

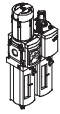
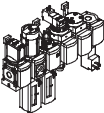




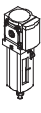
On-off/soft-start valves MS-EM/EE/DL/DE/SV, MS series



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	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	■	■	■	■	-	-	■	■
	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	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	■	■
	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					Security		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 G 1/8	Adapter plate for EN pressure gauge G 1/4	Pressure sensor	Rotary knob with detent, lockable via accessories	Rotary knob with integrated lock	Silencer	Flow direction from right to left	
Code		R	U	M	H	V	E...	VS	AG	A8	A4	AD...	AS	E11	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	-	■	■	■	■	■	■	■	-	■	■	■	■	-	■	ms9-lfr
	12	-	■	■	-	■	■	■	■	-	■	-	■	■	-	■	ms12-lfr
Filters MS-LF	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lf
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lf
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms9-lf
	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	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	■	■	■	■	-	-	-
		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	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-
		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	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-
		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	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	■	■	■
		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				Security		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 with detent, lockable via accessories	Rotary knob with integrated lock	Silencer		Flow direction from right to left
Code		R	U	VS	AG	A8	A4	AD...	AS	E11	S	Z	
Individual devices													
Pressure regulators MS-LR	4	-	-	■	■	■	■	■	■	■	-	■	ms4-lr
	6	-	-	■	■	-	■	■	■	■	-	■	ms6-lr
	9	-	-	■	■	-	■	■	■	■	-	■	ms9-lr
	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	-	■	-	-	-	-	-	-	-	-	■	ms9-loe
	12	-	■	-	-	-	-	-	-	-	-	■	ms12-loe
Electrical on-off valves MS-EM(1)	4	-	-	■	■	■	■	■	-	-	■	■	8
	6	-	-	■	■	-	■	■	-	-	■	■	8
	9	-	-	■	■	-	■	-	-	-	■	■	60
	12	-	-	■	■	-	■	-	-	-	■	■	78
Electrical on-off valves MS-EE	4	-	-	■	■	■	■	■	-	-	■	■	18
	6	-	-	■	■	-	■	■	-	-	■	■	18
	9	-	-	■	■	-	■	-	-	-	■	■	68
	12	-	-	■	■	-	■	-	-	-	■	■	84
Electrical soft-start valves MS-DL	4	-	-	■	■	■	■	■	-	-	-	■	30
	6	-	-	■	■	-	■	■	-	-	-	■	30
	9	-	-	-	-	-	-	-	-	-	-	-	-
Electrical soft-start valves MS-DE	4	-	-	■	■	■	■	■	-	-	-	■	38
	6	-	-	■	■	-	■	■	-	-	-	■	38
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	■	■	-	■	-	-	-	-	■	96
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	0.3	0.1	0.5	24 V DC, connection pattern to EN 175301	24 V DC, connection pattern M12 to DESINA	110 V AC, connection pattern to EN 175301	230 V AC, connection pattern to EN 175301
Code			AG...	D5	D6	D7	D8	V24	V24P	V110	V230
Individual devices											
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	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-
Distributor blocks MS-FRM-FRZ		4	G1/4	-	-	-	-	-	-	-	-
		6	G1/2	-	-	-	-	-	-	-	-
		9	-								
		12	-								
Flow sensors SFAM		4	-								
		6	G1/2	G1/2	-	-	-	-	-	-	-
		9	-	G1, G1 1/2	-	-	-	-	-	-	-
		12	-								

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

Product range overview – MS series service units

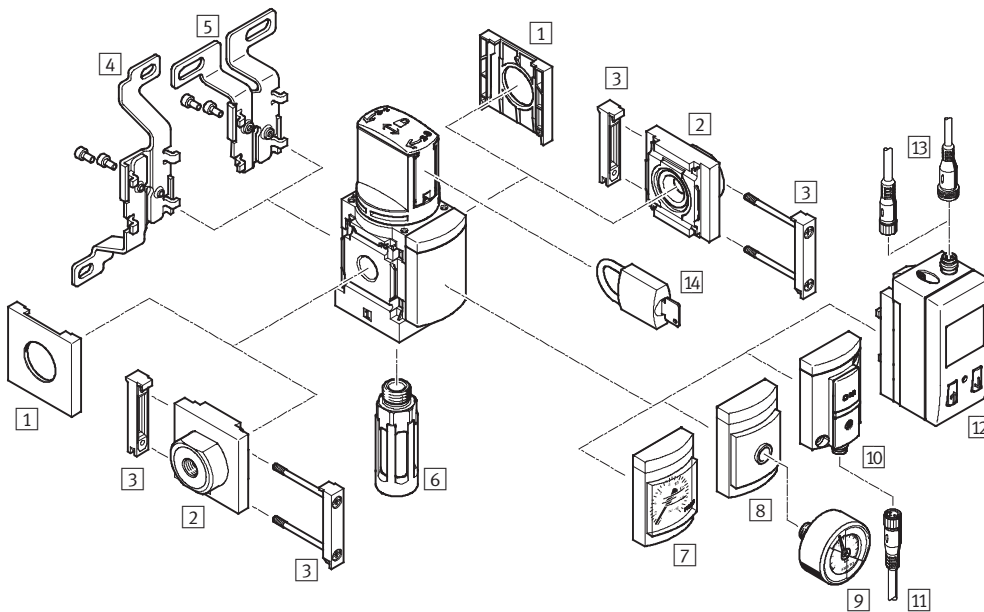
Type	Size	Bowl guard		Pressure indicator					Switch output		Options		→ Page/ Internet
		Plastic bowl with plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor	2x PNP or NPN, 1 analogue output 4 ... 20 mA	2x PNP or NPN, 1 analogue output 0 ... 10 V	Silencer	Flow direction from right to left	
Code		R	U	VS	AG	A8	A4	AD...	2SA	2SV	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	-	-	■	■	-	■	■	-	-	-	■	ms9-frm
	12	-	-	■	-	-	-	-	-	-	-	-	ms12-frm
Distributor blocks MS-FRM-FRZ	4	-	-	-	-	-	-	-	-	-	-	■	ms4-frm
	6	-	-	-	-	-	-	-	-	-	-	■	ms6-frm
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Flow sensors SFAM	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	■	■	-	■	sfam-62
	9	-	-	-	-	-	-	-	■	■	-	■	sfam-90
	12	-	-	-	-	-	-	-	-	-	-	-	-

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	■	■	■	■	103
7 MS pressure gauge AG/RG	■	■	■	■	16
8 Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	16
9 Pressure gauge MA	■	■	■	■	103
10 Pressure sensor without display AD7 ... AD10	■	■	■	■	16
11 Connecting cable NEBU-M8...-LE3	■	■	■	■	103
12 Pressure sensor with display AD1 ... AD4	■	■	■	■	16
13 Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	103
14 Padlock LRVS-D	■	■	■	■	103
- 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

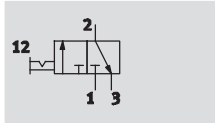
Additional variants can be ordered using the modular system → 16

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

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

Technical data

Function



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



- Manually operated on-off valve for pressurising and venting pneumatic installations
- The valve is activated by turning the rotary knob
- At connection 3 there is the facility to attach a silencer and/or to duct the exhaust air
- When the valve is closed, the rotary knob can be secured with a padlock
- Optional pressure gauge
- Optional pressure sensor

General technical data						
Size	MS4		MS6			
Pneumatic connection 1, 2	G ¹ / ₈	G ¹ / ₄	G ¹ / ₄	G ³ / ₈	G ¹ / ₂	
Pneumatic connection 3	G ¹ / ₄		G ¹ / ₂			
Design	Rotary slide valve					
Type of mounting	Via accessories					
	In-line installation					
Assembly position	Any					
Pressure indicator	Via pressure sensor for displaying output pressure via LCD display and electrical output					
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output					
	Via pressure gauge for displaying output pressure					
	Via pressure gauge with red/green scale for displaying output pressure					
	G ¹ / ₄ prepared					
	G ³ / ₈ prepared	-				
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 to ISO 1179-1 and to ISO 228-1

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

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

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

Technical data

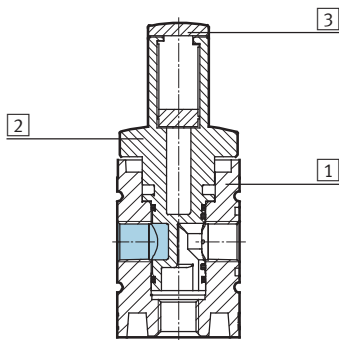
Operating and environmental conditions				
Variant	Standard		Pressure sensor AD...	
Size	MS4	MS6	MS4	MS6
Operating pressure [bar]	0 ... 14	0 ... 18	0 ... 10	0 ... 10
Operating medium	Filtered compressed air or inert gases, lubricated or unlubricated, grade of filtration 40 µm			
Ambient temperature [°C]	-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	PA reinforced
3	Lock slide	PA reinforced
-	Seals	NBR, TPE-U(PU)
Note on materials		RoHS-compliant
		Free of copper and PTFE (not with variants AG or AD...)

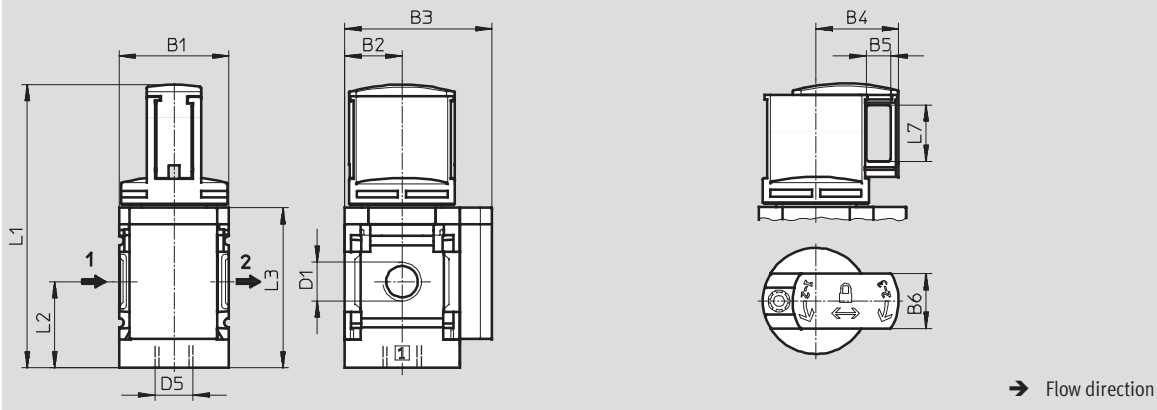
On-off valves MS4/MS6-EM1, MS series

Technical data

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 to ISO 1179-1 and to ISO 228-1

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

Technical data

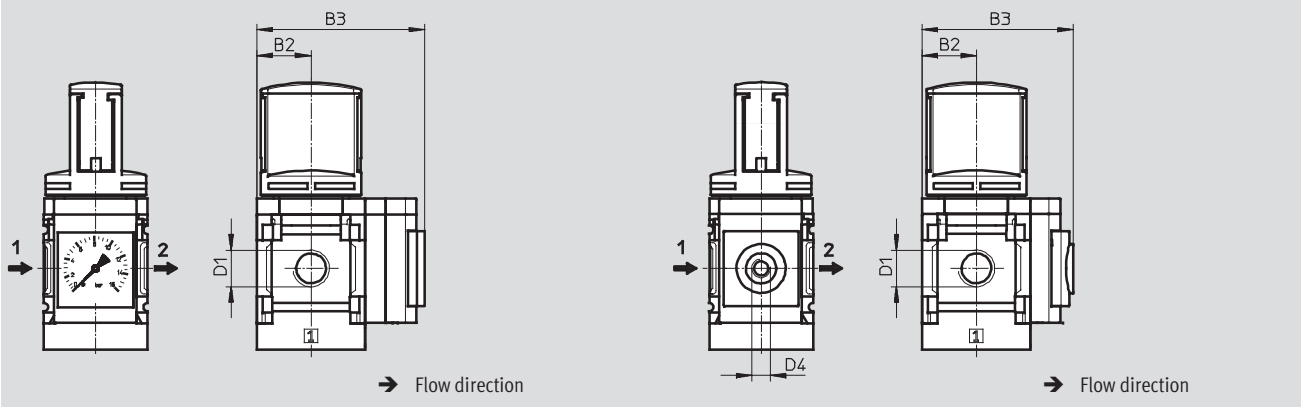
FESTO

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



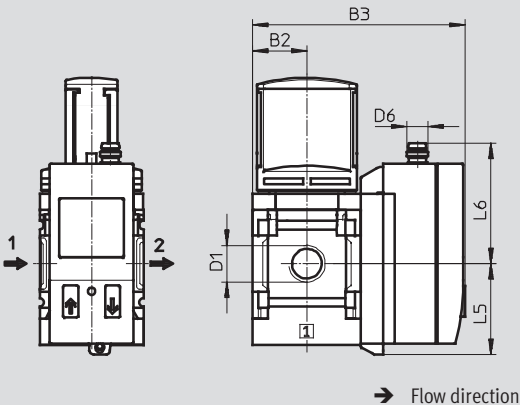
Type	B2	B3	D1	D4
MS4-EM1-1/8-...-AG	21	65	G1/8	-
MS4-EM1-1/4-...-AG			G1/4	
MS4-EM1-1/8-...-RG	21	66.5	G1/8	-
MS4-EM1-1/4-...-RG			G1/4	
MS4-EM1-1/8-...-A8	21	58.5	G1/8	G1/8
MS4-EM1-1/4-...-A8			G1/4	
MS4-EM1-1/8-...-A4	21	58.5	G1/8	G1/4
MS4-EM1-1/4-...-A4			G1/4	
MS6-EM1-1/4-...-AG	31	85	G1/4	-
MS6-EM1-3/8-...-AG			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 to ISO 1179-1 and to ISO 228-1

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](#)



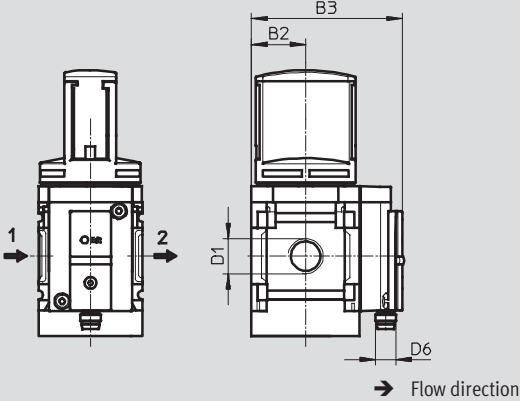
Variant AD1:
SDE1-D10-G2-MS-L-P1-M8 with 3-pin plug M8x1, 1 switching output PNP

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

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

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

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

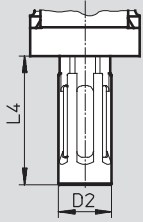
– † – Note: This product conforms to ISO 1179-1 and to ISO 228-1

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

Technical data

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

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



Ordering data – Modular products

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		-	
--	-----------	--	---	------------	--	---	--

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

Ordering data – Modular products

Options				
Silencer	Pressure gauge/adapter	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/adapter		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 AG or RG

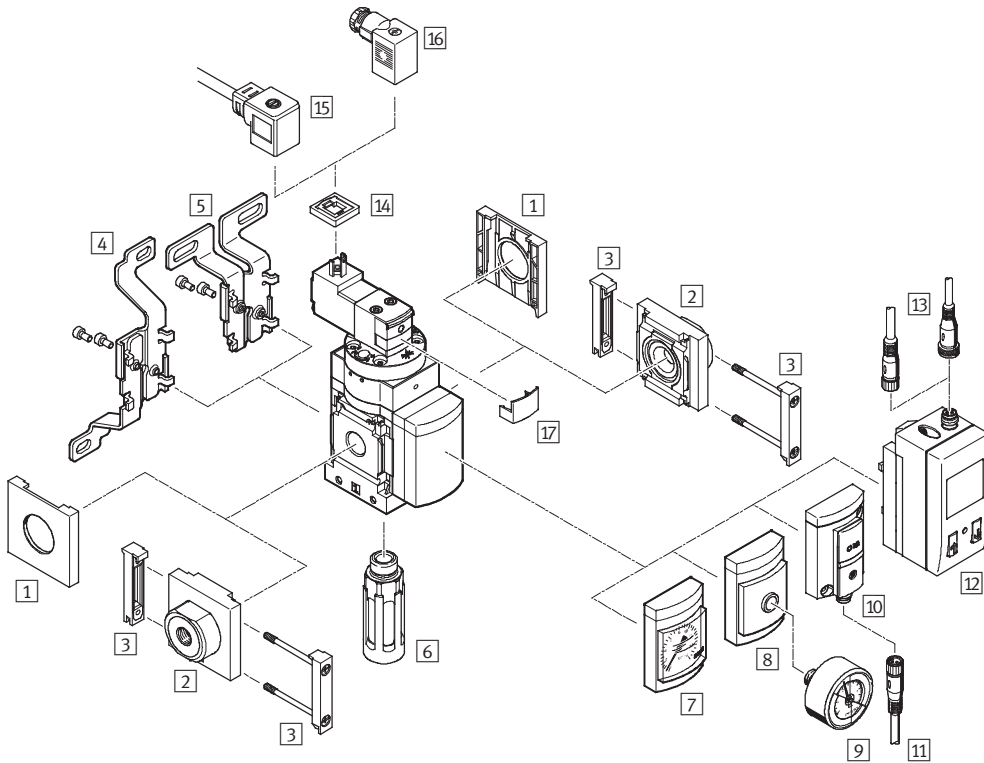
Transfer order code

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

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

Peripherals overview

On-off valve MS4/MS6-EE



Note

Additional accessories:

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

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	■	■	■	■	103
7	MS pressure gauge AG/RG	■	■	■	■	28
8	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	28
9	Pressure gauge MA	■	■	■	■	103
10	Pressure sensor without display AD7 ... AD10	■	■	■	■	28
11	Connecting cable NEBU-M8...-LE3	■	■	■	■	103
12	Pressure sensor with display AD1 ... AD4	■	■	■	■	28
13	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	103
14	Illuminating seal MEB-LD	■	■	■	■	102
15	Plug socket with cable KMEB	■	■	■	■	102
16	Plug socket MSSD-EB	■	■	■	■	102
17	Locking clip CPV18-HV	■	■	■	■	102
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

