

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

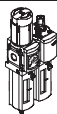
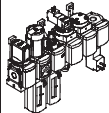
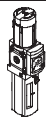
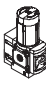
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On-off/soft-start valves MS-EM/EE/DL/DE/SV, MS series

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Product range overview – MS series service units

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range						Grade of filtration				
				[bar]						[µm]				
				0.05 ... 0.7	0.05 ... 2.5	0.1 ... 4	0.3 ... 7	0.1 ... 12	0.5 ... 16	0.01	1	5	40	
Code			AG...	D2	D4	D5	D6	D7	D8	A	B	C	E	
Service units														
MSB-FRC		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	–	■	■	–	–	–	■	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	■	■	–	–	–	■	■
		9	–											
		12	–											
Service unit combinations (further variants can be ordered using the configurator → Internet: msb4, msb6 or msb9)														
MSB		4	G1/4	G1/8, G1/4, G3/8	–	–	–	■	■	–	–	–	■	■
		6	G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	■	■	–	–	–	■	■
		9	–											
		12	–											
Individual devices														
Filter regulators MS-LFR		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	■	■	■	–	–	–	■	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	■	■	■	■	–	–	■	■
		9	–											
		12	–	G1, G1¼, G1½, G2	–	–	–	■	■	■	–	–	■	■
Filter MS-LF		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	–	–	–	–	–	–	■	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	–	–	–	–	–	■	■
		9	–											
		12	–	G1, G1¼, G1½, 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	G¾, G1	G½, G¾, G1, G1¼, G1½	–	–	–	–	–	–	■	■	–	–
		12	–	G1, G1¼, G1½, 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	G¾, G1	G½, G¾, G1, G1¼, G1½	–	–	–	–	–	–	–	–	–	–
		12	–	G1, G1¼, G1½, G2	–	–	–	–	–	–	–	–	–	–
Pressure regulators MS-LR		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	■	■	■	–	–	–	–	–
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	■	■	■	■	–	–	–	–
		9	–											
		12	–	G1, G1¼, G1½, 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	–											

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

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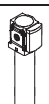
Product range overview – MS series service units

Type	Size	Bowl guard		Condensate drains				Pressure indicator					Actuator lock		Options		→ Page/ Internet
		Plastic bowl with plastic bowl guard	Metal bowl	Manual rotary	Semi-automatic	Fully automatic	External, fully automatic, electrical	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor with display	Rotary knob, lockable	Rotary knob, long	Silencer	Flow direction from right to left	
Code		R	U	M	H	V	E ...	VS	AG	A8	A4	AD...	AS	LD	S	Z	
Service units																	
MSB-FRC	4	■	–	■	–	■	–	–	■	–	–	–	■	–	–	■	msb4
	6	■	■	■	–	■	–	–	■	–	–	–	■	–	–	■	msb6
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Service unit combinations																	
MSB	4	■	■	■	–	■	–	–	■	–	–	–	■	–	–	■	msb4
	6	■	■	■	–	■	–	–	■	–	–	–	■	–	–	■	msb6
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Individual devices																	
Filter regulators MS-LFR	4	■	■	■	■	■	–	■	■	■	■	■	■	■	–	■	ms4-lfr
	6	■	■	■	■	■	■	■	■	–	■	■	■	■	–	■	ms6-lfr
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	■	■	–	■	■	■	■	–	■	–	■	■	–	■	ms12-lfr
Filters MS-LF	4	■	■	■	■	■	–	–	–	–	–	–	–	–	–	■	ms4-lf
	6	■	■	■	■	■	■	–	–	–	–	–	–	–	–	■	ms6-lf
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	■	■	–	■	■	–	–	–	–	–	–	–	–	■	ms12-lf
Fine and micro filters MS-LFM	4	■	■	■	■	■	–	–	–	–	–	–	–	–	–	■	ms4-lfm
	6	■	■	■	■	■	■	–	–	–	–	–	–	–	–	■	ms6-lfm
	9	–	■	■	–	■	■	–	–	–	–	–	–	–	–	■	ms9-lfm
	12	–	■	■	–	■	■	–	–	–	–	–	–	–	–	■	ms12-lfm
Activated carbon filters MS-LFX	4	■	■	–	–	–	–	–	–	–	–	–	–	–	–	■	ms4-lfx
	6	■	■	–	–	–	–	–	–	–	–	–	–	–	–	■	ms6-lfx
	9	–	■	–	–	–	–	–	–	–	–	–	–	–	–	■	ms9-lfx
	12	–	■	–	–	–	–	–	–	–	–	–	–	–	–	■	ms12-lfx
Pressure regulators MS-LR	4	–	–	–	–	–	–	■	■	■	■	■	■	■	–	■	ms4-lr
	6	–	–	–	–	–	–	■	■	–	■	■	■	■	–	■	ms6-lr
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	–	–	–	–	–	■	■	–	■	–	■	■	–	■	ms12-lr
Pressure regulators MS-LRB	4	–	–	–	–	–	–	■	■	■	■	■	■	■	–	■	ms4-lrb
	6	–	–	–	–	–	–	■	■	–	■	■	■	■	–	■	ms6-lrb
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Precision pressure regulators MS-LRP	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	■	–	■	■	■	■	■	–	■	ms6-lrp
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Precision pressure regulators MS-LRPB	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	■	–	■	■	■	■	■	–	■	ms6-lrpb
	9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

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

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Product range overview – MS series service units

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]				Supply voltage			
				0.3 ... 4	0.3 ... 7	0.5 ... 12	0.5 ... 16	24 V DC, connection pattern to EN 175301	24 V DC, connection pattern M12 to DESINA	110 V AC, connection pattern to EN 175301	230 V AC, connection pattern to EN 175301
Code			AG...	D5	D6	D7	D8	V24	V24P	V110	V230
Individual devices											
Electrical pressure regulators MS-LRE		4	–					–	–	–	–
		6	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	■	■	■	■	–	–	–
		9	–								
		12	–								
Lubricators MS-LOE		4	G ¹ / ₈ , G ¹ / ₄	G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈	–	–	–	–	–	–	–
		6	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	–	–	–	–	–	–	–
		9	–								
		12	–	G1, G1 ¹ / ₄ , G1 ¹ / ₂ , G2	–	–	–	–	–	–	–
Electrical on-off valves MS-EM(1)		4	G ¹ / ₈ , G ¹ / ₄	G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈	–	–	–	–	–	–	–
		6	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	–	–	–	–	–	–	–
		9	–								
		12	–	G1, G1 ¹ / ₄ , G1 ¹ / ₂ , G2	–	–	–	–	–	–	–
Electrical on-off valves MS-EE		4	G ¹ / ₈ , G ¹ / ₄	G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈	–	–	–	–	■	–	■
		6	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	–	–	–	–	■	–	■
		9	–								
		12	–	G1, G1 ¹ / ₄ , G1 ¹ / ₂ , G2	–	–	–	–	■	■	■
Electrical soft-start valves MS-DL		4	G ¹ / ₈ , G ¹ / ₄	G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈	–	–	–	–	–	–	–
		6	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	–	–	–	–	–	–	–
		9	–								
		12	–	G1, G1 ¹ / ₄ , G1 ¹ / ₂ , G2	–	–	–	–	–	–	–
Electrical soft-start valves MS-DE		4	G ¹ / ₈ , G ¹ / ₄	G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈	–	–	–	–	■	–	■
		6	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	–	–	–	–	■	–	■
		9	–								
		12	–	G1, G1 ¹ / ₄ , G1 ¹ / ₂ , G2	–	–	–	–	■	■	■
Soft start and exhaust valves MS-SV		4	–								
		6	G ¹ / ₂	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	–	–	–	–	■	–	–
		9	–								
		12	–								
Membrane air dryers MS-LDM1		4	G ¹ / ₈ , G ¹ / ₄	G ¹ / ₈ , G ¹ / ₄ , G ³ / ₈	–	–	–	–	–	–	–
		6	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ , G ³ / ₄	–	–	–	–	–	–	–
		9	–								
		12	–								

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

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Product range overview – MS series service units

Type	Size	Bowl guard		Pressure indicator					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 with display	Silencer	Flow direction from right to left	
Individual devices											
Electrical pressure regulators MS-LRE	4	-									-
	6	-	-	■	■	-	■	-	-	■	ms6-lre
	9	-									-
	12	-									-
Lubricators MS-LOE	4	■	■	-	-	-	-	-	-	■	ms4-loe
	6	■	■	-	-	-	-	-	-	■	ms6-loe
	9	-									-
	12	-	■	-	-	-	-	-	-	■	ms12-loe
Electrical on-off valves MS-EM(1)	4	-	-	■	■	■	■	■	■	■	8, 11
	6	-	-	■	■	-	■	■	■	■	8, 11
	9	-									-
	12	-	-	■	■	-	■	-	■	■	46
Electrical on-off valves MS-EE	4	-	-	■	■	■	■	■	■	■	8, 16
	6	-	-	■	■	-	■	■	■	■	8, 16
	9	-									-
	12	-	-	■	■	-	■	-	■	■	52
Electrical soft-start valves MS-DL	4	-	-	■	■	■	■	■	-	■	8, 24
	6	-	-	■	■	-	■	■	-	■	8, 24
	9	-									-
	12	-	-	■	■	-	■	-	-	■	58
Electrical soft-start valves MS-DE	4	-	-	■	■	■	■	■	-	■	8, 29
	6	-	-	■	■	-	■	■	-	■	8, 29
	9	-									-
	12	-	-	■	■	-	■	-	-	■	64
Soft start and exhaust valves MS-SV	4	-									-
	6	-	-	■	■	-	■	■	■	■	36
	9	-									-
	12	-									-
Membrane air dryers MS-LDM1	4	-	■	-	-	-	-	-	-	■	ms4-ldm1
	6	-	■	-	-	-	-	-	-	■	ms6-ldm1
	9	-									-
	12	-									-

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Product range overview – MS series service units

Type	Size				Pressure regulation range [bar]				Supply voltage			
Code		Pneumatic connection in housing	Connecting plate	0.3 ... 4	0.3 ... 7	0.5 ... 12	0.5 ... 16	24 V DC, connection pattern to EN 175301	24 V DC, connection pattern M12 to DESINA	110 V AC, connection pattern to EN 175301	230 V AC, connection pattern to EN 175301	
			AG...	D5	D6	D7	D8	V24	V24P	V110	V230	
Individual devices												
Branching modules MS-FRM		4	G1⁄8, G1⁄4	G1⁄8, G1⁄4, G3⁄8	–	–	–	–	–	–	–	
		6	G1⁄4, G3⁄8, G1⁄2	G1⁄4, G3⁄8, G1⁄2, G3⁄4	–	–	–	–	–	–	–	
		9	–									
		12	–	G1, G11⁄4, G11⁄2, G2	–	–	–	–	–	–	–	
Distributor blocks MS-FRM-FRZ		4	G1⁄4	–	–	–	–	–	–	–	–	
		6	G1⁄2	–	–	–	–	–	–	–	–	
		9	–									
		12	–									
Flow sensors MS-SFE		4	–									
		6	G1⁄2	G1⁄2	–	–	–	–	–	–	–	
		9	–									
		12	–									

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



Product range overview – MS series service units

Type	Size	Pressure indicator					Switch output		Options		→ Page/ Internet
		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 with display	2x PNP	2x NPN	Silencer	Flow direction from right to left	
		VS	AG	A8	A4	AD...	P2	N2	S	Z	
Individual devices											
Branching modules MS-FRM	4	■	■	■	■	■	-	-	-	■	ms4-frm
	6	■	■	-	■	■	-	-	-	■	ms6-frm
	9	-									-
	12	■	-	-	-	-	-	-	-	-	ms12-frm
Distributor blocks MS-FRM-FRZ	4	-	-	-	-	-	-	-	-	-	ms4-frm
	6	-	-	-	-	-	-	-	-	-	ms6-frm
	9	-									-
	12	-									-
Flow sensors MS-SFE	4	-									-
	6	-	-	-	-	-	■	■	-	■ ¹⁾	ms6-sfe
	9	-									-
	12	-									-

