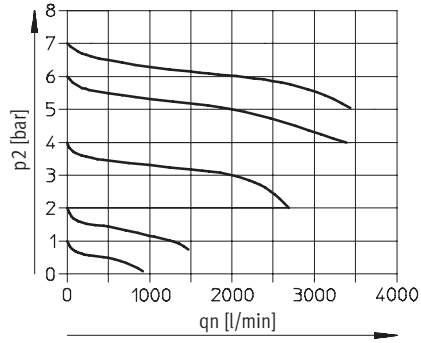
Pressure regulation range 0.3 ... 7 bar

Grade of filtration 5 μm

Grade of filtration 40 μm

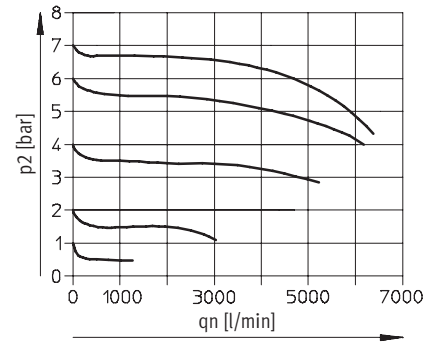
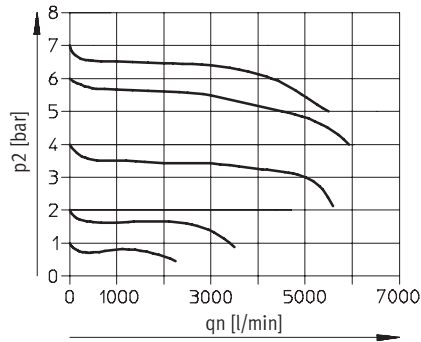
MSB6-1/4

Primary pressure $p_1 = 10$ bar



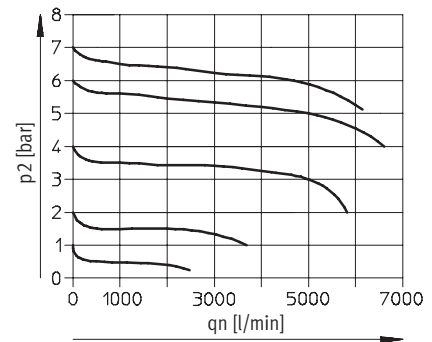
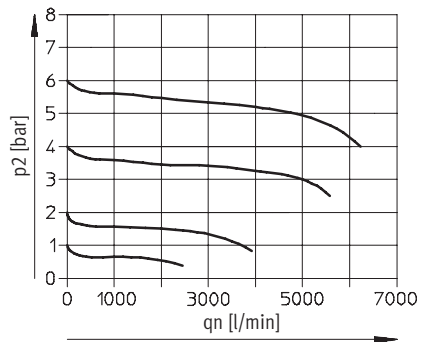
MSB6-3/8

Primary pressure $p_1 = 10$ bar



MSB6-1/2

Primary pressure $p_1 = 10$ bar



Service units MSB4/MSB6-FRC, MS series

Technical data



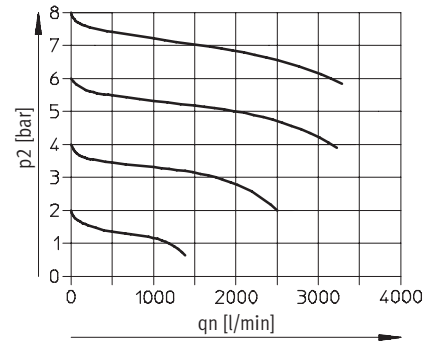
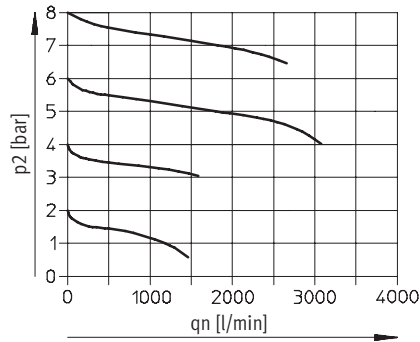
Standard flow rate q_n as a function of output pressure p_2

Pressure regulation range 0.5 ... 12 bar Grade of filtration 5 μm

Grade of filtration 40 μm

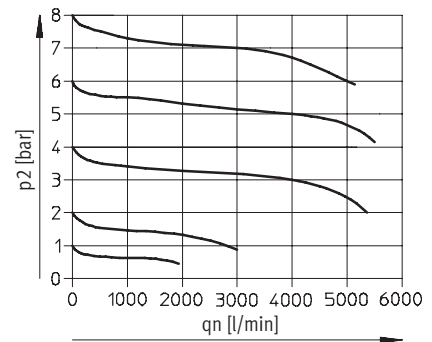
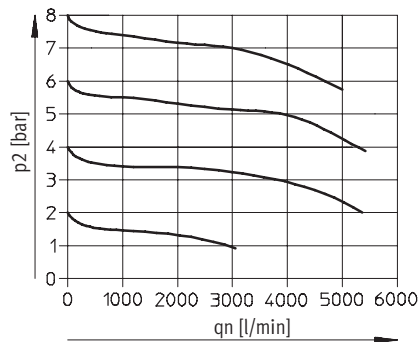
MSB6-1/4

Primary pressure $p_1 = 10$ bar



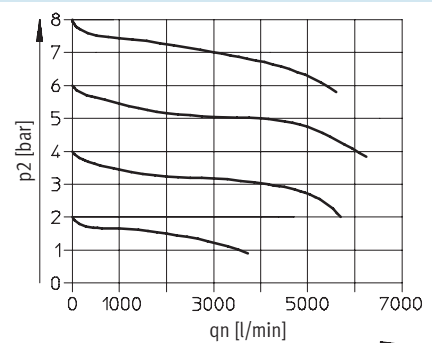
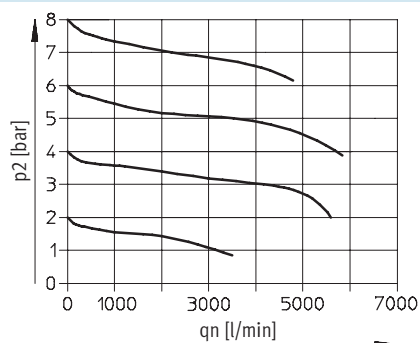
MSB6-3/8

Primary pressure $p_1 = 10$ bar



MSB6-1/2

Primary pressure $p_1 = 10$ bar



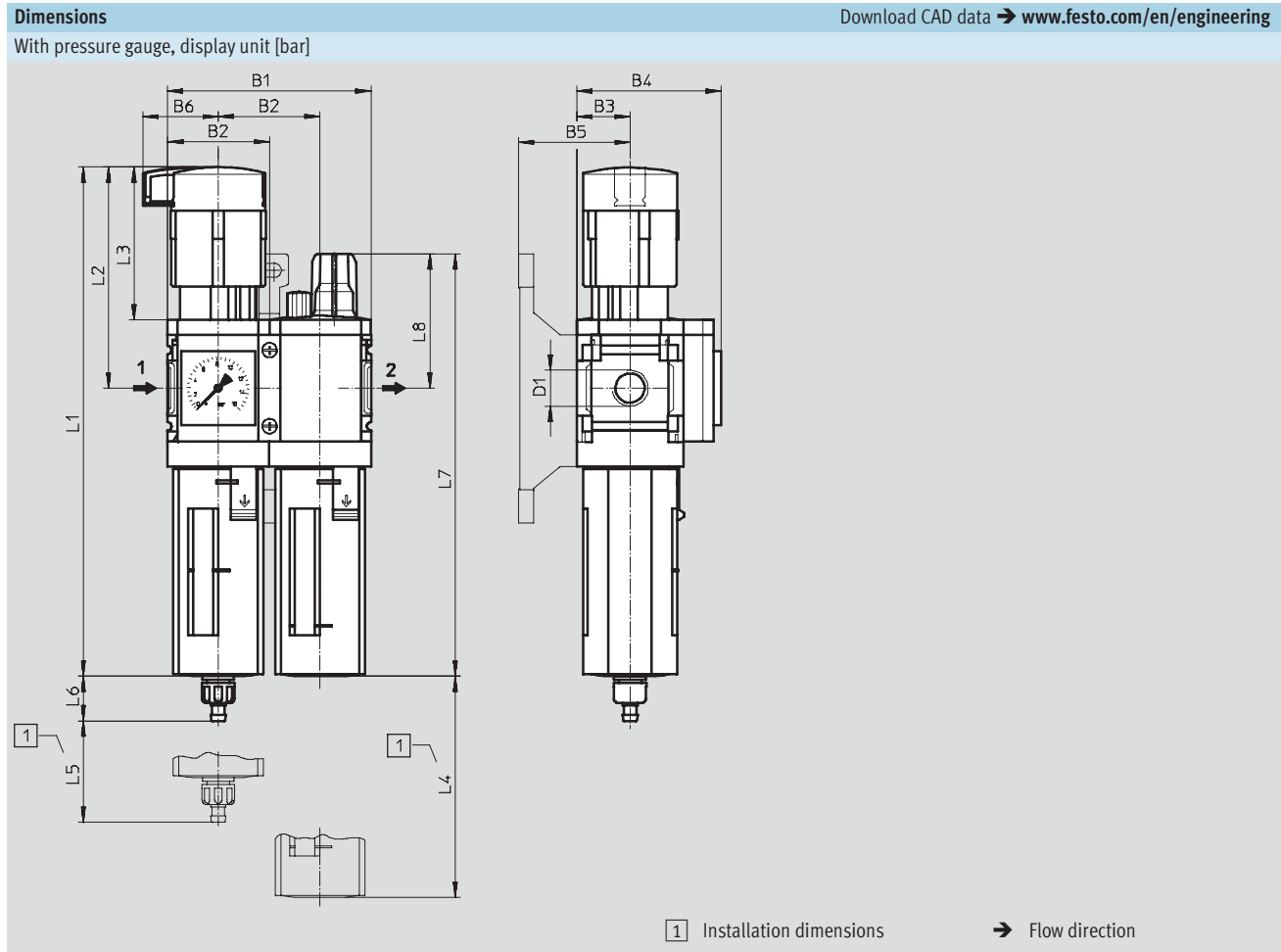
Service units MSB4/MSB6-FRC, MS series

Technical data



MS4/MS6 series service units
Service units

2.11



Type	B1	B2	B3	B4	B5	B6	D1	L1	L2	L3	L4	L5	L6 Condensate drain		L7	L8
													manual rotary	fully auto- matic		
MSB4-1/8	80.4	40.2	21	57	44	29.7	G1/8	201	87	60	80	25	17.7	20.4	167	53
MSB4-1/4							G1/4									
MSB6-1/4	124	62	31	77	54	38.8	G1/4	284.8	134.5	95.5	130	68	15.8	18.5	215.3	65.6
MSB6-3/8							G3/8									
MSB6-1/2							G1/2									

• † - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Service units MSB4/MSB6-FRC, MS series

FESTO

Technical data

Ordering data						
Pressure regulation range 0.3 ... 7 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{8}$	531 129	MSB4- $\frac{1}{8}$ -FRC3:J7M1	531 125	MSB4- $\frac{1}{8}$ -FRC1:J5M1
		G $\frac{1}{4}$	531 113	MSB4- $\frac{1}{4}$ -FRC3:J7M1	531 109	MSB4- $\frac{1}{4}$ -FRC1:J5M1
	fully automatic	G $\frac{1}{8}$	531 131	MSB4- $\frac{1}{8}$ -FRC4:J8M1	531 127	MSB4- $\frac{1}{8}$ -FRC2:J6M1
		G $\frac{1}{4}$	531 115	MSB4- $\frac{1}{4}$ -FRC4:J8M1	531 111	MSB4- $\frac{1}{4}$ -FRC2:J6M1
MSB6	manual rotary	G $\frac{1}{4}$	530 264	MSB6- $\frac{1}{4}$ -FRC3:J7M1	530 254	MSB6- $\frac{1}{4}$ -FRC1:J5M1
		G $\frac{3}{8}$	530 288	MSB6- $\frac{3}{8}$ -FRC3:J7M1	530 278	MSB6- $\frac{3}{8}$ -FRC1:J5M1
		G $\frac{1}{2}$	530 240	MSB6- $\frac{1}{2}$ -FRC3:J7M1	530 230	MSB6- $\frac{1}{2}$ -FRC1:J5M1
	fully automatic	G $\frac{1}{4}$	530 266	MSB6- $\frac{1}{4}$ -FRC4:J8M1	530 262	MSB6- $\frac{1}{4}$ -FRC2:J6M1
		G $\frac{3}{8}$	530 290	MSB6- $\frac{3}{8}$ -FRC4:J8M1	530 286	MSB6- $\frac{3}{8}$ -FRC2:J6M1
		G $\frac{1}{2}$	530 242	MSB6- $\frac{1}{2}$ -FRC4:J8M1	530 238	MSB6- $\frac{1}{2}$ -FRC2:J6M1

Ordering data						
Pressure regulation range 0.5 ... 12 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{8}$	531 137	MSB4- $\frac{1}{8}$ -FRC7:J3M1	531 133	MSB4- $\frac{1}{8}$ -FRC5:J1M1
		G $\frac{1}{4}$	531 121	MSB4- $\frac{1}{4}$ -FRC7:J3M1	531 117	MSB4- $\frac{1}{4}$ -FRC5:J1M1
	fully automatic	G $\frac{1}{8}$	531 139	MSB4- $\frac{1}{8}$ -FRC8:J4M1	531 135	MSB4- $\frac{1}{8}$ -FRC6:J2M1
		G $\frac{1}{4}$	531 123	MSB4- $\frac{1}{4}$ -FRC8:J4M1	531 119	MSB4- $\frac{1}{4}$ -FRC6:J2M1
MSB6	manual rotary	G $\frac{1}{4}$	530 272	MSB6- $\frac{1}{4}$ -FRC7:J3M1	530 268	MSB6- $\frac{1}{4}$ -FRC5:J1M1
		G $\frac{3}{8}$	530 296	MSB6- $\frac{3}{8}$ -FRC7:J3M1	530 292	MSB6- $\frac{3}{8}$ -FRC5:J1M1
		G $\frac{1}{2}$	530 248	MSB6- $\frac{1}{2}$ -FRC7:J3M1	530 244	MSB6- $\frac{1}{2}$ -FRC5:J1M1
	fully automatic	G $\frac{1}{4}$	530 274	MSB6- $\frac{1}{4}$ -FRC8:J4M1	530 270	MSB6- $\frac{1}{4}$ -FRC6:J2M1
		G $\frac{3}{8}$	530 298	MSB6- $\frac{3}{8}$ -FRC8:J4M1	530 294	MSB6- $\frac{3}{8}$ -FRC6:J2M1
		G $\frac{1}{2}$	530 250	MSB6- $\frac{1}{2}$ -FRC8:J4M1	530 246	MSB6- $\frac{1}{2}$ -FRC6:J2M1
Metal bowl						
MSB6	manual rotary	G $\frac{1}{4}$	530 258	MSB6- $\frac{1}{4}$ -FRC11:J9M2	530 276	MSB6- $\frac{1}{4}$ -FRC9:J11M2
		G $\frac{3}{8}$	530 282	MSB6- $\frac{3}{8}$ -FRC11:J9M2	530 300	MSB6- $\frac{3}{8}$ -FRC9:J11M2
		G $\frac{1}{2}$	530 234	MSB6- $\frac{1}{2}$ -FRC11:J9M2	530 252	MSB6- $\frac{1}{2}$ -FRC9:J11M2
	fully automatic	G $\frac{1}{4}$	530 260	MSB6- $\frac{1}{4}$ -FRC12:J10M2	530 256	MSB6- $\frac{1}{4}$ -FRC10:J12M2
		G $\frac{3}{8}$	530 284	MSB6- $\frac{3}{8}$ -FRC12:J10M2	530 280	MSB6- $\frac{3}{8}$ -FRC10:J12M2
		G $\frac{1}{2}$	530 236	MSB6- $\frac{1}{2}$ -FRC12:J10M2	530 232	MSB6- $\frac{1}{2}$ -FRC10:J12M2

MS4 / MS6 series service units
Service units

2.11

Service unit combinations MSB4/MSB6, MS series

Type codes



MS4/MS6 series service units
Service units

2.11

MSB 6 - 1/2 : H7 N3 M2 - WP

Series	
MSB	Service unit combination

Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm

Pneumatic connection	
1/4	Thread G1/4
1/2	Thread G1/2

Service unit combination

On-off valve → 3/2.16-2

C3	MS...-EM1
----	-----------

Filters → 3/2.13-1

H1	MS...-LF-ERV
H2	MS...-LF-ERM
H3	MS...-LF-CRM
H4	MS...-LF-CRV
H7	MS...-LF-EUV
H8	MS...-LF-EUM

Filter regulator → 3/2.12-2

J1	MS...-LFR-D7-ERM-AS
J2	MS...-LFR-D7-ERV-AS
J3	MS...-LFR-D7-CRM-AS
J4	MS...-LFR-D7-CRV-AS

Pressure regulator → 3/2.14-2

N2	MS...-LR-D6-AS
N3	MS...-LR-D7-AS

Soft-start valve → 3/2.16-2

A1	MS...-DL
----	----------

Lubricator → 3/2.15-1

M1	MS...-LOE-R
M2	MS...-LOE-U

On-off valve → 3/2.16-2

D1	MS...-EE-V24
D7	MS...-EE-10V24

Branching module → 3/2.18-2

F3	MS...-FRM-Y
----	-------------

Type of mounting

WP	Mounting bracket
----	------------------

Further variants can be ordered using the modular system

Service unit combinations → www.festo.com/en/engineering

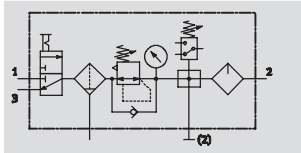
- Connection size
- Connecting plates
- Service unit equipment
- Alternative flow direction

Service unit combinations MSB4/MSB6, MS series

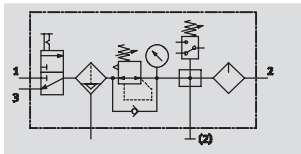
Technical data

Function

With condensate drain
manual rotary



With condensate drain
fully automatic



- - Flow rate
900 ... 3,300 l/min
- - Temperature range
-10 ... +60 °C
- - Pressure regulation
range
1 ... 12 bar



- On-off valve MS...-EM1 manually actuated
- Filter regulator MS...-LFR-D7
- Branching module MS...-FRM-Y with pressure switch without display
- Lubricator MS...-LOE-R
- Mounting bracket MS...-WP

- For filtered and lubricated compressed air
- Supply pressure can be opened and closed
- Output pressure is infinitely adjustable within the pressure regulation range
- The unit is vented when switched off
- Electrical pressure monitoring with adjustable switching pressure
- Removal of filtered and unlubricated compressed air at the branching module connections

General technical data		
Size	MSB4	MSB6
Pneumatic connection 1, 2, 3	G1/4	G1/2
Regulating function	With primary pressure compensation	
	With return flow function	
	With secondary venting	
	Output pressure constant	
Type of mounting	Via accessories	
Assembly position	Vertical ±5°	
Grade of filtration [µm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)	
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
	Fully automatic	
Actuator lock	Rotary knob with detent	
	Lockable with accessories	
Pressure regulation range [bar]	1 ... 12	
Pressure indicator	With pressure gauge	

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN [l/min]		
Size	MSB4	MSB6
Grade of filtration	5 µm	900
	40 µm	950
		3,200
		3,300

Service unit combinations MSB4/MSB6, MS series

Technical data



MS4/MS6 series service units
Service units

2.11

Operating and environmental conditions				
Condensate drain		Manual rotary		Fully automatic
Size	MSB4	MSB6	MSB4	MSB6
Supply pressure [bar]	1.5 ... 14	1.5 ... 18	1.5 ... 12	1.5 ... 12
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm			
Ambient temperature [°C]	-10 ... +60		+5 ... +60	
Temperature of medium [°C]	-10 ... +60		+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60	
Corrosion resistance	CRC ¹⁾	2		

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

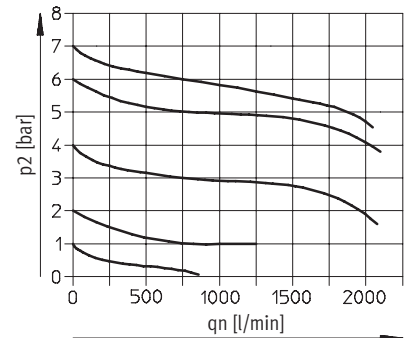
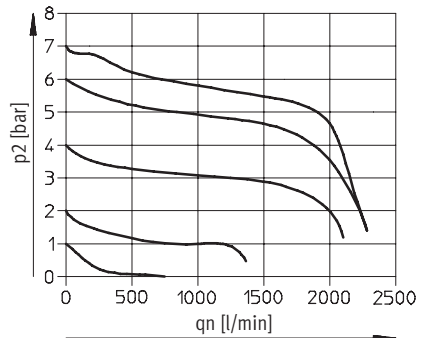
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,700	2,550
Mounting bracket	40	76

Note
Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

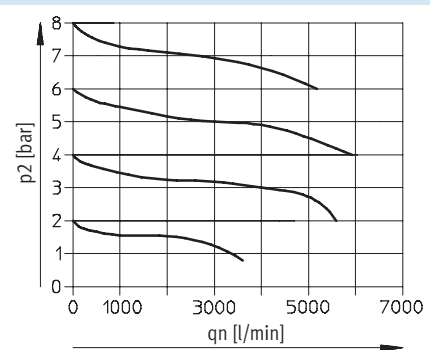
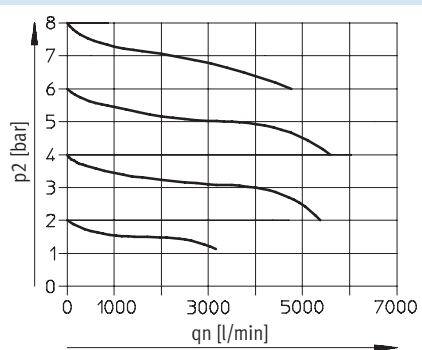
Pressure regulation range 1 ... 12 bar Grade of filtration 5 µm Grade of filtration 40 µm
MSB4-1/4

Primary pressure p1 = 10 bar



MSB6-1/2

Primary pressure p1 = 10 bar



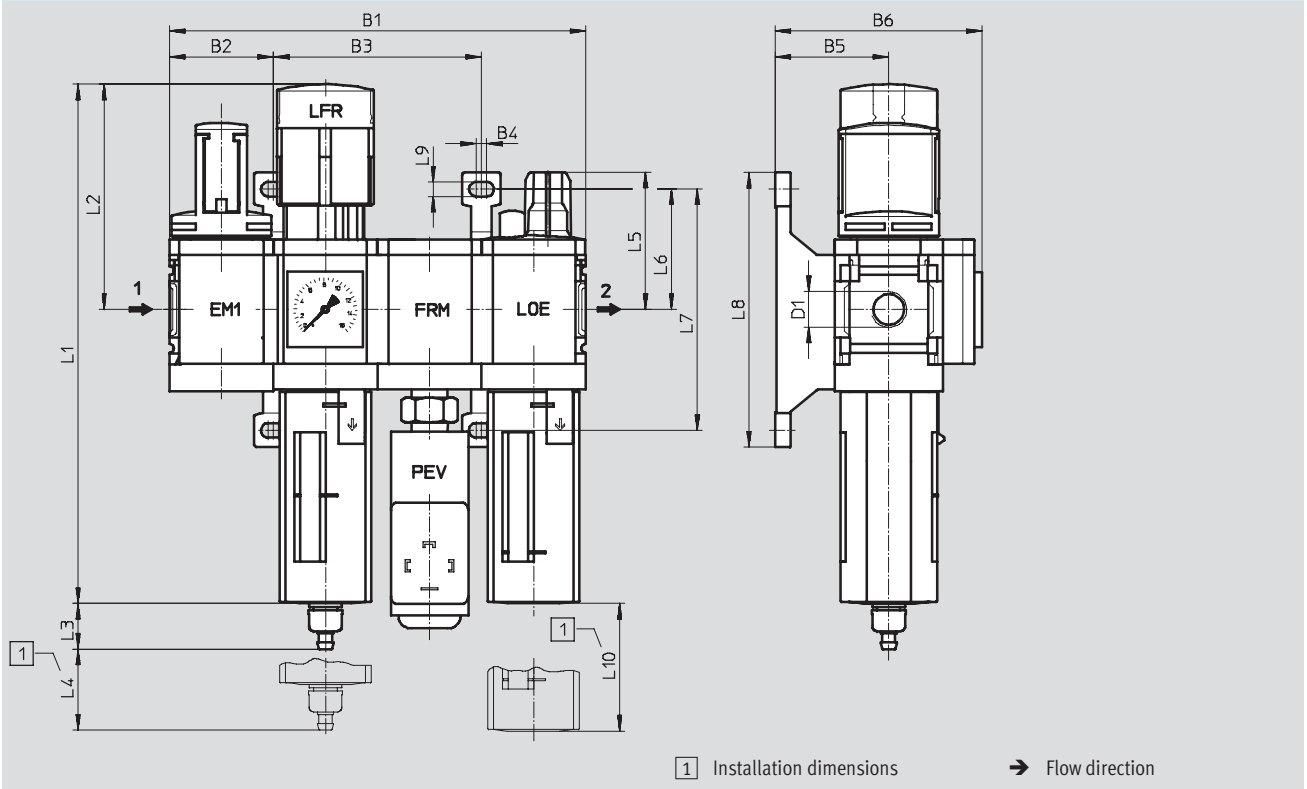
Service unit combinations MSB4/MSB6, MS series

Technical data



Dimensions Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



Type	B1	B2	B3	B4	B5	B6	D1	L1	L2
MSB4	160.8	40.2	80.4	4	44	80	G $\frac{1}{4}$	201	87
MSB6	248	62	124	4.5	54	100	G $\frac{1}{2}$	285	134.5

Type	L3 Condensate drain		L4	L5	L6	L7	L8	L9	L10
	manual rotary	fully auto- matic							
MSB4	17.7	20.4	25	53	46.5	93.2	106	5.6	80
MSB6	15.8	18.5	68	66	71	142	158	6.6	130

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data									
Pressure regulation range 1... 12 bar									
Size	Condensate drain	Connection	Grade of filtration 5 μ m				Grade of filtration 40 μ m		
			Part No.	Type	Part No.	Type	Part No.	Type	
Plastic bowl guard									
MSB4	manual rotary	G $\frac{1}{4}$	542 307	MSB4- $\frac{1}{4}$:C3J3F3M1-WP	542 295	MSB4- $\frac{1}{4}$:C3J1F3M1-WP			
	fully automatic	G $\frac{1}{4}$	542 313	MSB4- $\frac{1}{4}$:C3J4F3M1-WP	542 301	MSB4- $\frac{1}{4}$:C3J2F3M1-WP			
MSB6	manual rotary	G $\frac{1}{2}$	542 283	MSB6- $\frac{1}{2}$:C3J3F3M1-WP	542 271	MSB6- $\frac{1}{2}$:C3J1F3M1-WP			
	fully automatic	G $\frac{1}{2}$	542 289	MSB6- $\frac{1}{2}$:C3J4F3M1-WP	542 277	MSB6- $\frac{1}{2}$:C3J2F3M1-WP			

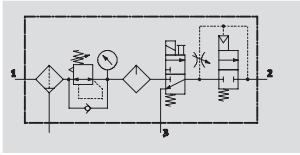
Service unit combinations MSB4/MSB6, MS series

Technical data

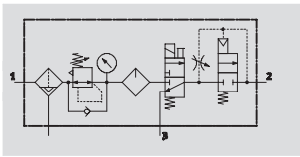


Function

With condensate drain
manual rotary



With condensate drain
fully automatic



- - Flow rate
550 ... 2,000 l/min
- - Temperature range
-10 ... +60 °C
- - Pressure regulation
range
4 ... 12 bar



- For filtered and lubricated compressed air
- Output pressure is infinitely adjustable within the pressure regulation range
- Gradual pressure build-up prevents sudden, unpredictable movements
- When supply pressure is closed, quick venting ensures rapid pressure reduction

- Filter regulator MS...-LFR-D7
- Lubricator MS...-LOE-R
- On-off valve MS...-EE-10V24 or MS...-EE-V24 solenoid actuated
- Soft-start valve MS...-DL pneumatically actuated
- Mounting bracket MS...-WP

General technical data		
Size	MSB4	MSB6
Pneumatic connection 1, 2, 3	G1/4	G1/2
Regulating function	With primary pressure compensation	
	With return flow function	
	With secondary venting	
	Output pressure constant	
Type of mounting	Via accessories	
Assembly position	Vertical ±5°	
Grade of filtration [µm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)	
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
	Fully automatic	
Actuator lock	Rotary knob with detent	
	Lockable with accessories	
Pressure regulation range [bar]	4 ... 9 (with on-off valve MS...-EE-10V24)	
	4 ... 12 (with on-off valve MS...-EE-V24)	
Pressure indicator	With pressure gauge	
Supply voltage [V DC]	24	

- - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN [l/min]		
Size	MSB4	MSB6
Grade of filtration	5 µm	1,900
	40 µm	2,000

Service unit combinations MSB4/MSB6, MS series

Technical data

Operating and environmental conditions									
	Pressure regulation range 4 ... 9 bar				Pressure regulation range 4 ... 12 bar				
Condensate drain	Manual rotary		Fully automatic		Manual rotary		Fully automatic		
Size	MSB4	MSB6	MSB4	MSB6	MSB4	MSB6	MSB4	MSB6	MSB6
Supply pressure [bar]	4.5 ... 10	4.5 ... 10	4.5 ... 10	4.5 ... 10	4.5 ... 14	4.5 ... 18	4.5 ... 12	4.5 ... 12	4.5 ... 12
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm								
Ambient temperature [°C]	-10 ... +50		+5 ... +50		-10 ... +60			+5 ... +60	
Temperature of medium [°C]	-10 ... +50		+5 ... +50		-10 ... +60			+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60		-10 ... +60			-10 ... +60	
Corrosion resistance	CRC ¹⁾		2						

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

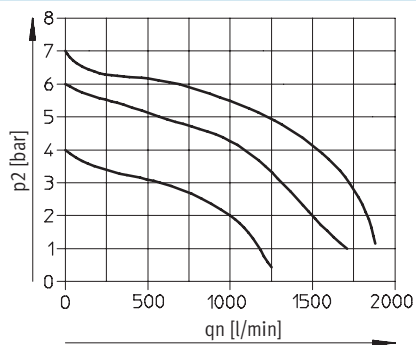
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,800	3,000
Mounting bracket	40	76

Note
 Materials → Technical data of the individual devices

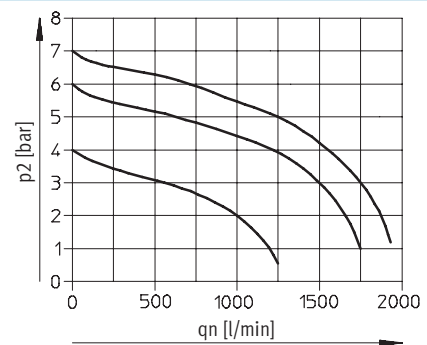
Standard flow rate qn as a function of output pressure p2

Pressure regulation range 4 ... 9 bar / 4 ... 12 bar
 MSB4-1/4

Primary pressure p1 = 10 bar

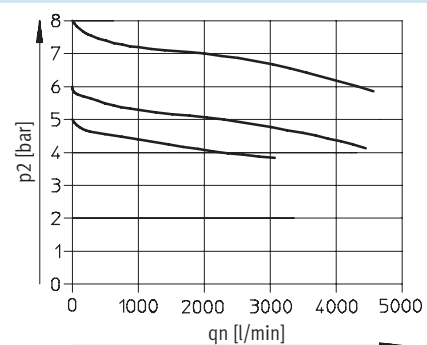
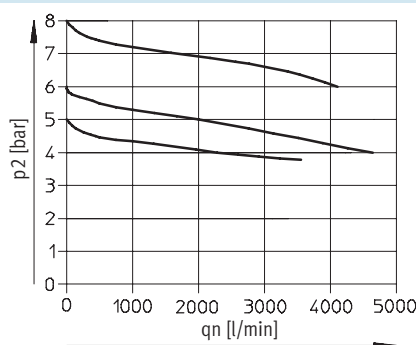


Grade of filtration 40 µm



MSB6-1/2

Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series



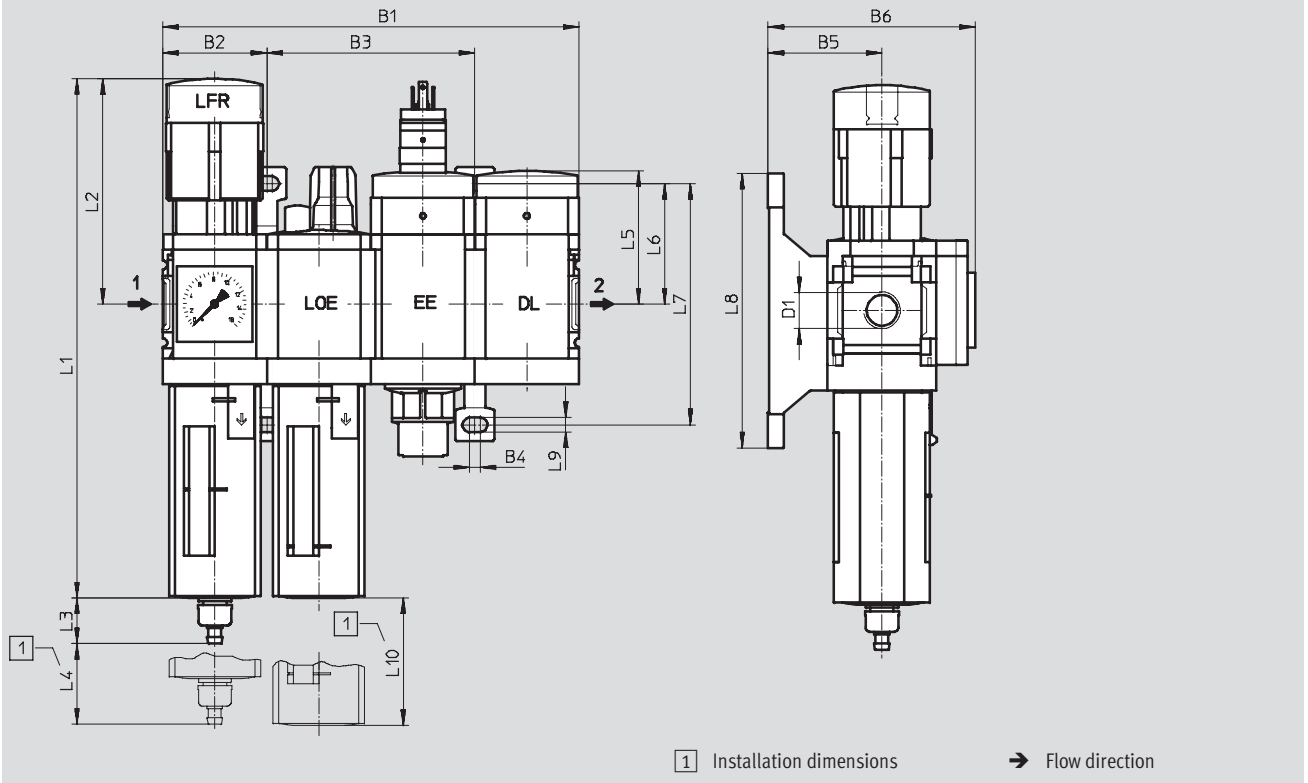
Technical data

MS4/MS6 series service units
Service units

2.11

Dimensions Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



Type	B1	B2	B3	B4	B5	B6	D1	L1	L2
MSB4	160.8	40.2	80.4	4	44	80	G $\frac{1}{4}$	201	87
MSB6	248	62	124	4.5	54	100	G $\frac{1}{2}$	285	134.5

Type	L3 Condensate drain		L4	L5	L6	L7	L8	L9	L10
	manual rotary	fully auto-matic							
MSB4	17.7	20.4	25	51.7	46.5	93.2	106	5.6	80
MSB6	15.8	18.5	68	71	71	142	158	6.6	130

- || - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Service unit combinations MSB4/MSB6, MS series

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Technical data

Ordering data						
Pressure regulation range 4 ... 9 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 632	MSB4- $\frac{1}{4}$:J3M1D7A1-WP	542 628	MSB4- $\frac{1}{4}$:J1M1D7A1-WP
	fully automatic	G $\frac{1}{4}$	542 634	MSB4- $\frac{1}{4}$:J4M1D7A1-WP	542 630	MSB4- $\frac{1}{4}$:J2M1D7A1-WP
MSB6	manual rotary	G $\frac{1}{2}$	542 648	MSB6- $\frac{1}{2}$:J3M1D7A1-WP	542 644	MSB6- $\frac{1}{2}$:J1M1D7A1-WP
	fully automatic	G $\frac{1}{2}$	542 650	MSB6- $\frac{1}{2}$:J4M1D7A1-WP	542 646	MSB6- $\frac{1}{2}$:J2M1D7A1-WP

Ordering data						
Pressure regulation range 4 ... 12 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	531 106	MSB4- $\frac{1}{4}$:J3M1D1A1-WP	531 102	MSB4- $\frac{1}{4}$:J1M1D1A1-WP
	fully automatic	G $\frac{1}{4}$	531 108	MSB4- $\frac{1}{4}$:J4M1D1A1-WP	531 104	MSB4- $\frac{1}{4}$:J2M1D1A1-WP
MSB6	manual rotary	G $\frac{1}{2}$	530 227	MSB6- $\frac{1}{2}$:J3M1D1A1-WP	530 223	MSB6- $\frac{1}{2}$:J1M1D1A1-WP
	fully automatic	G $\frac{1}{2}$	530 229	MSB6- $\frac{1}{2}$:J4M1D1A1-WP	530 225	MSB6- $\frac{1}{2}$:J2M1D1A1-WP

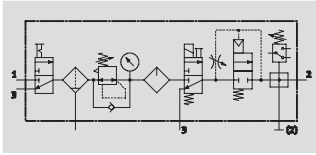
Service unit combinations MSB4/MSB6, MS series

Technical data

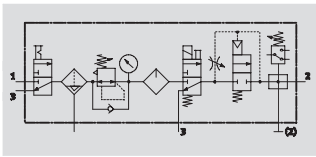


Function

With condensate drain
manual rotary



With condensate drain
fully automatic



- - Flow rate
550 ... 2,300 l/min
- - Temperature range
-10 ... +60 °C
- - Pressure regulation
range
4 ... 12 bar



- For filtered and lubricated compressed air
- Supply pressure can be opened and closed
- Output pressure is infinitely adjustable within the pressure regulation range
- Gradual pressure build-up prevents sudden, unpredictable movements
- To shut-off and vent the following device or the system
- Electrical pressure monitoring with adjustable switching pressure

- On-off valve MS...-EM1 manually actuated
- Filter regulator MS...-LFR-D7
- Lubricator MS...-LOE-R
- On-off valve MS...-EE-10V24 or MS...-EE-V24 solenoid actuated
- Soft-start valve MS...-DL pneumatically actuated
- Branching module MS...-FRM-Y with pressure switch without display
- Mounting bracket MS...-WP

General technical data		MSB4	MSB6
Size		G $\frac{1}{4}$	G $\frac{1}{2}$
Pneumatic connection 1, 2, 3			
Regulating function		With primary pressure compensation	
		With return flow function	
		With secondary venting	
		Output pressure constant	
Type of mounting	Via accessories		
Assembly position	Vertical $\pm 5^\circ$		
Grade of filtration	[μm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)	
		40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard		
Condensate drain		Manual rotary	
		Fully automatic	
Actuator lock		Rotary knob with detent	
		Lockable with accessories	
Pressure regulation range	[bar]	4 ... 9 (with on-off valve MS...-EE-10V24)	
	[bar]	4 ... 12 (with on-off valve MS...-EE-V24)	
Pressure indicator		With pressure gauge	
Supply voltage	[V DC]	24	

- \ddagger - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q_{nN} [l/min]			
Size		MSB4	MSB6
Grade of filtration	5 μm	550	2,100
	40 μm	600	2,300

Service unit combinations MSB4/MSB6, MS series

Technical data

Operating and environmental conditions									
	Pressure regulation range 4 ... 9 bar				Pressure regulation range 4 ... 12 bar				
Condensate drain	Manual rotary		Fully automatic		Manual rotary		Fully automatic		
Size	MSB4	MSB6	MSB4	MSB6	MSB4	MSB6	MSB4	MSB6	
Supply pressure [bar]	4.5 ... 10	4.5 ... 10	4.5 ... 10	4.5 ... 10	4.5 ... 14	4.5 ... 18	4.5 ... 12	4.5 ... 12	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm								
Ambient temperature [°C]	-10 ... +50		+5 ... +50		-10 ... +60			+5 ... +60	
Temperature of medium [°C]	-10 ... +50		+5 ... +50		-10 ... +60			+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60		-10 ... +60			-10 ... +60	
Corrosion resistance	CRC ¹⁾		2						

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

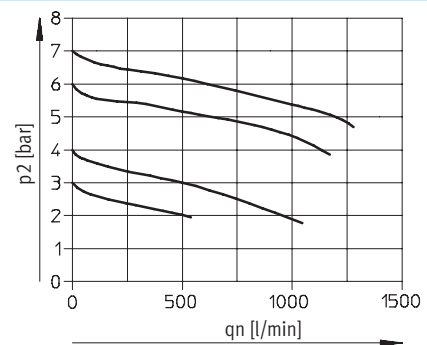
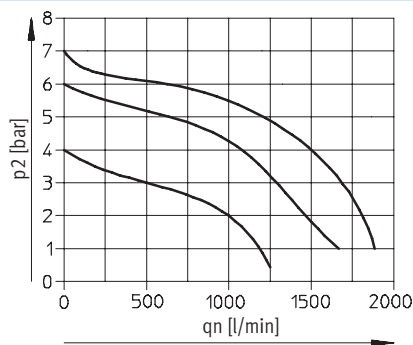
Weights [g]		
Size	MSB4	MSB6
Service unit combination	2,200	4,000
Mounting bracket	40	76

Note
 Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

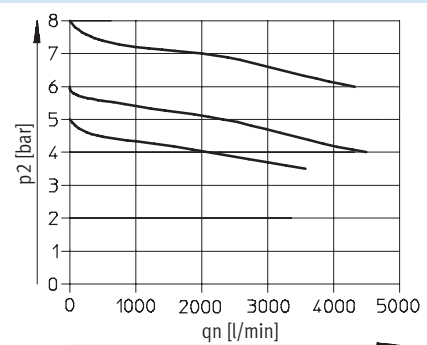
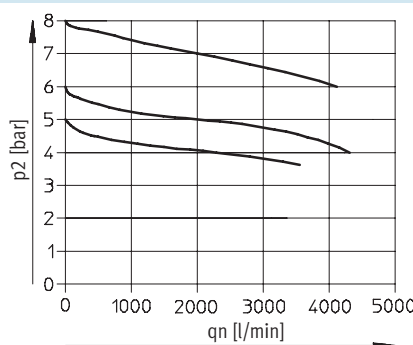
Pressure regulation range 4 ... 9 bar / 4 ... 12 bar
 MSB4-1/4

Primary pressure p1 = 10 bar



MSB6-1/2

Primary pressure p1 = 10 bar



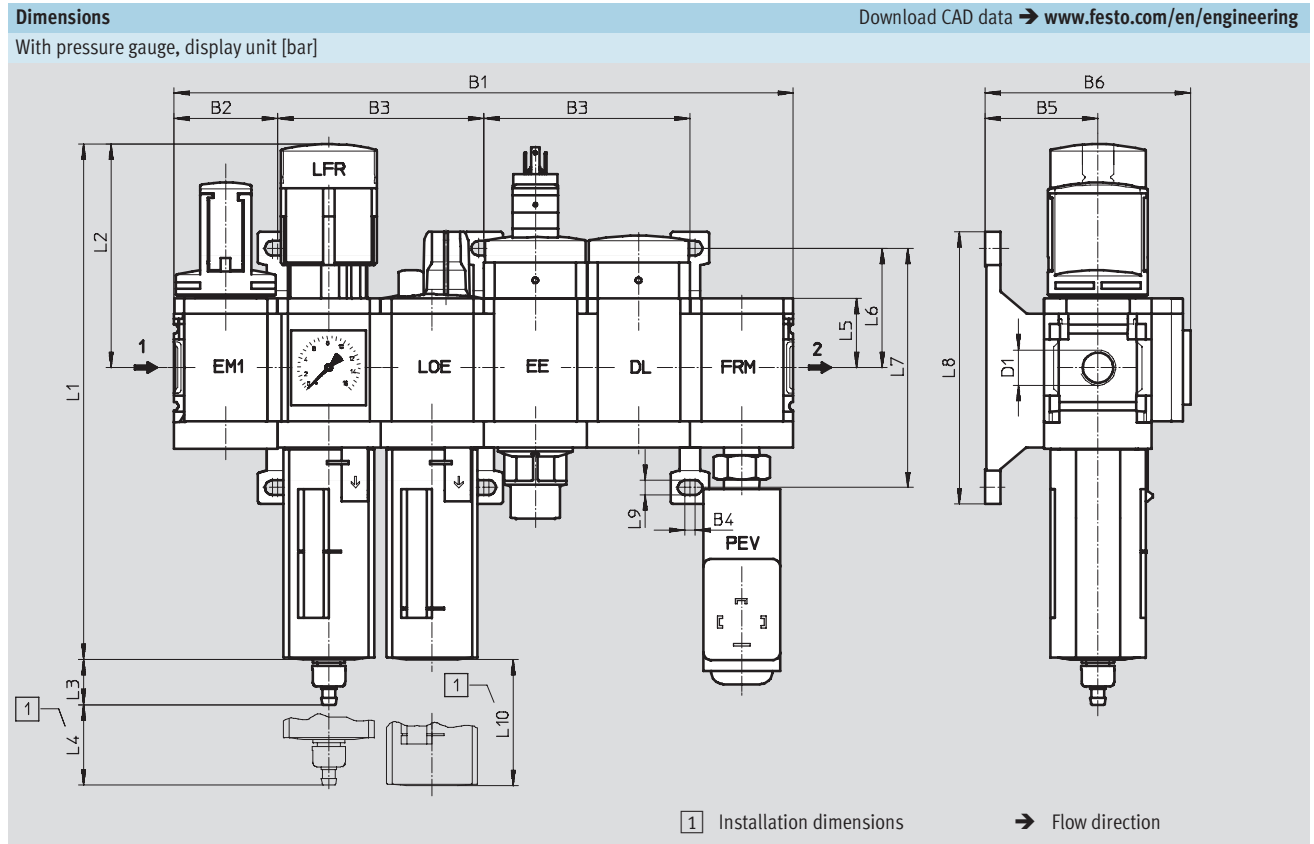
Service unit combinations MSB4/MSB6, MS series



Technical data

MS4/MS6 series service units
Service units

2.11



Type	B1	B2	B3	B4	B5	B6	D1	L1	L2
MSB4	241.2	40.2	80.4	4	44	80	G $\frac{1}{4}$	201	87
MSB6	372	62	124	4.5	54	100	G $\frac{1}{2}$	285	134.5

Type	L3 Condensate drain		L4	L5	L6	L7	L8	L9	L10
	manual rotary	fully auto- matic							
MSB4	17.7	20.4	25	27	46.5	93.2	106	5.6	80
MSB6	15.8	18.5	68	39	71	142	158	6.6	130

— | — Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Service unit combinations MSB4/MSB6, MS series

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Technical data

Ordering data						
Pressure regulation range 4 ... 9 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 624	MSB4- $\frac{1}{4}$:C3J3M1D7A1F3-WP	542 619	MSB4- $\frac{1}{4}$:C3J1M1D7A1F3-WP
	fully automatic	G $\frac{1}{4}$	542 626	MSB4- $\frac{1}{4}$:C3J4M1D7A1F3-WP	542 622	MSB4- $\frac{1}{4}$:C3J2M1D7A1F3-WP
MSB6	manual rotary	G $\frac{1}{2}$	542 640	MSB6- $\frac{1}{2}$:C3J3M1D7A1F3-WP	542 636	MSB6- $\frac{1}{2}$:C3J1M1D7A1F3-WP
	fully automatic	G $\frac{1}{2}$	542 642	MSB6- $\frac{1}{2}$:C3J4M1D7A1F3-WP	542 638	MSB6- $\frac{1}{2}$:C3J2M1D7A1F3-WP

Ordering data						
Pressure regulation range 4 ... 12 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 309	MSB4- $\frac{1}{4}$:C3J3M1D1A1F3-WP	542 297	MSB4- $\frac{1}{4}$:C3J1M1D1A1F3-WP
	fully automatic	G $\frac{1}{4}$	542 315	MSB4- $\frac{1}{4}$:C3J4M1D1A1F3-WP	542 303	MSB4- $\frac{1}{4}$:C3J2M1D1A1F3-WP
MSB6	manual rotary	G $\frac{1}{2}$	542 285	MSB6- $\frac{1}{2}$:C3J3M1D1A1F3-WP	542 273	MSB6- $\frac{1}{2}$:C3J1M1D1A1F3-WP
	fully automatic	G $\frac{1}{2}$	542 291	MSB6- $\frac{1}{2}$:C3J4M1D1A1F3-WP	542 279	MSB6- $\frac{1}{2}$:C3J2M1D1A1F3-WP

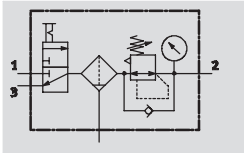
Service unit combinations MSB4/MSB6, MS series

Technical data

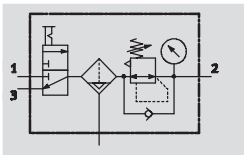


Function

With condensate drain
manual rotary



With condensate drain
fully automatic



- - Flow rate
950 ... 5,100 l/min
- - Temperature range
-10 ... +60 °C
- - Pressure regulation
range
0.5 ... 12 bar



- For filtered and unlubricated compressed air
- Supply pressure can be opened and closed
- Output pressure is infinitely adjustable within the pressure regulation range

- On-off valve MS...-EM1 manually actuated
- Filter regulator MS...-LFR-D7
- Mounting bracket MS...-WP

General technical data		
Size	MSB4	MSB6
Pneumatic connection 1, 2, 3	G $\frac{1}{4}$	G $\frac{1}{2}$
Regulating function	With primary pressure compensation	
	With return flow function	
	With secondary venting	
	Output pressure constant	
Type of mounting	Via accessories	
Assembly position	Vertical $\pm 5^\circ$	
Grade of filtration $[\mu\text{m}]$	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)	
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
	Fully automatic	
Actuator lock	Rotary knob with detent	
	Lockable with accessories	
Pressure regulation range [bar]	0.5 ... 12	
Pressure indicator	With pressure gauge	

• \parallel - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q_{nN} [l/min]			
Size	MSB4	MSB6	
Grade of filtration	5 μm	950	4,800
	40 μm	1,000	5,100

Service unit combinations MSB4/MSB6, MS series

Technical data

Operating and environmental conditions				
Condensate drain	Manual rotary		Fully automatic	
Size	MSB4	MSB6	MSB4	MSB6
Supply pressure [bar]	0.8 ... 14	0.8 ... 18	1.5 ... 12	1.5 ... 12
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm			
Ambient temperature [°C]	-10 ... +60		+5 ... +60	
Temperature of medium [°C]	-10 ... +60		+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60	
Corrosion resistance	CRC ¹⁾		2	

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

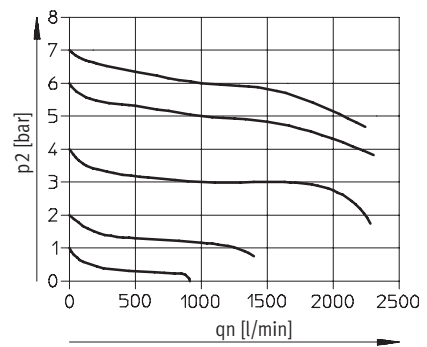
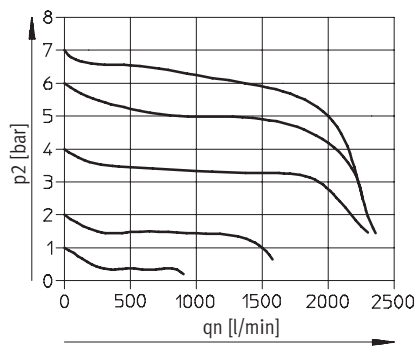
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,300	1,100
Mounting bracket	40	76

Note
 Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

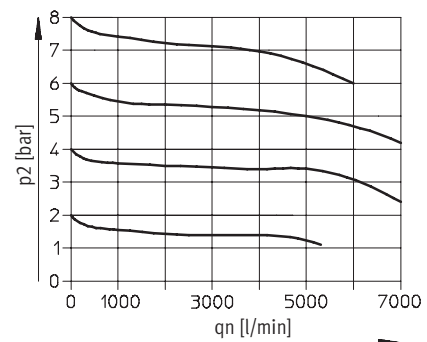
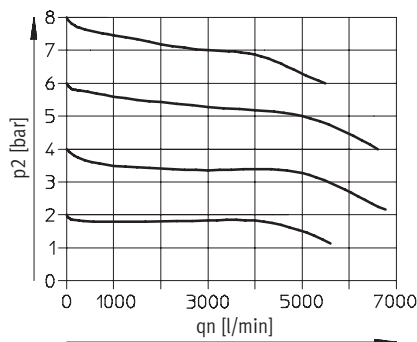
Pressure regulation range 0.5 ... 12 bar Grade of filtration 5 µm Grade of filtration 40 µm

MSB4-1/4
 Primary pressure p1 = 10 bar



MSB6-1/2

Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series

Technical data

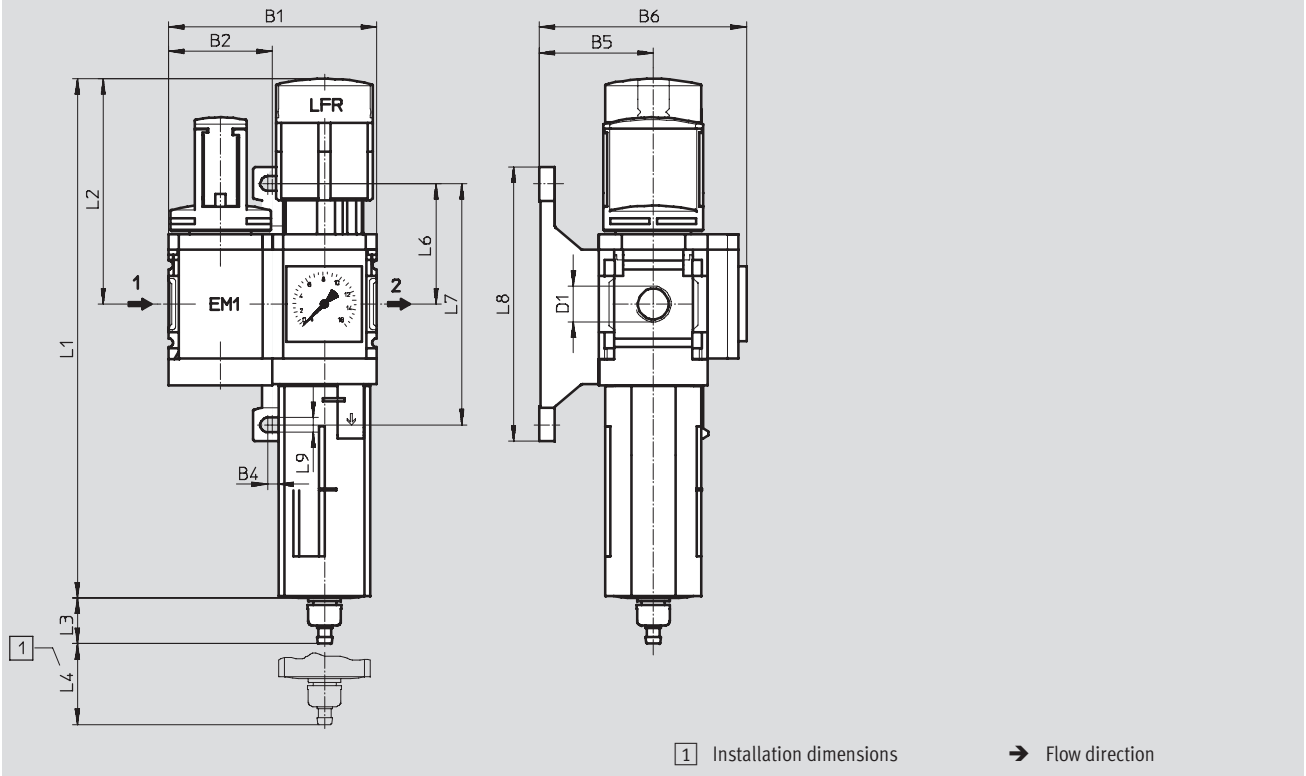


MS4/MS6 series service units
Service units

2.11

Dimensions Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



Type	B1	B2	B4	B5	B6	D1	L1	L2
MSB4	80.4	40.2	4	44	80	G $\frac{1}{4}$	201	87
MSB6	124	62	4.5	54	100	G $\frac{1}{2}$	285	134.5

Type	L3 Condensate drain		L4	L6	L7	L8	L9
	manual rotary	fully automatic					
MSB4	17.7	20.4	25	46.5	93.2	106	5.6
MSB6	15.8	18.5	68	71	142	158	6.6

– Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

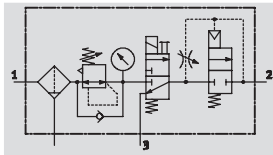
Ordering data							
Pressure regulation range 0.5 ... 12 bar							
Size	Condensate drain	Connection	Grade of filtration 5 μ m			Grade of filtration 40 μ m	
			Part No.	Type	Part No.	Type	
Plastic bowl guard							
MSB4	manual rotary	G $\frac{1}{4}$	542 304	MSB4- $\frac{1}{4}$:C3J3-WP	542 292	MSB4- $\frac{1}{4}$:C3J1-WP	
	fully automatic	G $\frac{1}{4}$	542 310	MSB4- $\frac{1}{4}$:C3J4-WP	542 298	MSB4- $\frac{1}{4}$:C3J2-WP	
MSB6	manual rotary	G $\frac{1}{2}$	542 280	MSB6- $\frac{1}{2}$:C3J3-WP	542 268	MSB6- $\frac{1}{2}$:C3J1-WP	
	fully automatic	G $\frac{1}{2}$	542 286	MSB6- $\frac{1}{2}$:C3J4-WP	542 274	MSB6- $\frac{1}{2}$:C3J2-WP	

Service unit combinations MSB4/MSB6, MS series

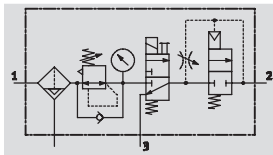
Technical data

Function

With condensate drain
manual rotary



With condensate drain
fully automatic



- Flow rate
700 ... 3,100 l/min
- Temperature range
-10 ... +60 °C
- Pressure regulation range
4 ... 12 bar



- Filter regulator MS...-LFR-D7
- On-off valve MS...-EE-10V24 or MS...-EE-V24 solenoid actuated
- Soft-start valve MS...-DL pneumatically actuated
- Mounting bracket MS...-WP

- For filtered and unlubricated compressed air
- Output pressure is infinitely adjustable within the pressure regulation range
- Gradual pressure build-up prevents sudden, unpredictable movements
- When supply pressure is closed, quick venting ensures rapid pressure reduction

General technical data		
Size	MSB4	MSB6
Pneumatic connection 1, 2, 3	G1/4	G1/2
Regulating function	With primary pressure compensation	
	With return flow function	
	With secondary venting	
	Output pressure constant	
Type of mounting	Via accessories	
Assembly position	Vertical ±5°	
Grade of filtration [µm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)	
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
	Fully automatic	
Actuator lock	Rotary knob with detent	
	Lockable with accessories	
Pressure regulation range	[bar]	4 ... 9 (with on-off valve MS...-EE-10V24)
	[bar]	4 ... 12 (with on-off valve MS...-EE-V24)
Pressure indicator	With pressure gauge	
Supply voltage [V DC]	24	

-||- Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN [l/min]		
Size	MSB4	MSB6
Grade of filtration	5 µm	3,000
	40 µm	3,100

Service unit combinations MSB4/MSB6, MS series

Technical data



MS4/MS6 series service units
Service units

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Operating and environmental conditions								
	Pressure regulation range 4 ... 9 bar				Pressure regulation range 4 ... 12 bar			
Condensate drain	Manual rotary		Fully automatic		Manual rotary		Fully automatic	
Size	MSB4	MSB6	MSB4	MSB6	MSB4	MSB6	MSB4	MSB6
Supply pressure [bar]	4.5 ... 10	4.5 ... 10	4.5 ... 10	4.5 ... 10	4.5 ... 14	4.5 ... 18	4.5 ... 12	4.5 ... 12
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm							
Ambient temperature [°C]	-10 ... +50		+5 ... +50		-10 ... +60		+5 ... +60	
Temperature of medium [°C]	-10 ... +50		+5 ... +50		-10 ... +60		+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60		-10 ... +60		-10 ... +60	
Corrosion resistance	CRC ¹⁾		2					

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

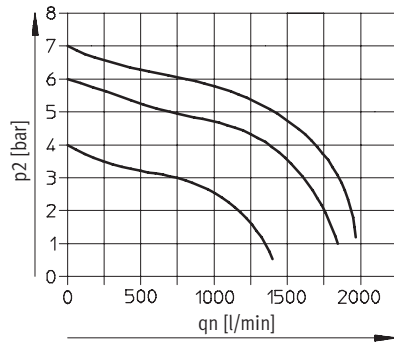
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,600	2,400
Mounting bracket	40	76

Note
Materials → Technical data of the individual devices

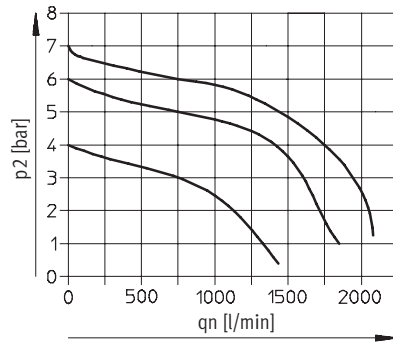
Standard flow rate qn as a function of output pressure p2

Pressure regulation range 4 ... 9 bar / 4 ... 12 bar
MSB4-1/4

Primary pressure p1 = 10 bar

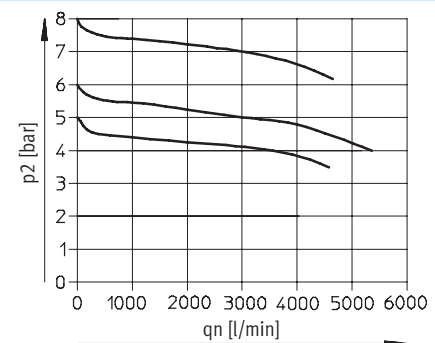
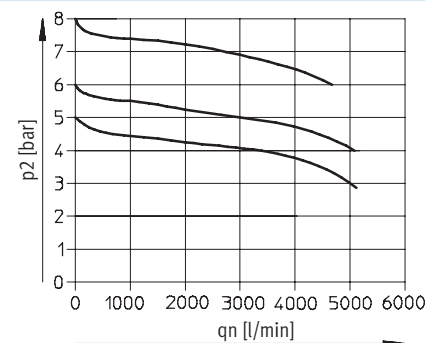


Grade of filtration 40 µm



MSB6-1/2

Primary pressure p1 = 10 bar



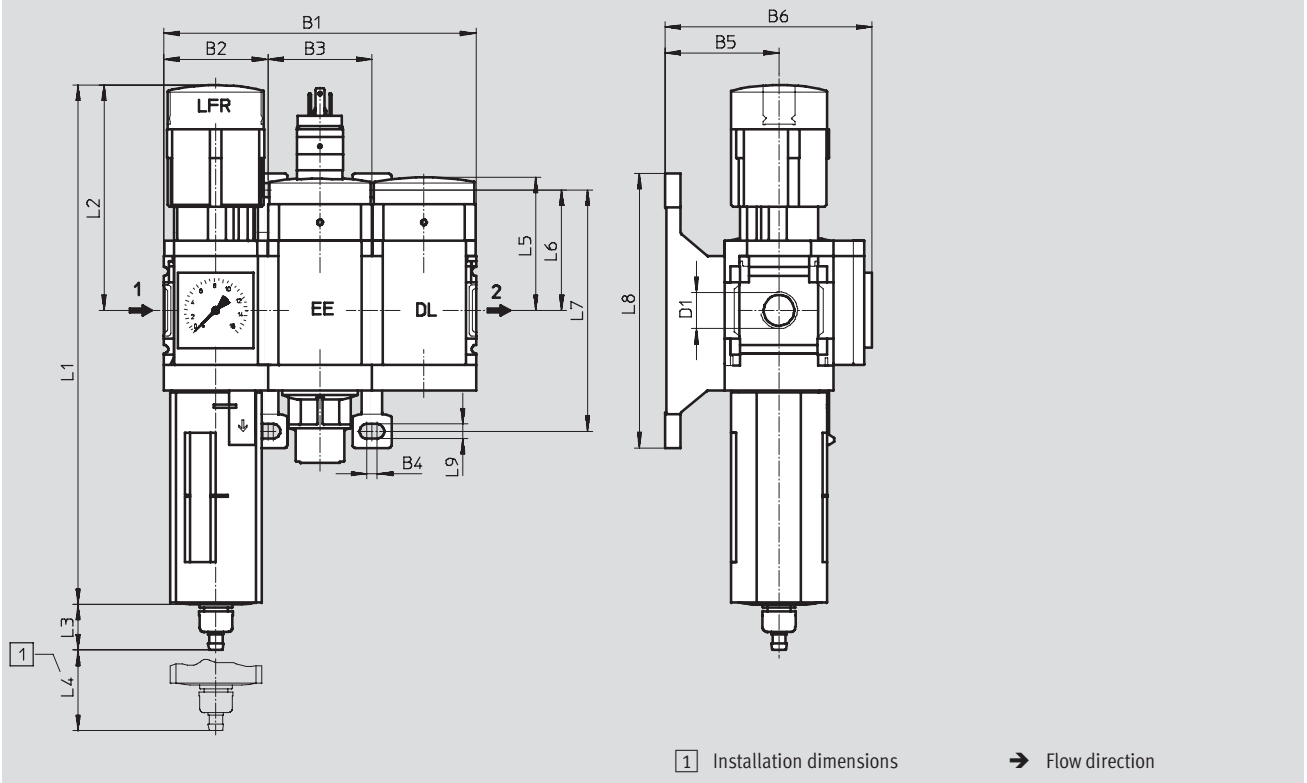
Service unit combinations MSB4/MSB6, MS series

Technical data



Dimensions Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



Type	B1	B2	B3	B4	B5	B6	D1	L1	L2
MSB4	120.6	40.2	40.2	4	44	80	G $\frac{1}{4}$	201	87
MSB6	186	62	62	4.5	54	100	G $\frac{1}{2}$	285	134.5

Type	L3 Condensate drain		L4	L5	L6	L7	L8	L9
	manual rotary	fully automatic						
MSB4	17.7	20.4	25	51.7	46.5	93.2	106	5.6
MSB6	15.8	18.5	68	71	71	142	158	6.6

• † - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

MS4/MS6 series service units
Service units
2.11

Service unit combinations MSB4/MSB6, MS series

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Technical data

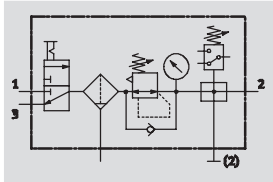
Ordering data						
Pressure regulation range 4 ... 9 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 631	MSB4- $\frac{1}{4}$:J3D7A1-WP	542 627	MSB4- $\frac{1}{4}$:J1D7A1-WP
	fully automatic	G $\frac{1}{4}$	542 633	MSB4- $\frac{1}{4}$:J4D7A1-WP	542 629	MSB4- $\frac{1}{4}$:J2D7A1-WP
MSB6	manual rotary	G $\frac{1}{2}$	542 647	MSB6- $\frac{1}{2}$:J3D7A1-WP	542 643	MSB6- $\frac{1}{2}$:J1D7A1-WP
	fully automatic	G $\frac{1}{2}$	542 649	MSB6- $\frac{1}{2}$:J4D7A1-WP	542 645	MSB6- $\frac{1}{2}$:J2D7A1-WP

Ordering data						
Pressure regulation range 4 ... 12 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	531 105	MSB4- $\frac{1}{4}$:J3D1A1-WP	531 101	MSB4- $\frac{1}{4}$:J1D1A1-WP
	fully automatic	G $\frac{1}{4}$	531 107	MSB4- $\frac{1}{4}$:J4D1A1-WP	531 103	MSB4- $\frac{1}{4}$:J2D1A1-WP
MSB6	manual rotary	G $\frac{1}{2}$	530 226	MSB6- $\frac{1}{2}$:J3D1A1-WP	530 222	MSB6- $\frac{1}{2}$:J1D1A1-WP
	fully automatic	G $\frac{1}{2}$	530 228	MSB6- $\frac{1}{2}$:J4D1A1-WP	530 224	MSB6- $\frac{1}{2}$:J2D1A1-WP

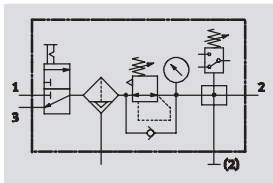
Service unit combinations MSB4/MSB6, MS series

Technical data

Function
With condensate drain
manual rotary



With condensate drain
fully automatic



- - Flow rate
1,250 ... 4,500 l/min
- - Temperature range
-10 ... +60 °C
- - Pressure regulation range
0.5 ... 12 bar



- For filtered and unlubricated compressed air
- Supply pressure can be opened and closed
- Output pressure is infinitely adjustable within the pressure regulation range
- Electrical pressure monitoring with adjustable switching pressure

- On-off valve MS...-EM1 manually actuated
- Filter regulator MS...-LFR-D7
- Branching module MS...-FRM-Y with pressure switch without display
- Mounting bracket MS...-WP

General technical data		
Size	MSB4	MSB6
Pneumatic connection 1, 2, 3	G1/4	G1/2
Regulating function	With primary pressure compensation	
	With return flow function	
	With secondary venting	
	Output pressure constant	
Type of mounting	Via accessories	
Assembly position	Vertical ±5°	
Grade of filtration [µm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)	
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
	Fully automatic	
Actuator lock	Rotary knob with detent	
	Lockable with accessories	
Pressure regulation range [bar]	0.5 ... 12	
Pressure indicator	With pressure gauge	

- - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN [l/min]			
Size	MSB4		MSB6
Grade of filtration	5 µm	1,250	4,400
	40 µm	1,300	4,500

Service unit combinations MSB4/MSB6, MS series

Technical data



MS4/MS6 series service units
Service units

2.11

Operating and environmental conditions				
Condensate drain		Manual rotary		Fully automatic
Size	MSB4	MSB6	MSB4	MSB6
Supply pressure [bar]	0.8 ... 14	0.8 ... 18	1.5 ... 12	1.5 ... 12
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm			
Ambient temperature [°C]	-10 ... +60		+5 ... +60	
Temperature of medium [°C]	-10 ... +60		+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60	
Corrosion resistance	CRC ¹⁾	2		

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

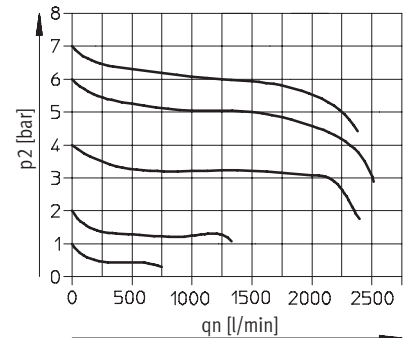
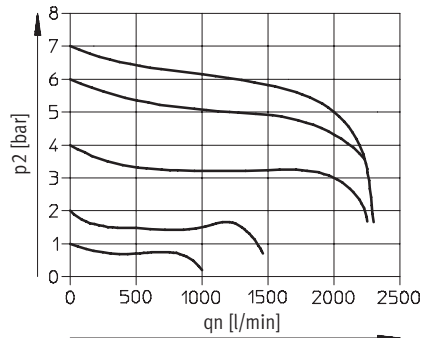
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,500	2,000
Mounting bracket	40	76

Note
Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

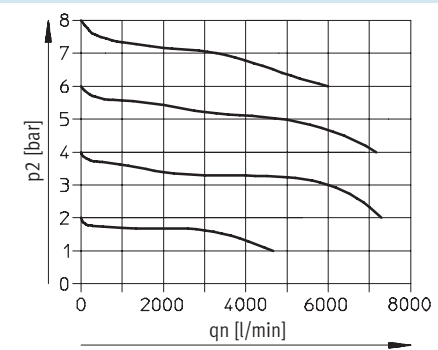
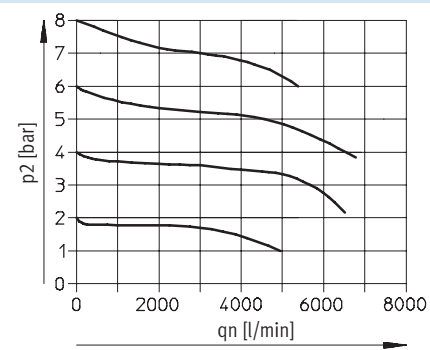
Pressure regulation range 0.5 ... 12 bar Grade of filtration 5 µm MSB4-1/4 Grade of filtration 40 µm

Primary pressure p1 = 10 bar



MSB6-1/2

Primary pressure p1 = 10 bar



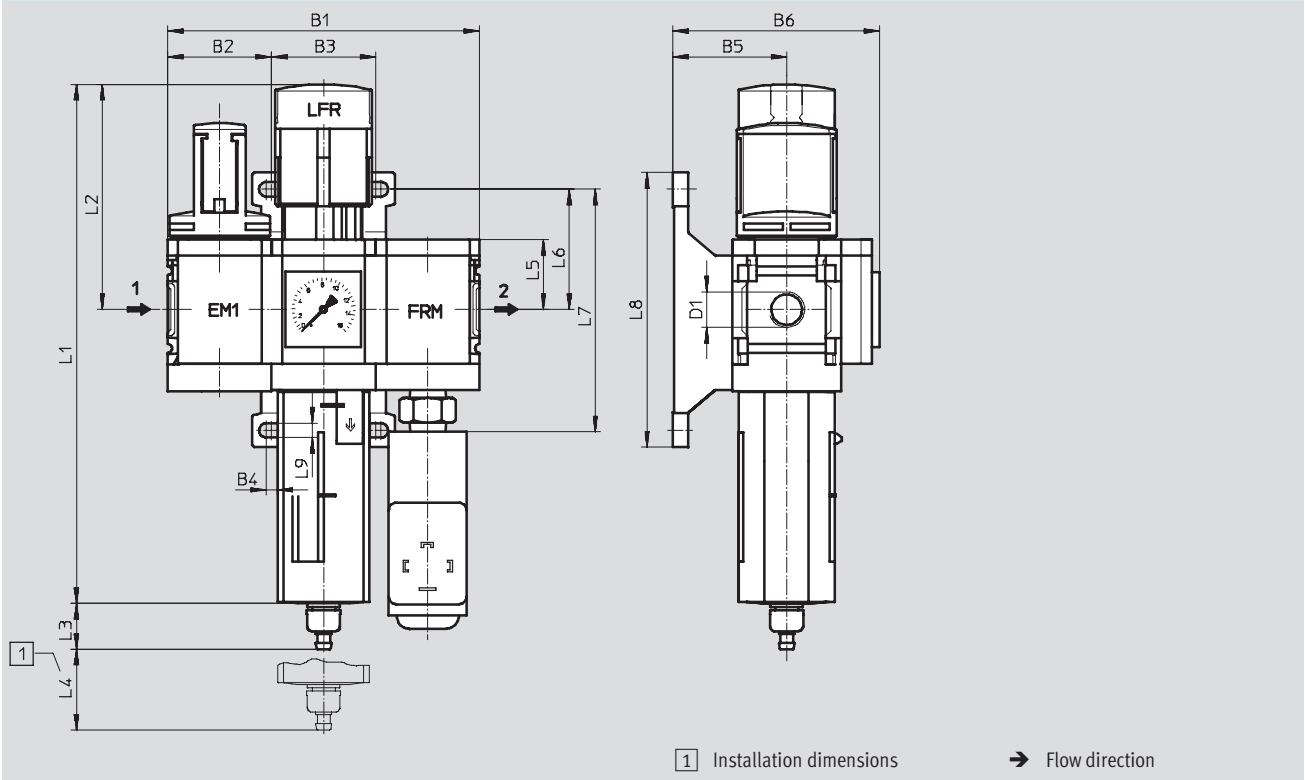
Service unit combinations MSB4/MSB6, MS series

Technical data



Dimensions Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



Type	B1	B2	B3	B4	B5	B6	D1	L1	L2
MSB4	120.6	40.2	40.2	4	44	80	G $\frac{1}{4}$	201	87
MSB6	186	62	62	4.5	54	100	G $\frac{1}{2}$	285	134.5

Type	L3 Condensate drain		L4	L5	L6	L7	L8	L9
	manual rotary	fully automatic						
MSB4	17.7	20.4	25	27	46.5	93.2	106	5.6
MSB6	15.8	18.5	68	39	71	142	158	6.6

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data									
Pressure regulation range 0.5 ... 12 bar									
Size	Condensate drain	Connection	Grade of filtration 5 μ m				Grade of filtration 40 μ m		
			Part No.	Type	Part No.	Type	Part No.	Type	
Plastic bowl guard									
MSB4	manual rotary	G $\frac{1}{4}$	542 306	MSB4- $\frac{1}{4}$:C3J3F3-WP	542 294	MSB4- $\frac{1}{4}$:C3J1F3-WP			
	fully automatic	G $\frac{1}{4}$	542 312	MSB4- $\frac{1}{4}$:C3J4F3-WP	542 300	MSB4- $\frac{1}{4}$:C3J2F3-WP			
MSB6	manual rotary	G $\frac{1}{2}$	542 282	MSB6- $\frac{1}{2}$:C3J3F3-WP	542 270	MSB6- $\frac{1}{2}$:C3J1F3-WP			
	fully automatic	G $\frac{1}{2}$	542 288	MSB6- $\frac{1}{2}$:C3J4F3-WP	542 276	MSB6- $\frac{1}{2}$:C3J2F3-WP			

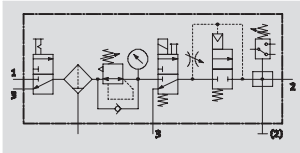
Service unit combinations MSB4/MSB6, MS series

Technical data

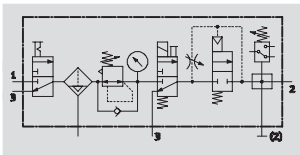


Function

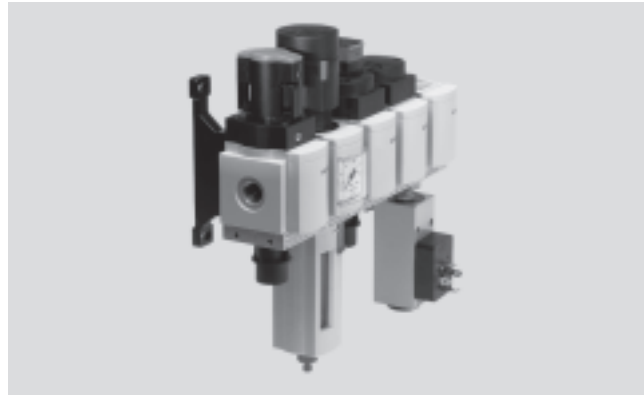
With condensate drain
manual rotary



With condensate drain
fully automatic



- - Flow rate
700 ... 3,100 l/min
- - Temperature range
-10 ... +60 °C
- - Pressure regulation
range
4 ... 12 bar



- For filtered and unlubricated compressed air
- Supply pressure can be opened and closed
- Output pressure is infinitely adjustable within the pressure regulation range
- Gradual pressure build-up prevents sudden, unpredictable movements
- To shut-off and vent the following device or the system
- Electrical pressure monitoring with adjustable switching pressure

- On-off valve MS...-EM1 manually actuated
- Filter regulator MS...-LFR-D7
- On-off valve MS...-EE-10V24 or MS...-EE-V24 solenoid actuated
- Soft-start valve MS...-DL pneumatically actuated
- Branching module MS...-FRM-Y with pressure switch without display
- Mounting bracket MS...-WP

General technical data		
Size	MSB4	MSB6
Pneumatic connection 1, 2, 3	G $\frac{1}{4}$	G $\frac{1}{2}$
Regulating function	With primary pressure compensation	
	With return flow function	
	With secondary venting	
	Output pressure constant	
Type of mounting	Via accessories	
Assembly position	Vertical $\pm 5^\circ$	
Grade of filtration μm	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)	
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
	Fully automatic	
Actuator lock	Rotary knob with detent	
	Lockable with accessories	
Pressure regulation range [bar]	4 ... 9 (with on-off valve MS...-EE-10V24)	
	4 ... 12 (with on-off valve MS...-EE-V24)	
Pressure indicator	With pressure gauge	
Supply voltage [V DC]	24	

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q_{nN} [l/min]			
Size		MSB4	MSB6
Grade of filtration	5 μm	700	3,000
	40 μm	750	3,100

Service unit combinations MSB4/MSB6, MS series

Technical data

Operating and environmental conditions									
	Pressure regulation range 4 ... 9 bar				Pressure regulation range 4 ... 12 bar				
Condensate drain	Manual rotary		Fully automatic		Manual rotary		Fully automatic		
Size	MSB4	MSB6	MSB4	MSB6	MSB4	MSB6	MSB4	MSB6	MSB6
Supply pressure [bar]	4.5 ... 10	4.5 ... 10	4.5 ... 10	4.5 ... 10	4.5 ... 14	4.5 ... 18	4.5 ... 12	4.5 ... 12	4.5 ... 12
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm								
Ambient temperature [°C]	-10 ... +50		+5 ... +50		-10 ... +60			+5 ... +60	
Temperature of medium [°C]	-10 ... +50		+5 ... +50		-10 ... +60			+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60		-10 ... +60			-10 ... +60	
Corrosion resistance	CRC ¹⁾		2						

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

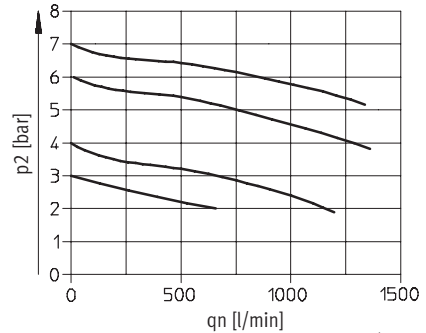
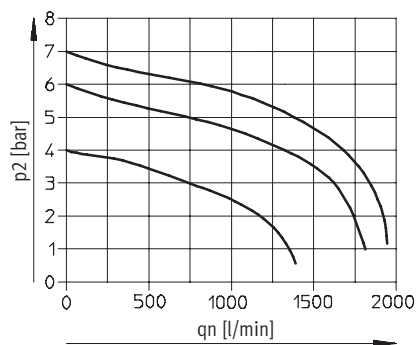
Weights [g]		
Size	MSB4	MSB6
Service unit combination	2,200	3,500
Mounting bracket	40	76

Note
Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

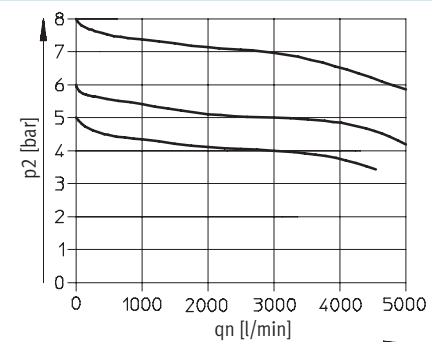
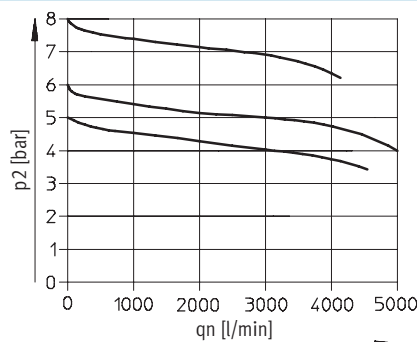
Pressure regulation range 4 ... 9 bar / 4 ... 12 bar
MSB4-1/4

Primary pressure p1 = 10 bar



MSB6-1/2

Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series



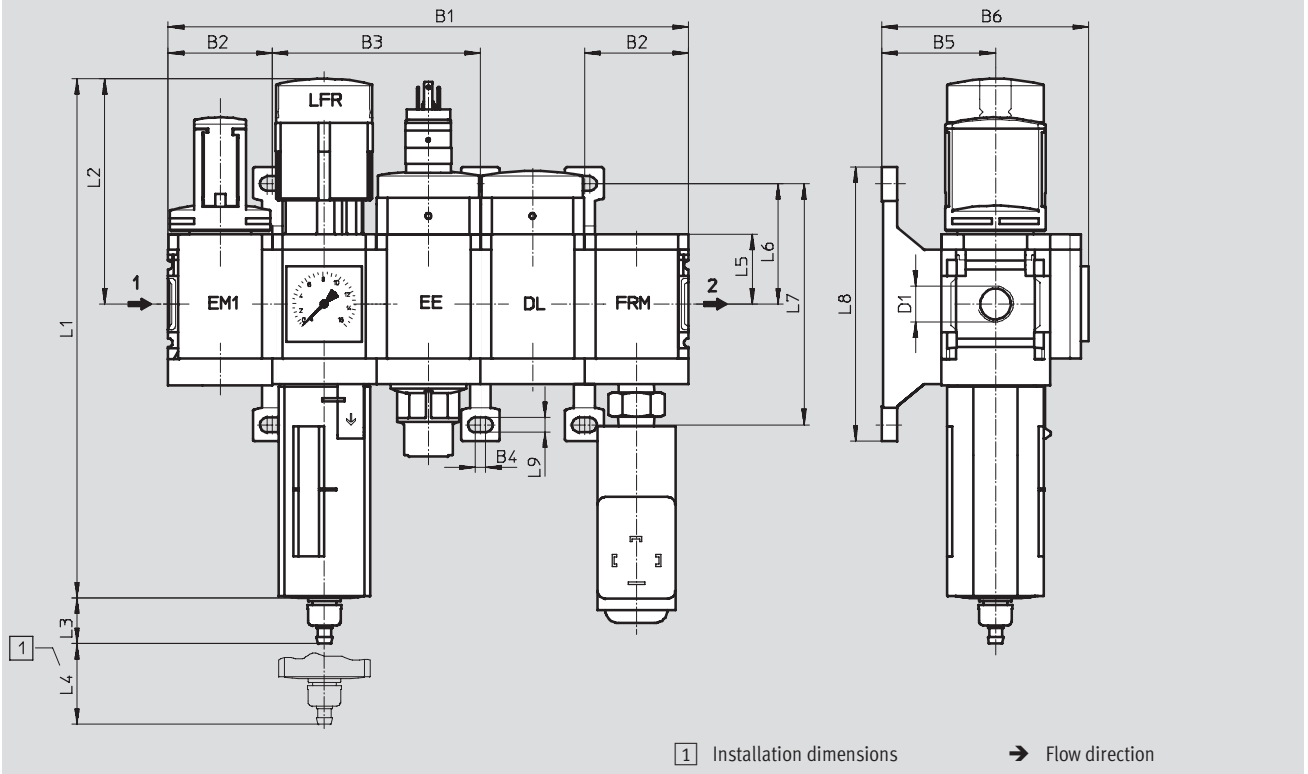
Technical data

MS4/MS6 series service units
Service units

2.11

Dimensions Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



Type	B1	B2	B3	B4	B5	B6	D1	L1	L2
MSB4	201	40.2	80.4	4	44	80	G $\frac{1}{4}$	201	87
MSB6	310	62	124	4.5	54	100	G $\frac{1}{2}$	285	134.5

Type	L3 Condensate drain		L4	L5	L6	L7	L8	L9
	manual rotary	fully automatic						
MSB4	17.7	20.4	25	27	46.5	93.2	106	5.6
MSB6	15.8	18.5	68	39	71	142	158	6.6

· | · Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Service unit combinations MSB4/MSB6, MS series

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Technical data

Ordering data						
Pressure regulation range 4 ... 9 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 623	MSB4- $\frac{1}{4}$:C3J3D7A1F3-WP	542 618	MSB4- $\frac{1}{4}$:C3J1D7A1F3-WP
	fully automatic	G $\frac{1}{4}$	542 625	MSB4- $\frac{1}{4}$:C3J4D7A1F3-WP	542 621	MSB4- $\frac{1}{4}$:C3J2D7A1F3-WP
MSB6	manual rotary	G $\frac{1}{2}$	542 639	MSB6- $\frac{1}{2}$:C3J3D7A1F3-WP	542 635	MSB6- $\frac{1}{2}$:C3J1D7A1F3-WP
	fully automatic	G $\frac{1}{2}$	542 641	MSB6- $\frac{1}{2}$:C3J4D7A1F3-WP	542 637	MSB6- $\frac{1}{2}$:C3J2D7A1F3-WP

Ordering data						
Pressure regulation range 4 ... 12 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 305	MSB4- $\frac{1}{4}$:C3J3D1A1F3-WP	542 293	MSB4- $\frac{1}{4}$:C3J1D1A1F3-WP
	fully automatic	G $\frac{1}{4}$	542 311	MSB4- $\frac{1}{4}$:C3J4D1A1F3-WP	542 299	MSB4- $\frac{1}{4}$:C3J2D1A1F3-WP
MSB6	manual rotary	G $\frac{1}{2}$	542 281	MSB6- $\frac{1}{2}$:C3J3D1A1F3-WP	542 269	MSB6- $\frac{1}{2}$:C3J1D1A1F3-WP
	fully automatic	G $\frac{1}{2}$	542 287	MSB6- $\frac{1}{2}$:C3J4D1A1F3-WP	542 275	MSB6- $\frac{1}{2}$:C3J2D1A1F3-WP

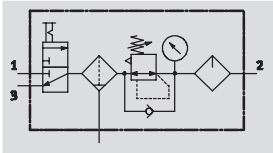
Service unit combinations MSB4/MSB6, MS series

Technical data

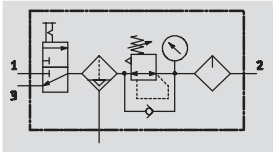


Function

With condensate drain
manual rotary



With condensate drain
fully automatic



- - Flow rate
700 ... 3,100 l/min
- - Temperature range
-10 ... +60 °C
- - Pressure regulation
range
1 ... 12 bar



- For filtered and lubricated compressed air
- Supply pressure can be opened and closed
- Output pressure is infinitely adjustable within the pressure regulation range

- On-off valve MS...-EM1 manually actuated
- Filter regulator MS...-LFR-D7
- Lubricator MS...-LOE-R
- Mounting bracket MS...-WP