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

Type codes

MS 6 - EE - 1/2 - V110 -

Series	
MS	Standard service unit
Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm
Service function	
EE	Solenoid actuated on-off valve
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

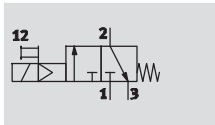
Additional variants can be ordered using the modular system → 28

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

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

Technical data

Function



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



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

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G1/8	G1/4	G1/4	G3/8	G1/2
Pneumatic connection 3	G1/4		G1/2		
Design	Piston spool valve				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Any				
Pressure indicator	Via pressure sensor for displaying output pressure via LCD display and electrical output				
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output				
	Via pressure gauge for displaying output pressure				
	Via pressure gauge with red/green scale for displaying output pressure				
	G1/4 prepared				
	G1/8 prepared	-			
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	Internal				
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

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

Electrical data		
Size	MS4	MS6
Coil characteristics	V24	24 V DC: 2.5 W; perm. voltage fluctuations ±10%
	10V24	24 V DC: 2.5 W; perm. voltage fluctuations ±10%
	V110	110 V AC: 50/60 Hz; pick-up power 3.0 W; holding power 2.4 W; perm. voltage fluctuations ±10%
	V230	230 V AC: 50/60 Hz; pick-up power 3.0 W; holding power 2.4 W; perm. voltage fluctuations -14%/+10%
Electrical connection	Plug, square design to DIN EN 175301-803, type C	
Protection class for solenoid coil	IP65	
Duty cycle [%]	100	

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

FESTO

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
Size	MS4		MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
In main flow direction 1 \rightarrow 2	1,000	2,000	2,600	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 ... 10 with silencer S)	4 ... 18 (4 ... 10 with silencer S)	4 ... 10	4 ... 10	4 ... 10	4 ... 10
Operating medium	Filtered compressed air or inert gases, 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

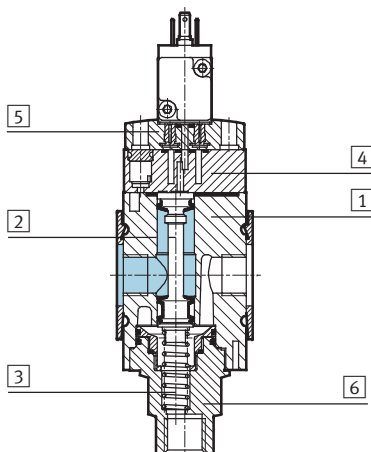
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

ATEX	
Variant	EX2
ATEX category gas	II 3G
Ex-ignition protection type gas	Ex nA II T4 X
ATEX category dust	II 3D
EX-ignition protection type dust	Ex tD A22 IP65 T105°C X
ATEX ambient temperature	-10 °C \leq Ta \leq +60 °C
ATEX certification	For zones 2 and 22
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

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

Materials

Sectional view



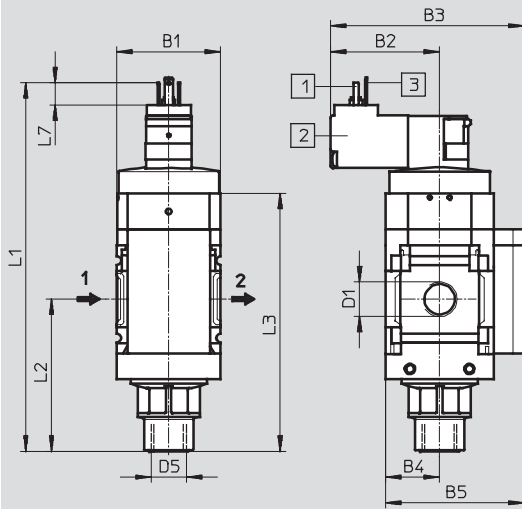
On-off valve	
1	Body Die-cast aluminium
2	Piston spool NBR/aluminium
3	Springs High-alloy stainless steel
4	End cap PA
5	Top plate PA
6	Socket end connection PA
-	Seals NBR
Note on materials RoHS-compliant Free of copper and PTFE (not with variants AG, 10V24 or AD...)	

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

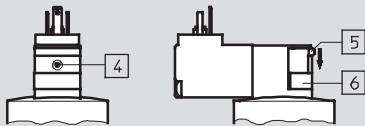
Technical data

Dimensions – Basic version

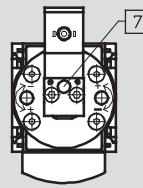
Download CAD data → www.festo.com



Supply voltage V24/V110/V230



Supply voltage 10V24



- Note

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

- [1] Plug connection to EN 175301-803
- [2] Solenoid actuator can be repositioned by 180°, i.e. solenoid points to the front
- [3] PIN only with solenoid actuators 110 V and 230 V
- [4] Manual override, non-detenting (delivery status)
- [5] Slide
- [6] Cover plate
- [7] Manual override, only non-detenting

→ 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 to ISO 1179-1 and to ISO 228-1

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



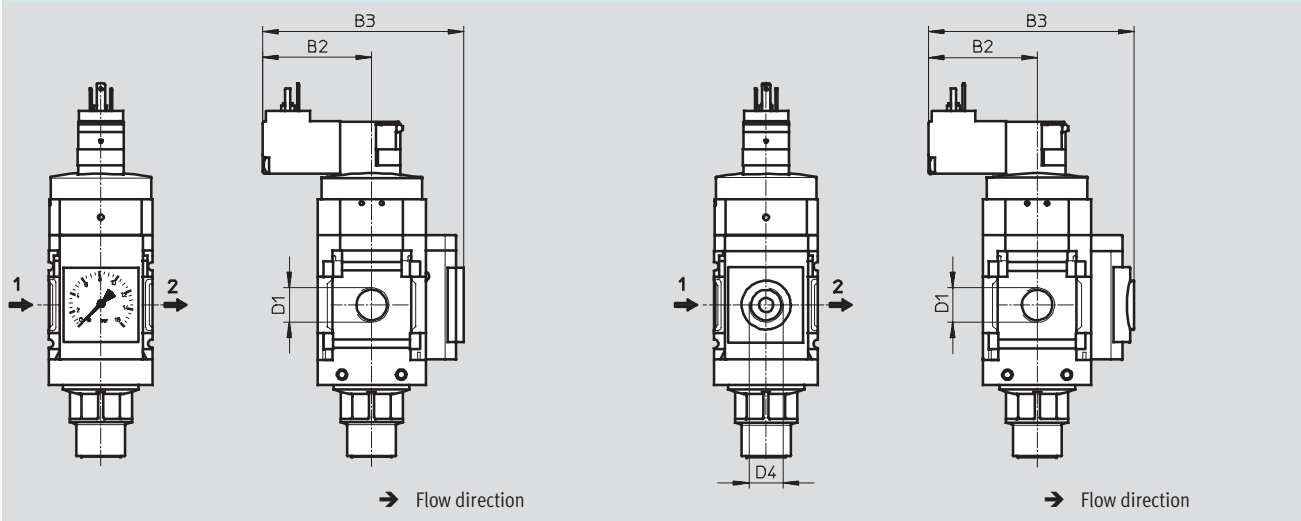
Technical data

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 to ISO 1179-1 and to ISO 228-1

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

Technical data

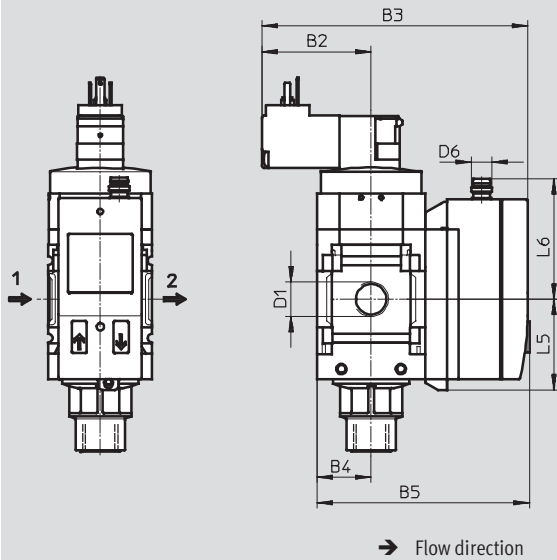
FESTO

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 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 to ISO 1179-1 and to ISO 228-1

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

Technical data

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

→ Flow direction

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 to ISO 1179-1 and to ISO 228-1

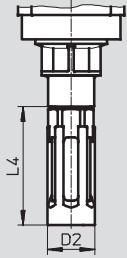
On-off valves MS4/MS6-EE, MS series

Technical data

FESTO

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

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



Ordering data – Modular products

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	-		5	-1/8		
		Thread G1/4	Thread G1/4		5	-1/4		
		-	Thread G3/8		5	-3/8		
		-	Thread G1/2		5	-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 5	-10V24	
		110 V AC (pin allocation to EN 175301)	4 ... 14 bar	4 ... 18 bar		5	-V110	
		230 V AC (pin allocation to EN 175301)	4 ... 14 bar	4 ... 18 bar		5	-V230	

1 10V24 Max. supply pressure 10 bar

Transfer order code

	MS		-	EE	-		-	
--	----	--	---	----	---	--	---	--

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

Ordering data – Modular products

Options					
Silencer	Pressure gauge/adapter	Alternative pressure gauge scale	Type of mounting	EU certification	Alternative flow direction
S	AG, A8, A4, RG, AD1, AD2, AD3, AD4, AD7, AD8, AD9, AD10	PSI MPA	WP WPM WB WBM	EX2	Z
- S	- AG	- PSI	- WP	-	- Z

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
0	Silencer	Silencer			-S	
	Pressure gauge/adapter	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 5	-AD1	
		Pressure sensor with display, plug M8, 1 switching output NPN, 3-pin		2 5	-AD2	
		Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA		2 5	-AD3	
		Pressure sensor with display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA		2 5	-AD4	
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O contact		2 5	-AD7	
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact		2 5	-AD8	
		Pressure sensor without display, plug M8, window comparator, PNP, N/O contact		2 5	-AD9	
		Pressure sensor without display, plug M8, window comparator, PNP, N/C contact		2 5	-AD10	
		Alternative pressure gauge scale	psi		3	-PSI
	MPa		3	-MPA		
	Type of mounting	Mounting bracket		4	-WP	
		Mounting bracket		4 5	-WPM	
		Mounting bracket			-WB	
		Mounting bracket		-	-WBM	
	EU certification	II 3GD to EU Directive 94/9/EG			-EX2	
	Alternative flow direction	Flow direction from right to left			-Z	

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

Measuring range max. 10 bar

3 PSI, MPA

Only in combination with pressure gauge AG or RG

4 WP, WPM

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

5

1/8, 1/4, 3/8, 1/2, 10V24, V110, V230, AD1 ... AD4, AD7 ... AD10, WPM

Not with EU EX2 certification

Transfer order code

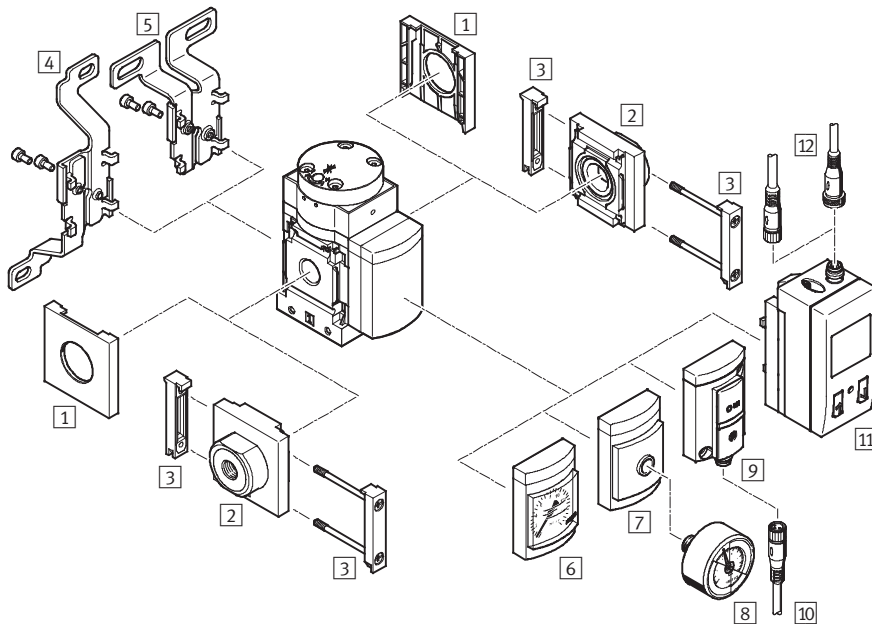
- [] - [] - [] - [] - [] - []

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/RG	■	■	■	■	36
7	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	36
8	Pressure gauge MA	■	■	■	■	103
9	Pressure sensor without display AD7 ... AD10	■	■	■	■	36
10	Connecting cable NEBU-M8...-LE3	■	■	■	■	103
11	Pressure sensor with display AD1 ... AD4	■	■	■	■	36
12	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	103
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

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

FESTO

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

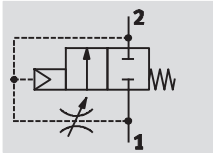
- Connecting plates
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

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				
	Via pressure gauge with red/green scale for displaying output pressure				
	G $\frac{1}{4}$ prepared				
	G $\frac{1}{8}$ prepared	-			
Valve function	2/2-way valve				
Exhaust function	Flow control				
Type of reset	Mechanical spring				
Pilot control mode	Direct				
Pilot air supply	External				
Direction of flow	Non-reversible				
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 to ISO 1179-1 and to ISO 228-1

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

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

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

Technical data

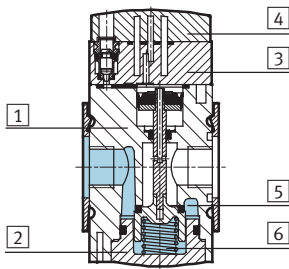
Operating and environmental conditions				
Variant	Standard		Pressure sensor AD...	
Size	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10
Operating medium	Filtered compressed air or inert gases, lubricated or unlubricated, grade of filtration 40 µm			
Ambient temperature [°C]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

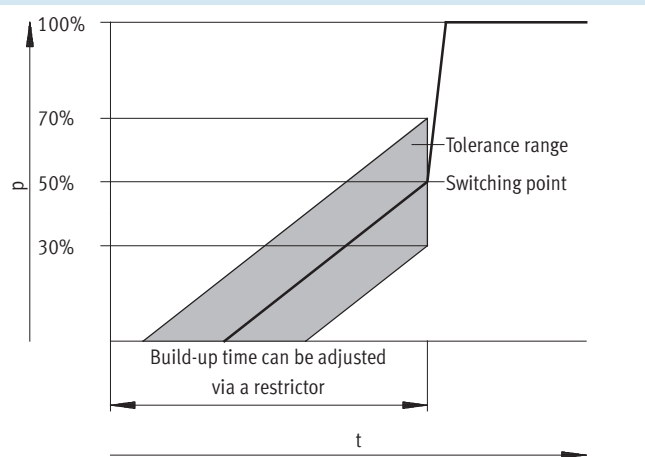
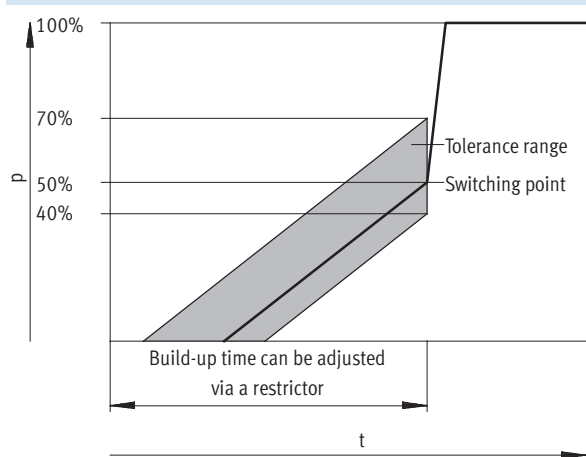
Materials

Sectional view



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

Switching point – Pressure p as a function of time t



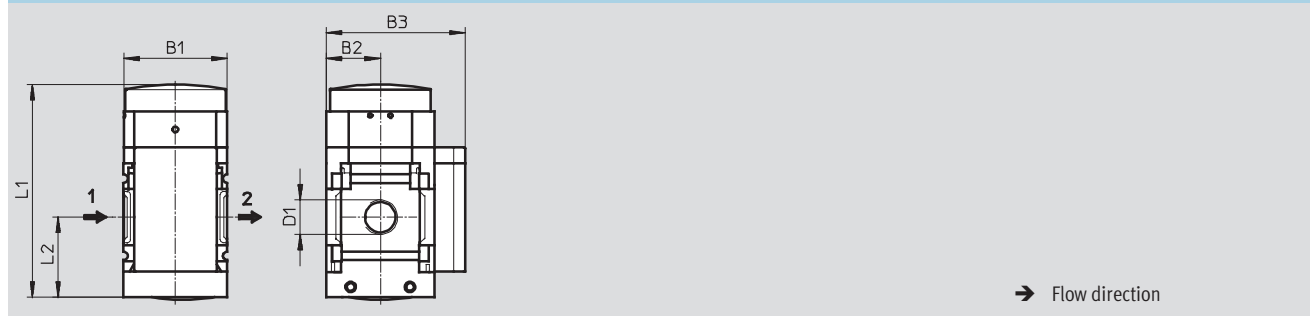
- - Note
 The tolerance specification +20%/–10% of the switching point refers to the operating pressure p1.
 Example: at an operating pressure of 4 bar a switching point of 1.6 bar to 2.8 bar is permitted.