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

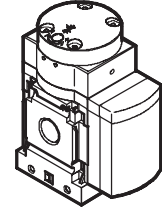
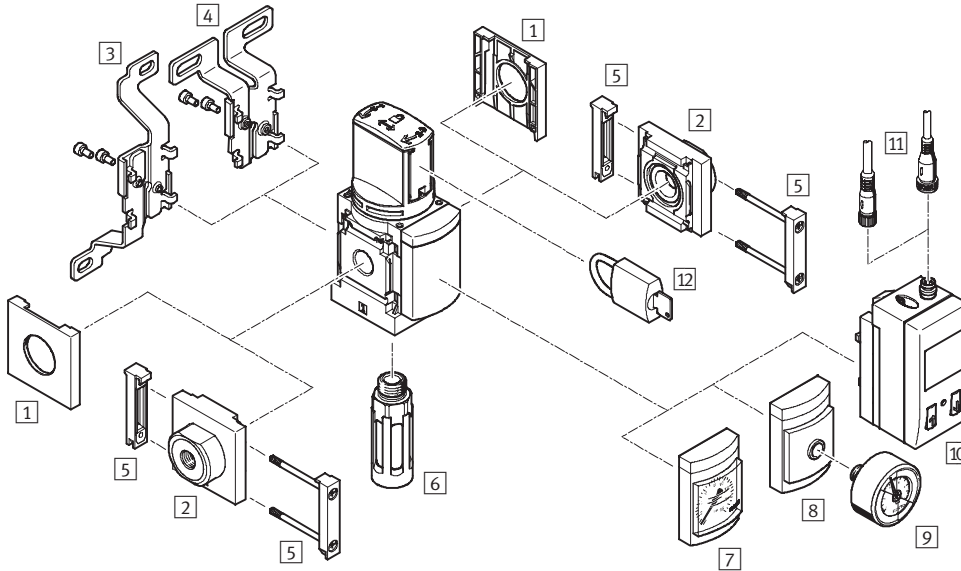
On-off/soft-start valves MS4/MS6-EM1/EE/DL/DE, MS series

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Peripherals overview

On-off valve EM1
manually actuated

Soft-start valve DL
pneumatically actuated



- Note

Additional accessories:

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

Mounting attachments and accessories						
		Individual unit		Combination		➔ Page/Internet
		without connect- ing plate	with connecting plate	without connect- ing 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	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
4	Mounting bracket MS4-WBM	■	■	–	–	ms4-wbm
5	Module connector MS4/6-MV	–	■	■	■	ms4-mv, ms6-mv
6	Silencer U	■ with EM1	■ with EM1	■ with EM1	■ with EM1	71
7	MS pressure gauge AG	■	■	■	■	EM1 15, DL 28
8	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	EM1 15, DL 28
9	Pressure gauge MA	■	■	■	■	71
10	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	EM1 15, DL 28
11	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	sim
12	Padlock LRVS-D	■	■	■	■	71
–	Mounting bracket MS4/6-WP/WPB/WPM	–	■	■	■	ms4-wp, ms6-wp

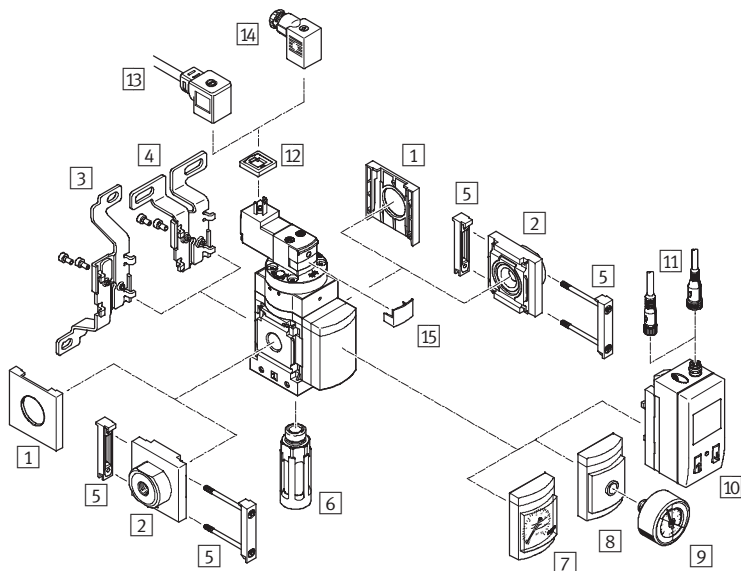
On-off/soft-start valves MS4/MS6-EM1/EE/DL/DE, MS series

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Peripherals overview

On-off/soft-start valve EE/DE

solenoid actuated



Note

Additional accessories:

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

Mounting attachments and accessories						
		Individual unit		Combination		➔ Page/Internet
		without connect- ing plate	with connecting plate	without connect- ing 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	Mounting bracket MS4/6-WB	■	■	–	–	ms4-wb, ms6-wb
4	Mounting bracket MS4-WBM	■	■	–	–	ms4-wbm
5	Module connector MS4/6-MV	–	■	■	■	ms4-mv, ms6-mv
6	Silencer U	■ with EE	■ with EE	■ with EE	■ with EE	71
7	Pressure gauge MS AG	■	■	■	■	EE 22, DE 34
8	Adapter for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	EE 22, DE 34
9	Pressure gauge MA	■	■	■	■	71
10	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	EE 22, DE 34
11	Plug socket with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	sim
12	Illuminating seal MEB-LD	■	■	■	■	70
13	Plug socket with cable KMEB	■	■	■	■	70
14	Plug socket MSSD-EB	■	■	■	■	70
15	Locking clip CPV18-HV	■	■	■	■	70
–	Mounting bracket MS4/6-WP/WPB/WPM	–	■	■	■	ms4-wp, ms6-wp

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

FESTO

Type codes

		MS	6	-	EE	-	1/2	-	V110	-	
Series											
MS	Standard service unit										
Size											
4	Grid dimension 40 mm										
6	Grid dimension 62 mm										
Service function											
EM1	On-off valve, manually operated										
EE	On-off valve, solenoid actuated										
DL	Soft-start valve, pneumatically actuated										
DE	Soft-start valve, solenoid actuated										
Connection size											
1/8	Thread G1/8										
1/4	Thread G1/4										
3/8	Thread G3/8										
1/2	Thread G1/2										
Supply voltage (for EE and DE only)											
10V24	Supply voltage 24 V DC										
V110	Supply voltage 110 V AC										
V230	Supply voltage 230 V AC										
Silencer (for EM1 and EE only)											
	Without silencer										
S	Silencer										

Further variants can be ordered using the modular system

On-off valves EM1	→ 15
On-off valves EE	→ 22
Soft-start valves DL	→ 28
Soft-start valves DE	→ 34

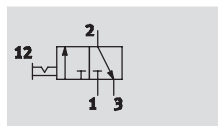
- Connecting plates
- Supply voltage (EE and DE only)
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

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

FESTO

Technical data

Function



- - Flow rate
1,200 ... 8,700 l/min

- - Temperature range
-10 ... +60 °C

- - Operating pressure
0 ... 18 bar



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

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G1/8	G1/4	G1/4	G3/8	G1/2
Pneumatic connection 3	G1/4		G1/2		
Design	Rotary slide valve				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Any				
Pressure indicator	With pressure sensor for the output pressure display and with electric output				
	With pressure gauge for the output pressure display				
Valve function	3/2-way valve, double solenoid				
Exhaust function	No flow control				
Switching position display	Knob actuator direction = flow direction				
Pilot control mode	Direct				
Direction of flow	Non-reversible				
C value [l/(s*bar)]	4.6	9.0	10.7	21.2	30.8
b value	0.51	0.39	0.56	0.49	0.57

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

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

FESTO

Technical data

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

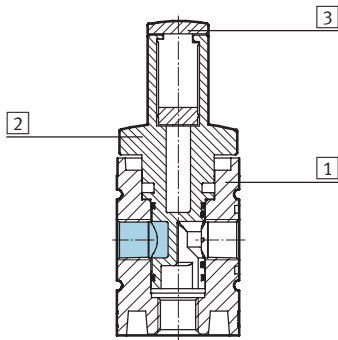
1) Corrosion resistance class 2 according to Festo standard 940 070

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

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

Materials

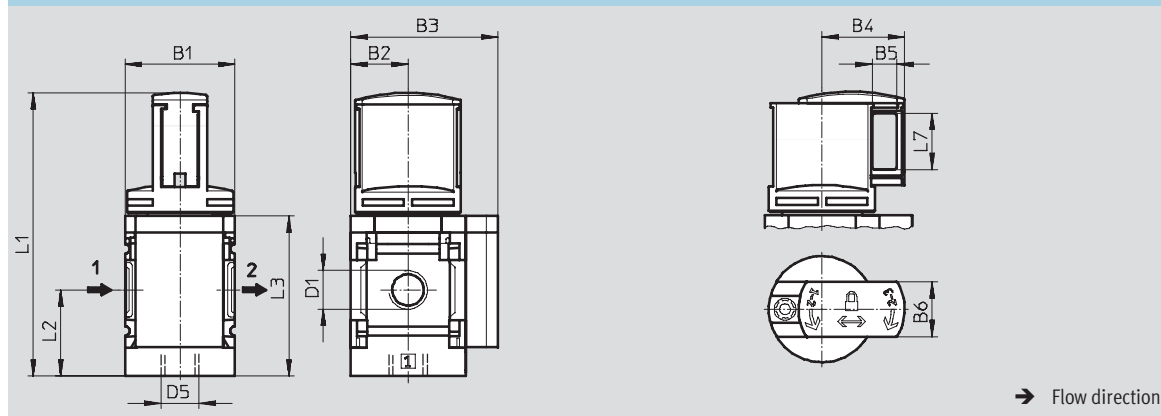
Sectional view



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

Dimensions – Standard

Download CAD data → www.festo.com



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

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

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

Technical data

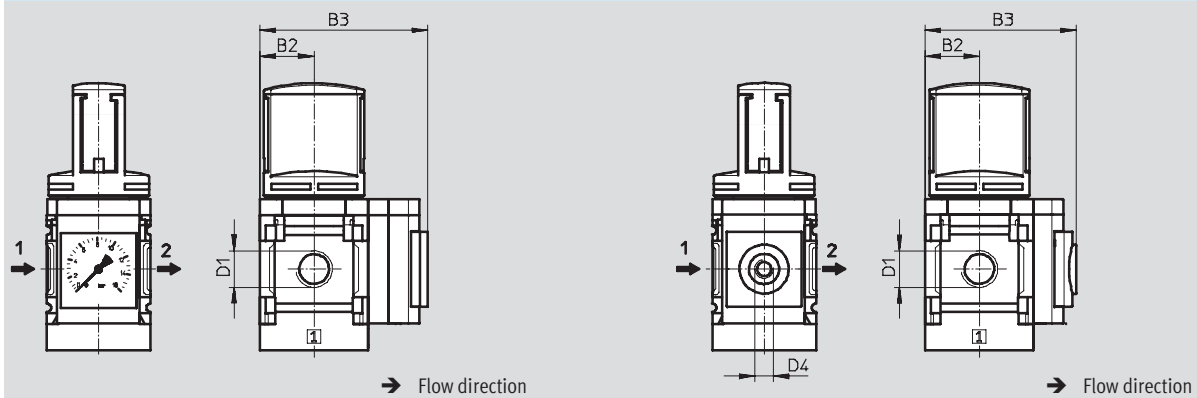
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

Adapter plate A8/A4 for EN pressure gauge $\frac{1}{8}/\frac{1}{4}$, without pressure gauge



