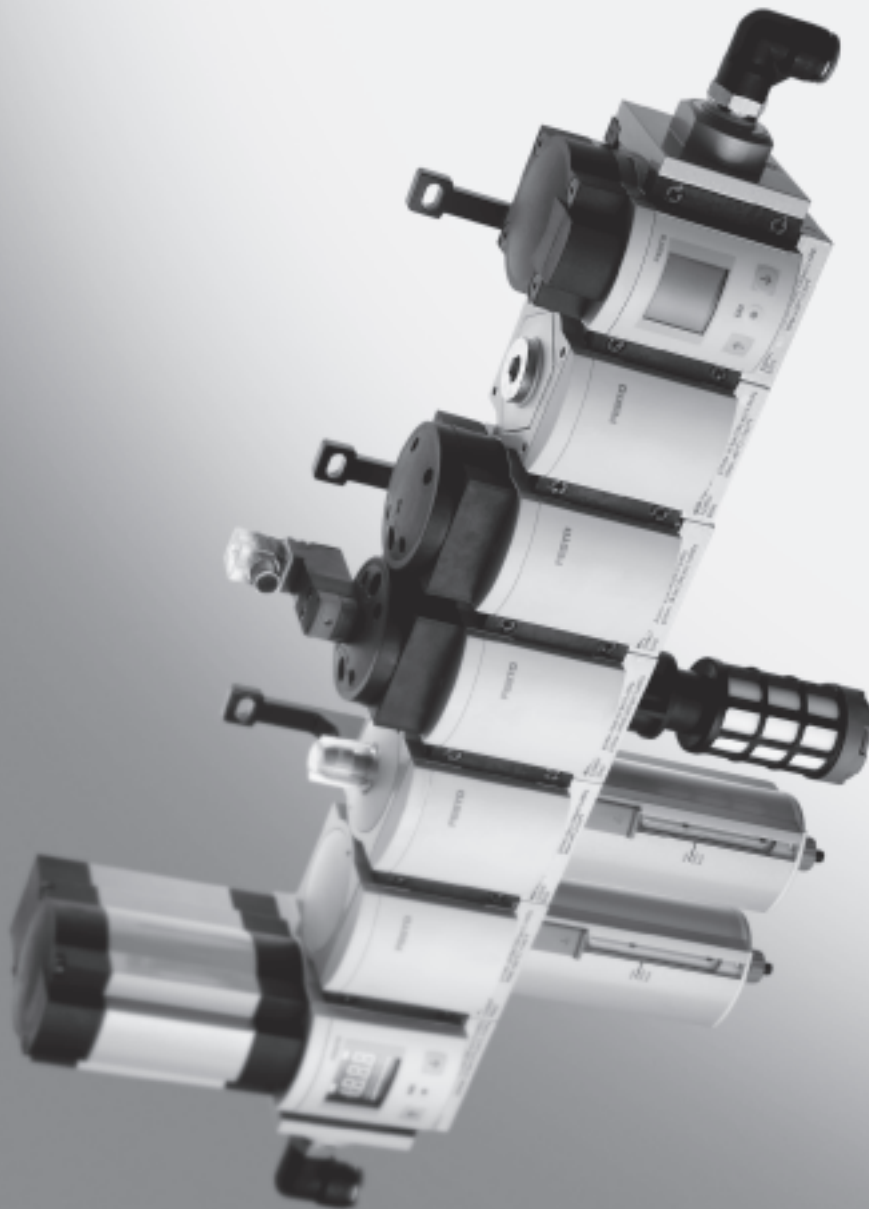


Wide range of configuration options

→ www.festo.com/en/engineering



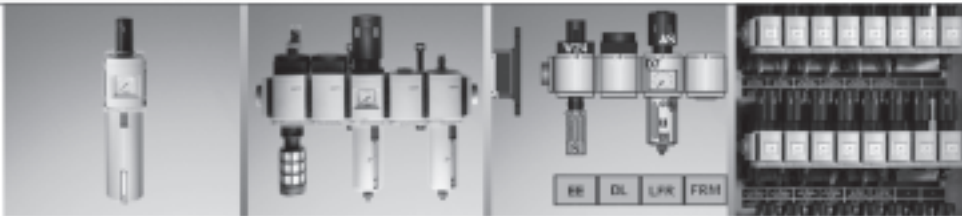
- Three sizes:
MS4 – grid
dimension 40 mm
MS6 – grid
dimension 62 mm
MS12 – grid
dimension 124 mm
- Modular
- Easy to assemble
- Broad range of functions
- Compact with high flow rates
- Modern design
- Wide choice of variants
- Integrated safety functions

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

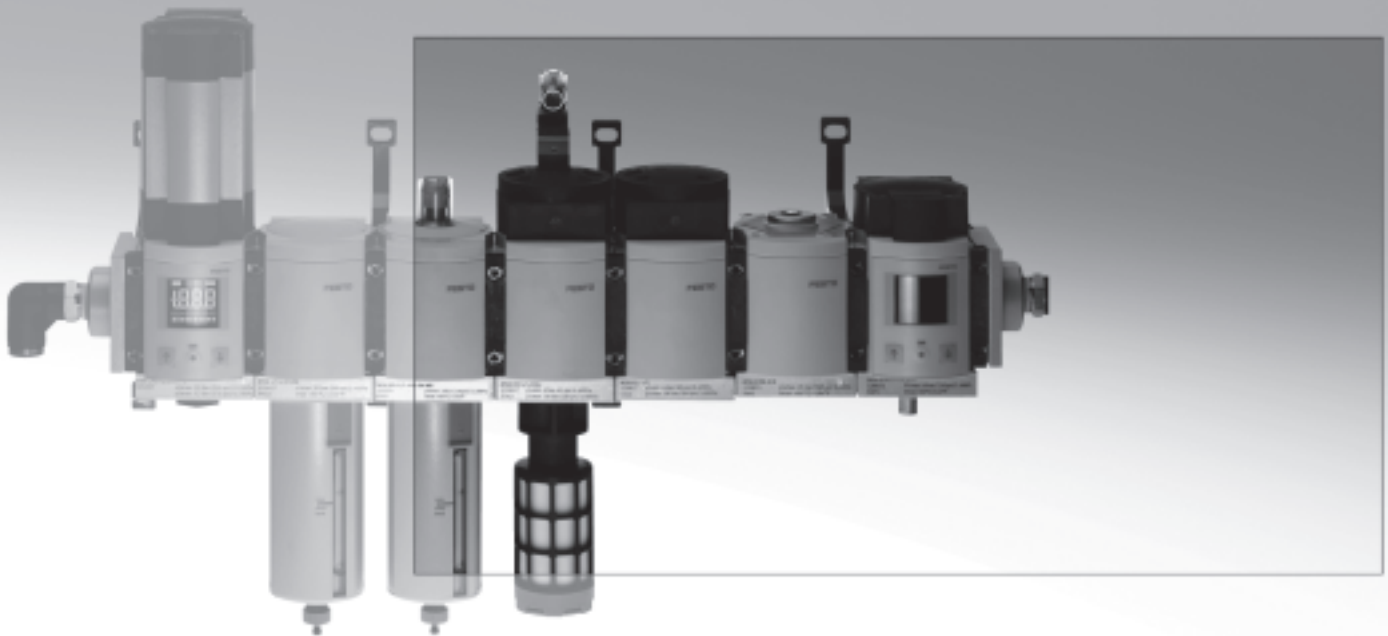
The choice is yours: using the FAST range and its free configurator you can easily configure your individual service units or entire combinations. Within no time at all you will have a solution perfectly tailored to your requirements, ready assembled and tested upon delivery. Alternatively this brochure 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.

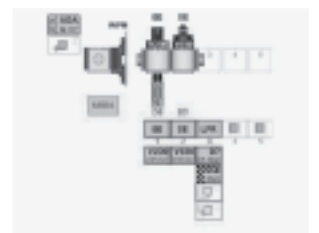


Freely combinable functional modules

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



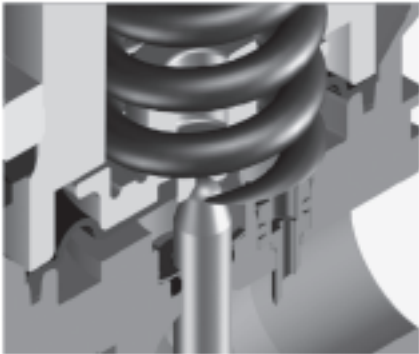
MS series service units – more than standard!



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.



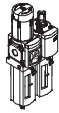
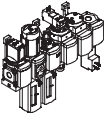








MS series service units

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	-	-	-	-	-	-	■	■	-	-
Activated carbon filters 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 drains				Pressure indicator					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 for EN pressure gauge G1/8	Adapter for EN pressure gauge G1/4	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
Activated carbon filters MS-LFX	4	■	■	■	-	-	-	-	-	-	-	-	-	-	-	■	3/2.13-0, 3/2.13-18
	6	■	■	■	-	-	-	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	3/2.23-0, 3/2.23-14
Pressure regulators MS-LR	4	-	-	-	-	-	-	■	■	■	■	■	■	■	-	■	3/2.14-0, 3/2.14-5
	6	-	-	-	-	-	-	■	■	-	■	■	■	■	-	■	
	12	-	-	-	-	-	-	■	■	-	■	-	■	■	-	■	3/2.24-0
Pressure regulators MS-LRB	4	-	-	-	-	-	-	■	■	■	■	■	■	■	-	■	3/2.14-0, 3/2.14-14
	6	-	-	-	-	-	-	■	■	-	■	■	■	■	-	■	
	12	-															
Precision pressure regulators MS-LRP	4	-						■	-	-	■	■	■	■	-	■	3/2.14-22, 3/2.14-27
	6	-	-	-	-	-	-	■	-	-	■	■	■	■	-	■	
	12	-															
Precision pressure regulators MS-LRPB	4	-						■	-	-	■	■	■	■	-	■	3/2.14-22, 3/2.14-36
	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	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	■	-	-	-
		12	-								
Lubricators MS-LOE		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	-	-	-	-	-	-	-
On-off valves MS-EM(1)		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	-	-	-	-	-	-	-
On-off valves MS-EE		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	-	-	-	-	■	■	■
Soft-start valves MS-DL		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	-	-	-	-	-	-	-
Soft-start valves MS-DE		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	-	-	-	-	■	■	■
Membrane air dryers MS-LDM1		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	-								
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	-	-	-	-	-	-	-
Flow sensors MS-SFE		4	-								
		6	G1/2	G1/2	-	-	-	-	-	-	-
		12	-								

MS series service units

Product range overview



Type	Size	Bowl guard		Pressure indicator					Switch output		Options		→ Page	
		Plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter for EN pressure gauge G $\frac{1}{8}$	Adapter for EN pressure gauge G $\frac{1}{4}$	Pressure sensor with display	2x PNP	2x NPN	Silencer	Flow direction from right to left		
														R
Individual devices														
Electrical pressure regulators MS-LRE	4	-	-	-	-	-	-	-	-	-	-	-	-	3/2.14-44
	6	-	-	■	■	-	■	-	-	-	-	-	■	
	12	-	-	-	-	-	-	-	-	-	-	-	-	
Lubricators MS-LOE	4	■	■	-	-	-	-	-	-	-	-	-	■	3/2.15-0
	6	■	■	-	-	-	-	-	-	-	-	-	■	
	12	-	■	-	-	-	-	-	-	-	-	-	■	
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	
On-off valves MS-EE	4	-	-	■	■	■	■	■	-	-	■	■	3/2.16-0, 3/2.16-8	
	6	-	-	■	■	-	■	■	-	-	■	■		
	12	-	-	■	■	-	■	-	-	-	■	■	3 / 2.26-1, 3 / 2.26-8	
Soft-start valves MS-DL	4	-	-	■	■	■	■	■	-	-	-	■	3/2.16-0, 3/2.16-16	
	6	-	-	■	■	-	■	■	-	-	-	■		
	12	-	-	■	■	-	■	-	-	-	-	■	3 / 2.26-1, 3 / 2.26-12	
Soft-start valves MS-DE	4	-	-	■	■	■	■	■	-	-	-	■	3/2.16-0, 3/2.16-21	
	6	-	-	■	■	-	■	■	-	-	-	■		
	12	-	-	■	■	-	■	-	-	-	-	■	3 / 2.26-1, 3 / 2.26-16	
Membrane air dryers MS-LDM1	4	-	■	-	-	-	-	-	-	-	-	-	■	3/2.17-0
	6	-	■	-	-	-	-	-	-	-	-	-	■	
	12	-	-	-	-	-	-	-	-	-	-	-	-	
Branching modules MS-FRM	4	-	-	■	■	■	■	■	-	-	-	-	■	3/2.18-0
	6	-	-	■	■	-	■	■	-	-	-	-	■	
	12	-	-	■	-	-	-	-	-	-	-	-	-	3 / 2.28-0
Flow sensors MS-SFE	4	-	-	-	-	-	-	-	-	-	-	-	-	3 / 2.19-0
	6	-	-	-	-	-	-	-	■	■	-	■ ¹⁾		
	12	-	-	-	-	-	-	-	-	-	-	-		

1) To be ordered via configurator software only → www.festo.com/en/engineering

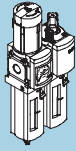
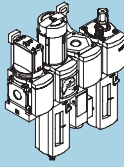
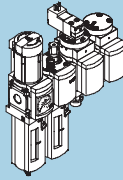
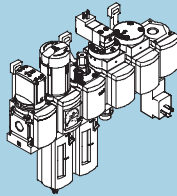
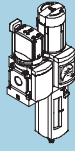
Service unit combinations MSB4/MSB6, MS series

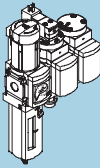
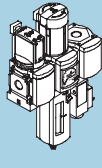
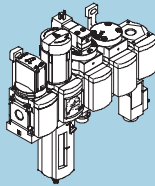
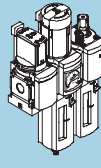
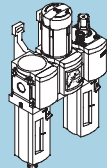


Product range overview

MS4/MS6 series service units
Service units

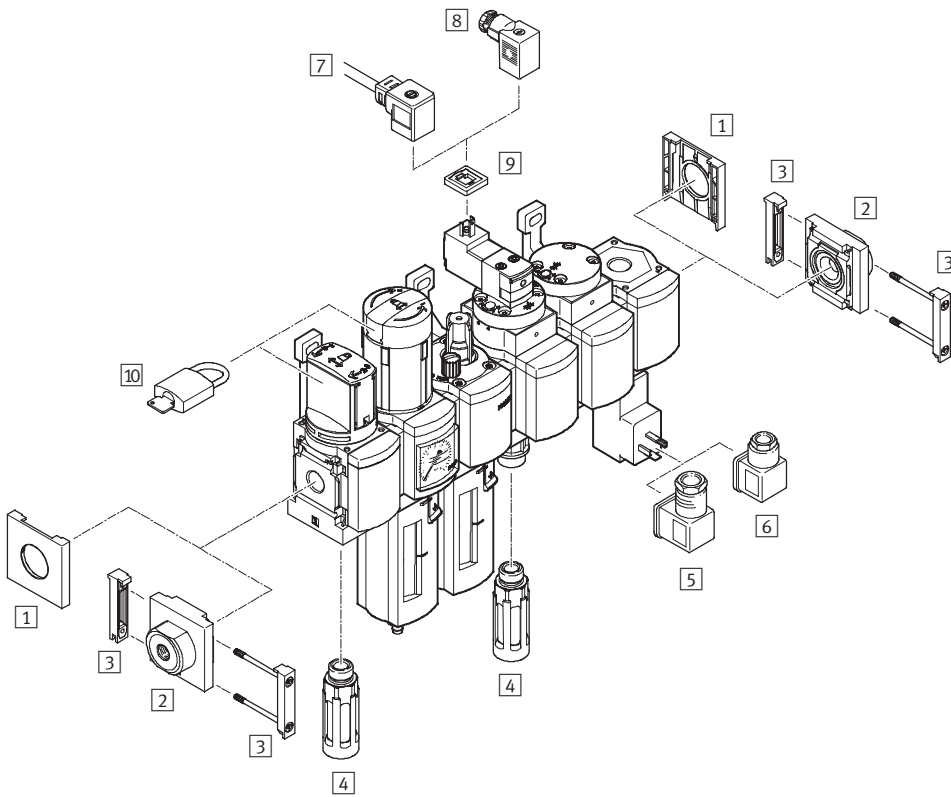
2.11


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

MS4/MS6 series service units
 Service units
2.11

Mounting attachments and accessories		→ Page
1	Cover cap MS4/6-END	3/2.31-1
2	Connecting plate MS4/6-AG...	3/2.31-0
3	Module connector MS4/6-MV	3/2.31-7
4	Silencer U	3/2.31-12
5	Angled socket PEV-1/4-WD-LED	3/2.31-10
6	Plug socket MSSD-C-4P	3/2.31-10
7	Plug socket with cable KMEB	3/2.31-10
8	Plug socket MSSD-EB	3/2.31-10
9	Illuminating seal MEB-LD	3/2.31-10
10	Padlock LRVS-D	3/2.31-12
-	Mounting bracket (for service unit MSB-FRC) MS4/6-WP/WPB/WPM	3/2.31-5, 3/2.31-6

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

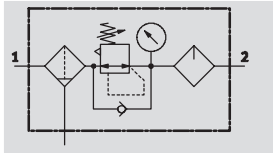
Lubricators	
M1	Plastic bowl guard
M2	Metal bowl

Service units MSB4/MSB6-FRC, MS series

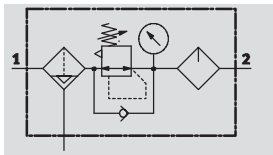
Technical data




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	G1/8	G1/4	G1/4	G3/8	G1/2
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 ±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		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				

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.

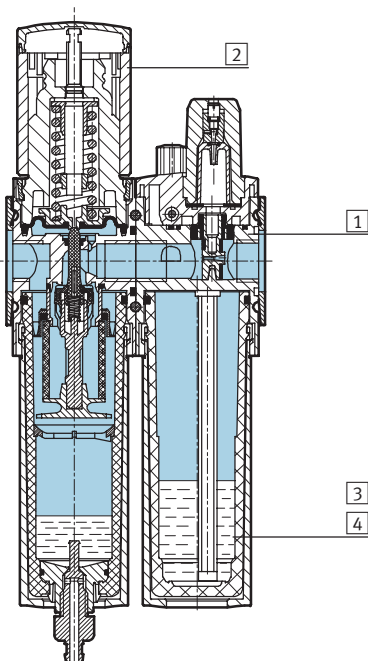
Operating and environmental conditions				
Condensate drains		Manual rotary		Fully automatic
Size	MSB4	MSB6	MSB4	MSB6
Supply pressure [bar]	1.5 ... 14		1.5 ... 12	
Operating medium	Compressed air			
Ambient temperature [°C]	-10 ... +60		+5 ... +60	
Temperature of medium [°C]	-10 ... +60		+5 ... +60	
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
With plastic bowl guard	500
With metal bowl guard	-

Materials

Sectional view



Service unit	
1	Body
2	Regulating knob
3	Plastic bowl guard
4	Metal bowl guard
-	Seals

Service units MSB4/MSB6-FRC, MS series

Technical data



Standard flow rate q_n as a function of output pressure p_2

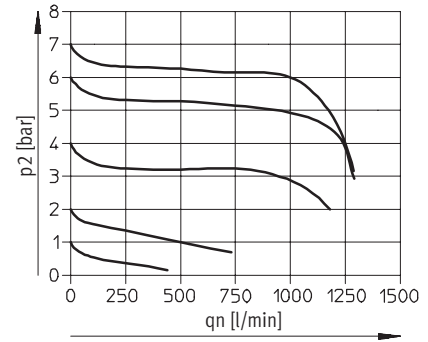
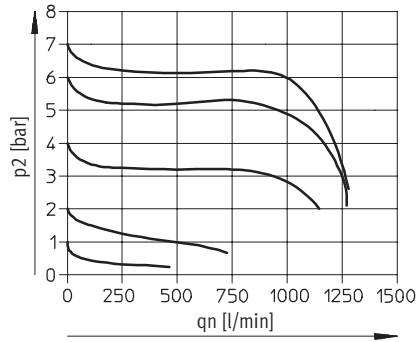
Pressure regulation range 0.3 ... 7 bar

Grade of filtration 5 μm

Grade of filtration 40 μm

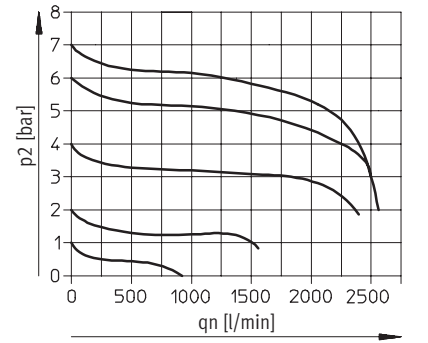
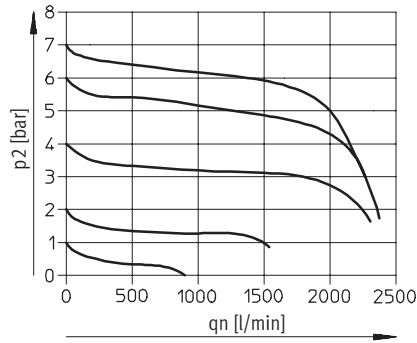
MSB4-1/8

Primary pressure $p_1 = 10$ bar



MSB4-1/4

Primary pressure $p_1 = 10$ bar



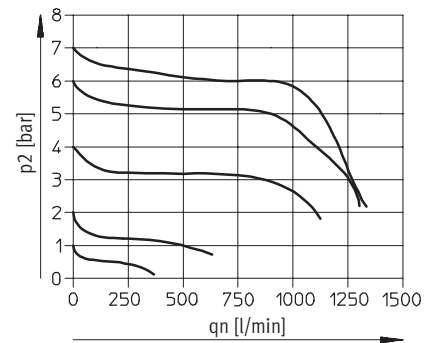
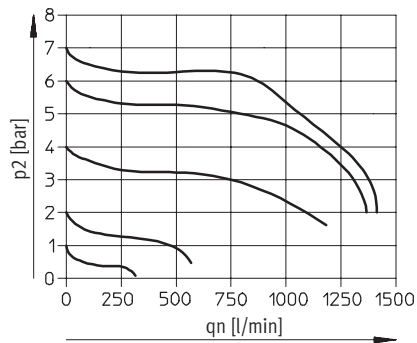
Pressure regulation range 0.5 ... 12 bar

Grade of filtration 5 μm

Grade of filtration 40 μm

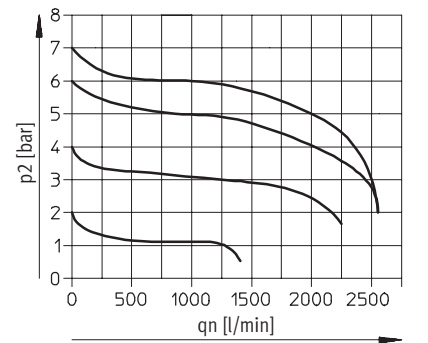
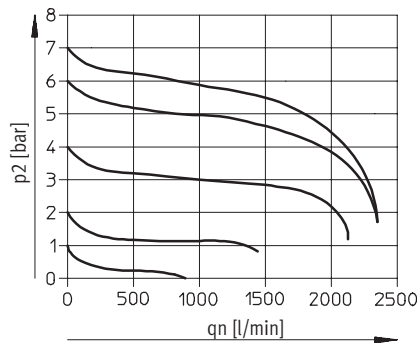
MSB4-1/8

Primary pressure $p_1 = 10$ bar



MSB4-1/4

Primary pressure $p_1 = 10$ bar



MS4/MS6 series service units
Service units

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Service units MSB4/MSB6-FRC, MS series

Technical data



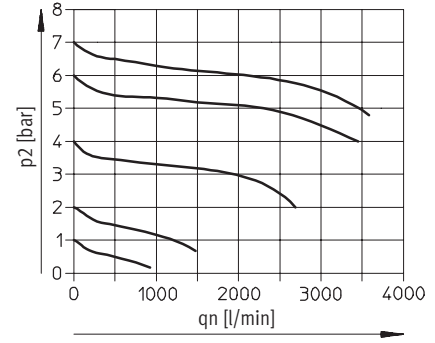
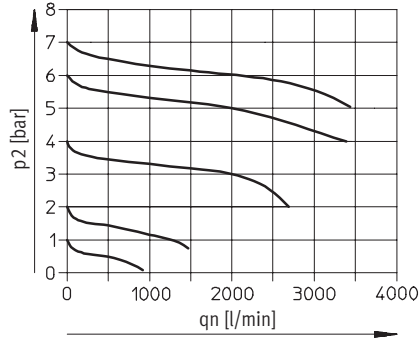
MS4/MS6 series service units
Service units

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
MSB6-1/4

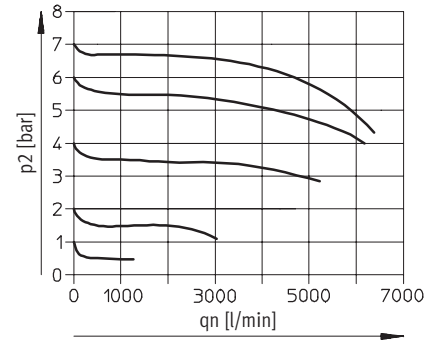
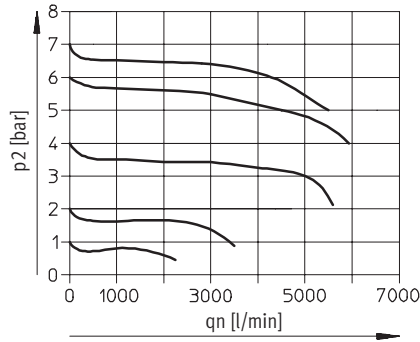
Grade of filtration 40 μm

Primary pressure $p_1 = 10$ bar



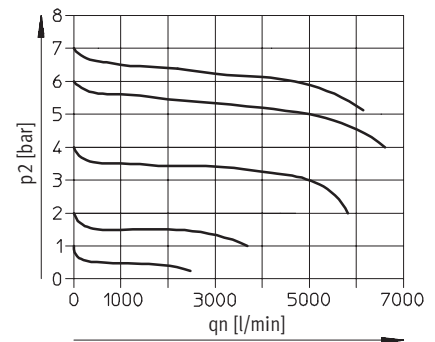
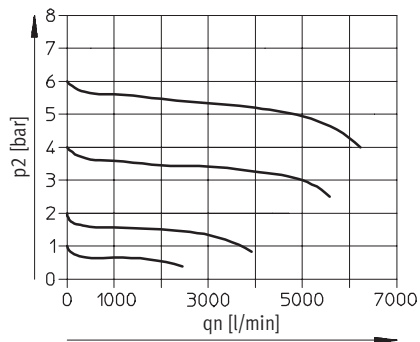
MSB6-3/8

Primary pressure $p_1 = 10$ bar



MSB6-1/2

Primary pressure $p_1 = 10$ bar



Service units MSB4/MSB6-FRC, MS series

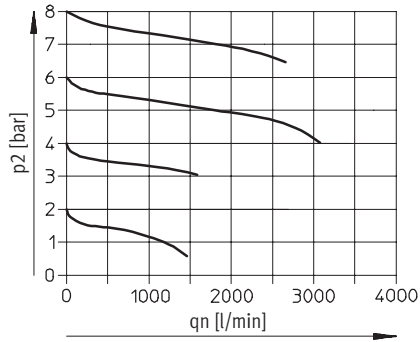
Technical data



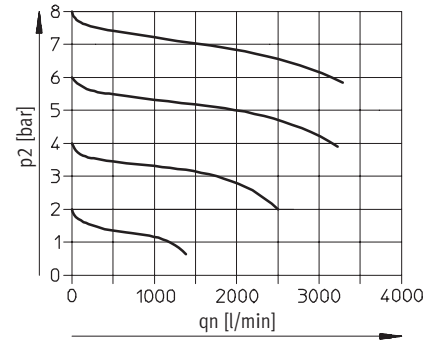
Standard flow rate q_n as a function of output pressure p_2

Pressure regulation range 0.5 ... 12 bar Grade of filtration 5 μm
MSB6-1/4

Primary pressure $p_1 = 10$ bar

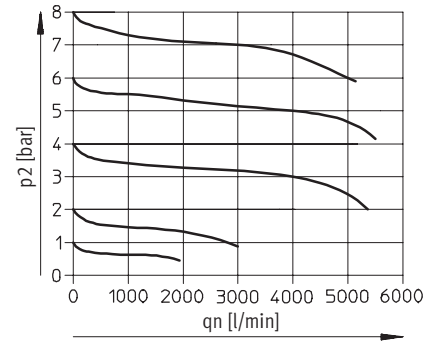
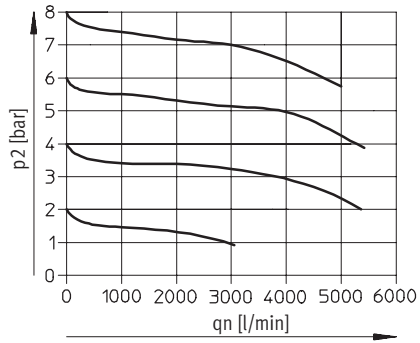


Grade of filtration 40 μm



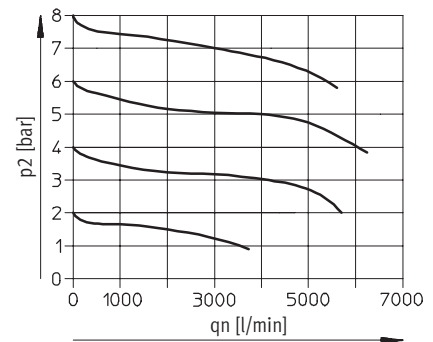
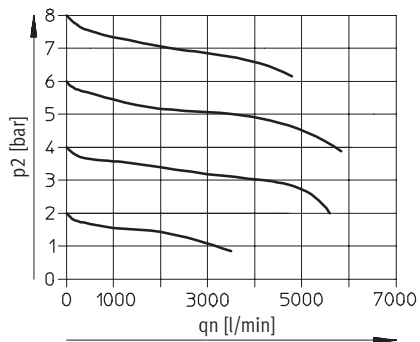
MSB6-3/8

Primary pressure $p_1 = 10$ bar



MSB6-1/2

Primary pressure $p_1 = 10$ bar



MS4/MS6 series service units
Service units

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Service units MSB4/MSB6-FRC, MS series

Technical data

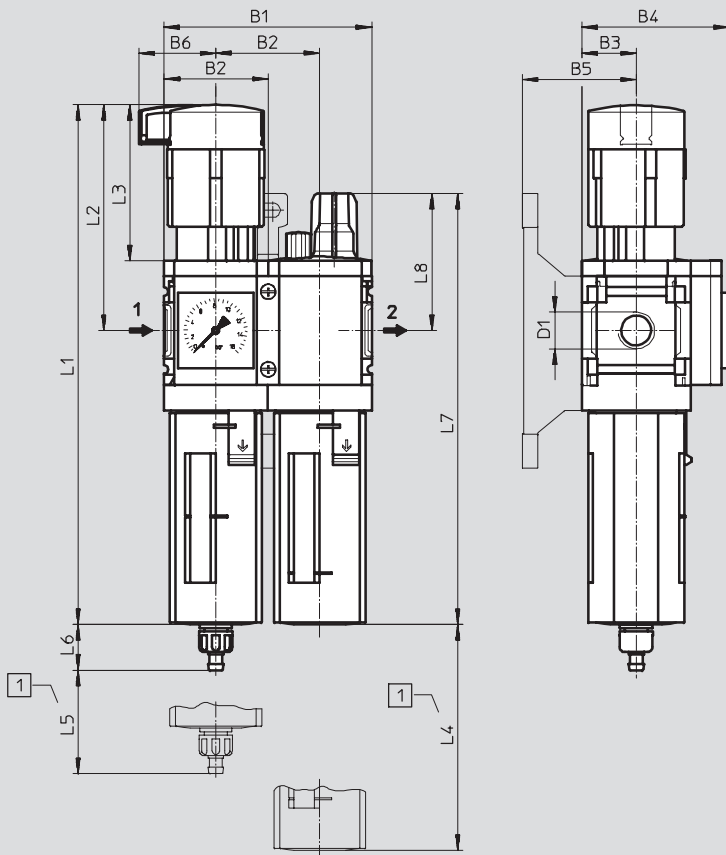


MS4/MS6 series service units
Service units

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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	L3	L4	L5	L6 Condensate drain		L7	L8
													manual rotary	fully automatic		
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									

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 → 3/2.14-4

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

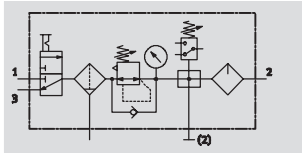
- Connection size
- Connecting plates
- Service unit equipment
- Alternative flow direction

Service unit combinations MSB4/MSB6, MS series

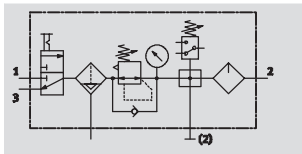
Technical data




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	

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.

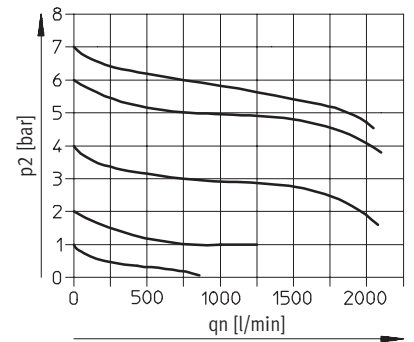
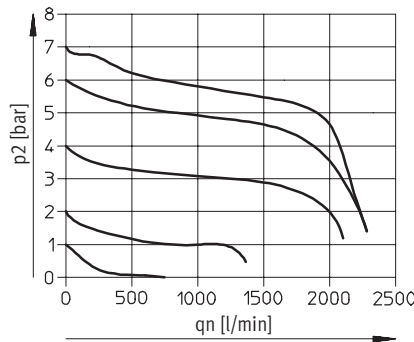
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,700	2,550
Mounting bracket	40	76

Note
Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

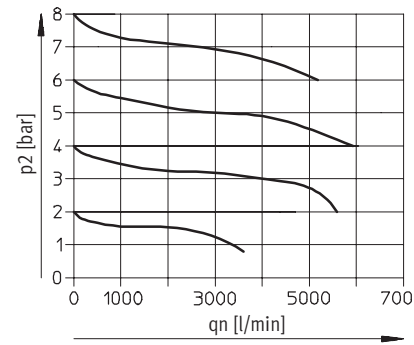
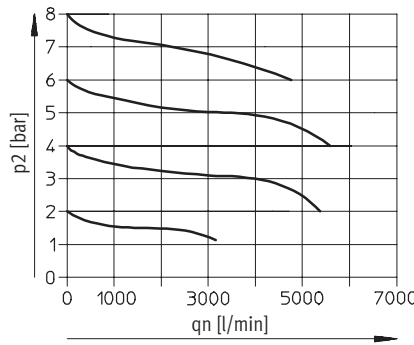
Pressure regulation range 1 ... 12 bar Grade of filtration 5 µm Grade of filtration 40 µm
MSB4-1/4

Primary pressure p1 = 10 bar



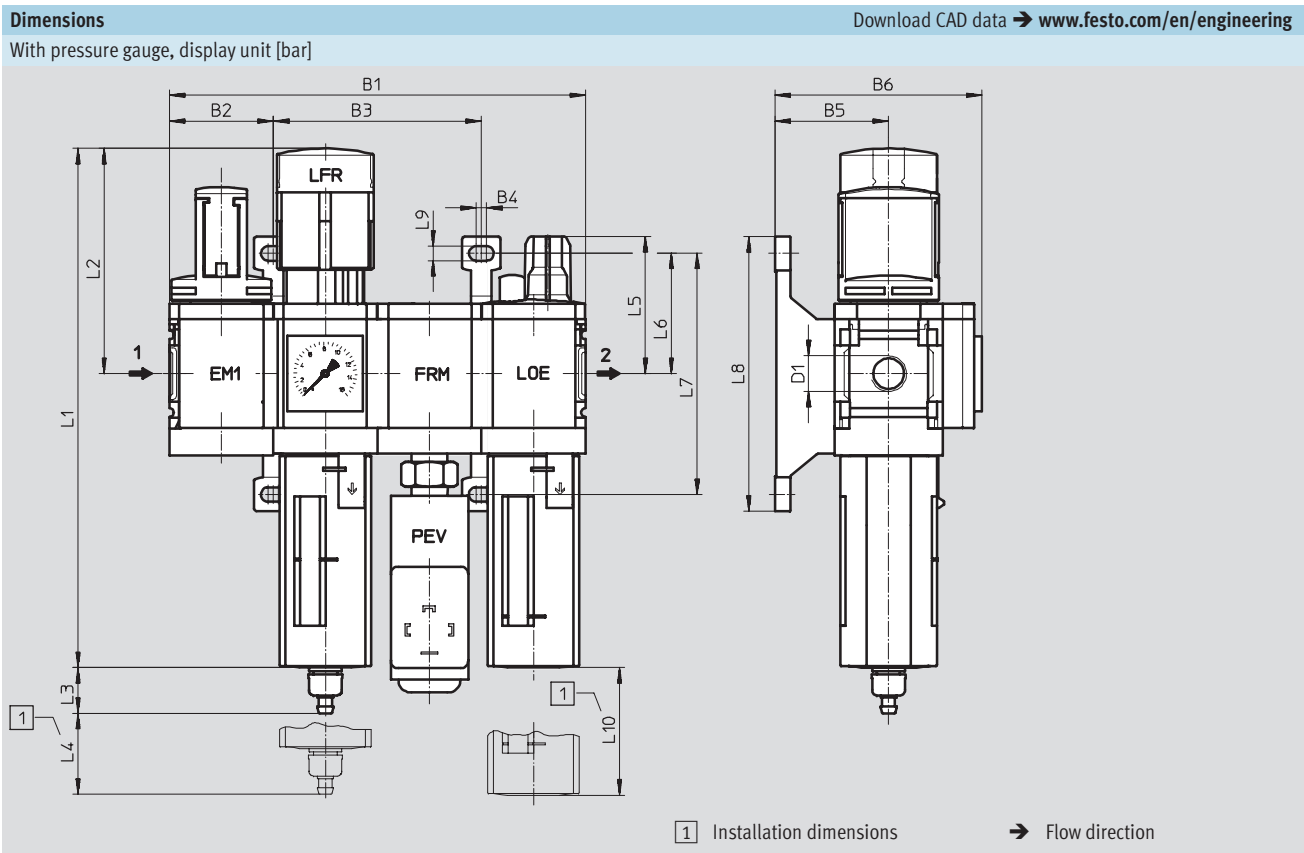
MSB6-1/2

Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series

Technical data



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 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

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 $\frac{1}{4}$	542 307	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

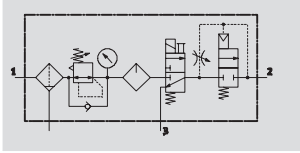
Service unit combinations MSB4/MSB6, MS series

Technical data

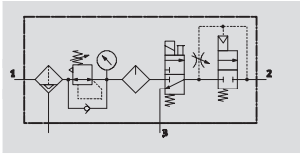


Function

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	
Coil characteristics [V DC]	12	
Supply voltage [V DC]	24	

Standard nominal flow rate qnN [l/min]		
Size	MSB4	MSB6
Grade of filtration	5 µm	550
	40 µm	600
		1,900
		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.

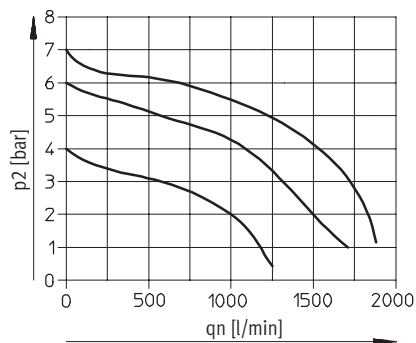
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,800	3,000
Mounting bracket	40	76

Note
 Materials → Technical data of the individual devices

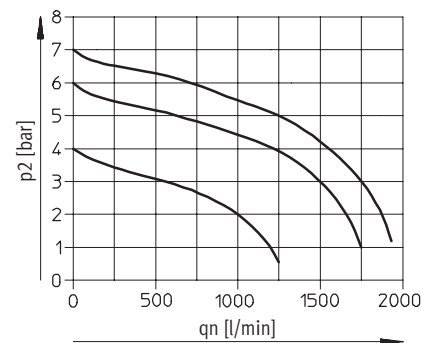
Standard flow rate qn as a function of output pressure p2

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

Primary pressure p1 = 10 bar

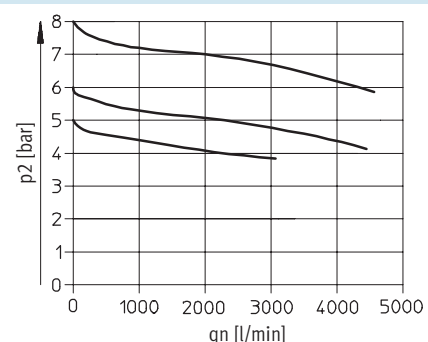
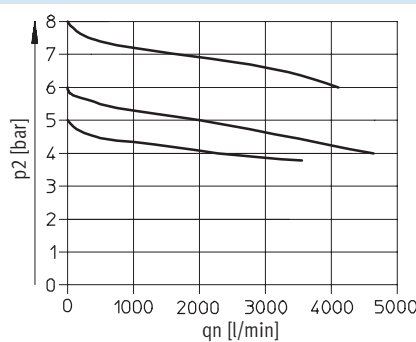


Grade of filtration 40 µm



MSB6-1/2

Primary pressure p1 = 10 bar



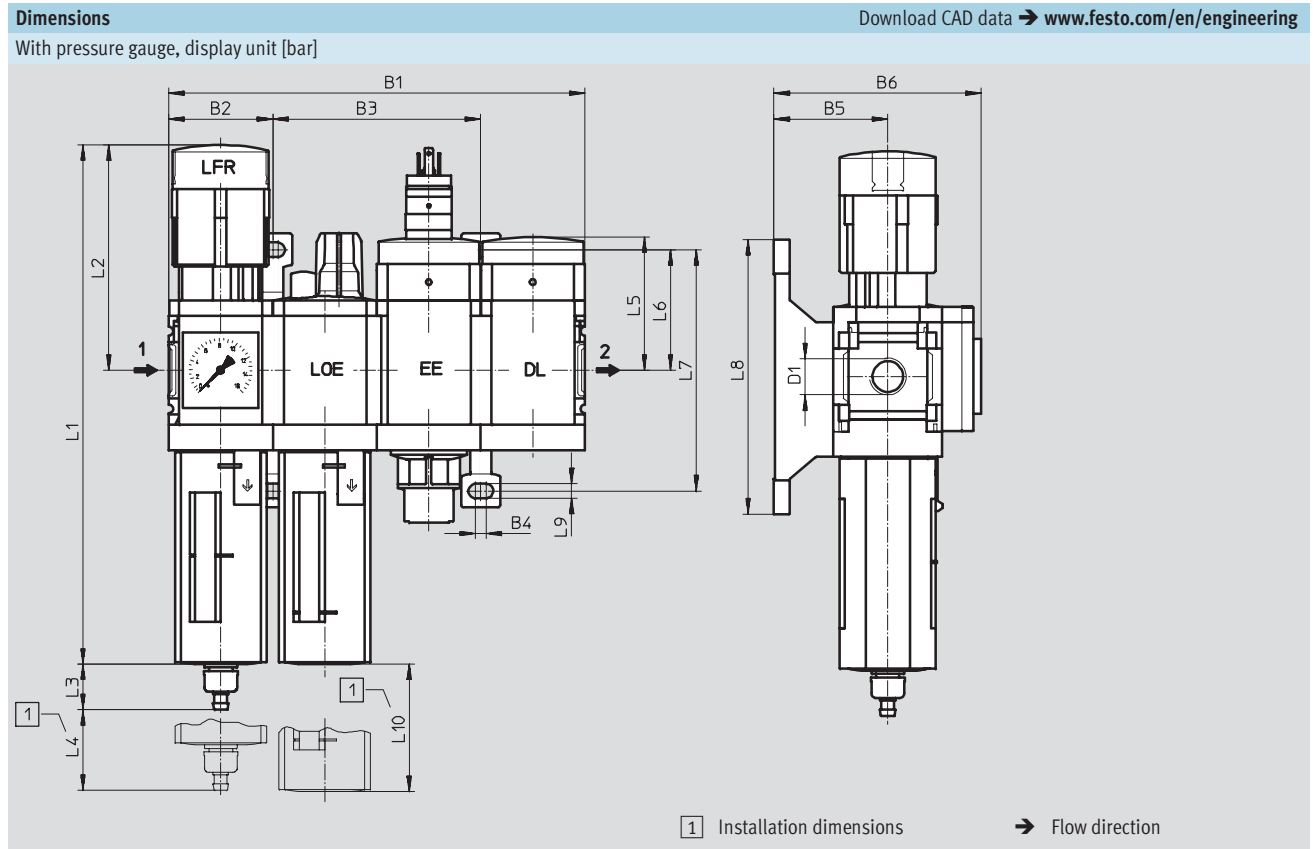
Service unit combinations MSB4/MSB6, MS series



Technical data

MS4/MS6 series service units
Service units

2.11











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

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	

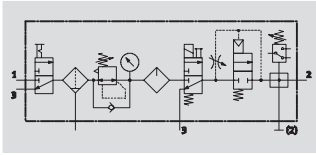
Service unit combinations MSB4/MSB6, MS series

Technical data

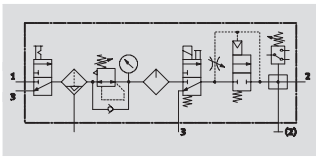


Function

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		
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	
Coil characteristics [V DC]	12	
Supply voltage [V DC]	24	

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	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.

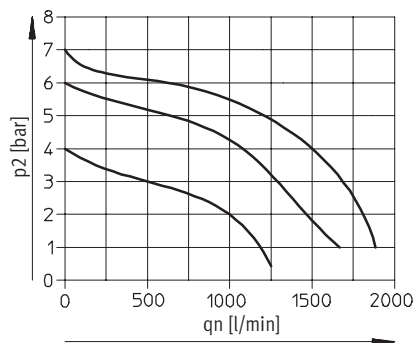
Weights [g]		
Size	MSB4	MSB6
Service unit combination	2,200	4,000
Mounting bracket	40	76

Note
 Materials → Technical data of the individual devices

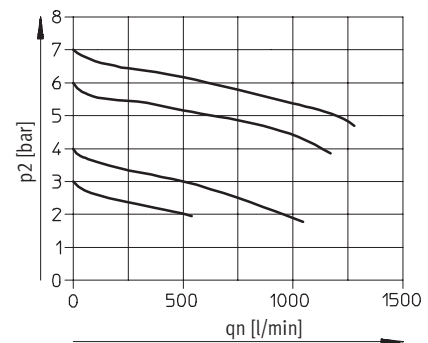
Standard flow rate qn as a function of output pressure p2

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

Primary pressure p1 = 10 bar

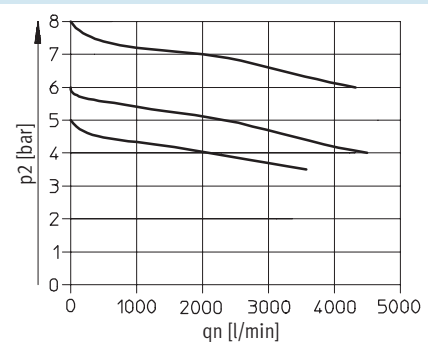
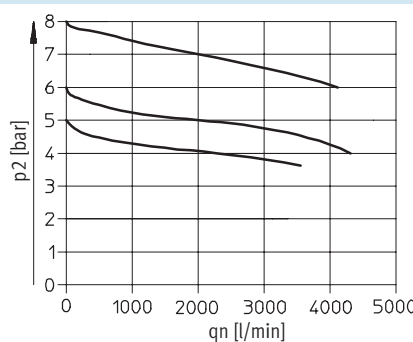


Grade of filtration 40 µm



MSB6-1/2

Primary pressure p1 = 10 bar



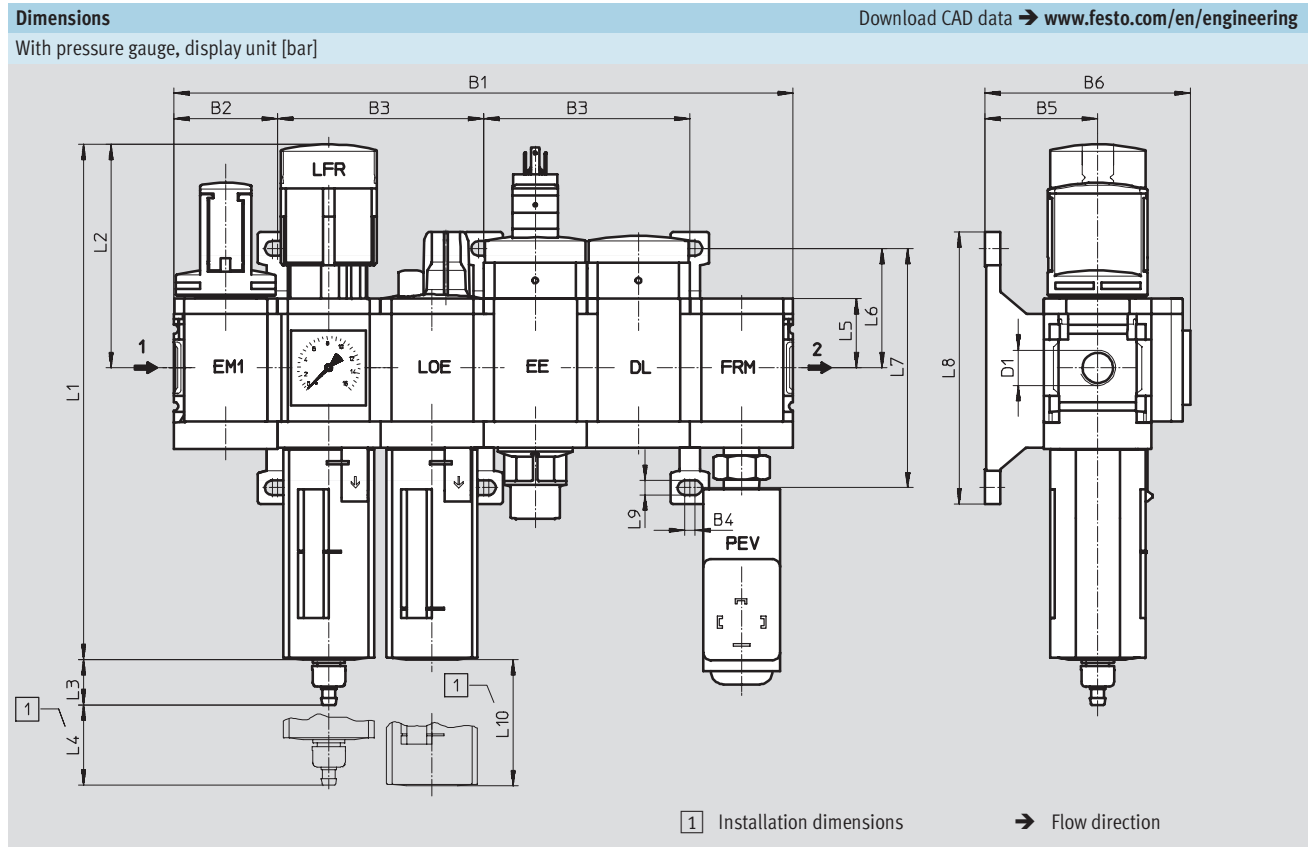
Service unit combinations MSB4/MSB6, MS series



Technical data

MS4/MS6 series service units
Service units

2.11



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

Service unit combinations MSB4/MSB6, MS series

FESTO

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

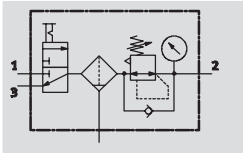
Service unit combinations MSB4/MSB6, MS series

Technical data

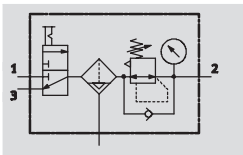


Function

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
- Output pressure is infinitely adjustable within the pressure regulation range
- Supply pressure can be opened and closed

- 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	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	

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

MS4/MS6 series service units
Service units

2.11


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.

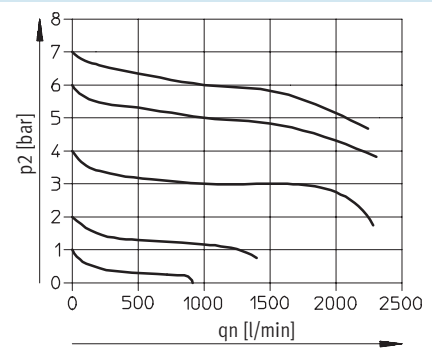
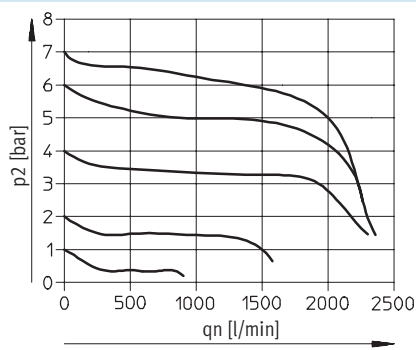
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,300	1,100
Mounting bracket	40	76

 Note
 Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

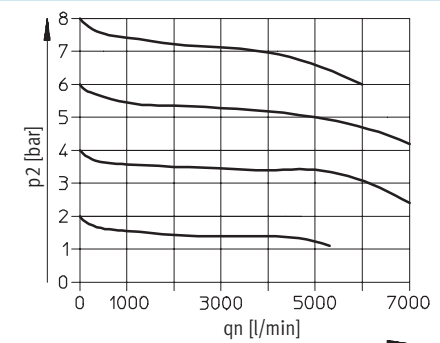
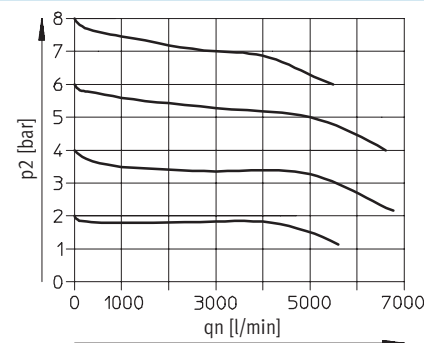
Pressure regulation range 0.5 ... 12 bar Grade of filtration 5 µm MSB4-1/4 Grade of filtration 40 µm

Primary pressure p1 = 10 bar



MSB6-1/2

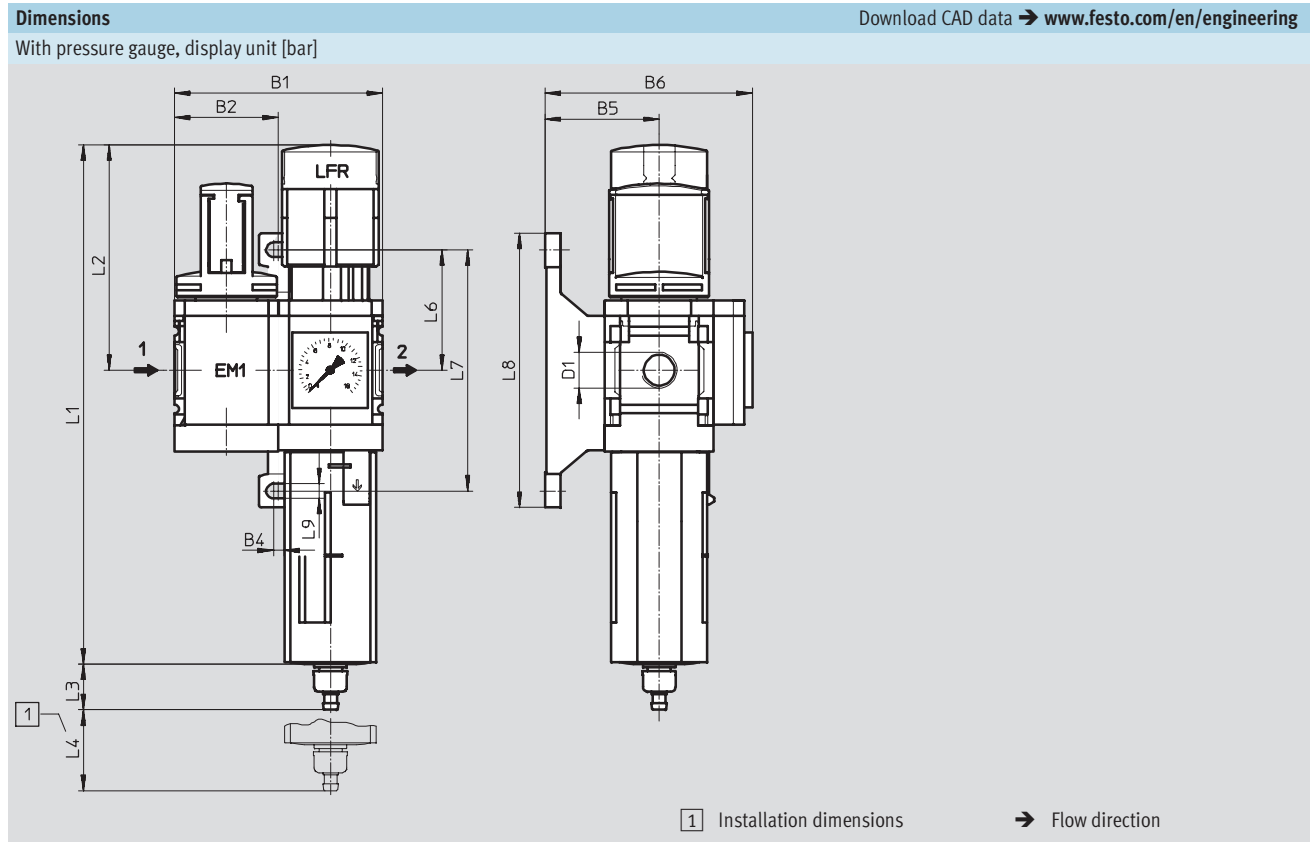
Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series



Technical data



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

Ordering data
Pressure regulation range 0.5 ... 12 bar

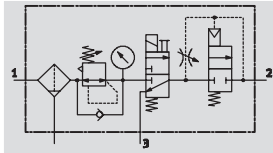
Size	Condensate drain	Connection	Grade of filtration 5 μ m		Grade of filtration 40 μ m	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 304	MSB4- $\frac{1}{4}$:C3J3-WP	542 292	MSB4- $\frac{1}{4}$:C3J1-WP
	fully automatic	G $\frac{1}{4}$	542 310	MSB4- $\frac{1}{4}$:C3J4-WP	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

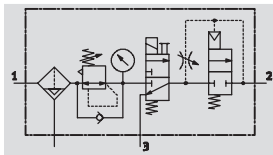
Technical data

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)	
	4 ... 12 (with on-off valve MS...-EE-V24)	
Pressure indicator	With pressure gauge	
Coil characteristics [V DC]	12	
Supply voltage [V DC]	24	

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

Service unit combinations MSB4/MSB6, MS series



Technical data

MS4/MS6 series service units
Service units

2.11

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.