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

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

Technical data

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

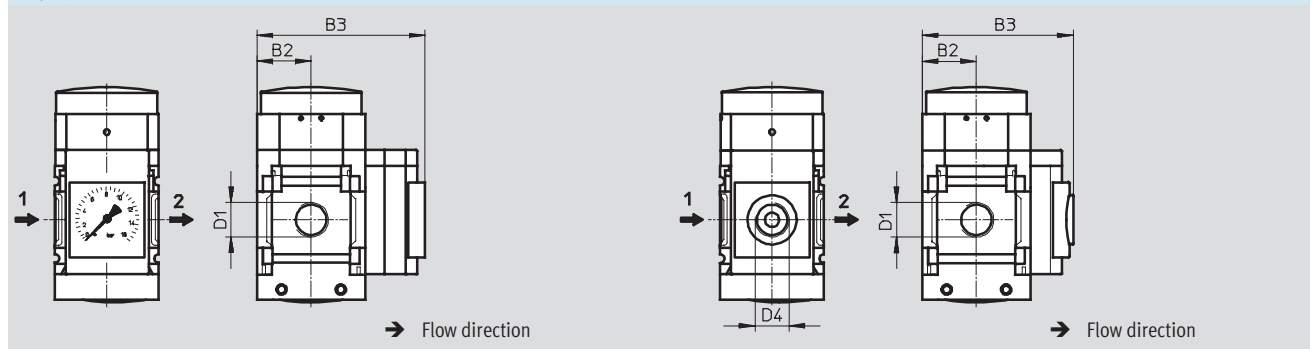


Type	B1	B2	B3	D1	L1	L2
MS4-DL-1/8	40	21	54	G1/8	82.7	31
MS4-DL-1/4				G1/4		
MS6-DL-1/4	62	31	76	G1/4	116	45
MS6-DL-3/8				G3/8		
MS6-DL-1/2				G1/2		

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

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

Integrated MS pressure gauge with standard scale AG or red-green scale RG, Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge display unit [bar]



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	

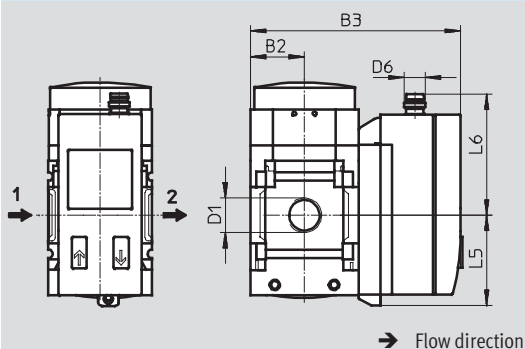
Note: This product conforms to ISO 1179-1 and to ISO 228-1

Soft-start valves MS4/MS6-DL, 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](#)



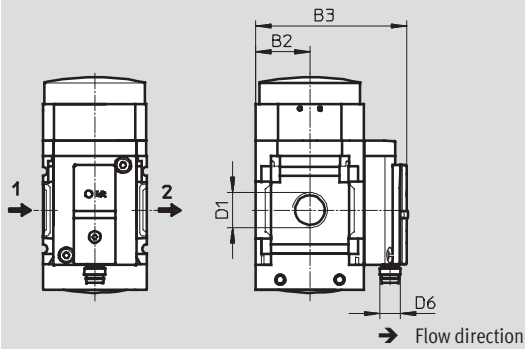
Variant AD1:
SDE1-D10-G2-MS-L-P1-M8 with 3-pin plug M8x1, 1 switching output PNP

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

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

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

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	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 to ISO 1179-1 and to ISO 228-1

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

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

Ordering data – Modular products

Options			
Pressure gauge/adapter	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/adapter	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 AG or RG

Transfer order code

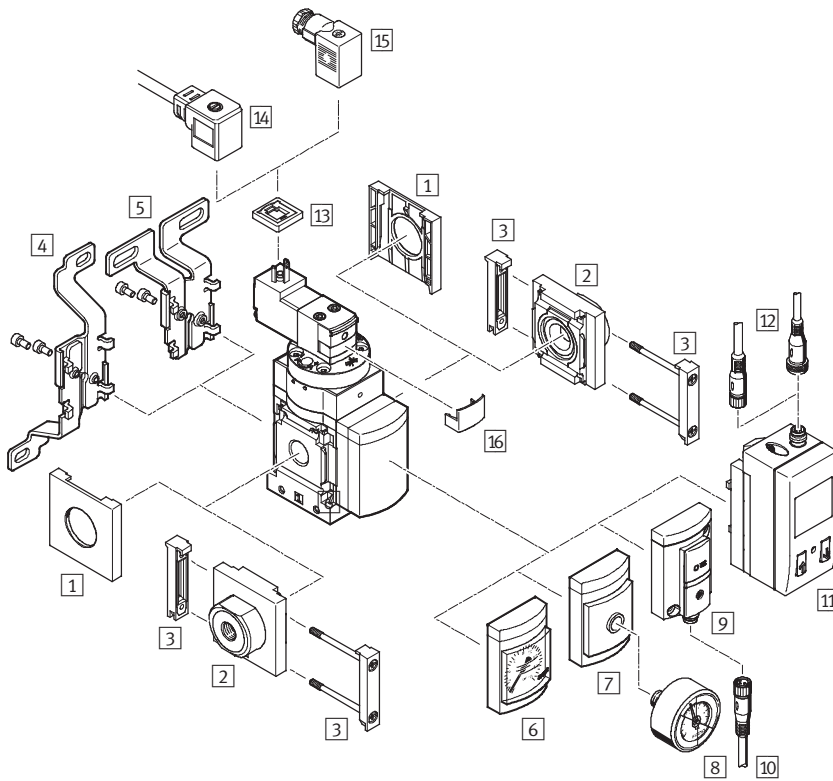
- [] - [] - [] - []

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

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/RG	■	■	■	■	46
7	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	46
8	Pressure gauge MA	■	■	■	■	103
9	Pressure sensor without display AD7 ... AD10	■	■	■	■	46
10	Connecting cable NEBU-M8...-LE3	■	■	■	■	103
11	Pressure sensor with display AD1 ... AD4	■	■	■	■	46
12	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	103
13	Illuminating seal MEB-LD	■	■	■	■	102
14	Plug socket with cable KMEB	■	■	■	■	102
15	Plug socket MSSD-EB	■	■	■	■	102
16	Locking clip CPV18-HV	■	■	■	■	102
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

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

FESTO

Type codes

		MS	6	-	DE	-	1/2	-	V110
Series									
MS	Standard service unit								
Size									
4	Grid dimension 40 mm								
6	Grid dimension 62 mm								
Service function									
DE	Solenoid actuated soft-start valve								
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								

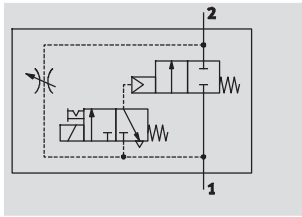
Additional variants can be ordered using the modular system → 46

- Connecting plates
- Supply voltage
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU Certification
- 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
- Non-detenting and detenting manual override (variant 10V24: only non-detenting)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	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				
	Via pressure gauge with red/green scale for displaying output pressure				
	G $\frac{1}{4}$ prepared				
	G $\frac{1}{8}$ prepared	-			
Valve function	2/2-way valve				
Exhaust function	Flow control				
Type of reset	Mechanical spring				
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
b value		0.5	0.45	0.54	0.48
				28.97	0.39

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

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

FESTO

Technical data

Electrical data			
Size	MS4		MS6
Coil characteristics	V24	24 V DC	
	10V24	24 V DC	
	V110	110 V AC	
	V230	230 V AC	
Electrical connection	Plug, square design to EN 175301-803, type C		
Protection class solenoid coil	IP65		
Duty cycle	[%]	100	

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]					
Size	MS4			MS6	
Pneumatic connection	G $\frac{3}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
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...	
	MS4	MS6	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10	4 ... 10	4 ... 10
Operating medium	Filtered compressed air or inert gases, 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.

ATEX	
Variant	EX2
ATEX category gas	II 3G
Ex-ignition protection type gas	Ex nA II T4 X
ATEX category dust	II 3D
EX-ignition protection type dust	Ex tD A22 IP65 T105°C X
ATEX ambient temperature	-10 °C \leq T_a \leq +60 °C
ATEX certification	For zones 2 and 22
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

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

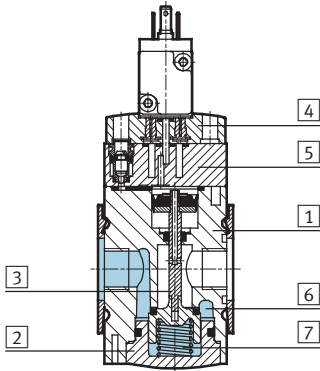
Soft-start valves MS4/MS6-DE, MS series

Technical data



Materials

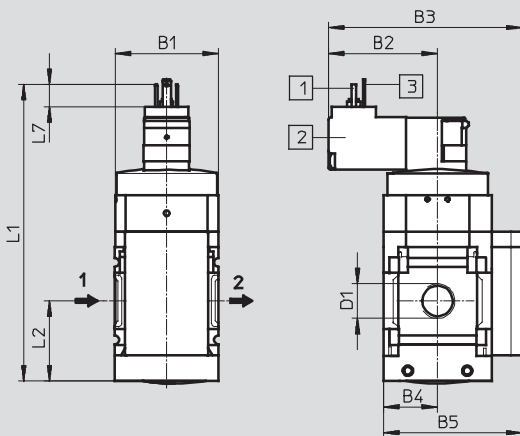
Sectional view



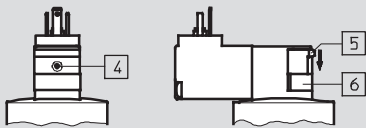
Soft-start valve		
1	Body	Die-cast aluminium
2	Base	PET
3	Valve stem	Aluminium
4	End cap	PA
5	Top plate	PA
6	Seat	Aluminium
7	Springs	Spring steel
-	Seals	NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE (not with variants AG, 10V24 or AD...)

Dimensions – Basic version

Download CAD data → www.festo.com



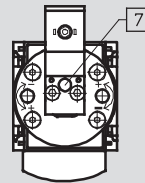
Supply voltage V24/V110/V230



- Note

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

Supply voltage 10V24



- 1 Plug connection to EN 175301-803
- 2 Solenoid actuator can be repositioned by 180°, i.e. solenoid points to the front
- 3 PIN only with solenoid actuators 110 V and 230 V
- 4 Manual override, non-detenting (delivery status)
- 5 Slide
- 6 Cover plate
- 7 Manual override, only non-detenting

→ 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 to ISO 1179-1 and to ISO 228-1

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

Technical data

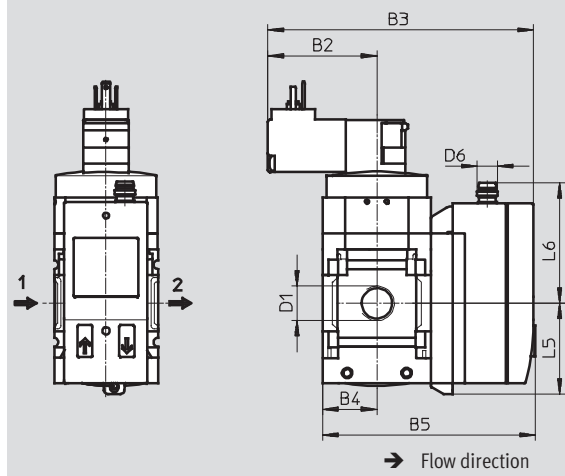


Dimensions – Pressure gauge alternatives

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

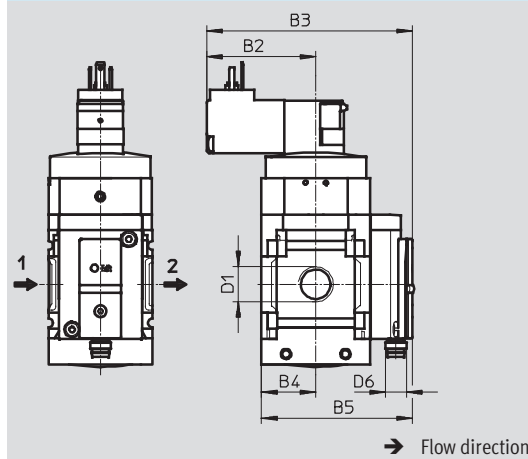
Variant AD2:
SDE1-D10-G2-MS-L-N1-M8 with
3-pin plug M8x1, 1 switching out-
put NPN

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

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	L5	L6
	10V24	V24/ V110/ V230	10V24	V24/ V110/ V230						
MS4-DE-1/8-...-AD1/AD2	34.9	42.2	96.5	103.8	21	82.6	G1/8	M8x1	35.1	46.7
MS4-DE-1/4-...-AD1/AD2							G1/4			
MS4-DE-1/8-...-AD3/AD4	34.9	42.2	96.5	103.8	21	82.6	G1/8	M12x1	35.1	55.8
MS4-DE-1/4-...-AD3/AD4							G1/4			
MS4-DE-1/8-...-AD7/AD8/AD9/AD10	34.9	42.2	73	80.3	21	59.1	G3/8	M8x1	-	-
MS4-DE-1/4-...-AD7/AD8/AD9/AD10							G1/4			
MS6-DE-1/4-...-AD1/AD2	44.7	52	116.7	124	31	103	G1/4	M8x1	35.1	46.7
MS6-DE-3/8-...-AD1/AD2							G3/8			
MS6-DE-1/2-...-AD1/AD2							G1/2			
MS6-DE-1/4-...-AD3/AD4	44.7	52	116.7	124	31	103	G1/4	M12x1	35.1	55.8
MS6-DE-3/8-...-AD3/AD4							G3/8			
MS6-DE-1/2-...-AD3/AD4							G1/2			
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 to ISO 1179-1 and to ISO 228-1

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

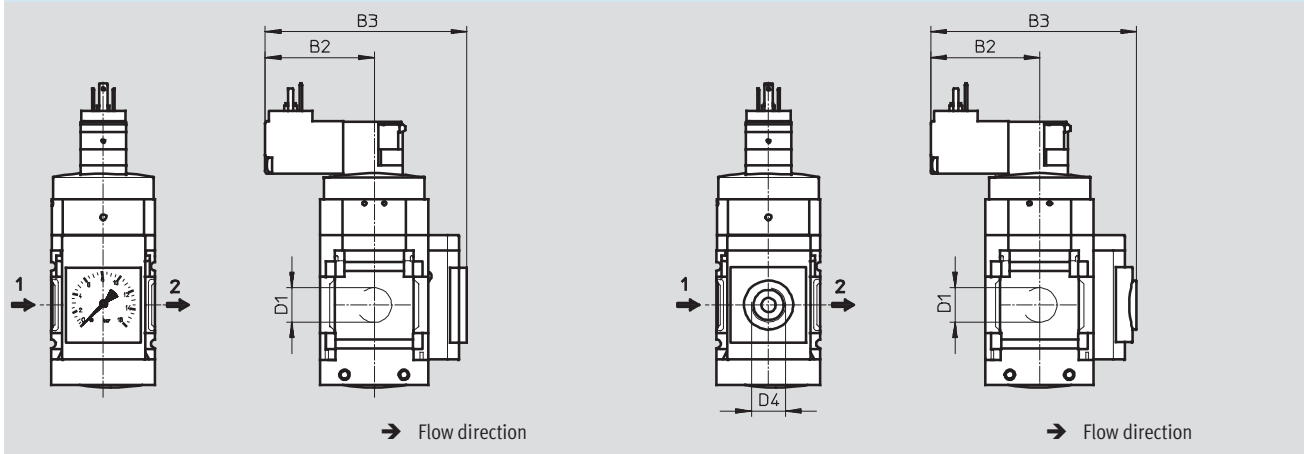
Technical data

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 to ISO 1179-1 and to ISO 228-1

Ordering data							
Size	Connection	Supply voltage 24 V DC		Supply voltage 110 V AC		Supply voltage 230 V AC	
		Part No.	Type	Part No.	Type	Part No.	Type
MS4	G1/8	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

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



Ordering data – Modular products

M 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	-	5	-1/8		
		Thread G1/4	Thread G1/4	5	-1/4		
		-	Thread G3/8	5	-3/8		
		-	Thread G1/2	5	-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			-V24		
		4 ... 14 bar		4 ... 18 bar			
		24 V DC (pin allocation to EN 175301) 4 ... 10 bar			1 5	-10V24	
		4 ... 10 bar		4 ... 10 bar			
		110 V AC (pin allocation to EN 175301) 4 ... 14 bar			5	-V110	
		4 ... 14 bar		4 ... 18 bar			
	230 V AC (pin allocation to EN 175301) 4 ... 14 bar			5	-V230		
	4 ... 14 bar		4 ... 18 bar				

1 10V24 Max. supply pressure 10 bar

Transfer order code

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

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

Ordering data – Modular products

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

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
0 Pressure gauge/adapter	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 5	-AD1		
	Pressure sensor with display, plug M8, 1 switching output NPN, 3-pin			2 5	-AD2		
	Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			2 5	-AD3		
	Pressure sensor with display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			2 5	-AD4		
	Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O contact			2 5	-AD7		
	Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact			2 5	-AD8		
	Pressure sensor without display, plug M8, window comparator, PNP, N/O contact			2 5	-AD9		
	Pressure sensor without display, plug M8, window comparator, PNP, N/C contact			2 5	-AD10		
	Alternative pressure gauge scale	psi			3		-PSI
		MPa			3		-MPA
Type of mounting	Mounting bracket			4	-WP		
	Mounting bracket			4 5	-WPM		
	Mounting bracket				-WB		
	Mounting bracket				-WBM		
EU certification	II 3GD to EU Directive 94/9/EG				-EX2		
Alternative flow direction	Flow direction from right to left				-Z		

- 2 **AD1 ... AD4, AD7 ... AD10**
Measuring range max. 10 bar
- 3 **PSI, MPA** Only with pressure gauge AG or RG

- 4 **WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD or AGE
- 5 1/8, 1/4, 3/8, 1/2, 10V24, V110, V230, AD1 ... AD4, AD7 ... AD10, WPM
Not with EU EX2 certification