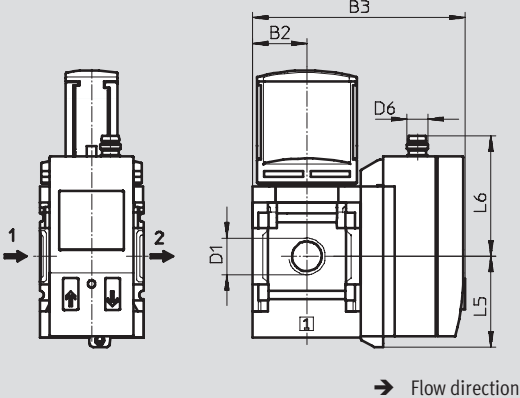
Type	B2	B3	D1	D4
MS4-EM1- $\frac{1}{8}$ -...-AG	21	65	G $\frac{1}{8}$	–
MS4-EM1- $\frac{1}{4}$ -...-AG			G $\frac{1}{4}$	
MS4-EM1- $\frac{1}{8}$ -...-RG	21	66.5	G $\frac{1}{8}$	–
MS4-EM1- $\frac{1}{4}$ -...-RG			G $\frac{1}{4}$	
MS4-EM1- $\frac{1}{8}$ -...-A8	21	58.5	G $\frac{1}{8}$	G $\frac{1}{8}$
MS4-EM1- $\frac{1}{4}$ -...-A8			G $\frac{1}{4}$	
MS4-EM1- $\frac{1}{8}$ -...-A4	21	58.5	G $\frac{1}{8}$	G $\frac{1}{4}$
MS4-EM1- $\frac{1}{4}$ -...-A4			G $\frac{1}{4}$	
MS6-EM1- $\frac{1}{4}$ -...-AG	31	85	G $\frac{1}{4}$	–
MS6-EM1- $\frac{3}{8}$ -...-AG			G $\frac{3}{8}$	
MS6-EM1- $\frac{1}{2}$ -...-AG			G $\frac{1}{2}$	
MS6-EM1- $\frac{1}{4}$ -...-RG	31	86.5	G $\frac{1}{4}$	–
MS6-EM1- $\frac{3}{8}$ -...-RG			G $\frac{3}{8}$	
MS6-EM1- $\frac{1}{2}$ -...-RG			G $\frac{1}{2}$	
MS6-EM1- $\frac{1}{4}$ -...-A4	31	78.5	G $\frac{1}{4}$	G $\frac{1}{4}$
MS6-EM1- $\frac{3}{8}$ -...-A4			G $\frac{3}{8}$	
MS6-EM1- $\frac{1}{2}$ -...-A4			G $\frac{1}{2}$	

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

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

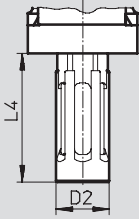
Technical data

FESTO

Dimensions – Pressure gauge alternatives			Download CAD data → www.festo.com	
Pressure sensor with 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	B2	B3	D1	D6	L5	L6
MS4-EM1-1/8-...-AD1/AD2	21	82.6	G1/8	M8x1	35.1	46.7
MS4-EM1-1/4-...-AD1/AD2			G1/4			
MS4-EM1-1/8-...-AD3/AD4	21	82.6	G1/8	M12x1	35.1	55.8
MS4-EM1-1/4-...-AD3/AD4			G1/4			
MS6-EM1-1/4-...-AD1/AD2	31	103	G1/4	M8x1	35.1	46.7
MS6-EM1-3/8-...-AD1/AD2			G3/8			
MS6-EM1-1/2-...-AD1/AD2			G1/2			
MS6-EM1-1/4-...-AD3/AD4	31	103	G1/4	M12x1	35.1	55.8
MS6-EM1-3/8-...-AD3/AD4			G3/8			
MS6-EM1-1/2-...-AD3/AD4			G1/2			

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

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

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

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

1) Free of copper and PTFE

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

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Ordering data – Modular products

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

Ordering table									
Grid dimension		[mm]	40	62	Condi- tions	Code	Enter code		
M	Module No.		541 266	541 279					
	Series		Standard			MS		MS	
	Size		4	6		...			
	Function		On-off valve, manual			-EM1		-EM1	
	Connection sizes	Thread G1/8				-1/8			
		Thread G1/4		Thread G1/4		-1/4			
				Thread G3/8		-3/8			
				Thread G1/2		-1/2			
		Connecting plate G1/8				-AGA			
		Connecting plate G1/4		Connecting plate G1/4		-AGB			
		Connecting plate G3/8		Connecting plate G3/8		-AGC			
				Connecting plate G1/2		-AGD			
				Connecting plate G3/4		-AGE			
O	Silencer		Silencer			-S			
	Pressure gauge alternatives	MS pressure gauge, bar (with adapter)		MS pressure gauge, bar		-AG			
		Adapter plate for EN pressure gauge 1/8, without pressure gauge				-A8			
		Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4			
		Integrated pressure gauge, red-green scale				-RG			
		Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin			1	-AD1			
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			1	-AD2			
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			1	-AD3			
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			1	-AD4			
	Alternative pressure gauge scale	psi			2	-PSI			
		MPa			2	-MPA			
	Type of mounting	Mounting bracket			3	-WP			
		Mounting bracket (for retro-fitting M-series)			3	-WPM			
		Mounting bracket				-WB			
		Mounting bracket				-WBM			
	Alternative flow direction		Flow direction from right to left			-Z			

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

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

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

Transfer order code

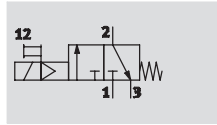
	MS		-	EM1	-		-		-		-		-		-	
--	----	--	---	-----	---	--	---	--	---	--	---	--	---	--	---	--

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

FESTO

Technical data

Function



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



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

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

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

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

FESTO

Technical data

Standard nominal flow rate $q_{\text{N}}^{1)}$ [l/min]					
Size	MS4		MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
In main flow direction 1 $\rightarrow$ 2	1,000	2,000	2,600	5,500	7,000
In relief direction 2 $\rightarrow$ 3	1,600	1,600	7,000	6,200	5,500

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

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

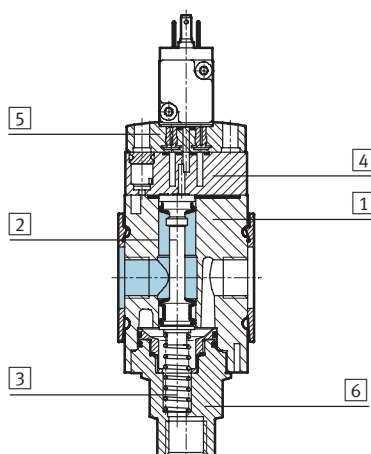
1) Corrosion resistance class 2 according to Festo standard 940 070

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

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

Materials

Sectional view



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

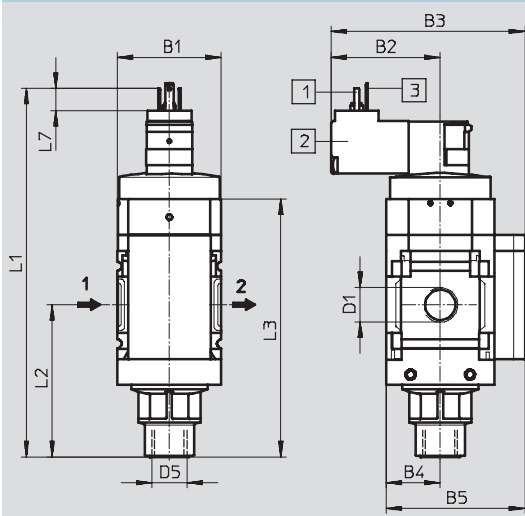
On-off valves MS4/MS6-EE, MS series

Technical data

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Dimensions – Standard

Download CAD data → www.festo.com



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

→ Flow direction

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

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

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

Technical data

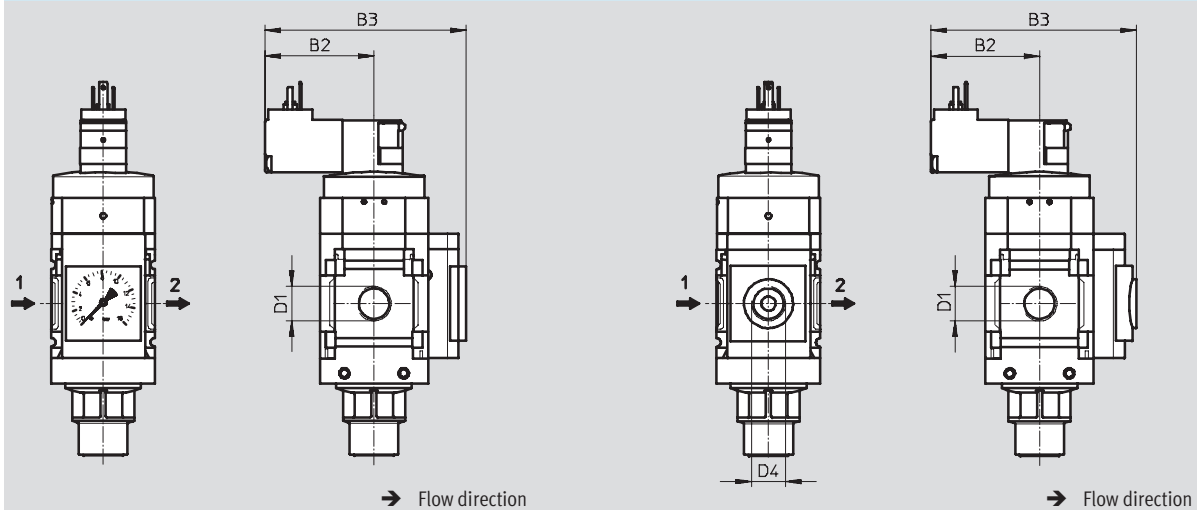
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

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



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

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

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

Technical data

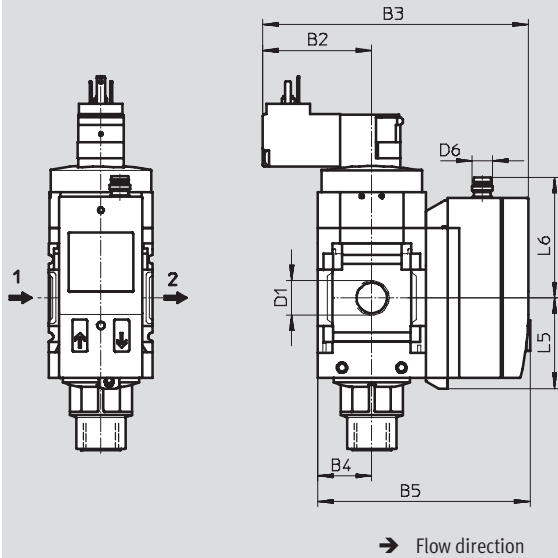
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with display AD1 ... AD4

Technical data → Internet: sde1



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

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

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

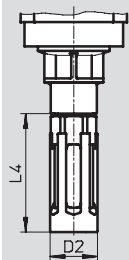
AD4 variants:
SDE1-D10-G2-MS-L-NI-M12 with
4-pin plug M12x1, 1 switching out-
put NPN and 4 ... 20 mA analogue

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

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

Dimensions – Silencer

Download CAD data → www.festo.com



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

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

FESTO

Technical data

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

1) Free of copper and PTFE

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

FESTO

Ordering data – Modular products

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

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

1 10V24 Max. supply pressure 10 bar

Transfer order code

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

Ordering data – Modular products

FESTO

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

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
0 Silencer		Silencer			-S	
Pressure gauge alternatives	MS pressure gauge, bar (with adapter)	MS pressure gauge, bar			-AG	
	Adapter plate for EN pressure gauge 1/8, without pressure gauge	-			-A8	
	Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4	
	Integrated pressure gauge, red-green scale				-RG	
	Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin			2	-AD1	
	Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			2	-AD2	
	Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			2	-AD3	
	Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			2	-AD4	
Alternative pressure gauge scale	psi			3	-PSI	
	MPa			3	-MPa	
Type of mounting	Mounting bracket			4	-WP	
	Mounting bracket (for retro-fitting M-series)			4	-WPM	
	Mounting bracket				-WB	
	Mounting bracket	-			-WBM	
Alternative flow direction	Flow direction from right to left				-Z	

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

3 PSI, MPa Only with pressure gauge alternatives AG or RG

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

Transfer order code

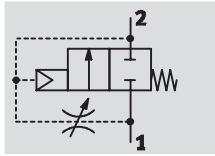
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Soft-start valves MS4/MS6-DL, MS series

FESTO

Technical data

Function



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



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

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

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

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

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

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

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

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

FESTO

Technical data

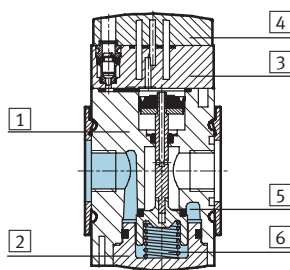
Operating and environmental conditions				
Variant	Standard		Pressure sensor with display AD...	
Size	MS4	MS6	MS4	MS6
Operating pressure [bar]	4 ... 14	4 ... 18	4 ... 10	4 ... 10
Operating medium	Compressed air		Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm	
Ambient temperature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