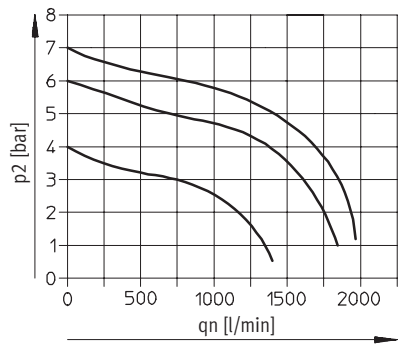
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,600	2,400
Mounting bracket	40	76

Note
 Materials → Technical data of the individual devices

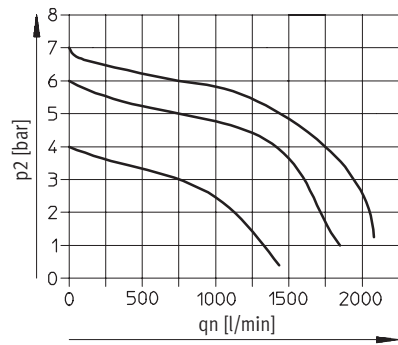
Standard flow rate qn as a function of output pressure p2

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

Primary pressure p1 = 10 bar

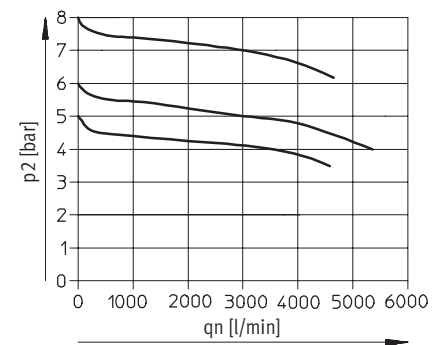
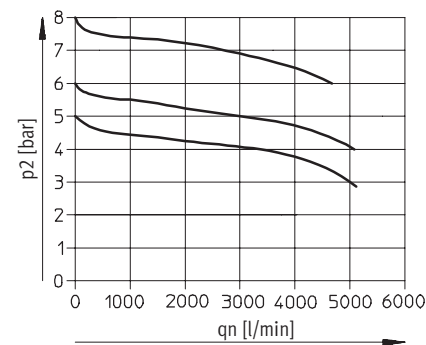


Grade of filtration 40 µm



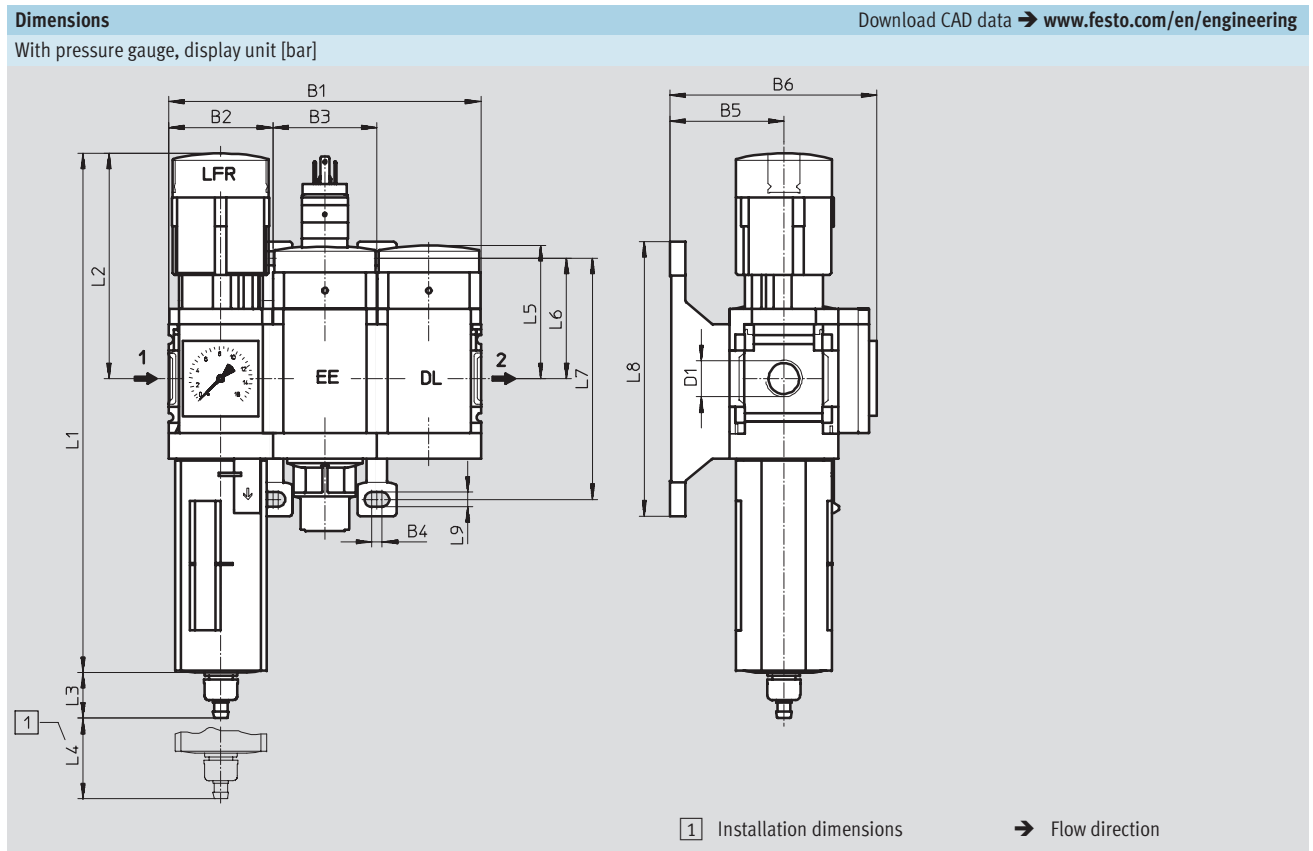
MSB6-1/2

Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series

Technical data



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

Service unit combinations MSB4/MSB6, MS series

FESTO

Technical data

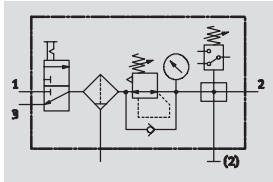
Ordering data						
Pressure regulation range 4 ... 9 bar						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 631	MSB4- $\frac{1}{4}$:j3D7A1-WP	542 627	MSB4- $\frac{1}{4}$:j1D7A1-WP
	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

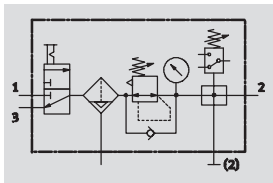
Service unit combinations MSB4/MSB6, MS series

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	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]	0.5 ... 12	
Pressure indicator	With pressure gauge	

Standard nominal flow rate q _{nN} [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.

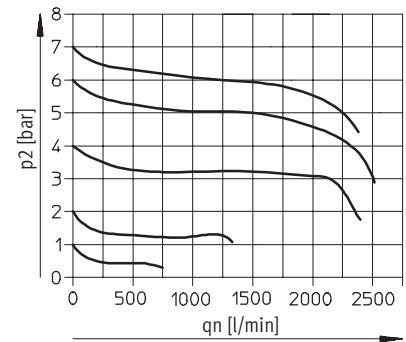
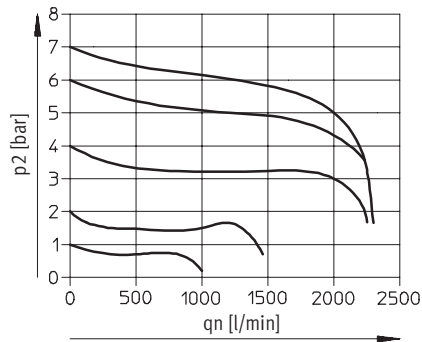
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,500	2,000
Mounting bracket	40	76

- - Note
Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

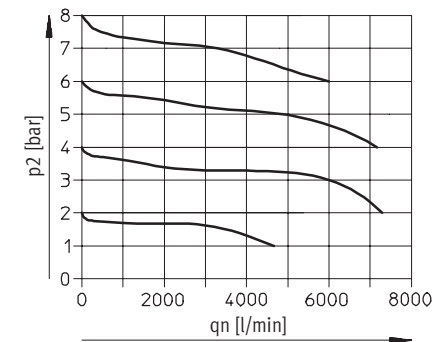
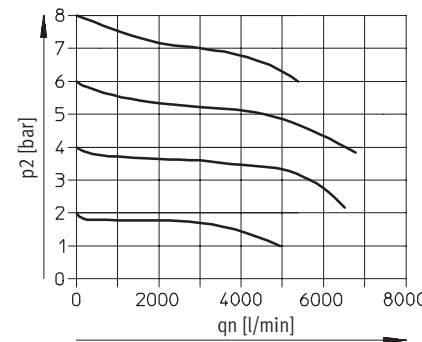
Pressure regulation range 0.5 ... 12 bar Grade of filtration 5 µm MSB4-1/4 Grade of filtration 40 µm

Primary pressure p1 = 10 bar



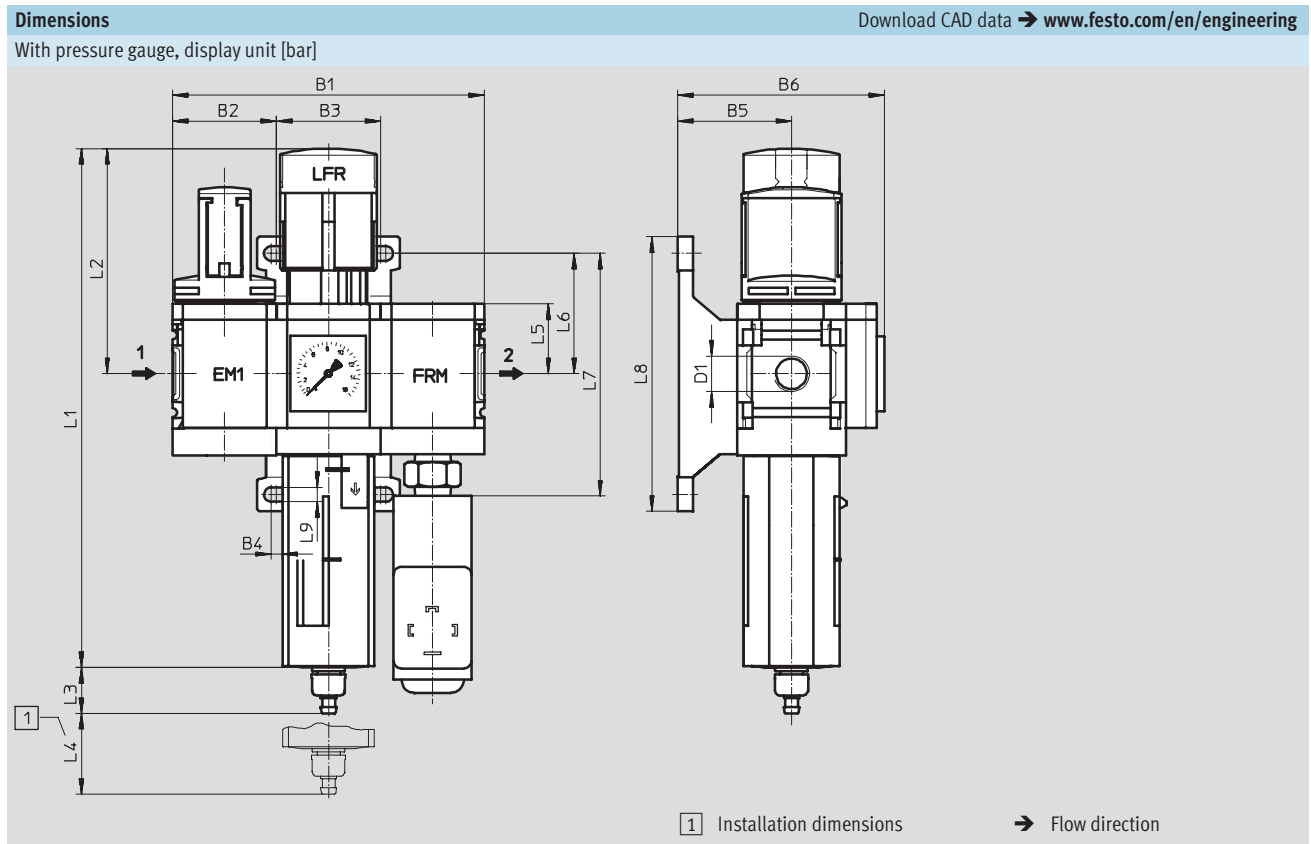
MSB6-1/2

Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series

Technical data



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

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 $\frac{1}{4}$	542 306	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

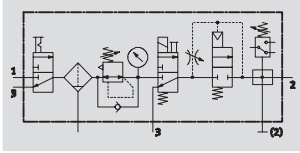
Service unit combinations MSB4/MSB6, MS series

Technical data

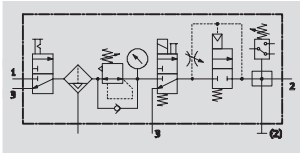


Function

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	
Coil characteristics [V DC]	12	
Supply voltage [V DC]	24	

Standard nominal flow rate qnN [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.

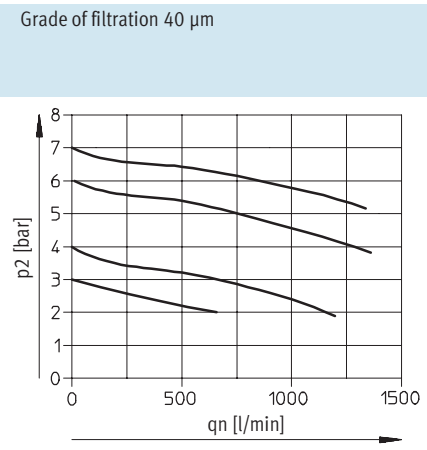
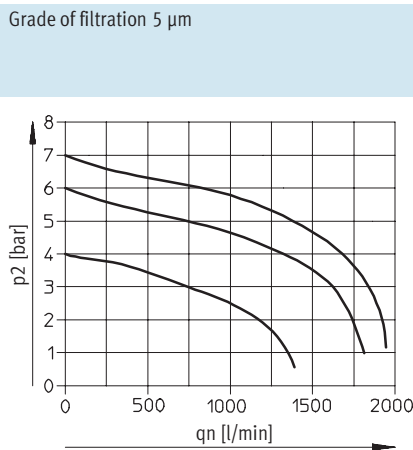
Weights [g]		
Size	MSB4	MSB6
Service unit combination	2,200	3,500
Mounting bracket	40	76

Note
 Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

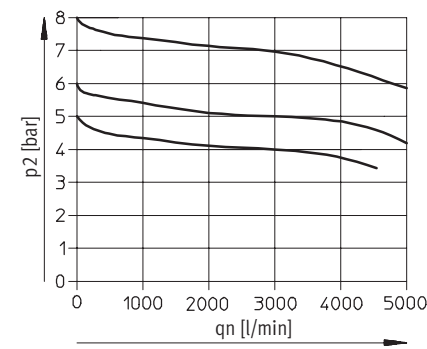
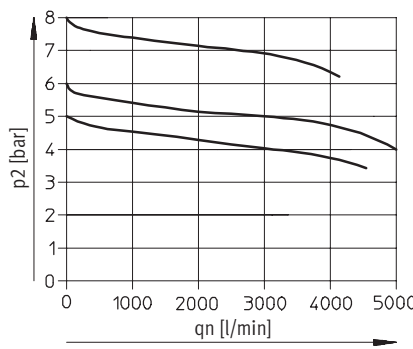
Pressure regulation range 4 ... 9 bar / 4 ... 12 bar
 MSB4-1/4

Primary pressure p1 = 10 bar



MSB6-1/2

Primary pressure p1 = 10 bar



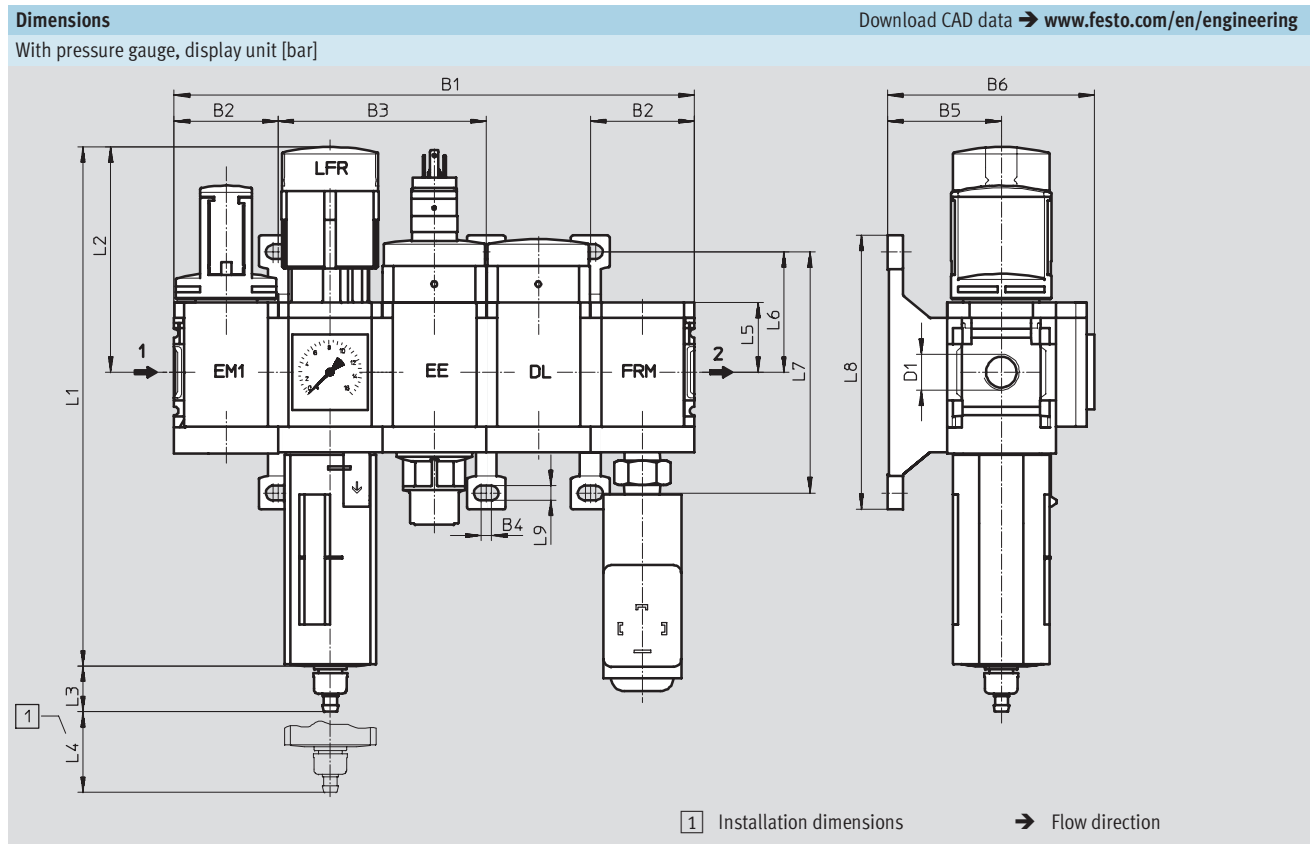
Service unit combinations MSB4/MSB6, MS series



Technical data

MS4/MS6 series service units
Service units

2.11











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

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	

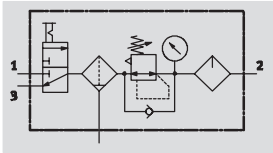
Service unit combinations MSB4/MSB6, MS series

Technical data

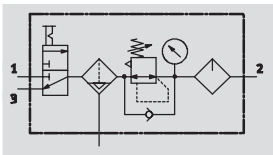


Function

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	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	

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

MS4/MS6 series service units
Service units

2.11


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.

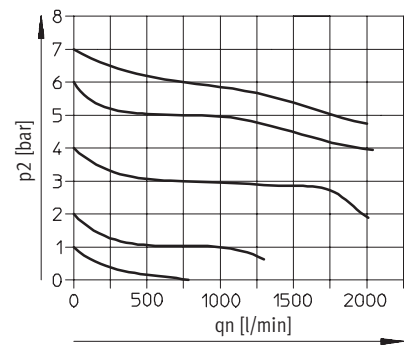
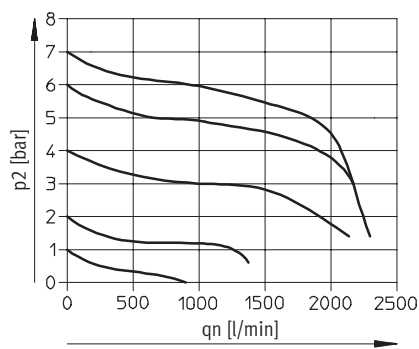
Weights [g]		
Size	MSB4	MSB6
Service unit combination	1,500	1,750
Mounting bracket	40	76

 Note
 Materials → Technical data of the individual devices

Standard flow rate qn as a function of output pressure p2

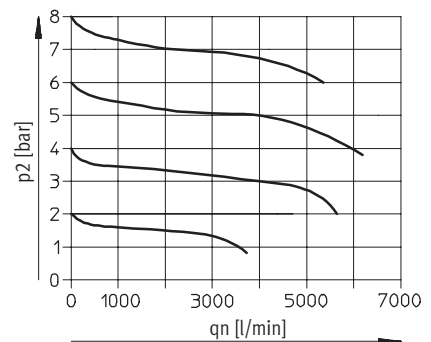
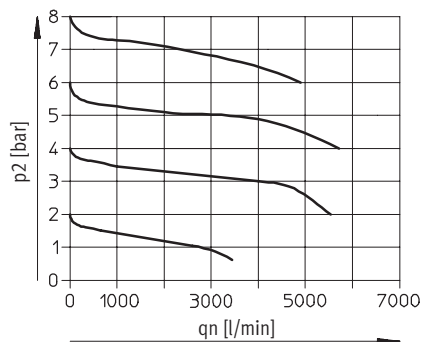
Pressure regulation range 1 ... 12 bar Grade of filtration 5 µm Grade of filtration 40 µm
 MSB4-1/4

Primary pressure p1 = 10 bar



MSB6-1/2

Primary pressure p1 = 10 bar



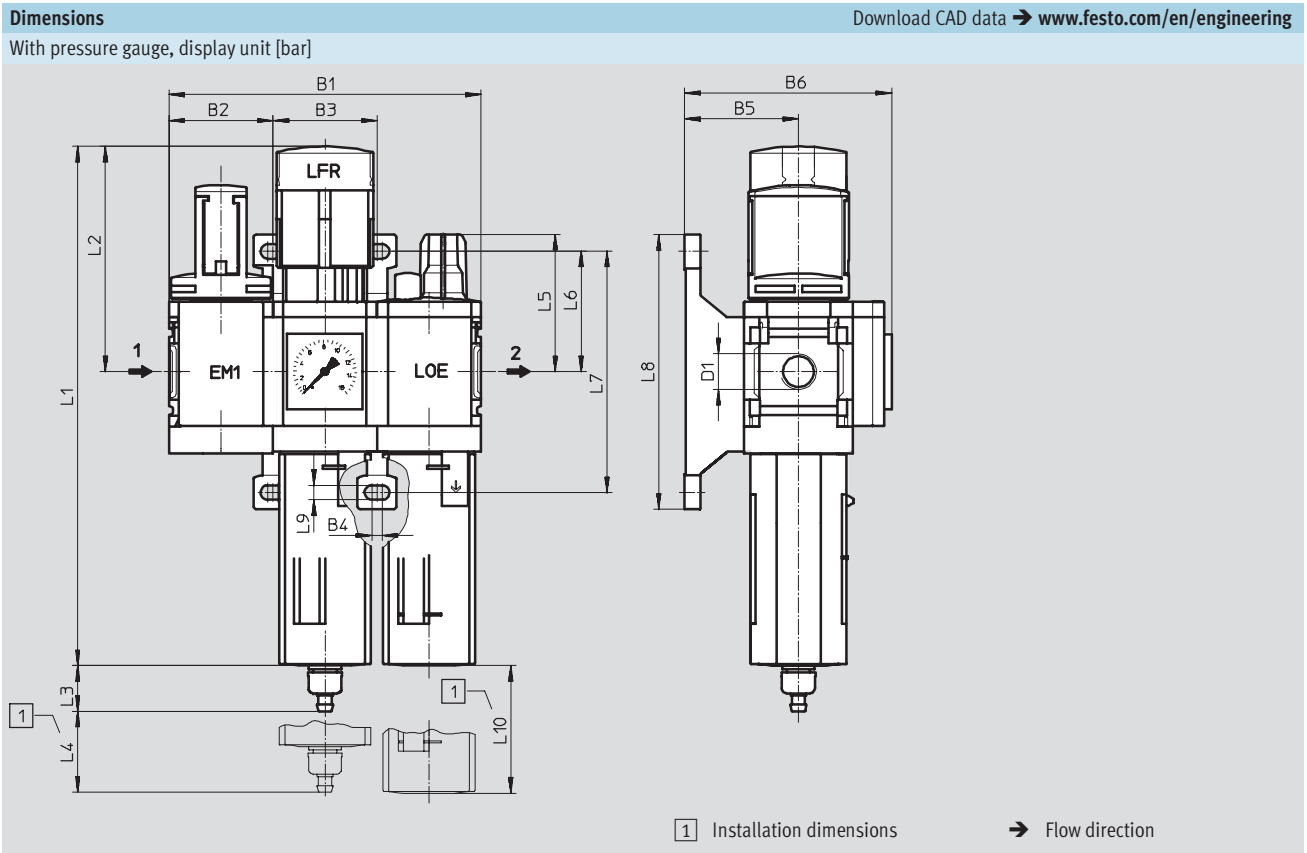
Service unit combinations MSB4/MSB6, MS series

Technical data



MS4/MS6 series service units
Service units

2.11



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

Ordering data

Pressure regulation range 1 ... 12 bar

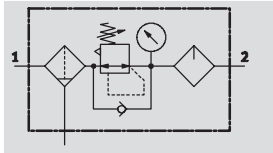
Size	Condensate drain	Connection	Grade of filtration 5 μ m		Grade of filtration 40 μ m	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MSB4	manual rotary	G $\frac{1}{4}$	542 308	MSB4- $\frac{1}{4}$:C3J3M1-WP	542 296	MSB4- $\frac{1}{4}$:C3J1M1-WP
	fully automatic	G $\frac{1}{4}$	542 314	MSB4-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

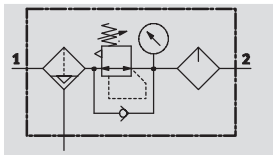
Technical data

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	

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	3,500
	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 ... 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.

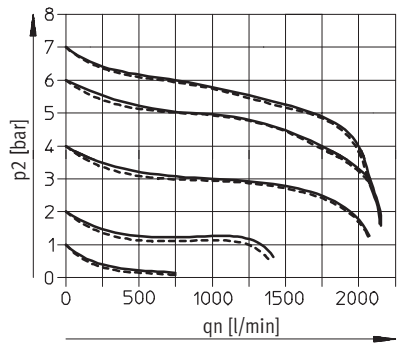
Weights [g]	
Size	MSB4 MSB6
Service unit combination	
With plastic bowl guard	1,000 2,000
With metal bowl guard	- 2,400
Mounting bracket	40 76

Note
Materials → Technical data of the individual devices

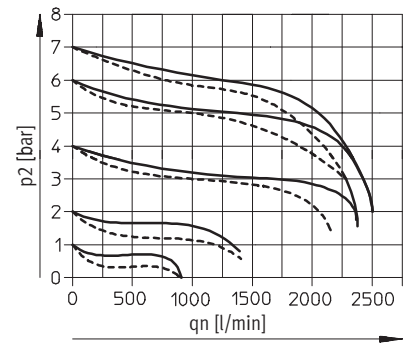
Standard flow rate qn as a function of output pressure p2

Pressure regulation range N2 or N3
MSB4-1/4

Primary pressure p1 = 10 bar

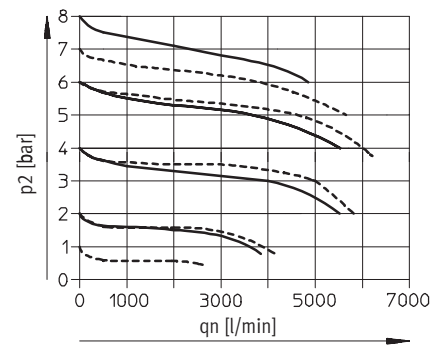
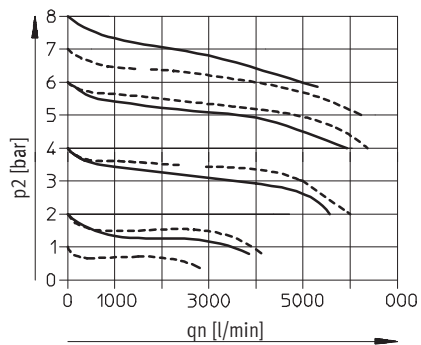


Grade of filtration 40 µm



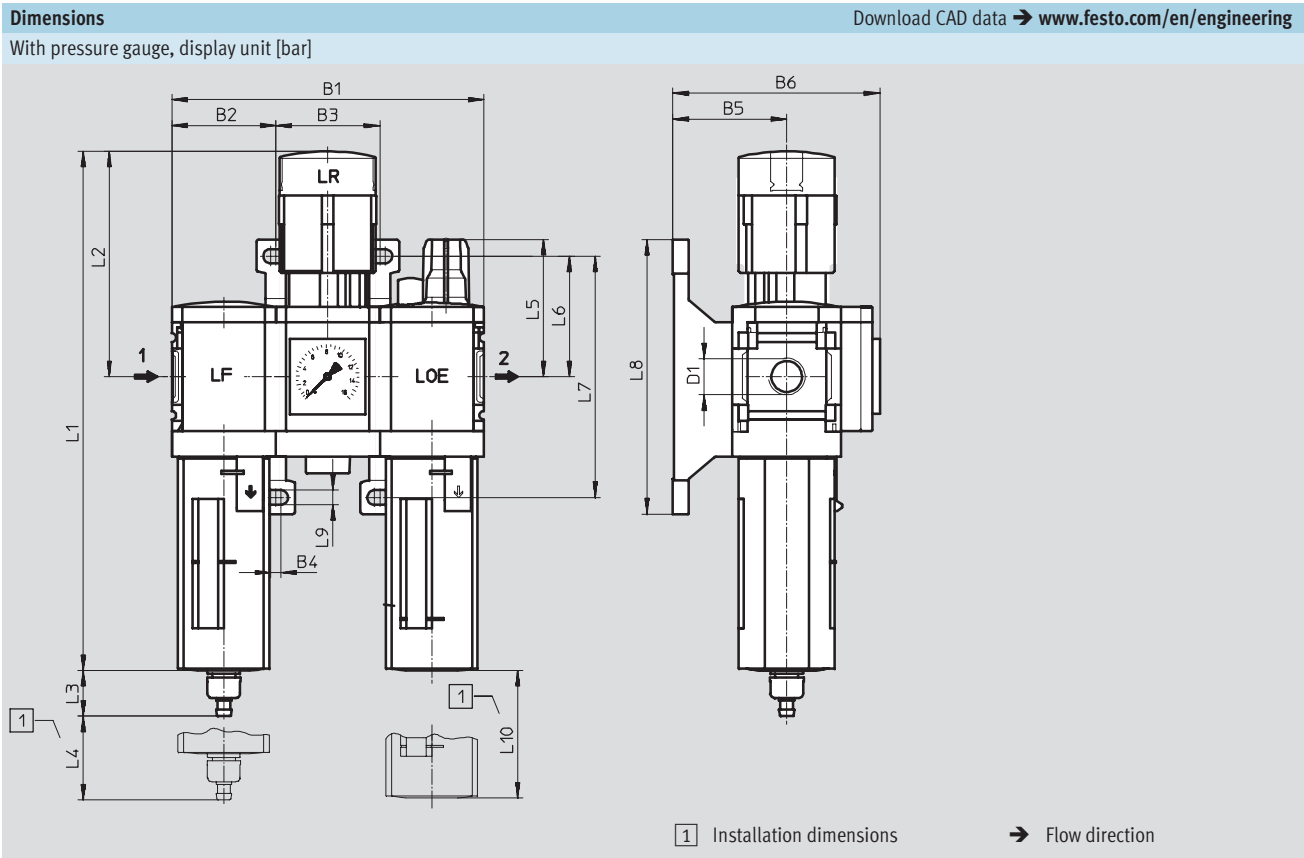
MSB6-1/2

Primary pressure p1 = 10 bar



Service unit combinations MSB4/MSB6, MS series

Technical data



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

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

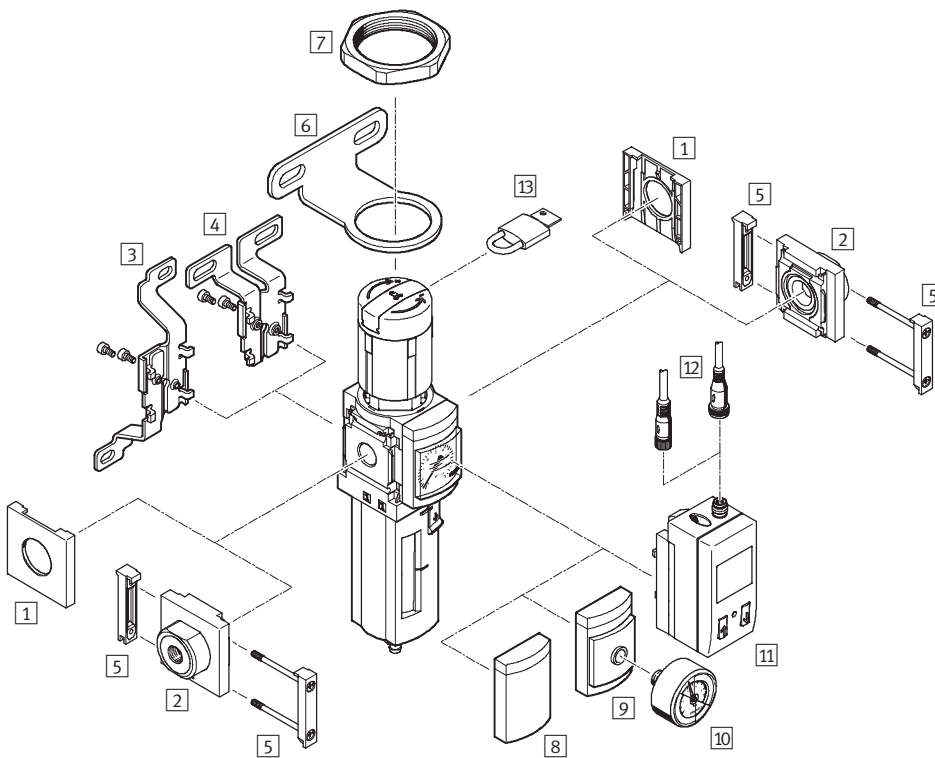
Ordering data				
Pressure regulation range 1 ... 12 bar				
Size	Condensate drain	Connection	Grade of filtration 5 µm	
			Part No. Type	
				Grade of filtration 40 µm
				Part No. Type
Plastic bowl guard				
MSB4	manual rotary	G $\frac{1}{4}$	531 097 MSB4-$\frac{1}{4}$:H3N3M1-WP	531 093 MSB4-$\frac{1}{4}$:H2N3M1-WP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



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

Filter regulators MS4/MS6-LFR, MS series

Type codes

		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														
Actuator lock															
AS	Lockable standard type rotary knob														

Further variants can be ordered using the modular system

Filter regulators LFR

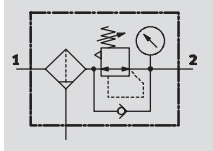
→ 3/2.12-12

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

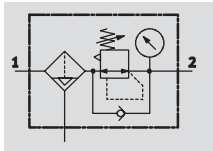
Filter regulators MS4/MS6-LFR, MS series

Technical data

Function
Condensate drain
manual rotary
with pressure gauge



Condensate drain
semi or fully automatic
with pressure gauge



- - 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

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
- 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
- Available with or without secondary venting
- 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
- Filter cartridges → 3/2.31-8

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	Filter regulator with/without pressure indicator			
Regulating function	With/without secondary venting			
	With return flow function			
	Output pressure constant			
Type of mounting	Via accessories			
	In-line installation			
	Front panel mounting			
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 actuated	
Actuator lock	Rotary knob with detent			
	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 variant pressure sensor AD...)		
	D8 [bar]	-		0.5 ... 16
Max. hysteresis [bar]	0.25			
Pressure indicator	With pressure sensor for the output pressure display and with electric output			
	With pressure gauge for the output pressure display			
Max. condensate volume [cm ³]	19 (with plastic bowl guard)		38	
	25 (with metal bowl)			

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 actuated
	M	MS6	H	MS6	V	MS6	E...
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS6
Supply pressure [bar]	0.8 ... 14	0.8 ... 20	1.5 ... 12	1.5 ... 12	2 ... 12	2 ... 12	0.8 ... 16
Operating medium without pressure sensor AD...	Compressed air						
Operating medium with pressure sensor AD...	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m						
Ambient temperature without pressure sensor AD... [°C]	–10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Ambient temperature with pressure sensor AD... [°C]	0 ... +50		+5 ... +50		+5 ... +50		+1 ... +50
Medium temperature without pressure sensor AD... [°C]	–10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Medium temperature with pressure sensor AD... [°C]	0 ... +50		+5 ... +50		+5 ... +50		+1 ... +50
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.

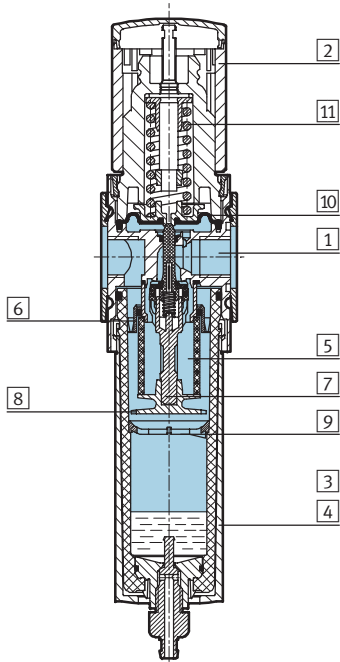
Weights [g]	
Size	MS6
With plastic bowl guard	875
With metal bowl	1,087
With metal bowl and fully automatic, electrically actuated condensate drain	1,800

Filter regulators MS4/MS6-LFR, MS series

Technical data

Materials

Sectional view



Filter regulator		
1	Body	Die-cast aluminium
2	Regulating knob	Polyamide/polyacetate
3	Plastic bowl guard	Polycarbonate/polyamide
4	Metal bowl	Aluminium
	Viewing 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

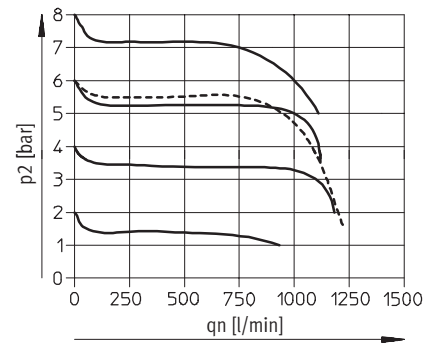
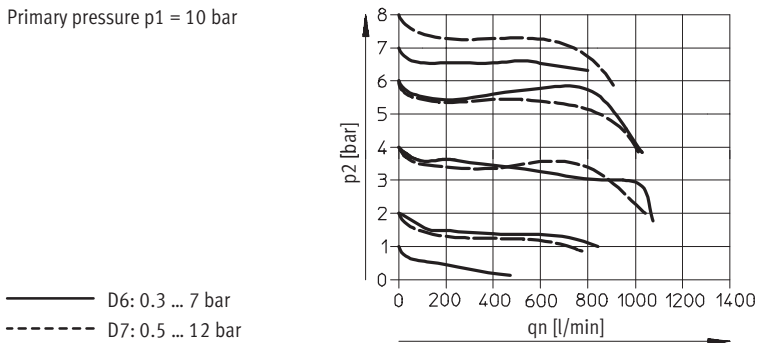
Standard flow rate q_n as a function of output pressure p_2

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

Grade of filtration 5 μm

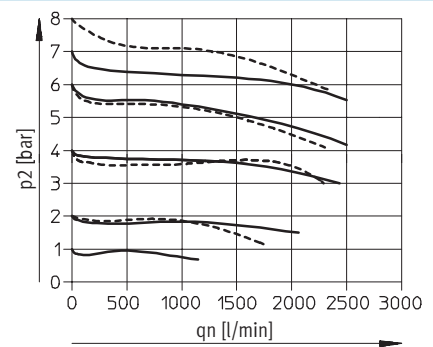
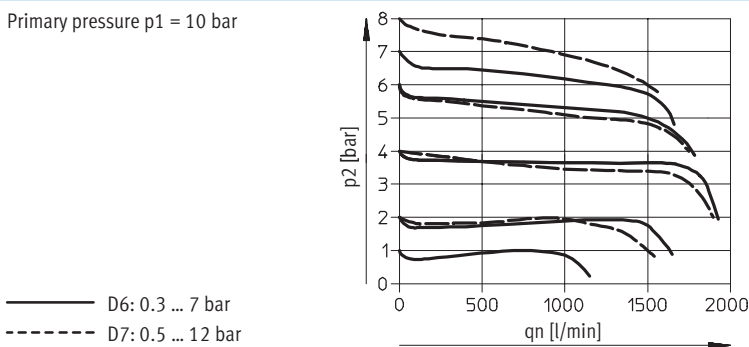
Grade of filtration 40 μm

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



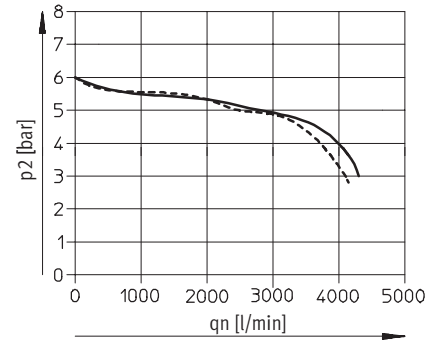
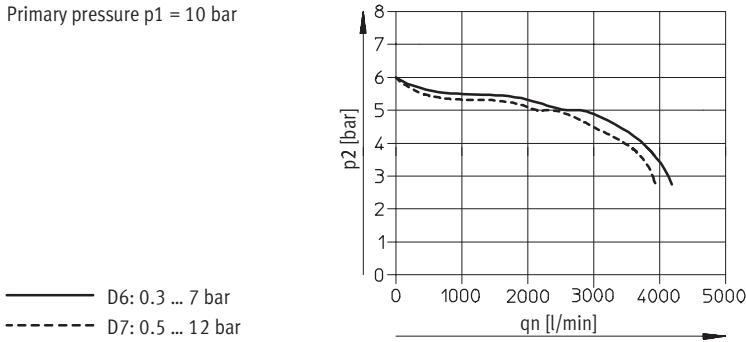
Standard flow rate q_n as a function of output pressure p_2

Pressure regulation range D6 or D7
MS6-LFR-1/4

Grade of filtration 5 μm

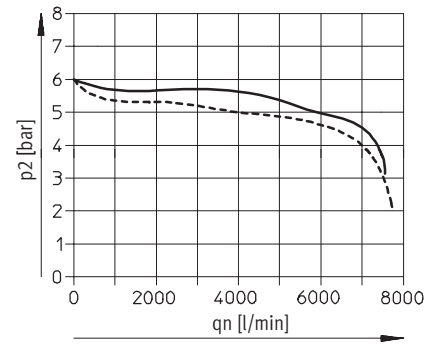
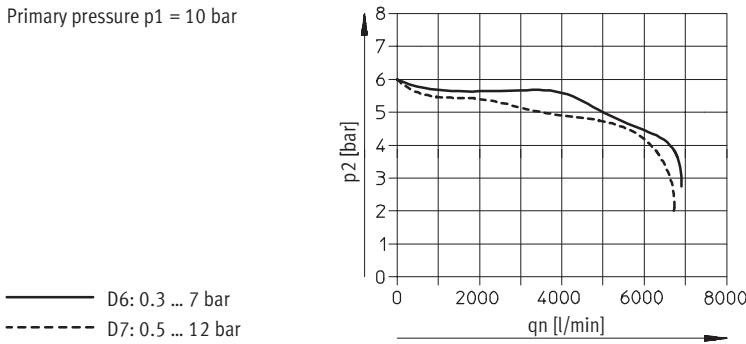
Grade of filtration 40 μm

Primary pressure $p_1 = 10$ bar



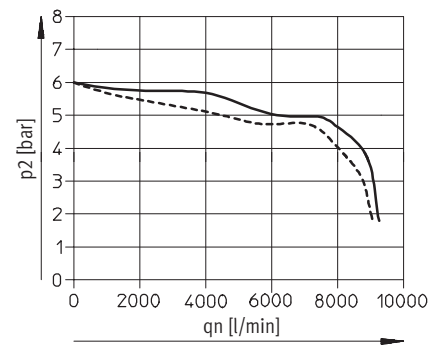
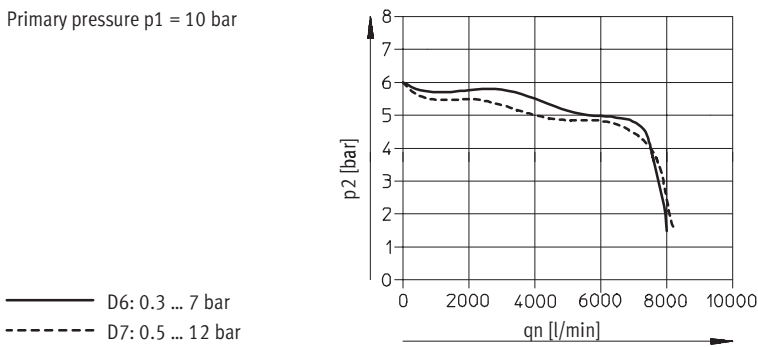
MS6-LFR-3/8

Primary pressure $p_1 = 10$ bar



MS6-LFR-1/2

Primary pressure $p_1 = 10$ bar



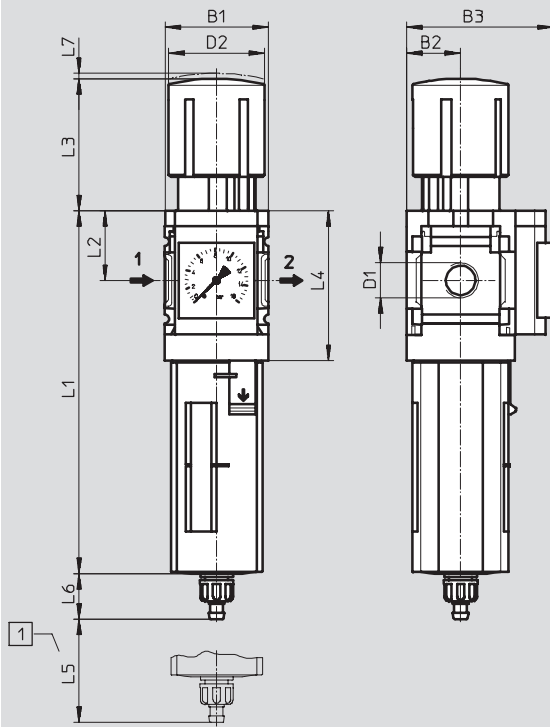
Filter regulators MS4/MS6-LFR, MS series

Technical data

Dimensions – Standard

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

With 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
						Bowl guard						Bowl guard		
						Plastic	Metal					Plastic	Metal	
MS4-LFR-1/8	40	21	57	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	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										

Filter regulators MS4/MS6-LFR, MS series

Technical data

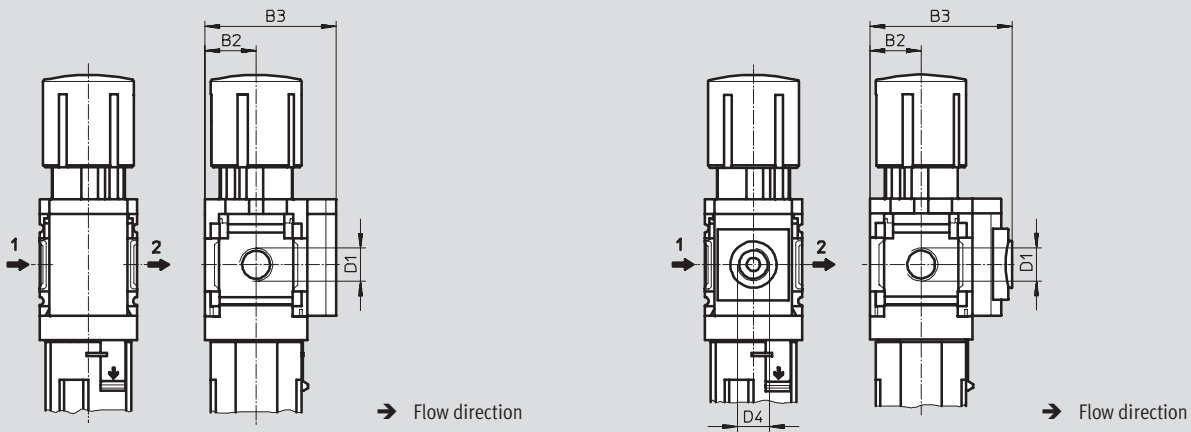
FESTO

Dimensions – Pressure gauge alternatives

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

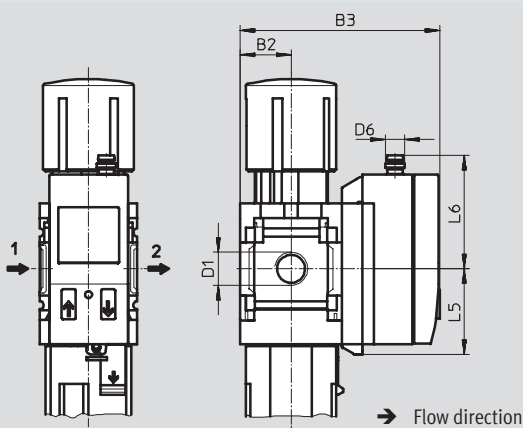
Cover plate VS

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



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

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

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

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	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				

Filter regulators MS4/MS6-LFR, MS series

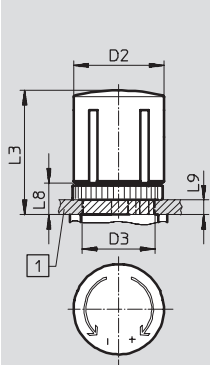
Technical data

Dimensions – Rotary knob

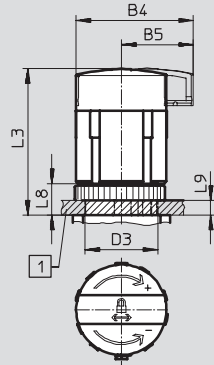
Download CAD data → www.festo.com/en/engineering

For installation into control panel

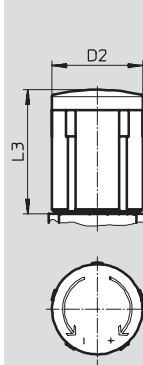
Standard



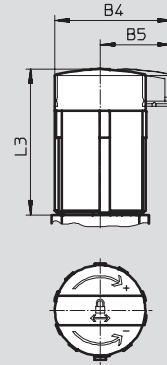
Standard, lockable AS



Long LD



Long, lockable LD-AS



1 Max. control panel thickness

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...-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...-LD	-	-	51	-	86	-	-
MS6-LFR...-LD-AS	67.7	42			95.5		

Filter regulators MS4/MS6-LFR, MS series

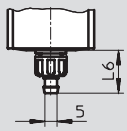
Technical data

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Dimensions – Condensate drain

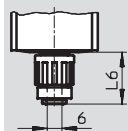
Download CAD data → www.festo.com/en/engineering

Manual rotary M



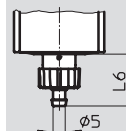
Barbed fitting for plastic tubing
PCN-4

Semi-automatic H



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

Fully automatic V



Barbed fitting for plastic tubing
PCN-4

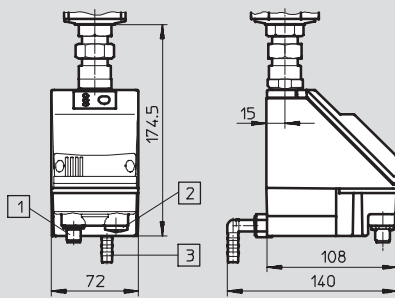
Type	L6
Plastic bowl guard	
MS4-LFR-...-M	17.7
MS6-LFR-...-M	15.8
Metal bowl	
MS4-LFR-...-M	17.7
MS6-LFR-...-M	19

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-...