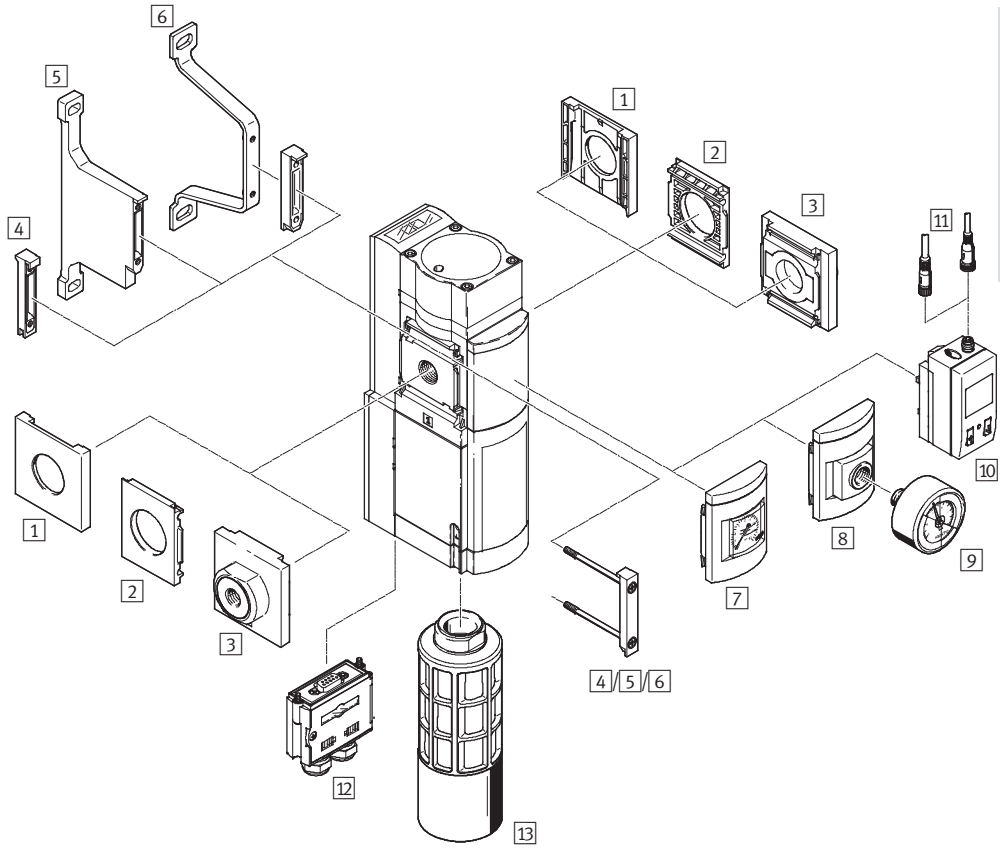
Transfer order code

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

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

Soft start and exhaust valves MS6-SV, 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 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	■	■	■	■	56
8	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	56
9	Pressure gauge MA	■	■	■	■	103
10	Pressure sensor with display AD1 ... AD4	■	■	■	■	56
11	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	103
12	Multi-pin plug socket NECA	■	■	■	■	58
13	Silencer UOS-1	■	■	■	■	59

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

Type codes

		MS	6	-	SV	-	1/2	-	E	-	10V24	-	SO	-	AG
Series															
MS	Standard service unit														
Size															
6	Grid dimension 62 mm														
Service function															
SV	Soft-start and exhaust valve														
Pneumatic connection															
1/2	Thread G1/2														
Performance level															
E	Category 4 to DIN EN ISO 13849-1, 2-channel with self-monitoring														
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, M8 plug, PNP, 3-pin														

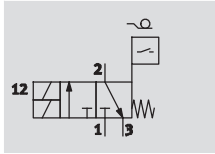
Additional variants can be ordered using the modular system → 56





- Sub-bases
- Pressure gauge/adaptor plate
- Alternative pressure gauge scale
- Multi-pin plug socket
- Type of mounting
- UL certification
- Alternative flow direction

Soft-start and exhaust valves MS6-SV, MS series

Technical data

Function



-  - Flow rate
4,300 l/min
-  - Temperature range
-10 ... +50 °C
-  - Operating pressure
3.5 ... 10 bar
-  - www.festo.com





The electropneumatic soft-start and exhaust valve is used to reduce pressure quickly and reliably and to build up pressure gradually in industrial pneumatic systems and terminals. The device is a self-testing, redundant mechatronic system conforming to the requirements of EN ISO 13849-1. The


safety-related pneumatic protection objective and safe exhausting are ensured, even in the case of valve defects (e.g. sticking of a slide). Thanks to the 2-channel design and its monitoring, the device fulfils controller category 4

requirements. Thus, with correct installation and consideration of the specific application data, performance level “e” 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 must only be used in conjunction with an NECA approved multi-pin plug socket. This can be ordered via the modular product system (MP... → 56) or as an accessory (NECA → 58).


 **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 → 56) or as an accessory (UOS-1 → 59).

 **Note**
Only devices that do not impair the pneumatic protective measure – safe venting – may be placed downstream of the MS6-SV. The MS6-SV is not permitted for use as a press safety valve.

- Performance level “e”/category 4 to EN ISO 13849-1
- Conforms to EN 61508
- A switching time delay adjusted via a flow control valve for gradual pressure build-up
- Optional pressure sensor

Safety data	
Conforms to – Performance Level (PL) – MTTF _d value ¹⁾ – B10 value	EN ISO 13849-1 – Category 4, PL “e” safety component – 200 years (= high) – 250,000 switching cycles
Conforms to – Safety Integrity Level (SIL) – PFH _d value	EN 61508 – SIL “3” safety component – 2.47e ⁻⁸
Max. service life	20 years

1) Under the following conditions: number: 365 days/year, 24 hours/day; actuations: approx. 1x/21 min; service life: 20 years; B10_d: 500,000 switching cycles

 **Safety instructions: switching frequency min. 1/month**
The mechanical system is not tested in the controlled (i.e. pressurised) state. If the process-related switching frequency (safe venting) is less than once a month, the machine operator must carry out a forced switch-off.

Soft-start and exhaust valves MS6-SV, MS series

Technical data

General technical data	
Pneumatic connection 1, 2	G $\frac{1}{2}$
Pneumatic connection 3	G1
Design	Piston seat
Type of mounting	Via accessories
	In-line installation
Mounting position	Any
Pressure display	Via pressure sensor for displaying output pressure via LCD display and electrical output
	Via pressure gauge for displaying output pressure
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 control	Direct
Pilot air supply	Internal
Direction of flow	Non-reversible
Sealing principle	Soft
C value [l/(s*bar)]	19.3
b value	0.21

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

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

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
Degree of protection	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)	To EU EMC Directive	
	To EU Machinery Directive	
Fire protection classification to UL 94	V0-V2	
Certification	c UL us - Recognized (OL) (not with pressure gauge AG)	
	C-Tick	
	BIA	

1) Corrosion resistance class 2 according 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.

Soft-start and exhaust valves MS6-SV, MS series

Technical data

Weights [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	NBR

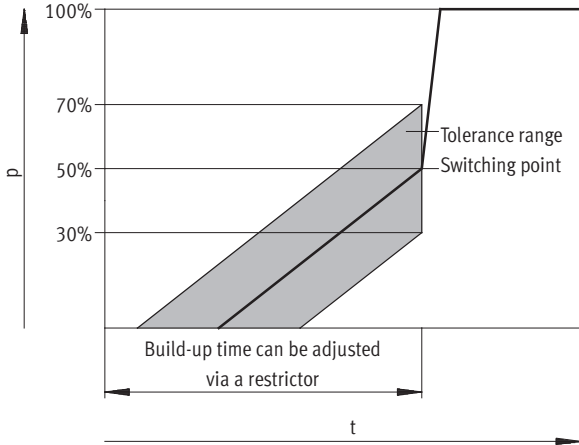
Multi-pin plug socket		
Description	Enable signals (EN1/EN2)	Example of connection
<p>NECA-...-M P1</p> <ul style="list-style-type: none"> Static enable signals (EN1 = 24 V, EN2 = 24 V). 		
<ul style="list-style-type: none"> Clocked enable signals (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V) for cross circuit detection. Cross circuit detection with clock signals is in principle carried out by the protective switch-gear/safety PLC used. 	<p>Note</p> <p>Given the fact that clock outputs from different controller manufacturers are not standardised, their usability must be checked in each case. If the clock pulse is outside of the described limits, this is recognised by the MS6-SV as an error and a safe switch-off is performed.</p>	
<p>NECA-...-M P3</p> <ul style="list-style-type: none"> Static enable signals (EN1 = 0 V, EN2 = 24 V). Static cross circuit monitoring possible. A cross circuit in lines EN1 and EN2 does not lead to inadvertent start-up of the valve. 		

Soft-start and exhaust valves MS6-SV, MS series

Technical data

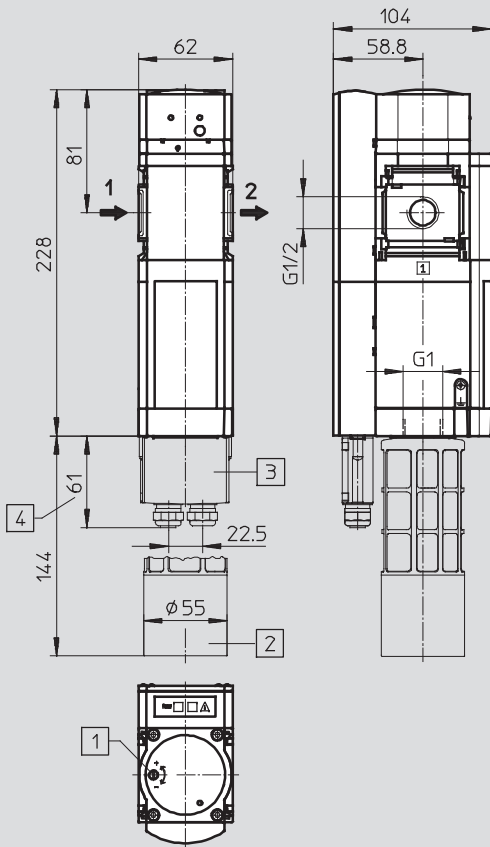
Switching point

Pressure p as a function of time t



Dimensions – Standard

Download CAD data → www.festo.com



- 1 Regulating screw for flow control valve
- 2 Silencer UOS-1
- 3 Multi-pin plug socket NECA
- 4 Dimension without cable

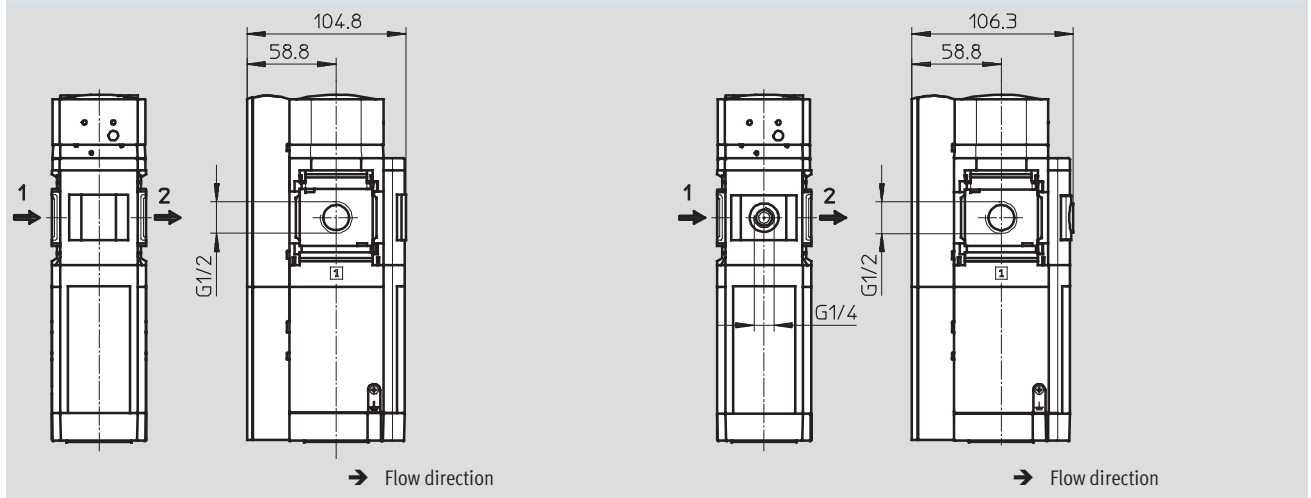
→ Flow direction

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

Soft-start and exhaust valves MS6-SV, MS series

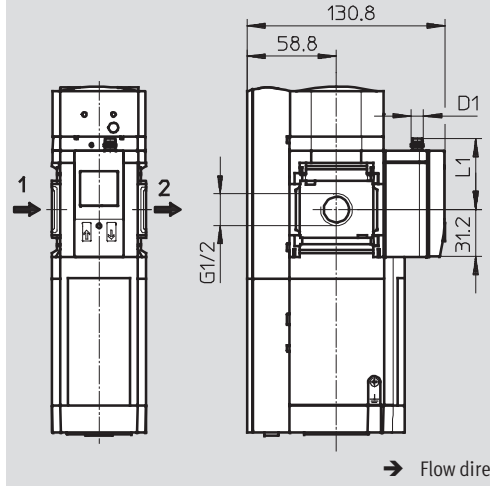
Technical data

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 to ISO 1179-1 and to ISO 228-1

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



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

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

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

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

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

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

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-E-10V24-AG	548717	MS6-SV-1/2-E-10V24-SO-AG
Pressure sensor with display, M8 plug, PNP, 3-pin					
MS6	G1/2	562580	MS6-SV-1/2-E-10V24-AD1	-	

Soft-start and exhaust valves MS6-SV, MS series

Ordering data – Modular products

M Mandatory data →						
Module No.	Series	Size	Function	Connection size	Performance level	Supply voltage
548713	MS	6	SV	1/2, AGB, AGC, AGD, AGE	E	10V24
Order example						
548713	MS	6	- SV	- AGB	- E	- 10V24 -

Ordering table					
Grid dimension	[mm]	62	Condi- tions	Code	Enter code
M	Module No.	548713			
	Series	Standard		MS	MS
	Size	6		6	6
	Function	Soft-start and exhaust valve		-SV	-SV
	Connection size	Thread G1/2		-1/2	
		Connecting plate G1/4		-AGB	
		Connecting plate G3/8		-AGC	
		Connecting plate G1/2		-AGD	
		Connecting plate G3/4		-AGE	
	Performance level	Category 4, 2-channel with self-monitoring, maximum attainable according to EN ISO 13849-1		-E	-E
↓	Supply voltage	24 V DC (connection pattern to EN 175301), 10 bar		-10V24	-10V24

Transfer order code

548713	MS	6	- SV	-	E	-	10V24
--------	----	---	------	---	---	---	-------

Soft-start and exhaust valves MS6-SV, MS series

Ordering data – Modular products

→ **Options**

Silencer	Pressure gauge/ adapter plate	Alternative pres- sure gauge scale	Multi-pin plug socket	Mounting type	UL certification	Alternative flow direction
SO	AG, A4, AD1, AD2, AD3, AD4	PSI, MPA	MP1, MP3	WPB	UL1	Z
- SO	- AG	-	- MP1	- WPB	-	-

Ordering table

Grid dimension	[mm]	62	Condi- tions	Code	Enter code
0 Silencer		Open silencer		-SO	
Pressure gauge/adapter plate		MS pressure gauge		-AG	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4	
		Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin		-AD1	
		Pressure sensor with display, plug M8, 1 switching output NPN, 3-pin		-AD2	
		Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA		-AD3	
		Pressure sensor with display, plug M12, 1 switching output 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	
		Sub-D, 9-pin, screw terminal, without cable, enable signals static (EN1 = 0 V, EN2 = 24 V), short-circuit detection possible		-MP3	
Mounting type		Wall mounting plate, large clearance		-WPB	
UL certification		cULus, ordinary location for Canada and USA	[2]	-UL1	
Alternative flow direction		Flow direction from right to left		-Z	

[1] **PSI, MPA** Not with pressure gauge/adapter plate A4, AD1, AD2, AD3, AD4
 [2] **UL1** Not with pressure gauge/adapter plate AG

Transfer order code

- - - - - - -

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

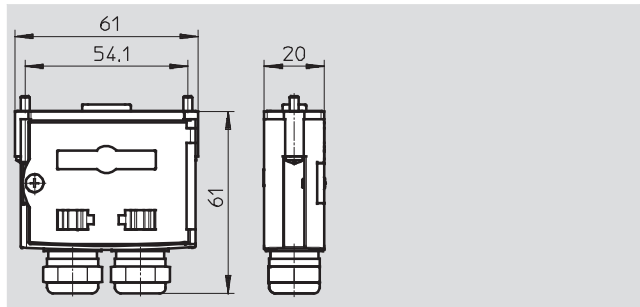
Material:

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]	1.0
Connection cross section	[mm ²]	0.34 ... 1.0 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

FESTO

Accessories

Silencer UOS-1

(order code: SO)

- For soft start and exhaust valve MS6-SV

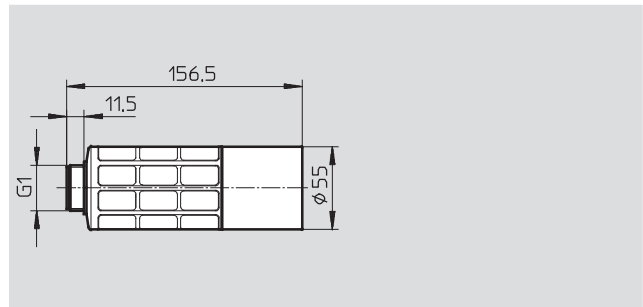
Materials:

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

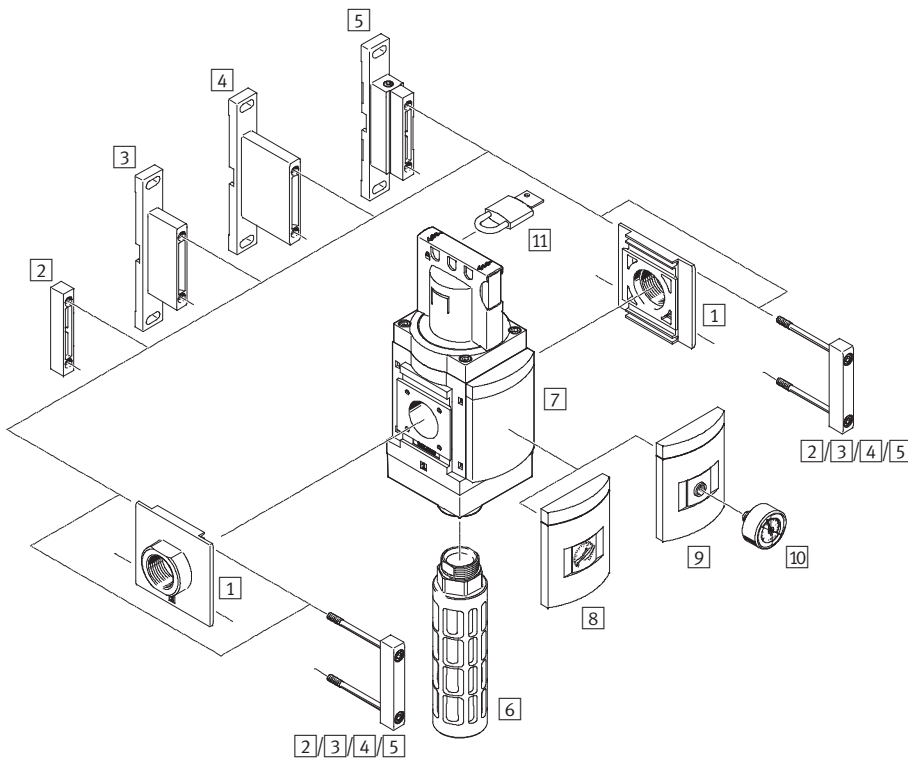
1) Corrosion resistance class 2 to Festo standard 940 070