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

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

Materials

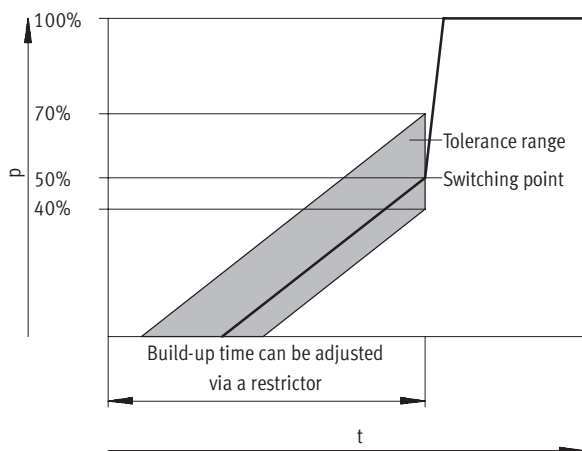
Sectional view



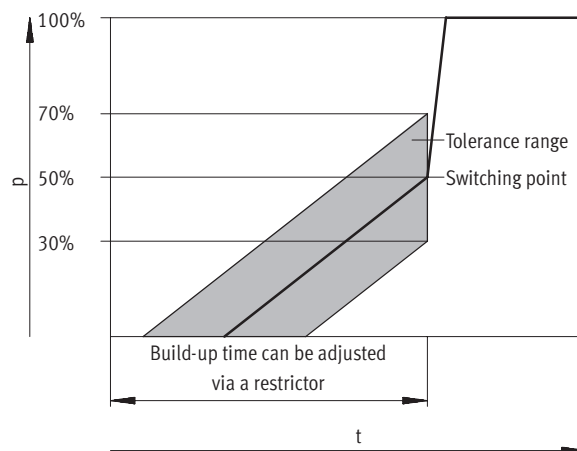
Soft-start valve		
1	Body	Die-cast aluminium
2	Base	Polyester
3	End cap	Polyamide
4	Top plate	Polyamide
5	Seat	Die-cast aluminium
6	Springs	Spring steel
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE (not with variants AG or AD...)

Switching point – Pressure p as a function of time t

MS4



MS6



- - Note

The tolerance specification
+20%/-10% of the switching point
refers to the operating pressure p1.

Example: at an operating pressure of
4 bar a switching point of 1.6 bar to
2.8 bar is permitted.

- - Note

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

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

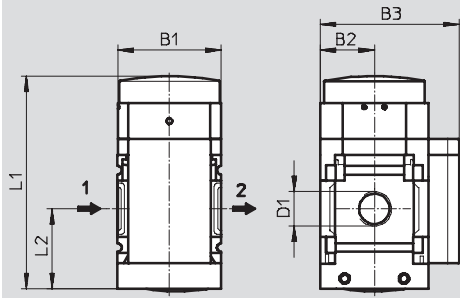
Soft-start valves MS4/MS6-DL, MS series

Technical data

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Dimensions – Standard

Download CAD data → www.festo.com



→ Flow direction

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

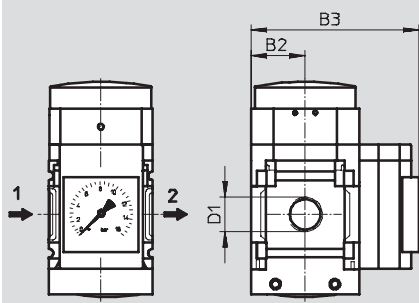
– † – Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauge alternatives

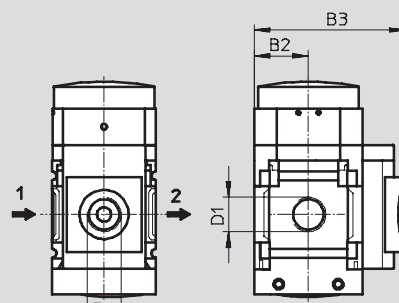
Download CAD data → www.festo.com

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

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



→ Flow direction



→ Flow direction

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

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

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

Technical data

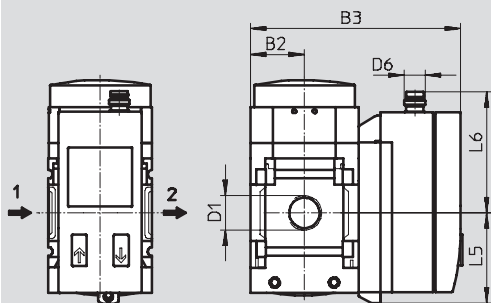
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with display AD1 ... AD4

Technical data → Internet: [sde1](#)



→ Flow direction

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

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

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

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

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

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

Ordering data

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

1) Free of copper and PTFE

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

FESTO

Ordering data – Modular products

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

Ordering table							
Grid dimension		[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.		527 711	527 684			
	Series		Standard			MS	MS
	Size		4	6		...	
	Function		Soft-start valve, pneumatic			-DL	-DL
	Connection sizes	Thread G1/8	-			-1/8	
		Thread G1/4		Thread G1/4		-1/4	
		-		Thread G3/8		-3/8	
		-		Thread G1/2		-1/2	
		Connecting plate G1/8	-			-AGA	
		Connecting plate G1/4		Connecting plate G1/4		-AGB	
		Connecting plate G3/8		Connecting plate G3/8		-AGC	
		-		Connecting plate G1/2		-AGD	
		-		Connecting plate G3/4		-AGE	
O	Pressure gauge alternatives	MS pressure gauge, bar (with adapter)		MS pressure gauge, bar		-AG	
		Adapter plate for EN pressure gauge 1/8, without pressure gauge	-			-A8	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4	
		Integrated pressure gauge, red-green scale				-RG	
		Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin			1	-AD1	
		Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			1	-AD2	
		Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			1	-AD3	
		Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			1	-AD4	
	Alternative pressure gauge scale	psi			2	-PSI	
		MPa			2	-MPA	
	Type of mounting	Mounting bracket			3	-WP	
		Mounting bracket (for retro-fitting M-series)			3	-WPM	
		Mounting bracket				-WB	
		Mounting bracket	-			-WBM	
	Alternative flow direction	Flow direction from right to left				-Z	

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

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

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

Transfer order code

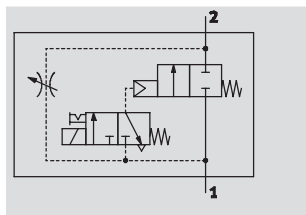
	MS		-	DL	-		-		-		-		-	
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Soft-start valves MS4/MS6-DE, MS series

Technical data

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. Only the air flow from the restrictor is available when the solenoid valve is not actuated. The main seat is only opened by energising the solenoid valve.

When the solenoid valve is switched off, the main seat is closed and only the air flow from the flow control valve is available.

The solenoid valve should remain switched on in order to vent a system as this increases the flow rate from 2 and 1 and reduces the exhaust time.

- Solenoid actuated soft-start valve for slowly pressurising and venting pneumatic installations
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- With solenoid coil without plug socket
- Switch-through pressure can be precisely controlled using a solenoid valve
- Adjustable switching time delay
- Three voltage ranges can be selected
- Pushing and detenting manual override (detenting is locked on delivery)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor with display

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G1/8	G1/4	G1/4	G3/8	G1/2
Design	Piston poppet valve				
Type of mounting	Via accessories				
	In-line installation				
Assembly position	Any				
Pressure indicator	With pressure sensor for the output pressure display and with electric output				
	With pressure gauge for the output pressure display				
Valve function	2/2-way valve				
Exhaust function	Flow control				
Type of reset	Mechanical spring				
Switching position display	Via accessories				
Pilot control mode	Piloted				
Pilot air supply	External				
Direction of flow	Non-reversible				
C value [l/(s*bar)]	4.6	9.6	11.22	21.05	28.97
b value	0.5	0.45	0.54	0.48	0.39
Coil characteristics	V24	24 V DC			
	10V24	24 V DC			
	V110	110 V AC			
	V230	230 V AC			

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

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

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	2,700	5,050	6,450
In relief direction 2 $\rightarrow$ 1 ²⁾	1,000	2,000	2,600	5,050	6,400

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

2) For energised solenoid valve.

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

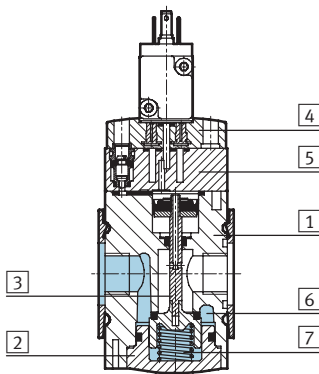
1) Corrosion resistance class 2 according to Festo standard 940 070

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

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

Materials

Sectional view



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

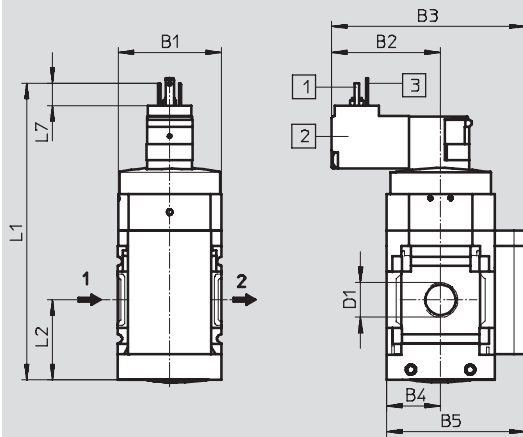
Soft-start valves MS4/MS6-DE, MS series

Technical data

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Dimensions – Standard

Download CAD data → www.festo.com



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

→ Flow direction

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

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

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

Technical data

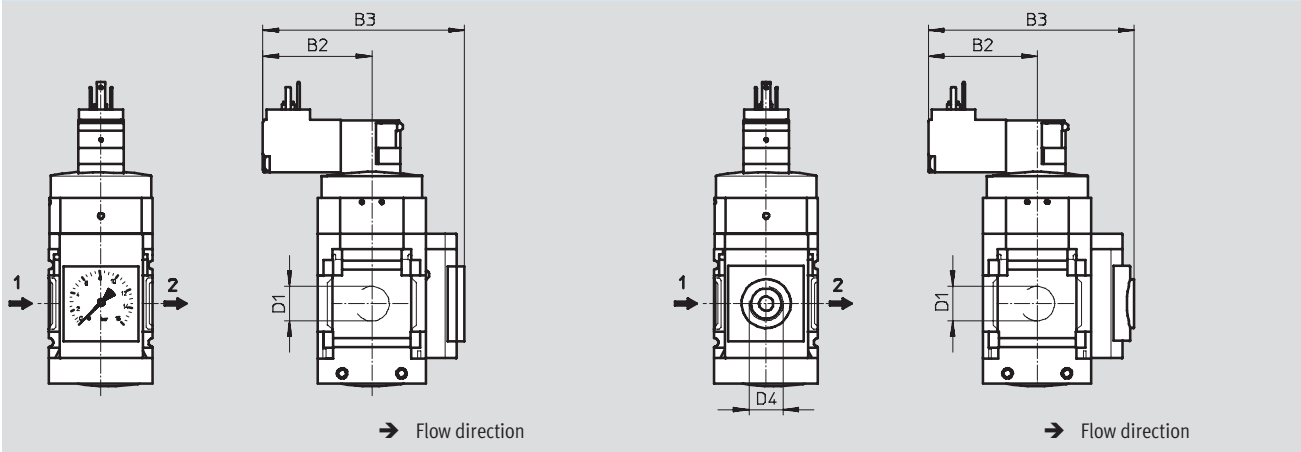
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