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-CRM-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

Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products



MS4/MS6 series service units
Filter regulators

2.12

M Mandatory data →

Module No.	Series	Size	Function	Connection size	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 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	
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		-		-		-	
--	----	--	---	-----	--	---	--	---	--	---	--

Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products

M		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 AD1 AD2 AD3 AD4	PSI MPA	OS	LD	AS	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, elec- trical	24 V DC, M12		2	-E1	
		110 V AC, terminals		2	-E2	
		230 V AC, terminals		2	-E3	
		24 V DC, terminals		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	
		Pressure sensor with display, M8 plug, 1 switching output PNP, 3-pin		3	-AD1	
		Pressure sensor with display, M8 plug, 1 switching output NPN, 3-pin		3	-AD2	
		Pressure sensor with display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA		3	-AD3	
		Pressure sensor with display, M12 plug, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA		3	-AD4	
Alternative pressure gauge scale	psi		4	-PSI		
	MPa		4	-MPA		
Secondary venting	Without secondary venting			-OS		
Rotary knob	Long rotary knob			-LD		
Security	Lockable rotary knob			-AS		
Type of mounting	Mounting bracket with knurled nut for regulator head		5	-WR		
	Mounting bracket		6	-WP		
	Mounting bracket		6	-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 AD1 ... AD4 Measuring range max. 10 bar.
Not with pressure regulation range D8

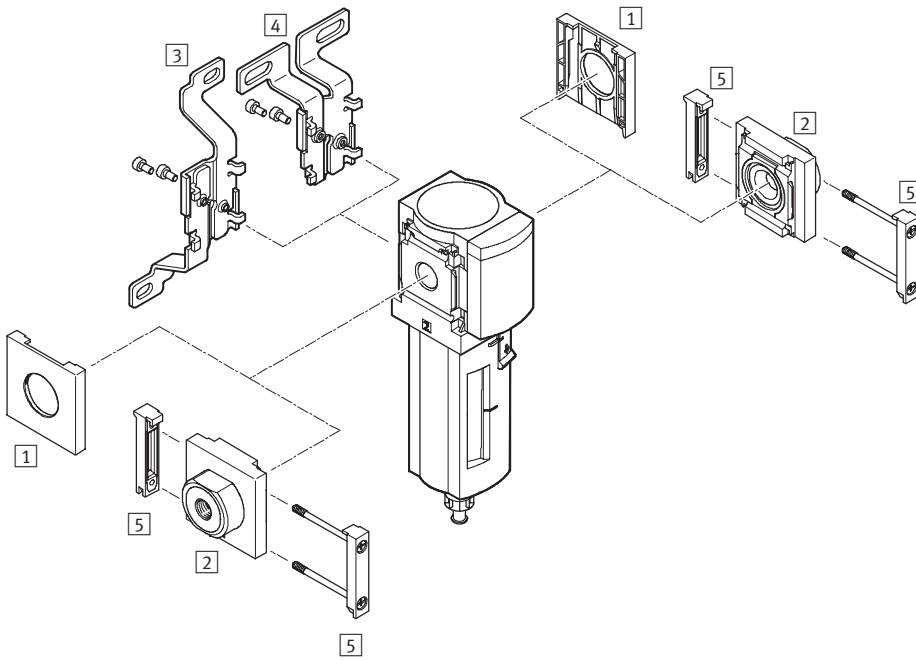
- 4 PSI, MPA Not with pressure gauge alternatives VS, A8, A4, AD1, AD2, AD3, AD4
- 5 WR Not with long rotary knob LD
- 6 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE

Transfer order code

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

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

Peripherals overview



MS4/MS6 series service units
Filters

2.13

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

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

Type codes

		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	Thread G1/8												
1/4	Thread G1/4												
3/8	Thread G3/8												
1/2	Thread G1/2												
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												
Filter change sensor (for LFM only)													
	Without differential pressure indicator												
DA	Differential pressure display												

Further variants can be ordered using the modular system

- Filters LF → 3/2.13-8
- Fine and micro filters LFM → 3/2.13-16
- Active carbon filters LFX → 3/2.13-21

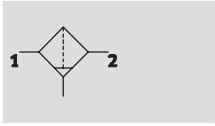
- Connecting plates
- Condensate drain
- Type of mounting
- Alternative flow direction

Filters MS4/MS6-LF, MS series

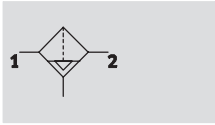
Technical data



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](http://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 → 3/2.31-8

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		

Standard nominal flow rate q _{nN} 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	3,200
	40 µm	1,100	1,700	2,500	3,800	4,100

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

Filters MS4/MS6-LF, MS series

Technical data

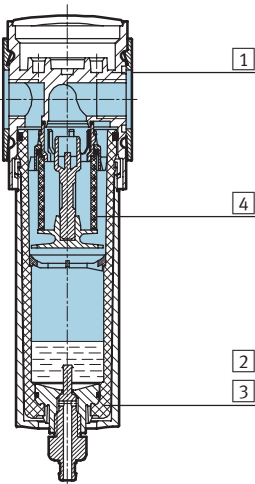
Operating and environmental conditions							
Condensate drain	Manual rotary		Semi-automatic		Fully automatic		Fully automatic, electrical
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS6
Input pressure [bar]	0 ... 14	0 ... 20	1.5 ... 12	1.5 ... 12	2 ... 12	2 ... 12	0.8 ... 16
Operating medium	Compressed air						
Ambient 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
With plastic bowl guard	190	600
With metal bowl	350	820
With metal bowl and fully automatic, electrically actuated condensate drain	-	1,800

Materials

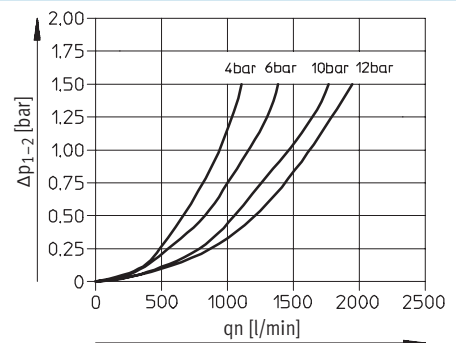
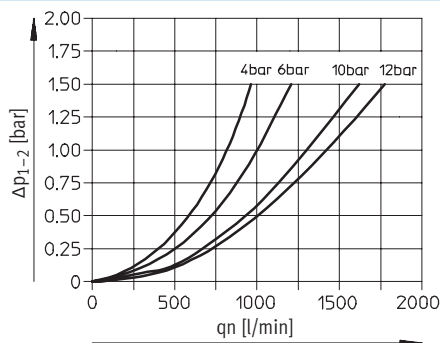
Sectional view



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

Standard flow rate qn as a function of the differential pressure Δp1-2

MS4-LF-1/8 Grade of filtration 5 µm Grade of filtration 40 µm



Filters MS4/MS6-LF, MS series

Technical data

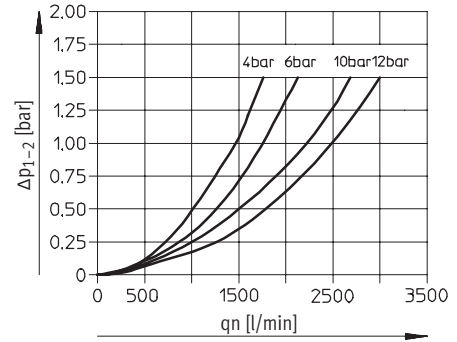
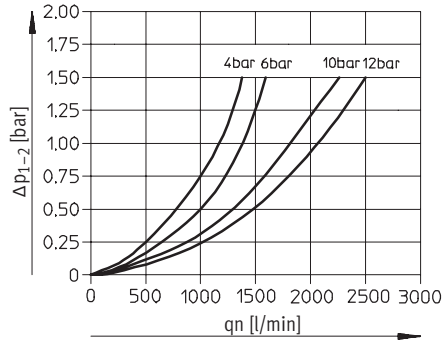


Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

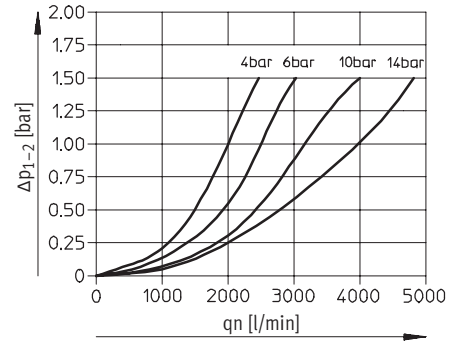
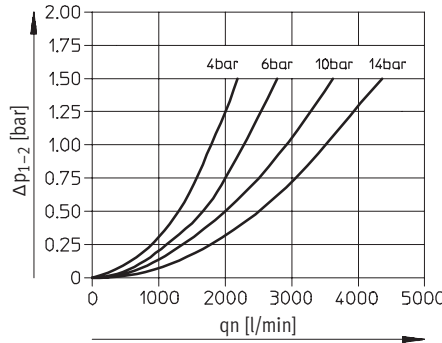
Grade of filtration 5 μm

Grade of filtration 40 μm

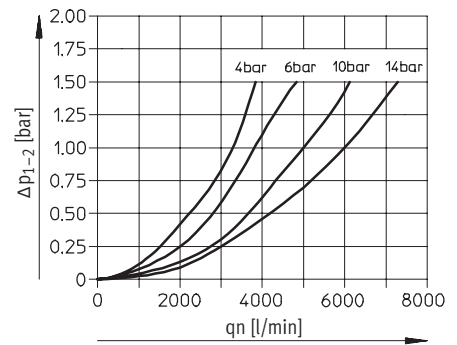
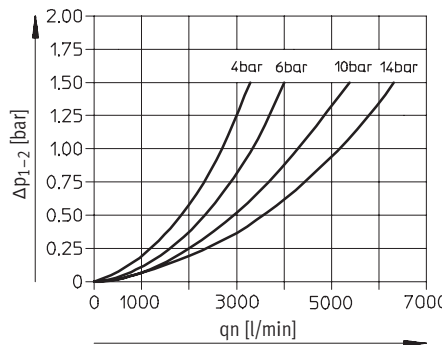
MS4-LF-1/4



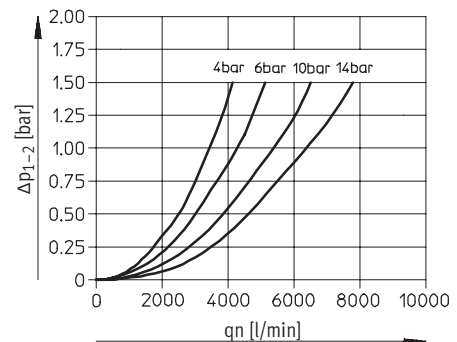
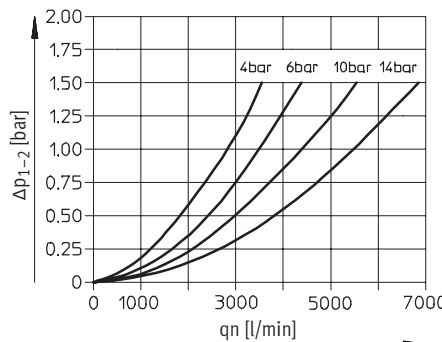
MS6-LF-1/4



MS6-LF-3/8



MS6-LF-1/2



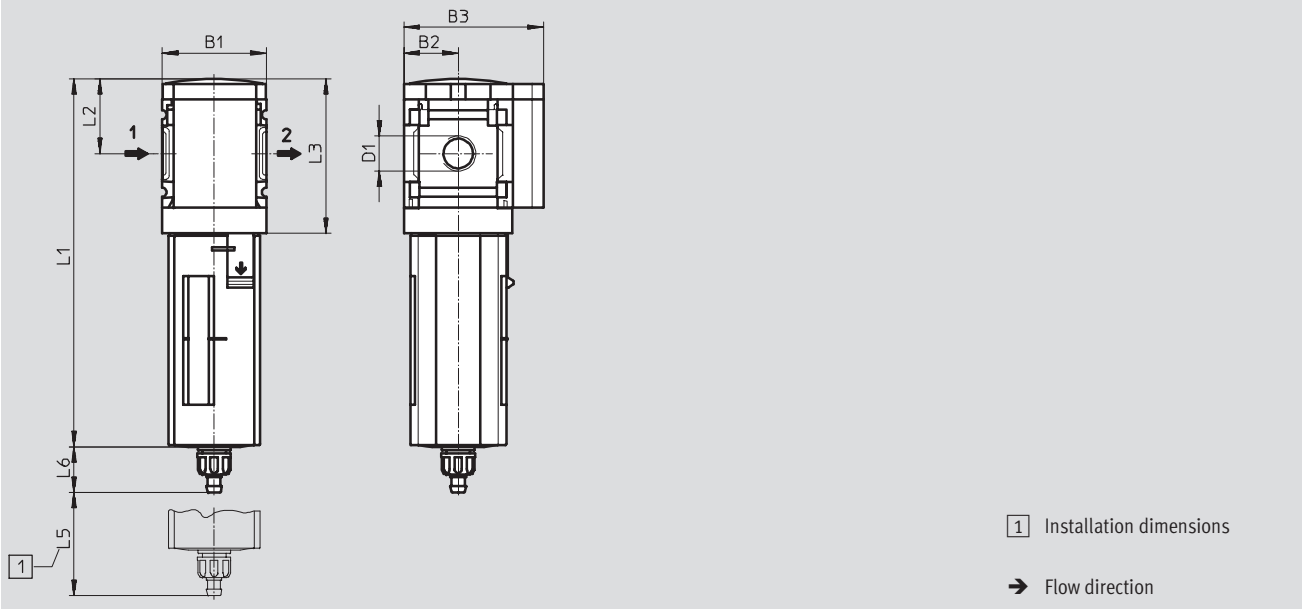
Filters MS4/MS6-LF, MS series

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							

MS4/MS6 series service units
Filters

2.13

Filters MS4/MS6-LF, MS series

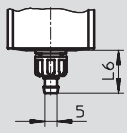
Technical data



Dimensions – Condensate drain

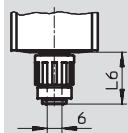
Download CAD data → www.festo.com/en/engineering

Manual rotary M



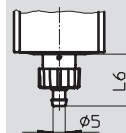
Barbed fitting for plastic tubing
PCN-4

Semi-automatic H



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

Fully automatic V



Barbed fitting for plastic tubing
PCN-4

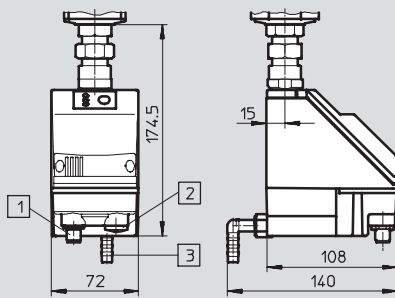
Type	L6
Plastic bowl guard	
MS4-LF-...-M	17.7
MS6-LF-...-M	15.8
Metal bowl	
MS4-LF-...-M	17.7
MS6-LF-...-M	19

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

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	
	-	Connecting plate G3/4		-AGE		
Grade of filtration		40 µm			-E	
		5 µm			-C	
Bowl		Plastic bowl with plastic bowl guard			-R	
		Metal bowl			-U	

MS4/MS6 series service units
Filters
2.13

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

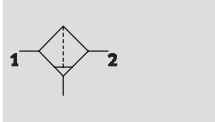
- - -

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

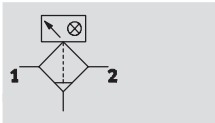
Technical data



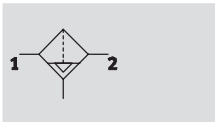
Function
Condensate drain
manual rotary
without differential pressure indicator



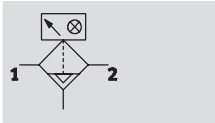
with differential pressure indicator



Condensate drain
semi or fully automatic
without differential pressure indicator



with differential pressure indicator



- - Flow rate
120 ... 850 l/min
- - Temperature range
-10 ... +60 °C
- - Input pressure
0 ... 20 bar
- - www.festo.com/en/Spare_parts_service

Wearing parts kits
→ 3/2.13-15



- 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 optical indication of filter contamination
- Choice of filter cartridges: 0.01 µm or 1 µm
- Filter cartridges → 3/2.31-8

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
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	Plastic bowl guard Metal bowl				
Condensate drain	Manual rotary Semi-automatic Fully automatic - Fully automatic, electrical				
Differential pressure display	Visual indicator				
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		

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

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 $\frac{3}{8}$	G $\frac{1}{2}$
Micro filter LFM-A					
$q_{nN} 1 \rightarrow 2$	120	120	380	430	480
$q_n \text{ min}$	54	54	135	135	135
$q_n \text{ max}$	360	360	900	900	900
Fine filter LFM-B					
$q_{nN} 1 \rightarrow 2$	180	180	550	700	850
$q_n \text{ min}$	54	54	140	140	140
$q_n \text{ max}$	360	360	950	950	950

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

Operating and environmental conditions							
Condensate drain	Manual rotary		Semi-automatic		Fully automatic		Fully automatic, electrical
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 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		+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						

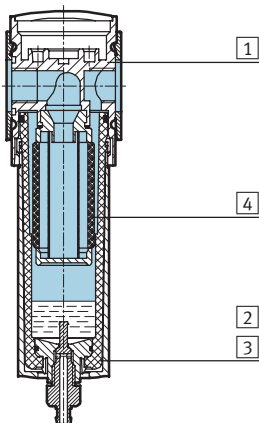
1) Corrosion resistance class 2 according to Festo standard 940 070

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
With plastic bowl guard	190	600
With metal bowl	350	820
With metal bowl and fully automatic, electrically actuated condensate drain	-	1,800

Materials

Sectional view



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

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

Technical data

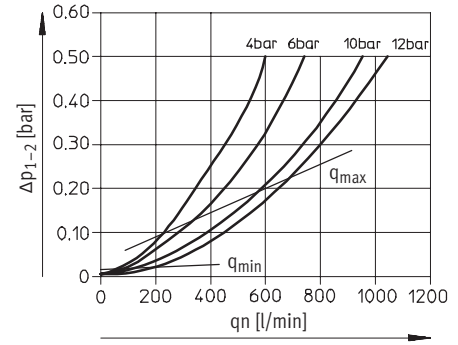
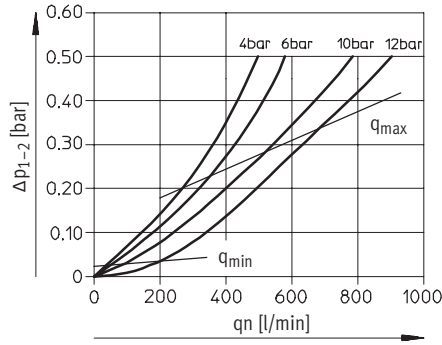


Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

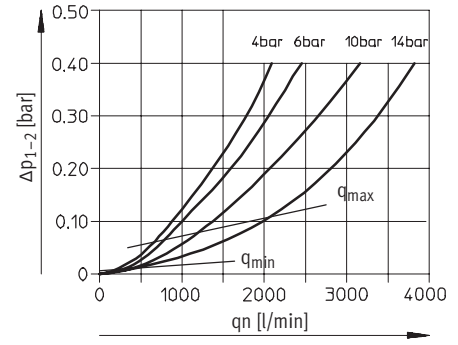
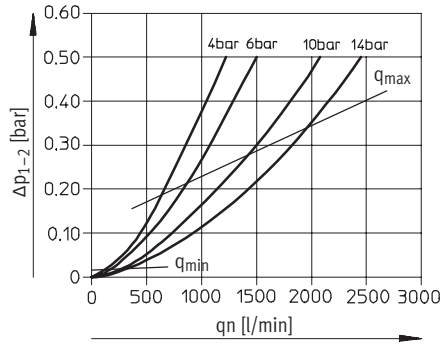
Grade of filtration 0.01 μm

Grade of filtration 1 μm

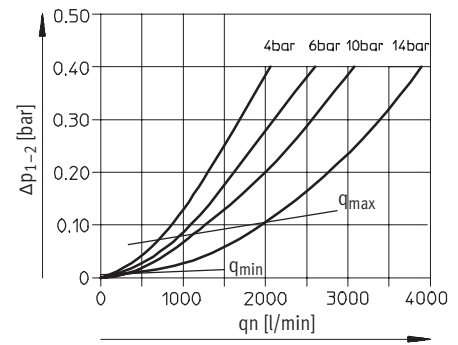
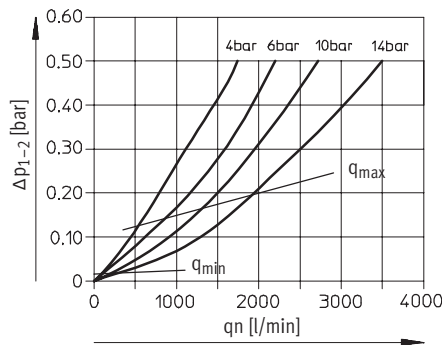
MS4-LFM-1/8 and MS4-LFM-1/4



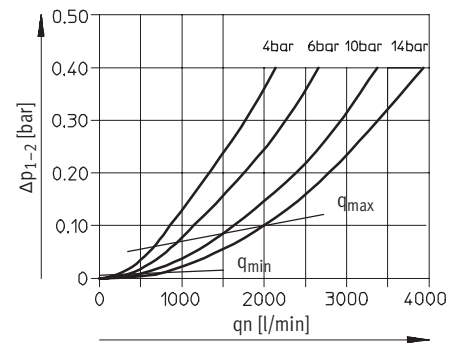
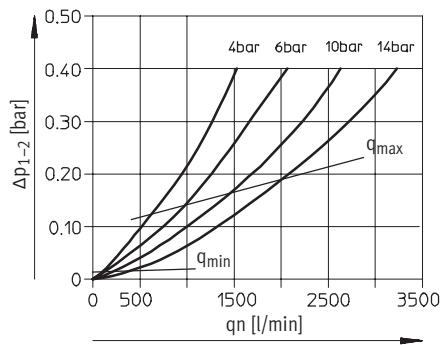
MS6-LFM-1/4



MS6-LFM-3/8



MS6-LFM-1/2



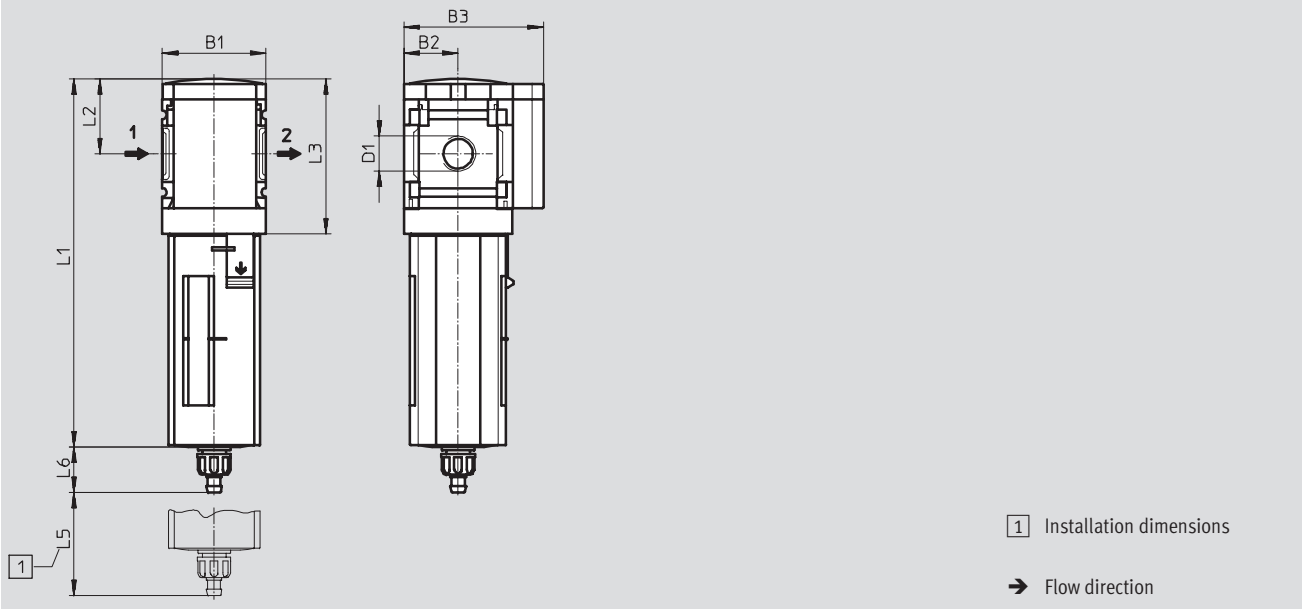
Fine and micro filters MS4/MS6-LFM, MS series

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-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	189	198	42	87	75	15.8	19
MS6-LFM-3/8				G3/8							
MS6-LFM-1/2				G1/2							

MS4/MS6 series service units
Filters

2.13

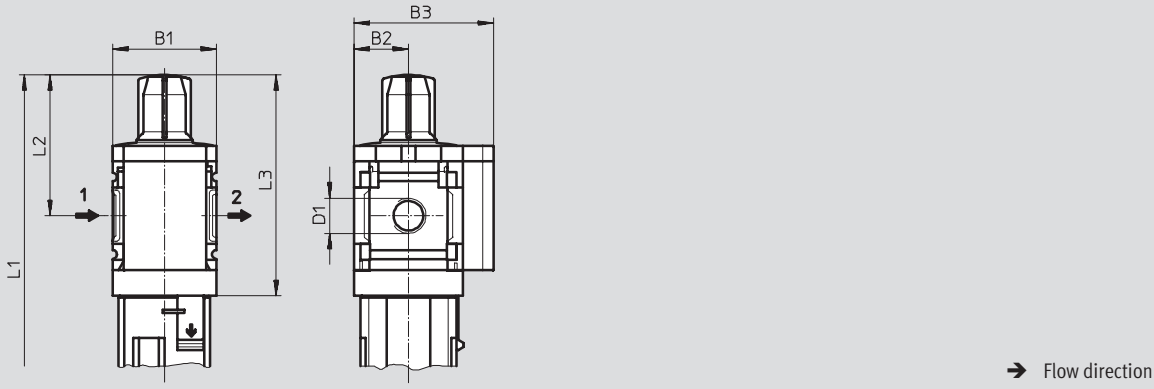
Fine and micro filters MS4/MS6-LFM, MS series

Technical data



Dimensions – Differential pressure indicator

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



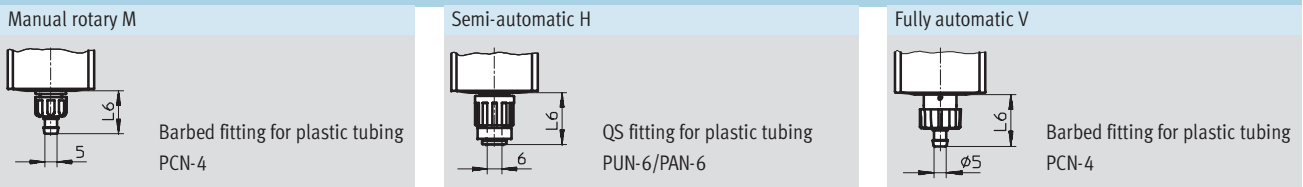
Type	B1	B2	B3	D1	L1 Bowl guard		L2	L3
					Plastic	Metal		
MS4-LFM-1/8-...-DA	40	21	54	G1/8	168	186	55	86
MS4-LFM-1/4-...-DA				G1/4				
MS6-LFM-1/4-...-DA	62	31	76	G1/4	218	224	68	113
MS6-LFM-3/8-...-DA				G3/8				
MS6-LFM-1/2-...-DA				G1/2				

MS4/MS6 series service units
Filters

2.13

Dimensions – Condensate drain

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



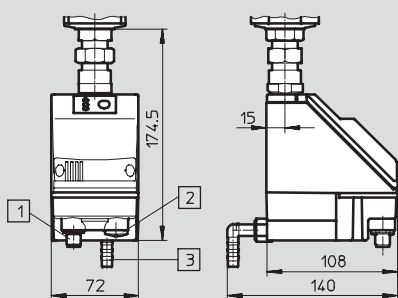
Type	L6
Plastic bowl guard	
MS4-LFM-...-M	17.7
MS6-LFM-...-M	15.8
Metal bowl	
MS4-LFM-...-M	17.7
MS6-LFM-...-M	19

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 Variants E2/E3/E4
PWEA-AC-... with cable conduit
fitting Pg9
- 3 Connection 360° rotatable for
plastic tubing PUN-H-12x2-...

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

FESTO

Technical data

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 ¹ / ₈	529 463	MS4-LFM- ¹ / ₈ -ARM	529 465	MS4-LFM- ¹ / ₈ -BRM
		G ¹ / ₄	529 459	MS4-LFM- ¹ / ₄ -ARM	529 461	MS4-LFM- ¹ / ₄ -BRM
MS6	manual rotary	G ¹ / ₄	529 663	MS6-LFM- ¹ / ₄ -ARM	529 667	MS6-LFM- ¹ / ₄ -BRM
		G ³ / ₈	529 671	MS6-LFM- ³ / ₈ -ARM	529 675	MS6-LFM- ³ / ₈ -BRM
		G ¹ / ₂	529 655	MS6-LFM- ¹ / ₂ -ARM	529 659	MS6-LFM- ¹ / ₂ -BRM
	fully automatic	G ¹ / ₄	530 510	MS6-LFM- ¹ / ₄ -ARV	530 514	MS6-LFM- ¹ / ₄ -BRV
		G ³ / ₈	530 518	MS6-LFM- ³ / ₈ -ARV	530 522	MS6-LFM- ³ / ₈ -BRV
		G ¹ / ₂	530 502	MS6-LFM- ¹ / ₂ -ARV	530 506	MS6-LFM- ¹ / ₂ -BRV
Metal bowl						
MS4	fully automatic	G ¹ / ₈	539 208	MS4-LFM- ¹ / ₈ -AUV	539 204	MS4-LFM- ¹ / ₈ -BUV
		G ¹ / ₄	535 768	MS4-LFM- ¹ / ₄ -AUV	535 766	MS4-LFM- ¹ / ₄ -BUV
MS6	fully automatic	G ¹ / ₄	529 665	MS6-LFM- ¹ / ₄ -AUV	529 669	MS6-LFM- ¹ / ₄ -BUV
		G ³ / ₈	529 673	MS6-LFM- ³ / ₈ -AUV	529 677	MS6-LFM- ³ / ₈ -BUV
		G ¹ / ₂	529 657	MS6-LFM- ¹ / ₂ -AUV	529 661	MS6-LFM- 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 ¹ / ₈	536 821	MS4-LFM- ¹ / ₈ -ARM-DA	536 817	MS4-LFM- ¹ / ₈ -BRM-DA
		G ¹ / ₄	536 822	MS4-LFM- ¹ / ₄ -ARM-DA	536 818	MS4-LFM- ¹ / ₄ -BRM-DA
MS6	manual rotary	G ¹ / ₄	536 869	MS6-LFM- ¹ / ₄ -ARM-DA	536 833	MS6-LFM- ¹ / ₄ -BRM-DA
		G ³ / ₈	536 870	MS6-LFM- ³ / ₈ -ARM-DA	536 834	MS6-LFM- ³ / ₈ -BRM-DA
		G ¹ / ₂	536 871	MS6-LFM- ¹ / ₂ -ARM-DA	536 835	MS6-LFM- ¹ / ₂ -BRM-DA
	fully automatic	G ¹ / ₄	536 875	MS6-LFM- ¹ / ₄ -ARV-DA	536 839	MS6-LFM- ¹ / ₄ -BRV-DA
		G ³ / ₈	536 876	MS6-LFM- ³ / ₈ -ARV-DA	536 840	MS6-LFM- ³ / ₈ -BRV-DA
		G ¹ / ₂	536 877	MS6-LFM- ¹ / ₂ -ARV-DA	536 841	MS6-LFM- ¹ / ₂ -BRV-DA
Metal bowl						
MS4	fully automatic	G ¹ / ₈	537 213	MS4-LFM- ¹ / ₈ -AUV-DA	537 209	MS4-LFM- ¹ / ₈ -BUV-DA
		G ¹ / ₄	537 214	MS4-LFM- ¹ / ₄ -AUV-DA	537 210	MS4-LFM- ¹ / ₄ -BUV-DA
MS6	fully automatic	G ¹ / ₄	536 881	MS6-LFM- ¹ / ₄ -AUV-DA	536 845	MS6-LFM- ¹ / ₄ -BUV-DA
		G ³ / ₈	536 882	MS6-LFM- ³ / ₈ -AUV-DA	536 846	MS6-LFM- ³ / ₈ -BUV-DA
		G ¹ / ₂	536 883	MS6-LFM- ¹ / ₂ -AUV-DA	536 847	MS6-LFM- ¹ / ₂ -BUV-DA

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

MS4/MS6 series service units
Filters

2.13

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



Ordering data – Modular products

M 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 U
527 670		6				R U
Order example	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 filter			-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				
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Fine and micro filters MS4/MS6-LFM, MS series



Ordering data – Modular products

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

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	Filter change sensor	Differential pressure indicator, optical			-DA	
	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

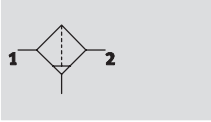
- [] - [] - []

Active carbon filters MS4/MS6-LFX, MS series

Technical data



Function
Condensate drain
manual rotary



- - Flow rate
250 ... 1,200 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 → 3/2.31-8

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	Active carbon filter				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Vertical ±5°				
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.

Standard nominal flow rate qnN ¹⁾ and standard flow rate qn [l/min]					
Size	MS4		MS6		
Pneumatic connection	G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈	G ¹ / ₂
qnN 1 → 2	250	250	700	1,000	1,200
qn max	360	360	900	900	900

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

Operating and environmental conditions		
Size	MS4	MS6
Input pressure	[bar]	0 ... 14
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.

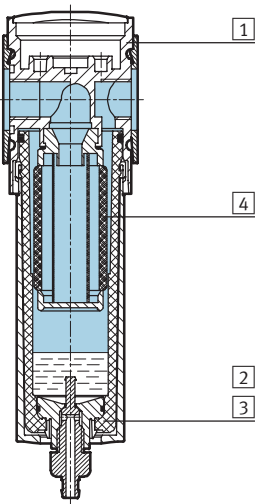
Active carbon filters MS4/MS6-LFX, MS series

Technical data

Weights [g]		
Size	MS4	MS6
With plastic bowl guard	190	600
With metal bowl	350	820

Materials

Sectional view

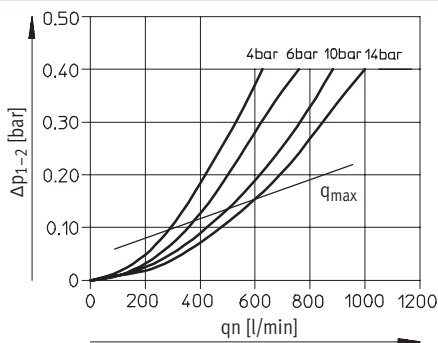


Active carbon filter

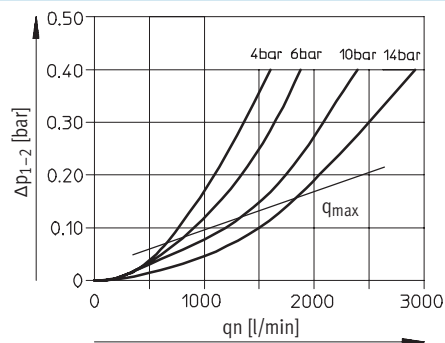
1	Body	Die-cast aluminium
2	Plastic bowl guard	Polycarbonate/polyamide
3	Metal bowl Viewing window	Aluminium Polyamide
4	Filters	Active carbon
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE

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

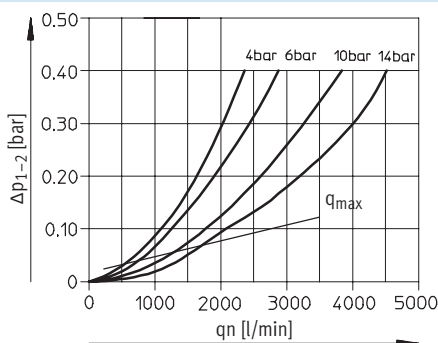
MS4-LFX-1/8 and MS4-LFX-1/4



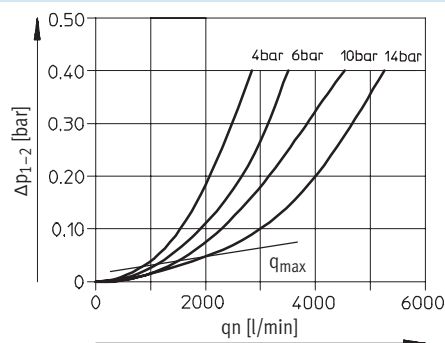
MS6-LFX-1/4



MS6-LFX-3/8



MS6-LFX-1/2



Active carbon filters MS4/MS6-LFX, MS series

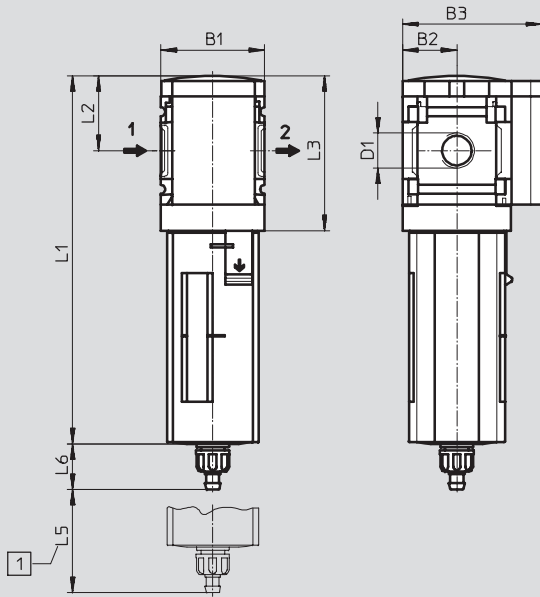
Technical data



Dimensions – Standard

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-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							

Ordering data

Size	Condensate drain	Connection	Plastic bowl guard		Metal bowl	
			Part No.	Type	Part No.	Type
MS4	manual rotary	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	manual rotary	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

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	Type of mounting	Alternative flow direction
527 699	MS	4	LFX	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	R U	WP WPM WB WBM	Z
527 672		6					
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	
		Connecting plate G3/4		-AGE		
	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

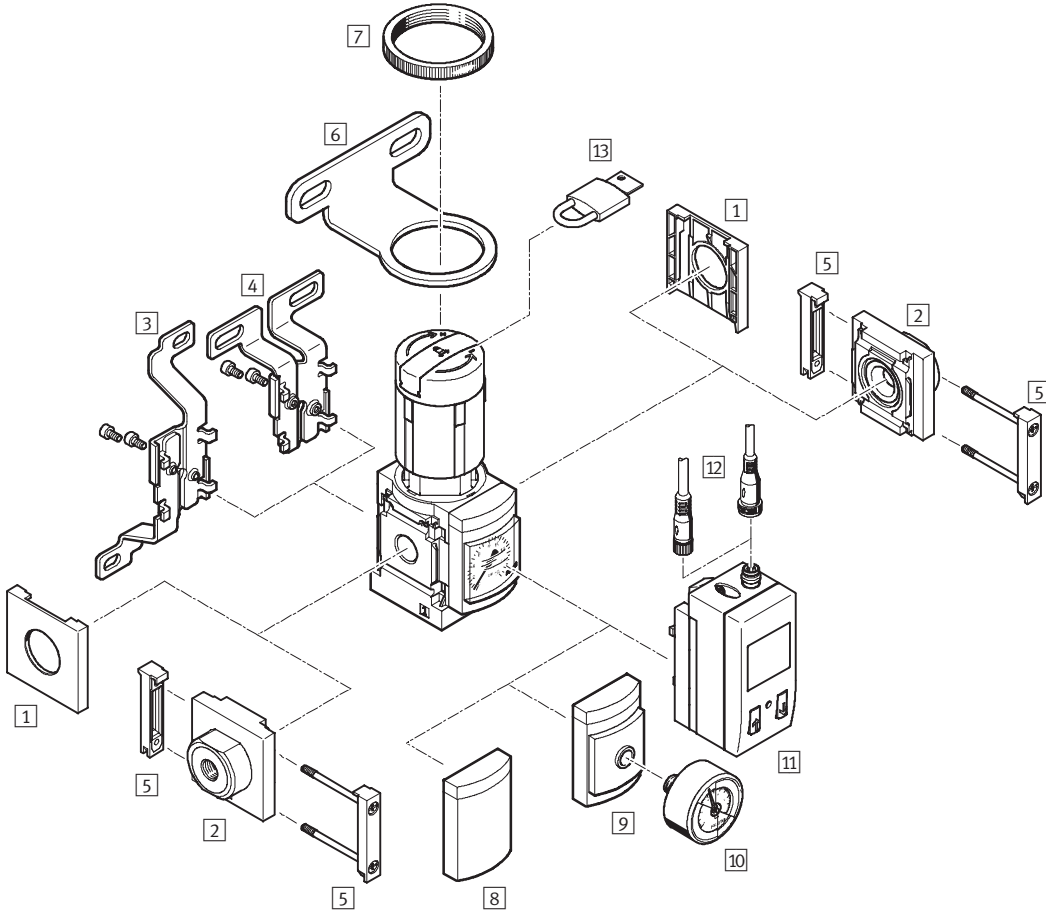
	MS		-	LFX		-		-		-	
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MS4/MS6 series service units
Filters
2.13

Pressure regulators MS4/MS6-LR/LRB, MS series

Peripherals overview

Pressure regulator LR



MS4/MS6 series service units
Pressure regulators

2.14

Pressure regulators MS4/MS6-LR/LRB, MS series

Peripherals overview

FESTO

Mounting attachments and accessories – LR						
		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	■	-	■	-	3/2.31-1
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-0
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-2
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-2
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-7
6	Regulator wall bracket MS4/6-WR	■	■	-	-	3/2.31-3
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Cover plate VS	■	■	■	■	3/2.14-12
9	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.14-12
10	Pressure gauge MA	■	■	■	■	3/2.31-11
11	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.14-12 Volume 4
12	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-11
13	Padlock LRVS-D	■	■	■	■	3/2.31-12
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-5, 3/2.31-6

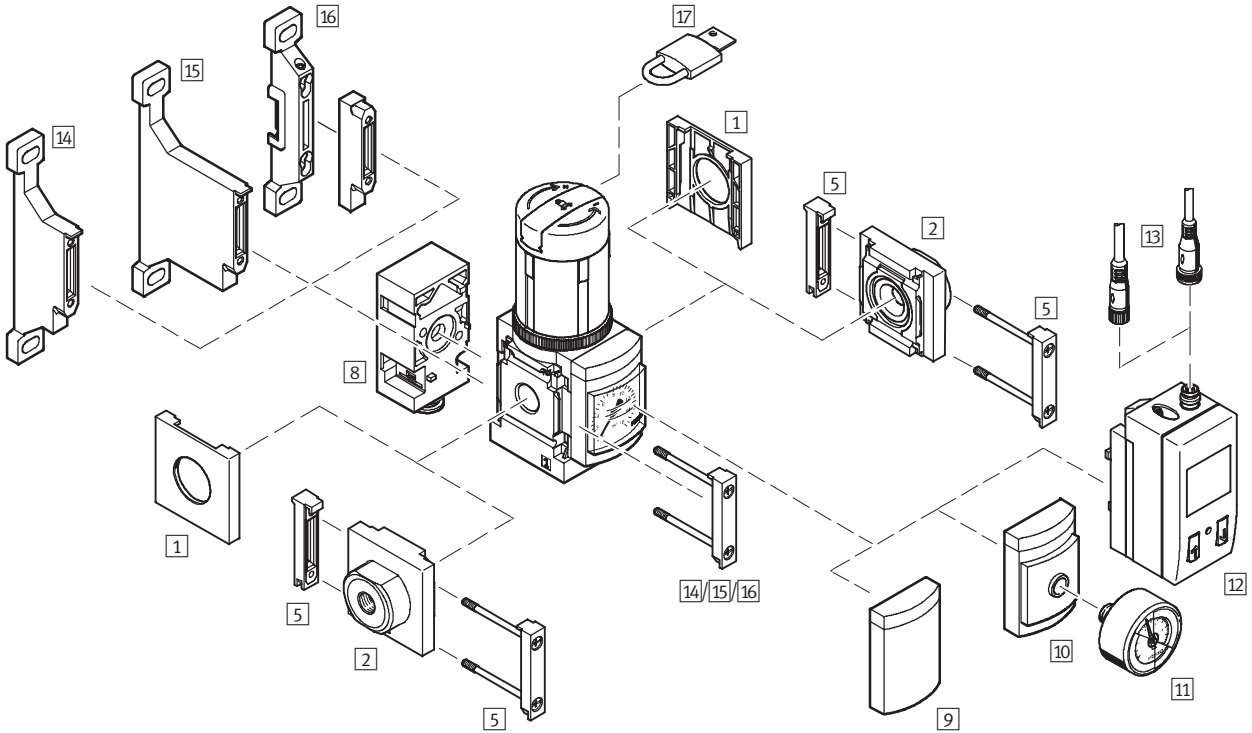
Pressure regulators MS4/MS6-LR/LRB, MS series

Peripherals overview

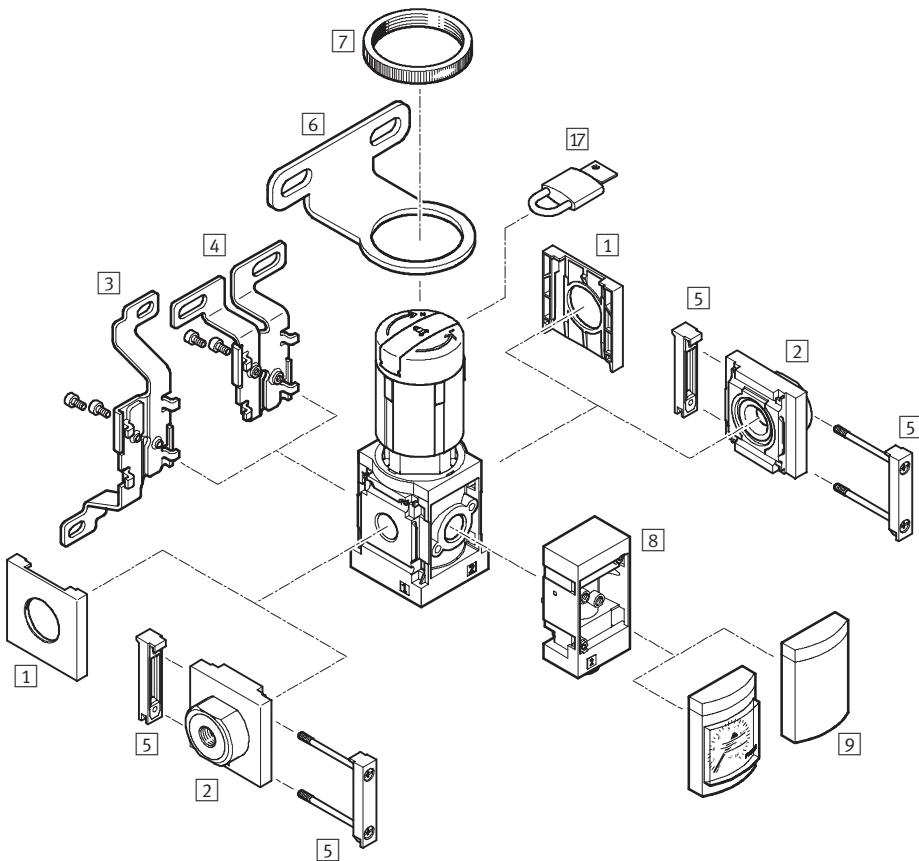


Pressure regulator LRB

Pressure output at rear



Pressure output to front Z



MS4/MS6 series service units
Pressure regulators

2.14

Pressure regulators MS4/MS6-LR/LRB, MS series

Peripherals overview

FESTO

Mounting attachments and accessories – LRB						
		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	■	-	■	-	3/2.31-1
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-0
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-2
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-2
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-7
6	Regulator wall bracket MS4/6-WR	■	■	-	-	3/2.31-3
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Angled outlet block B...	■	■	■	■	3/2.14-20
9	Cover plate VS	■	■	■	■	3/2.14-20
10	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.14-20
11	Pressure gauge MA	■	■	■	■	3/2.31-11
12	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.14-20 Volume 4
13	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-11
14	Mounting bracket MS4/6-WP	-	■	■	■	3/2.31-5
15	Mounting bracket MS4/6-WPB	-	■	■	■	3/2.31-5
16	Mounting bracket MS4/6-WPM	-	■	■	■	3/2.31-6
17	Padlock LRVS-D	■	■	■	■	3/2.31-12

New
Variants AD..., KD, DM...

Pressure regulators MS4/MS6-LR/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															
LR	Pressure regulator														
LRB	Pressure regulator for manifold assembly														
Connection size															
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														
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 (LRB only)															
	Without angled outlet block														
BD	Angled outlet block QS-8														

Further variants can be ordered using the modular system

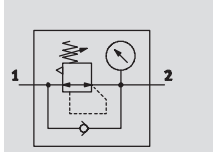
Pressure regulators LR → 3/2.14-12
 Pressure regulators LRB → 3/2.14-20


- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Rotary knob alternative
- Alternative mounting position
- Pressure output (LRB only)
- 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](http://www.festo.com/en/Spare_parts_service)


Wearing parts kits
→ 3/2.14-11

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
- Available with or 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 $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$ G $\frac{1}{2}$
Design		Directly actuated diaphragm regulator			
Regulating function		With 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			
		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 variant pressure sensor AD...)			
	D8 [bar]	-		0.5 ... 16	
Max. hysteresis [bar]		0.25			
Pressure indicator		With pressure sensor for the output pressure display and with electric output			
		With pressure gauge for the output pressure display			

 **New**
Variants AD..., KD, DM...

Pressure regulators MS4/MS6-LR, 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 $\frac{1}{2}$
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

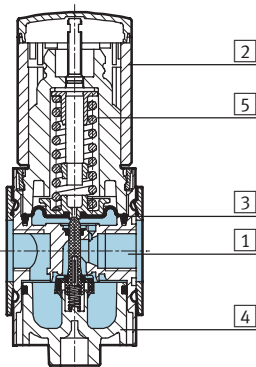
Operating and environmental conditions					
Variant	Standard			Pressure sensor with display AD...	
Size	MS4		MS6	MS4	MS6
Input pressure [bar]	0.8 ... 14		0.8 ... 20	0.8 ... 14	0.8 ... 20
Operating medium	Compressed air			Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m	
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 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
Pressure regulator	225	730

Materials

Sectional view



Pressure regulator	
1	Body Die-cast aluminium
2	Regulating knob Polyamide/polyacetate
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	

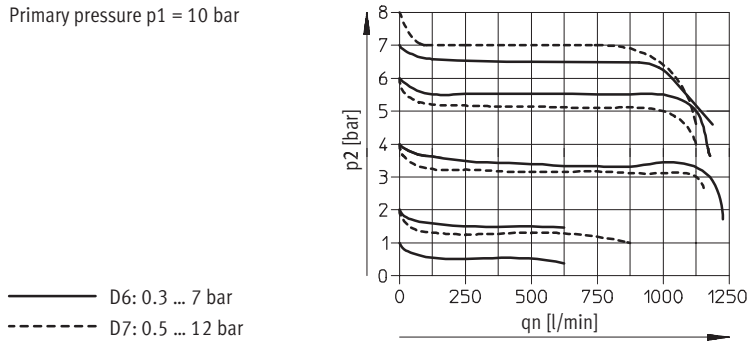
Pressure regulators MS4/MS6-LR, MS series

Technical data

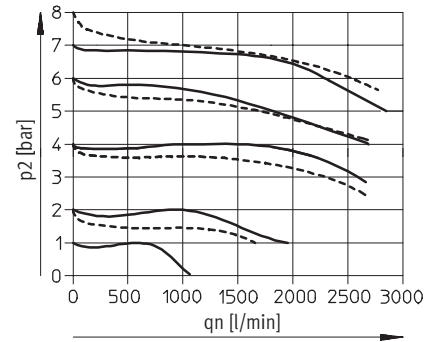
Standard flow rate q_n as a function of output pressure p_2

MS4-LR-1/8

Primary pressure $p_1 = 10$ bar

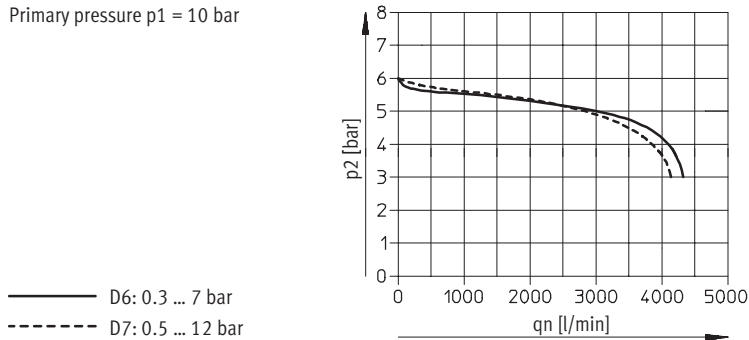


MS4-LR-1/4

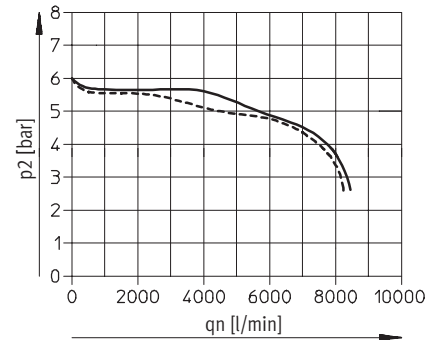


MS6-LR-1/4

Primary pressure $p_1 = 10$ bar

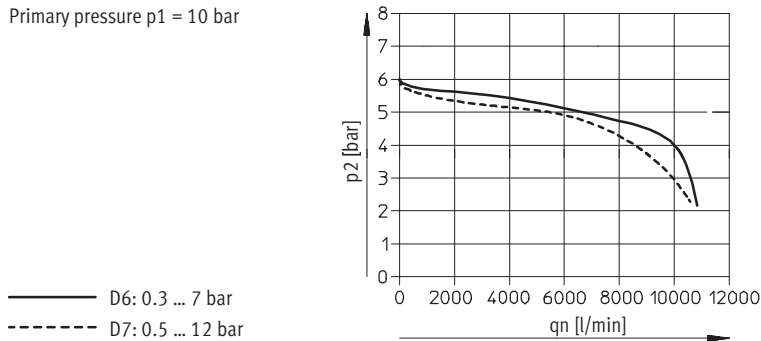


MS6-LR-3/8



MS6-LR-1/2

Primary pressure $p_1 = 10$ bar



New
Variants AD..., KD, DM...

Pressure regulators MS4/MS6-LR, MS series

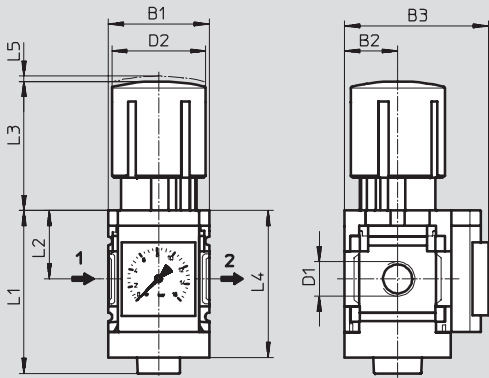
Technical data



Dimensions – Standard

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

With pressure gauge, display unit [bar]



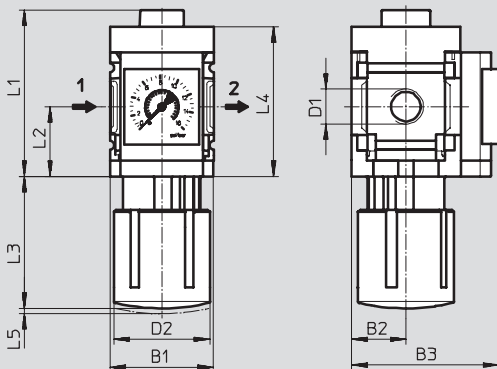
→ Flow direction

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

Dimensions – Alternative mounting position

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

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



→ 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						
MS4-LR-1/4-...-KD	62	31	77	G1/4	51	93	39	86	84	5
MS6-LR-3/8-...-KD				G3/8						
MS4-LR-1/4-...-KD				G1/2						

MS4/MS6 series service units
 Pressure regulators

2.14

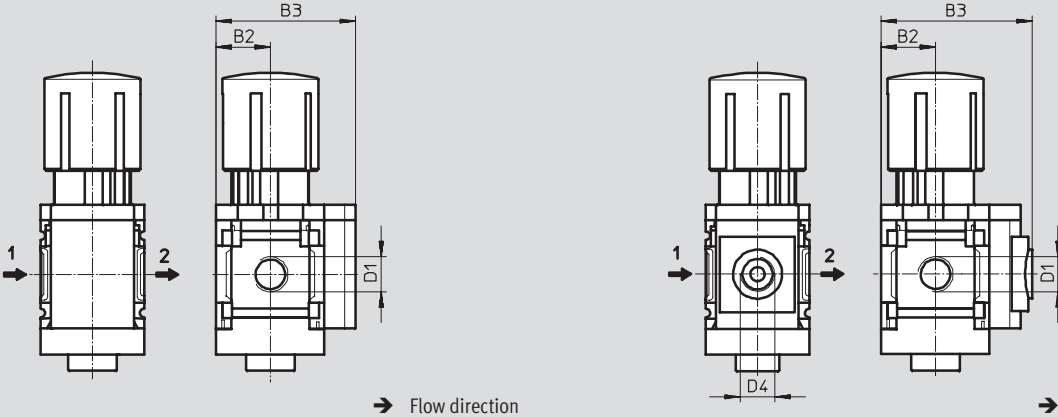
Pressure regulators MS4/MS6-LR, MS series

Technical data

FESTO

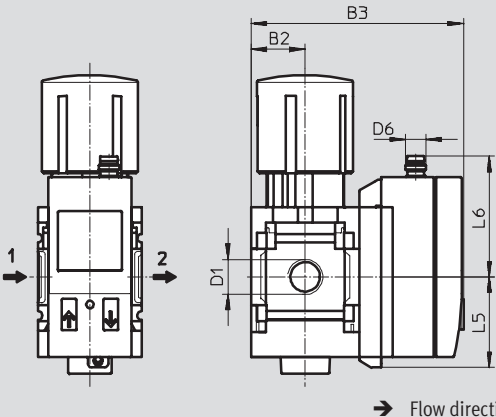
Dimensions – Pressure gauge alternatives Download CAD data → www.festo.com/en/engineering

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

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	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	31	78.5	G1/4	G1/4	-	-	-
MS6-LR-3/8-...-A4			G3/8				
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				

New
Variants AD..., KD, DM...