General technical data		
Size	MSB4	MSB6
Pneumatic connection 1, 2, 3	G $\frac{1}{4}$	G $\frac{1}{2}$
Regulating function	With primary pressure compensation	
	With return flow function	
	With secondary venting	
	Output pressure constant	
Type of mounting	Via accessories	
Assembly position	Vertical $\pm 5^\circ$	
Grade of filtration $[\mu\text{m}]$	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)	
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard	
Condensate drain	Manual rotary	
	Fully automatic	
Actuator lock	Rotary knob with detent	
	Lockable with accessories	
Pressure regulation range [bar]	1 ... 12	
Pressure indicator	With pressure gauge	

- \parallel - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q_{nN} [l/min]			
Size		MSB4	MSB6
Grade of filtration	5 μm	700	3,000
	40 μm	750	3,100

Service unit combinations MSB4/MSB6, MS series

Technical data

Operating and environmental conditions				
Condensate drain		Manual rotary		Fully automatic
Size	MSB4	MSB6	MSB4	MSB6
Supply pressure [bar]	1.5 ... 14	1.5 ... 18	1.5 ... 12	1.5 ... 12
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm			
Ambient temperature [°C]	-10 ... +60		+5 ... +60	
Temperature of medium [°C]	-10 ... +60		+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60	
Corrosion resistance	CRC ¹⁾	2		

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

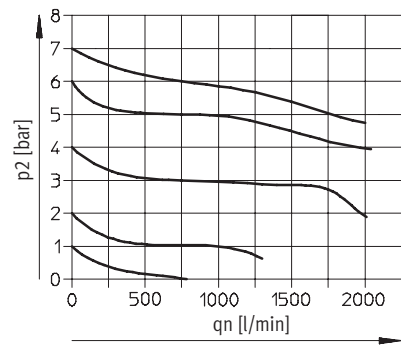
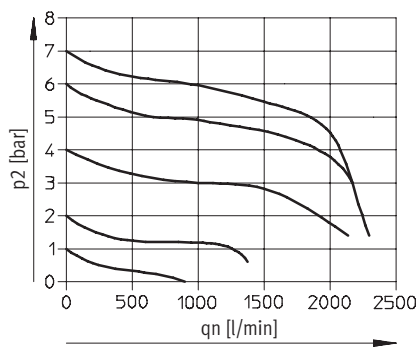
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,500	1,750
Mounting bracket	40	76

Note
 Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

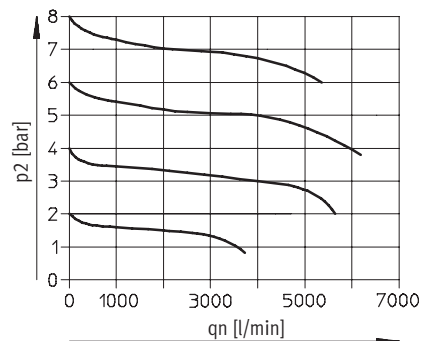
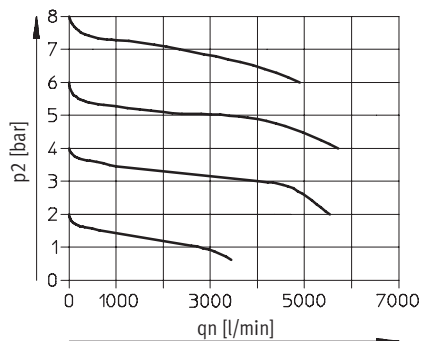
Pressure regulation range 1 ... 12 bar Grade of filtration 5 µm Grade of filtration 40 µm
 MSB4-1/4

Primary pressure p1 = 10 bar



MSB6-1/2

Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series



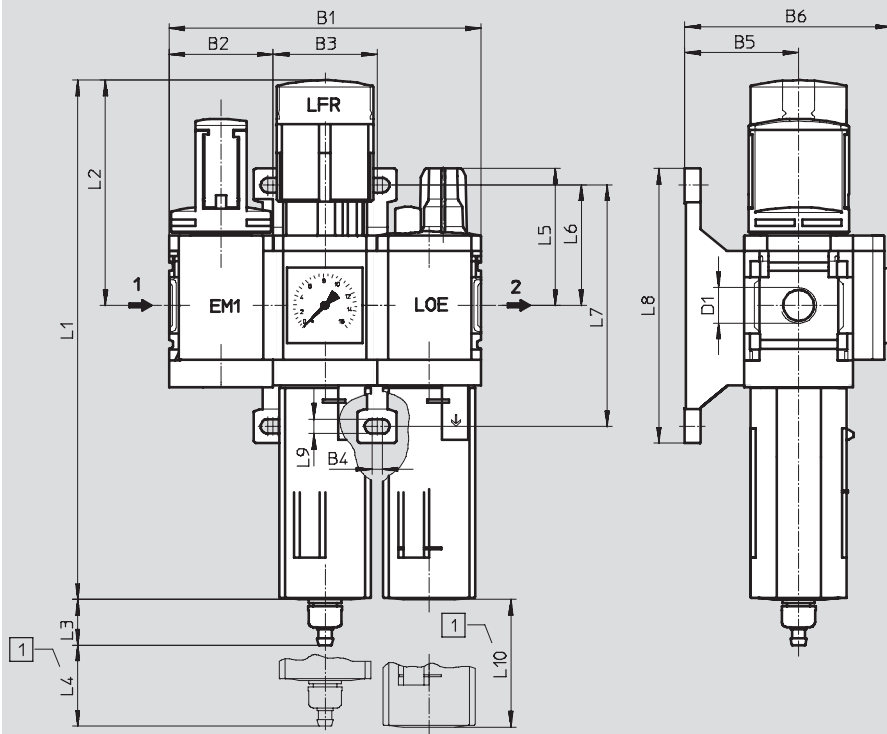
Technical data

MS4/MS6 series service units
Service units

2.11

Dimensions Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



1 Installation dimensions

→ Flow direction

Type	B1	B2	B3	B4	B5	B6	D1	L1	L2
MSB4	120.6	40.2	40.2	4	44	80	G $\frac{1}{4}$	201	87
MSB6	186	62	62	4.5	54	100	G $\frac{1}{2}$	285	134.5

Type	L3 Condensate drain		L4	L5	L6	L7	L8	L9	L10
	manual rotary	fully automatic							
MSB4	17.7	20.4	25	53	46.5	93.2	106	5.6	80
MSB6	15.8	18.5	68	66	71	142	158	6.6	130

– Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data

Pressure regulation range 1 ... 12 bar

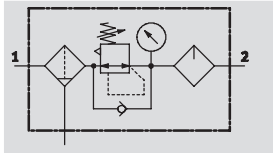
Size	Condensate drain	Connection	Grade of filtration 5 μ m		Grade of filtration 40 μ m	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 308	MSB4- $\frac{1}{4}$:C3J3M1-WP	542 296	MSB4- $\frac{1}{4}$:C3J1M1-WP
	fully automatic	G $\frac{1}{4}$	542 314	MSB4- $\frac{1}{4}$:C3J4M1-WP	542 302	MSB4- $\frac{1}{4}$:C3J2M1-WP
MSB6	manual rotary	G $\frac{1}{2}$	542 284	MSB6- $\frac{1}{2}$:C3J3M1-WP	542 272	MSB6- $\frac{1}{2}$:C3J1M1-WP
	fully automatic	G $\frac{1}{2}$	542 290	MSB6- $\frac{1}{2}$:C3J4M1-WP	542 278	MSB6- $\frac{1}{2}$:C3J2M1-WP

Service unit combinations MSB4/MSB6, MS series

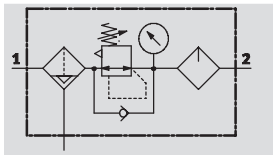
Technical data

Function

With condensate drain
manual rotary



With condensate drain
fully automatic



- Flow rate
700 ... 4,700 l/min
- Temperature range
-10 ... +60 °C
- Pressure regulation range
1 ... 12 bar



- For filtered and lubricated compressed air
- Output pressure is infinitely adjustable within the pressure regulation range

- Filter MS...-LF
- Pressure regulator MS...-LR
- Lubricator MS...-LOE
- Mounting bracket MS...-WP

General technical data		
Size	MSB4	MSB6
Pneumatic connection 1, 2	G1/4	G1/2
Type of mounting	Via accessories	
Assembly position	Vertical ±5°	
Grade of filtration [µm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1) 40 (air purity class at the output 5.7.- to DIN ISO 8573-1)	
Bowl guard	Plastic bowl guard Metal bowl guard	
Condensate drain	Manual rotary Fully automatic	
Actuator lock	Rotary knob with detent Lockable with accessories	
Pressure regulation range	N2 [bar] N3 [bar]	1 ... 7 1 ... 12
Pressure indicator	With pressure gauge	

- | - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN [l/min]		
Size	MSB4	MSB6
N2 – Pressure regulation range 1 ... 7 bar		
Grade of filtration	40 µm	1,300
		4,700
N3 – Pressure regulation range 1 ... 12 bar		
Grade of filtration	5 µm	700
	40 µm	800
		3,500

Service unit combinations MSB4/MSB6, MS series

Technical data



MS4/MS6 series service units
Service units

2.11

Operating and environmental conditions				
Condensate drain	Manual rotary		Fully automatic	
Size	MSB4	MSB6	MSB4	MSB6
Supply pressure [bar]	1.5 ... 14		1.5 ... 12	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm			
Ambient temperature [°C]	-10 ... +60		+5 ... +60	
Temperature of medium [°C]	-10 ... +60		+5 ... +60	
Storage temperature [°C]	-10 ... +60		-10 ... +60	
Corrosion resistance	CRC ¹⁾		2	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

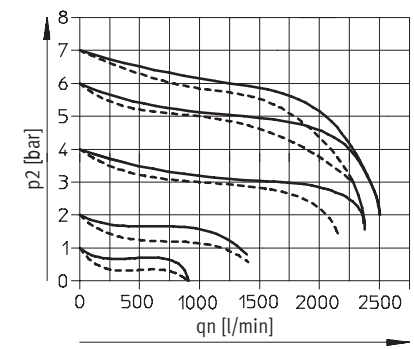
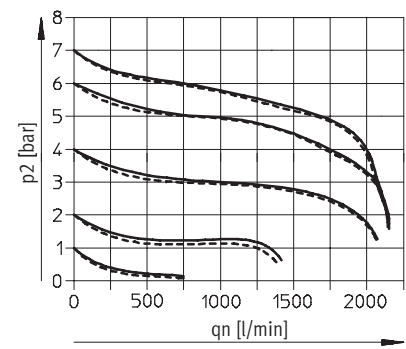
Weights [g]		
Size	MSB4	MSB6
Service unit combination		
With plastic bowl guard	1,000	2,000
With metal bowl guard	-	2,400
Mounting bracket		
	40	76

Note
Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

Pressure regulation range N2 or N3 Grade of filtration 5 µm Grade of filtration 40 µm
MSB4-1/4

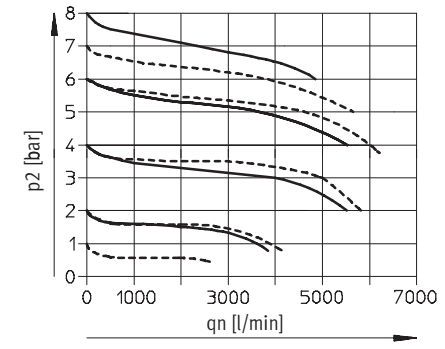
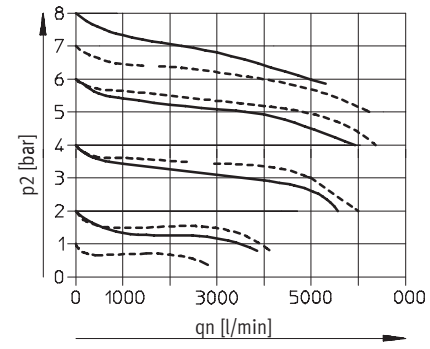
Primary pressure p1 = 10 bar



----- N2: 1 ... 7 bar
——— N3: 1 ... 12 bar

MSB6-1/2

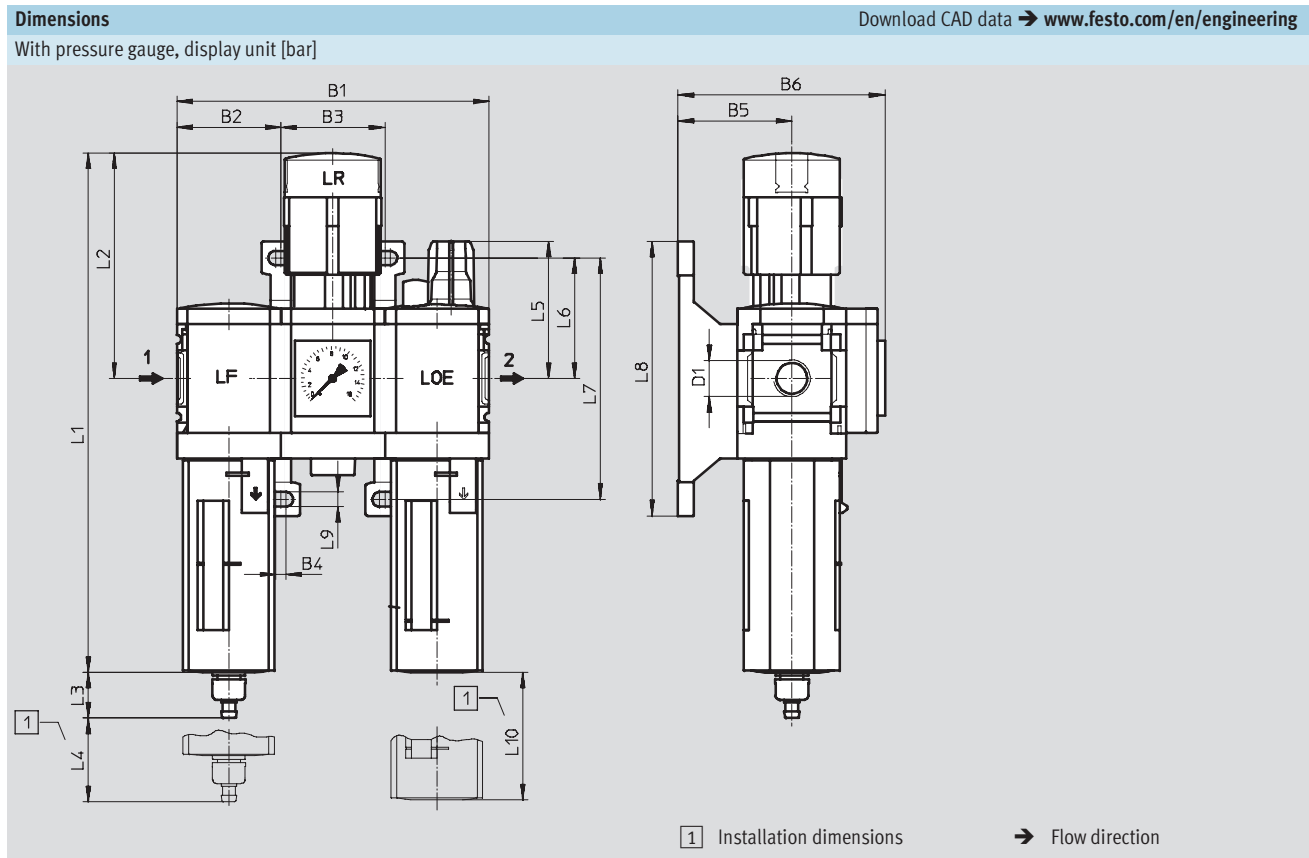
Primary pressure p1 = 10 bar



----- N2: 1 ... 7 bar
——— N3: 1 ... 12 bar

Service unit combinations MSB4/MSB6, MS series

Technical data



Type	B1	B2	B3	B4	B5	B6	D1	L1	L2
MSB4	120.6	40.2	40.2	4	44	80	G¼	201	87
MSB6	186	62	62	4.5	54	100	G½	285	134.5

Type	L3 Condensate drain		L4	L5	L6	L7	L8	L9	L10
	manual rotary	fully auto- matic							
MSB4	17.7	20.4	25	53	46.5	93.2	106	5.6	80
MSB6	15.8	18.5	68	66	71	142	158	6.6	130

• - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Service unit combinations MSB4/MSB6, MS series

FESTO

Technical data

Ordering data			
Pressure regulation range 1 ... 7 bar			
Size	Condensate drain	Connection	Grade of filtration 40 µm
			Part No. Type
Plastic bowl guard			
MSB4	manual rotary	G $\frac{1}{4}$	531 091 MSB4-$\frac{1}{4}$:H2N2M1-WP
	fully automatic	G $\frac{1}{4}$	531 085 MSB4-$\frac{1}{4}$:H1N2M1-WP
MSB6	manual rotary	G $\frac{1}{2}$	530 212 MSB6-$\frac{1}{2}$:H2N2M1-WP
	fully automatic	G $\frac{1}{2}$	530 206 MSB6-$\frac{1}{2}$:H1N2M1-WP

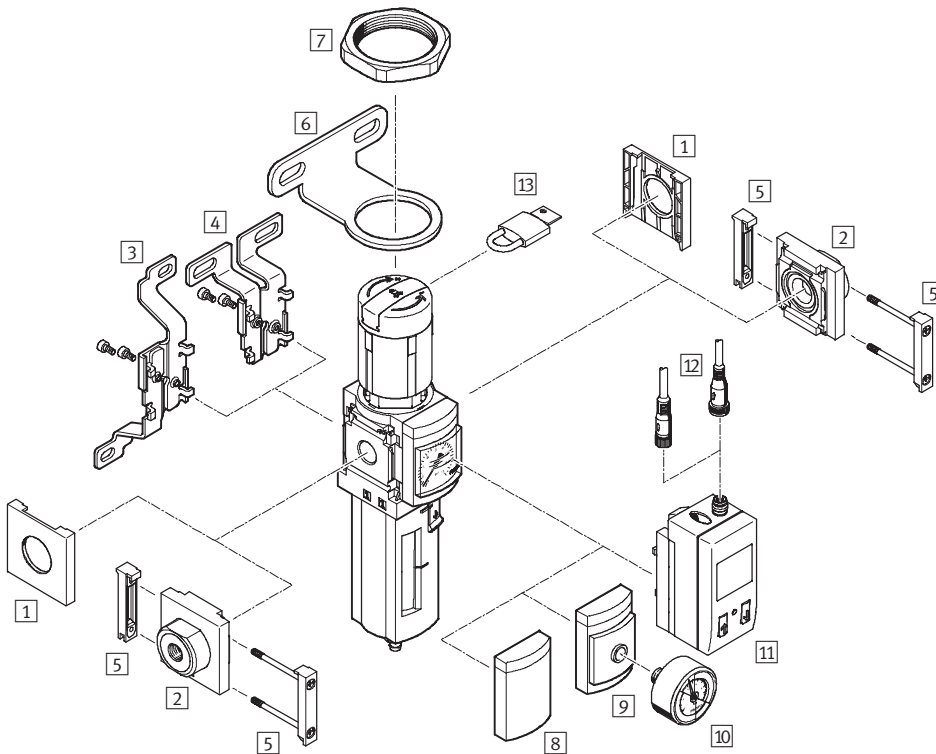
Ordering data			
Pressure regulation range 1 ... 12 bar			
Size	Condensate drain	Connection	Grade of filtration 5 µm
			Part No. Type
		Grade of filtration 40 µm	
		Part No. Type	
Plastic bowl guard			
MSB4	manual rotary	G $\frac{1}{4}$	531 097 MSB4-$\frac{1}{4}$:H3N3M1-WP
	fully automatic	G $\frac{1}{4}$	531 099 MSB4-$\frac{1}{4}$:H4N3M1-WP
MSB6	manual rotary	G $\frac{1}{2}$	530 218 MSB6-$\frac{1}{2}$:H3N3M1-WP
	fully automatic	G $\frac{1}{2}$	530 220 MSB6-$\frac{1}{2}$:H4N3M1-WP
			531 093 MSB4-$\frac{1}{4}$:H2N3M1-WP
			531 087 MSB4-$\frac{1}{4}$:H1N3M1-WP
			530 214 MSB6-$\frac{1}{2}$:H2N3M1-WP
			530 208 MSB6-$\frac{1}{2}$:H1N3M1-WP
Metal bowl guard			
MSB4	manual rotary	G $\frac{1}{4}$	–
	fully automatic	G $\frac{1}{4}$	–
MSB6	manual rotary	G $\frac{1}{2}$	–
	fully automatic	G $\frac{1}{2}$	–
			531 095 MSB4-$\frac{1}{4}$:H8N3M2-WP
			531 089 MSB4-$\frac{1}{4}$:H7N3M2-WP
			530 216 MSB6-$\frac{1}{2}$:H8N3M2-WP
			530 210 MSB6-$\frac{1}{2}$:H7N3M2-WP


MS4/MS6 series service units
Service units

2.11

Filter regulators MS4/MS6-LFR, MS series

Peripherals overview



-  - Note
Additional accessories:
- Module connector for combinations → 3/2.31-10
- Adapter for mounting on profiles → 3/2.31-13

Mounting attachments and accessories		Individual unit		Combination → 3/2.11-0		→ Page
		without connecting plate	with connecting plate	without connecting plate	with connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-4
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-4
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-9
6	Regulator wall bracket MS4/6-WR	■	■	-	-	3/2.31-5
7	Hex nut MS4/6-WRS	■	■	■	■	3/2.31-5
8	Cover plate VS	■	■	■	■	3/2.12-12
9	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.12-12
10	Pressure gauge MA	■	■	■	■	3/2.31-24
11	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.12-12 Volume 4
12	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
13	Padlock LRVS-D	■	■	■	■	3/2.31-25
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-7, 3/2.31-8

New
Variants E11, RG

FESTO

Filter regulators MS4/MS6-LFR, MS series

Type codes

MS4/MS6 series service units
Filter regulators

2.12

		MS	6	-	LFR	-	1/2	-	D7	-	E	R	M	-	AS
Series															
MS	Standard service unit														
Size															
4	Grid dimension 40 mm														
6	Grid dimension 62 mm														
Service function															
LFR	Filter regulator														
Pneumatic connection															
1/8	Thread G1/8														
1/4	Thread G1/4														
3/8	Thread G3/8														
1/2	Thread G1/2														
Pressure regulation range															
D6	Pressure regulation range 0.3 ... 7 bar														
D7	Pressure regulation range 0.5 ... 12 bar														
Grade of filtration															
C	5 µm														
E	40 µm														
Bowl guard															
R	Plastic bowl guard														
U	Metal bowl														
Condensate drain															
M	Manual rotary														
V	Fully automatic														
Security															
AS	Lockable standard type rotary knob														

Further variants can be ordered using the modular system

Filter regulators LFR → 3/2.12-12

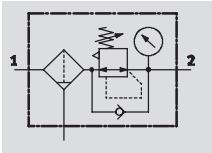
- Connecting plates
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Rotary knob
- Security
- Type of mounting
- Alternative flow direction

Filter regulators MS4/MS6-LFR, MS series

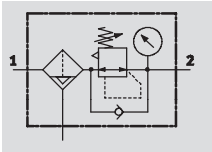
Technical data

Function


Manual rotary condensate drain, with pressure gauge




Semi- or fully automatic condensate drain, with pressure gauge



With this device, the filter and pressure regulator are combined into a single unit. The sintered filter with water separator removes contamination, pipe sinter, rust and condensate from the compressed air.

 Flow rate
850 ... 7,200 l/min

 Temperature range
-10 ... +60 °C

 Input pressure
0.8 ... 20 bar

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

Wearing parts kits
→ 3/2.12-11

- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Available with or without secondary venting



- High flow rates
- Directly actuated diaphragm regulator
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Lockable rotary knob
- Two pressure gauge connections for different fitting options
- Return flow option for exhausting from output 2 to output 1
- Optional pressure sensor with display
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 3/2.31-19

General technical data		MS4		MS6	
Size					
Pneumatic connection 1, 2		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$ G $\frac{1}{2}$
Design		Filter regulator with/without pressure display			
Regulating function		With/without secondary venting			
		Via return flow function			
		Output pressure constant			
Type of mounting		Via accessories			
		In-line installation			
		Front panel mounting			
Assembly position		Vertical $\pm 5^\circ$			
Grade of filtration [µm]		5 (air purity class at the output 3.7.- to DIN ISO 8573-1)			
		40 (air purity class at the output 5.7.- to DIN ISO 8573-1)			
Bowl guard		Plastic bowl guard			
		Metal bowl			
Condensate drain		Manual rotary			
		Semi-automatic			
		Fully automatic			
			Fully automatic, electrical		
Actuator lock		Rotary knob with detent			
		Rotary knob with integrated lock			
		Lockable with accessories			
Pressure regulation range	D5 [bar]	0.3 ... 4			
	D6 [bar]	0.3 ... 7			
	D7 [bar]	0.5 ... 12 (0.5 ... 10 with pressure sensor variant AD...)			
	D8 [bar]		0.5 ... 16		
Max. hysteresis [bar]		0.25			
Pressure display		Via pressure sensor for displaying output pressure and electrical output			
		Via pressure gauge for displaying output pressure			
Max. condensate volume [cm ³]		19 (with plastic bowl guard)		38	
		25 (with metal bowl)			

 Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

 **New**
Variants E11, RG

Filter regulators MS4/MS6-LFR, MS series

Technical data

FESTO

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]						
Size	MS4			MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
D5 – Pressure regulation range 0.3 ... 4 bar						
Grade of filtration	5 μ m	900 ²⁾	1,800 ²⁾	2,000 ²⁾	5,500 ²⁾	6,900 ²⁾
	40 μ m	1,100 ²⁾	1,900 ²⁾	2,200 ²⁾	6,000 ²⁾	7,200 ²⁾
D6 – Pressure regulation range 0.3 ... 7 bar						
Grade of filtration	5 μ m	900	1,500	2,700	5,000	5,600
	40 μ m	1,000	1,700	2,800	5,700	6,200
D7 – Pressure regulation range 0.5 ... 12 bar						
Grade of filtration	5 μ m	850	1,200	2,200	3,500	4,000
	40 μ m	900	1,500	2,500	4,000	4,500
D8 – Pressure regulation range 0.5 ... 16 bar						
Grade of filtration	5 μ m	–	–	2,000	3,300	3,800
	40 μ m	–	–	2,300	3,500	4,000

1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar

2) Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar

Operating and environmental conditions							
Condensate drain	Manual rotary		Semi-automatic		Fully automatic		Fully automatic, electrical E1 ... E4
	M		H		V		
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS6
Input pressure [bar]	0.8 ... 14	0.8 ... 20	1.5 ... 12	1.5 ... 12	2 ... 12	2 ... 12	0.8 ... 16
Operating medium	Compressed air						
Operating medium with pressure sensor AD...	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m						
Ambient temperature [°C]	–10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Ambient temperature with pressure sensor AD...	0 ... +50		+5 ... +50		+5 ... +50		+1 ... +50
Temperature of medium [°C]	–10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Medium temperature with pressure sensor AD...	0 ... +50		+5 ... +50		+5 ... +50		+1 ... +50
Storage temperature [°C]	–10 ... +60		–10 ... +60		–10 ... +60		+1 ... +60
Corrosion resistance class CRC ¹⁾	2						

1) Corrosion resistance class 2 to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]				
Size	MS4		MS6	
Rotary knob	Without integrated lock E11	With integrated lock E11	Without integrated lock E11	With integrated lock E11
Filter regulator with plastic bowl guard R	275	400	875	1,145
Filter regulator with metal bowl U	475	600	1,087	1,627
Filter regulator with metal bowl U and condensate drain fully automatic, electrically actuated E1 ... E4	–	–	1,800	2,070

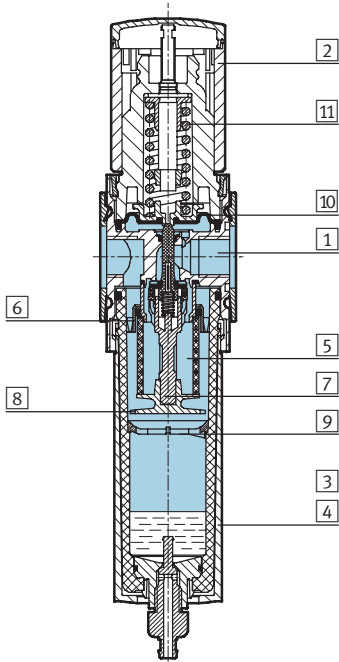
Filter regulators MS4/MS6-LFR, MS series

Technical data



Materials

Sectional view



Filter regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	Polyamide/polyacetate
	Rotary knob with integrated lock E11	Aluminium
3	Plastic bowl guard	Polycarbonate/polyamide
4	Metal bowl	Aluminium
	Inspection window	Polyamide
5	Filter element	Polyethylene
6	Spin disc	Polyacetate
7	Filter holder	Polyacetate
8	Separating plate	Polyacetate
9	Stabilising disc	Polyacetate
10	Diaphragm	Nitrile rubber
11	Spring	Steel
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE only with cover plate VS

MS4/MS6 series service units
Filter regulators

2.12

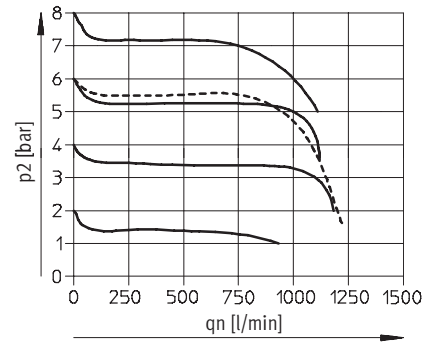
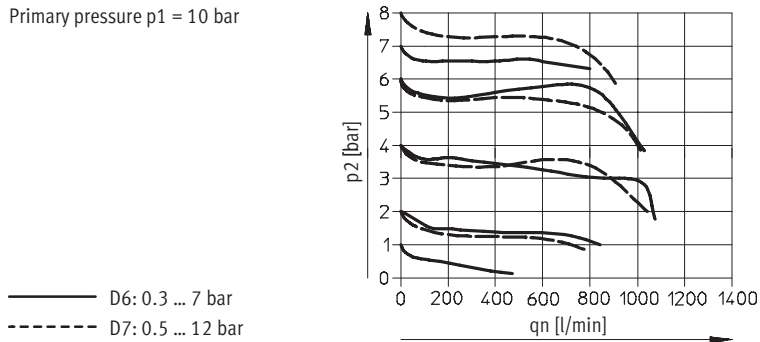
Standard flow rate q_n as a function of output pressure p_2

Pressure regulation range D6 or D7
MS4-LFR-1/8

Grade of filtration 5 μm

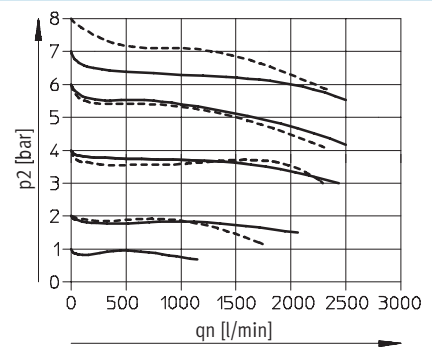
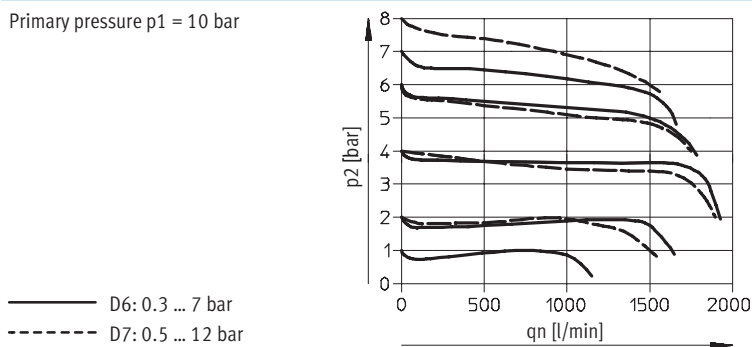
Grade of filtration 40 μm

Primary pressure $p_1 = 10$ bar



MS4-LFR-1/4

Primary pressure $p_1 = 10$ bar



Filter regulators MS4/MS6-LFR, MS series

Technical data



Standard flow rate q_n as a function of output pressure p_2

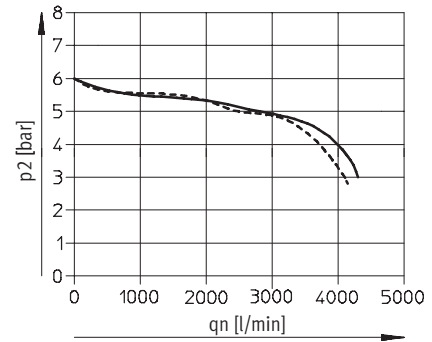
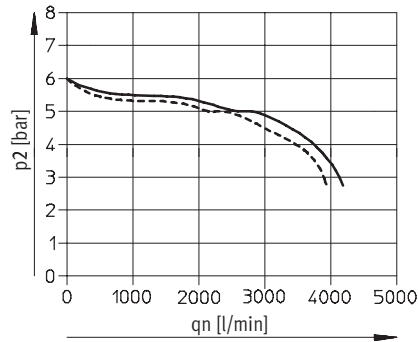
Pressure regulation range D6 or D7

Grade of filtration 5 μm

Grade of filtration 40 μm

MS6-LFR- $\frac{1}{4}$

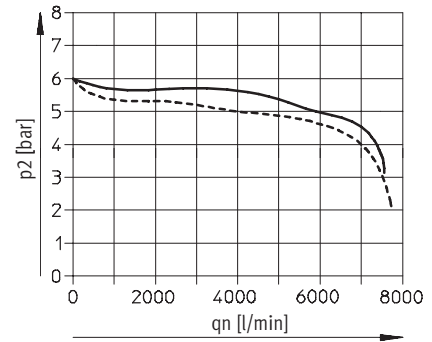
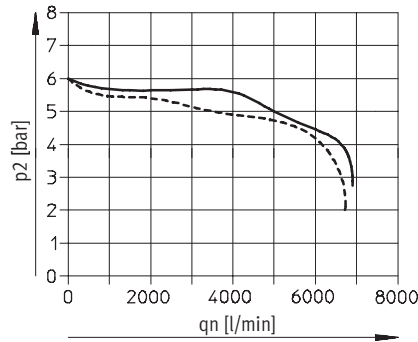
Primary pressure $p_1 = 10$ bar



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

MS6-LFR- $\frac{3}{8}$

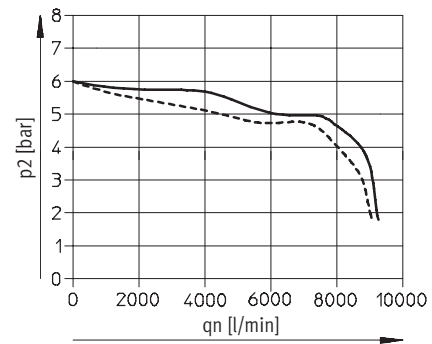
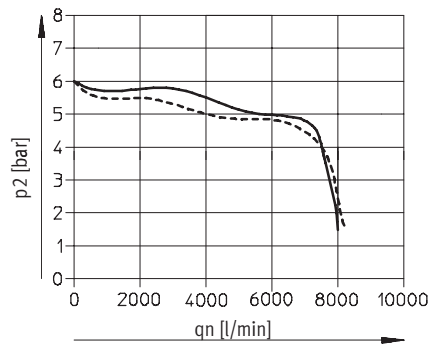
Primary pressure $p_1 = 10$ bar



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

MS6-LFR- $\frac{1}{2}$

Primary pressure $p_1 = 10$ bar



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

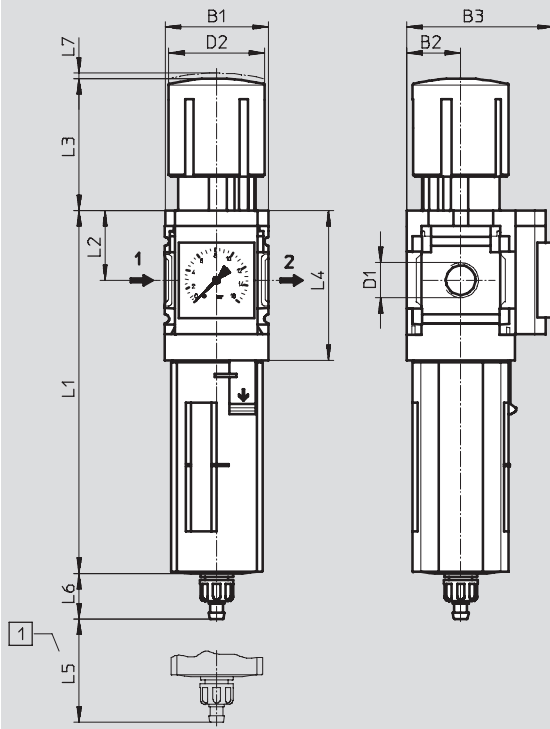
Filter regulators MS4/MS6-LFR, MS series

Technical data

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering

Integrated pressure gauge, display unit [bar], rotary knob as standard, manual rotary condensate drain



1 Installation dimensions

→ Flow direction

Type	B1	B2	B3		D1	D2	L1		L2	L3	L4	L5	L6		L7
			Pressure gauge				Bowl guard						Bowl guard		
			Standard scale	Red-green scale			Polymer	Metal					Polymer	Metal	
MS4-LFR-1/8	40	21	57	58.5	G1/8	37.2	140.6	158.2	27	51.1	58.5	25	17.7	17.7	2
MS4-LFR-1/4					G1/4										
MS6-LFR-1/4	62	31	77	78.5	G1/4	51	189	194.4	39	86	84	68	15.8	19	5
MS6-LFR-3/8					G3/8										
MS6-LFR-1/2					G1/2										

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

New
Variants E11, RG

Filter regulators MS4/MS6-LFR, MS series

Technical data

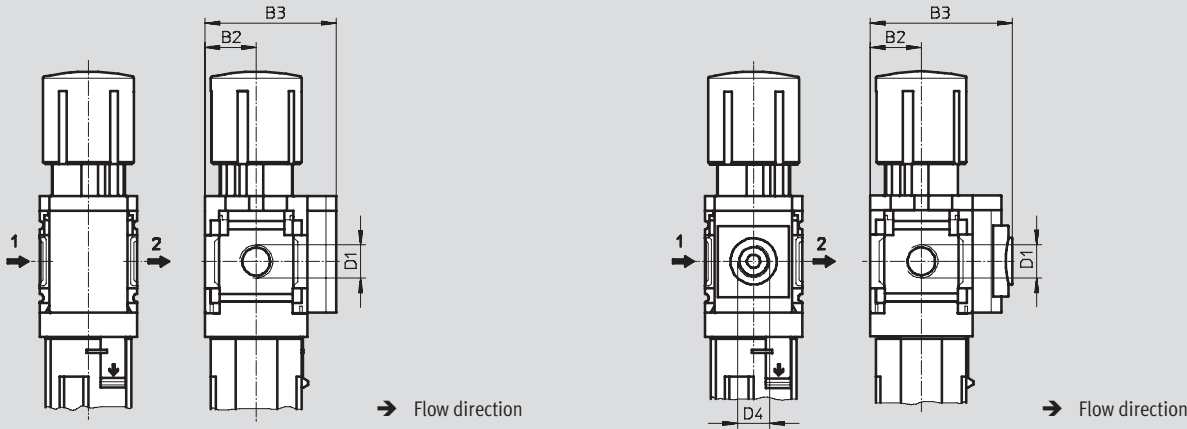


Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

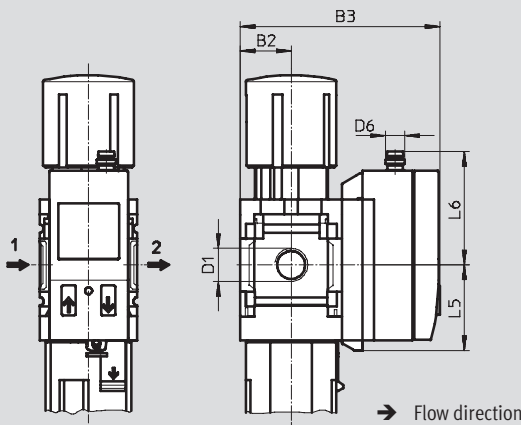
Cover plate VS

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



Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

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

Type	B2	B3	D1	D4	D6	L5	L6						
MS4-LFR-1/8-...-VS	21	54	G1/8	-	-	-	-						
MS4-LFR-1/4-...-VS			G1/4										
MS4-LFR-1/8-...-A8	21	58.5	G1/8	G1/8	-	-	-						
MS4-LFR-1/4-...-A8			G1/4										
MS4-LFR-1/8-...-A4	21	58.5	G1/8	G1/4	-	-	-						
MS4-LFR-1/4-...-A4			G1/4										
MS4-LFR-1/8-...-AD1/AD2	21	82.6	G1/8	-	M8x1	35.1	46.7						
MS4-LFR-1/4-...-AD1/AD2			G1/4										
MS4-LFR-1/8-...-AD3/AD4	21	82.6	G1/8	-	M12x1	35.1	55.8						
MS4-LFR-1/4-...-AD3/AD4			G1/4										
MS6-LFR-1/4-...-VS	31	76	G1/4	-	-	-	-						
MS6-LFR-3/8-...-VS			G3/8										
MS6-LFR-1/2-...-VS			G1/2										
MS6-LFR-1/4-...-A4			31					78.5	G1/4	G1/4	-	-	-
MS6-LFR-3/8-...-A4									G3/8				
MS6-LFR-1/2-...-A4									G1/2				
MS6-LFR-1/4-...-AD1/AD2	31	103	G1/4	-	M8x1	35.1	46.7						
MS6-LFR-3/8-...-AD1/AD2			G3/8										
MS6-LFR-1/2-...-AD1/AD2			G1/2										
MS6-LFR-1/4-...-AD3/AD4	31	103	G1/4	-	M12x1	35.1	55.8						
MS6-LFR-3/8-...-AD3/AD4			G3/8										
MS6-LFR-1/2-...-AD3/AD4			G1/2										

– Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Filter regulators MS4/MS6-LFR, MS series

Technical data

FESTO

Dimensions – Rotary knob

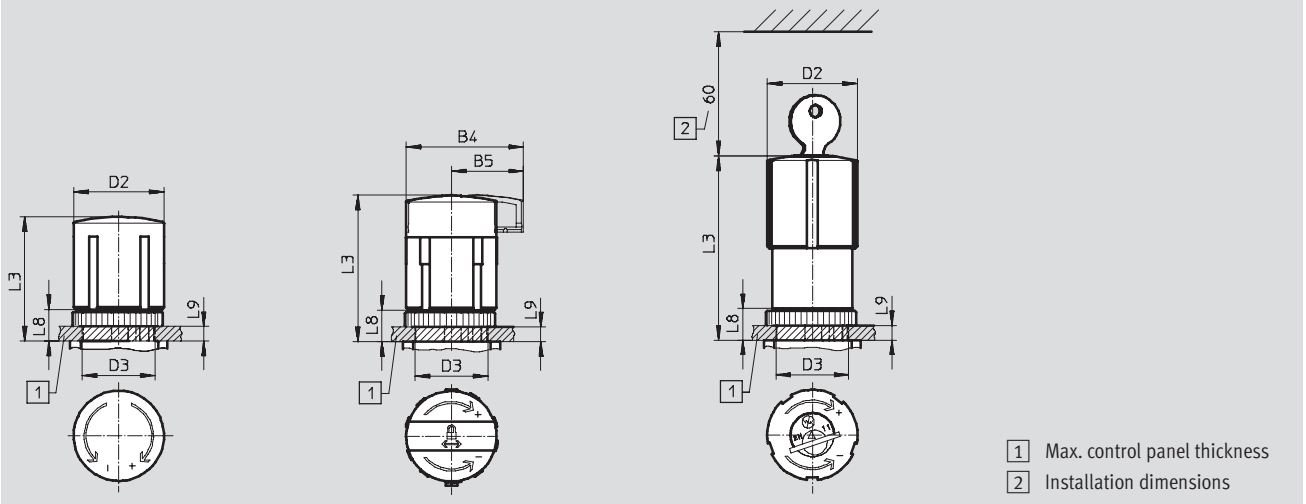
Download CAD data → www.festo.com/en/engineering

For installation into control panel

Standard

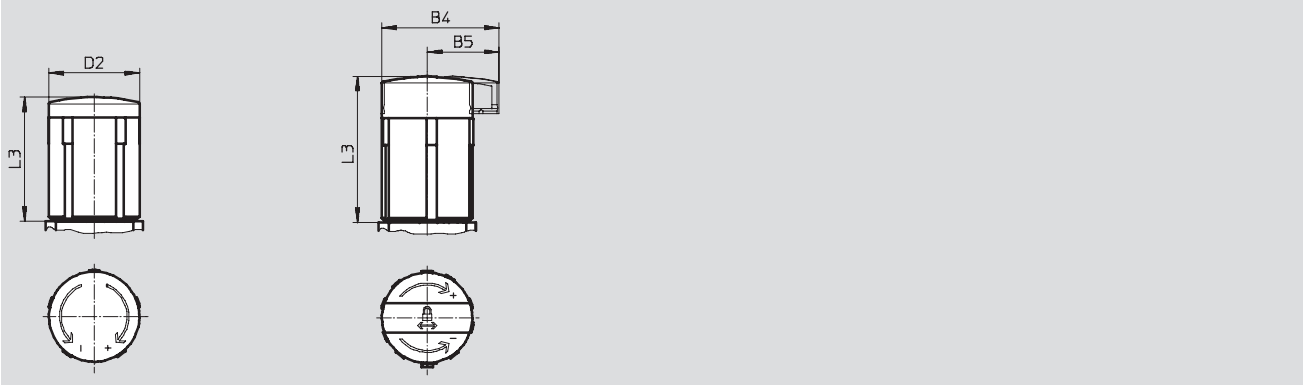
Standard, lockable AS

With integrated lock E11



Long LD

Long, lockable LD-AS



Type	B4	B5	D2	D3 +1	L3	L8	L9
MS4-LFR-...	-	-	37.2	30	51.1	13	6
MS4-LFR-...-AS	48.3	29.7			60.2		
MS4-LFR-...-E11	-	-			76		
MS4-LFR-...-LD	-	-	37.2	-	51.1	-	-
MS4-LFR-...-LD-AS	48.3	29.7			60.2		
MS6-LFR-...	-	-	51	44	86	22	14
MS6-LFR-...-AS	67.7	42			95.5		
MS6-LFR-...-E11	-	-			51.8		
MS6-LFR-...-LD	-	-	51	-	86	-	-
MS6-LFR-...-LD-AS	67.7	42			95.5		

New
Variants E11, RG

Filter regulators MS4/MS6-LFR, MS series

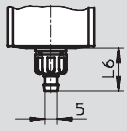
Technical data



Dimensions – Condensate drain

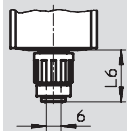
Download CAD data → www.festo.com/en/engineering

Manual rotary M



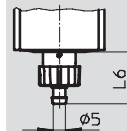
Barbed fitting for plastic tubing
PCN-4

Semi-automatic H



QS fitting for plastic tubing
PUN-6/PAN-6

Fully automatic V



Barbed fitting for plastic tubing
PCN-4

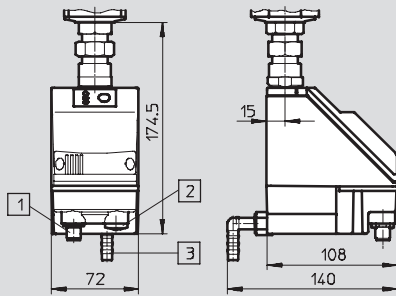
Type	L6
Plastic bowl guard	
MS4-LFR-...-M	17.7
MS6-LFR-...-M	15.8
Metal bowl	
MS4-LFR-...-M	17.7
MS6-LFR-...-M	19

Type	L6
Plastic bowl guard	
MS4-LFR-...-H	22.1
MS6-LFR-...-H	20.2
Metal bowl	
MS4-LFR-...-H	22.1
MS6-LFR-...-H	22.8

Type	L6
Plastic bowl guard	
MS4-LFR-...-V	20.4
MS6-LFR-...-V	18.5
Metal bowl	
MS4-LFR-...-V	20.4
MS6-LFR-...-V	22

Fully automatic, electrically actuated E1 ... E4

Technical data PWEA → 3 / 4.6-4



- 1 Variant E1
PWEA-AP-... with M12x1 plug,
5-pin for SIM-M12-5GD-...
- 2 Variant E2/E3/E4
PWEA-AC-... with cable conduit
fitting Pg9
- 3 Connection 360° rotatable for
plastic tubing PUN-H-12x2-...

MS4/MS6 series service units
Filter regulators

2.12

Filter regulators MS4/MS6-LFR, MS series

Technical data

FESTO

Ordering data						
Pressure regulation range 0.3 ... 7 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MS4	Manual rotary	G $\frac{1}{8}$	529 160	MS4-LFR- $\frac{1}{8}$ -D6-CRM-AS	529 164	MS4-LFR- $\frac{1}{8}$ -D6-ERM-AS
		G $\frac{1}{4}$	529 144	MS4-LFR- $\frac{1}{4}$ -D6-CRM-AS	529 148	MS4-LFR- $\frac{1}{4}$ -D6-ERM-AS
	Fully automatic	G $\frac{1}{8}$	529 162	MS4-LFR- $\frac{1}{8}$ -D6-CRV-AS	529 166	MS4-LFR- $\frac{1}{8}$ -D6-ERV-AS
		G $\frac{1}{4}$	529 146	MS4-LFR- $\frac{1}{4}$ -D6-CRV-AS	529 150	MS4-LFR- $\frac{1}{4}$ -D6-ERV-AS
MS6	Manual rotary	G $\frac{1}{4}$	529 196	MS6-LFR- $\frac{1}{4}$ -D6-CRM-AS	529 200	MS6-LFR- $\frac{1}{4}$ -D6-ERM-AS
		G $\frac{3}{8}$	529 216	MS6-LFR- $\frac{3}{8}$ -D6-CRM-AS	529 220	MS6-LFR- $\frac{3}{8}$ -D6-ERM-AS
		G $\frac{1}{2}$	529 176	MS6-LFR- $\frac{1}{2}$ -D6-CRM-AS	529 180	MS6-LFR- $\frac{1}{2}$ -D6-ERM-AS
	Fully automatic	G $\frac{1}{4}$	529 198	MS6-LFR- $\frac{1}{4}$ -D6-CRV-AS	529 202	MS6-LFR- $\frac{1}{4}$ -D6-ERV-AS
		G $\frac{3}{8}$	529 218	MS6-LFR- $\frac{3}{8}$ -D6-CRV-AS	529 222	MS6-LFR- $\frac{3}{8}$ -D6-ERV-AS
		G $\frac{1}{2}$	529 178	MS6-LFR- $\frac{1}{2}$ -D6-CRV-AS	529 182	MS6-LFR- $\frac{1}{2}$ -D6-ERV-AS

Ordering data						
Pressure regulation range 0.5 ... 12 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MS4	Manual rotary	G $\frac{1}{8}$	529 168	MS4-LFR- $\frac{1}{8}$ -D7-CRM-AS	529 172	MS4-LFR- $\frac{1}{8}$ -D7-ERM-AS
		G $\frac{1}{4}$	529 152	MS4-LFR- $\frac{1}{4}$ -D7-CRM-AS	529 156	MS4-LFR- $\frac{1}{4}$ -D7-ERM-AS
	Fully automatic	G $\frac{1}{8}$	529 170	MS4-LFR- $\frac{1}{8}$ -D7-CRV-AS	529 174	MS4-LFR- $\frac{1}{8}$ -D7-ERV-AS
		G $\frac{1}{4}$	529 154	MS4-LFR- $\frac{1}{4}$ -D7-CRV-AS	529 158	MS4-LFR- $\frac{1}{4}$ -D7-ERV-AS
MS6	Manual rotary	G $\frac{1}{4}$	529 204	MS6-LFR- $\frac{1}{4}$ -D7-CRM-AS	529 208	MS6-LFR- $\frac{1}{4}$ -D7-ERM-AS
		G $\frac{3}{8}$	529 224	MS6-LFR- $\frac{3}{8}$ -D7-CRM-AS	529 228	MS6-LFR- $\frac{3}{8}$ -D7-ERM-AS
		G $\frac{1}{2}$	529 184	MS6-LFR- $\frac{1}{2}$ -D7-CRM-AS	529 188	MS6-LFR- $\frac{1}{2}$ -D7-ERM-AS
	Fully automatic	G $\frac{1}{4}$	529 206	MS6-LFR- $\frac{1}{4}$ -D7-CRV-AS	529 210	MS6-LFR- $\frac{1}{4}$ -D7-ERV-AS
		G $\frac{3}{8}$	529 226	MS6-LFR- $\frac{3}{8}$ -D7-CRV-AS	529 230	MS6-LFR- $\frac{3}{8}$ -D7-ERV-AS
		G $\frac{1}{2}$	529 186	MS6-LFR- $\frac{1}{2}$ -D7-CRV-AS	529 190	MS6-LFR- $\frac{1}{2}$ -D7-ERV-AS

Metal bowl						
MS4	Manual rotary	G $\frac{1}{8}$	535 702	MS4-LFR- $\frac{1}{8}$ -D7-CUM-AS	535 708	MS4-LFR- $\frac{1}{8}$ -D7-EUM-AS
		G $\frac{1}{4}$	535 718	MS4-LFR- $\frac{1}{4}$ -D7-CUM-AS	535 724	MS4-LFR- $\frac{1}{4}$ -D7-EUM-AS
	Fully automatic	G $\frac{1}{8}$	535 704	MS4-LFR- $\frac{1}{8}$ -D7-CUV-AS	535 706	MS4-LFR- $\frac{1}{8}$ -D7-EUV-AS
		G $\frac{1}{4}$	535 720	MS4-LFR- $\frac{1}{4}$ -D7-CUV-AS	535 722	MS4-LFR- $\frac{1}{4}$ -D7-EUV-AS
MS6	Manual rotary	G $\frac{1}{4}$	530 342	MS6-LFR- $\frac{1}{4}$ -D7-CUM-AS	529 212	MS6-LFR- $\frac{1}{4}$ -D7-EUM-AS
		G $\frac{3}{8}$	530 346	MS6-LFR- $\frac{3}{8}$ -D7-CUM-AS	529 232	MS6-LFR- $\frac{3}{8}$ -D7-EUM-AS
		G $\frac{1}{2}$	530 338	MS6-LFR- $\frac{1}{2}$ -D7-CUM-AS	529 192	MS6-LFR- $\frac{1}{2}$ -D7-EUM-AS
	Fully automatic	G $\frac{1}{4}$	530 344	MS6-LFR- $\frac{1}{4}$ -D7-CUV-AS	529 214	MS6-LFR- $\frac{1}{4}$ -D7-EUV-AS
		G $\frac{3}{8}$	530 348	MS6-LFR- $\frac{3}{8}$ -D7-CUV-AS	529 234	MS6-LFR- $\frac{3}{8}$ -D7-EUV-AS
		G $\frac{1}{2}$	530 340	MS6-LFR- $\frac{1}{2}$ -D7-CUV-AS	529 194	MS6-LFR- $\frac{1}{2}$ -D7-EUV-AS

Ordering data – Wearing parts kits		
Size	Part No.	Type
MS4	673 647	MS4-LFR
MS6	673 648	MS6-LFR

 **New**
Variants E11, RG

Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products



M Mandatory data →

Module No.	Series	Size	Function	Connection sizes	Pressure regulation range	Grade of filtration	Bowl
526 489	MS	4	LFR	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	D5 D6 D7 D8	E C	R U
526 490		6					
Order example							
526 489	MS	4	- LFR	- AGA	- D6	- C	- R

Ordering table

Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M Module No.		526 489	526 490			
Series		Standard			MS	MS
Size		4	6		...	
Function		Filter regulator			-LFR	-LFR
Connection sizes	Thread G1/8	-			-1/8	
	Thread G1/4		Thread G1/4		-1/4	
	-		Thread G3/8		-3/8	
	-		Thread G1/2		-1/2	
	Connecting plate G1/8	-			-AGA	
	Connecting plate G1/4		Connecting plate G1/4		-AGB	
	Connecting plate G3/8		Connecting plate G3/8		-AGC	
	-		Connecting plate G1/2		-AGD	
	-		Connecting plate G3/4		-AGE	
Pressure regulation range	0.3 ... 4 bar				-D5	
	0,3 ... 7 bar				-D6	
	0.5 ... 12 bar				-D7	
	-		0.5 ... 16 bar		-D8	
Grade of filtration	40 µm				-E	
	5 µm				-C	
Bowl	Plastic bowl with plastic bowl guard				-R	
	Metal bowl				-U	

Transfer order code

	MS		- LFR				
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Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products

→ M		O Options					
Condensate drain	Pressure gauge alternatives	Alternative pressure gauge scale	Secondary venting	Rotary knob	Security	Type of mounting	Alternative flow direction
M H V E1 E2 E3 E4	VS, A8, A4, RG, AD1, AD2, AD3, AD4	PSI MPA	OS	LD	AS E11	WR WP WPM WB WBM	Z
- M	- A8	-	-	- LD	- AS	- WPM	- Z

Ordering table								
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code		
↓ M	Condensate drain	Manual			-M			
		Semi-automatic (P1 max. 12 bar)		1	-H			
		Fully automatic (P1 max. 12 bar)		1	-V			
	External, fully automatic, electrical	–		24 V DC, M12	2	-E1		
		–		110 V AC, terminal strip	2	-E2		
		–		230 V AC, terminal strip	2	-E3		
		–		24 V DC, terminal strip	2	-E4		
O	Pressure gauge alternatives	Cover plate			-VS			
		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			3		-RG	
		Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin			4		-AD1	
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			4		-AD2	
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			4		-AD3	
	Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			4		-AD4		
	Alternative pressure gauge scale	psi			5		-PSI	
		MPa			5		-MPA	
Secondary venting	Without secondary venting					-OS		
Rotary knob	Long rotary knob			6		-LD		
Security	Lockable rotary knob					-AS		
	With integrated lock					-E11		
Type of mounting	Wall mounting bracket with knurled nut for regulator head			7		-WR		
	Mounting bracket			8		-WP		
	Mounting bracket (for retro-fitting M-series)			8		-WPM		
	Mounting bracket					-WB		
	Mounting bracket		–			-WBM		
Alternative flow direction	Flow direction from right to left					-Z		

1 H, V Not with pressure regulation range D8

2 E1 ... E4 Only with metal bowl U

3 RG Alternative pressure gauge scale PSI serves only as an auxiliary scale

4 AD1 ... AD4 Measuring range max. 10 bar.
Not with pressure regulation range D8.

5 PSI, MPA Not with pressure gauge alternatives VS, A8, A4, AD1, AD2, AD3, AD4

6 LD Not with security E11

7 WR Not with long rotary knob LD

8 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE

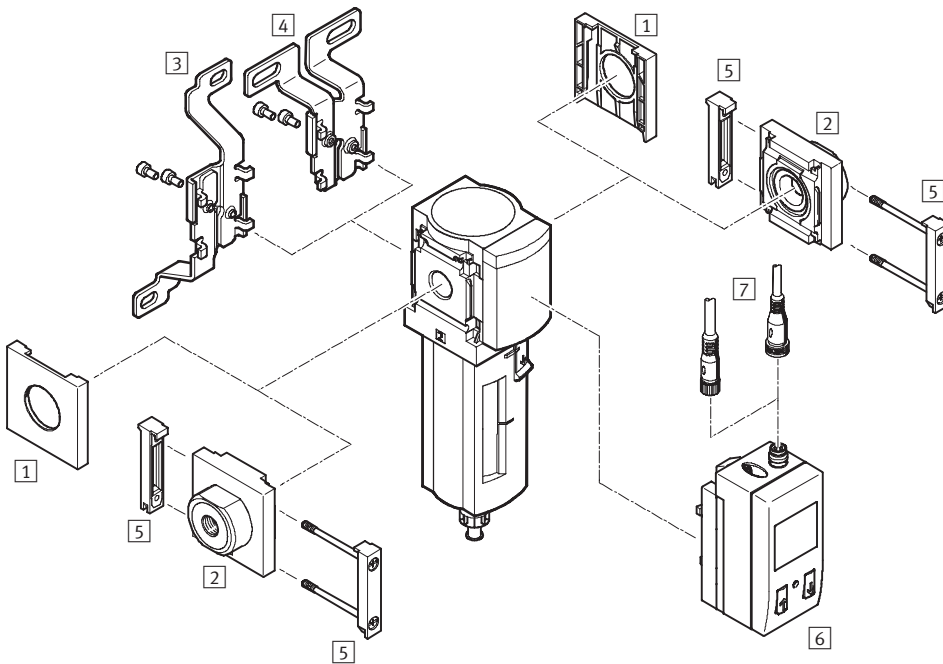
Transfer order code

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

New
Variants HF, DP(I), DN(I)

Filters MS4/MS6-LF/LFM/LFX, MS series

Peripherals overview



Note
Additional accessories:
– Module connector for combinations → 3/2.31-10
– Adapter for mounting on profiles → 3/2.31-13

MS4/MS6 series service units
Filters

2.13

Mounting attachments and accessories						
	Individual device		Combination → 3/2.11-0		→ Page	
	without connecting plate	with connecting plate	without connecting plate	with connecting plate		
1	Cover cap MS4/6-END	■	–	■	–	3/2.31-3
2	Connecting plate MS4/6-AG...	–	■	–	■	3/2.31-2
3	Mounting bracket MS4/6-WB	■	■	–	–	3/2.31-4
4	Mounting bracket MS4-WBM	■	■	–	–	3/2.31-4
5	Module connector MS4/6-MV	–	■	■	■	3/2.31-9
6	Filter pollution indicator DP/DN/DPI/DNI	■ for LFM	■ for LFM	■ for LFM	■ for LFM	3/2.13-20
7	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■ for LFM	■ for LFM	■ for LFM	■ for LFM	3/2.31-24
–	Mounting bracket MS4/6-WP/WPB/WPM	–	■	■	■	3/2.31-7, 3/2.31-8

Filters MS4/MS6-LF/LFM/LFX, MS series

FESTO

Type codes

Series		MS	6	-	LFM	-	1/4	-	A	R	M	-		-	DA
Series															
MS	Standard service unit														
Size															
4	Grid dimension 40 mm														
6	Grid dimension 62 mm														
Service function															
LF	Filter														
LFM	Fine and micro filter														
LFX	Activated carbon filter														
Pneumatic connection															
1/8	G1/8 thread														
1/4	G1/4 thread														
3/8	G3/8 thread														
1/2	G1/2 thread														
Grade of filtration (for LF and LFM only)															
A	0.01 µm														
B	1 µm														
C	5 µm														
E	40 µm														
Bowl guard															
R	Plastic bowl guard														
U	Metal bowl														
Condensate drain (for LF and LFM only)															
M	Manual rotary														
V	Fully automatic														
Flow rate (for LFM and LFX only)															
	Standard														
HF	High flow rate														
Filter change sensor (for LFM only)															
	Without differential pressure indicator														
DA	Differential pressure indicator														

Further variants can be ordered using the modular system

Filters LF	→ 3/2.13-8
Fine and micro filters LFM	→ 3/2.13-20
Activated carbon filters LFX	→ 3/2.13-27

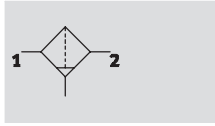
- Connecting plates
- Condensate drain
- Filter pollution indicator (for LFM only)
- Type of mounting
- Alternative flow direction

Filters MS4/MS6-LF, MS series

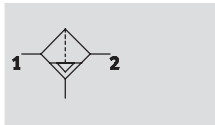
Technical data



Function
Condensate drain
manual rotary



semi or fully automatic



- - Flow rate
1,000 ... 4,100 l/min

- - Temperature range
-10 ... +60 °C

- - Input pressure
0 ... 20 bar

- - www.festo.com/en/Spare_parts_service

Wearing parts kits
→ 3/2.13-7

The sintered filter with centrifugal separation removes contamination, rust and condensate from the compressed air. The filter cartridges are replaceable.



- Good particle and condensate separation
- High flow rate with minimal pressure drop
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- Choice of filter cartridges: 5 µm or 40 µm
- Filter cartridges → 3/2.31-19

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈	G ¹ / ₂
Design	Sintered filter with centrifugal separation				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Vertical ±5°				
Grade of filtration [µm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)				
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)				
Bowl guard	Plastic bowl guard				
	Metal bowl				
Condensate drain	Manual rotary				
	Semi-automatic				
	Fully automatic				
	-		Fully automatic, electrical		
Max. condensate volume [cm ³]	19 (with plastic bowl guard) 25 (with metal bowl)		38		

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q _n ¹⁾ [l/min]					
Size	MS4		MS6		
Pneumatic connection	G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈	G ¹ / ₂
Grade of filtration	5 µm	1,000	1,300	2,000	3,000
	40 µm	1,100	1,700	2,500	3,200
				3,800	4,100

1) Measured at p₁ = 6 bar and Δp = 1 bar

Filters MS4/MS6-LF, MS series

Technical data



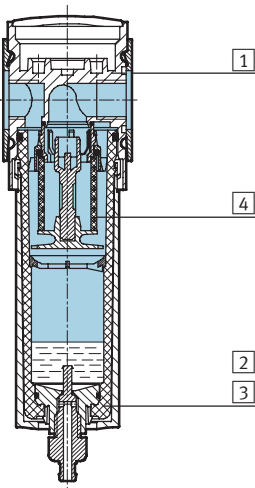
Operating and environmental conditions							
Condensate drain	Manual rotary M		Semi-automatic H		Fully automatic V		Fully automatic, electrical E1 ... E4
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS6
Input pressure [bar]	0 ... 14	0 ... 20	1.5 ... 12	1.5 ... 12	2 ... 12	2 ... 12	0.8 ... 16
Operating medium	Compressed air						
Ambient temperature [°C]	-10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Temperature of medium [°C]	-10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Storage temperature [°C]	-10 ... +60		-10 ... +60		-10 ... +60		+1 ... +60
Corrosion resistance	CRC ¹⁾		2				

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]		
Size	MS4	MS6
Filter with plastic bowl guard R	190	600
Filter with metal bowl U	350	820
Filter with metal bowl U and fully automatic, electrically actuated condensate drain E1 ... E4	-	1,800

Materials

Sectional view



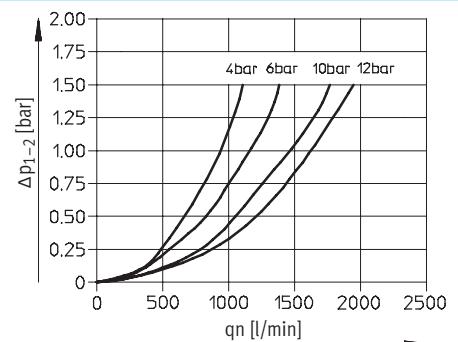
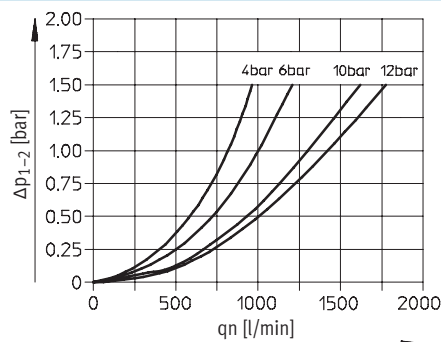
Filters		
1	Body	Die-cast aluminium
2	Plastic bowl guard	Polycarbonate/polyamide
3	Metal bowl	Aluminium
	Viewing window	Polyamide
4	Filter element	Polyethylene
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE

Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

Grade of filtration 5 μm

Grade of filtration 40 μm

MS4-LF-1/8



Filters MS4/MS6-LF, MS series

Technical data

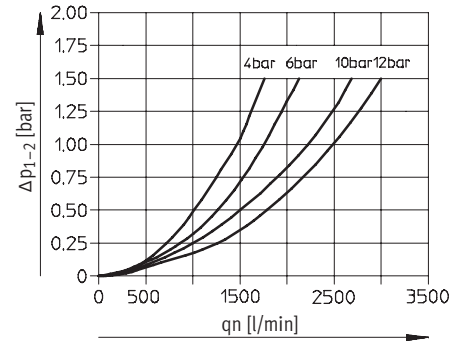
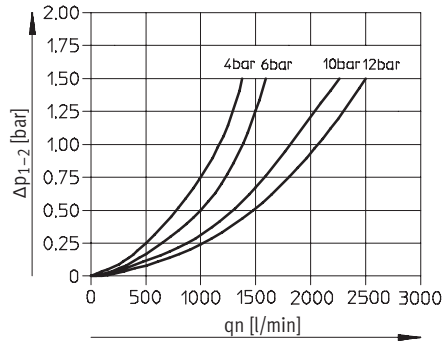


Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

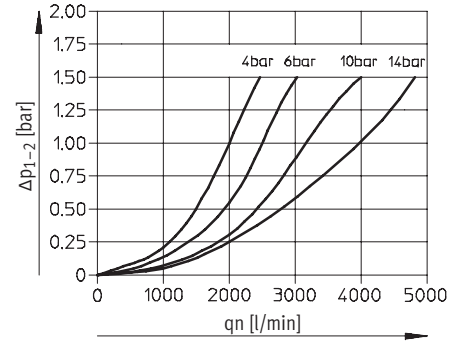
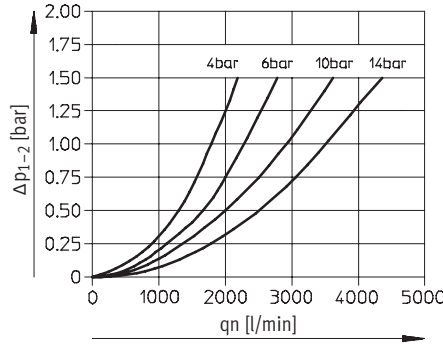
Grade of filtration 5 μm

Grade of filtration 40 μm

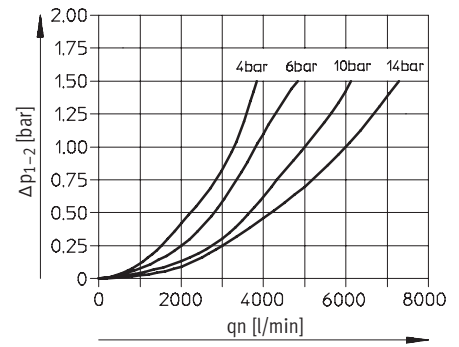
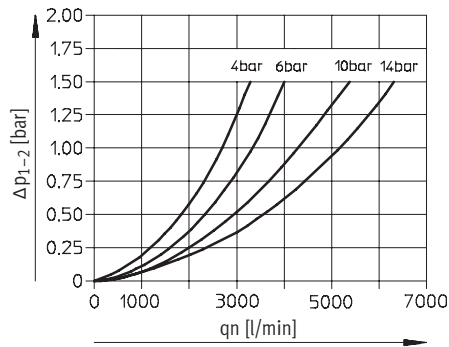
MS4-LF-1/4



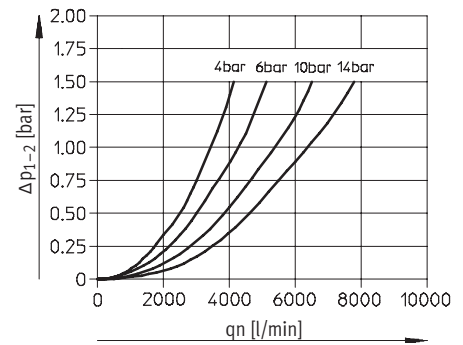
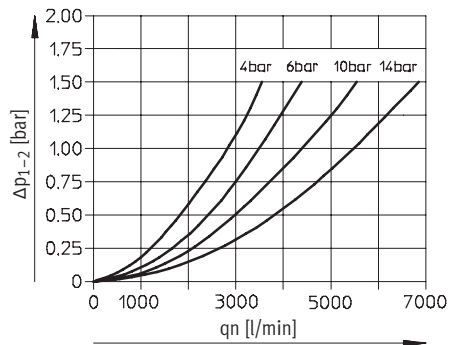
MS6-LF-1/4



MS6-LF-3/8



MS6-LF-1/2



Filters MS4/MS6-LF, MS series

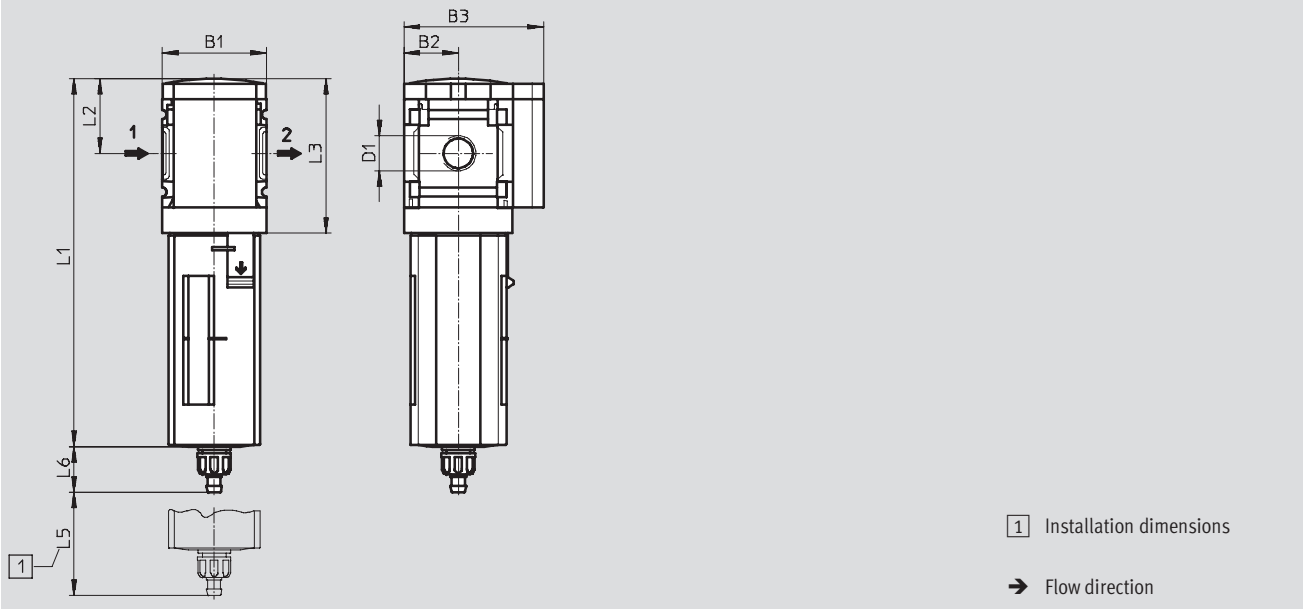
Technical data



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering

Manual rotary condensate drain



Type	B1	B2	B3	D1	L1		L2	L3	L5	L6	
					Bowl guard					Plastic	Metal
					Plastic	Metal					
MS4-LF-1/8	40	21	54	G1/8	142.8	159.4	29	60.5	25	17.7	17.7
MS4-LF-1/4				G1/4							
MS6-LF-1/4	62	31	76	G1/4	192	198	42	87	68	15.8	19
MS6-LF-3/8				G3/8							
MS6-LF-1/2				G1/2							

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Filters MS4/MS6-LF, MS series

Technical data



Dimensions – Condensate drain Download CAD data → www.festo.com/en/engineering

Manual rotary M

Barbed fitting for plastic tubing
PCN-4

Semi-automatic H

QS fitting for plastic tubing
PUN-6/PAN-6

Fully automatic V

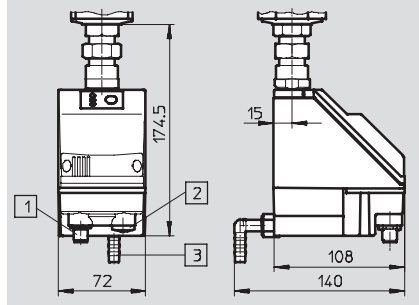
Barbed fitting for plastic tubing
PCN-4

Type	L6
Plastic bowl guard	
MS4-LF-...-M	17.7
MS6-LF-...-M	15.8
Metal bowl	
MS4-LF-...-M	17.7
MS6-LF-...-M	19

Type	L6
Plastic bowl guard	
MS4-LF-...-H	22.1
MS6-LF-...-H	20.2
Metal bowl	
MS4-LF-...-H	22.1
MS6-LF-...-H	22.8

Type	L6
Plastic bowl guard	
MS4-LF-...-V	20.4
MS6-LF-...-V	18.5
Metal bowl	
MS4-LF-...-V	20.4
MS6-LF-...-V	22

Fully automatic, electrically actuated E1 ... E4 Technical data PWEA → 3 / 4.6-4



- 1 Variant E1
PWEA-AP-... with M12x1 plug,
5-pin for SIM-M12-5GD-...
- 2 Variant E2/E3/E4
PWEA-AC-... with cable conduit
fitting Pg9
- 3 Connection 360° rotatable for
plastic tubing PUN-H-12x2-...

Filters MS4/MS6-LF, MS series

Technical data

FESTO

Ordering data						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MS4	manual rotary	G $\frac{1}{8}$	529 403	MS4-LF- $\frac{1}{8}$ -CRM	529 407	MS4-LF- $\frac{1}{8}$ -ERM
		G $\frac{1}{4}$	529 395	MS4-LF- $\frac{1}{4}$ -CRM	529 399	MS4-LF- $\frac{1}{4}$ -ERM
	fully automatic	G $\frac{1}{8}$	529 405	MS4-LF- $\frac{1}{8}$ -CRV	529 409	MS4-LF- $\frac{1}{8}$ -ERV
		G $\frac{1}{4}$	529 397	MS4-LF- $\frac{1}{4}$ -CRV	529 401	MS4-LF- $\frac{1}{4}$ -ERV
MS6	manual rotary	G $\frac{1}{4}$	529 623	MS6-LF- $\frac{1}{4}$ -CRM	529 631	MS6-LF- $\frac{1}{4}$ -ERM
		G $\frac{3}{8}$	529 639	MS6-LF- $\frac{3}{8}$ -CRM	529 647	MS6-LF- $\frac{3}{8}$ -ERM
		G $\frac{1}{2}$	529 607	MS6-LF- $\frac{1}{2}$ -CRM	529 615	MS6-LF- $\frac{1}{2}$ -ERM
	fully automatic	G $\frac{1}{4}$	529 625	MS6-LF- $\frac{1}{4}$ -CRV	529 633	MS6-LF- $\frac{1}{4}$ -ERV
		G $\frac{3}{8}$	529 641	MS6-LF- $\frac{3}{8}$ -CRV	529 649	MS6-LF- $\frac{3}{8}$ -ERV
		G $\frac{1}{2}$	529 609	MS6-LF- $\frac{1}{2}$ -CRV	529 617	MS6-LF- $\frac{1}{2}$ -ERV
Metal bowl						
MS4	manual rotary	G $\frac{1}{8}$	535 638	MS4-LF- $\frac{1}{8}$ -CUM	535 644	MS4-LF- $\frac{1}{8}$ -EUM
		G $\frac{1}{4}$	535 654	MS4-LF- $\frac{1}{4}$ -CUM	535 660	MS4-LF- $\frac{1}{4}$ -EUM
	fully automatic	G $\frac{1}{8}$	535 640	MS4-LF- $\frac{1}{8}$ -CUV	535 642	MS4-LF- $\frac{1}{8}$ -EUV
		G $\frac{1}{4}$	535 656	MS4-LF- $\frac{1}{4}$ -CUV	535 658	MS4-LF- $\frac{1}{4}$ -EUV
MS6	manual rotary	G $\frac{1}{4}$	529 627	MS6-LF- $\frac{1}{4}$ -CUM	529 635	MS6-LF- $\frac{1}{4}$ -EUM
		G $\frac{3}{8}$	529 643	MS6-LF- $\frac{3}{8}$ -CUM	529 651	MS6-LF- $\frac{3}{8}$ -EUM
		G $\frac{1}{2}$	529 611	MS6-LF- $\frac{1}{2}$ -CUM	529 619	MS6-LF- $\frac{1}{2}$ -EUM
	fully automatic	G $\frac{1}{4}$	529 629	MS6-LF- $\frac{1}{4}$ -CUV	529 637	MS6-LF- $\frac{1}{4}$ -EUV
		G $\frac{3}{8}$	529 645	MS6-LF- $\frac{3}{8}$ -CUV	529 653	MS6-LF- $\frac{3}{8}$ -EUV
		G $\frac{1}{2}$	529 613	MS6-LF- $\frac{1}{2}$ -CUV	529 621	MS6-LF- $\frac{1}{2}$ -EUV

Ordering data – Wearing parts kits			
Size	Part No.	Type	
MS4	673 639	MS4-LF	
MS6	673 640	MS6-LF	

MS4/MS6 series service units
Filters

2.13

Filters MS4/MS6-LF, MS series

Ordering data – Modular products



M Mandatory data →

Module No.	Series	Size	Function	Connection size	Grade of filtration	Bowl
527 695	MS	4	LF	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	E C	R
527 668		6				U
Order example						
527 695	MS	4	- LF	- AGB	- E	- R

Ordering table

Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M Module No.		527 695	527 668			
Series		Standard			MS	MS
Size		4	6		...	
Function		Filters			-LF	-LF
Connection size		Thread G1/8	-		-1/8	
		Thread G1/4	Thread G1/4		-1/4	
		-	Thread G3/8		-3/8	
		-	Thread G1/2		-1/2	
		Connecting plate G1/8	-		-AGA	
		Connecting plate G1/4	Connecting plate G1/4		-AGB	
		Connecting plate G3/8	Connecting plate G3/8		-AGC	
		-	Connecting plate G1/2		-AGD	
Grade of filtration		40 µm			-E	
		5 µm			-C	
Bowl		Plastic bowl with plastic bowl guard			-R	
		Metal bowl			-U	

Transfer order code

	MS		- LF		-		-	
--	----	--	------	--	---	--	---	--

Filters MS4/MS6-LF, MS series

Ordering data – Modular products



→ M Mandatory data	O Options	
Condensate drain M H V E1 E2 E3 E4	Type of mounting WP WPM WB WBM	Alternative flow direction Z
- M	- WP	- Z

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
↓ M	Condensate drain	Manual			-M	
		Semi-automatic (P1 max. 12 bar)			-H	
		Fully automatic (P1 max. 12 bar)			-V	
		-	External fully automatic condensate drain, electrical, 24 V DC, M12	1	-E1	
		-	External fully automatic condensate drain, electrical, 110 V AC, terminals	1	-E2	
		-	External fully automatic condensate drain, electrical, 230 V AC, terminals	1	-E3	
-	External fully automatic condensate drain, electrical, 24 V DC, terminals	1	-E4			
O	Type of mounting	Mounting bracket		2	-WP	
		Mounting bracket		2	-WPM	
		Mounting bracket			-WB	
		Mounting bracket			-WBM	
Alternative flow direction		Flow direction from right to left			-Z	

1 E1, E2, E3, E4
Only with metal bowl U.

2 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE.