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



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

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

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

Technical data

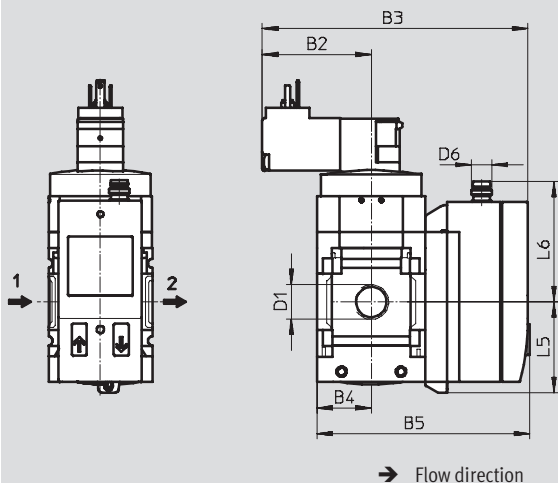
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with display AD1 ... AD4

Technical data → Internet: [sde1](#)



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

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

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

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

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

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

Ordering data

Size	Connection	Supply voltage 24 V DC		Supply voltage 110 V AC		Supply voltage 230 V AC	
		Part No.	Type	Part No.	Type	Part No.	Type
MS4	G1/8	542 560	MS4-DE-1/8-10V24	529 525	MS4-DE-1/8-V110 ¹⁾	529 527	MS4-DE-1/8-V230 ¹⁾
	G1/4	542 558	MS4-DE-1/4-10V24	529 519	MS4-DE-1/4-V110 ¹⁾	529 521	MS4-DE-1/4-V230 ¹⁾
MS6	G1/4	542 564	MS6-DE-1/4-10V24	529 805	MS6-DE-1/4-V110 ¹⁾	529 807	MS6-DE-1/4-V230 ¹⁾
	G3/8	542 566	MS6-DE-3/8-10V24	529 811	MS6-DE-3/8-V110 ¹⁾	529 813	MS6-DE-3/8-V230 ¹⁾
	G1/2	542 562	MS6-DE-1/2-10V24	529 799	MS6-DE-1/2-V110 ¹⁾	529 801	MS6-DE-1/2-V230 ¹⁾

1) Free of copper and PTFE

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

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Ordering data – Modular products

Mandatory data →					
Module No.	Series	Size	Function	Connection sizes	Supply voltage
527 713 527 686	MS	4 6	DE	1/8, 1/4, 3/8, 1/2 AGA, AGB, AGC, AGD, AGE	V24 10V24 V110 V230
Order example					
527 713	MS	4	- DE	- AGA	- V110

Ordering table					
Grid dimension	[mm]	40	62	Condi- tions	Code
Enter code					
M	Module No.	527 713	527 686		
	Series	Standard			MS
	Size	4	6		...
	Function	Soft-start valve, electrical			-DE
	Connection sizes	Thread G1/8	–		-1/8
		Thread G1/4	Thread G1/4		-1/4
		–	Thread G3/8		-3/8
		–	Thread G1/2		-1/2
		Connecting plate G1/8	–		-AGA
		Connecting plate G1/4	Connecting plate G1/4		-AGB
		Connecting plate G3/8	Connecting plate G3/8		-AGC
		–	Connecting plate G1/2		-AGD
		–	Connecting plate G3/4		-AGE
	Supply voltage	24 V DC (connection pattern to EN 175301), 18 bar			-V24
		24 V DC (connection pattern to EN 175301), 10 bar		1	-10V24
		110 V AC (connection pattern to EN 175301), 18 bar			-V110
		230 V AC (connection pattern to EN 175301), 18 bar			-V230

1 10V24 Max. supply pressure 10 bar

Transfer order code

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

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Ordering data – Modular products

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

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
0 Pressure gauge alternatives	MS pressure gauge, bar (with adapter)	MS pressure gauge, bar			-AG	
	Adapter plate for EN pressure gauge 1/8, without pressure gauge	-			-A8	
	Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4	
	Integrated pressure gauge, red-green scale				-RG	
	Pressure sensor with display, plug M8, 1 switch output PNP, 3-pin			2	-AD1	
	Pressure sensor with display, plug M8, 1 switch output NPN, 3-pin			2	-AD2	
	Pressure sensor with display, plug M12, 1 switch output PNP, 4-pin, analogue output 4 ... 20 mA			2	-AD3	
	Pressure sensor with display, plug M12, 1 switch output NPN, 4-pin, analogue output 4 ... 20 mA			2	-AD4	
	Alternative pressure gauge scale			3	-PSI	
				3	-MPA	
Type of mounting	Mounting bracket			4	-WP	
	Mounting bracket (for retro-fitting M-series)			4	-WPM	
	Mounting bracket				-WB	
	Mounting bracket	-			-WBM	
Alternative flow direction	Flow direction from right to left				-Z	

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

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

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

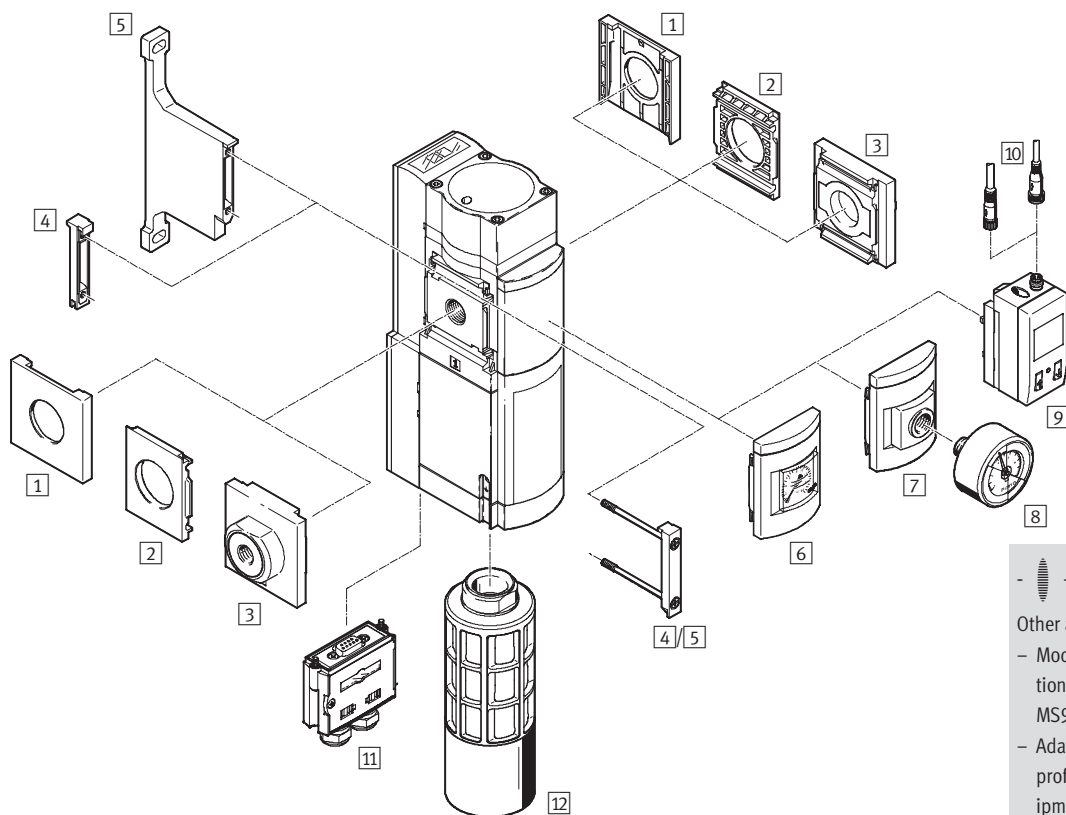
Transfer order code

- - - -

Soft start and exhaust valves MS6-SV, MS series

Peripherals overview

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 Note

Other accessories:

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

Mounting attachments and accessories						
		Individual device		Combination		➔ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	–	–	■	–	ms6-end
2	Mounting plate MS6-AEND	■ ¹⁾	–	■ ²⁾	–	ms6-aend
3	Connecting plate MS6-AG...	–	■ ¹⁾	–	■ ²⁾	ms6-ag
4	Module connector MS6-MV	–	–	■	■	ms6-mv
5	Mounting bracket MS6-WPB	■	■	■	■	ms6-wpb
6	MS pressure gauge AG	■	■	■	■	43
7	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	43
8	Pressure gauge MA	■	■	■	■	71
9	Pressure sensor SDE1-...-MS AD1 ... AD4	■	■	■	■	43
10	Plug sockets with cable SIM-M8-3.../SIM-M12-4...	■	■	■	■	sim
11	Multi-pin plug socket NECA	■	■	■	■	44
12	Silencer UOS-1	■	■	■	■	45

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

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

Soft start and exhaust valves MS6-SV, MS series

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Type codes

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

Further variants can be ordered using the modular system

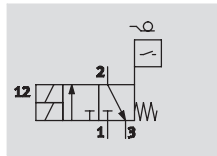
Soft start and exhaust valve SV → 43

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

Soft start and exhaust valves MS6-SV, MS series

Technical data

Function



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



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

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

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

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

 **Note**
The device may only be used together with the multi-pin plug socket NECA approved for it. The multi-pin plug socket can be ordered via the modular product system (MP... → 43) or as an accessory (NECA → 44).

 **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 → 43) or as an accessory (UOS-1 → 45).

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

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

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

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

Soft start and exhaust valves MS6-SV, MS series

Technical data

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

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

2) Measured with respect to atmosphere with silencer UOS-1.

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

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

1) Corrosion resistance class 2 to Festo standard 940 070

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

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

Materials	
Housing	Die-cast aluminium
Seals	Nitrile rubber

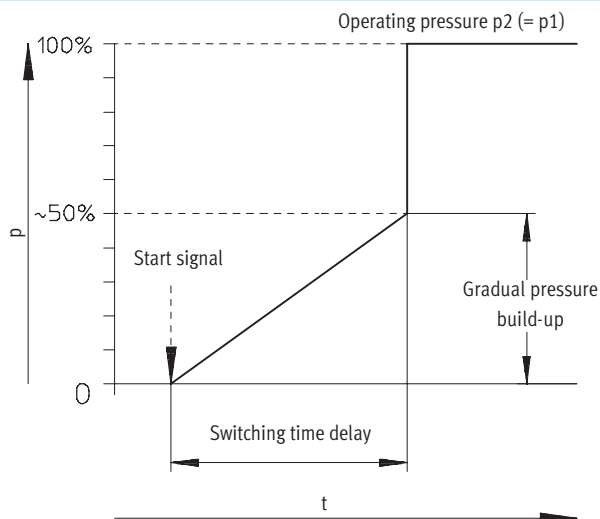
Soft start and exhaust valves MS6-SV, MS series

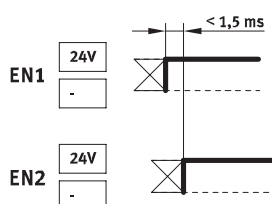
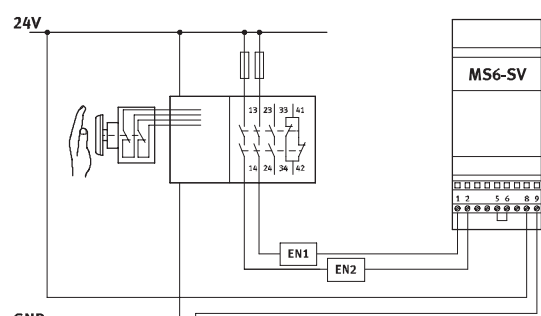
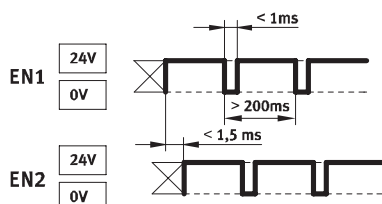
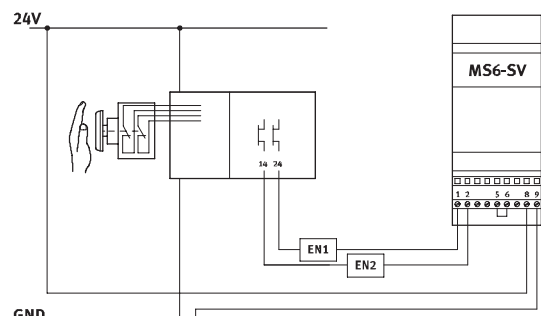
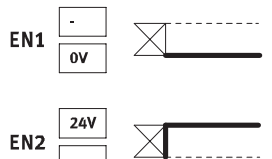
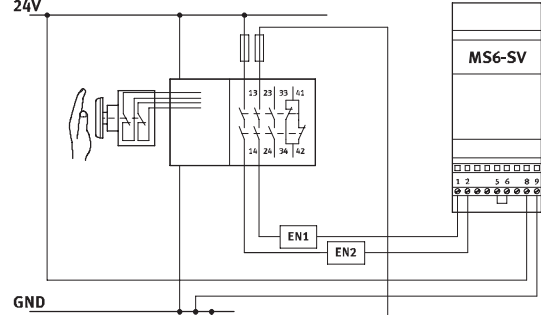
Technical data