Pressure regulators MS4/MS6-LR, MS series

Technical data

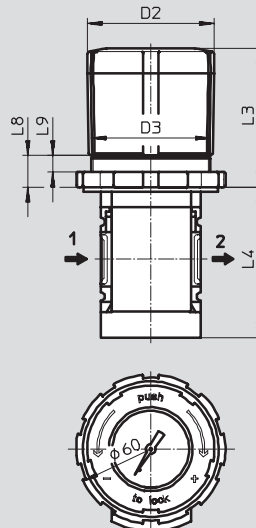
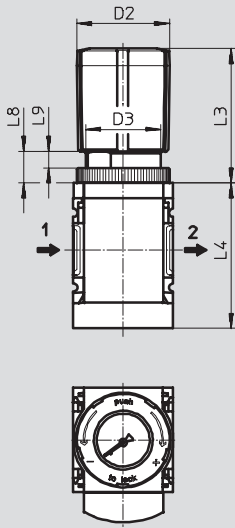


Dimensions – Rotary knob pressure gauge

Download CAD-Daten → www.festo.com/de/engineering

Small DM1

Large DM2



Note

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

→ Flow direction

→ Flow direction

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

Dimensions – Rotary knob

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

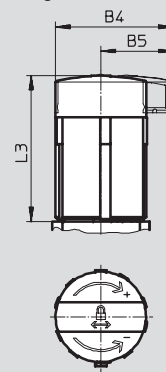
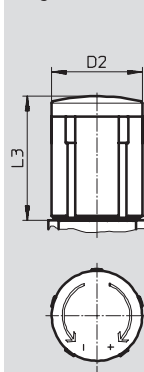
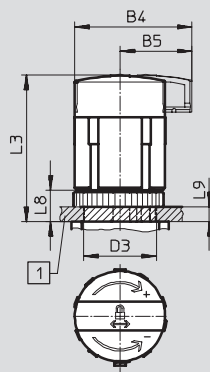
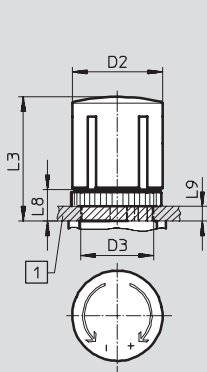
For installation into control panel

Standard

Standard, lockable AS

Long LD

Long, lockable LD-AS



1 Max. control panel thickness

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-...-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-...-LD	-	-	51	-	86	-	-
MS6-LR-...-LD-AS	67.7	42			95.5		

Pressure regulators MS4/MS6-LR, MS series

FESTO

Technical data

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

Pressure regulators MS4/MS6-LR, MS series

Ordering data – Modular products



M Mandatory data →

Module No.	Series	Size	Function	Connection size	Pressure regulation range
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
Ordering example					
527 690	MS	4	- LR	- AGB	- D6

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 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	
Pressure regulation range	0.3 ... 4 bar				-D5	
	0.3 ... 7 bar				-D6	
	0.5 ... 12 bar				-D7	
	-	0.5 ... 16 bar		1	-D8	

1 D8 Not with rotary knob alternative DM2.

Transfer order code

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

Pressure regulators MS4/MS6-LR, MS series

Ordering data – Modular products



→ **0 Options**

Pressure gauge alternatives	Alternative pressure gauge scale	Secondary venting	Rotary knob alternative	Alternative assembly position	Security	Type of mounting	Alternative flow direction
VS A8 A4 AD1 AD2 AD3 AD4	PSI MPA	OS	LD DM1 DM2	KD	AS	WR WP WPM WB WBM	Z
- AD3	-	- OS	- LD	-	- AS	- WB	- Z

Ordering table		Grid dimension [mm]	40	62	Condi-tions	Code	Enter code
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	
	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	
Secondary venting	Without secondary venting				4	-OS	
Rotary knob alternative	Long rotary knob					-LD	
	Rotary knob pressure gauge, small				5	-DM1	
	Rotary knob pressure gauge, large				6	-DM2	
Alternative assembly position	Rotary knob at bottom				7	-KD	
Security	Lockable rotary knob				8	-AS	
Type of mounting	Wall mounting bracket with knurled nut for regulator head				9	-WR	
	Wall mounting plate				10	-WP	
	Wall mounting plate				10	-WPM	
	Wall mounting bracket				11	-WB	
	Wall mounting bracket					-WBM	
Alternative flow direction	Flow direction from right to left					-Z	

- 2 **AD1 ... AD4** Measuring range max. 10 bar
Not with pressure regulation range D8
Not with rotary knob alternative DM2
- 3 **PSI, MPA** Not with pressure gauge alternatives VS, A8, A4, AD1, AD2, AD3, AD4
Not with rotary knob alternatives DM1, DM2
- 4 **OS** Not with rotary knob alternatives DM1, DM2
- 5 **DM1** Only with one pressure gauge alternative VS, A8, A4, AD1, AD2, AD3 or AD4
- 6 **DM2** Only with one pressure gauge alternative VS, A8, A4

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

Transfer order code

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

MS4/MS6 series service units
Pressure regulators

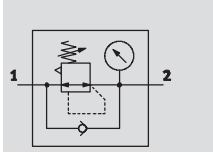
2.14

Pressure regulators MS4/MS6-LRB, MS series

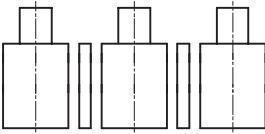
Technical data





FESTO

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](http://www.festo.com/en/Spare_parts_service)
- Wearing parts kits
→ 3/2.14-19

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 control 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 or 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	With 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		
	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 variant pressure sensor AD...)	
	D8 [bar]	-	0.5 ... 16
Max. hysteresis [bar]	0.25		
Pressure indicator	With pressure sensor for the output pressure display and with electric output		
	With pressure gauge for the output pressure display		

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	CRC ¹⁾	2			

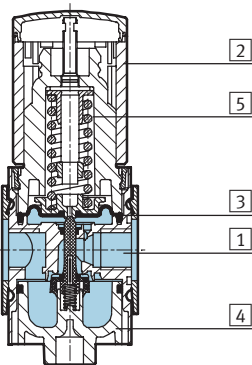
1) Corrosion resistance class 2 according to Festo standard 940 070

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
Pressure regulator	222	747

Materials

Sectional view



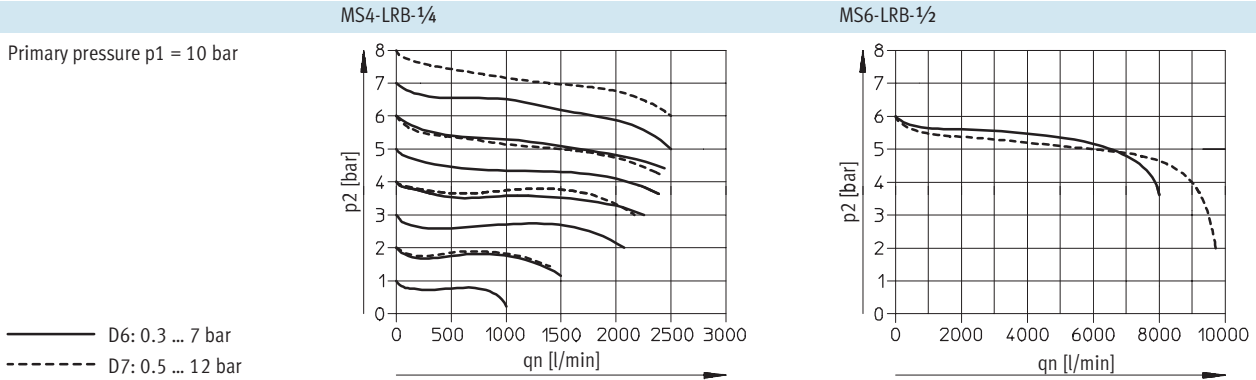
Pressure regulator (manifold assembly)		
1	Body	Die-cast aluminium
2	Regulating knob	Polyamide/polyacetate
3	Diaphragm	Nitrile rubber
4	Bottom cap	Polyester, fibreglass reinforced
5	Springs	Steel
–	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE only with cover plate VS

Pressure regulators MS4/MS6-LRB, MS series

Technical data

FESTO

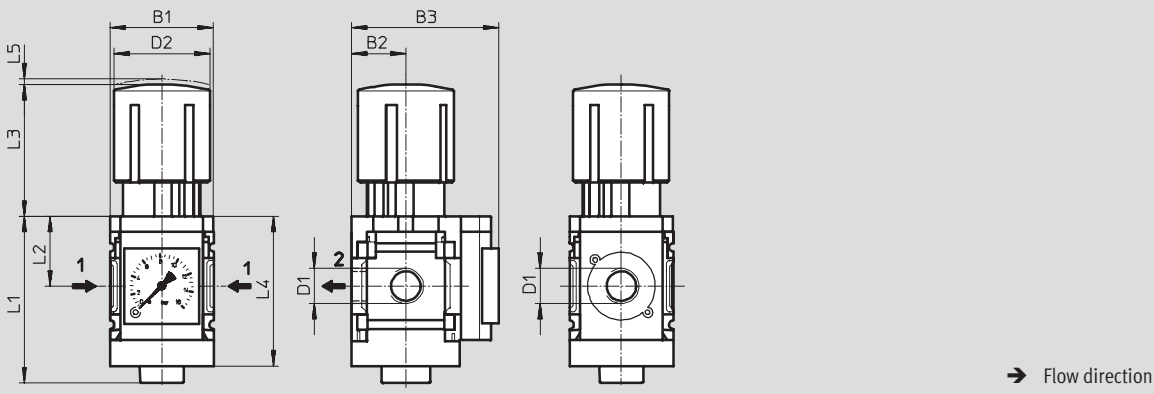
Standard flow rate q_n as a function of output pressure p_2



Dimensions – Standard

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

With pressure gauge, display unit [bar]

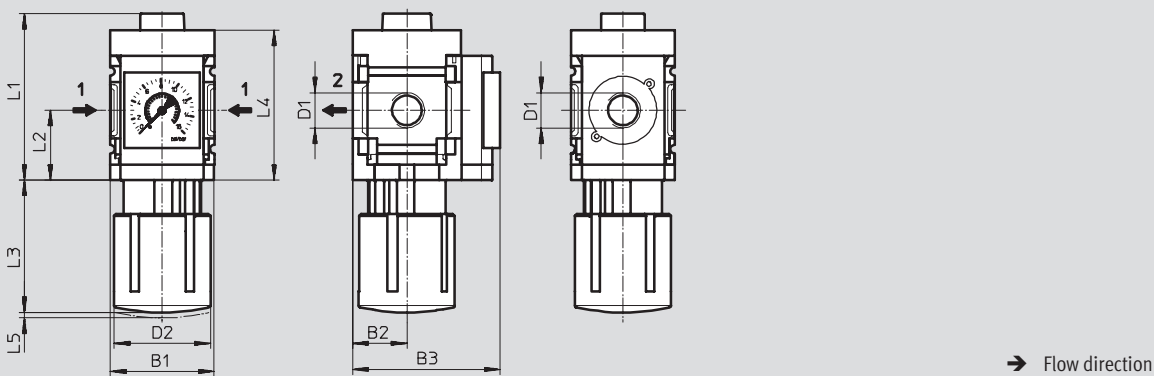


Type	B1	B2	B3	D1	D2	L1	L2	L3	L4	L5
MS4-LRB-1/4	40	21	57	G1/4	37.2	64.4	27	51.1	58	2
MS6-LRB-1/2	62	31	77	G1/2	51	93	39	86	84	5

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

Pressure regulators MS4/MS6-LRB, MS series

Technical data

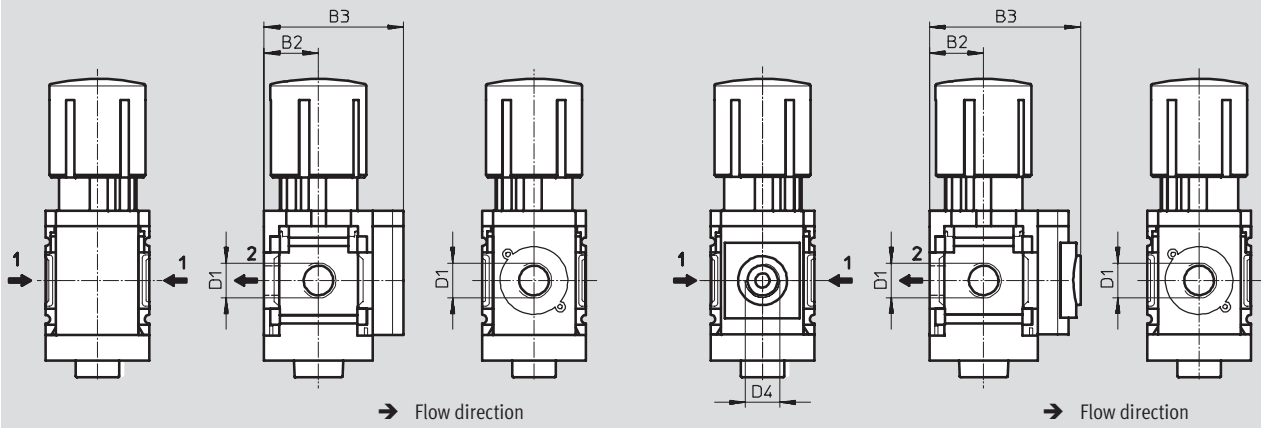
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Dimensions – Pressure gauge alternatives

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

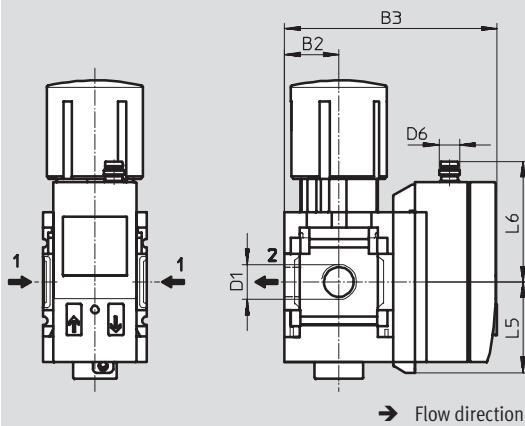
Cover plate VS

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



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	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

Pressure regulators MS4/MS6-LRB, MS series

Technical data

FESTO

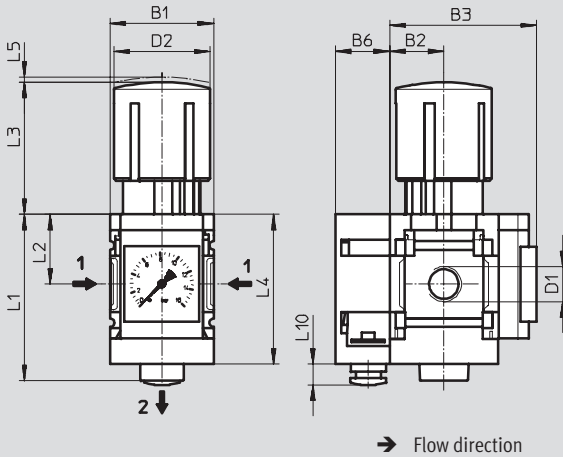
Dimensions – Angled outlet block BC/BD/BE

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

Pressure output at rear

MS4

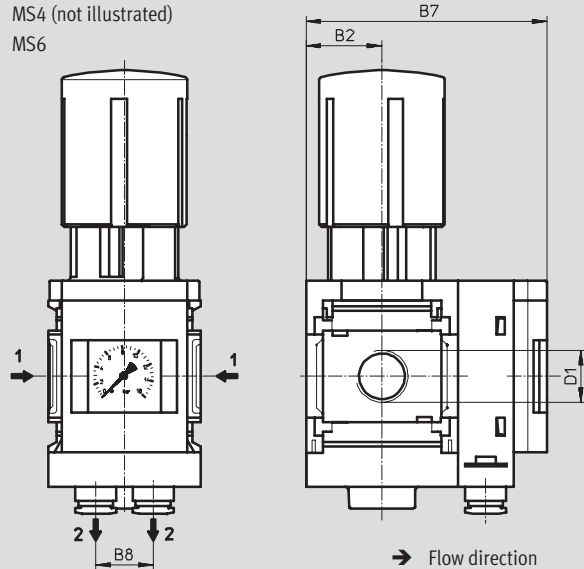
MS6 (not illustrated)



Pressure output to front Z

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

Dimensions – Rotary knob

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

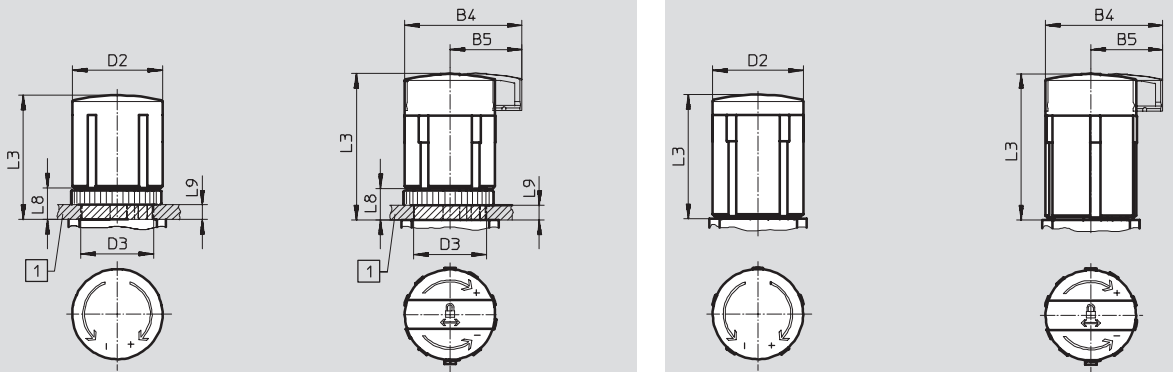
For installation into control panel

Standard

Standard, lockable AS

Long LD

Long, lockable LD-AS



1 Max. control panel thickness

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-...-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-...-LD	-	-	51	-	86	-	-
MS6-LRB-...-LD-AS	67.7	42			95.5		

Pressure regulators MS4/MS6-LRB, MS series

Technical data

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	

Pressure regulators MS4/MS6-LRB, MS series

Ordering data – Modular products

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M Mandatory data						O Options →
Module No.	Series	Size	Function	Connection size	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 AD1 AD2 AD3 AD4
Ordering 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 size	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	
		Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin		2 3	-AD1	
		Pressure sensor with display, plug M8, 1 switching output NPN, 3-pin		2 3	-AD2	
		Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA		2 3	-AD3	
		Pressure sensor with display, plug M12, 1 switching 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

	MS		-	LRB		-		-		-	
--	----	--	---	-----	--	---	--	---	--	---	--

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	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	-MPA		
Secondary venting	Without secondary venting				-OS		
Rotary knob alternative	Long rotary knob				-LD		
Alternative assembly position	Rotary knob, underneath			5	-KD		
Security	Lockable rotary knob				-AS		
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	Mounting bracket with knurled nut for regulator head			6 7	-WR		
	Mounting bracket			8 9	-WP		
	Mounting bracket			6 8	-WPM		
	Mounting bracket for large wall gap			8 10	-WPB		
	Mounting bracket			6	-WB		
	Mounting bracket		-	6	-WBM		
Alternative flow direction	Pressure output at front (for manometer connection an angled outlet block is required)				-Z		

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

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

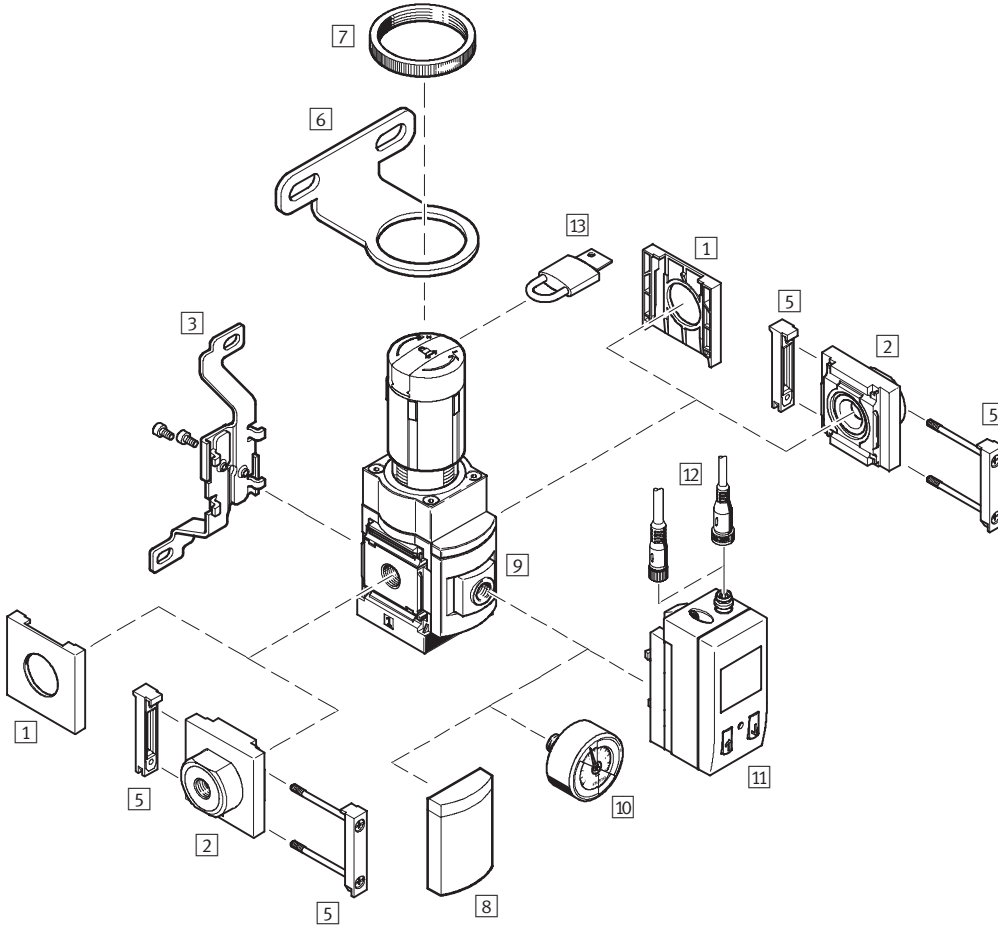
Transfer order code

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

Precision pressure regulators MS6-LRP/LRPB, MS series

Peripherals overview

Precision pressure regulator LRP



MS4/MS6 series service units
Pressure regulators

2.14

Precision pressure regulators MS6-LRP/LRPB, MS series

Peripherals overview

FESTO

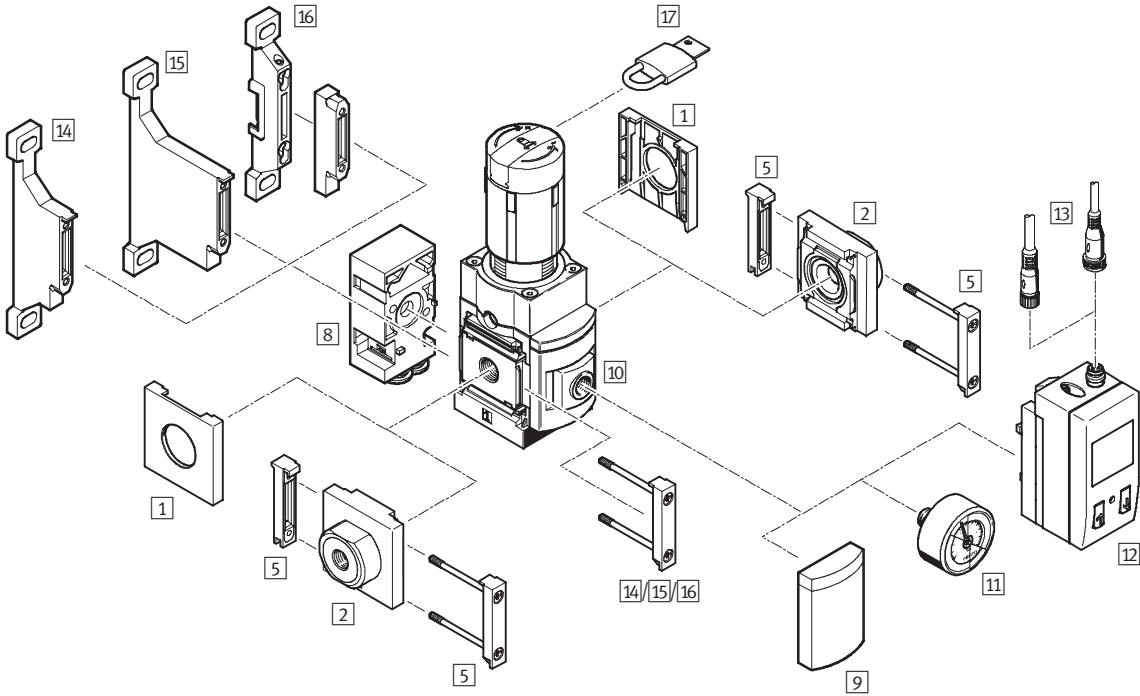
Mounting attachments and accessories – LRP						
		Individual unit		Combination → 3/2.11-0		→ Page
		without connect- ing plate	with connecting plate	without connect- ing plate	with connecting plate	
1	Cover cap MS6-END	■	-	■	-	3/2.31-1
2	Connecting plate MS6-AG...	-	■	-	■	3/2.31-0
3	Mounting bracket MS6-WB	■	■	-	-	3/2.31-2
5	Module connector MS6-MV	-	■	■	■	3/2.31-7
6	Regulator wall bracket MS6-WR	■	■	-	-	3/2.31-3
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Cover plate VS	■	■	■	■	3/2.14-34
9	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.14-34
10	Precision pressure gauge A8M/MAP	■	■	■	■	3/2.14-34 3/2.31-11
11	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.14-34 Volume 4
12	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-11
13	Padlock LRVS-D	■	■	■	■	3/2.31-12
-	Mounting bracket MS6-WP/WPB/WPM	-	■	■	■	3/2.31-5, 3/2.31-6

Precision pressure regulators MS6-LRP/LRPB, MS series

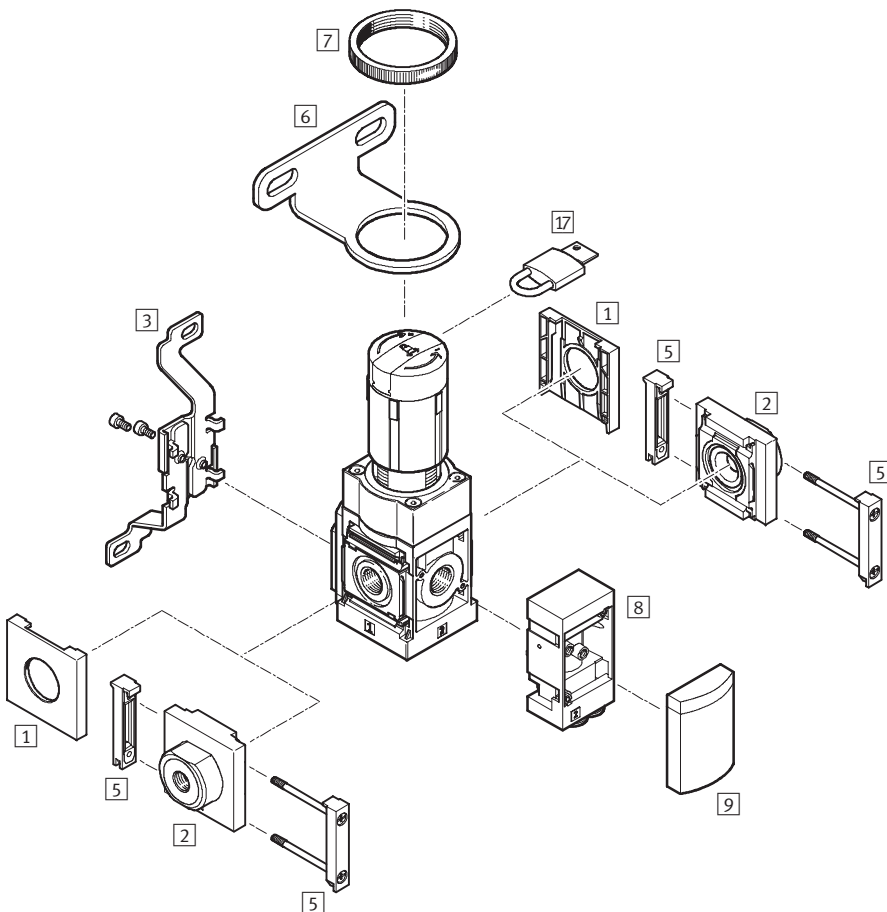
Peripherals overview

Precision pressure regulator LRPB

Pressure output at rear



Pressure output to front Z



Precision pressure regulators MS6-LRP/LRPB, MS series

Peripherals overview

FESTO

Mounting attachments and accessories – LRPB						
		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	■	-	■	-	3/2.31-1
2	Connecting plate MS6-AG...	-	■	-	■	3/2.31-0
3	Mounting bracket MS6-WB	■	■	-	-	3/2.31-2
5	Module connector MS6-MV	-	■	■	■	3/2.31-7
6	Regulator wall bracket MS6-WR	■	■	-	-	3/2.31-3
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Angled outlet block B...	■	■	■	■	3/2.14-42
9	Cover plate VS	■	■	■	■	3/2.14-42
10	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	3/2.14-42
11	Precision pressure gauge A8M/MAP	■	■	■	■	3/2.14-42 3/2.31-11
12	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.14-42 Volume 4
13	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-11
14	Mounting bracket MS6-WP	-	■	■	■	3/2.31-5
15	Mounting bracket MS6-WPB	-	■	■	■	3/2.31-5
16	Mounting bracket MS6-WPM	-	■	■	■	3/2.31-6
17	Padlock LRVS-D	■	■	■	■	3/2.31-12

Precision pressure regulators MS6-LRP/LRPB, MS series

Type codes

		MS	6	-	LRPB	-	1/2	-	D7	-	A8	-	BD
Series													
MS	Standard service unit												
Size													
6	Grid dimension 62 mm												
Service function													
LRP	Precision pressure regulator												
LRPB	Precision pressure regulator for manifold assembly												
Connection size													
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												
Pressure output (LRPB only)													
	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 LRP → 3/2.14-34
 Precision pressure regulators LRPB → 3/2.14-42

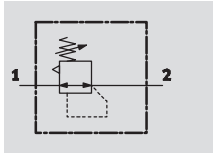
- Connecting plates
- Pressure gauge alternatives
- Rotary knob alternative
- Alternative assembly position
- Security
- Type of mounting
- Alternative flow direction





Precision pressure regulators MS6-LRP, MS series

Technical data

FESTO

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 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
- Lockable rotary knob (optional)
- 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, 2	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Pneumatic connection 3	G $\frac{1}{4}$		
Constructional 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		
Installation position	Any		
Actuator lock	Rotary knob with detent		
	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		

Precision pressure regulators MS6-LRP, MS series

Technical data

Standard nominal flow rate qnN [l/min]				
Pneumatic connection		G1/4	G3/8	G1/2
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

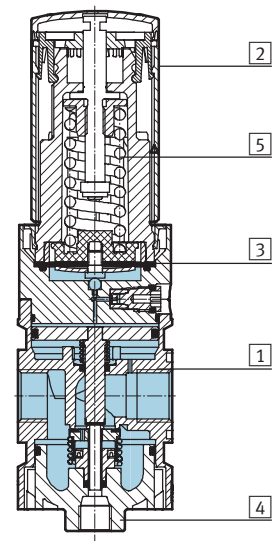
Operating and environmental conditions		
Variant	Standard	Pressure sensor with display AD...
Input pressure [bar]	1 ... 14	1 ... 14
Operating medium	Compressed air, filtered, unlubricated, grade of filtration 40 μm	
Ambient temperature [°C]	-10 ... +60	0 ... +50
Temperature of medium [°C]	-10 ... +60	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

Materials

Sectional view



Precision pressure regulator		
1	Housing	Die-cast aluminium
2	Regulating knob	Polyamide/polyacetate
3	Diaphragm	Nitrile rubber
4	Cap, bottom	Polyester, fibreglass reinforced
5	Springs	Steel
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE (not with variants A8M or AD...)

MS4/MS6 series service units
Pressure regulators

2.14

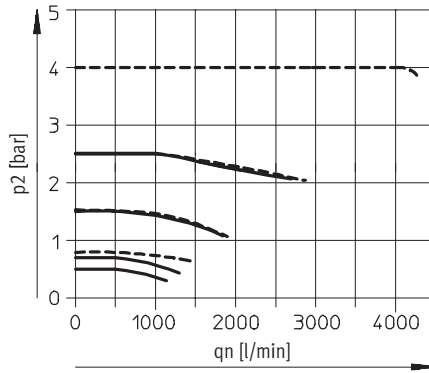
Precision pressure regulators MS6-LRP, MS series

Technical data

Standard flow rate q_n as a function of output pressure p_2

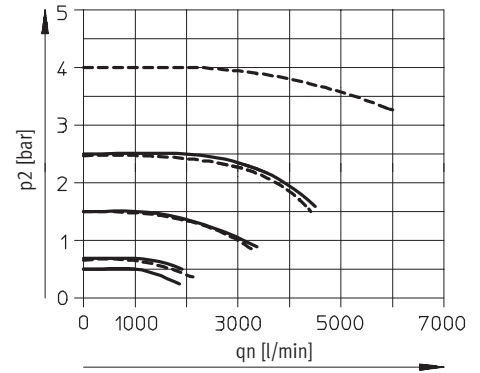
MS6-LRP- $\frac{1}{4}$

Primary pressure $p_1 = 10$ bar



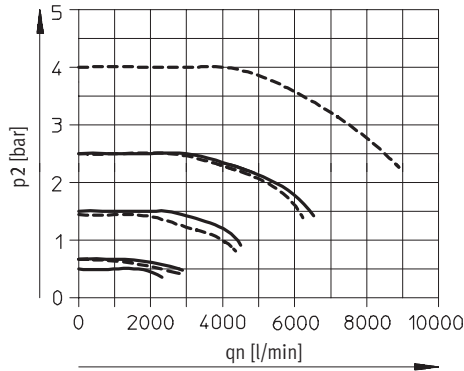
— D4: 0.05 ... 2.5 bar
 - - - D5: 0.1 ... 4 bar

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



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

Primary pressure $p_1 = 10$ bar



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

Precision pressure regulators MS6-LRP, MS series

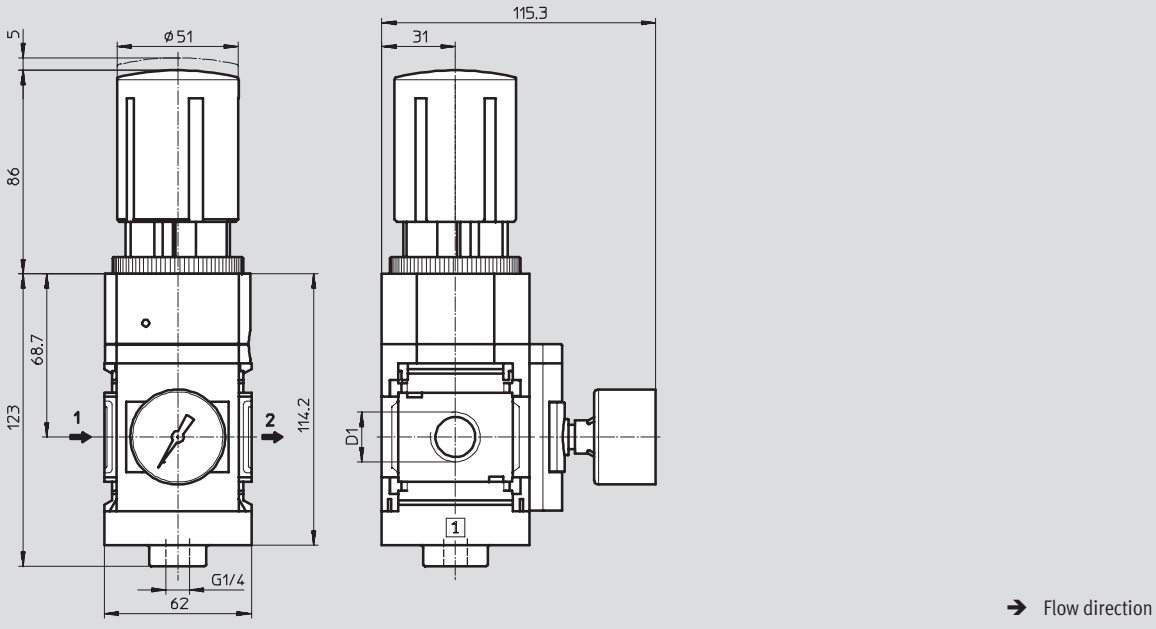
Technical data

Dimensions

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

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

Technical data MAP → 3 / 4.8-10



→ Flow direction

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

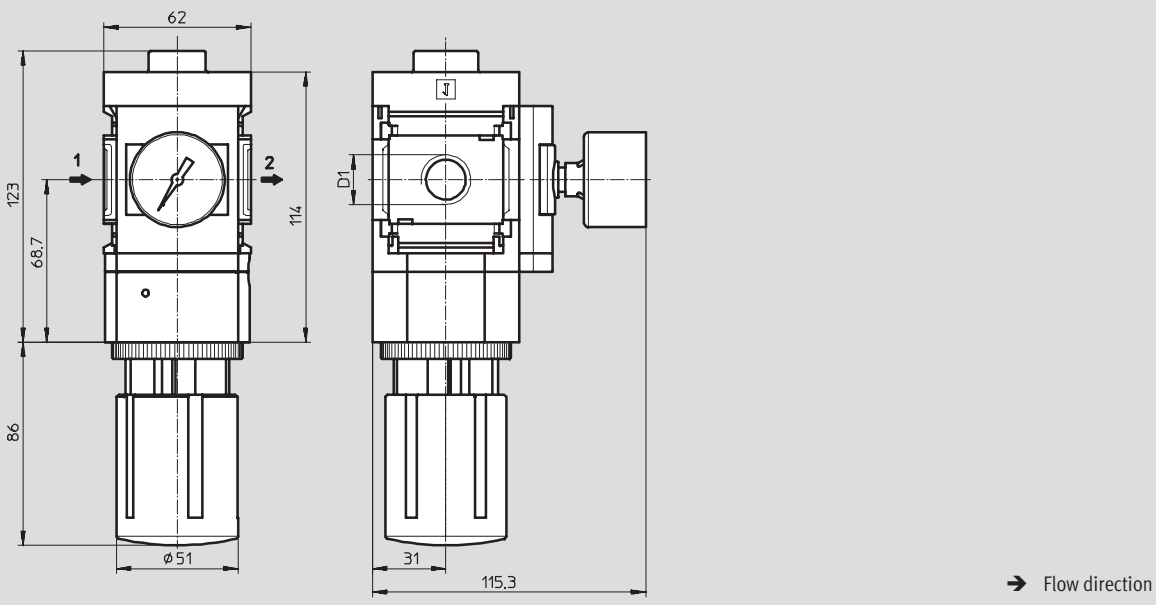
MS4/MS6 series service units
Pressure regulators

2.14

Dimensions – Alternative assembly position

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

Rotary knob at bottom KD



→ Flow direction

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

Precision pressure regulators MS6-LRP, MS series

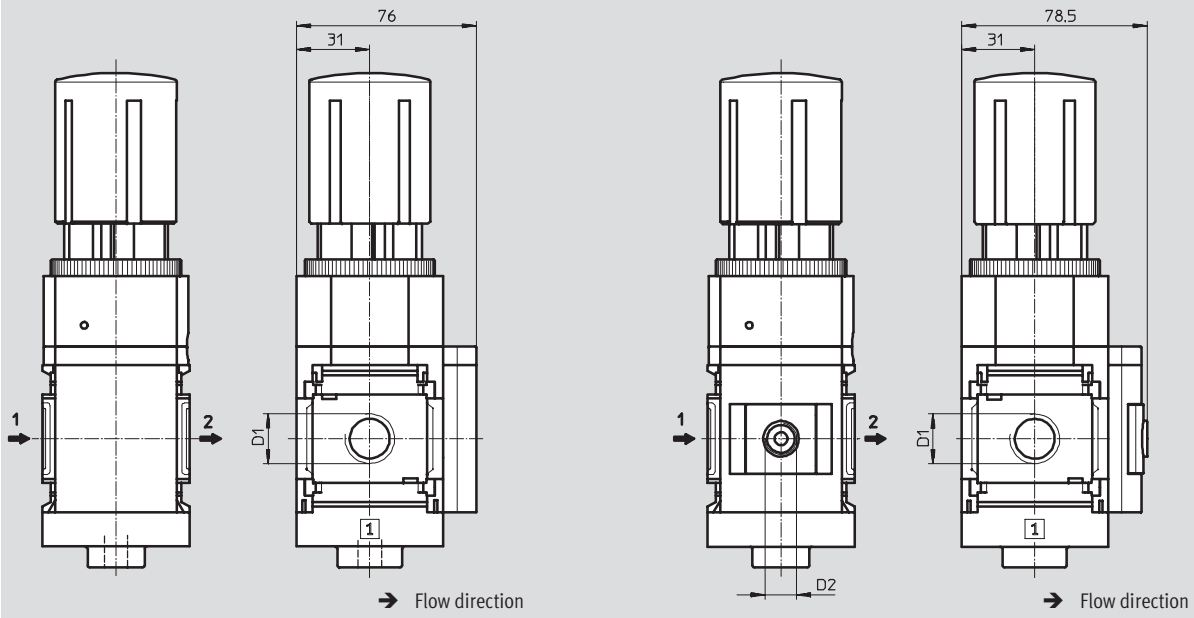
Technical data

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



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	
MS6-LRP-1/4-...-A4	G1/4	G1/4
MS6-LRP-3/8-...-A4	G3/8	
MS6-LRP-1/2-...-A4	G1/2	

Precision pressure regulators MS6-LRP, MS series

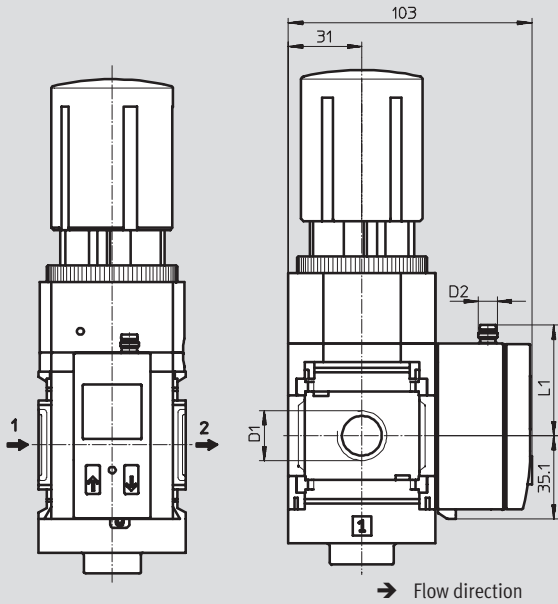
Technical data

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 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	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		

MS4/MS6 series service units
Pressure regulators

2.14

Dimensions – Rotary knob

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

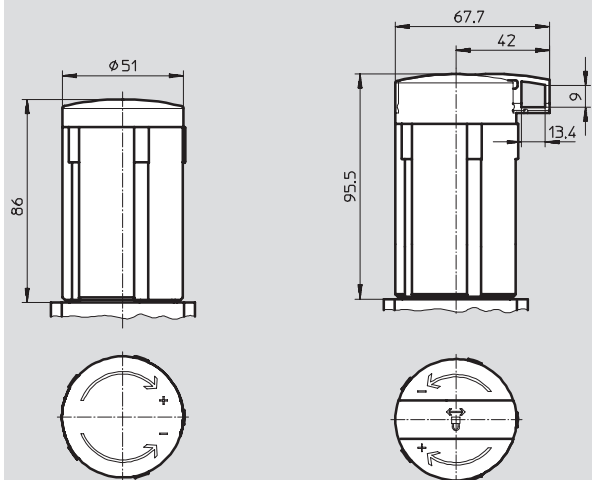
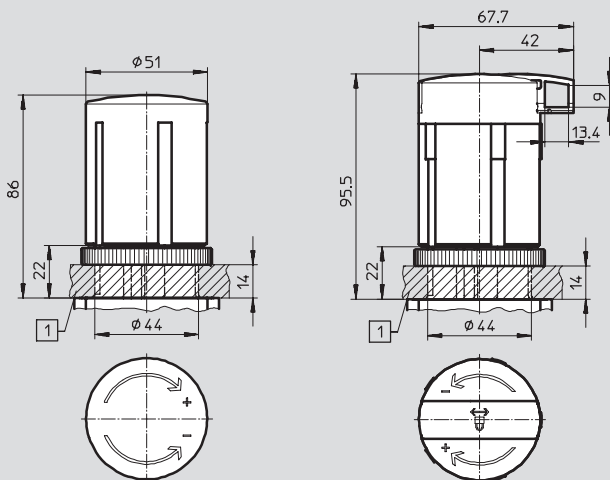
For installation into control panel

Standard

Standard, lockable AS

Long LD

Long, lockable LD-AS



1 Max. control panel thickness

Precision pressure regulators MS6-LRP, MS series



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-A8 ¹⁾
	G3/8	538 012	MS6-LRP-3/8-D2-A8 ¹⁾
	G1/2	538 020	MS6-LRP-1/2-D2-A8 ¹⁾
Pressure regulation range 0.05 ... 2.5 bar			
MS6	G1/4	538 006	MS6-LRP-1/4-D4-A8 ¹⁾
	G3/8	538 014	MS6-LRP-3/8-D4-A8 ¹⁾
	G1/2	538 022	MS6-LRP-1/2-D4-A8 ¹⁾
Pressure regulation range 0.1 ... 4 bar			
MS6	G1/4	538 008	MS6-LRP-1/4-D5-A8 ¹⁾
	G3/8	538 016	MS6-LRP-3/8-D5-A8 ¹⁾
	G1/2	538 024	MS6-LRP-1/2-D5-A8 ¹⁾
Pressure regulation range 0.1 ... 12 bar			
MS6	G1/4	538 010	MS6-LRP-1/4-D7-A8 ¹⁾
	G3/8	538 018	MS6-LRP-3/8-D7-A8 ¹⁾
	G1/2	538 026	MS6-LRP-1/2-D7-A8 ¹⁾

1) Free of copper and PTFE

Precision pressure regulators MS6-LRP, MS series

Ordering data – Modular products

M Mandatory data →

Module No.	Series	Size	Function	Connection size	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
Ordering 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 size	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	
		0.1 ... 4 bar			-D5	
		0.1 ... 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

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	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		-LD	
	Alternative assembly position	Rotary knob at bottom	2	-KD	
	Security	Lockable rotary knob		-AS	
	Type of mounting	Wall mounting bracket with knurled nut for regulator head	3	-WR	
		Wall mounting plate	4	-WP	
		Wall mounting plate	4	-WPM	
		Wall mounting bracket		-WB	
	Alternative flow direction	Flow direction from right to left (without pressure output, no pressure gauge)		-Z	

2 **KD** Not with mounting type WP

3 **WR** Not with long rotary knob LD

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

Transfer order code

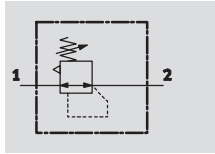
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Precision pressure regulators MS6-LRPB, MS series

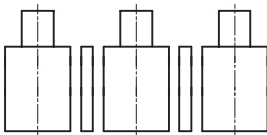
Technical data







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



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

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 control characteristics with low hysteresis and primary pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with separate, independent pressure regulation ranges
- Setting values are secured by locking the rotary knob
- Lockable rotary knob (optional)
- 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 $\frac{1}{2}$
Pneumatic connection 3		G $\frac{1}{4}$ QS-8 QS-10
Constructional 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
Installation position		Any
Actuator lock		Rotary knob with detent 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 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

Precision pressure regulators MS6-LRPB, MS series

Technical data

Standard nominal flow rate qnN [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

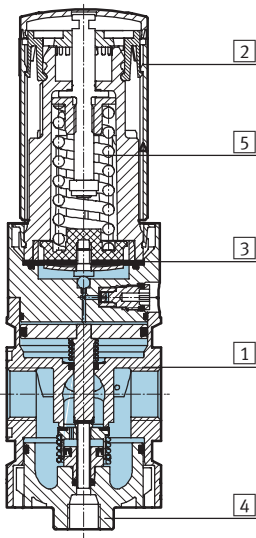
Operating and environmental conditions		
Variant	Standard	Pressure sensor with display AD...
Input pressure [bar]	1 ... 14	1 ... 14
Operating medium	Compressed air, filtered, unlubricated, grade of filtration 40 μm	
Ambient temperature [°C]	-10 ... +60	0 ... +50
Temperature of medium [°C]	-10 ... +60	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

Materials

Sectional view



Precision pressure regulator (manifold assembly)		
1	Housing	Die-cast aluminium
2	Regulating knob	Polyamide/polyacetate
3	Diaphragm	Nitrile rubber
4	Cap, bottom	Polyester, fibreglass reinforced
5	Springs	Steel
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE (not with variants A8M or AD...)

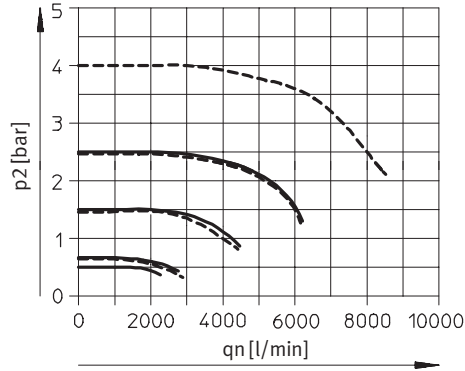
Precision pressure regulators MS6-LRPB, MS series

Technical data

Standard flow rate q_n as a function of output pressure p_2

MS6-LRPB-1/2

Primary pressure $p_1 = 10$ bar



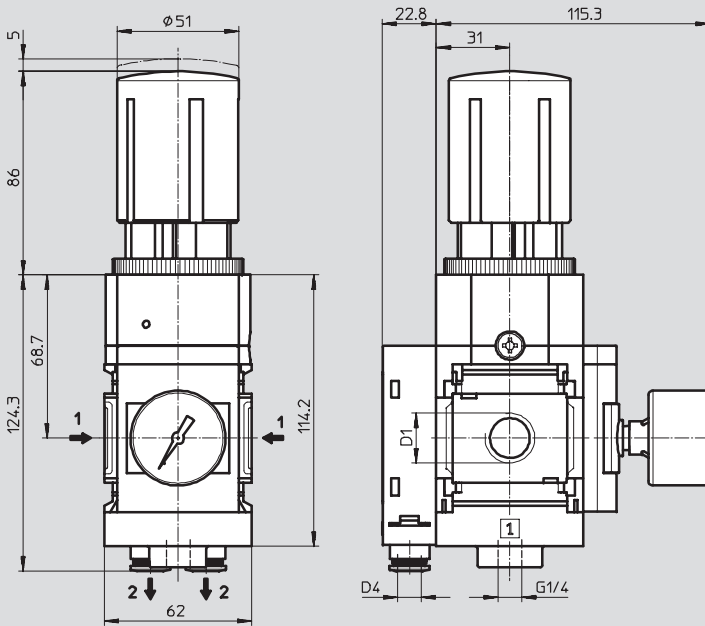
— D4: 0.05 ... 2.5 bar
 - - - D5: 0.1 ... 4 bar

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		QS-10

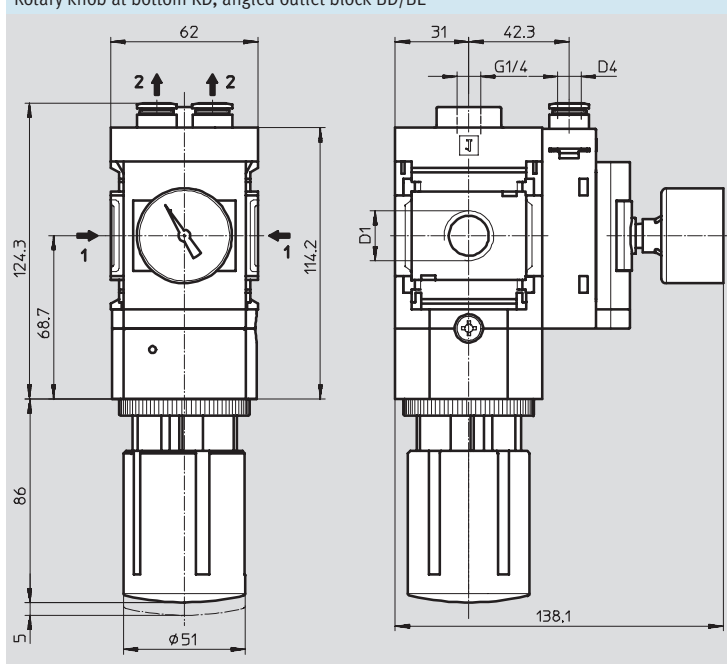
Precision pressure regulators MS6-LRPB, MS series

Technical data

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

Rotary knob at bottom KD, angled outlet block BD/BE

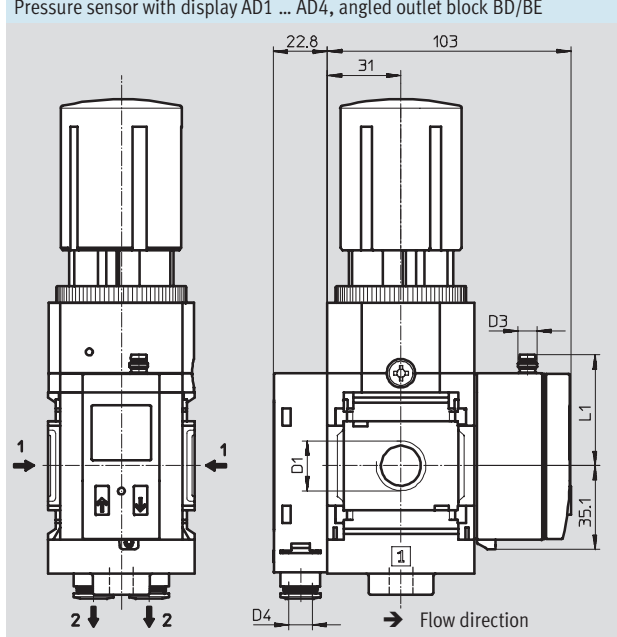


→ Flow direction

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

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	

Precision pressure regulators MS6-LRPB, MS series

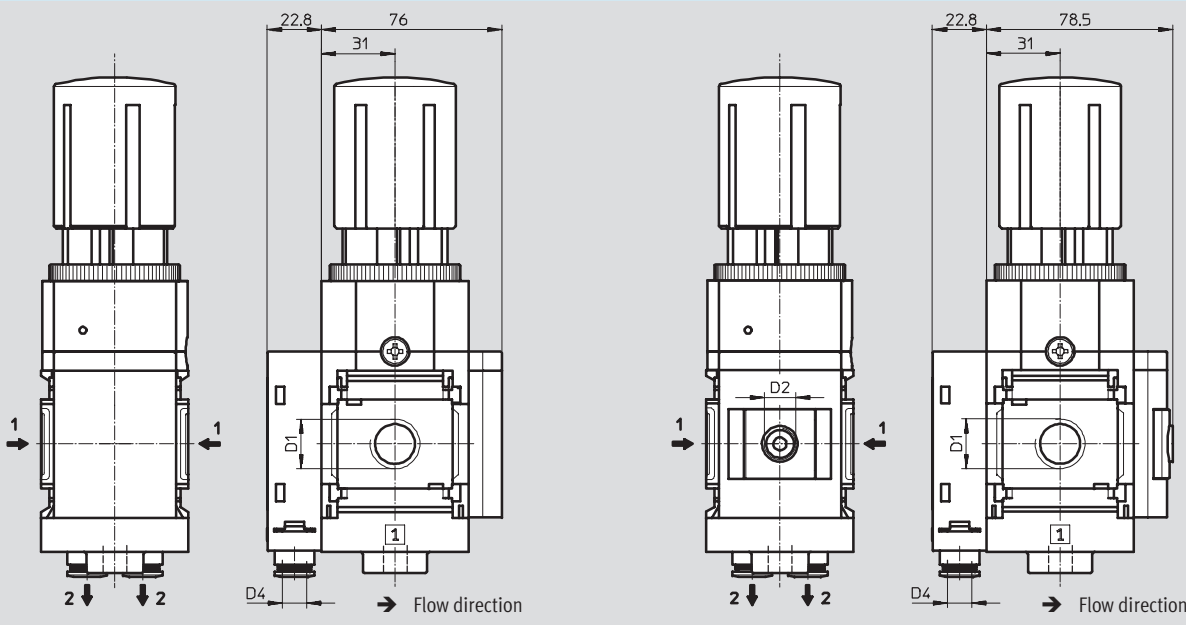
Technical data

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

Dimensions – Rotary knob

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

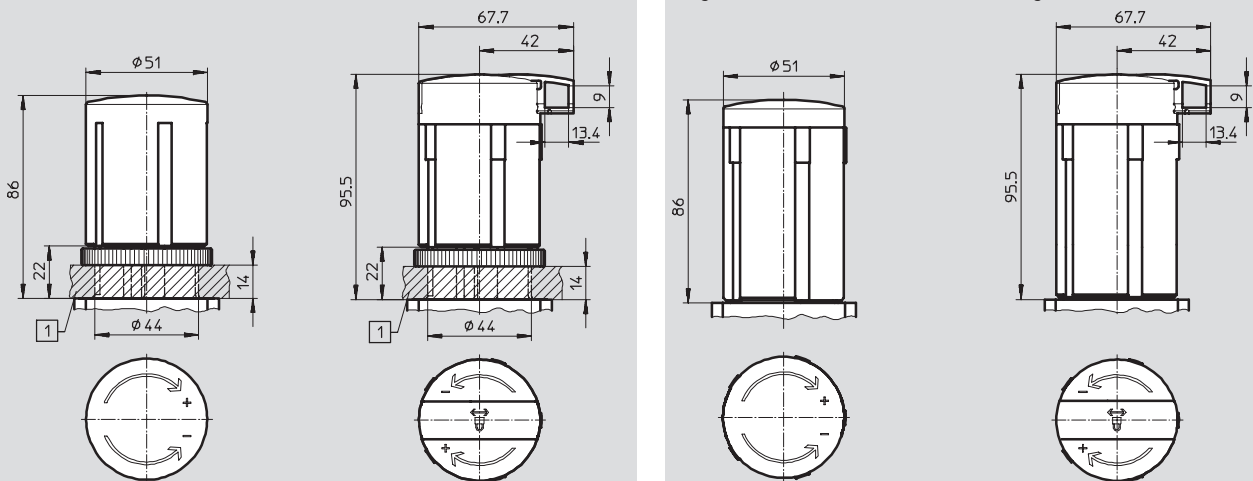
For installation into control panel

Standard

Standard, lockable AS

Long LD

Long, lockable LD-AS



1 Max. control panel thickness

MS4/MS6 series service units
Pressure regulators

2.14

Precision pressure regulators MS6-LRPB, MS series

FESTO

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

Mandatory data						
Module No.	Series	Size	Function	Connection size	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
Ordering 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	MS
	Size	6			6	6
	Function	Precision pressure regulator for manifold assembly			-LRPB	-LRPB
	Connection size	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		1	-VS	
		Adapter plate for EN pressure gauge 1/8, without pressure gauge		2	-A8	
		Adapter plate for EN pressure gauge 1/8, with precision pressure gauge		2	-A8M	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		2	-A4	
		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 with alternative flow direction Z without alternative assembly position KD 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

