

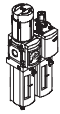
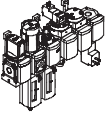





On-off/soft-start valves MS-EM/EE/DL/DE/SV, MS series



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

FESTO

Product range overview – MS series service units

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	-	-	-	■	■	-	-	-	■	■
	9	-											
	12	-											
Service unit combinations (further variants can be ordered using the configurator → Internet: msb4, msb6 or msb9)													
MSB 	4	G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	■	■
	6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	■	■
	9	-											
	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	-	-	■	■	■	■	-	-	■	■
	9	-											
	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	-	-	-	-	-	-	-	-	■	■
	9	-											
	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	-	-	-	-	-	-	■	■	-	-
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	■	■	-	-
	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	-	-	-	-	-	-	-	-	-	-
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	-
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-
Water separators MS-LWS 	4	-											
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-
	9	-											
	12	-											

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

Product range overview – MS series service units

Type	Size	Bowl guard		Condensate drains				Pressure indicator					Actuator lock		Options		→ Page/ Internet
		Plastic bowl with plastic bowl guard	Metal bowl	Manual rotary	Semi-automatic	Fully automatic	External, fully automatic, electrical	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor	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	■	-	■	-	■	-	-	■	-	-	-	■	-	-	■	msb4
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	msb6
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Service unit combinations																	
MSB	4	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	msb4
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	msb6
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Individual devices																	
Filter regulators MS-LFR	4	■	■	■	■	■	-	■	■	■	■	■	■	■	-	■	ms4-lfr
	6	■	■	■	■	■	■	■	■	-	■	■	■	■	-	■	ms6-lfr
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	■	■	-	■	■	■	■	-	■	-	■	■	-	■	ms12-lfr
Filters MS-LF	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lf
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lf
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lf
Fine and micro filters MS-LFM	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lfm
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lfm
	9	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms9-lfm
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lfm
Activated carbon filters MS-LFX	4	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms4-lfx
	6	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms6-lfx
	9	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms9-lfx
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms12-lfx
Water separators MS-LWS	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms6-lws
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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



Product range overview – MS series service units

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]						Supply voltage			
				0.05 ... 0.7	0.05 ... 2.5	0.1 ... 4	0.3 ... 7	0.1 ... 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...	D2	D4	D5	D6	D7	D8	V24	V24P	V110	V230
Individual devices													
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	-	-	■	■	■	■	-	-	-
		9	-										
		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	-	-	■	■	■	■	-	-	-
		9	-										
		12	-										
Precision pressure regulators MS-LRP		4	-										
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-
		9	-										
		12	-										
Precision pressure regulators MS-LRPB		4	-										
		6	G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-
		9	-										
		12	-										
Electrical pressure regulators MS-LRE		4	-										
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-
		9	-										
		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	-	-	-	-	-	-	-	-	-
		9	-										
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
Electrical 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	-	-	-	-	-	-	-	-	-
		9	-										
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
Electrical 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	-	-	-	-	-	-	■	-	■
		9	-										
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	■
Electrical 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	-	-	-	-	-	-	-	-	-
		9	-										
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
Electrical 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	-	-	-	-	-	-	■	-	■
		9	-										
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	■
Soft start and exhaust valves MS-SV		4	-										
		6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	■	-	-
		9	-										
		12	-										

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






Product range overview – MS series service units

Type	Size	Bowl guard		Pressure indicator				Actuator lock		Options		→ Page/ Internet	
		Plastic bowl with plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor	Rotary knob, lockable	Rotary knob, long	Silencer		Flow direction from right to left
Code		R	U	VS	AG	A8	A4	AD...	AS	LD	S	Z	
Individual devices													
Pressure regulators MS-LR	4	-	-	■	■	■	■	■	■	■	-	■	ms4-lr
	6	-	-	■	■	-	■	■	■	■	-	■	ms6-lr
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	■	■	-	■	-	■	■	-	■	ms12-lr
Pressure regulators MS-LRB	4	-	-	■	■	■	■	■	■	■	-	■	ms4-lrb
	6	-	-	■	■	-	■	■	■	■	-	■	ms6-lrb
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRP	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	-	■	■	■	■	■	-	■	ms6-lrp
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRPB	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	-	■	■	■	■	■	-	■	ms6-lrpb
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Electrical pressure regulators MS-LRE	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	■	-	■	-	-	-	-	■	ms6-lre
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Lubricators MS-LOE	4	■	■	-	-	-	-	-	-	-	-	■	ms4-loe
	6	■	■	-	-	-	-	-	-	-	-	■	ms6-loe
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	■	-	-	-	-	-	-	-	-	■	ms12-loe
Electrical on-off valves MS-EM(1)	4	-	-	■	■	■	■	■	-	-	■	■	8
	6	-	-	■	■	-	■	■	-	-	■	■	8
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	■	■	-	■	-	-	-	■	■	58
Electrical on-off valves MS-EE	4	-	-	■	■	■	■	■	-	-	■	■	18
	6	-	-	■	■	-	■	■	-	-	■	■	18
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	■	■	-	■	-	-	-	■	■	64
Electrical soft-start valves MS-DL	4	-	-	■	■	■	■	■	-	-	-	■	30
	6	-	-	■	■	-	■	■	-	-	-	■	30
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	■	■	-	■	-	-	-	-	■	70
Electrical soft-start valves MS-DE	4	-	-	■	■	■	■	■	-	-	-	■	38
	6	-	-	■	■	-	■	■	-	-	-	■	38
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	■	■	-	■	-	-	-	-	■	76
Soft start and exhaust valves MS-SV	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	■	-	■	■	-	-	■	■	48
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-

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



Product range overview – MS series service units

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]				Supply voltage				
				0.1 ... 4	0.3 ... 7	0.1 ... 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												
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	-	-	-	-	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-
		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	-	-	-	-	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-
Distributor blocks MS-FRM-FRZ		4	G1/4	-	-	-	-	-	-	-	-	-
		6	G1/2	-	-	-	-	-	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-
Flow sensors MS-SFE		4	-	-	-	-	-	-	-	-	-	-
		6	G1/2	G1/2	-	-	-	-	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-
Flow sensors SFAM		4	-	-	-	-	-	-	-	-	-	-
		6	G1/2	G1/2	-	-	-	-	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-

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

Product range overview – MS series service units

Type	Size	Bowl guard		Pressure indicator				Switch output		Options		→ Page/ Internet	
		Plastic bowl with plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor	2x PNP	2x NPN	Silencer		Flow direction from right to left
Code		R	U	VS	AG	A8	A4	AD...	P2/2S	N2/2S	S	Z/R	
Individual devices													
Membrane air dryers MS-LDM1	4	-	■	-	-	-	-	-	-	-	-	■	ms4-ldm1
	6	-	■	-	-	-	-	-	-	-	-	■	ms6-ldm1
	9	-											-
	12	-											-
Branching modules MS-FRM	4	-	-	■	■	■	■	■	-	-	-	■	ms4-frm
	6	-	-	■	■	-	■	■	-	-	-	■	ms6-frm
	9	-											-
	12	-	-	■	-	-	-	-	-	-	-	-	ms12-frm
Distributor blocks MS-FRM-FRZ	4	-	-	-	-	-	-	-	-	-	-	■	ms4-frm
	6	-	-	-	-	-	-	-	-	-	-	■	ms6-frm
	9	-											-
	12	-											-
Flow sensors MS-SFE	4	-											-
	6	-	-	-	-	-	-	-	■	■	-	■ ¹⁾	ms6-sfe
	9	-											-
	12	-											-
Flow sensors SFAM	4	-											-
	6	-	-	-	-	-	-	-	■	■	-	■	sfam
	9	-											-
	12	-											-

1) Can only be ordered using the configurator → Internet: ms6-sfe

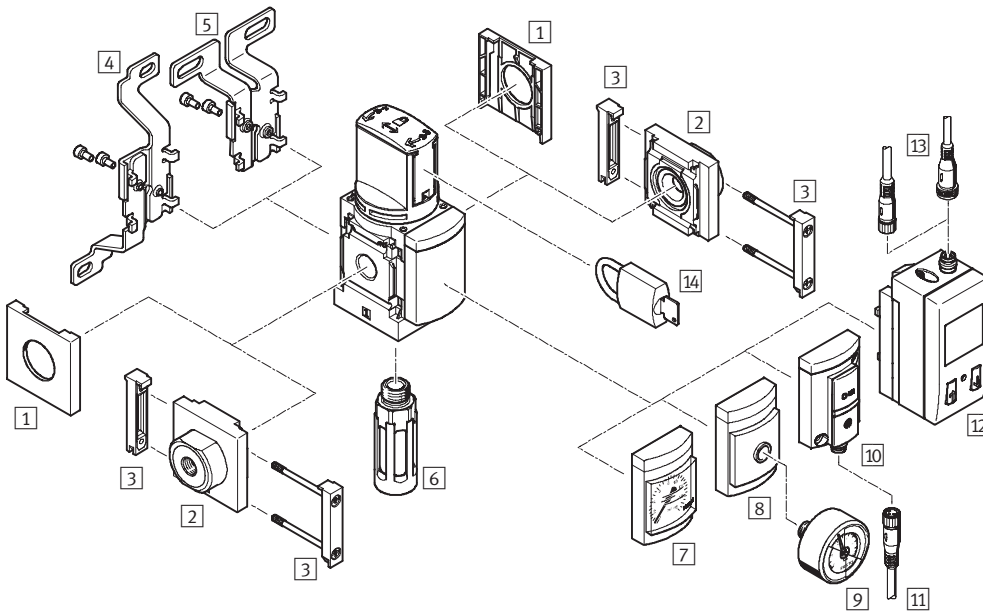
New
Variant AD7 ... AD10

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

Peripherals overview

FESTO

On-off valve MS4/MS6-EM1



Note

Additional accessories:

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

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
3	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
4	Mounting bracket MS4/6-WB	■	■	-	-	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	-	-	ms4-wbm
6	Silencer U	■	■	■	■	83
7	MS pressure gauge AG	■	■	■	■	16
8	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	16
9	Pressure gauge MA	■	■	■	■	83
10	Pressure sensor without display AD7 ... AD10	■	■	■	■	16
11	Connecting cable NEBU-M8...-LE3	■	■	■	■	83
12	Pressure sensor with display AD1 ... AD4	■	■	■	■	16
13	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	83
14	Padlock LRVS-D	■	■	■	■	83
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

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

Type codes

		MS	6	-	EM1	-	1/2	-	S
Series									
MS	Standard service unit								
Size									
4	Grid dimension 40 mm								
6	Grid dimension 62 mm								
Service function									
EM1	Manually operated on-off valve								
Connection size									
MS4									
1/8	Thread G1/8								
1/4	Thread G1/4								
MS6									
1/4	Thread G1/4								
3/8	Thread G3/8								
1/2	Thread G1/2								
Silencer									
	Without silencer								
S	Silencer								

Additional variants can be ordered using the modular system → 16

- Connecting plates
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

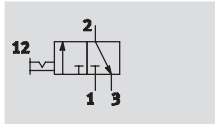
New
Variant AD7 ... AD10

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

Technical data

FESTO

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

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	Via pressure sensor for displaying output pressure via LCD display and electrical output				
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output				
	Via pressure gauge for displaying output pressure				
Valve function	3/2-way valve, double solenoid				
Exhaust function	No flow control				
Switching position display	Knob actuator direction = flow direction				
Pilot control mode	Direct				
Direction of flow	Non-reversible				
C value [l/(s*bar)]	4.6	9.0	10.7	21.2	30.8
b value	0.51	0.39	0.56	0.49	0.57

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

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
Size	MS4		MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
In main flow direction 1 \rightarrow 2	1,200	2,200	3,000	5,500	8,700
In relief direction 2 \rightarrow 3	1,900	1,700	6,800	6,600	6,200

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

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

FESTO

Technical data

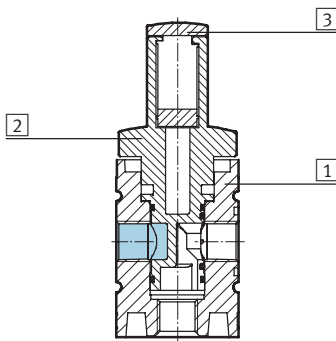
Operating and environmental conditions				
Variant	Standard		Pressure sensor AD...	
Size	MS4	MS6	MS4	MS6
Operating pressure [bar]	0 ... 14	0 ... 18	0 ... 10	0 ... 10
Operating medium	Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature [°C]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

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

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

Materials

Sectional view



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

New
Variant AD7 ... AD10

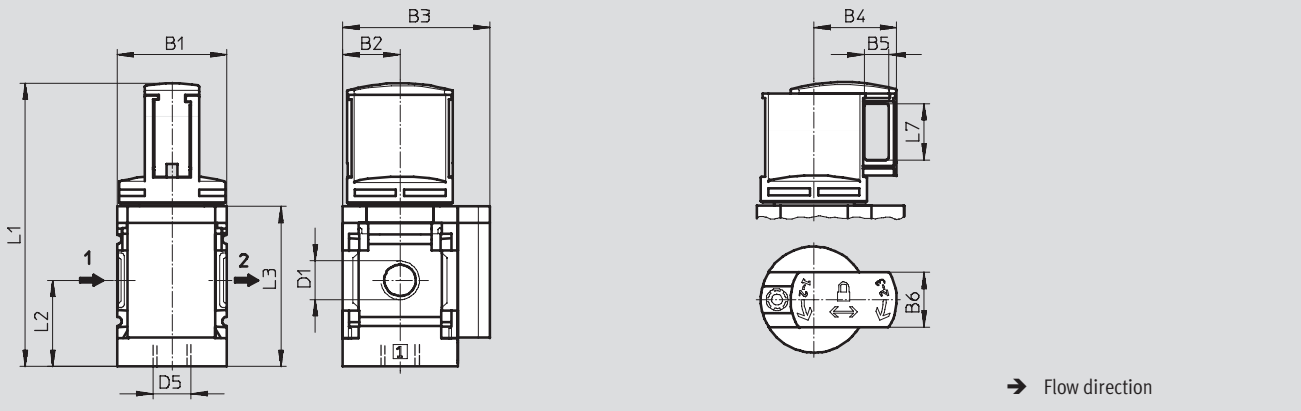
On-off valves MS4/MS6-EM1, MS series

Technical data

FESTO

Dimensions – Standard

Download CAD data → www.festo.com



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

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

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

Technical data

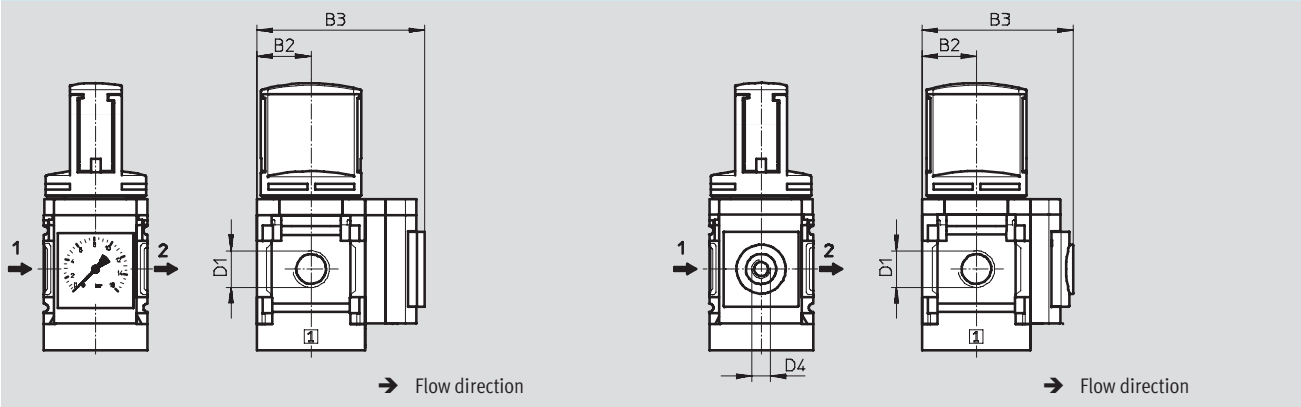
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

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



Type	B2	B3	D1	D4
MS4-EM1-1/8-...-AG	21	65	G1/8	-
MS4-EM1-1/4-...-AG			G1/4	
MS4-EM1-1/8-...-RG	21	66.5	G1/8	-
MS4-EM1-1/4-...-RG			G1/4	
MS4-EM1-1/8-...-A8	21	58.5	G1/8	G1/8
MS4-EM1-1/4-...-A8			G1/4	
MS4-EM1-1/8-...-A4	21	58.5	G1/8	G1/4
MS4-EM1-1/4-...-A4			G1/4	
MS6-EM1-1/4-...-AG	31	85	G1/4	-
MS6-EM1-3/8-...-AG			G3/8	
MS6-EM1-1/2-...-AG			G1/2	
MS6-EM1-1/4-...-RG	31	86.5	G1/4	-
MS6-EM1-3/8-...-RG			G3/8	
MS6-EM1-1/2-...-RG			G1/2	
MS6-EM1-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-EM1-3/8-...-A4			G3/8	
MS6-EM1-1/2-...-A4			G1/2	