FESTO

Switching point

Pressure p as a function of time t



Multi-pin plug socket		
Type	Enable signals (EN1/EN2)	Example of connection
NECA-S1G9-P9-MP1 Static enable signals (EN1 = 24 V, EN2 = 24 V)		
NECA-S1G9-P9-MP2 - Dynamic enable signals (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V) - Short-circuit monitoring possible		
NECA-S1G9-P9-MP3 - Static enable signals (EN1 = 0 V, EN2 = 24 V) - Short-circuit monitoring possible		

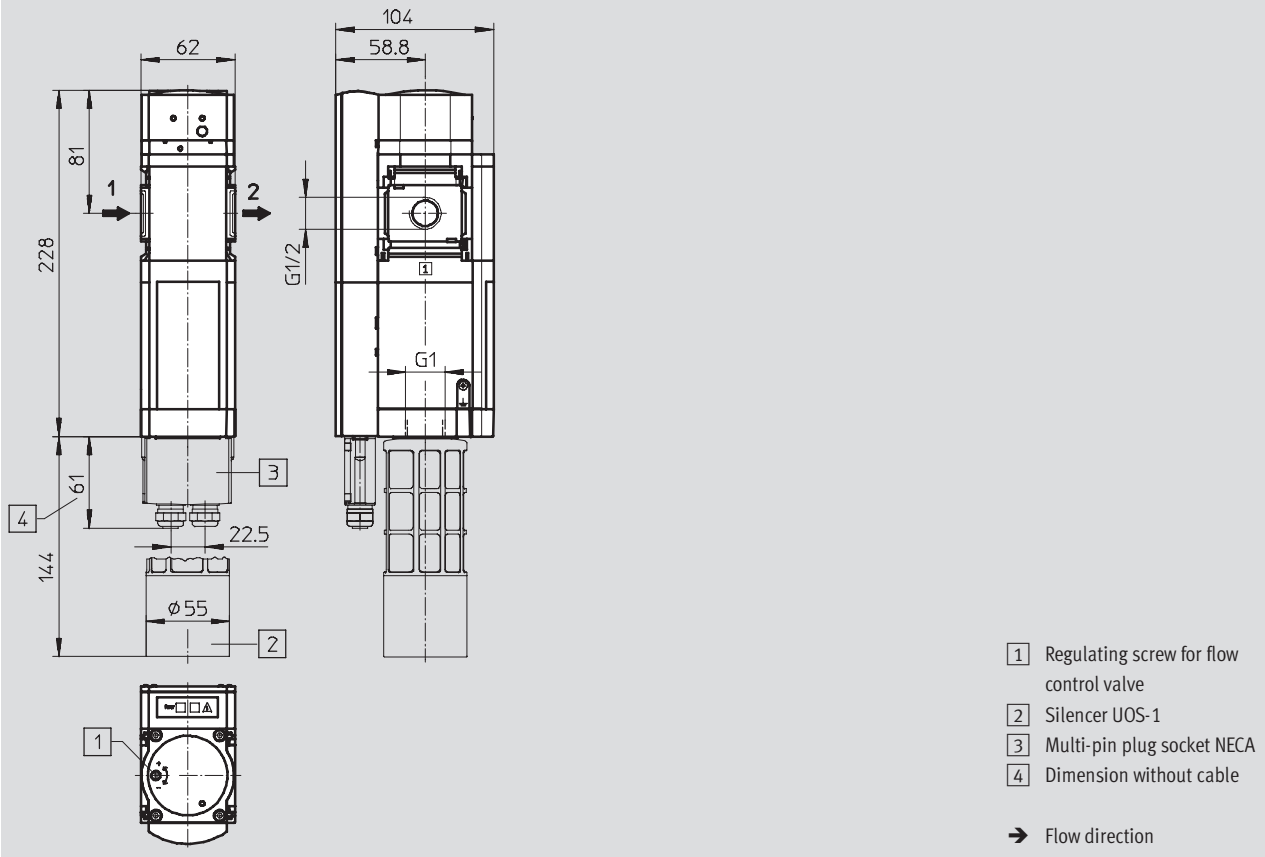
Soft start and exhaust valves MS6-SV, MS series

Technical data

FESTO

Dimensions – Standard

Download CAD data → www.festo.com



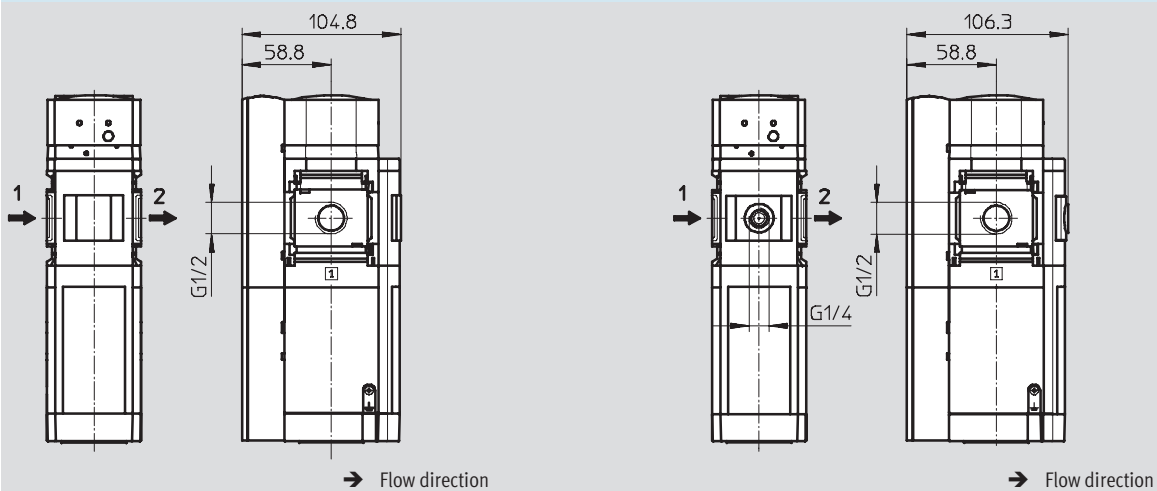
Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



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

Soft start and exhaust valves MS6-SV, MS series

Technical data

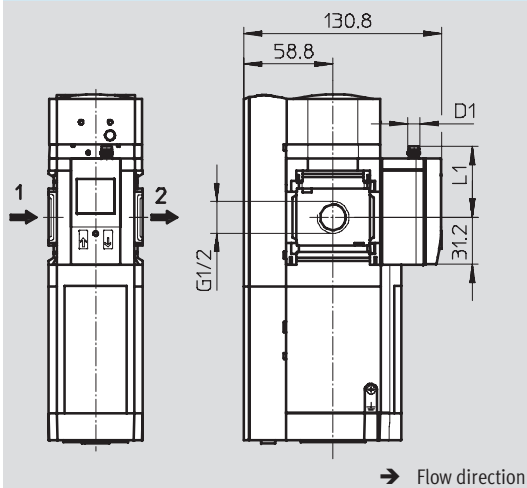
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor with display AD1 ... AD4

Technical data → Internet: sde1



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

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

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

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

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

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

Ordering data

MS pressure gauge, display unit [bar]

Size	Connection	Without silencer		With silencer	
		Part No.	Type	Part No.	Type
MS6	G1/2	548 715	MS6-SV-1/2-D-10V24-AG	548 717	MS6-SV-1/2-D-10V24-SO-AG

Soft start and exhaust valves MS6-SV, MS series

Ordering data – Modular products

FESTO

M Mandatory data										O Options												
Module No.		Series		Function		Performance Level		Silencer		Alternative pressure gauge scale		Type of mounting										
548 713	Size		Connection sizes		Supply voltage		Pressure gauge/adaptor plate		Multi-pin plug socket		Alternative flow direction											
	MS	6	SV	1/2 AGB AGC AGD AGE	D	10V24	SO	AG A4 AD1 AD2 AD3 AD4	PSI MPA	MP1 MP2 MP3	WPB	Z										
	Order example																					
548 713	MS	6	-	SV	-	AGB	-	D	-	10V24	-	SO	-	AG	-		-	MP2	-	WPB	-	

Ordering table						
Grid dimension		[mm]	62	Condi- tions	Code	Enter code
M	Module No.		548 713			
	Series		Standard		MS	MS
	Size		6		6	6
	Function		Soft start and exhaust valve		-SV	-SV
	Connection sizes		Thread G1/2		-1/2	
			Connecting plate G1/4		-AGB	
			Connecting plate G3/8		-AGC	
			Connecting plate G1/2		-AGD	
			Connecting plate G3/4		-AGE	
	Performance Level		Category 3, 2-channel with self-monitoring, maximum attainable according to ISO 13849-1		-D	-D
Supply voltage		24 V DC, 10 bar		-10V24	-10V24	
O	Silencer		Silencer, open		-SO	
	Pressure gauge/ adapter plate	Pressure gauge	MS pressure gauge		-AG	
		Adapter plates	For EN pressure gauge 1/4, without pressure gauge		-A4	
	Pressure sensor		With display, plug M8, PNP, 3-pin		-AD1	
			With display, plug M8, NPN, 3-pin		-AD2	
			With display, plug M12, PNP, 4-pin, analogue output 4 ... 20 mA		-AD3	
			With display, plug M12, NPN, 4-pin, analogue output 4 ... 20 mA		-AD4	
	Alternative pressure gauge scale		psi	1	-PSI	
			MPa	1	-MPA	
	Multi-pin plug socket	Sub-D, 9-pin, screw terminal	Without cable, enable signals static (EN1 = 24 V, EN2 = 24 V)		-MP1	
			Without cable, enable signals dynamic (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V), short-circuit detection possible		-MP2	
			Without cable, enable signals static (EN1 = 0 V, EN2 = 24 V), short-circuit detection possible		-MP3	
	Type of mounting		Wall mounting plate, large clearance		-WPB	
	Alternative flow direction		Flow direction from right to left		-Z	

1 PSI, MPa Not with pressure gauge/adaptor plate A4, AD1, AD2, AD3, AD4

Transfer order code

548 713 MS 6 - SV - D - 10V24 - - - - -

Soft start and exhaust valves MS6-SV, MS series

Accessories

FESTO

Multi-pin plug socket NECA

(order code: MP1/MP2/MP3)

- For soft start and exhaust valve MS6-SV

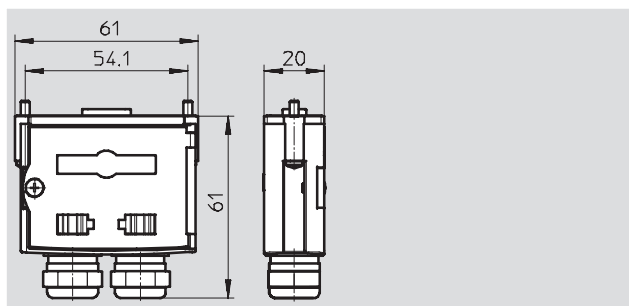
Material:

Housing: Reinforced polyamide

Screws: Steel

Union nut: Brass

Seals: Nitrile rubber



Technical data		
Type of mounting	Via through-holes	
Electrical connection	Sub-D, 9-pin, screw terminal 9-pin	
Operating voltage range	[V DC]	21.6 ... 26.4
Nominal operating voltage	[V DC]	24
Current-carrying capacity	[A]	1
Connection cross section	[mm ²]	0.34 ... 1 without wire end sleeves
	[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	548 719	NECA-S1G9-P9-MP1
	Without cable, enable signals dynamic (EN1 = 0 ... 24 V, EN2 = 0 ... 24 V), short-circuit detection possible	60	548 720	NECA-S1G9-P9-MP2
	Without cable, enable signals static (EN1 = 0 V, EN2 = 24 V), short-circuit detection possible	60	552 703	NECA-S1G9-P9-MP3