Transfer order code

535 007	MS	6	- LRPB	-	-	-
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MS4/MS6 series service units
Pressure regulators

2.14

Precision pressure regulators MS6-LRPB, MS series

Ordering data – Modular products



→ **0 Options**

Rotary knob alternative	Alternative assembly position	Security	Alternative pressure output	Type of mounting	Alternative flow direction
LD	KD	AS	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				-LD	
	Alternative assembly position	Rotary knob at bottom			4	-KD	
	Security	Lockable rotary knob				-AS	
	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			5 6	-WR	
		Wall mounting plate			7 8	-WP	
		Wall mounting plate			5 7	-WPM	
		Wall mounting plate for large wall gap			7 9	-WPB	
		Wall mounting bracket			5	-WB	
	Alternative flow direction	Pressure output to front (without pressure output, no pressure gauge)				-Z	

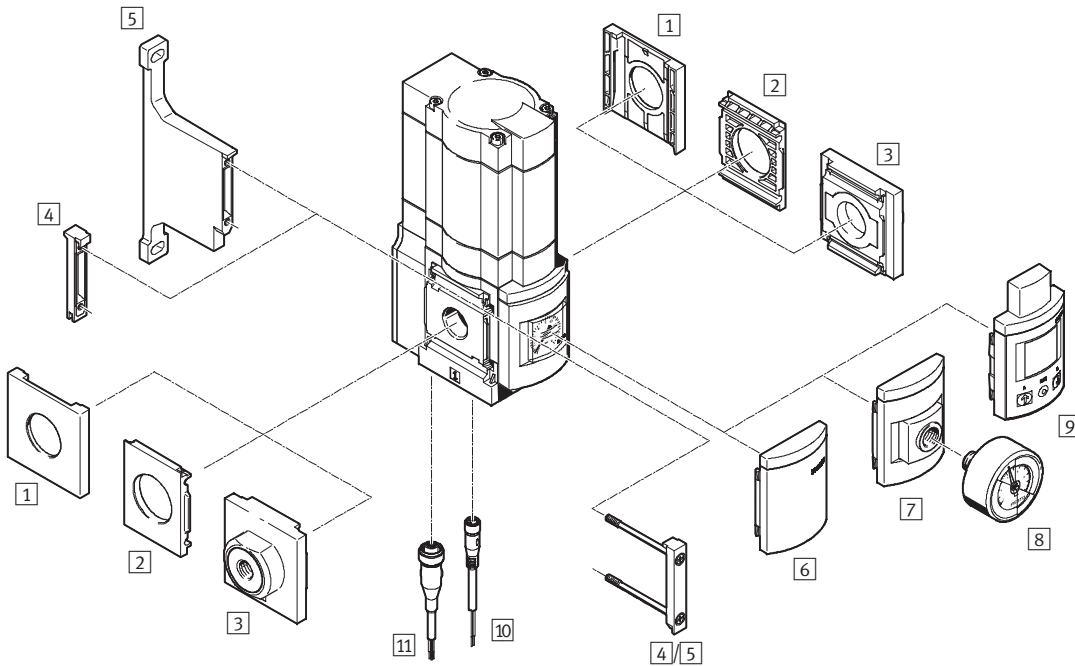
- | | |
|--|--|
| <p>4 KD In combination with pressure gauge alternatives A8, A4, AD1, AD2, AD3, AD4 only with alternative flow direction Z</p> <p>5 WPM, WB Either only with alternative flow direction Z or only with alternative assembly position KD</p> <p>6 WR Only with alternative flow direction Z
Not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

Transfer order code

- - - - - -

Electrical pressure regulators MS6-LRE, MS series

Peripherals overview



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	-	-	■	-	3/2.31-1
2	Mounting plate MS6-AEND	■ ¹⁾	-	■ ²⁾	-	3/2.31-1
3	Connecting plate MS6-AG...	-	■ ¹⁾	-	■ ²⁾	3/2.31-0
4	Module connector MS6-MV	-	-	■	■	3/2.31-7
5	Mounting bracket MS6-WPB	■	■	■	■	3/2.31-5
6	Cover plate VS	■	■	■	■	3/2.14-52
7	Adapter plate for EN pressure gauge ¼ A4	■	■	■	■	3/2.14-52
8	Pressure gauge MA	■	■	■	■	3/2.31-11
9	Control unit with display OP	■	■	■	■	3/2.14-52
10	Plug socket with cable SIM-M8-3...	■	■	■	■	3/2.31-11
11	Plug socket with cable SIM-M12-5...	■	■	■	■	3/2.31-11

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

FESTO

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 → 3/2.14-52

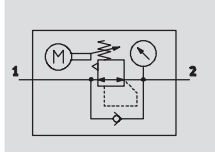
- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Sensor cables
- Supply cables
- Type of mounting
- Alternative flow direction

Electrical pressure regulators MS6-LRE, MS series

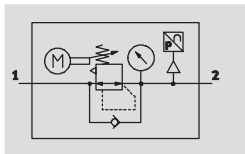





Technical data

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		MS6	
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	

Electrical pressure regulators MS6-LRE, MS series

FESTO

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]	–		–	
	[mA]	–		4 ... 20	
Analogue outputs, absolute accuracy at 25 °C		[%]	–		±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

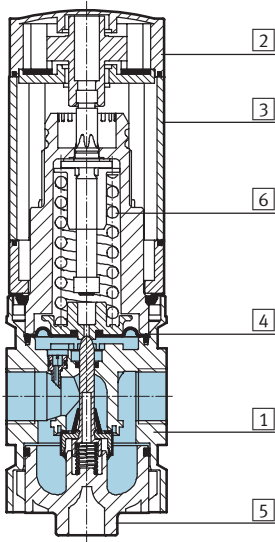
Electrical pressure regulators MS6-LRE, MS series

Technical data



Materials

Sectional view

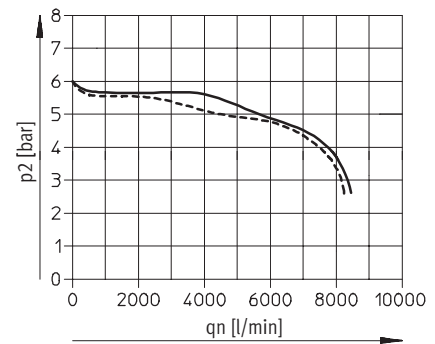
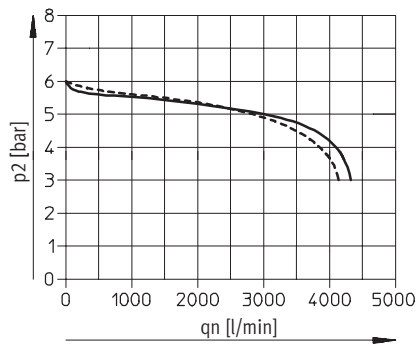


Electrical pressure regulator		
1	Body	Die-cast aluminium
2	Drive housing	Reinforced polyamide
3	Profile housing	Wrought aluminium alloy
4	Diaphragm	Nitrile rubber
5	Bottom cap	Polyester, fibreglass reinforced
6	Springs	Steel
-	Display and control unit	Polyamide
-	Seals	Nitrile rubber

Standard flow rate q_n as a function of output pressure p_2

MS6-LRE-1/4 MS6-LRE-3/8

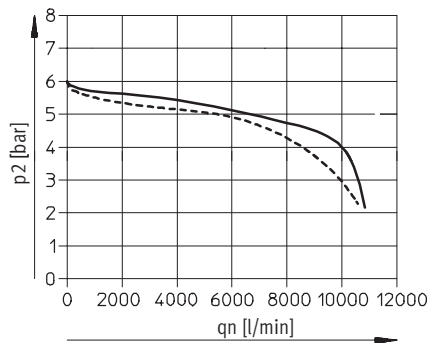
Primary pressure $p_1 = 10$ bar



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

MS6-LRE-1/2

Primary pressure $p_1 = 10$ bar



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

Electrical pressure regulators MS6-LRE, MS series

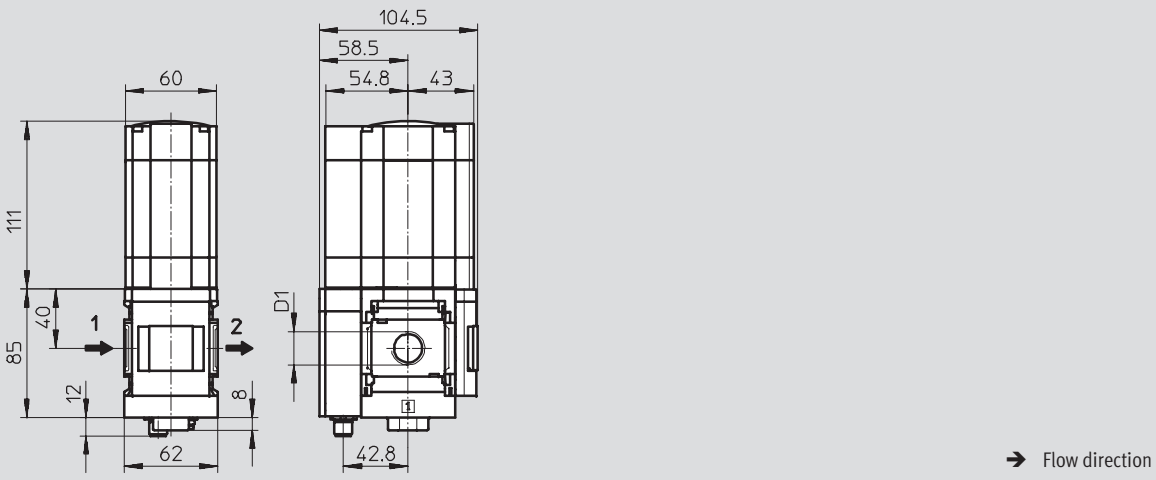
Technical data

FESTO

Dimensions – Standard

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

With pressure gauge, display unit [bar]



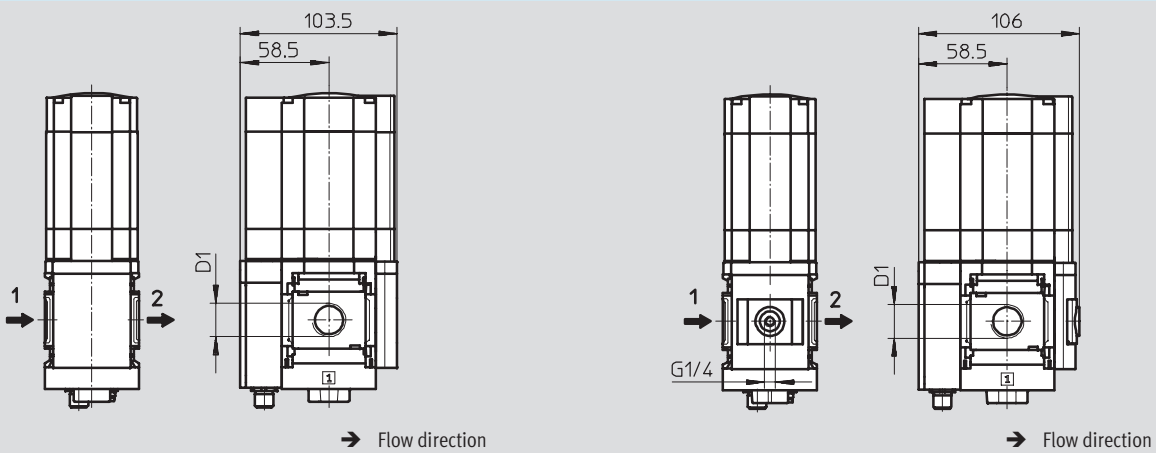
Type	D1
MS6-LRE-1/4	G1/4
MS6-LRE-3/8	G3/8
MS6-LRE-1/2	G1/2

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

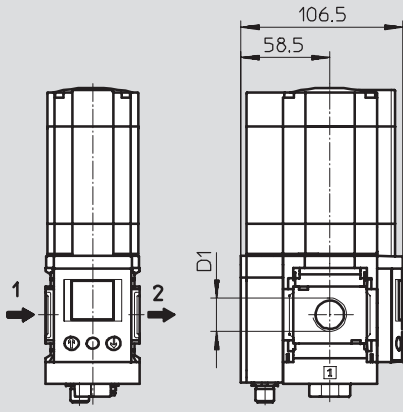
Electrical pressure regulators MS6-LRE, MS series

Technical data

Dimensions – Pressure gauge alternatives

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

Control unit with display OP



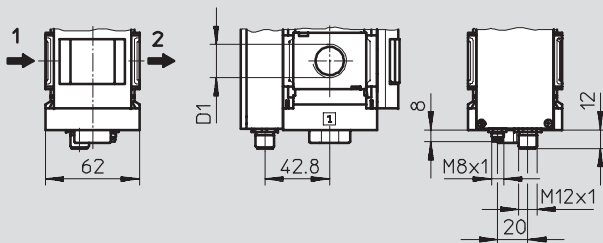
→ Flow direction

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

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

FESTO

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

Electrical pressure regulators MS6-LRE, MS series

Ordering data – Modular products

M Mandatory data →

Module No.	Series	Size	Function	Connection size	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 size	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	
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 cables	Type of mounting	Alternative flow direction
VS A4 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	
	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	
	Mounting bracket 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, OP.

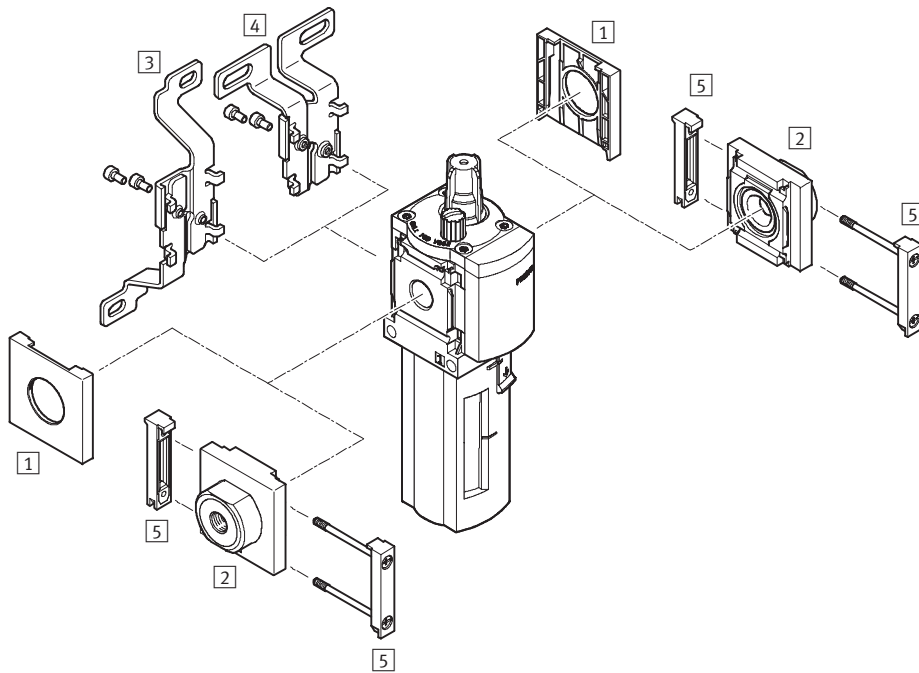
- 3 **WBE** Only with connection thread size 1/4, 3/8, 1/2.
- 4 **WPB** Only with connecting plate size AGB, AGC, AGD, AGE.

Transfer order code

- - - - - - - -

Lubricators MS4/MS6-LOE, MS series

Peripherals overview



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	■	-	■	-	3/2.31-1
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-0
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-2
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-2
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-7
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-5, 3/2.31-6

MS4/MS6 series service units
Lubricators
2.15

Lubricators MS4/MS6-LOE, MS series

Type codes

		MS	6	-	LOE	-	1/4	-	U
Series									
MS	Standard service unit								
Size									
4	Grid dimension 40 mm								
6	Grid dimension 62 mm								
Service function									
LOE	Lubricators								
Connection size									
1/8	Thread G1/8								
1/4	Thread G1/4								
3/8	Thread G3/8								
1/2	Thread G1/2								
Bowl guard									
R	Plastic bowl guard								
U	Metal bowl								

Further variants can be ordered using the modular system

Lubricator LOE → 3/2.15-5

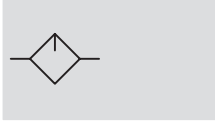
- Connecting plates
- Type of mounting
- Alternative flow direction

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
→ 3/2.31-12
- 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)		

Standard nominal flow rate q _{nN} [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

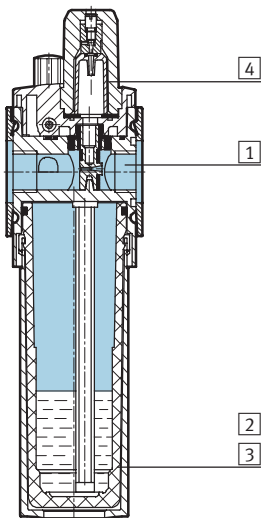
Data sheet



Weights [g]		
Size	MS4	MS6
With plastic bowl guard	194	600
With metal bowl	354	810

Materials

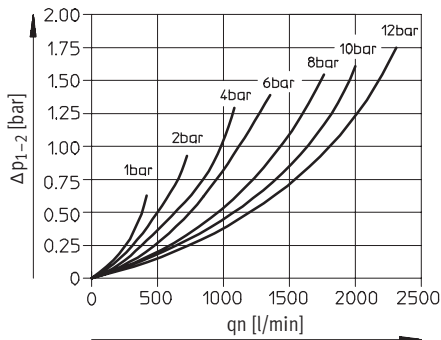
Sectional view



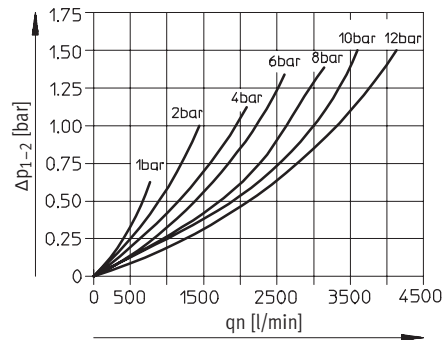
Lubricators		
1	Body	Die-cast aluminium
2	Plastic bowl guard	Polycarbonate/polyamide
3	Metal bowl Viewing window	Aluminium Polyamide
4	Lubricator dome	Polycarbonate
-	Seals	Nitrile rubber

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

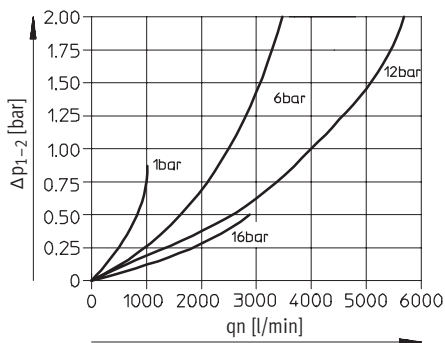
MS4-LOE-1/8



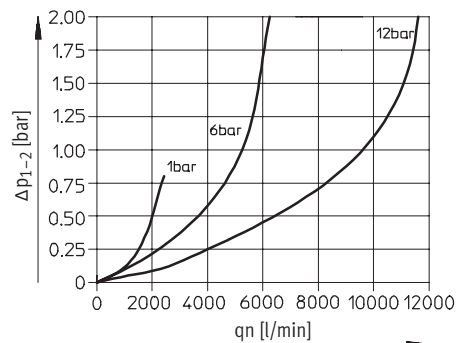
MS4-LOE-1/4



MS6-LOE-1/4



MS6-LOE-3/8



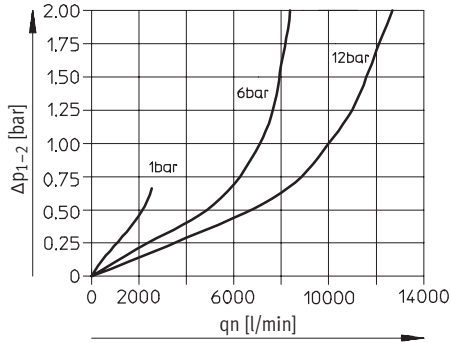
Lubricators MS4/MS6-LOE, MS series

Data sheet



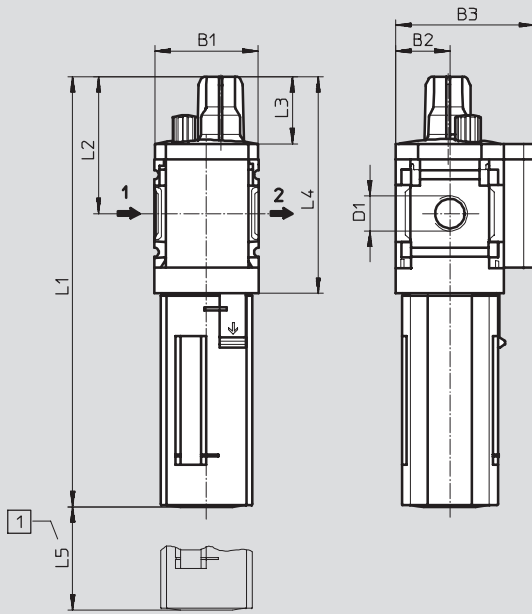
Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

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		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						

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	G1/8 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	
	-	Connecting plate G3/4		-AGE		
	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		-		-		-	
--	----	--	---	-----	--	---	--	---	--	---	--

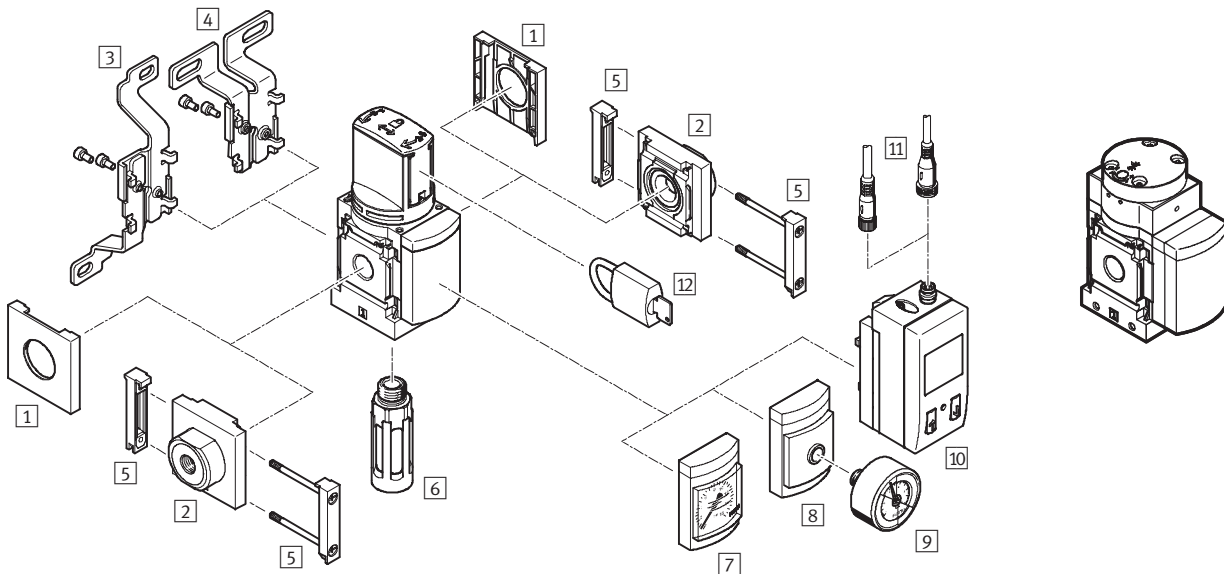
On-off/soft-start valves MS4/MS6-EM1/EE/DL/DE, MS series

Peripherals overview

FESTO

On-off valve EM1
manually actuated

Soft-start valve DL
pneumatically actuated



Mounting attachments and accessories

	Individual unit		Combination → 3/2.11-0		→ Page
	without connect- ing plate	with connect- ing plate	without connect- ing plate	with connect- ing plate	
1 Cover cap MS4/6-END	■	-	■	-	3/2.31-1
2 Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-0
3 Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-2
4 Mounting bracket MS4-WBM	■	■	-	-	3/2.31-2
5 Module connector MS4/6-MV	-	■	■	■	3/2.31-7
6 Silencer U	■ with EM1	■ with EM1	■ with EM1	■ with EM1	3/2.31-12
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	■	■	■	■	3/2.31-11
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...	■	■	■	■	3/2.31-11
12 Padlock LRVS-D	■	■	■	■	3/2.31-12
- Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-5, 3/2.31-6

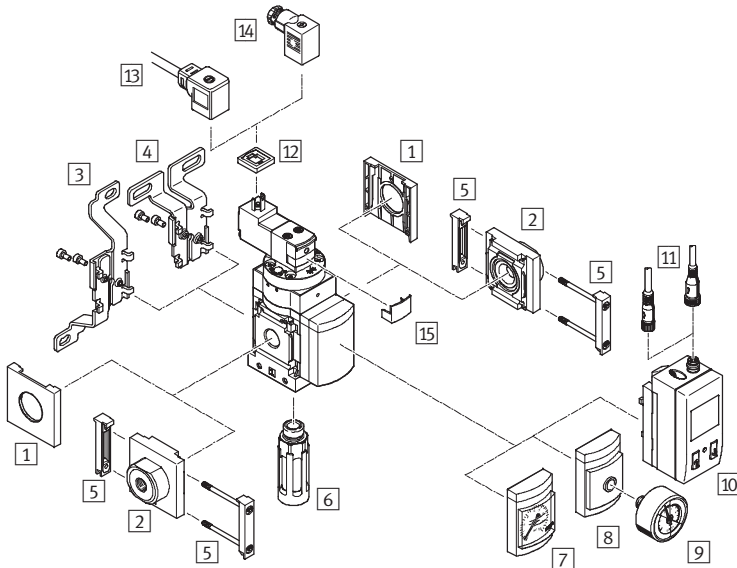
On-off/soft-start valves MS4/MS6-EM1/EE/DL/DE, MS series

Peripherals overview

FESTO

On-off/soft-start valve EE/DE

solenoid actuated



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	■	-	■	-	3/2.31-1
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-0
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-2
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-2
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-7
6	Silencer U	■ with EE	■ with EE	■ with EE	■ with EE	3/2.31-12
7	Pressure gauge MS AG	■	■	■	■	EE 3/2.16-14 DE 3/2.16-25
8	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	EE 3/2.16-14 DE 3/2.16-25
9	Pressure gauge MA	■	■	■	■	3/2.31-11
10	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	EE 3/2.16-14 DE 3/2.16-25
11	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-11
12	Illuminating seal MEB-LD	■	■	■	■	3/2.31-11
13	Plug socket with cable KMEB	■	■	■	■	3/2.31-10
14	Plug socket MSSD-EB	■	■	■	■	3/2.31-10
15	Locking clip CPV18-HV	■	■	■	■	3/2.31-10
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-5, 3/2.31-6

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

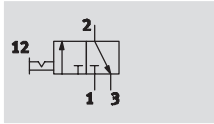
On-off valves EM1	→ 3/2.16-7
On-off valves EE	→ 3/2.16-14
Soft-start valves DL	→ 3/2.16-20
Soft-start valves DE	→ 3/2.16-25

- 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/sbar]	4.6	9.0	10.7	21.2	30.8
b value	0.51	0.39	0.56	0.49	0.57

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

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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			

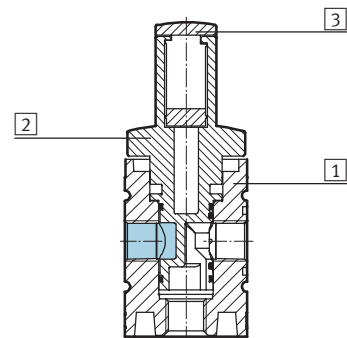
1) Corrosion resistance class 2 according to Festo standard 940 070

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
Standard	190	580
With silencer	210	655

Materials

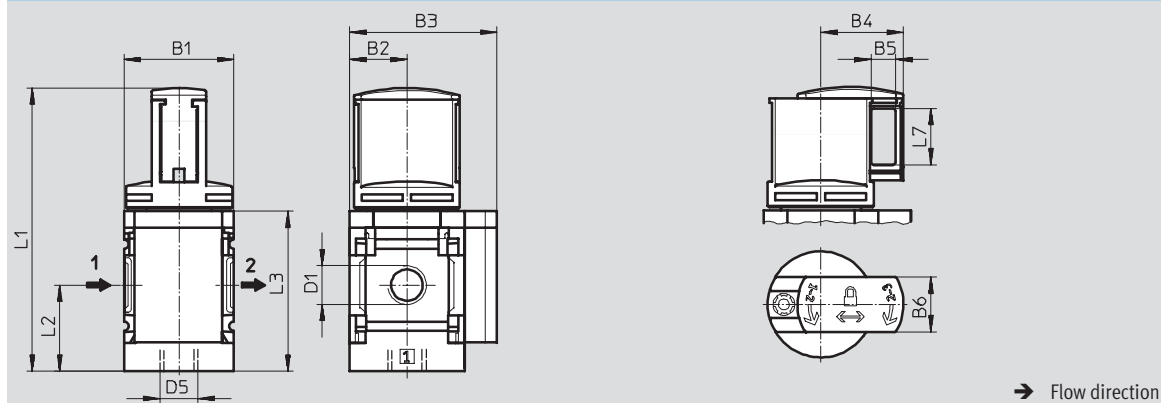
Sectional view



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					

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

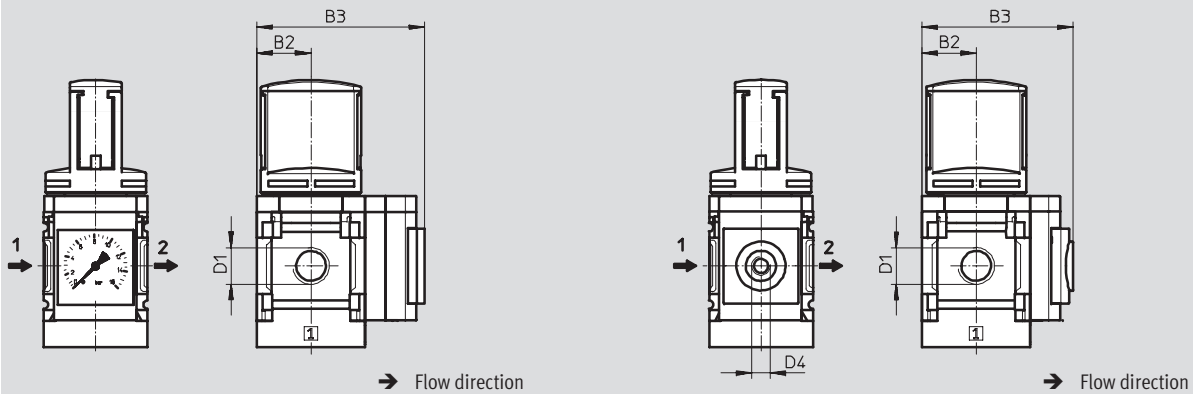
Technical data

Dimensions – Pressure gauge alternatives

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

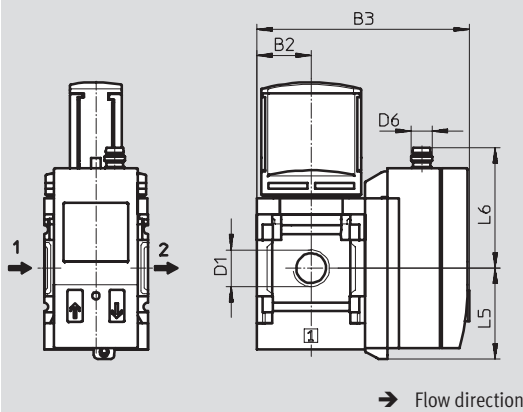
Integrated MS pressure gauge AG, display unit [bar]

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



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	D4	D6	L5	L6
MS4-EM1-1/8-...-AG	21	65	G1/8	-	-	-	-
MS4-EM1-1/4-...-AG			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				
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-...-AG	31	85	G1/4	-	-	-	-
MS6-EM1-3/8-...-AG			G3/8				
MS6-EM1-1/2-...-AG			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				
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				

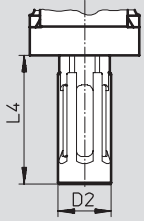
On-off valves MS4/MS6-EM1, MS series

Technical data

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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 size	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, 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	Condi- tions	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 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	
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	
		Pressure sensor with display, M8 plug, 1 switching output PNP, 3-pin			[1] -AD1	
		Pressure sensor with display, M8 plug, 1 switching output NPN, 3-pin			[1] -AD2	
		Pressure sensor with display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			[1] -AD3	
		Pressure sensor with display, M12 plug, 1 switching 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		[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 AG.

Transfer order code

	MS		-	EM1	-		-		-		-		-		-	
--	----	--	---	-----	---	--	---	--	---	--	---	--	---	--	---	--

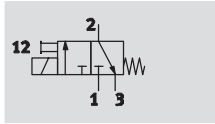
New
Variants AD..., 10V24

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

Technical data



Function



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



- 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/sbar]	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				

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					

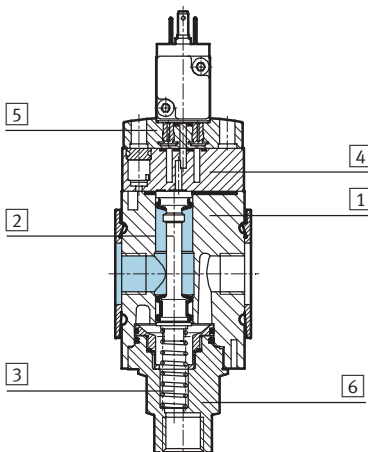
1) Corrosion resistance class 2 according to Festo standard 940 070

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	MS6
Standard	740
With silencer	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...)

New
Variants AD..., 10V24

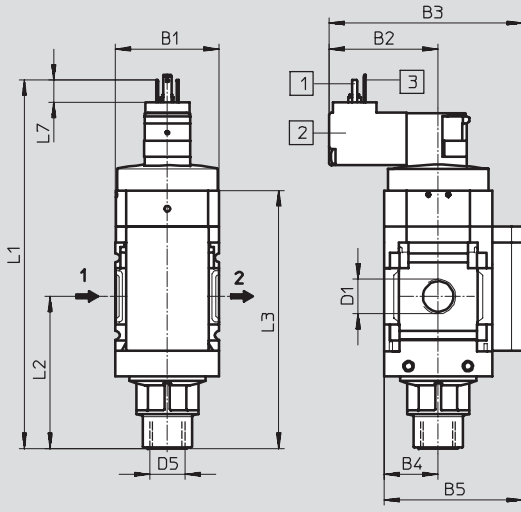
On-off valves MS4/MS6-EE, MS series

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 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	D5	L1	L2	L3	L7
MS4-EE-1/8	40	42.2	75.2	21	54	G1/8	G1/4	142.8	58.9	100	8.6
MS4-EE-1/4						G1/4					
MS6-EE-1/4	62	52	97	31	76	G1/4	G1/2	185.6	84	143	8.6
MS6-EE-3/8						G3/8					
MS6-EE-1/2						G1/2					

MS4/MS6 series service units
 Start-up and exhaust valves

2.16

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

Technical data

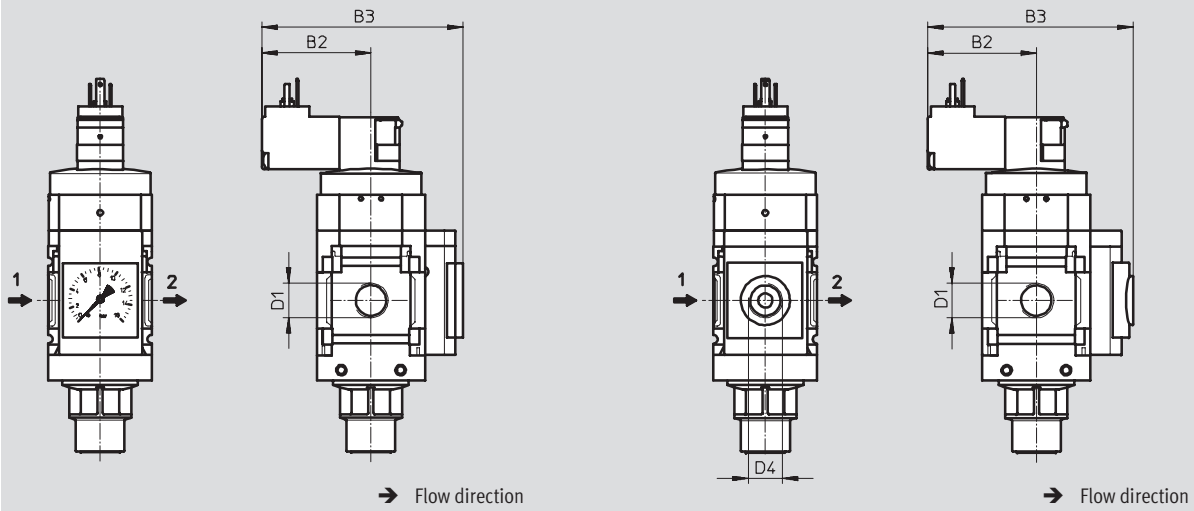
FESTO

Dimensions – Pressure gauge alternatives

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

Integrated MS pressure gauge AG, display unit [bar]

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



Type	B2	B3	D1	D4
MS4-EE-1/8-...-AG	42.2	86.2	G1/8	-
MS4-EE-1/4-...-AG			G1/4	
MS4-EE-1/8-...-A8	42.2	79.7	G1/8	G1/8
MS4-EE-1/4-...-A8			G1/4	
MS4-EE-1/8-...-A4	42.2	79.7	G1/8	G1/4
MS4-EE-1/4-...-A4			G1/4	
MS6-EE-1/4-...-AG	52	106	G1/4	-
MS6-EE-3/8-...-AG			G3/8	
MS6-EE-1/2-...-AG			G1/2	
MS6-EE-1/4-...-A4	52	99.6	G1/4	G1/4
MS6-EE-3/8-...-A4			G3/8	
MS6-EE-1/2-...-A4			G1/2	

New
Variants AD..., 10V24

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

Technical data

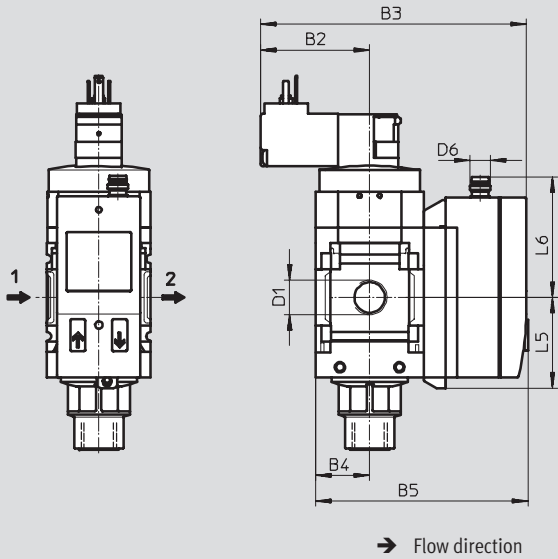


Dimensions – Pressure gauge alternatives

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 out-
 put PNP

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

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

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

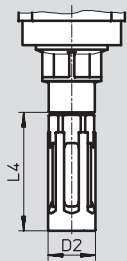
Type	B2	B3	B4	B5	D1	D6	L5	L6
MS4-EE-1/8-...-AD1/AD2	42.2	103.8	21	82.6	G1/8	M8x1	35.1	46.7
MS4-EE-1/4-...-AD1/AD2					G1/4			
MS4-EE-1/8-...-AD3/AD4	42.2	103.8	21	82.6	G1/8	M12x1	35.1	55.8
MS4-EE-1/4-...-AD3/AD4					G1/4			
MS6-EE-1/4-...-AD1/AD2	52	124	31	103	G1/4	M8x1	35.1	46.7
MS6-EE-3/8-...-AD1/AD2					G3/8			
MS6-EE-1/2-...-AD1/AD2					G1/2			
MS6-EE-1/4-...-AD3/AD4					G1/4			
MS6-EE-3/8-...-AD3/AD4	52	124	31	103	G3/8	M12x1	35.1	55.8
MS6-EE-1/2-...-AD3/AD4					G1/2			

MS4/MS6 series service units
 Start-up and exhaust valves

2.16

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

FESTO

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	 New	542 600	MS4-EE-1/8-10V24-S  New
	G1/4	542 578	MS4-EE-1/4-10V24	 New	542 598	MS4-EE-1/4-10V24-S  New
MS6	G1/4	542 584	MS6-EE-1/4-10V24	 New	542 604	MS6-EE-1/4-10V24-S  New
	G3/8	542 586	MS6-EE-3/8-10V24	 New	542 606	MS6-EE-3/8-10V24-S  New
	G1/2	542 582	MS6-EE-1/2-10V24	 New	542 602	MS6-EE-1/2-10V24-S  New
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

New
Variants AD..., 10V24

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

Ordering data – Modular products



Mandatory data →

Module No.	Series	Size	Function	Connection size	Supply voltage
527 709	MS	4	EE	1/8	V24
527 682		6		1/4	10V24
				3/8	V110
				1/2	V230
				AGA	
				AGB	
				AGC	
				AGD	
				AGE	
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 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	
Supply voltage	24 V DC (connection pattern to EN 175301), 18 bar				-V24	
	24 V DC (connection pattern to EN 175301), 10 bar				-10V24	
	110 V AC (connection pattern to EN 175301), 18 bar				-V110	
	230 V AC (connection pattern to EN 175301), 18 bar				-V230	

MS4/MS6 series service units
Start-up and exhaust valves

2.16

Transfer order code

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

Ordering data – Modular products

FESTO

0 Options				
Silencer	Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
S	AG A8 A4 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	
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	
	Pressure sensor with display, M8 plug, 1 switching output PNP, 3-pin			1	-AD1	
	Pressure sensor with display, M8 plug, 1 switching output NPN, 3-pin			1	-AD2	
	Pressure sensor with display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			1	-AD3	
	Pressure sensor with display, M12 plug, 1 switching 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			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.

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

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

Transfer order code

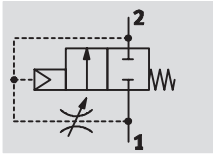
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Soft-start valves MS4/MS6-DL, MS series

Technical data

FESTO

Function



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



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

When the valve is exhausted, the main seat remains open until the switch-through pressure is reached. The rest of the exhaust procedure is performed using the restrictor.

- 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/sbar]	4.6	9.6	11.22	21.05	28.97
b value	0.5	0.45	0.54	0.48	0.39

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 → 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

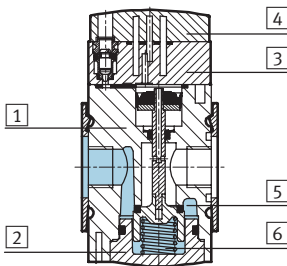
Operating and environmental conditions				
Variant	Standard		Pressure sensor with display AD...	
Size	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10
Operating medium	Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature [°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

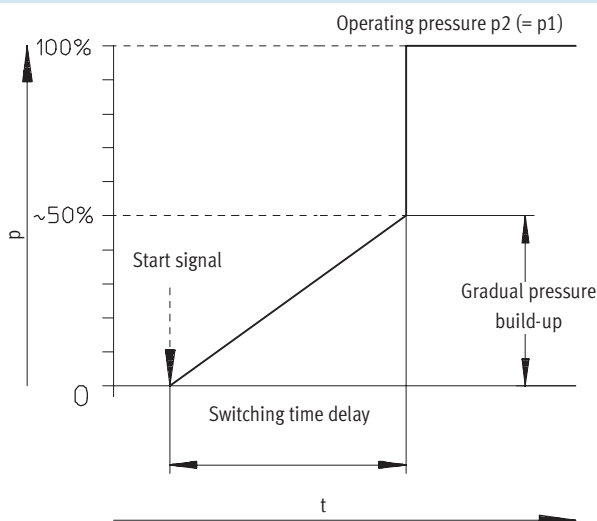
Sectional view



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



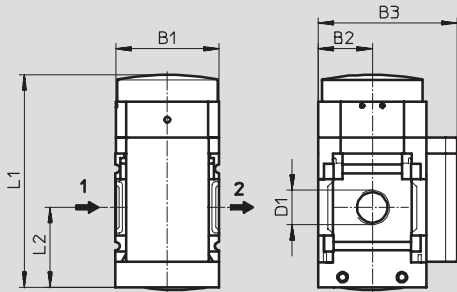
Soft-start valves MS4/MS6-DL, MS series

Technical data

FESTO

Dimensions – Standard

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



→ Flow direction

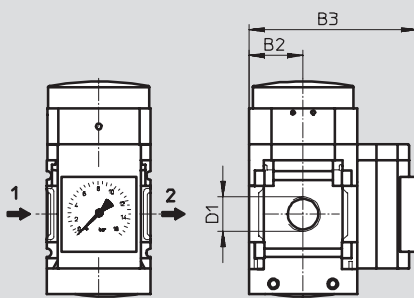
Type	B1	B2	B3	D1	L1	L2
MS4-DL-1/8	40	21	54	G1/8	82.7	31
MS4-DL-1/4				G1/4		
MS6-DL-1/4	62	31	76	G1/4	116	45
MS6-DL-3/8				G3/8		
MS6-DL-1/2				G1/2		

Dimensions – Pressure gauge alternatives

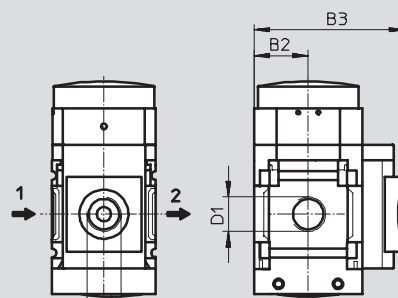
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Integrated MS pressure gauge AG, display unit [bar]

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-...-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-...-A4	31	78.5	G1/4	G1/4
MS6-DL-3/8-...-A4			G3/8	
MS6-DL-1/2-...-A4			G1/2	

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

Technical data

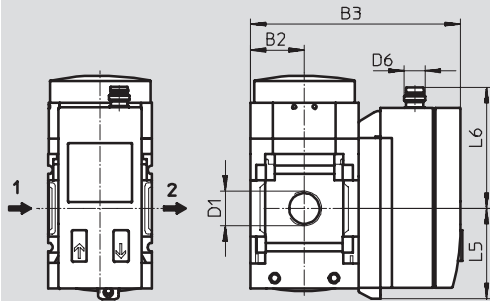
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Dimensions – Pressure gauge alternatives

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Pressure sensor with display AD1 ... AD4

Technical data SDE1 → Volume 4



→ Flow direction

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			

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 size	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, 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 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		
	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		
		Pressure sensor with display, M8 plug, 1 switching output PNP, 3-pin			[1] -AD1		
		Pressure sensor with display, M8 plug, 1 switching output NPN, 3-pin			[1] -AD2		
		Pressure sensor with display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			[1] -AD3		
		Pressure sensor with display, M12 plug, 1 switching 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		[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 AG.

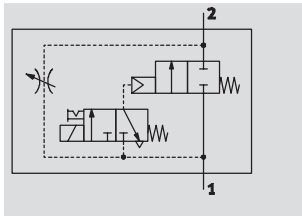
Transfer order code




	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	G1/8	G1/4	G1/4	G3/8	G1/2	
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/sbar]	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				

New
Variants AD..., 10V24

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

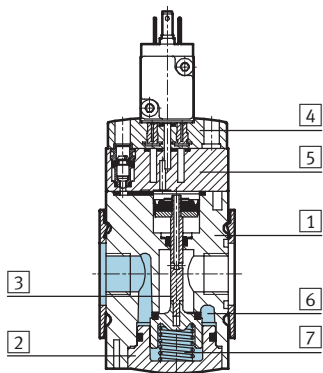
- 1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar
 2) For energised solenoid valve.

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...)	

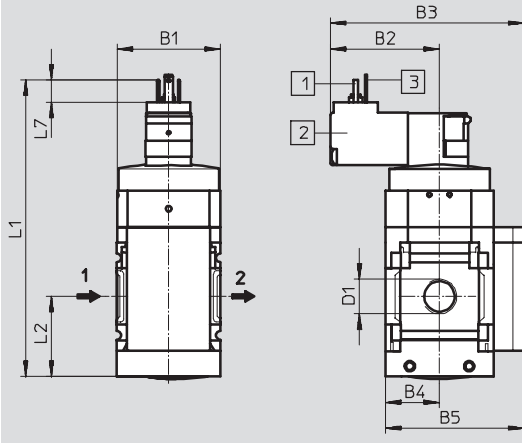
Soft-start valves MS4/MS6-DE, MS series

Technical data

FESTO

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

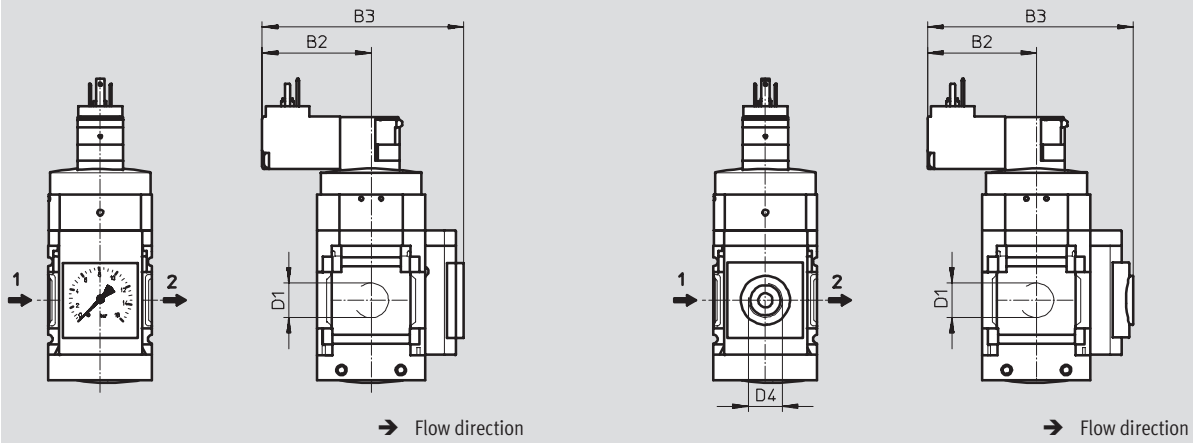
Type	B1	B2	B3	B4	B5	D1	L1	L2	L7
MS4-DE-1/8	40	42.2	75.2	21	54	G1/8	115.4	31.5	8.6
MS4-DE-1/4						G1/4			
MS6-DE-1/4	62	52	97	31	76	G1/4	147	45.5	8.6
MS6-DE-3/8						G3/8			
MS6-DE-1/2						G1/2			

Dimensions – Pressure gauge alternatives

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

Integrated MS pressure gauge AG, display unit [bar]

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



Type	B2	B3	D1	D4
MS4-DE-1/8-...-AG	42.2	86.2	G1/8	-
MS4-DE-1/4-...-AG			G1/4	
MS4-DE-1/8-...-A8	42.2	79.7	G1/8	G1/8
MS4-DE-1/4-...-A8			G1/4	
MS4-DE-1/8-...-A4	42.2	79.7	G1/8	G1/4
MS4-DE-1/4-...-A4			G1/4	
MS6-DE-1/4-...-AG	52	106	G1/4	-
MS6-DE-3/8-...-AG			G3/8	
MS6-DE-1/2-...-AG			G1/2	
MS6-DE-1/4-...-A4	52	99.6	G1/4	G1/4
MS6-DE-3/8-...-A4			G3/8	
MS6-DE-1/2-...-A4			G1/2	

New
Variants AD..., 10V24

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

Technical data

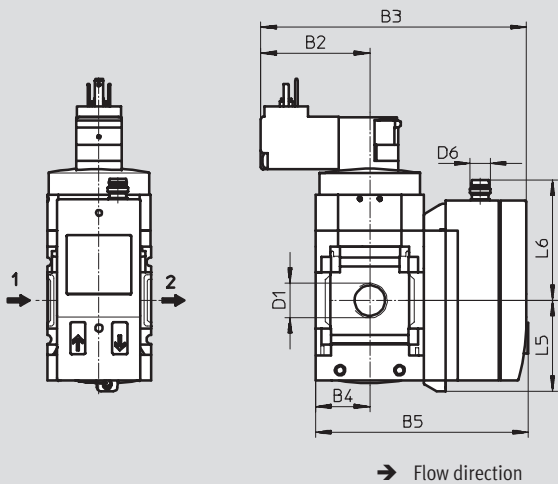


Dimensions – Pressure gauge alternatives

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

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

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

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
MS4-DE-1/8-...-AD1/AD2	42.2	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	42.2	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	52	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	52	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			

Ordering data

Size	Connection	Part No.	Type
Supply voltage 24 V DC			
MS4	G1/8	542 560	MS4-DE-1/8-10V24 ☉ New
	G1/4	542 558	MS4-DE-1/4-10V24 ☉ New
MS6	G1/4	542 564	MS6-DE-1/4-10V24 ☉ New
	G3/8	542 566	MS6-DE-3/8-10V24 ☉ New
	G1/2	542 562	MS6-DE-1/2-10V24 ☉ New
Supply voltage 110 V AC			
MS4	G1/8	529 525	MS4-DE-1/8-V110 ¹⁾
	G1/4	529 519	MS4-DE-1/4-V110 ¹⁾
MS6	G1/4	529 805	MS6-DE-1/4-V110 ¹⁾
	G3/8	529 811	MS6-DE-3/8-V110 ¹⁾
	G1/2	529 799	MS6-DE-1/2-V110 ¹⁾
Supply voltage 230 V AC			
MS4	G1/8	529 527	MS4-DE-1/8-V230 ¹⁾
	G1/4	529 521	MS4-DE-1/4-V230 ¹⁾
MS6	G1/4	529 807	MS6-DE-1/4-V230 ¹⁾
	G3/8	529 813	MS6-DE-3/8-V230 ¹⁾
	G1/2	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

FESTO

M Mandatory data						O Options				
Module No.	Series	Size	Function	Connection size	Supply voltage	Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction	
527 713 527 686	MS	4 6	DE	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE	V24 10V24 V110 V230	AG, A8, A4, AD1, AD2, AD3, AD4	PSI MPA	WP WPM WB WBM	Z	
Order example 527 713	MS	4	- DE	- AGA	- V110	- AG	- PSI	- WP	- Z	

Ordering table									
Grid dimension	[mm]	40	62	Conditions	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 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				
	Supply voltage	24 V DC (connection pattern to EN 175301), 18 bar			-V24				
		24 V DC (connection pattern to EN 175301), 10 bar			-10V24				
		110 V AC (connection pattern to EN 175301), 18 bar			-V110				
		230 V AC (connection pattern to EN 175301), 18 bar			-V230				
	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				
		Pressure sensor with display, M8 plug, 1 switching output PNP, 3-pin			[1] -AD1				
		Pressure sensor with display, M8 plug, 1 switching output NPN, 3-pin			[1] -AD2				
		Pressure sensor with display, M12 plug, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			[1] -AD3				
		Pressure sensor with display, M12 plug, 1 switching 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		[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.

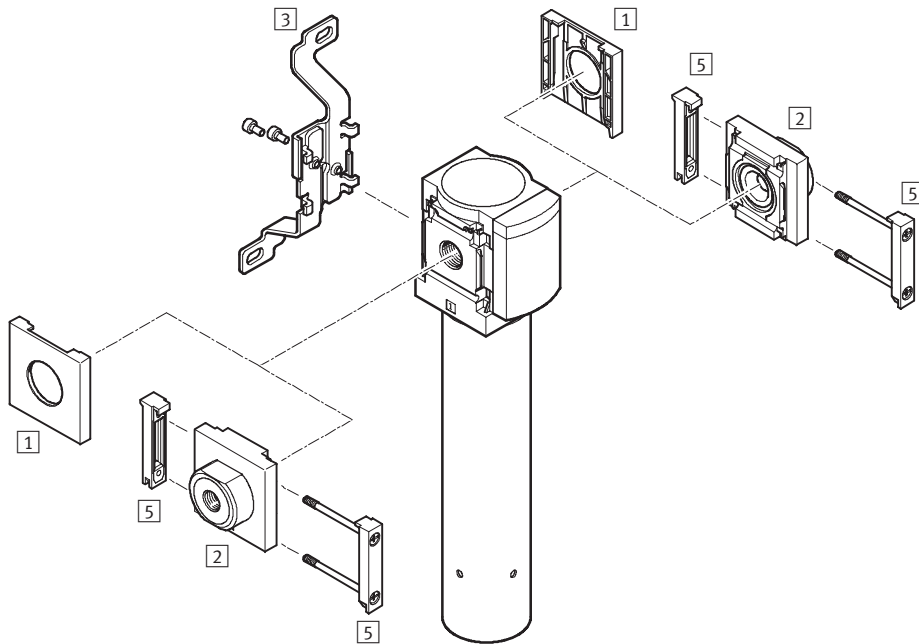
[2] PSI, MPA Only with pressure gauge AG.