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

New
Variant AD7 ... AD10

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

Technical data

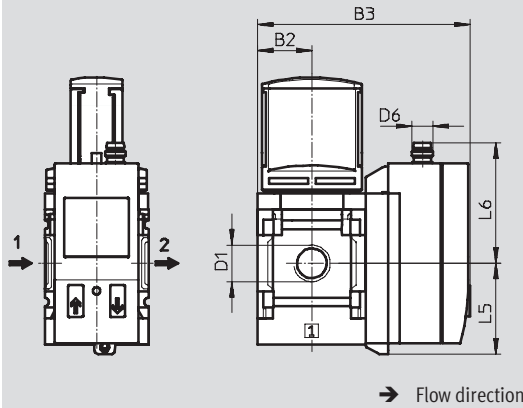


Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with LCD display AD1 ... AD4

Technical data → Internet: sde1



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

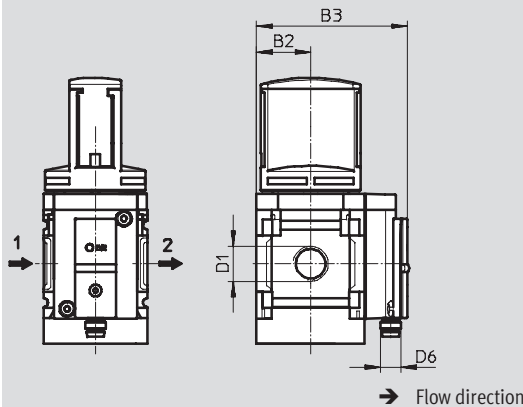
Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with
4-pin plug M12x1, 1 switching out-
put PNP and 4 ... 20 mA analogue

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

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

Pressure sensor without LCD display (operational status indicator only) AD7 ... AD10

Technical data → Internet: sde5



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

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

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

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

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

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

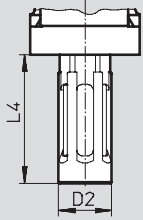
On-off valves MS4/MS6-EM1, MS series

Technical data

FESTO

Dimensions – Silencer

Download CAD data → www.festo.com



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

Ordering data					
Size	Connection	Standard		With silencer	
		Part No.	Type	Part No.	Type
MS4	G1/8	541262	MS4-EM1-1/8 ¹⁾	541263	MS4-EM1-1/8-S ¹⁾
	G1/4	541258	MS4-EM1-1/4 ¹⁾	541259	MS4-EM1-1/4-S ¹⁾
MS6	G1/4	541271	MS6-EM1-1/4 ¹⁾	541272	MS6-EM1-1/4-S ¹⁾
	G3/8	541275	MS6-EM1-3/8 ¹⁾	541276	MS6-EM1-3/8-S ¹⁾
	G1/2	541267	MS6-EM1-1/2 ¹⁾	541268	MS6-EM1-1/2-S ¹⁾

1) Free of copper and PTFE

 **New**
Variant AD7 ... AD10

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

Ordering data – Modular products

FESTO

M Mandatory data				
Module No.	Series	Size	Function	Connection size
541266 541279	MS	4 6	EM1	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE
Order example				
541266	MS	4	- EM1	- 1/4

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	541266	541279			
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	On-off valve, manual			-EM1	-EM1
	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		- EM1	
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On-off valves MS4/MS6-EM1, MS series

Ordering data – Modular products

FESTO

Options				
Silencer	Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
S	AG, A8, A4, RG, AD1 ... AD4, AD7 ... AD10	PSI MPA	WP WPM WB WBM	Z
- S	- AG	- PSI	- WB	- 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 plate)	MS pressure gauge, bar		-AG	
		Adapter plate for EN pressure gauge 1/8, without pressure gauge	-		-A8	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4	
		Integrated pressure gauge, red-green scale			-RG	
		Pressure sensor with display, plug M8, 1 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 without display, plug M8, threshold value comparator, PNP, N/O contact		[1]	-AD7	
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact		[1]	-AD8	
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, AD7 ... AD10**

Measuring range max. 10 bar

[3] **WP, WPM**

Only with connecting plate AGA, AGB, AGC, AGD or AGE

[2] **PSI, MPA**

Only with pressure gauge alternatives AG or RG

Transfer order code

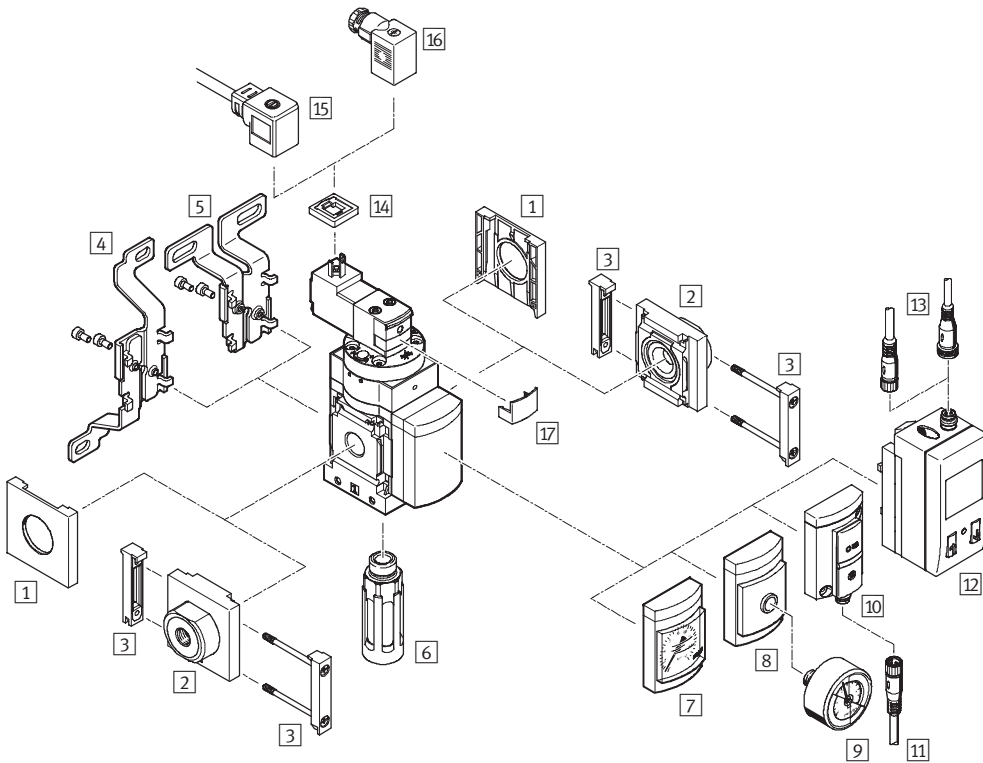
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On-off valves MS4/MS6-EE, MS series

Peripherals overview

FESTO

On-off valve MS4/MS6-EE



 Note

Additional accessories:

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

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

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
3	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
4	Mounting bracket MS4/6-WB	■	■	-	-	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	-	-	ms4-wbm
6	Silencer U	■	■	■	■	83
7	MS pressure gauge AG	■	■	■	■	28
8	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	28
9	Pressure gauge MA	■	■	■	■	83
10	Pressure sensor without display AD7 ... AD10	■	■	■	■	28
11	Connecting cable NEBU-M8...-LE3	■	■	■	■	83
12	Pressure sensor with display AD1 ... AD4	■	■	■	■	28
13	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	83
14	Illuminating seal MEB-LD	■	■	■	■	82
15	Plug socket with cable KMEB	■	■	■	■	82
16	Plug socket MSSD-EB	■	■	■	■	82
17	Locking clip CPV18-HV	■	■	■	■	82
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

 **New**
Variant AD7 ... AD10

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

Type codes

FESTO

		MS	6	-	EE	-	1/2	-	V110	-	
Series											
MS	Standard service unit										
Size											
4	Grid dimension 40 mm										
6	Grid dimension 62 mm										
Service function											
EE	Solenoid actuated on-off valve										
Connection size											
MS4											
1/8	Thread G1/8										
1/4	Thread G1/4										
MS6											
1/4	Thread G1/4										
3/8	Thread G3/8										
1/2	Thread G1/2										
Supply voltage											
10V24	Supply voltage 24 V DC										
V110	Supply voltage 110 V AC										
V230	Supply voltage 230 V AC										
Silencer											
	Without silencer										
S	Silencer										

Additional variants can be ordered using the modular system → 28

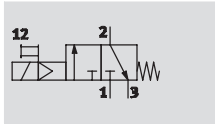
- Connecting plates
- Supply voltage
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction




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

Technical data

FESTO

Function



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



- Solenoid actuated on-off valve for pressurising and venting pneumatic installations
- With solenoid coil without plug socket
- Three voltage ranges can be selected
- Ducted exhaust possible via a threaded connection with silencer
- Pushing and detenting (except variant 10V24) manual override
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor

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	Via pressure sensor for displaying output pressure via LCD display and electrical output Via pressure sensor for displaying output pressure via operational status indicator and electrical output Via pressure gauge for displaying output pressure				
Valve function	3/2-way valve, single solenoid, closed				
Exhaust function	Without flow control				
Type of reset	Mechanical spring				
Switching position display	Via accessories				
Pilot control mode	Direct				
Pilot air supply	External				
Direction of flow	Non-reversible				
C value [l/(s*bar)]	4.5	9.5	11.0	22.0	29.0
b value	0.5	0.44	0.5	0.5	0.4
Coil characteristics	V24	24 V DC			
	10V24	24 V DC			
	V110	110 V AC			
	V230	230 V AC			

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

New
Variant AD7 ... AD10

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 AD...	
Size	MS4	MS6	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10	4 ... 10	4 ... 10
Operating medium	Compressed air				Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m	
Ambient temperature [°C]	-10 ... +60	-10 ... +60	-10 ... +50	-10 ... +50	0 ... +50	0 ... +50
Temperature of medium [°C]	-10 ... +60	-10 ... +60	-10 ... +50	-10 ... +50	0 ... +50	0 ... +50
Corrosion resistance CRC ¹⁾	2					

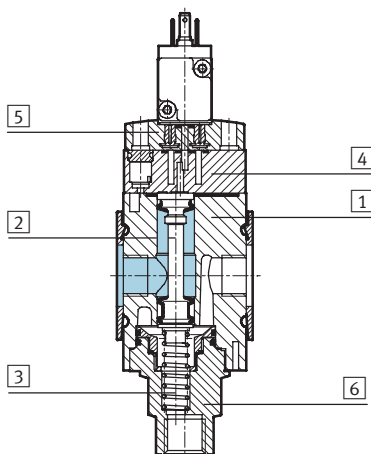
1) Corrosion resistance class 2 according to Festo standard 940 070

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

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

Materials

Sectional view



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

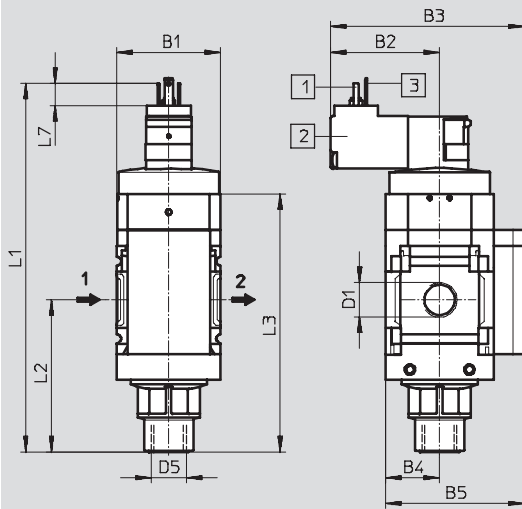
On-off valves MS4/MS6-EE, MS series

Technical data

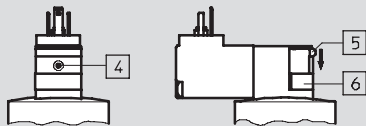
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Dimensions – Basic version

Download CAD data → www.festo.com



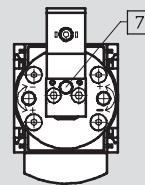
Supply voltage V24/V110/V230



-  - Note

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

Supply voltage 10V24



- [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
- [4] Manual override, non-detenting (delivery status)
- [5] Slide
- [6] Cover plate
- [7] Manual override, non-detenting (delivery status)

→ Flow direction

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

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

New
Variant AD7 ... AD10

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

Technical data

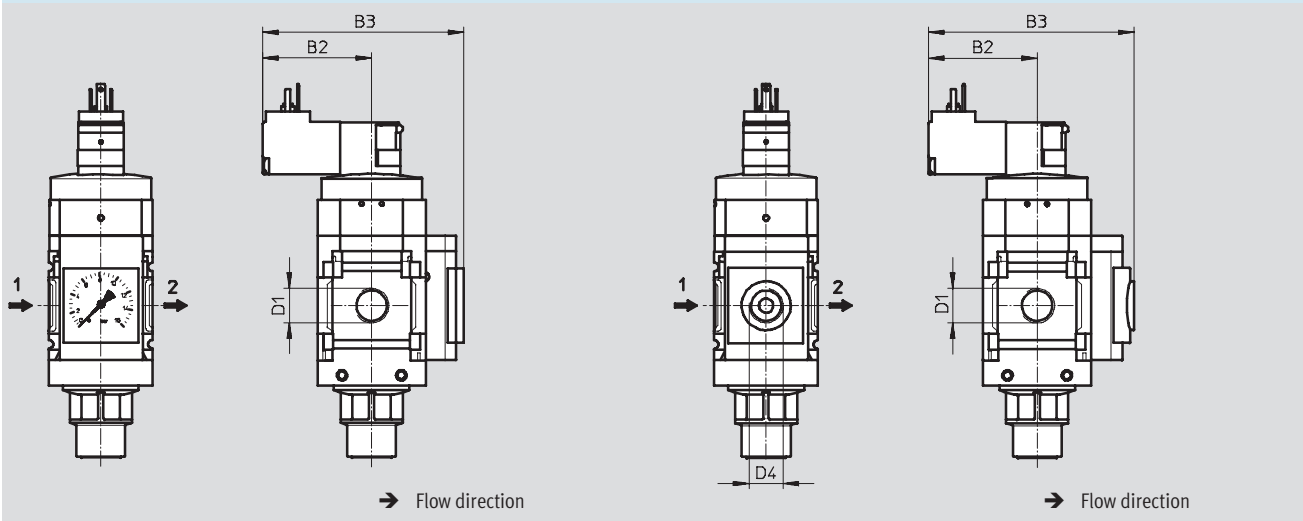
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

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



Type	B2		B3		D1	D4
	10V24	V24/V110/V230	10V24	V24/V110/V230		
MS4-EE-1/8-...-AG	34.9	42.2	78.9	86.2	G1/8	-
MS4-EE-1/4-...-AG			G1/4			
MS4-EE-1/8-...-RG	34.9	42.2	80.4	87.7	G1/8	-
MS4-EE-1/4-...-RG			G1/4			
MS4-EE-1/8-...-A8	34.9	42.2	72.4	79.7	G1/8	G1/8
MS4-EE-1/4-...-A8			G1/4			
MS4-EE-1/8-...-A4	34.9	42.2	72.4	79.7	G1/8	G1/4
MS4-EE-1/4-...-A4			G1/4			
MS6-EE-1/4-...-AG	44.7	52	98.7	106	G1/4	-
MS6-EE-3/8-...-AG					G3/8	
MS6-EE-1/2-...-AG					G1/2	
MS6-EE-1/4-...-RG	44.7	52	100.2	107.5	G1/4	-
MS6-EE-3/8-...-RG					G3/8	
MS6-EE-1/2-...-RG					G1/2	
MS6-EE-1/4-...-A4	44.7	52	92.3	99.6	G1/4	G1/4
MS6-EE-3/8-...-A4					G3/8	
MS6-EE-1/2-...-A4					G1/2	

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

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

Technical data

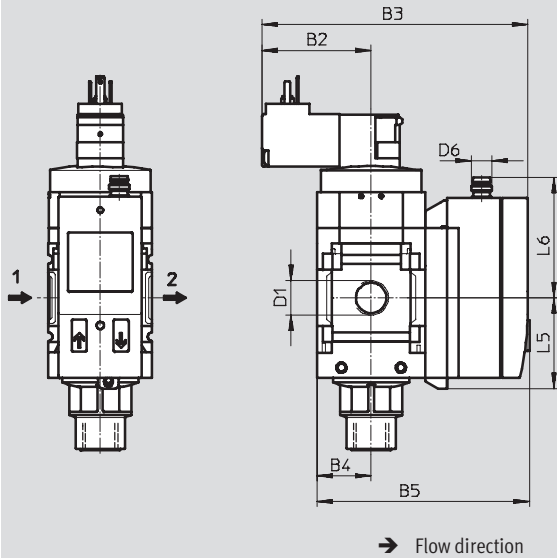
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Dimensions – Pressure gauge alternatives