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

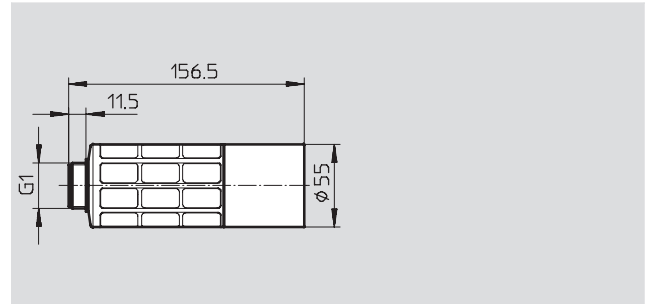
Materials:

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

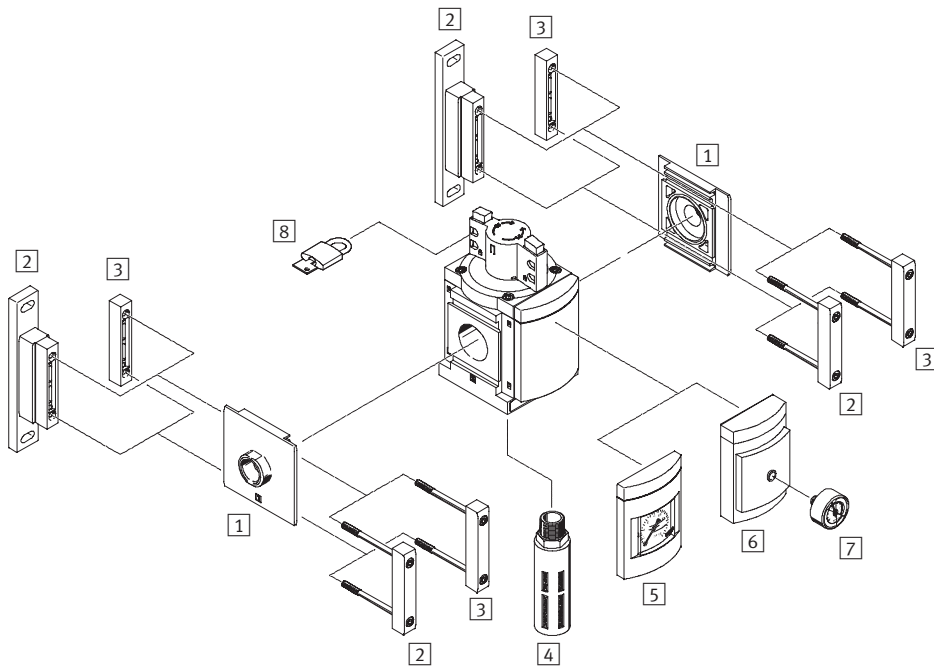
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Ordering data			
Size	Weight [g]	Part No.	Type
MS6	200	552 252	UOS-1

On-off valves MS12-EM, MS series

Peripherals overview

FESTO



-  - 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	71
5	MS pressure gauge AG	51
6	Adapter for EN pressure gauge 1/4 A4	51
7	Pressure gauge MA	71
8	Padlock LRVS-D	71

On-off valves MS12-EM, MS series

FESTO

Type codes

		MS	12	–	EM	–	G
Series							
MS	Standard service unit						
Size							
12	Grid dimension 124 mm						
Service function							
EM	On-off valve, manually operated						
Connection size							
G	Module without connecting thread, without connecting plate Connecting plates → Accessories						

Further variants can be ordered using the modular system

On-off valves EM → 51

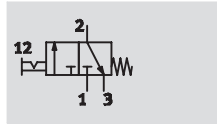
- Connecting plates
- Silencer
- Pressure gauge/adaptor
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

On-off valves MS12-EM, MS series

FESTO

Technical data

Function



-  - Flow rate
25,000 ... 32,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0 ... 21 bar



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

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Pneumatic connection 3	G1			
Design	Piston spool valve			
Type of mounting	Via accessories			
	In-line installation			
Assembly position	Any			
Valve function	3/2-way valve, double solenoid			
Exhaust function	Without flow control			
Switching position display	Knob actuator direction = flow direction			
Type of actuation	Direct			
Pilot air supply	Internal			
Direction of flow	Non-reversible			

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

Standard nominal flow rate q _N 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.

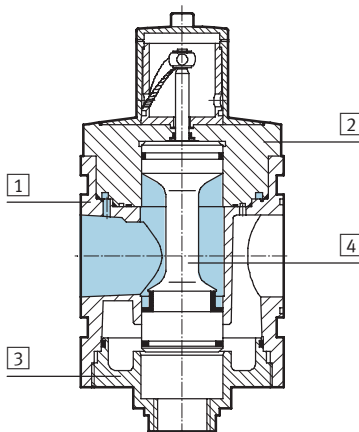
On-off valves MS12-EM, MS series

FESTO

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						
		→ Flow direction						

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

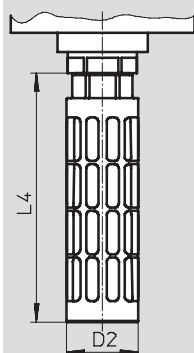
On-off valves MS12-EM, MS series

Technical data

FESTO

Dimensions – Silencer

Download CAD data → www.festo.com



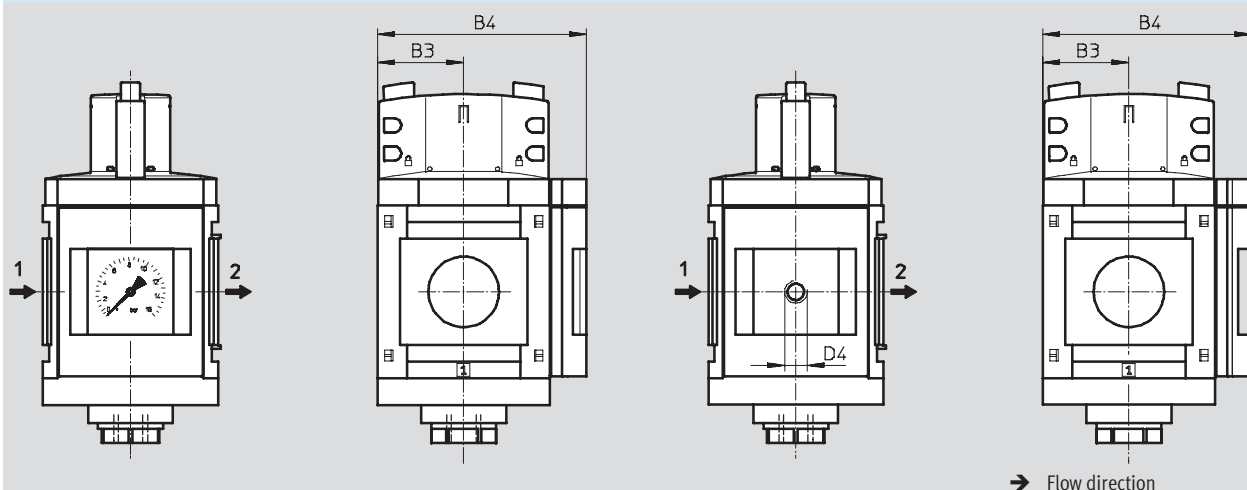
Type	D2 Ø	L4
MS12-EM-...-S	47.8	165.5

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



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

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

Ordering data

Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	541 495	MS12-EM-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 with the ISO 1179-1 standard and the ISO 228-1 standard.

On-off valves MS12-EM, MS series

FESTO

Ordering data – Modular products

M Mandatory data					O Options				
Module No.	Series	Size	Function	Connection size	Silencer	Pressure gauge/ adapter	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535 031	MS	12	EM	AGF AGG AGH AGI G	S	AG A4	PSI MPa	WP	Z
Order example									
535 031	MS	12	- EM	- G	- S	- AG	- PSI	-	- Z

Ordering table					
Grid dimension [mm]		124	Condi- tions	Code	Enter code
M	Module No.	535 031			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	On-off valve, manual		-EM	-EM
	Connection size	Connecting plate G1		-AGF	
		Connecting plate G1¼		-AGG	
		Connecting plate G1½		-AGH	
		Connecting plate G2		-AGI	
		Module without connecting thread, without connecting plate		-G	
O	Silencer	Silencer		-S	
	Pressure gauge/adapter	MS pressure gauge, bar		-AG	
		Adapter plate for EN pressure gauge ¼, without pressure gauge		-A4	
	Alternative pressure gauge scale	psi	1	-PSI	
		MPa	1	-MPA	
	Type of mounting	Mounting bracket	2	-WP	
	Alternative flow direction	Flow direction from right to left		-Z	

1 PSI, MPA Only with pressure gauge AG.

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

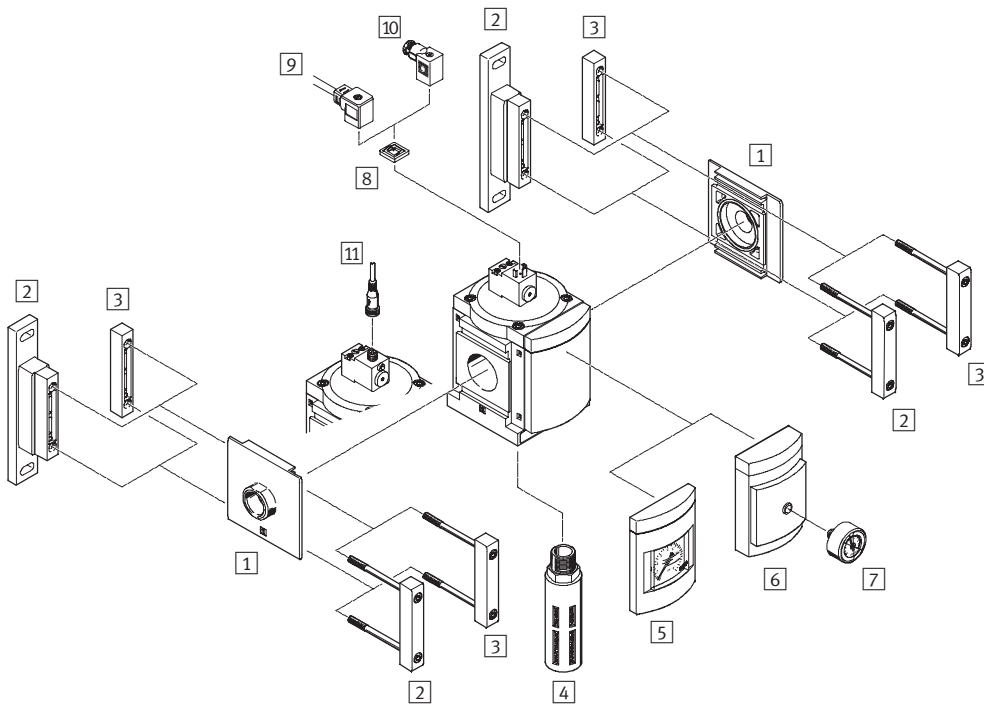
Transfer order code

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

Peripherals overview

FESTO



-  - 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	71
5	MS pressure gauge AG	57
6	Adapter for EN pressure gauge 1/4 A4	57
7	Pressure gauge MA	71
8	Illuminating seal MC-LD	70
9	Plug socket with cable KMC	70
10	Plug socket MSSD-C	70
11	Plug socket with cable SIM-M12-4...	sim

On-off valves MS12-EE, MS series

FESTO

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

On-off valves EE → 57

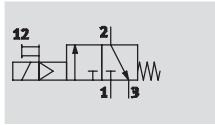
- Connecting plates
- Supply voltage
- Silencer
- Pressure gauge/adaptor
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

On-off valves MS12-EE, MS series

Technical data

FESTO

Function



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



- Solenoid actuated on-off valve for pressurising and venting pneumatic installations
- With solenoid coil without plug socket
- Three voltage ranges can be selected
- Ducted exhaust possible via a threaded connection with silencer
- Non-detenting manual override (except variant V24P)