MS4/MS6 series service units
Filters
2.13

Transfer order code

- - -

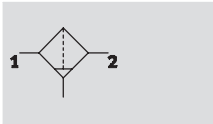
New
Variants HF, DP(I), DN(I)

Fine and micro filters MS4/MS6-LFM, MS series

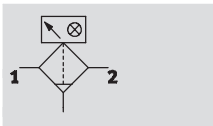
Technical data



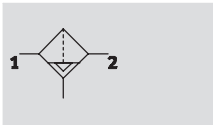
Function
 Condensate drain
 manual rotary
 without differential pressure indicator



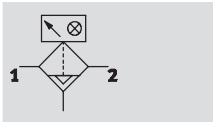
with differential pressure indicator or
 filter pollution indicator



Condensate drain
 semi or fully automatic
 without differential pressure indicator



with differential pressure indicator or
 filter pollution indicator



- - Flow rate
 120 ... 1,470 l/min

- - Temperature range
 -10 ... +60 °C

- - Supply pressure
 0 ... 20 bar

- - www.festo.com/en/Spare_parts_service

Wearing parts kits
 → 3/2.13-19



- High-performance filter for exceptionally clean compressed air
- Air quality to DIN ISO 8573-1
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- Available with differential pressure indicator for display of filter pollution
- Available with electronic filter pollution indicator
- Choice of filter cartridges: 0.01 µm or 1 µm
- Filter cartridges → 3/2.31-19

LFM-A:
 ISO class 1 for particles:
 Max. particle density 0.1 mg/m³
 ISO class 2 for oil aerosols:
 Max. oil concentration 0.1 mg/m³
 Filter efficiency 99.9999%

LFM-B:
 ISO class 2 for particles:
 Max. particle density 1 mg/m³
 ISO class 3 for oil aerosols:
 Max. oil concentration 1 mg/m³
 Filter efficiency 99.99%

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈	G ¹ / ₂
Constructional design	Fibre filter				
Type of mounting	Via accessories In-line installation				
Mounting position	Vertical ±5°				
Grade of filtration [µm]	0.01 (micro filter LFM-A, air purity class at the output 1.7.2 to DIN ISO 8573-1) 1 (fine filter LFM-B, air purity class at the output 2.7.3 to DIN ISO 8573-1)				
Bowl guard	Plastic bowl guard Metal bowl				
Condensate drain	Manual rotary Semi-automatic Fully automatic - Fully automatic, electrically actuated				
Differential pressure indication	Visual display With filter pollution indicator based on differential pressure				
Residual oil content [mg/m ³]	≤0.01 (micro filter LFM-A) ≤0.5 (fine filter LFM-B)				
Max. condensate volume [cm ³]	19 (with plastic bowl guard) 25 (with metal bowl)		38		

- - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Fine and micro filters MS4/MS6-LFM, MS series

FESTO

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ and standard flow rate q_n [l/min]								
Size	MS4			MS6				
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{1}{2}$
Variant	Standard	Standard	Standard	High flow rate HF	Standard	High flow rate HF	Standard	High flow rate HF
Micro filter LFM-A								
$q_{nN} 1 \rightarrow 2$	120	120	380	670	430	960	480	1,080
q_n min	54	54	135	150	135	150	135	150
q_n max	360	360	900	2,500	900	2,500	900	2,500
Fine filter LFM-B								
$q_{nN} 1 \rightarrow 2$	180	180	550	830	700	1,090	850	1,470
q_n min	54	54	140	188	140	188	140	188
q_n max	360	360	950	3,000	950	3,000	950	3,000

1) Measured at $p_1 = 6$ bar and $\Delta p = 70$ mbar

Technical data – Filter pollution indicator				
Variant	DP	DN	DPI	DNI
Pressure measuring range [bar]	0 ... +1			
Measured variable	Differential pressure; percentage value for filter pollution			
Switch output	PNP	NPN	PNP	NPN
Analogue output [mA]	–		4 ... 20	
Operating voltage range [V DC]	15 ... 30			
Max. output current [mA]	150			
Protection class	IP65			
CE mark (see declaration of conformity)	In accordance with EU EMC directive			
	In accordance with EU Low Voltage Directive			

Operating and environmental conditions									
Variant	Condensate drain							Filter pollution indicator	
	Manual rotary		Semi-automatic		Fully automatic		Fully automatic, electrically actuated		DP/DN/DPI/DNI
	M	MS6	H	MS6	V	MS6	E1 ... E4	MS4	
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS6	MS4	MS6
Supply pressure [bar]	0 ... 14	0 ... 20	1.5 ... 12	1.5 ... 12	2 ... 12	2 ... 12	0.8 ... 16	max. 10	
Operating medium for micro filter LFM-A	Filtered compressed air, unlubricated, grade of filtration 1 μ m								
Operating medium for fine filter LFM-B	Filtered compressed air, unlubricated, grade of filtration 5 μ m								
Ambient temperature [°C]	–10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60		0 ... +50
Temperature of medium [°C]	–10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60		0 ... +50
Storage temperature [°C]	–10 ... +60		–10 ... +60		–10 ... +60		+1 ... +60		0 ... +50
Corrosion resistance class CRC ¹⁾	2								

1) Corrosion resistance class 2 to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

New
Variants HF, DP(I), DN(I)

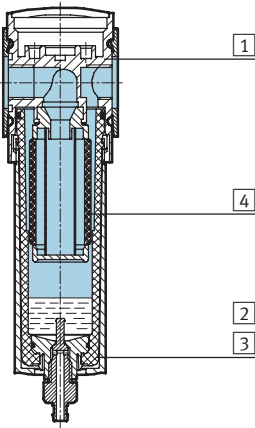
Fine and micro filters MS4/MS6-LFM, MS series

Technical data



Weight [g]			
Size	MS4	MS6	
Variant	Standard	Standard	High flow rate HF
Fine and micro filter with plastic bowl guard R	190	600	1,280
Fine and micro filter with metal bowl U	350	820	1,500
Fine and micro filter with metal bowl U and fully automatic, electrically actuated condensate drain E1 ... E4	-	1,800	2,180
Filter pollution indicator	80	100	100

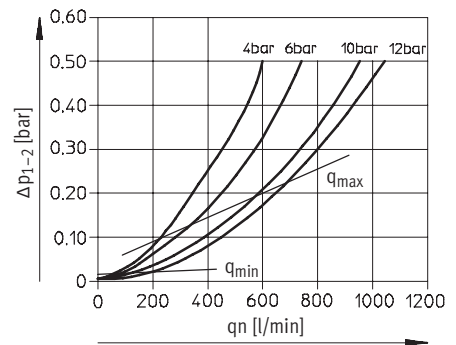
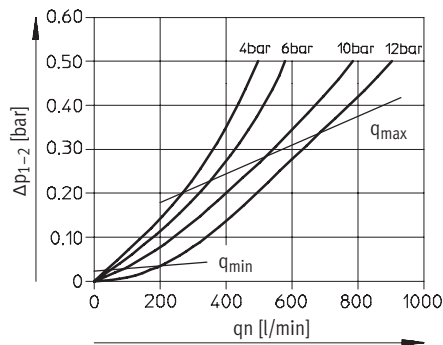
Materials
 Sectional view



Fine and micro filters	
1	Housing Die-cast aluminium
2	Plastic bowl guard Polycarbonate/polyamide
3	Metal bowl Inspection window Aluminium Polyamide
4	Filter Borosilicate fibre
-	Seals Nitrile rubber
Note on materials Free of copper and PTFE	

Filter pollution indicator	
Housing	Reinforced polyamide/polyacetate
Adapter	Reinforced polyamide
Display	Polycarbonate
Seals	Nitrile rubber
Note on materials Free of copper and PTFE	

Standard flow rate q_n as a function of the differential pressure Δp_{1-2}
 Grade of filtration 0.01 μm Grade of filtration 1 μm
 MS4-LFM- $\frac{1}{8}$ and MS4-LFM- $\frac{1}{4}$

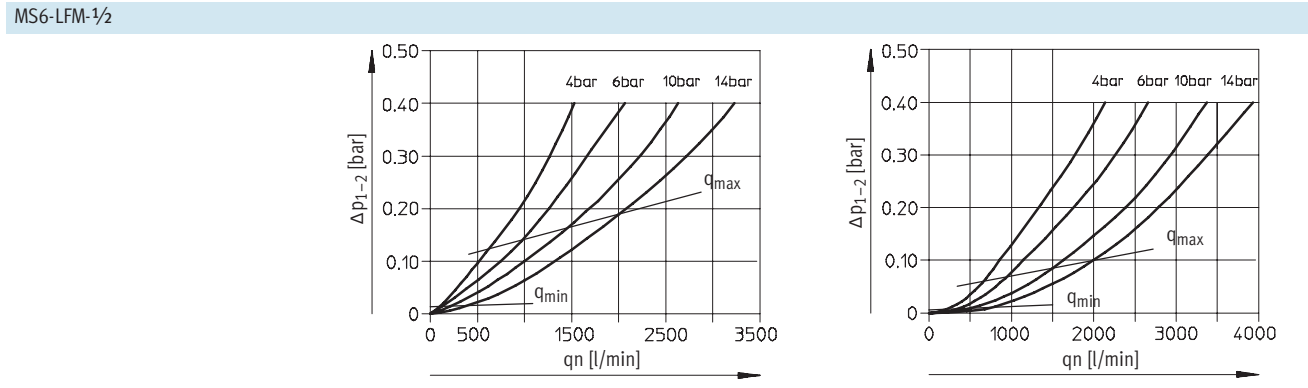
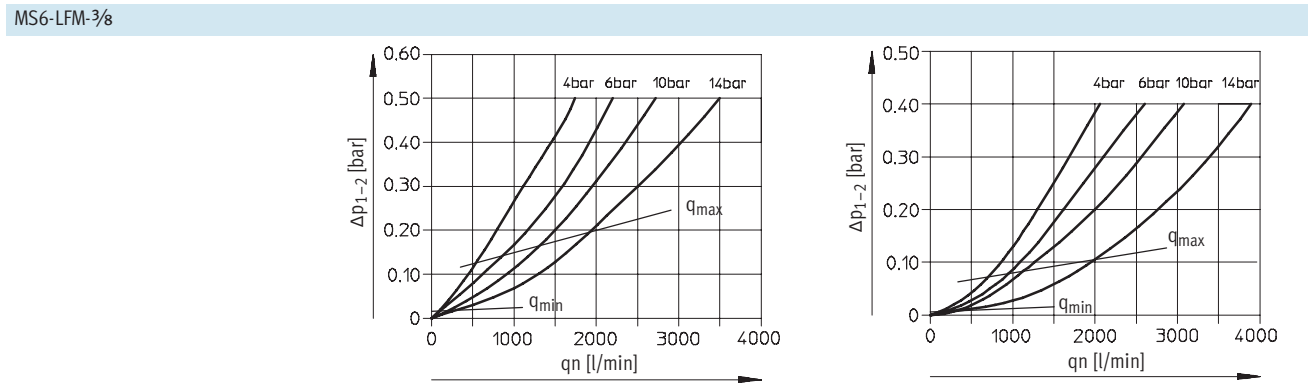
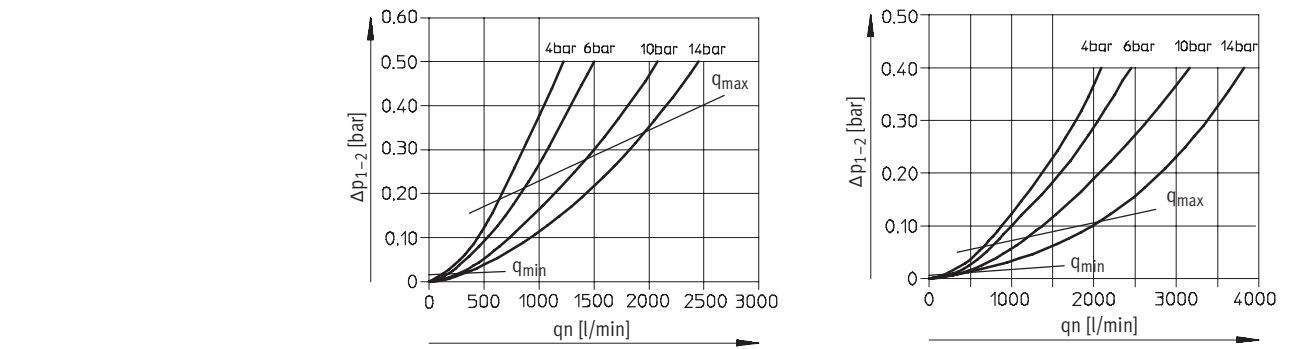


Fine and micro filters MS4/MS6-LFM, MS series

Technical data

Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

Grade of filtration 0.01 μm Grade of filtration 1 μm



MS4/MS6 series service units
Filters

2.13

New
Variants HF, DP(I), DN(I)

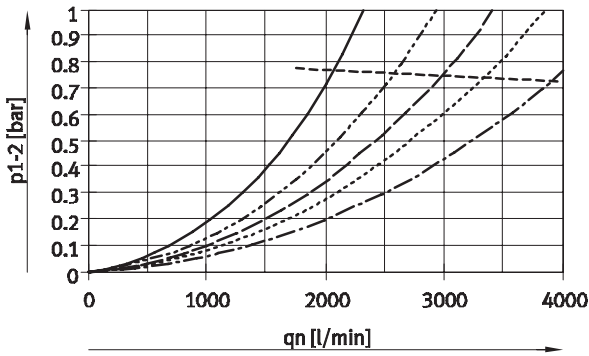
Fine and micro filters MS4/MS6-LFM, MS series

Technical data

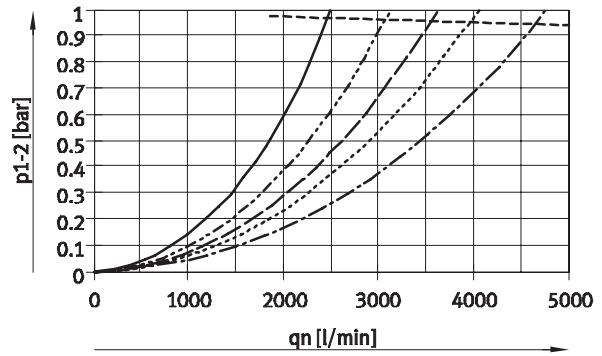


Standard flow rate q_n as a function of the differential pressure p_{1-2}

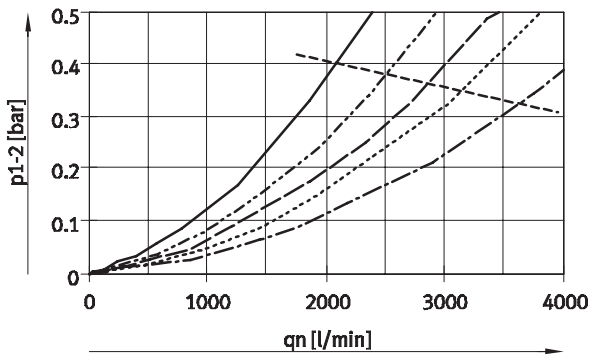
MS6-LFM-1/4-...-HF, Grade of filtration 0.01 μm



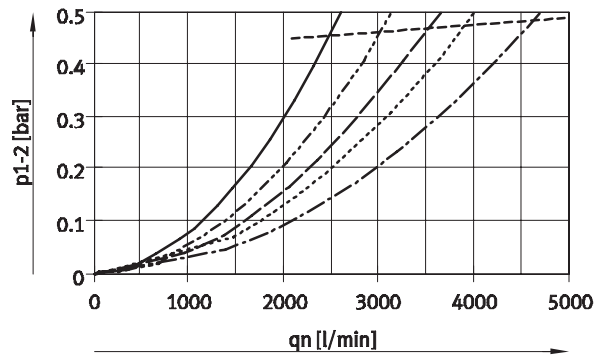
MS6-LFM-1/4-...-HF, Grade of filtration 1 μm



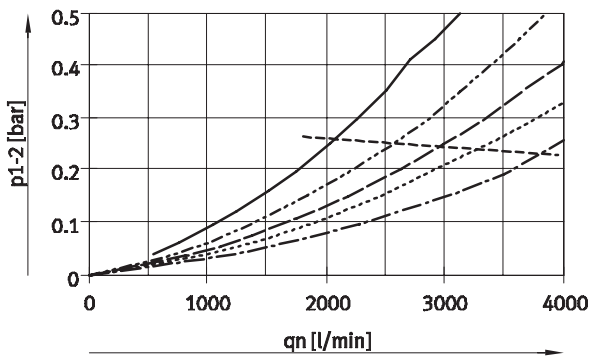
MS6-LFM-3/8-...-HF, Grade of filtration 0.01 μm



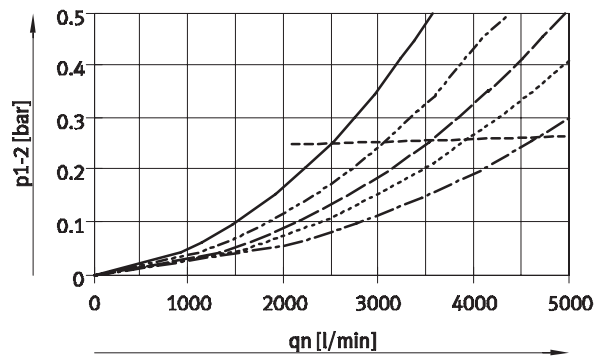
MS6-LFM-3/8-...-HF, Grade of filtration 1 μm



MS6-LFM-1/2-...-HF, Grade of filtration 0.01 μm



MS6-LFM-1/2-...-HF, Grade of filtration 1 μm



- p_1 : 4 bar (q_{\min} : 103 l/min)
- - - p_1 : 6 bar (q_{\min} : 125 l/min)
- · - p_1 : 8 bar
- · · p_1 : 10 bar (q_{\min} : 162 l/min)
- - - - p_1 : 14 bar (q_{\min} : 192 l/min)
- - - - q_{\max}

- p_1 : 4 bar (q_{\min} : 124 l/min)
- - - p_1 : 6 bar (q_{\min} : 150 l/min)
- · - p_1 : 8 bar
- · · p_1 : 10 bar (q_{\min} : 194 l/min)
- - - - p_1 : 14 bar (q_{\min} : 230 l/min)
- - - - q_{\max}

Fine and micro filters MS4/MS6-LFM, MS series

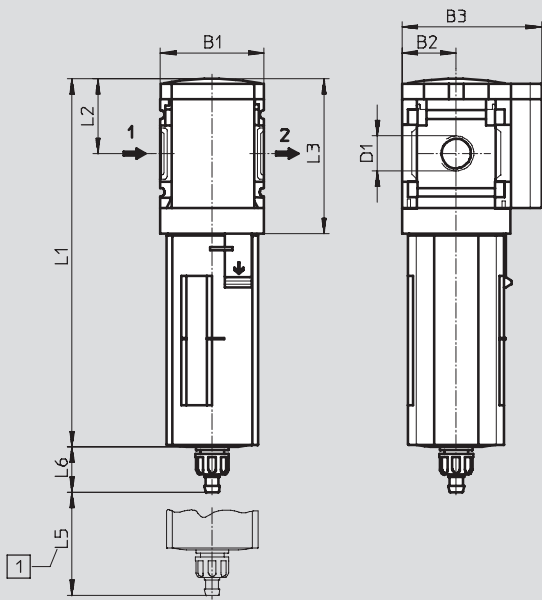
Technical data

FESTO

Dimensions – Standard/High flow rate HF

Download CAD data → www.festo.com/en/engineering

Manual rotary condensate drain



1 Installation dimensions

→ Flow direction

Type	B1	B2	B3	D1	L1		L2	L3	L5	L6	
					Bowl guard					Plastic	Metal
					Plastic	Metal					
MS4-LFM-1/8	40	21	54	G1/8	142	160	29	60	25	17.7	17.7
MS4-LFM-1/4				G1/4							
MS6-LFM-1/4	62	31	76	G1/4	192	198	42	87	75	15.8	19
MS6-LFM-3/8				G3/8							
MS6-LFM-1/2				G1/2							
MS6-LFM-1/4-...-HF	62	31	76	G1/4	312	318	42	87	75	15.8	19
MS6-LFM-3/8-...-HF				G3/8							
MS6-LFM-1/2-...-HF				G1/2							

-||- Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

New
Variants HF, DP(I), DN(I)

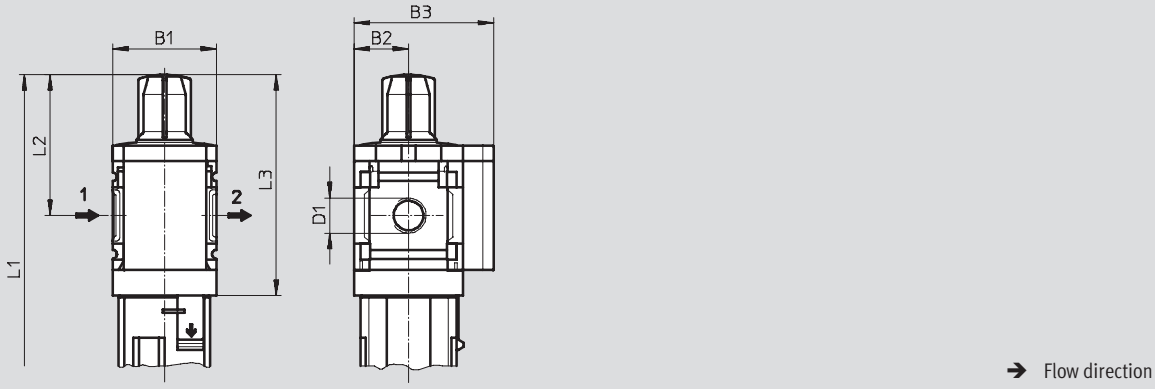
Fine and micro filters MS4/MS6-LFM, MS series

Technical data



Dimensions – Differential pressure indicator DA

Download CAD data → www.festo.com/en/engineering



Type	B1	B2	B3	D1	L1		L2	L3
					Plastic	Metal		
MS4-LFM-1/8-...-DA	40	21	54	G1/8	168	186	55	86
MS4-LFM-1/4-...-DA				G1/4				
MS6-LFM-1/4-...-DA	62	31	76	G1/4	218	224	68	113
MS6-LFM-3/8-...-DA				G3/8				
MS6-LFM-1/2-...-DA				G1/2				
MS6-LFM-1/4-...-HF-DA	62	31	76	G1/4	338	344	68	113
MS6-LFM-3/8-...-HF-DA				G3/8				
MS6-LFM-1/2-...-HF-DA				G1/2				

• † • Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

MS4/MS6 series service units
 Filters

2.13

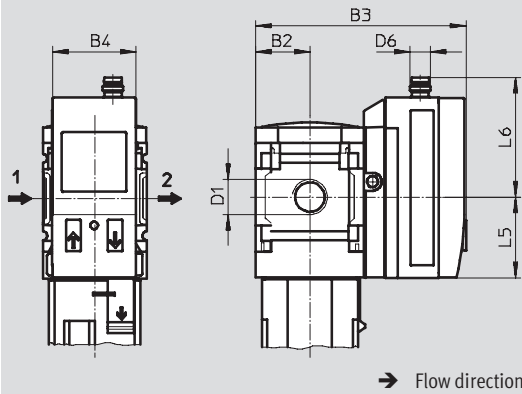
Fine and micro filters MS4/MS6-LFM, MS series

Technical data

FESTO

Dimensions – Filter pollution indicator DP/DN/DPI/DNI

Download CAD data → www.festo.com/en/engineering



Variant DP:
Filter pollution indicator with 3-pin
M8x1 plug, 1 switch output PNP

Variant DN:
Filter pollution indicator with 3-pin
M8x1 plug, 1 switch output NPN

Variant DPI:
Filter pollution indicator with 4-pin
M12x1 plug, 1 switch output PNP
and 4 ... 20 mA analogue

Variant DNI:
Filter pollution indicator with 4-pin
M12x1 plug, 1 switch output NPN
and 4 ... 20 mA analogue

Type	B2	B3	B4	D1	D6	L5	L6
MS4-LFM-1/8-...-DP/DN	21	81.8	32.3	G1/8	M8x1	32	47
MS4-LFM-1/4-...-DP/DN				G1/4			
MS4-LFM-1/8-...-DPI/DNI	21	81.8	32.3	G1/8	M12x1	32	56
MS4-LFM-1/4-...-DPI/DNI				G1/4			
MS6-LFM-1/4-...-DP/DN	31	102	32.3	G1/4	M8x1	32	47
MS6-LFM-3/8-...-DP/DN				G3/8			
MS6-LFM-1/2-...-DP/DN				G1/2			
MS6-LFM-1/4-...-DPI/DNI	31	102	32.3	G1/4	M12x1	32	56
MS6-LFM-3/8-...-DPI/DNI				G3/8			
MS6-LFM-1/2-...-DPI/DNI				G1/2			

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

New
Variants HF, DP(I), DN(I)

Fine and micro filters MS4/MS6-LFM, MS series

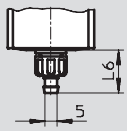
Technical data



Dimensions – Condensate drain

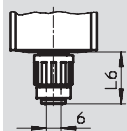
Download CAD data → www.festo.com/en/engineering

Manual rotary M



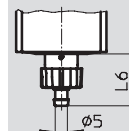
Barbed fitting for plastic tubing
 PCN-4

Semi-automatic H



QS fitting for plastic tubing
 PUN-6/PAN-6

Fully automatic V



Barbed fitting for plastic tubing
 PCN-4

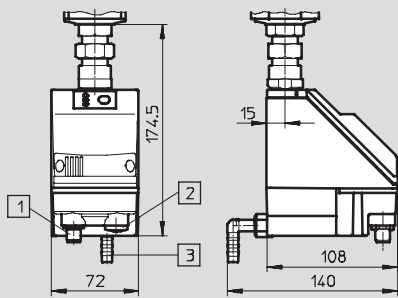
Type	L6
Plastic bowl guard	
MS4-LFM-...-M	17.7
MS6-LFM-...-M	15.8
Metal bowl	
MS4-LFM-...-M	17.7
MS6-LFM-...-M	19

Type	L6
Plastic bowl guard	
MS4-LFM-...-H	22.1
MS6-LFM-...-H	20.2
Metal bowl	
MS4-LFM-...-H	22.1
MS6-LFM-...-H	22.8

Type	L6
Plastic bowl guard	
MS4-LFM-...-V	20.4
MS6-LFM-...-V	18.5
Metal bowl	
MS4-LFM-...-V	20.4
MS6-LFM-...-V	22

Fully automatic, electrically actuated E1 ... E4

Technical data PWEA → 3 / 4.6-4



- 1 Variant E1
 PWEA-AP-... with M12x1 plug,
 5-pin for SIM-M12-5GD-...
- 2 Variant E2/E3/E4
 PWEA-AC-... with cable conduit
 fitting Pg9
- 3 Connection 360° rotatable for
 plastic tubing PUN-H-12x2-...



MS4/MS6 series service units
 Filters
 2.13

Fine and micro filters MS4/MS6-LFM, MS series

Technical data

FESTO

Ordering data						
Without differential pressure indicator						
Size	Condensate drain	Connection	Micro filter		Fine filter	
			Grade of filtration 0.01 µm		Grade of filtration 1 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MS4	Manual rotary	G $\frac{1}{8}$	529 463	MS4-LFM- $\frac{1}{8}$ -ARM	529 465	MS4-LFM- $\frac{1}{8}$ -BRM
		G $\frac{1}{4}$	529 459	MS4-LFM- $\frac{1}{4}$ -ARM	529 461	MS4-LFM- $\frac{1}{4}$ -BRM
MS6	Manual rotary	G $\frac{1}{4}$	529 663	MS6-LFM- $\frac{1}{4}$ -ARM	529 667	MS6-LFM- $\frac{1}{4}$ -BRM
		G $\frac{3}{8}$	529 671	MS6-LFM- $\frac{3}{8}$ -ARM	529 675	MS6-LFM- $\frac{3}{8}$ -BRM
		G $\frac{1}{2}$	529 655	MS6-LFM- $\frac{1}{2}$ -ARM	529 659	MS6-LFM- $\frac{1}{2}$ -BRM
	Fully automatic	G $\frac{1}{4}$	530 510	MS6-LFM- $\frac{1}{4}$ -ARV	530 514	MS6-LFM- $\frac{1}{4}$ -BRV
		G $\frac{3}{8}$	530 518	MS6-LFM- $\frac{3}{8}$ -ARV	530 522	MS6-LFM- $\frac{3}{8}$ -BRV
		G $\frac{1}{2}$	530 502	MS6-LFM- $\frac{1}{2}$ -ARV	530 506	MS6-LFM- $\frac{1}{2}$ -BRV
Metal bowl						
MS4	Fully automatic	G $\frac{1}{8}$	539 208	MS4-LFM- $\frac{1}{8}$ -AUV	539 204	MS4-LFM- $\frac{1}{8}$ -BUV
		G $\frac{1}{4}$	535 768	MS4-LFM- $\frac{1}{4}$ -AUV	535 766	MS4-LFM- $\frac{1}{4}$ -BUV
MS6	Fully automatic	G $\frac{1}{4}$	529 665	MS6-LFM- $\frac{1}{4}$ -AUV	529 669	MS6-LFM- $\frac{1}{4}$ -BUV
		G $\frac{3}{8}$	529 673	MS6-LFM- $\frac{3}{8}$ -AUV	529 677	MS6-LFM- $\frac{3}{8}$ -BUV
		G $\frac{1}{2}$	529 657	MS6-LFM- $\frac{1}{2}$ -AUV	529 661	MS6-LFM- $\frac{1}{2}$ -BUV

Ordering data						
With differential pressure indicator						
Size	Condensate drain	Connection	Micro filter		Fine filter	
			Grade of filtration 0.01 µm		Grade of filtration 1 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MS4	Manual rotary	G $\frac{1}{8}$	536 821	MS4-LFM- $\frac{1}{8}$ -ARM-DA	536 817	MS4-LFM- $\frac{1}{8}$ -BRM-DA
		G $\frac{1}{4}$	536 822	MS4-LFM- $\frac{1}{4}$ -ARM-DA	536 818	MS4-LFM- $\frac{1}{4}$ -BRM-DA
MS6	Manual rotary	G $\frac{1}{4}$	536 869	MS6-LFM- $\frac{1}{4}$ -ARM-DA	536 833	MS6-LFM- $\frac{1}{4}$ -BRM-DA
		G $\frac{3}{8}$	536 870	MS6-LFM- $\frac{3}{8}$ -ARM-DA	536 834	MS6-LFM- $\frac{3}{8}$ -BRM-DA
		G $\frac{1}{2}$	536 871	MS6-LFM- $\frac{1}{2}$ -ARM-DA	536 835	MS6-LFM- $\frac{1}{2}$ -BRM-DA
	Fully automatic	G $\frac{1}{4}$	536 875	MS6-LFM- $\frac{1}{4}$ -ARV-DA	536 839	MS6-LFM- $\frac{1}{4}$ -BRV-DA
		G $\frac{3}{8}$	536 876	MS6-LFM- $\frac{3}{8}$ -ARV-DA	536 840	MS6-LFM- $\frac{3}{8}$ -BRV-DA
		G $\frac{1}{2}$	536 877	MS6-LFM- $\frac{1}{2}$ -ARV-DA	536 841	MS6-LFM- $\frac{1}{2}$ -BRV-DA
Metal bowl						
MS4	Fully automatic	G $\frac{1}{8}$	537 213	MS4-LFM- $\frac{1}{8}$ -AUV-DA	537 209	MS4-LFM- $\frac{1}{8}$ -BUV-DA
		G $\frac{1}{4}$	537 214	MS4-LFM- $\frac{1}{4}$ -AUV-DA	537 210	MS4-LFM- $\frac{1}{4}$ -BUV-DA
MS6	Fully automatic	G $\frac{1}{4}$	536 881	MS6-LFM- $\frac{1}{4}$ -AUV-DA	536 845	MS6-LFM- $\frac{1}{4}$ -BUV-DA
		G $\frac{3}{8}$	536 882	MS6-LFM- $\frac{3}{8}$ -AUV-DA	536 846	MS6-LFM- $\frac{3}{8}$ -BUV-DA
		G $\frac{1}{2}$	536 883	MS6-LFM- $\frac{1}{2}$ -AUV-DA	536 847	MS6-LFM- $\frac{1}{2}$ -BUV-DA
Metal bowl and high flow rate						
MS6	Fully automatic	G $\frac{1}{2}$	552 926	MS6-LFM- $\frac{1}{2}$ -AUV-HF-DA 	552 925	MS6-LFM- $\frac{1}{2}$ -BUV-HF-DA 

Ordering data – Wearing parts kits		
Size	Part No.	Type
MS4	673 641	MS4-LFM
MS6	673 642	MS6-LFM

New
Variants HF, DP(I), DN(I)

Fine and micro filters MS4/MS6-LFM, MS series

Ordering data – Modular products



Mandatory data →

Module No.	Series	Size	Function	Connection size	Grade of filtration	Bowl
527 697	MS	4	LFM	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	B A	R
527 670		6				U
Order example						
527 697	MS	4	- LFM	- AGB	- B	- R

Ordering table

Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M Module No.		527 697	527 670			
Series		Standard			MS	MS
Size		4	6		...	
Function		Fine and micro filters			-LFM	-LFM
Connection size		Thread G1/8	-		-1/8	
		Thread G1/4	Thread G1/4		-1/4	
		-	Thread G3/8		-3/8	
		-	Thread G1/2		-1/2	
		Connecting plate G1/8	-		-AGA	
		Connecting plate G1/4	Connecting plate G1/4		-AGB	
		Connecting plate G3/8	Connecting plate G3/8		-AGC	
		-	Connecting plate G1/2		-AGD	
	-	Connecting plate G3/4		-AGE		
Grade of filtration		1 µm			-B	
		0.01 µm			-A	
Bowl		Plastic bowl with plastic bowl guard			-R	
		Metal bowl			-U	

MS4/MS6 series service units
 Filters
 2.13

Transfer order code

	MS		-	LFM		-		-		-	
--	----	--	---	-----	--	---	--	---	--	---	--

Fine and micro filters MS4/MS6-LFM, MS series

Ordering data – Modular products

FESTO

→ M Mandatory data		O Options		
Condensate drain	Flow rate	Filter change sensor	Type of mounting	Alternative flow direction
M H V E1 E2 E3 E4	HF	DA DP DN DPI DNI	WP WPM WB WBM	Z
- M	-	-	- WP	- Z

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
↓ M Condensate drain	Manual				-M		
	Semi-automatic (P1 max. 12 bar)				-H		
	Fully automatic (P1 max. 12 bar)				1	-V	
	-		External fully automatic condensate drain, electrical, 24 V DC, M12		2	-E1	
	-		External fully automatic condensate drain, electrical, 110 V AC, terminals		2	-E2	
	-		External fully automatic condensate drain, electrical, 230 V AC, terminals		2	-E3	
	-		External fully automatic condensate drain, electrical, 24 V DC, terminals		2	-E4	
O Flow rate	-	High flow rate			-HF		
Filter change sensor	Differential pressure indicator, optical				-DA		
	Filter pollution indicator, M8 plug, PNP, 3-pin			3	-DP		
	Filter pollution indicator, M8 plug, NPN, 3-pin			3	-DN		
	Filter pollution indicator, plug M12, PNP, 4-pin, analogue output 4 ... 20 mA			3	-DPI		
	Filter pollution indicator, plug M12, PNP, 4-pin, analogue output 4 ... 20 mA			3	-DNI		
Type of mounting	Mounting bracket			4	-WP		
	Mounting bracket			4	-WPM		
	Mounting bracket				-WB		
	Mounting bracket		-		-WBM		
Alternative flow direction	Flow direction from right to left				-Z		

1 **V** Size 4: Only with metal bowl U

2 **E1, E2, E3, E4**
Only with metal bowl U

3 **DP, DN, DPI, DNI**
Measuring range max. 10 bar

4 **WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD or AGE.

Transfer order code

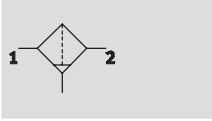
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Active carbon filters MS4/MS6-LFX, MS series

Technical data

FESTO

Function



-  - Flow rate
250 ... 1,300 l/min
-  - Temperature range
-10 ... +60 °C
-  - Input pressure
0 ... 20 bar



- Removal of liquid and gaseous oil particles from compressed air using active carbon
- Eliminates odours and vapours
- Prefiltration with micro filter MS-LFM-A, grade of filtration 0.01 µm, recommended
- Filter cartridges → 3/2.31-19

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Design	Active carbon filter				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Vertical $\pm 5^\circ$				
Air purity class at the output ¹⁾	1.7.1 to DIN ISO 8573-1				
Bowl guard	Plastic bowl guard				
	Metal bowl				
Residual oil content	[mg/m ³]	≤ 0.003			

1) It is recommended to replace filter cartridges after 1,000 operating hours.
 - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN ¹⁾ and standard flow rate qn [l/min]								
Size	MS4			MS6				
	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{1}{2}$
Variant	Standard	Standard	Standard	High flow rate HF	Standard	High flow rate HF	Standard	High flow rate HF
qnN 1 → 2	250	250	700	770	1,000	1,100	1,200	1,300
qn max	360	360	900	2,500	900	2,500	900	2,500

1) Measured at p₁ = 6 bar and Δp = 70 mbar

Active carbon filters MS4/MS6-LFX, MS series

Technical data

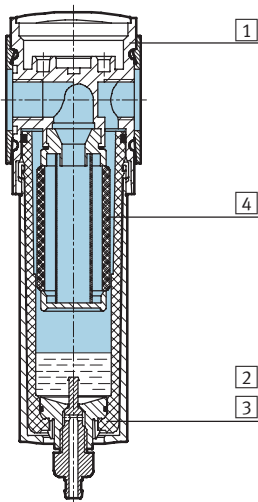
Operating and environmental conditions		
Size	MS4	MS6
Input pressure [bar]	0 ... 14	0 ... 20
Operating medium	Compressed air, filtered, unlubricated, grade of filtration 0.01 µm	
Ambient temperature [°C]	-10 ... +60	
Temperature of medium [°C]	+5 ... +30	
Storage temperature [°C]	-10 ... +60	
Corrosion resistance CRC ¹⁾	2	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]			
Size	MS4	MS6	
Variant	Standard	Standard	High flow rate HF
Active carbon filter with plastic bowl guard R	190	600	1,280
Active carbon filter with metal bowl U	350	820	1,500

Materials

Sectional view



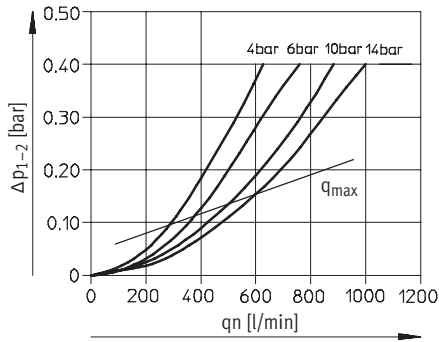
Active carbon filter		
1	Body	Die-cast aluminium
2	Plastic bowl guard	Polycarbonate/polyamide
3	Metal bowl Viewing window	Aluminium Polyamide
4	Filters	Active carbon
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE

Active carbon filters MS4/MS6-LFX, MS series

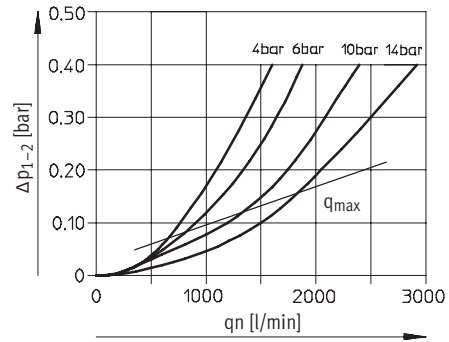
Technical data

Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

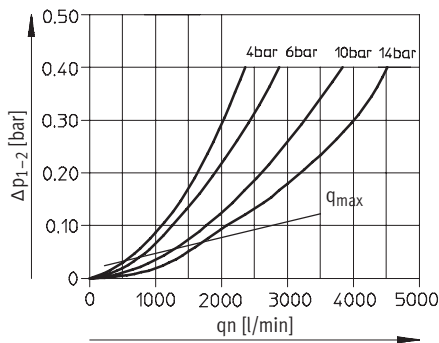
MS4-LFX-1/8 and MS4-LFX-1/4



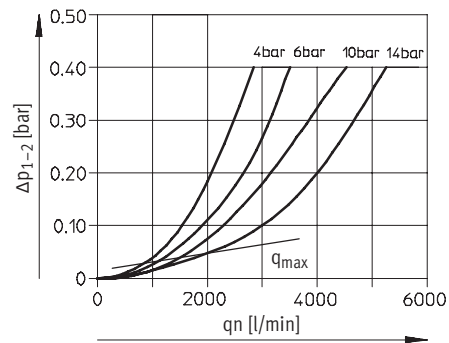
MS6-LFX-1/4



MS6-LFX-3/8



MS6-LFX-1/2

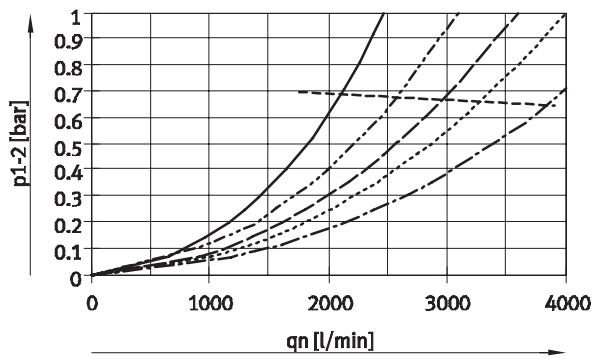


Active carbon filters MS4/MS6-LFX, MS series

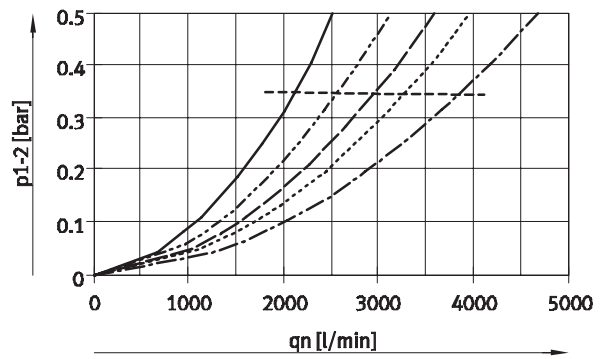
Technical data

Standard flow rate q_n as a function of the differential pressure p_{1-2}

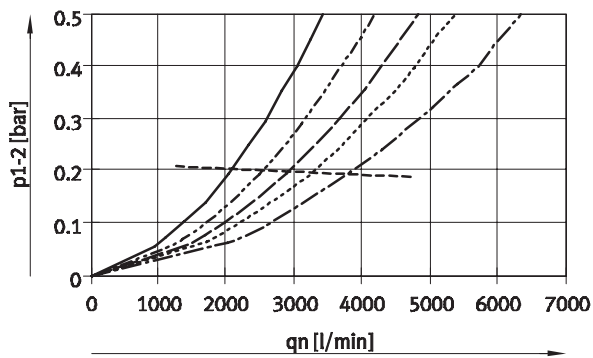
MS6-LFX-1/4-...-HF



MS6-LFX-3/8-...-HF



MS6-LFX-1/2-...-HF



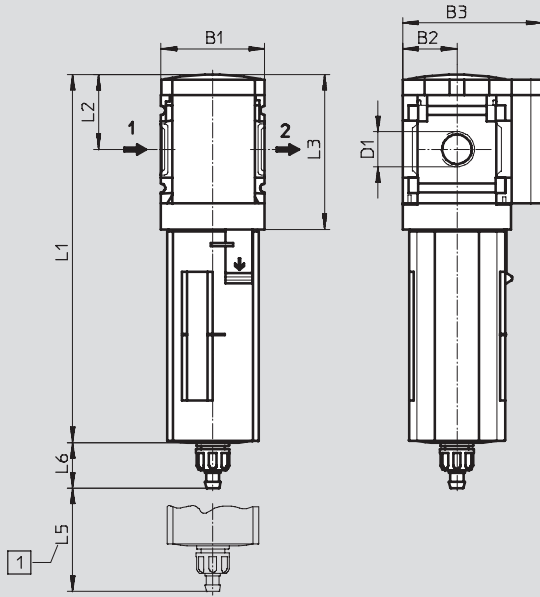
- p1: 4 bar
- - - p1: 6 bar
- · - p1: 8 bar
- · · p1: 10 bar
- - - - p1: 14 bar
- - - - q_{max}

Active carbon filters MS4/MS6-LFX, MS series

Technical data

Dimensions – Standard/High flow rate HF

Download CAD data → www.festo.com/en/engineering



1 Installation dimensions

→ Flow direction

Type	B1	B2	B3	D1	L1		L2	L3	L5	L6	
					Bowl guard					Plastic	Metal
					Plastic	Metal					
MS4-LFX-1/8	40.2	21	54	G1/8	142.8	160.4	29	60	75	17.7	18
MS4-LFX-1/4				G1/4							
MS6-LFX-1/4	62	31	76	G1/4	192	198	42	87	100	15.8	19
MS6-LFX-3/8				G3/8							
MS6-LFX-1/2				G1/2							
MS6-LFX-1/4-...-HF				G1/4							
MS6-LFX-3/8-...-HF	62	31	76	G3/8	312	318	42	87	100	15.8	19
MS6-LFX-1/2-...-HF				G1/2							

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data						
Size	Connection	Plastic bowl guard		Metal bowl		
		Part No.	Type	Part No.	Type	
MS4	G1/8	536 707	MS4-LFX-1/8-R	536 709	MS4-LFX-1/8-U	
	G1/4	529 467	MS4-LFX-1/4-R	535 782	MS4-LFX-1/4-U	
MS6	G1/4	529 683	MS6-LFX-1/4-R	529 685	MS6-LFX-1/4-U	
	G3/8	529 687	MS6-LFX-3/8-R	529 689	MS6-LFX-3/8-U	
	G1/2	529 679	MS6-LFX-1/2-R	529 681	MS6-LFX-1/2-U	
High flow rate						
MS6	G1/2	-	-	552 927	MS6-LFX-1/2-U-HF	

Active carbon filters MS4/MS6-LFX, MS series

Ordering data – Modular products

M Mandatory data						O Options		
Module No.	Series	Size	Function	Connection size	Bowl	Flow rate	Type of mounting	Alternative flow direction
527 699 527 672	MS	4 6	LFX	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	R U	HF	WP WPM WB WBM	Z
Order example								
527 699	MS	4	- LFX	- AGB	- R	-	- WP	- Z

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527 699		527 672		
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Activated carbon filter			-LFX	-LFX
	Connection size	Thread G1/8	-		-1/8	
		Thread G1/4	Thread G1/4		-1/4	
		-	Thread G3/8		-3/8	
		-	Thread G1/2		-1/2	
		Connecting plate G1/8	-		-AGA	
		Connecting plate G1/4	Connecting plate G1/4		-AGB	
		Connecting plate G3/8	Connecting plate G3/8		-AGC	
		-	Connecting plate G1/2		-AGD	
	Bowl	Plastic bowl with plastic bowl guard			-R	
		Metal bowl			-U	
O	Flow rate	-	High flow rate		-HF	
	Type of mounting	Mounting bracket		1	-WP	
		Mounting bracket		1	-WPM	
		Mounting bracket			-WB	
		Mounting bracket	-		-WBM	
	Alternative flow direction	Flow direction from right to left			-Z	

1 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE.

Transfer order code


	MS		-	LFX	-		-		-		-	
--	----	--	---	-----	---	--	---	--	---	--	---	--

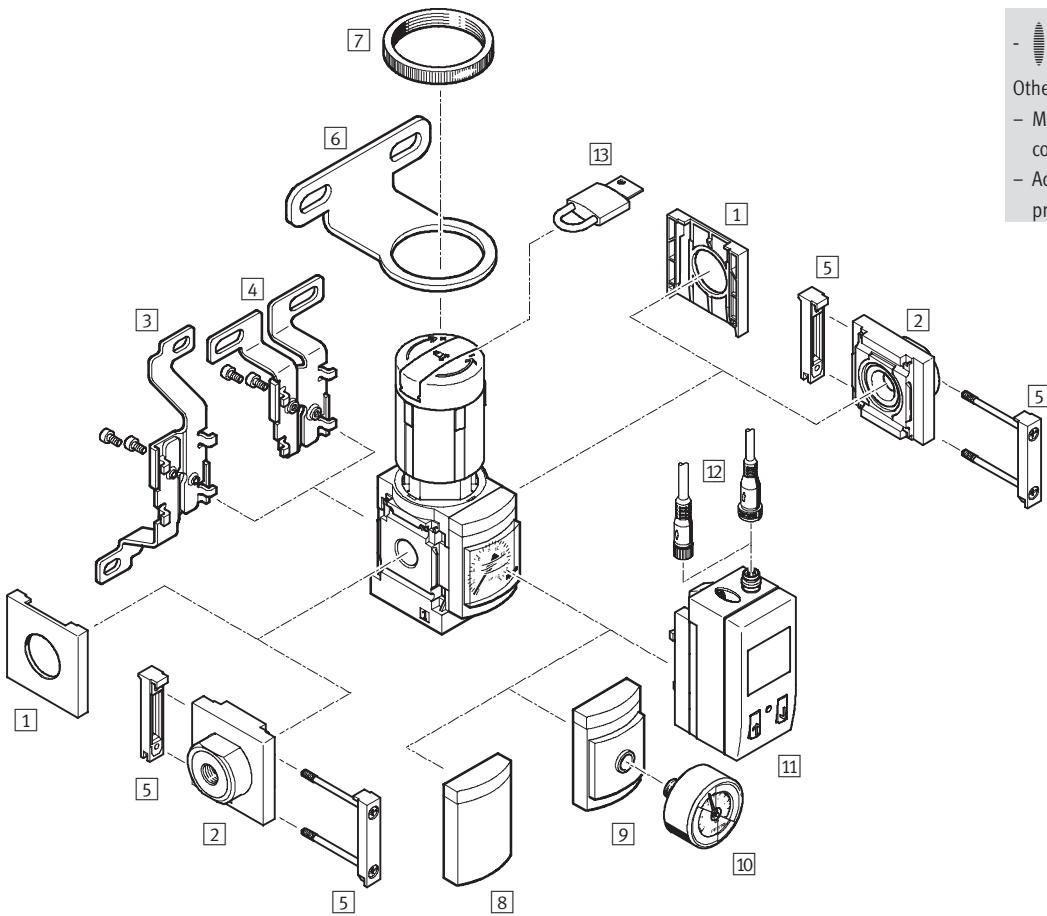
New
Variants E11, RG

Pressure regulators MS4/MS6-LR, MS series

Peripherals overview



-  - Note
 Other accessories:
 - Module connector for combinations → 3/2.31-10
 - Adapter plate for mounting on profiles → 3/2.31-13



MS4/MS6 series service units
 Pressure regulators

2.14

Pressure regulators MS4/MS6-LR, MS series

Peripherals overview

FESTO

Mounting attachments and accessories						
		Individual device		Combination → 3/2.11-0		→Page
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-4
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-4
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-9
6	Mounting bracket MS4/6-WR	■	■	-	-	3/2.31-5
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Cover plate VS	■	■	■	■	3/2.14-10
9	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.14-10
10	Pressure gauge MA	■	■	■	■	3/2.31-24
11	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.14-10 Volume 4
12	Plug sockets with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
13	Padlock LRVS-D	■	■	■	■	3/2.31-25
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-7, 3/2.31-8

New
Variants E11, RG

Pressure regulators MS4/MS6-LR, MS series

Type codes

FESTO

MS 6 - LR - 1/2 - D5 - AS

Series

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

Size

4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function

LR	Pressure regulator
----	--------------------

Connection sizes

1/8	Thread G1/8
1/4	Thread G1/4
3/8	Thread G3/8
1/2	Thread G1/2

Pressure regulation range

D5	0.3 ... 4 bar
D6	0.3 ... 7 bar
D7	0.5 ... 12 bar

Security

AS	Lockable rotary knob as standard
----	----------------------------------

MS4/MS6 series service units
Pressure regulators

2.14

Further variants can be ordered using the modular system

Pressure regulators LR → 3/2.14-10

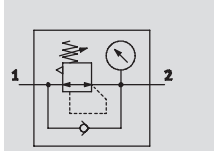
- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Rotary knob alternative
- Alternative assembly position
- Security
- Type of mounting
- Alternative flow direction

Pressure regulators MS4/MS6-LR, MS series

Technical data

Function

With pressure gauge



- - Flow rate
1,000 ... 7,500 l/min

- - Temperature range
-10 ... +60 °C

- - Input pressure
0.8 ... 20 bar

- - www.festo.com/en/Spare_parts_service

Wearing parts kits
→ 3/2.14-9

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



- Good regulation characteristics with low hysteresis and primary pressure compensation
- High flow rate with minimal pressure drop
- Available with and without secondary venting
- Setting values are secured by locking the rotary knob
- Lockable rotary knob
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Two pressure gauge connections for different fitting options
- Return flow option for exhausting from output 2 to output 1
- Optional pressure sensor with display
- Optional rotary knob pressure gauge for size MS4

General technical data					
Size		MS4		MS6	
Pneumatic connection 1, 2		G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈ G ¹ / ₂
Design		Directly actuated diaphragm regulator			
Regulating function		Via primary pressure compensation			
		With/without secondary venting			
		Output pressure constant			
Type of mounting		Via accessories			
		In-line installation			
		Front panel mounting			
Assembly position		Any			
Actuator lock		Rotary knob with detent			
		Rotary knob with integrated lock			
		Lockable with accessories			
Pressure regulation range	D5 [bar]	0.3 ... 4			
		0.8 ... 4 with rotary knob pressure gauge variant DM...		-	
	D6 [bar]	0.3 ... 7			
		0.8 ... 7 with rotary knob pressure gauge variant DM...		-	
	D7 [bar]	0.5 ... 12			
		0.8 ... 12 with rotary knob pressure gauge variant DM...		-	
		0.5 ... 10 with pressure sensor variant AD...			
	D8 [bar]	-		0.5 ... 16	
Max. hysteresis [bar]	0.25				
Pressure display	Via pressure sensor for displaying output pressure and electrical output				
	Via pressure gauge for displaying output pressure				

- - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

New
Variants E11, RG

Pressure regulators MS4/MS6-LR, MS series

Technical data

FESTO

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]						
Size	MS4			MS6		
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	
Pressure regulation range	D5	1,200 ²⁾	2,100 ²⁾	2,400 ²⁾	5,500 ²⁾	7,500 ²⁾
	D6	1,150	1,800	3,000	5,800	6,500
	D7	1,000	1,700	2,700	4,500	5,500
	D8	–	–	2,200	4,000	4,500

- 1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar
2) Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar

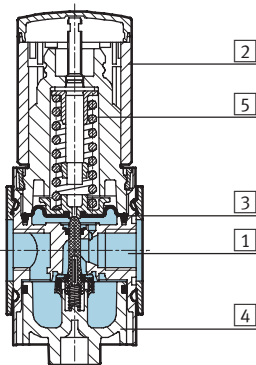
Operating and environmental conditions					
Variant	Standard			Pressure sensor with display AD...	
Size	MS4		MS6	MS4	MS6
Input pressure [bar]	0.8 ... 14		0.8 ... 20	0.8 ... 14	0.8 ... 20
Operating medium	Compressed air			Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m	
Ambient temperature [°C]	-10 ... +60		-10 ... +60	0 ... +50	0 ... +50
Temperature of medium [°C]	-10 ... +60		-10 ... +60	0 ... +50	0 ... +50
Storage temperature [°C]	-10 ... +60		-10 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	2				

- 1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]		
Size	MS4	MS6
Pressure regulator	225	730
Pressure regulator with rotary knob with integrated lock E11	350	1,000

Materials

Sectional view



Pressure regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	Polyamide/polyacetate
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	Nitrile rubber
4	Bottom cap	Polyester, fibreglass reinforced
5	Springs	Steel
–	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE only with cover plate VS

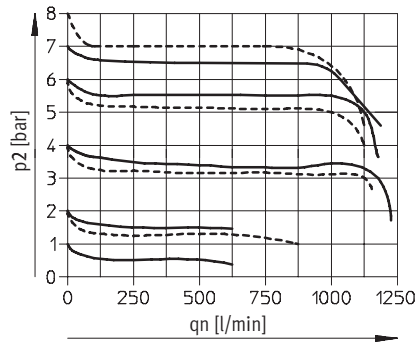
Pressure regulators MS4/MS6-LR, MS series

Technical data

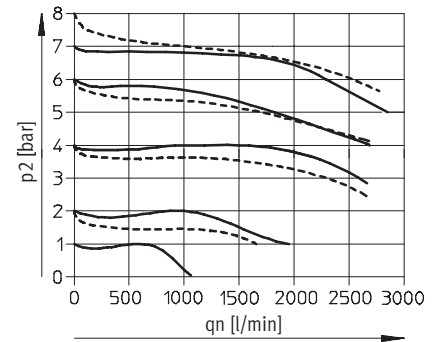
Standard flow rate q_n as a function of output pressure p_2

MS4-LR-1/8

Primary pressure $p_1 = 10$ bar



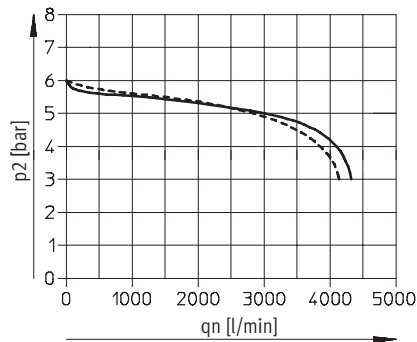
MS4-LR-1/4



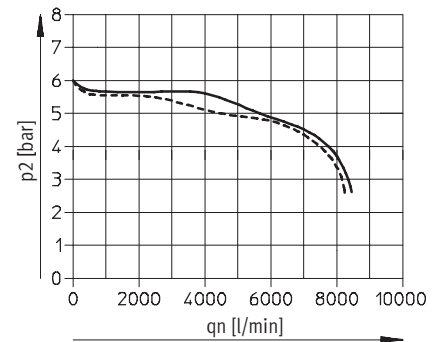
1) There is a higher initial pressure drop for the characteristic curve of the DM1/DM2 variant.

MS6-LR-1/4

Primary pressure $p_1 = 10$ bar

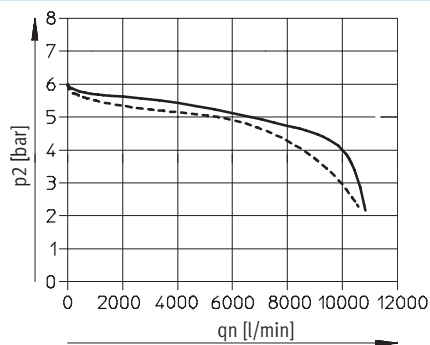


MS6-LR-3/8



MS6-LR-1/2

Primary pressure $p_1 = 10$ bar



New
Variants E11, RG

Pressure regulators MS4/MS6-LR, MS series

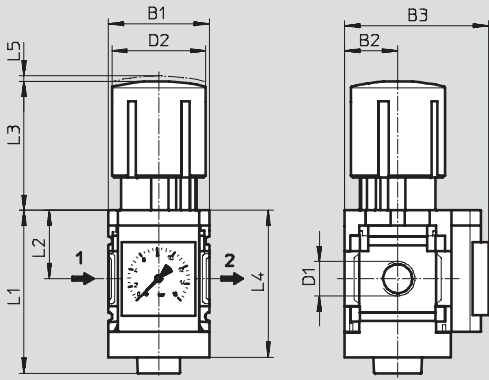
Technical data



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering

Integrated pressure gauge, display unit [bar], rotary knob as standard



→ Flow direction

Type	B1	B2	B3		D1	D2	L1	L2	L3	L4	L5
			Standard scale	Red-green scale							
MS4-LR-1/8	40	21	57	58.5	G1/8	37.2	64.4	27	51.1	58	2
MS4-LR-1/4					G1/4						
MS6-LR-1/4	62	31	77	78.5	G1/4	51	93	39	86	84	5
MS6-LR-3/8					G3/8						
MS6-LR-1/2					G1/2						

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

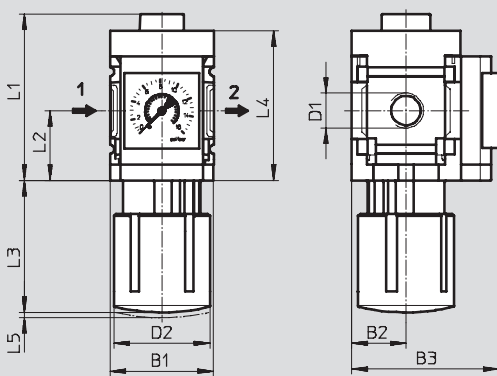
MS4/MS6 series service units
Pressure regulators

2.14

Dimensions – Alternative mounting position

Download CAD data → www.festo.com/en/engineering

Rotary knob at bottom KD



→ Flow direction

Type	B1	B2	B3	D1	D2	L1	L2	L3	L4	L5
MS4-LR-1/8-...-KD	40	21	57	G1/8	37.2	64.4	27	51.1	58	2
MS4-LR-1/4-...-KD				G1/4						
MS6-LR-1/4-...-KD	62	31	77	G1/4	51	93	39	86	84	5
MS6-LR-3/8-...-KD				G3/8						
MS6-LR-1/2-...-KD				G1/2						

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

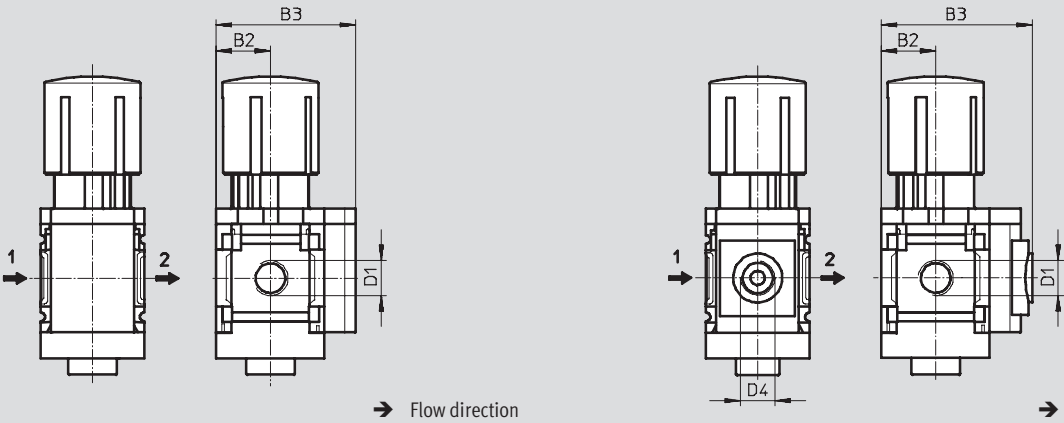
Pressure regulators MS4/MS6-LR, MS series

Technical data

FESTO

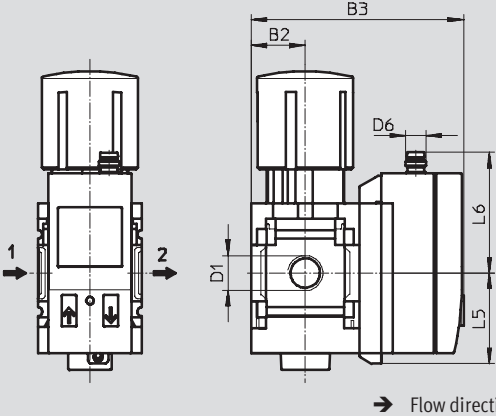
Dimensions – Pressure gauge alternatives Download CAD data → www.festo.com/en/engineering

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



→ Flow direction

Pressure sensor with display AD1 ... AD4 Technical data SDE1 → Volume 4



→ Flow direction

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

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

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

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

Type	B2	B3	D1	D4	D6	L5	L6
MS4-LR-1/8-...-VS	21	54	G1/8	-	-	-	-
MS4-LR-1/4-...-VS			G1/4				
MS4-LR-1/8-...-A8	21	58.5	G1/8	G1/8	-	-	-
MS4-LR-1/4-...-A8			G1/4				
MS4-LR-1/8-...-A4	21	58.5	G1/8	G1/4	-	-	-
MS4-LR-1/4-...-A4			G1/4				
MS4-LR-1/8-...-AD1/AD2	21	82.6	G1/8	-	M8x1	35.1	46.7
MS4-LR-1/4-...-AD1/AD2			G1/4				
MS4-LR-1/8-...-AD3/AD4	21	82.6	G1/8	-	M12x1	35.1	55.8
MS4-LR-1/4-...-AD3/AD4			G1/4				
MS6-LR-1/4-...-VS	31	76	G1/4	-	-	-	-
MS6-LR-3/8-...-VS			G3/8				
MS6-LR-1/2-...-VS			G1/2				
MS6-LR-1/4-...-A4			G1/4				
MS6-LR-3/8-...-A4	31	78.5	G3/8	G1/4	-	-	-
MS6-LR-1/2-...-A4			G1/2				
MS6-LR-1/4-...-AD1/AD2	31	103	G1/4	-	M8x1	35.1	46.7
MS6-LR-3/8-...-AD1/AD2			G3/8				
MS6-LR-1/2-...-AD1/AD2			G1/2				
MS6-LR-1/4-...-AD3/AD4	31	103	G1/4	-	M12x1	35.1	55.8
MS6-LR-3/8-...-AD3/AD4			G3/8				
MS6-LR-1/2-...-AD3/AD4			G1/2				

• | • Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

New
Variants E11, RG

Pressure regulators MS4/MS6-LR, MS series

Technical data



Dimensions – Rotary knob

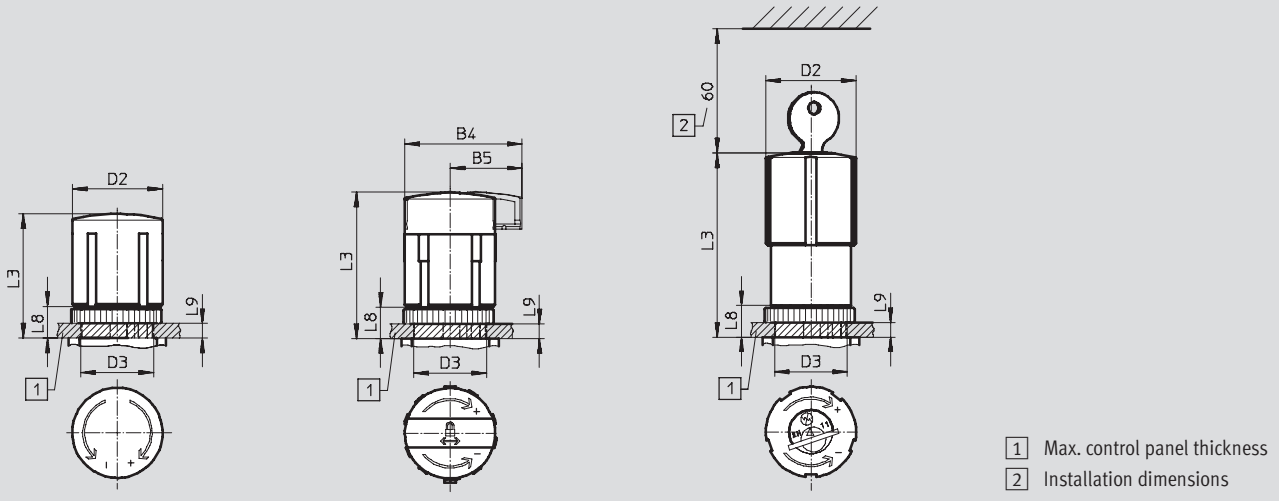
Download CAD data → www.festo.com/en/engineering

For installation into control panel

Standard

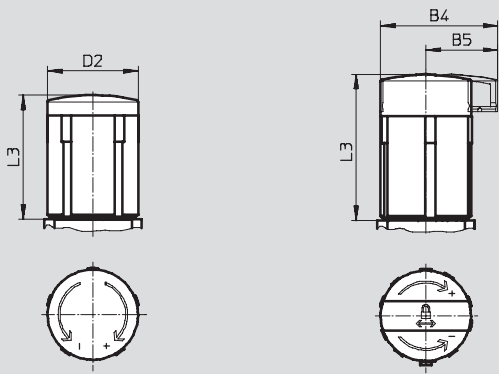
Standard, lockable AS

With integrated lock E11



Long LD

Long, lockable LD-AS



Type	B4	B5	D2	D3 +1	L3	L8	L9
MS4-LR-...	-	-	37.2	30	51.1	13	6
MS4-LR-...-AS	48.3	29.7			60.2		
MS4-LR-...-E11	-	-			76		
MS4-LR-...-LD	-	-	37.2	-	51.1	-	-
MS4-LR-...-LD-AS	48.3	29.7			60.2		
MS6-LR-...	-	-	51	44	86	22	14
MS6-LR-...-AS	67.7	42			95.5		
MS6-LR-...-E11	-	-			51.8		
MS6-LR-...-LD	-	-	51	-	86	-	-
MS6-LR-...-LD-AS	67.7	42			95.5		

MS4/MS6 series service units
Pressure regulators

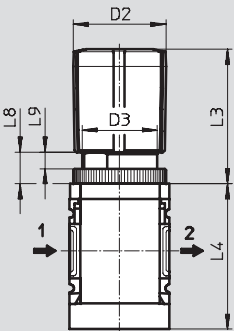
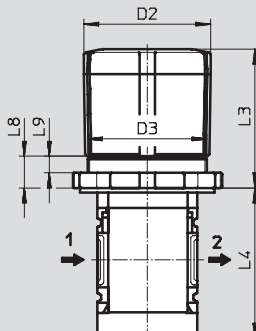
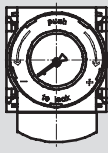
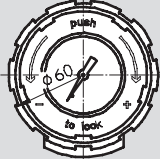
2.14


Pressure regulators MS4/MS6-LR, MS series

Technical data

FESTO

Dimensions – Rotary knob with pressure gauge Download CAD data → www.festo.com/en/engineering

Small DM1	Large DM2
	
	
→ Flow direction	→ Flow direction

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

Type	D2	D3	L3	L4	L8	L9
MS4-LR-...-DM1	37.2	M30x1.5	54	58.5	13	6.7
MS4-LR-...-DM2	51.1	M48x1.5	55.7	60.5	13	6.6

Ordering data			
Pressure gauge, lockable standard type rotary knob			
Size	Connection	Part No.	Type
Pressure regulation range 0.3 ... 4 bar			
MS4	G1/8	529 421	MS4-LR-1/8-D5-AS
	G1/4	529 415	MS4-LR-1/4-D5-AS
MS6	G1/4	529 995	MS6-LR-1/4-D5-AS
	G3/8	530 001	MS6-LR-3/8-D5-AS
	G1/2	529 989	MS6-LR-1/2-D5-AS
Pressure regulation range 0.3 ... 7 bar			
MS4	G1/8	529 423	MS4-LR-1/8-D6-AS
	G1/4	529 417	MS4-LR-1/4-D6-AS
MS6	G1/4	529 997	MS6-LR-1/4-D6-AS
	G3/8	530 003	MS6-LR-3/8-D6-AS
	G1/2	529 991	MS6-LR-1/2-D6-AS
Pressure regulation range 0.5 ... 12 bar			
MS4	G1/8	529 425	MS4-LR-1/8-D7-AS
	G1/4	529 419	MS4-LR-1/4-D7-AS
MS6	G1/4	529 999	MS6-LR-1/4-D7-AS
	G3/8	530 005	MS6-LR-3/8-D7-AS
	G1/2	529 993	MS6-LR-1/2-D7-AS

Ordering data – Wearing parts kits		
Size	Part No.	Type
MS4	673 649	MS4-LR/LRB
MS6	673 650	MS6-LR/LRB

New
Variants E11, RG

Pressure regulators MS4/MS6-LR, MS series

Ordering data – Modular products



M Mandatory data						Options →
Module No.	Series	Size	Function	Connection sizes	Pressure regulation range	Pressure gauge alternatives
527 690 527 663	MS	4 6	LR	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	D5 D6 D7 D8	VS, A8, A4, RG, AD1, AD2, AD3, AD4
Order example						
527 690	MS	4	- LR	- AGB	- D6	AD3

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527 690	527 663			
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Pressure regulator			-LR	-LR
	Connection sizes	Thread G1/8	-		-1/8	
		Thread G1/4	Thread G1/4		-1/4	
		-	Thread G3/8		-3/8	
		-	Thread G1/2		-1/2	
		Connecting plate G1/8	-		-AGA	
		Connecting plate G1/4	Connecting plate G1/4		-AGB	
		Connecting plate G3/8	Connecting plate G3/8		-AGC	
		-	Connecting plate G1/2		-AGD	
		-	Connecting plate G3/4		-AGE	
	Pressure regulation range	0.3 ... 4 bar			-D5	
		0.3 ... 7 bar			-D6	
		0.5 ... 12 bar			-D7	
		-	0.5 ... 16 bar		-D8	
0	Pressure gauge alternatives	Cover plate			-VS	
		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 display, plug M8, 1 switch output PNP, 3-pin			-AD1	
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			-AD2	
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			-AD3	
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			-AD4	

1 D7, RG Not with rotary knob alternatives DM1, DM2.
2 D8 Not with rotary knob alternative DM2.

3 AD1 ... AD4 Measuring range max. 10 bar.
Not with pressure regulation range D8.
Not with rotary knob alternative DM2.

Transfer order code

	MS		- LR		-		-	
--	----	--	------	--	---	--	---	--

Pressure regulators MS4/MS6-LR, MS series

Ordering data – Modular products



Options						
Alternative pressure gauge scale	Secondary venting	Rotary knob alternative	Alternative assembly position	Security	Type of mounting	Alternative flow direction
PSI MPa	OS	LD DM1 DM2	KD	AS E11	WR WP WPM WB WBM	Z
-	- OS	- LD	-	- AS	- WB	- Z

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
0 Alternative pressure gauge scale	psi			4	-PSI	
	MPa			4	-MPA	
Secondary venting	Without secondary venting			5	-OS	
Rotary knob alternative	Long rotary knob			6	-LD	
	Rotary knob pressure gauge, small	-		7	-DM1	
	Rotary knob pressure gauge, large	-		8	-DM2	
Alternative assembly position	Rotary knob underneath			9	-KD	
Security	Lockable rotary knob			10	-AS	
	With integrated lock				-E11	
Type of mounting	Wall mounting bracket with knurled nut for regulator head			11	-WR	
	Mounting bracket			12	-WP	
	Mounting bracket (for retro-fitting M-series)			12	-WPM	
	Mounting bracket			13	-WB	
	Mounting bracket	-			-WBM	
Alternative flow direction	Flow direction from right to left				-Z	

- 4 **PSI, MPA** Not with pressure gauge alternatives VS, A8, A4, AD1, AD2, AD3, AD4.
Not with rotary knob alternatives DM1, DM2.
- 5 **OS** Not with rotary knob alternatives DM1, DM2.
- 6 **LD** Not with security E11
- 7 **DM1** Not with pressure gauge alternatives VS, A8, A4, AD1, AD2, AD3, AD4.
Not with security E11
- 8 **DM2** Only with pressure gauge alternatives VS, A8, A4
Not with security E11

- 9 **KD** Not with pressure gauge alternative RG
Not with alternative pressure gauge scaling MPA.
Not with mounting type WP.
Not with rotary knob alternatives DM1, DM2.
- 10 **AS** Not with rotary knob alternatives DM1, DM2.
- 11 **WR** Not with long rotary knob LD.
Not with rotary knob alternative DM2.
- 12 **WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD or AGE
- 13 **WB** Not with rotary knob alternative DM2

Transfer order code

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

MS4/MS6 series service units
Pressure regulators

2.14

New
Variants E11, RG

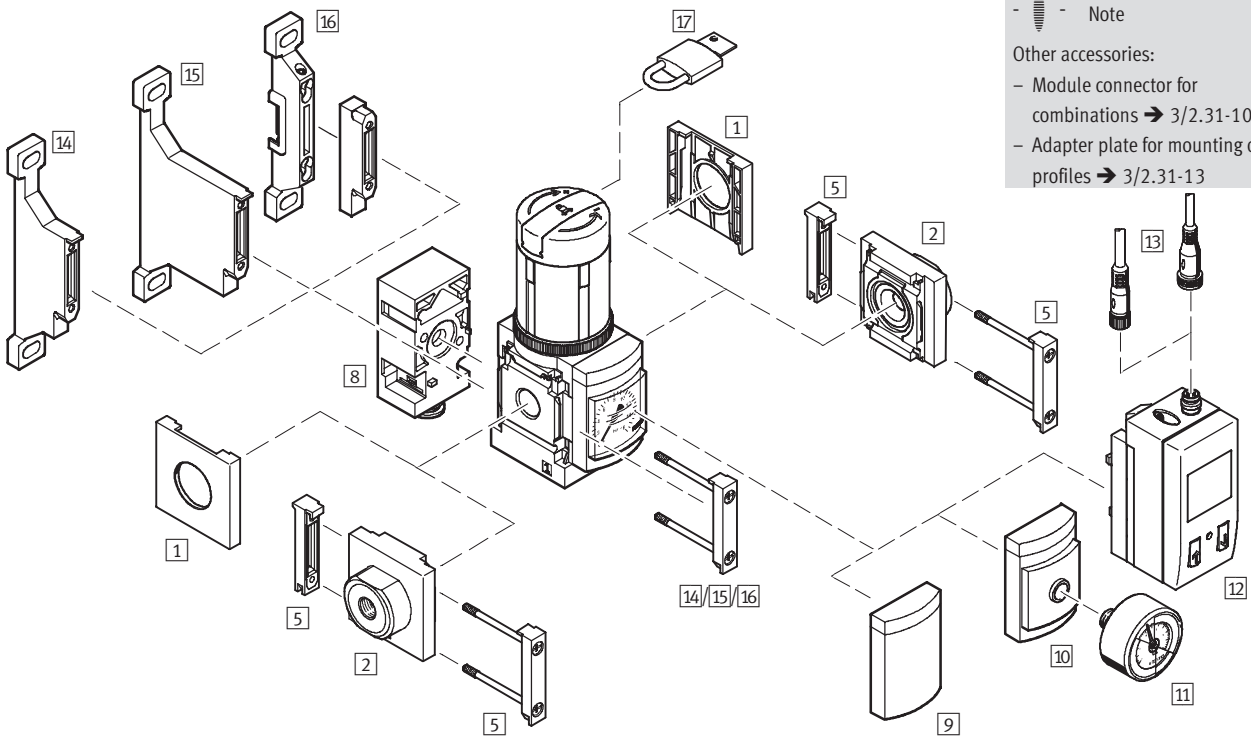
Pressure regulators MS4/MS6-LRB, MS series

Peripherals overview



Pressure output

Rear

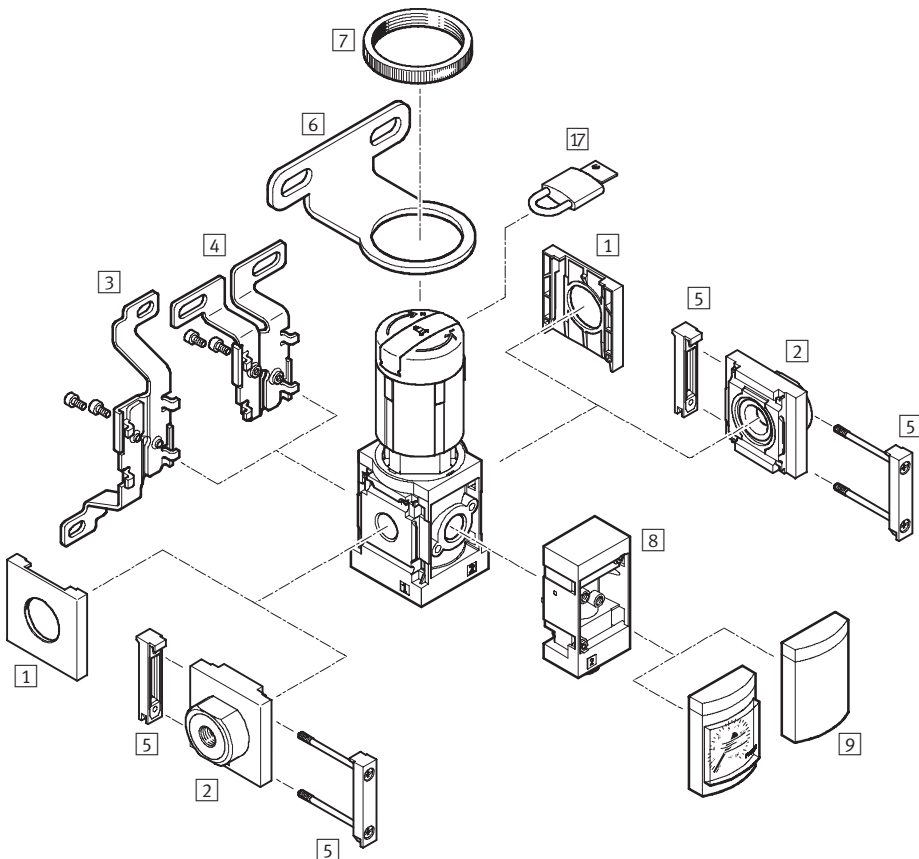


- - Note
Other accessories:
- Module connector for combinations → 3/2.31-10
- Adapter plate for mounting on profiles → 3/2.31-13

MS4/MS6 series service units
Pressure regulators

2.14

Front Z



- - Note
Other accessories:
- Module connector for combinations → 3/2.31-10
- Adapter plate for mounting on profiles → 3/2.31-13

Pressure regulators MS4/MS6-LRB, MS series

Peripherals overview

FESTO

Mounting attachments and accessories						
		Individual device		Combination → 3/2.11-0		→Page
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-4
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-4
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-9
6	Mounting bracket MS4/6-WR	■	■	-	-	3/2.31-5
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Angled outlet block B...	■	■	■	■	3/2.14-22
9	Cover plate VS	■	■	■	■	3/2.14-22
10	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.14-22
11	Pressure gauge MA	■	■	■	■	3/2.31-24
12	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.14-22 Volume 4
13	Plug sockets with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
14	Mounting bracket MS4/6-WP	-	■	■	■	3/2.31-7
15	Mounting bracket MS4/6-WPB	-	■	■	■	3/2.31-7
16	Mounting bracket (for retro-fitting M-series) MS4/6-WPM	-	■	■	■	3/2.31-8
17	Padlock LRVS-D	■	■	■	■	3/2.31-25

New
Variants E11, RG

Pressure regulators MS4/MS6-LRB, MS series

Type codes

FESTO

MS4/MS6 series service units
Pressure regulators

2.14

MS 6 - LRB - 1/2 - D7 - AS - BD

Series	
MS	Standard service unit

Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function	
LRB	Pressure regulator for manifold assembly

Connection sizes	
1/4	Thread G1/4
1/2	Thread G1/2

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

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

Security	
AS	Lockable rotary knob as standard

Pressure output	
	Without angled outlet block
BD	Angled outlet block QS-8

Further variants can be ordered using the modular system

Pressure regulators LRB → 3/2.14-22

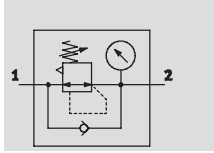
- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Rotary knob alternative
- Alternative assembly position
- Security
- Pressure output
- Type of mounting
- Alternative flow direction

Pressure regulators MS4/MS6-LRB, MS series

Technical data

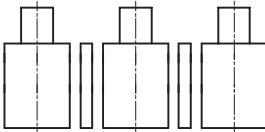
Function

With pressure gauge



LRB-manifold

with through pressure supply for manifold assembly



- - Flow rate
300 ... 7,300 l/min

- - Temperature range
-10 ... +60 °C

- - Input pressure
0.8 ... 20 bar

- - www.festo.com/en/Spare_parts_service

Wearing parts kits
→ 3/2.14-21

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



- Good regulation characteristics with low hysteresis and primary pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure regulation ranges
- Available with and without secondary venting
- Setting values are secured by locking the rotary knob
- Lockable rotary knob
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Return flow option for exhausting from output 2 to output 1
- Optional pressure sensor with display

General technical data		
Size	MS4	MS6
Pneumatic connection 1	G $\frac{1}{4}$	G $\frac{1}{2}$
Pneumatic connection 2	G $\frac{1}{4}$	G $\frac{1}{2}$
	QS-6	QS-8
	QS-8	QS-10
Design	Directly actuated diaphragm regulator with through pressure supply	
Regulating function	Via primary pressure compensation	
	With/without secondary venting	
	Output pressure constant	
Type of mounting	Via accessories	
	In-line installation	
	Front panel mounting	
Assembly position	Any	
Actuator lock	Rotary knob with detent	
	Rotary knob with integrated lock	
	Lockable with accessories	
Pressure regulation range	D5 [bar]	0.3 ... 4
	D6 [bar]	0.3 ... 7
	D7 [bar]	0.5 ... 12 (0.5 ... 10 with pressure sensor variant AD...)
	D8 [bar]	-
Max. hysteresis [bar]	0.25	
Pressure display	Via pressure sensor for displaying output pressure and electrical output	
	Via pressure gauge for displaying output pressure	

- - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

New
Variants E11, RG

Pressure regulators MS4/MS6-LRB, MS series

Technical data

FESTO

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]							
Size		MS4			MS6		
		Standard	Angled outlet block		Standard	Angled outlet block	
			QS-6	QS-8		QS-8	QS-10
Pressure regulation range	D5	1,900 ²⁾	300 ²⁾	650 ²⁾	7,300 ²⁾	600 ²⁾	750 ²⁾
	D6	1,700	350	840	6,300	880	1,000
	D7	1,500	350	640	5,500	800	950
	D8	–	–	–	4,500	750	850

1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar

2) Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar

Operating and environmental conditions					
Variant		Standard		Pressure sensor with display AD...	
Size		MS4	MS6	MS4	MS6
Input pressure [bar]		0.8 ... 14	0.8 ... 20	0.8 ... 14	0.8 ... 20
Operating medium		Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m	
Ambient temperature [°C]		-10 ... +60	-10 ... +60	0 ... +50	0 ... +50
Temperature of medium [°C]		-10 ... +60	-10 ... +60	0 ... +50	0 ... +50
Storage temperature [°C]		-10 ... +60	-10 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class	CRC ¹⁾	2			

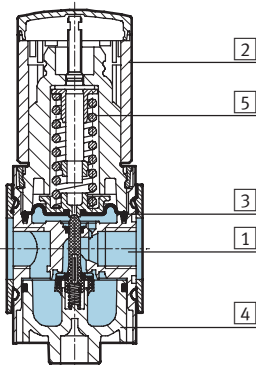
1) Corrosion resistance class 2 to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]		
Size	MS4	MS6
Pressure regulator	222	747
Pressure regulator with rotary knob with integrated lock E11	347	1,017

Materials

Sectional view



Pressure regulator (manifold assembly)		
1	Housing	Die-cast aluminium
2	Rotary knob	Polyamide/polyacetate
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	Nitrile rubber
4	Bottom cap	Polyester, fibreglass reinforced
5	Springs	Steel
–	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE only with cover plate VS

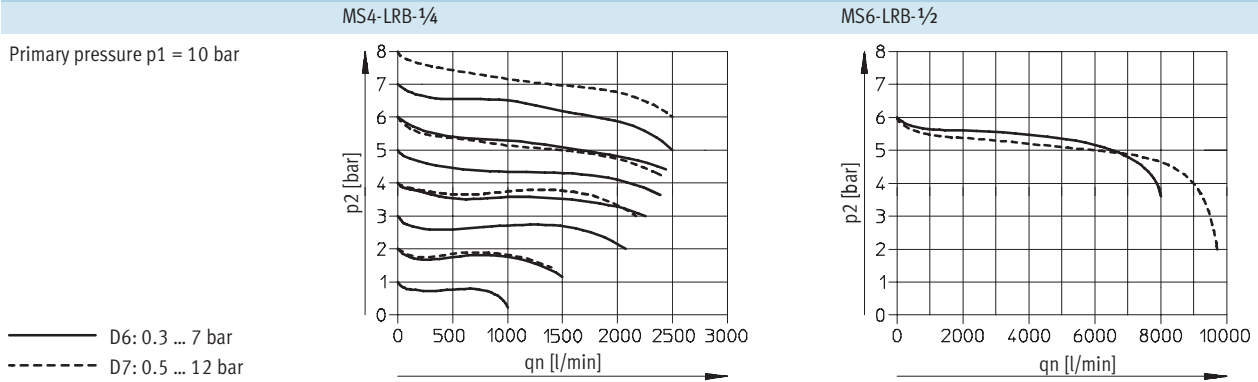
MS4/MS6 series service units
Pressure regulators

2.14

Pressure regulators MS4/MS6-LRB, MS series

Technical data

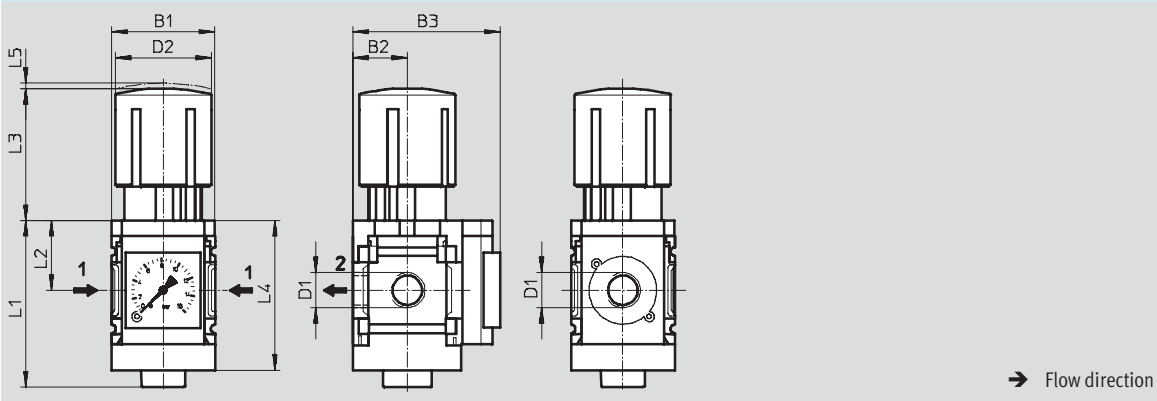
Standard flow rate q_n as a function of output pressure p_2



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



Type	B1	B2	B3		D1	D2	L1	L2	L3	L4	L5
			Pressure gauge Standard scale	Red- green scale							
MS4-LRB-1/4	40	21	57	58.5	G1/4	37.2	64.4	27	51.1	58	2
MS6-LRB-1/2	62	31	77	78.5	G1/2	51	93	39	86	84	5

-||- Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Pressure regulators MS4/MS6-LRB, MS series

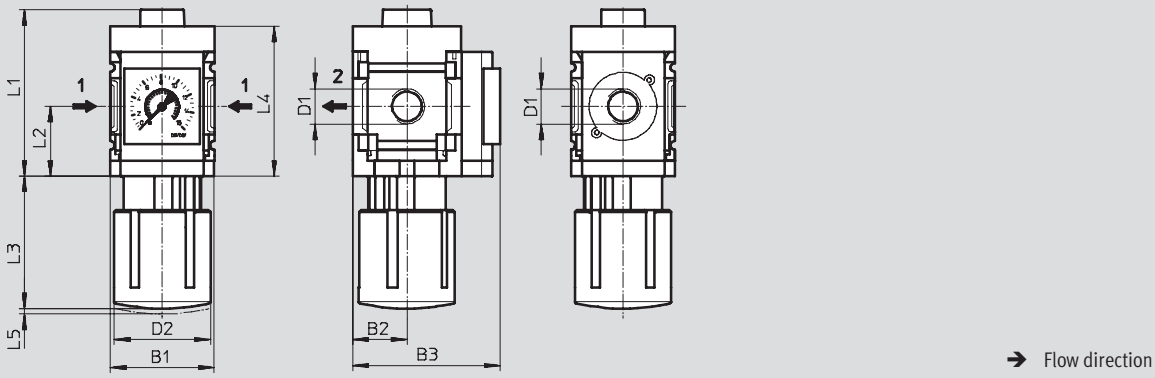
Technical data

FESTO

Dimensions – Alternative mounting position

Download CAD data → www.festo.com/en/engineering

Rotary knob underneath KD, standard rotary knob, with pressure gauge



Type	B1	B2	B3	D1	D2	L1	L2	L3	L4	L5
MS4-LRB-1/4-...-KD	40	21	57	G1/4	37.2	64.4	27	51.1	58	2
MS6-LRB-1/2-...-KD	62	31	77	G1/2	51	93	39	86	84	5

– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Angled outlet block BC/BD/BE

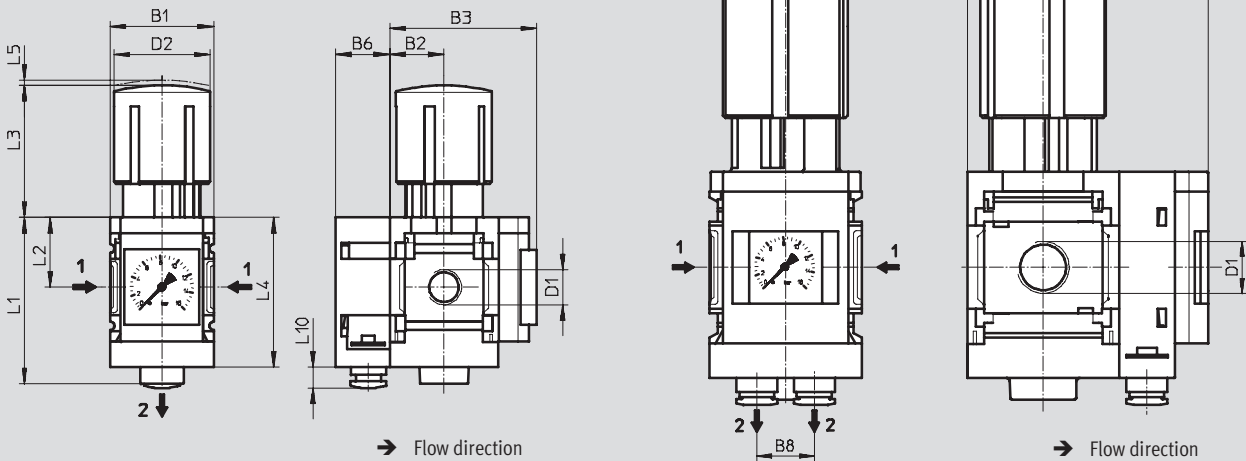
Download CAD data → www.festo.com/en/engineering

Pressure output at rear

Pressure output to front Z

MS4
MS6 (not illustrated)

MS4 (not illustrated)
MS6



Type	B1	B2	B3	B6	B7	B8	D1	D2	L1	L2	L3	L4	L5	L10
MS4-LRB-1/4-...-B...	40	21	57	21	78	–	G1/4	37.2	64.4	27	51.1	58	2	8
MS6-LRB-1/2-...-B...	62	31	77	22.6	99.6	23.4	G1/2	51	93	39	86	84	5	11

– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Pressure regulators MS4/MS6-LRB, MS series

Technical data

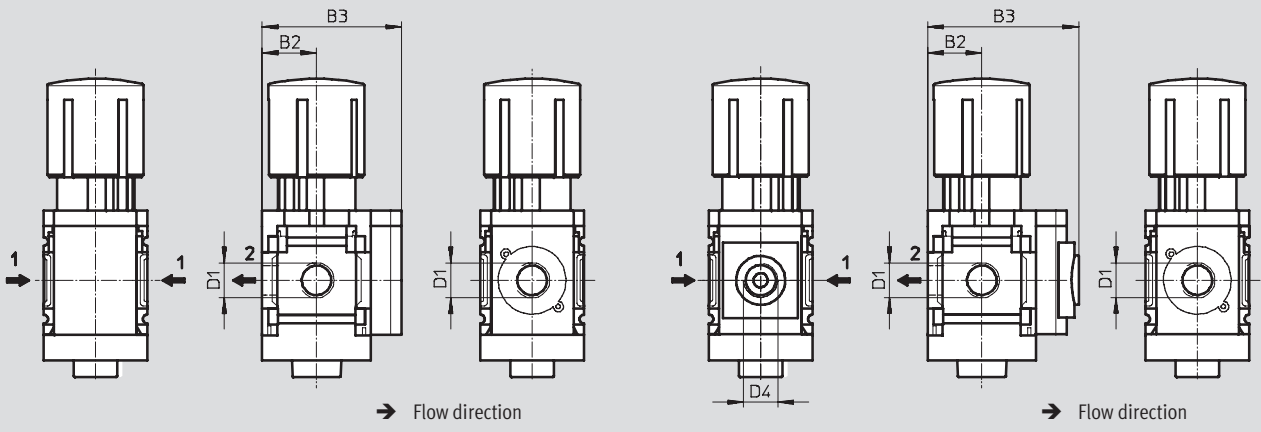
FESTO

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

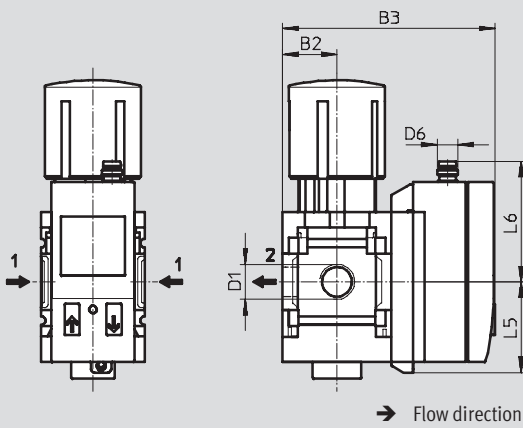
Cover plate VS

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



Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

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

Type	B2	B3	D1	D4	D6	L5	L6
MS4-LRB-1/4-...-VS	21	54	G1/4	-	-	-	-
MS4-LRB-1/4-...-A8	21	58.5	G1/4	G1/8	-	-	-
MS4-LRB-1/4-...-A4	21	58.5	G1/4	G1/4	-	-	-
MS4-LRB-1/4-...-AD1/AD2	21	82.6	G1/4	-	M8x1	35.1	46.7
MS4-LRB-1/4-...-AD3/AD4	21	82.6	G1/4	-	M12x1	35.1	55.8
MS6-LRB-1/2-...-VS	31	76	G1/2	-	-	-	-
MS6-LRB-1/2-...-A4	31	78.5	G1/2	G1/4	-	-	-
MS6-LRB-1/2-...-AD1/AD2	31	103	G1/2	-	M8x1	35.1	46.7
MS6-LRB-1/2-...-AD3/AD4	31	103	G1/2	-	M12x1	35.1	55.8

– Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

New
Variants E11, RG

Pressure regulators MS4/MS6-LRB, MS series

Technical data



Dimensions – Rotary knob

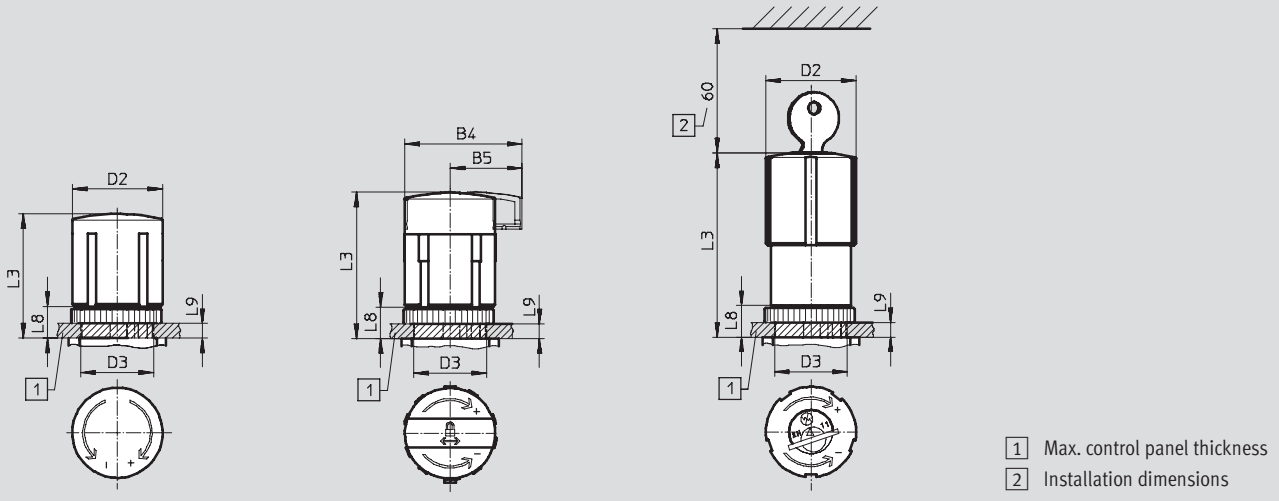
Download CAD data → www.festo.com/en/engineering

For installation into control panel

Standard

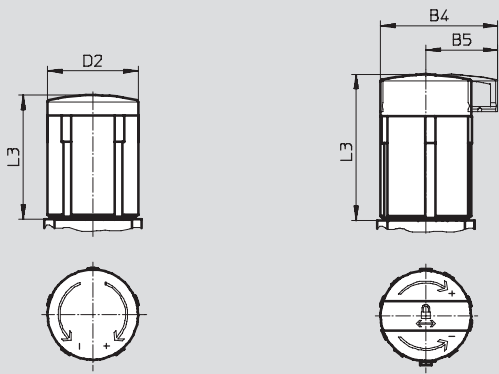
Standard, lockable AS

With integrated lock E11



Long LD

Long, lockable LD-AS



Type	B4	B5	D2	D3 +1	L3	L8	L9
MS4-LRB-...	-	-	37.2	30	51.1	13	6
MS4-LRB-...-AS	48.3	29.7			60.2		
MS4-LRB-...-E11	-	-			76		
MS4-LRB-...-LD	-	-	37.2	-	51.1	-	-
MS4-LRB-...-LD-AS	48.3	29.7			60.2		
MS6-LRB-...	-	-	51	44	86	22	14
MS6-LRB-...-AS	67.7	42			95.5		
MS6-LRB-...-E11	-	-			51.8		
MS6-LRB-...-LD	-	-	51	-	86	-	-
MS6-LRB-...-LD-AS	67.7	42			95.5		

MS4/MS6 series service units
Pressure regulators

2.14

Pressure regulators MS4/MS6-LRB, MS series

Technical data

FESTO

Ordering data					
Pressure gauge, lockable standard type rotary knob					
Size	Connection	Pressure output to rear without angled outlet block		Pressure output to rear with angled outlet block QS-8	
		Part No.	Type	Part No.	Type
Pressure regulation range 0.3 ... 4 bar					
MS4	G1/4	529 473	MS4-LRB-1/4-D5-AS	529 474	MS4-LRB-1/4-D5-AS-BD
MS6	G1/2	530 322	MS6-LRB-1/2-D5-AS	530 323	MS6-LRB-1/2-D5-AS-BD
Pressure regulation range 0.3 ... 7 bar					
MS4	G1/4	529 479	MS4-LRB-1/4-D6-AS	529 480	MS4-LRB-1/4-D6-AS-BD
MS6	G1/2	530 328	MS6-LRB-1/2-D6-AS	530 329	MS6-LRB-1/2-D6-AS-BD
Pressure regulation range 0.5 ... 12 bar					
MS4	G1/4	529 485	MS4-LRB-1/4-D7-AS	529 486	MS4-LRB-1/4-D7-AS-BD
MS6	G1/2	530 334	MS6-LRB-1/2-D7-AS	530 335	MS6-LRB-1/2-D7-AS-BD

Ordering data					
Adapter plate A8 for EN pressure gauge 1/8, lockable standard-type rotary knob					
Size	Connection	Pressure output to rear without angled outlet block			
		Part No.	Type		
Pressure regulation range 0.3 ... 4 bar					
MS4	G1/4	529 471	MS4-LRB-1/4-D5-A8-AS		
Pressure regulation range 0.3 ... 7 bar					
MS4	G1/4	529 477	MS4-LRB-1/4-D6-A8-AS		
Pressure regulation range 0.5 ... 12 bar					
MS4	G1/4	529 483	MS4-LRB-1/4-D7-A8-AS		

Ordering data					
Adapter plate A4 for EN pressure gauge 1/4, lockable standard-type rotary knob					
Size	Connection	Pressure output to rear without angled outlet block			
		Part No.	Type		
Pressure regulation range 0.3 ... 4 bar					
MS6	G1/2	530 320	MS6-LRB-1/2-D5-A4-AS		
Pressure regulation range 0.3 ... 7 bar					
MS6	G1/2	530 326	MS6-LRB-1/2-D6-A4-AS		
Pressure regulation range 0.5 ... 12 bar					
MS6	G1/2	530 332	MS6-LRB-1/2-D7-A4-AS		

Ordering data – Wearing parts kits			
Size	Part No.	Type	
MS4	673 649	MS4-LR/LRB	
MS6	673 650	MS6-LR/LRB	

New
Variants E11, RG

Pressure regulators MS4/MS6-LRB, MS series

Ordering data – Modular products



Mandatory data						Options
Module No.	Series	Size	Function	Connection sizes	Pressure regulation range	Pressure gauge alternatives
527 692 527 665	MS	4 6	LRB	1/4 1/2 AGA AGB AGC AGD AGE	D5 D6 D7 D8	VS, A8, A4, RG, AD1, AD2, AD3, AD4
Order example 527 692	MS	4	- LRB	- AGC	- D5	- A4

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527 692	527 665			
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Pressure regulator for manifold assembly			-LRB	-LRB
	Connection sizes	Thread G1/4	-		-1/4	
		-	Thread G1/2		-1/2	
		Connecting plate G1/8	-		-AGA	
		Connecting plate G1/4	Connecting plate G1/4		-AGB	
		Connecting plate G3/8	Connecting plate G3/8		-AGC	
		-	Connecting plate G1/2		-AGD	
		-	Connecting plate G3/4		-AGE	
	Pressure regulation range	0.3 ... 4 bar			-D5	
		0.3 ... 7 bar			-D6	
		0.5 ... 12 bar			-D7	
		-	0.5 ... 16 bar		-D8	
O	Pressure gauge alternatives	Cover plate		1	-VS	
		Adapter plate for EN pressure gauge 1/8, without pressure gauge	-	2	-A8	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		2	-A4	
		Integrated pressure gauge, red-green scale			-RG	
		Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin		2 3	-AD1	
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin		2 3	-AD2	
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA		2 3	-AD3	
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA		2 3	-AD4	

1 VS Must be selected if alternative flow direction Z is selected without alternative assembly position KD and without pressure output BC, BD, BE.
Must be selected if alternative assembly position KD is selected without alternative flow direction Z and without pressure output BC, BD, BE.