Pressure sensor with LCD display AD1 ... AD4

Download CAD data → www.festo.com

Technical data → Internet: sde1



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

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

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

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

Type	B2		B3		B4	B5	D1	D6	L5	L6
	10V24	V24/ V110/ V230	10V24	V24/ V110/ V230						
MS4-EE-1/8-...-AD1/AD2	34.9	42.2	96.5	103.8	21	82.6	G1/8	M8x1	35.1	46.7
MS4-EE-1/4-...-AD1/AD2							G1/4			
MS4-EE-1/8-...-AD3/AD4	34.9	42.2	96.5	103.8	21	82.6	G1/8	M12x1	35.1	55.8
MS4-EE-1/4-...-AD3/AD4							G1/4			
MS6-EE-1/4-...-AD1/AD2	44.7	52	116.7	124	31	103	G1/4	M8x1	35.1	46.7
MS6-EE-3/8-...-AD1/AD2							G3/8			
MS6-EE-1/2-...-AD1/AD2							G1/2			
MS6-EE-1/4-...-AD3/AD4	44.7	52	116.7	124	31	103	G1/4	M12x1	35.1	55.8
MS6-EE-3/8-...-AD3/AD4							G3/8			
MS6-EE-1/2-...-AD3/AD4							G1/2			

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

New
Variant AD7 ... AD10

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

Technical data

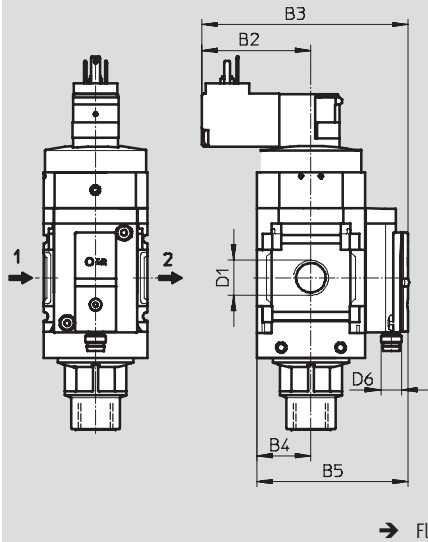
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor without LCD display (operational status indicator only) AD7 ... AD10

Technical data → Internet: sde5



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

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

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

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

Type	B2		B3		B4	B5	D1	D6
	10V24	V24/ V110/ V230	10V24	V24/ V110/ V230				
MS4-EE-1/8-...-AD7/AD8/AD9/AD10	34.9	42.2	73	80.3	21	59.1	G1/8	M8x1
MS4-EE-1/4-...-AD7/AD8/AD9/AD10							G1/4	
MS6-EE-1/4-...-AD7/AD8/AD9/AD10	44.7	52	92.9	100.2	31	79	G1/4	M8x1
MS6-EE-3/8-...-AD7/AD8/AD9/AD10							G3/8	
MS6-EE-1/2-...-AD7/AD8/AD9/AD10							G1/2	

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

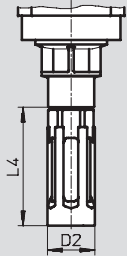
On-off valves MS4/MS6-EE, MS series

Technical data

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Dimensions – Silencer

Download CAD data → www.festo.com



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

Ordering data

Size	Connection	Without silencer		With silencer	
		Part No.	Type	Part No.	Type
Supply voltage 24 V DC					
MS4	G1/8	542580	MS4-EE-1/8-10V24	542600	MS4-EE-1/8-10V24-S
	G1/4	542578	MS4-EE-1/4-10V24	542598	MS4-EE-1/4-10V24-S
MS6	G1/4	542584	MS6-EE-1/4-10V24	542604	MS6-EE-1/4-10V24-S
	G3/8	542586	MS6-EE-3/8-10V24	542606	MS6-EE-3/8-10V24-S
	G1/2	542582	MS6-EE-1/2-10V24	542602	MS6-EE-1/2-10V24-S
Supply voltage 110 V AC					
MS4	G1/8	529541	MS4-EE-1/8-V110 ¹⁾	538725	MS4-EE-1/8-V110-S ¹⁾
	G1/4	529535	MS4-EE-1/4-V110 ¹⁾	538719	MS4-EE-1/4-V110-S ¹⁾
MS6	G1/4	529829	MS6-EE-1/4-V110 ¹⁾	538737	MS6-EE-1/4-V110-S ¹⁾
	G3/8	529835	MS6-EE-3/8-V110 ¹⁾	538743	MS6-EE-3/8-V110-S ¹⁾
	G1/2	529823	MS6-EE-1/2-V110 ¹⁾	538731	MS6-EE-1/2-V110-S ¹⁾
Supply voltage 230 V AC					
MS4	G1/8	529543	MS4-EE-1/8-V230 ¹⁾	538727	MS4-EE-1/8-V230-S ¹⁾
	G1/4	529537	MS4-EE-1/4-V230 ¹⁾	538721	MS4-EE-1/4-V230-S ¹⁾
MS6	G1/4	529831	MS6-EE-1/4-V230 ¹⁾	538739	MS6-EE-1/4-V230-S ¹⁾
	G3/8	529837	MS6-EE-3/8-V230 ¹⁾	538745	MS6-EE-3/8-V230-S ¹⁾
	G1/2	529825	MS6-EE-1/2-V230 ¹⁾	538733	MS6-EE-1/2-V230-S ¹⁾

1) Free of copper and PTFE

New
Variant AD7 ... AD10

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

Ordering data – Modular products



M Mandatory data →

Module No.	Series	Size	Function	Connection size	Supply voltage
527709	MS	4	EE	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	V24 10V24 V110 V230
527682		6			
Order example					
527709	MS	4	- EE	- AGB	- V24

Ordering table

Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M Module No.		527709	527682			
Series		Standard			MS	MS
Size		4	6		...	
Function		On-off valve, electrical			-EE	-EE
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 (pin allocation to EN 175301) 4 ... 14 bar			-V24	
		4 ... 18 bar				
		24 V DC (pin allocation to EN 175301) 4 ... 10 bar		1	-10V24	
		4 ... 10 bar				
		110 V AC (pin allocation to EN 175301) 4 ... 14 bar			-V110	
		4 ... 18 bar				
		230 V AC (pin allocation to EN 175301) 4 ... 14 bar			-V230	
	4 ... 18 bar					

1 10V24 Max. supply pressure 10 bar

Transfer order code

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

Ordering data – Modular products

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Options				
Silencer	Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
S	AG, A8, A4, RG, AD1, AD2, AD3, AD4, AD7, AD8, AD9, AD10	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 (with adapter plate)	MS pressure gauge		-AG	
		Adapter plate for EN pressure gauge 1/8, without pressure gauge	-		-A8	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4	
		Integrated pressure gauge, red-green scale			-RG	
		Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin		2	-AD1	
		Pressure sensor with display, plug M8, 1 switching output NPN, 3-pin		2	-AD2	
		Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA		2	-AD3	
		Pressure sensor with display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA		2	-AD4	
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O contact		2	-AD7	
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact		2	-AD8	
Alternative pressure gauge scale		psi		3	-PSI	
		MPa		3	-MPA	
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	

2 **AD1 ... AD4, AD7 ... AD10**
Measuring range max. 10 bar

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

3 **PSI, MPA** Only in combination with pressure gauge alternative AG or RG

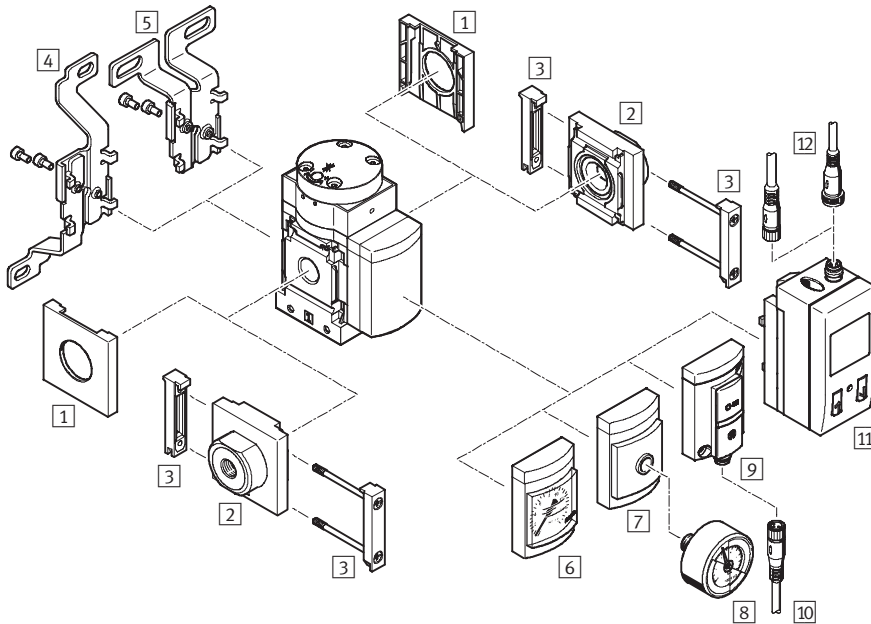
Transfer order code

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

Peripherals overview

Soft-start valve MS4/MS6-DL



Note

Additional accessories:

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

Mounting attachments and accessories

		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
3	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
4	Mounting bracket MS4/6-WB	■	■	-	-	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	-	-	ms4-wbm
6	MS pressure gauge AG	■	■	■	■	36
7	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	36
8	Pressure gauge MA	■	■	■	■	83
9	Pressure sensor without display AD7 ... AD10	■	■	■	■	36
10	Connecting cable NEBU-M8...-LE3	■	■	■	■	83
11	Pressure sensor with display AD1 ... AD4	■	■	■	■	36
12	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	83
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

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

Type codes

		MS	6	-	DL	-	1/2
Series							
MS	Standard service unit						
Size							
4	Grid dimension 40 mm						
6	Grid dimension 62 mm						
Service function							
DL	Pneumatically actuated soft-start valve						
Connection size							
MS4							
1/8	Thread G1/8						
1/4	Thread G1/4						
MS6							
1/4	Thread G1/4						
3/8	Thread G3/8						
1/2	Thread G1/2						

Additional variants can be ordered using the modular system → 36

- Connecting plates
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

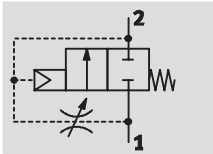
New
Variant AD7 ... AD10




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

Technical data

FESTO

Function



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



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

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

- Pneumatically actuated soft-start valve for slowly pressurising and venting pneumatic installations (for use with on-off valves EM1 and EE)
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- Pressure switching approx. 50% of input pressure
- Adjustable switching time delay
- Optional pressure sensor

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	Via pressure sensor for displaying output pressure via LCD display and electrical output					
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output					
	Via pressure gauge for displaying output pressure					
Valve function	2/2-way valve					
Exhaust function	Flow control					
Type of reset	Mechanical spring					
Pilot control mode	Direct					
Pilot air supply	External					
Direction of flow	Non-reversible					
C value	[l/(s*bar)]	4.6	9.6	11.22	21.05	28.97
b value		0.5	0.45	0.54	0.48	0.39

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

Standard nominal flow rate 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	2,800	5,050	6,450
In relief direction 2 \rightarrow 1	1,000	2,000	2,800	5,050	6,400

1) Measured at p1 = 6 bar and p2 = 5 bar, $\Delta p = 1$ bar

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

Technical data

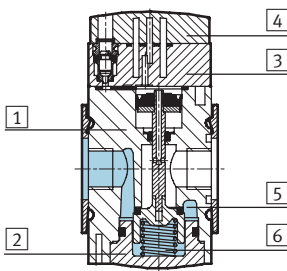
Operating and environmental conditions				
Variant	Standard		Pressure sensor AD...	
Size	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10
Operating medium	Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature [°C]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

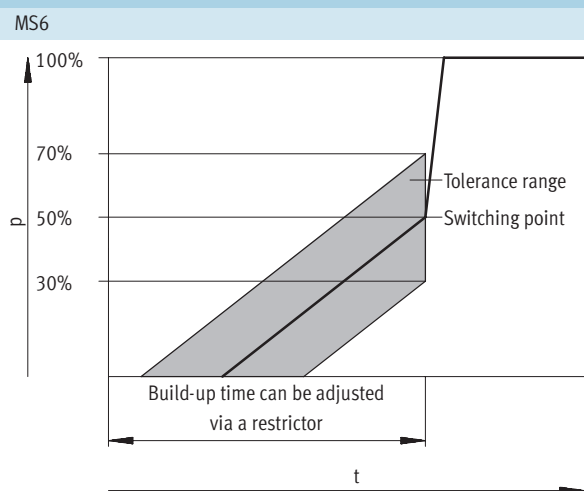
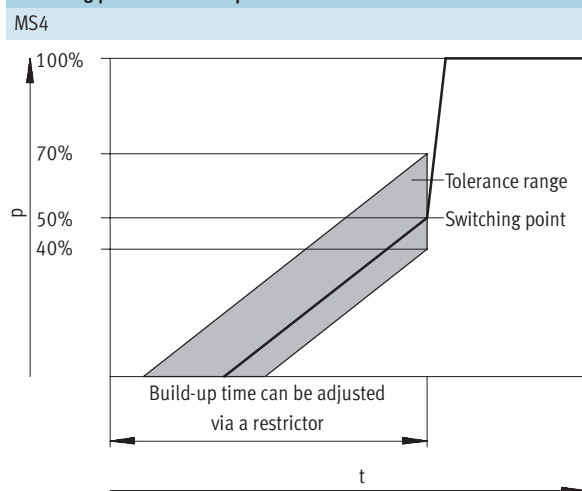
Materials

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



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

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

New
Variant AD7 ... AD10

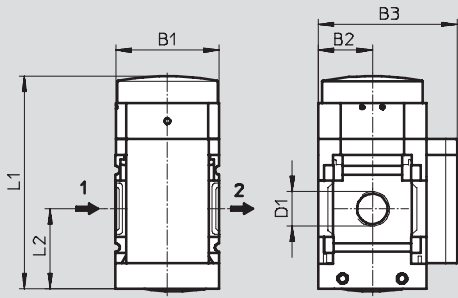
Soft-start valves MS4/MS6-DL, MS series

Technical data

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Dimensions – Standard

Download CAD data → www.festo.com



→ Flow direction

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

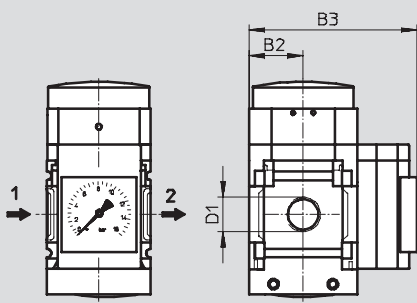
– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauge alternatives

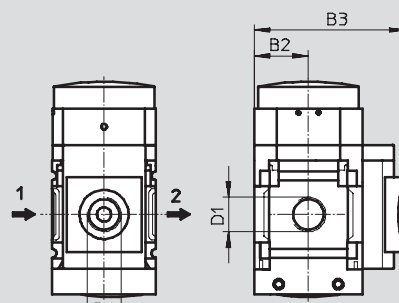
Download CAD data → www.festo.com

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

Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge display unit [bar]



→ Flow direction



→ Flow direction

Type	B2	B3	D1	D4
MS4-DL-1/8-...-AG	21	65	G1/8	-
MS4-DL-1/4-...-AG			G1/4	
MS4-DL-1/8-...-RG	21	66.5	G1/8	-
MS4-DL-1/4-...-RG			G1/4	
MS4-DL-1/8-...-A8	21	58.5	G1/8	G1/8
MS4-DL-1/4-...-A8			G1/4	
MS4-DL-1/8-...-A4	21	58.5	G1/8	G1/4
MS4-DL-1/4-...-A4			G1/4	
MS6-DL-1/4-...-AG	31	85	G1/4	-
MS6-DL-3/8-...-AG			G3/8	
MS6-DL-1/2-...-AG			G1/2	
MS6-DL-1/4-...-RG	31	86.5	G1/4	-
MS6-DL-3/8-...-RG			G3/8	
MS6-DL-1/2-...-RG			G1/2	
MS6-DL-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-DL-3/8-...-A4			G3/8	
MS6-DL-1/2-...-A4			G1/2	

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

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

Technical data

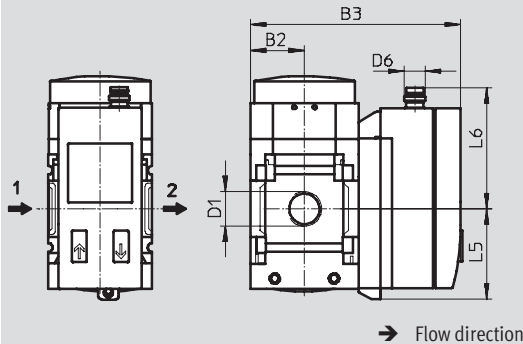
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with LCD display AD1 ... AD4

Technical data → Internet: sde1



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

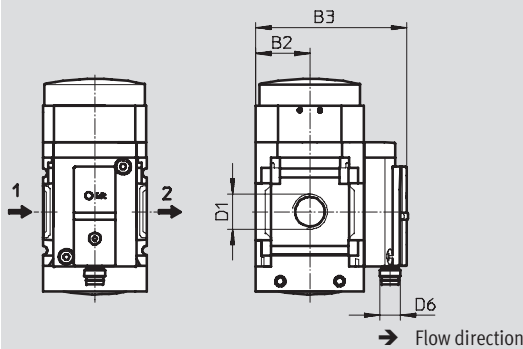
Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with
4-pin plug M12x1, 1 switching out-
put PNP and 4 ... 20 mA analogue

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

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

Pressure sensor without LCD display (operational status indicator only) AD7 ... AD10