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 MS9-EM, MS series

Peripherals overview

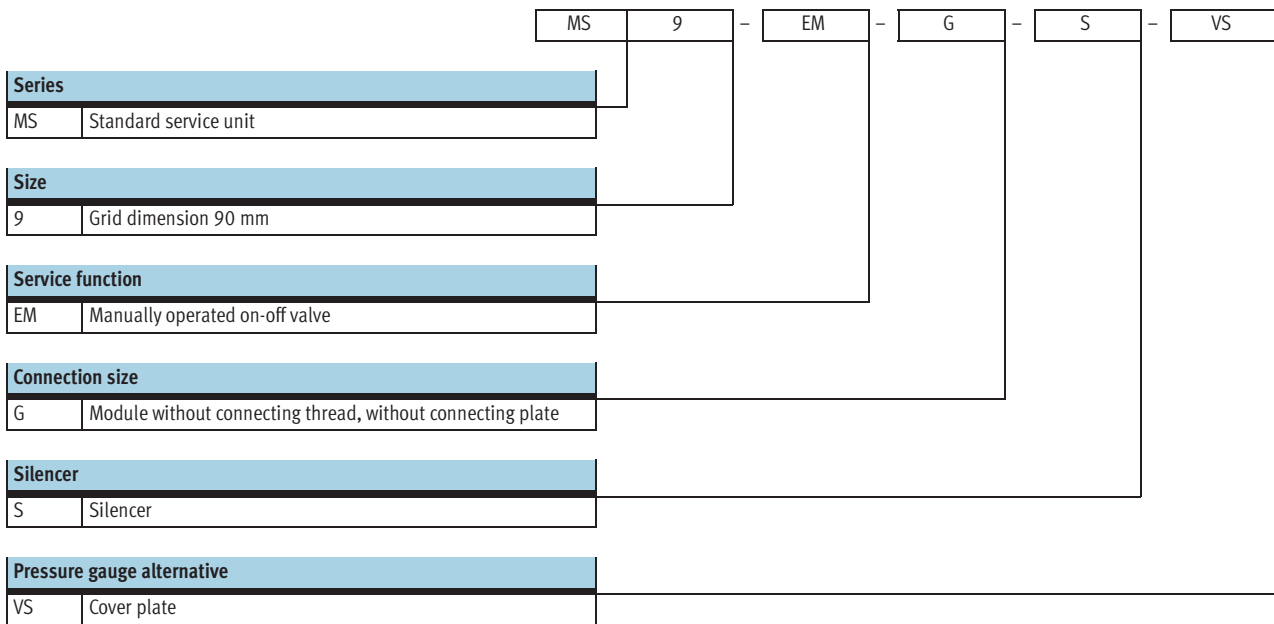


 Note
 Additional accessories:
 – Module connector for combinations with size MS6, MS9 or size MS12
 → Internet: rmv, armv

Mounting attachments and accessories					
		Individual component		Combination	→ Page/Internet
		Without connecting thread	With connecting thread 3/4 or 1		
1	Connecting plate MS9-AG...	■	–	■	ms9-ag
2	Module connector MS9-MV	■	–	■	ms9-mv
3	Mounting bracket MS9-WP	■	■	■	ms9-wp
4	Mounting bracket MS9-WPB	■	■	■	ms9-wp
5	Mounting bracket MS9-WPM	■	–	■	ms9-wp
6	Silencer U	■	■	■	103
7	Cover plate VS	■	■	■	66
8	MS pressure gauge AG/RG	■	■	■	66
9	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	66
10	Pressure gauge MA	■	■	■	103
11	Padlock LRVS-D	■	■	■	103

On-off valves MS9-EM, MS series

Type codes



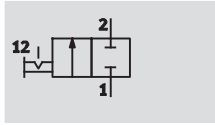
Additional variants can be ordered using the modular system → 66

- Connecting plates
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Valve function
- Type of mounting
- Alternative flow direction

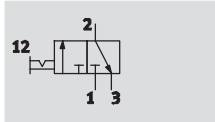
On-off valves MS9-EM, MS series




Technical data

2/2-way valve, double solenoid



3/2-way valve, double solenoid



-  - Flow rate
8,000 ... 18,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0 ... 20 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
- Optional pressure gauge

General technical data				
Pneumatic connection 1, 2	G3/4	G1	G1½ ... G1½ (with connecting plate AG...)	- (without connecting thread G)
Pneumatic connection 3	G1			
Design	Piston spool valve			
Type of mounting	Via accessories			
	In-line installation			
Mounting position	Any			
Regulator lock	Rotary knob with detent			
Pressure display	Via pressure gauge for displaying output pressure			
	Via pressure gauge with red/green scale for displaying output pressure			
	G¼ prepared			
Valve function	2/2-way valve, double solenoid			
	3/2-way valve, double solenoid			
Exhaust air function	No flow control			
Reset method	Forced			
Type of control	Direct			
Sealing principle	Soft			

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

On-off valves MS9-EM, MS series

Technical data

FESTO

Flow rate characteristic values								
Pneumatic connection	Connecting thread		Connecting plate					None
	G3/4	G1	AGD	AGE	AGF	AGG	AGH	G
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]								
In main flow direction 1 \rightarrow 2	14,500	18,000	8,000	14,000	18,000	18,000	18,000	18,000
In relief direction 2 \rightarrow 3	14,900	14,100	16,500	14,400	13,800	13,200	13,200	14,100
C value [l/s*min]								
In main flow direction 1 \rightarrow 2	59.59	76.90	32.75	57.50	75.65	75.51	75.17	-
In relief direction 2 \rightarrow 3	55.11	53.54	56.22	54.07	52.73	51.06	51.36	-
b value								
In main flow direction 1 \rightarrow 2	0.41	0.37	0.45	0.39	0.38	0.39	0.38	-
In relief direction 2 \rightarrow 3	0.50	0.48	0.60	0.49	0.47	0.45	0.44	-

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

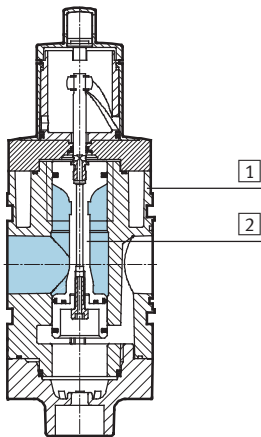
Operating and environmental conditions	
Operating pressure [bar]	0 ... 20
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	2
Noise level [dB (A)]	93 ²⁾ with silencer
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)
ATEX	Specified types \rightarrow www.festo.com

- 1) Corrosion resistance class 2 according 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.
- 2) Venting at 10 bar at a distance of 1 m.

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

Materials

Sectional view



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

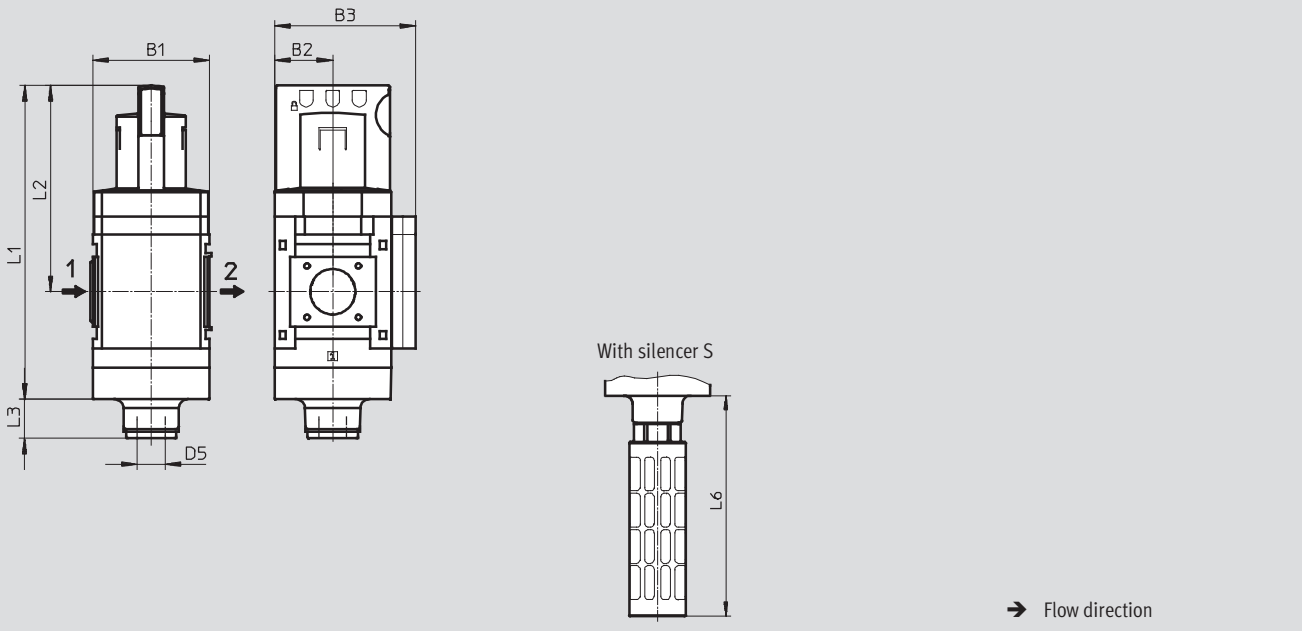
On-off valves MS9-EM, MS series

Technical data

Dimensions – Basic version

Download CAD data → www.festo.com

Without connecting thread G, with cover plate VS



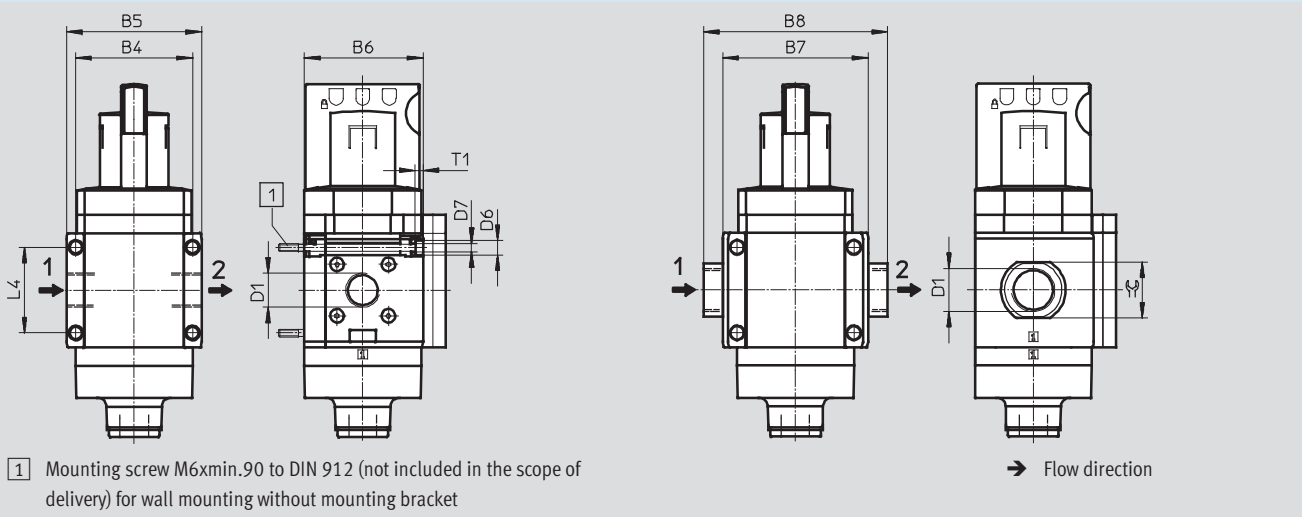
Type	B1	B2	B3	D5	L1	L2	L3		L6
							2/2-way valve	3/2-way valve	
MS9-EM-G	90	45	109	G1	242	159	30	23	189

Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

With connecting thread 3/4 or 1

With connecting plate AG...



1 Mounting screw M6x11.90 to DIN 912 (not included in the scope of delivery) for wall mounting without mounting bracket

Type	B4	B5	B6	B7	B8	D1	D6	D7	L4	T1	⌀G
MS9-EM-3/4	90	104	91.5	-	-	G3/4	11	6.5	66	6	-
MS9-EM-1						G1					
MS9-EM-AGD	-	-	-	112	132	G1/2	-	-	-	-	30
MS9-EM-AGE					132	G3/4					36
MS9-EM-AGF					142	G1					41
MS9-EM-AGG					162	G1 1/4					50
MS9-EM-AGH					176	G1 1/2					55

On-off valves MS9-EM, MS series

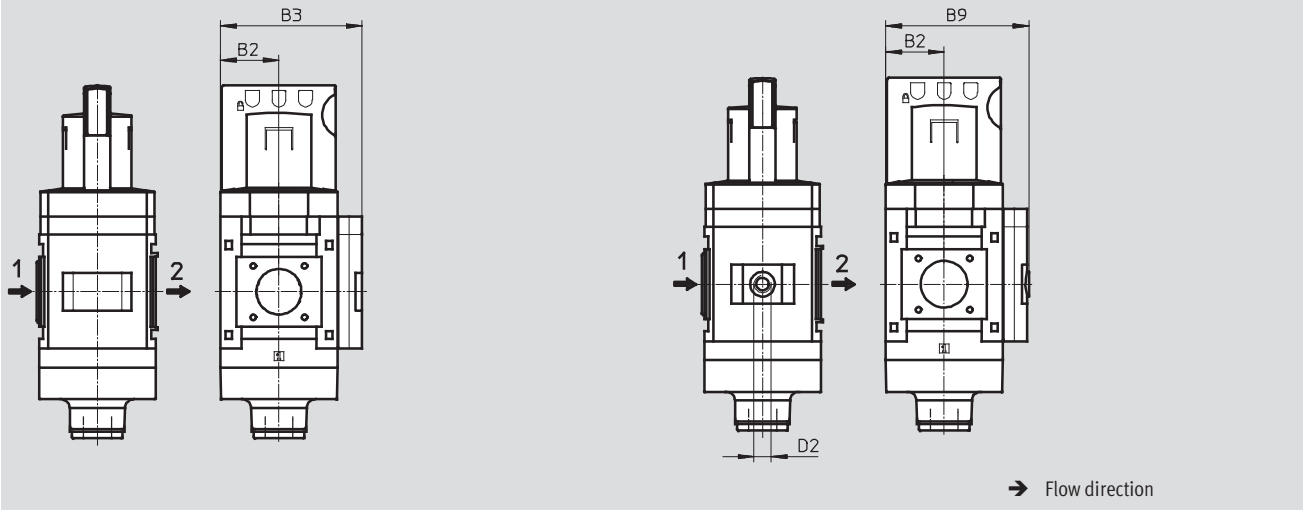
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

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



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

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

Ordering data

3/2-way valve, with silencer

Size	Connection	Part No.	Type
MS9	-	562952	MS9-EM-G-S-VS

On-off valves MS9-EM, MS series

Ordering data – Modular products

M **Mandatory data** →

Module No.	Series	Size	Function	Connection size
562178	MS	9	EM	3/4, 1, AGD, AGE, AGF, AGG, AGH, G
Ordering example				
562178	MS	9	- EM	- G

Ordering table

Grid dimension	[mm]	90	Condi- tions	Code	Enter code
M Module No.	562178				
Series	Standard			MS	MS
Size	9			9	9
Function	Manual on-off valve			-EM	-EM
Connection size	Thread G3/4			-3/4	
	Thread G1			-1	
	Connecting plate G1/2			-AGD	
	Connecting plate G3/4			-AGE	
	Connecting plate G1			-AGF	
	Connecting plate G11/4			-AGG	
	Connecting plate G11/2			-AGH	
	Module without connecting thread, without connecting plate			-G	

Transfer order code

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

On-off valves MS9-EM, MS series

Ordering data – Modular products

Options	Mandatory data	Options			
Silencer	Pressure gauge/ pressure gauge alter- natives	Alternative pressure gauge scale	Valve function	Type of mounting	Alternative flow direction
S	AG, VS, A4, RG	PSI, MPA, BAR	- 2	WP, WPM, WPB	Z
- S	- AG	- BAR	-	-	-

Ordering table					
Grid dimension	[mm]	90	Condi- tions	Code	Enter code
Options	Silencer	Silencer		-S	
Mandatory data	Pressure gauge/pressure gauge alternatives	MS pressure gauge		-AG	
		Cover plate		-VS	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4	
		Integrated pressure gauge, red/green scale	1	-RG	
Alternative pressure gauge scale	Psi		2	-PSI	
	MPa		2	-MPA	
	Bar		2	-BAR	
Options	Valve function	Standard (3/2-way valve)		-	
		2/2-way valve	3	-2	
Type of mounting	Mounting bracket	Mounting bracket	4	-WP	
		Mounting bracket	4	-WPM	
		Mounting bracket for large wall gap	4	-WPB	
Alternative flow direction	Flow direction from right to left			-Z	