Transfer order code

	MS		-	DE	-		-		-		-		-		-		-	
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Membrane air dryers MS4/MS6-LDM1, MS series

Peripherals overview



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	■	-	■	-	3/2.31-1
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-0
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-2
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-7
-	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-2
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-5, 3/2.31-6

MS4/MS6 series service units
Dryers

2.17

Membrane air dryers MS4/MS6-LDM1, MS series

Type codes

		MS	6	-	LDM1	-	1/2	-	P20
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

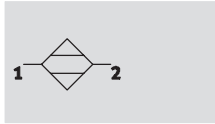
Membrane air dryers LDM1 → 3/2.17-7




- 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
- 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°				

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.

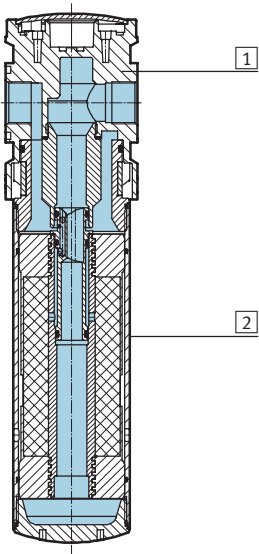
Membrane air dryers MS4/MS6-LDM1, MS series

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



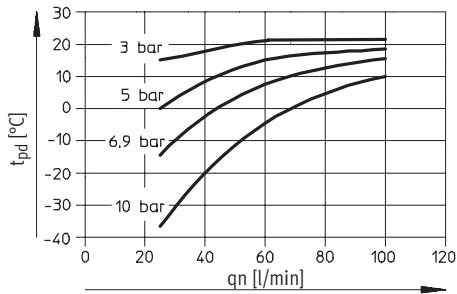
Membrane air dryer		
1	Housing	Die-cast aluminium
2	Bowl	Wrought aluminium alloy
-	Seals	Nitrile rubber

Membrane air dryers MS4/MS6-LDM1, MS series

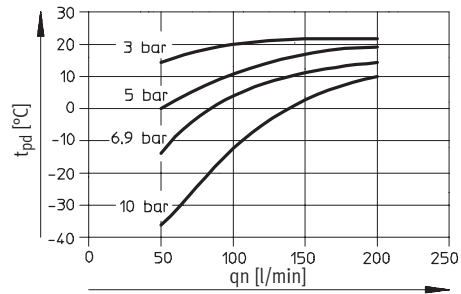
Technical data

Pressure dew point t_{pd} (output) as a function of the standard flow rate at output q_n

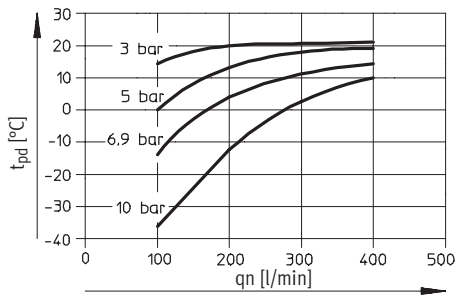
MS4-LDM1-...-P05



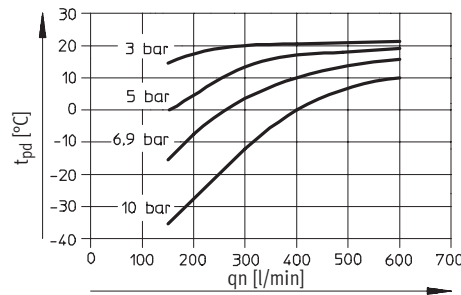
MS4-LDM1-...-P10



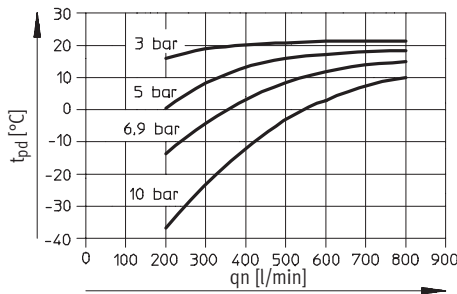
MS6-LDM1-...-P20



MS6-LDM1-...-P30



MS6-LDM1-...-P40

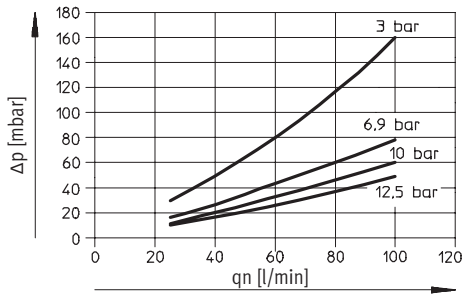


Membrane air dryers MS4/MS6-LDM1, MS series

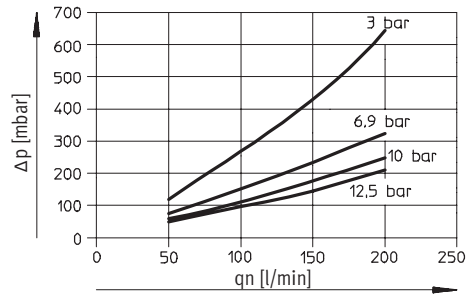
Technical data

Differential pressure Δp as a function of the standard flow rate at output q_n

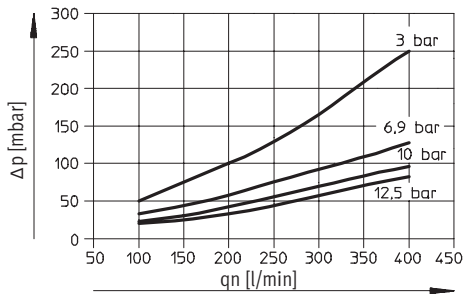
MS4-LDM1-...-P05



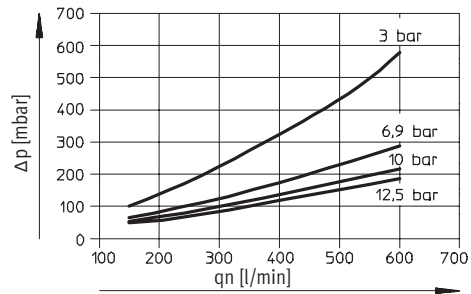
MS4-LDM1-...-P10



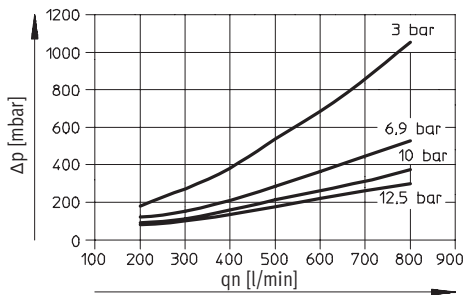
MS6-LDM1-...-P20



MS6-LDM1-...-P30



MS6-LDM1-...-P40

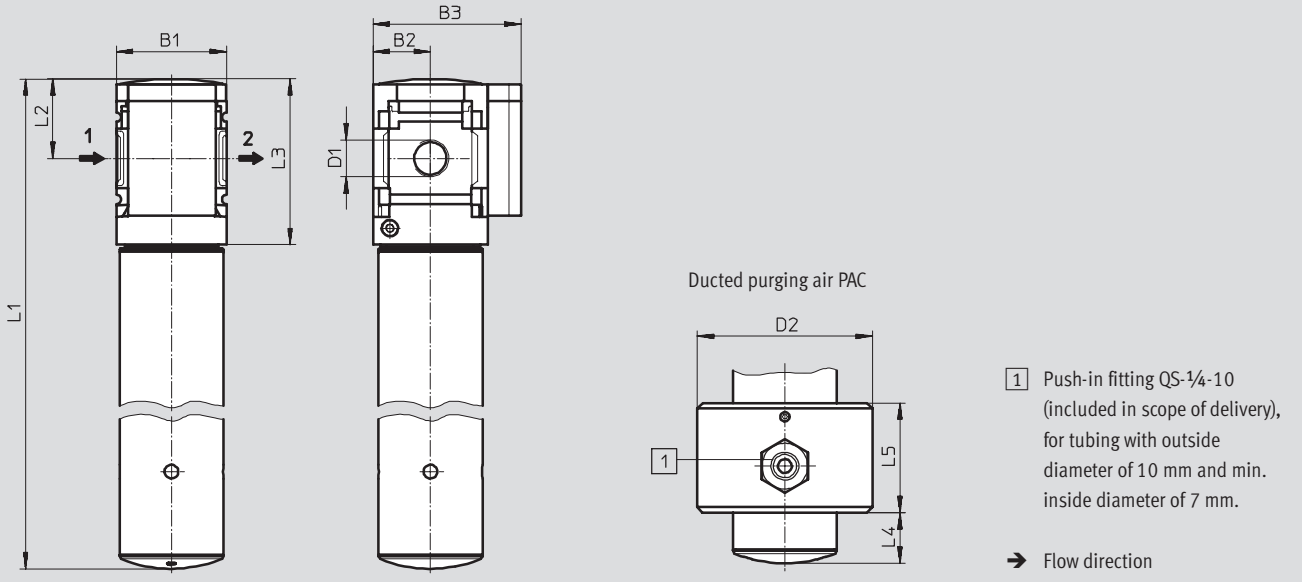


Membrane air dryers MS4/MS6-LDM1, MS series

Technical data

Dimensions

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



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				

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		1	-WP		
		Wall mounting plate		1	-WPM		
		Wall mounting bracket			-WB		
		Wall mounting bracket		-	-WBM		
	Alternative flow direction	Flow direction from right to left			-Z		

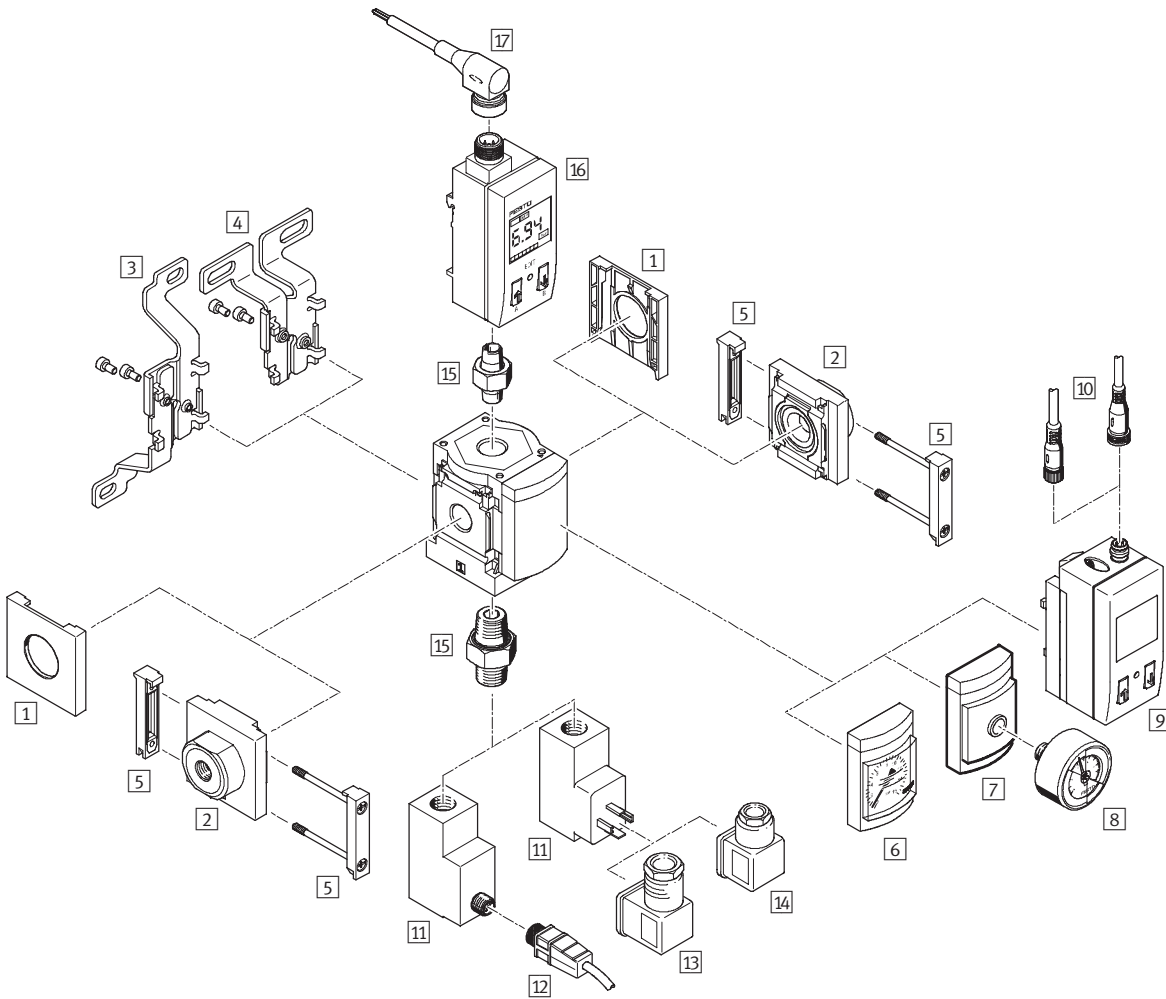
1 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD or AGE.

Transfer order code

	MS		-	LDM1	-		-		-		-	
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Branching modules MS4/MS6-FRM, MS series

Peripherals overview



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	■	-	■	-	3/2.31-1
2	Connecting plate MS4/6-AG...	-	■	-	■	3/2.31-0
3	Mounting bracket MS4/6-WB	■	■	-	-	3/2.31-2
4	Mounting bracket MS4-WBM	■	■	-	-	3/2.31-2
5	Module connector MS4/6-MV	-	■	■	■	3/2.31-7
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	■	■	■	■	3/2.31-11
9	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	3/2.18-8 Volume 4
10	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	3/2.31-11
11	Pressure switch PEV X/Y/M12	■	■	■	■	3/2.18-8, 3/2.31-9
12	Plug socket with cable SIM-M12-4...	■	■	■	■	3/2.31-11
13	Angled socket PEV-1/4-WD-LED-...	■	■	■	■	3/2.31-10
14	Plug socket MSSD-C-4P	■	■	■	■	3/2.31-10
15	Double nipple ESK	■	■	■	■	3/2.31-12
16	Pressure sensor SDE1-...-H18/W18 AD5/AD6	■	■	■	■	3/2.18-8, 3/2.31-9
17	Plug socket with cable SIM-M8-3.../SIM-M12-5...	■	■	■	■	3/2.31-11
-	Mounting bracket MS4/6-WP/WPB/WPM	-	■	■	■	3/2.31-5, 3/2.31-6

Branching modules MS4/MS6-FRM, MS series

FESTO

Type codes

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						
Pressure switch							
	Without pressure switch						
Y	With pressure switch						

Further variants can be ordered using the modular system

Branching modules FRM

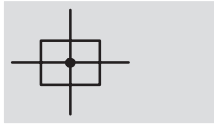
→ 3/2.18-8




- 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

Function



-  Flow rate
1,300 ... 13,000 l/min
-  Temperature range
-10 ... +60 °C
-  Operating pressure
0 ... 20 bar



- Pneumatic manifold with 4 connections
- Attachment facility for auxiliary modules
- Can be used as an intermediate distributor for varying air qualities
- Outlet top and bottom
- 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				
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.

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	1,300	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

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

Operating and environmental conditions						
Variant	Standard		Pressure switch X/Y/M12		Pressure sensor with display AD...	
	MS4	MS6	MS4	MS6	MS4	MS6
Operating pressure [bar]	0 ... 14	0 ... 20	0 ... 12	0 ... 12	0 ... 10	0 ... 10
Operating medium	Compressed air		Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m	
Ambient temperature [°C]	-10 ... +60		-10 ... +60		0 ... +50	
Temperature of medium [°C]	-10 ... +60		-10 ... +60		0 ... +50	
Storage temperature [°C]	-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.

Branching modules MS4/MS6-FRM, MS series

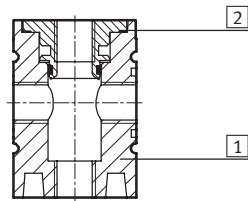
Technical data



Weight [g]		
Size	MS4	MS6
Standard	160	500
With pressure switch	400	778
With pressure sensor	250	570

Materials

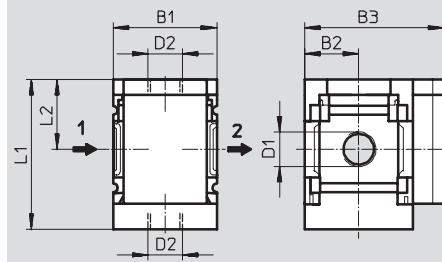
Sectional view



Branching module	
1	Housing Die-cast aluminium
2	Threaded insert Aluminium
-	Seals Nitrile rubber
Note on materials Free of copper and PTFE (not with variants AG or AD...)	

Dimensions – Standard

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			
MS6-FRM-1/4	62	31	76	G1/4	G1/2	84	39
MS6-FRM-3/8				G3/8			
MS6-FRM-1/2				G1/2			

Branching modules MS4/MS6-FRM, MS series

Technical data

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

Integrated MS pressure gauge AG, display unit [bar] 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-FRM-1/8-...-AG	21	57	G1/8	-	-	-	-
MS4-FRM-1/4-...-AG			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				
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-...-AG	31	77	G1/4	-	-	-	-
MS6-FRM-3/8-...-AG			G3/8				
MS6-FRM-1/2-...-AG			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				
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				

Branching modules MS4/MS6-FRM, MS series

Technical data

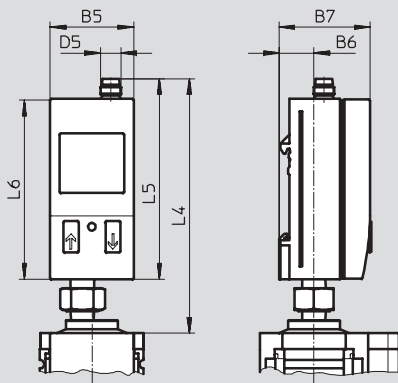
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Dimensions – Pressure gauge alternatives

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

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

Variant X/Y

Variant M12

Variant X:
PEV-1/4-SC-0D with display, plug, square design to DIN EN 175 301, type A

Variant Y:
PEV-1/4-B-0D, plug, square design to DIN EN 175 301, type A

Variant M12:
PEV-1/4-B-M12 with 4-pin plug M12x1

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	Without pressure switch		With pressure switch PEV-1/4-B-0D (variant Y)	
		Part No.	Type	Part No.	Type
MS4	G1/8	529 559	MS4-FRM-1/8 ¹⁾	529 560	MS4-FRM-1/8-Y ¹⁾
	G1/4	529 555	MS4-FRM-1/4 ¹⁾	529 556	MS4-FRM-1/4-Y ¹⁾
MS6	G1/4	529 857	MS6-FRM-1/4 ¹⁾	529 858	MS6-FRM-1/4-Y ¹⁾
	G3/8	529 861	MS6-FRM-3/8 ¹⁾	529 862	MS6-FRM-3/8-Y ¹⁾
	G1/2	529 853	MS6-FRM-1/2 ¹⁾	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



M Mandatory data →

Module No.	Series	Size	Function	Connection size
527 703	MS	4	FRM	1/8
527 676		6		1/4
				3/8
				1/2
				AGA
				AGB
				AGC
				AGD
				AGE
Ordering 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 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	

Transfer order code

	MS		-	FRM		-	
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Branching modules MS4/MS6-FRM, MS series

Ordering data – Modular products

Options				
Pressure gauge alternatives	Alternative pressure gauge scale	Pressure switch	Type of mounting	Alternative flow direction
AG A8 A4 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 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	
	Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin			1	-AD1	
	Pressure sensor with display, plug M8, 1 switching output NPN, 3-pin			1	-AD2	
	Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			1	-AD3	
	Pressure sensor with display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			1	-AD4	
	Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin			1	-AD5	
	Pressure sensor with display, plug M12, 2 switching outputs PNP, 5-pin, analogue output 4 ... 20 mA			1	-AD6	
	Alternative pressure gauge scale	psi			2	
MPa				2	-MPA	
Pressure switch	Pressure switch PEV with display, socket, EN 175301, type A, cube			3	-X	
	Pressure switch PEV without display, socket, EN 175301, type A, cube			3	-Y	
	Pressure switch PEV without display, socket, round, M12, 4-pin			3	-M12	
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 **AD1 ... AD6** Measuring range max. 10 bar.
2 **PSI, MPA** Only with pressure gauge AG.

- 3 **X, Y, M12** Max. permissible input pressure P1 = 12 bar.
Not with pressure gauge alternatives AD5 or AD6.
4 **WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD or AGE.

Transfer order code

- - - - -

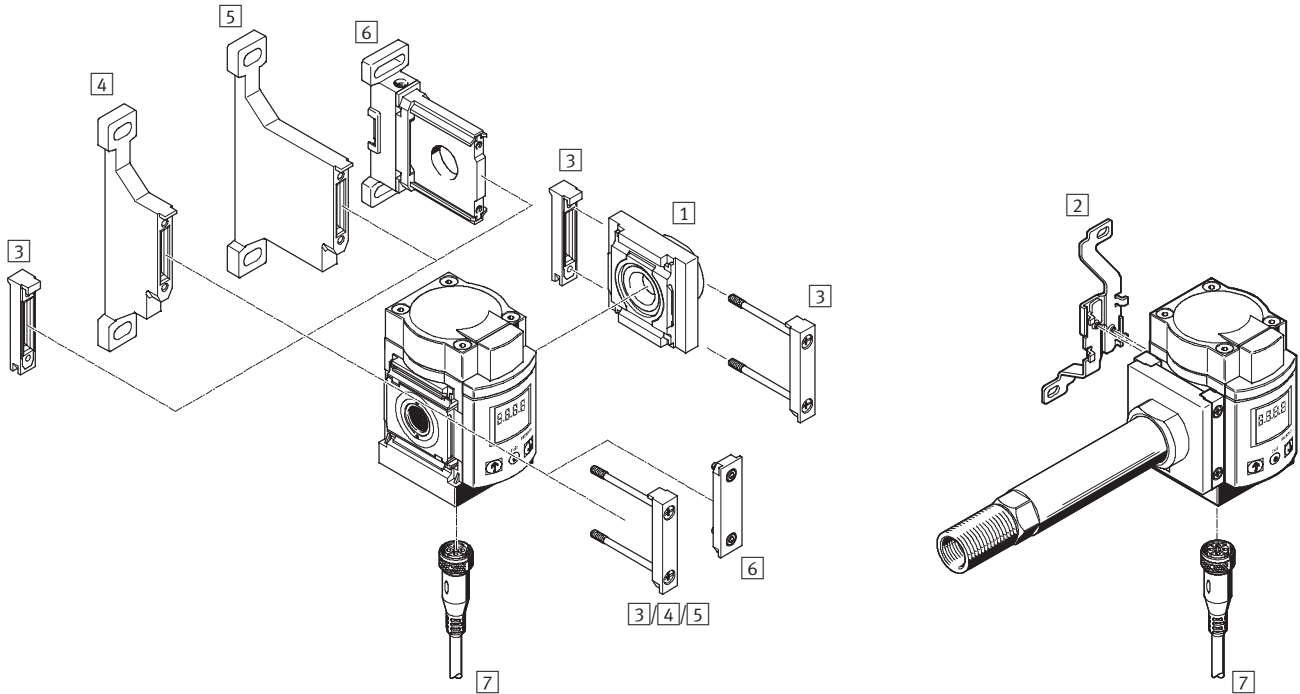
Flow sensors MS6-SFE, MS series

Peripherals overview



For service unit combinations
with filter cartridge

For individual mounting
with connecting plates and inlet section



Mounting attachments and accessories			
	In service unit combinations, MS series	Individual mounting	→ Page
1	Connecting plate MS6-AG...	■ included in scope of delivery	3/2.31-0
2	Mounting bracket MS6-WB	■ included in scope of delivery	3/2.31-2
3	Module connector MS6-MV	-	3/2.31-7
4	Mounting bracket MS6-WP	-	3/2.31-5
5	Mounting bracket MS6-WPB	-	3/2.31-5
6	Mounting bracket MS6-WPM	-	3/2.31-6
7	Plug socket with cable SIM-M12-5GD...	■	3/2.31-11

MS4/MS6 series service units
Flow sensors

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

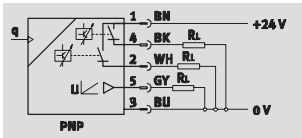
M12	Plug M12x1, 5-pin
-----	-------------------

Flow sensors MS6-SFE, MS series

Technical data

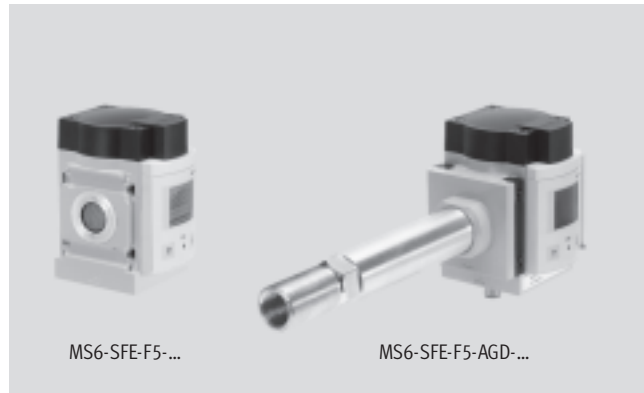


Function¹⁾



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 mounting
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 3/2.31-0
 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

Flow sensors MS6-SFE, MS series

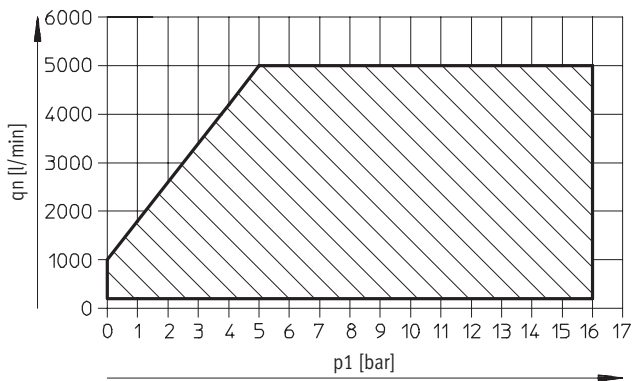
Technical data

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 qn as a function of operating pressure p1



Flow sensors MS6-SFE, MS series

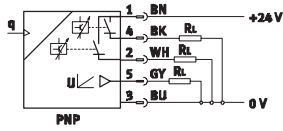
Technical data



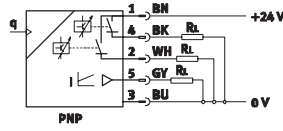
Electrical outputs¹⁾

2 switch outputs PNP

0 ... 10 V analogue

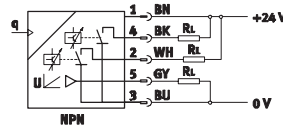


4 ... 20 mA analogue

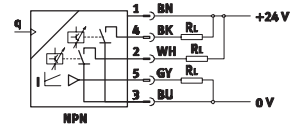


2 switch outputs NPN

0 ... 10 V analogue



4 ... 20 mA analogue



Terminal allocation

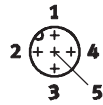
1 = +24 V

2 = Switch output B

3 = 0 V

4 = Switch output A

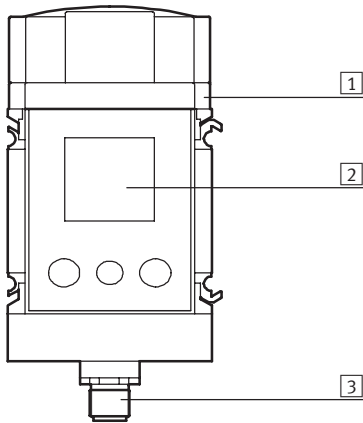
5 = Analogue output C



1) Core colours indicated apply when using plug sockets with cable SIM-M12-5GD → 3/2.31-11

Materials

Sectional view



Flow sensor		
1	Body	Die-cast aluminium, polyamide, reinforced
2		
3	Plug contacts	Gold-plated brass
-	Inspection glass	Polycarbonate

Flow sensors MS6-SFE, MS series

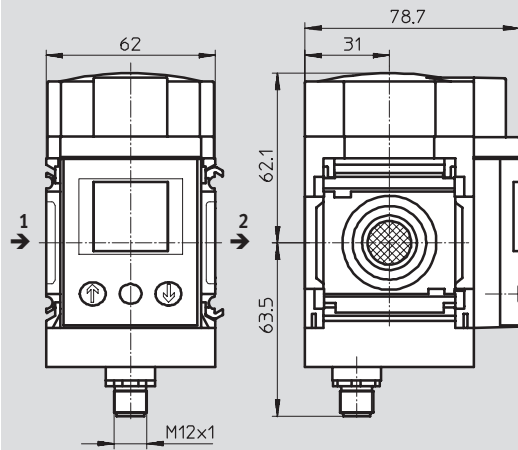
Technical data



Dimensions

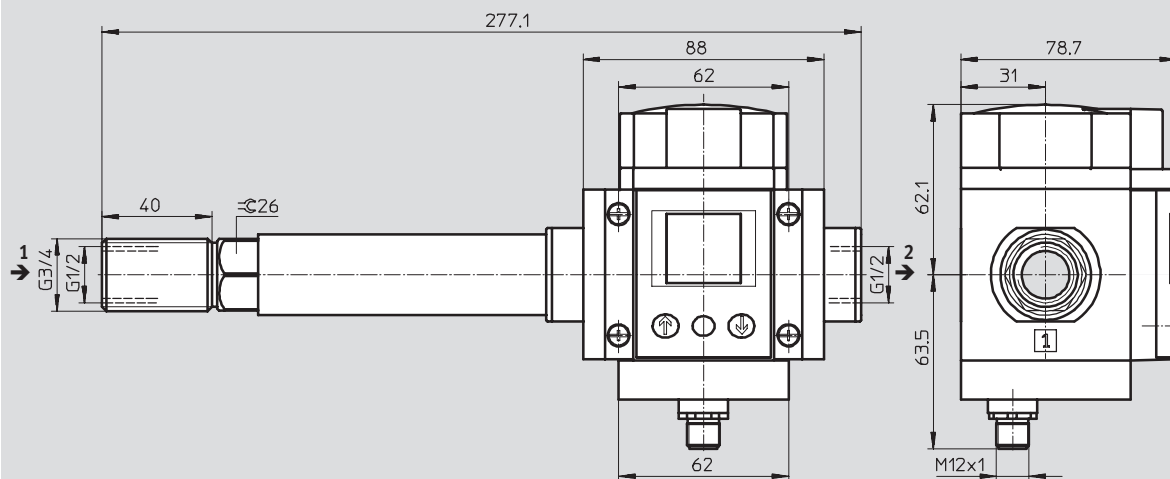
Download CAD data → www.festo.com/en/engineering

In service unit combinations, MS series



→ Flow direction

Individual mounting



→ Flow direction

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



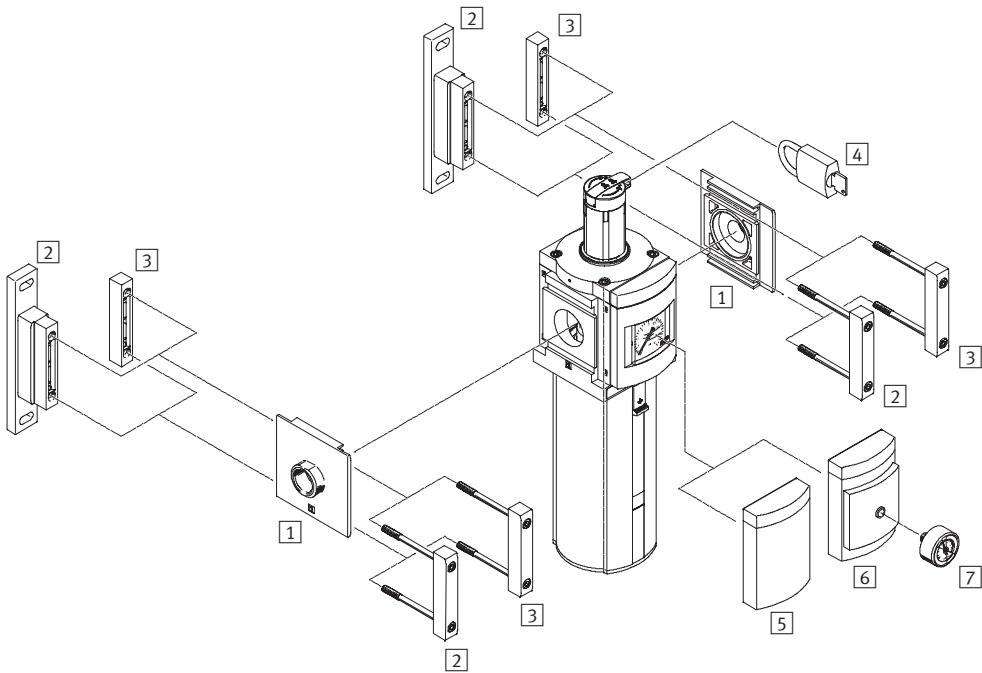
Filter regulators MS12-LFR, MS series

Peripherals overview



MS12 series service units
Filter regulators

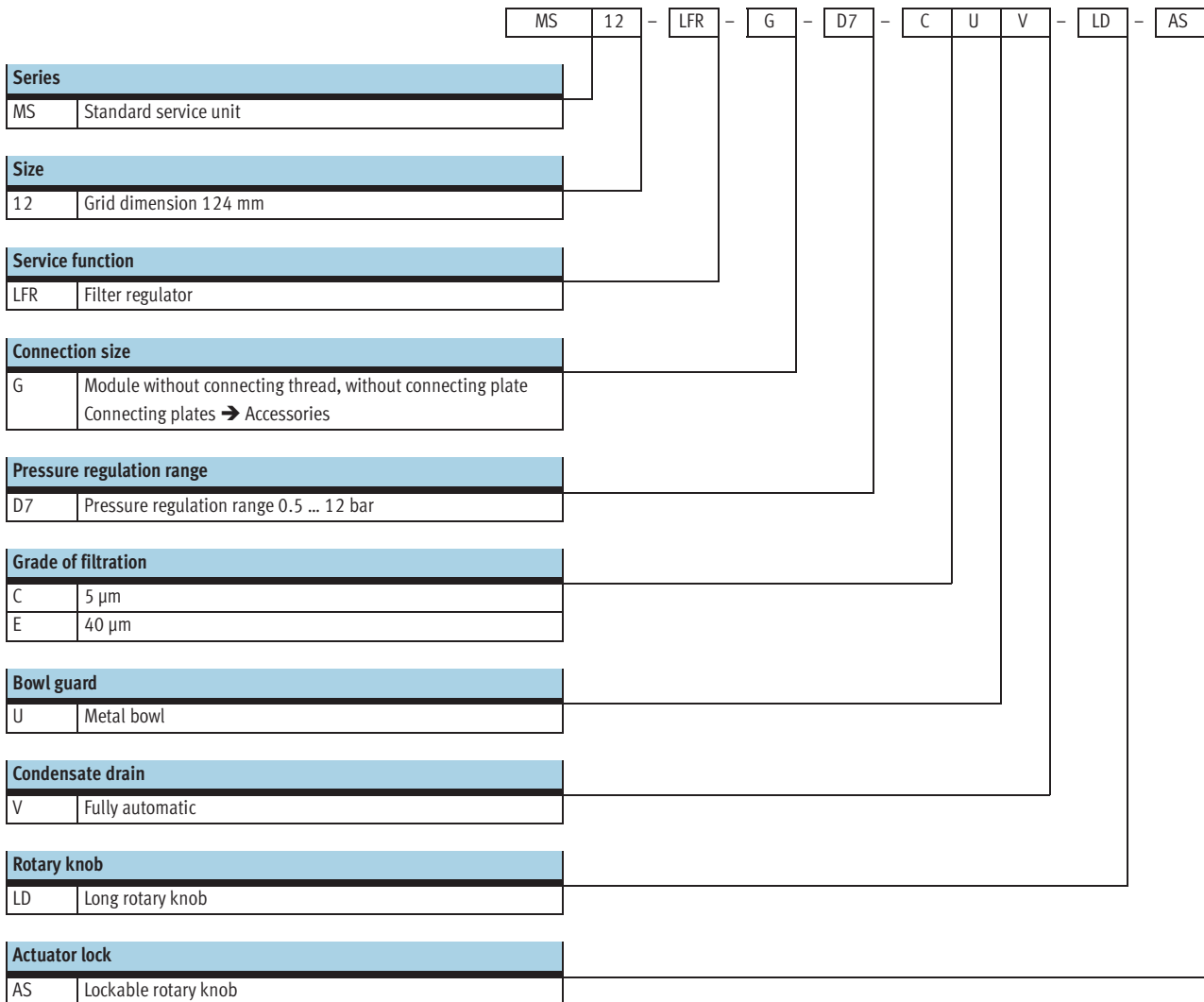
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Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-0
2	Mounting bracket MS12-WP	3/2.31-7
3	Module connector MS12-MV	3/2.31-7
4	Padlock LRVS-D	3/2.31-12
5	Cover plate VS	3/2.22-8
6	Adapter for EN pressure gauge 1/4 A4	3/2.22-8
7	Pressure gauge MA	3/2.31-11

Filter regulators MS12-LFR, MS series

Type codes



Further variants can be ordered using the modular system
 Filter regulators LFR → 3/2.22-8

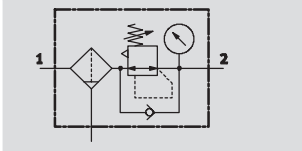
- Connecting plates
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Actuator lock
- Type of mounting
- Alternative flow direction

Filter regulators MS12-LFR, MS series

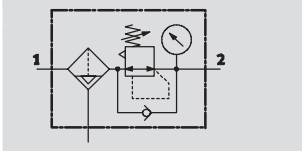
Technical data



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 → 3/2.31-8

General technical data		G1	G1¼	G1½	G2
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			
		With return flow function			
		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			
		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 → 3/2.31-0

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 → 3/2.31-0
measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 0.5$ bar

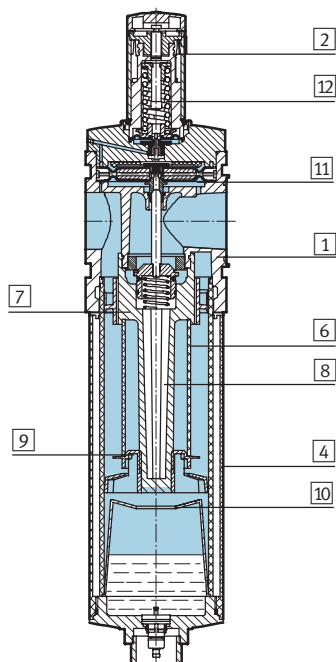
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical actuated E...
Input pressure [bar]	0.8 ... 20	2 ... 12	0.8 ... 16
Operating medium	Compressed air, air quality class 5.7.- to DIN ISO 8573-1		
Ambient temperature [°C]	-10 ... +60	+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]	
With metal bowl	7,000
With metal bowl and fully automatic, electrically actuated condensate drain	7,700

Materials

Sectional view



Filter regulator		
1	Body	Die-cast aluminium
2	Regulating knob	Polyamide
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



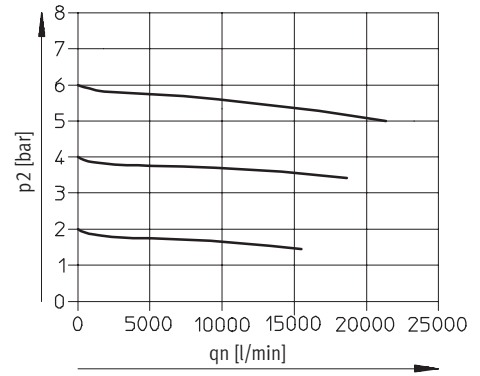
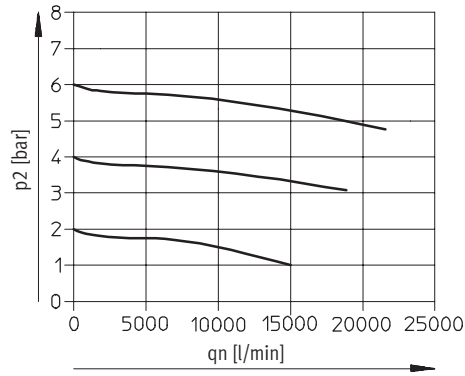
Standard flow rate q_n as a function of output pressure p_2

Grade of filtration 40 μm

With connecting plate MS12-AGF
Pneumatic connection G1

With connecting plate MS12-AGG
Pneumatic connection G1 $\frac{1}{4}$

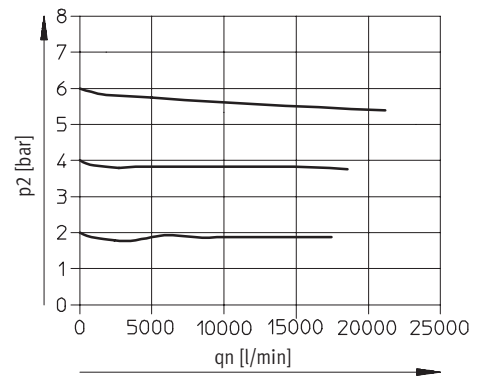
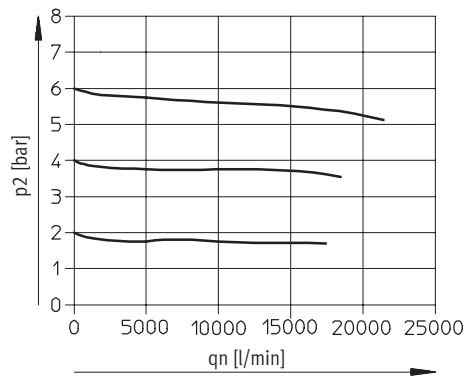
Primary pressure $p_1 = 10$ bar



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

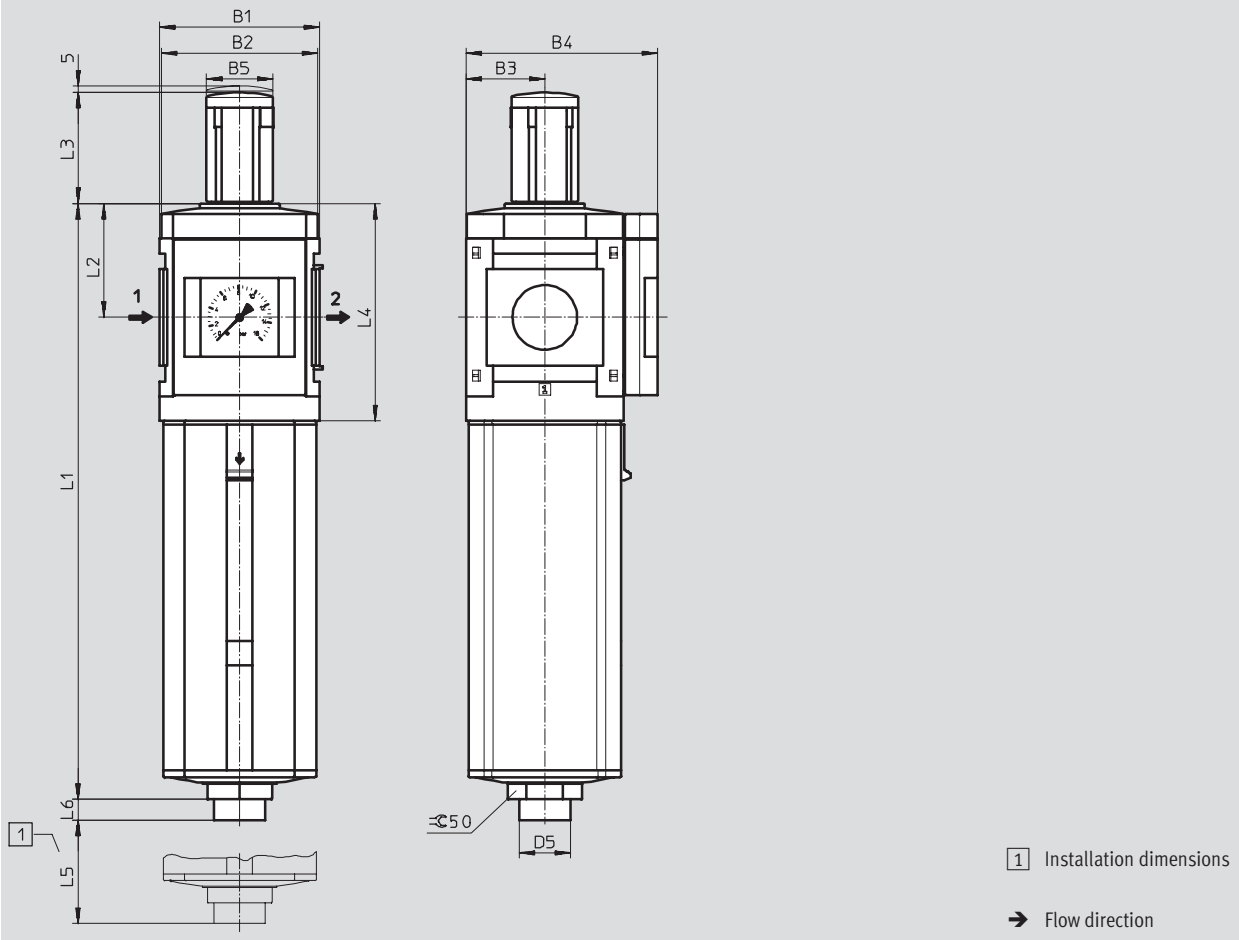
Technical data



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 Ø	L1	L2	L3	L4	L5	L6
MS12-LFR	124	122	61	148	51	40	460	88	86	168	250	16

MS12 series service units
 Filter regulators

2.22

Filter regulators MS12-LFR, MS series

Technical data



MS12 series service units
Filter regulators

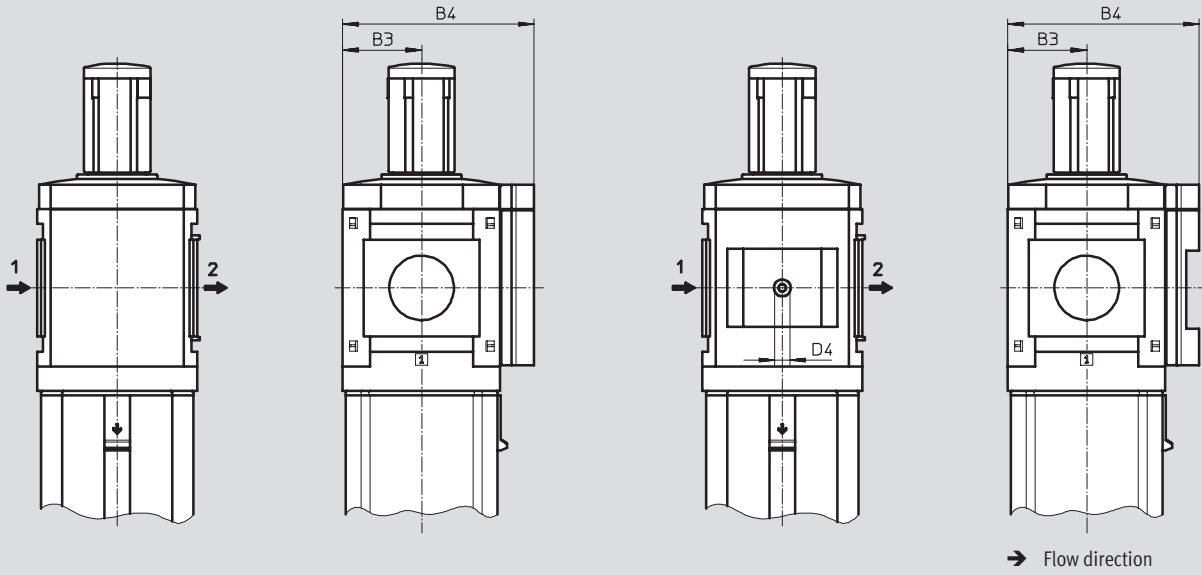
2.22

Dimensions – Pressure gauge alternatives

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

Cover plate VS

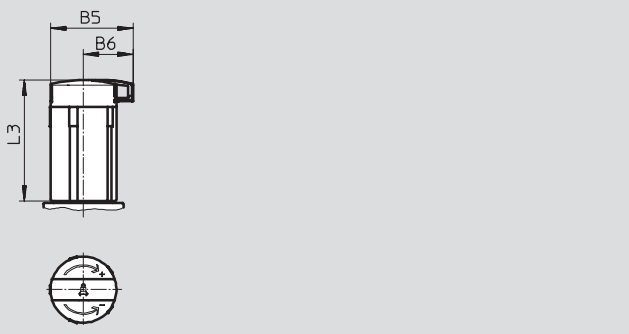
Adapter A4 for EN pressure gauge 1/4, without pressure gauge



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

Dimensions – Rotary knob

Long, lockable LD-AS



Type	B5	B6	L3
MS12-LFR-...-LD-AS	64.4	39	95.5

Filter regulators MS12-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

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 → 3/2.31-0

Ordering data – Wearing parts kits

Size	Part No.	Type
MS12	673 586	MS12-LR/LFR

MS12 series service units
Filter regulators

2.22

Filter regulators MS12-LFR, MS series

Ordering data – Modular products



MS12 series service units
Filter regulators

2.22

M Mandatory data →

Module No.	Series	Size	Function	Connection size	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 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	
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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Filter regulators MS12-LFR, MS series

Ordering data – Modular products



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	WP	Z
- E1	-	-	- LD	- AS	- WP	- Z

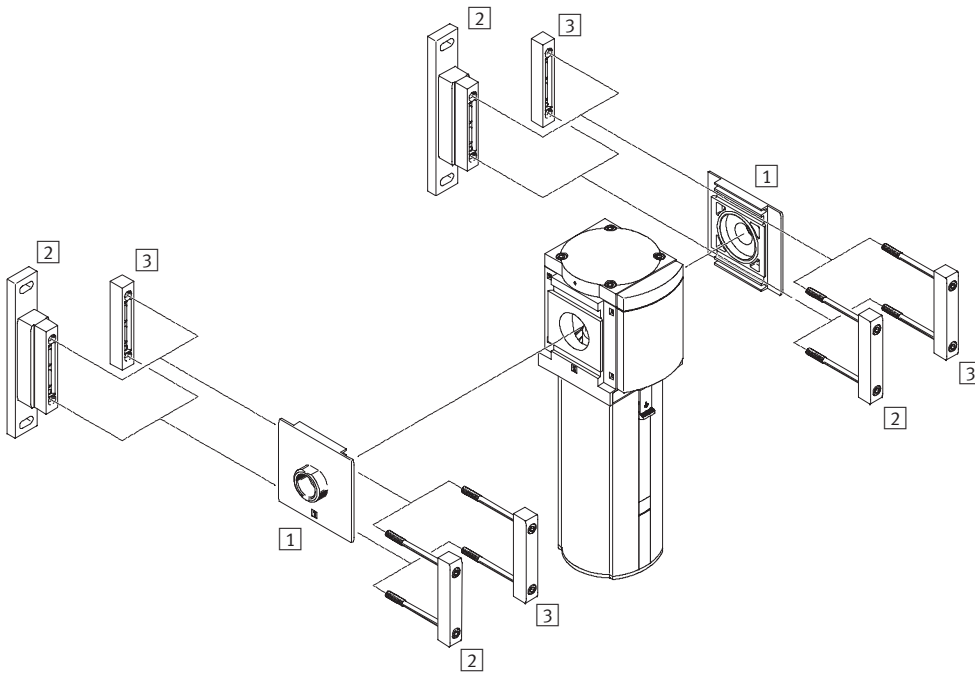
Ordering table						
Grid dimension	[mm]	124	Condi- tions	Code	Enter code	
M	Condensate drain	Manual		-M		
		Fully automatic (P1 max. 12 bar)	1	-V		
		External fully automatic condensate drain, electrical, 24 V DC, M12		-E1		
		External fully automatic condensate drain, electrical, 110 V AC, terminals		-E2		
		External fully automatic condensate drain, electrical, 230 V AC, terminals		-E3		
		External fully automatic condensate drain, electrical, 24 V DC, terminals		-E4		
O	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		-LD		-LD
	Security	Lockable rotary knob		-AS		
	Type of mounting	Mounting bracket	3	-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 WP Only with connecting plate AGF, AGG, AGH or AGI.