2 A8, A4, AD1 ... AD4 In combination with alternative flow direction Z only with alternative assembly position KD.
3 AD1 ... AD4 Measuring range max. 10 bar.
Not with pressure regulation range D8.

Transfer order code

- - - -

MS4/MS6 series service units
Pressure regulators

2.14

Pressure regulators MS4/MS6-LRB, MS series

Ordering data – Modular products

Options							
Alternative pressure gauge scale	Secondary venting	Rotary knob alternative	Alternative assembly position	Security	Pressure output	Type of mounting	Alternative flow direction
PSI MPA	OS	LD	KD	AS E11	BC BD BE	WR WP WPM WPB WB WBM	Z
-	- OS	- LD	-	- AS	- BC	- WP	-

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
Alternative pressure gauge scale	psi			4	-PSI		
	MPa			4 5	-MPA		
Secondary venting	Without secondary venting				-OS		
Rotary knob alternative	Long rotary knob			6	-LD		
Alternative assembly position	Rotary knob underneath			7	-KD		
Security	Lockable rotary knob				-AS		
	With integrated lock				-E11		
Pressure output (p _{max} = 10 bar)	Angled outlet block QS-6		-		-BC		
	Angled outlet block QS-8		Angled outlet block QS-8		-BD		
	-		Angled outlet block QS-10		-BE		
Type of mounting	Wall mounting bracket with knurled nut for regulator head			8 9	-WR		
	Mounting bracket			10 11	-WP		
	Mounting bracket (for retro-fitting M-series)			8 10	-WPM		
	Wall mounting plate for large wall gap			10 12	-WPB		
	Mounting bracket			8	-WB		
	Mounting bracket			8	-WBM		
Alternative flow direction	Pressure outlet to front (without pressure outlet, no pressure gauge)				-Z		

- 4 PSI, MPA** Not with pressure gauge alternatives VS, A8, A4, AD1, AD2, AD3, AD4.
In combination with alternative flow direction Z only with pressure output BC, BD, BE.
- 5 MPA** Not with alternative assembly position KD
- 6 LD** Not with security E11
- 7 KD** Not with alternative pressure gauge scale MPA.
In combination with alternative pressure gauge scale PSI only with alternative flow direction Z and/or only with pressure output BC, BD, BE
Not with mounting type WP, WPB.
In combination with mounting type WR, WPM, WB, WBM not with alternative flow direction Z.
Not with pressure gauge alternative RG.
In combination with pressure gauge alternatives A8, A4, AD1, AD2, AD3, AD4 only with alternative flow direction Z.


- 8 WR, WPM, WB, WBM** In combination with alternative flow direction Z not with alternative assembly position KD.
- 9 WR** Only with alternative flow direction Z.
Not with rotary knob alternative LD
- 10 WP, WPM, WPB** Only with connecting plate AGA, AGB, AGC, AGD, AGE.
Only with alternative flow direction Z and/or only with pressure output BC, BD, BE
- 11 WP** Only with alternative flow direction Z and/or only with pressure output BC, BD, BE
- 12 WPB** Not with alternative flow direction Z.
Not with pressure output BC, BD, BE.

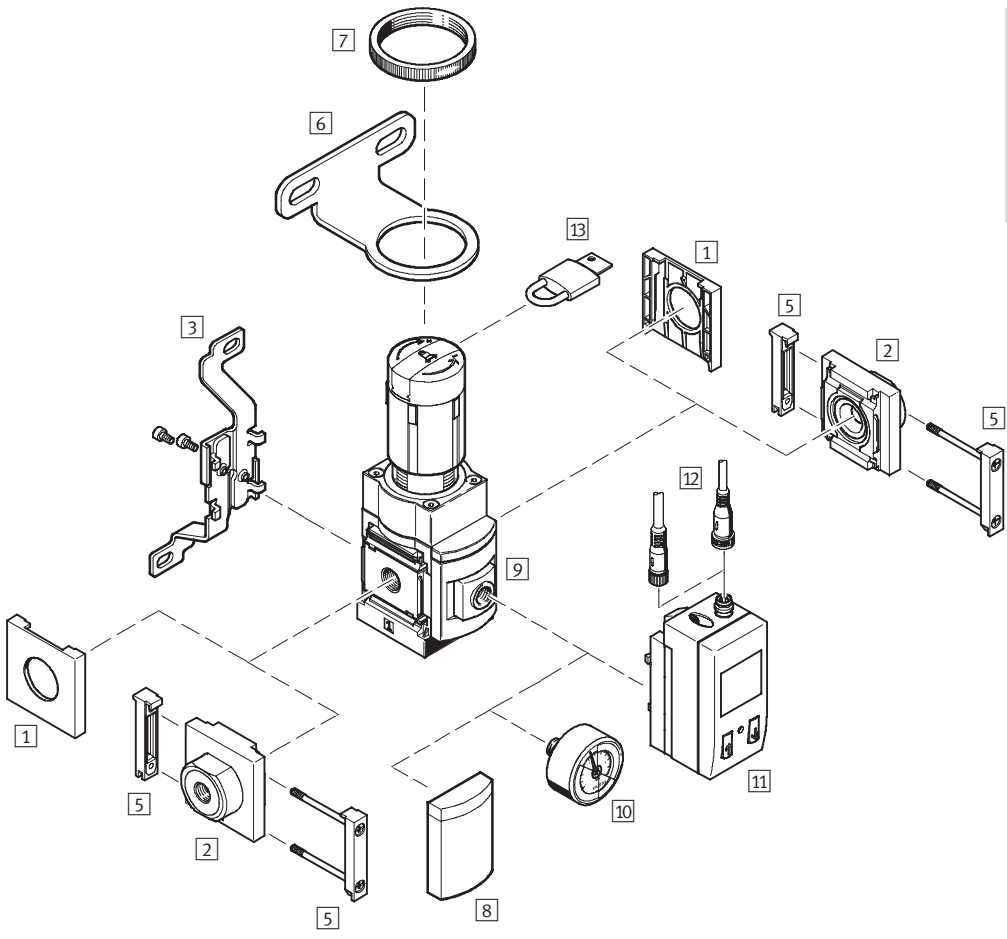
Transfer order code

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

Precision pressure regulators MS6-LRP, MS series

Peripherals overview

 Note
Other accessories:
- Module connector for combinations → 3/2.31-10
- Adapter plate for mounting on profiles → 3/2.31-13



MS4/MS6 series service units
Pressure regulators

2.14

Precision pressure regulators MS6-LRP, MS series

Peripherals overview

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Mounting attachments and accessories						
		Individual device		Combination → 3/2.11-0		→Page
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS6-WB	■	■	-	-	3/2.31-4
5	Module connector MS6-MV	-	■	■	■	3/2.31-9
6	Mounting bracket MS6-WR	■	■	-	-	3/2.31-5
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Cover plate VS	■	■	■	■	3/2.14-36
9	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.14-36
10	Precision pressure gauge A8M/MAP	■	■	■	■	3/2.14-36 3/2.31-24
11	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.14-36 Volume 4
12	Plug sockets with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
13	Padlock LRVS-D	■	■	■	■	3/2.31-25
-	Mounting bracket MS6-WP/WPB/WPM	-	■	■	■	3/2.31-7, 3/2.31-8

Precision pressure regulators MS6-LRP, MS series

Type codes

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		MS	6	-	LRP	-	1/2	-	D7	-	A8
Series											
MS	Standard service unit										
Size											
6	Grid dimension 62 mm										
Service function											
LRP	Precision pressure regulator										
Connection sizes											
1/4	Thread G1/4										
3/8	Thread G3/8										
1/2	Thread G1/2										
Pressure regulation range											
D2	0.05 ... 0.7 bar										
D4	0.05 ... 2.5 bar										
D5	0.1 ... 4 bar										
D7	0.1 ... 12 bar										
Pressure gauge alternatives											
A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge										

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Further variants can be ordered using the modular system

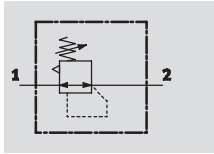
Precision pressure regulators LRP → 3/2.14-36





- Connecting plates
- Pressure gauge alternatives
- Rotary knob alternative
- Alternative assembly position
- Security
- Type of mounting
- Alternative flow direction

Precision pressure regulators MS6-LRP, MS series

Technical data

Function



-  Flow rate
800 ... 5,000 l/min
-  Temperature range
-10 ... +60 °C
-  Input pressure
1 ... 14 bar
-  [www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)



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

- Good regulation characteristics with low hysteresis and primary pressure compensation
- High flow rate with minimal pressure drop
- Setting values are secured by locking the rotary knob
- Four pressure regulation ranges: 0.05 ... 0.7 bar, 0.05 ... 2.5 bar, 0.1 ... 4 bar and 0.1 ... 12 bar
- Optional pressure sensor with display

General technical data		MS6		
Size	MS6			
Pneumatic connection 1, 2	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
Pneumatic connection 3 (Secondary venting)	G $\frac{1}{4}$			
Design	Pilot actuated precision diaphragm regulator			
Regulating function	Via secondary venting			
	Output pressure constant			
Type of mounting	Via accessories			
	In-line installation			
	Front panel mounting			
Assembly position	Any			
Actuator lock	Rotary knob with detent			
	Rotary knob with integrated lock			
	Lockable with accessories			
Pressure regulation range	D2 [bar]	0.05 ... 0.7		
	D4 [bar]	0.05 ... 2.5		
	D5 [bar]	0.1 ... 4		
	D7 [bar]	0.1 ... 12 (0.1 ... 10 with pressure sensor variant AD...)		
Max. hysteresis	[bar]	0.02		
Pressure display	Via pressure sensor for displaying output pressure and electrical output			
	Via precision pressure gauge for displaying output pressure			
	G $\frac{1}{8}$ prepared			
	G $\frac{1}{4}$ prepared			
Flow rate of secondary venting	[l/min]	≥ 220 with pressure regulation range D2		
		≥ 450 with pressure regulation range D4		
		≥ 650 with pressure regulation range D5		
		≥ 900 with pressure regulation range D7		

• † - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Precision pressure regulators MS6-LRP, MS series

Technical data

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Standard nominal flow rate qnN [l/min]				
Pneumatic connection		G¼	G¾	G½
Pressure regulation range	D2	800 ¹⁾	1,100 ¹⁾	1,600 ¹⁾
	D4	1,100 ²⁾	1,400 ²⁾	2,300 ²⁾
	D5	1,400 ³⁾	1,700 ³⁾	3,000 ³⁾
	D7	3,000 ⁴⁾	3,300 ⁴⁾	5,000 ⁴⁾

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

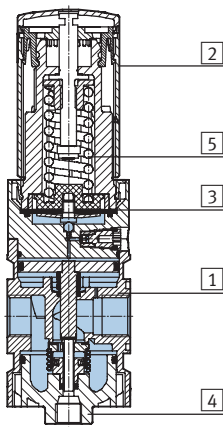
Operating and environmental conditions		
Variant	Standard	Pressure sensor with display AD...
Input pressure [bar]	1 ... 14	1 ... 14
Operating medium	Filtered compressed air, unlubricated, grade of filtration 40 µm	
Ambient temperature [°C]	-10 ... +60	0 ... +50
Temperature of medium [°C]	-10 ... +60	0 ... +50
Storage temperature [°C]	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	2	

- 1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]	
Precision pressure regulator	1,000
Precision pressure regulator with rotary knob with integrated lock E11	1,120

Materials

Sectional view



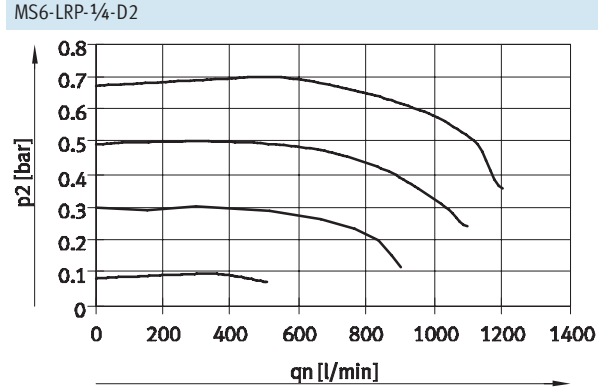
Precision pressure regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	Polyamide/polyacetate
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	Nitrile rubber
4	Bottom cap	Polycarbonate
5	Springs	Steel
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE (not with variant A8M or AD...)

Precision pressure regulators MS6-LRP, MS series

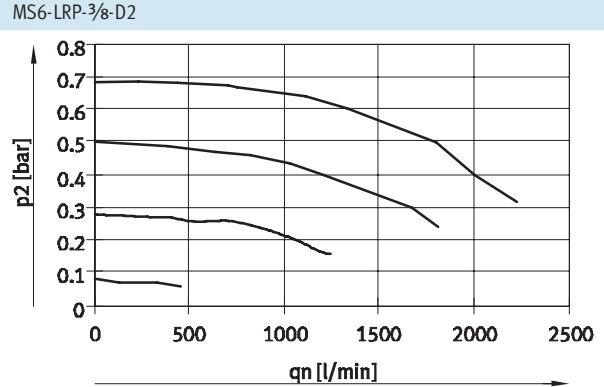
Technical data

FESTO

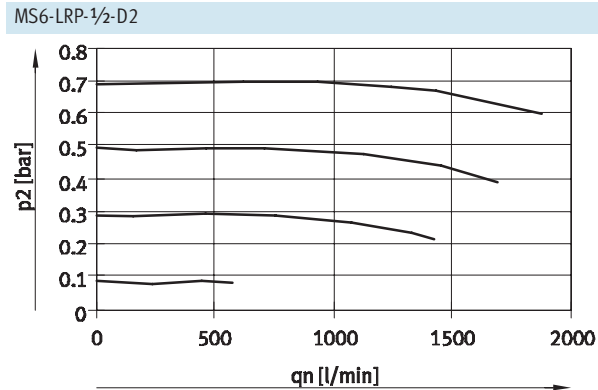
Standard flow rate q_n as a function of the output pressure p_2 ($p_1 = 10$ bar)



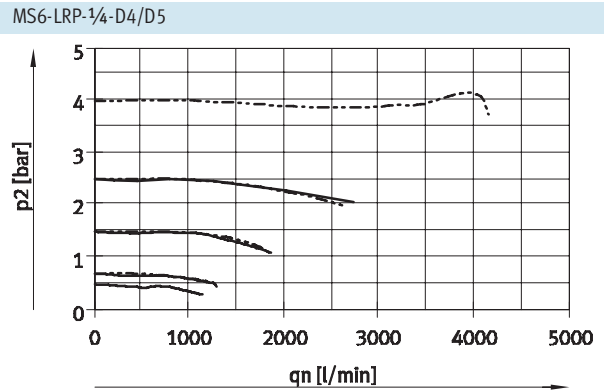
D2: 0.05...0.7 bar



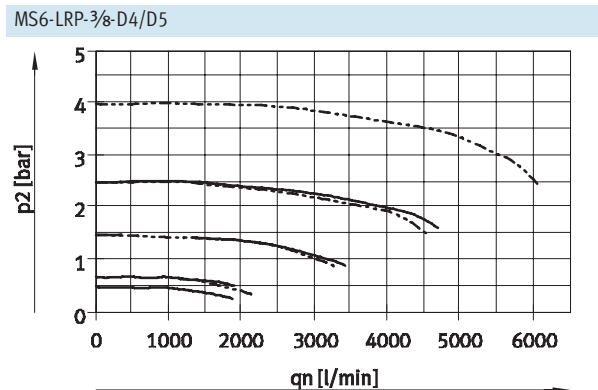
D2: 0.05...0.7 bar



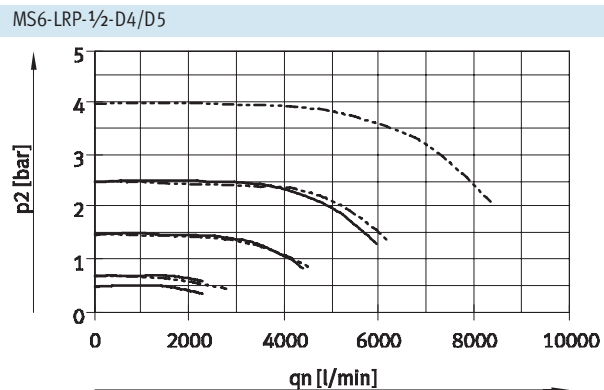
D2: 0.05...0.7 bar



D4: 0.05...2.5 bar
D5: 0.1...4 bar



D4: 0.05...2.5 bar
D5: 0.1...4 bar



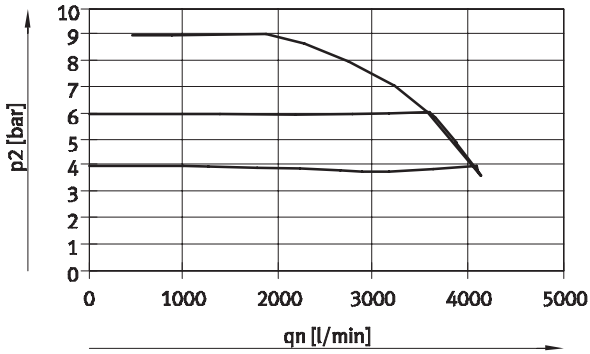
D4: 0.05...2.5 bar
D5: 0.1...4 bar

Precision pressure regulators MS6-LRP, MS series

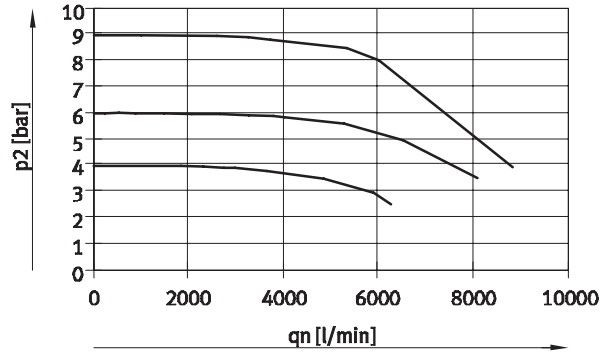
Technical data

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

MS6-LRP-1/4-D7



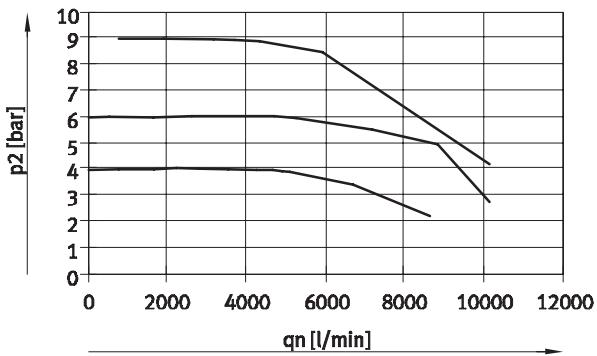
MS6-LRP-3/8-D7



— D7: 0.1...12 bar

— D7: 0.1...12 bar

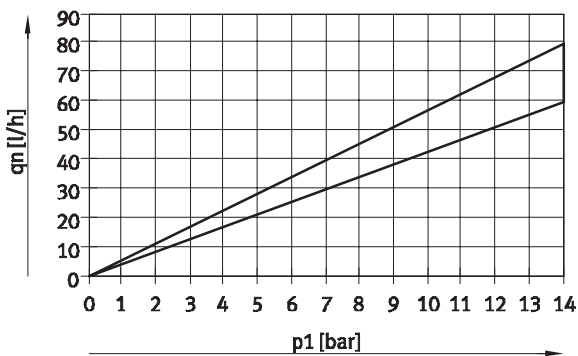
MS6-LRP-1/2-D7



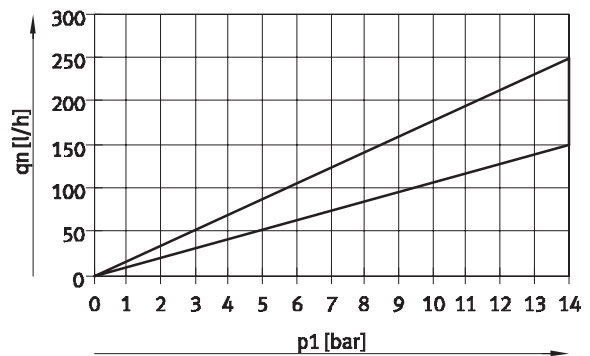
— D7: 0.1...12 bar

Internal air consumption q_n as a function of supply pressure p_1

MS6-LRP-...-D2/D4



MS6-LRP-...-D5/D7

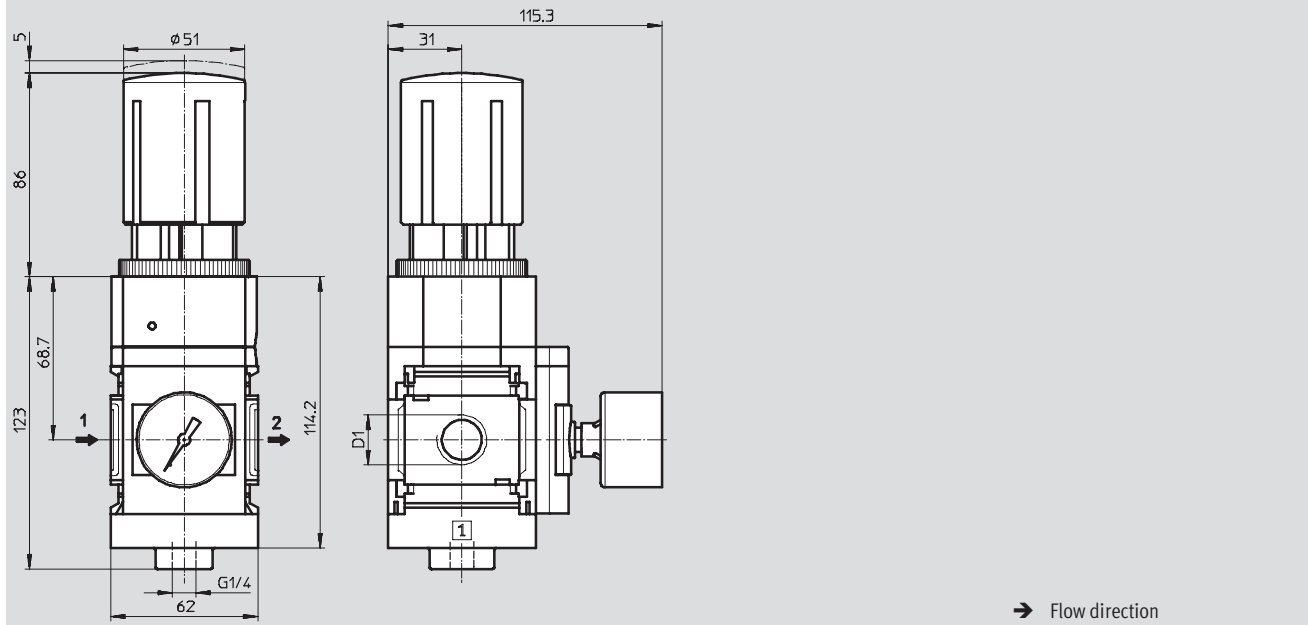


Precision pressure regulators MS6-LRP, MS series

Technical data

Dimensions Download CAD data → www.festo.com/en/engineering

Adapter plate A8M for EN pressure gauge 1/8, with precision pressure gauge MAP Technical data MAP → 3 / 4.8-10

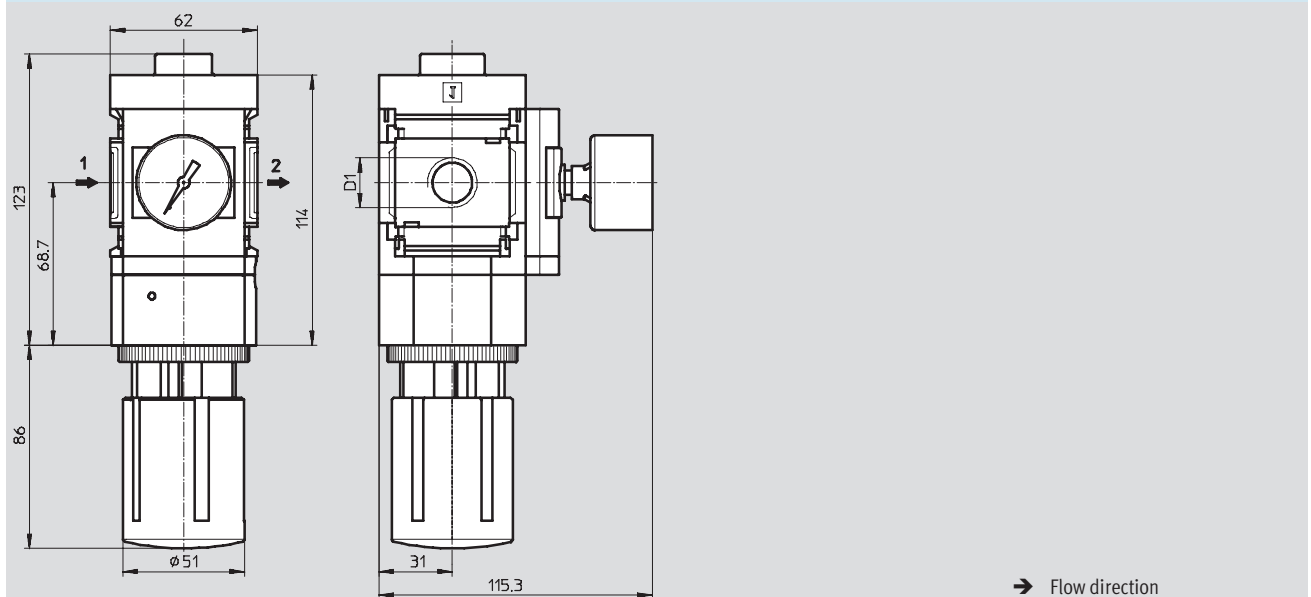


Type	D1
MS6-LRP-1/4-...-A8M	G1/4
MS6-LRP-3/8-...-A8M	G3/8
MS6-LRP-1/2-...-A8M	G1/2

– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

Rotary knob at bottom KD



Type	D1
MS6-LRP-1/4-...-KD	G1/4
MS6-LRP-3/8-...-KD	G3/8
MS6-LRP-1/2-...-KD	G1/2

– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Precision pressure regulators MS6-LRP, MS series

Technical data

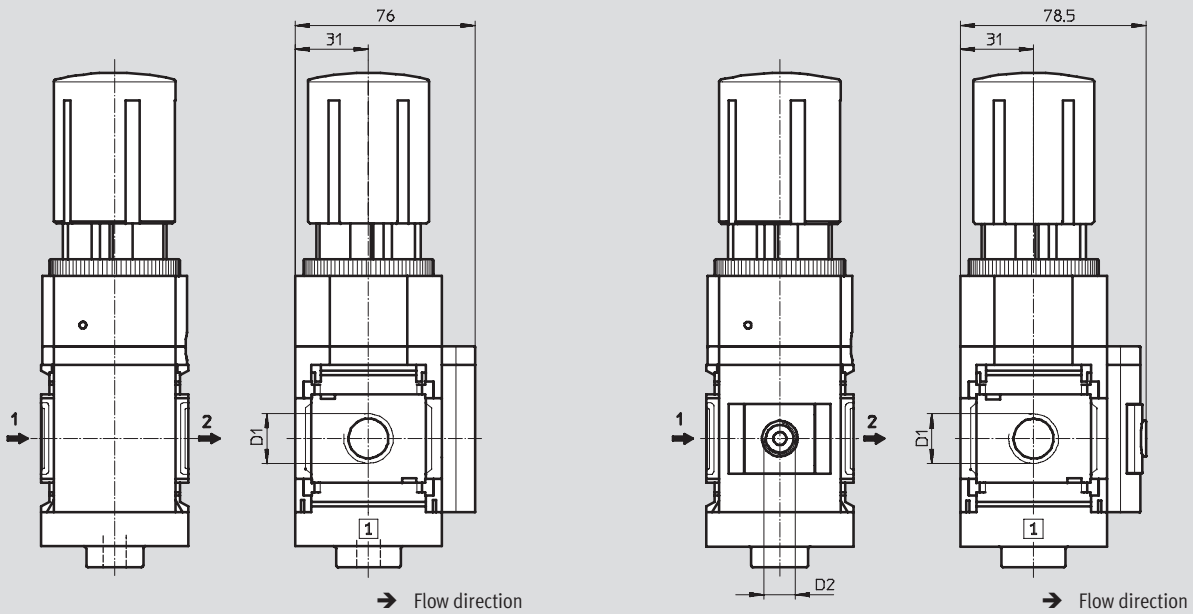
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Cover plate VS

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



Type	D1	D2
MS6-LRP-1/4-...-VS	G1/4	-
MS6-LRP-3/8-...-VS	G3/8	
MS6-LRP-1/2-...-VS	G1/2	
MS6-LRP-1/4-...-A8	G1/4	G1/8
MS6-LRP-3/8-...-A8	G3/8	
MS6-LRP-1/2-...-A8	G1/2	G1/4
MS6-LRP-1/4-...-A4	G1/4	
MS6-LRP-3/8-...-A4	G3/8	
MS6-LRP-1/2-...-A4	G1/2	

– | – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Precision pressure regulators MS6-LRP, MS series

Technical data

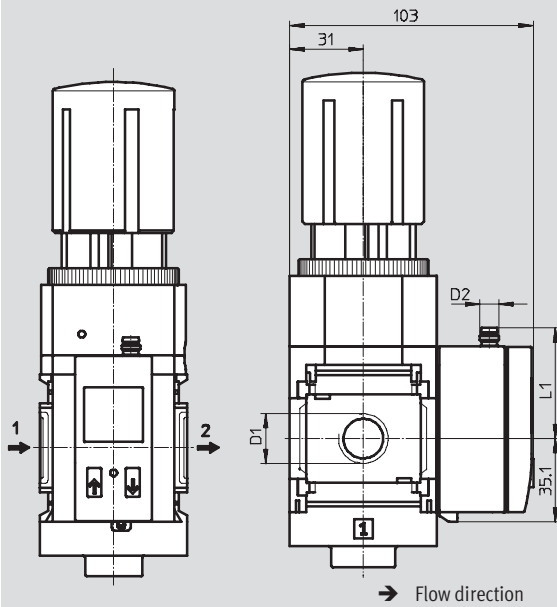
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

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

Type	D1	D2	L1
MS6-LRP-1/4-...-AD1/AD2	G1/4	M8x1	46.7
MS6-LRP-3/8-...-AD1/AD2	G3/8		
MS6-LRP-1/2-...-AD1/AD2	G1/2		
MS6-LRP-1/4-...-AD3/AD4	G1/4	M12x1	55.8
MS6-LRP-3/8-...-AD3/AD4	G3/8		
MS6-LRP-1/2-...-AD3/AD4	G1/2		

• † - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

New
Variant E11

Precision pressure regulators MS6-LRP, MS series

Technical data



Dimensions – Rotary knob

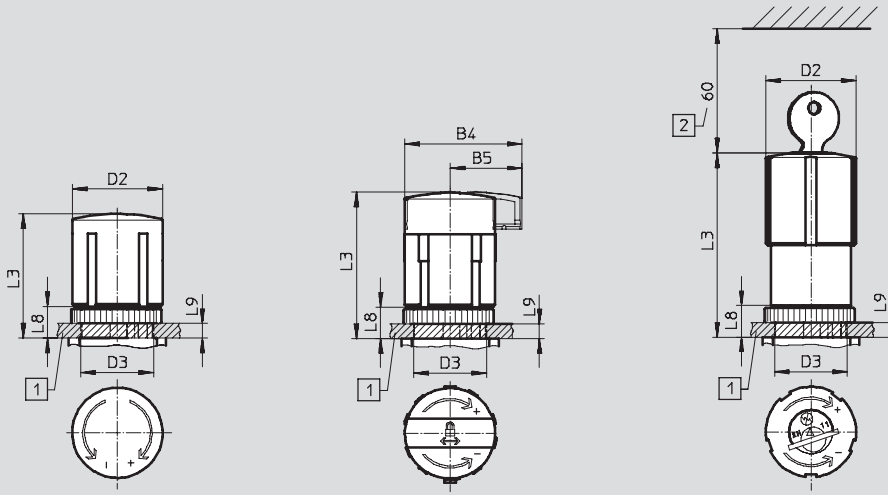
Download CAD data → www.festo.com/en/engineering

For installation into control panel

Standard

Standard, lockable AS

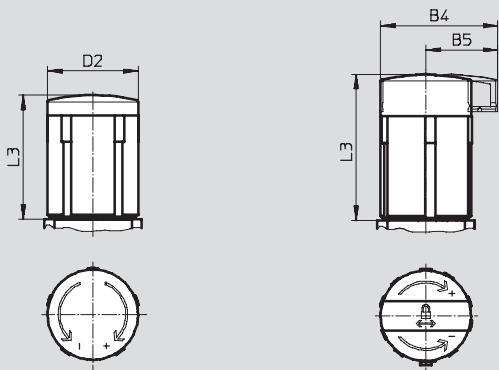
With integrated lock E11



- 1 Max. control panel thickness
- 2 Installation dimensions

Long LD

Long, lockable LD-AS



MS4/MS6 series service units
Pressure regulators

2.14

Type	B4	B5	D2	D3 +1	L3	L8	L9
MS6-LRP-...	-	-	51	44	86	22	14
MS6-LRP-...-AS	67.7	42			95.5		
MS6-LRP-...-E11	-	-	51.8	-	112.1	-	-
MS6-LRP-...-LD	-	-	51	-	86	-	-
MS6-LRP-...-LD-AS	67.7	42			95.5		

Precision pressure regulators MS6-LRP, MS series

FESTO

Technical data

Ordering data			
Adapter plate for EN pressure gauge 1/8, standard rotary knob			
Size	Connection	Part No.	Type
Pressure regulation range 0.05 ... 0.7 bar			
MS6	G1/4	538 004	MS6-LRP-1/4-D2-A8¹⁾
	G3/8	538 012	MS6-LRP-3/8-D2-A8¹⁾
	G1/2	538 020	MS6-LRP-1/2-D2-A8¹⁾
Pressure regulation range 0.05 ... 2.5 bar			
MS6	G1/4	538 006	MS6-LRP-1/4-D4-A8¹⁾
	G3/8	538 014	MS6-LRP-3/8-D4-A8¹⁾
	G1/2	538 022	MS6-LRP-1/2-D4-A8¹⁾
Pressure regulation range 0.1 ... 4 bar			
MS6	G1/4	538 008	MS6-LRP-1/4-D5-A8¹⁾
	G3/8	538 016	MS6-LRP-3/8-D5-A8¹⁾
	G1/2	538 024	MS6-LRP-1/2-D5-A8¹⁾
Pressure regulation range 0.1 ... 12 bar			
MS6	G1/4	538 010	MS6-LRP-1/4-D7-A8¹⁾
	G3/8	538 018	MS6-LRP-3/8-D7-A8¹⁾
	G1/2	538 026	MS6-LRP-1/2-D7-A8¹⁾

1) Free of copper and PTFE

Precision pressure regulators MS6-LRP, MS series

Ordering data – Modular products

FESTO

M **Mandatory data** →

Module No.	Series	Size	Function	Connection sizes	Pressure regulation range	Pressure gauge alternatives
538 028	MS	6	LRP	1/4, 3/8, 1/2, AGB, AGC, AGD, AGE	D2 D4 D5 D7	VS A8 A8M A4 AD1 AD2 AD3 AD4
Order example						
538 028	MS	6	- LRP	- 1/2	- D4	- A4

Ordering table

Grid dimension	[mm]	62	Condi- tions	Code	Enter code
M Module No.	538 028				
Series	Standard			MS	MS
Size	6			6	6
Function	Precision pressure regulator			-LRP	-LRP
Connection sizes	Thread G1/4			-1/4	
	Thread G3/8			-3/8	
	Thread G1/2			-1/2	
	Connecting plate G1/4			-AGB	
	Connecting plate G3/8			-AGC	
	Connecting plate G1/2			-AGD	
	Connecting plate G3/4			-AGE	
Pressure regulation range	0.05 ... 0.7 bar			-D2	
	0.05 ... 2.5 bar			-D4	
	0.3 ... 4 bar			-D5	
	0.5 ... 12 bar			-D7	
Pressure gauge alternatives	Cover plate			-VS	
	Adapter plate for EN pressure gauge 1/8, without pressure gauge			-A8	
	Adapter plate for EN pressure gauge 1/8, with precision pressure gauge			-A8M	
	Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4	
	Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin		1	-AD1	
	Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin		1	-AD2	
	Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA		1	-AD3	
	Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA		1	-AD4	

1 **AD1 ... AD4** Measuring range max. 10 bar.
Not with pressure regulation range D2, D4.

Transfer order code

538 028	MS	6	- LRP			
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Precision pressure regulators MS6-LRP, MS series

Ordering data – Modular products



→ **0 Options**

Rotary knob alternative	Alternative assembly position	Security	Type of mounting	Alternative flow direction
LD	KD	AS E11	WR WP WPM WB	Z
- LD	-	- AS	- WB	- Z

Ordering table		Grid dimension [mm]	62	Condi- tions	Code	Enter code
0	Rotary knob alternative	Long rotary knob		2	-LD	
	Alternative assembly position	Rotary knob underneath		3	-KD	
	Security	Lockable rotary knob			-AS	
		With integrated lock			-E11	
	Type of mounting	Wall mounting bracket with knurled nut for regulator head		4	-WR	
		Mounting bracket		5	-WP	
		Mounting bracket (for retro-fitting M-series)		5	-WPM	
		Mounting bracket			-WB	
	Alternative flow direction	Flow direction from right to left (without pressure output, no pressure gauge)			-Z	

- 2 **LD** Not with security E11
- 3 **KD** Not with mounting type WP.

- 4 **WR** Not with rotary knob alternative LD.
- 5 **WP, WPM** Only with connecting plate AGB, AGC, AGD or AGE.

Transfer order code

- - - - -

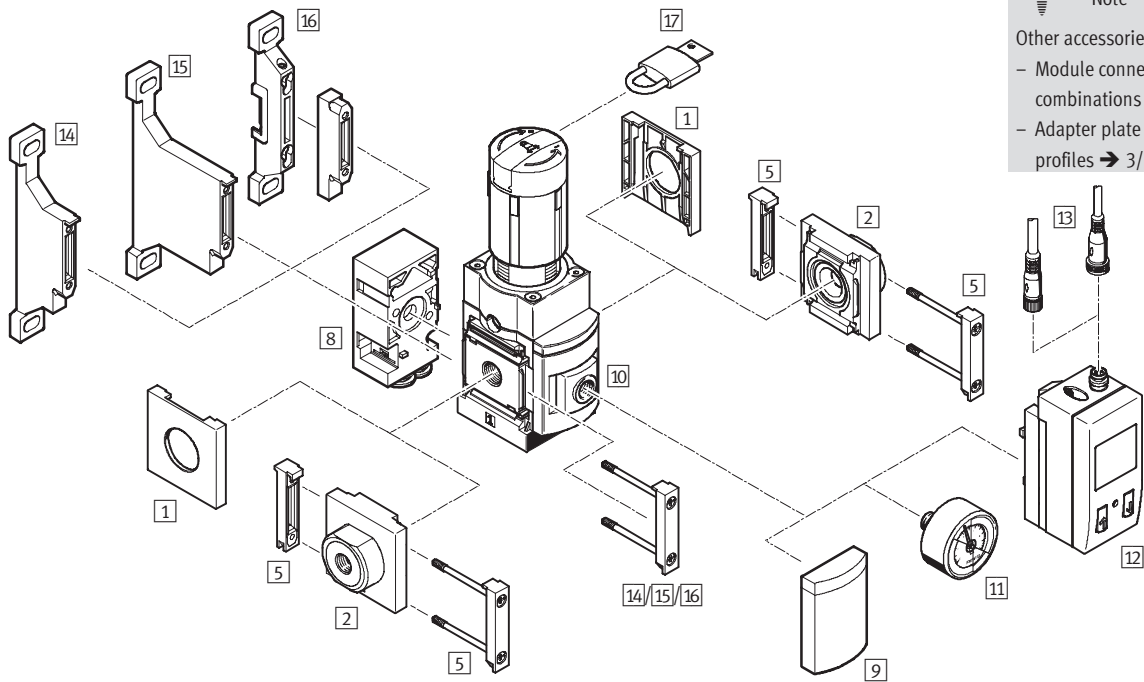
Precision pressure regulators MS6-LRPB, MS series

Peripherals overview



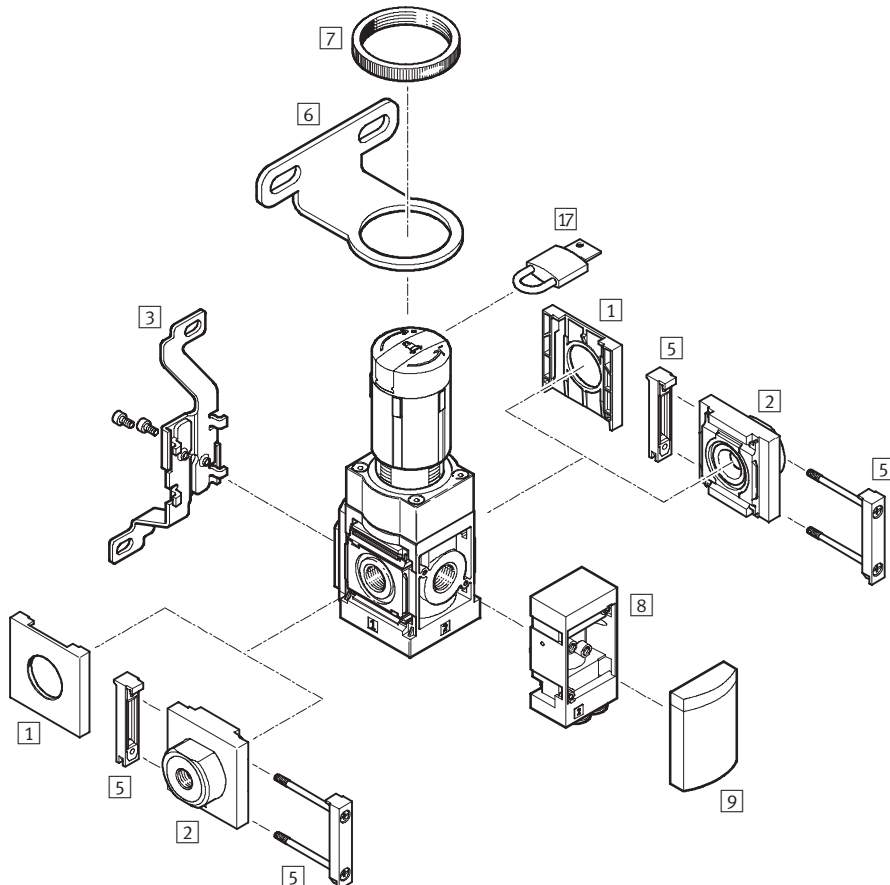
Pressure output

Rear



Note
Other accessories:
- Module connector for combinations → 3/2.31-10
- Adapter plate for mounting on profiles → 3/2.31-13

Front Z



Note
Other accessories:
- Module connector for combinations → 3/2.31-10
- Adapter plate for mounting on profiles → 3/2.31-13

Precision pressure regulators MS6-LRPB, MS series

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination → 3/2.11-0		→Page
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS6-WB	■	■	-	-	3/2.31-4
5	Module connector MS6-MV	-	■	■	■	3/2.31-9
6	Mounting bracket MS6-WR	■	■	-	-	3/2.31-5
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Angled outlet block B...	■	■	■	■	3/2.14-50
9	Cover plate VS	■	■	■	■	3/2.14-50
10	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.14-50
11	Precision pressure gauge A8M/MAP	■	■	■	■	3/2.14-50 3/2.31-24
12	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.14-50 Volume 4
13	Plug sockets with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
14	Mounting bracket MS6-WP	-	■	■	■	3/2.31-7
15	Mounting bracket MS6-WPB	-	■	■	■	3/2.31-7
16	Mounting bracket (for retro-fitting M-series) MS6-WPM	-	■	■	■	3/2.31-8
17	Padlock LRVS-D	■	■	■	■	3/2.31-25

Precision pressure regulators MS6-LRPB, MS series

Type codes

FESTO

		MS	6	-	LRPB	-	1/2	-	D7	-	A8	-	BD
Series													
MS	Standard service unit												
Size													
6	Grid dimension 62 mm												
Service function													
LRPB	Precision pressure regulator for manifold assembly												
Connection sizes													
1/2	Thread G1/2												
Pressure regulation range													
D2	0.05 ... 0.7 bar												
D4	0.05 ... 2.5 bar												
D5	0.1 ... 4 bar												
D7	0.1 ... 12 bar												
Pressure gauge alternatives													
A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge												
Pressure output													
	Without angled outlet block												
BD	Angled outlet block QS-8												
BE	Angled outlet block QS-10												

Further variants can be ordered using the modular system

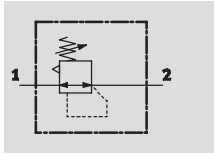
Precision pressure regulators LRPB → 3/2.14-50

- Connecting plates
- Pressure gauge alternatives
- Rotary knob alternative
- Alternative assembly position
- Security
- Type of mounting
- Alternative flow direction

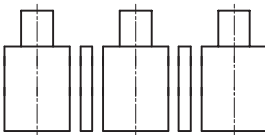
Precision pressure regulators MS6-LRPB, MS series





Technical data

Function



LRPB combination
with through pressure supply for
manifold assembly



-  Flow rate
1,600 ... 5,000 l/min
-  Temperature range
-10 ... +60 °C
-  Input pressure
1 ... 14 bar
-  [www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)



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

- Good regulation characteristics with low hysteresis and primary pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure regulation ranges
- Setting values are secured by locking the rotary knob
- Four pressure regulation ranges: 0.05 ... 0.7 bar, 0.05 ... 2.5 bar, 0.1 ... 4 bar and 0.1 ... 12 bar
- Optional pressure sensor with display

General technical data		
Size		MS6
Pneumatic connection 1		G½
Pneumatic connection 2		G½
		QS-8
		QS-10
Pneumatic connection 3 (Secondary venting)		G¼
Design		Pilot actuated precision diaphragm regulator with through pressure supply
Regulating function		Via secondary venting
		Output pressure constant
Type of mounting		Via accessories
		In-line installation
		Front panel mounting
Assembly position		Any
Actuator lock		Rotary knob with detent
		Rotary knob with integrated lock
		Lockable with accessories
Pressure regulation range	D2 [bar]	0.05 ... 0.7
	D4 [bar]	0.05 ... 2.5
	D5 [bar]	0.1 ... 4
	D7 [bar]	0.1 ... 12 (0.1 ... 10 with pressure sensor variant AD...)
Max. hysteresis	[bar]	0.02
Pressure display		Via pressure sensor for displaying output pressure and electrical output
		Via pressure gauge for displaying output pressure
		G⅜ prepared
		G¾ prepared
Flow rate of secondary venting	[l/min]	≥ 220 with pressure regulation range D2
		≥ 450 with pressure regulation range D4
		≥ 650 with pressure regulation range D5
		≥ 900 with pressure regulation range D7

 Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Precision pressure regulators MS6-LRPB, MS series

Technical data

FESTO

Standard nominal flow rate q _{nN} [l/min]		
Pressure regulation range	D2	1,600 ¹⁾
	D4	2,300 ²⁾
	D5	3,000 ³⁾
	D7	5,000 ⁴⁾

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

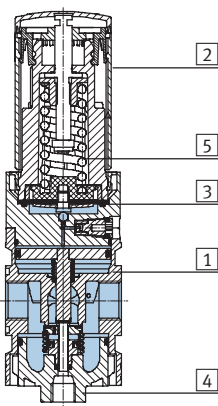
Operating and environmental conditions		
Variant	Standard	Pressure sensor with display AD...
Input pressure [bar]	1 ... 14	1 ... 14
Operating medium	Filtered compressed air, unlubricated, grade of filtration 40 μm	
Ambient temperature [°C]	-10 ... +60	0 ... +50
Temperature of medium [°C]	-10 ... +60	0 ... +50
Storage temperature [°C]	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	2	

- 1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]	
Precision pressure regulator	1,000
Precision pressure regulator with rotary knob with integrated lock E11	1,120

Materials

Sectional view



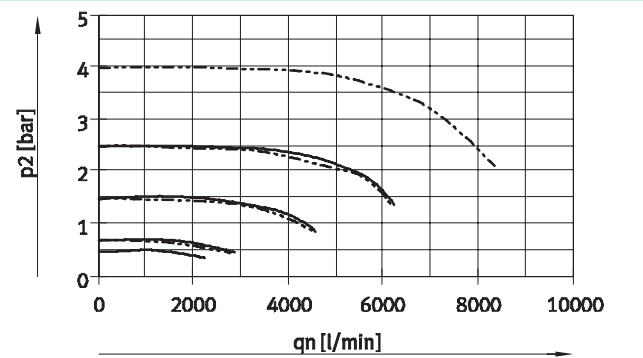
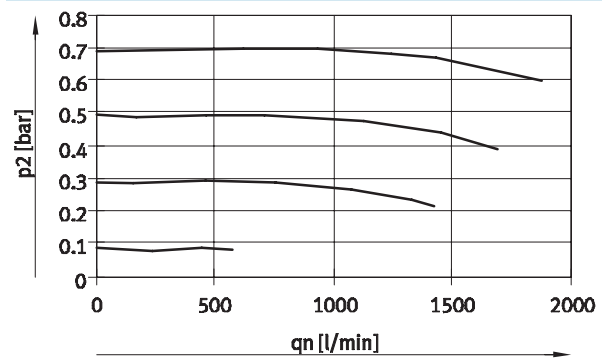
Precision pressure regulator (manifold assembly)		
1	Housing	Die-cast aluminium
2	Rotary knob	Polyamide/polyacetate
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	Nitrile rubber
4	Bottom cap	Polycarbonate
5	Springs	Steel
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE (not with variant A8M or AD...)

Precision pressure regulators MS6-LRPB, MS series

Technical data

FESTO

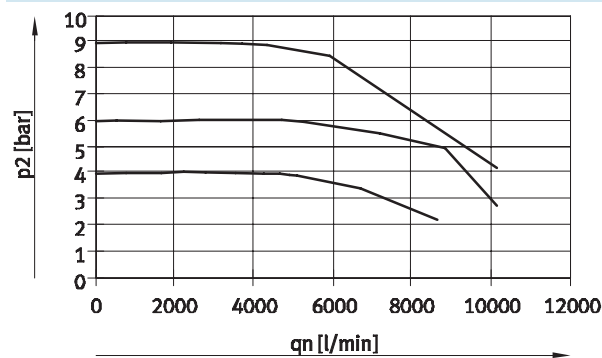
Standard flow rate q_n as a function of the output pressure p_2 ($p_1 = 10$ bar)



— D2: 0.05...0.7 bar

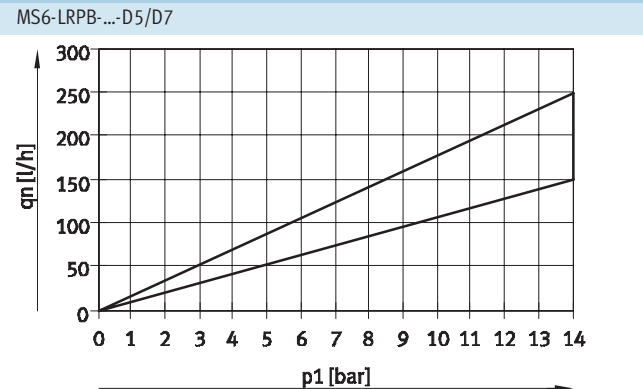
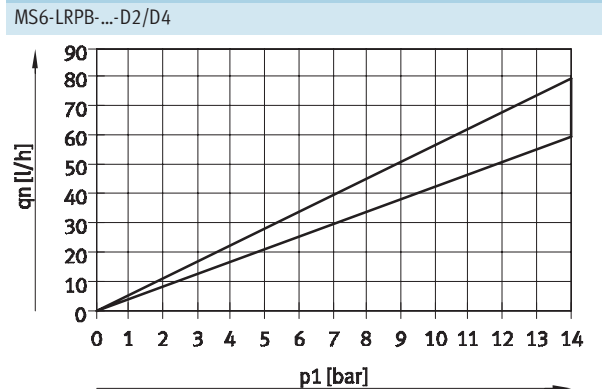
— D4: 0.05...2.5 bar
- - - D5: 0.1...4 bar

MS6-LRPB-1/2-D7



— D7: 0.1...12 bar

Internal air consumption q_n as a function of supply pressure p_1



New
Variant E11

Precision pressure regulators MS6-LRPB, MS series

Technical data

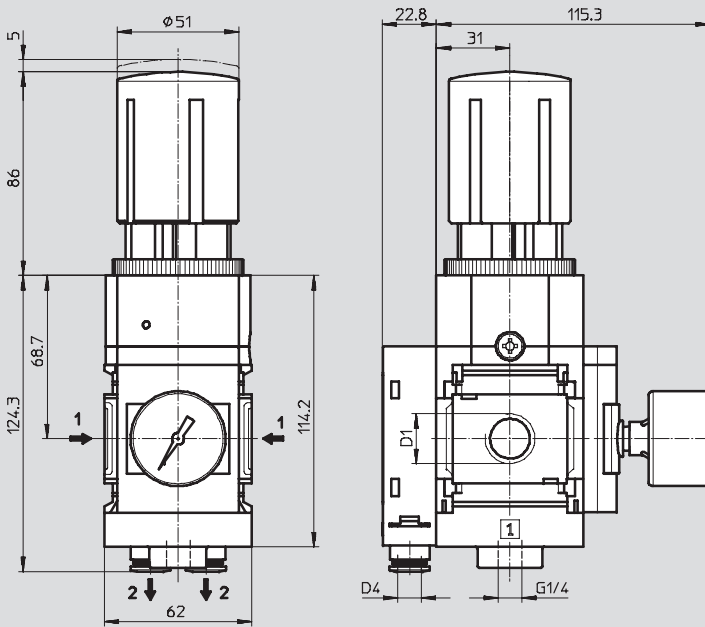


Dimensions

Download CAD data → www.festo.com/en/engineering

Adapter plate A8M for EN pressure gauge 1/8, with precision pressure gauge, angled outlet block BD/BE

Technical data MAP → 3 / 4.8-10



→ Flow direction

Type	D1	D4
MS6-LRPB-1/2-...-A8M-BD	G1/2	QS-8
MS6-LRPB-1/2-...-A8M-BE	G1/2	QS-10

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

MS4/MS6 series service units
Pressure regulators

2.14

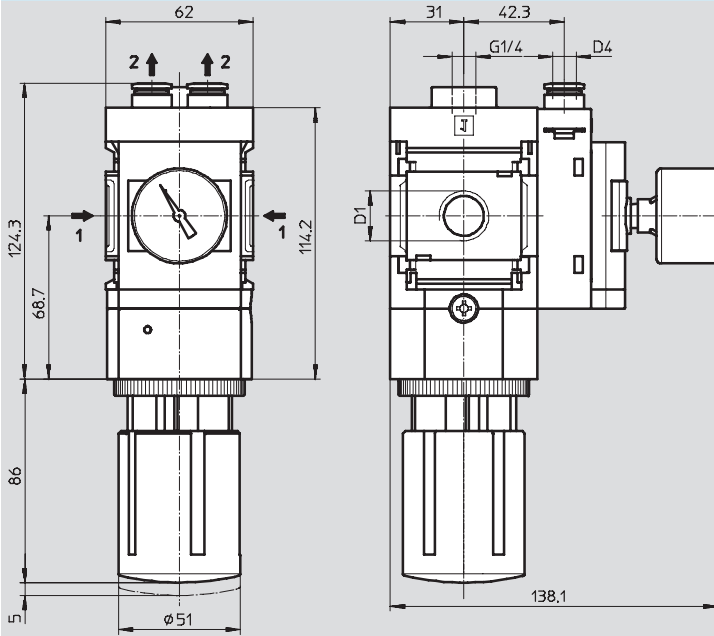
Precision pressure regulators MS6-LRPB, MS series

Technical data

Dimensions – Alternative mounting position

Download CAD data → www.festo.com/en/engineering

Rotary knob underneath KD, angled outlet block BD/BE



Type	D1	D4
MS6-LRPB-1/2-...-KD-BD	G1/2	QS-8
MS6-LRPB-1/2-...-KD-BE		QS-10

|| - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Precision pressure regulators MS6-LRPB, MS series

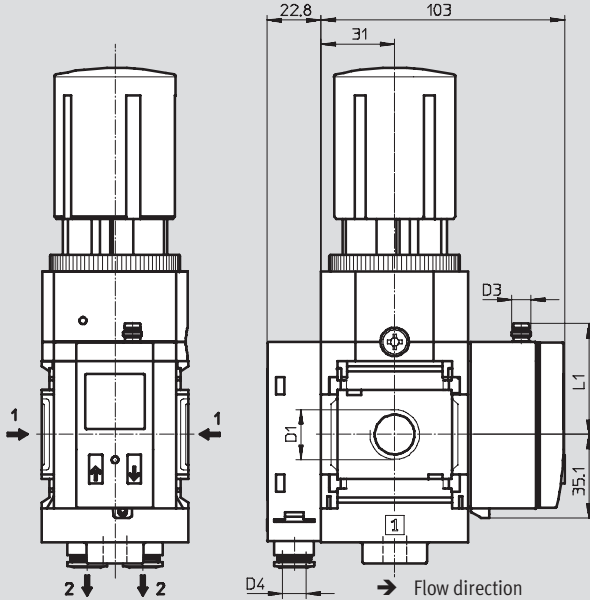
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD1 ... AD4, angled outlet block BD/BE

Technical data SDE1 → Volume 4



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

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

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

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

Type	D1	D3	D4	L1
MS6-LRPB-1/2-...-AD1/AD2-BD	G1/2	M8x1	QS-8	46.7
MS6-LRPB-1/2-...-AD1/AD2-BE			QS-10	
MS6-LRPB-1/2-...-AD3/AD4-BD	G1/2	M12x1	QS-8	55.8
MS6-LRPB-1/2-...-AD3/AD4-BE			QS-10	

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Precision pressure regulators MS6-LRPB, MS series

Technical data

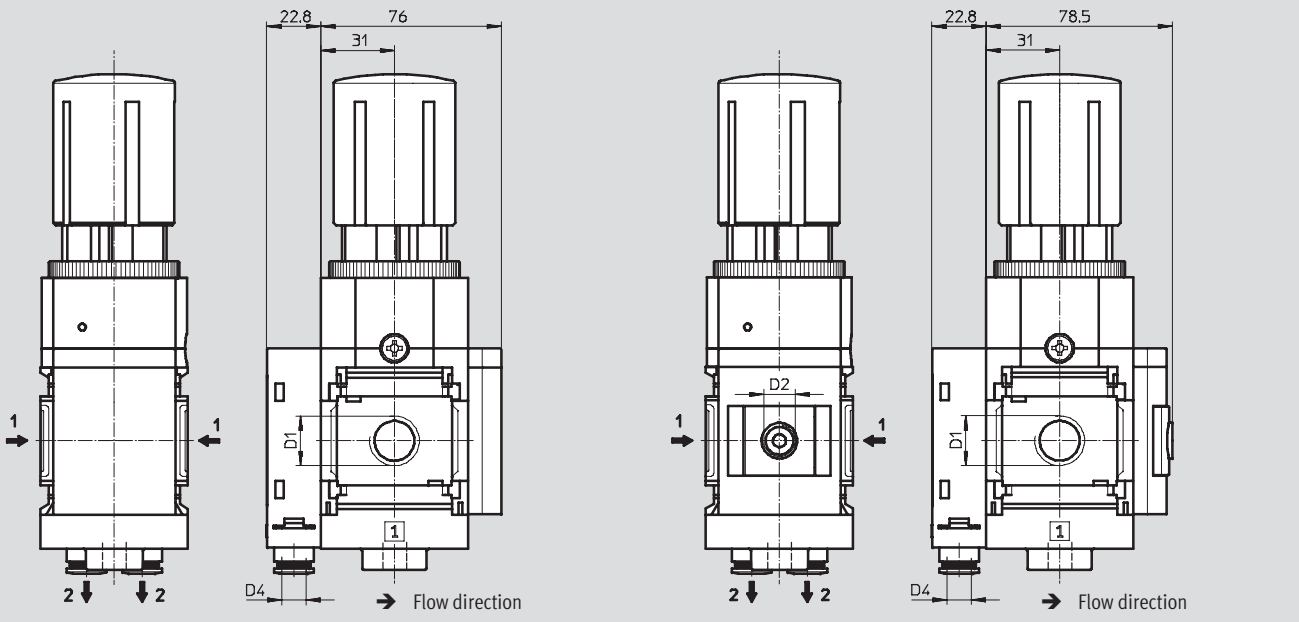
FESTO

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Cover plate VS, angled outlet block BD/BE

Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge, angled outlet block BD/BE



Type	D1	D2	D4
MS6-LRPB-1/2-...-VS-BD	G1/2	-	QS-8
MS6-LRPB-1/2-...-VS-BE			QS-10
MS6-LRPB-1/2-...-A8-BD	G1/2	G1/8	QS-8
MS6-LRPB-1/2-...-A8-BE			QS-10
MS6-LRPB-1/2-...-A4-BD	G1/2	G1/4	QS-8
MS6-LRPB-1/2-...-A4-BE			QS-10

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Precision pressure regulators MS6-LRPB, MS series

Technical data

Dimensions – Rotary knob

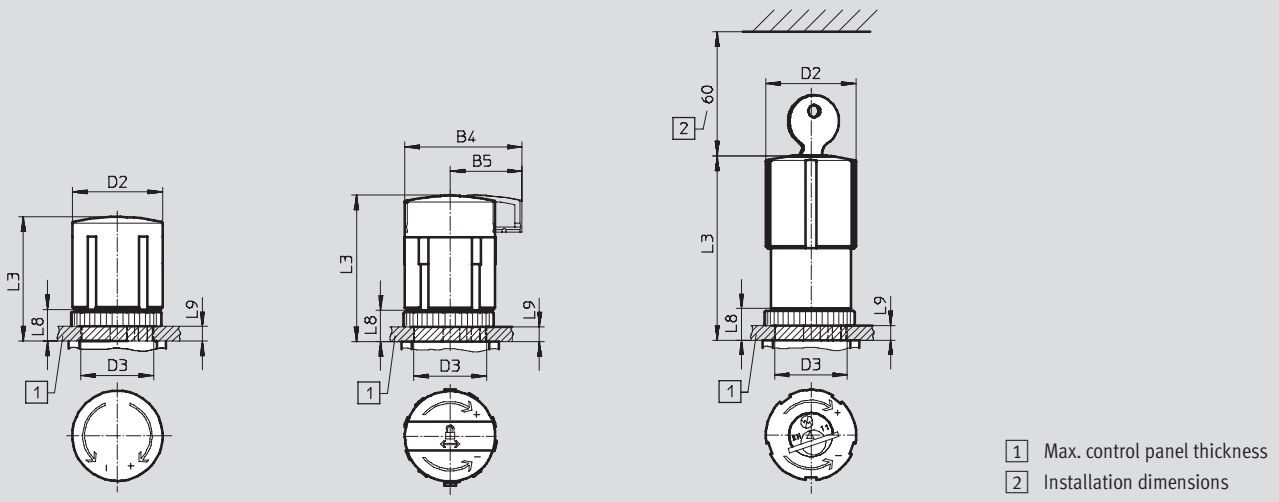
Download CAD data → www.festo.com/en/engineering

For installation into control panel

Standard

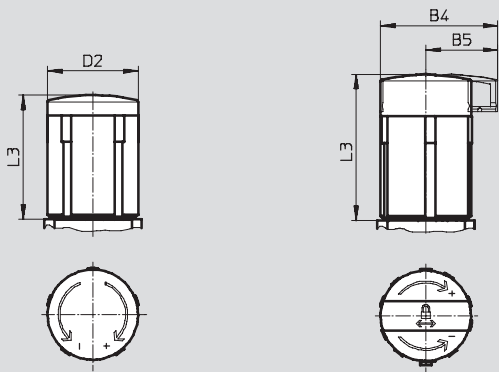
Standard, lockable AS

With integrated lock E11



Long LD

Long, lockable LD-AS



Type	B4	B5	D2	D3 +1	L3	L8	L9
MS6-LRPB-...	-	-	51	44	86	22	14
MS6-LRPB-...-AS	67.7	42			95.5		
MS6-LRPB-...-E11	-	-			112.1		
MS6-LRPB-...-LD	-	-	51	-	86	-	-
MS6-LRPB-...-LD-AS	67.7	42			95.5		

Precision pressure regulators MS6-LRPB, MS series

Technical data

Ordering data			
Adapter plate A8 for EN pressure gauge 1/8, standard rotary knob			
Size	Connection	Pressure output to rear without angled outlet block	
		Part No.	Type
Pressure regulation range 0.05 ... 0.7 bar			
MS6	G1/2	534 911	MS6-LRPB-1/2-D2-A8 ¹⁾
Pressure regulation range 0.05 ... 2.5 bar			
MS6	G1/2	534 914	MS6-LRPB-1/2-D4-A8 ¹⁾
Pressure regulation range 0.1 ... 4 bar			
MS6	G1/2	534 917	MS6-LRPB-1/2-D5-A8 ¹⁾
Pressure regulation range 0.1 ... 12 bar			
MS6	G1/2	534 920	MS6-LRPB-1/2-D7-A8 ¹⁾

1) Free of copper and PTFE

Ordering data					
Adapter plate A8 for EN pressure gauge 1/8, standard rotary knob					
Size	Connection	Pressure output to rear with angled outlet block QS-8		Pressure output to rear with angled outlet block QS-10	
		Part No.	Type	Part No.	Type
Pressure regulation range 0.05 ... 0.7 bar					
MS6	G1/2	534 865	MS6-LRPB-1/2-D2-A8-BD ¹⁾	534 913	MS6-LRPB-1/2-D2-A8-BE ¹⁾
Pressure regulation range 0.05 ... 2.5 bar					
MS6	G1/2	534 868	MS6-LRPB-1/2-D4-A8-BD ¹⁾	534 916	MS6-LRPB-1/2-D4-A8-BE ¹⁾
Pressure regulation range 0.1 ... 4 bar					
MS6	G1/2	534 871	MS6-LRPB-1/2-D5-A8-BD ¹⁾	534 919	MS6-LRPB-1/2-D5-A8-BE ¹⁾
Pressure regulation range 0.1 ... 12 bar					
MS6	G1/2	534 874	MS6-LRPB-1/2-D7-A8-BD ¹⁾	534 922	MS6-LRPB-1/2-D7-A8-BE ¹⁾

1) Free of copper and PTFE

Precision pressure regulators MS6-LRPB, MS series

Ordering data – Modular products

FESTO

Mandatory data						
Module No.	Series	Size	Function	Connection sizes	Pressure regulation range	Pressure gauge alternatives
535 007	MS	6	LRPB	1/2, AGB, AGC, AGD, AGE	D2 D4 D5 D7	VS A8 A8M A4 AD1 AD2 AD3 AD4
Order example						
535 007	MS	6	- LRPB	- AGB	- D5	- VS

Ordering table			
Grid dimension	[mm]	62	Condi- tions
Code	Enter code		
M Module No.	535 007		
Series	Standard		MS
Size	6		6
Function	Precision pressure regulator for manifold assembly		-LRPB
Connection sizes	Thread G1/2		-1/2
	Connecting plate G1/4		-AGB
	Connecting plate G3/8		-AGC
	Connecting plate G1/2		-AGD
	Connecting plate G3/4		-AGE
Pressure regulation range	0.05 ... 0.7 bar		-D2
	0.05 ... 2.5 bar		-D4
	0.1 ... 4 bar		-D5
	0.1 ... 12 bar		-D7
Pressure gauge alternatives	Cover plate	<input type="checkbox"/>	-VS
	Adapter plate for EN pressure gauge 1/8, without pressure gauge	<input type="checkbox"/>	-A8
	Adapter plate for EN pressure gauge 1/8, with precision pressure gauge	<input type="checkbox"/>	-A8M
	Adapter plate for EN pressure gauge 1/4, without pressure gauge	<input type="checkbox"/>	-A4
	Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin	<input type="checkbox"/> <input type="checkbox"/>	-AD1
	Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin	<input type="checkbox"/> <input type="checkbox"/>	-AD2
	Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA	<input type="checkbox"/> <input type="checkbox"/>	-AD3
	Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA	<input type="checkbox"/> <input type="checkbox"/>	-AD4

1 VS Must be selected with alternative flow direction Z without alternative assembly position KD or without alternative pressure output BD, BE.
Must be selected with alternative assembly position KD without alternative flow direction Z or without alternative pressure output BD, BE.

2 A8, A8M, A4, AD1 ... AD4 In combination with alternative flow direction Z only with alternative assembly position KD.

3 AD1 ... AD4 Measuring range max. 10 bar.
Not with pressure regulation range D2, D4.

Transfer order code

535 007	MS	6	- LRPB	-	-	-
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Precision pressure regulators MS6-LRPB, MS series

Ordering data – Modular products

Options					
Rotary knob alternative	Alternative assembly position	Security	Alternative pressure output	Type of mounting	Alternative flow direction
LD	KD	AS E11	BD BE	WR WP WPM WPB WB	Z
- LD	-	- AS	- BE	- WB	- Z

Ordering table					
Grid dimension	[mm]	62	Condi- tions	Code	Enter code
0	Rotary knob alternative	Long rotary knob	4	-LD	
	Alternative assembly position	Rotary knob underneath	5	-KD	
	Security	Lockable rotary knob		-AS	
		With integrated lock		-E11	
	Alternative pressure output	Angled outlet block QS-8		-BD	
		Angled outlet block QS-10		-BE	
	Type of mounting	Wall mounting bracket with knurled nut for regulator head	6	-WR	
		Mounting bracket	7 8	-WP	
		Mounting bracket (for retro-fitting M-series)	7 9	-WPM	
		Wall mounting plate for large wall gap	7 10	-WPB	
		Mounting bracket	9	-WB	
	Alternative flow direction	Pressure output to front (without pressure output, no pressure gauge)		-Z	

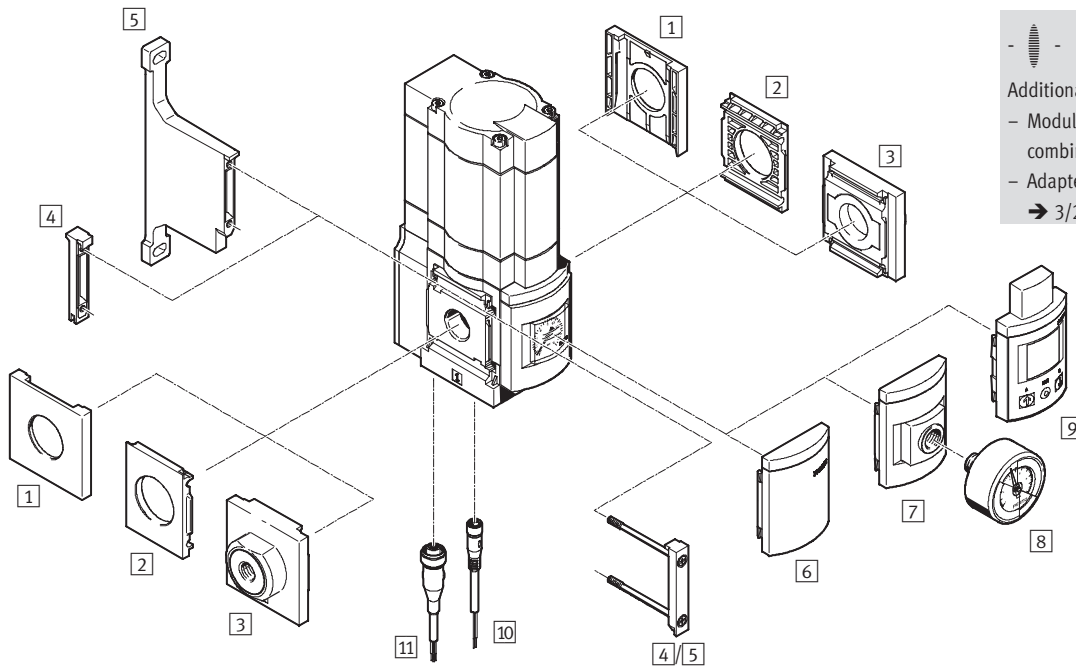
- | | | | | | |
|---|---------------------|--|----|----------------|--|
| 4 | LD | Not with security E11 | 8 | WP | Not with alternative assembly position KD. |
| 5 | KD | In combination with pressure gauge alternatives A8, A4, AD1, AD2, AD3, AD4 only with alternative flow direction Z. | | | Either only with alternative flow direction Z or only with alternative pressure output BD, BE. |
| 6 | WR | Only with alternative flow direction Z.
Not with long rotary knob LD.
Not with alternative assembly position KD. | 9 | WPM, WB | Either only with alternative flow direction Z or only with alternative assembly position KD |
| 7 | WP, WPM, WPB | Only with connecting plate AGB, AGC, AGD or AGE. | 10 | WPB | Not with alternative assembly position KD.
Not with alternative pressure output BD, BE.
Not with alternative flow direction Z. |

Transfer order code

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

Electrical pressure regulators MS6-LRE, MS series

Peripherals overview



Note
Additional accessories:
– Module connector for combinations → 3/2.31-10
– Adapter for mounting on profiles → 3/2.31-13

MS4/MS6 series service units
Pressure regulators

2.14

Mounting attachments and accessories						
	Individual unit		Combination → 3/2.11-0		→ Page	
	Without connect- ing plate	With connecting plate	Without connect- ing plate	With connecting plate		
1	Cover cap MS6-END	–	–	■	–	3/2.31-3
2	Mounting plate MS6-AEND	■ ¹⁾	–	■ ²⁾	–	3/2.31-3
3	Connecting plate MS6-AG...	–	■ ¹⁾	–	■ ²⁾	3/2.31-2
4	Module connector MS6-MV	–	–	■	■	3/2.31-9
5	Mounting bracket MS6-WPB	■	■	■	■	3/2.31-7
6	Cover plate VS	■	■	■	■	3/2.14-60
7	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	3/2.14-60
8	Pressure gauge MA	■	■	■	■	3/2.31-24
9	Control unit with display OP	■	■	■	■	3/2.14-60
10	Plug socket with cable SIM-M8-3...	■	■	■	■	3/2.31-24
11	Plug socket with cable SIM-M12-5...	■	■	■	■	3/2.31-24

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

Electrical pressure regulators MS6-LRE, MS series

Type codes

		MS	6	-	LRE	-	1/2	-	D7	-	PI	
Series												
MS	Standard service unit											
Size												
6	Grid dimension 62 mm											
Service function												
LRE	Electrical pressure regulator											
Pneumatic connection												
1/4	Thread G1/4											
3/8	Thread G3/8											
1/2	Thread G1/2											
Pressure regulation range												
D6	Pressure regulation range 0.3 ... 7 bar											
D7	Pressure regulation range 0.5 ... 12 bar											
Electrically controlled pressure output (integrated pressure sensor with electrical output)												
	None											
PI	Plug, M8, 3-pin, I out											
PU	Plug, M8, 3-pin, V out											

Further variants can be ordered using the modular system

Electrical pressure regulator LRE → 3/2.14-60

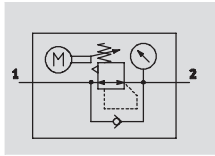
- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Sensor cables
- Supply cables
- Type of mounting
- Alternative flow direction

Electrical pressure regulators MS6-LRE, MS series

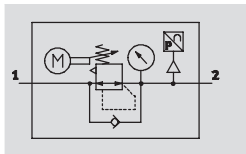
Technical data


FESTO

Function
with pressure gauge




with pressure gauge and integrated
pressure sensor



-  - Flow rate
2,200 ... 7,500 l/min

-  - Temperature range
0 ... +50 °C

-  - Input pressure
0.8 ... 20 bar



-  - Note

The electrical pressure regulator is not suitable for the set-up of closed control loops.

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

The output pressure is set indirectly via an integrated electrical drive unit. The drive unit can be operated either with digital inputs via the M12 plug or

using the optional control and display unit.


The direction of rotation of the drive unit is thus pre-set, which makes adjustment of the output pressure in the rising or falling direction possible.

In the event of a power failure, the last drive unit or output pressure setting is saved. Pneumatic pressure regulation continues to function.

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

General technical data

Size		MS6	
Pneumatic connection 1, 2		G $\frac{1}{4}$	G $\frac{3}{8}$ G $\frac{1}{2}$
Design		Electrically adjustable pressure regulator	
Regulating function		With primary pressure compensation	
		With/without secondary venting	
		Output pressure constant	
Type of mounting		Via accessories	
		In-line installation	
Assembly position		Any, preferably vertical	
Pressure regulation range	D5 [bar]	0.3 ... 4	
	D6 [bar]	0.3 ... 7	
	D7 [bar]	0.5 ... 12	
	D8 [bar]	0.5 ... 16	
Max. hysteresis	[bar]	0.25	
Pressure indicator		With pressure gauge	
		With control unit	

-  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Electrical pressure regulators MS6-LRE, MS series

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]				
Pneumatic connection		G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Pressure regulation range	D5	2,400 ²⁾	5,500 ²⁾	7,500 ²⁾
	D6	3,000	5,800	6,500
	D7	2,700	4,500	5,500
	D8	2,200	4,000	4,500

1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar

2) Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar

Electrical data					
		Without integrated pressure sensor		With integrated pressure sensor	
				PI (I out)	PU (V out)
Analogue output	[V]	–		–	0 ... 10
	[mA]	–		4 ... 20	–
Analogue outputs, absolute accuracy at 25 °C		[%]	–	±3	±3
Cable interface	Inputs	Plug M12x1, 5-pin			
	Outputs	–	Plug M8x1, 3-pin		
Design of inputs		To IEC 61131-2, no electrical isolation			
Nominal operating voltage	[V DC]	24			
Permissible voltage fluctuations	[%]	±10			
Current consumption at 24 V DC	[A]	Max. 3.5			
Current consumption at nominal operating voltage	[A]	Max. 1			
Duration of actuation at 25°C	[s]	Max. 90 ¹⁾			
Protection against short circuit		For all electrical connections			
Protection class		IP65			

1) In order to prevent the drive from overheating, a control/pause ratio of 1:3 must be observed.