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

2 **PSI, MPA, BAR** Not with pressure gauge alternative VS, A4

3 **2** Not with silencer S

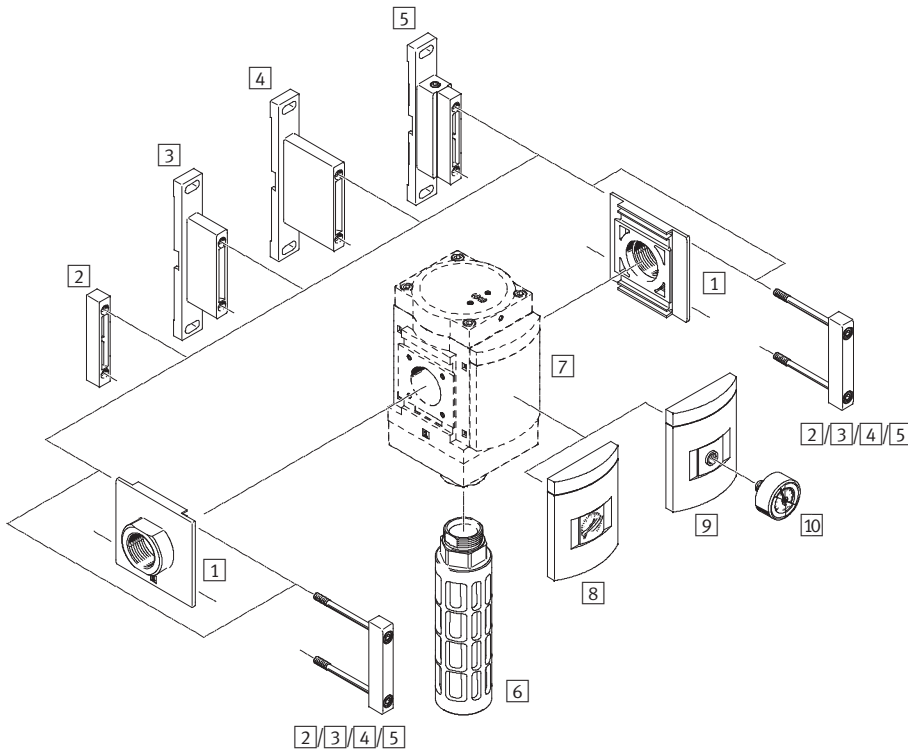
4 **WP, WPM, WPB** Not with module G


Transfer order code

- - - - - -

On-off valves MS9-EE, MS series

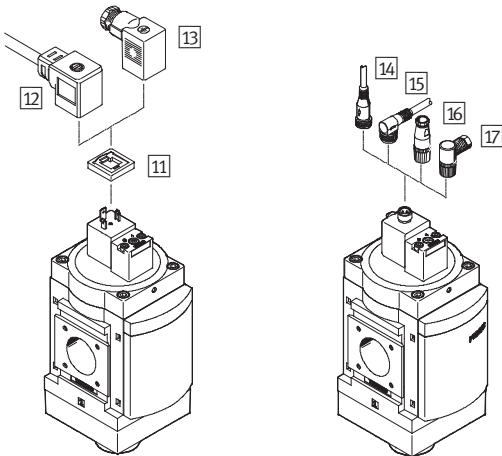
Peripherals overview



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

Supply voltage
 V24/V110/V230

Supply voltage
 V24P



On-off valves MS9-EE, MS series

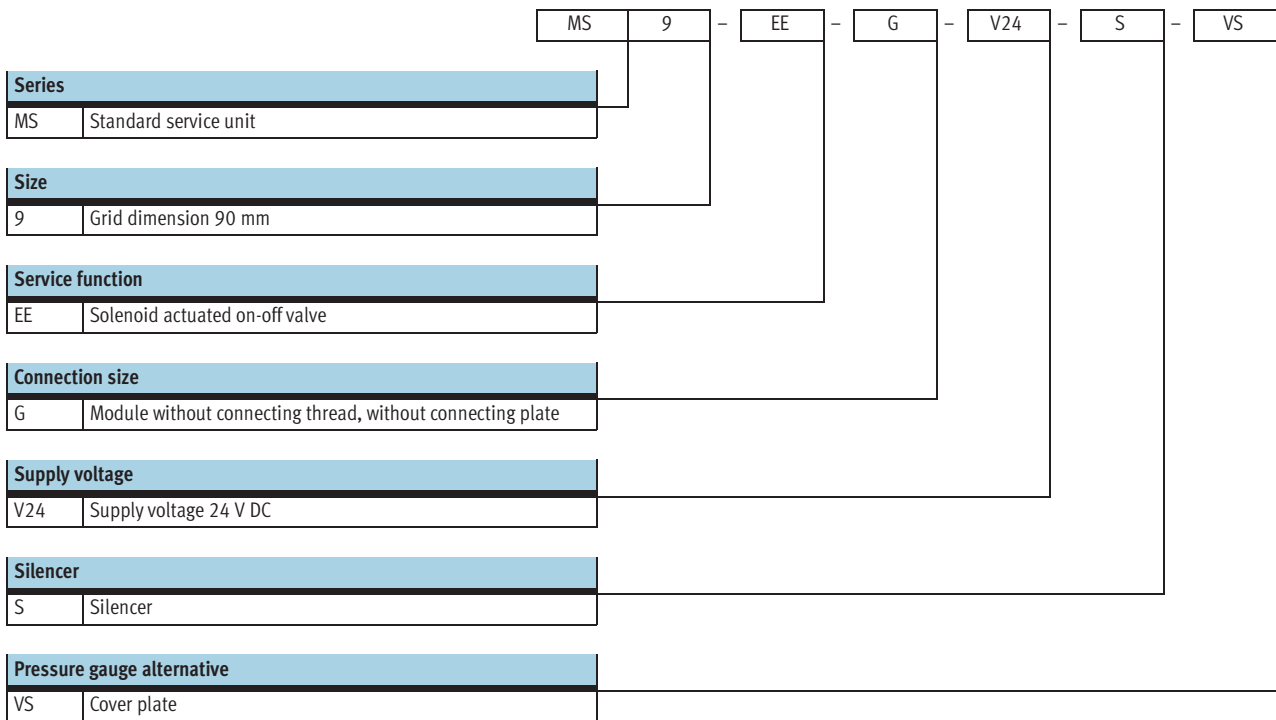
Peripherals overview

FESTO

Mounting attachments and accessories					
		Individual component		Combination	→ Page/Internet
		Without connecting thread	With connecting thread ¾ or 1		
1	Connecting plate MS9-AG...	■	-	■	ms9-ag
2	Module connector MS9-MV	■	-	■	ms9-mv
3	Mounting bracket MS9-WP	■	■	■	ms9-wp
4	Mounting bracket MS9-WPB	■	■	■	ms9-wp
5	Mounting bracket MS9-WPM	■	-	■	ms9-wp
6	Silencer U	■	■	■	103
7	Cover plate VS	■	■	■	76
8	MS pressure gauge AG/RG	■	■	■	76
9	Adapter plate for EN pressure gauge ¼ A4	■	■	■	76
10	Pressure gauge MA	■	■	■	103
11	Illuminating seal MC-LD	■	■	■	102
12	Plug socket with cable KMC	■	■	■	102
13	Plug socket MSSD-C	■	■	■	102
14	Connecting cable NEBU-M12G5	■	■	■	103
15	Connecting cable NEBU-M12W5	■	■	■	103
16	Sensor socket SIE-GD	■	■	■	103
17	Angled plug socket SIE-WD	■	■	■	103

On-off valves MS9-EE, MS series

Type codes



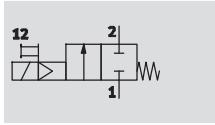
Additional variants can be ordered using the modular system → 76

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

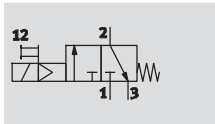
On-off valves MS9-EE, MS series




Technical data

2/2-way valve, single solenoid, closed



3/2-way valve, single solenoid, closed



-  Flow rate
8,000 ... 18,000 l/min
-  Temperature range
-10 ... +60 °C
-  Operating pressure
3 ... 16 bar



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

General technical data				
Pneumatic connection 1, 2	G3/4	G1	G1/2 ... G1 1/2 (with connecting plate AG...)	- (without connecting thread G)
Pneumatic connection 3	G1			
Design	Piston spool valve			
Type of mounting	Via accessories			
	In-line installation			
Mounting position	Any			
Pressure display	Via pressure gauge for displaying output pressure			
	Via pressure gauge with red/green scale for displaying output pressure			
	G1/4 prepared			
Valve function	2/2-way valve, single solenoid, closed			
	3/2-way valve, single solenoid, closed			
Exhaust air function	No flow control			
Reset method	Mechanical spring			
Type of control	Piloted			
Pilot air supply	Internal			
Sealing principle	Soft			

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

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

On-off valves MS9-EE, MS series

Technical data

Flow rate characteristic values								
Pneumatic connection	Connecting thread		Connecting plate					None
	G3/4	G1	AGD	AGE	AGF	AGG	AGH	G
Standard nominal flow rate $q_{nN}^{1)}$ [l/min]								
In main flow direction 1 \rightarrow 2	14,500	18,000	8,000	14,000	18,000	18,000	18,000	18,000
In relief direction 2 \rightarrow 3	14,900	14,100	16,500	14,400	13,800	13,200	13,200	14,100
C value [l/s*min]								
In main flow direction 1 \rightarrow 2	59.59	76.90	32.75	57.50	75.65	75.51	75.17	-
In relief direction 2 \rightarrow 3	55.11	53.54	56.22	54.07	52.73	51.06	51.36	-
b value								
In main flow direction 1 \rightarrow 2	0.41	0.37	0.45	0.39	0.38	0.39	0.38	-
In relief direction 2 \rightarrow 3	0.50	0.48	0.60	0.49	0.47	0.45	0.44	-

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

Operating and environmental conditions	
Operating pressure [bar]	3.5 ... 16
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 μ m
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	2
Noise level [dB (A)]	93 ²⁾ with silencer
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)
ATEX	Specified types \rightarrow www.festo.com

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

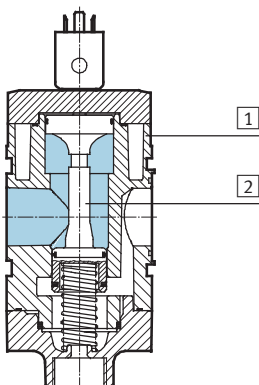
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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

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

Materials

Sectional view



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

On-off valves MS9-EE, MS series

Technical data

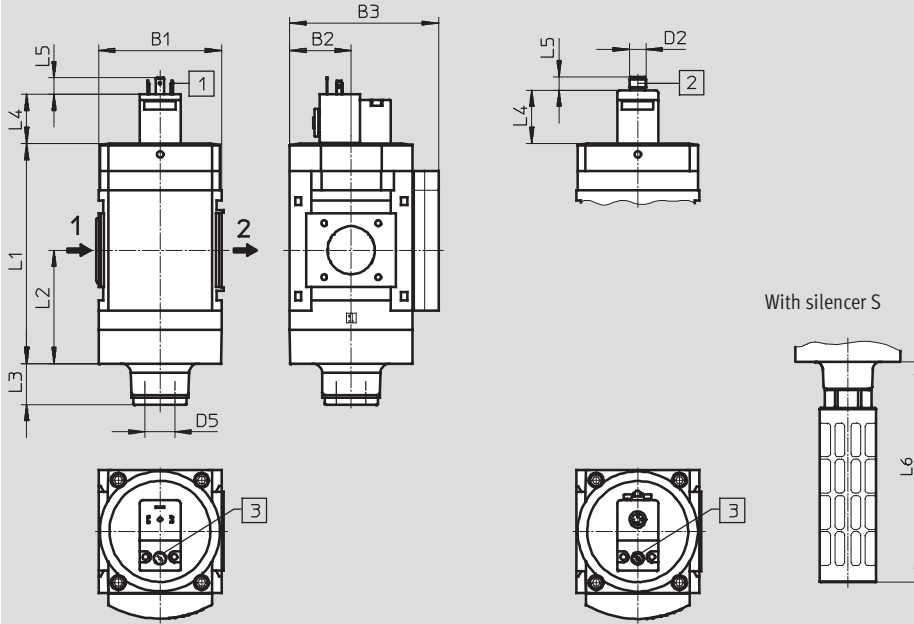
Dimensions – Basic version

Download CAD data → www.festo.com

Without connecting thread G, with cover plate VS

Supply voltage V24/V110/V230

Supply voltage V24P



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

On-off valves MS9-EE, MS series

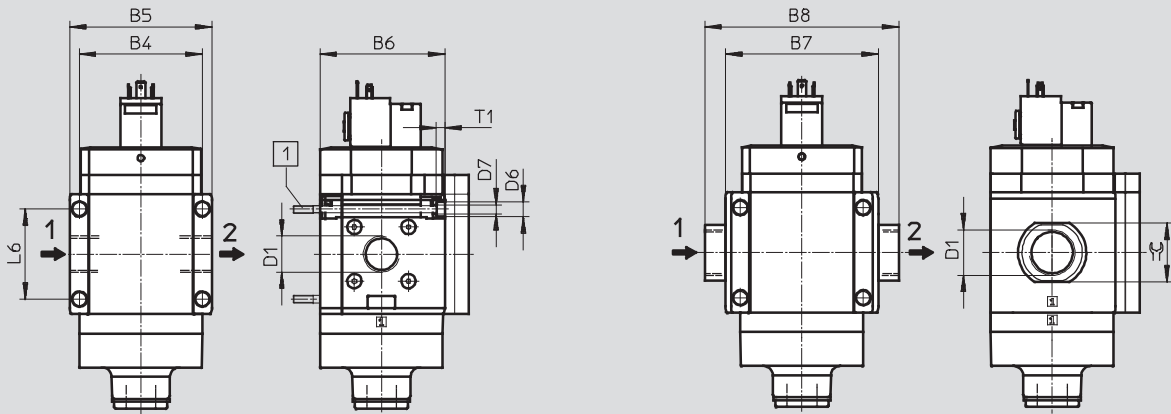
Technical data

Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

With connecting thread 3/4 or 1

With connecting plate AG...



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

→ Flow direction

Type	B4	B5	B6	B7	B8	D1	D6	D7	L6	T1	⌀
MS9-EE-3/4	90	104	91.5	-	-	G3/4	11	6.5	66	6	-
MS9-EE-1						G1					
MS9-EE-AGD	-	-	-	112	132	G1/2	-	-	-	-	30
MS9-EE-AGE					132	G3/4					36
MS9-EE-AGF					142	G1					41
MS9-EE-AGG					162	G1 1/4					50
MS9-EE-AGH					176	G1 1/2					55

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

On-off valves MS9-EE, MS series

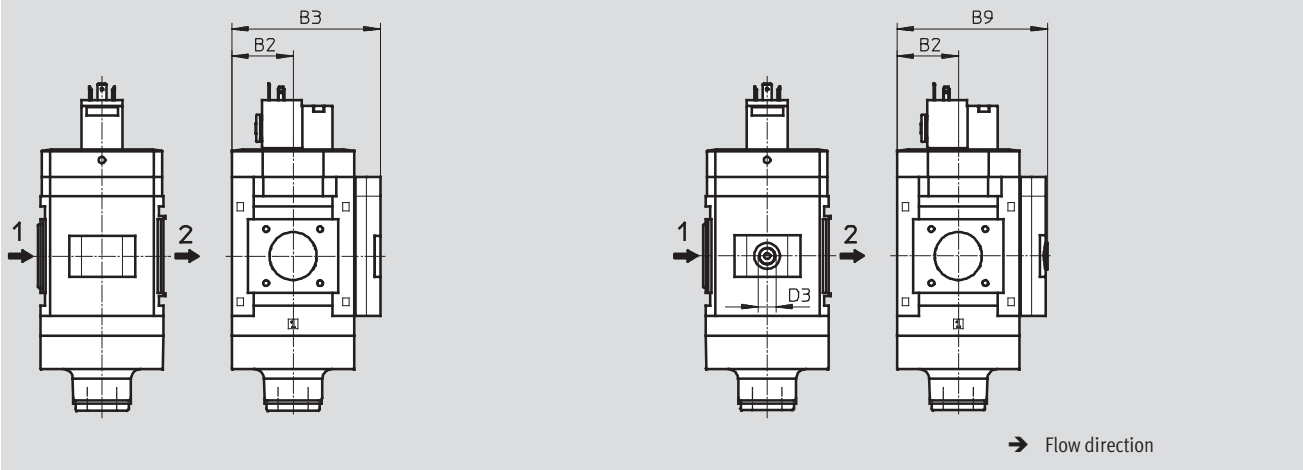
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

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



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

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

Ordering data

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

Size	Connection	Part No.	Type
MS9	-	562940	MS9-EE-G-V24-S-VS

On-off valves MS9-EE, MS series

Ordering data – Modular products

M Mandatory data →					
Module No.	Series	Size	Function	Connection size	Supply voltage
562177	MS	9	EE	3/4, 1, AGD, AGE, AGF, AGG, AGH, G	V24, V24P, V110, V230
Ordering example					
562177	MS	9	- EE	- 1	- V24

Ordering table					
Grid dimension	[mm]	90	Condi- tions	Code	Enter code
M Module No.	562177				
Series	Standard			MS	MS
Size	9			9	9
Function	Electrical on-off valve			-EE	-EE
Connection size	Thread G3/4			-3/4	
	Thread G1			-1	
	Connecting plate G1/2			-AGD	
	Connecting plate G3/4			-AGE	
	Connecting plate G1			-AGF	
	Connecting plate G1 1/4			-AGG	
	Connecting plate G1 1/2			-AGH	
	Module without connecting thread, without connecting plate			-G	
Supply voltage	24 V DC (pin allocation to EN 175301), 16 bar			V24	
	24 V DC plug (connection pattern M12 to DESINA), 16 bar			V24P	
	110 V AC (pin allocation to EN 175301), 16 bar			V110	
	230 V AC (pin allocation to EN 175301), 16 bar			V230	

Transfer order code

562177	MS	9	- EE	-		-	
--------	----	---	------	---	--	---	--

On-off valves MS9-EE, MS series

Ordering data – Modular products

Options		Mandatory data		Options		
Silencer	Pressure gauge/ pressure gauge alter- natives	Alternative pressure gauge scale	Valve function	Type of mounting	Alternative flow direction	
S	AG, VS, A4, RG	PSI, MPA, BAR	- 2	WP, WPM, WPB	Z	
- S	- AG	- BAR	-	-	-	

Ordering table		Grid dimension [mm]	90	Condi- tions	Code	Enter code
Options	Silencer	Silencer			-S	
Mandatory data	Pressure gauge/pressure gauge alternatives	MS pressure gauge			-AG	
		Cover plate			-VS	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4	
		Integrated pressure gauge, red/green scale		1	-RG	
Mandatory data	Alternative pressure gauge scale	Psi		2	-PSI	
		MPa		2	-MPA	
		Bar		2	-BAR	
Options	Valve function	Standard (3/2-way valve)			-	
		2/2-way valve		3	-2	
Options	Type of mounting	Mounting bracket		4	-WP	
		Mounting bracket		4	-WPM	
		Mounting bracket for large wall gap		4	-WPB	
Options	Alternative flow direction	Flow direction from right to left			-Z	