Technical data → Internet: sde5



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

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

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

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

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

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

Ordering data

Size	Connection	Part No.	Type
MS4	G1/8	529533	MS4-DL-1/8 ¹⁾
	G1/4	529531	MS4-DL-1/4 ¹⁾
MS6	G1/4	529819	MS6-DL-1/4 ¹⁾
	G3/8	529821	MS6-DL-3/8 ¹⁾
	G1/2	529817	MS6-DL-1/2 ¹⁾

1) Free of copper and PTFE

New
Variant AD7 ... AD10

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

Ordering data – Modular products



M Mandatory data →

Module No.	Series	Size	Function	Connection size
527711 527684	MS	4 6	DL	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE
Order example				
527711	MS	4	- DL	- AGA

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M Module No.		527711	527684			
Series		Standard			MS	MS
Size		4	6		...	
Function		Soft-start valve, pneumatic			-DL	-DL
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		-	DL		-	
--	----	--	---	----	--	---	--

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

FESTO

Ordering data – Modular products

Options			
Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
AG, A8, A4, RG, AD1 ... AD4, AD7 ... AD10	PSI MPA	WP WPM WB WBM	Z
- AG	- PSI	- WB	- Z

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
0	Pressure gauge alternatives	MS pressure gauge, bar (with adapter plate)	MS pressure gauge, bar		-AG		
		Adapter plate for EN pressure gauge 1/8, without pressure gauge	-		-A8		
		Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4		
		Integrated pressure gauge, red-green scale			-RG		
		Pressure sensor with display, plug M8, 1 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 without display, plug M8, threshold value comparator, PNP, N/O contact			1		-AD7
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact			1		-AD8
		Pressure sensor without display, plug M8, window comparator, PNP, N/O contact			1		-AD9
		Pressure sensor without display, plug M8, window comparator, PNP, N/C contact			1		-AD10
		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, AD7 ... AD10

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 alternative AG or RG

Transfer order code

- - - -

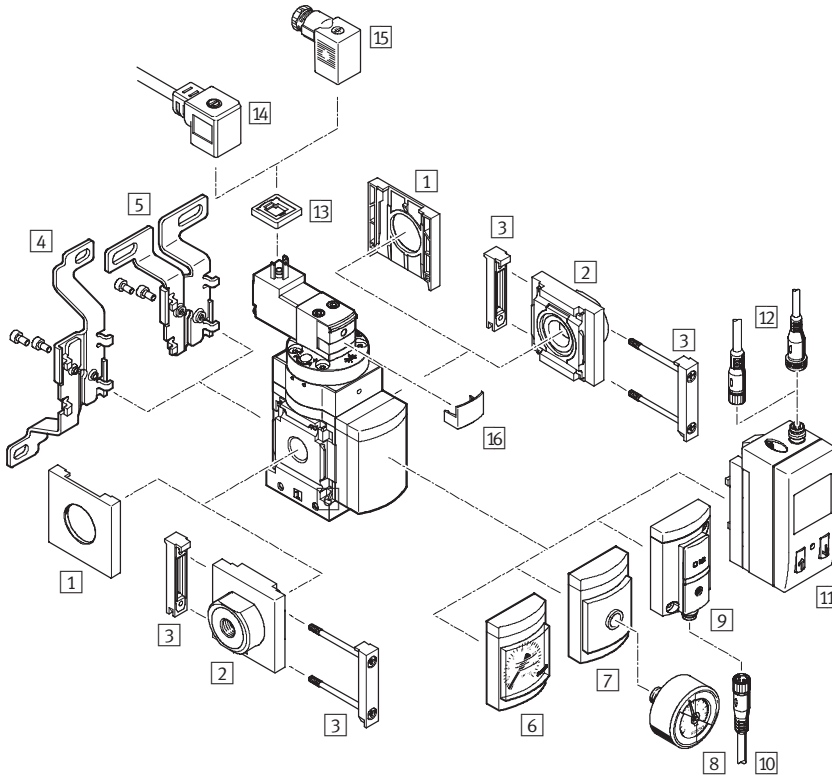
New
Variant AD7 ... AD10

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

Peripherals overview

FESTO

Soft-start valve MS4/MS6-DE



Note

Additional accessories:

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

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

Peripherals overview

FESTO

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
3	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
4	Mounting bracket MS4/6-WB	■	■	-	-	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	-	-	ms4-wbm
6	MS pressure gauge AG	■	■	■	■	46
7	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	46
8	Pressure gauge MA	■	■	■	■	83
9	Pressure sensor without display AD7 ... AD10	■	■	■	■	46
10	Connecting cable NEBU-M8...-LE3	■	■	■	■	83
11	Pressure sensor with display AD1 ... AD4	■	■	■	■	46
12	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	83
13	Illuminating seal MEB-LD	■	■	■	■	82
14	Plug socket with cable KMEB	■	■	■	■	82
15	Plug socket MSSD-EB	■	■	■	■	82
16	Locking clip CPV18-HV	■	■	■	■	82
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

New
Variant AD7 ... AD10

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

Type codes

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

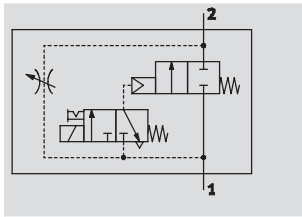
Additional variants can be ordered using the modular system → 46




- Connecting plates
- Supply voltage
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

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

Technical data

Function



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



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 (except variant 10V24) manual override
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor

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	Via pressure sensor for displaying output pressure via LCD display and electrical output				
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output				
	Via pressure gauge for displaying output pressure				
Valve function	2/2-way valve				
Exhaust function	Flow control				
Type of reset	Mechanical spring				
Switching position display	Via accessories				
Pilot control mode	Piloted				
Pilot air supply	External				
Direction of flow	Non-reversible				
C value [l/(s*bar)]	4.6	9.6	11.22	21.05	28.97
b value	0.5	0.45	0.54	0.48	0.39
Coil characteristics	V24	24 V DC			
	10V24	24 V DC			
	V110	110 V AC			
	V230	230 V AC			

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

New
Variant AD7 ... AD10

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

Technical data

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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.

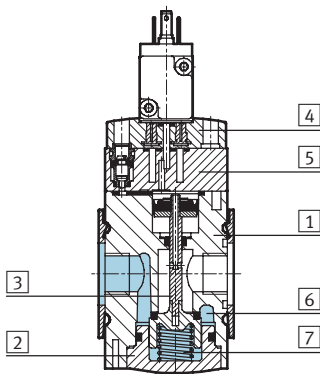
Operating and environmental conditions						
Variant	Coil parameter V24, V110, V230		Coil parameter 10V24		Pressure sensor AD...	
Size	MS4	MS6	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10	4 ... 10	4 ... 10
Operating medium	Compressed air				Filtered compressed air, lubricated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

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

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

Materials

Sectional view



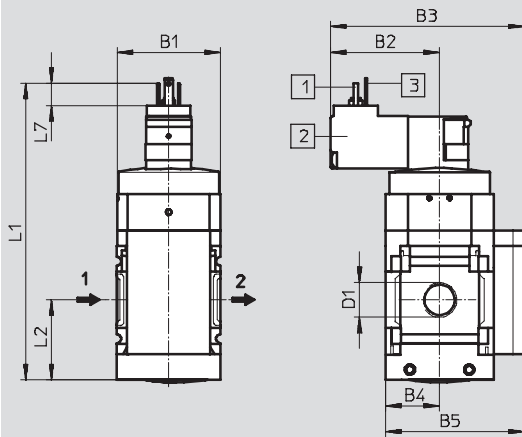
Soft-start valve	
1	Body Die-cast aluminium
2	Base Polyamide
3	Valve stem Steel
4	End cap Polyamide
5	Top plate Polyamide
6	Seat Aluminium/nitrile rubber
7	Springs Spring steel
-	Seals Nitrile rubber
Note on materials Free of copper and PTFE (not with variants AG, 10V24 or AD...)	

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

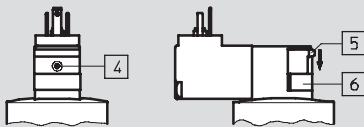
Technical data

Dimensions – Basic version

Download CAD data → www.festo.com



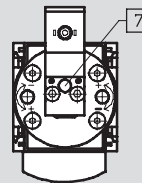
Supply voltage V24/V110/V230



- - Note

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

Supply voltage 10V24



- 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
- 4** Manual override, non-detenting (delivery status)
- 5** Slide
- 6** Cover plate
- 7** Manual override, non-detenting (delivery status)

→ Flow direction

Type	B1	B2		B3		B4	B5	D1	L1		L2	L7
		10V24	V24/ V110/ V230	10V24	V24/ V110/ V230				10V24	V24/ V110/ V230		
MS4-DE-1/8	40	34.9	42.2	67.9	75.2	21	54	G1/8	112.9	115.4	31.5	8.6
MS4-DE-1/4								G1/4				
MS6-DE-1/4	62	44.7	52	89.7	97	31	76	G1/4	144.9	147	45.5	8.6
MS6-DE-3/8								G3/8				
MS6-DE-1/2								G1/2				

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

New
Variant AD7 ... AD10

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

Technical data

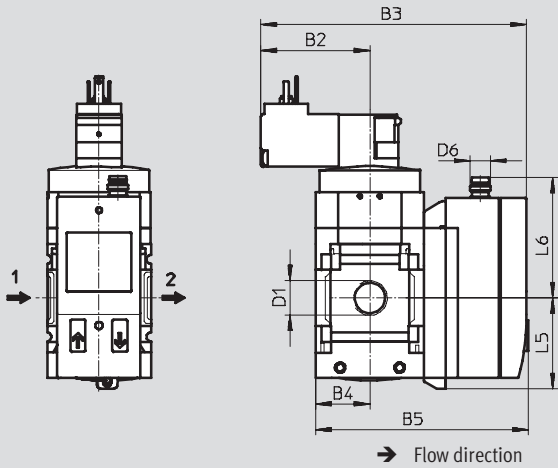
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with LCD display AD1 ... AD4

Technical data → Internet: sde1



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

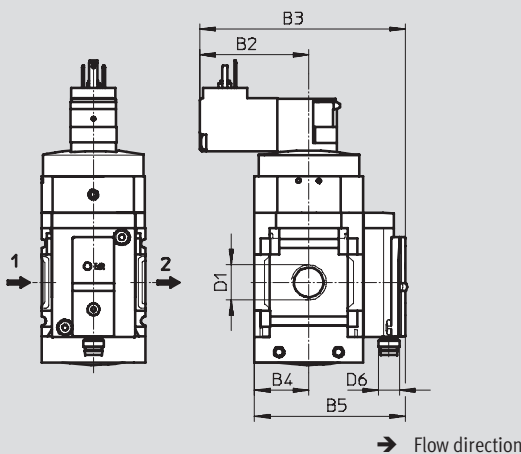
Variant AD3:
SDE1-D10-G2-MS-L-PI-M12 with 4-pin plug M12x1, 1 switching output PNP and 4 ... 20 mA analogue

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

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

Pressure sensor without LCD display (operational status indicator only) AD7 ... AD10

Technical data → Internet: sde5



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

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

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

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

Type	B2		B3		B4	B5	D1	D6	L5	L6
	10V24	V24/ V110/ V230	10V24	V24/ V110/ V230						
MS4-DE-1/8-...-AD1/AD2	34.9	42.2	96.5	103.8	21	82.6	G1/8	M8x1	35.1	46.7
MS4-DE-1/4-...-AD1/AD2							G3/4			
MS4-DE-1/8-...-AD3/AD4	34.9	42.2	96.5	103.8	21	82.6	G1/8	M12x1	35.1	55.8
MS4-DE-1/4-...-AD3/AD4							G3/4			
MS4-DE-1/8-...-AD7/AD8/AD9/AD10	34.9	42.2	73	80.3	21	59.1	G1/8	M8x1	-	-
MS4-DE-1/4-...-AD7/AD8/AD9/AD10							G3/4			
MS6-DE-1/4-...-AD1/AD2	44.7	52	116.7	124	31	103	G1/4	M8x1	35.1	46.7
MS6-DE-3/8-...-AD1/AD2							G3/8			
MS6-DE-1/2-...-AD1/AD2							G1/2			
MS6-DE-1/4-...-AD3/AD4	44.7	52	116.7	124	31	103	G1/4	M12x1	35.1	55.8
MS6-DE-3/8-...-AD3/AD4							G3/8			
MS6-DE-1/2-...-AD3/AD4							G1/2			
MS6-DE-1/4-...-AD7/AD8/AD9/AD10	44.7	52	92.9	100.2	31	79	G1/4	M8x1	-	-
MS6-DE-3/8-...-AD7/AD8/AD9/AD10							G3/8			
MS6-DE-1/2-...-AD7/AD8/AD9/AD10							G1/2			

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

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

Technical data

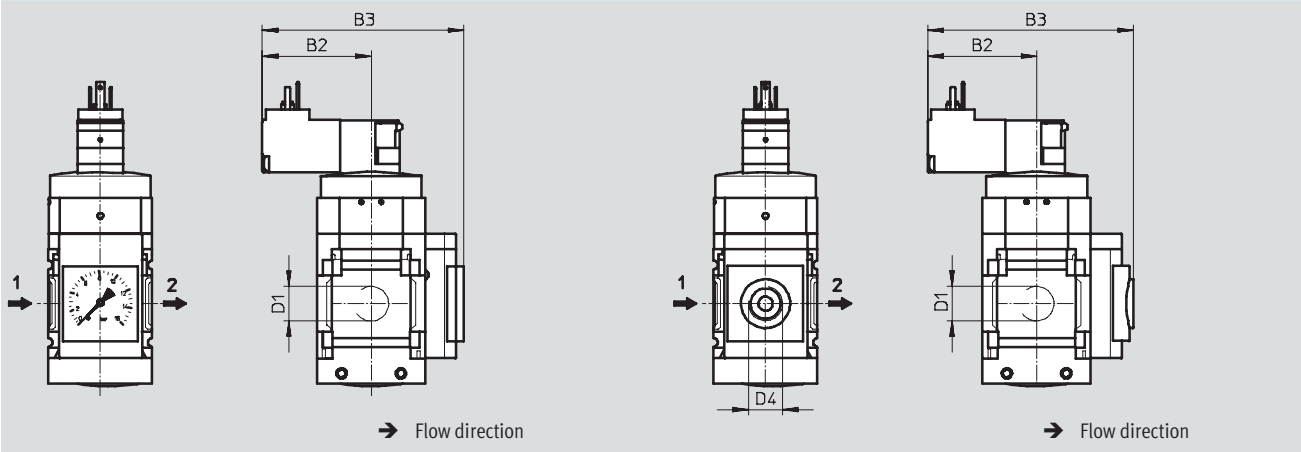
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

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



Type	B2		B3		D1	D4
	10V24	V24/V110/V230	10V24	V24/V110/V230		
MS4-DE-1/8-...-AG	34.9	42.2	78.9	86.2	G1/8	-
MS4-DE-1/4-...-AG					G1/4	
MS4-DE-1/8-...-RG	34.9	42.2	80.4	87.7	G1/8	-
MS4-DE-1/4-...-RG					G1/4	
MS4-DE-1/8-...-A8	34.9	42.2	72.4	79.7	G1/8	G1/8
MS4-DE-1/4-...-A8					G1/4	
MS4-DE-1/8-...-A4	34.9	42.2	72.4	79.7	G1/8	G1/4
MS4-DE-1/4-...-A4					G1/4	
MS6-DE-1/4-...-AG	44.7	52	98.7	106	G1/4	-
MS6-DE-3/8-...-AG					G3/8	
MS6-DE-1/2-...-AG					G1/2	
MS6-DE-1/4-...-RG	44.7	52	100.2	107.5	G1/4	-
MS6-DE-3/8-...-RG					G3/8	
MS6-DE-1/2-...-RG					G1/2	
MS6-DE-1/4-...-A4	44.7	52	92.3	99.6	G1/4	G1/4
MS6-DE-3/8-...-A4					G3/8	
MS6-DE-1/2-...-A4					G1/2	

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

Ordering data

Size	Connection	Supply voltage 24 V DC		Supply voltage 110 V AC		Supply voltage 230 V AC	
		Part No.	Type	Part No.	Type	Part No.	Type
MS4	G1/8	542560	MS4-DE-1/8-10V24	529525	MS4-DE-1/8-V110 ¹⁾	529527	MS4-DE-1/8-V230 ¹⁾
	G1/4	542558	MS4-DE-1/4-10V24	529519	MS4-DE-1/4-V110 ¹⁾	529521	MS4-DE-1/4-V230 ¹⁾
MS6	G1/4	542564	MS6-DE-1/4-10V24	529805	MS6-DE-1/4-V110 ¹⁾	529807	MS6-DE-1/4-V230 ¹⁾
	G3/8	542566	MS6-DE-3/8-10V24	529811	MS6-DE-3/8-V110 ¹⁾	529813	MS6-DE-3/8-V230 ¹⁾
	G1/2	542562	MS6-DE-1/2-10V24	529799	MS6-DE-1/2-V110 ¹⁾	529801	MS6-DE-1/2-V230 ¹⁾

1) Free of copper and PTFE

New
Variant AD7 ... AD10

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

Ordering data – Modular products



Mandatory data					
Module No.	Series	Size	Function	Connection size	Supply voltage
527713	MS	4	DE	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE	V24 10V24 V110 V230
527686		6			
Order example					
527713	MS	4	DE	AGA	V110