Transfer order code - [] - [] - [] - LD - [] - [] - []

Filters MS12-LF/LFM/LFX, MS series

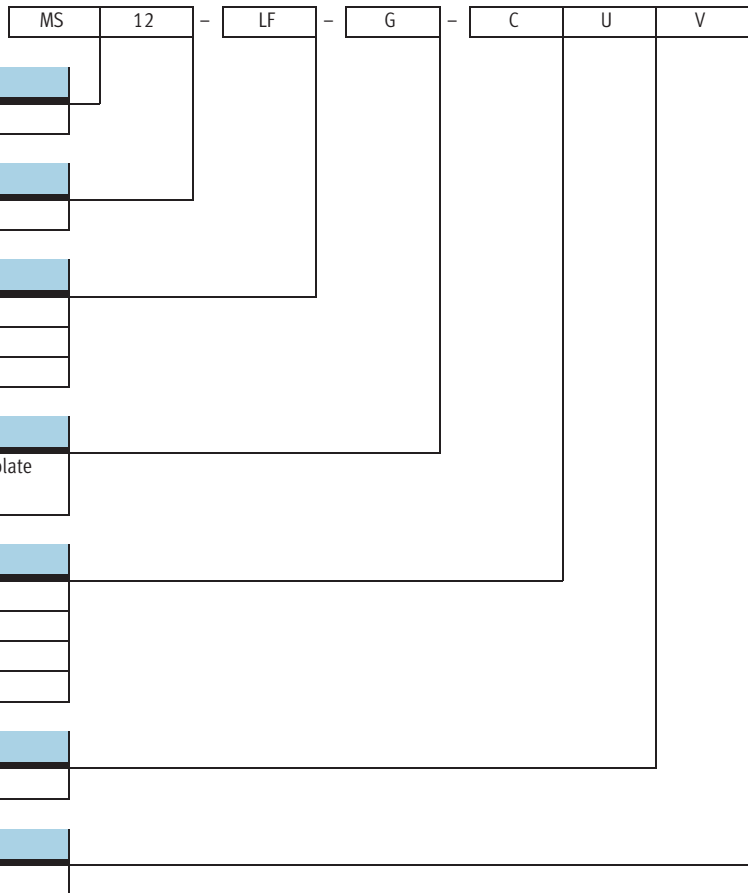
Peripherals overview



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-0
2	Mounting bracket MS12-WP	3/2.31-7
3	Module connector MS12-MV	3/2.31-7

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

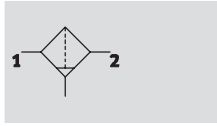
- Connecting plates
- Condensate drain (LF/LFM only)
- Filter change sensor (for LFM only)
- Type of mounting
- Alternative flow direction

Filters MS12-LF, MS series

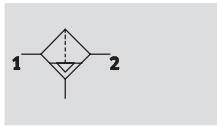
Technical data



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 → 3/2.31-8

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 → 3/2.31-0

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 → 3/2.31-0
Measured at p₁ = 6 bar and Δp = 0.5 bar

Filters MS12-LF, MS series

Technical data



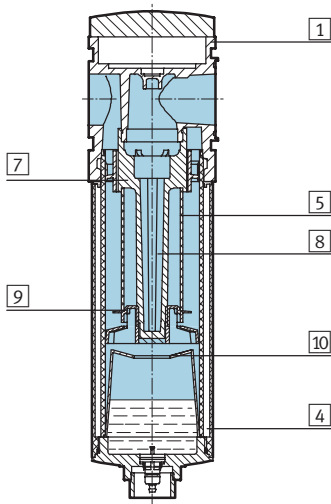
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical actuated E...
Input pressure [bar]	0.8 ... 20	2 ... 12	0.8 ... 16
Operating medium	Compressed air, air quality class 5.7.- to DIN ISO 8573-1		
Ambient temperature [°C]	-10 ... +60	+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]	
With metal bowl	6,500
With metal bowl and fully automatic, electrically actuated condensate drain	7,200

Materials

Sectional view



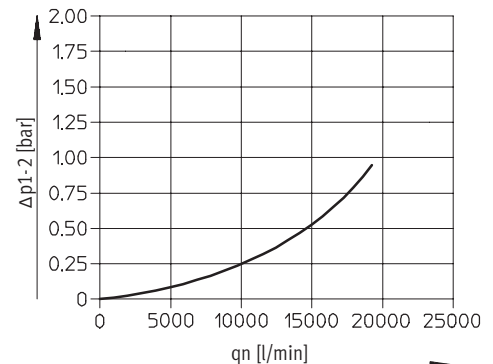
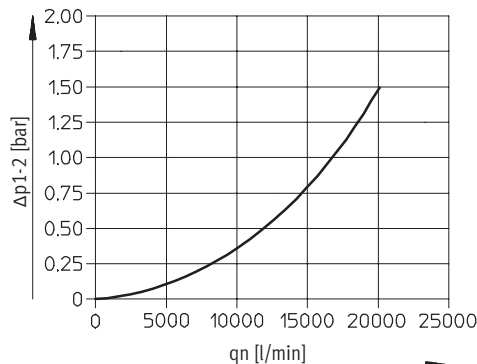
Filter		
1	Body	Die-cast aluminium
4	Metal bowl	Wrought aluminium alloy
5	Filter element	Sintered bronze
7	Spin disc	Polyacetate
8	Filter holder	Polyacetate
9	Separating plate	Polyacetate
10	Stabilising disc	Polyacetate
-	Seals	Nitrile rubber

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

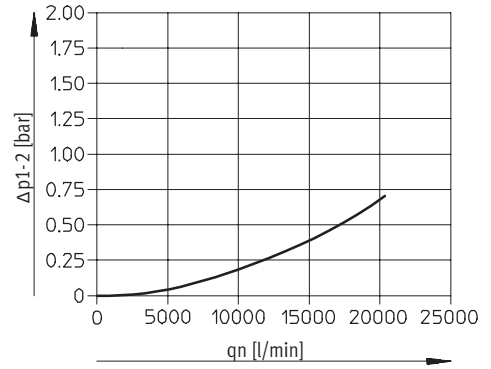
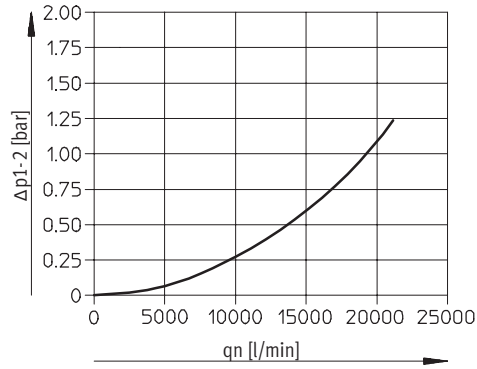


Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

Grade of filtration 40 μm

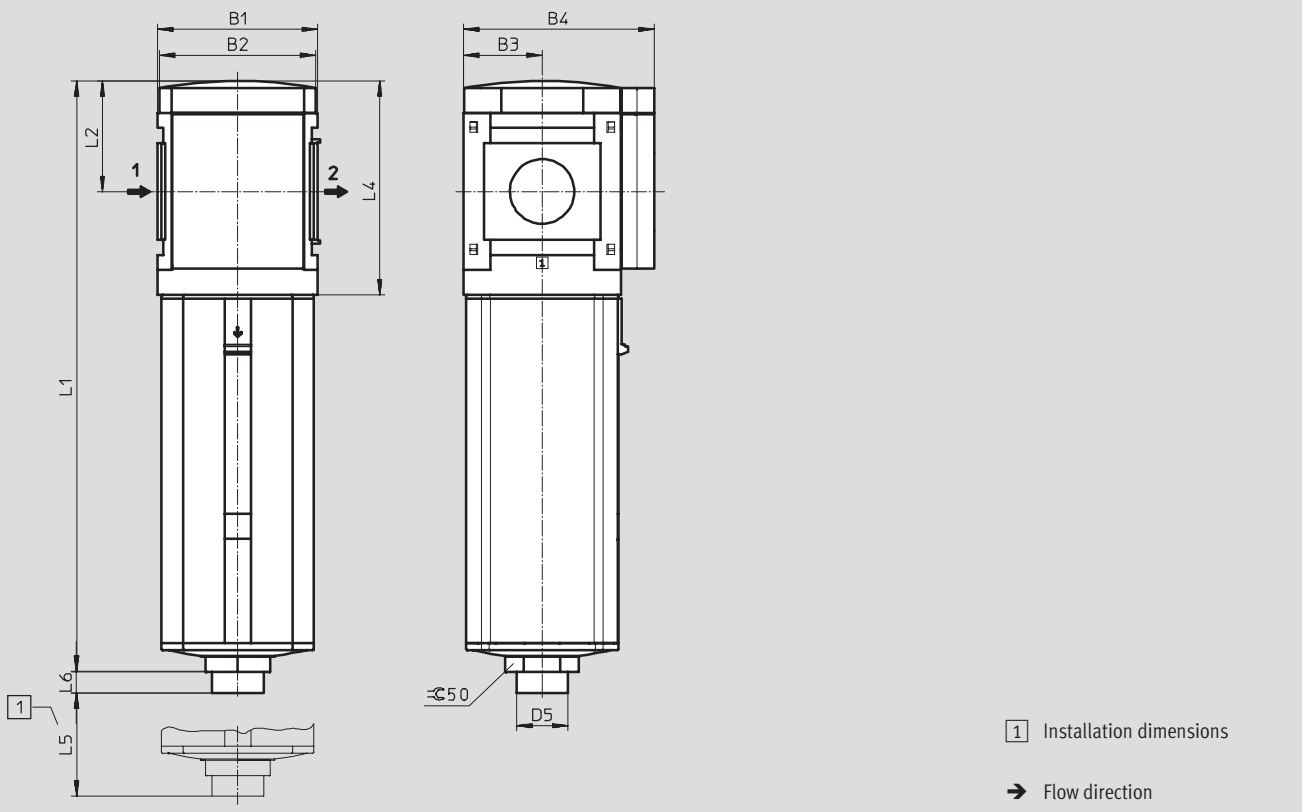
With connecting plate MS12-AGF
Pneumatic connection G1

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

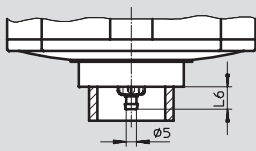
Technical data



Dimensions – Condensate drain

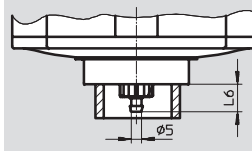
Download CAD data → www.festo.com/en/engineering

Manual rotary M



Barbed fitting for plastic tubing
PCN-4

Fully automatic V



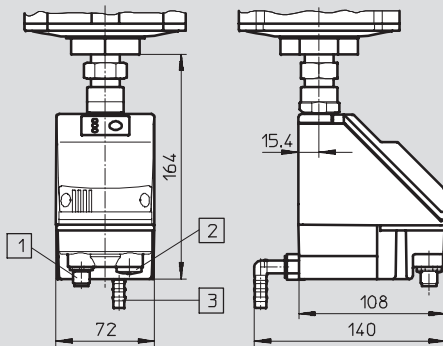
Barbed fitting for plastic tubing
PCN-4

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 → 3/2.31-0

Filters MS12-LF, MS series

Ordering data – Modular products



M Mandatory data							O 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.

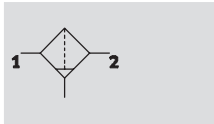
Transfer order code

535 023	MS	12	- LF	-	-	- U	-	-	-
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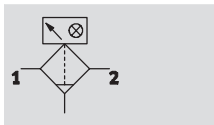
Fine and micro filters MS12-LFM, MS series

Technical data

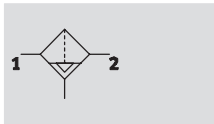
Function
Condensate drain
manual rotary
without differential pressure indicator



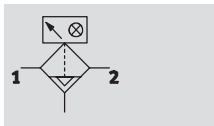
with differential pressure indicator






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 → 3/2.31-8
- 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 → 3/2.31-0

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 → 3/2.31-0
Measured at $p_1 = 6 \text{ bar}$ and $\Delta p = 70 \text{ mbar}$.

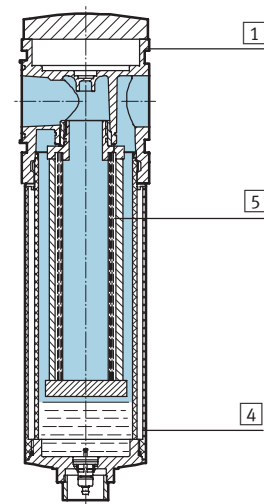
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical actuated E...
Input pressure [bar]	0.8 ... 20	2 ... 12	0.8 ... 16
Operating medium micro filter LFM-A	Compressed air, filtered, unlubricated, grade of filtration 1 µm		
Operating medium 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]	
With metal bowl	7,000
With metal bowl and fully automatic, electrically actuated condensate drain	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

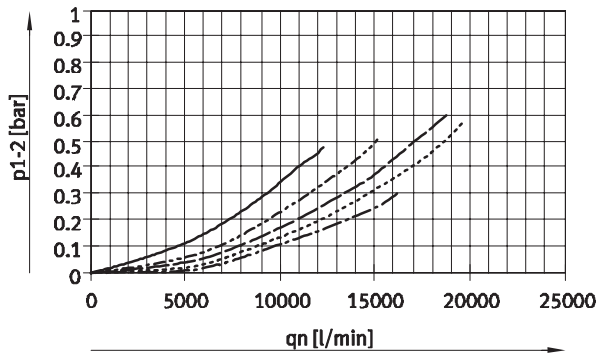
Technical data



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

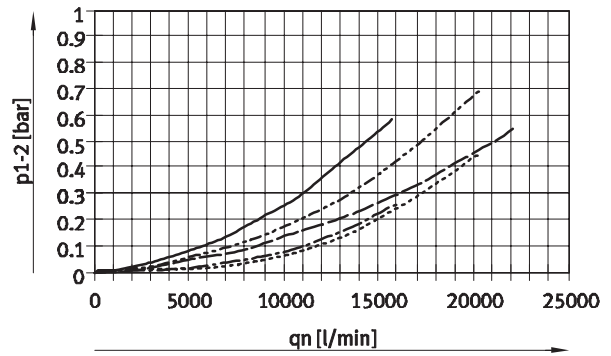
Grade of filtration 0.01 μm

With connecting plate MS12-AGF, Pneumatic connection G1



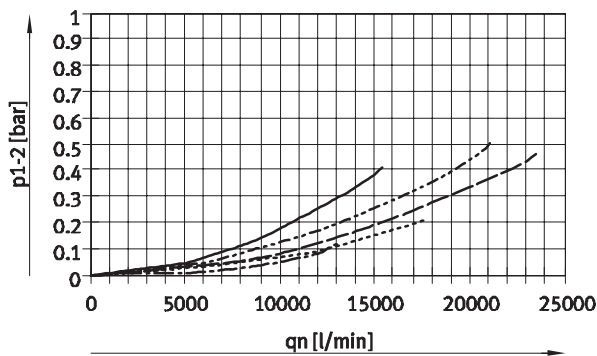
Grade of filtration 0.01 μm

With connecting plate MS12-AGG, Pneumatic connection G1¼



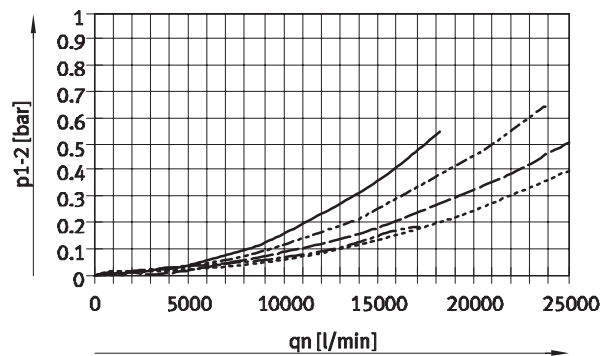
Grade of filtration 0.01 μm

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

MS12 series service units
Filters

2.23

Fine and micro filters MS12-LFM, MS series

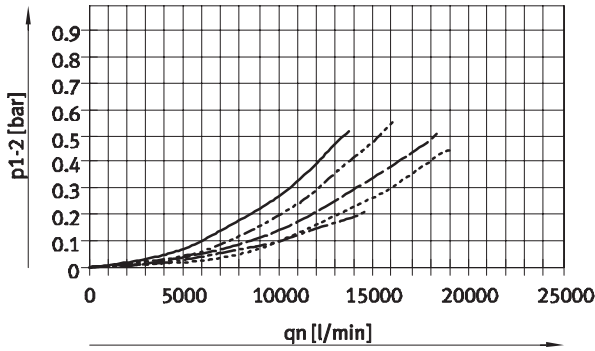
Technical data



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

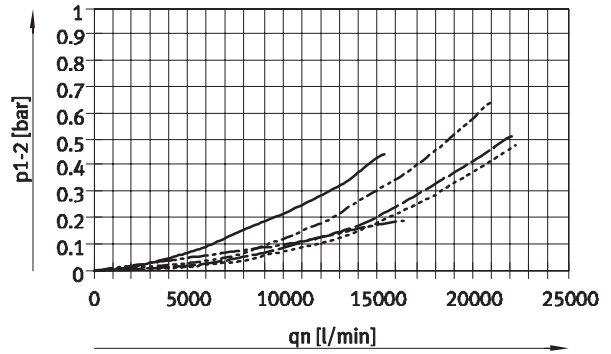
Grade of filtration $1\ \mu\text{m}$

With connecting plate MS12-AGF, Pneumatic connection G1



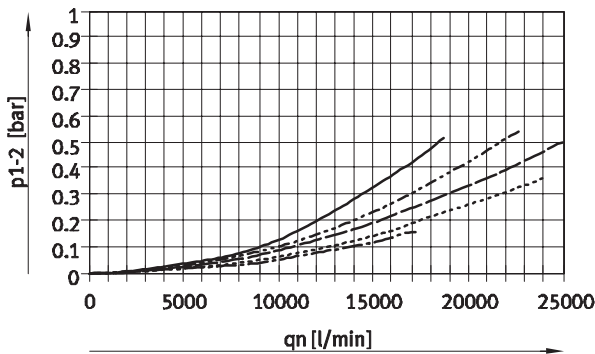
Grade of filtration $1\ \mu\text{m}$

With connecting plate MS12-AGG, Pneumatic connection $G1\frac{1}{4}$



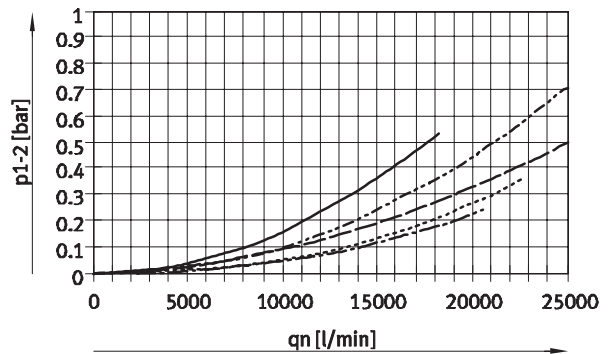
Grade of filtration $1\ \mu\text{m}$

With connecting plate MS12-AGH, Pneumatic connection $G1\frac{1}{2}$



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

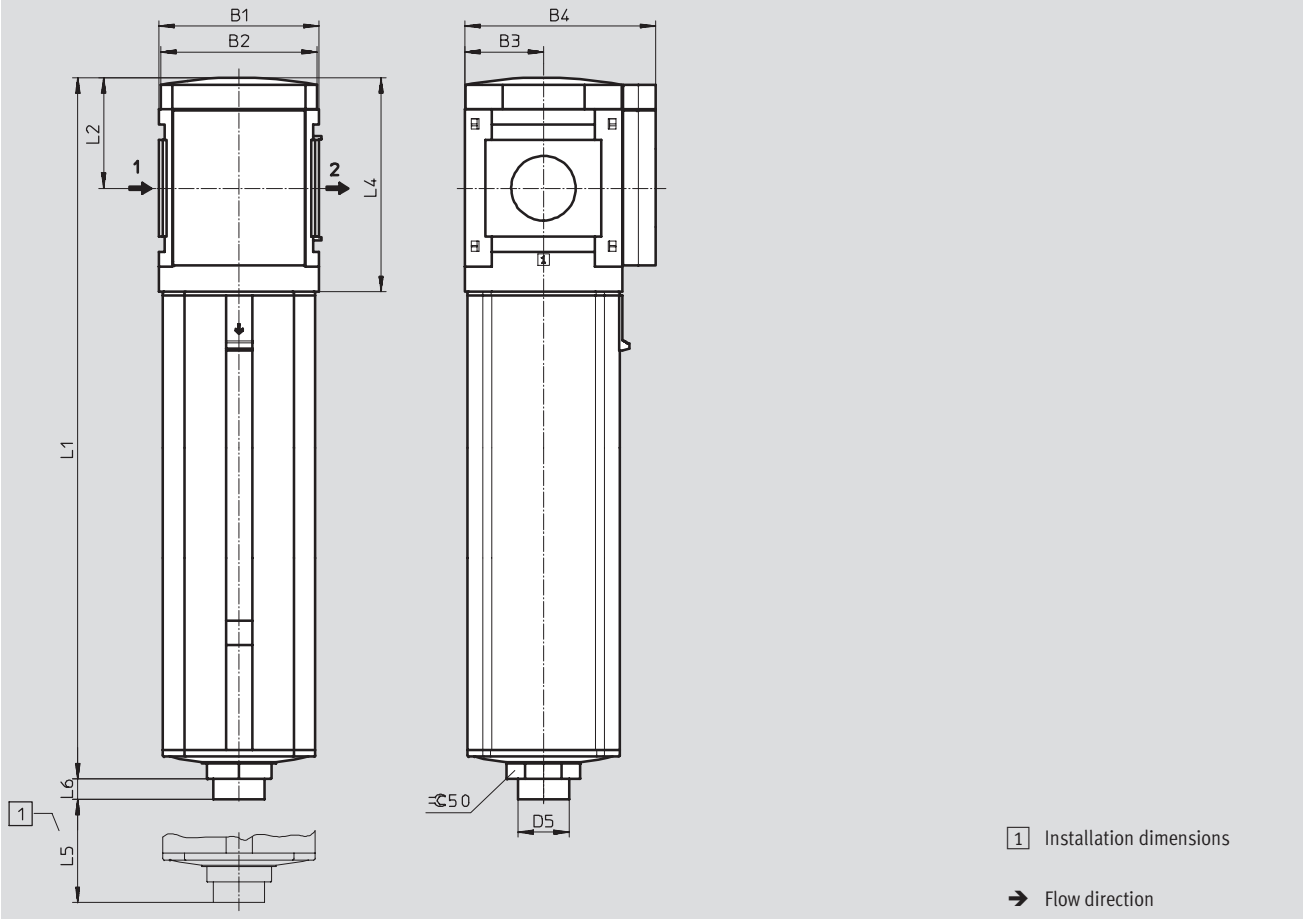
Fine and micro filters MS12-LFM, MS series

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

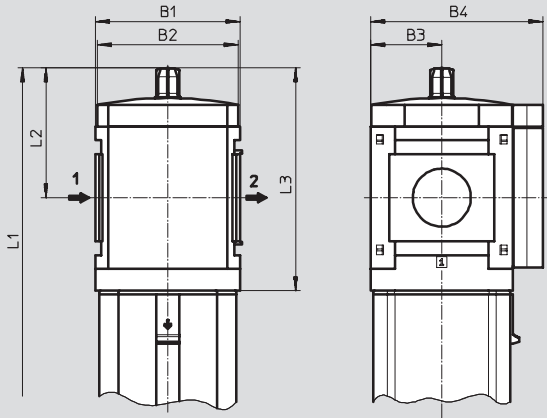
Fine and micro filters MS12-LFM, MS series

Technical data



Dimensions – Differential pressure indicator

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



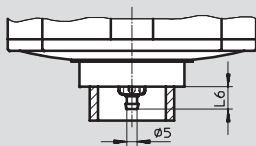
→ Flow direction

Type	B1	B2	B3	B4	L1	L2	L3
MS12-LFM-...-DA	124	122	61	148	569	112	192

Dimensions – Condensate drain

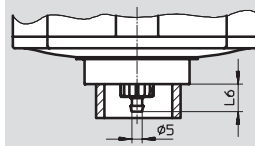
Download CAD data → www.festo.com/en/engineering

Manual rotary M



Barbed fitting for plastic tubing
PCN-4

Fully automatic V



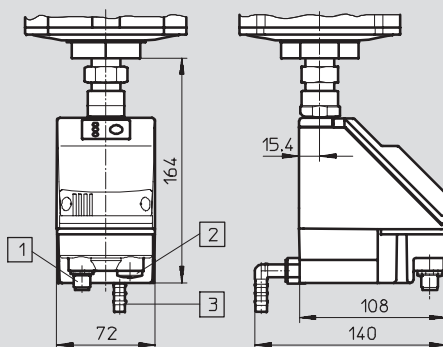
Barbed fitting for plastic tubing
PCN-4

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 → 3/2.31-0

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
M	Module No.	535 042	Code
	Series	Standard	MS
	Size	12	12
	Function	Fine and micro filter	-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
	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
	Enter code		

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

Transfer order code

535 042	MS	12	-	LFM	-		-		-	U	-		-		-	
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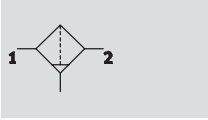
MS12 series service units
Filters
2.23

Active carbon filters MS12-LFX, MS series

Technical data



Function
Condensate drain
manual rotary



- - 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 → 3/2.31-8

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 → 3/2.31-0

Standard nominal flow rate q _N ¹⁾ [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 → 3/2.31-0
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.

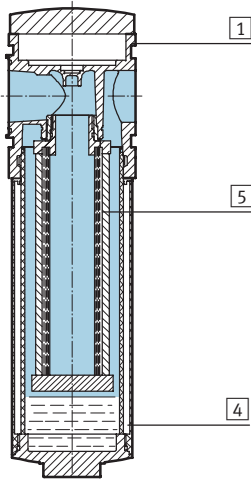
Weights [g]	
With metal bowl	7,000

Active carbon filters MS12-LFX, MS series

Technical data

Materials

Sectional view

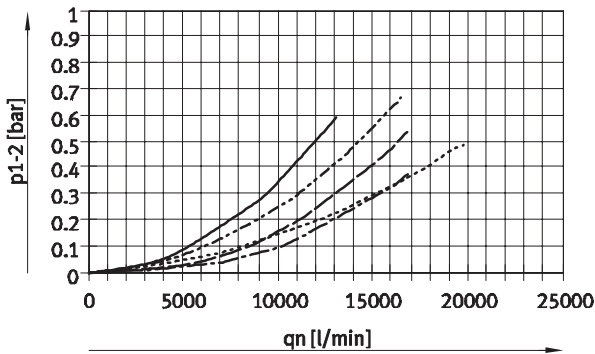


Active carbon filter

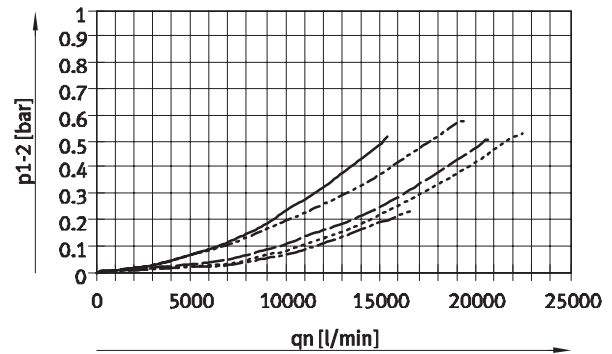
1	Body	Die-cast aluminium
4	Metal bowl	Wrought aluminium alloy
5	Filter	Active carbon
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE

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

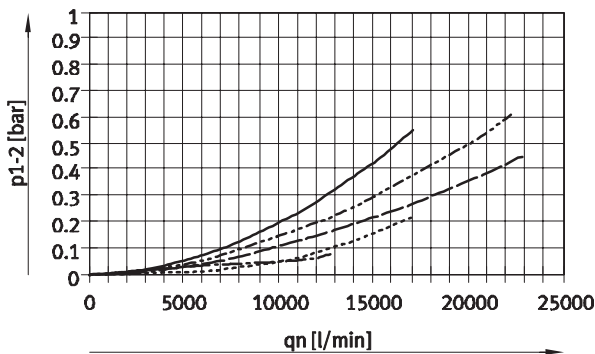
With connecting plate MS12-AGF, Pneumatic connection G1



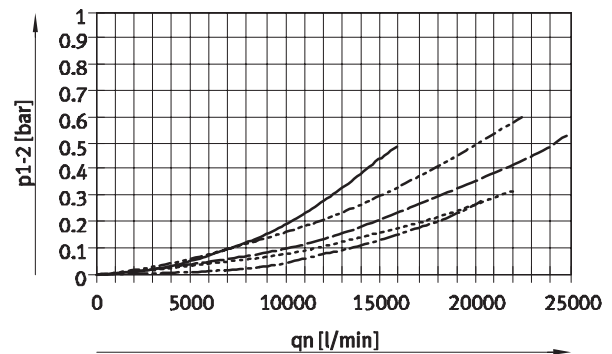
With connecting plate MS12-AGG, Pneumatic connection G1¼



With connecting plate MS12-AGH, Pneumatic connection G1½



With connecting plate MS12-AGI, Pneumatic connection G2



- p_1 : 4 bar
- - - p_1 : 6 bar
- · - p_1 : 8 bar
- · · p_1 : 10 bar
- - - p_1 : 12 bar

Active carbon filters MS12-LFX, MS series

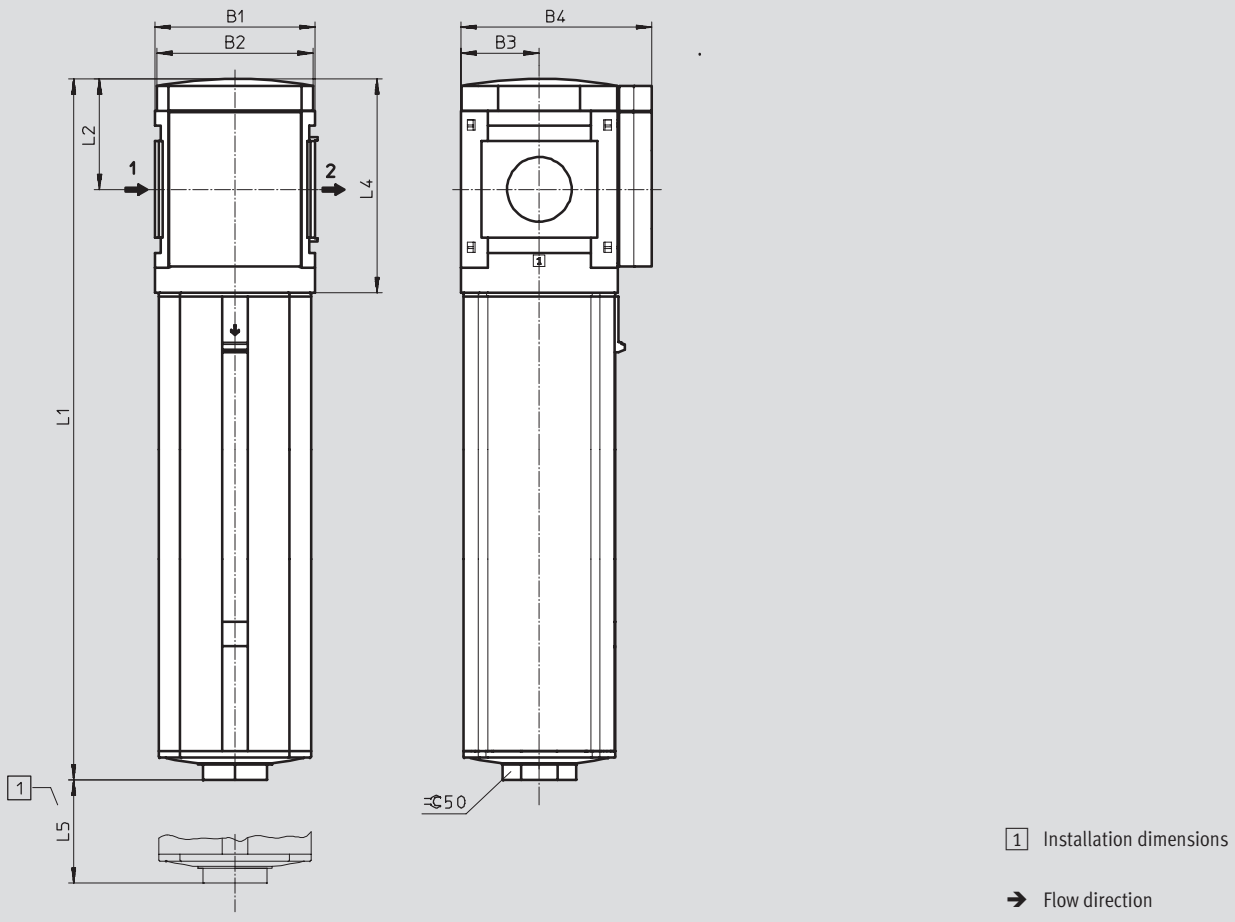
Technical data



Dimensions – Standard

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

Manual rotary condensate drain



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 → 3/2.31-0

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				Condi- tions	Code	Enter code
Grid dimension	[mm]	124				
M Module No.	535 043					
Series	Standard			MS	MS	
Size	12			12	12	
Function	Active carbon filter			-LFX	-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	-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

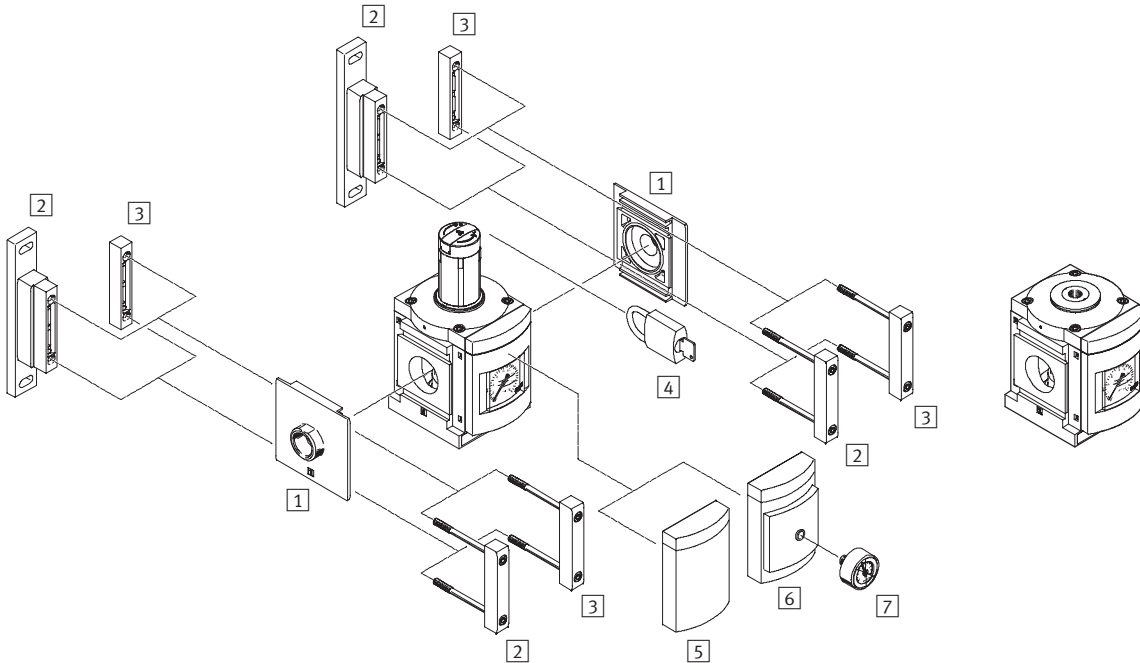


Pressure regulator LR

Standard

Variant PO

pneumatically actuated

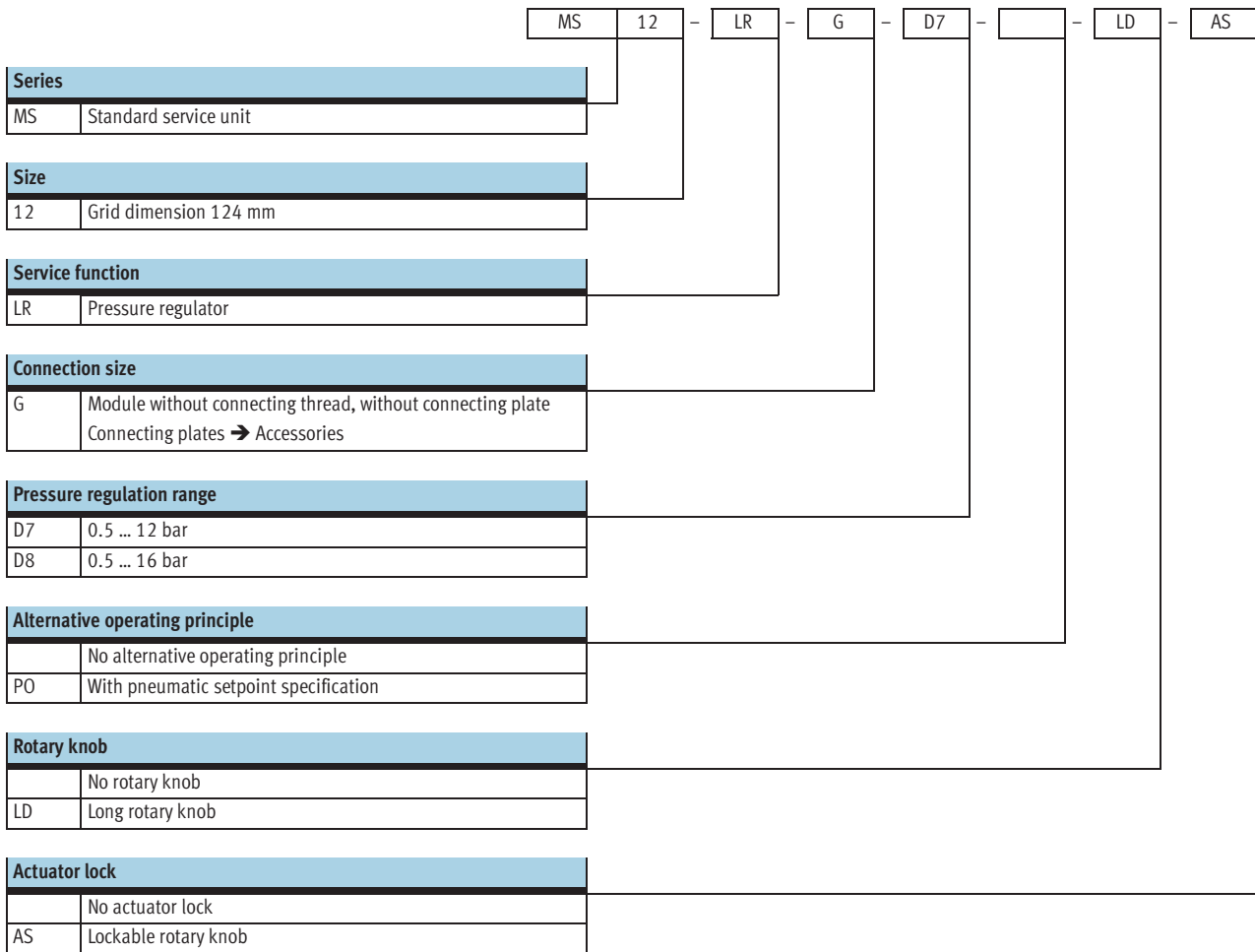


Mounting attachments and accessories

		→ Page
1	Connecting plate MS12-AG...	3/2.31-0
2	Mounting bracket MS12-WP	3/2.31-7
3	Module connector MS12-MV	3/2.31-7
4	Padlock (except variant PO) LRVS-D	3/2.31-12
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	3/2.31-11

Pressure regulators MS12-LR, MS series

Type codes



Further variants can be ordered using the modular system
 Pressure regulators LR → 3/2.24-6

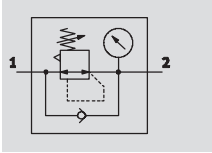
- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Rotary knob
- Actuator lock
- Type of mounting
- Alternative flow direction

Pressure regulators MS12-LR, MS series

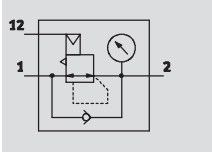
Technical data



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
- Return flow option for exhausting from output 2 to output 1

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 With return flow function Output pressure constant			
Type of mounting		Via accessories In-line installation			
Assembly position		Any			
Actuator lock		Rotary knob with detent 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			
Product weight	[g]	4,000			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → 3/2.31-0

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 → 3/2.31-0
Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 0.5$ bar

Pressure regulators MS12-LR, MS series

Technical data

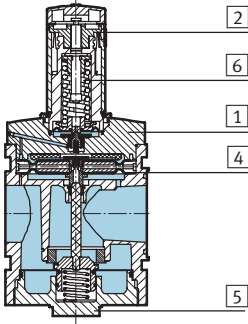


Operating and environmental conditions		
Input pressure	[bar]	0.8 ... 21
Operating medium		Compressed air, air quality class 5.7.- to DIN ISO 8573-1
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Storage temperature	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

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.

Materials

Sectional view



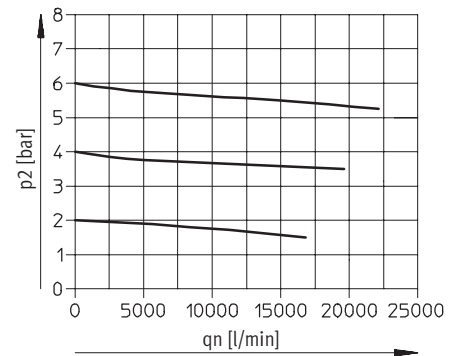
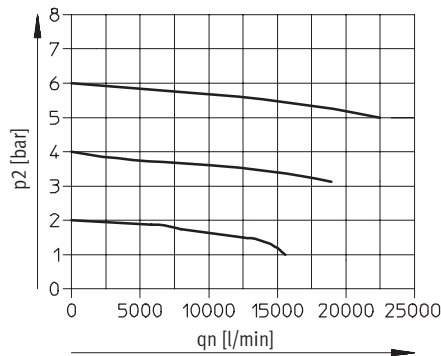
Pressure regulator		
1	Body	Die-cast aluminium
2	Regulating knob	Polyamide/polyacetate
4	Diaphragm	Nitrile rubber
5	Bottom cap	Wrought aluminium alloy
6	Springs	Steel
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE only with cover plate VS

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

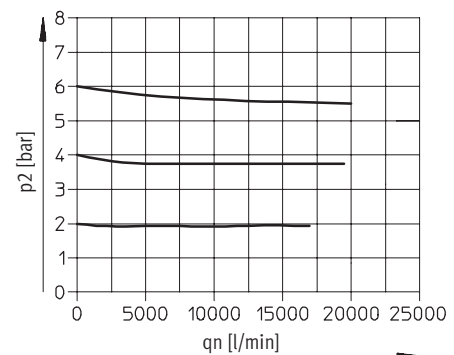
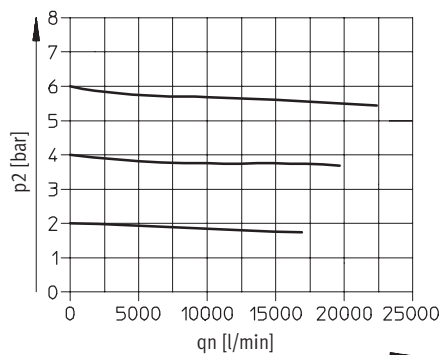
Primary pressure $p_1 = 10$ bar



With connecting plate MS12-AGH Pneumatic connection G1½

With connecting plate MS12-AGI Pneumatic connection G2

Primary pressure $p_1 = 10$ bar



Pressure regulators MS12-LR, MS series

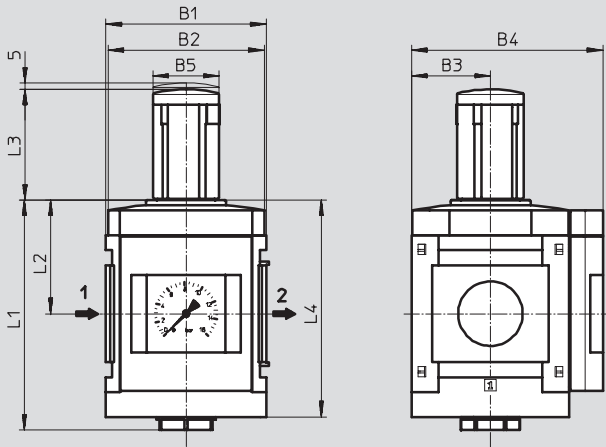
Technical data



Dimensions – Standard

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

With pressure gauge, display unit [bar], long rotary knob



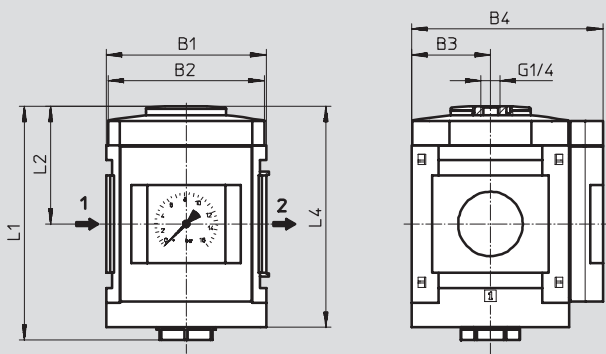
→ Flow direction

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

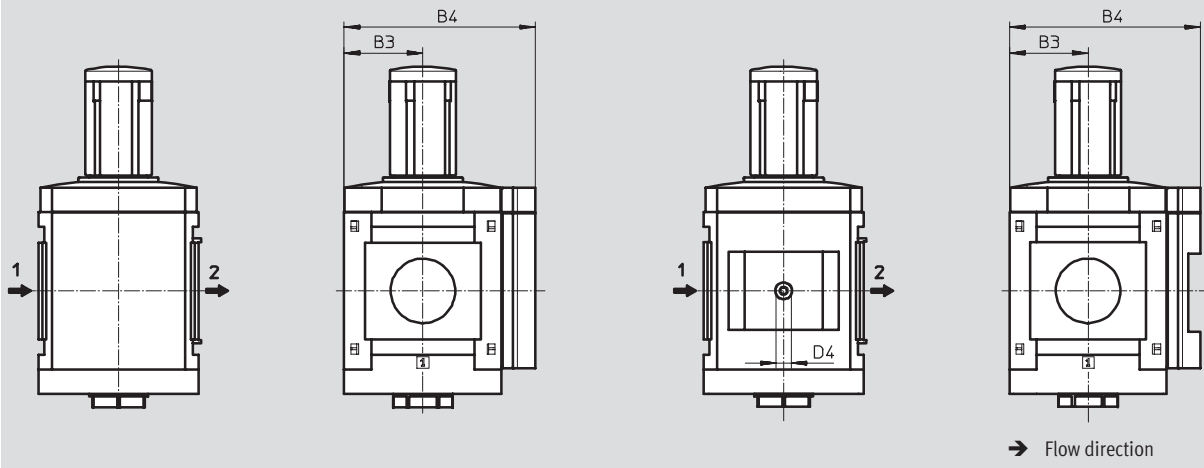


Dimensions – Pressure gauge alternatives

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

Cover plate VS

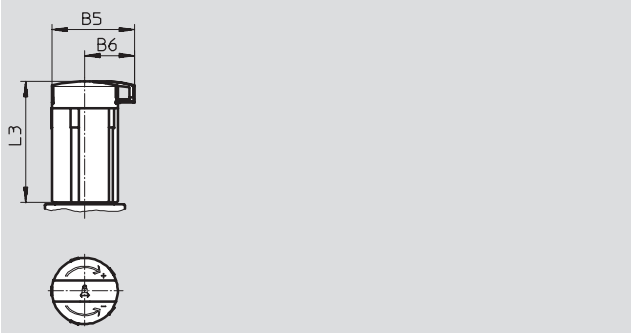
Adapter A4 for EN pressure gauge 1/4, without pressure gauge



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

Dimensions – Rotary knob

Long, lockable LD-AS



Type	B5	B6	L3
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 → 3/2.31-0

Ordering data – Wearing parts kits

Size	Part No.	Type
MS12	673 586	MS12-LR/LFR

MS12 series service units
Pressure regulators

2.24

Pressure regulators MS12-LR, MS series

Ordering data – Modular products



M Mandatory data →

Module No.	Series	Size	Function	Connection size	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 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	
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	-	LF	-		-	
---------	----	----	---	----	---	--	---	--

Pressure regulators MS12-LR, MS series

Ordering data – Modular products



0 Options

Pressure gauge alternatives	Alternative pressure gauge scale	Rotary knob	Security	Alternative operating principle	Type of mounting	Alternative flow direction
VS A4	PSI MPA	LD	AS	PO	WP	Z
- VS	-	- LD	- AS	- PO	-	- 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	Long rotary knob			2	-LD	
Security	Lockable rotary knob				-AS	
Alternative operating principle	Pneumatically actuated			3	-PO	
Type of mounting	Mounting bracket			4	-WP	
Alternative flow direction	Flow direction from right to left				-Z	

- 1 **PSI, MPA** Not with pressure gauge alternatives VS, A4
- 2 **LD** Must be selected if alternative operating principle PO has not been selected

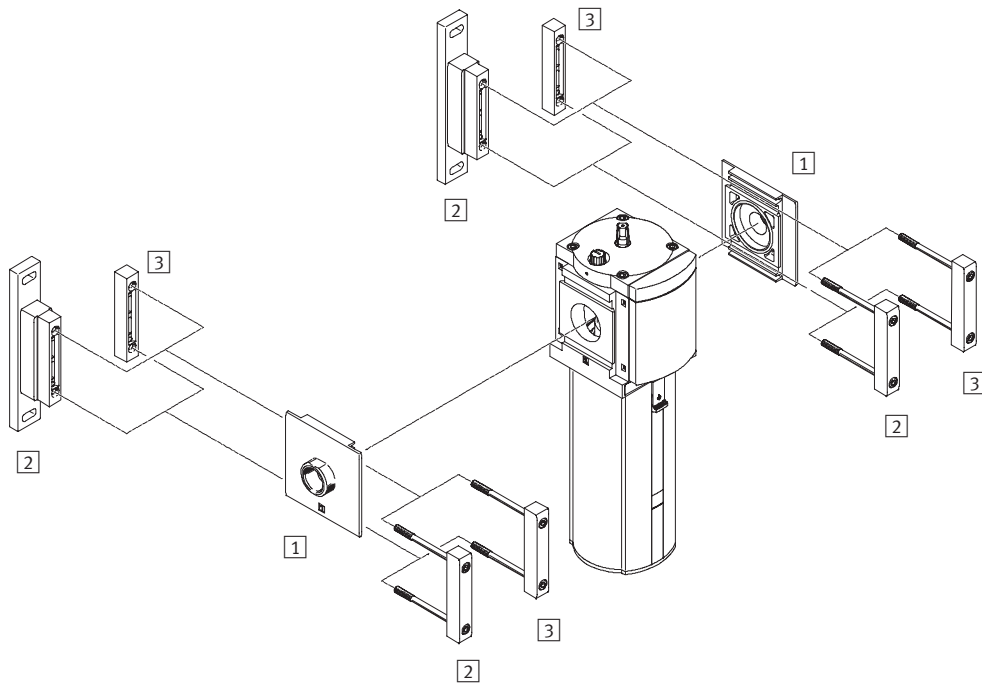
- 3 **PO** Not with rotary knob LD.
Not with security AS
- 4 **WP** Only with connecting plate AGF, AGG, AGH or AGI

Transfer order code

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

Lubricators MS12-LOE, MS series

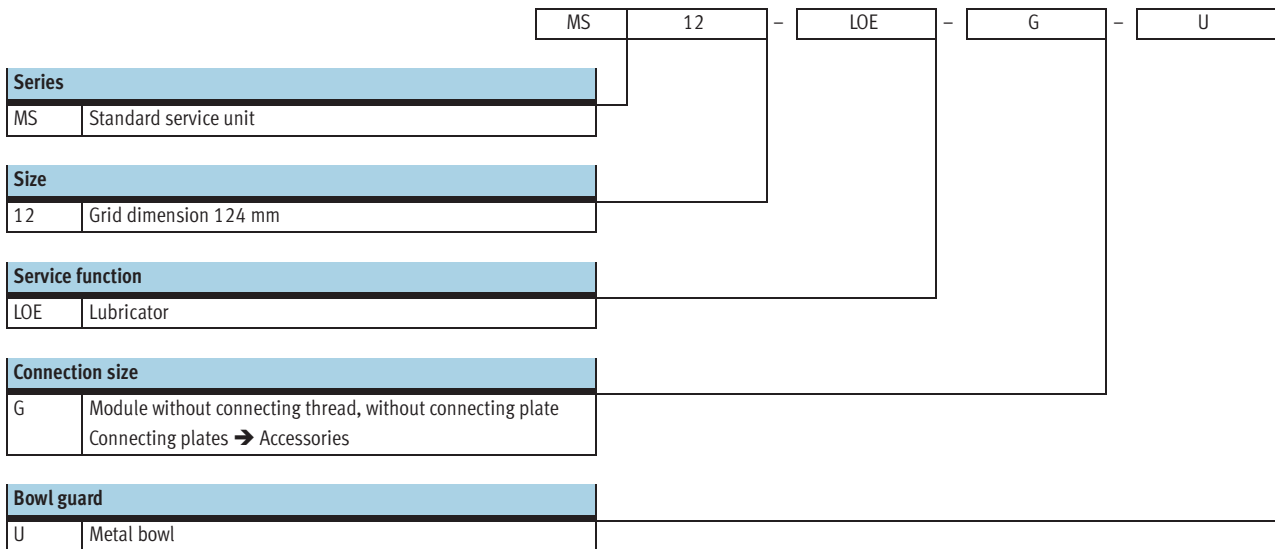
Peripherals overview



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-0
2	Mounting bracket MS12-WP	3/2.31-7
3	Module connector MS12-MV	3/2.31-7

Lubricators MS12-LOE, MS series

Type codes



Further variants can be ordered using the modular system

Lubricators LOE

→ 3/2.25-6

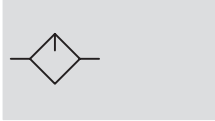
- Connecting plates
- Type of mounting
- Alternative flow direction

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 → 3/2.31-12
- 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 → 3/2.31-0

Standard nominal flow rate qnN 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 → 3/2.31-0
Measured at p₁ = 6 bar and Δp = 0.5 bar

Lubricators MS12-LOE, MS series

Technical data



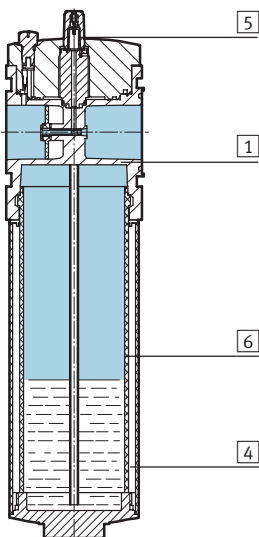
Operating and environmental conditions		
Input pressure	[bar]	1 ... 16
Operating medium		Compressed air, air quality class 5.7.- to DIN ISO 8573-1
Ambient temperature	[°C]	0 ... +60
Temperature of medium	[°C]	0 ... +60
Storage temperature	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

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]	
With metal bowl	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

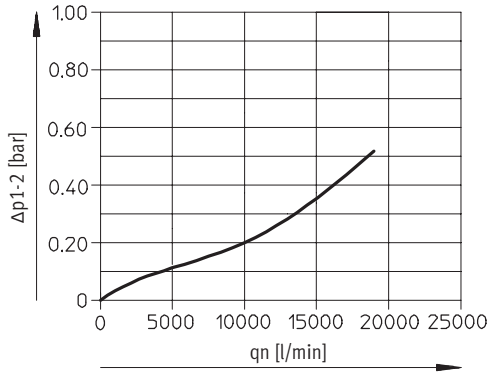
Technical data



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

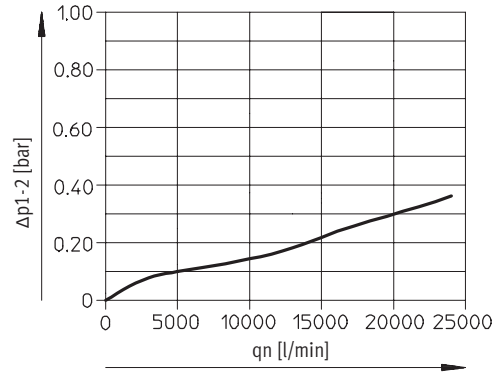
With connecting plate MS12-AGF

Pneumatic connection G1



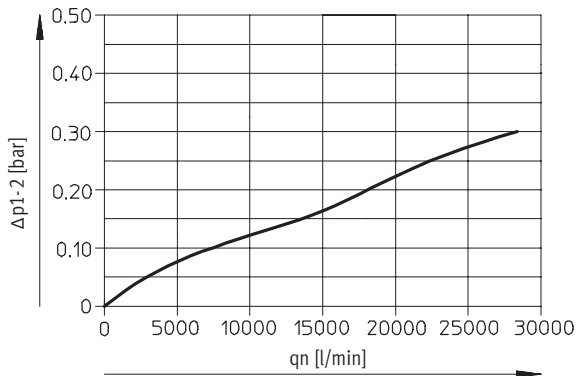
With connecting plate MS12-AGG

Pneumatic connection G1¼



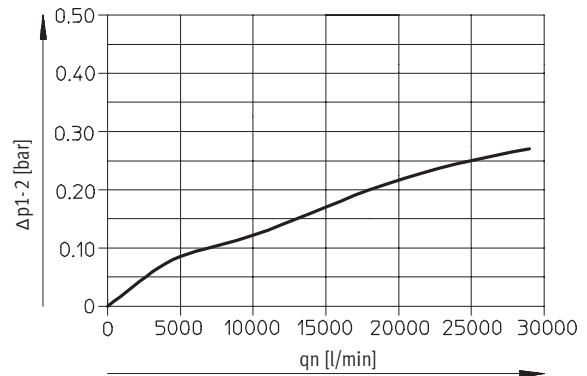
With connecting plate MS12-AGH

Pneumatic connection G1½



With connecting plate MS12-AGI

Pneumatic connection G2



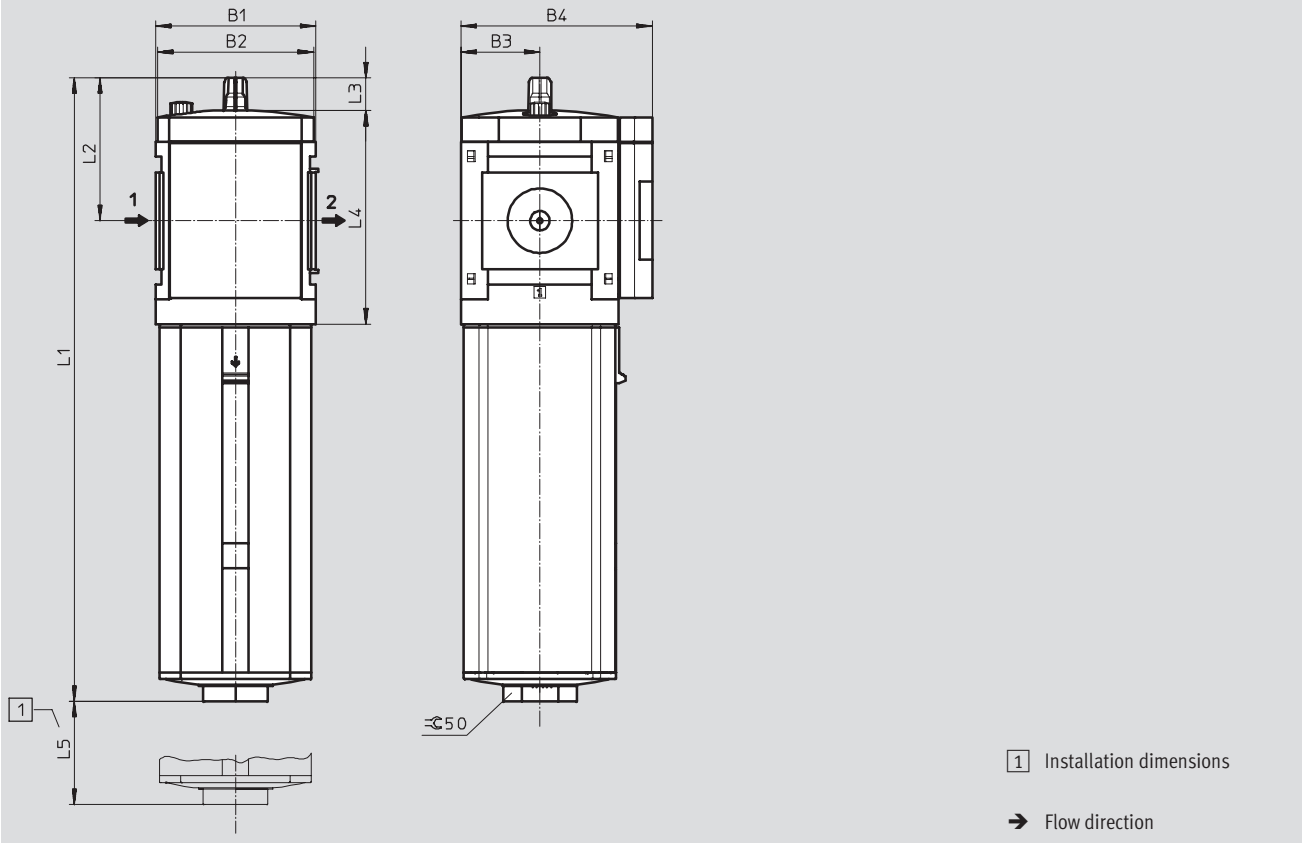
Lubricators MS12-LOE, MS series

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 → 3/2.31-0

Ordering data – Wearing parts kits		
Size	Part No.	Type
MS12	673 746	MS12-LOE

Lubricators MS12-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
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	Enter code
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.