Operating and environmental conditions		
Supply pressure	[bar]	0.8 ... 20
Operating medium		Compressed air, air quality class 5.4 – to DIN ISO 8573-1
Ambient temperature	[°C]	0 ... +50
Temperature of medium	[°C]	0 ... +50
Storage temperature	[°C]	0 ... +50
Corrosion resistance	CRC ¹⁾	2
CE symbol (declaration of conformance)		In accordance with EU EMC Directive

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]	
Electrical pressure regulator	1,280

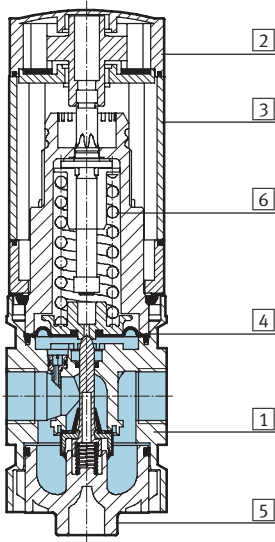
Electrical pressure regulators MS6-LRE, MS series

Technical data



Materials

Sectional view

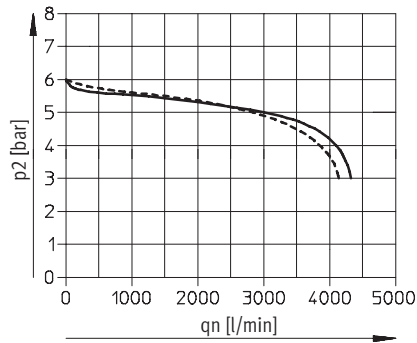


Electrical pressure regulator		
1	Body	Die-cast aluminium
2	Drive housing	Reinforced polyamide
3	Profile housing	Wrought aluminium alloy
4	Diaphragm	Nitrile rubber
5	Bottom cap	Polyester, fibreglass reinforced
6	Springs	Steel
-	Display and control unit	Polyamide
-	Seals	Nitrile rubber

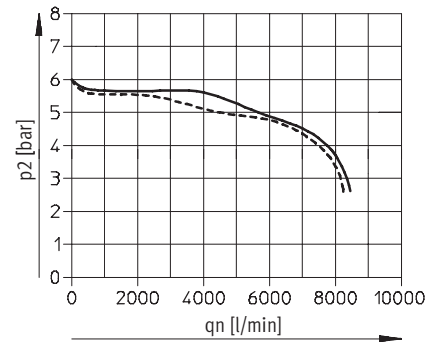
Standard flow rate q_n as a function of output pressure p_2

MS6-LRE-1/4

Primary pressure $p_1 = 10$ bar

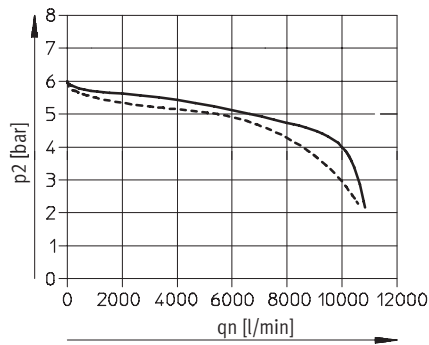


MS6-LRE-3/8



MS6-LRE-1/2

Primary pressure $p_1 = 10$ bar



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

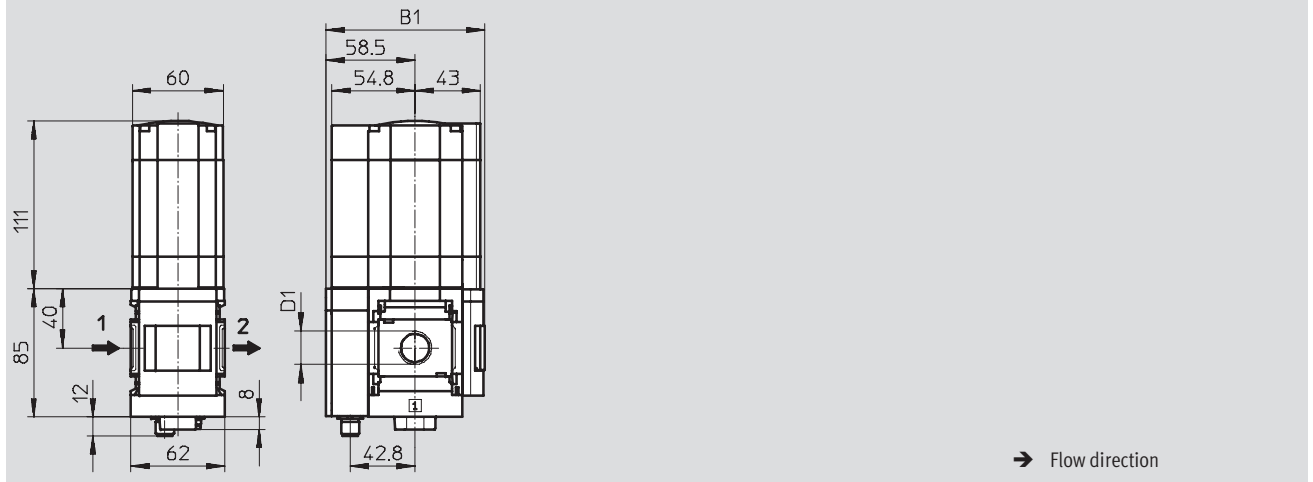
— D6: 0.3 ... 7 bar
- - - D7: 0.5 ... 12 bar

Electrical pressure regulators MS6-LRE, MS series

Technical data

Dimensions – Standard Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar]



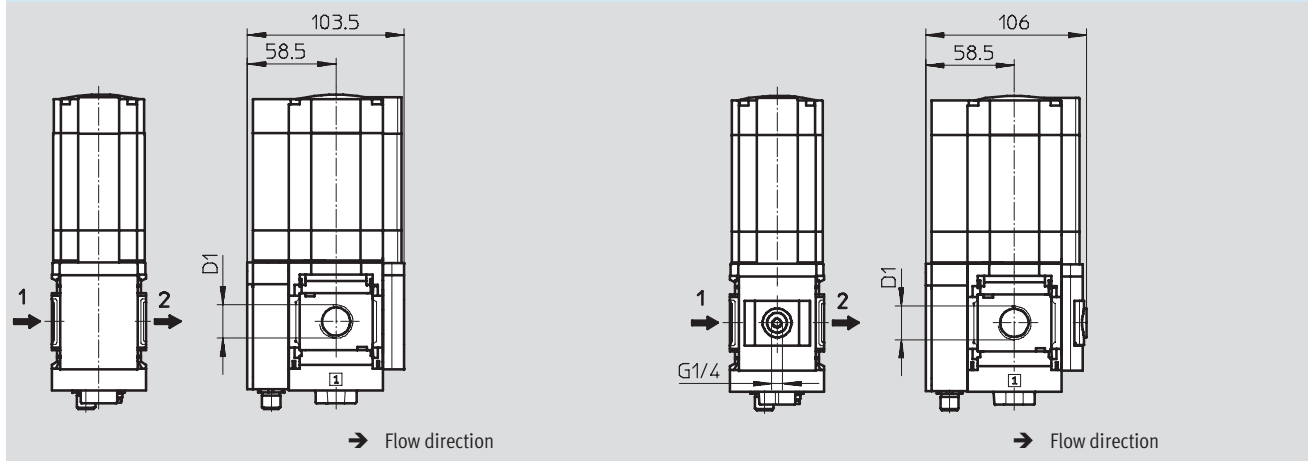
Type	B1 Pressure gauge		D1
	Standard scale	Red-green scale	
MS6-LRE-1/4	104.5	106	G1/4
MS6-LRE-3/8			G3/8
MS6-LRE-1/2			G1/2

|| - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

Cover plate VS

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



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

|| - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Electrical pressure regulators MS6-LRE, MS series

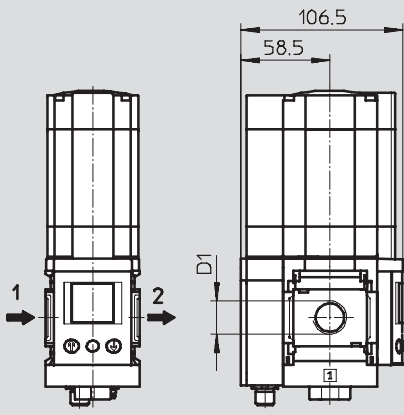
Technical data

FESTO

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Control unit with display OP



→ Flow direction

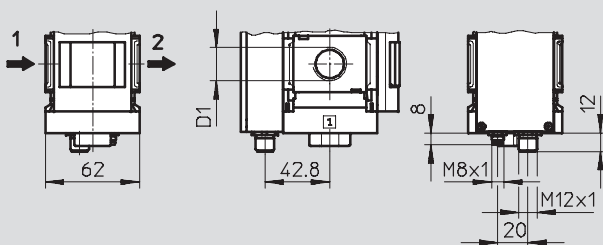
Type	D1
MS6-LRE-1/4	G1/4
MS6-LRE-3/8	G3/8
MS6-LRE-1/2	G1/2

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Electrically controlled pressure output

Download CAD data → www.festo.com/en/engineering

Integrated pressure sensor with electrical output PI/PU



→ Flow direction

Electrical pressure regulators MS6-LRE, MS series

Technical data

Ordering data					
Pressure gauge					
Size	Connection	Pressure regulation range 0.3... 7 bar		Pressure regulation range 0.5... 12 bar	
		Part No.	Type	Part No.	Type
Standard					
MS6	G $\frac{1}{4}$	535 358	MS6-LRE- $\frac{1}{4}$ -D6	535 364	MS6-LRE- $\frac{1}{4}$ -D7
	G $\frac{3}{8}$	535 372	MS6-LRE- $\frac{3}{8}$ -D6	535 378	MS6-LRE- $\frac{3}{8}$ -D7
	G $\frac{1}{2}$	535 348	MS6-LRE- $\frac{1}{2}$ -D6	535 354	MS6-LRE- $\frac{1}{2}$ -D7
Electrically controlled pressure output (integrated pressure sensor with voltage output), M8x1 plug, 3-pin					
MS6	G $\frac{1}{4}$	535 360	MS6-LRE- $\frac{1}{4}$ -D6-PI	535 366	MS6-LRE- $\frac{1}{4}$ -D7-PI
	G $\frac{3}{8}$	535 374	MS6-LRE- $\frac{3}{8}$ -D6-PI	535 380	MS6-LRE- $\frac{3}{8}$ -D7-PI
	G $\frac{1}{2}$	535 350	MS6-LRE- $\frac{1}{2}$ -D6-PI	535 356	MS6-LRE- $\frac{1}{2}$ -D7-PI
Electrically controlled pressure output (integrated pressure sensor with voltage output), M8x1 plug, 3-pin					
MS6	G $\frac{1}{4}$	535 362	MS6-LRE- $\frac{1}{4}$ -D6-PU	535 369	MS6-LRE- $\frac{1}{4}$ -D7-PU
	G $\frac{3}{8}$	535 376	MS6-LRE- $\frac{3}{8}$ -D6-PU	535 382	MS6-LRE- $\frac{3}{8}$ -D7-PU
	G $\frac{1}{2}$	535 352	MS6-LRE- $\frac{1}{2}$ -D6-PU	535 357	MS6-LRE- $\frac{1}{2}$ -D7-PU

New
Variant RG

Electrical pressure regulators MS6-LRE, MS series

Ordering data – Modular products



Mandatory data →

Module No.	Series	Size	Function	Connection sizes	Pressure regulation range
535 191	MS	6	LRE	1/4, 3/8, 1/2, AGB, AGC, AGD, AGE	D5 D6 D7 D8
Order example					
535 191	MS	6	- LRE	- AGC	- D6

Ordering table		Grid dimension [mm]	62	Condi- tions	Code	Enter code
M	Module No.	535 191				
	Series	Standard			MS	MS
	Size	6			6	6
	Function	Electrical pressure regulator			-LRE	-LRE
	Connection sizes	Thread G1/4			-1/4	
		Thread G3/8			-3/8	
		Thread G1/2			-1/2	
		Connecting plate G1/4			-AGB	
		Connecting plate G3/8			-AGC	
		Connecting plate G1/2			-AGD	
		Connecting plate G3/4			-AGE	
	Pressure regulation range	0.3 ... 4 bar			-D5	
		0.3 ... 7 bar			-D6	
		0.5 ... 12 bar			-D7	
		0.5 ... 16 bar			-D8	

MS4/MS6 series service units
Pressure regulators

2.14

Transfer order code

535 191	MS	6	-	LRE	-		-	
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Electrical pressure regulators MS6-LRE, MS series

Ordering data – Modular products

0 Options

Pressure gauge alternatives	Alternative pressure gauge scale	Secondary venting	Electrically controlled pressure output	Sensor cables	Supply cable	Type of mounting	Alternative flow direction
VS A4 RG OP	PSI MPA	OS	PI PU	SK2 SK5	VK2 VK5	WBE WPB	Z
- OP	-	- OS	- PU	- SK5	-	-	- Z

Ordering table		Grid dimension [mm]	62	Condi- tions	Code	Enter code
0 Pressure gauge alternatives	Cover plate				-VS	
	Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4	
	Integrated pressure gauge, red-green scale				-RG	
	Control unit with display			1	-OP	
Alternative pressure gauge scale	psi			2	-PSI	
	MPa			2	-MPA	
Secondary venting	Without secondary venting				-OS	
Electrically controlled pressure output	Plug, M8, 3-pin, I out				-PI	
	Plug, M8, 3-pin, V out				-PU	
Sensor cables	Plug socket, M8, with cable, 2.5 m			1	-SK2	
	Plug socket, M8, with cable, 5 m			1	-SK5	
Supply cable	Plug socket, M12, with cable, 2.5 m				-VK2	
	Plug socket, M12, with cable, 5 m				-VK5	
Type of mounting	Connecting plate for direct thread			3	-WBE	
	Wall mounting plate for large wall gap			4	-WPB	
Alternative flow direction	Flow direction from right to left				-Z	

- 1 **OP, SK2, SK5** Only with electrical pressure output PI, PU
 2 **PSI, MPA** Not with pressure gauge alternatives VS, A4, RG, OP

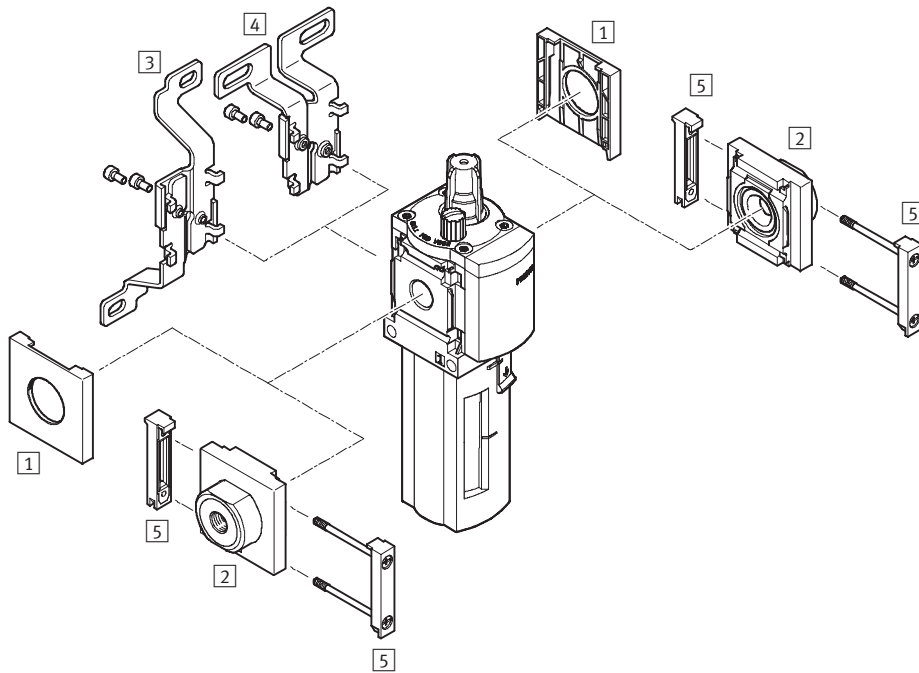
- 3 **WBE** Only with connection thread size 1/4, 3/8, 1/2
 4 **WPB** Only with connecting plate size AGB, AGC, AGD, AGE

Transfer order code

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

Lubricators MS4/MS6-LOE, MS series

Peripherals overview



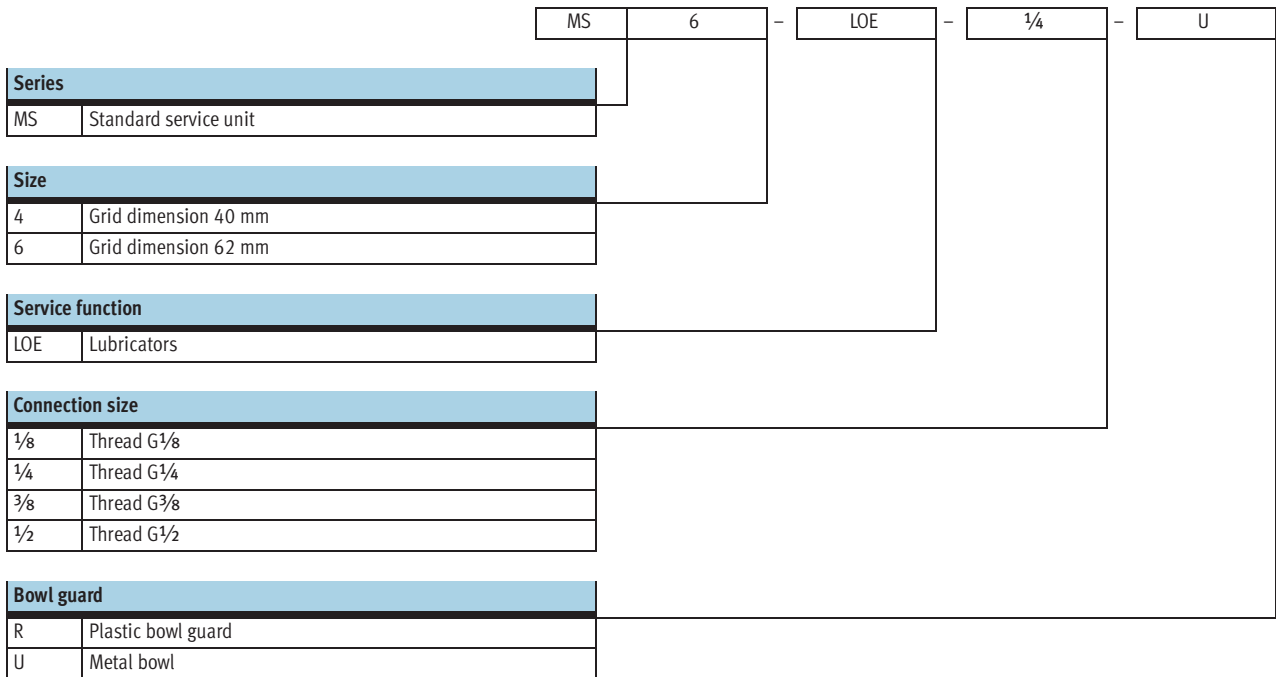
- - Note
 Additional accessories:
 - Module connector for combinations → 3/2.31-10
 - Adapter for mounting on profiles → 3/2.31-13

Mounting attachments and accessories						
		Individual unit		Combination → 3/2.11-0		→ Page
		without connecting plate	with connecting plate	without connecting plate	with connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-4
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-4
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-9
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-7, 3/2.31-8

MS4/MS6 series service units
Lubricators
2.15

Lubricators MS4/MS6-LOE, MS series

Type codes



Further variants can be ordered using the modular system

Lubricator LOE → 3/2.15-5

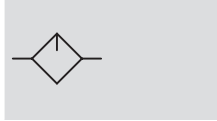
- Connecting plates
- Type of mounting
- Alternative flow direction

Lubricators MS4/MS6-LOE, MS series

Technical data



Function



- - Flow rate
1,100 ... 7,200 l/min
- - Temperature range
-10 ... +60 °C
- - Input pressure
1 ... 16 bar



The proportional lubricator adds a precision adjustable quantity of oil to the compressed air stream.

The pressure drop that occurs when air flows through a Venturi nozzle is used to convey oil from the container to the drip cap. From here, the oil drips into the air duct directly behind the proportional valve, where it is atomised. The oil mist component is pro-

portional to the compressed air flow rate.

- Proportional lubricator with precision oil metering
- Reduces wear on drive units subject to high loading
- High flow rate
- Quick and easy oil top-up even during operation (under pressure)

The following oils are recommended for Festo components:
Viscosity range to ISO 3448, ISO class VG 32
32 mm²/s (= cSt) at 40°C

- Festo special oil OFSW-32
→ 3/2.31-25
- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈	G ¹ / ₂
Design	Proportional standard mist lubricator				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Vertical ±5°				
Bowl guard	Plastic bowl guard				
	Metal bowl				
Minimum flow for lubricator operation [l/min]	40		50		
Max. oil capacity [cm ³]	30 (with plastic bowl guard)		75 (with plastic bowl guard)		
	36 (with metal bowl)		80 (with metal bowl)		

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN [l/min]					
Size	MS4		MS6		
Pneumatic connection	G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈	G ¹ / ₂
In main flow direction 1 → 2	1,100	2,200	2,500	5,300	7,200

Operating and environmental conditions		
Size	MS4	MS6
Input pressure [bar]	1 ... 12	1 ... 16
Operating medium	Compressed air	Filtered compressed air, grade of filtration 40 µm
Ambient temperature [°C]	-10 ... +60	0 ... +60
Temperature of medium [°C]	-10 ... +60	0 ... +60
Storage temperature [°C]	-10 ... +60	-10 ... +60
Corrosion resistance CRC ¹⁾	2	

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Lubricators MS4/MS6-LOE, MS series

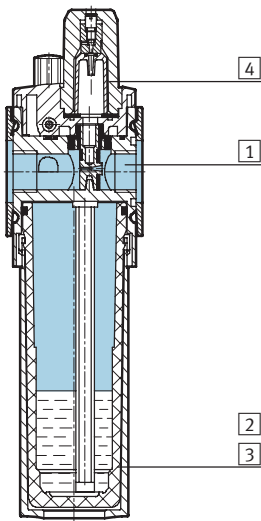
Data sheet



Weights [g]		
Size	MS4	MS6
Lubricator with plastic bowl guard R	194	600
Lubricator with metal bowl U	354	810

Materials

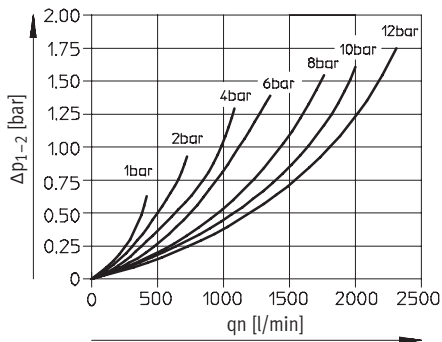
Sectional view



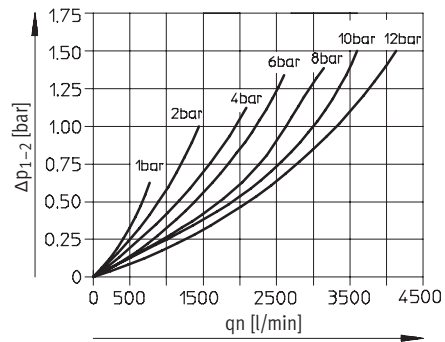
Lubricators		
1	Body	Die-cast aluminium
2	Plastic bowl guard	Polycarbonate/polyamide
3	Metal bowl	Aluminium
	Viewing window	Polyamide
4	Lubricator dome	Polycarbonate
-	Seals	Nitrile rubber

Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

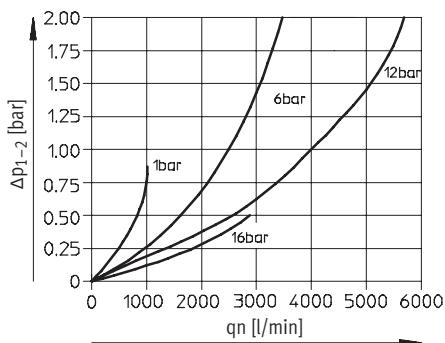
MS4-LOE-1/8



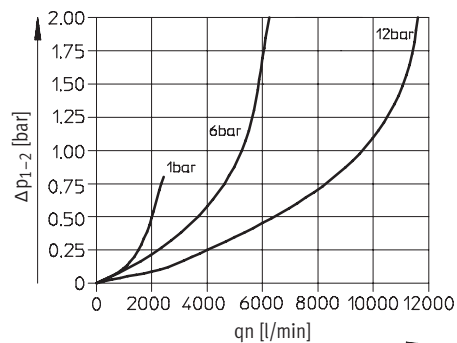
MS4-LOE-1/4



MS6-LOE-1/4



MS6-LOE-3/8



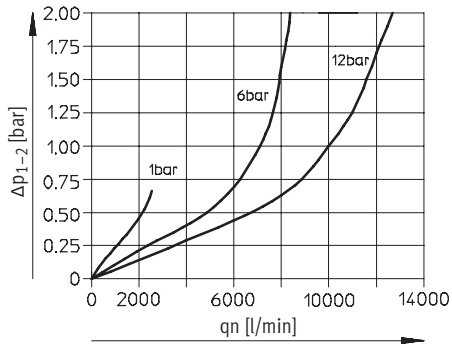
Lubricators MS4/MS6-LOE, MS series

Data sheet



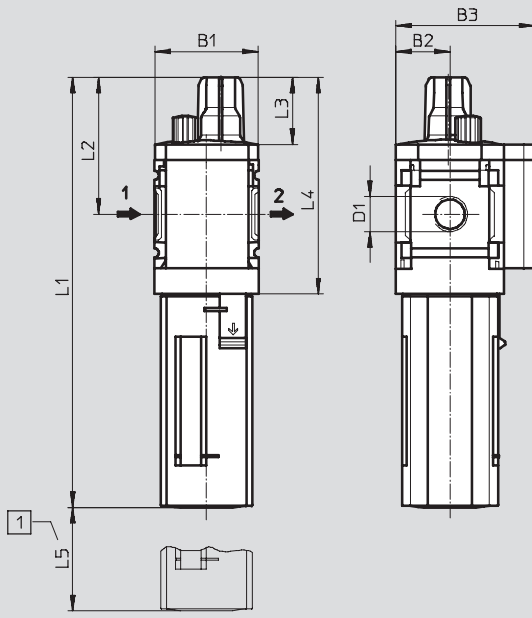
Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

MS6-LOE-1/2



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



1 Installation dimensions

→ Flow direction

Type	B1	B2	B3	D1	L1 Bowl guard		L2	L3	L4	L5
					Plastic	Metal				
MS4-LOE-1/8	42	21	54	G1/8	166.6	184.9	53	26	84	80
MS4-LOE-1/4				G1/4						
MS6-LOE-1/4	62	31	76	G1/4	215.7	222	66	27	111	130
MS6-LOE-3/8				G3/8						
MS6-LOE-1/2				G1/2						

– Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data

Size	Connection	Plastic bowl guard		Metal bowl	
		Part No.	Type	Part No.	Type
MS4	G1/8	529 413	MS4-LOE-1/8-R	535 791	MS4-LOE-1/8-U
	G1/4	529 411	MS4-LOE-1/4-R	535 790	MS4-LOE-1/4-U
MS6	G1/4	529 779	MS6-LOE-1/4-R	529 781	MS6-LOE-1/4-U
	G3/8	529 783	MS6-LOE-3/8-R	529 785	MS6-LOE-3/8-U
	G1/2	529 775	MS6-LOE-1/2-R	529 777	MS6-LOE-1/2-U

Lubricators MS4/MS6-LOE, MS series

Ordering data – Modular products



M Mandatory data						O Options	
Module No.	Series	Size	Function	Connection size	Bowl	Type of mounting	Alternative flow direction
527 701 527 674	MS	4 6	LOE	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	R U	WP WPM WB WBM	Z
Order example							
527 701	MS	4	- LOE	- AGB	- R	- WP	- Z

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	527 701	527 674				
	Series	Standard			MS	MS	
	Size	4	6		...		
	Function	Lubricators			-LOE	-LOE	
	Connection size	G3/8 thread	-		-1/8		
		Thread G1/4	Thread G1/4		-1/4		
		-	Thread G3/8		-3/8		
		-	Thread G1/2		-1/2		
		Connecting plate G1/8	-		-AGA		
		Connecting plate G1/4	Connecting plate G1/4		-AGB		
		Connecting plate G3/8	Connecting plate G3/8		-AGC		
		-	Connecting plate G1/2		-AGD		
	Bowl	Plastic bowl with plastic bowl guard			-R		
		Metal bowl			-U		
O	Type of mounting	Mounting bracket		1	-WP		
		Mounting bracket		1	-WPM		
		Mounting bracket				-WB	
		Mounting bracket	-			-WBM	
	Alternative flow direction	Flow direction from right to left			-Z		

1 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE.

Transfer order code

	MS		-	LOE		-		-		-	
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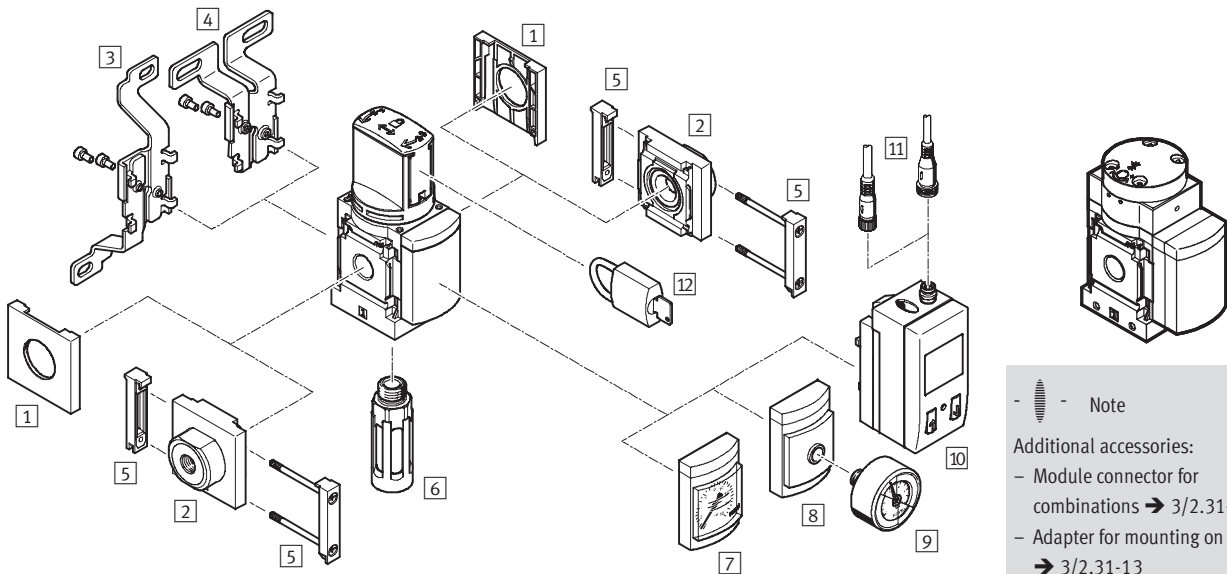
On-off/soft-start valves MS4/MS6-EM1/EE/DL/DE, MS series

Peripherals overview

FESTO

On-off valve EM1
manually actuated

Soft-start valve DL
pneumatically actuated



Note
Additional accessories:
– Module connector for combinations → 3/2.31-10
– Adapter for mounting on profiles → 3/2.31-13

Mounting attachments and accessories

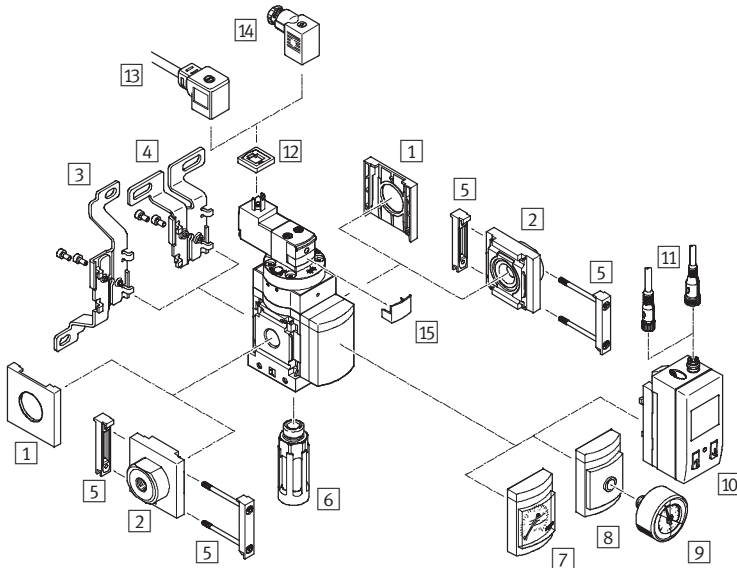
	Individual unit		Combination → 3/2.11-0		→ Page
	without connecting plate	with connecting plate	without connecting plate	with connecting plate	
1 Cover cap MS4/6-END	■	-	■	-	3/2.31-3
2 Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-2
3 Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-4
4 Mounting bracket MS4-WBM	■	■	-	-	3/2.31-4
5 Module connector MS4/6-MV	-	■	■	■	3/2.31-9
6 Silencer U	■ with EM1	■ with EM1	■ with EM1	■ with EM1	3/2.31-25
7 MS pressure gauge AG	■	■	■	■	EM1 3/2.16-7 DL 3/2.16-20
8 Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	EM1 3/2.16-7 DL 3/2.16-20
9 Pressure gauge MA	■	■	■	■	3/2.31-24
10 Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	EM1 3/2.16-7 DL 3/2.16-20
11 Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
12 Padlock LRVS-D	■	■	■	■	3/2.31-25
- Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-7, 3/2.31-8


On-off/soft-start valves MS4/MS6-EM1/EE/DL/DE, MS series

Peripherals overview

On-off/soft-start valve EE/DE

solenoid actuated



-  Note
Additional accessories:
- Module connector for combinations → 3/2.31-10
- Adapter for mounting on profiles → 3/2.31-13

Mounting attachments and accessories		Individual unit		Combination → 3/2.11-0		→ Page
		without connecting plate	with connecting plate	without connecting plate	with connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-4
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-4
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-9
6	Silencer U	■ with EE	■ with EE	■ with EE	■ with EE	3/2.31-25
7	Pressure gauge MS AG	■	■	■	■	EE 3/2.16-14 DE 3/2.16-26
8	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	EE 3/2.16-14 DE 3/2.16-26
9	Pressure gauge MA	■	■	■	■	3/2.31-24
10	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	EE 3/2.16-14 DE 3/2.16-26
11	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
12	Illuminating seal MEB-LD	■	■	■	■	3/2.31-24
13	Plug socket with cable KMEB	■	■	■	■	3/2.31-23
14	Plug socket MSSD-EB	■	■	■	■	3/2.31-23
15	Locking clip CPV18-HV	■	■	■	■	3/2.31-23
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-7, 3/2.31-8

On-off/soft-start valves MS4/MS6-EM1/EE/DL/DE, 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										
EM1	On-off valve, manually operated									
EE	On-off valve, solenoid actuated									
DL	Soft-start valve, pneumatically actuated									
DE	Soft-start valve, solenoid actuated									
Connection size										
1/8	Thread G1/8									
1/4	Thread G1/4									
3/8	Thread G3/8									
1/2	Thread G1/2									
Supply voltage (for EE and DE only)										
10V24	Supply voltage 24 V DC									
V110	Supply voltage 110 V AC									
V230	Supply voltage 230 V AC									
Silencer (for EM1 and EE only)										
	Without silencer									
S	Silencer									

Further variants can be ordered using the modular system

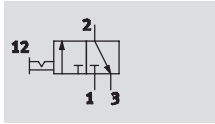
On-off valves EM1	→ 3/2.16-7
On-off valves EE	→ 3/2.16-14
Soft-start valves DL	→ 3/2.16-20
Soft-start valves DE	→ 3/2.16-26

- Connecting plates
- Supply voltage (EE and DE only)
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Alternative 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



- 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 with display

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
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	With pressure sensor for the output pressure display and with electric output With pressure gauge for the output pressure display				
Valve function	3/2-way valve, double solenoid				
Exhaust function	No flow control				
Switching position display	Knob actuator direction = flow direction				
Pilot control mode	Direct				
Direction of flow	Non-reversible				
C value [l/(s*bar)]	4.6	9.0	10.7	21.2	30.8
b value	0.51	0.39	0.56	0.49	0.57

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
Size	MS4		MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
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

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				
Variant	Standard		Pressure sensor with display AD...	
Size	MS4	MS6	MS4	MS6
Operating pressure [bar]	0 ... 14	0 ... 18	0 ... 10	0 ... 10
Operating medium	Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature [°C]	-10 ... +60	-10 ... +60	0 ... +50	0 ... +50
Temperature of medium [°C]	-10 ... +60	-10 ... +60	0 ... +50	0 ... +50
Corrosion resistance CRC ¹⁾	2			

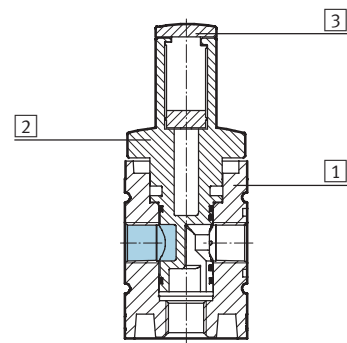
1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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

Materials

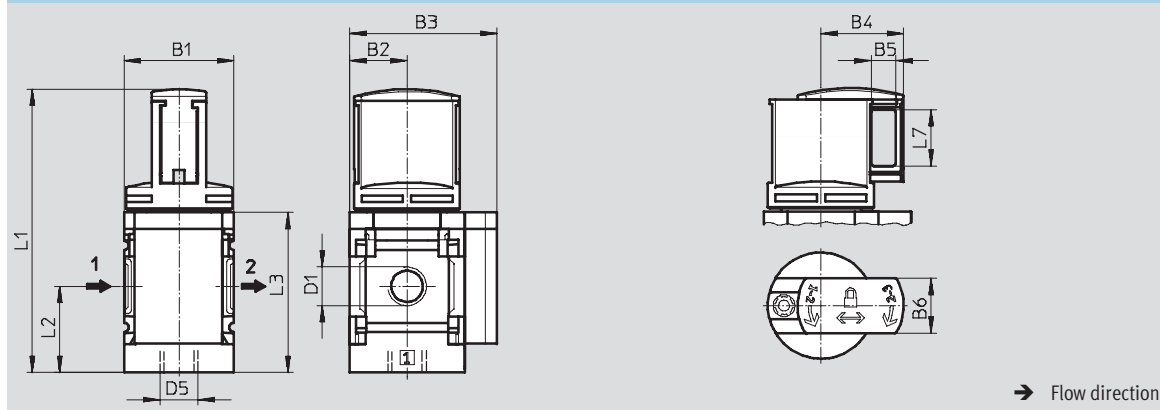
Sectional view



On-off valve		
1	Body	Die-cast aluminium
2	Rotary valve	Reinforced polyamide
3	Lock slide	Reinforced polyamide
-	Seals	Nitrile rubber, polyurethane
Note on materials		Free of copper and PTFE (not with variants AG or AD...)

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



Type	B1	B2	B3	B4	B5	B6	D1	D5	L1	L2	L3	L7
MS4-EM1-1/8	40	21	54	30	9	20	G1/8	G1/4	104	31.5	59	20.6
MS4-EM1-1/4							G1/4					
MS6-EM1-1/4	62	31	76	45	10	24	G1/4	G1/2	150.9	45.5	84.5	28.2
MS6-EM1-3/8							G3/8					
MS6-EM1-1/2							G1/2					

⌘ - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

Technical data

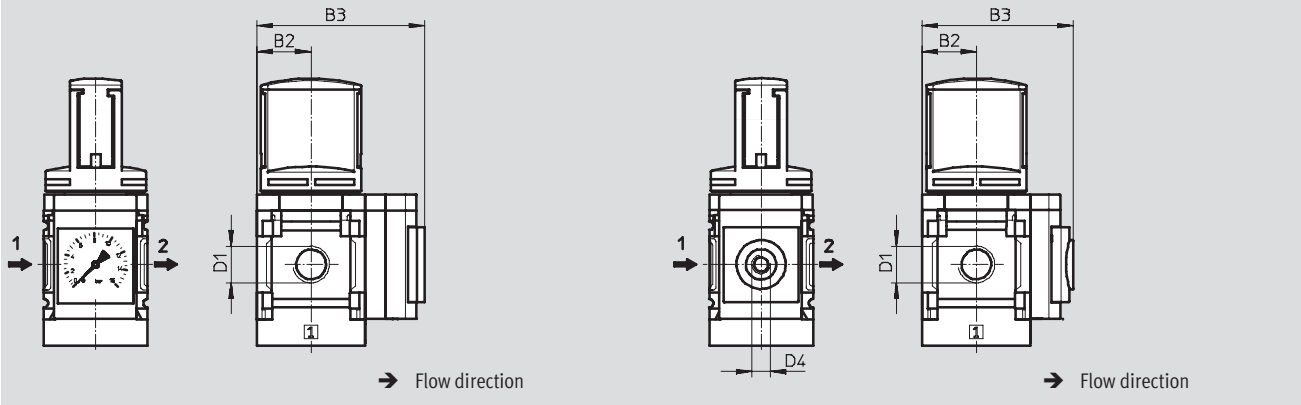
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

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	65	G1/8	-
MS4-EM1-1/4-...-AG			G1/4	
MS4-EM1-1/8-...-RG	21	66.5	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	85	G1/4	-
MS6-EM1-3/8-...-AG			G3/8	
MS6-EM1-1/2-...-AG			G1/2	
MS6-EM1-1/4-...-RG	31	86.5	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 with the ISO 1179-1 standard and the ISO 228-1 standard.

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

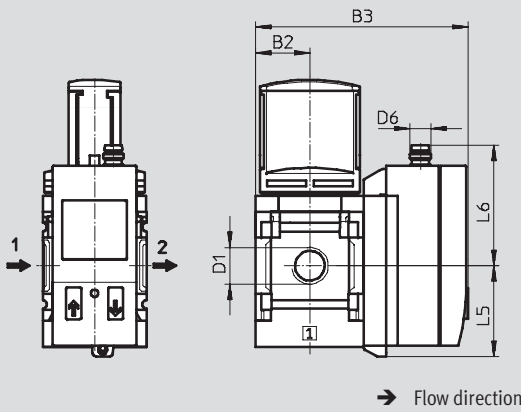
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

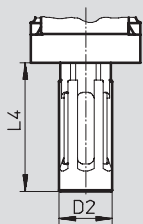
AD4 variants:
SDE1-D10-G2-MS-L-NI-M12 with
4-pin plug M12x1, 1 switching out-
put NPN and 4 ... 20 mA analogue

Type	B2	B3	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			
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			

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Silencer

Download CAD data → www.festo.com/en/engineering



Type	D2	L4
MS4-EM1-...-S	19.5	47
MS6-EM1-...-S	28	106

Ordering data

Size	Connection	Standard		With silencer	
		Part No.	Type	Part No.	Type
MS4	G1/8	541 262	MS4-EM1-1/8 ¹⁾	541 263	MS4-EM1-1/8-S ¹⁾
	G1/4	541 258	MS4-EM1-1/4 ¹⁾	541 259	MS4-EM1-1/4-S ¹⁾
MS6	G1/4	541 271	MS6-EM1-1/4 ¹⁾	541 272	MS6-EM1-1/4-S ¹⁾
	G3/8	541 275	MS6-EM1-3/8 ¹⁾	541 276	MS6-EM1-3/8-S ¹⁾
	G1/2	541 267	MS6-EM1-1/2 ¹⁾	541 268	MS6-EM1-1/2-S ¹⁾

1) Free of copper and PTFE

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

Ordering data – Modular products

M Mandatory data					O Options				
Module No.	Series	Size	Function	Connection sizes	Silencer	Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
541 266 541 279	MS	4 6	EM1	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE	S	AG, A8, A4, RG, AD1, AD2, AD3, AD4	PSI MPA	WP WPM WB WBM	Z
Order example 527 705	MS	4	- EM1	- 1/4	- S	- AG	- PSI	- WB	- Z

Ordering table							
Grid dimension	[mm]	40	62	Conditions	Code	Enter code	
M	Module No.	541 266		541 279			
	Series	Standard			MS	MS	
	Size	4	6		...		
	Function	On-off valve, manual			-EM1	-EM1	
	Connection sizes	Thread G1/8	-		-1/8		
		Thread G1/4	Thread G1/4		-1/4		
		-	Thread G3/8		-3/8		
		-	Thread G1/2		-1/2		
		Connecting plate G1/8	-		-AGA		
		Connecting plate G1/4	Connecting plate G1/4		-AGB		
		Connecting plate G3/8	Connecting plate G3/8		-AGC		
		-	Connecting plate G1/2		-AGD		
	-	Connecting plate G3/4		-AGE			
O	Silencer	Silencer			-S		
	Pressure gauge alternatives	MS pressure gauge, bar (with adapter)	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 display, plug M8, 1 switch output PNP, 3-pin			[1]	-AD1	
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			[1]	-AD2	
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			[1]	-AD3	
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			[1]	-AD4	
	Alternative pressure gauge scale	psi		[2]	-PSI		
		MPa		[2]	-MPA		
	Type of mounting	Mounting bracket		[3]	-WP		
		Mounting bracket (for retro-fitting M-series)		[3]	-WPM		
		Mounting bracket				-WB	
		Mounting bracket	-			-WBM	
	Alternative flow direction	Flow direction from right to left			-Z		

[1] AD1 ... AD4 Measuring range max. 10 bar.

[3] WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE

[2] PSI, MPA Only with pressure gauge alternatives AG or RG

Transfer order code

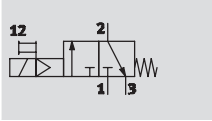
	MS		-	EM1	-		-		-		-		-		-	
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On-off valves MS4/MS6-EE, MS series

Technical data

FESTO

Function



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



- 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
- Pushing and detenting manual override (detenting is locked on delivery)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor with display

General technical data						
Size	MS4		MS6			
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
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	With pressure sensor for the output pressure display and with electric output With pressure gauge for the output pressure display					
Valve function	3/2-way valve, single solenoid, closed					
Exhaust function	Without flow control					
Type of reset	Mechanical spring					
Switching position display	Via accessories					
Pilot control mode	Direct					
Pilot air supply	External					
Direction of flow	Non-reversible					
C value	[l/(s*bar)]	4.5	9.5	11.0	22.0	29.0
b value		0.5	0.44	0.5	0.5	0.4
Coil characteristics	V24	24 V DC				
	10V24	24 V DC				
	V110	110 V AC				
	V230	230 V AC				

– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

Technical data

FESTO

Standard nominal flow rate $q_{nN^{1)}$ [l/min]					
Size	MS4		MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
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

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

Operating and environmental conditions						
Variant	Coil parameter V24, V110, V230		Coil parameter 10V24		Pressure sensor with display AD...	
Size	MS4	MS6	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10	4 ... 10	4 ... 10
Operating medium	Compressed air				Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m	
Ambient temperature [°C]	-10 ... +60	-10 ... +60	-10 ... +50	-10 ... +50	0 ... +50	0 ... +50
Temperature of medium [°C]	-10 ... +60	-10 ... +60	-10 ... +50	-10 ... +50	0 ... +50	0 ... +50
Corrosion resistance CRC ¹⁾	2					

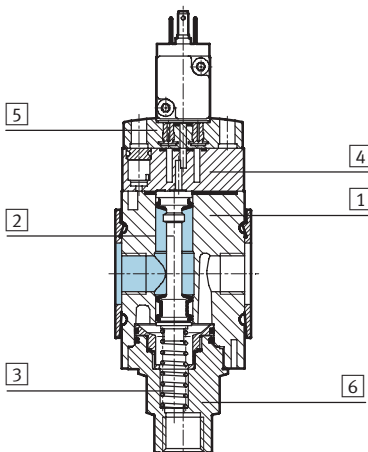
1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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

Materials

Sectional view



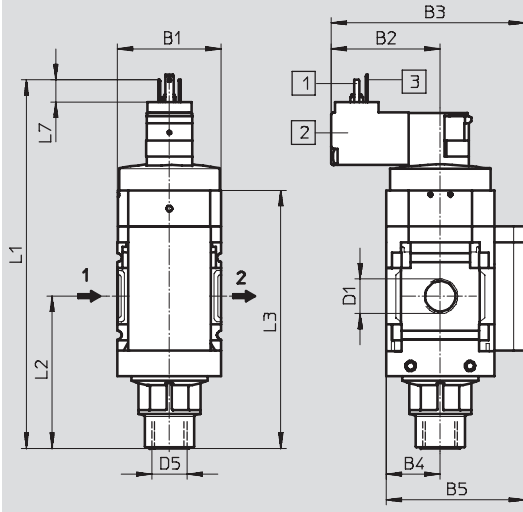
On-off valve	
1	Body Die-cast aluminium
2	Piston spool Nitrile rubber/aluminium
3	Springs High-alloy stainless steel
4	End cap Polyamide
5	Top plate Polyamide
6	Socket end connection Polyamide
-	Seals Nitrile rubber
Note on materials Free of copper and PTFE (not with variants AG, 10V24 or AD...)	

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

Technical data

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



- 1 Plug connection to DIN EN 175 301-803
- 2 Solenoid actuator can be re-positioned by 180°, i.e. solenoid points to the front
- 3 PIN only with solenoid actuators 110 V and 230 V

→ Flow direction

Type	B1	B2		B3		B4	B5	D1	D5	L1		L2	L3	L7
		10V24	V24/ V110/ V230	10V24	V24/ V110/ V230					10V24	V24/ V110/ V230			
MS4-EE-1/8	40	34.9	42.2	67.9	75.2	21	54	G1/8	G1/4	140.4	142.8	58.9	100	8.6
MS4-EE-1/4								G1/4						
MS6-EE-1/4	62	44.7	52	89.7	97	31	76	G1/4	G1/2	183.2	185.6	84	143	8.6
MS6-EE-3/8								G3/8						
MS6-EE-1/2								G1/2						

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

Technical data

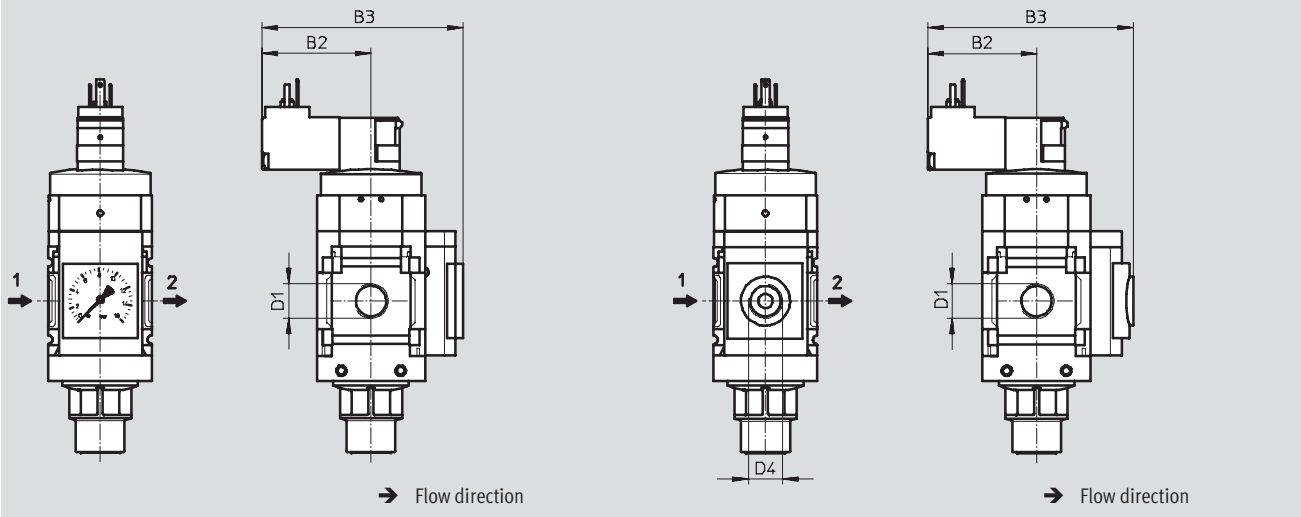
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

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
	10V24	V24/V110/V230	10V24	V24/V110/V230		
MS4-EE-1/8-...-AG	34.9	42.2	78.9	86.2	G1/8	-
MS4-EE-1/4-...-AG			G1/4			
MS4-EE-1/8-...-RG	34.9	42.2	80.4	87.7	G1/8	-
MS4-EE-1/4-...-RG			G1/4			
MS4-EE-1/8-...-A8	34.9	42.2	72.4	79.7	G1/8	G1/8
MS4-EE-1/4-...-A8			G1/4			
MS4-EE-1/8-...-A4	34.9	42.2	72.4	79.7	G1/8	G1/4
MS4-EE-1/4-...-A4			G1/4			
MS6-EE-1/4-...-AG	44.7	52	98.7	106	G1/4	-
MS6-EE-3/8-...-AG					G3/8	
MS6-EE-1/2-...-AG					G1/2	
MS6-EE-1/4-...-RG	44.7	52	100.2	107.5	G1/4	-
MS6-EE-3/8-...-RG					G3/8	
MS6-EE-1/2-...-RG					G1/2	
MS6-EE-1/4-...-A4	44.7	52	92.3	99.6	G1/4	G1/4
MS6-EE-3/8-...-A4					G3/8	
MS6-EE-1/2-...-A4					G1/2	

• | - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

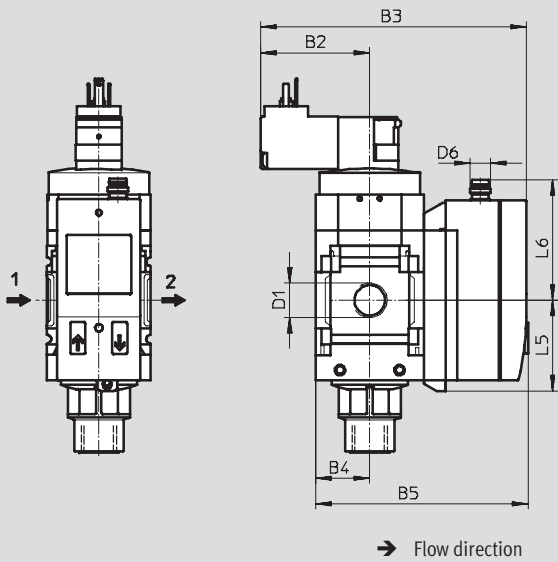
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

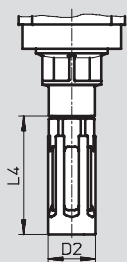
AD4 variants:
SDE1-D10-G2-MS-L-NI-M12 with 4-pin plug M12x1, 1 switching output NPN and 4 ... 20 mA analogue

Type	B2		B3		B4	B5	D1	D6	L5	L6
	10V24	V24/ V110/ V230	10V24	V24/ V110/ V230						
MS4-EE-1/8-...-AD1/AD2	34.9	42.2	96.5	103.8	21	82.6	G1/8	M8x1	35.1	46.7
MS4-EE-1/4-...-AD1/AD2							G1/4			
MS4-EE-1/8-...-AD3/AD4	34.9	42.2	96.5	103.8	21	82.6	G1/8	M12x1	35.1	55.8
MS4-EE-1/4-...-AD3/AD4							G1/4			
MS6-EE-1/4-...-AD1/AD2	44.7	52	116.7	124	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	44.7	52	116.7	124	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			

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Silencer

Download CAD data → www.festo.com/en/engineering



Type	D2	L4
MS4-EE-...-S	19.5	48.5
MS6-EE-...-S	28	106

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

Technical data

Ordering data					
Size	Connection	Without silencer		With silencer	
		Part No.	Type	Part No.	Type
Supply voltage 24 V DC					
MS4	G1/8	542 580	MS4-EE-1/8-10V24	542 600	MS4-EE-1/8-10V24-S
	G1/4	542 578	MS4-EE-1/4-10V24	542 598	MS4-EE-1/4-10V24-S
MS6	G1/4	542 584	MS6-EE-1/4-10V24	542 604	MS6-EE-1/4-10V24-S
	G3/8	542 586	MS6-EE-3/8-10V24	542 606	MS6-EE-3/8-10V24-S
	G1/2	542 582	MS6-EE-1/2-10V24	542 602	MS6-EE-1/2-10V24-S
Supply voltage 110 V AC					
MS4	G1/8	529 541	MS4-EE-1/8-V110 ¹⁾	538 725	MS4-EE-1/8-V110-S ¹⁾
	G1/4	529 535	MS4-EE-1/4-V110 ¹⁾	538 719	MS4-EE-1/4-V110-S ¹⁾
MS6	G1/4	529 829	MS6-EE-1/4-V110 ¹⁾	538 737	MS6-EE-1/4-V110-S ¹⁾
	G3/8	529 835	MS6-EE-3/8-V110 ¹⁾	538 743	MS6-EE-3/8-V110-S ¹⁾
	G1/2	529 823	MS6-EE-1/2-V110 ¹⁾	538 731	MS6-EE-1/2-V110-S ¹⁾
Supply voltage 230 V AC					
MS4	G1/8	529 543	MS4-EE-1/8-V230 ¹⁾	538 727	MS4-EE-1/8-V230-S ¹⁾
	G1/4	529 537	MS4-EE-1/4-V230 ¹⁾	538 721	MS4-EE-1/4-V230-S ¹⁾
MS6	G1/4	529 831	MS6-EE-1/4-V230 ¹⁾	538 739	MS6-EE-1/4-V230-S ¹⁾
	G3/8	529 837	MS6-EE-3/8-V230 ¹⁾	538 745	MS6-EE-3/8-V230-S ¹⁾
	G1/2	529 825	MS6-EE-1/2-V230 ¹⁾	538 733	MS6-EE-1/2-V230-S ¹⁾

1) Free of copper and PTFE

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

Ordering data – Modular products

M Mandatory data →

Module No.	Series	Size	Function	Connection sizes	Supply voltage
527 709 527 682	MS	4 6	EE	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	V24 10V24 V110 V230
Order example					
527 709	MS	4	- EE	- AGB	- V24

Ordering table		Grid dimension [mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527 709	527 682				
	Series	Standard				MS	MS
	Size	4	6			...	
	Function	On-off valve, electrical				-EE	-EE
	Connection sizes	Thread G1/8	-			-1/8	
		Thread G1/4	Thread G1/4			-1/4	
		-	Thread G3/8			-3/8	
		-	Thread G1/2			-1/2	
		Connecting plate G1/8	-			-AGA	
		Connecting plate G1/4	Connecting plate G1/4			-AGB	
		Connecting plate G3/8	Connecting plate G3/8			-AGC	
		-	Connecting plate G1/2			-AGD	
	-	Connecting plate G3/4			-AGE		
	Supply voltage	24 V DC (connection pattern to EN 175301), 18 bar				-V24	
		24 V DC (connection pattern to EN 175301), 10 bar			1	-10V24	
		110 V AC (connection pattern to EN 175301), 18 bar				-V110	
		230 V AC (connection pattern to EN 175301), 18 bar				-V230	

1 10V24 Max. supply pressure 10 bar

Transfer order code

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

Ordering data – Modular products

Options				
Silencer	Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
S	AG, A8, A4, RG, AD1, AD2, AD3, AD4	PSI MPA	WP WPM WB WBM	Z
- S	- AG	- PSI	- WP	- Z

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
0	Silencer	Silencer			-S		
0	Pressure gauge alternatives	MS pressure gauge, bar (with adapter)	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 display, plug M8, 1 switch output PNP, 3-pin			[2]	-AD1	
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			[2]	-AD2	
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			[2]	-AD3	
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			[2]	-AD4	
		Alternative pressure gauge scale	psi			[3]	-PSI
MPa				[3]	-MPA		
Type of mounting	Mounting bracket			[4]	-WP		
	Mounting bracket (for retro-fitting M-series)			[4]	-WPM		
	Mounting bracket				-WB		
	Mounting bracket	-			-WBM		
Alternative flow direction	Flow direction from right to left				-Z		

[2] AD1 ... AD4 Measuring range max. 10 bar.

[4] WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE

[3] PSI, MPA Only with pressure gauge alternatives AG or RG

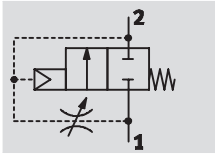
Transfer order code




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

Technical data

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 input pressure
- Adjustable switching time delay
- Optional pressure sensor with display

General technical data						
Size	MS4		MS6			
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
Design	Piston poppet valve					
Type of mounting	Via accessories					
	In-line installation					
Assembly position	Any					
Pressure indicator	With pressure sensor for the output pressure display and with electric output					
	With pressure gauge for the output pressure display					
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					
C value	[l/(s*bar)]	4.6	9.6	11.22	21.05	28.97
b value		0.5	0.45	0.54	0.48	0.39

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN ¹⁾ [l/min]						
Size	MS4		MS6			
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
In main flow direction 1 → 2	1,000	2,000	2,800	5,050	6,450	
In relief direction 2 → 1	1,000	2,000	2,800	5,050	6,400	

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

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

Technical data

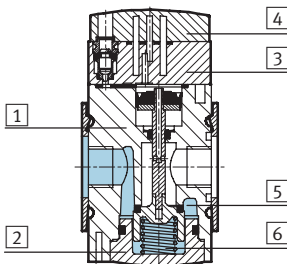
Operating and environmental conditions				
Variant	Standard		Pressure sensor with display AD...	
Size	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10
Operating medium	Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature [°C]	-10 ... +60	-10 ... +60	0 ... +50	0 ... +50
Temperature of medium [°C]	-10 ... +60	-10 ... +60	0 ... +50	0 ... +50
Corrosion resistance CRC ¹⁾	2			

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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

Materials

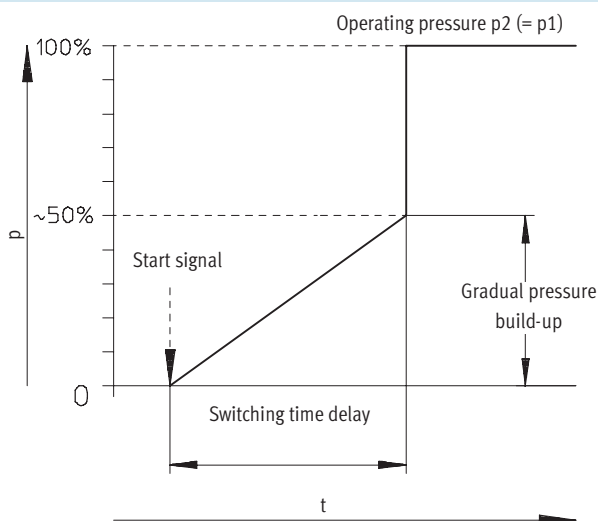
Sectional view



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

Switching point

Pressure p as a function of time t

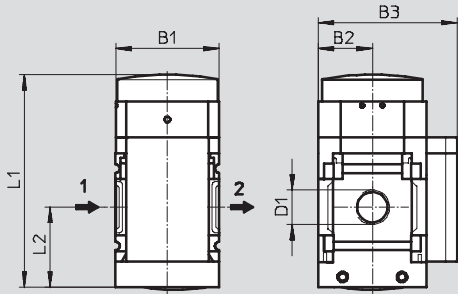


Soft-start valves MS4/MS6-DL, MS series

Technical data

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



→ Flow direction

Type	B1	B2	B3	D1	L1	L2
MS4-DL-1/8	40	21	54	G1/8	82.7	31
MS4-DL-1/4				G1/4		
MS6-DL-1/4	62	31	76	G1/4	116	45
MS6-DL-3/8				G3/8		
MS6-DL-1/2				G1/2		

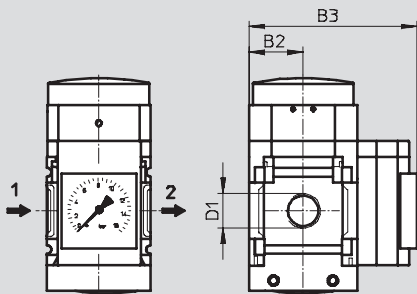
– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauge alternatives

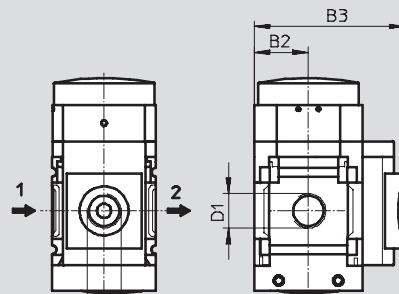
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Integrated MS pressure gauge with standard scale AG or red-green scale RG, display unit [bar]

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	65	G1/8	-
MS4-DL-1/4-...-AG			G1/4	
MS4-DL-1/8-...-RG	21	66.5	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	85	G1/4	-
MS6-DL-3/8-...-AG			G3/8	
MS6-DL-1/2-...-AG			G1/2	
MS6-DL-1/4-...-RG	31	86.5	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 with the ISO 1179-1 standard and the ISO 228-1 standard.

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

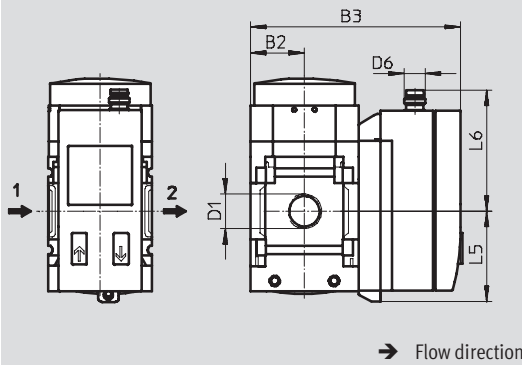
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

AD4 variants:
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	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 with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data

Size	Connection	Part No.	Type
MS4	G1/8	529 533	MS4-DL-1/8 ¹⁾
	G1/4	529 531	MS4-DL-1/4 ¹⁾
MS6	G1/4	529 819	MS6-DL-1/4 ¹⁾
	G3/8	529 821	MS6-DL-3/8 ¹⁾
	G1/2	529 817	MS6-DL-1/2 ¹⁾

1) Free of copper and PTFE

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

Ordering data – Modular products

M Mandatory data					O Options			
Module No.	Series	Size	Function	Connection sizes	Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
527 711 527 684	MS	4 6	DL	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE	AG, A8, A4, RG, AD1, AD2, AD3, AD4	PSI MPA	WP WPM WB WBM	Z
Order example								
527 711	MS	4	- DL	- AGA	- AG	- PSI	- WB	- Z

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	527 711	527 684				
	Series	Standard			MS		MS
	Size	4	6		...		
	Function	Soft-start valve, pneumatic			-DL		-DL
	Connection sizes	Thread G1/8	-		-1/8		
		Thread G1/4	Thread G1/4		-1/4		
		-	Thread G3/8		-3/8		
		-	Thread G1/2		-1/2		
		Connecting plate G1/8	-		-AGA		
		Connecting plate G1/4	Connecting plate G1/4		-AGB		
		Connecting plate G3/8	Connecting plate G3/8		-AGC		
		-	Connecting plate G1/2		-AGD		
		-	Connecting plate G3/4		-AGE		
O	Pressure gauge alternatives	MS pressure gauge, bar (with adapter)	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 display, plug M8, 1 switch output PNP, 3-pin		1	-AD1		
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin		1	-AD2		
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA		1	-AD3		
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA		1	-AD4		
	Alternative pressure gauge scale	psi		2	-PSI		
		MPa		2	-MPA		
	Type of mounting	Mounting bracket		3	-WP		
		Mounting bracket (for retro-fitting M-series)		3	-WPM		
		Mounting bracket			-WB		
		Mounting bracket	-		-WBM		
	Alternative flow direction	Flow direction from right to left			-Z		

1 AD1 ... AD4 Measuring range max. 10 bar.

3 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE

2 PSI, MPA Only with pressure gauge alternatives AG or RG

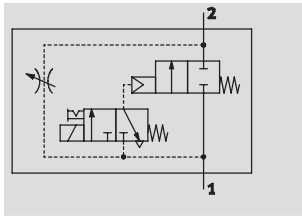
Transfer order code




	MS		-	DL		-			-			-	
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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



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
- Pushing and detenting manual override (detenting is locked on delivery)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor with display

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Design	Piston poppet valve				
Type of mounting	Via accessories In-line installation				
Assembly position	Any				
Pressure indicator	With pressure sensor for the output pressure display and with electric output With pressure gauge for the output pressure display				
Valve function	2/2-way valve				
Exhaust function	Flow control				
Type of reset	Mechanical spring				
Switching position display	Via accessories				
Pilot control mode	Piloted				
Pilot air supply	External				
Direction of flow	Non-reversible				
C value [l/(s*bar)]	4.6	9.6	11.22	21.05	28.97
b value	0.5	0.45	0.54	0.48	0.39
Coil characteristics	V24	24 V DC			
	10V24	24 V DC			
	V110	110 V AC			
	V230	230 V AC			

-  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
Size	MS4		MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
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

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

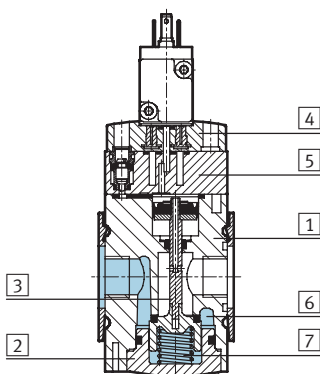
Operating and environmental conditions						
Variant	Coil parameter V24, V110, V230		Coil parameter 10V24		Pressure sensor with display AD...	
Size	MS4	MS6	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10	4 ... 10	4 ... 10
Operating medium	Compressed air				Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m	
Ambient temperature [°C]	-10 ... +60	-10 ... +60	-10 ... +50	-10 ... +50	0 ... +50	0 ... +50
Temperature of medium [°C]	-10 ... +60	-10 ... +60	-10 ... +50	-10 ... +50	0 ... +50	0 ... +50
Corrosion resistance CRC ¹⁾	2					

- 1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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

Materials

Sectional view



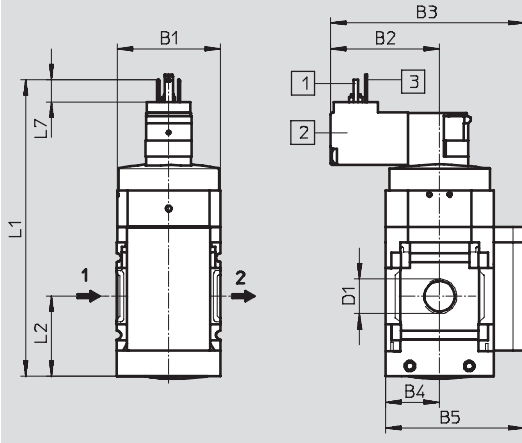
Soft-start valve	
1	Body Die-cast aluminium
2	Base Polyamide
3	Valve stem Steel
4	End cap Polyamide
5	Top plate Polyamide
6	Seat Aluminium/nitrile rubber
7	Springs Spring steel
-	Seals Nitrile rubber
Note on materials Free of copper and PTFE (not with variants AG, 10V24 or AD...)	

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

Technical data

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



- 1 Plug connection to DIN EN 175 301-803
- 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

→ Flow direction

Type	B1	B2		B3		B4	B5	D1	L1		L2	L7
		10V24	V24/ V110/ V230	10V24	V24/ V110/ V230				10V24	V24/ V110/ V230		
MS4-DE-1/8	40	34.9	42.2	67.9	75.2	21	54	G1/8	112.9	115.4	31.5	8.6
MS4-DE-1/4								G1/4				
MS6-DE-1/4	62	44.7	52	89.7	97	31	76	G1/4	144.9	147	45.5	8.6
MS6-DE-3/8								G3/8				
MS6-DE-1/2								G1/2				

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

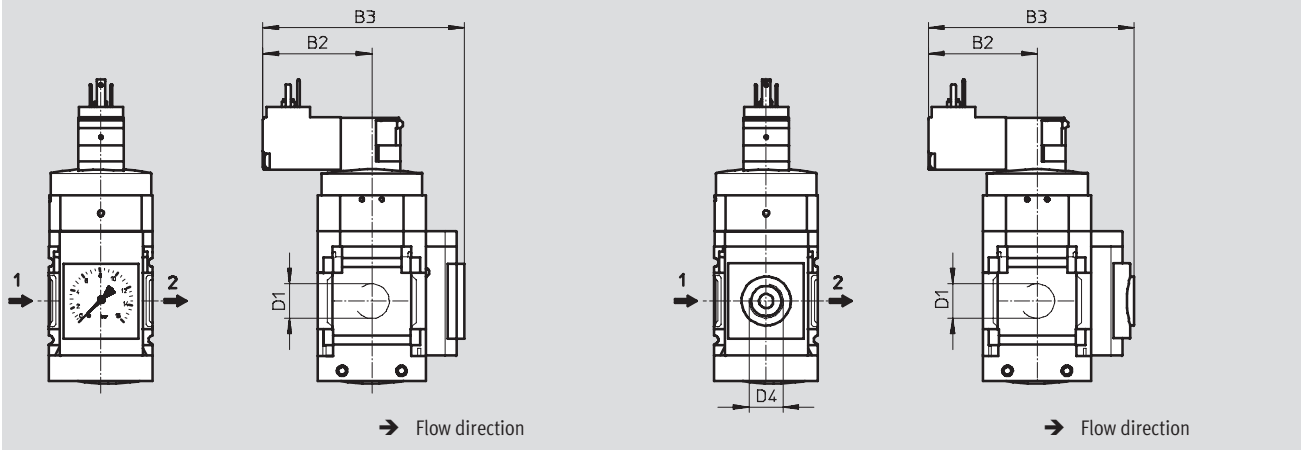
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

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
	10V24	V24/V110/V230	10V24	V24/V110/V230		
MS4-DE-1/8-...-AG	34.9	42.2	78.9	86.2	G1/8	-
MS4-DE-1/4-...-AG			G1/4			
MS4-DE-1/8-...-RG	34.9	42.2	80.4	87.7	G1/8	-
MS4-DE-1/4-...-RG			G1/4			
MS4-DE-1/8-...-A8	34.9	42.2	72.4	79.7	G1/8	G1/8
MS4-DE-1/4-...-A8			G1/4			
MS4-DE-1/8-...-A4	34.9	42.2	72.4	79.7	G1/8	G1/4
MS4-DE-1/4-...-A4			G1/4			
MS6-DE-1/4-...-AG	44.7	52	98.7	106	G1/4	-
MS6-DE-3/8-...-AG					G3/8	
MS6-DE-1/2-...-AG					G1/2	
MS6-DE-1/4-...-RG	44.7	52	100.2	107.5	G1/4	-
MS6-DE-3/8-...-RG					G3/8	
MS6-DE-1/2-...-RG					G1/2	
MS6-DE-1/4-...-A4	44.7	52	92.3	99.6	G1/4	G1/4
MS6-DE-3/8-...-A4					G3/8	
MS6-DE-1/2-...-A4					G1/2	

– | – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

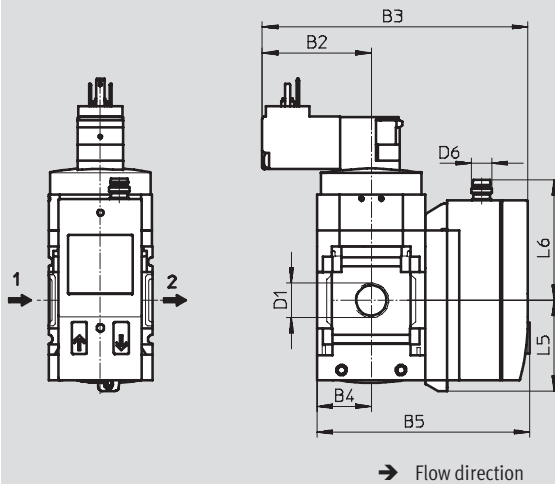
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

AD4 variants:
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
	10V24	V24/ V110/ V230	10V24	V24/ V110/ V230						
MS4-DE-1/8-...-AD1/AD2	34.9	42.2	96.5	103.8	21	82.6	G1/8	M8x1	35.1	46.7
MS4-DE-1/4-...-AD1/AD2							G1/4			
MS4-DE-1/8-...-AD3/AD4	34.9	42.2	96.5	103.8	21	82.6	G1/8	M12x1	35.1	55.8
MS4-DE-1/4-...-AD3/AD4							G1/4			
MS6-DE-1/4-...-AD1/AD2	44.7	52	116.7	124	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	44.7	52	116.7	124	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 with the ISO 1179-1 standard and the ISO 228-1 standard.

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	G1/8	542 560	MS4-DE-1/8-10V24	529 525	MS4-DE-1/8-V110 ¹⁾	529 527	MS4-DE-1/8-V230 ¹⁾				
	G1/4	542 558	MS4-DE-1/4-10V24	529 519	MS4-DE-1/4-V110 ¹⁾	529 521	MS4-DE-1/4-V230 ¹⁾				
MS6	G1/4	542 564	MS6-DE-1/4-10V24	529 805	MS6-DE-1/4-V110 ¹⁾	529 807	MS6-DE-1/4-V230 ¹⁾				
	G3/8	542 566	MS6-DE-3/8-10V24	529 811	MS6-DE-3/8-V110 ¹⁾	529 813	MS6-DE-3/8-V230 ¹⁾				
	G1/2	542 562	MS6-DE-1/2-10V24	529 799	MS6-DE-1/2-V110 ¹⁾	529 801	MS6-DE-1/2-V230 ¹⁾				

1) Free of copper and PTFE

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

Ordering data – Modular products

M Mandatory data →					
Module No.	Series	Size	Function	Connection sizes	Supply voltage
527 713	MS	4	DE	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE	V24 10V24 V110 V230
527 686		6			
Order example					
527 713	MS	4	- DE	- AGA	- V110

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527 713	527 686			
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Soft-start valve, electrical			-DE	-DE
	Connection sizes	Thread G1/8	-		-1/8	
		Thread G1/4	Thread G1/4		-1/4	
		-	Thread G3/8		-3/8	
		-	Thread G1/2		-1/2	
		Connecting plate G1/8	-		-AGA	
		Connecting plate G1/4	Connecting plate G1/4		-AGB	
		Connecting plate G3/8	Connecting plate G3/8		-AGC	
		-	Connecting plate G1/2		-AGD	
	-	Connecting plate G3/4		-AGE		
	Supply voltage	24 V DC (connection pattern to EN 175301), 18 bar			-V24	
		24 V DC (connection pattern to EN 175301), 10 bar		¹	-10V24	
		110 V AC (connection pattern to EN 175301), 18 bar			-V110	
		230 V AC (connection pattern to EN 175301), 18 bar			-V230	

¹ 10V24 Max. supply pressure 10 bar

Transfer order code

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

Ordering data – Modular products

Options			
Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
AG, A8, A4, RG, AD1, AD2, AD3, AD4	PSI MPA	WP WPM WB WBM	Z
- AG	- PSI	- WP	- Z

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
0	Pressure gauge alternatives	MS pressure gauge, bar (with adapter)	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 display, plug M8, 1 switch output PNP, 3-pin		2	-AD1		
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin		2	-AD2		
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA		2	-AD3		
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA		2	-AD4		
		Alternative pressure gauge scale	psi		3		-PSI
			MPa		3		-MPA
Type of mounting	Mounting bracket		4	-WP			
	Mounting bracket (for retro-fitting M-series)		4	-WPM			
	Mounting bracket			-WB			
	Mounting bracket	-		-WBM			
Alternative flow direction	Flow direction from right to left				-Z		

2 AD1 ... AD4 Measuring range max. 10 bar.

4 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE

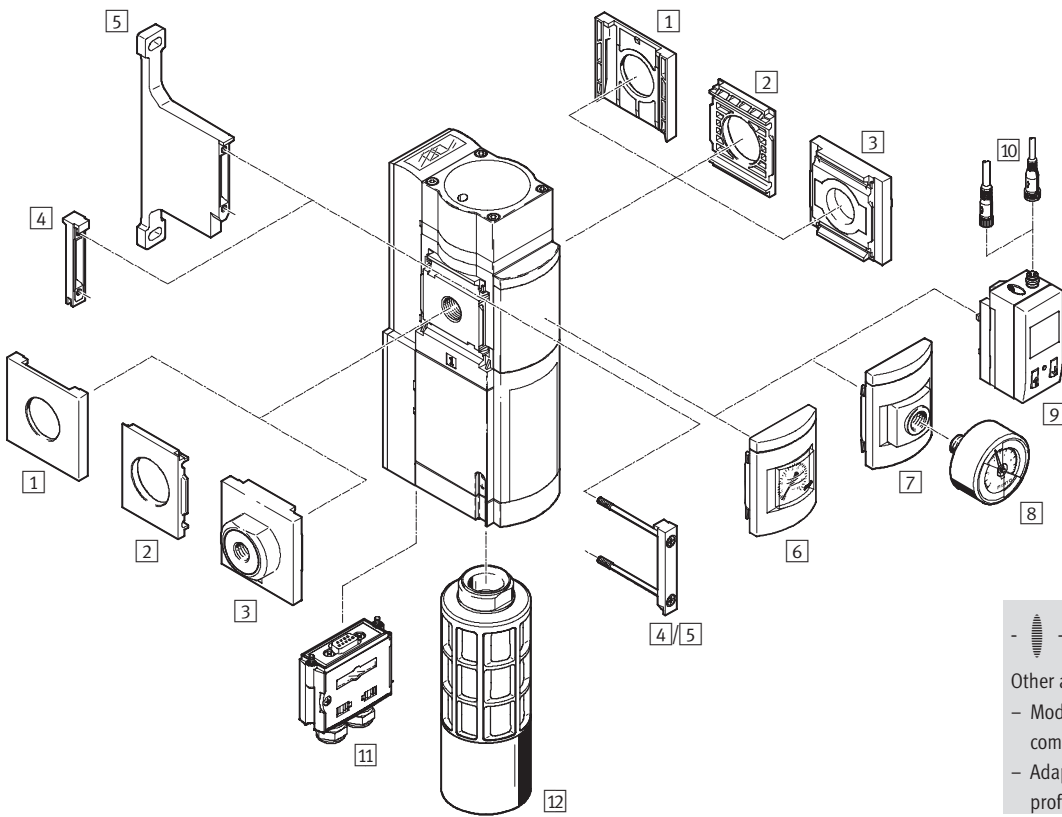
3 PSI, MPA Only with pressure gauge alternatives AG or RG


Transfer order code

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

Soft start and exhaust valves MS6-SV, MS series

Peripherals overview



 Note
 Other accessories:
 – Module connector for combinations → 3/2.31-10
 – Adapter plate for mounting on profiles → 3/2.31-13

MS4/MS6 series service units
Start-up and exhaust valves

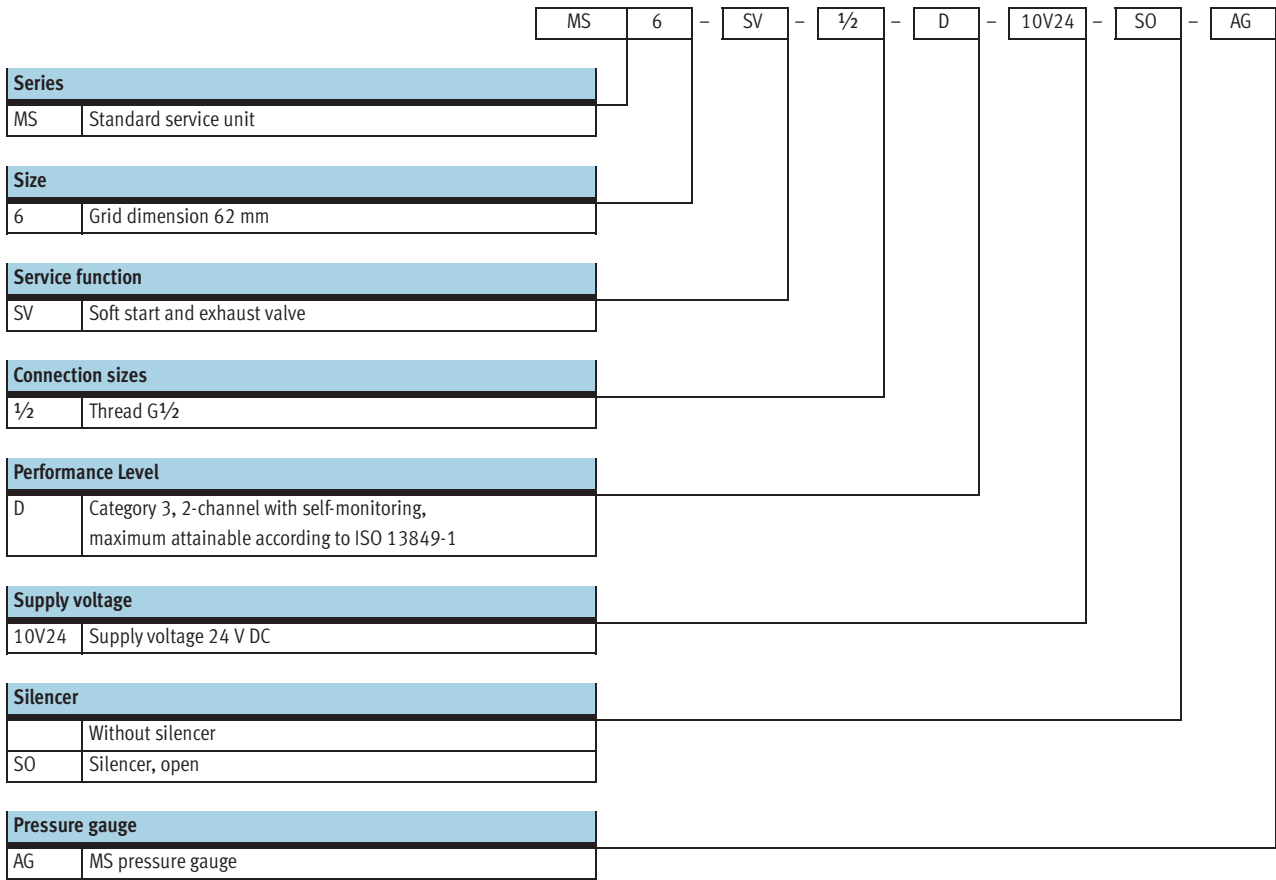
2.16

Mounting attachments and accessories						
		Individual device		Combination → 3/2.11-0		→Page
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	-	-	■	-	3/2.31-3
2	Mounting plate MS6-AEND	■ ¹⁾	-	■ ²⁾	-	3/2.31-3
3	Connecting plate MS6-AG...	-	■ ¹⁾	-	■ ²⁾	3/2.31-2
4	Module connector MS6-MV	-	-	■	■	3/2.31-9
5	Mounting bracket MS6-WPB	■	■	■	■	3/2.31-7
6	MS pressure gauge AG	■	■	■	■	3/2.16-35
7	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	3/2.16-35
8	Pressure gauge MA	■	■	■	■	3/2.31-24
9	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.16-35
10	Plug sockets with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
11	Multi-pin plug socket NECA	■	■	■	■	3/2.31-20
11	Silencer UOS-1	■	■	■	■	3/2.31-21

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

Soft start and exhaust valves MS6-SV, MS series

Type codes



Further variants can be ordered using the modular system

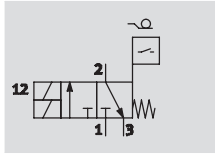
Soft start and exhaust valve SV → 3/2.16-35




- Connecting plates
- Pressure gauge/adaptor plate
- Alternative pressure gauge scale
- Multi-pin plug socket
- Type of mounting
- Alternative flow direction

Soft start and exhaust valves MS6-SV, MS series

Technical data

Function



-  - Flow rate
4300 l/min
-  - Temperature range
-10 ... +50 °C
-  - Operating pressure
3.5 ... 10 bar





The electropneumatic soft-start and exhaust valve is used to reduce pressure quickly and reliably and to build up pressure gradually in pneumatic systems and following devices in industry. The device is a self-testing, redundant mechatronic system in accordance


with the requirements of DIN EN ISO 13849-1, for which the safety-related pneumatic protection objective and safe venting, even in the case of failures within a valve (e.g. caused by wear, contamination) are guaranteed. With the 2-channel design and its monitoring, the device

fulfils controller category 3 requirements. Thus, with correct installation and consideration of the specific application data, a performance level of max. “d” can be attained. Via the electrical connection (multi-pin plug socket NECA Sub-D, 9-pin), the device receives the secure enable

signals (EN1/EN2) from commercially available electronic or electromechanical protective switchgear, which monitor the protective equipment of the machine (e.g. emergency stop, light curtain, electrical door switch of the protective enclosure etc.).

 - Note
The device may only be used together with the multi-pin plug socket NECA approved for it. The multi-pin plug socket can be ordered via the modular product system (MP... → 3/2.16-35) or as an accessory (NECA → 3/2.31-20).

 - Note
To avoid back pressures, it is recommended that the device be operated together with the silencer UOS-1. The silencer can be ordered via the modular product system (SO → 3/2.16-35) or as an accessory (UOS-1 → 3/2.31-21).

 - Note
Only devices that do not impair the pneumatic protective measure – safe venting – may be placed after the MS6-SV.

- Conforms to DIN EN ISO 13849-1
- Max. achievable performance level “d”
- A switching time delay adjusted via a flow control valve for gradual pressure build-up
- Optional pressure sensor with display

General technical data	
Pneumatic connection 1, 2	G1/2
Pneumatic connection 3	G1
Design	Piston seat
Type of mounting	Via accessories
	In-line installation
Assembly position	Any
Pressure display	Via pressure sensor for displaying output pressure and electrical output
	Via pressure gauge for displaying output pressure
Performance Level	Max. “d”
Position sensing principle	Solenoid piston principle
Valve function	3/2-way valve, single solenoid, closed
Manual override	None
Reset method	Mechanical spring
Switching position display	LED and floating contact
Type of actuation	Direct
Pilot air supply	Internal
Direction of flow	Non-reversible
C value	[l/(s*bar)] 19.3
b value	0.21

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Soft start and exhaust valves MS6-SV, MS series

FESTO

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]	
In main flow direction 1 → 2	4,300
In relief direction 2 → 3	9,000 ²⁾
	6,000 ²⁾ (in the event of a critical error)

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

2) Measured with respect to atmosphere with silencer UOS-1.