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527713		527686		
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Soft-start valve, electrical			-DE	-DE
	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 (pin allocation to EN 175301) 4 ... 14 bar		4 ... 18 bar		-V24
		24 V DC (pin allocation to EN 175301) 4 ... 10 bar		4 ... 10 bar	[1]	-10V24
		110 V AC (pin allocation to EN 175301) 4 ... 14 bar		4 ... 18 bar		-V110
		230 V AC (pin allocation to EN 175301) 4 ... 14 bar		4 ... 18 bar		-V230

[1] 10V24 Max. supply pressure 10 bar

Transfer order code

	MS		-	DE		-	
--	----	--	---	----	--	---	--

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

Ordering data – Modular products

FESTO

Options			
Pressure gauge alternatives	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
AG, A8, A4, RG, AD1, AD2, AD3, AD4, AD7, AD8, AD9, AD10	PSI MPA	WP WPM WB WBM	Z
- AG	- PSI	- WP	- Z

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
0 Pressure gauge alternatives	MS pressure gauge (with adapter plate)	MS pressure gauge			-AG		
	Adapter plate for EN pressure gauge 1/8, without pressure gauge	-			-A8		
	Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4		
	Integrated pressure gauge, red-green scale				-RG		
	Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin			2	-AD1		
	Pressure sensor with display, plug M8, 1 switching output NPN, 3-pin			2	-AD2		
	Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			2	-AD3		
	Pressure sensor with display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			2	-AD4		
	Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O contact			2	-AD7		
	Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact			2	-AD8		
	Pressure sensor without display, plug M8, window comparator, PNP, N/O contact			2	-AD9		
	Pressure sensor without display, plug M8, window comparator, PNP, N/C contact			2	-AD10		
	Alternative pressure gauge scale	psi			3		-PSI
		MPa			3		-MPA
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		

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

Measuring range max. 10 bar

4 WP, WPM

Only with connecting plate AGA, AGB, AGC, AGD or AGE

3 PSI, MPA

Only with pressure gauge alternative AG or RG

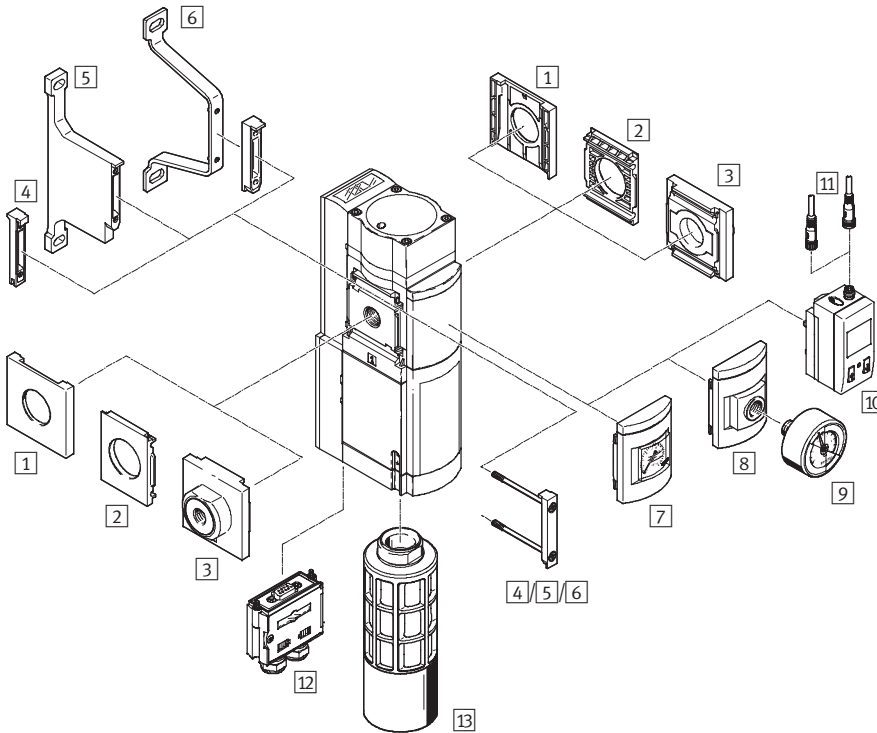
Transfer order code

- - - -

Soft start and exhaust valves MS6-SV, MS series

Peripherals overview

Soft start and exhaust valves MS6-SV



 Note

Other accessories:

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

Mounting attachments and accessories

		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	-	-	■	-	ms6-end
2	Mounting plate MS6-AEND	■ ¹⁾	-	■ ²⁾	-	ms6-aend
3	Connecting plate MS6-AG...	-	■ ¹⁾	-	■ ²⁾	ms6-ag
4	Module connector MS6-MV	-	-	■	■	ms6-mv
5	Mounting bracket MS6-WPB	■	■	■	■	ms6-wpb
6	Mounting bracket MS6-WPE	■	■	■	■	ms6-wpe
7	MS pressure gauge AG	■	■	■	■	55
8	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	55
9	Pressure gauge MA	■	■	■	■	83
10	Pressure sensor with display AD1 ... AD4	■	■	■	■	55
11	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	83
12	Multi-pin plug socket NECA	■	■	■	■	56
13	Silencer UOS-1	■	■	■	■	57

1) Mounting bracket MS6-WPB/WPE is required for mounting.

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

Soft start and exhaust valves MS6-SV, MS series

FESTO

Type codes

		MS	6	-	SV	-	1/2	-	D	-	10V24	-	SO	-	AG
Series															
MS	Standard service unit														
Size															
6	Grid dimension 62 mm														
Service function															
SV	Soft start and exhaust valve														
Connection sizes															
1/2	Thread G1/2														
Performance Level															
D	Category 3, 2-channel with self-monitoring, maximum attainable according to ISO 13849-1														
Supply voltage															
10V24	Supply voltage 24 V DC														
Silencer															
	Without silencer														
SO	Silencer, open														
Pressure gauge/adaptor plate															
AG	MS pressure gauge														
AD1	Pressure sensor with display, plug M8, PNP, 3-pin														

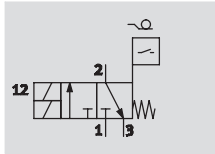
Further variants can be ordered using the modular system → 55




- Connecting plates
- Pressure gauge/adaptor plate
- Alternative pressure gauge scale
- Multi-pin plug socket
- Type of mounting
- Alternative flow direction

Soft start and exhaust valves MS6-SV, MS series

Technical data

Function



-  - Flow rate
4300 l/min
-  - Temperature range
-10 ... +50 °C
-  - Operating pressure
3.5 ... 10 bar





The electropneumatic soft-start and exhaust valve is used to reduce pressure quickly and reliably and to build up pressure gradually in pneumatic systems and following devices in industry. The device is a self-testing, redundant mechatronic system in accordance


with the requirements of DIN EN ISO 13849-1, for which the safety-related pneumatic protection objective and safe venting, even in the case of failures within a valve (e.g. caused by wear, contamination) are guaranteed. With the 2-channel design and its monitoring, the device

fulfils controller category 3 requirements. Thus, with correct installation and consideration of the specific application data, a performance level of max. “d” can be attained. Via the electrical connection (multi-pin plug socket NECA Sub-D, 9-pin), the device receives the secure enable

signals (EN1/EN2) from commercially available electronic or electromechanical protective switchgear, which monitor the protective equipment of the machine (e.g. emergency stop, light curtain, electrical door switch of the protective enclosure etc.).

 **Note**
The device may only be used together with the multi-pin plug socket NECA approved for it. The multi-pin plug socket can be ordered via the modular product system (MP... → 55) or as an accessory (NECA → 56).

 **Note**
To avoid back pressures, it is recommended that the device be operated together with the silencer UOS-1. The silencer can be ordered via the modular product system (SO → 55) or as an accessory (UOS-1 → 57).

 **Note**
Only devices that do not impair the pneumatic protective measure – safe venting – may be placed after the MS6-SV.

- Conforms to DIN EN ISO 13849-1
- Max. achievable performance level “d”
- A switching time delay adjusted via a flow control valve for gradual pressure build-up
- Optional pressure sensor


General technical data	
Pneumatic connection 1, 2	G½
Pneumatic connection 3	G1
Design	Piston seat
Type of mounting	Via accessories In-line installation
Assembly position	Any
Pressure display	Via pressure sensor for displaying output pressure via LCD display and electrical output Via pressure gauge for displaying output pressure
Performance Level	Max. “d”
Position sensing principle	Solenoid piston principle
Valve function	3/2-way valve, single solenoid, closed
Manual override	None
Reset method	Mechanical spring
Switching position display	LED and floating contact
Type of actuation	Direct
Pilot air supply	Internal
Direction of flow	Non-reversible
C value	[l/(s*bar)] 19.3
b value	0.21

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

Soft start and exhaust valves MS6-SV, MS series

FESTO

Technical data

 **Safety instruction: switching frequency min. 1/week**

In the processing-safe (i.e. pressurized) state the mechanical system is not tested. If the process-specific switching frequency (reliable exhausting) is less than once a week, compulsory switching off must be carried out by the machine user.

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]	
In main flow direction 1 \rightarrow 2	4,300
In relief direction 2 \rightarrow 3	9,000 ²⁾
	6,000 ²⁾ (in the event of a critical error)

- 1) Measured at $p_1 = 6$ bar and $p_2 = 5$ bar, $\Delta p = 1$ bar
 2) Measured with respect to atmosphere with silencer UOS-1.

Electrical data	
Electrical connection	Sub-D 9-pin
Operating voltage range [V DC]	21.6 ... 26.4
Nominal operating voltage [V DC]	24
Duty cycle [%]	100
Response time off [ms]	40
Response time on [ms]	130
Protection class	IP65 with multi-pin plug socket NECA

Operating and environmental conditions		
Variant	Standard	Pressure sensor AD...
Operating pressure [bar]	3.5 ... 10	3.5 ... 10
Operating medium	Compressed air	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m
Ambient temperature [°C]	-10 ... +50	0 ... +50
Temperature of medium [°C]	-10 ... +50	0 ... +50
Corrosion resistance class CRC ¹⁾	2	
Noise level [dB (A)]	75 (with silencer UOS-1)	
CE mark (see declaration of conformity)	In accordance with EU EMC directive	
Fire protection classification to UL 94	V0-V2	

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

Weight [g]	
Soft start and exhaust valve	2,000
Soft start and exhaust valve with silencer UOS-1	2,200

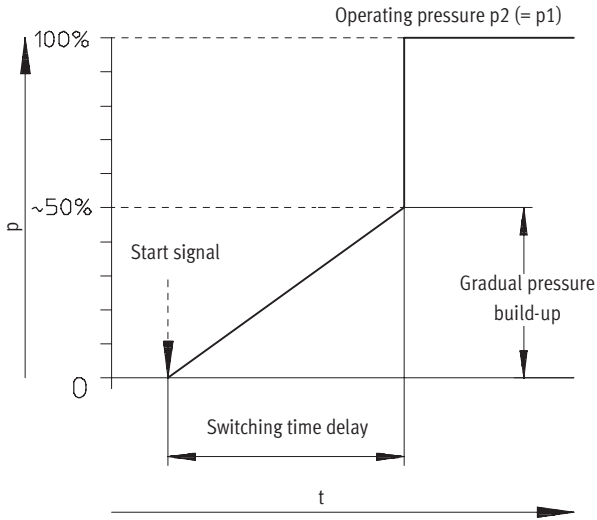
Materials	
Housing	Die-cast aluminium
Seals	Nitrile rubber

Soft start and exhaust valves MS6-SV, MS series

Technical data

Switching point

Pressure p as a function of time t



Multi-pin plug socket

Description	Enable signals (EN1/EN2)	Example of connection
<p>NECA-...-MP1</p> <ul style="list-style-type: none"> Static enable signals (EN1 = 24 V, EN2 = 24 V). 		
<ul style="list-style-type: none"> Pulsing enable signals (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V) for cross-circuit recognition. The cross-circuit recognition by means of pulse signals is always carried out by the safety switching device/safety PLC used. 		
<p>NECA-...-MP3</p> <ul style="list-style-type: none"> Static enable signals (EN1 = 0 V, EN2 = 24 V). Cross-circuit monitoring is possible statically. A cross-circuit between cables EN1 and EN2 does not cause the valve to start unintentionally. 		

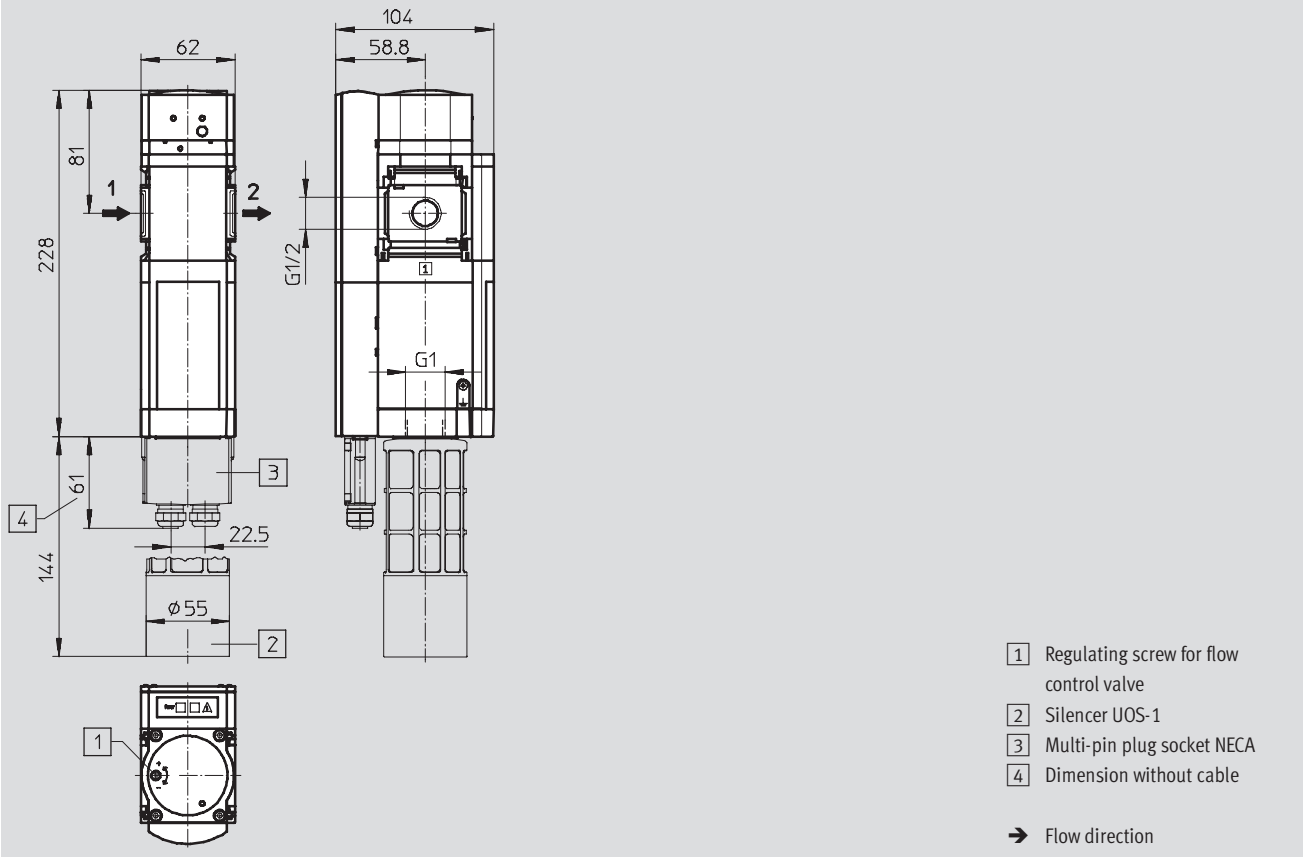
Soft start and exhaust valves MS6-SV, MS series

Technical data

FESTO

Dimensions – Standard

Download CAD data → www.festo.com



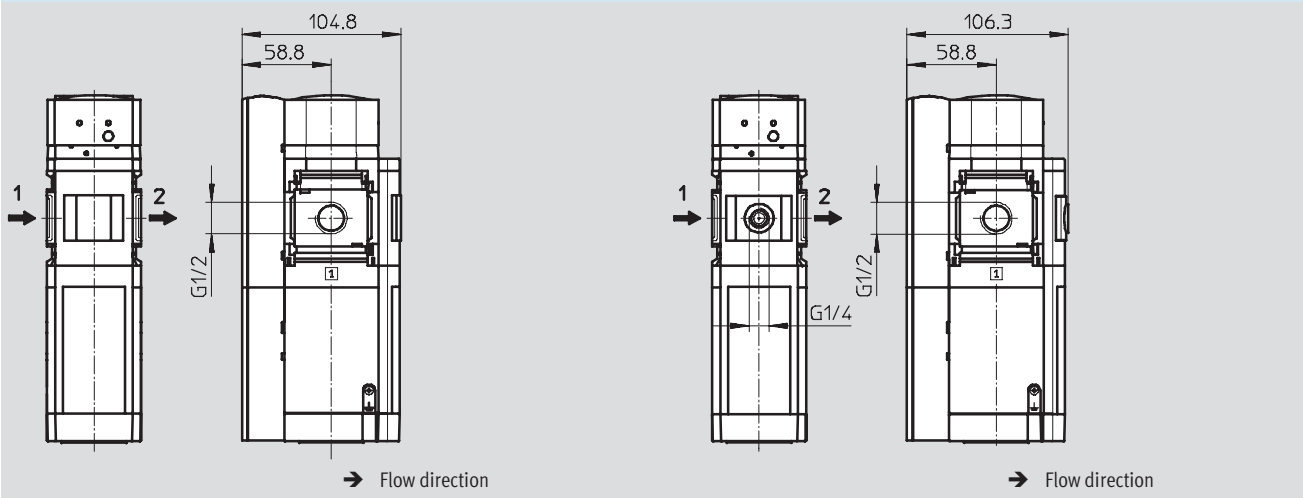
Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