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

2 **PSI, MPA, BAR** Not with pressure gauge alternative VS, A4

3 **2** Not with silencer S

4 **WP, WPM, WPB** Not with module G

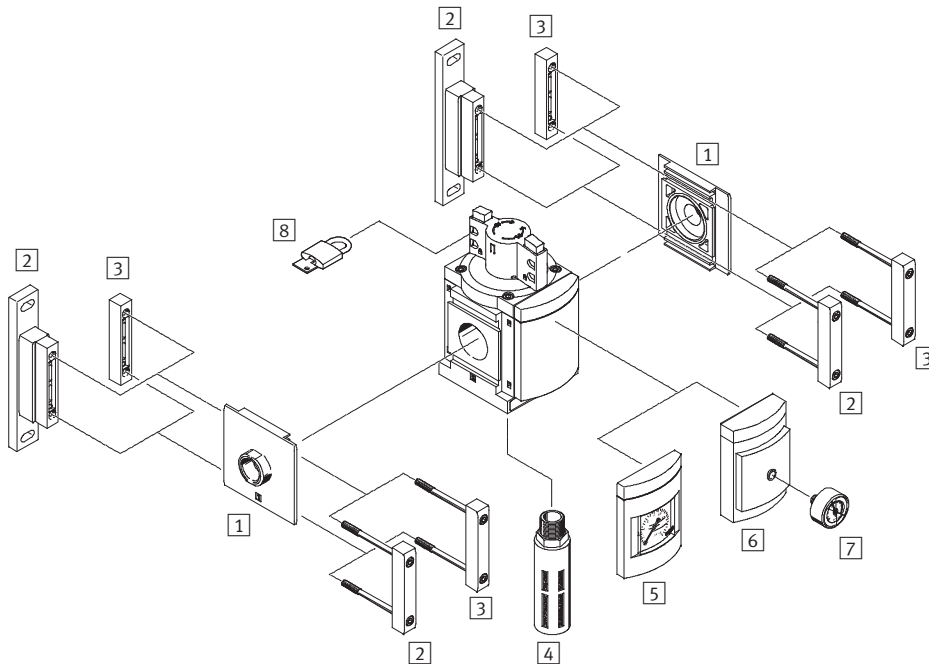
Transfer order code


- - - - - -

On-off valves MS12-EM, MS series

Peripherals overview

On-off valves MS12-EM



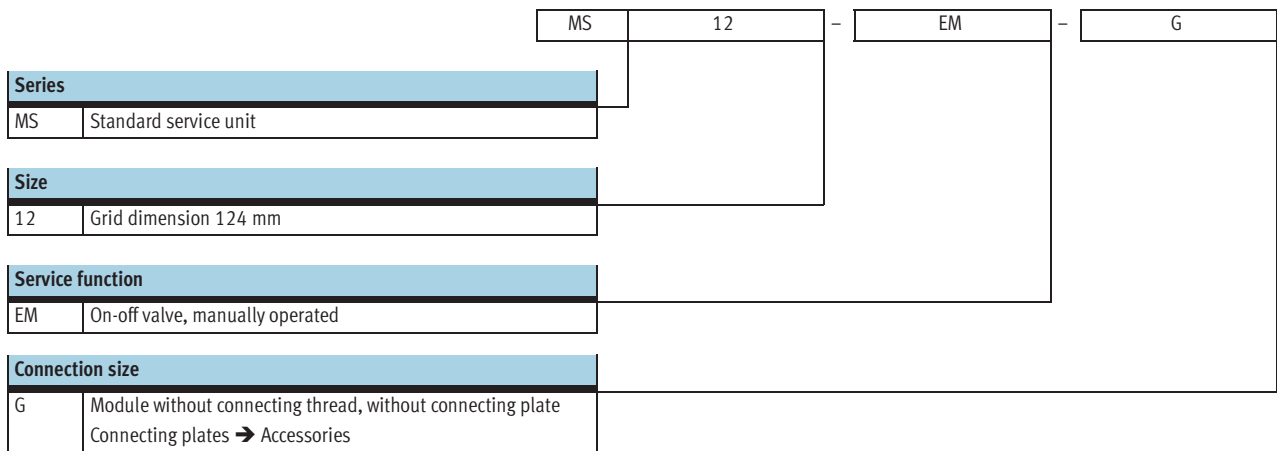
-  - Note
 Additional accessories:
 - Module connector for combination with size MS9 → Internet: armv

Mounting attachments and accessories

		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	Silencer U	103
5	MS pressure gauge AG	83
6	Adapter for EN pressure gauge 1/4 A4	83
7	Pressure gauge MA	103
8	Padlock LRVS-D	103

On-off valves MS12-EM, MS series

Type codes



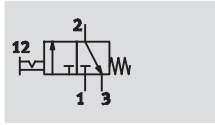
Further variants can be ordered using the modular system → 83




- 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

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			
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 to ISO 1179-1 and to ISO 228-1

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 p₁ = 6 bar and Δp = 1 bar

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

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

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

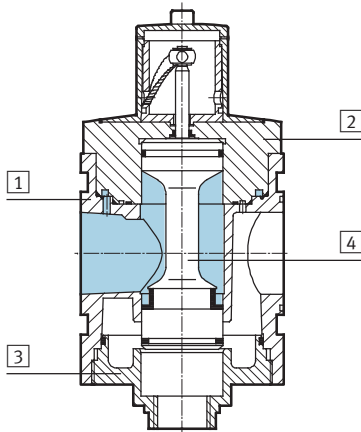
On-off valves MS12-EM, MS series

Technical data

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

Materials

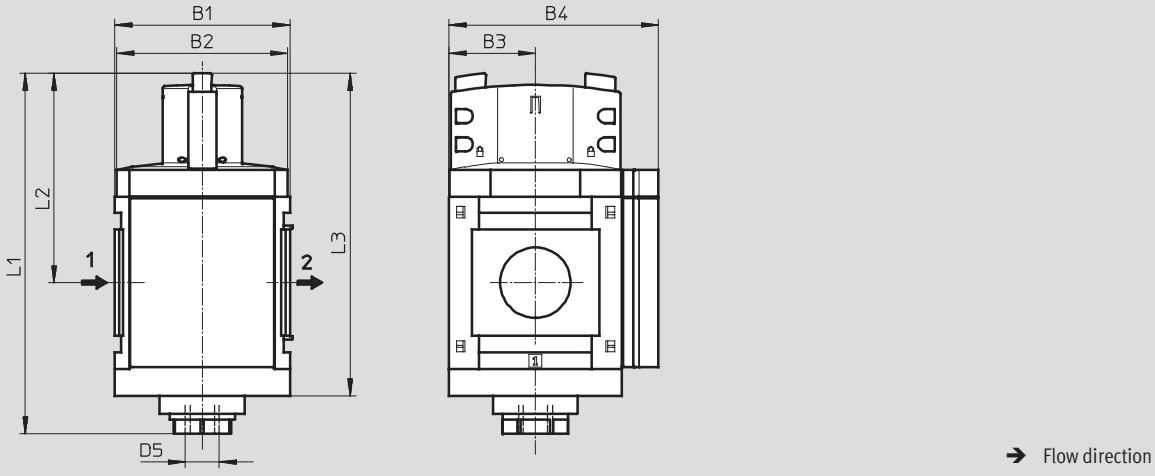
Sectional view



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

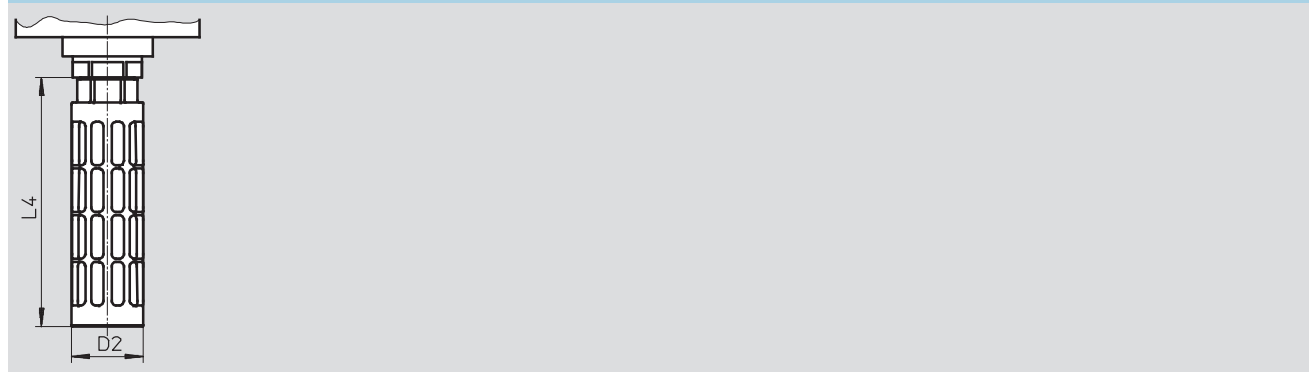


Type	B1	B2	B3	B4	L1	L2	L3	D5
MS12-EM	124	122	61	148	255	148	228	G1

On-off valves MS12-EM, MS series

Technical data

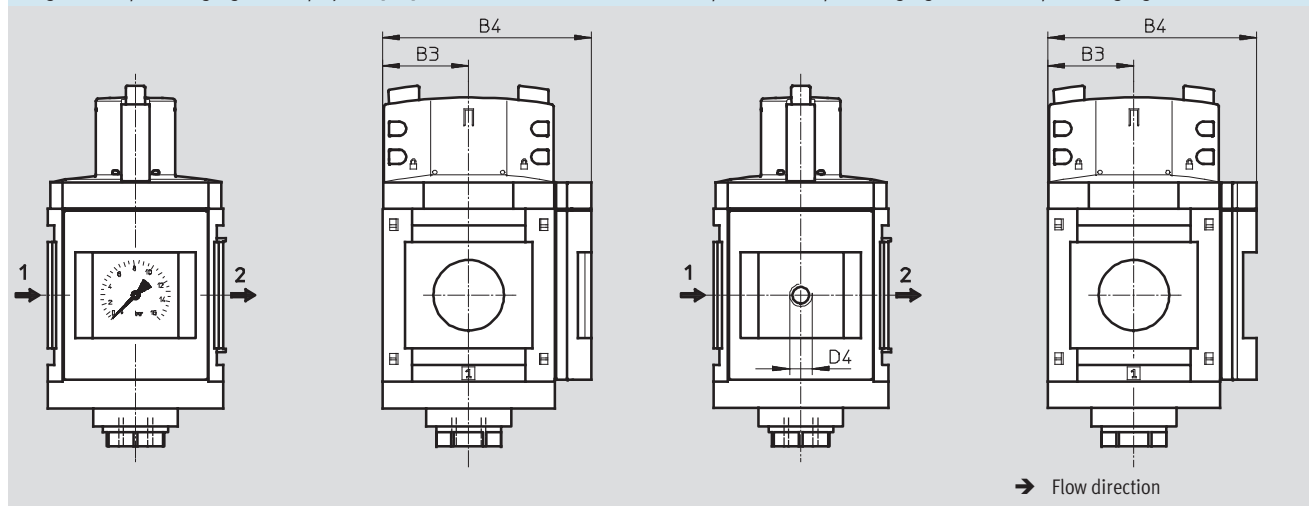
Dimensions – Silencer Download CAD data → www.festo.com



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 to ISO 1179-1 and to ISO 228-1

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 to ISO 1179-1 and to ISO 228-1

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.

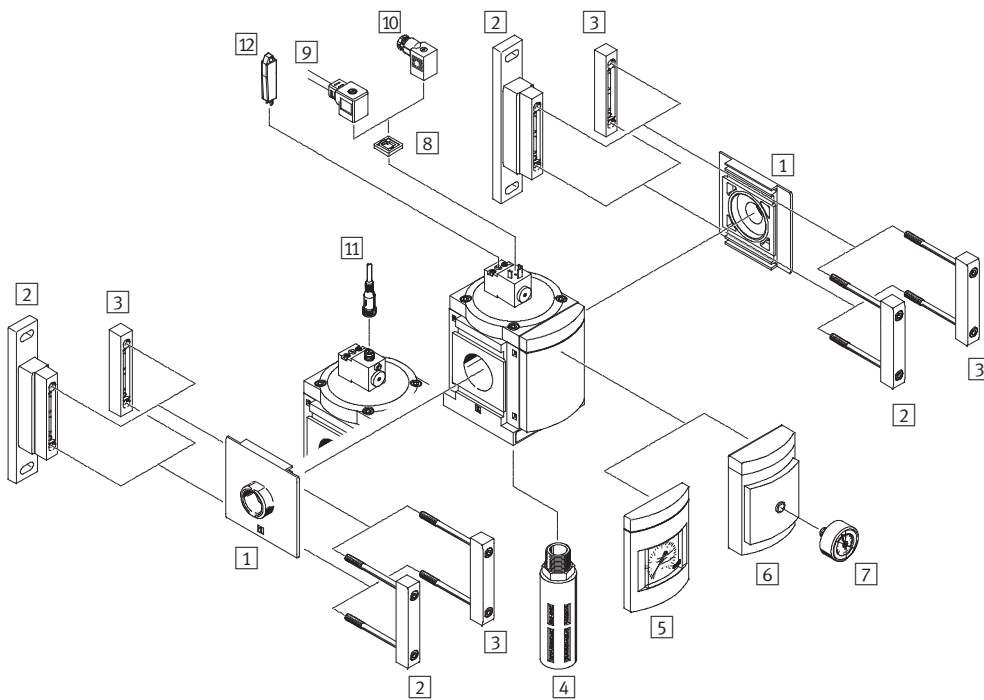
Transfer order code

535031	MS	12	-EM	-	-	-	-	-	-	-
--------	----	----	-----	---	---	---	---	---	---	---

On-off valves MS12-EE, MS series

Peripherals overview

On-off valves MS12-EE



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

Mounting attachments and accessories		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	Silencer U	103
5	MS pressure gauge AG	89
6	Adapter for EN pressure gauge 1/4 A4	89
7	Pressure gauge MA	103
8	Illuminating seal MC-LD	102
9	Plug socket with cable KMC	102
10	Plug socket MSSD-C	102
11	Connecting cable NEBU-M12...-LE4	103
12	Manual override AHB-MD/MF/MV	102

On-off valves MS12-EE, MS series

Type codes

	MS	12	-	EE	-	G	-	V24
Series								
MS	Standard service unit							
Size								
12	Grid dimension 124 mm							
Service function								
EE	On-off valve, solenoid actuated							
Connection size								
G	Module without connecting thread, without connecting plate Connecting plates → Accessories							
Supply voltage (for EE and DE only)								
V24	Supply voltage 24 V DC							

Further variants can be ordered using the modular system → 89

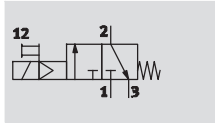
- Connecting plates
- Supply voltage
- Silencer
- Pressure gauge/adapter
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

On-off valves MS12-EE, MS series

Technical data



Function



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



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

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			

1) Dependent on connecting plate selected, must be ordered separately as an accessory → Internet: ms12-ag

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

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

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

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

On-off valves MS12-EE, MS series

Technical data

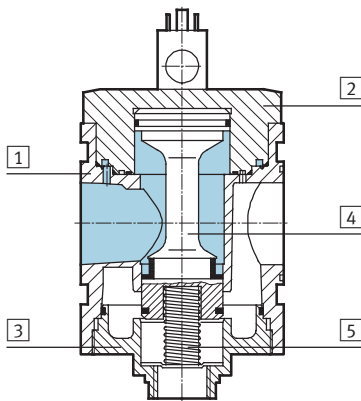
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

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, POM, NBR
5	Springs	Steel
-	Covers/cover plates	PA
-	Seals	NBR
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 EN 175301-803

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	

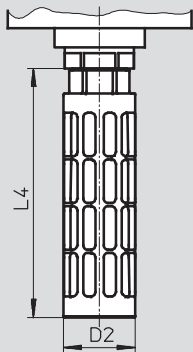
On-off valves MS12-EE, MS series

Technical data

FESTO

Dimensions – Silencer

Download CAD data → www.festo.com



Type	D2 Ø	L4
MS12-EE-...-S	47.8	165.5

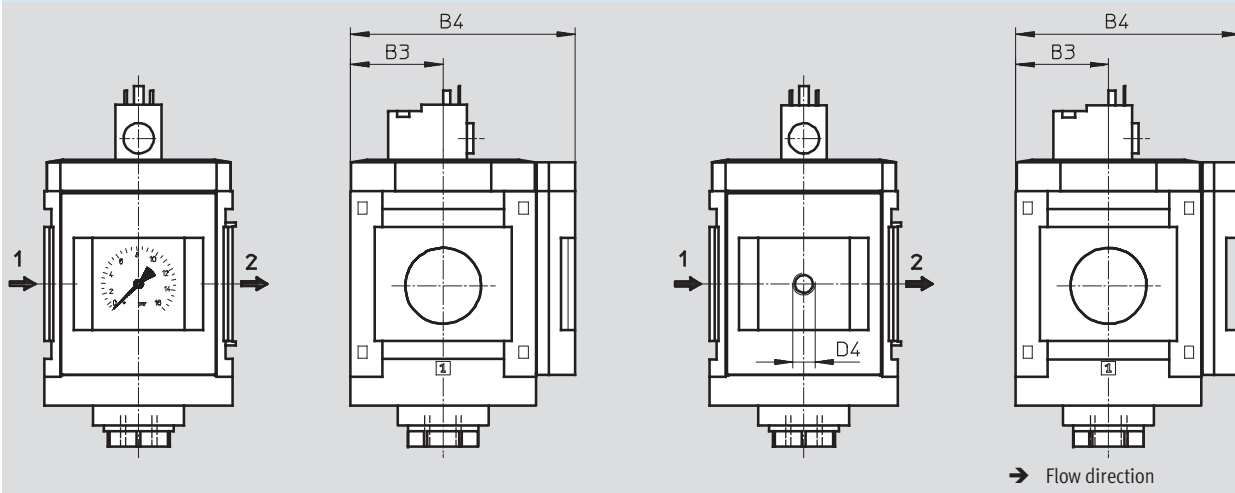
– Note: This product conforms to ISO 1179-1 and to ISO 228-1

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 to ISO 1179-1 and to ISO 228-1

On-off valves MS12-EE, MS series

Ordering data – Modular products

M Mandatory data						O Options				
Module No.	Series	Size	Function	Connection size	Supply voltage	Silencer	Pressure gauge/adapter	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535032	MS	12	EE	AGF AGG AGH AGI G	V24 V24P V110 V230	S	AG A4	PSI MPA	WP	Z
Order example										
535032	MS	12	-EE	-AGI	-V110	-S	-AG	-MPA	-WP	-

Ordering table					
Grid dimension	[mm]	124	Condi-tions	Code	Enter code
M	Module No.	535032			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	On-off valve, electrical		-EE	-EE
	Connection size	Connecting plate G1		-AGF	
		Connecting plate G1¼		-AGG	
		Connecting plate G1½		-AGH	
		Connecting plate G2		-AGI	
		Module without connecting thread, without connecting plate		G	
	Supply voltage	24 V DC (connection pattern to EN 175301), 16 bar		-V24	
		24 V DC plug (connection pattern M12 to DESINA), 16 bar		-V24P	
		110 V AC (connection pattern to EN 175301), 16 bar		-V110	
		230 V AC (connection pattern to EN 175301), 16 bar		-V230	
O	Silencer	Silencer		-S	
	Pressure gauge/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.