MS12 series service units
Lubricators

2.25

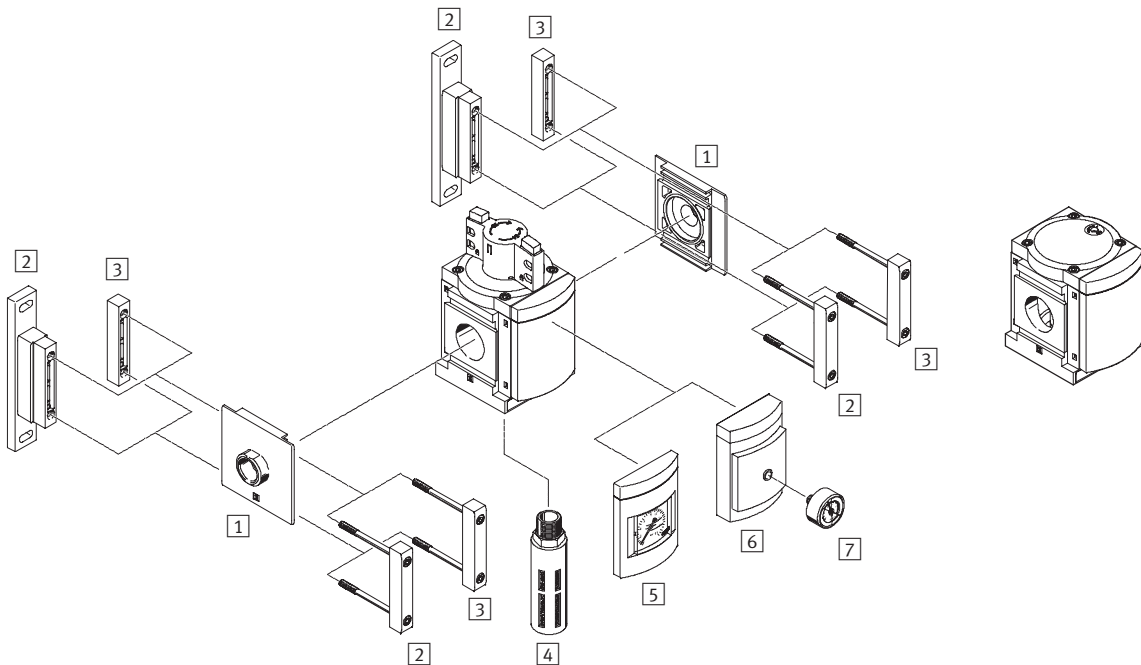
Transfer order code

535 041	MS	12	- LOE	-	U	-		-	
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On-off/soft-start valves MS12-EM/EE/DL/DE, MS series

Peripherals overview

On-off valve EM manually actuated	Soft-start valve DL pneumatically actuated
---	--



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-0
2	Mounting bracket MS12-WP	3/2.31-7
3	Module connector MS12-MV	3/2.31-7
4	Silencer (with EM) U	3/2.31-12
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	3/2.31-11

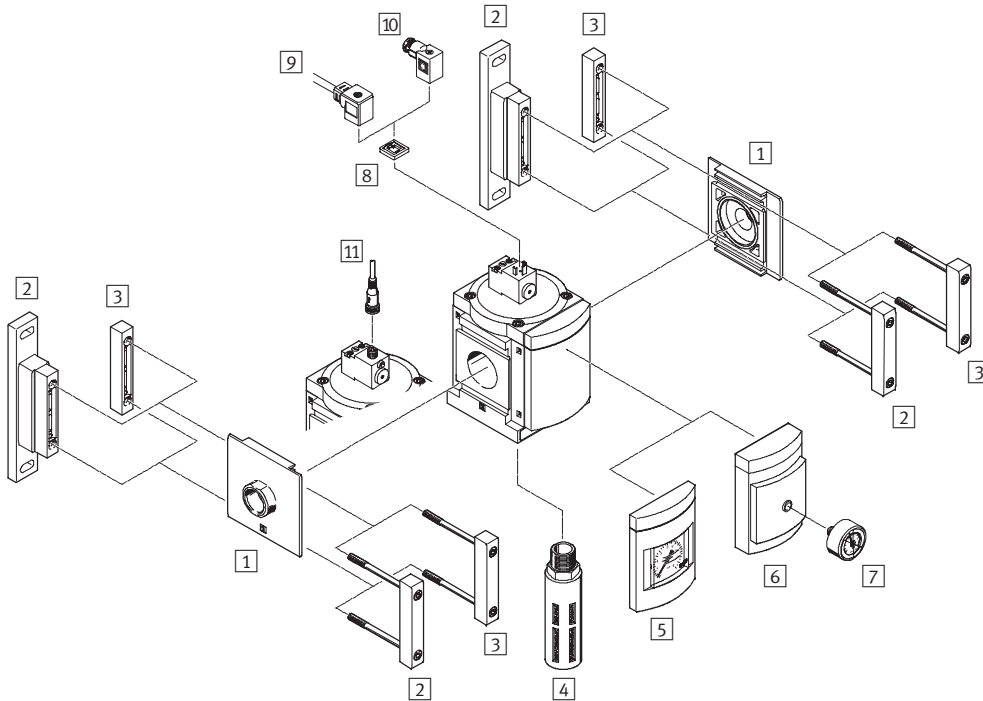
MS12 series service units
Start-up and exhaust valves
2.26

On-off/soft-start valves MS12-EM/EE/DL/DE, MS series

Peripherals overview



On-off/soft-start valve EE/DE solenoid actuated

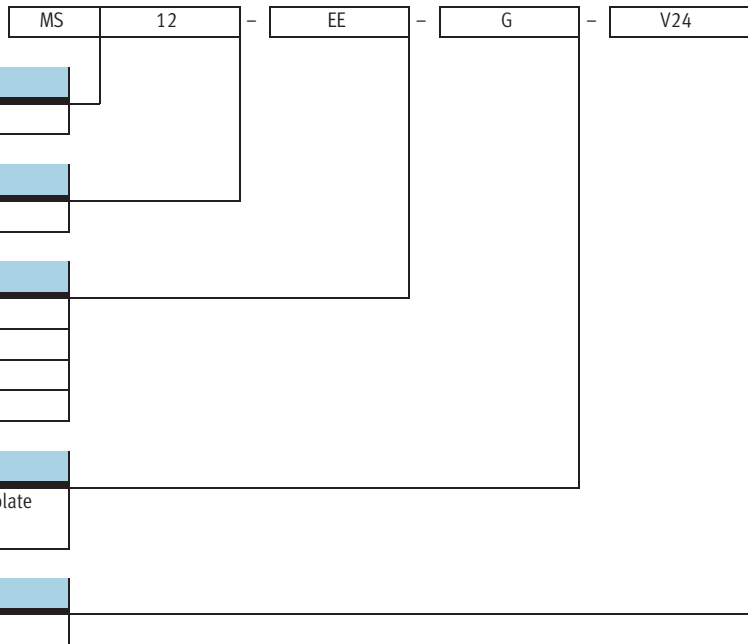


Mounting attachments and accessories

	→ Page
1 Connecting plate MS12-AG...	3/2.31-0
2 Mounting bracket MS12-WP	3/2.31-7
3 Module connector MS12-MV	3/2.31-7
4 Silencer (with EE) U	3/2.31-12
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	3/2.31-11
8 Illuminating seal MC-LD	3/2.31-10
9 Plug socket with cable KMC	3/2.31-10
10 Plug socket MSSD-C	3/2.31-10
11 Plug socket with cable SIM-M12-4...	3/2.31-11

On-off/soft-start valves MS12-EM/EE/DL/DE, MS series

Type codes



Series

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

Size

12	Grid dimension 124 mm
----	-----------------------

Service function

EM	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

G	Module without connecting thread, without connecting plate Connecting plates → Accessories
---	---

Supply voltage (for EE and DE only)

V24	Supply voltage 24 V DC
-----	------------------------

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

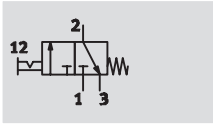
- Connecting plates
- Supply voltage (for EE and DE only)
- Silencer (for EM and EE only)
- Pressure gauge/adapter
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

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 → 3/2.31-0

Standard nominal flow rate qnN ¹⁾ [l/min]	
In main flow direction 1 → 2	25,000 ... 32,000
In relief direction 2 → 3	13,000

1) Measured at p1 = 6 bar and Δp = 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.

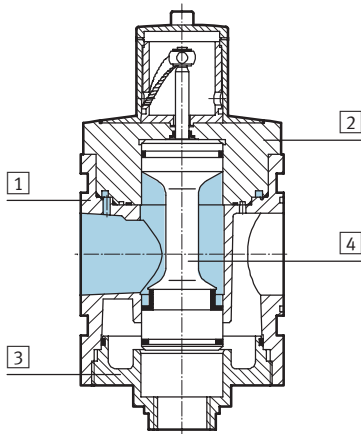
On-off valves MS12-EM, MS series

Technical data

Weights [g]	
Standard	3,900
With silencer	4,000

Materials

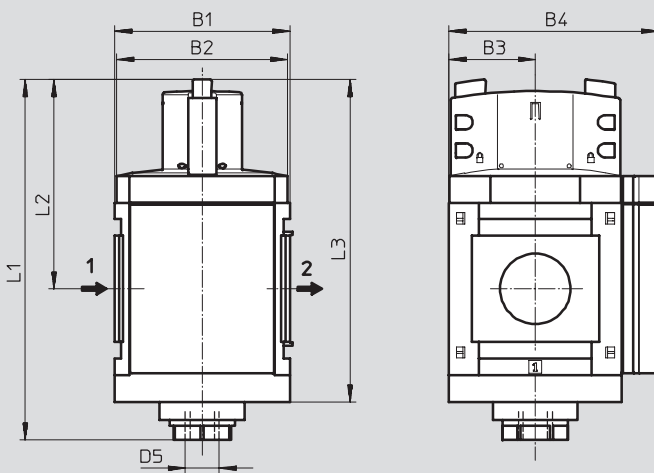
Sectional view



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



→ Flow direction

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

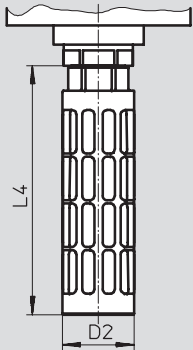
On-off valves MS12-EM, MS series

Technical data



Dimensions – Silencer

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



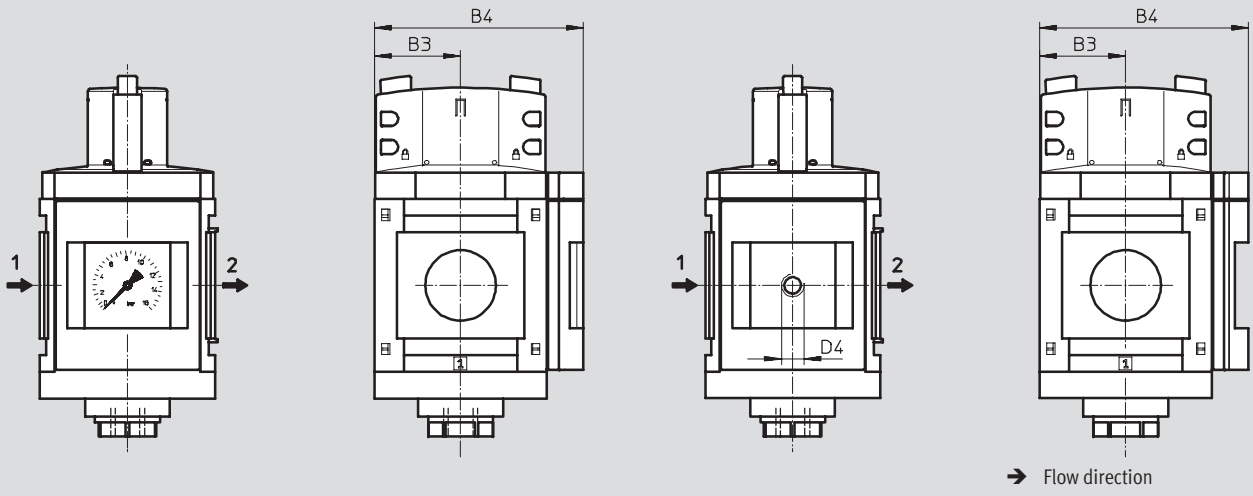
Type	D2 Ø	L4
MS12-EM-...-S	47.8	165.5

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

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 → 3/2.31-0
- 2) Free of copper and PTFE

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

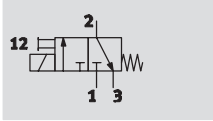
535 031	MS	12	- EM	-	-	-	-	-	-	-
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On-off valves MS12-EE, MS series

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 → 3/2.31-0

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

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

On-off valves MS12-EE, MS series

Technical data

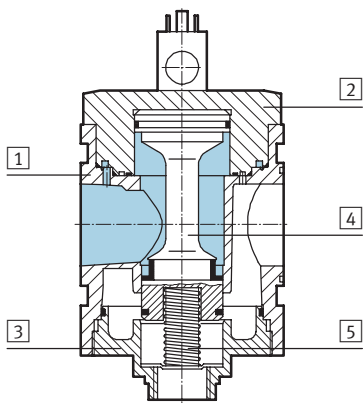
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

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]	
Standard	3,800
With silencer	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	

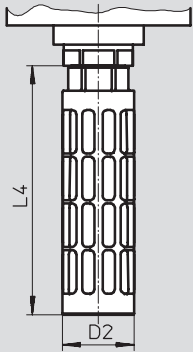
On-off valves MS12-EE, MS series

Technical data



Dimensions – Silencer

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



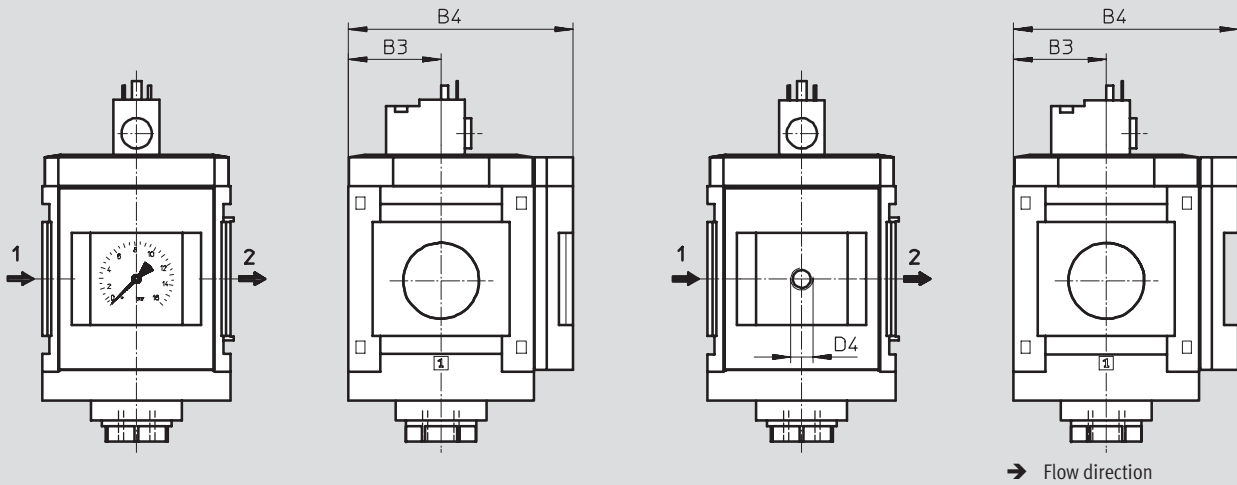
Type	D2 Ø	L4
MS12-EE-...-S	47.8	165.5

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 → 3/2.31-0
- 2) Free of copper and PTFE

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	Code	Enter code
M	Module No.	535 032			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	On-off valve, electrical		-EE	-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

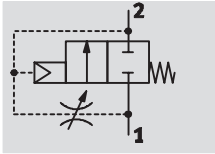
535 032	MS	12	- EE	-	-	-	-	-	-	-	-
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Soft-start valves MS12-DL, MS series

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.

When the valve is exhausted, the main seat remains open until the switch-through pressure is reached. The rest of the exhaust procedure is performed using the restrictor.

- 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 → 3/2.31-0

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

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

Soft-start valves MS12-DL, MS series

Technical data

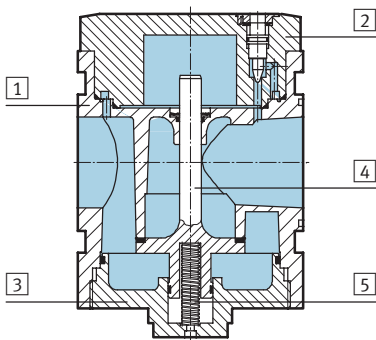
Operating and environmental conditions		
Operating pressure	[bar]	2 ... 21
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

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

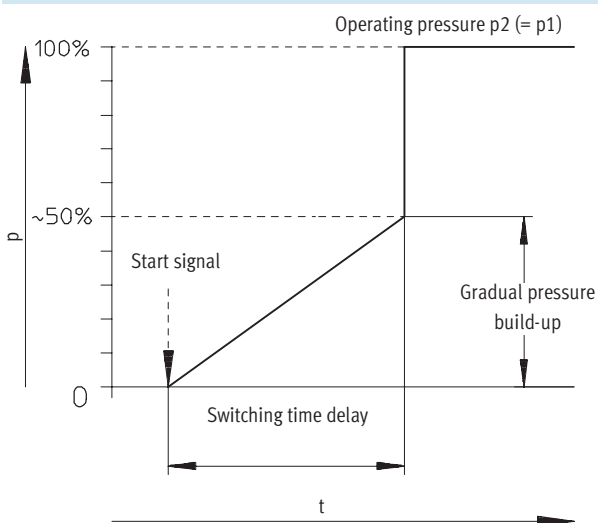
Sectional view



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



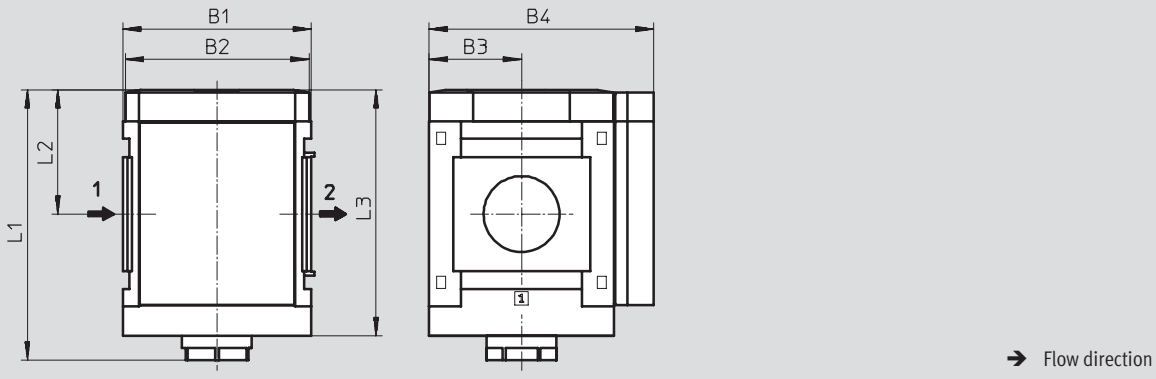
Soft-start valves MS12-DL, MS series

Technical data



Dimensions – Standard

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



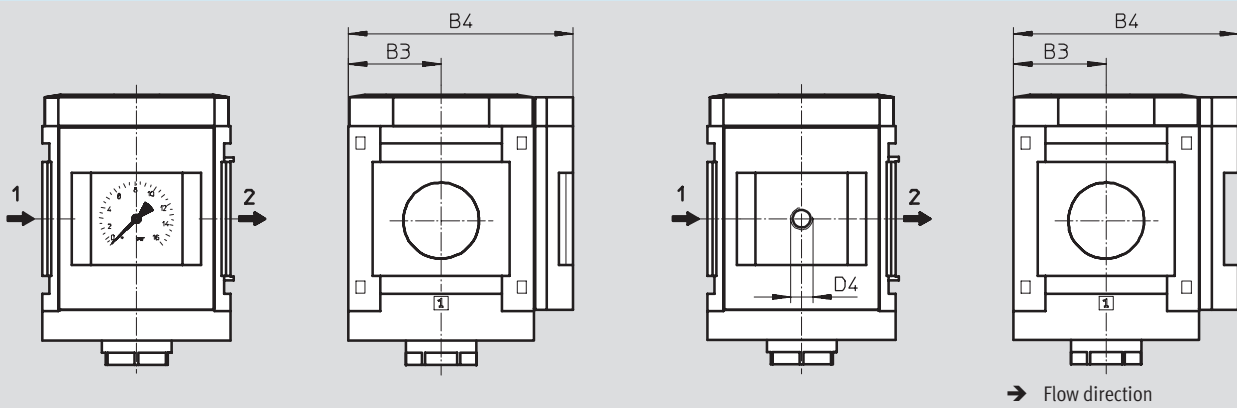
Type	B1	B2	B3	B4	L1	L2	L3
MS12-DL	124	122	61	148	178	82	162

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 → 3/2.31-0
- 2) Free of copper and PTFE

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

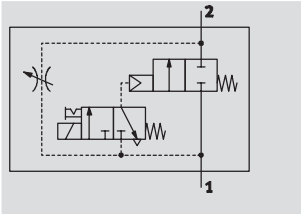
535 033	MS	12	- DL	-	-	-	-	-	-
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Soft-start valves MS12-DE, MS series

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 → 3/2.31-0

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

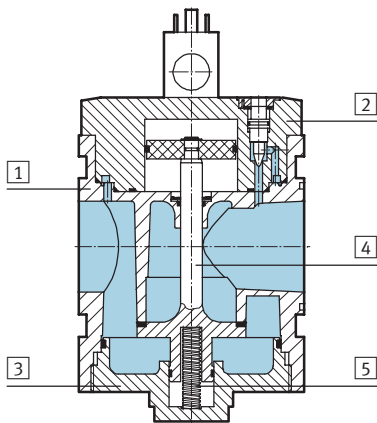
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

- 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)

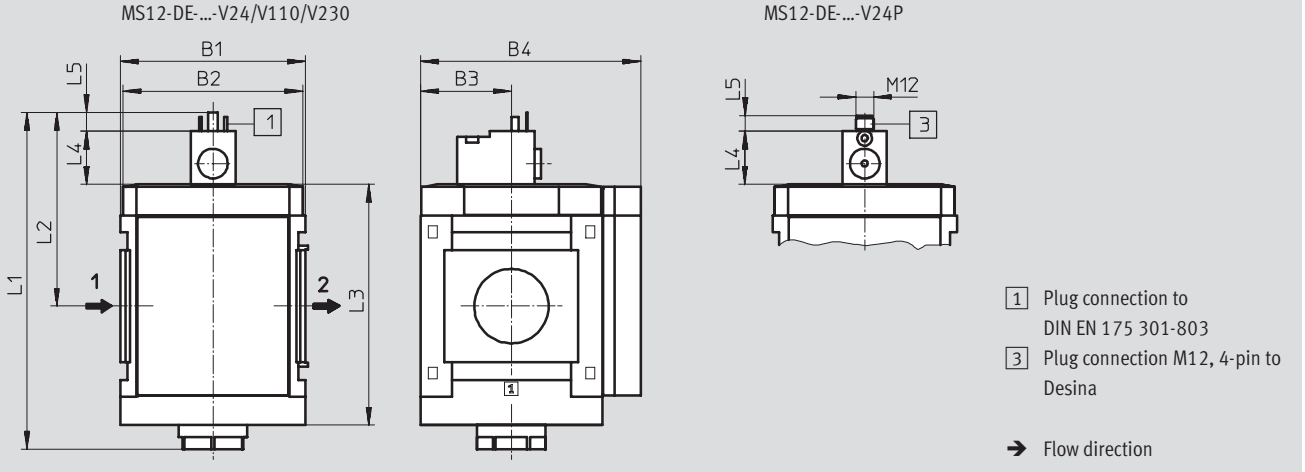
Soft-start valves MS12-DE, MS series

Technical data



Dimensions – Standard

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



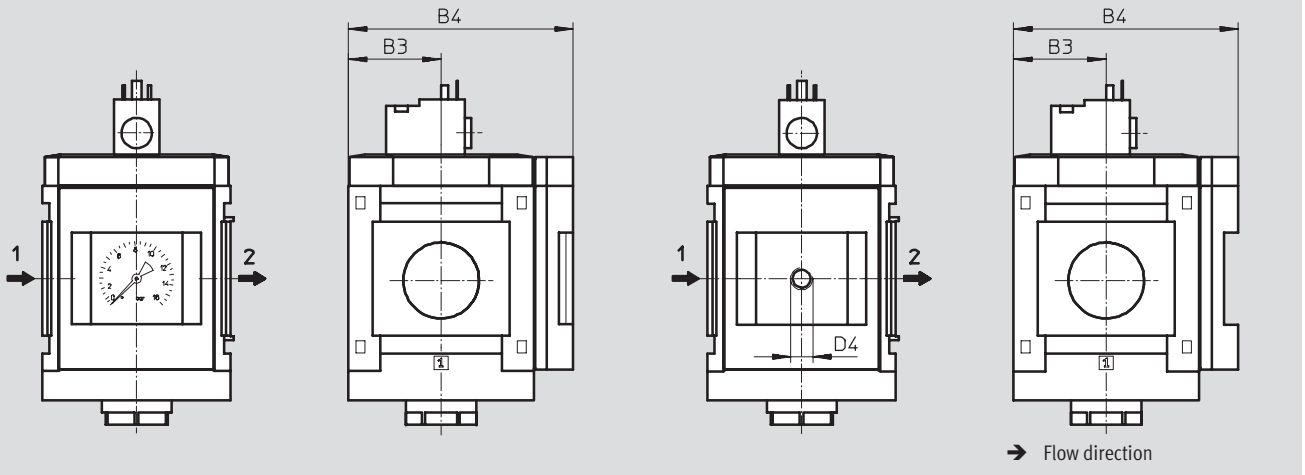
Type	B1	B2	B3	B4	L1	L2	L3	L4	L5
MS12-DE-...-V24/V110/V230	124	122	61	148	226	130	162	35.7	12.3
MS12-DE-...-V24P								36	10

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 → 3/2.31-0
 2) Free of copper and PTFE

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.

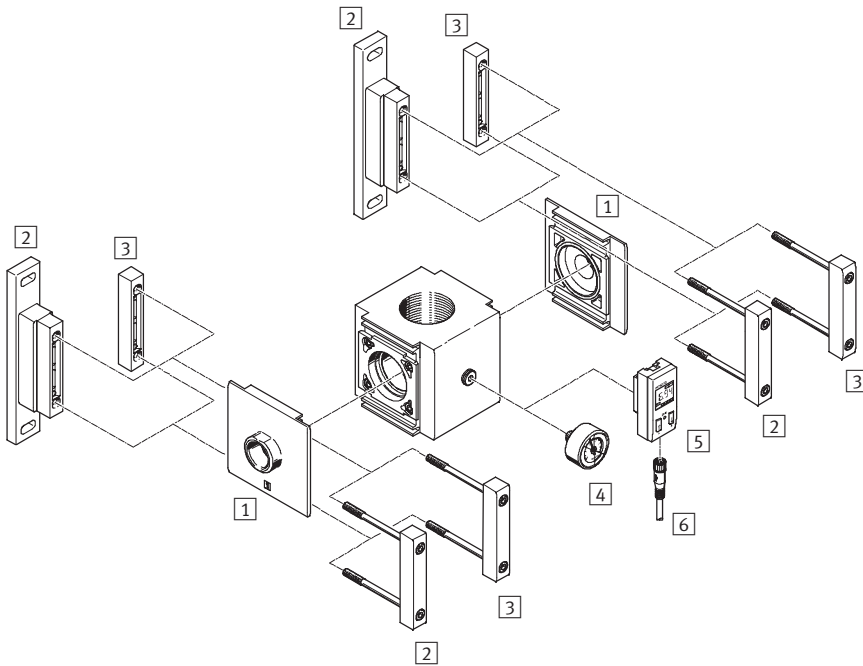
2 WP Only with connecting plate AGF, AGG, AGH or AGI.

Transfer order code

535 034	MS	12	- DE	-	-	-	-	-	-	-
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Branching modules MS12-FRM, MS series

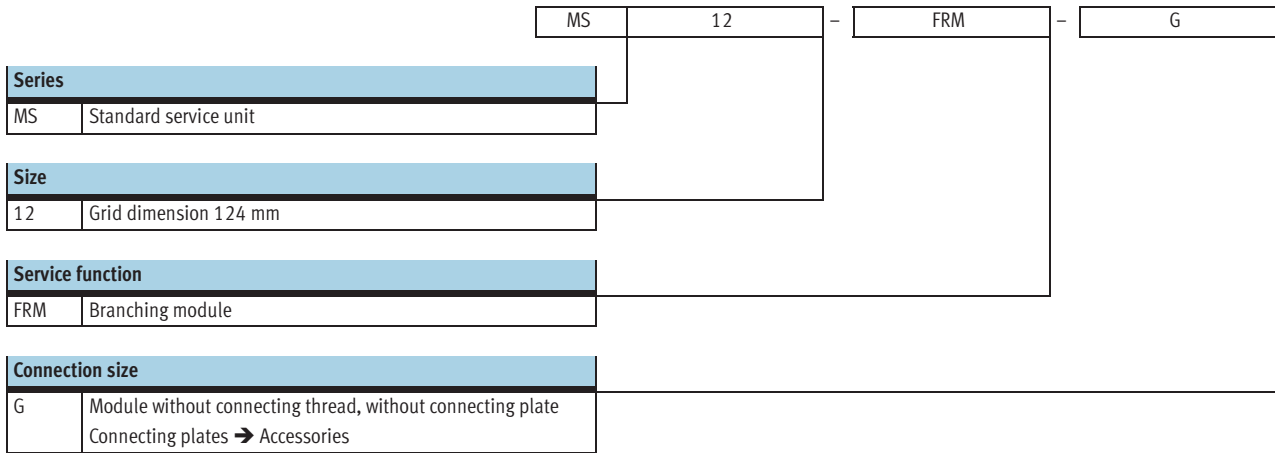
Peripherals overview



Mounting attachments and accessories		→ Page
1	Connecting plate MS12-AG...	3/2.31-0
2	Mounting bracket MS12-WP	3/2.31-7
3	Module connector MS12-MV	3/2.31-7
4	Pressure gauge MA	3/2.31-11
5	Pressure sensor SDE1-...-R14/R18	3/2.31-9 Volume 4
6	Plug socket with cable SIM-M8-3.../SIM-M8-4.../SIM-M12-3...	3/2.31-11

Branching modules MS12-FRM, MS series

Type codes



Further variants can be ordered using the modular system

Branching modules FRM → 3 / 2.28-4

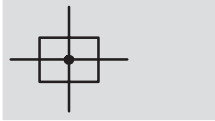
- Connecting plates
- Type of mounting

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 → 3/2.31-0

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 → 3/2.31-0
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.

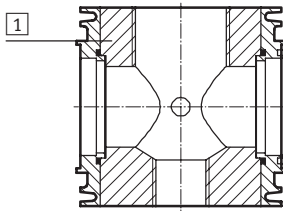
Branching modules MS12-FRM, MS series

Technical data

Weights [g]	
Branching module	3,000

Materials

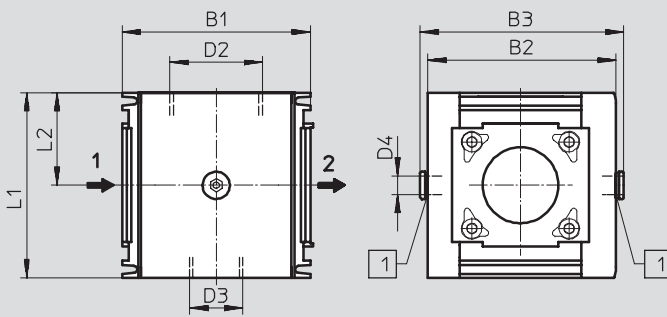
Sectional view



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

Ordering data			
Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	541 681	MS12-FRM-G ²⁾

1) Connecting plate must be ordered separately as an accessory → 3/2.31-0

2) Free of copper and PTFE

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

Accessories

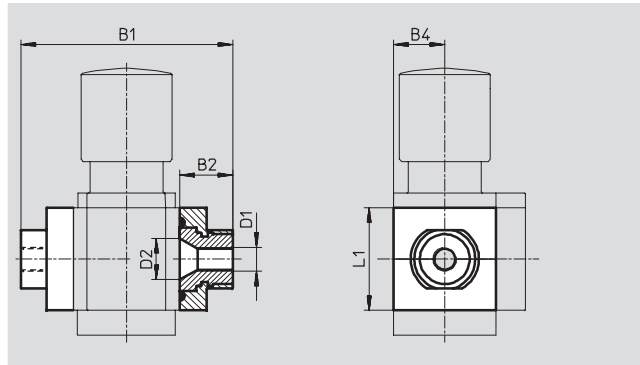


Connecting plate MS4/6-AG...

(order code: AG...)

- Adapter for pneumatic connection
- MS6-AGE for implementing threaded connection G $\frac{3}{4}$

Material:
Aluminium



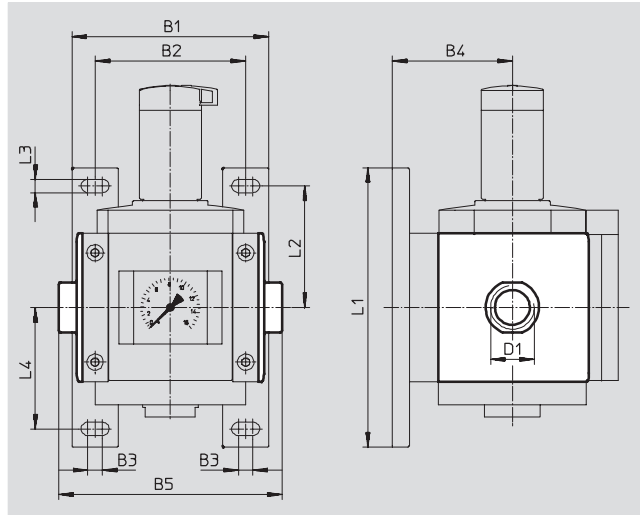
Dimensions and ordering data									
Size	B1	B2	B4	D1	D2	L1	Weight [g]	Part No.	Type
MS4	83.5	21.5	21	G $\frac{1}{8}$	16.8	42	128	526 068	MS4-AGA
				G $\frac{1}{4}$				526 069	MS4-AGB
				G $\frac{3}{8}$				526 070	MS4-AGC
MS6	115	26.5	31	G $\frac{1}{4}$	24	62	300	526 080	MS6-AGB
				G $\frac{3}{8}$				526 081	MS6-AGC
				G $\frac{1}{2}$				526 082	MS6-AGD
				G $\frac{3}{4}$				526 083	MS6-AGE

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	G $\frac{1}{4}$						537 136	MS12-AGG
					184	G $\frac{1}{2}$						537 137	MS12-AGH
					196	G2						537 138	MS12-AGI

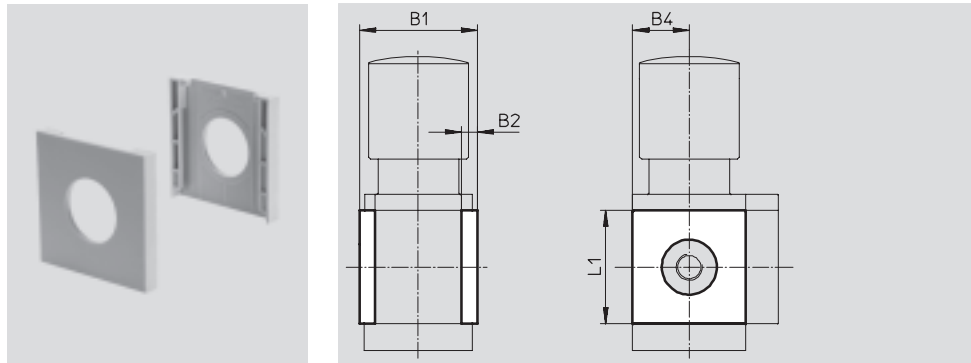
MS series service units

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



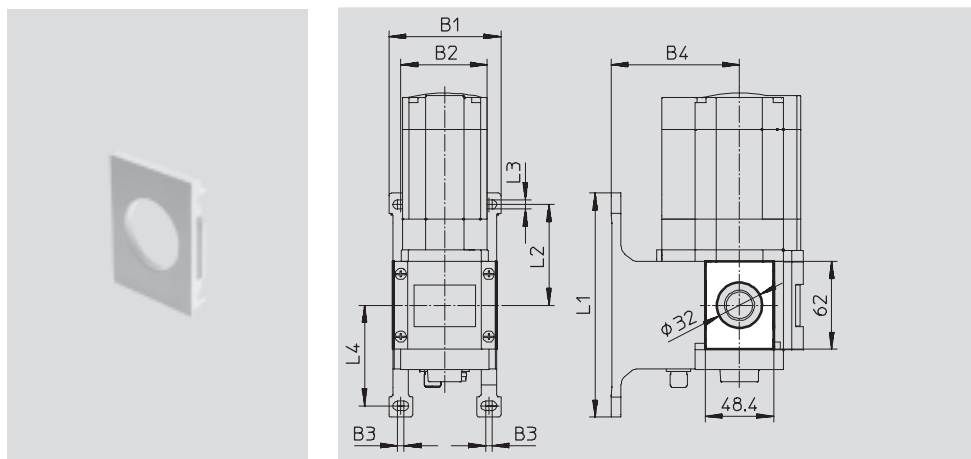
Dimensions and ordering data						
Size	B1	B2	B4	L1	Part No.	Type
MS4	43.6	6	21	42	538 779	MS4-END
MS6	67	8	31	62	538 780	MS6-END

Mounting plate MS6-AEND

(order code: WBE; scope of delivery includes wall mounting plate MS6-WPB)

- In combination with wall mounting plate MS6-WP or MS6-WPB for mounting an individual unit on a wall with direct thread

Material:
Reinforced polyamide
Free of copper and PTFE



Dimensions and ordering data												
Size	B1	B2	B3	B4	L1	L2	L3	L4	CRC ¹⁾	Weight [g]	Part No.	Type
MS6	79	62	4.5	90.5	158	71	6.6	71	2	17	535 408	MS6-AEND New

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



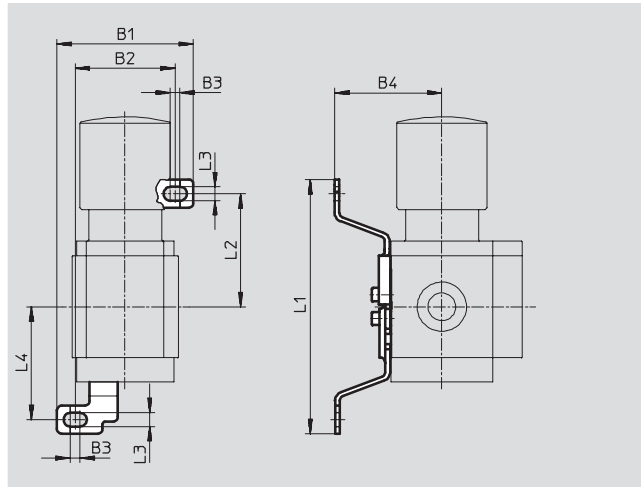
Mounting bracket MS4/6-WB

(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

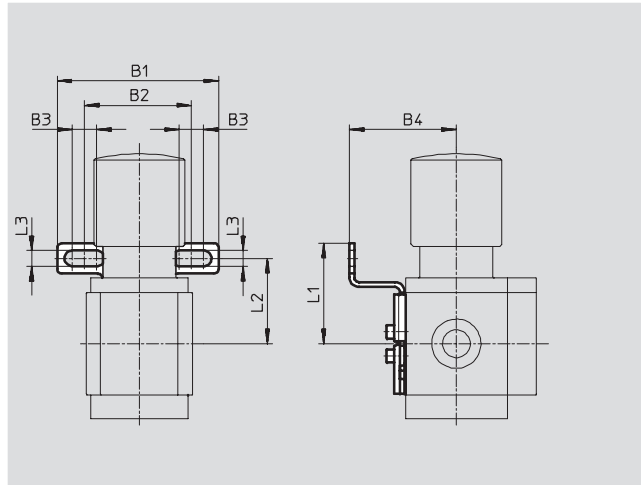
Mounting bracket MS4-WBM

(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)

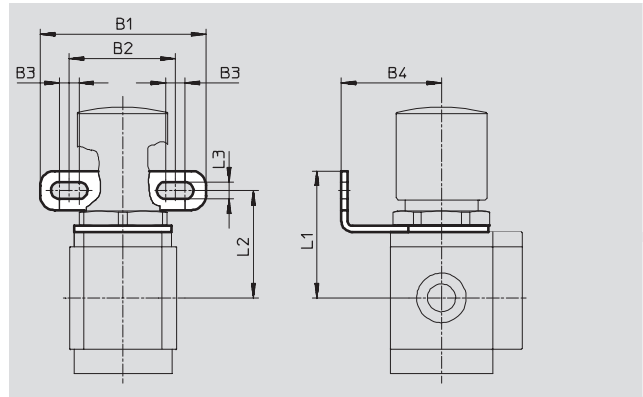
- For wall mounting
- For filter regulator, pressure regulator

Material:
Steel



Note

The hex nut for attaching components to this bracket must be ordered separately.

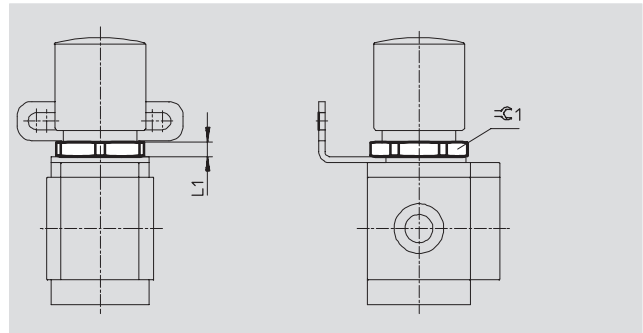


Dimensions and ordering data										
Size	B1	B2	B3	B4	L1	L2	L3	Weight [g]	Part No.	Type
MS4	68	44	8	41	52	44	7	49	526 064	MS4-WR
MS6	70	42	8.2	40	67	57	7.1	90	526 075	MS6-WR

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	$\approx \pm 1$	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



Mounting bracket MS4/6-WP...

Clearances for mounting service unit combinations

1 unit

MS4-...: 40 mm

MS6-...: 62 mm

2 units

MS4-...: 80 mm

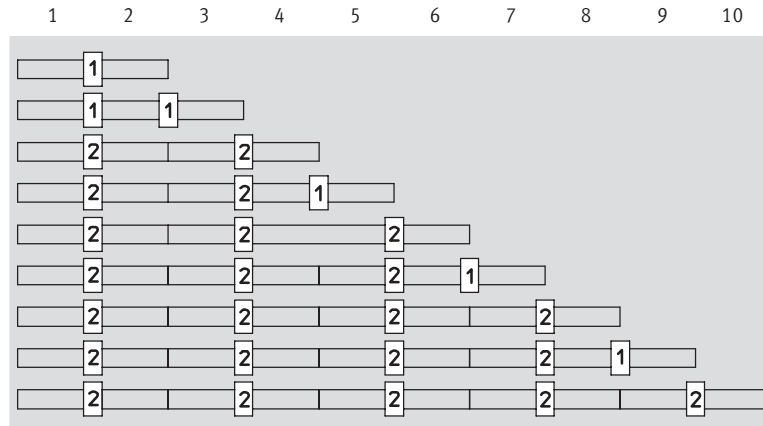
MS6-...: 124 mm with WP, WPB

138 mm with WPM-2D

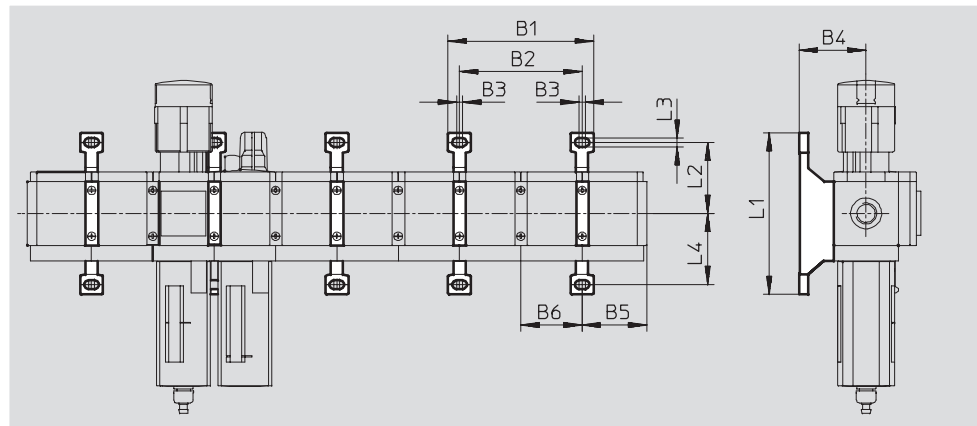
1 Mounting bracket WP, WPB or WPM-D

2 Mounting bracket WP, WPB or WPM-2D

Number of units



Mounting dimensions



Type	B1	B2	B3	B4	B5	B6	L1	L2	L3	L4
MS4-WP	95.2	80	4	44	41.9	40	106	46.5	5.6	46.7
MS4-WPB				66						
MS4-WPM-...D				44						
MS6-WP	141	124	4.5	54	64.5	62	158	71	6.6	71
MS6-WPB				90.5						
MS6-WPM-...D				54						
MS6-WPM-...D	168	138	17.5	54	65.5	69	98.6	41.3		41.3

MS series service units

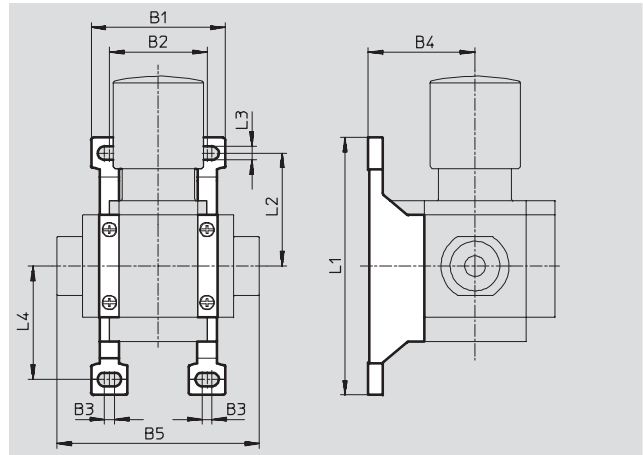
Accessories



Mounting bracket 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 MS6-AEND or for mounting an individual unit with direct thread on a wall
- For pressure regulator LRB with angled outlet block B... at rear



Material:

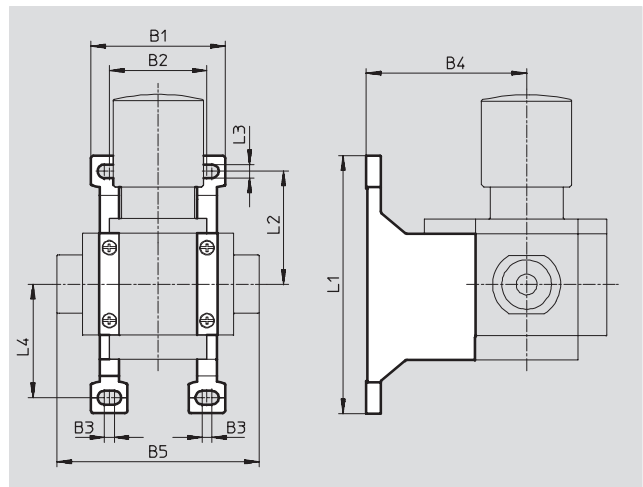
Die-cast aluminium

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	115	158	71	6.6	71	76	532 195	MS6-WP

Mounting bracket 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 MS6-AEND or 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



Mounting bracket MS4/6-WPM

(order code: WPM)

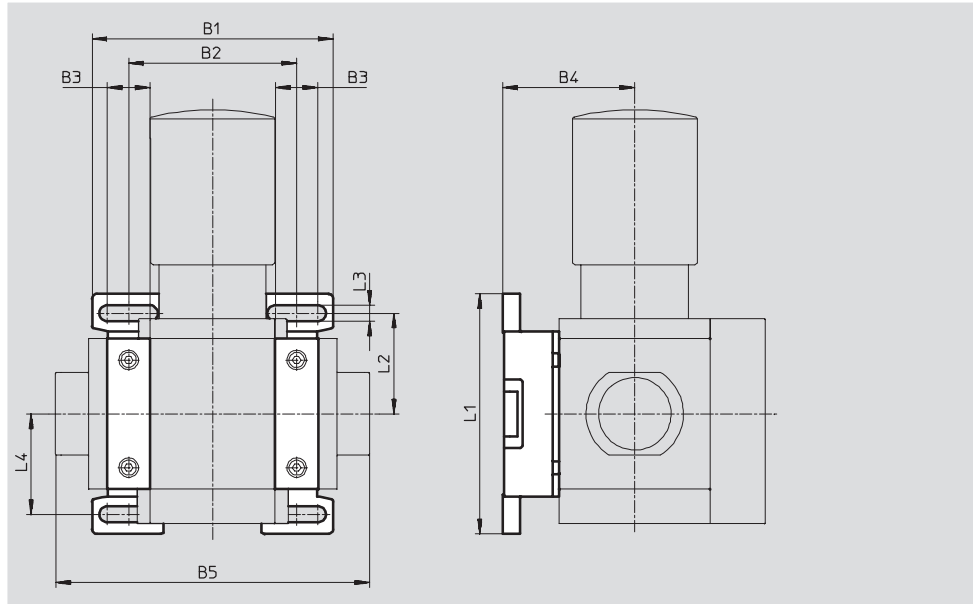
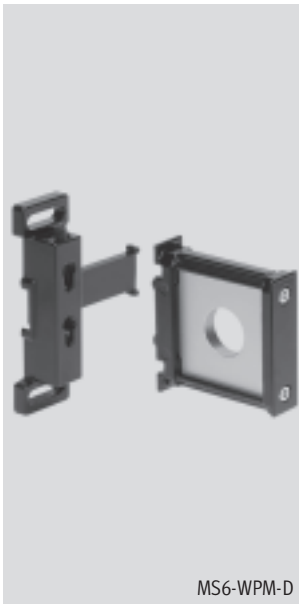
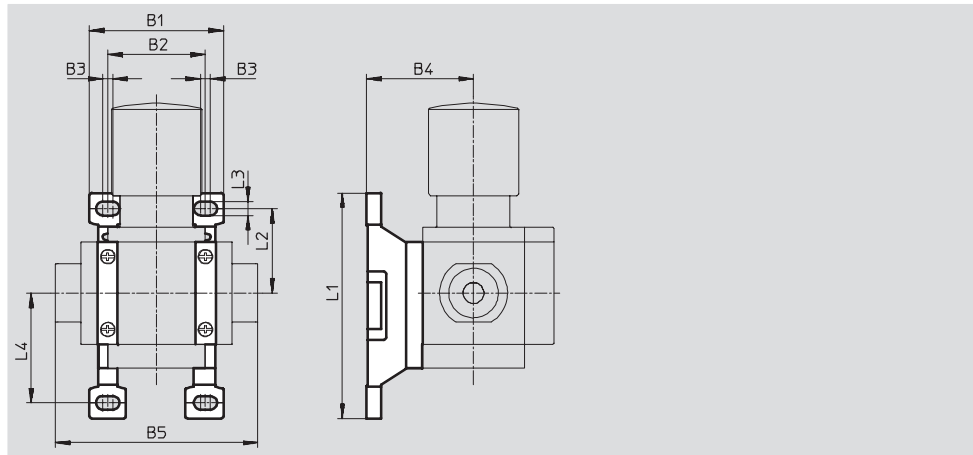
- For connecting the modules for wall mounting
- In combination with a connecting plate MS4/6-AG... for mounting an individual unit on a wall
- Speedy attachment and detachment
- For installation of modules with regulating knob pointing downwards

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	4	44	83.4	92.8	34.8	5.6	45.2	40	45	526 060	MS4-WPM-D
	95.2	80			123.4					80	55	526 061	MS4-WPM-2D
MS6	99	69	17.5	54	129	98.6	41.3	6.6	41.3	62	144	526 073	MS6-WPM-D
	168	138			198					124	154	532 186	MS6-WPM-2D

MS series service units

Accessories

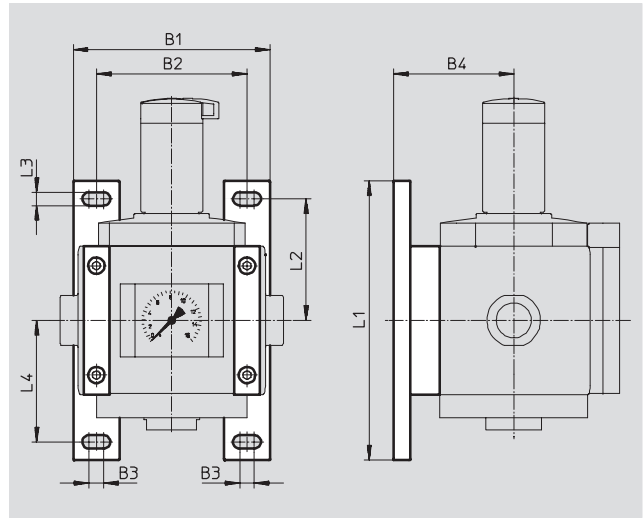


Wall mounting plate MS12-WP

(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/polyacetate

MS12: Die-cast aluminium,
free of copper and PTFE



MS4/6



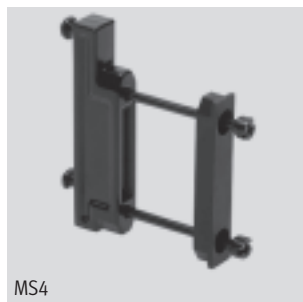
MS12

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

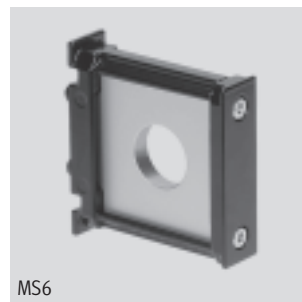
Module connector MS4/6-MVM

- 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

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Filter cartridge MS4/6-LF...



MS...-LFM



MS...-LFP



MS...-LFX

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	Residual oil content ≤ 0.003 mg/m ³	532 912	MS4/D-MINI-LFX
MS6	Micro-filter cartridge	0.01	532 909	MS6-LFM-A
	Fine-filter cartridge	1	532 910	MS6-LFM-B
	Filter cartridge	5	534 499	MS6-LFP-C
	Filter cartridge	40	534 500	MS6-LFP-E
	Active carbon filter cartridge	Residual oil content ≤ 0.003 mg/m ³	532 911	MS6-LFX

Filter cartridge MS12-LF...



MS12-LFM-B



MS12-LFM-A






MS12-LFX

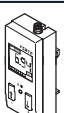

Ordering data				
Size		Grade of filtration [μm]	Part No.	Type
MS12	Micro-filter cartridge	0.01	537 146	MS12-LFM-A
	Fine-filter cartridge	1	537 145	MS12-LFM-B
	Filter cartridge	5	537 143	MS12-LFP-C
	Filter cartridge	40	537 144	MS12-LFP-E
	Active carbon filter cartridge	Residual oil content ≤ 0.003 mg/m ³	537 147	MS12-LFX

MS series service units

Accessories

FESTO

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

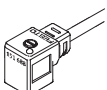
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MS series service units
Accessories


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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	Switching status display	Cable length [m]	Part No.	Type
	for MS4/6-EE/DE	24 V DC	LED	2.5	151 688	KMEB-1-24-2,5-LED
		24 V DC	LED	5	151 689	KMEB-1-24-5-LED
		24 V DC	LED	10	193 457	KMEB-1-24-10-LED
		230 V AC	–	2.5	151 690	KMEB-1-230AC-2,5
		230 V AC	–	5	151 691	KMEB-1-230AC-5
	for MS12-EE/DE	24 V DC	LED	2.5	30 931	KMC-1-24DC-2,5-LED
		24 V DC	LED	5	30 933	KMC-1-24DC-5-LED
		24 V DC	LED	10	193 459	KMC-1-24-10-LED
		230 V AC	–	2.5	30 932	KMC-1-230AC-2,5
		230 V AC	–	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		Cover for manual override, the clip prevents actuation	530 056	CPV18-HV	10



1) Packaging unit quantity


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 [m]	Part No.	Type
	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 [m]	Part No.	Type
	M12x1, 3-pin	2.5	159 428	SIM-M12-3GD-2,5-PU
		5	159 429	SIM-M12-3GD-5-PU
		10	192 964	SIM-M12-3GD-10-PU
	M12x1, 4-pin	2.5	164 259	SIM-M12-4GD-2,5-PU
		5	164 260	SIM-M12-4GD-5-PU
		10	192 965	SIM-M12-4GD-10-PU
	M12x1, 3-pin	2.5	175 715	SIM-M12-5GD-2,5-PU
		5	175 716	SIM-M12-5GD-5-PU
		10	192 965	SIM-M12-5GD-10-PU
	M12x1, 4-pin	2.5	159 430	SIM-M12-3WD-2,5-PU
		5	159 431	SIM-M12-3WD-5-PU
		10	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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MS series service units


Accessories


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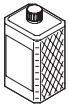
MS series service units
Accessories

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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		Technical data → 3 / 6.1-2		
Description	Pneumatic connection	Part No.	Type	
	Adjustable for angular compensation	R1/8	R1/4	534 151 ESK-1/8-1/4
	<ul style="list-style-type: none"> For retro-fitting pressure switch PEV or pressure sensor SDE1 to branching module MS-FRM 	R1/4	R1/4	151 521 ESK-1/4-1/4
		R1/4	R1/2	534 153 ESK-1/4-1/2

Ordering data – Padlock LRVS-D		Technical data → 3 / 6.1-2	
Description	Weight [g]	Part No.	Type
	for filter or pressure regulators	120	193 786 LRVS-D

Ordering data – Special oil OFSW		Technical data → 3 / 6.1-2	
Description	Scope of delivery	Part No.	Type
	for lubricators	1 litre	152 811 OFSW-32