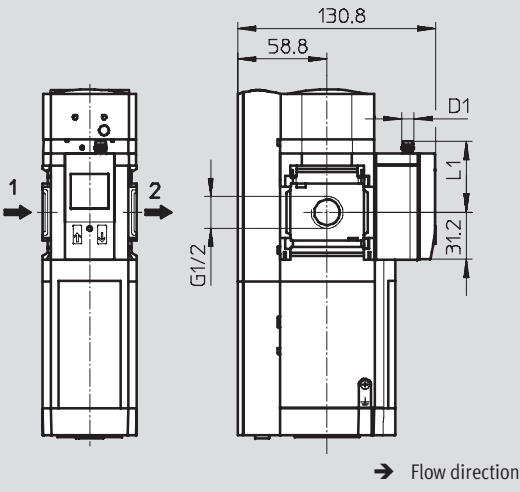
Adapter plate A4 for EN pressure gauge 1/4, without pressure gauge



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

Soft start and exhaust valves MS6-SV, MS series

Technical data

Dimensions – Pressure gauge alternatives	Download CAD data → www.festo.com
<p>Pressure sensor with LCD display AD1 ... AD4</p>  <p style="text-align: center;">→ Flow direction</p>	<p style="text-align: right;">Technical data → Internet: sde1</p> <p>Variant AD1: SDE1-D10-G2-MS-L-P1-M8 with 3-pin plug M8x1, 1 switch output PNP</p> <p>Variant AD2: SDE1-D10-G2-MS-L-N1-M8 with 3-pin plug M8x1, 1 switch output NPN</p> <p>Variant AD3: SDE1-D10-G2-MS-L-PI-M12 with 4-pin plug M12x1, 1 switch output PNP and 4 ... 20 mA analogue</p> <p>Variant AD4: SDE1-D10-G2-MS-L-NI-M12 with 4-pin plug M12x1, 1 switch output NPN and 4 ... 20 mA analogue</p>

Type	D1	L1
MS6-SV-...-AD1/AD2	M8x1	46.7
MS6-SV-...-AD3/AD4	M12x1	55.8

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

Ordering data					
Size	Connection	Without silencer		With silencer	
		Part No.	Type	Part No.	Type
MS pressure gauge, display unit [bar]					
MS6	G1/2	548715	MS6-SV-1/2-D-10V24-AG	548717	MS6-SV-1/2-D-10V24-SO-AG
Pressure sensor with display, plug M8, PNP, 3-pin					
MS6	G1/2	562580	MS6-SV-1/2-D-10V24-AD1	–	

Soft start and exhaust valves MS6-SV, MS series

Ordering data – Modular products



M Mandatory data				O Options			
Module No.	Series	Function	Performance Level	Silencer	Alternative pressure gauge scale	Type of mounting	
548713	MS 6	SV 1/2 AGB AGC AGD AGE	D 10V24	SO AG A4 AD1 AD2 AD3 AD4	PSI MPA	Alternative flow direction	
						MP1 MP3	WPB Z
Order example							
548713	MS 6	- SV - AGB -	D - 10V24 -	SO - AG -	- MP1 -	WPB	- Z

Ordering table		Grid dimension [mm]	62	Conditions	Code	Enter code
M	Module No.	548713				
	Series	Standard			MS	MS
	Size	6			6	6
	Function	Soft start and exhaust valve			-SV	-SV
	Connection sizes	Thread G1/2			-1/2	
		Connecting plate G1/4			-AGB	
		Connecting plate G3/8			-AGC	
		Connecting plate G1/2			-AGD	
		Connecting plate G3/4			-AGE	
	Performance Level	Category 3, 2-channel with self-monitoring, maximum attainable according to ISO 13849-1			-D	-D
	Supply voltage	24 V DC, 10 bar			-10V24	-10V24
O	Silencer	Silencer, open			-SO	
	Pressure gauge/ adapter plate	Pressure gauge	MS pressure gauge		-AG	
		Adapter plates	For EN pressure gauge 1/4, without pressure gauge		-A4	
	Pressure sensor	With display, plug M8, PNP, 3-pin			-AD1	
		With display, plug M8, NPN, 3-pin			-AD2	
		With display, plug M12, PNP, 4-pin, analogue output 4 ... 20 mA			-AD3	
		With display, plug M12, NPN, 4-pin, analogue output 4 ... 20 mA			-AD4	
	Alternative pressure gauge scale	psi		1	-PSI	
		MPa		1	-MPA	
	Multi-pin plug socket	Sub-D, 9-pin, screw terminal	Without cable, enable signals static (EN1 = 24 V, EN2 = 24 V)		-MP1	
			Without cable, enable signals static (EN1 = 0 V, EN2 = 24 V), short-circuit detection possible		-MP3	
	Type of mounting	Wall mounting plate, large clearance			-WPB	
	Alternative flow direction	Flow direction from right to left			-Z	

1 PSI, MPA Not with pressure gauge/adapter plate A4, AD1, AD2, AD3, AD4

Transfer order code

548713	MS	6	-	SV	-		-	D	-	10V24	-		-		-		-		-	
--------	----	---	---	----	---	--	---	---	---	-------	---	--	---	--	---	--	---	--	---	--

Soft start and exhaust valves MS6-SV, MS series

Accessories

Multi-pin plug socket NECA

(order code: MP1/MP3)

- For soft start and exhaust valve MS6-SV

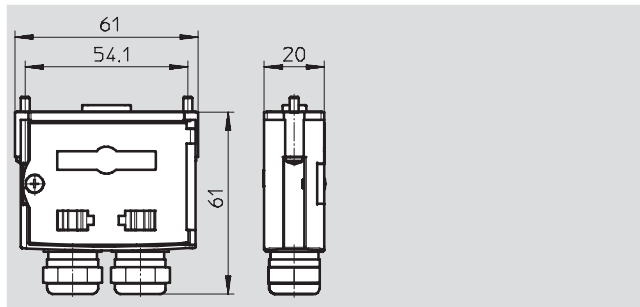
Material:

Housing: Reinforced polyamide

Screws: Steel

Union nut: Brass

Seals: Nitrile rubber



Technical data		
Type of mounting	Via through-holes	
Electrical connection	Sub-D, 9-pin, screw terminal 9-pin	
Operating voltage range	[V DC]	21.6 ... 26.4
Nominal operating voltage	[V DC]	24
Current-carrying capacity	[A]	1
Connection cross section	[mm ²]	0.34 ... 1 without wire end sleeves
	[mm ²]	0.34 ... 0.5 with wire end sleeves
Permissible cable diameter	[mm]	5 ... 10
Protection class to IEC 60529	IP65	

Operating and environmental conditions		
Relative air humidity	95%, non-condensing	
Ambient temperature	[°C]	0 ... +50
Storage temperature	[°C]	-20 ... +70
Corrosion resistance class CRC ¹⁾	2	

1) Corrosion resistance class 2 to Festo standard 940 070

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

Ordering data				
Size	Connection	Weight [g]	Part No.	Type
MS6	Without cable, enable signals static (EN1 = 24 V, EN2 = 24 V)	60	548719	NECA-S1G9-P9-MP1
	Without cable, enable signals static (EN1 = 0 V, EN2 = 24 V), short-circuit detection possible	60	552703	NECA-S1G9-P9-MP3

Soft start and exhaust valves MS6-SV, MS series

Accessories

Silencer UOS-1

(order code: SO)

- For soft start and exhaust valve MS6-SV

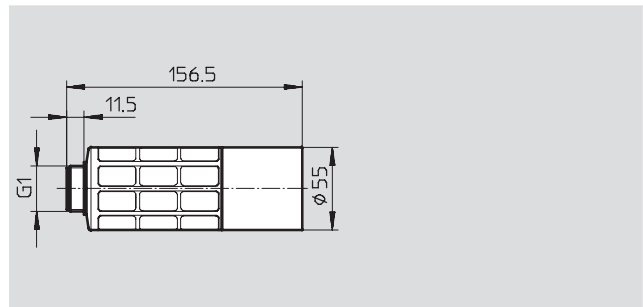
Materials:

Housing: Polyacetate

Sleeve: Wrought aluminium alloy

Silencer insert: Polyethylene

Free of copper and PTFE



Technical data	
Pneumatic connection	G1
Design	Silencer, open
Type of mounting	Via male thread
Assembly position	Any
Type of seal on threaded collar	No seal

Operating and environmental conditions		
Operating pressure	[bar]	0 ... 10
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Corrosion resistance class CRC ¹⁾		2

1) Corrosion resistance class 2 to Festo standard 940 070

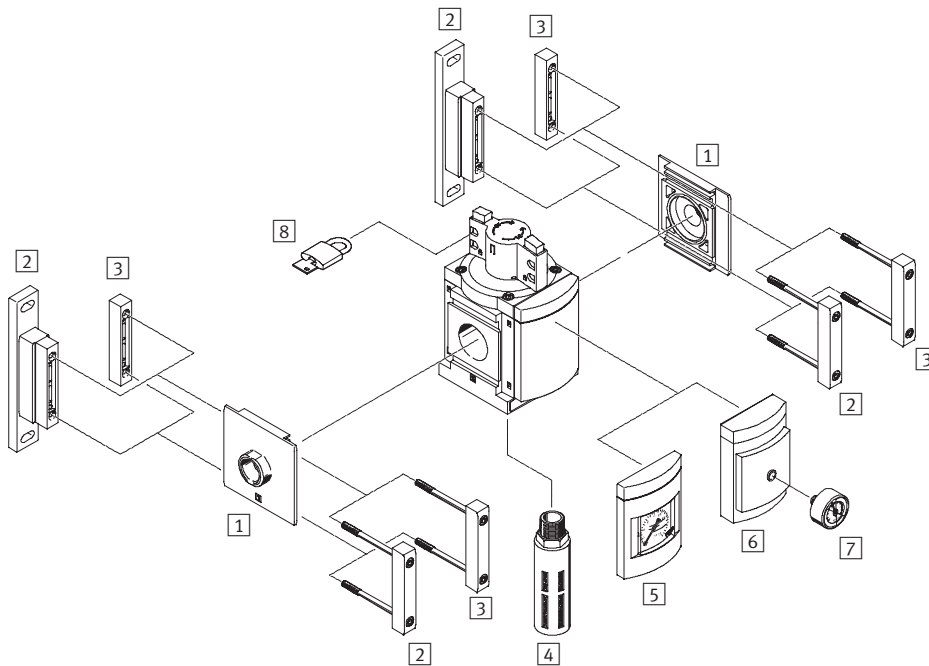
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Ordering data			
Size	Weight [g]	Part No.	Type
MS6	200	552252	UOS-1

On-off valves MS12-EM, MS series

Peripherals overview

On-off valves MS12-EM

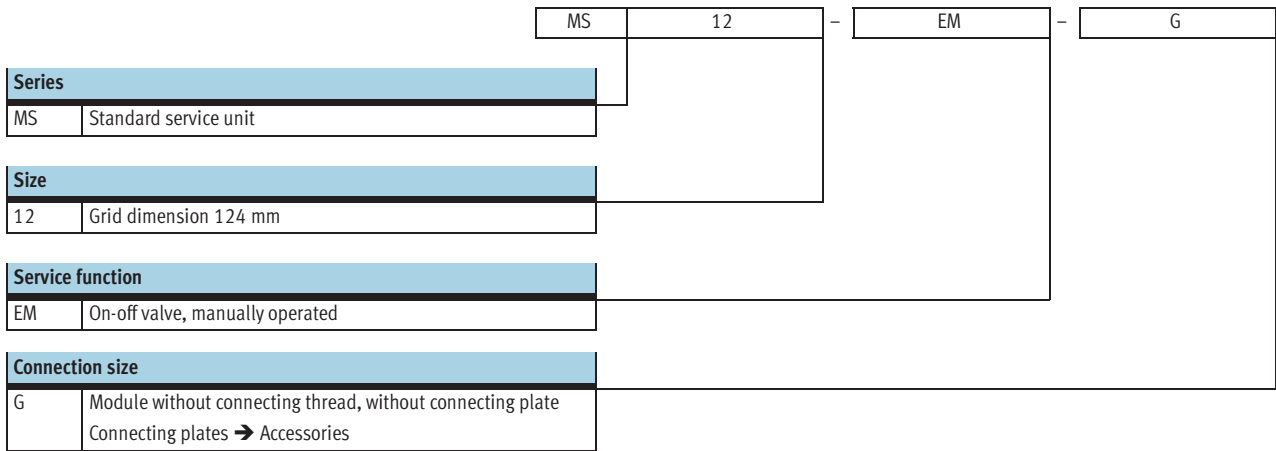


Note
 Additional accessories:
 – Module connector for combination with size MS9 → Internet: armv

Mounting attachments and accessories		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	Silencer U	83
5	MS pressure gauge AG	63
6	Adapter for EN pressure gauge 1/4 A4	63
7	Pressure gauge MA	83
8	Padlock LRVS-D	83

On-off valves MS12-EM, MS series

Type codes



Further variants can be ordered using the modular system → 63

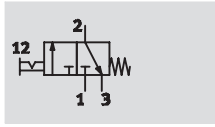
- Connecting plates
- Silencer
- Pressure gauge/adapter
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction




On-off valves MS12-EM, MS series

Technical data

FESTO

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 → Internet: ms12-ag
 -  Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

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

Operating and environmental conditions		
Operating pressure	[bar]	0 ... 21
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Corrosion resistance	CRC ¹⁾	2

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

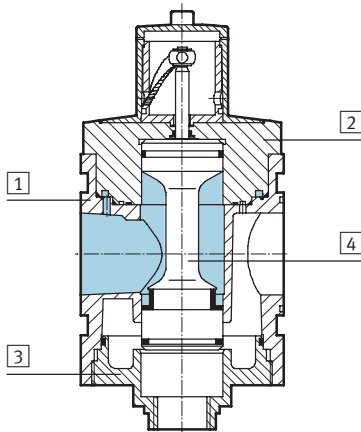
On-off valves MS12-EM, MS series

Technical data

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

Materials

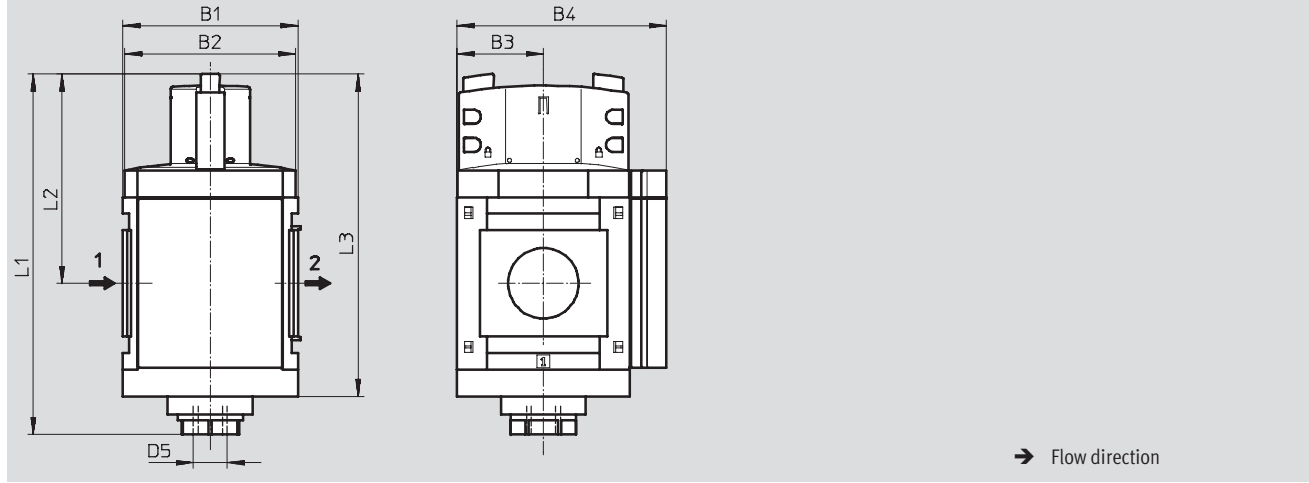
Sectional view



On-off valve		
1	Body	Die-cast aluminium
2	Cap, top	Aluminium
3	Cap, bottom	Aluminium
4	Valve spool	Stainless steel, polyacetate, nitrile rubber
-	Springs	Steel
-	Covers/cover plates	Polyamide
-	Seals	Nitrile rubber
	Note on materials	Free of copper and PTFE (not with variant AG)