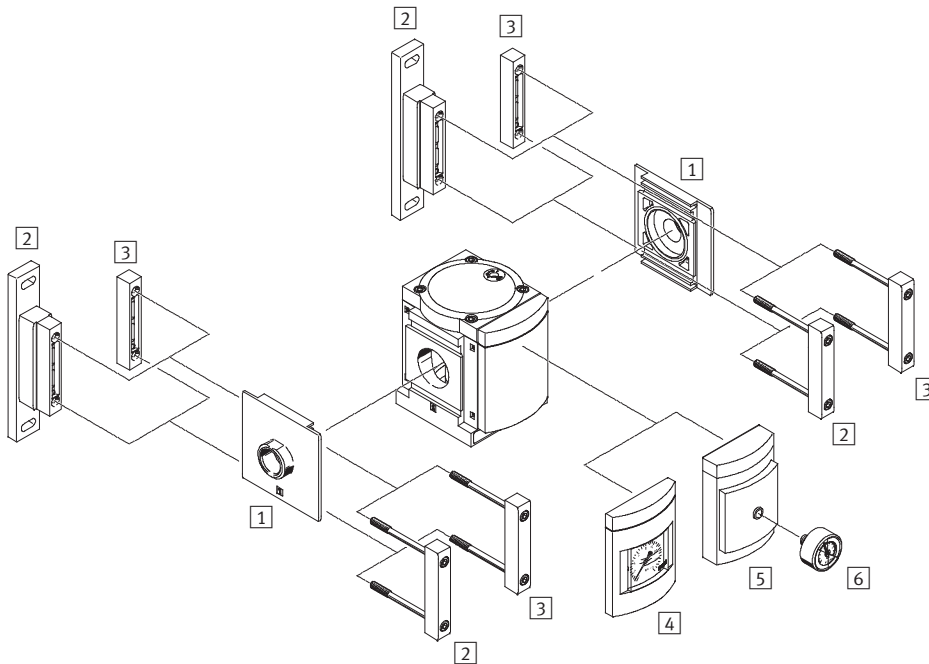
Transfer order code

535032	MS	12	-	EE	-		-		-		-		-		-		-	
--------	----	----	---	----	---	--	---	--	---	--	---	--	---	--	---	--	---	--

Soft-start valves MS12-DL, MS series

Peripherals overview

Soft-start valves MS12-DL



-  - Note

Additional accessories:

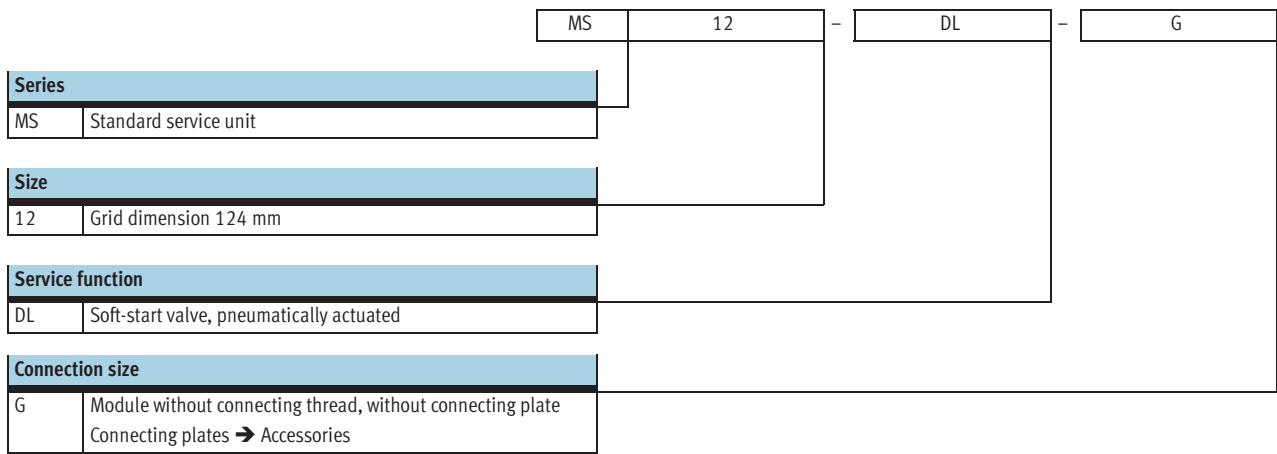
- Module connector for combination with size MS9 → Internet: armv

Mounting attachments and accessories

		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	MS pressure gauge AG	95
5	Adapter for EN pressure gauge 1/4 A4	95
6	Pressure gauge MA	103

Soft-start valves MS12-DL, MS series

Type codes



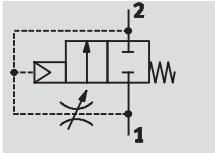
Further variants can be ordered using the modular system → 95




- 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 to ISO 1179-1 and to ISO 228-1

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

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

Soft-start valves MS12-DL, MS series

Technical data

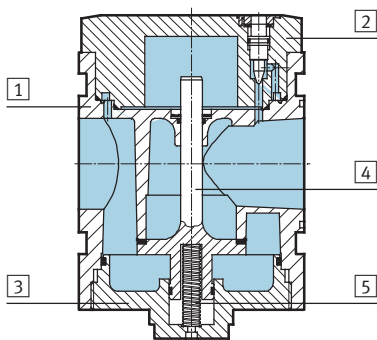
Operating and environmental conditions	
Operating pressure [bar]	2 ... 21
Operating medium	Compressed air
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance CRC ¹⁾	2

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

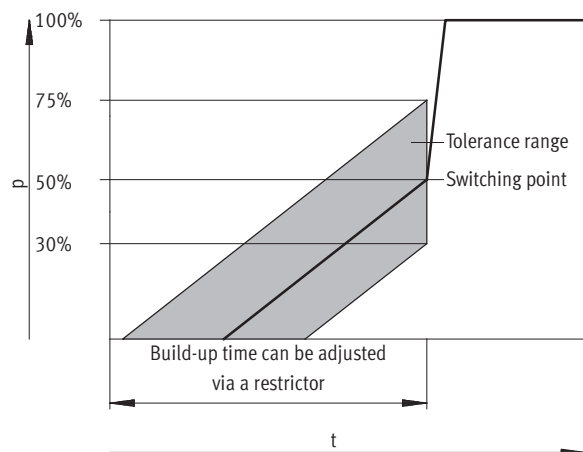
Materials

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.

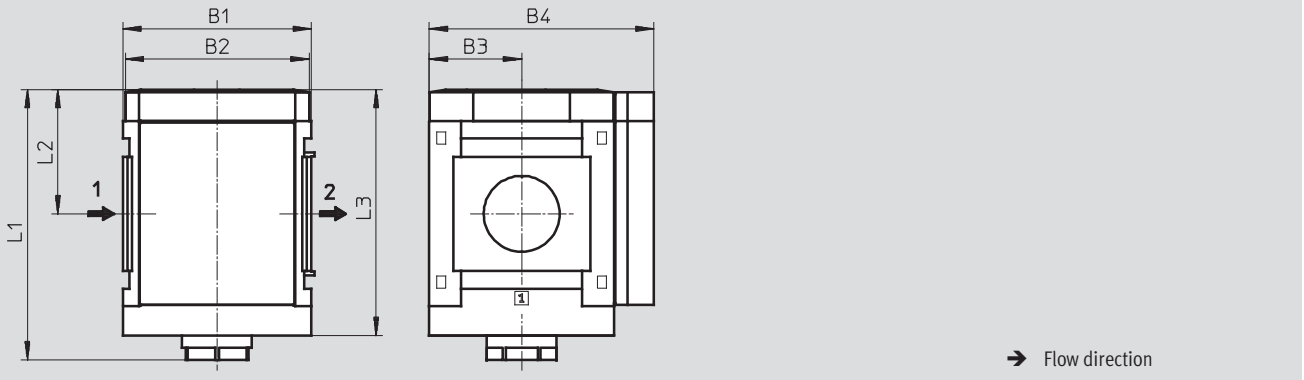
Soft-start valves MS12-DL, MS series

Technical data

FESTO

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

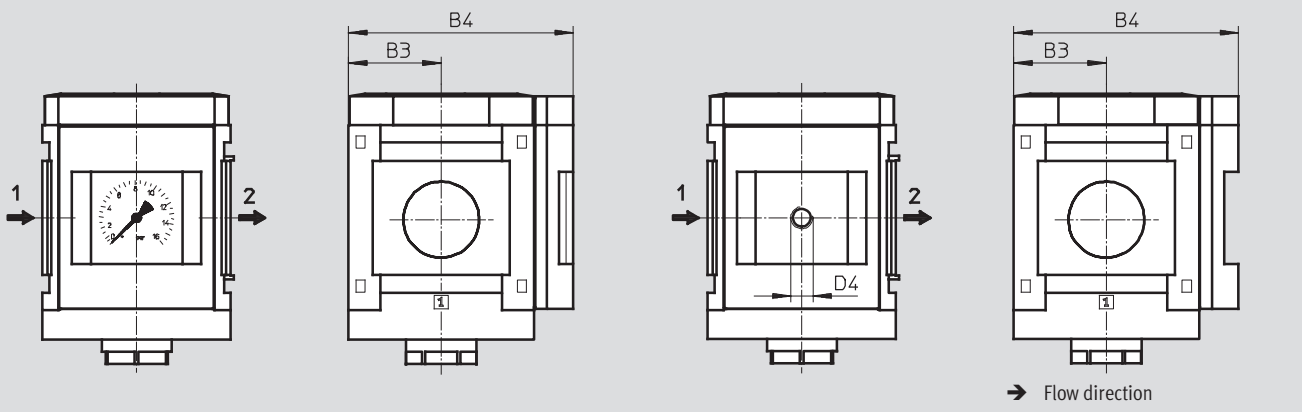
- | - Note: This product conforms to ISO 1179-1 and to ISO 228-1

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-G ²⁾

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

2) Free of copper and PTFE

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

Soft-start valves MS12-DL, MS series

Ordering data – Modular products

M Mandatory data					O Options			
Module No.	Series	Size	Function	Connection size	Pressure gauge/adaptor	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
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/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

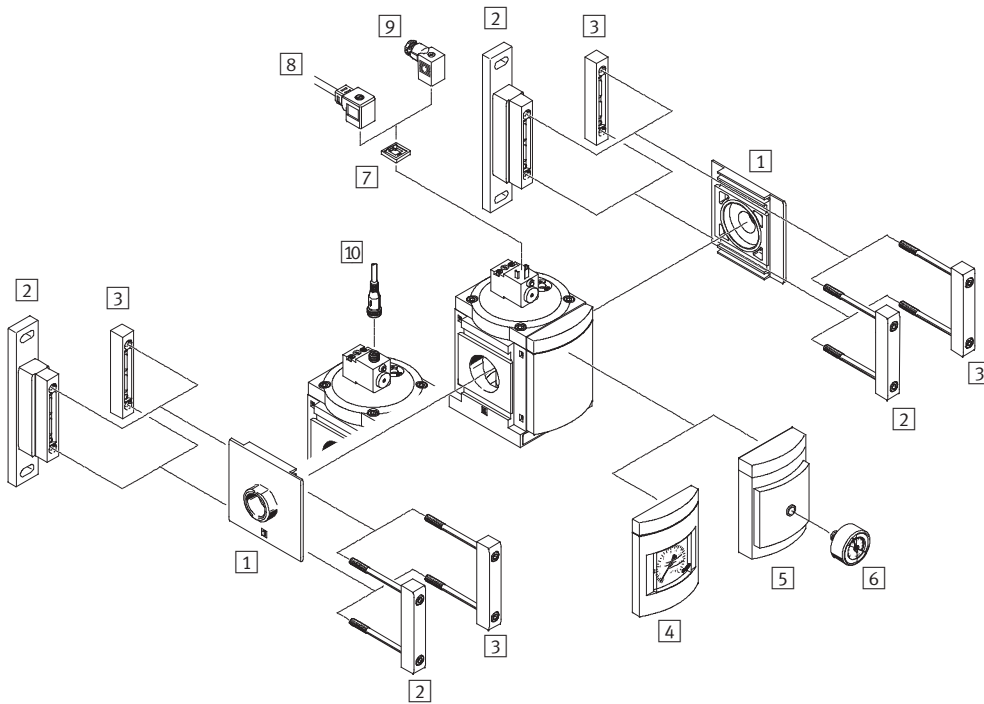
535033 MS 12 - DL - - - - -

Soft-start valves MS12-DE, MS series

Peripherals overview



Soft-start valves MS12-DE



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

Mounting attachments and accessories

		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	MS pressure gauge AG	101
5	Adapter for EN pressure gauge 1/4 A4	101
6	Pressure gauge MA	103
7	Illuminating seal MC-LD	102
8	Plug socket with cable KMC	102
9	Plug socket MSSD-C	102
10	Connecting cable NEBU-M12...-LE4	103

Soft-start valves MS12-DE, MS series

Type codes

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

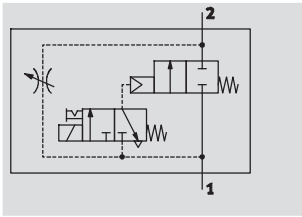
Further variants can be ordered using the modular system → 101




- 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
- Non-detenting and detenting manual override

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			

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

Electrical data		
Coil characteristics	V24	24 V DC
	V24P	24 V DC
	V110	110 V AC
	V230	230 V AC
Electrical connection	V24/V110/V230	Plug, square design to DIN EN 175301-803, type A
	V24P	Plug M12, 4-pin to DESINA
Protection class for solenoid coil	IP65	
Duty cycle	[%]	100

Soft-start valves MS12-DE, MS series

Technical data

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

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

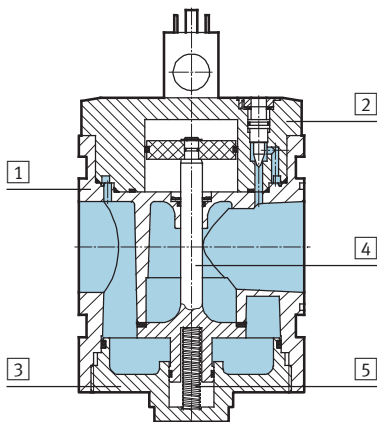
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

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

Weights [g]	
Soft-start valve	3,800

Materials

Sectional view



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

Soft-start valves MS12-DE, MS series

Technical data



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

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

MS12-DE...-V24P

1 Plug connection to EN 175301-803

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 to ISO 1179-1 and to ISO 228-1

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 to ISO 1179-1 and to ISO 228-1

Soft-start valves MS12-DE, MS series

Ordering data – Modular products

M Mandatory data						O Options			
Module No.	Series	Size	Function	Connection size	Supply voltage	Pressure gauge/adapter	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
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	
	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

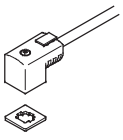
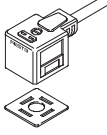
535034	MS	12	- DE	-	-	-	-	-	-	-
--------	----	----	------	---	---	---	---	---	---	---


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


FESTO

Accessories


Ordering data – Plug socket MSSD					Technical data → Internet: mssd	
	Description		Electrical connection	Type of mounting cable connection	Part No.	Type
	for MS4/6-EE/DE	–	3-pin	Clamping screws	151687	MSSD-EB
			4-pin	Insulation displacement technology	192745	MSSD-EB-S-M14
	for MS9-EE, for MS12-EE/DE	–	3-pin	Clamping screws	539712	MSSD-EB-M12
			4-pin	Insulation displacement technology	34583	MSSD-C
					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		
		230 V AC	3-pin	LED	2.5	151688	KMEB-1-24-2,5-LED	
				–	5	151689	KMEB-1-24-5-LED	
			–	10	193457	KMEB-1-24-10-LED		
				2.5	151690	KMEB-1-230AC-2,5		
	for MS9-EE, for MS12-EE/DE	24 V DC	3-pin	LED	2.5	30931	KMC-1-24DC-2,5-LED	
					5	30933	KMC-1-24DC-5-LED	
					10	193459	KMC-1-24-10-LED	
		230 V AC	3-pin	–	2.5	30932	KMC-1-230AC-2,5	
					5	30934	KMC-1-230AC-5	

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

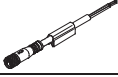

1) Packaging unit quantity



Ordering data – Manual override AHB-MD/MF/MV				Technical data → Internet: ahb	
	Description	Part No.	Type		
	for MS12-EE	157651	AHB-MD/MF/MV		


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

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

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

Ordering data – Pressure gauge MA						
	Nominal size	Pneumatic connection	Indicating range		Part No.	Type
			[bar]	[psi]		
	Pressure gauge MA, DIN EN 837-1				Technical data → Internet: ma	
	40	R $\frac{1}{4}$	0 ... 16	0 ... 232	187080	MA-40-16-R $\frac{1}{4}$ -EN
			0 ... 25	0 ... 360	187081	MA-40-25-R $\frac{1}{4}$ -EN
		G $\frac{1}{4}$	0 ... 16	0 ... 232	183901	MA-40-16-G $\frac{1}{4}$ -EN
			0 ... 25	0 ... 360	183902	MA-40-25-G $\frac{1}{4}$ -EN
Pressure gauge MA, DIN EN 837-1, with red-green range				Technical data → Internet: ma		
40	R $\frac{1}{8}$	0 ... 16	–	525726	MA-40-16-R $\frac{1}{8}$ -E-RG	
50	R $\frac{1}{4}$	0 ... 16	–	525729	MA-50-16-R $\frac{1}{4}$ -E-RG	

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