Electrical data	
Electrical connection	Sub-D 9-pin
Operating voltage range [V DC]	21.6 ... 26.4
Nominal operating voltage [V DC]	24
Duty cycle [%]	100
Response time off [ms]	40
Response time on [ms]	130
Protection class	IP65 with multi-pin plug socket NECA

Operating and environmental conditions		
Variant	Standard	Pressure sensor with display AD...
Operating pressure [bar]	3.5 ... 10	3.5 ... 10
Operating medium	Compressed air	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m
Ambient temperature [°C]	-10 ... +50	0 ... +50
Temperature of medium [°C]	-10 ... +50	0 ... +50
Corrosion resistance class CRC ¹⁾	2	
Noise level [dB (A)]	75 (with silencer UOS-1)	
CE mark (see declaration of conformity)	In accordance with EU EMC directive	
Fire protection classification to UL 94	V0-V2	

1) Corrosion resistance class 2 to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]	
Soft start and exhaust valve	2,000
Soft start and exhaust valve with silencer UOS-1	2,200

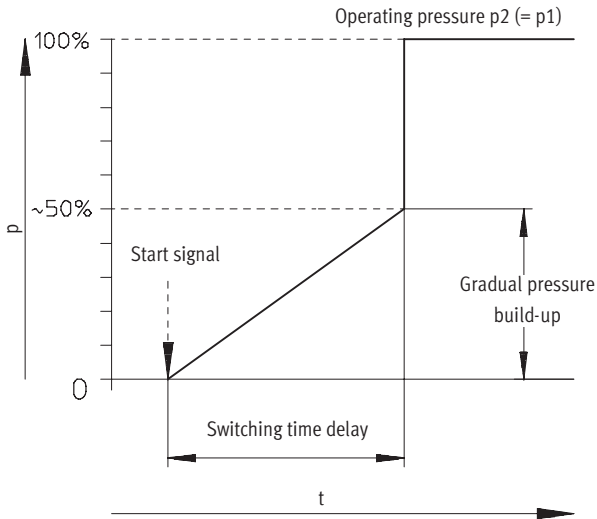
Materials	
Housing	Die-cast aluminium
Seals	Nitrile rubber

Soft start and exhaust valves MS6-SV, MS series

Technical data

Switching point

Pressure p as a function of time t



Multi-pin plug socket

Type	Enable signals (EN1/EN2)	Example of connection
NECA-S1G9-P9-MP1 <ul style="list-style-type: none"> Static enable signals (EN1 = 24 V, EN2 = 24 V) 		
NECA-S1G9-P9-MP2 <ul style="list-style-type: none"> Dynamic enable signals (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V) Short-circuit monitoring possible 		
NECA-S1G9-P9-MP3 <ul style="list-style-type: none"> Static enable signals (EN1 = 0 V, EN2 = 24 V) Short-circuit monitoring possible 		

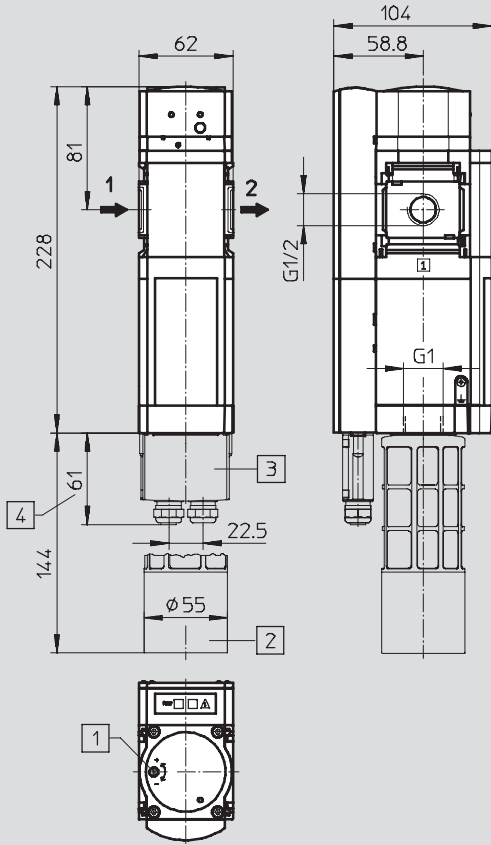
Soft start and exhaust valves MS6-SV, MS series

Technical data

FESTO

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



- 1 Regulating screw for flow control valve
- 2 Silencer UOS-1
- 3 Multi-pin plug socket NECA
- 4 Dimension without cable

→ Flow direction

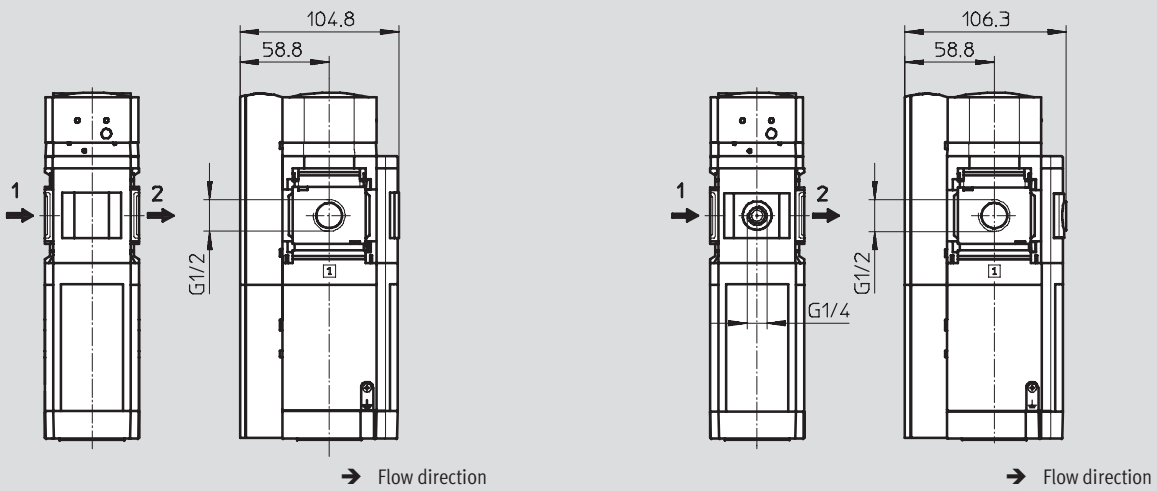
Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Integrated MS pressure gauge AG, display unit [bar]

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



→ Flow direction

→ Flow direction

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Soft start and exhaust valves MS6-SV, MS series

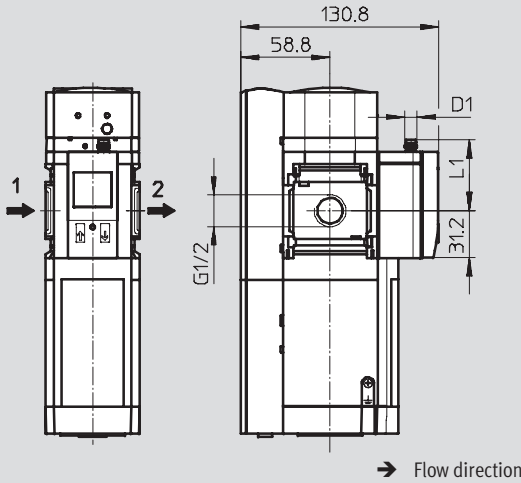
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

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

Type	D1	L1
MS6-SV-...-AD1/AD2	M8x1	46.7
MS6-SV-...-AD3/AD4	M12x1	55.8

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data

MS pressure gauge, display unit [bar]

Size	Connection	Without silencer		With silencer	
		Part No.	Type	Part No.	Type
MS6	G1/2	548 715	MS6-SV-1/2-D-10V24-AG	548 717	MS6-SV-1/2-D-10V24-SO-AG

Soft start and exhaust valves MS6-SV, MS series

Ordering data – Modular products

M Mandatory data				O Options			
Module No.	Series	Function	Performance Level	Silencer	Alternative pressure gauge scale	Type of mounting	
	Size	Connection sizes	Supply voltage	Pressure gauge/adaptor plate	Multi-pin plug socket	Alternative flow direction	
548 713	6	SV 1/2 AGB AGC AGD AGE	D 10V24	SO AG A4 AD1 AD2 AD3 AD4	PSI MPA MP1 MP2 MP3	WPB	Z
Order example							
548 713	MS 6	- SV - AGB	- D - 10V24	- SO - AG	- MP2	- WPB	-

Ordering table						
Grid dimension	[mm]	62	Condi- tions	Code	Enter code	
M	Module No.	548 713				
	Series	Standard		MS	MS	
	Size	6		6	6	
	Function	Soft start and exhaust valve		-SV	-SV	
	Connection sizes	Thread G1/2		-1/2		
		Connecting plate G1/4		-AGB		
		Connecting plate G3/8		-AGC		
		Connecting plate G1/2		-AGD		
		Connecting plate G3/4		-AGE		
	Performance Level	Category 3, 2-channel with self-monitoring, maximum attainable according to ISO 13849-1		-D	-D	
	Supply voltage	24 V DC, 10 bar		-10V24	-10V24	
O	Silencer	Silencer, open		-SO		
	Pressure gauge/ adaptor plate	Pressure gauge	MS pressure gauge	-AG		
		Adapter plates	For EN pressure gauge 1/4, without pressure gauge	-A4		
	Pressure sensor	With display, plug M8, PNP, 3-pin		-AD1		
		With display, plug M8, NPN, 3-pin		-AD2		
		With display, plug M12, PNP, 4-pin, analogue output 4 ... 20 mA		-AD3		
		With display, plug M12, NPN, 4-pin, analogue output 4 ... 20 mA		-AD4		
	Alternative pressure gauge scale	psi	1	-PSI		
		MPa	1	-MPA		
	Multi-pin plug socket	Sub-D, 9-pin, screw terminal	Without cable, enable signals static (EN1 = 24 V, EN2 = 24 V)	-MP1		
			Without cable, enable signals dynamic (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V), short-circuit detection possible	-MP2		
			Without cable, enable signals static (EN1 = 0 V, EN2 = 24 V), short-circuit detection possible	-MP3		
	Type of mounting	Wall mounting plate, large clearance		-WPB		
	Alternative flow direction	Flow direction from right to left		-Z		

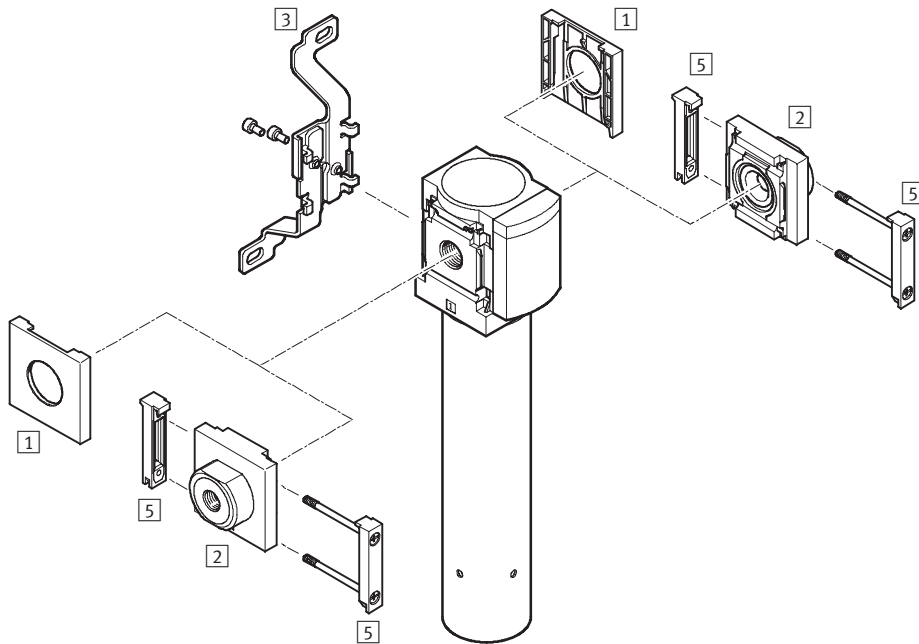
1 PSI, MPA Not with pressure gauge/adaptor plate A4, AD1, AD2, AD3, AD4


Transfer order code

548 713 MS 6 - SV - D - 10V24 - MP2 - WPB - Z

Membrane air dryers MS4/MS6-LDM1, MS series

Peripherals overview



 Note

Additional accessories:

- Module connector for combinations → 3/2.31-10
- Adapter for mounting on profiles → 3/2.31-13

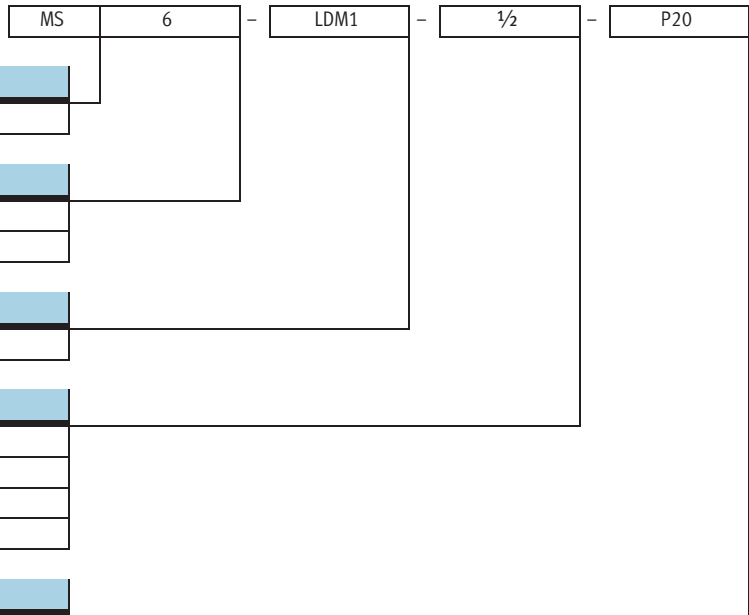
Mounting attachments and accessories						
	Individual unit		Combination → 3/2.11-0		→ Page	
	without connect- ing plate	with connecting plate	without connect- ing plate	with connecting plate		
1	Cover cap MS4/6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-4
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-9
-	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-4
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-7, 3/2.31-8

MS4/MS6 series service units
Dryers

2.17

Membrane air dryers MS4/MS6-LDM1, MS series

Type codes



Series

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

Size

4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function

LDM1	Membrane air dryer
------	--------------------

Connection size

1/8	Thread G1/8
1/4	Thread G1/4
3/8	Thread G3/8
1/2	Thread G1/2

Flow cartridge

P10	Cartridge P10
P20	Cartridge P20
P40	Cartridge P40

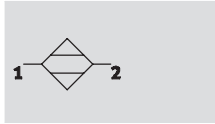
Further variants can be ordered using the modular system
 Membrane air dryers LDM1 → 3/2.17-7




- Connecting plates
- Flow cartridge
- Ducted purging air
- Type of mounting
- Alternative flow direction

Membrane air dryers MS4/MS6-LDM1, MS series

Technical data

Function



-  - Flow rate
50 ... 400 l/min
-  - Temperature range
+2 ... +50 °C
-  - Input pressure
3 ... 12.5 bar

Pressure dew point reduction:
20 K



- Optimum final dryer with excellent operational reliability
- Suitable for use as an individual unit or for integration in existing service unit combinations
- Flow rate-dependent dew point reduction

- Wear-free function requiring no external energy
- The composition of the compressed air remains almost unchanged due to the drying process
- 15% purge air flow rate
- Optional purge ring for ducting of purging air

Typical areas of application:

- Drying, cleaning of precision parts
- Measuring technology
- Rinsing of precision glass scales
- Painting systems
- Paper and packaging machines

-  - Note

Prefiltration of the compressed air using a micro filter MS-LFM-A, grade of filtration 0.01 µm (residual particles < 0.1 µm, residual oil content < 0.1 mg/m³) is vital for flawless functioning of the unit.

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈	G ¹ / ₂
Design	Membrane dryer with internal air consumption				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Vertical ±5°				

-  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard flow rate q _n ¹⁾ [l/min]					
Size	MS4		MS6		
	Cartridge P05	Cartridge P10	Cartridge P20	Cartridge P30	Cartridge P40
Input q _{n In}	59	118	235	353	471
Output q _{n Out}	50	100	200	300	400
Purge air q _{n Purge}	8.8	17.6	35.3	52.9	70.6

1) Measured at p₁ = 6.9 bar, θ_{pd In} = 25 °C, θ_{pd Out} = 5 °C ± 1.5 °C (θ_{pA Out} = -21.5 °C ± 1.2 °C), θ_{amb} = 25 °C

Operating and environmental conditions		
Input pressure	[bar]	3 ... 12.5
Operating medium		Compressed air, air quality class 1.7.2 to DIN ISO 8573-1
Pressure dew point reduction	[K]	20
Ambient temperature	[°C]	+2 ... +50
Temperature of medium	[°C]	+2 ... +50
Storage temperature	[°C]	-20 ... +60
Corrosion resistance class	CRC ¹⁾	2

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

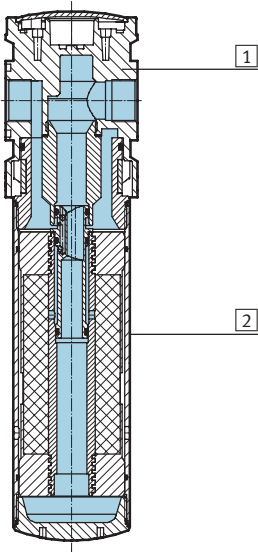
Membrane air dryers MS4/MS6-LDM1, MS series

Technical data

Weights [g]					
Size	MS4		MS6		
	Cartridge P05	Cartridge P10	Cartridge P20	Cartridge P30	Cartridge P40
Membrane air dryer	420	530	1,050	1,200	1,300

Materials

Sectional view



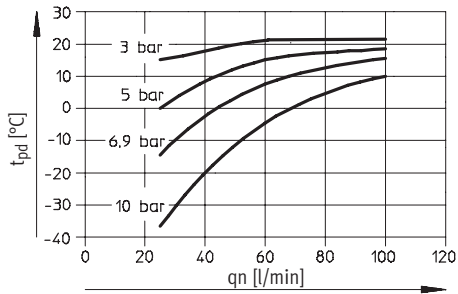
Membrane air dryer		
1	Housing	Die-cast aluminium
2	Bowl	Wrought aluminium alloy
-	Seals	Nitrile rubber

Membrane air dryers MS4/MS6-LDM1, MS series

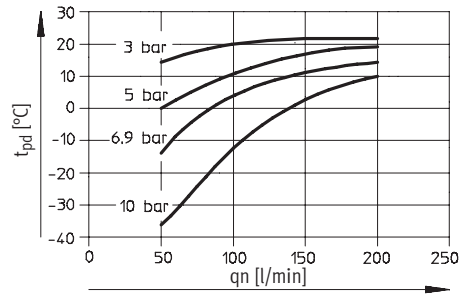
Technical data

Pressure dew point t_{pd} (output) as a function of the standard flow rate at output q_n

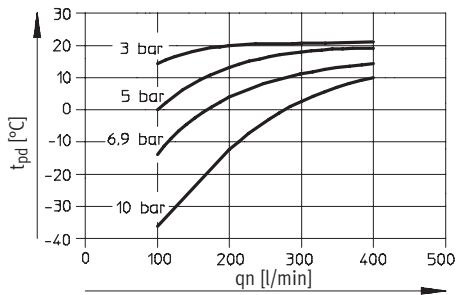
MS4-LDM1-...-P05



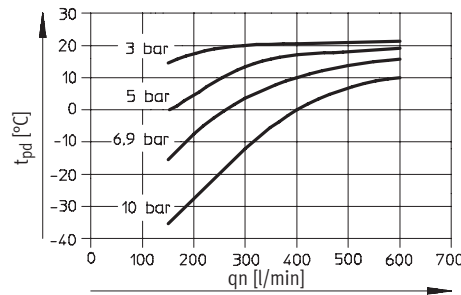
MS4-LDM1-...-P10



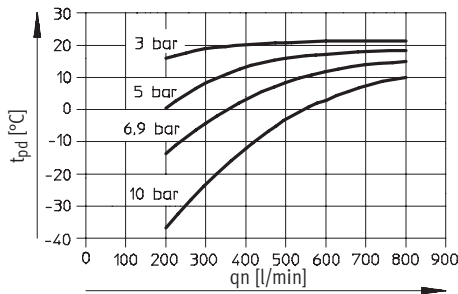
MS6-LDM1-...-P20



MS6-LDM1-...-P30



MS6-LDM1-...-P40

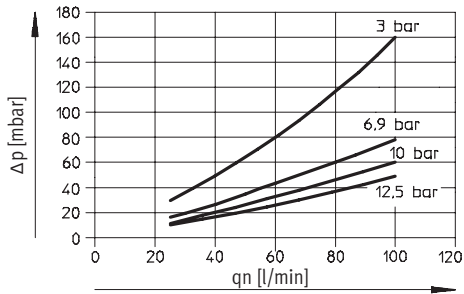


Membrane air dryers MS4/MS6-LDM1, MS series

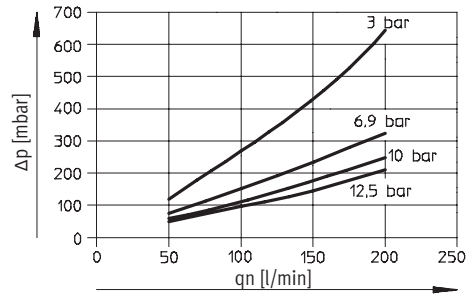
Technical data

Differential pressure Δp as a function of the standard flow rate at output q_n

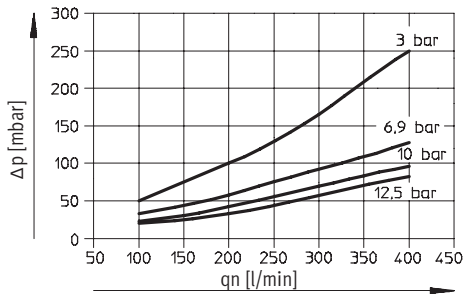
MS4-LDM1-...-P05



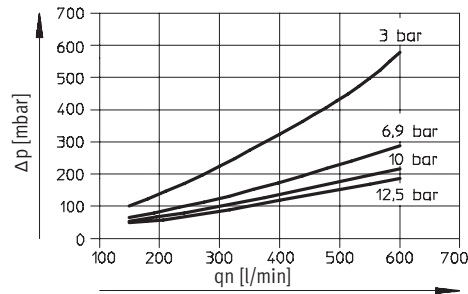
MS4-LDM1-...-P10



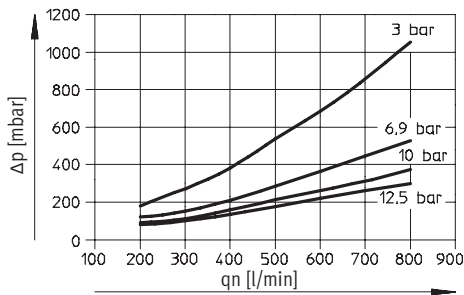
MS6-LDM1-...-P20



MS6-LDM1-...-P30



MS6-LDM1-...-P40

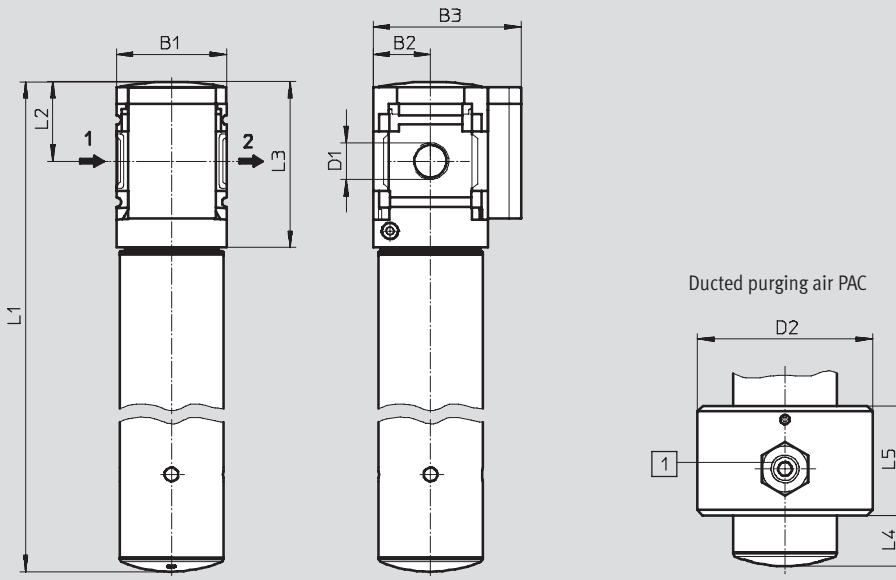


Membrane air dryers MS4/MS6-LDM1, MS series

Technical data

Dimensions

Download CAD data → www.festo.com/en/engineering



1 Push-in fitting QS-1/4-10 (included in scope of delivery), for tubing with outside diameter of 10 mm and min. inside diameter of 7 mm.

→ Flow direction

Type	B1	B2	B3	D1	D2	L1	L2	L3	L4	L5
MS4-LDM1-1/8-P05	40	21	54	G1/8	64	245	29	60	18	40
MS4-LDM1-1/8-P10						345				
MS4-LDM1-1/4-P05	40	21	54	G1/4	64	245	29	60	18	40
MS4-LDM1-1/4-P10						345				
MS6-LDM1-1/4-P20	62	31	76	G1/4	80	345	42	87	34	40
MS6-LDM1-1/4-P30						415				
MS6-LDM1-1/4-P40						475				
MS6-LDM1-3/8-P20	62	31	76	G3/8	80	345	42	87	34	40
MS6-LDM1-3/8-P30						415				
MS6-LDM1-3/8-P40						475				
MS6-LDM1-1/2-P20	62	31	76	G1/2	80	345	42	87	34	40
MS6-LDM1-1/2-P30						415				
MS6-LDM1-1/2-P40						475				

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data

Size	Flow cartridge	Connection	Part No.	Type
MS4	P10	G1/8	543 630	MS4-LDM1-1/8-P10
		G1/4	543 632	MS4-LDM1-1/4-P10
MS6	P20	G1/4	543 640	MS6-LDM1-1/4-P20
		G3/8	543 642	MS6-LDM1-3/8-P20
		G1/2	543 644	MS6-LDM1-1/2-P20
	P40	G1/4	543 646	MS6-LDM1-1/4-P40
		G3/8	543 648	MS6-LDM1-3/8-P40
		G1/2	543 650	MS6-LDM1-1/2-P40

Membrane air dryers MS4/MS6-LDM1, MS series

Ordering data – Modular products

M Mandatory data						O Options		
Module No.	Series	Size	Function	Connection size	Flow cartridge	Purging air	Type of mounting	Alternative flow direction
543 628 543 638	MS	4 6	LDM1	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE	P05 P10 P20 P30 P40	PAC	WP WPM WB WBM	Z
Ordering example								
543 628	MS	4	- LDM1	- AGC	- P10	-	- WP	-

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	543 628		543 638			
	Series	Standard			MS		MS
	Size	4	6		...		
	Function	Membrane dryer			-LDM1		-LDM1
	Connection size	Thread G1/8		-	-1/8		
		Thread G1/4		Thread G1/4	-1/4		
		-		Thread G3/8	-3/8		
		-		Thread G1/2	-1/2		
		Connecting plate G1/8		-	-AGA		
		Connecting plate G1/4		Connecting plate G1/4	-AGB		
		Connecting plate G3/8		Connecting plate G3/8	-AGC		
		-		Connecting plate G1/2	-AGD		
	Flow cartridge	50 l/min		-	-P05		
		100 l/min		-	-P10		
		-		200 l/min	-P20		
		-		300 l/min	-P30		
		-		400 l/min	-P40		
O	Purging air	Ducted purging air			-PAC		
	Type of mounting	Wall mounting plate		<input type="checkbox"/>	-WP		
		Wall mounting plate		<input type="checkbox"/>	-WPM		
		Wall mounting bracket			-WB		
		Wall mounting bracket		-	-WBM		
	Alternative flow direction	Flow direction from right to left			-Z		

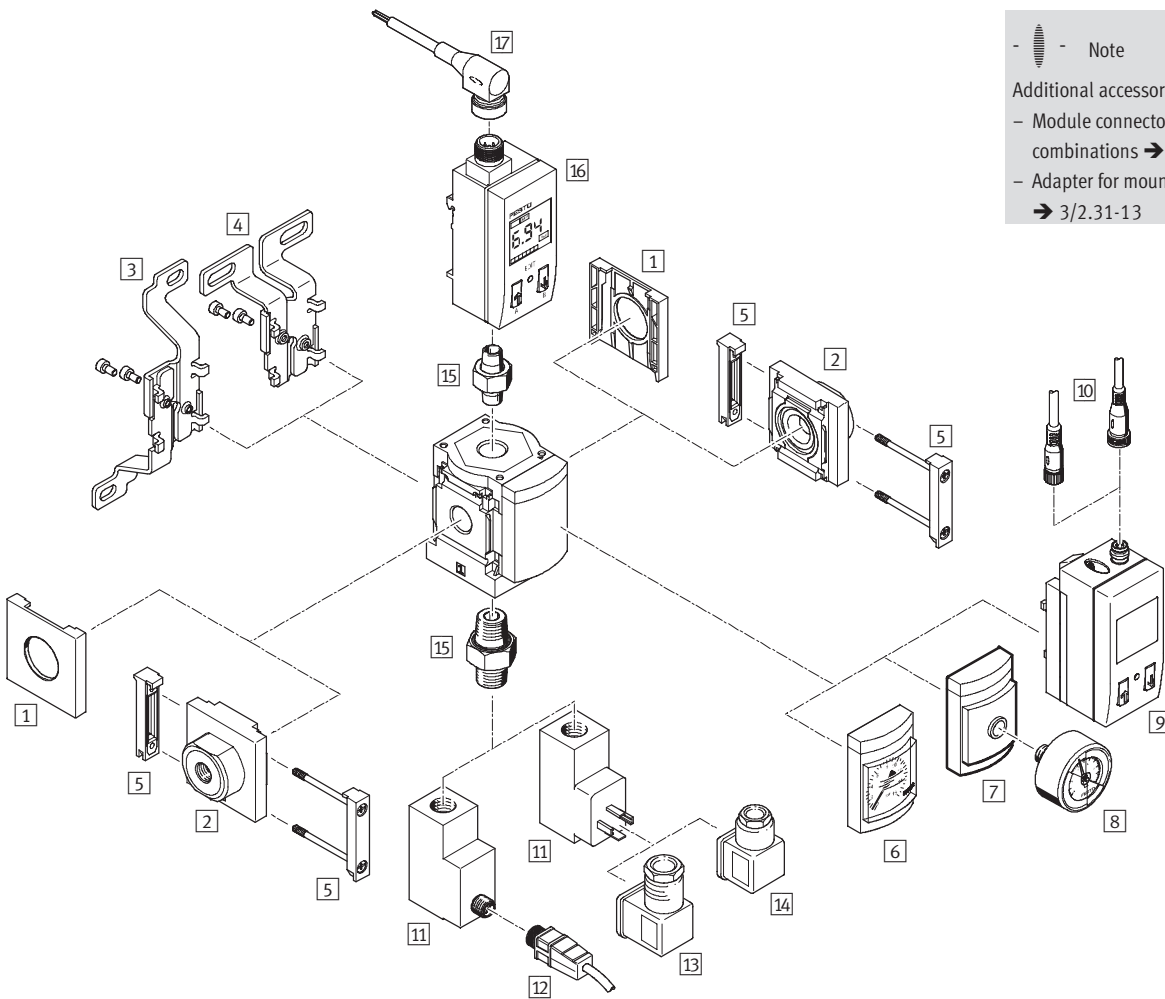
WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE.


Transfer order code

MS - LDM1 - - - - -

Branching modules MS4/MS6-FRM, MS series

Peripherals overview



 Note
Additional accessories:
- Module connector for combinations → 3/2.31-10
- Adapter for mounting on profiles → 3/2.31-13

MS4/MS6 series service units
Branching modules

2.18

Branching modules MS4/MS6-FRM, MS series

Peripherals overview

FESTO

Mounting attachments and accessories						
		Individual unit		Combination → 3/2.11-0		→ Page
		without connect- ing plate	with connecting plate	without connect- ing plate	with connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	3/2.31-3
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-2
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-4
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-4
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-9
6	MS pressure gauge AG	■	■	■	■	3/2.18-8
7	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.18-8
8	Pressure gauge MA	■	■	■	■	3/2.31-24
9	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.18-8 Volume 4
10	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-24
11	Pressure switch PEV X/Y/M12	■	■	■	■	3/2.18-8, 3/2.31-22
12	Plug socket with cable SIM-M12-4...	■	■	■	■	3/2.31-24
13	Angled socket PEV-1/4-WD-LED-...	■	■	■	■	3/2.31-23
14	Plug socket MSSD-C-4P	■	■	■	■	3/2.31-23
15	Double nipple ESK	■	■	■	■	3/2.31-25
16	Pressure sensor SDE1-...-H18/W18 AD5/AD6	■	■	■	■	3/2.18-8, 3/2.31-22
17	Plug socket with cable SIM-M8-3.../SIM-M12-5...	■	■	■	■	3/2.31-24
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-7, 3/2.31-8

Branching modules MS4/MS6-FRM, MS series

Type codes

FESTO

MS	4	-	FRM	-	1/8	-	Y
Series							
MS	Standard service unit						
Size							
4	Grid dimension 40 mm						
6	Grid dimension 62 mm						
Service function							
FRM	Branching module						
Connection size							
1/8	Thread G1/8						
1/4	Thread G1/4						
3/8	Thread G3/8						
1/2	Thread G1/2						
Non-return function/pressure switch							
	Standard						
I	With integrated non-return function						
Y	With pressure switch						

Further variants can be ordered using the modular system

Branching modules FRM → 3/2.18-8

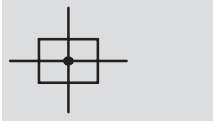
- Connecting plates
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Pressure switch
- Type of mounting
- Alternative flow direction

Branching modules MS4/MS6-FRM, MS series

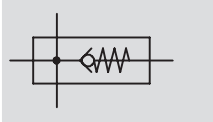
Technical data


FESTO


Function
Standard




With integrated non-return function



-  - Flow rate
1,200 ... 13,000 l/min

-  - Temperature range
-10 ... +60 °C

-  - Operating pressure
0 ... 20 bar



- Pneumatic manifold with 4 connections
- Can be used as an intermediate distributor for varying air qualities
- Attachment facility for auxiliary modules
- Outlet top and bottom
- An integrated non-return valve prevents the return flow e.g. of lubricated compressed air
- Optional pressure sensor with display

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Pneumatic connection 3, 4	G $\frac{1}{4}$		G $\frac{1}{2}$		
Design	Branching module				
	Branching module with non-return function				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Any ¹⁾				
Pressure display	With pressure sensor for the output pressure display and with electric output				
	With pressure gauge for the output pressure display				

1) The branching module must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.
-  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q _N ¹⁾ [l/min]					
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					
In main flow direction 1 → 2	1,300	3,500	3,300	8,350	13,000
Outlet at top	2,200	2,300	6,570	7,800	6,700
Outlet at bottom	2,300	2,500	6,800	8,750	8,000
With non-return function					
In main flow direction 1 → 2	1,200	1,750	3,200	5,500	6,000
Outlet at top	500	500	2,700	2,900	3,100
Outlet at bottom	500	500	2,800	3,200	3,300

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

Branching modules MS4/MS6-FRM, MS series

Technical data

FESTO

Operating and environmental conditions								
Variant	Standard		Non-return function I		Pressure switch X/Y/M12		Pressure sensor with display AD...	
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS4	MS6
Operating pressure [bar]	0 ... 14	0 ... 20	0 ... 10	0 ... 20	0 ... 12	0 ... 12	0 ... 10	0 ... 10
Operating medium	Compressed air		Compressed air		Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature [°C]	-10 ... +60		-10 ... +60		-10 ... +60		0 ... +50	
Temperature of medium [°C]	-10 ... +60		-10 ... +60		-10 ... +60		0 ... +50	
Storage temperature [°C]	-10 ... +60		-10 ... +60		-10 ... +60		-10 ... +60	
Corrosion resistance class CRC ¹⁾	2							

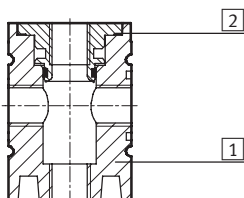
1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]		
Size	MS4	MS6
Branching module	160	500
Branching module with non-return function I	160	400
Branching module with pressure switch AD...	400	778
Branching module with pressure sensor X/Y/M12	250	570

Materials

Sectional view



Branching module	
1	Housing Die-cast aluminium
2	Threaded insert Aluminium
Note on materials Free of copper and PTFE (not with variants AG or AD...)	

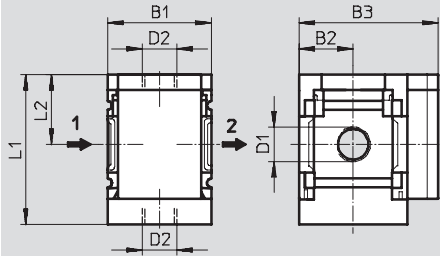
Branching modules MS4/MS6-FRM, MS series

Technical data

FESTO

Dimensions – Standard/With non-return function I

Download CAD data → www.festo.com/en/engineering



→ Flow direction

Type	B1	B2	B3	D1	D2	L1	L2
MS4-FRM-1/8	40	21	54	G1/8	G1/4	58	27
MS4-FRM-1/4				G1/4			
MS4-FRM-1/8-I	40	21	54	G1/8	G1/4	59.9	28.9
MS4-FRM-1/4-I				G1/4			
MS6-FRM-1/4	62	31	76	G1/4	G1/2	84.5	39
MS6-FRM-3/8				G3/8			
MS6-FRM-1/2				G1/2			
MS6-FRM-1/4-I	62	31	76	G1/4	G1/2	87.2	41.7
MS6-FRM-3/8-I				G3/8			
MS6-FRM-1/2-I				G1/2			

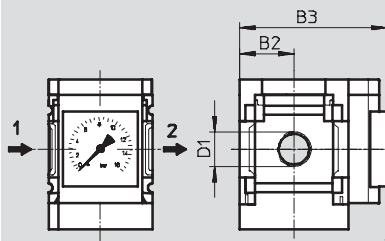
–||– Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauge alternatives

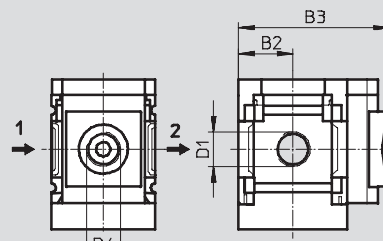
Download CAD data → www.festo.com/en/engineering

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-FRM-1/8-...-AG	21	57	G1/8	–
MS4-FRM-1/4-...-AG			G1/4	
MS4-FRM-1/8-...-RG	21	58.5	G1/8	–
MS4-FRM-1/4-...-RG			G1/4	
MS4-FRM-1/8-...-A8	21	58.5	G1/8	G1/8
MS4-FRM-1/4-...-A8			G1/4	
MS4-FRM-1/8-...-A4	21	58.5	G1/8	G1/4
MS4-FRM-1/4-...-A4			G1/4	
MS6-FRM-1/4-...-AG	31	77	G1/4	–
MS6-FRM-3/8-...-AG			G3/8	
MS6-FRM-1/2-...-AG			G1/2	
MS6-FRM-1/4-...-RG	31	78.5	G1/4	–
MS6-FRM-3/8-...-RG			G3/8	
MS6-FRM-1/2-...-RG			G1/2	
MS6-FRM-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-FRM-3/8-...-A4			G3/8	
MS6-FRM-1/2-...-A4			G1/2	

–||– Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Branching modules MS4/MS6-FRM, MS series

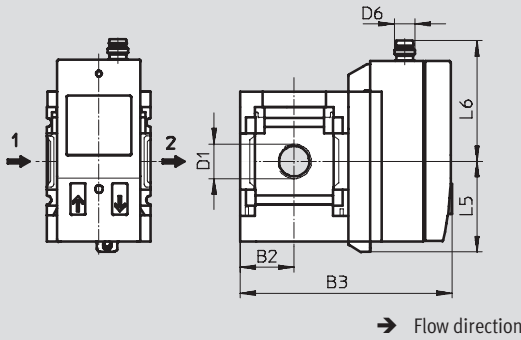
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



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

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

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

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

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

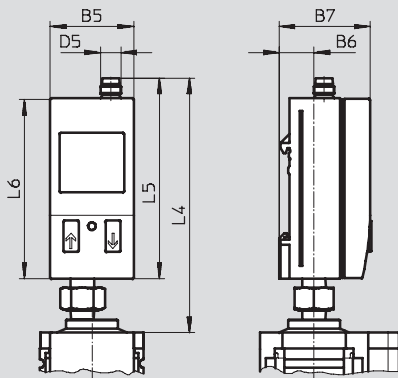
– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Pressure sensor with display AD5/AD6

Technical data SDE1 → Volume 4



Variant AD5:
SDE1-D10-G2-H18-C-P1-M8 with
3-pin plug M8x1, 1 switch output
PNP

Variant AD6:
SDE1-D10-G2-W18-L-2I-M12 with
5-pin plug M12x1, 2 switch outputs
PNP and 4 ... 20 mA analogue

Type	B5	B6	B7	D5	L4	L5	L6
MS4-FRM-...-AD5	32.3	13.5	35.2	M8	99	78	70
MS4-FRM-...-AD6				M12			
MS6-FRM-...-AD5	32.3	13.5	35.2	M8	94	78	70
MS6-FRM-...-AD6				M12			

Branching modules MS4/MS6-FRM, MS series

Technical data

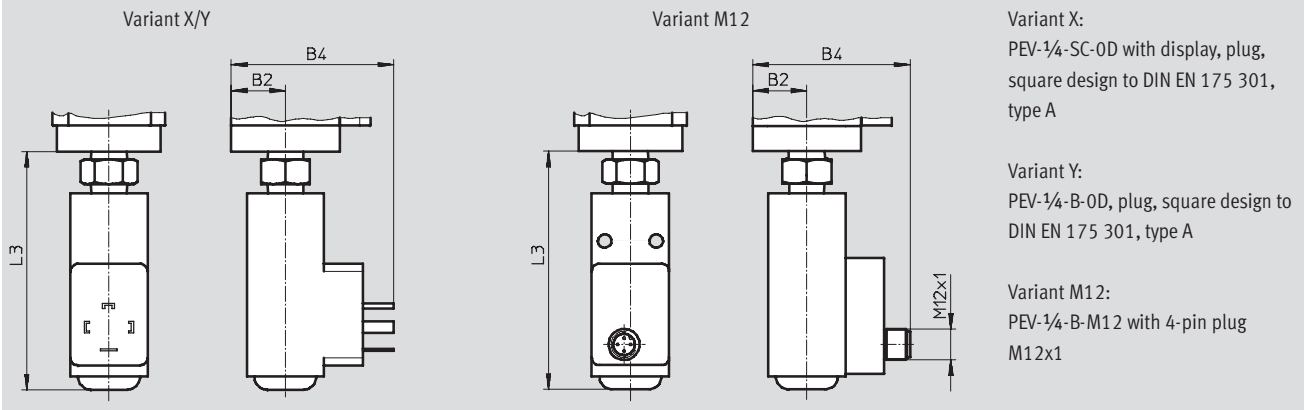
FESTO

Dimensions – Pressure switch

Download CAD data → www.festo.com/en/engineering






Pressure switch with adjustable pressure switching point X/Y/M12

Technical data PEV → Volume 4



Type	B2	B4	L3
MS4-FRM-...-X/Y	21	63	92.3
MS4-FRM-...-M12	21	61	92.3
MS6-FRM-...-X/Y	31	73	99.5
MS6-FRM-...-M12	31	71	99.5

Ordering data

Size	Connection	Part No.	Type
Standard			
MS4	G1/8	529 559	MS4-FRM-1/8-1 ¹⁾
	G1/4	529 555	MS4-FRM-1/4-1 ¹⁾
MS6	G1/4	529 857	MS6-FRM-1/4-1 ¹⁾
	G3/8	529 861	MS6-FRM-3/8-1 ¹⁾
	G1/2	529 853	MS6-FRM-1/2-1 ¹⁾
With integrated non-return function			
MS4	G1/8	536 965	MS4-FRM-1/8-1 ¹⁾  New
	G1/4	536 966	MS4-FRM-1/4-1 ¹⁾  New
MS6	G1/4	536 967	MS6-FRM-1/4-1 ¹⁾  New
	G3/8	536 968	MS6-FRM-3/8-1 ¹⁾  New
	G1/2	536 969	MS6-FRM-1/2-1 ¹⁾  New
With pressure switch PEV-1/4-B-0D (variant Y)			
MS4	G1/8	529 560	MS4-FRM-1/8-Y ¹⁾
	G1/4	529 556	MS4-FRM-1/4-Y ¹⁾
MS6	G1/4	529 858	MS6-FRM-1/4-Y ¹⁾
	G3/8	529 862	MS6-FRM-3/8-Y ¹⁾
	G1/2	529 854	MS6-FRM-1/2-Y ¹⁾

1) Free of copper and PTFE

Branching modules MS4/MS6-FRM, MS series

Ordering data – Modular products

FESTO

M Mandatory data →				
Module No.	Series	Size	Function	Connection sizes
527 703 527 676	MS	4 6	FRM	1/8, 1/4, 3/8 > 1/2, AGA, AGB, AGC, AGD, AGE
Order example				
527 676	MS	6	- FRM	- 3/8

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527 703	527 676			
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Branching module			-FRM	-FRM
	Connection sizes	Thread G1/8	-		-1/8	
		Thread G1/4	Thread G1/4		-1/4	
		-	Thread G3/8		-3/8	
		-	Thread G1/2		-1/2	
		Connecting plate G1/8	-		-AGA	
		Connecting plate G1/4	Connecting plate G1/4		-AGB	
		Connecting plate G3/8	Connecting plate G3/8		-AGC	
		-	Connecting plate G1/2		-AGD	
	-	Connecting plate G3/4		-AGE		

Transfer order code

	MS		-	FRM		-	
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Branching modules MS4/MS6-FRM, MS series

Ordering data – Modular products

Options					
Additional function	Pressure gauge alternatives	Alternative pressure gauge scale	Pressure switch	Type of mounting	Alternative flow direction
I	AG, A8, A4, RG, AD1, AD2, AD3, AD4, AD5, AD6	PSI MPA	X Y M12	WP WPM WB WBM	Z
-	- AG	- PSI	- M12	- WB	- Z

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
0	Additional function	With integrated non-return function		1	-I		
	Pressure gauge alternatives	MS pressure gauge, bar (with adapter)	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 display, plug M8, 1 switch output PNP, 3-pin			2	-AD1	
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			2	-AD2	
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			2	-AD3	
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			2	-AD4	
		Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin			2	-AD5	
		Pressure sensor with display, plug M12, 2 switch outputs PNP, 5-pin, analogue output 4 ... 20 mA			2	-AD6	
	Alternative pressure gauge scale	psi		3	-PSI		
		MPa		3	-MPA		
	Pressure switch	Pressure switch PEV with display, socket, EN 175301, type A, cube		4	-X		
		Pressure switch PEV without display, socket, EN 175301, type A, cube		4	-Y		
		Pressure switch PEV without display, socket, round, M12, 4-pin		4	-M12		
	Type of mounting	Mounting bracket		5	-WP		
		Mounting bracket (for retro-fitting M-series)		5	-WPM		
		Mounting bracket			-WB		
		Mounting bracket	-		-WBM		
	Alternative flow direction	Flow direction from right to left			-Z		

- 1 I Not with pressure gauge alternatives AD5 or AD6
 2 AD1 ... AD6 Measuring range max. 10 bar
 3 PSI, MPA Only with pressure gauge alternatives AG or RG

- 4 X, Y, M12 Max. permissible input pressure P1 = 12 bar.
 Not with pressure gauge alternatives AD5 or AD6
 5 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE

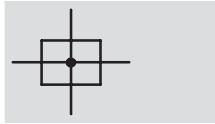
Transfer order code




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

Distributor blocks MS4/MS6-FRM-FRZ, MS series

Technical data

Function



-  - Flow rate
2,900 ... 14,600 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0 ... 20 bar



- - Note

The distributor block MS4/6-FRM-FRZ has a half grid dimension width.

- Pneumatic manifold with 4 connections
- Outlet top and bottom
- Can be used as an intermediate distributor for varying air qualities
- Can be used as an intermediate distributor between two pressure regulators with large rotary knob with pressure gauge on size MS4

General technical data

Size	MS4	MS6
Pneumatic connection 1, 2, 3, 4	G $\frac{1}{4}$	G $\frac{1}{2}$
Design	Branching module	
Type of mounting	Via accessories	
	In-line installation	
Assembly position	Any	

-  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q_{nN^1} [l/min]

Size	MS4	MS6
Pneumatic connection	G $\frac{1}{4}$	G $\frac{1}{2}$
In main flow direction 1 \rightarrow 2	4,050	14,600
Outlet at top	3,250	10,400
Outlet at bottom	2,900	9,850

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

Operating and environmental conditions

Size	MS4	MS6
Operating pressure [bar]	0 ... 14	0 ... 20
Operating medium	Compressed air	
Ambient temperature [°C]	-10 ... +60	
Temperature of medium [°C]	-10 ... +60	
Storage temperature [°C]	-10 ... +60	
Corrosion resistance class CRC ¹⁾	2	

1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weight [g]

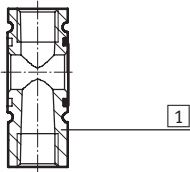
Size	MS4	MS6
Distributor block	60	163

Distributor blocks MS4/MS6-FRM-FRZ, MS series

Technical data

Materials

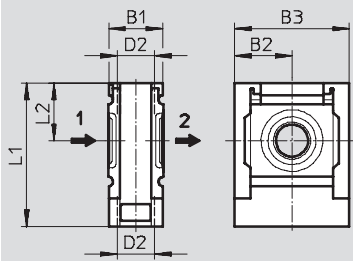
Sectional view



Distributor block		
1	Housing	Die-cast aluminium
Note on materials		Free of copper and PTFE

Dimensions

Download CAD data → www.festo.com/en/engineering



→ Flow direction

Type	B1	B2	B3	D2	L1	L2
MS4-FRM-FRZ	20	21	42	G $\frac{1}{4}$	52.5	21
MS6-FRM-FRZ	31	31	62	G $\frac{1}{2}$	76.5	31

• † - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data

Size	Connection	Part No.	Type
MS4	G $\frac{1}{4}$	549 336	MS4-FRM-FRZ¹⁾
MS6	G $\frac{1}{2}$	549 337	MS6-FRM-FRZ¹⁾

1) Free of copper and PTFE

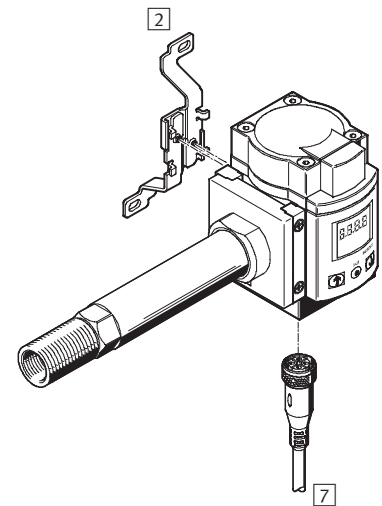
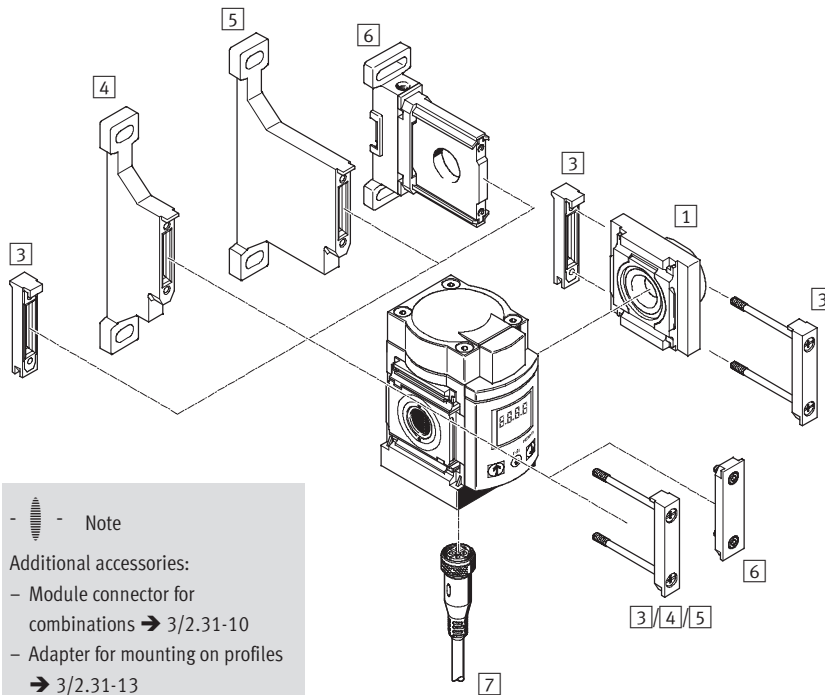
Flow sensors MS6-SFE, MS series


Peripherals overview



For service unit combinations
with laminar flow cartridge

Individual device
with connecting plates and stabilizing attachment



-  - Note
Additional accessories:
- Module connector for combinations → 3/2.31-10
- Adapter for mounting on profiles → 3/2.31-13

Mounting attachments and accessories			
	In service unit combinations, MS series	Individual mounting	→ Page
1	Connecting plate MS6-AG...	■ included in scope of delivery	3/2.31-2
2	Mounting bracket MS6-WB	■ included in scope of delivery	3/2.31-4
3	Module connector MS6-MV	-	3/2.31-9
4	Mounting bracket MS6-WP	-	3/2.31-7
5	Mounting bracket MS6-WPB	-	3/2.31-7
6	Mounting bracket MS6-WPM	-	3/2.31-8
7	Plug socket with cable SIM-M12-5GD...	■	3/2.31-24

Flow sensors MS6-SFE, MS series

Type codes

MS 6 - SFE - F5 - - P2 I - M12

Series

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

Size

6	Grid dimension 62 mm
---	----------------------

Service function

SFE	Flow sensor
-----	-------------

Flow measuring range [l/min]

F5	200 ... 5 000
----	---------------

Type of mounting/Pneumatic connection

	Inline installation in service unit combination series MS/ depends on connecting plate selected → Accessories
AGD	With accessories/connecting plate with internal G $\frac{1}{2}$ thread and stabilizing attachment with internal G $\frac{1}{2}$ thread or outer G $\frac{3}{4}$ thread

Switch output

P2	2x PNP
N2	2x NPN

Analogue output

U	0 ... 10 V
I	4 ... 20 mA

Electrical connection

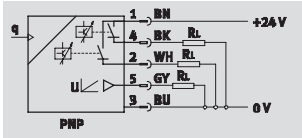
M12	Plug M12x1, 5-pin
-----	-------------------

Flow sensors MS6-SFE, MS series

Technical data

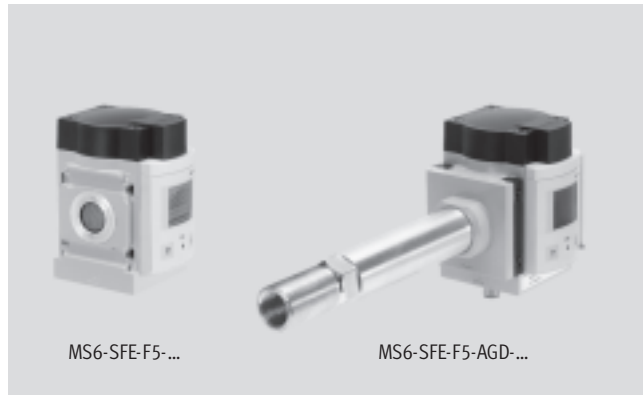


Function¹⁾



1) For example with 2 switch outputs PNP and 0 ... 10 V analogue

- - Flow rate
200 ... 5,000 l/min
- - Temperature range
0 ... +50 °C
- - Operating pressure
0 ... 16 bar



- Switch output
2x PNP or 2x NPN
- Analogue output
0 ... 10 V or 4 ... 20 mA
- Suitable for flow and consumption measurement
- Switching points for measurement are freely programmable
- Freely selectable pulse output for consumption measurement

- Note
To comply with the specified accuracies, the MS6-SFE-F5-AGD-... must be supplied via a connection inside diameter of at least 10 mm and the MS6-SFE-F5-... must be supplied via a pneumatic connection of at least G $\frac{1}{2}$.

- Note
After a filter regulator MS6-LFR or pressure regulator MS6-LR, a branching module MS6-FRM must be fitted in front of a flow sensor MS6-SFE-F5-... in order that the specified accuracies can be maintained.

General technical data		
	In service unit combinations, MS series	Individual device
Flow measuring range [l/min]	200 ... 5,000 ¹⁾	
Pneumatic connection 1	min. G $\frac{1}{2}$	Female thread G $\frac{1}{2}$ Male thread G $\frac{3}{4}$
Pneumatic connection 2	G $\frac{1}{2}$ ²⁾ G $\frac{3}{4}$ ²⁾	Female thread G $\frac{1}{2}$
Measuring principle	Thermal	
Method of measurement	Heat Loss	
Measured variable	Flow rate	
	Consumption	
Direction of flow	Unidirectional P1 > P2	
Type of display	Illuminated LCD (optimised display)	
Displayable unit(s)	l, m ³ , l/min	
Reproducibility of switching point	$\pm(0.8\% \text{ o.m.v.} + 0.2\% \text{ FS})$ ³⁾	
Reproducibility of analogue value	$\pm(0.8\% \text{ o.m.v.} + 0.2\% \text{ FS})$ ³⁾	
Accuracy under rated conditions (6 bar, 23 °C, horizontal mounting position)	$\pm(3\% \text{ o.m.v.} + 0.3\% \text{ FS})$ ³⁾⁴⁾	
Type of mounting	Inline installation	With accessories
Assembly position	Horizontal $\pm 5^\circ$	
Product weight [g]	600	1,100

1) Restricted at operating pressure < 5 bar, diagram \rightarrow 3 / 2.19-3
 2) Depends on connecting plate selected, must be ordered separately as accessory \rightarrow 3/2.31-2
 3) % o.m.v. = % of measured value
 % FS = % of measuring range's final value (full scale)
 4) Reduced accuracy with variant Z: $\pm(5\% \text{ o.m.v.} + 0,3\% \text{ FS})$. Variant Z (flow direction from right to left), to be ordered via configurator software \rightarrow www.festo.com/en/engineering
 - ∇ - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Flow sensors MS6-SFE, MS series

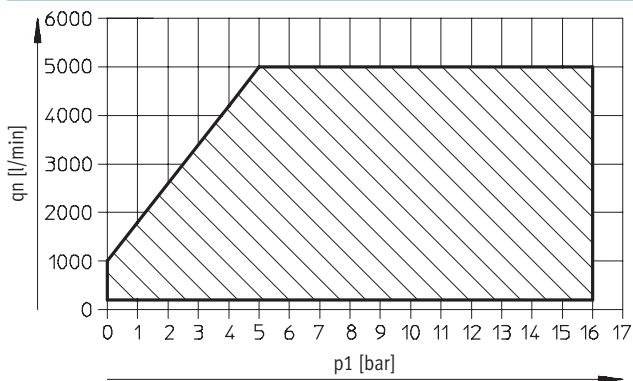
Technical data

Electrical data					
Type		MS6-SFE...-P2U	MS6-SFE...-P2I	MS6-SFE...-N2U	MS6-SFE...-N2I
Switch output		2x PNP	2x PNP	2x NPN	2x NPN
Analogue output	[V]	0 ... 10	–	0 ... 10	–
	[mA]	–	4 ... 20	–	4 ... 20
Switching element function		NC contact			
		NO contact			
Switching function		Window comparator			
		Threshold value with variable hysteresis			
Operating voltage	[V DC]	15 ... 30			
Load resistance	[Ω]	≥ 10,000	≤ 500	≥ 10,000	≤ 500
Max. output current	[mA]	≤ 100			
Electrical connection		Straight plug, M12x1, 5-pin			
Pin allocation in accordance with standards		EN 60947-5-2			
Protection against short circuit		Yes			
Protection class to EN 60 529		IP65			
CE symbol		89/336/EEC (EMC)			

Operating and environmental conditions	
Operating pressure	[bar] 0 ... 16
Operating medium	Compressed air, air quality class 5.4.3 to DIN ISO 8573-1
Ambient temperature	[°C] 0 ... 50
Temperature of medium	[°C] 0 ... 50
Corrosion resistance class CRC ¹⁾	2

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Flow measuring range q_n as a function of operating pressure p_1



Flow sensors MS6-SFE, MS series

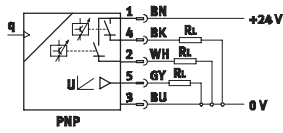
Technical data



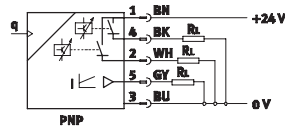
Electrical outputs¹⁾

2 switch outputs PNP

0 ... 10 V analogue

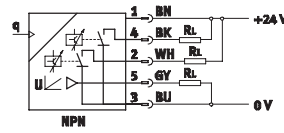


4 ... 20 mA analogue

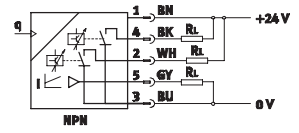


2 switch outputs NPN

0 ... 10 V analogue

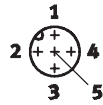


4 ... 20 mA analogue



Terminal allocation

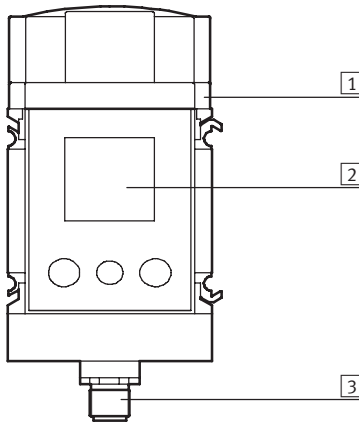
- 1 = +24 V
- 2 = Switch output B
- 3 = 0 V
- 4 = Switch output A
- 5 = Analogue output C



1) Core colours indicated apply when using plug sockets with cable SIM-M12-5GD → 3/2.31-24

Materials

Sectional view



Flow sensor		
1	Body	Die-cast aluminium, polyamide, reinforced
2	Inspection glass	Polycarbonate
3	Plug contacts	Gold-plated brass
-	Inspection glass	Polycarbonate

Flow sensors MS6-SFE, MS series

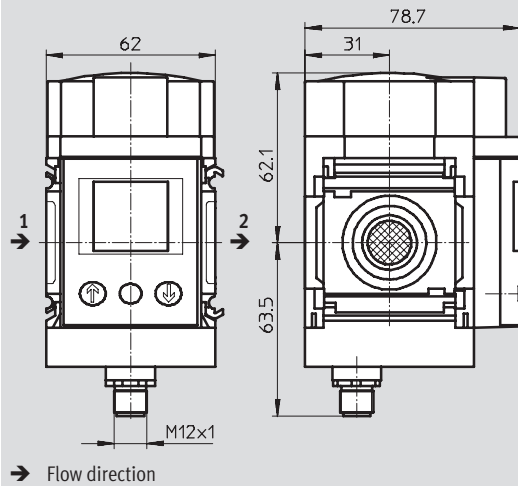
Technical data



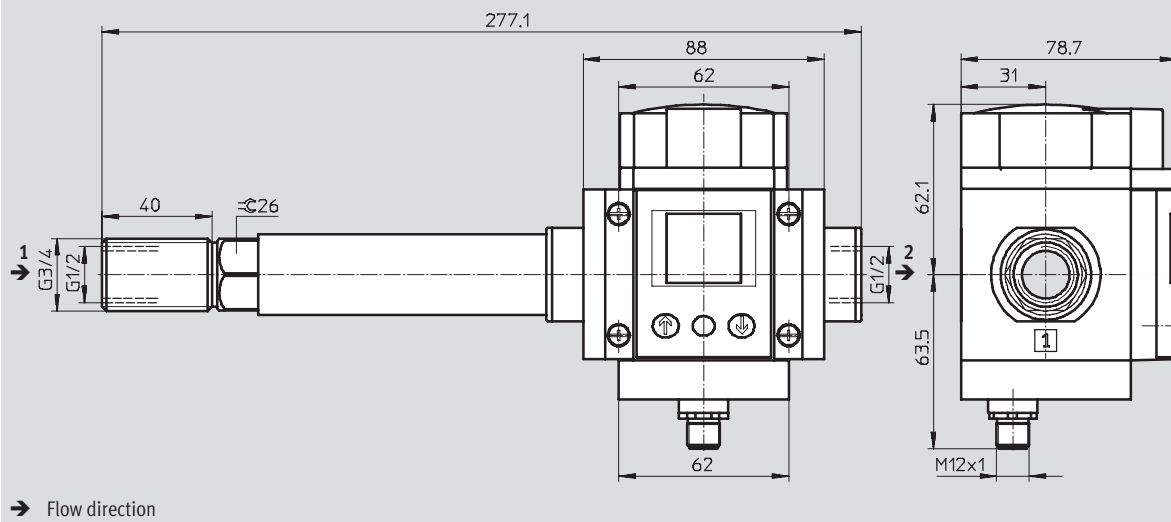
Dimensions

Download CAD data → www.festo.com/en/engineering

In service unit combinations, MS series



Individual device



Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data

Size	Switch output		Analogue output		In service unit combinations, MS series		Individual mounting	
	2x PNP	2x NPN	4 ... 20 mA	0 ... 10 V	Part No.	Type	Part No.	Type
MS6	■	-	■	-	538 421	MS6-SFE-F5-P2I-M12	538 417	MS6-SFE-F5-AGD-P2I-M12
	■	-	-	■	538 422	MS6-SFE-F5-P2U-M12	538 418	MS6-SFE-F5-AGD-P2U-M12
	-	■	■	-	538 423	MS6-SFE-F5-N2I-M12	538 419	MS6-SFE-F5-AGD-N2I-M12
	-	■	-	■	538 424	MS6-SFE-F5-N2U-M12	538 420	MS6-SFE-F5-AGD-N2U-M12

MS12 series service units

FESTO

Wide range of configuration options
→ www.festo.com/en/engineering

MS12 series service units

2.20

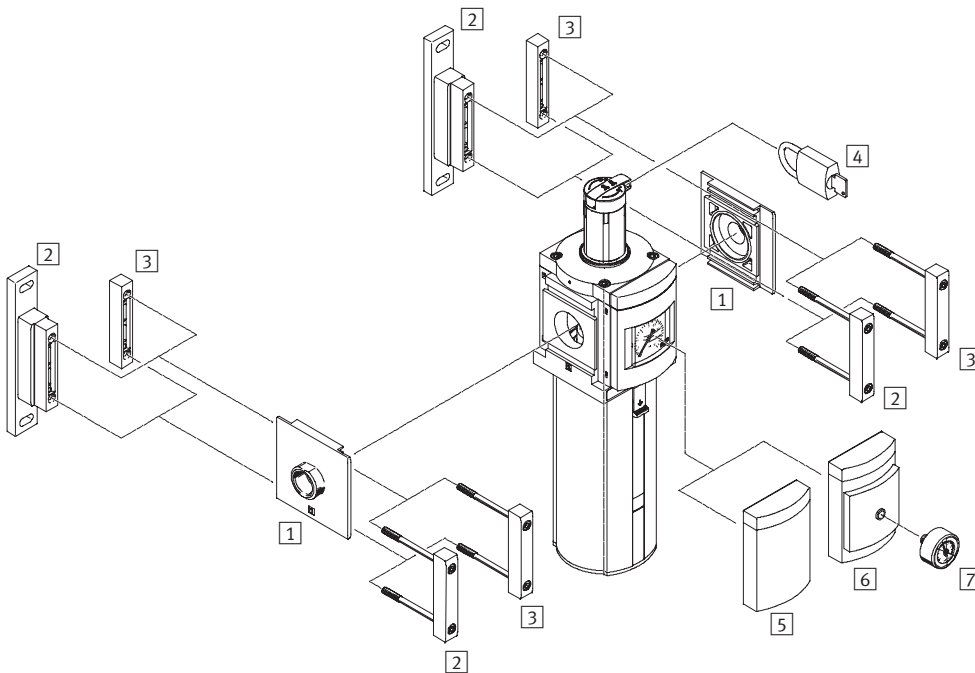


- Grid dimension 124 mm
- High flow rates
- Modern design



Filter regulators MS12-LFR, MS series

Peripherals overview



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-2
2	Mounting bracket MS12-WP	3/2.31-9
3	Module connector MS12-MV	3/2.31-9
4	Padlock LRVS-D	3/2.31-25
5	Cover plate VS	3/2.22-8
6	Adapter for EN pressure gauge 1/4 A4	3/2.22-8
7	Pressure gauge MA	3/2.31-24

Filter regulators MS12-LFR, MS series

Type codes

		MS	12	-	LFR	-	G	-	D7	-	C	U	V	-	LD	-	AS	
Series																		
MS	Standard service unit																	
Size																		
12	Grid dimension 124 mm																	
Service function																		
LFR	Filter regulator																	
Connection size																		
G	Module without connecting thread, without connecting plate Connecting plates → Accessories																	
Pressure regulation range																		
D7	Pressure regulation range 0.5 ... 12 bar																	
Grade of filtration																		
C	5 µm																	
E	40 µm																	
Bowl guard																		
U	Metal bowl																	
Condensate drain																		
V	Fully automatic																	
Rotary knob																		
LD	Long rotary knob																	
Security																		
AS	Lockable rotary knob																	

Further variants can be ordered using the modular system

Filter regulators LFR → 3/2.22-8

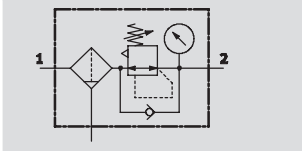
- Connecting plates
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Security
- Type of mounting
- Alternative flow direction

Filter regulators MS12-LFR, MS series

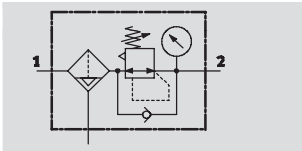
Technical data


FESTO

Function
Condensate drain
manual rotary
with pressure gauge




Condensate drain
fully automatic
with pressure gauge



-  - Flow rate
11,000 ... 17,000 l/min

-  - Temperature range
-10 ... +60 °C

-  - Input pressure
0.8 ... 20 bar

-  - [www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)

Wearing parts kits
→ 3/2.22-7


With this device, the filter and pressure regulator are combined into a single unit. The sintered filter with water separator removes contamination, pipe sinter, rust and condensate from the compressed air.



- Good control characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- High flow rates
- Pilot actuated diaphragm regulator without intrinsic air consumption
- Three pressure regulation ranges: 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Pressure gauge connection for different fitting options
- Available with manual, fully automatic or fully automatic, electrically actuated condensate drain
- Setting values are secured by locking the rotary knob
- Rotary knob can be locked using accessories
- Choice of filter cartridges: 5 µm or 40 µm
- Filter cartridges → 3/2.31-19

General technical data

Pneumatic connection 1, 2 ¹⁾		G1	G1¼	G1½	G2
Design		Filter regulator with/without pressure gauge			
		Sintered filter with centrifugal separation			
		Pilot actuated diaphragm regulator			
Regulating function		With primary pressure compensation			
		With secondary venting			
		Output pressure constant			
Type of mounting		Via accessories			
		In-line installation			
Assembly position		Vertical ±5°			
Grade of filtration [µm]		5 (air purity class at the output 3.7.- to DIN ISO 8573-1)			
		40 (air purity class at the output 5.7.- to DIN ISO 8573-1)			
Bowl guard		Metal bowl			
Condensate drain		Manual rotary			
		Fully automatic			
		Fully automatic, electrical actuated			
Actuator lock		Rotary knob with detent			
		Rotary knob with integrated lock			
		Lockable with accessories			
Pressure regulation range	D6 [bar]	0.3 ... 7			
	D7 [bar]	0.5 ... 12			
	D8 [bar]	0.5 ... 16			
Max. hysteresis [bar]		0.4			
Pressure indicator		With pressure gauge			
Max. condensate volume [cm ³]		400			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 -  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Filter regulators MS12-LFR, MS series

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
Pneumatic connection		G1	G1¼	G1½	G2
Grade of filtration	5 µm	11,000	11,500	12,000	14,000
	40 µm	12,000	12,500	13,000	17,000

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 0.5$ bar

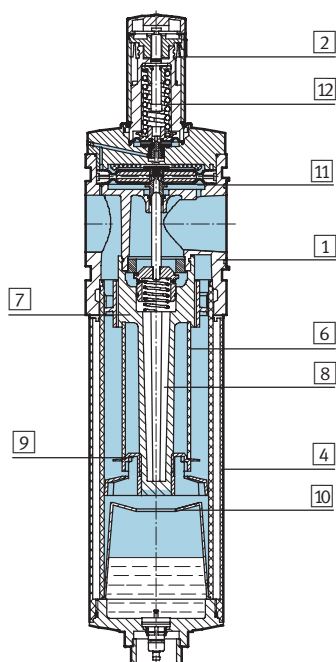
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical actuated E1 ... E4
Input pressure [bar]	0.8 ... 20	2 ... 12	0.8 ... 16
Operating medium	Compressed air, air quality class 5.7.- to DIN ISO 8573-1		
Ambient temperature [°C]	-10 ... +60	+5 ... +60	+1 ... +60
Temperature of medium [°C]	-10 ... +60	+5 ... +60	+1 ... +60
Storage temperature [°C]	-10 ... +60	-10 ... +60	+1 ... +60
Corrosion resistance	CRC ¹⁾	2	

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]		
Rotary knob	Without integrated lock E11	With integrated lock E11
Filter regulator with metal bowl U	7,000	7,300
Filter regulator with metal bowl U and fully automatic, electrically actuated condensate drain E1 ... E4	7,700	8,000

Materials

Sectional view



Filter regulator		
1	Body	Die-cast aluminium
2	Rotary knob	Polyamide
	Rotary knob with integrated lock E11	Aluminium
4	Metal bowl	Wrought aluminium alloy
6	Filter element	Sintered bronze
7	Spin disc	Polyacetate
8	Filter holder	Polyacetate
9	Separating plate	Polyacetate
10	Stabilising disc	Polyacetate
11	Diaphragm	Nitrile rubber
12	Spring	Steel
-	Seals	Nitrile rubber

Filter regulators MS12-LFR, MS series

Technical data

FESTO

Standard flow rate q_n as a function of output pressure p_2

Grade of filtration 40 μm

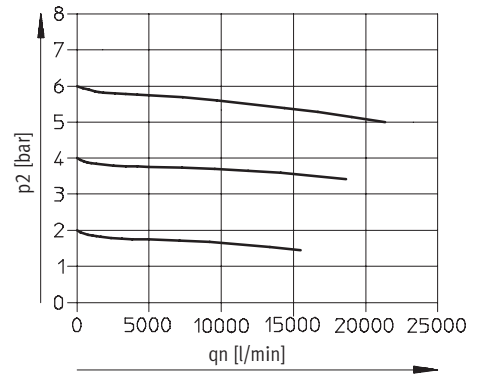
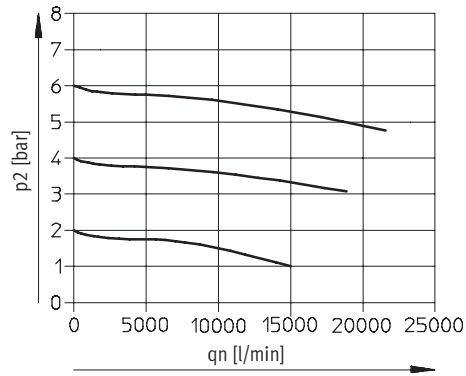
With connecting plate MS12-AGF

Pneumatic connection G1

With connecting plate MS12-AGG

Pneumatic connection G1 $\frac{1}{4}$

Primary pressure $p_1 = 10$ bar



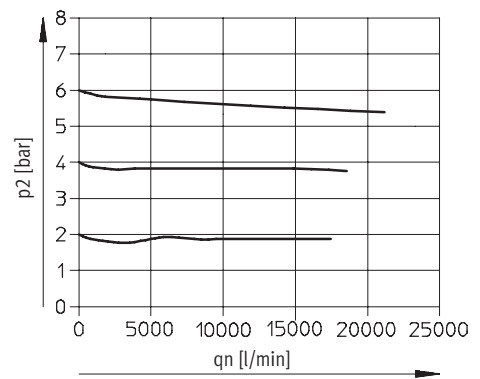
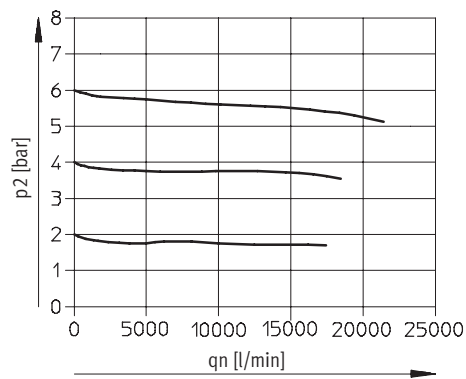
With connecting plate MS12-AGH

Pneumatic connection G1 $\frac{1}{2}$

With connecting plate MS12-AGI

Pneumatic connection G2

Primary pressure $p_1 = 10$ bar



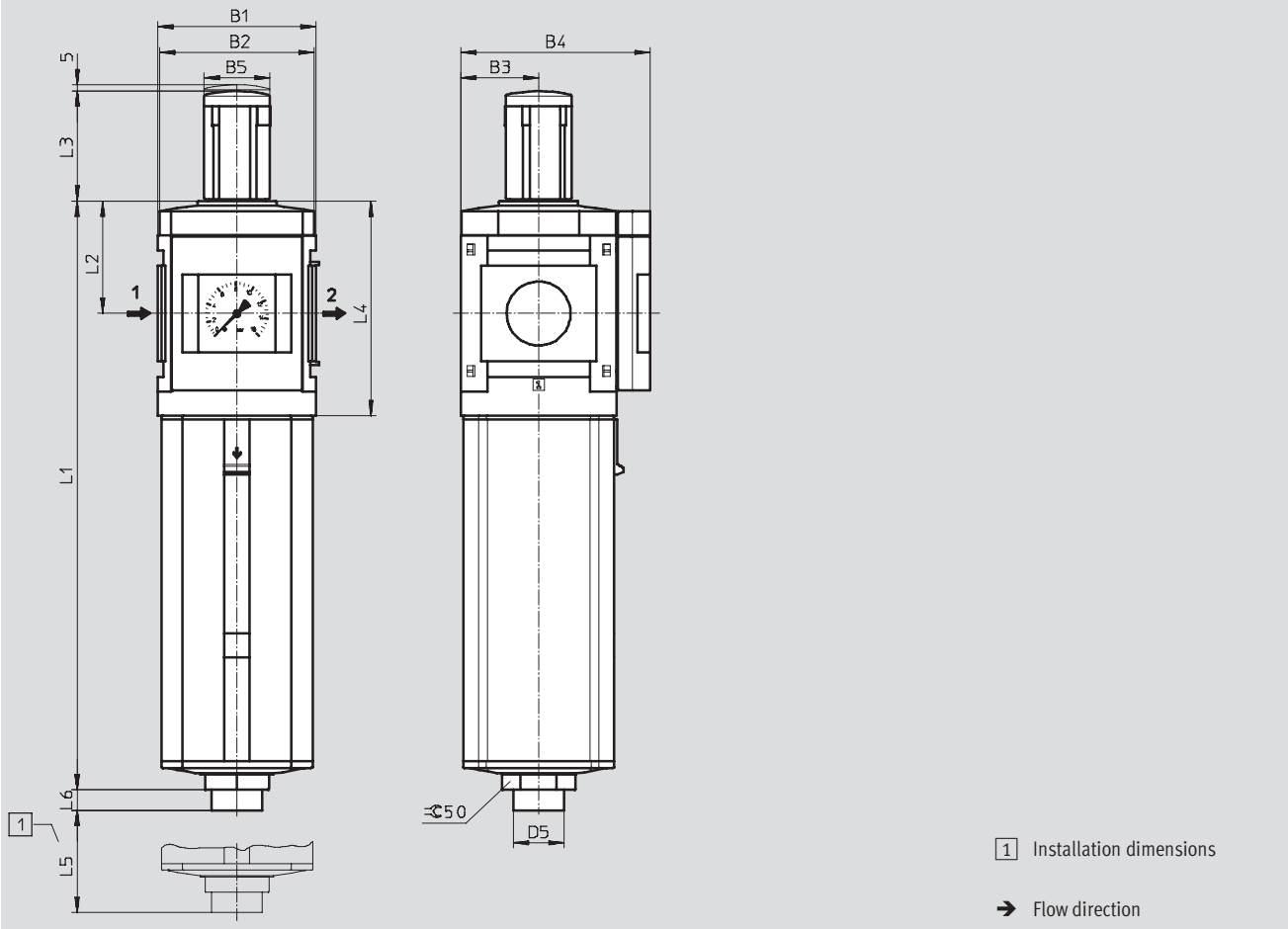
Filter regulators MS12-LFR, MS series

Technical data

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar], long rotary knob



Type	B1	B2	B3	B4	B5	D5 ∅	L1	L2	L3	L4	L5	L6
MS12-LFR	124	122	61	148	51	40	460	88	86	168	250	16

New
Variant E11

Filter regulators MS12-LFR, MS series

Technical data

FESTO

MS12 series service units
Filter regulators

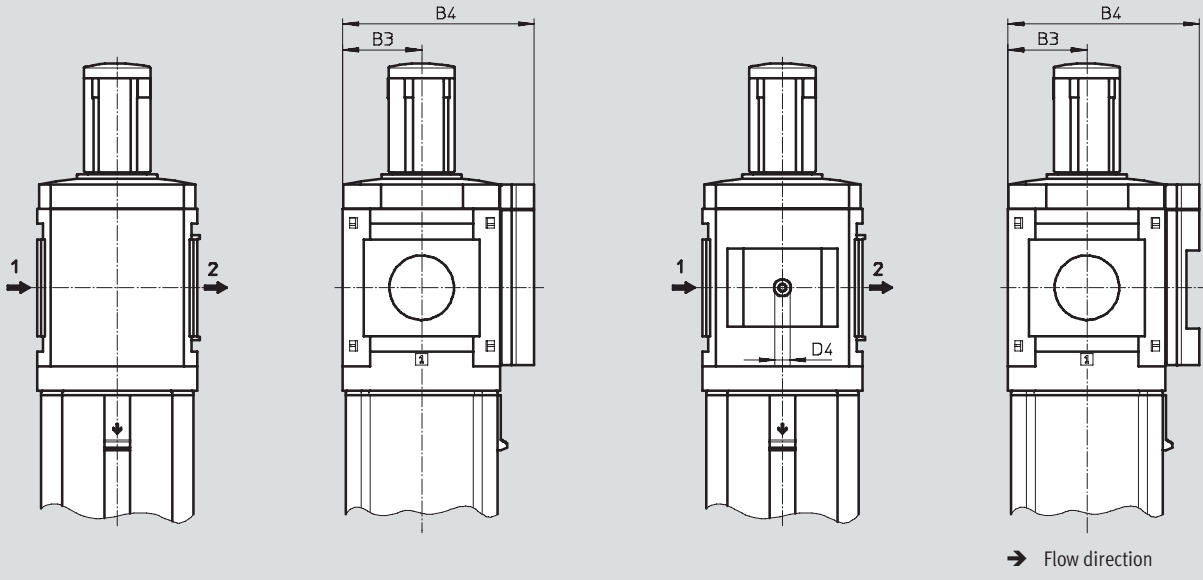
2.22

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com/en/engineering

Cover plate VS

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



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

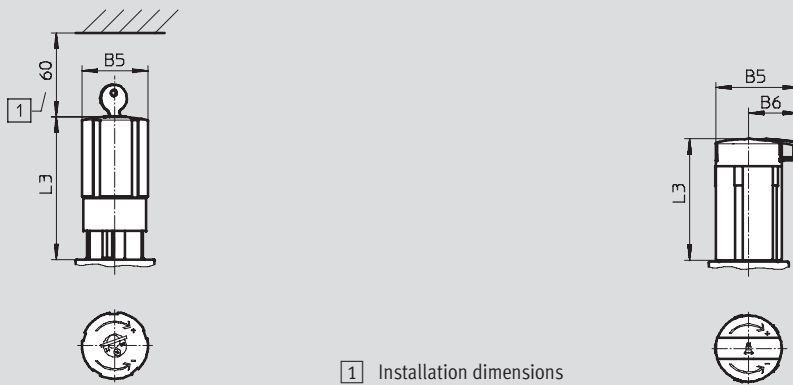
– | – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Security

Download CAD data → www.festo.com/en/engineering

With integrated lock E11

Long, lockable LD-AS



1 Installation dimensions

Type	B5	B6	L3
MS12-LFR-...-E11	51.8	–	112
MS12-LFR-...-LD-AS	64.4	39	95.5

Filter regulators MS12-LFR, MS series

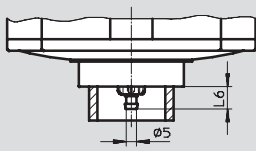
Technical data

FESTO

Dimensions – Condensate drain

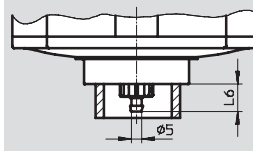
Download CAD data → www.festo.com/en/engineering

Manual rotary M



Barbed fitting for plastic tubing
PCN-4

Fully automatic V



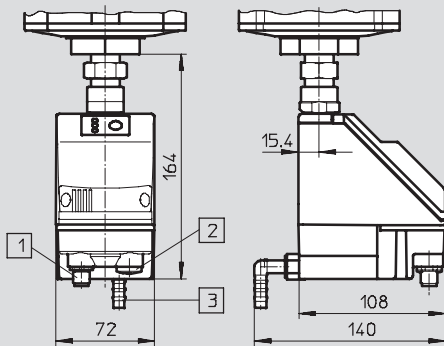
Barbed fitting for plastic tubing
PCN-4

Type	L6
MS12-LFR-...-M	11

Type	L6
MS12-LFR-...-V	13

Fully automatic, electrically actuated E1 ... E4

Technical data PWEA → 3 / 4.6-4



- 1 Variant E1
PWEA-AP-... with M12x1 plug,
5-pin for SIM-M12-5GD-...
- 2 Variant E2/E3/E4
PWEA-AC-... with cable conduit
fitting Pg9
- 3 Connection 360° rotatable for
plastic tubing PUN-H-12x2-...

Ordering data

Pressure regulation range 0.5 ... 12 bar, metal bowl, long rotary knob, can be locked using accessories

Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
MS12	fully automatic	G1 ... G2 ¹⁾	537 150	MS12-LFR-G-D7-CUV-LD-AS	537 149	MS12-LFR-G-D7-EUV-LD-AS

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2
 Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data – Wearing parts kits

Size	Part No.	Type
MS12	673 586	MS12-LR/LFR

New
Variant E11

Filter regulators MS12-LFR, MS series

Ordering data – Modular products



M Mandatory data →

Module No.	Series	Size	Function	Connection sizes	Pressure regulation range	Grade of filtration	Bowl
535 022	MS	12	LFR	AGF AGG AGH AGI G	D6 D7 D8	E C	U
Order example							
535 022	MS	12	- LFR	- AGF	- D6	- C	- U

Ordering table

Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M Module No.	535 022				
Series	Standard			MS	MS
Size	12			12	12
Function	Filter regulator			-LFR	-LFR
Connection sizes	Connecting plate G1			-AGF	
	Connecting plate G1¼			-AGG	
	Connecting plate G1½			-AGH	
	Connecting plate G2			-AGI	
	Module without connecting thread, without connecting plate			-G	
Pressure regulation range	0.3 ... 7 bar			-D6	
	0.5 ... 12 bar			-D7	
	0.5 ... 16 bar			-D8	
Grade of filtration	40 µm			-E	
	5 µm			-C	
↓ Bowl	Metal bowl			-U	-U

Transfer order code

535 022	MS	12	- LFR	-	-	-	- U
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MS12 series service units
Filter regulators

2.22

Filter regulators MS12-LFR, MS series

Ordering data – Modular products



→ M		O Options				
Condensate drain	Pressure gauge alternatives	Alternative pressure gauge scale	Rotary knob	Security	Type of mounting	Alternative flow direction
M V E1 E2 E3 E4	VS A4	PSI MPA	LD	AS E11	WP	Z
- E1	-	-	- LD	- AS	- WP	- Z

Ordering table						
Grid dimension	[mm]	124	Condi- tions	Code	Enter code	
↓ M	Condensate drain	Manual		-M		
		Fully automatic (P1 max. 12 bar)	[1]	-V		
		External fully automatic condensate drain, electrical, 24 V DC, M12		-E1		
		External fully automatic condensate drain, electrical, 110 V AC, terminal strip		-E2		
		External fully automatic condensate drain, electrical, 230 V AC, terminal strip		-E3		
		External fully automatic condensate drain, electrical, 24 V DC, terminal strip		-E4		
O	Pressure gauge alternatives	Cover plate		-VS		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4		
	Alternative pressure gauge scale	psi	[2]	-PSI		
		MPa	[2]	-MPA		
	Rotary knob	Long rotary knob	[3] [4]	-LD		
	Security	Lockable rotary knob		-AS		
		With integrated lock	[3]	-E11		
	Type of mounting	Mounting bracket	[5]	-WP		
	Alternative flow direction	Flow direction from right to left		-Z		

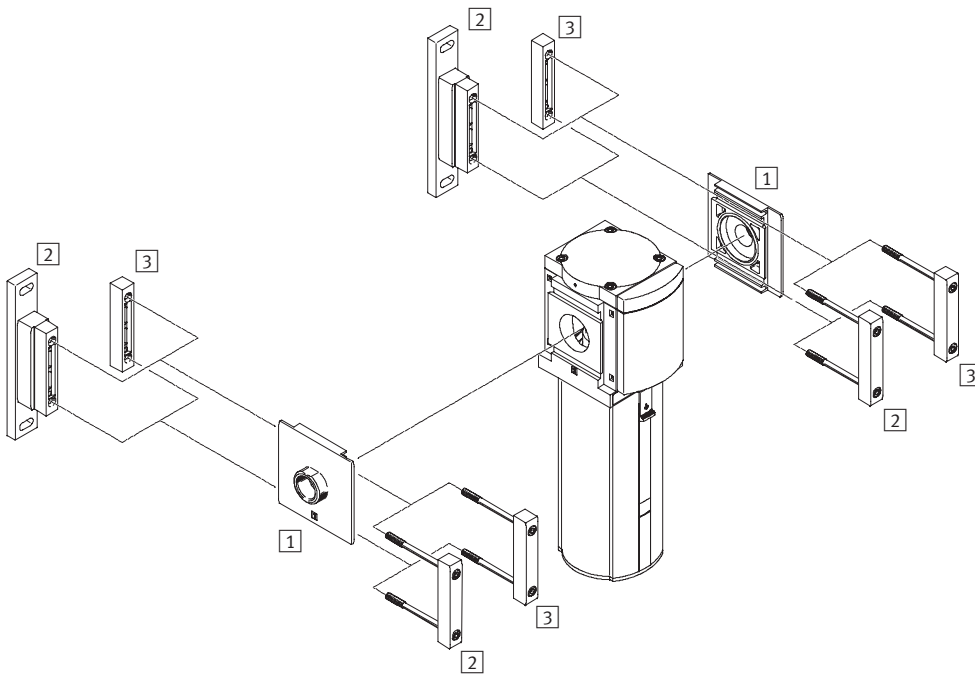
- [1] **V** Not with pressure regulation range D8
- [2] **PSI, MPA** Not with pressure gauge alternatives VS, A4
- [3] **LD, E11** Either rotary knob LD or security E11 must be selected
- [4] **LD** Not with security E11
- [5] **WP** Only with connecting plate AGF, AGG, AGH or AGI

Transfer order code

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

Filters MS12-LF/LFM/LFX, MS series

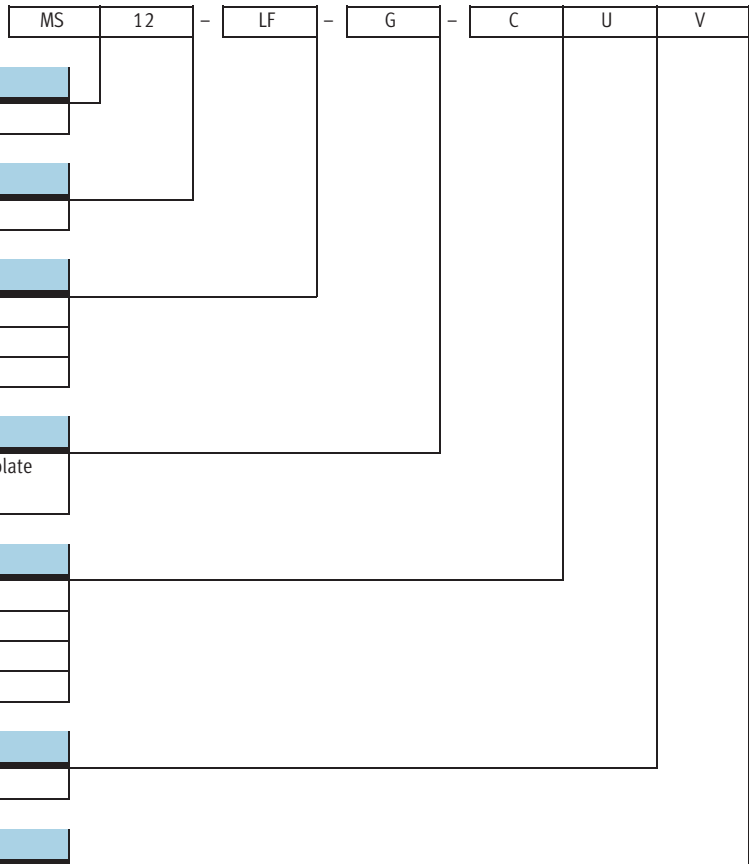
Peripherals overview



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-2
2	Mounting bracket MS12-WP	3/2.31-9
3	Module connector MS12-MV	3/2.31-9

Filters MS12-LF/LFM/LFX, MS series

Type codes



Further variants can be ordered using the modular system

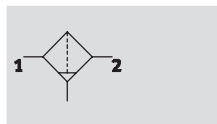
Filters LF → 3/2.23-6
 Fine and micro filters LFM → 3/2.23-13
 Active carbon filters LFX → 3/2.23-17

- Connecting plates
- Condensate drain (LF/LFM only)
- Filter change sensor (for LFM only)
- Type of mounting
- Alternative flow direction

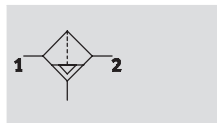
Filters MS12-LF, MS series


Technical data


Function
Condensate drain
manual rotary




fully automatic



-  - Flow rate
11,500 ... 16,000 l/min

-  - Temperature range
-10 ... +60 °C


-  - Input pressure
0.8 ... 20 bar



The sintered filter with centrifugal separation removes contamination, rust and condensate from the compressed air. The filter cartridges are replaceable.