Dimensions – Standard

Download CAD data → www.festo.com



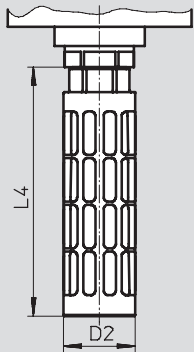
Type	B1	B2	B3	B4	L1	L2	L3	D5
MS12-EM	124	122	61	148	255	148	228	G1

On-off valves MS12-EM, MS series

Technical data

Dimensions – Silencer

Download CAD data → www.festo.com



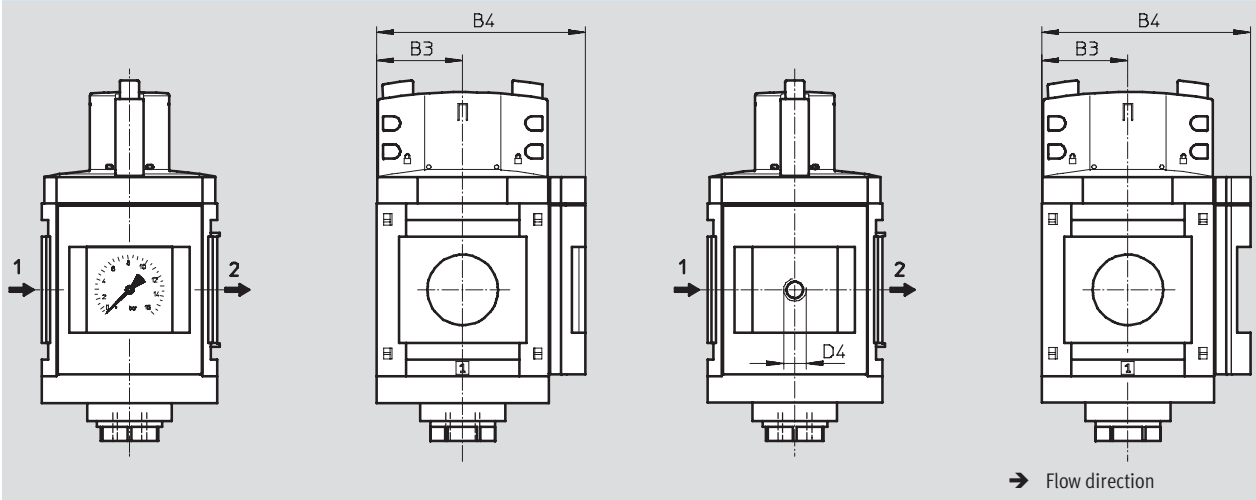
Type	D2 Ø	L4
MS12-EM-...-S	47.8	165.5

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



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

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

Ordering data

Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	541495	MS12-EM-G²⁾

1) Connecting plate must be ordered separately as an accessory → Internet: ms12-ag

2) Free of copper and PTFE

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

On-off valves MS12-EM, MS series

Ordering data – Modular products

M Mandatory data					O Options				
Module No.	Series	Size	Function	Connection size	Silencer	Pressure gauge/ adapter	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535031	MS	12	EM	AGF AGG AGH AGI G	S	AG A4	PSI MPA	WP	Z
Order example									
535031	MS	12	-EM	-G	-S	-AG	-PSI	-	-Z

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535031			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	On-off valve, manual		-EM	-EM
	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

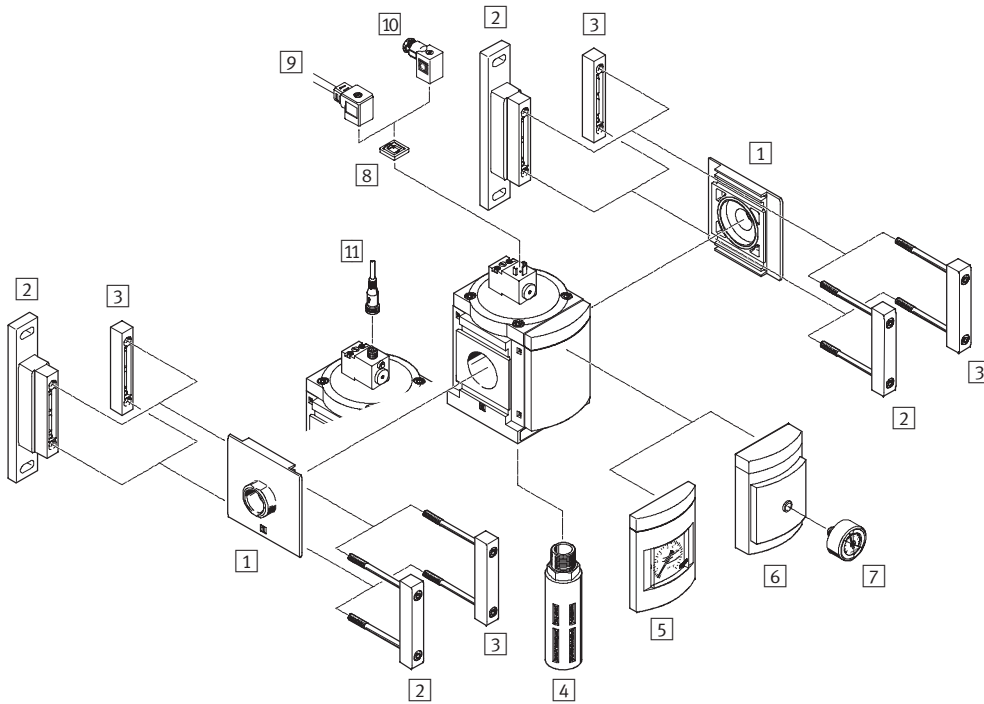
535031	MS	12	-EM	-	-	-	-	-	-	-
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On-off valves MS12-EE, MS series

Peripherals overview

FESTO

On-off valves MS12-EE

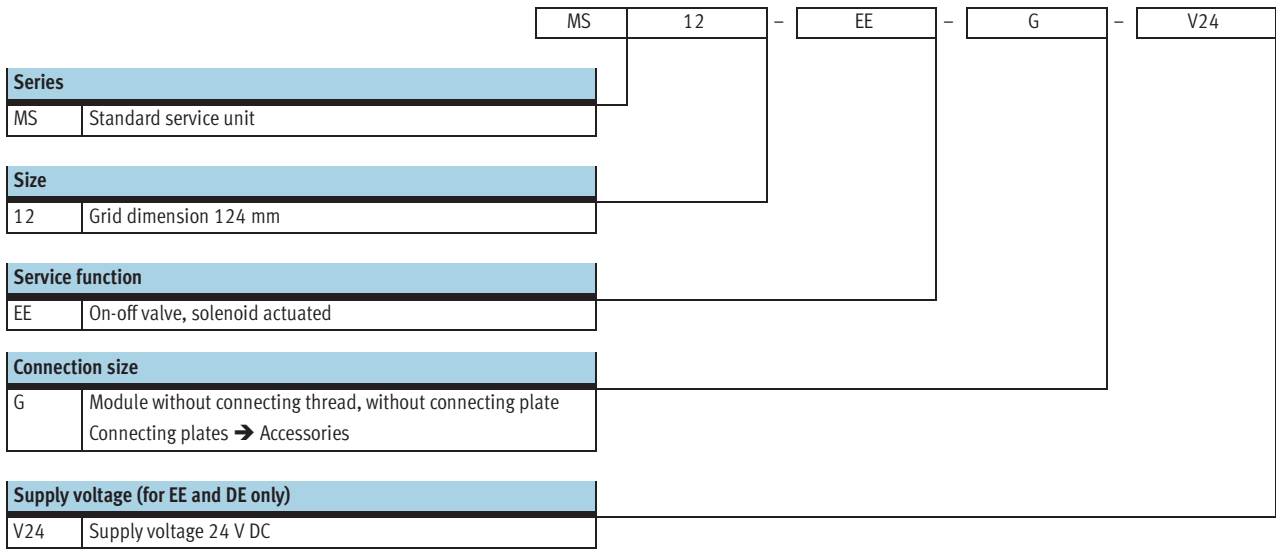


Note
 Additional accessories:
 - Module connector for combination with size MS9 → Internet: armv

Mounting attachments and accessories		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	Silencer U	83
5	MS pressure gauge AG	69
6	Adapter for EN pressure gauge 1/4 A4	69
7	Pressure gauge MA	83
8	Illuminating seal MC-LD	82
9	Plug socket with cable KMC	82
10	Plug socket MSSD-C	82
11	Connecting cable NEBU-M12...-LE4	83

On-off valves MS12-EE, MS series

Type codes



Further variants can be ordered using the modular system → 69

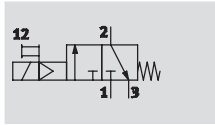
- Connecting plates
- Supply voltage
- Silencer
- Pressure gauge/adapter
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction




On-off valves MS12-EE, MS series

Technical data

FESTO

Function




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



- 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 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 → Internet: ms12-ag
 -  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Standard nominal flow rate q_n [l/min]	
In main flow direction 1 → 2	25,000 ... 32,000
In relief direction 2 → 3	8,900

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

On-off valves MS12-EE, MS series

Technical data

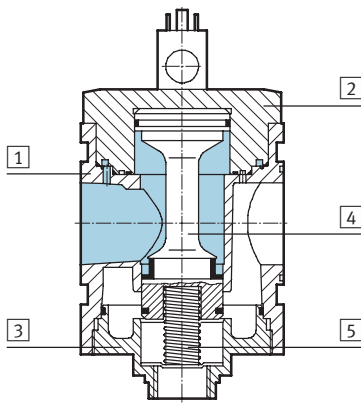
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

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

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

Materials

Sectional view



On-off valve		
1	Body	Die-cast aluminium
2	Cap, top	Aluminium
3	Cap, bottom	Aluminium
4	Valve spool	Stainless steel, polyacetate, nitrile rubber
5	Springs	Steel
-	Covers/cover plates	Polyamide
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE (not with variant AG)

Dimensions – Standard

Download CAD data → www.festo.com

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	

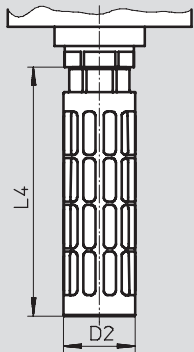
On-off valves MS12-EE, MS series

Technical data

FESTO

Dimensions – Silencer

Download CAD data → www.festo.com



Type	D2 Ø	L4
MS12-EE-...-S	47.8	165.5

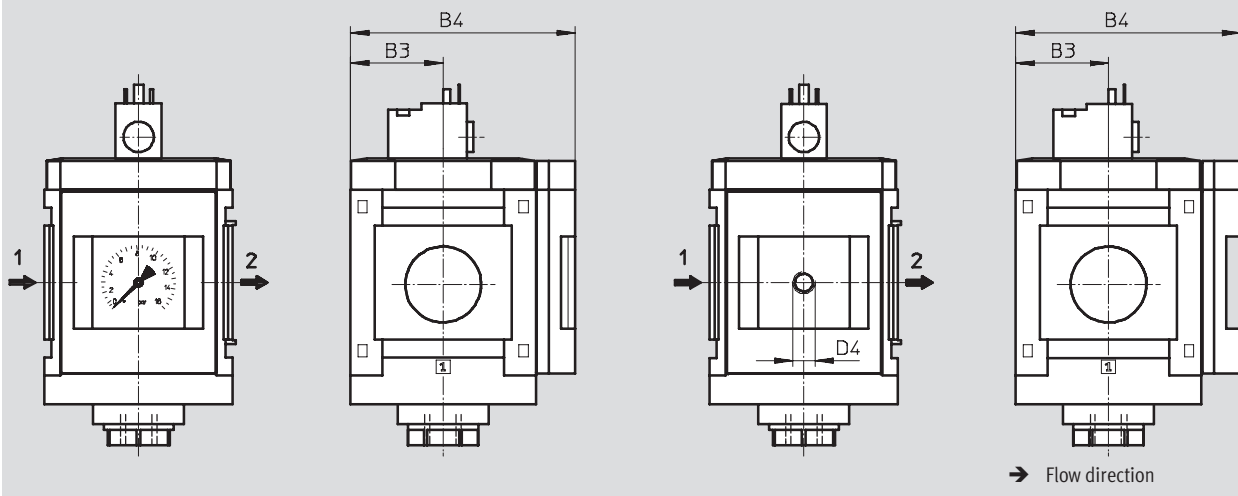
– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com

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⁾	541496	MS12-EE-G-V24 ²⁾

1) Connecting plate must be ordered separately as an accessory → Internet: ms12-ag

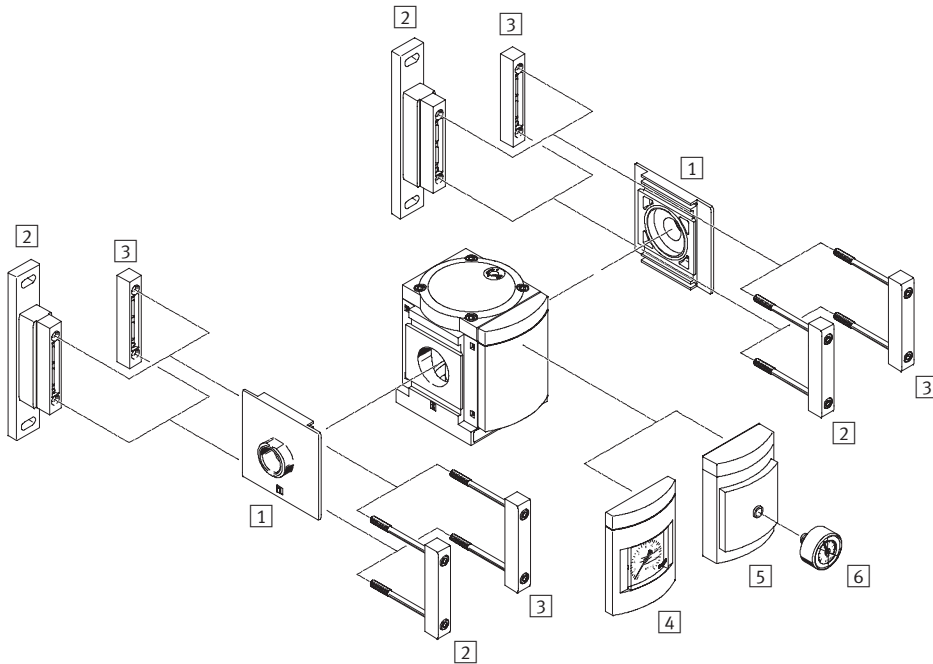
2) Free of copper and PTFE

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

Soft-start valves MS12-DL, MS series

Peripherals overview

Soft-start valves MS12-DL



-  - Note

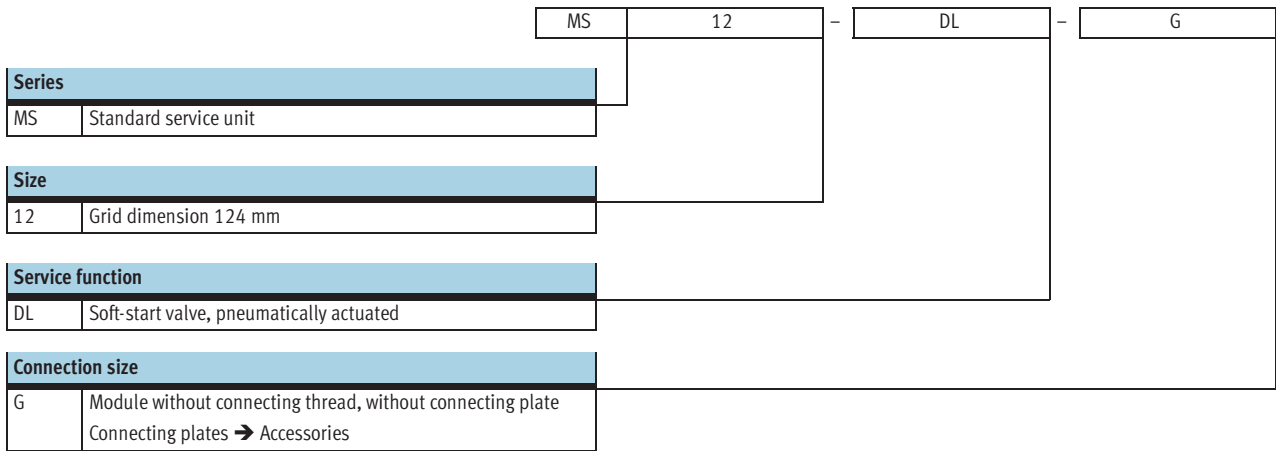
Additional accessories:
 - Module connector for combination with size MS9 → Internet: armv

Mounting attachments and accessories

		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	MS pressure gauge AG	75
5	Adapter for EN pressure gauge 1/4 A4	75
6	Pressure gauge MA	83

Soft-start valves MS12-DL, MS series

Type codes



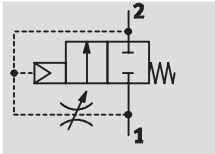
Further variants can be ordered using the modular system → 75




- Connecting plates
- Pressure gauge/adapter
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

Soft-start valves MS12-DL, MS series

Technical data

Function



-  - Flow rate
25,000 ... 42,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
2 ... 21 bar