- Good particle and condensate separation
- High flow rate with minimal pressure drop
- Available with manual, fully automatic or fully automatic, electrically actuated condensate drain
- Choice of filter cartridges: 5 µm or 40 µm
- Filter cartridges → 3/2.31-19

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Design	Sintered filter with centrifugal separation			
Type of mounting	Via accessories			
	In-line installation			
Assembly position	Vertical ±5°			
Grade of filtration [µm]	5 (air purity class at the output 3.7.- to DIN ISO 8573-1)			
	40 (air purity class at the output 5.7.- to DIN ISO 8573-1)			
Bowl guard	Metal bowl			
Condensate drain	Manual rotary			
	Fully automatic			
	Fully automatic, electrical actuated			
Max. condensate volume [cm ³]	400			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 -  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q _{nN} ¹⁾ [l/min]					
Pneumatic connection		G1	G1¼	G1½	G2
Grade of filtration	5 µm	11,500	12,500	13,500	14,000
	40 µm	12,500	13,000	14,000	16,000

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 Measured at p₁ = 6 bar and Δp = 0.5 bar

Filters MS12-LF, MS series

Technical data



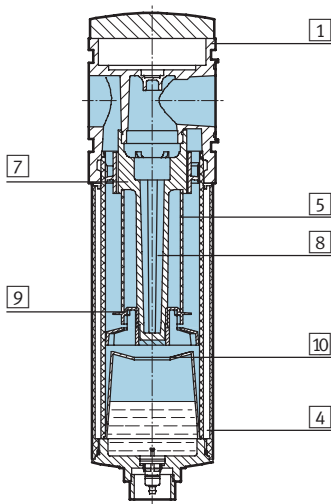
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical actuated E1 ... E4
Input pressure [bar]	0.8 ... 20	2 ... 12	0.8 ... 16
Operating medium	Compressed air, air quality class 5.7.- to DIN ISO 8573-1		
Ambient temperature [°C]	-10 ... +60	+5 ... +60	+1 ... +60
Temperature of medium [°C]	-10 ... +60	+5 ... +60	+1 ... +60
Storage temperature [°C]	-10 ... +60	-10 ... +60	+1 ... +60
Corrosion resistance CRC ¹⁾	2		

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]	
Filter with metal bowl U	6,500
Filter with metal bowl U and fully automatic, electrically actuated condensate drain E1 ... E4	7,200

Materials

Sectional view



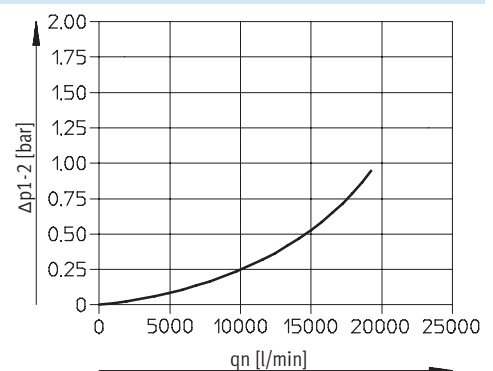
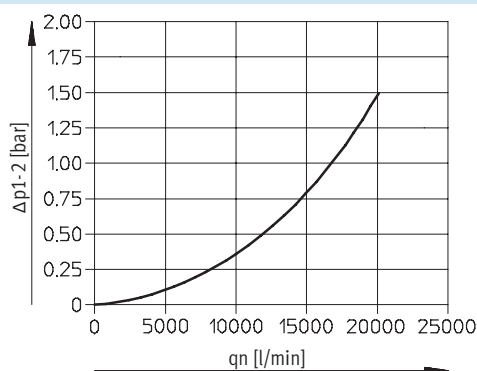
Filter		
1	Body	Die-cast aluminium
4	Metal bowl	Wrought aluminium alloy
5	Filter element	Sintered bronze
7	Spin disc	Polyacetate
8	Filter holder	Polyacetate
9	Separating plate	Polyacetate
10	Stabilising disc	Polyacetate
-	Seals	Nitrile rubber

Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

Grade of filtration 5 μm

With connecting plate MS12-AGF
Pneumatic connection G1

With connecting plate MS12-AGI
Pneumatic connection G2



Filters MS12-LF, MS series

Technical data



Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

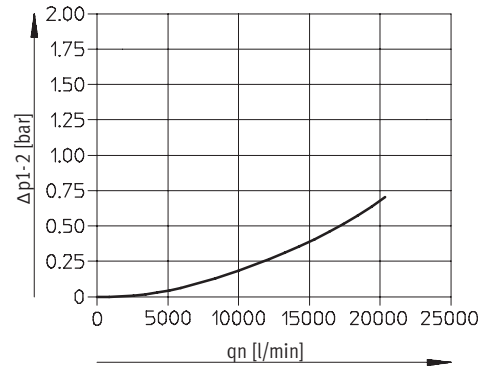
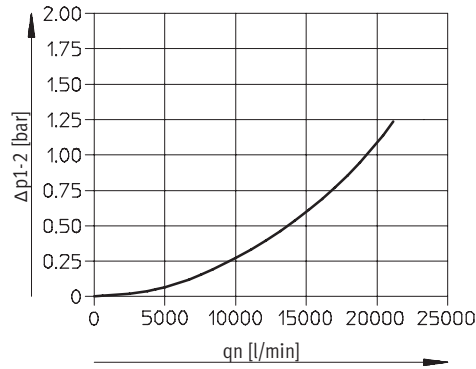
Grade of filtration 40 μm

With connecting plate MS12-AGF

Pneumatic connection G1

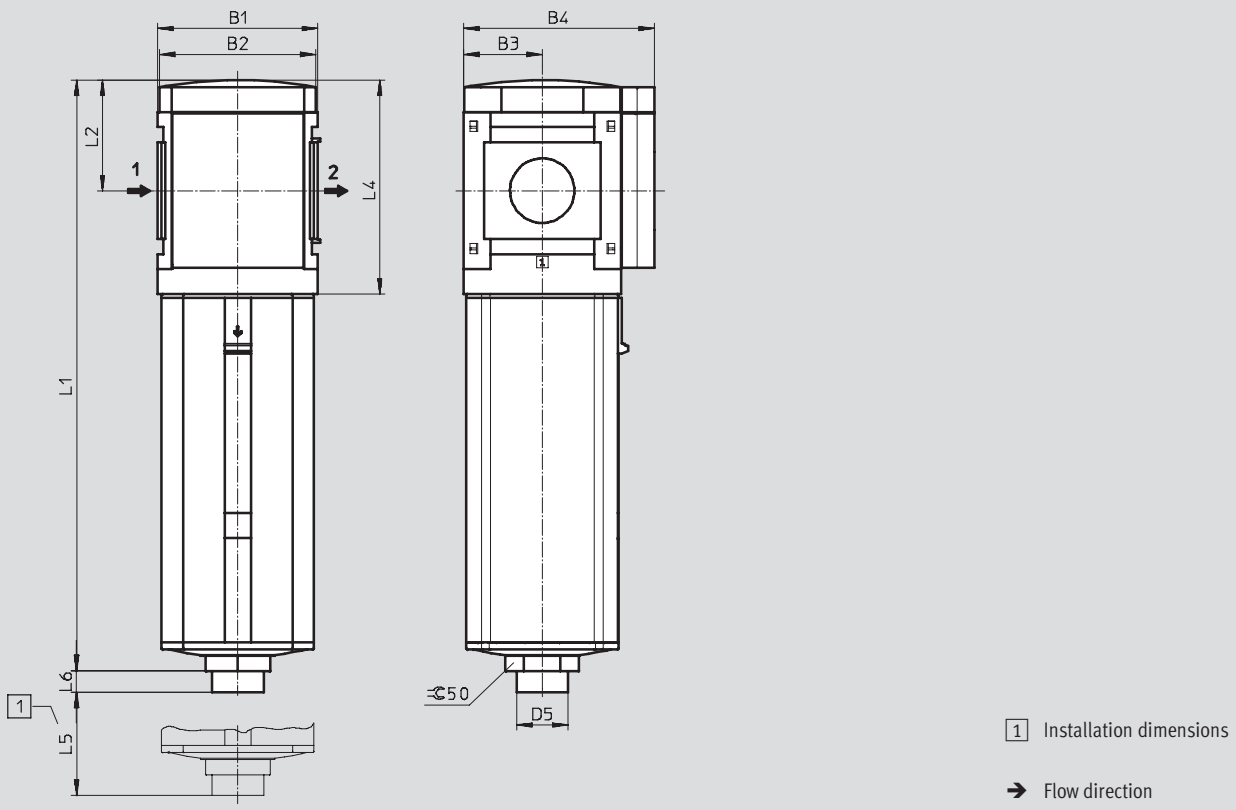
With connecting plate MS12-AGI

Pneumatic connection G2



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



Type	B1	B2	B3	B4	D5	L1	L2	L4	L5	L6
MS12-LF	124	122	61	148	40 ∅	458	86	166	250	16

Filters MS12-LF, MS series

Technical data



Dimensions – Condensate drain Download CAD data → www.festo.com/en/engineering

Manual rotary M

Barbed fitting for plastic tubing
PCN-4

Fully automatic V

Barbed fitting for plastic tubing
PCN-4

Type	L6
MS12-LF-...-M	11

Type	L6
MS12-LF-...-V	13

Fully automatic, electrically actuated E1 ... E4 Technical data PWEA → 3 / 4.6-4

- 1 Variant E1
PWEA-AP-... with M12x1 plug,
5-pin for SIM-M12-5GD-...
- 2 Variant E2/E3/E4
PWEA-AC-... with cable conduit
fitting Pg9
- 3 Connection 360° rotatable for
plastic tubing PUN-H-12x2-...

Ordering data						
Metal bowl						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
MS12	fully automatic	G1 ... G2 ¹⁾	537 152	MS12-LF-G-CUV	537 151	MS12-LF-G-EUV

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2
 - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

MS12 series service units
Filters

2.23

Filters MS12-LF, MS series

Ordering data – Modular products



MS12 series service units
Filters

2.23

Mandatory data							Options		
Module No.	Series	Size	Function	Connection size	Grade of filtration	Bowl	Condensate drain	Type of mounting	Alternative flow direction
535 023	MS	12	LF	AGF AGG AGH AGI G	E C	U	M V E1 E2 E3 E4	WP	Z
Order example									
535 023	MS	12	- LF	- G	- E	- U	- V	-	-

Ordering table		Grid dimension [mm]	124	Condi-tions	Code	Enter code
M	Module No.	535 023				
	Series	Standard			MS	MS
	Size	12			12	12
	Function	Filter			-LF	-LF
	Connection size	Connecting plate G1			-AGF	
		Connecting plate G1¼			-AGG	
		Connecting plate G1½			-AGH	
		Connecting plate G2			-AGI	
		Module without connecting thread, without connecting plate			-G	
	Grade of filtration	40 µm			-E	
		5 µm			-C	
	Bowl	Metal bowl			-U	-U
	Condensate drain	Manual			-M	
		Fully automatic (P1 max. 12 bar)			-V	
		External fully automatic condensate drain, electrical, 24 V DC, M12			-E1	
		External fully automatic condensate drain, electrical, 110 V AC, terminals			-E2	
		External fully automatic condensate drain, electrical, 230 V AC, terminals			-E3	
	External fully automatic condensate drain, electrical, 24 V DC, terminals			-E4		
O	Type of mounting	Mounting bracket		1	-WP	
	Alternative flow direction	Flow direction from right to left			-Z	

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

Transfer order code

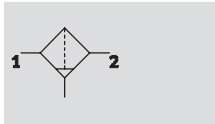
535 023	MS	12	- LF	-	-	- U	-	-	-
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Fine and micro filters MS12-LFM, MS series

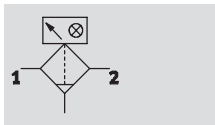
Technical data

Function

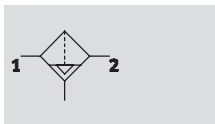
Condensate drain
manual rotary
without differential pressure indicator



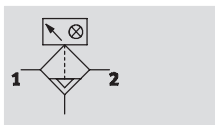
with differential pressure indicator






Condensate drain
fully automatic
without differential pressure indicator



with differential pressure indicator




-  - Flow rate
5,000 ... 7,600 l/min
-  - Temperature range
-10 ... +60 °C
-  - Input pressure
0.8 ... 20 bar



- High-performance filter for exceptionally clean compressed air
 - Air quality to DIN ISO 8573-1
 - Available with manual, fully automatic or fully automatic, electrically actuated condensate drain
 - Available with differential pressure indicator for optical indication of filter contamination
 - Choice of filter cartridges: 0.01 µm or 1 µm
 - Filter cartridges → 3/2.31-19
- LFM-A:
ISO class 1 for particles:
max. particle density 0.1 mg/m³
ISO class 2 for oil aerosols:
max. oil concentration 0.1 mg/m³
Filter efficiency 99.9999%
- LFM-B:
ISO class 2 for particles:
max. particle density 1 mg/m³
ISO class 3 for oil aerosols:
max. oil concentration 1 mg/m³
Filter efficiency 99.99%

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Design	Fibre filter			
Type of mounting	Via accessories			
	In-line installation			
Assembly position	Vertical ±5°			
Grade of filtration [µm]	0.01 (micro filter LFM-A, air purity class at the output 1.7.2 to DIN ISO 8573-1)			
	1 (fine filter LFM-B, air purity class at the output 2.7.3 to DIN ISO 8573-1)			
Bowl guard	Metal bowl			
Condensate drain	Manual rotary			
	Fully automatic			
	Fully automatic, electrical actuated			
Max. condensate volume [cm ³]	400			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 -  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Fine and micro filters MS12-LFM, MS series

Technical data



Standard nominal flow rate $q_{nN}^{1)}$ and standard flow rate $q_n^{1)}$ [l/min]				
Pneumatic connection	G1	G1¼	G1½	G2
Micro filter LFM-A				
$q_{nN} 1 \rightarrow 2$	5,000	6,000	6,500	7,000
$q_n \text{ min}$	700	700	700	700
$q_n \text{ max}$	23,000	23,000	23,000	23,000
Fine filter LFM-B				
$q_{nN} 1 \rightarrow 2$	5,200	6,200	7,500	7,600
$q_n \text{ min}$	950	950	950	950
$q_n \text{ max}$	23,000	23,000	23,000	23,000

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
Measured at $p_1 = 6 \text{ bar}$ and $\Delta p = 70 \text{ mbar}$.

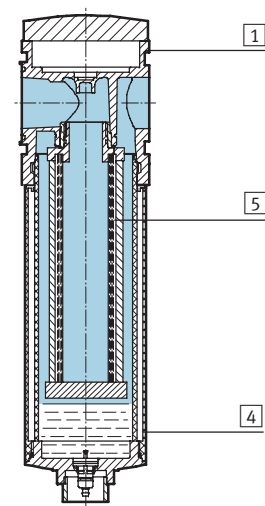
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical actuated E1 ... E4
Input pressure [bar]	0.8 ... 20	2 ... 12	0.8 ... 16
Operating medium micro filter LFM-A	Compressed air, filtered, unlubricated, grade of filtration 1 µm		
Operating medium fine filter LFM-B	Compressed air, filtered, unlubricated, grade of filtration 5 µm		
Ambient temperature [°C]	-10 ... +60	+5 ... +60	+1 ... +60
Temperature of medium [°C]	-10 ... +60	+5 ... +60	+1 ... +60
Storage temperature [°C]	-10 ... +60	-10 ... +60	+1 ... +60
Corrosion resistance CRC ¹⁾	2		

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]	
Fine and micro filter with metal bowl U	7,000
Fine and micro filter with metal bowl U and fully automatic, electrically actuated condensate drain E1 ... E4	7,700

Materials

Sectional view



Fine and micro filter	
1 Body	Die-cast aluminium
4 Metal bowl	Wrought aluminium alloy
5 Filter element	Borosilicate mesh
- Seals	Nitrile rubber

Fine and micro filters MS12-LFM, MS series

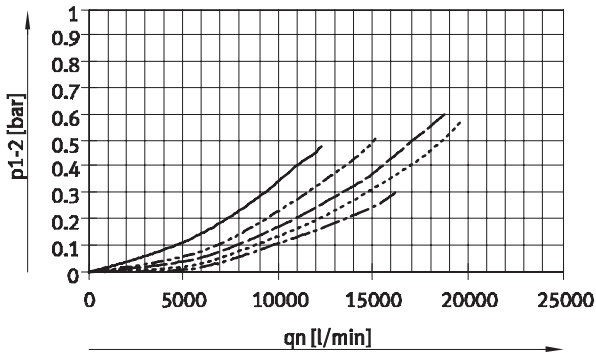
Technical data



Standard flow rate q_n as a function of the differential pressure p_{1-2}

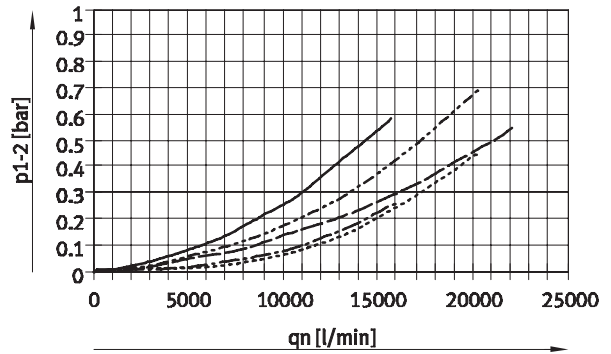
Grade of filtration 0.01 μm

With connecting plate MS12-AGF, Pneumatic connection G1



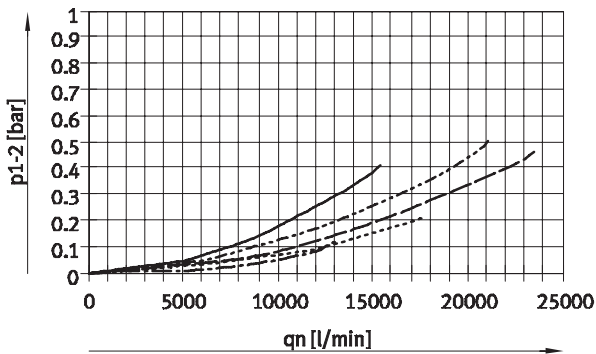
Grade of filtration 0.01 μm

With connecting plate MS12-AGG, Pneumatic connection G1¼



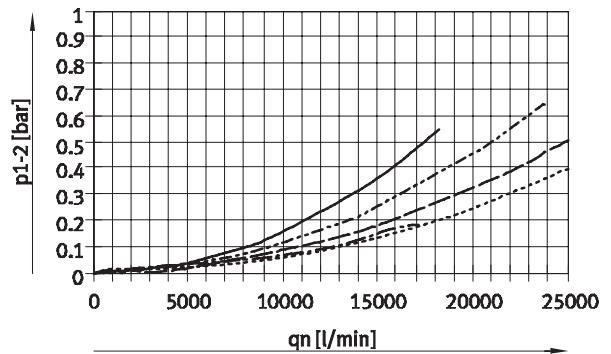
Grade of filtration 0.01 μm

With connecting plate MS12-AGH, Pneumatic connection G1½



Grade of filtration 0.01 μm

With connecting plate MS12-AGI, Pneumatic connection G2



- p1: 4 bar
- - - - - p1: 6 bar
- — — — p1: 8 bar
- · · · · p1: 10 bar
- · - · - p1: 12 bar

Fine and micro filters MS12-LFM, MS series

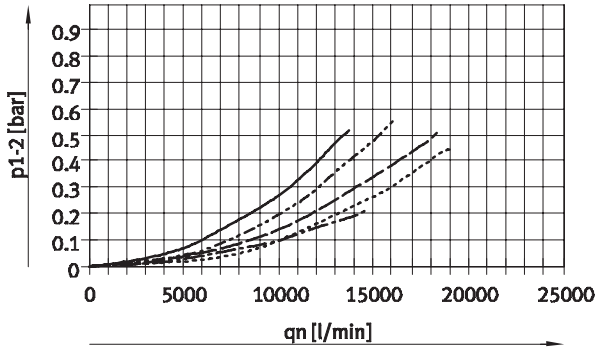
Technical data



Standard flow rate q_n as a function of the differential pressure p_{1-2}

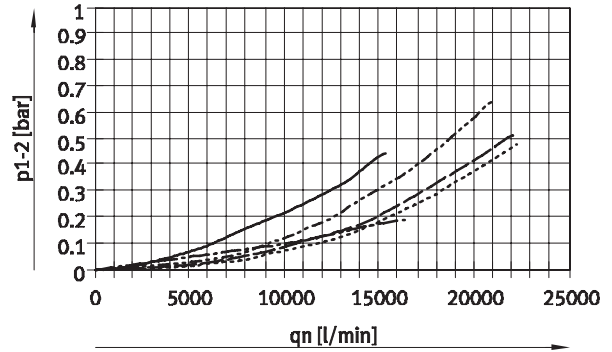
Grade of filtration $1\ \mu\text{m}$

With connecting plate MS12-AGF, Pneumatic connection G1



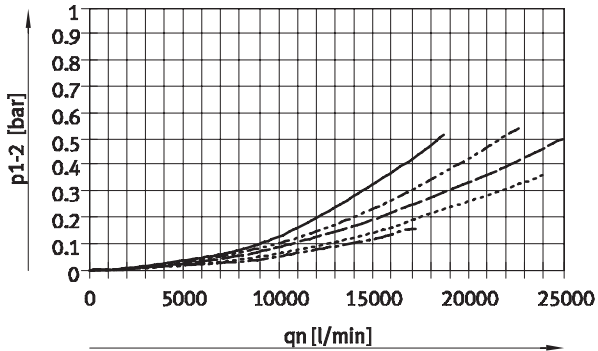
Grade of filtration $1\ \mu\text{m}$

With connecting plate MS12-AGG, Pneumatic connection G1¼



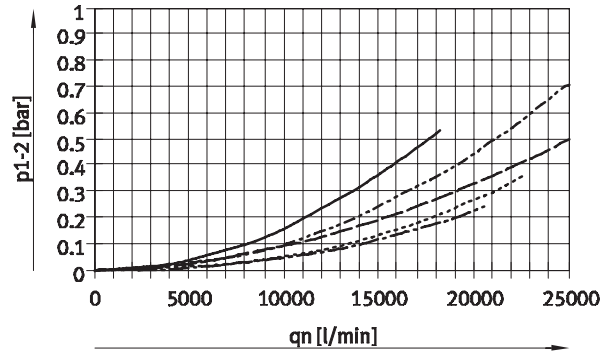
Grade of filtration $1\ \mu\text{m}$

With connecting plate MS12-AGH, Pneumatic connection G1½



Grade of filtration $1\ \mu\text{m}$

With connecting plate MS12-AGI, Pneumatic connection G2



- p1: 4 bar
- - - - p1: 6 bar
- — — p1: 8 bar
- · · · · p1: 10 bar
- · - · - p1: 12 bar

MS12 series service units
Filters
2.23

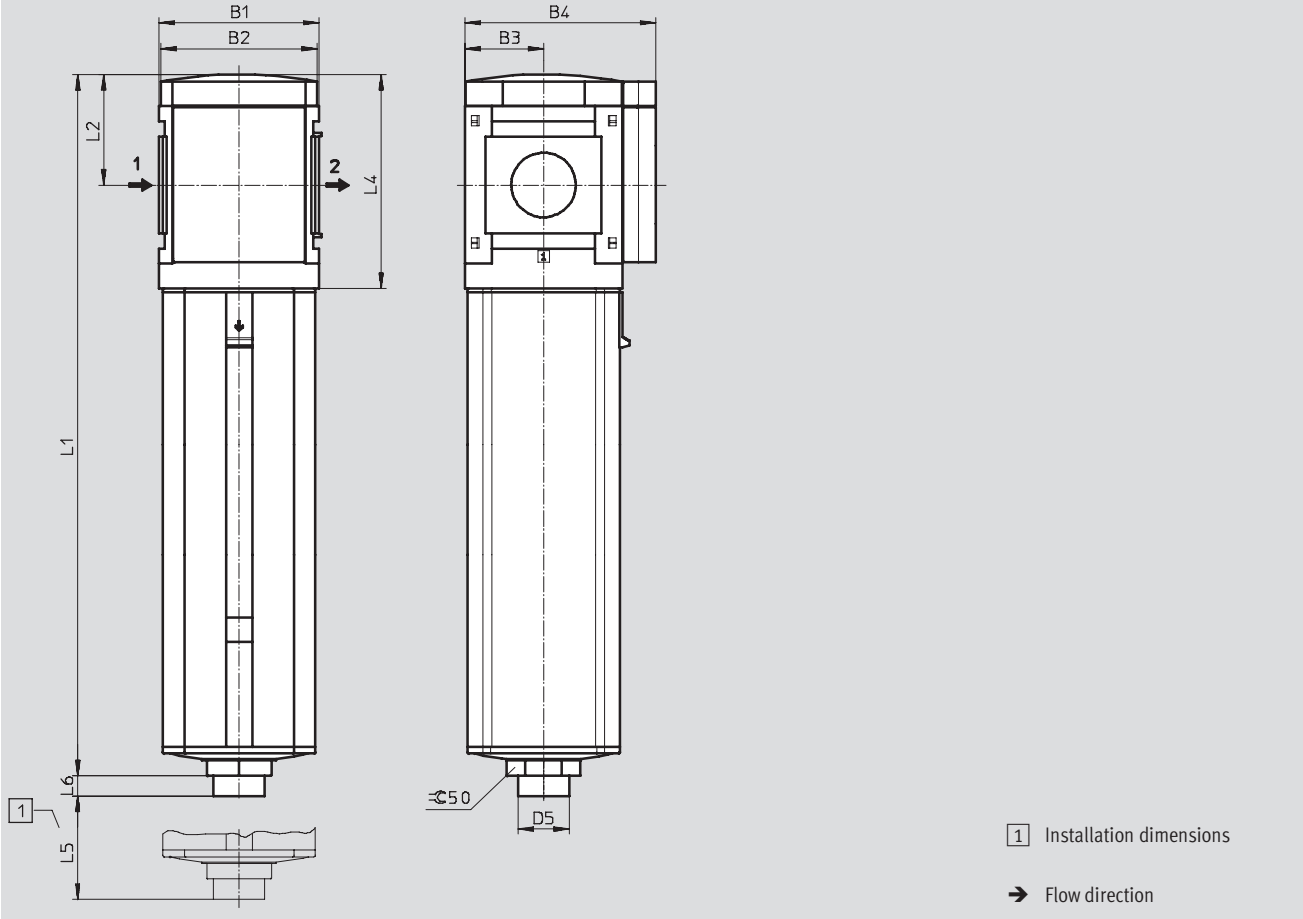
Fine and micro filters MS12-LFM, MS series

Technical data



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



Type	B1	B2	B3	B4	D5	L1	L2	L4	L5	L6
MS12-LFM	124	122	61	148	40 ∅	543	86	166	350	16

MS12 series service units
Filters

2.23

Fine and micro filters MS12-LFM, MS series

Technical data

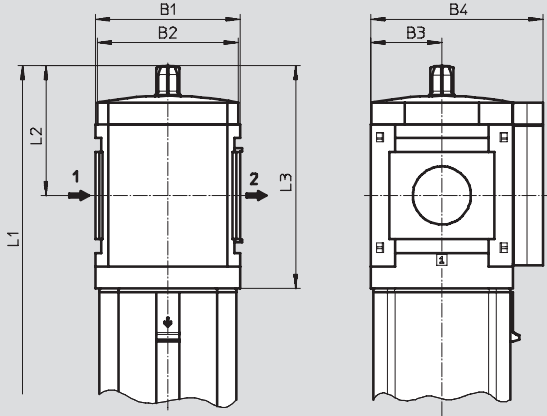


MS12 series service units
Filters

2.23

Dimensions – Differential pressure indicator

Download CAD data → www.festo.com/en/engineering



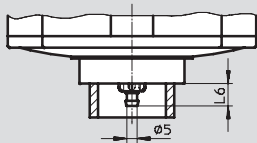
→ Flow direction

Type	B1	B2	B3	B4	L1	L2	L3
MS12-LFM-...-DA	124	122	61	148	569	112	192

Dimensions – Condensate drain

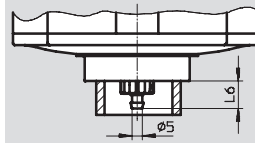
Download CAD data → www.festo.com/en/engineering

Manual rotary M



Barbed fitting for plastic tubing
PCN-4

Fully automatic V



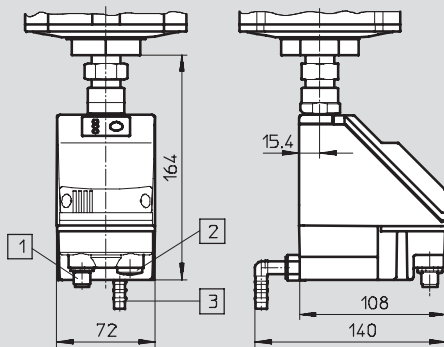
Barbed fitting for plastic tubing
PCN-4

Type	L6
MS12-LFM-...-M	11

Type	L6
MS12-LFM-...-V	13

Fully automatic, electrically actuated E1 ... E4

Technical data PWEA → 3 / 4.6-4



- 1 Variant E1
PWEA-AP-... with M12x1 plug,
5-pin for SIM-M12-5GD-...
- 2 Variant E2/E3/E4
PWEA-AC-... with cable conduit
fitting Pg9
- 3 Connection 360° rotatable for
plastic tubing PUN-H-12x2-...

Ordering data

Metal bowl

Size	Condensate drain	Connection	Micro filter		Fine filter	
			Grade of filtration 0.01 µm	Grade of filtration 1 µm		
			Part No.	Type	Part No.	Type
MS12	fully automatic	G1 ... G2 ¹⁾	537 154	MS12-LFM-G-AUV	537 153	MS12-LFM-G-BUV

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2
 - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Fine and micro filters MS12-LFM, MS series

Ordering data – Modular products

M Mandatory data							O Options			
Module No.	Series	Size	Function	Connection size	Grade of filtration	Bowl	Condensate drain	Filter change sensor	Type of mounting	Alternative flow direction
535 042	MS	12	LFM	AGF AGG AGH AGI G	B A	U	M V E1 E2 E3 E4	DA	WP	Z
Order example										
535 042	MS	12	- LFM	- AGI	- A	- U	- M	-	-	-

Ordering table		Grid dimension [mm]	124	Condi-tions	Code	Enter code
M	Module No.	535 042				
	Series	Standard			MS	MS
	Size	12			12	12
	Function	Fine and micro filter			-LFM	-LFM
	Connection size	Connecting plate G1			-AGF	
		Connecting plate G1¼			-AGG	
		Connecting plate G1½			-AGH	
		Connecting plate G2			-AGI	
		Module without connecting thread, without connecting plate			-G	
	Grade of filtration	1 µm			-B	
		0.01 µm			-A	
	Bowl	Metal bowl			-U	-U
	Condensate drain	Manual			-M	
		Fully automatic (P1 max. 12 bar)			-V	
		External fully automatic condensate drain, electrical, 24 V DC, M12			-E1	
		External fully automatic condensate drain, electrical, 110 V AC, terminals			-E2	
		External fully automatic condensate drain, electrical, 230 V AC, terminals			-E3	
	External fully automatic condensate drain, electrical, 24 V DC, terminals			-E4		
O	Filter change sensor	Differential pressure indicator, optical			-DA	
	Type of mounting	Mounting bracket		1	-WP	
	Alternative flow direction	Flow direction from right to left			-Z	

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

Transfer order code

535 042	MS	12	- LFM	-	-	- U	-	-	-	-
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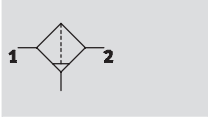
MS12 series service units
Filters
2.23

Active carbon filters MS12-LFX, MS series

Technical data



Function



- - Flow rate
4,800 ... 6,000 l/min
- - Temperature range
-10 ... +60 °C
- - Input pressure
0 ... 20 bar



- Removal of liquid and gaseous oil particles from compressed air using active carbon
- Eliminates odours and vapours
- Prefiltration with micro filter MS-LFM-A, grade of filtration 0.01 µm, recommended
- Filter cartridges → 3/2.31-19

General technical data

Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Design	Active carbon filter			
Type of mounting	Via accessories			
	In-line installation			
Assembly position	Vertical ±5°			
Air purity class at the output	1.7.1 to DIN ISO 8573-1			
Bowl guard	Metal bowl			
Residual oil content	[mg/m ³]	≤ 0.003		
Max. condensate volume	[cm ³]	400		

- 1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate qnN¹⁾ [l/min]

Pneumatic connection	G1	G1¼	G1½	G2
In main flow direction 1 → 2	4,800	5,000	5,500	6,000

- 1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 Measured at p₁ = 6 bar and Δp = 70 mbar

Operating and environmental conditions

Input pressure	[bar]	0 ... 20
Operating medium	Compressed air, filtered, unlubricated, grade of filtration 0.01 µm	
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	+5 ... +30
Storage temperature	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

- 1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]

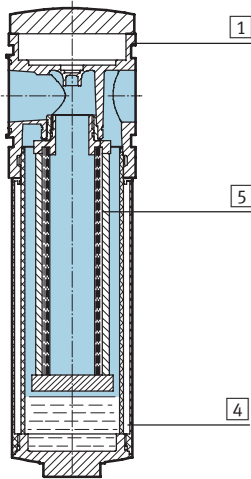
Active carbon filter with metal bowl U	7,000
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Active carbon filters MS12-LFX, MS series

Technical data

Materials

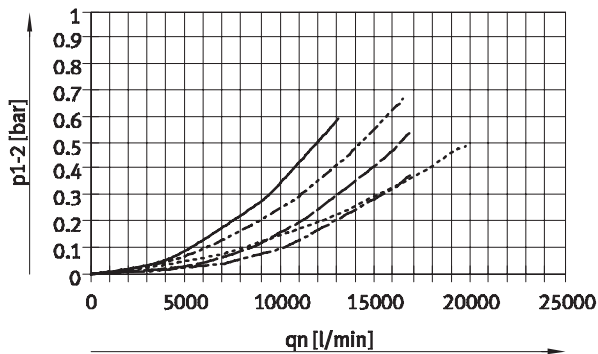
Sectional view



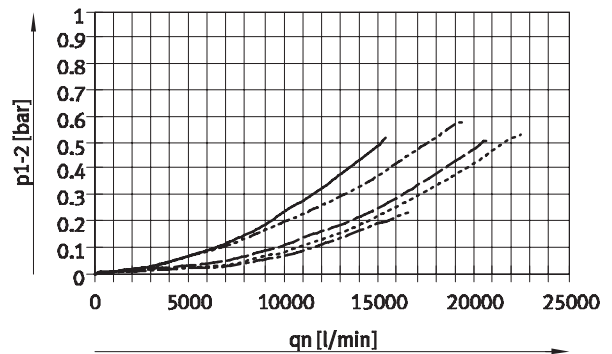
Active carbon filter		
1	Body	Die-cast aluminium
4	Metal bowl	Wrought aluminium alloy
5	Filter	Active carbon
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE

Standard flow rate q_n as a function of the differential pressure p_{1-2}

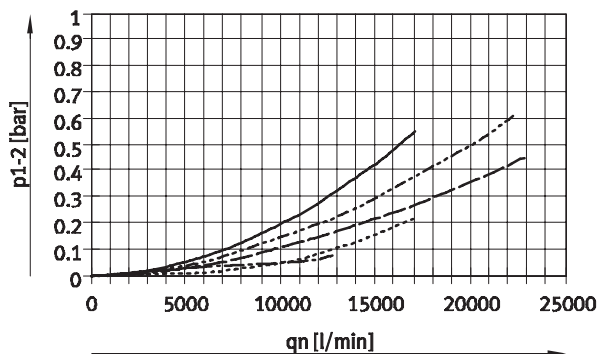
With connecting plate MS12-AGF, Pneumatic connection G1



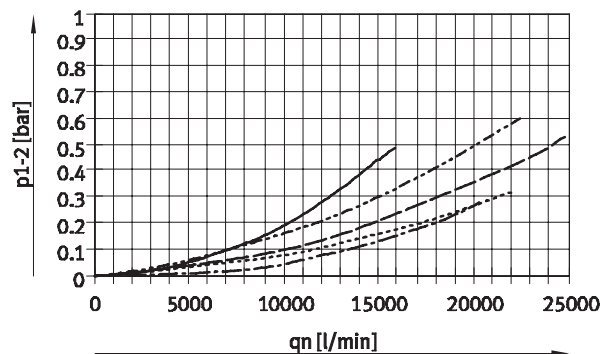
With connecting plate MS12-AGG, Pneumatic connection G1¼



With connecting plate MS12-AGH, Pneumatic connection G1½



With connecting plate MS12-AGI, Pneumatic connection G2



- p1: 4 bar
- - - p1: 6 bar
- · - p1: 8 bar
- · · p1: 10 bar
- - - p1: 12 bar

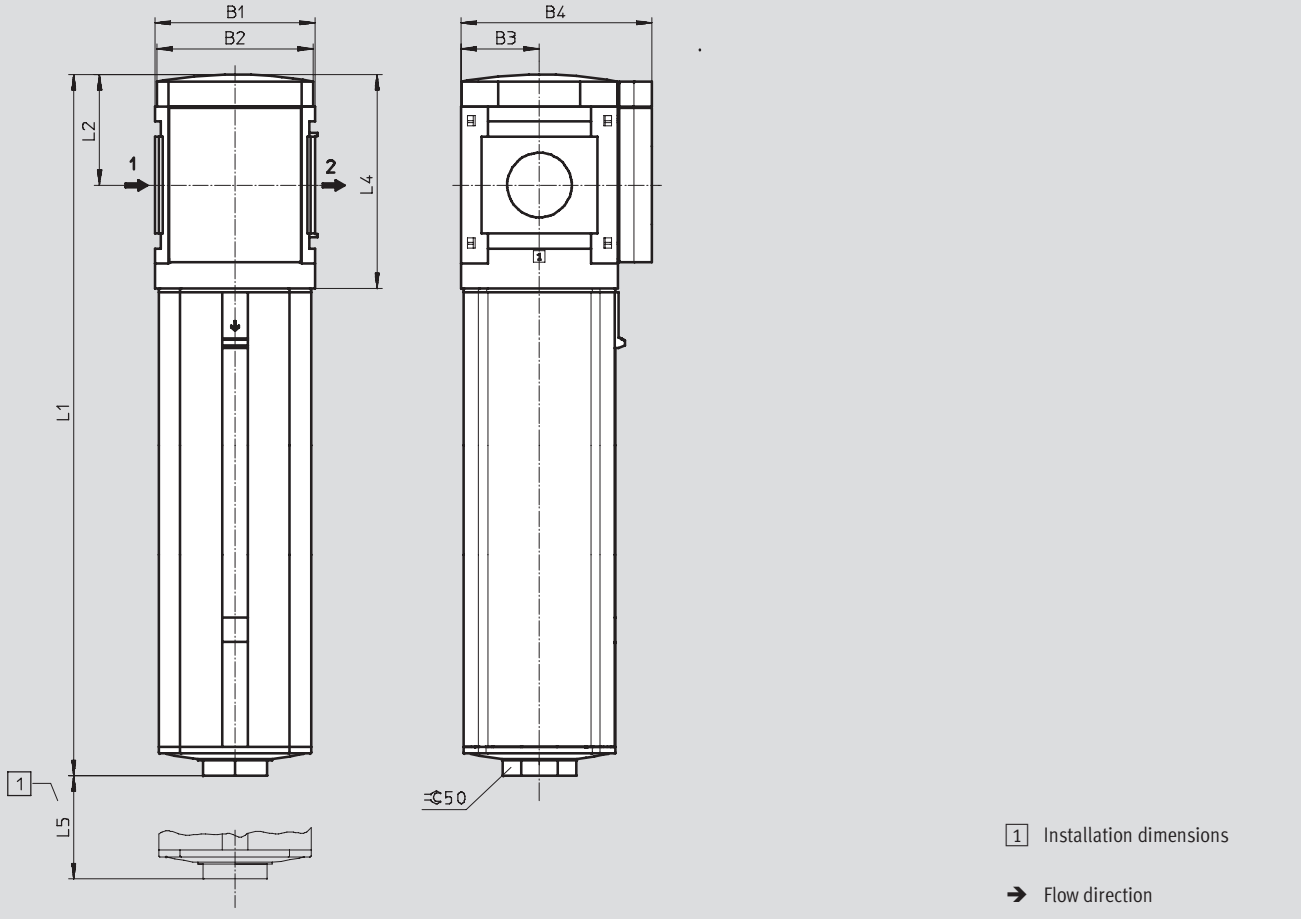
Active carbon filters MS12-LFX, MS series

Technical data



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



Type	B1	B2	B3	B4	L1	L2	L4	L5
MS12-LFX	124	122	61	148	543	86	166	350

Ordering data

Metal bowl

Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	537 155	MS12-LFX-G-U

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2

· Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Active carbon filters MS12-LFX, MS series

Ordering data – Modular products

M Mandatory data						O Options	
Module No.	Series	Size	Function	Connection size	Bowl	Type of mounting	Alternative flow direction
535 043	MS	12	LFX	AGF AGG AGH AGI G	U	WP	Z
Order example							
535 043	MS	12	- LFX	- AGF	- U	- WP	- Z

Ordering table			
Grid dimension	[mm]	124	Condi- tions
M	Module No.	535 043	
	Series	Standard	MS
	Size	12	12
	Function	Active carbon filter	-LFX
	Connection size	Connecting plate G1	-AGF
		Connecting plate G1¼	-AGG
		Connecting plate G1½	-AGH
		Connecting plate G2	-AGI
		Module without connecting thread, without connecting plate	-G
	Bowl	Metal bowl	-U
O	Type of mounting	Mounting bracket	1 -WP
	Alternative flow direction	Flow direction from right to left	-Z

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

Transfer order code

535 043	MS	12	- LFX	-	U	-		-	
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Pressure regulators MS12-LR, MS series

Peripherals overview

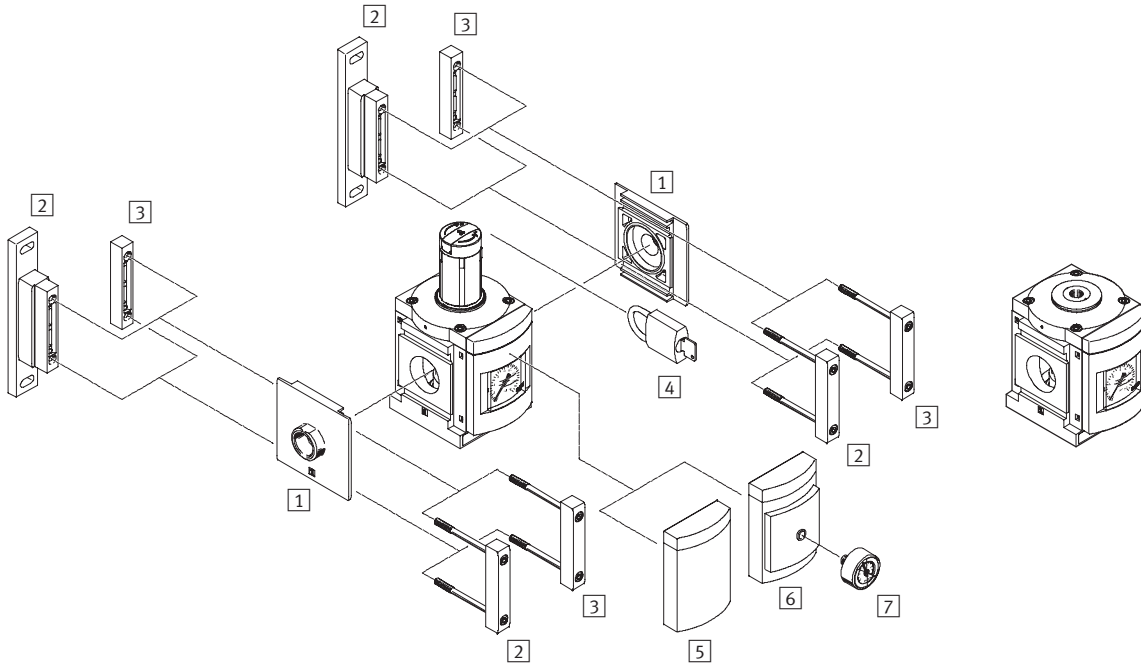
FESTO

Pressure regulator LR

Standard

Variant PO

pneumatically actuated



Mounting attachments and accessories

		→ Page
1	Connecting plate MS12-AG...	3/2.31-2
2	Mounting bracket MS12-WP	3/2.31-9
3	Module connector MS12-MV	3/2.31-9
4	Padlock (except variant PO) LRVS-D	3/2.31-25
5	Cover plate VS	3/2.24-6
6	Adapter for EN pressure gauge 1/4 A4	3/2.24-6
7	Pressure gauge MA	3/2.31-24

Pressure regulators MS12-LR, MS series

Type codes

		MS	12	LR	G	D7		LD	AS
Series									
MS	Standard service unit								
Size									
12	Grid dimension 124 mm								
Service function									
LR	Pressure regulator								
Connection size									
G	Module without connecting thread, without connecting plate Connecting plates → Accessories								
Pressure regulation range									
D7	0.5 ... 12 bar								
D8	0.5 ... 16 bar								
Alternative operating principle									
	No alternative operating principle								
PO	With pneumatic setpoint specification								
Rotary knob									
	No rotary knob								
LD	Long rotary knob								
Security									
	No lockable rotary knob								
AS	Lockable rotary knob								

Further variants can be ordered using the modular system

Pressure regulators LR → 3/2.24-6

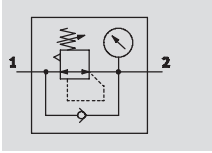
- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Rotary knob
- Security
- Type of mounting
- Alternative flow direction

Pressure regulators MS12-LR, MS series

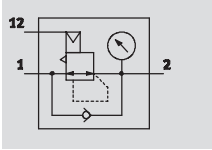
Technical data

FESTO

Function
with pressure gauge



with pressure gauge and pneumatic
setpoint specification PO



- - Flow rate
13,000 ... 22,000 l/min

- - Temperature range
-10 ... +60 °C

- - Input pressure
0.8 ... 21 bar

- - [www.festo.com/en/
Spare_parts_service](http://www.festo.com/en/Spare_parts_service)

Wearing parts kits
→ 3/2.24-5

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



- Good control characteristics with low hysteresis and primary pressure compensation
- High flow rate with minimal pressure drop
- Setting values are secured by locking the rotary knob
- Rotary knob can be locked using accessories
- With secondary venting
- Three pressure regulation ranges: 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Pressure gauge connection for different fitting options

General technical data

Pneumatic connection 1, 2 ¹⁾		G1	G1¼	G1½	G2
Pilot air connection 12 for variant PO		G¼			
Design		Pressure regulator with/without pressure gauge			
		Pilot actuated diaphragm regulator (except variant PO)			
		Diaphragm regulator (variant PO)			
Regulating function		With primary pressure compensation			
		With secondary venting			
		Output pressure constant			
Type of mounting		Via accessories			
		In-line installation			
Assembly position		Any			
Actuator lock		Rotary knob with detent			
		Rotary knob with integrated lock			
		Lockable with accessories			
Pressure regulation range	D6 [bar]	0.3 ... 7			
	D7 [bar]	0.5 ... 12			
	D8 [bar]	0.5 ... 16			
Max. hysteresis	[bar]	0.4			
Pressure indicator		With pressure gauge			
Flow rate of secondary venting	[l/min]	≤ 600			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]

Pneumatic connection	G1	G1¼	G1½	G2
In main flow direction 1 → 2	13,000	13,500	16,000	22,000

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 0.5$ bar

Pressure regulators MS12-LR, MS series

Technical data

FESTO

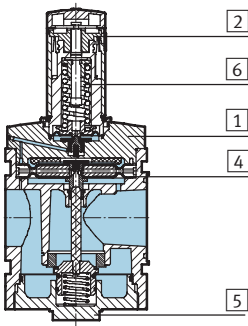
Operating and environmental conditions		
Input pressure	[bar]	0.8 ... 21
Operating medium		Compressed air, air quality class 5.7.- to DIN ISO 8573-1
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Storage temperature	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]	
Pressure regulator	4,000
Pressure regulator with rotary knob with integrated lock E11	4,300

Materials

Sectional view



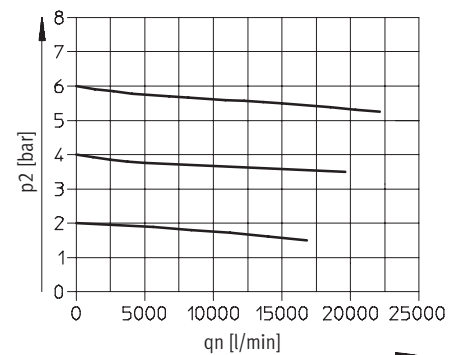
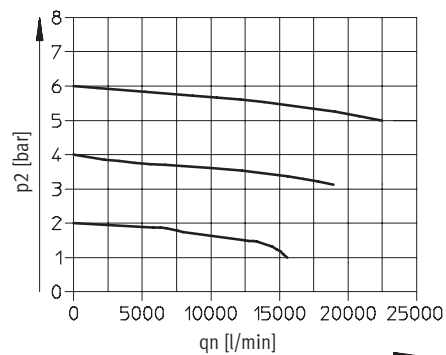
Pressure regulator		
1	Body	Die-cast aluminium
2	Rotary knob	Polyamide/polyacetate
	Rotary knob with integrated lock E11	Aluminium
4	Diaphragm	Nitrile rubber
5	Bottom cap	Wrought aluminium alloy
6	Springs	Steel
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE only with cover plate VS

Standard flow rate q_n as a function of output pressure p_2

With connecting plate MS12-AGF
Pneumatic connection G1

With connecting plate MS12-AGG
Pneumatic connection G1¼

Primary pressure $p_1 = 10$ bar



Pressure regulators MS12-LR, MS series

Technical data

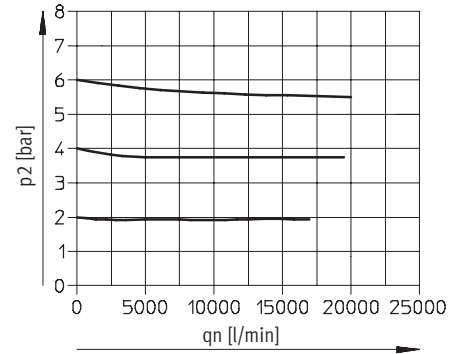
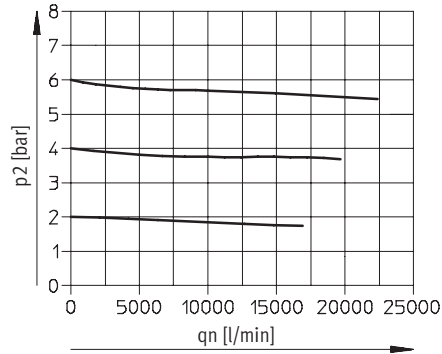


Standard flow rate q_n as a function of output pressure p_2

With connecting plate MS12-AGH
Pneumatic connection G1½

With connecting plate MS12-AGI
Pneumatic connection G2

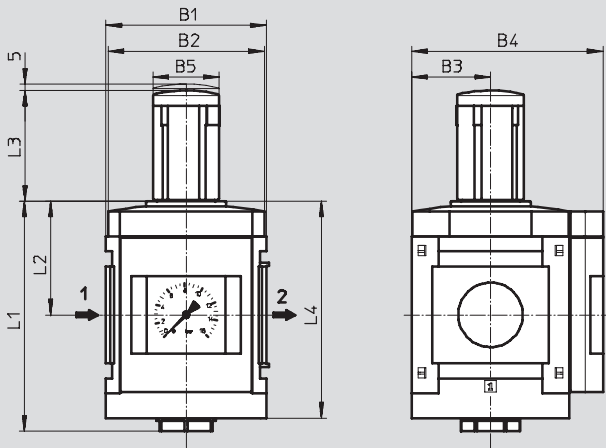
Primary pressure $p_1 = 10$ bar



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering

With pressure gauge, display unit [bar], long rotary knob



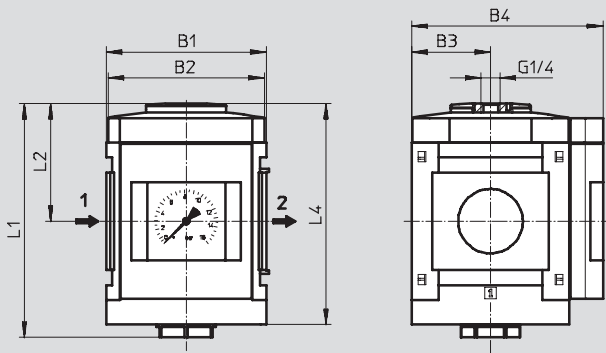
→ Flow direction

Type	B1	B2	B3	B4	B5	L1	L2	L3	L4
MS12-LR	124	122	61	148	51	178	88	86	168

Dimensions – Alternative operating principle

Download CAD data → www.festo.com/en/engineering

Pneumatically actuated PO, with pressure gauge, display unit [bar]



→ Flow direction

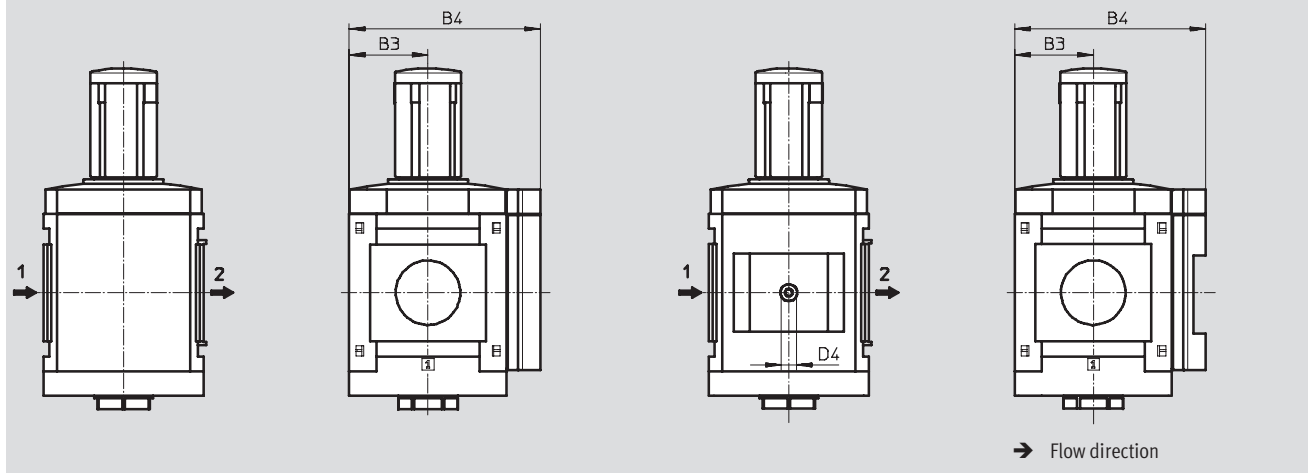
Type	B1	B2	B3	B4	L1	L2	L4
MS12-LR-...-PO	124	122	61	148	181	91	171

Pressure regulators MS12-LR, MS series

Technical data

FESTO

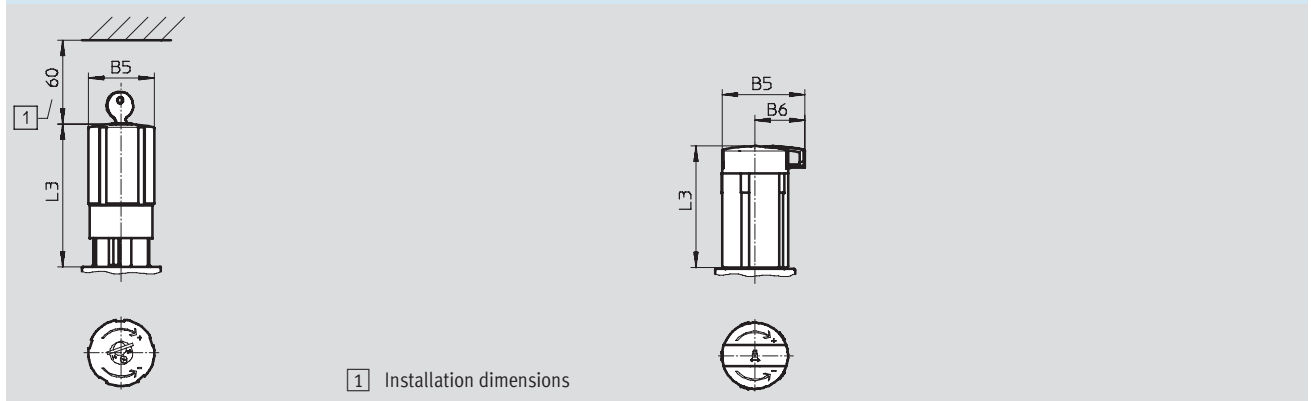
Dimensions – Pressure gauge alternatives Download CAD data → www.festo.com/en/engineering
 Cover plate VS Adapter A4 for EN pressure gauge 1/4, without pressure gauge



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

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Security Download CAD data → www.festo.com/en/engineering
 With integrated lock E11 Long, lockable LD-AS



Type	B5	B6	L3
MS12-LR-...-E11	51.8	–	112
MS12-LR-...-LD-AS	64.4	39	95.5

Ordering data			
Pressure gauge			
Size	Connection	Long rotary knob, can be locked using accessories, pressure regulation range 0.5... 12 bar	Alternative operating principle, pressure regulation range 0.5... 16 bar
		Part No. Type	Part No. Type
MS12	G1 ... G2 ¹⁾	537 148 MS12-LR-G-D7-LD-AS	541 680 MS12-LR-G-D8-PO

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2

Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data – Wearing parts kits	
Size	Part No. Type
MS12	673 586 MS12-LR/LFR

 **New**
Variant E11

Pressure regulators MS12-LR, MS series

Ordering data – Modular products



M **Mandatory data** →

Module No.	Series	Size	Function	Connection sizes	Pressure regulation range
535 021	MS	12	LR	AGF AGG AGH AGI G	D6 D7 D8
Order example					
535 021	MS	12	- LR	- G	- D8

Ordering table

Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M Module No.	535 021				
Series	Standard			MS	MS
Size	12			12	12
Function	Pressure regulator			-LR	-LR
Connection sizes	Connecting plate G1			-AGF	
	Connecting plate G1¼			-AGG	
	Connecting plate G1½			-AGH	
	Connecting plate G2			-AGI	
	Module without connecting thread, without connecting plate			-G	
Pressure regulation range	0.3 ... 7 bar			-D6	
	0.5 ... 12 bar			-D7	
	0.5 ... 16 bar			-D8	

MS12 series service units
Pressure regulators

2.24

Transfer order code

535 021	MS	12	- LR	-		-	
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Pressure regulators MS12-LR, MS series

Ordering data – Modular products

→ 0 Options						
Pressure gauge alternatives	Alternative pressure gauge scale	Rotary knob alternative	Security	Alternative operating principle	Type of mounting	Alternative flow direction
VS A4	PSI MPA	LD	AS E11	PO	WP	Z
- VS	-	- LD	- AS	-	-	- Z

Ordering table						
Grid dimension	[mm]	124	Condi- tions	Code		Enter code
0 Pressure gauge alternatives	Cover plate			-VS		
	Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4		
Alternative pressure gauge scale	psi		1	-PSI		
	MPa		1	-MPA		
Rotary knob alternative	Long rotary knob		2 3	-LD		
Security	Lockable rotary knob			-AS		
	With integrated lock		2	-E11		
Alternative operating principle	Pneumatically actuated		2 4	-PO		
Type of mounting	Mounting bracket		5	-WP		
Alternative flow direction	Flow direction from right to left			-Z		

1 **PSI, MPA** Not with pressure gauge alternatives VS, A4

2 **LD, E11, PO** Either rotary knob alternative LD, security E11 or alternative function principle PO must be selected

3 **LD** Not with security E11

4 **PO** Not with rotary knob LD.

Not with security AS, E11

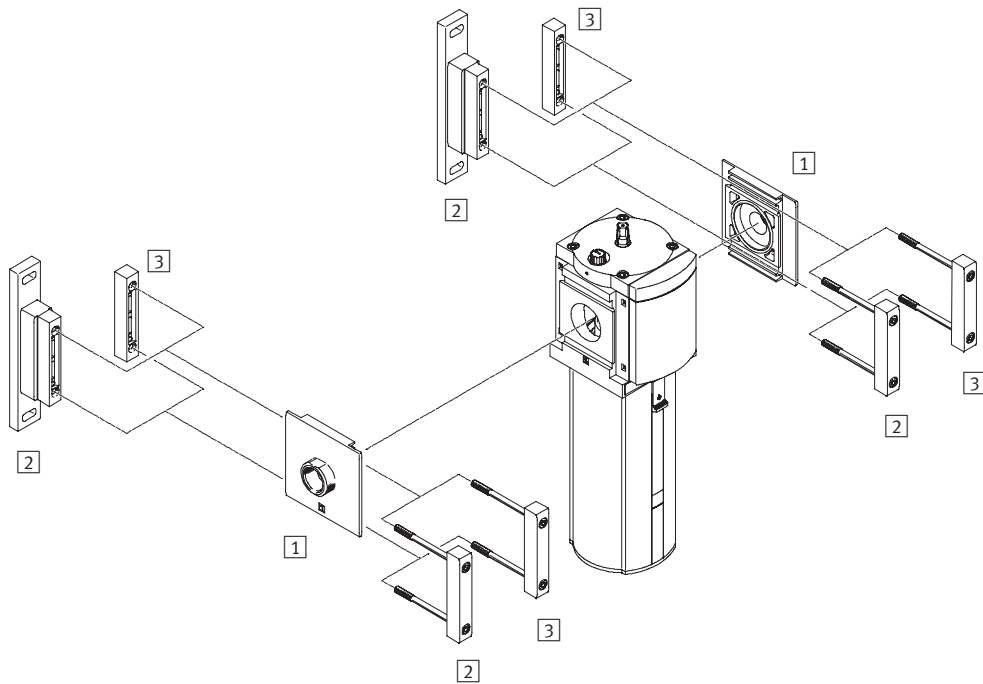
5 **WP** Only with connecting plate AGF, AGG, AGH or AGI

Transfer order code

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

Lubricators MS12-LOE, MS series

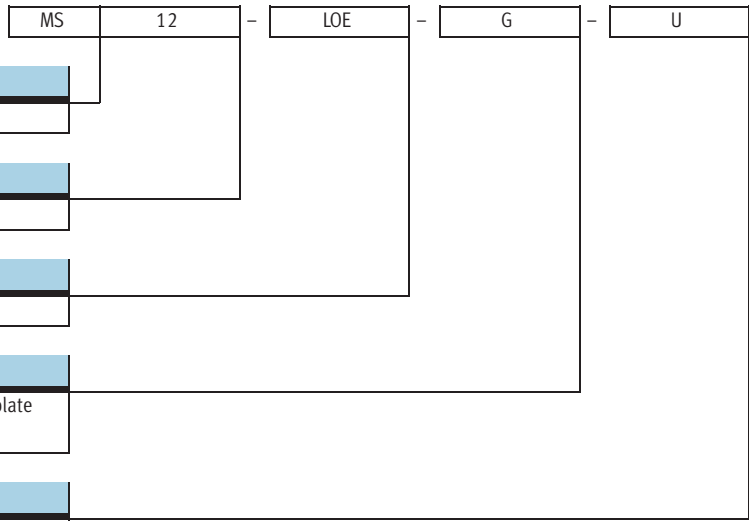
Peripherals overview



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-2
2	Mounting bracket MS12-WP	3/2.31-9
3	Module connector MS12-MV	3/2.31-9

Lubricators MS12-LOE, MS series

Type codes



Series

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

Size

12	Grid dimension 124 mm
----	-----------------------

Service function

LOE	Lubricator
-----	------------

Connection size

G	Module without connecting thread, without connecting plate Connecting plates → Accessories
---	---

Bowl guard

U	Metal bowl
---	------------

Further variants can be ordered using the modular system
 Lubricators LOE → 3/2.25-6

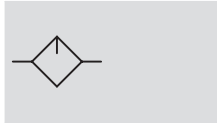
- Connecting plates
- Type of mounting
- Alternative flow direction

Lubricators MS12-LOE, MS series

Technical data



Function



- - Flow rate
20,000 ... 22,000 l/min

- - Temperature range
0 ... 60 °C

- - Input pressure
1 ... 16 bar

- - www.festo.com/en/Spare_parts_service

Wearing parts kits
→ 3/2.25-5



The following oils are recommended for Festo components:
Viscosity range to ISO 3448, ISO class VG 32
32 mm²/s (= cSt) at 40°C

The proportional lubricator adds a precision adjustable quantity of oil to the compressed air stream.

The pressure drop that occurs when air flows through a Venturi nozzle is used to convey oil from the container

to the drip cap. From here, the oil drips into the air duct directly behind the proportional valve, where it is atomised. The oil mist component is proportional to the compressed air flow rate.

- Proportional lubricator with precision oil metering
- Reduces wear on drive units subject to high loading
- High flow rate
- Quick and easy oil top-up even during operation (under pressure)

- Festo special oil OFSW-32 → 3/2.31-25
- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Design	Proportional standard mist lubricator			
Type of mounting	Via accessories			
	In-line installation			
Assembly position	Vertical ±5°			
Bowl guard	Metal bowl			
Minimum flow for lubricator operation [l/min]	≤400			
Max. oil capacity [cm ³]	1,500			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 - - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q _N ¹⁾ [l/min]				
Pneumatic connection	G1	G1¼	G1½	G2
In main flow direction 1 → 2	20,000	20,500	21,000	22,000

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 Measured at p₁ = 6 bar and Δp = 0.5 bar

Lubricators MS12-LOE, MS series

Technical data



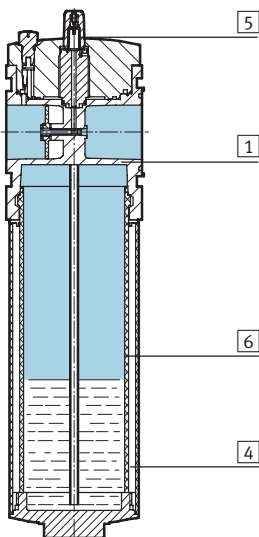
Operating and environmental conditions		
Input pressure	[bar]	1 ... 16
Operating medium		Compressed air, air quality class 5.7.- to DIN ISO 8573-1
Ambient temperature	[°C]	0 ... +60
Temperature of medium	[°C]	0 ... +60
Storage temperature	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]	
Lubricator with metal bowl U	6,500

Materials

Sectional view



Lubricator		
1	Body	Die-cast aluminium
4	Metal bowl	Aluminium/polyamide
5	Lubricator dome	Polycarbonate
6	Metal bowl sight glass	Polyamide
-	Seals	Nitrile rubber

Lubricators MS12-LOE, MS series

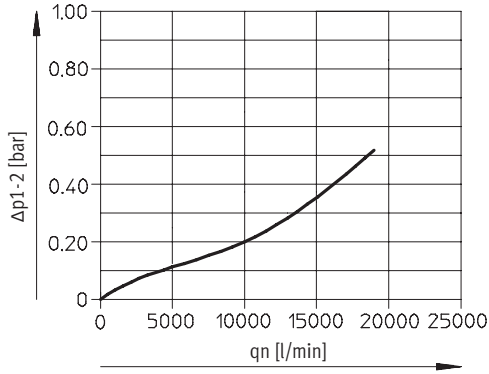
Technical data



Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

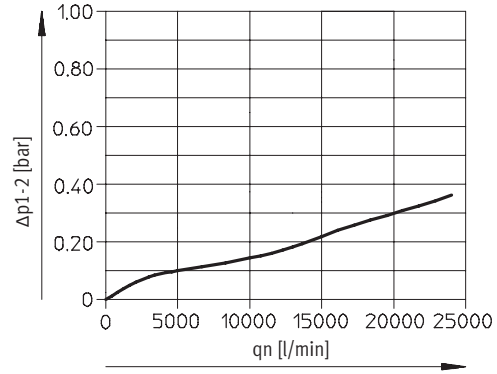
With connecting plate MS12-AGF

Pneumatic connection G1



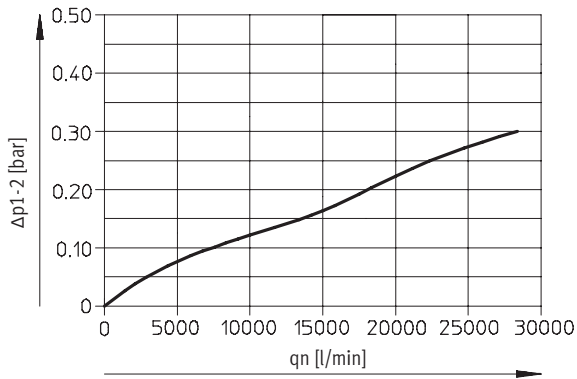
With connecting plate MS12-AGG

Pneumatic connection G1¼



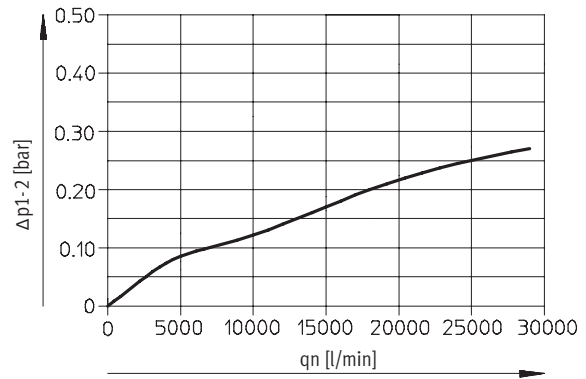
With connecting plate MS12-AGH

Pneumatic connection G1½



With connecting plate MS12-AGI

Pneumatic connection G2



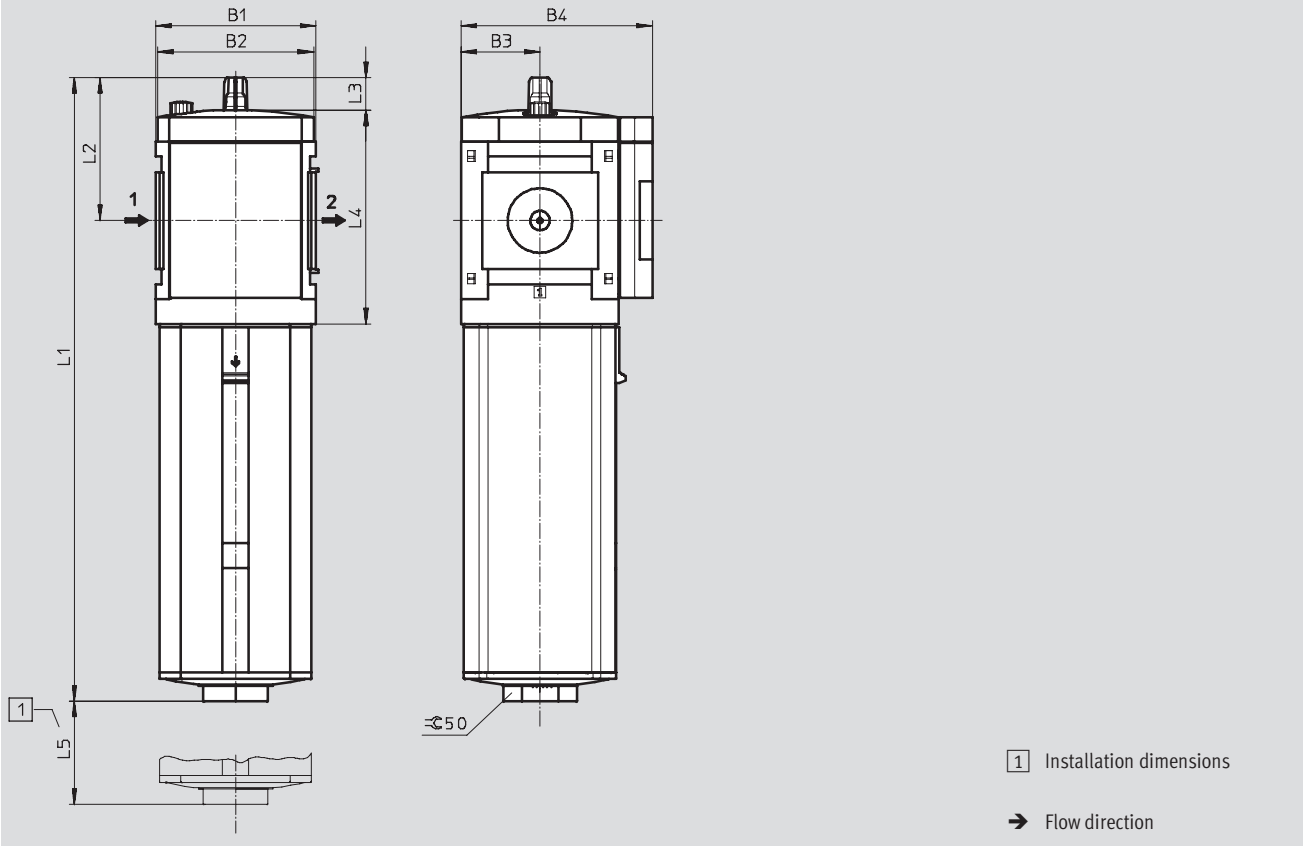
Lubricators MS12-LOE, MS series

Technical data



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



Type	B1	B2	B3	B4	L1	L2	L3	L4	L5
MS12-LOE	124	122	61	148	483	111	25	166	300

Ordering data

Metal bowl

Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	537 156	MS12-LOE-G-U

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2

- | - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data – Wearing parts kits

Size	Part No.	Type
MS12	673 746	MS12-LOE

Lubricators MS12-LOE, MS series

Ordering data – Modular products



MS12 series service units
Lubricators

M Mandatory data						O Options	
Module No.	Series	Size	Function	Connection size	Bowl	Type of mounting	Alternative flow direction
535 041	MS		LOE	AGF AGG AGH AGI G	U	WP	Z
Order example							
535 041	MS	12	- LOE	- AGI	- U	- WP	- Z

Ordering table			
Grid dimension	[mm]	124	Condi- tions
M	Module No.	535 041	
	Series	Standard	MS
	Size	12	12
	Function	Lubricator	-LOE
	Connection size	Connecting plate G1	-AGF
		Connecting plate G1¼	-AGG
		Connecting plate G1½	-AGH
		Connecting plate G2	-AGI
		Module without connecting thread, without connecting plate	-G
	Bowl	Metal bowl	-U
O	Type of mounting	Mounting bracket	1 WP
	Alternative flow direction	Flow direction from right to left	-Z

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

Transfer order code

535 041	MS	12	- LOE	-	U	-		-	
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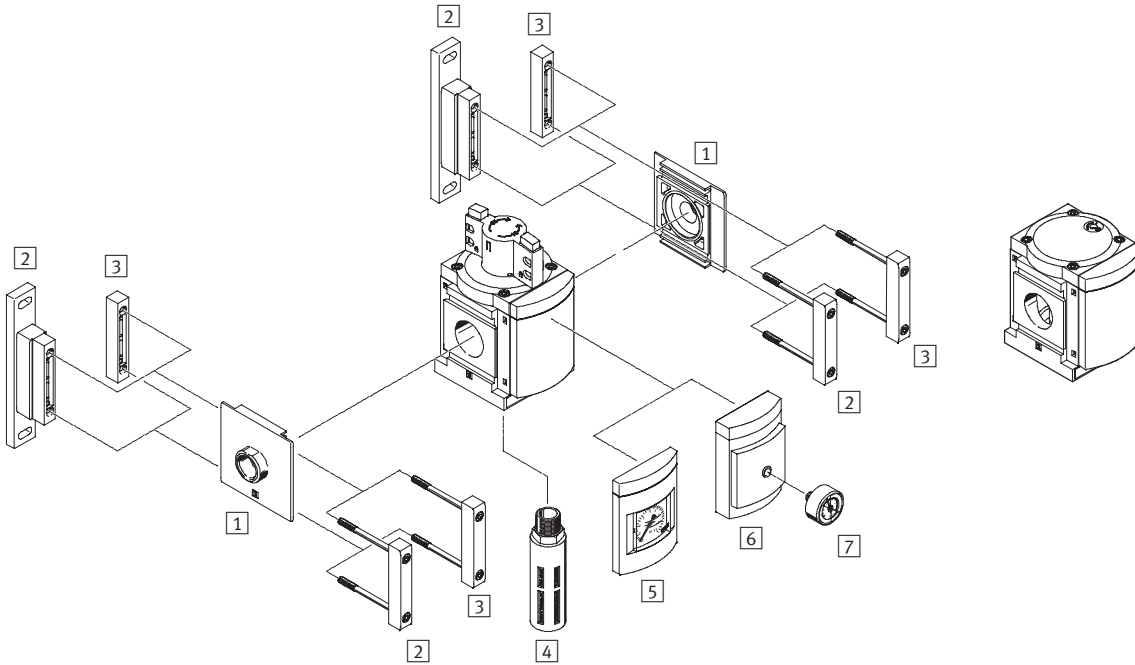
On-off/soft-start valves MS12-EM/EE/DL/DE, MS series

Peripherals overview

FESTO

On-off valve EM
manually actuated

Soft-start valve DL
pneumatically actuated



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-2
2	Mounting bracket MS12-WP	3/2.31-9
3	Module connector MS12-MV	3/2.31-9
4	Silencer (with EM) U	3/2.31-25
5	MS pressure gauge AG	EM 3 / 2.26-7 DL 3 / 2.26-15
6	Adapter for EN pressure gauge 1/4 A4	EM 3 / 2.26-7 DL 3 / 2.26-15
7	Pressure gauge MA	3/2.31-24

MS12 series service units
Start-up and exhaust valves

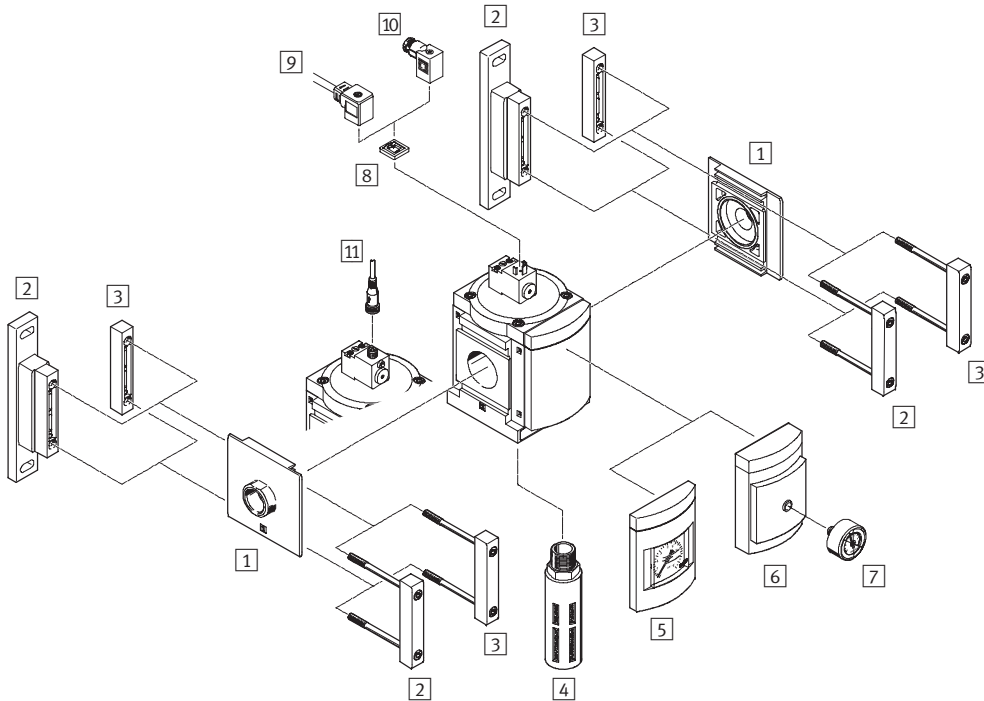
2.26

On-off/soft-start valves MS12-EM/EE/DL/DE, MS series

Peripherals overview

FESTO

On-off/soft-start valve EE/DE solenoid actuated

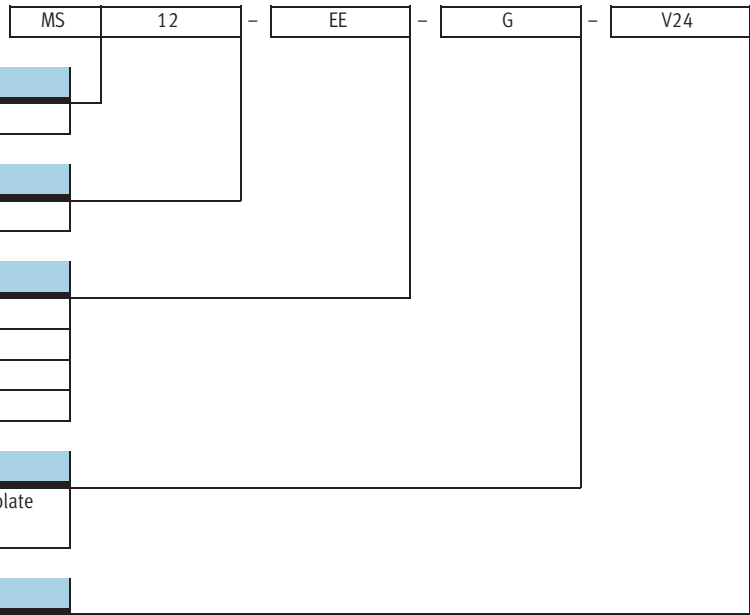


Mounting attachments and accessories

	→ Page
1 Connecting plate MS12-AG...	3/2.31-2
2 Mounting bracket MS12-WP	3/2.31-9
3 Module connector MS12-MV	3/2.31-9
4 Silencer (with EE) U	3/2.31-25
5 MS pressure gauge AG	EE 3 / 2.26-11 DE 3 / 2.26-19
6 Adapter for EN pressure gauge 1/4 A4	EE 3 / 2.26-11 DE 3 / 2.26-19
7 Pressure gauge MA	3/2.31-24
8 Illuminating seal MC-LD	3/2.31-23
9 Plug socket with cable KMC	3/2.31-23
10 Plug socket MSSD-C	3/2.31-23
11 Plug socket with cable SIM-M12-4...	3/2.31-24

On-off/soft-start valves MS12-EM/EE/DL/DE, MS series

Type codes



Further variants can be ordered using the modular system

On-off valves EM	→ 3 / 2.26-7
On-off valves EE	→ 3 / 2.26-11
Soft-start valves DL	→ 3 / 2.26-15
Soft-start valves DE	→ 3 / 2.26-19

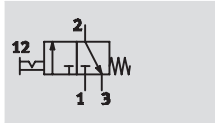
- Connecting plates
- Supply voltage (for EE and DE only)
- Silencer (for EM and EE only)
- Pressure gauge/adapter
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

On-off valves MS12-EM, MS series

Technical data



Function



- - Flow rate
25,000 ... 32,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0 ... 21 bar



- 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 ¹⁾	G1	G1¼	G1½	G2
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, double solenoid			
Exhaust function	Without flow control			
Switching position display	Knob actuator direction = flow direction			
Type of actuation	Direct			
Pilot air supply	Internal			
Direction of flow	Non-reversible			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 - - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

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

Operating and environmental conditions		
Operating pressure	[bar]	0 ... 21
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

On-off valves MS12-EM, MS series

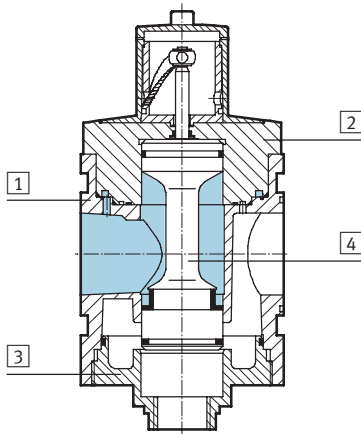
Technical data



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

Materials

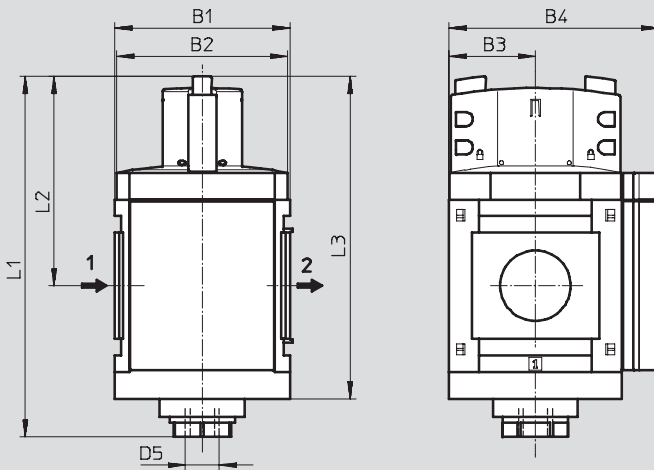
Sectional view



On-off valve		
1	Body	Die-cast aluminium
2	Cap, top	Aluminium
3	Cap, bottom	Aluminium
4	Valve spool	Stainless steel, polyacetate, nitrile rubber
-	Springs	Steel
-	Covers/cover plates	Polyamide
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE (not with variant AG)

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



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

MS12 series service units
Start-up and exhaust valves

2.26

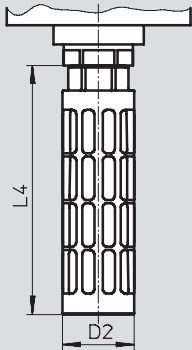
On-off valves MS12-EM, MS series

Technical data



Dimensions – Silencer

Download CAD data → www.festo.com/en/engineering



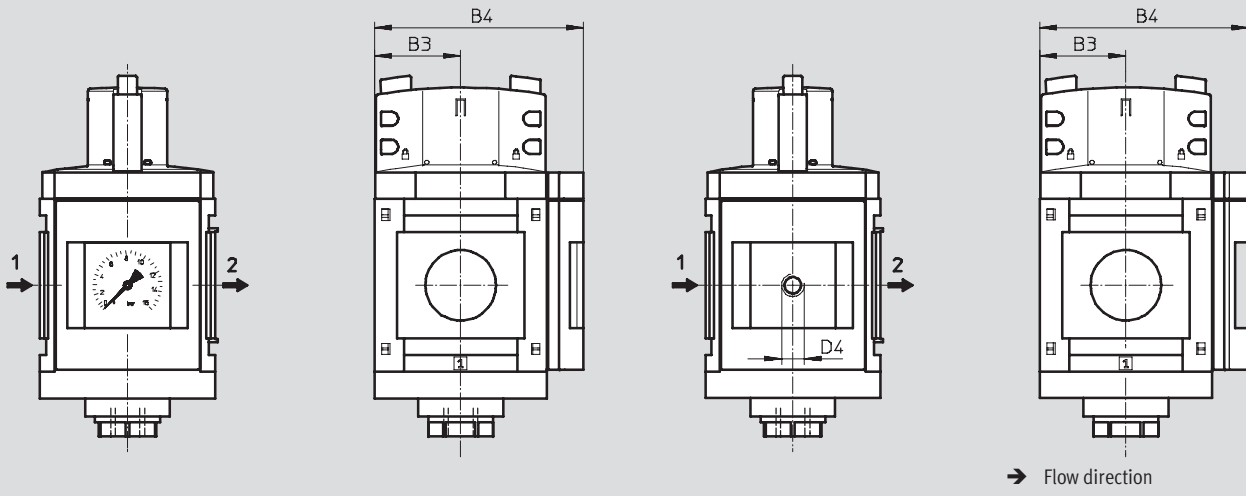
Type	D2 Ø	L4
MS12-EM-...-S	47.8	165.5

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com/en/engineering

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 with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data

Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	541 495	MS12-EM-G ²⁾

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2

2) Free of copper and PTFE

– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

On-off valves MS12-EM, MS series

Ordering data – Modular products

M Mandatory data					O Options				
Module No.	Series	Size	Function	Connection size	Silencer	Pressure gauge/ adapter	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535 031	MS	12	EM	AGF AGG AGH AGI G	S	AG A4	PSI MPA	WP	Z
Order example									
535 031	MS	12	- EM	- G	- S	- AG	- PSI	-	- Z

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535 031			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	On-off valve, manual		-EM	-EM
	Connection size	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/adapter	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	2	-WP	
	Alternative 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.

Transfer order code

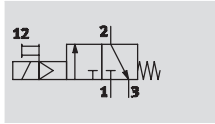
535 031	MS	12	- EM	-	-	-	-	-	-	-
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On-off valves MS12-EE, MS series

Technical data



Function



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



- 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 manual override (except variant V24P)

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
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	Direct			
Pilot air supply	Internal			
Direction of flow	Non-reversible			
Coil characteristics	V24	24 V DC		
	V110	110 V AC		
	V230	230 V AC		

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 - - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q_n 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

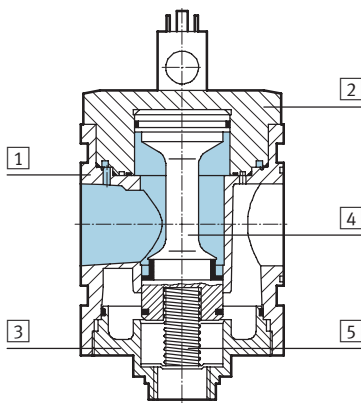
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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, polyacetate, nitrile rubber
5	Springs	Steel
-	Covers/cover plates	Polyamide
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE (not with variant AG)

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering

MS12-EE-...-V24/V110/V230

MS12-EE-...-V24P

1 Plug connection to DIN EN 175 301-803

3 Plug connection M12, 4-pin to Desina

→ Flow direction

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

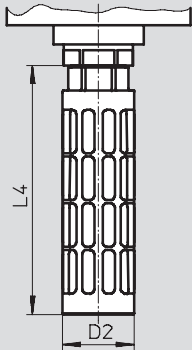
On-off valves MS12-EE, MS series

Technical data



Dimensions – Silencer

Download CAD data → www.festo.com/en/engineering



Type	D2 Ø	L4
MS12-EE-...-S	47.8	165.5

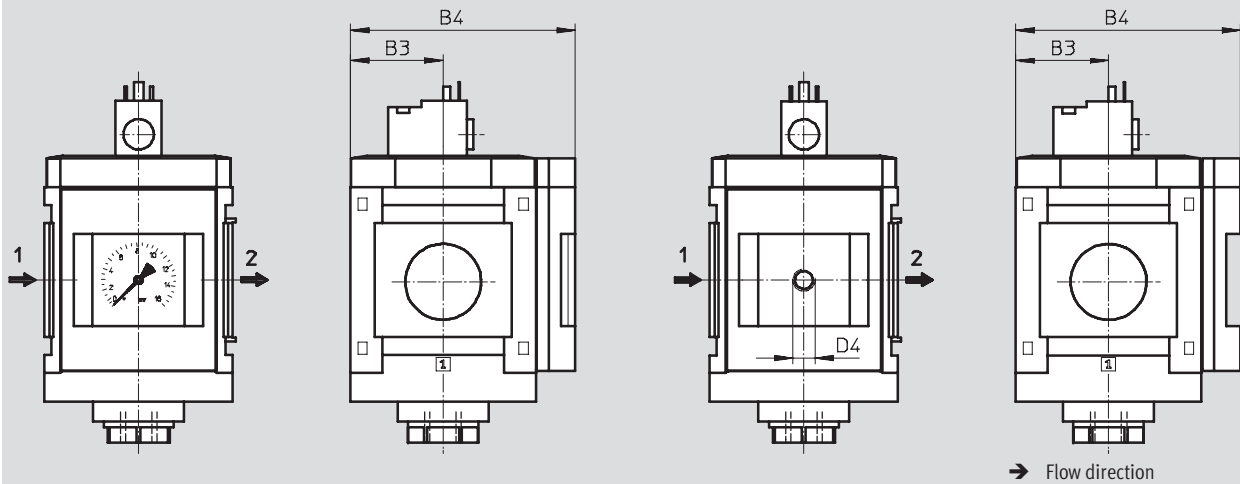
– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com/en/engineering

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

Ordering data

Size	Connection	Supply voltage 24 V DC	
		Part No.	Type
MS12	G1 ... G2 ¹⁾	541 496	MS12-EE-G-V24 ²⁾

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2

2) Free of copper and PTFE

– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

On-off valves MS12-EE, MS series

Ordering data – Modular products



M Mandatory data						O Options				
Module No.	Series	Size	Function	Connection size	Supply voltage	Silencer	Pressure gauge/adaptor	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535 032	MS	12	EE	AGF AGG AGH AGI G	V24 V24P V110 V230	S	AG A4	PSI MPA	WP	Z
Order example										
535 032	MS	12	- EE	- AGI	- V110	- S	- AG	- MPA	- WP	-

Ordering table			
Grid dimension	[mm]	124	Condi- tions
M	Module No.	535 032	
	Series	Standard	MS
	Size	12	12
	Function	On-off valve, electrical	-EE
	Connection size	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/adaptor	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	[2] -WP
	Alternative 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.