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

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

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

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Design	Piston poppet valve			
Type of mounting	Via accessories In-line installation			
Assembly position	Any			
Valve function	2/2-way valve			
Exhaust function	Flow control			
Type of reset	Mechanical spring			
Type of actuation	Direct			
Pilot air supply	Internal			
Direction of flow	Non-reversible			

- 1) Dependent on connecting plate selected, must be ordered separately as an accessory → Internet: ms12-ag
 - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

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

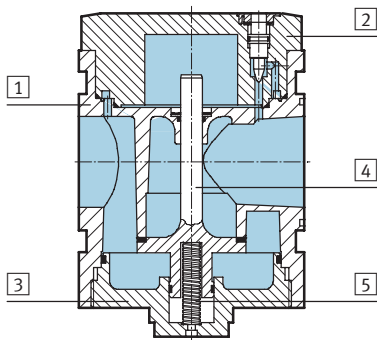
Operating and environmental conditions	
Operating pressure [bar]	2 ... 21
Operating medium	Compressed air
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance CRC ¹⁾	2

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

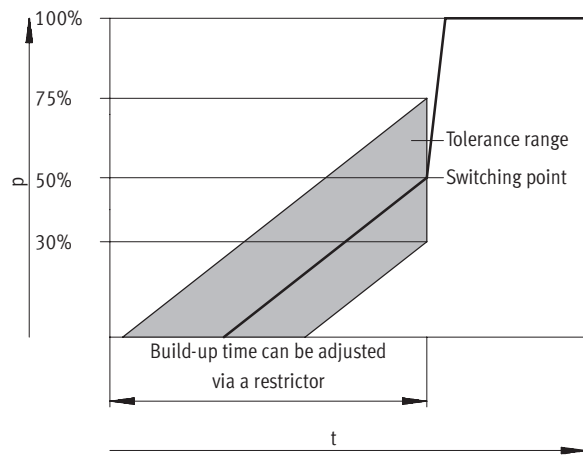
Materials

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

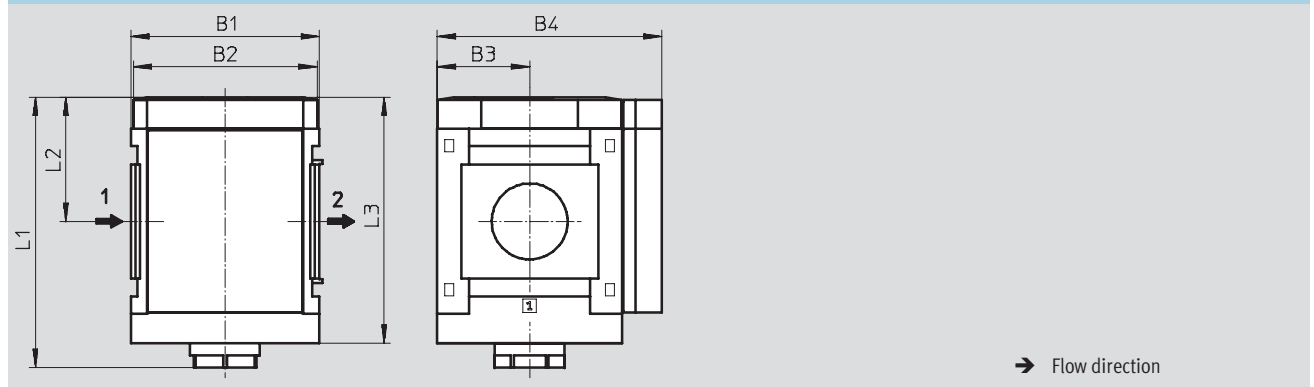


Note
 The tolerance specification +25%/-20% of the switching point refers to the operating pressure p1.
 Example: at an operating pressure of 4 bar a switching point of 1.2 bar to 3.0 bar is permitted.

Soft-start valves MS12-DL, MS series

Technical data

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

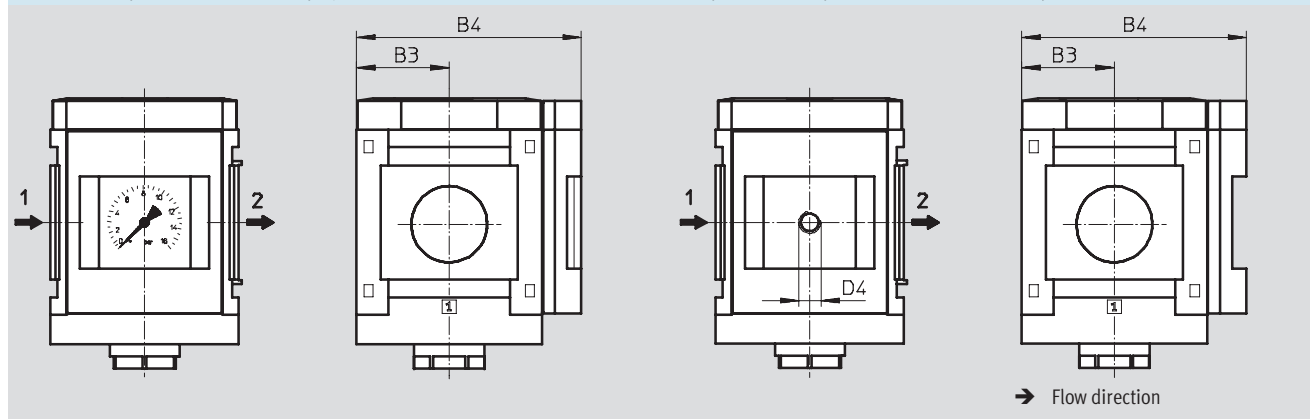


Type	B1	B2	B3	B4	L1	L2	L3
MS12-DL	124	122	61	148	178	82	162

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

Dimensions – Pressure gauges/adapters Download CAD data → www.festo.com

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⁾	541497	MS12-DL-G²⁾

1) Connecting plate must be ordered separately as an accessory → Internet: ms12-ag

2) Free of copper and PTFE

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

Soft-start valves MS12-DL, MS series

Ordering data – Modular products

M Mandatory data					O Options			
Module No.	Series	Size	Function	Connection size	Pressure gauge/adapter	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535033	MS	12	DL	AGF AGG AGH AGI G	AG A4	PSI MPA	WP	Z
Order example								
535033	MS	12	-DL	-AGI	-AG	-MPA	-WP	-Z

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535033			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	Soft-start valve, pneumatic		-DL	-DL
	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/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

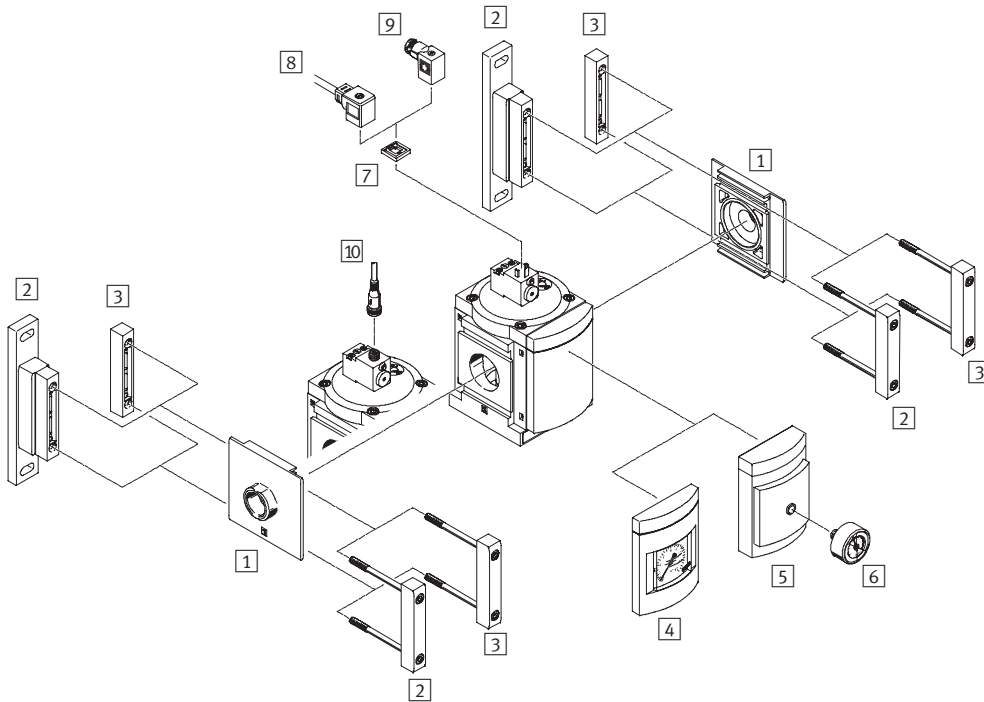
535033	MS	12	-DL	-		-		-		-	
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Soft-start valves MS12-DE, MS series

Peripherals overview

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Soft-start valves MS12-DE



Note

Additional accessories:

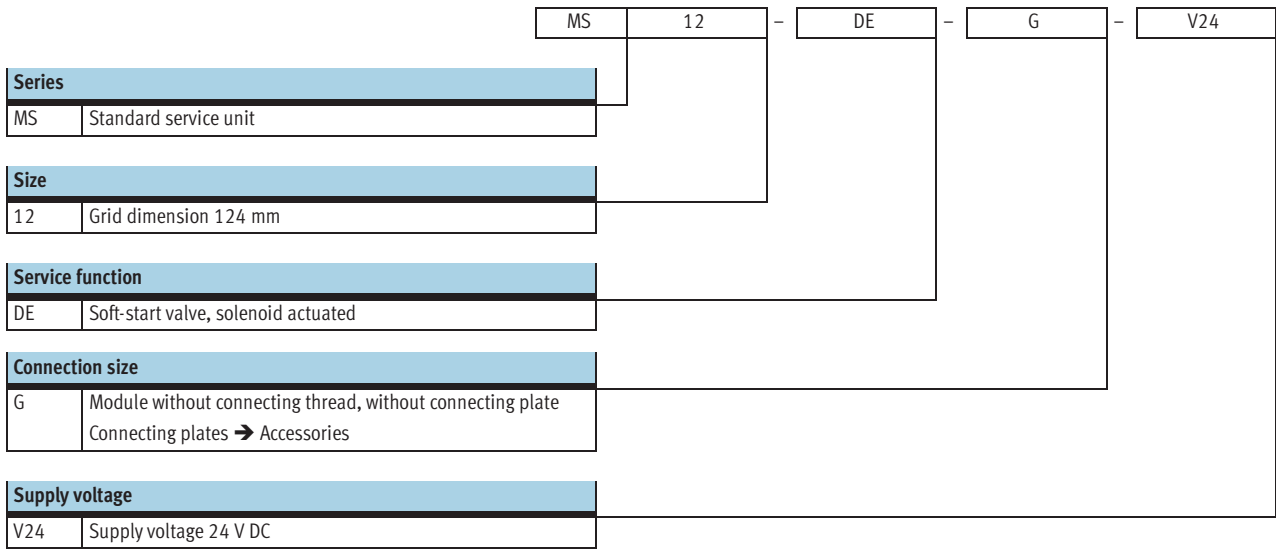
- Module connector for combination with size MS9 → Internet: armv

Mounting attachments and accessories

		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	MS pressure gauge AG	81
5	Adapter for EN pressure gauge 1/4 A4	81
6	Pressure gauge MA	83
7	Illuminating seal MC-LD	82
8	Plug socket with cable KMC	82
9	Plug socket MSSD-C	82
10	Connecting cable NEBU-M12...-LE4	83

Soft-start valves MS12-DE, MS series

Type codes



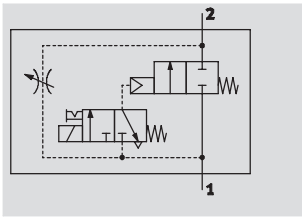
Further variants can be ordered using the modular system → 81




- Connecting plates
- Supply voltage
- Pressure gauge/adaptor
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

Soft-start valves MS12-DE, MS series

Technical data

Function



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




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
- Pushing manual override (except variant V24P)

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			
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 → Internet: ms12-ag
 -  - Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Soft-start valves MS12-DE, MS series

Technical data

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

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

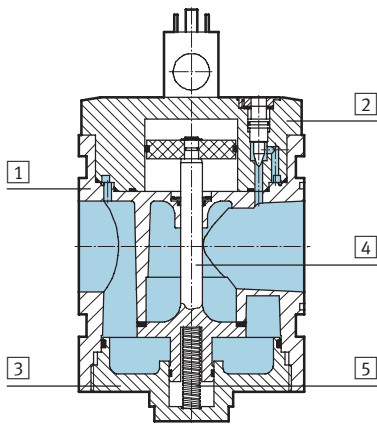
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

- 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

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

MS12-DE...-V24/V110/V230

MS12-DE...-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
MS12-DE...-V24/V110/V230	124	122	61	148	226	130	162	35.7	12.3
MS12-DE...-V24P								36	10

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

Dimensions – Pressure gauges/adapters Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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

→ Flow direction

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⁾	541498	MS12-DE-G-V24 ²⁾

1) Connecting plate must be ordered separately as an accessory → Internet: ms12-ag

2) Free of copper and PTFE

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

Soft-start valves MS12-DE, MS series

Ordering data – Modular products

M Mandatory data						O Options			
Module No.	Series	Size	Function	Connection size	Supply voltage	Pressure gauge/adaptor	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535034	MS	12	DE	AGF AGG AGH AGI G	V24 V24P V110 V230	AG A4	PSI MPA	WP	Z
Order example									
535034	MS	12	- DE	- AGH	- V230	- A4	-	- WP	- Z

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535034			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	Soft-start valve, electrical		-DE	-DE
	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	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

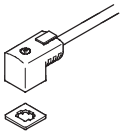
535034	MS	12	- DE	-	-	-	-	-	-	-
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On-off/soft-start valves MS-EM/EE/DL/DE/SV, MS series


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Accessories

Ordering data – Plug socket MSSD					Technical data → Internet: mssd	
	Description	Operating voltage range	Electrical connection	Type of mounting cable connection	Part No.	Type
	for MS4/6-EE/DE	≤ 250 V AC/DC	3-pin	Clamping screws	151687	MSSD-EB
			4-pin	Insulation displacement technology	192745	MSSD-EB-S-M14
	for MS12-EE/DE	≤ 250 V AC/DC	3-pin	Clamping screws	34583	MSSD-C
			4-pin	Insulation displacement technology	192748	MSSD-C-S-M16

Ordering data – Plug socket with cable KMEB/KMC						Technical data → Internet: kmeb, kmc	
	Description	Operating voltage range	Electrical connection	Switching status display	Cable length [m]	Part No.	Type
	for MS4/6-EE/DE	24 V DC	2-pin	LED	2.5	547268	KMEB-3-24-2,5-LED
				–	5	547269	KMEB-3-24-5-LED
				–	2.5	547270	KMEB-3-24-2,5
			–	5	547271	KMEB-3-24-5	
			3-pin	LED	2.5	151688	KMEB-1-24-2,5-LED
				–	5	151689	KMEB-1-24-5-LED
		–		10	193457	KMEB-1-24-10-LED	
		230 V AC	3-pin	–	2.5	151690	KMEB-1-230AC-2,5
				–	5	151691	KMEB-1-230AC-5
			3-pin	LED	2.5	30931	KMC-1-24DC-2,5-LED
5	30933				KMC-1-24DC-5-LED		
10	193459	KMC-1-24-10-LED					
230 V AC	3-pin	–	2.5	30932	KMC-1-230AC-2,5		
			5	30934	KMC-1-230AC-5		

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



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



1) Packaging unit quantity


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


FESTO


Accessories

Ordering data – Connecting cable NEBU-M8				Technical data → Internet: nebu	
	Electrical connection	Number of wires	Cable length [m]	Part No.	Type
	M8x1, straight socket	3	2.5	541333	NEBU-M8G3-K-2.5-LE3
			5	541334	NEBU-M8G3-K-5-LE3
	M8x1, angled socket	3	2.5	541338	NEBU-M8W3-K-2.5-LE3
			5	541341	NEBU-M8W3-K-5-LE3

Ordering data – Connecting cable NEBU-M12				Technical data → Internet: nebu	
	Electrical connection	Number of wires	Cable length [m]	Part No.	Type
	M12x1, straight socket	4	2.5	550326	NEBU-M12G5-K-2.5-LE4
			5	541328	NEBU-M12G5-K-5-LE4
	M12x1, angled socket	4	2.5	550325	NEBU-M12W5-K-2.5-LE4
			5	541329	NEBU-M12W5-K-5-LE4

Ordering data – Silencer U			Technical data → Internet: u	
	Description	Pneumatic connection	Part No.	Type
	for MS4-EM1/EE	G¼	6842	U-¼-B
	for MS6-EM1/EE	G½	6844	U-½-B
	for MS12-EM/EE	G1	151990	U-1-B

Ordering data – Pressure gauge MA						
	Nominal size	Pneumatic connection	Indicating range		Part No.	Type
			[bar]	[psi]		
	Pressure gauge MA, DIN EN 837-1				Technical data → Internet: ma	
	40	G¼	0 ... 16	0 ... 232	183901	MA-40-16-G¼-EN
	Pressure gauge MA, DIN EN 837-1, with red-green range				Technical data → Internet: ma	
40	R¼	0 ... 16	–	525726	MA-40-16-R¼-E-RG	
50	R¼	0 ... 16	–	525729	MA-50-16-R¼-E-RG	

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