Transfer order code

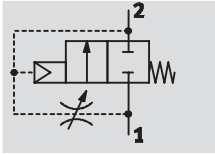
535 032	MS	12	- EE	-	-	-	-	-	-	-	-
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Soft-start valves MS12-DL, MS series

Technical data



Function



- - Flow rate
25,000 ... 42,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
2 ... 21 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 EM and EE)
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- Pressure switching approx. 50% of input pressure
- Adjustable switching time delay

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
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			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 - - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q _{nN} 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

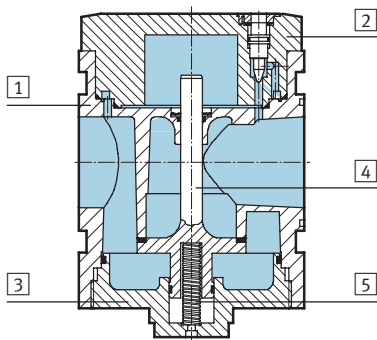
Operating and environmental conditions		
Operating pressure	[bar]	2 ... 21
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Weights [g]	
Soft-start valve	3,600

Materials

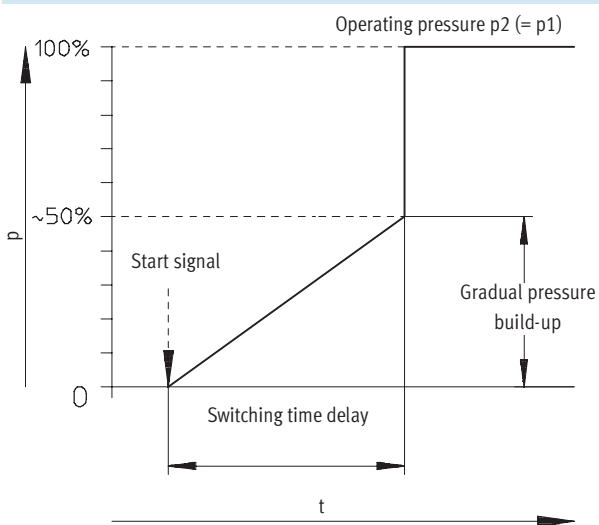
Sectional view



Soft-start valve		
1	Body	Die-cast aluminium
2	Cap, top	Aluminium
3	Cap, bottom	Aluminium
4	Valve stem	Aluminium, nitrile rubber
5	Springs	Steel
-	Covers/cover plates	Polyamide
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE (not with variant AG)

Switching point

Pressure p as a function of time t



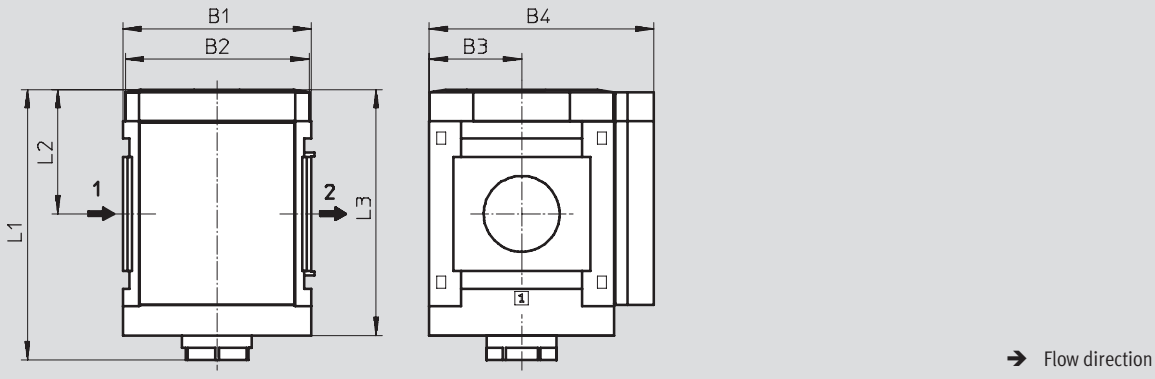
Soft-start valves MS12-DL, MS series

Technical data



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



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

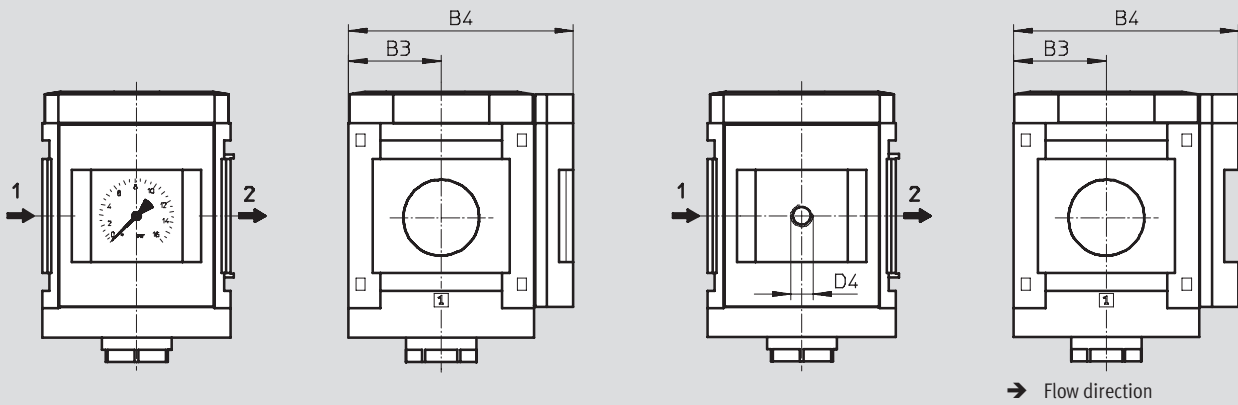
- † - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com/en/engineering

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

Ordering data

Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	541 497	MS12-DL-G ²⁾

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2

2) Free of copper and PTFE

- † - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Soft-start valves MS12-DL, MS series

Ordering data – Modular products

M Mandatory data					O Options			
Module No.	Series	Size	Function	Connection size	Pressure gauge/adaptor	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535 033	MS	12	DL	AGF AGG AGH AGI G	AG A4	PSI MPA	WP	Z
Order example								
535 033	MS	12	- DL	- AGI	- AG	- MPA	- WP	- Z

Ordering table							
Grid dimension		[mm]	124	Condi- tions	Code	Enter code	
M	Module No.	535 033					
	Series	Standard				MS	MS
	Size	12				12	12
	Function	Soft-start valve, pneumatic				-DL	-DL
	Connection size	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/adaptor	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			2	-WP	
	Alternative 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.

Transfer order code

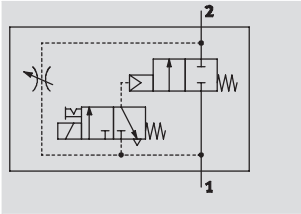
535 033	MS	12	- DL	-	-	-	-	-	-
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Soft-start valves MS12-DE, MS series

Technical data



Function



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



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 manual override (except variant V24P)

General technical data		G1	G1¼	G1½	G2
Pneumatic connection 1, 2 ¹⁾					
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				
Switching position display	Via accessories				
	LED (with variant V24P)				
Type of actuation	Piloted				
Pilot air supply	Internal				
Direction of flow	Non-reversible				
Coil characteristics	V24	24 V DC			
	V110	110 V AC			
	V230	230 V AC			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 - - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Soft-start valves MS12-DE, MS series

Technical data

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

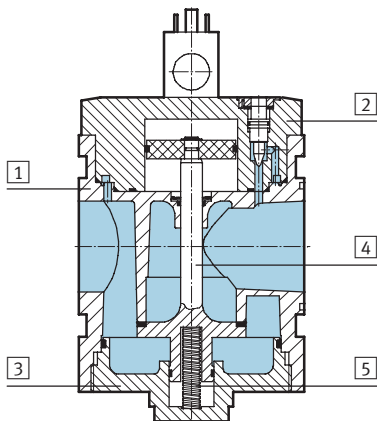
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

- 1) Corrosion resistance class 2 according to Festo standard 940 070
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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, nitrile rubber
5	Springs	Steel
-	Covers/cover plates	Polyamide
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE (not with variant AG)

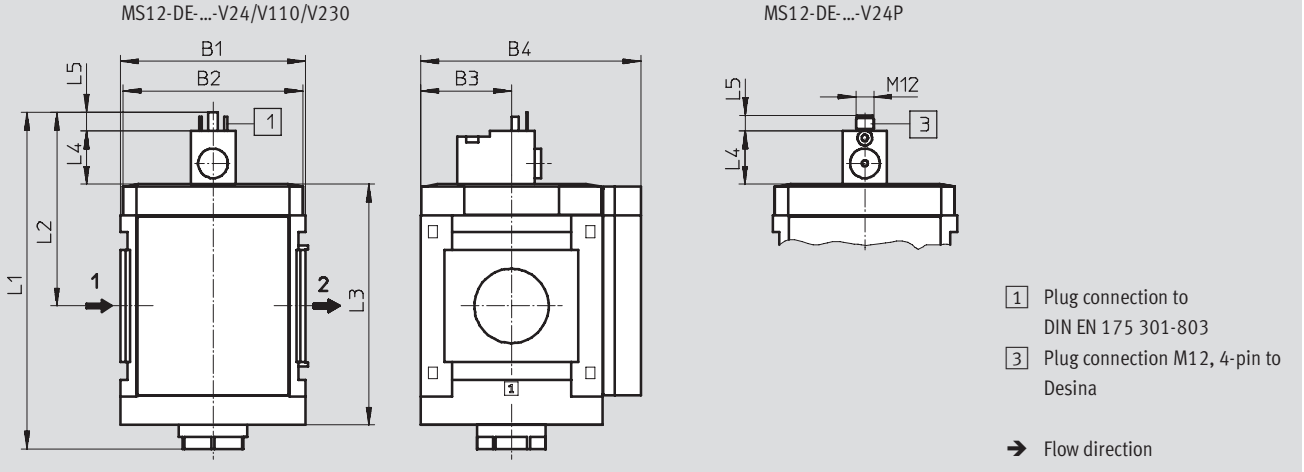
Soft-start valves MS12-DE, MS series

Technical data



Dimensions – Standard

Download CAD data → www.festo.com/en/engineering



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

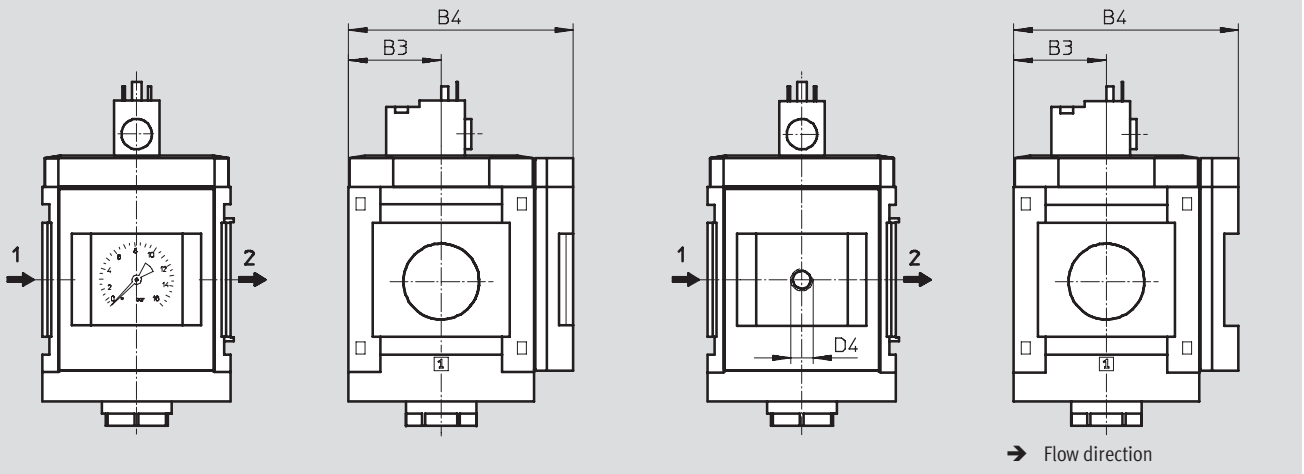
• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com/en/engineering

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

Ordering data

Size	Connection	Supply voltage 24 V DC	
		Part No.	Type
MS12	G1 ... G2 ¹⁾	541 498	MS12-DE-G-V24 ²⁾

1) Connecting plate must be ordered separately as an accessory → 3/2.31-2
 2) Free of copper and PTFE
 • Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

MS12 series service units
 Start-up and exhaust valves
 2.26

Soft-start valves MS12-DE, MS series

Ordering data – Modular products

M Mandatory data						O Options			
Module No.	Series	Size	Function	Connection size	Supply voltage	Pressure gauge/ adapter	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535 034	MS	12	DE	AGF AGG AGH AGI G	V24 V24P V110 V230	AG A4	PSI MPA	WP	Z
Order example									
535 034	MS	12	- DE	- AGH	- V230	- A4	-	- WP	- Z

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535 034			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	Soft-start valve, electrical		-DE	-DE
	Connection size	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	
	Pressure gauge/adapter	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	2	-WP	
	Alternative flow direction	Flow direction from right to left		-Z	

1 PSI, MPA Only with pressure gauge AG.

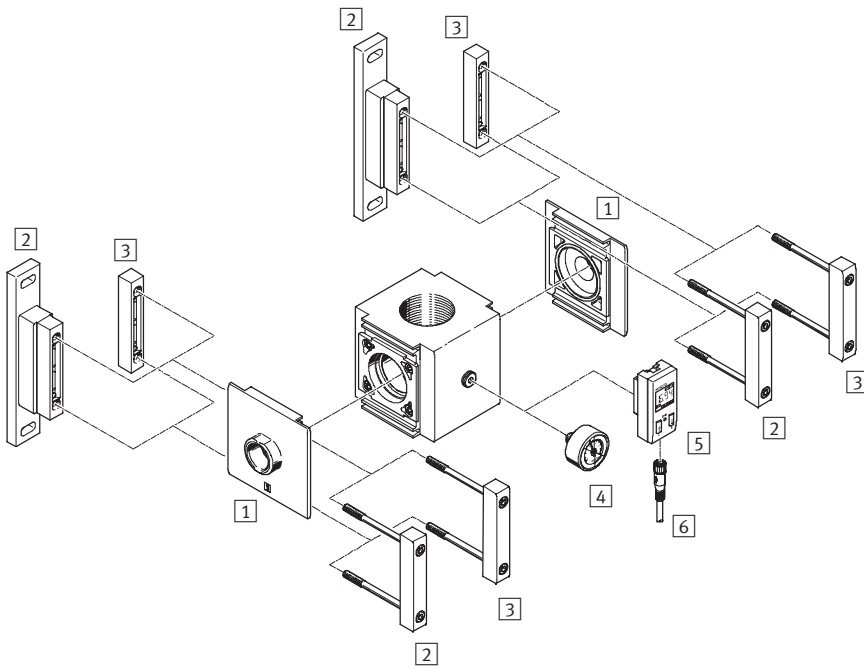
2 WP Only with connecting plate AGF, AGG, AGH or AGI.

Transfer order code

535 034	MS	12	- DE	-	-	-	-	-	-	-
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Branching modules MS12-FRM, MS series

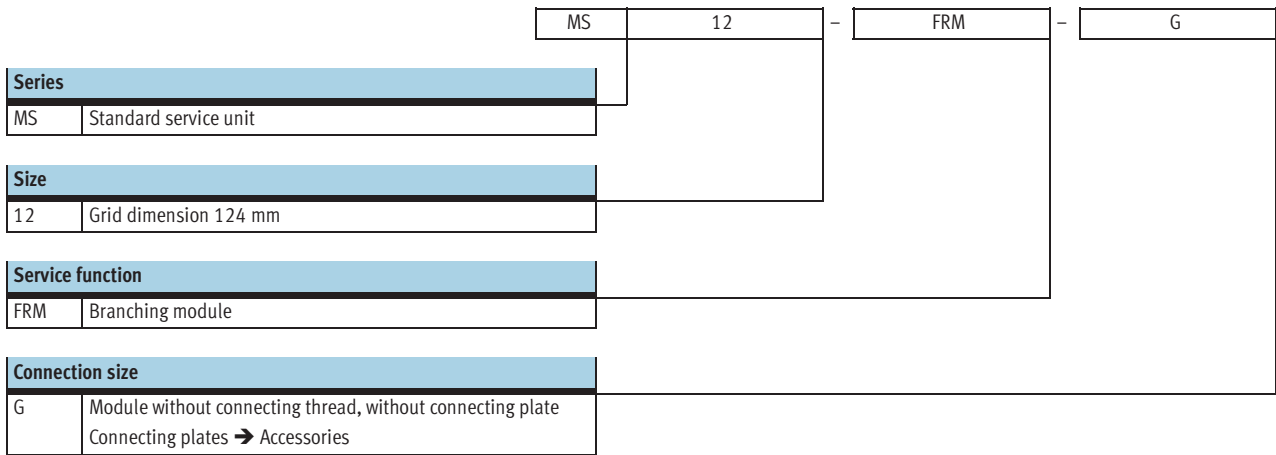
Peripherals overview



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-2
2	Mounting bracket MS12-WP	3/2.31-9
3	Module connector MS12-MV	3/2.31-9
4	Pressure gauge MA	3/2.31-24
5	Pressure sensor SDE1-...-R14/R18	3/2.31-22 Volume 4
6	Plug socket with cable SIM-M8-3.../SIM-M8-4.../SIM-M12-3...	3/2.31-24

Branching modules MS12-FRM, MS series

Type codes



Further variants can be ordered using the modular system

Branching modules FRM → 3 / 2.28-4

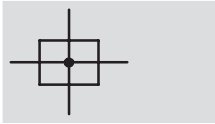
- Connecting plates
- Type of mounting




Branching modules MS12-FRM, MS series

Technical data



Function



-  - Flow rate
25,000 ... 42,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0 ... 21 bar



- Pneumatic manifold with 4 connections
- Attachment facility for auxiliary modules
- Outlet top and bottom
- Can be used as an intermediate distributor for varying air qualities

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Pneumatic connection 3	G2			
Pneumatic connection 4	G1			
Design	Branching module			
Type of mounting	Via accessories			
	In-line installation			
Assembly position	Any			

- 1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

- 1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-2
 Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar

Operating and environmental conditions	
Operating pressure [bar]	0 ... 21
Operating medium	Compressed air
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Storage temperature [°C]	-10 ... +60
Corrosion resistance CRC ¹⁾	2

- 1) Corrosion resistance class 2 according to Festo standard 940 070
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Branching modules MS12-FRM, MS series

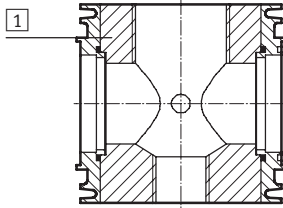
Technical data

FESTO

Weights [g]	
Branching module	3,000

Materials

Sectional view



Branching module		
1	Body	Die-cast aluminium
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE

Dimensions – Standard

Download CAD data → www.festo.com/en/engineering

1 G $\frac{1}{4}$ Female thread in body, sealed with cover plate by default

→ Flow direction

Type	B1	B2	B3	D2	D3	D4	L1	L2
MS12-FRM	124	124	134	G2	G1	G $\frac{1}{4}$	122	61

• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Ordering data			
Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	541 681	MS12-FRM-G²⁾

- 1) Connecting plate must be ordered separately as an accessory → 3/2.31-2
 - 2) Free of copper and PTFE
- Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Branching modules MS12-FRM, MS series

Ordering data – Modular products



M Mandatory data					O Options
Module No.	Series	Size	Function	Connection size	Type of mounting
535 035	MS	12	FRM	AGF AGG AGH AGI G	WP
Order example					
535 035	MS	12	- FRM	- AGF	- WP

Ordering table						
Grid dimension		[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535 035				
	Series	Standard			MS	MS
	Size	12			12	12
	Function	Branching module			-FRM	-FRM
	Connection size	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	Type of mounting	Mounting bracket		1	-WP	

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

Transfer order code

535 035	MS	12	- FRM	-		-	
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MS series service units

Product overview



MS series service units
Accessories








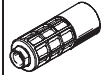
2.31

Type		Accessories for size			→ Page
		MS4	MS6	MS12	
Cover plates					
Connecting plate MS-AG...		■	■	■	3/2.31-2
Cover cap MS-END		■	■	-	3/2.31-3
Mounting plate MS-AEND		■	■	-	3/2.31-3
Mounting attachments for individual devices					
Mounting bracket MS-WB		■	■	-	3/2.31-4
Mounting bracket MS-WBM		■	-	-	3/2.31-4
Mounting bracket MS-WR		■	■	-	3/2.31-5
Hex nut MS-WRS		■	■	-	3/2.31-5
Mounting attachments for individual devices/combinations					
Wall mounting plate MS-WP		■	■	■	3/2.31-7, 3/2.31-9
Wall mounting plate MS-WPB		■	■	-	3/2.31-7
Wall mounting plate MS-WPM		■	■	-	3/2.31-8
Connectors					
Module connector MS-MV		■	■	■	3/2.31-9
Module connector MS-MVM		■	■	-	3/2.31-9
Module connector MS-RMV		■	■	-	3/2.31-10, 3/2.31-11
Module connector MS-AMV		■	■	-	3/2.31-10, 3/2.31-12

MS series service units

Product overview

FESTO

Type	Accessories for size			→ Page	
	MS4	MS6	MS12		
Adapter for mounting on profiles					
Pressure supply modules MS-E-IPM-40-80		■	■	-	3/2.31-13, 3/2.31-14
Pressure supply modules MS-E-IPM-80-80		■	■	-	3/2.31-13, 3/2.31-15
Branching modules MS-A-IPM-80		■	■	-	3/2.31-13, 3/2.31-16
Branching modules MS-A-RMV-IPM-80		■	■	-	3/2.31-13, 3/2.31-17
Sealing rings MS-NNR		■	■	-	3/2.31-13, 3/2.31-18
Filter cartridges					
Filter cartridges MS-LF...		■	■	■	3/2.31-19
Accessories for soft start/quick exhaust valve MS-SV					
Multi-pin plug socket NECA		-	■	-	3/2.31-20
Silencer UOS-1		-	■	-	3/2.31-21
Other accessories					
Pressure switch PEV		■	■	-	3/2.31-22
Pressure sensor SDE1		■	■	-	3/2.31-22
Angled plug socket PEV		■	■	-	3/2.31-23
Plug socket MSSD		■	■	■	3/2.31-23
Plug socket with cable KMEB/KMC		■	■	■	3/2.31-23
Illuminating seal MEB-LD/MC-LD		■	■	■	3/2.31-23
Locking clip CPV18-HV		■	■	-	3/2.31-23
Plug socket with cable SIM		■	■	■	3/2.31-24
Pressure gauge MA		■	■	■	3/2.31-24
Silencer U		■	■	■	3/2.31-25
Double nipple ESK		■	■	-	3/2.31-25
Padlock LRVS-D		■	■	■	3/2.31-25
Special oil OFSW		■	■	■	3/2.31-25

MS series service units

Accessories

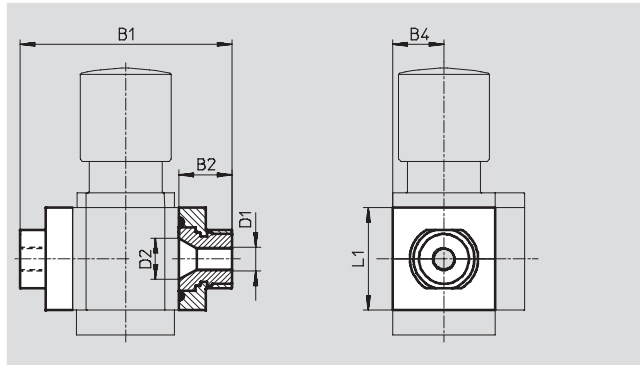


Connecting plate MS4/6-AG...

(order code: AG...)

- Adapter for pneumatic connection
- MS6-AGE for implementing threaded connection G $\frac{3}{4}$

Material:
Aluminium



Dimensions and ordering data									
Size	B1	B2	B4	D1	D2	L1	Weight [g]	Part No.	Type
MS4	83.5	21.5	21	G $\frac{1}{8}$	16.8	42	128	526 068	MS4-AGA
				G $\frac{1}{4}$				526 069	MS4-AGB
				G $\frac{3}{8}$				526 070	MS4-AGC
MS6	115	26.5	31	G $\frac{1}{4}$	24	62	300	526 080	MS6-AGB
				G $\frac{3}{8}$				526 081	MS6-AGC
				G $\frac{1}{2}$				526 082	MS6-AGD
				G $\frac{3}{4}$				526 083	MS6-AGE

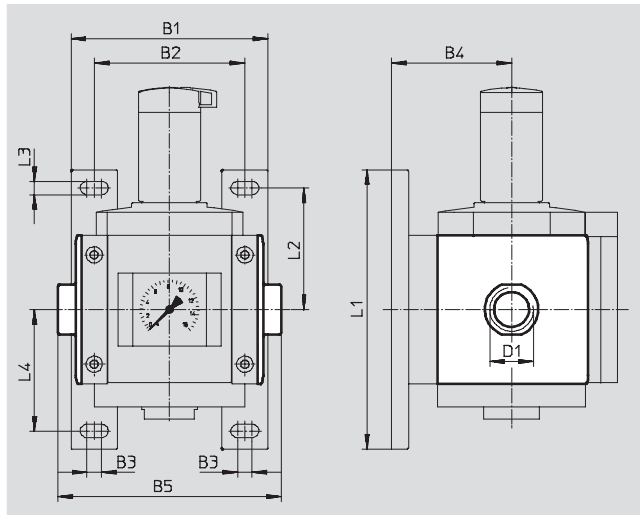
-||- Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Connecting plate MS12-AG...

(order code: AG...)

- Adapter for pneumatic connection

Material:
Die-cast aluminium
Free of copper and PTFE



Dimensions and ordering data													
Size	B1	B2	B3	B4	B5	D1	L1	L2	L3	L4	Weight [g]	Part No.	Type
MS12	162	124	12	99	184	G1	230	100	11	100	1,300	537 135	MS12-AGF
					184	G1 $\frac{1}{4}$						537 136	MS12-AGG
					184	G1 $\frac{1}{2}$						537 137	MS12-AGH
					196	G2						537 138	MS12-AGI

-||- Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

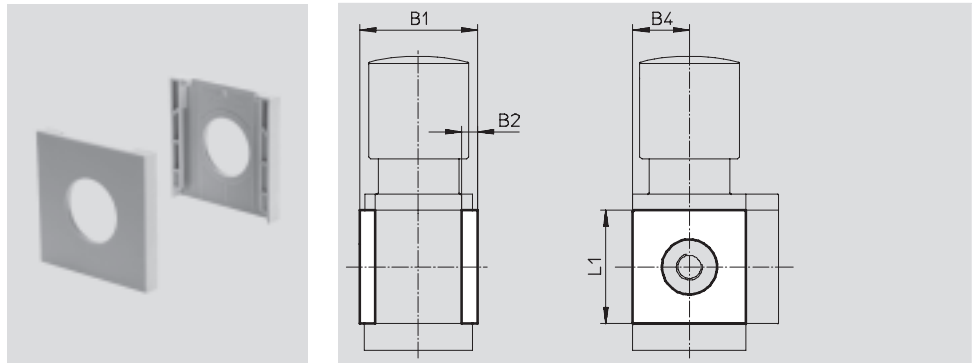
MS series service units

Accessories

Cover cap MS4/6-END

- Can be used to cover the body sides of the first and last module if connecting plates are not used.

Material:
Reinforced polyamide
Free of copper and PTFE



Dimensions and ordering data						
Size	B1	B2	B4	L1	Part No.	Type
MS4	43.6	6	21	42	538 779	MS4-END
MS6	67	8	31	62	538 780	MS6-END

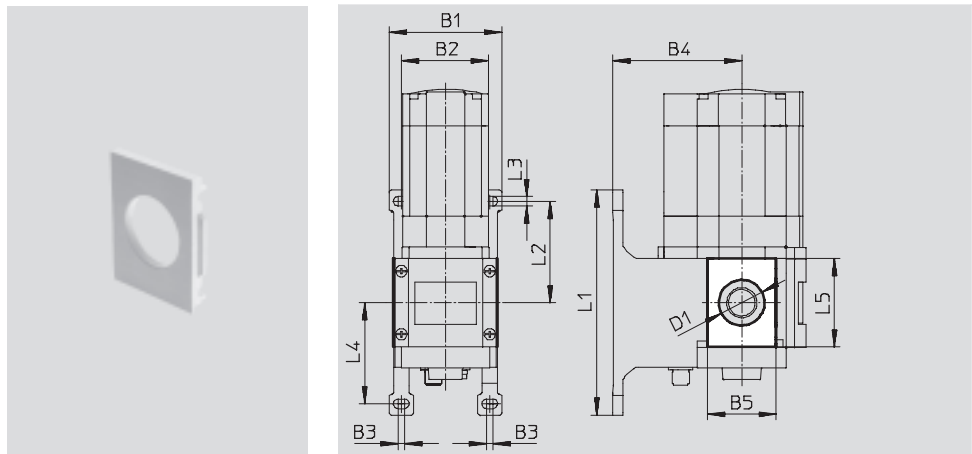
• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.


Mounting plate MS4/6-AEND

(order code: WBE; scope of delivery includes wall mounting plate MS6-WPB)

- In combination with wall mounting plate MS-WP or MS-WPB for mounting an individual unit on a wall with direct thread

Material:
Reinforced polyamide
Conforms to RoHS
Free of copper and PTFE



Dimensions and ordering data														Weight [g]	Part No.	Type	
Size	B1	B2	B3	B4		B5	D1	L1	L2	L3	L4	L5	CRC ¹⁾				
				WP	WPB		∅										
MS4	55.2	40.2	4	44	66	30.4	20.3	106	46.5	5.6	46.7	42	2	4	542 966	MS4-AEND	
MS6	79	62	4.5	54	90.5	48.4	32	158	71	6.6	71	62	2	17	535 408	MS6-AEND	

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

MS series service units

Accessories



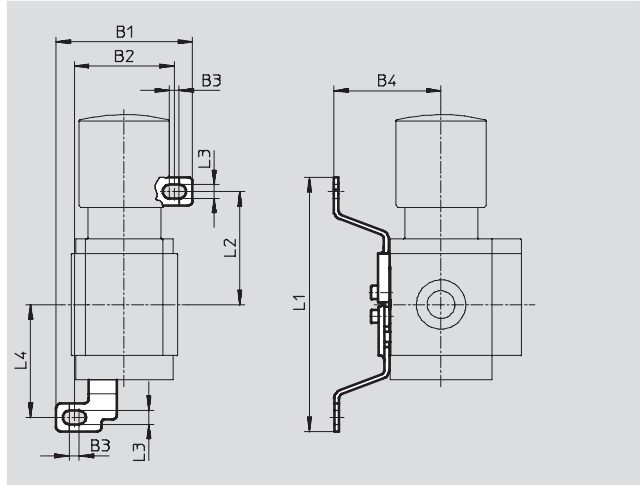
Mounting bracket MS4/6-WB

(order code: WB)

- For wall mounting

Material:

Steel



Dimensions and ordering data											
Size	B1	B2	B3	B4	L1	L2	L3	L4	Weight [g]	Part No.	Type
MS4	56.2	41.2	4	44.2	104.6	46.6	5.6	46.5	46	532 185	MS4-WB
MS6	79.4	61.9	4.5	55	157.6	71	6.6	71	121	532 196	MS6-WB

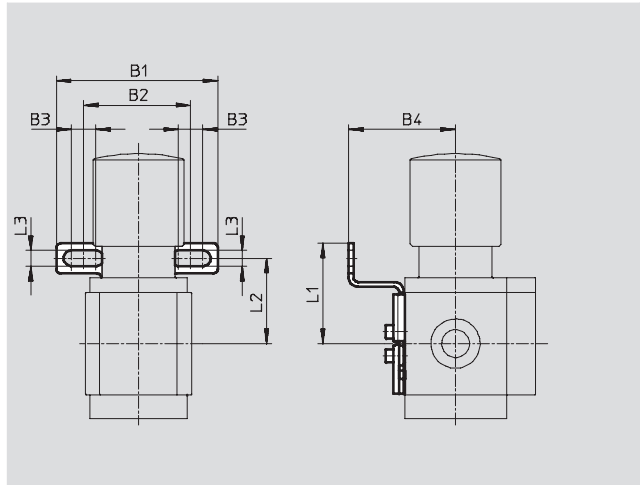
Mounting bracket MS4-WBM

(order code: WBM)

- For wall mounting

Material:

Steel



Dimensions and ordering data											
Size	B1	B2	B3	B4	L1	L2	L3	Weight [g]	Part No.	Type	
MS4	66.5	44	10	44	41.3	35	6.5	48	526 062	MS4-WBM	

MS series service units
Accessories

2.31

MS series service units

Accessories



Mounting bracket MS4/6-WR

(order code: WR)

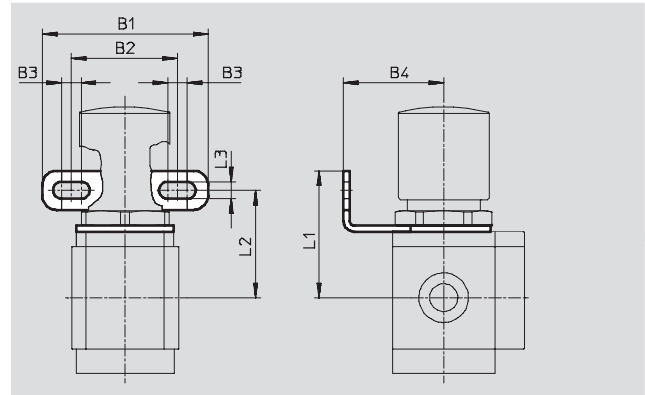
- For wall mounting
- For filter regulator, pressure regulator

Material:
Steel



Note

The hex nut for attaching components to this bracket must be ordered separately.



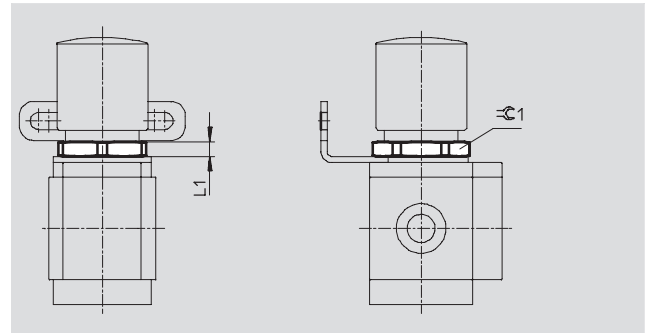
Dimensions and ordering data

Size	B1	B2	B3	B4	L1	L2	L3	Weight [g]	Part No.	Type
MS4	68	44	8	41	52	44	7	49	526 064	MS4-WR
MS6	70	42	8.2	40	67	57	7.1	90	526 075	MS6-WR

Hex nut MS4/6-WRS

- For front panel mounting
- For attaching components to the mounting bracket MS...-WR

Material:
Aluminium



Dimensions and ordering data

Size	L1	C1	Weight [g]	Part No.	Type
MS4	6	36	6.9	532 187	MS4-WRS
MS6	7	55	20.9	532 188	MS6-WRS

MS series service units

Accessories



Wall mounting plate MS4/6-WP...

Clearances for mounting service unit combinations

1 service unit

MS4: with WP/WPB/WPM-D:
40.2 mm (20.1 mm at
MS4-FRM-FRZ)

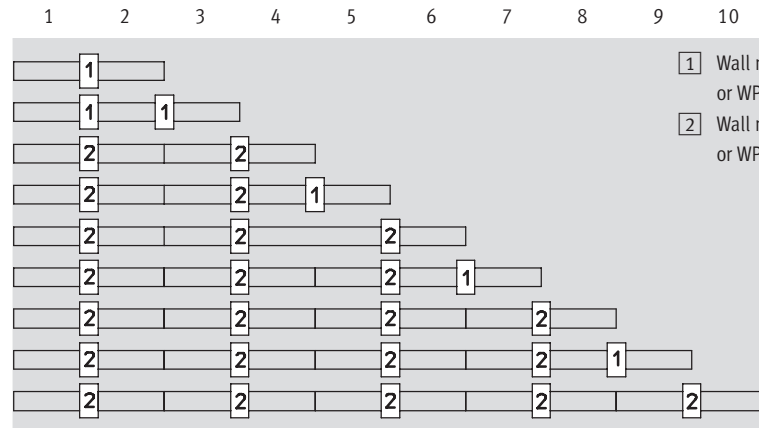
MS6: with WP, WPB: 62 mm (31 mm
at MS4-FRM-FRZ)
with WPM-D: 69 mm
(38 mm at MS6-FRM-FRZ)

2 service units

MS4: with WP/WPB/WPM-2D:
80.4 mm (40.2 mm at
MS4-FRM-FRZ)

MS6: with WP, WPB: 124 mm
(62 mm at MS6-FRM-FRZ)
with WPM-2D: 138 mm
(76 mm at MS6-FRM-FRZ)

Number of units

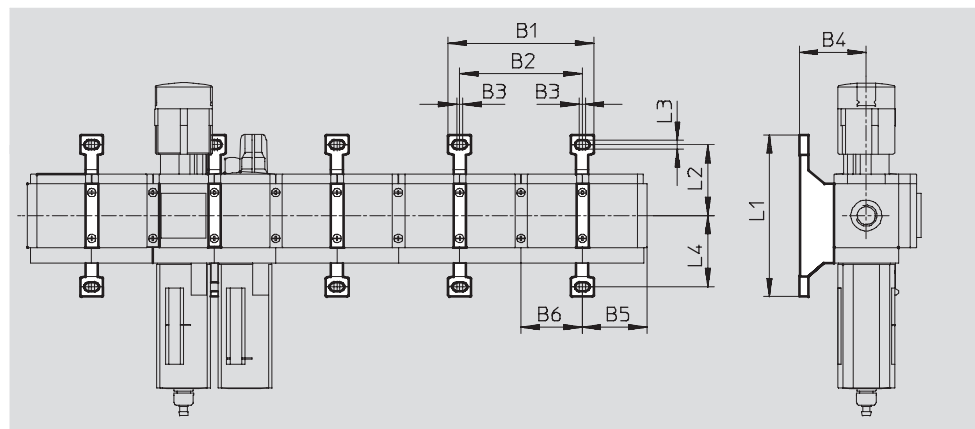


- 1 Wall mounting plate WP, WPB or WPM-D
- 2 Wall mounting plate WP, WPB or WPM-2D

Mounting dimensions

Note

The distributor block MS4/6-FRM-FRZ has a half grid dimension width.



Type	2 service units with grid dimension		1 service unit with grid dimension and 1 distributor block MS-FRM-FRZ		2 distributor blocks MS-FRM-FRZ		B3	B4	Service unit with grid dimension		Distributor block MS-FRM-FRZ		L1	L2	L3	L4			
	B1	B2	B1	B2	B1	B2			B5 ¹⁾	B6	B5 ¹⁾	B6							
MS4-WP	95.4	80.4	75.3	60.3	55.2	40.2	4	44	41.9	40.2	21.8	20.1	106	46.5	5.6	46.7			
MS4-WPB																	92.8	34.8	45.2
MS4-WPM-...D																			
MS6-WP	141	124	110	93	79	62	4.5	54.1	64.5	62	33.5	31	158	71	6.6	71			
MS6-WPB								90.5											
MS6-WPM-...D								168									138	137	107

1) With accessory cover cap MS-END

MS series service units

Accessories



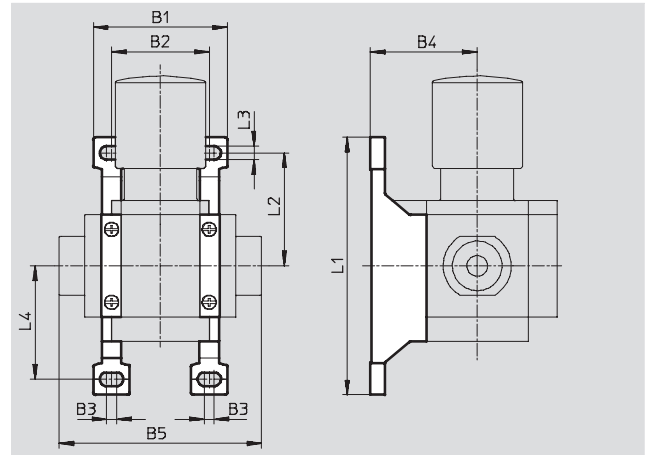
Wall mounting plate MS4/6-WP

(order code: WP)

- For connecting the modules for wall mounting
- In combination with a connecting plate MS4/6-AG... for mounting an individual unit on a wall
- In combination with mounting plate MS-AEND for mounting an individual unit with direct thread on a wall
- For pressure regulator LRB with angled outlet block B... at rear

Material:

Die-cast aluminium



Dimensions and ordering data											
Size	B1	B2	B3	B4	B5	L1	L2	L3	L4	Weight [g]	Part No. Type
MS4	55.2	40.2	4	44	83.4	106	46.5	5.6	46.7	39	532 184 MS4-WP
MS6	79	62	4.5	54.1	115	158	71	6.6	71	76	532 195 MS6-WP

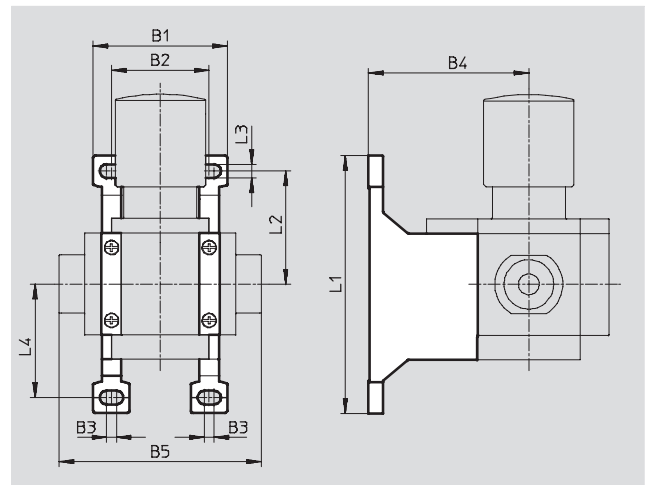
Wall mounting plate MS4/6-WPB

(order code: WPB)

- For connecting the modules for wall mounting
- In combination with a connecting plate MS4/6-AG... for mounting an individual unit on a wall
- In combination with mounting plate MS-AEND for mounting an individual unit with direct thread on a wall
- Provides large wall gap for pressure regulator

Material:

Die-cast aluminium



Dimensions and ordering data											
Size	B1	B2	B3	B4	B5	L1	L2	L3	L4	Weight [g]	Part No. Type
MS4	55.2	40.2	4	66	83.4	106	46.5	5.6	46.7	55	526 063 MS4-WPB
MS6	79	62	4.5	90.5	115	158	71	6.6	71	115	526 074 MS6-WPB

MS series service units

Accessories



Wall mounting plate MS4/6-WPM

(order code: WPM)

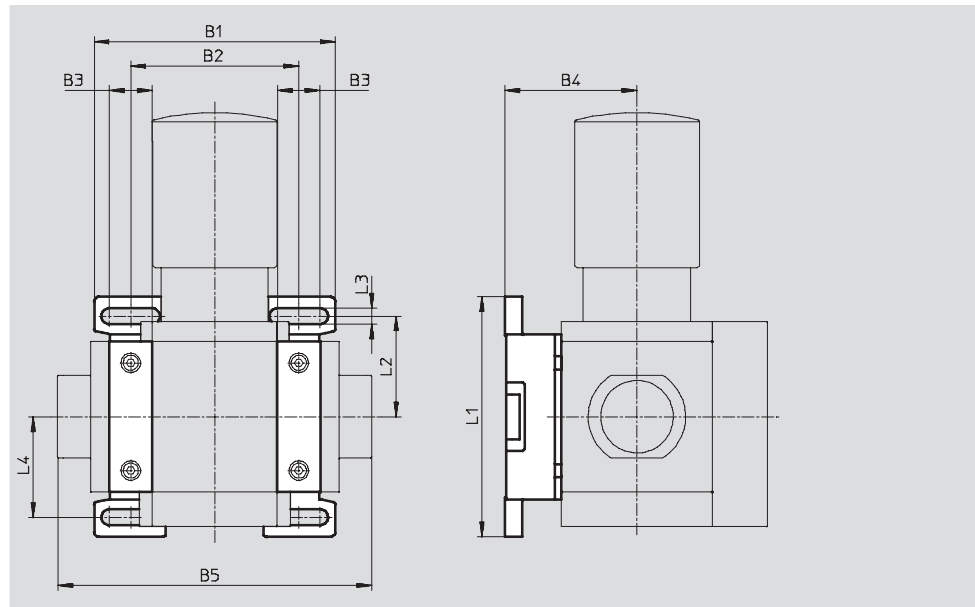
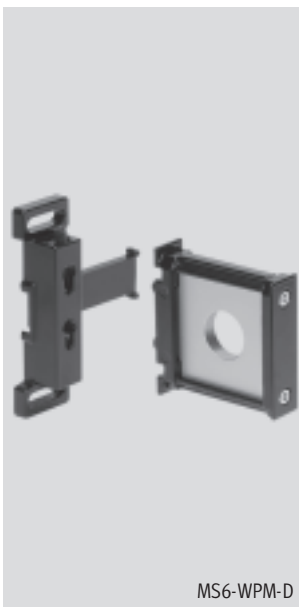
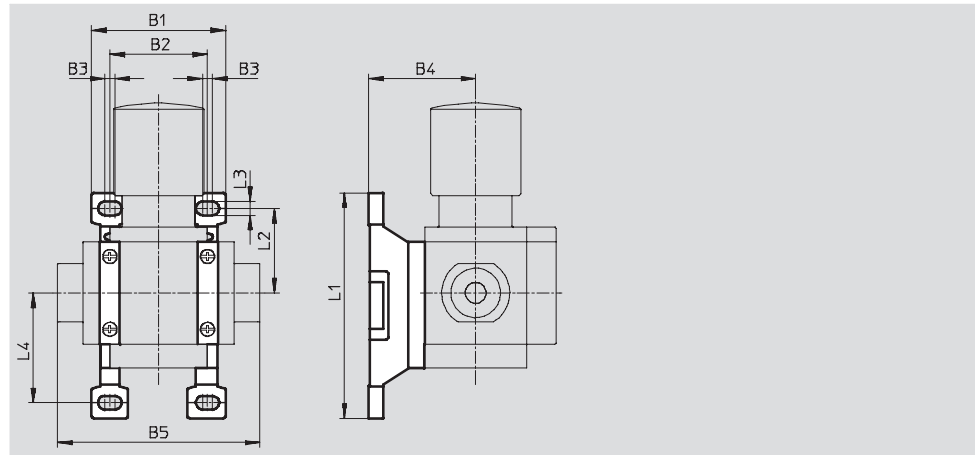
- For connecting the modules for wall mounting
- In combination with a connecting plate MS4/6-AG... for mounting an individual unit on a wall
- Speedy attachment and detachment
- For installation of modules with regulating knob pointing downwards

The distance piece D or 2D (designated in the type code) is included in the scope of delivery and ensures the correct clearance

Material:
Die-cast aluminium

MS series service units
Accessories

2.31



Dimensions and ordering data													
Size	B1	B2	B3	B4	B5	L1	L2	L3	L4	Clearance	Weight [g]	Part No.	Type
MS4	55.2	40.2	4	44	83.4	92.8	34.8	5.6	45.2	40.2	45	526 060	MS4-WPM-D
	95.4	80.4			123.4					80.4	55	526 061	MS4-WPM-2D
MS6	99	69	17.5	54.1	129	98.6	41.3	6.6	41.3	69	144	526 073	MS6-WPM-D
	168	138			198					138	154	532 186	MS6-WPM-2D

MS series service units

Accessories



Wall mounting plate MS12-WP

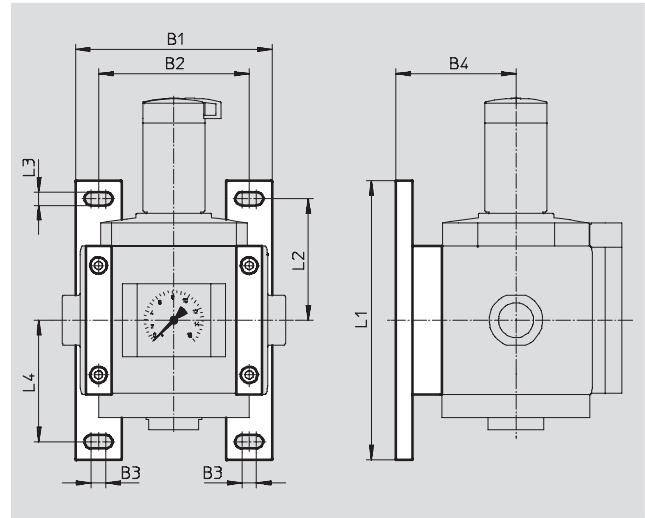
(order code: WP)

- For connecting the modules for wall mounting
- In combination with a connecting plate for mounting an individual unit on a wall

Material:

Die-cast aluminium

Free of copper and PTFE



Dimensions and ordering data

Size	B1	B2	B3	B4	L1	L2	L3	L4	Weight [g]	Part No.	Type
MS12	162	124	12	99	230	100	11	100	700	537 133	MS12-WP

Module connector MS...-MV

- For connecting modules

Material:

MS4/6: Stainless steel/polycarbonate

MS12: Die-cast aluminium,

Free of copper and PTFE



MS4/6



MS12

Ordering data

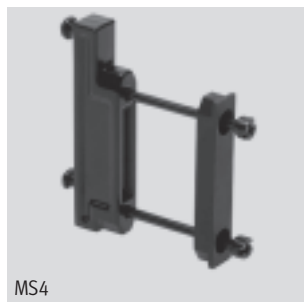
Size	Weight [g]	Part No.	Type
MS4	36	532 798	MS4-MV
MS6	54	532 799	MS6-MV
MS12	500	537 134	MS12-MV

Module connector MS4/6-MVM

- For installation of modules with regulating knob pointing downwards

Material:

Die-cast aluminium



MS4



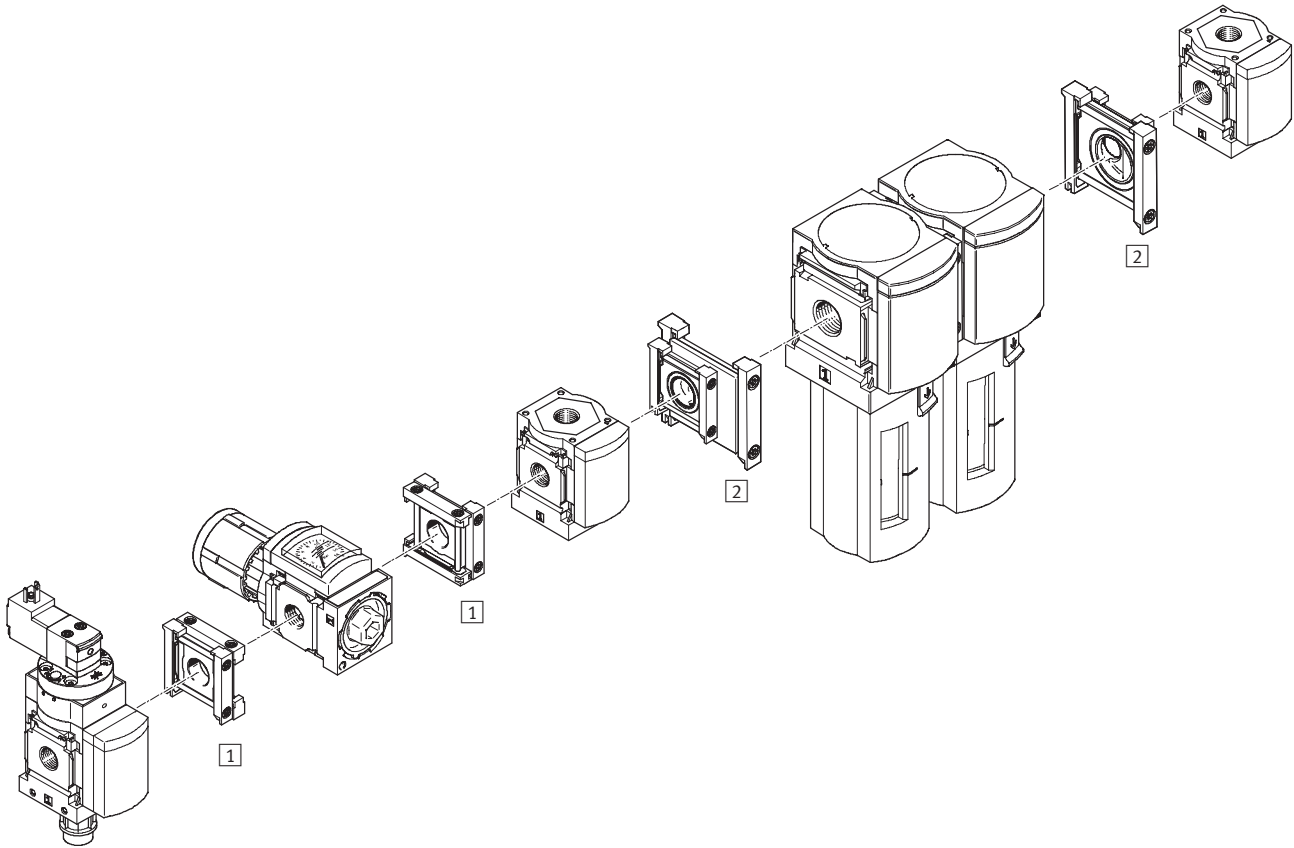
MS6

Ordering data


Size	Part No.	Type
MS4	532 800	MS4-MVM
MS6	532 801	MS6-MVM

MS series service units

Accessories



Mounting attachments		→ Page
1	Module connector MS4/6-RMV	3/2.31-11
2	Module connector MS4-6-AMV	3/2.31-12

 Note
Mounting attachments for wall
mounting → 3/2.31-6

MS series service units

Accessories

Module connector MS4/6-RMV

- For connecting service units at right angles to the axis of connection

Material:

Connecting plate, module connector:

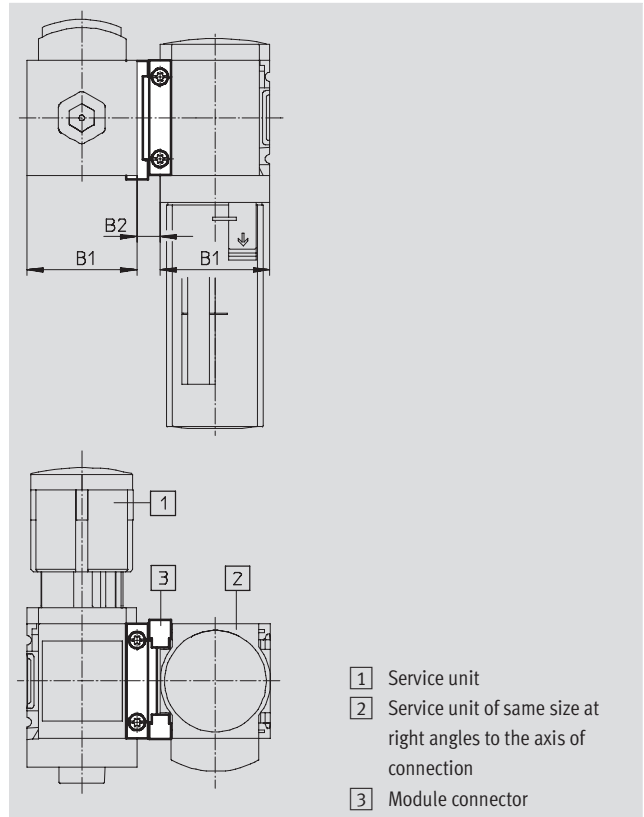
Die-cast aluminium

Sealing ring: Nitrile rubber

Conforms to RoHS

Temperature of medium:

-10 ... +60 °C



- 1 Service unit
- 2 Service unit of same size at right angles to the axis of connection
- 3 Module connector

Dimensions and ordering data						
Size	B1	B2	CRC ¹⁾	Weight [g]	Part No.	Type
MS4	40.2	8.5	2	42	543 490	MS4-RMV
MS6	62	11	2	112	543 491	MS6-RMV

1) Corrosion resistance class 2 to Festo standard 940 070
 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

MS series service units

Accessories

Module connector MS4-6-AMV

- For connecting MS4 and MS6 service units as one unit

Material:

Connecting plate, module connector:

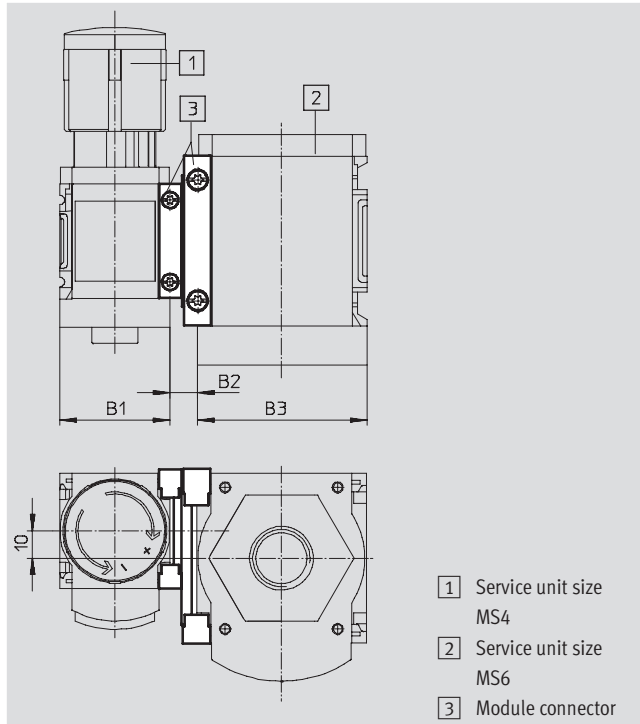
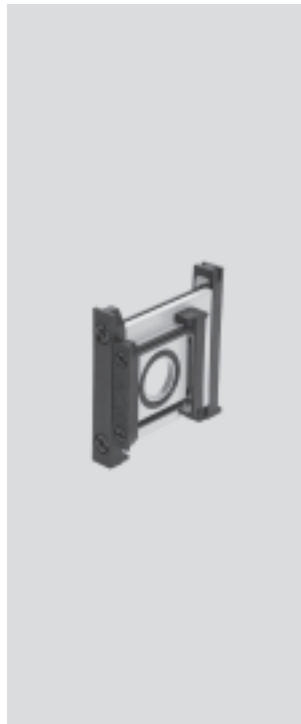
Die-cast aluminium

Sealing ring: Nitrile rubber

Conforms to RoHS

Temperature of medium:

-10 ... +60 °C



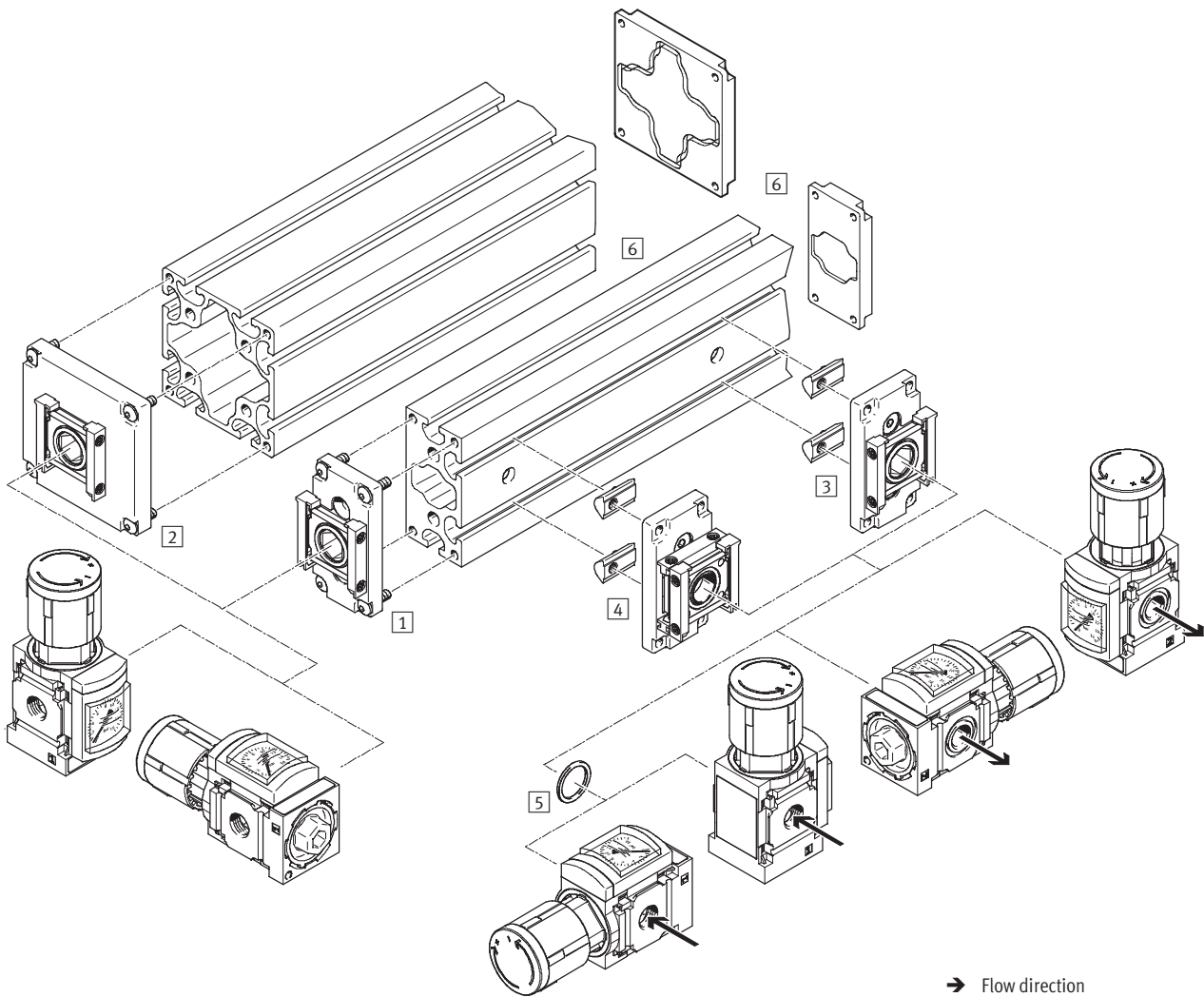
- 1 Service unit size MS4
- 2 Service unit size MS6
- 3 Module connector

Dimensions and ordering data							
Size	B1	B2	B3	CRC ¹⁾	Weight [g]	Part No.	Type
MS4/6	40.2	10	62	2	77	543 489	MS4-6-AMV

1) Corrosion resistance class 2 to Festo standard 940 070
 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

MS series service units

Accessories



→ Flow direction

Mounting attachments		→ Page
1	Pressure supply module MS4/6-E-IPM-40-80	3/2.31-14
2	Pressure supply module MS4/6-E-IPM-80-80	3/2.31-15
3	Branching module MS4/6-A-IPM-80	3/2.31-16
4	Branching module MS4/6-A-RMV-IPM-80	3/2.31-17
5	Sealing ring MS4/6-NNR	3/2.31-18
6	Profiles 40x80/80x80, cover plates, supply plates, drilling jigs	On request

Note
Further mounting attachments are required for mounting a service unit combination → 3/2.31-6

MS series service units

Accessories

Pressure supply module

MS4/6-E-IPM-40-80

- For mounting a service unit on the end of a profile of size 40x80
- Module connector can be repositioned by 90° for horizontal mounting of the service unit

Material:

Connecting plate, hollow bolt, module connector: Die-cast aluminium

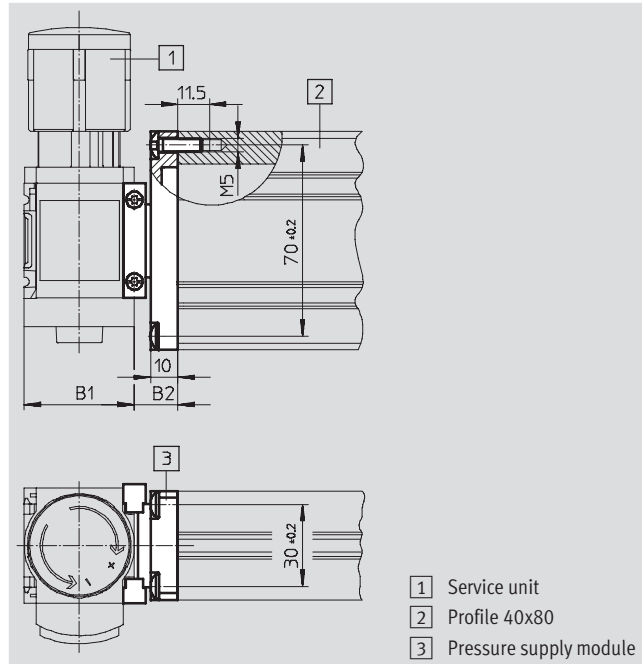
Screws: Steel

Seals: Nitrile rubber

Conforms to RoHS

Temperature of medium:

-10 ... +60 °C



Dimensions and ordering data						
Size	B1	B2	CRC ¹⁾	Weight [g]	Part No.	Type
MS4	40.2	16	2	109	543 494	MS4-E-IPM-40-80
MS6	62	16	2	141	543 496	MS6-E-IPM-40-80

1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

MS series service units

Accessories

Pressure supply module

MS4/6-E-IPM-80-80

- For mounting a service unit on the end of a profile of size 80x80
- Module connector can be repositioned by 90° for horizontal mounting of the service unit

Material:

Connecting plate, hollow bolt, module connector: Die-cast aluminium

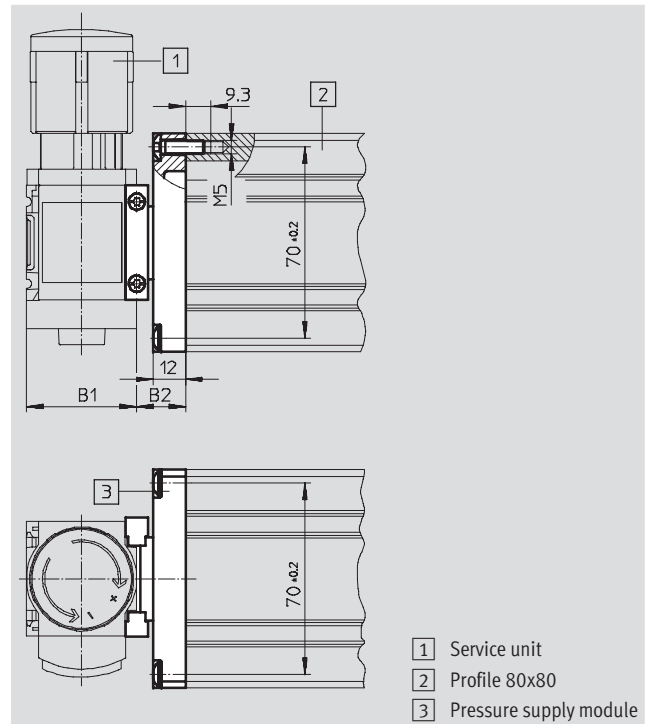
Screws: Steel

Seals: Nitrile rubber

Conforms to RoHS

Temperature of medium:

-10 ... +60 °C



Dimensions and ordering data						
Size	B1	B2	CRC ¹⁾	Weight [g]	Part No.	Type
MS4	40.2	18	2	186	543 495	MS4-E-IPM-80-80
MS6	62	18	2	218	543 497	MS6-E-IPM-80-80

1) Corrosion resistance class 2 to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

MS series service units

Accessories

Branching module MS4/6-A-IPM-80

- For mounting a service unit on the long side of a profile
- Module connector can be repositioned by 90° for horizontal mounting of the service unit

Material:

Connecting plate, hollow bolt, module

connector: Die-cast aluminium

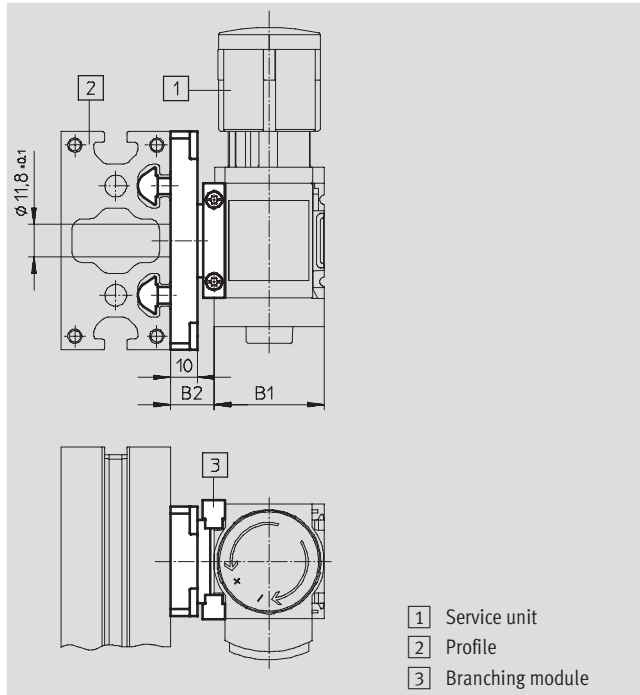
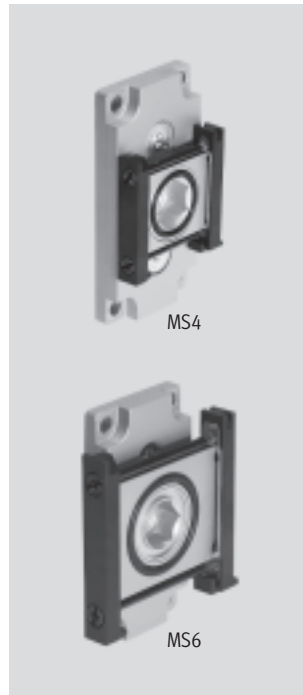
Screws: Steel

Seals: Nitrile rubber

Conforms to RoHS

Temperature of medium:

-10 ... +60 °C



- 1 Service unit
- 2 Profile
- 3 Branching module

Dimensions and ordering data						
Size	B1	B2	CRC ¹⁾	Weight [g]	Part No.	Type
MS4	40.2	16	2	124	543 498	MS4-A-IPM-80
MS6	62	16	2	156	543 499	MS6-A-IPM-80

1) Corrosion resistance class 2 to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

MS series service units

Accessories

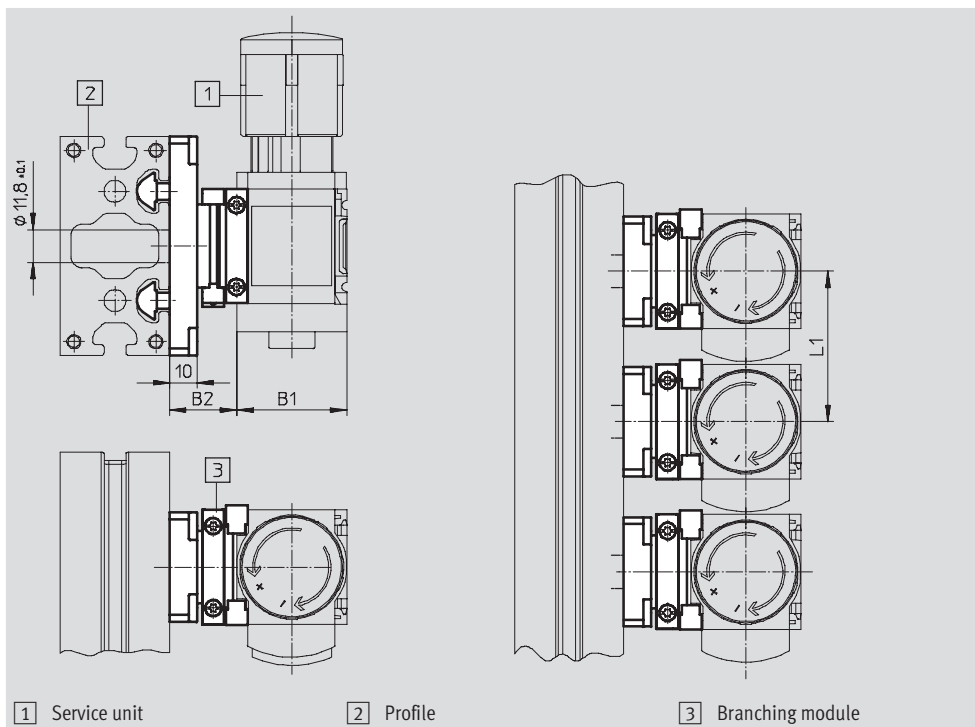
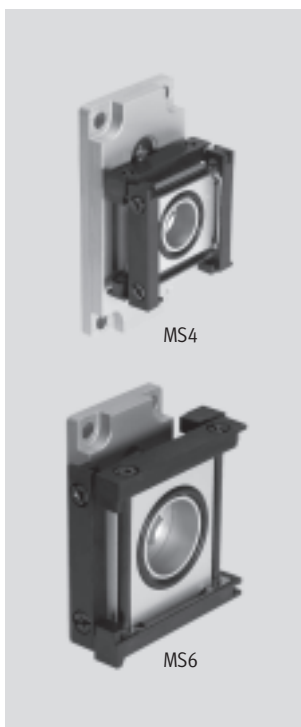
Branching module

MS4/6-A-RMV-IPM-80

- For mounting a service unit on the long side of a profile
- Suitable for manifold mounting (the fittings on the module connector can be accessed from above for fast replacement of an individual component)
- Module connector can be repositioned by 90° for horizontal mounting of the service unit

Material:
 Connecting plate, hollow bolt,
 module connector: Die-cast
 aluminium
 Screws: Steel
 Seals: Nitrile rubber
 Conforms to RoHS

Temperature of medium:
 -10 ... +60 °C



Dimensions and ordering data							
Size	B1	B2	L1	CRC ¹⁾	Weight [g]	Part No.	Type
MS4	40.2	24.5	55	2	150	543 500	MS4-A-RMV-IPM-80
MS6	62	27	77	2	236	543 501	MS6-A-RMV-IPM-80

1) Corrosion resistance class 2 to Festo standard 940 070
 Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

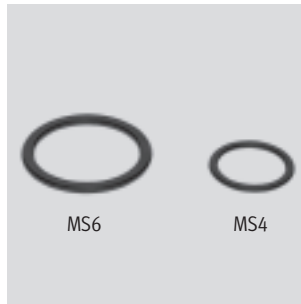
MS series service units

Accessories

Sealing ring MS4/6-NNR

- For sealing a branching module
MS-A-IPM when used as a pressure supply module

Material:
Nitrile rubber
Conforms to RoHS



Temperature of medium:
-10 ... +60 °C

Dimensions and ordering data			
Size	CRC ¹⁾	Part No.	Type
MS4	2	543 492	MS4-NNR
MS6	2	543 493	MS6-NNR




1) Corrosion resistance class 2 to Festo standard 940 070
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

MS series service units

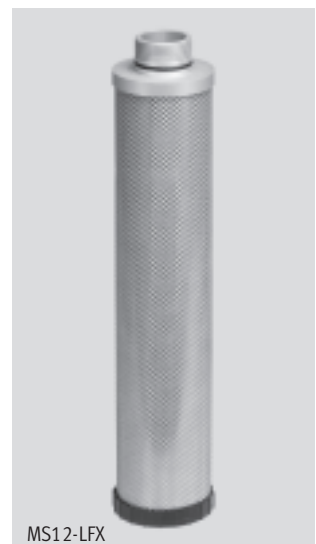
Accessories

Filter cartridge MS4/6-LF...



Ordering data				
Size		Grade of filtration [µm]	Part No.	Type
MS4	Micro-filter cartridge	0.01	162 674	MS4/D-MINI-LFM-A
	Fine-filter cartridge	1	162 677	MS4/D-MINI-LFM-B
	Filter cartridge	5	534 501	MS4-LFP-C
	Filter cartridge	40	534 502	MS4-LFP-E
	Active carbon filter cartridge	–	532 912	MS4/D-MINI-LFX
MS6	Micro-filter cartridge	0.01	532 909	MS6-LFM-A
	Micro-filter cartridge (for variant HF, high flow rate)	0.01	552 093	MS6-LFM-A-HF 
	Fine-filter cartridge	1	532 910	MS6-LFM-B
	Fine-filter cartridge (for variant HF, high flow rate)	1	552 092	MS6-LFM-B-HF 
	Filter cartridge	5	534 499	MS6-LFP-C
	Filter cartridge	40	534 500	MS6-LFP-E
	Active carbon filter cartridge	–	532 911	MS6-LFX
	Active carbon filter cartridge (for variant HF, high flow rate)	–	552 094	MS6-LFX-HF 

Filter cartridge MS12-LF...



Ordering data				
Size		Grade of filtration [µm]	Part No.	Type
MS12	Micro-filter cartridge	0.01	537 146	MS12-LFM-A
	Fine-filter cartridge	1	537 145	MS12-LFM-B
	Filter cartridge	5	537 143	MS12-LFP-C
	Filter cartridge	40	537 144	MS12-LFP-E
	Active carbon filter cartridge	–	537 147	MS12-LFX

MS series service units

Accessories

Multi-pin plug socket NECA

(order code: MP1/MP2/MP3)

- For soft start and exhaust valve
MS6-SV

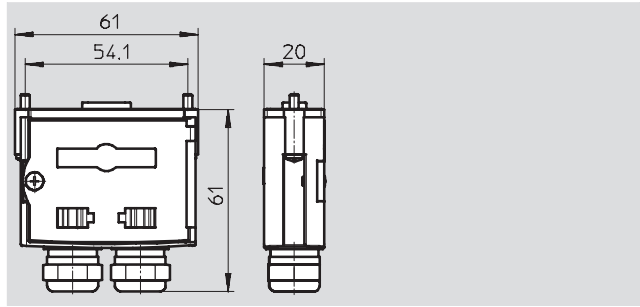
Material:

Housing: Reinforced polyamide

Screws: Steel

Union nut: Brass

Seals: Nitrile rubber



Technical data	
Type of mounting	Via through-holes
Electrical connection	Sub-D, 9-pin, screw terminal 9-pin
Operating voltage range [V DC]	21.6 ... 26.4
Nominal operating voltage [V DC]	24
Current-carrying capacity [A]	1
Connection cross section [mm ²]	0.34 ... 1 without wire end sleeves
	0.34 ... 0.5 with wire end sleeves
Permissible cable diameter [mm]	5 ... 10
Protection class to IEC 60529	IP65

Operating and environmental conditions	
Relative air humidity	95%, non-condensing
Ambient temperature [°C]	0 ... +50
Storage temperature [°C]	-20 ... +70
Corrosion resistance class CRC ¹⁾	2

1) Corrosion resistance class 2 to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Ordering data				
Size	Connection	Weight [g]	Part No.	Type
MS6	Without cable, enable signals static (EN1 = 24 V, EN2 = 24 V)	60	548 719	NECA-S1G9-P9-MP1
	Without cable, enable signals dynamic (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V), short-circuit detection possible	60	548 720	NECA-S1G9-P9-MP2
	Without cable, enable signals static (EN1 = 0 V, EN2 = 24 V), short-circuit detection possible	60	552 703	NECA-S1G9-P9-MP3

MS series service units

Accessories

Silencer UOS-1

(order code: SO)

- For soft start and exhaust valve
MS6-SV

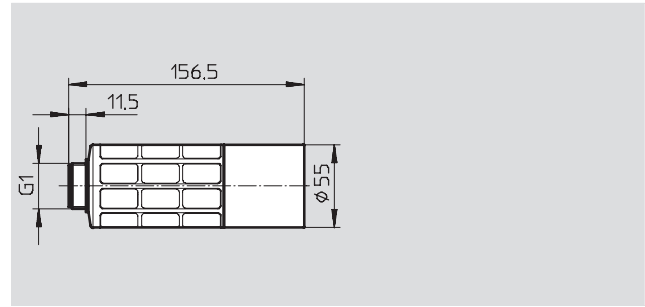
Materials:

Housing: Polyacetate

Sleeve: Wrought aluminium alloy

Silencer insert: Polyethylene

Free of copper and PTFE



Technical data	
Pneumatic connection	G1
Design	Silencer, open
Type of mounting	Via male thread
Assembly position	Any
Type of seal on threaded collar	No seal

Operating and environmental conditions	
Operating pressure [bar]	0 ... 10
Operating medium	Compressed air
Ambient temperature [°C]	-10 ... +50
Corrosion resistance class CRC ¹⁾	2

1) Corrosion resistance class 2 to Festo standard 940 070

Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Ordering data			
Size	Weight [g]	Part No.	Type
MS6	200	552 252	UOS-1




MS series service units

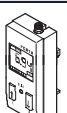

Accessories

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MS series service units
Accessories

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Ordering data – Pressure switch PEV						Technical data → Volume 4	
	Pneumatic connection	Pressure switching point	Electrical connection	Order code	Part No.	Type	
	G1/4	Adjustable with visual scale	Plug, square design to DIN EN 175 301, type A	X	161 760	PEV-1/4-SC-0D	
	G1/4	Adjustable	Plug, square design to DIN EN 175 301, type A	Y	175 250	PEV-1/4-B-0D	
	G1/4	Adjustable	Plug M12x1, 4-pin	M12	192 488	PEV-1/4-B-M12	

Ordering data – Pressure sensor SDE1						Technical data → Volume 4		
	Pneumatic connection	Electrical output	Electrical connection	Display	Order code	Part No.	Type	
Pressure sensor SDE1 for branching module MS-FRM, pressure measuring range 0 ... 10 bar, relative pressure measurement								
	Female thread G1/8	1 switch output PNP	M8x1, 3-pin	LCD	AD5	192 030	SDE1-D10-G2-H18-C-P1-M8	
		2 switch outputs PNP and 4 ... 20 mA analogue	M12x1, 5-pin	Illuminated LCD	AD6	534 062	SDE1-D10-G2-W18-L-2I-M12	
Pressure sensor SDE1 for direct mounting on the service unit with pressure gauge connection (adapter for pneumatic connection included in scope of delivery), pressure measuring range 0 ... 10 bar, relative pressure measurement								
	Male thread R1/8	1 switch output PNP	M8x1, 3-pin	LCD	–	192 026	SDE1-D10-G2-R18-C-P1-M8	
			M8x1, 3-pin	Illuminated LCD	–	529 970	SDE1-D10-G2-R18-L-P1-M8	
			M12x1, 3-pin	Illuminated LCD	–	534 064	SDE1-D10-G2-R18-L-P1-M12	
		2 switch outputs PNP	M8x1, 4-pin	LCD	–	192 027	SDE1-D10-G2-R18-C-P2-M8	
			M8x1, 4-pin	Illuminated LCD	–	529 971	SDE1-D10-G2-R18-L-P2-M8	
			1 switch output PNP and 0 ... 10 V analogue	M8x1, 4-pin	LCD	–	529 958	SDE1-D10-G2-R18-C-PU-M8
		M8x1, 4-pin		Illuminated LCD	–	529 972	SDE1-D10-G2-R18-L-PU-M8	
		Male thread R1/4	1 switch output PNP	M8x1, 3-pin	LCD	–	192 028	SDE1-D10-G2-R14-C-P1-M8
				M8x1, 3-pin	Illuminated LCD	–	529 967	SDE1-D10-G2-R14-L-P1-M8
	M12x1, 3-pin			Illuminated LCD	–	534 157	SDE1-D10-G2-R14-L-P1-M12	
	2 switch outputs PNP		M8x1, 4-pin	LCD	–	192 029	SDE1-D10-G2-R14-C-P2-M8	
			M8x1, 4-pin	Illuminated LCD	–	529 968	SDE1-D10-G2-R14-L-P2-M8	
	1 switch output PNP and 0 ... 10 V analogue		M8x1, 4-pin	LCD	–	529 957	SDE1-D10-G2-R14-C-PU-M8	
		M8x1, 4-pin	Illuminated LCD	–	529 969	SDE1-D10-G2-R14-L-PU-M8		


MS series service units


Accessories

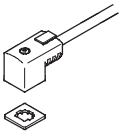
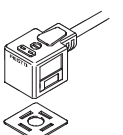
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MS series service units
Accessories


2.31

Ordering data – Angled socket PEV						Technical data → Volume 4	
	Description	Operating voltage range	Electrical connection	Switching status display	Part No.	Type	
	for PEV-1/4-...-OD	15 ... 30 V DC	4-pin	Yellow LED	164 274	PEV-1/4-WD-LED-24	
		≤ 230 V AC ≤ 180 V DC	4-pin	Yellow LED	164 275	PEV-1/4-WD-LED-230	

Ordering data – Plug socket MSSD						Technical data → Volume 2	
	Description	Operating voltage range	Electrical connection	Type of mounting cable connection	Part No.	Type	
	for PEV-1/4-...-OD	≤ 250 V AC/DC	3-pin	Clamping screws	171 157	MSSD-C-4P	
	for MS4/6-EE/DE	≤ 250 V AC/DC	3-pin	Clamping screws	151 687	MSSD-EB	
			4-pin	Insulation displacement technology	192 745	MSSD-EB-S-M14	
	for MS12-EE/DE	≤ 250 V AC/DC	3-pin	Clamping screws	34 583	MSSD-C	
4-pin			Insulation displacement technology	192 748	MSSD-C-S-M16		

Ordering data – Plug socket with cable KMEB/KMC							Technical data → Volume 2	
	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	547 268	KMEB-3-24-2,5-LED	
				–	5	547 269	KMEB-3-24-5-LED	
				–	2.5	547 270	KMEB-3-24-2,5	
			3-pin	LED	5	547 271	KMEB-3-24-5	
				–	2.5	151 688	KMEB-1-24-2,5-LED	
				–	5	151 689	KMEB-1-24-5-LED	
		230 V AC	3-pin	–	10	193 457	KMEB-1-24-10-LED	
				–	2.5	151 690	KMEB-1-230AC-2,5	
				–	5	151 691	KMEB-1-230AC-5	
				–	5	151 691	KMEB-1-230AC-5	
	for MS12-EE/DE	24 V DC	3-pin	LED	2.5	30 931	KMC-1-24DC-2,5-LED	
				–	5	30 933	KMC-1-24DC-5-LED	
				–	10	193 459	KMC-1-24-10-LED	
		230 V AC	3-pin	–	2.5	30 932	KMC-1-230AC-2,5	
				–	5	30 934	KMC-1-230AC-5	
				–	5	30 934	KMC-1-230AC-5	

Ordering data – Illuminating seal MEB-LD/MC-LD					Technical data → Volume 2	
	Description	Operating voltage range	Part No.	Type		
	for plug socket with cable KMEB and plug socket MSSD-EB	12 ... 24 V DC	151 717	MEB-LD-12-24DC		
		230 V DC/AC ±10%	151 718	MEB-LD-230AC		
	for plug socket with cable KMC and plug socket MSSD-C	12 ... 24 V DC	19 145	MC-LD-12-24DC		
		230 V DC/AC ±10%	19 146	MC-LD-230AC		

Ordering data – Locking clip CPV18-HV					Technical data → Volume 4	
	Description	Part No.	Type	PU ¹⁾		
	for MS4/6-EE/DE-...-V24				530 056	CPV18-HV
	Cover for manual override, the clip prevents actuation					10

1) Packaging unit quantity



MS series service units



Accessories


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MS series service units
Accessories

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Ordering data – Plug socket with cable SIM-M8			Technical data → Volume 4	
	Electrical connection	Cable length	Part No.	Type
		[m]		
	M8x1, 3-pin	2.5	159 420	SIM-M8-3GD-2,5-PU
		5	159 421	SIM-M8-3GD-5-PU
		10	192 964	SIM-M8-3GD-10-PU
	M8x1, 4-pin	2.5	158 960	SIM-M8-4GD-2,5-PU
		5	158 961	SIM-M8-4GD-5-PU
		10	192 965	SIM-M8-4GD-10-PU
	M8x1, 3-pin	2.5	159 422	SIM-M8-3WD-2,5-PU
		5	159 423	SIM-M8-3WD-5-PU
		10	192 965	SIM-M8-3WD-10-PU
	M8x1, 4-pin	2.5	158 962	SIM-M8-4WD-2,5-PU
		5	158 963	SIM-M8-4WD-5-PU
		10	192 965	SIM-M8-4WD-10-PU


Ordering data – Plug socket with cable SIM-M12			Technical data → Volume 4	
	Electrical connection	Cable length	Part No.	Type
		[m]		
	M12x1, 3-pin	2.5	159 428	SIM-M12-3GD-2,5-PU
		5	159 429	SIM-M12-3GD-5-PU
	M12x1, 4-pin	5	164 259	SIM-M12-4GD-5-PU
		M12x1, 5-pin	2.5	175 715
			5	175 716
		M12x1, 3-pin	2.5	159 430
5			159 431	SIM-M12-3WD-5-PU
M12x1, 4-pin		5	164 258	SIM-M12-4WD-5-PU


Ordering data – Pressure gauge MA				Further pressure gauges → 3 / 4.0-3		
	Nominal size	Pneumatic connection	Indicating range		Part No.	Type
			[bar]	[psi]		
	Pressure gauge MA, DIN EN 837-1					Technical data → 3 / 4.8-1
	40	G $\frac{1}{4}$	0 ... 16	0 ... 232	183 901	MA-40-16-G $\frac{1}{4}$ -EN
	Pressure gauge MA, DIN EN 837-1, with red-green range					Technical data → 3 / 4.8-4
	40	R $\frac{1}{8}$	0 ... 16	–	525 726	MA-40-16-R $\frac{1}{8}$ -E-RG
	50	R $\frac{1}{4}$	0 ... 16	–	525 729	MA-50-16-R $\frac{1}{4}$ -E-RG
	Precision pressure gauge MAP, DIN EN 837-1					Technical data → 3 / 4.8-10
	40	R $\frac{1}{8}$	0 ... 1	0 ... 15	161 126	MAP-40-1- $\frac{1}{8}$ -EN
			0 ... 4	0 ... 58	162 842	MAP-40-4- $\frac{1}{8}$ -EN
			0 ... 6	0 ... 87	161 127	MAP-40-6- $\frac{1}{8}$ -EN
			0 ... 16	0 ... 232	161 128	MAP-40-16- $\frac{1}{8}$ -EN


MS series service units

Accessories

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Ordering data – Silencer U			Technical data → 3 / 6.1-2	
	Description	Pneumatic connection	Part No.	Type
	for MS4-EM1/EE	G1/4	6 842	U-1/4-B
	for MS6-EM1/EE	G1/2	6 844	U-1/2-B
	for MS12-EM/EE	G1	151 990	U-1-B

Ordering data – Double nipple ESK					
	Description	Pneumatic connection		Part No.	Type
	Adjustable for angular compensation • For retro-fitting pressure switch PEV or pressure sensor SDE1 to branching module MS-FRM	R1/8	R1/4	534 151	ESK-1/8-1/4
		R1/4	R1/4	151 521	ESK-1/4-1/4
			R1/2	534 153	ESK-1/4-1/2

Ordering data – Padlock LRVS-D				
	Description	Weight [g]	Part No.	Type
	for filter or pressure regulators	120	193 786	LRVS-D

Ordering data – Special oil OFSW				
	Description	Scope of delivery	Part No.	Type
	for lubricators	1 litre	152 811	OFSW-32

MS series service units
Accessories

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