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Pneumatic connection 3	G1			
Design	Piston spool valve			
Type of mounting	Via accessories			
	In-line installation			
Assembly position	Any			
Valve function	3/2-way valve, single solenoid, closed			
Exhaust function	Without flow control			
Type of reset	Mechanical spring			
Switching position display	Via accessories			
	LED (with variant V24P)			
Type of actuation	Direct			
Pilot air supply	Internal			
Direction of flow	Non-reversible			
Coil characteristics	V24	24 V DC		
	V110	110 V AC		
	V230	230 V AC		

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

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

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

On-off valves MS12-EE, MS series

FESTO

Technical data

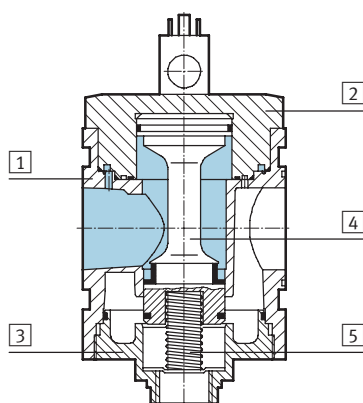
Operating and environmental conditions		
Operating pressure	[bar]	3 ... 16
Operating medium		Compressed air
Ambient temperature	[°C]	-10 ... +50
Temperature of medium	[°C]	-10 ... +50
Corrosion resistance	CRC ¹⁾	2

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

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

Materials

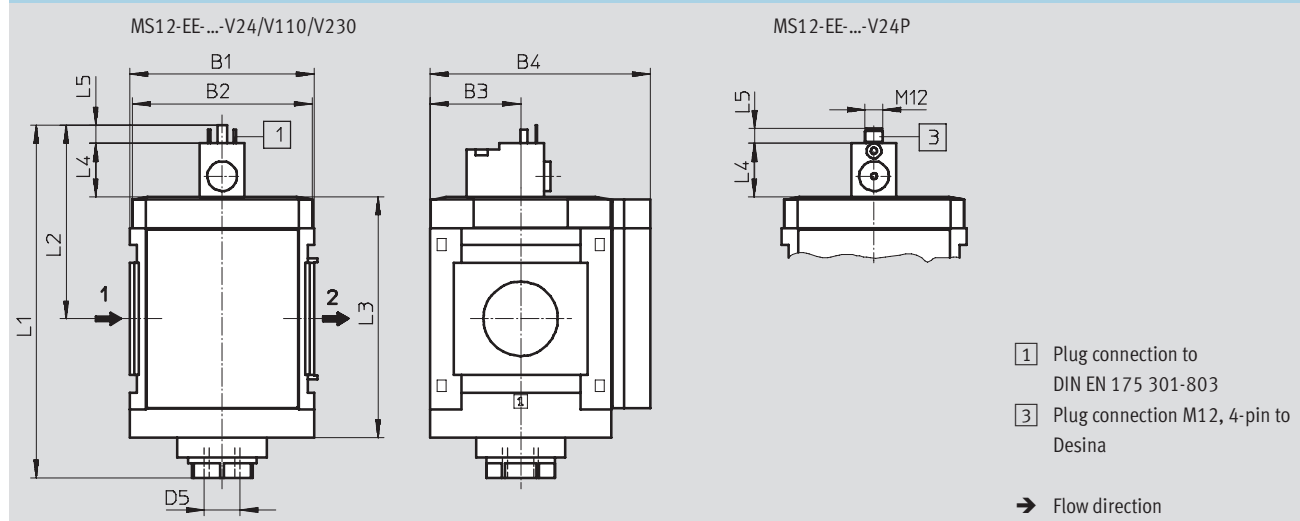
Sectional view



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

Dimensions – Standard

Download CAD data → www.festo.com



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

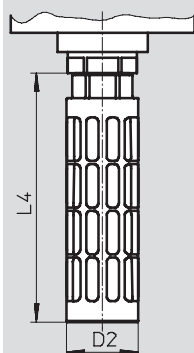
On-off valves MS12-EE, MS series

Technical data

FESTO

Dimensions – Silencer

Download CAD data → www.festo.com



Type	D2 Ø	L4
MS12-EE-...-S	47.8	165.5

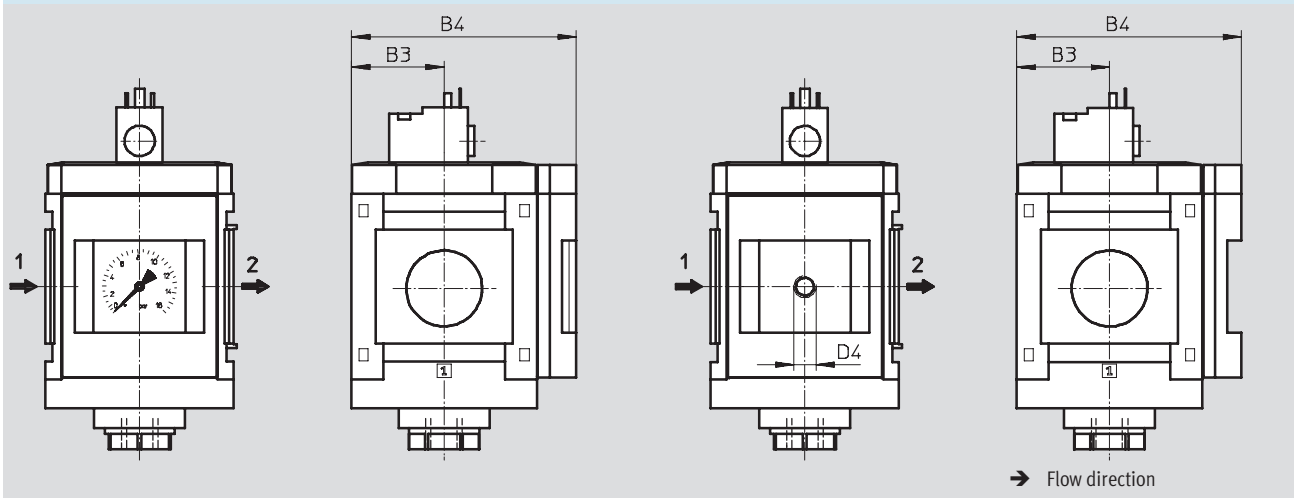
• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



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

Ordering data

Size	Connection	Supply voltage 24 V DC	
		Part No.	Type
MS12	G1 ... G2 ¹⁾	541 496	MS12-EE-G-V24 ²⁾

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

2) Free of copper and PTFE

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

On-off valves MS12-EE, MS series

FESTO

Ordering data – Modular products

M Mandatory data						O Options				
Module No.	Series	Size	Function	Connection size	Supply voltage	Silencer	Pressure gauge/adaptor	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535 032	MS	12	EE	AGF AGG AGH AGI G	V24 V24P V110 V230	S	AG A4	PSI MPa	WP	Z
Order example										
535 032	MS	12	- EE	- AGI	- V110	- S	- AG	- MPA	- WP	-

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M Module No. 535 032					
Series	Standard			MS	MS
Size	12			12	12
Function	On-off valve, electrical			-EE	-EE
Connection size	Connecting plate G1			-AGF	
	Connecting plate G1¼			-AGG	
	Connecting plate G1½			-AGH	
	Connecting plate G2			-AGI	
	Module without connecting thread, without connecting plate			G	
Supply voltage	24 V DC (connection pattern to EN 175301), 16 bar			-V24	
	24 V DC plug (connection pattern M12 to DESINA), 16 bar			-V24P	
	110 V AC (connection pattern to EN 175301), 16 bar			-V110	
	230 V AC (connection pattern to EN 175301), 16 bar			-V230	
O Silencer Silencer					
Pressure gauge/adaptor	MS pressure gauge, bar			-AG	
	Adapter plate for EN pressure gauge ¼, without pressure gauge			-A4	
Alternative pressure gauge scale	psi	1		-PSI	
	MPa	1		-MPA	
Type of mounting	Mounting bracket	2		-WP	
Alternative flow direction	Flow direction from right to left			-Z	

1 PSI, MPA Only with pressure gauge AG.

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

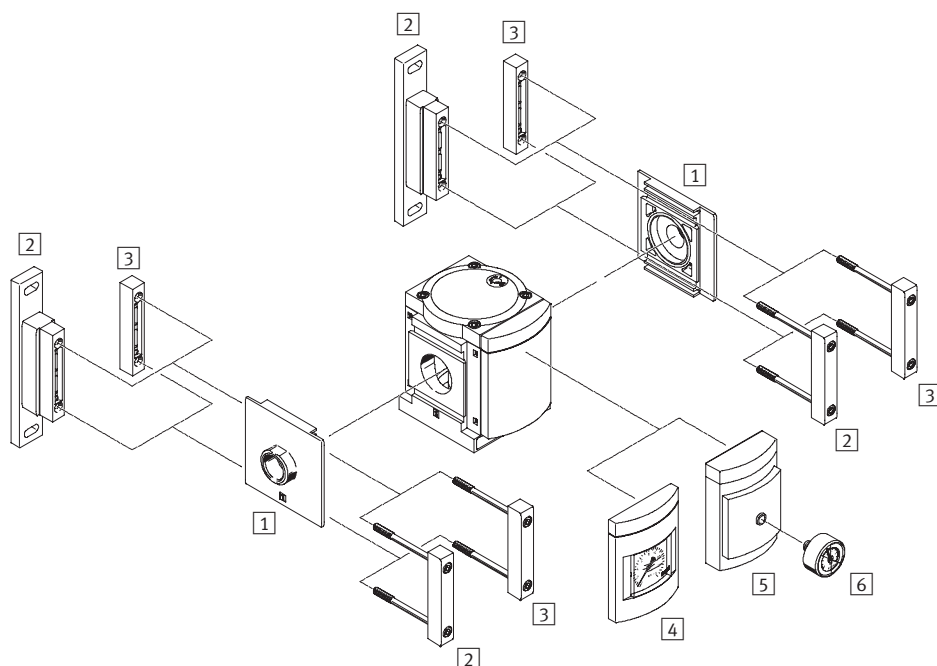
Transfer order code

535 032 MS 12 - EE - - - - - - - - - -

Soft-start valves MS12-DL, MS series

Peripherals overview

FESTO



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	63
5	Adapter for EN pressure gauge 1/4 A4	63
6	Pressure gauge MA	71

Soft-start valves MS12-DL, MS series

FESTO

Type codes

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

Further variants can be ordered using the modular system

Soft-start valves DL → 63

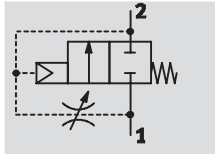
- Connecting plates
- Pressure gauge/adaptor
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

Soft-start valves MS12-DL, MS series

Technical data

FESTO

Function



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



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

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

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

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

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

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

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

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

Soft-start valves MS12-DL, MS series

FESTO

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

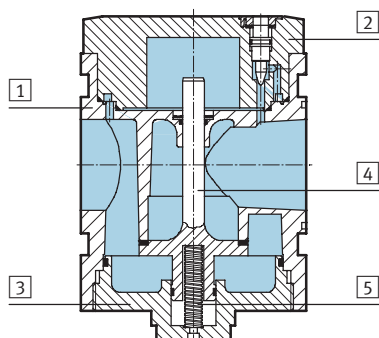
1) Corrosion resistance class 2 according to Festo standard 940 070

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

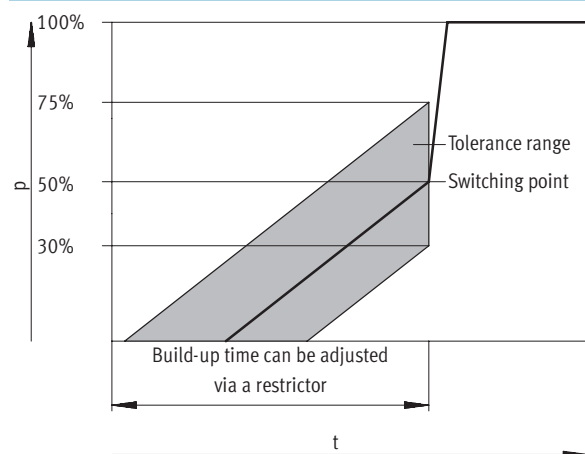
Materials

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.	

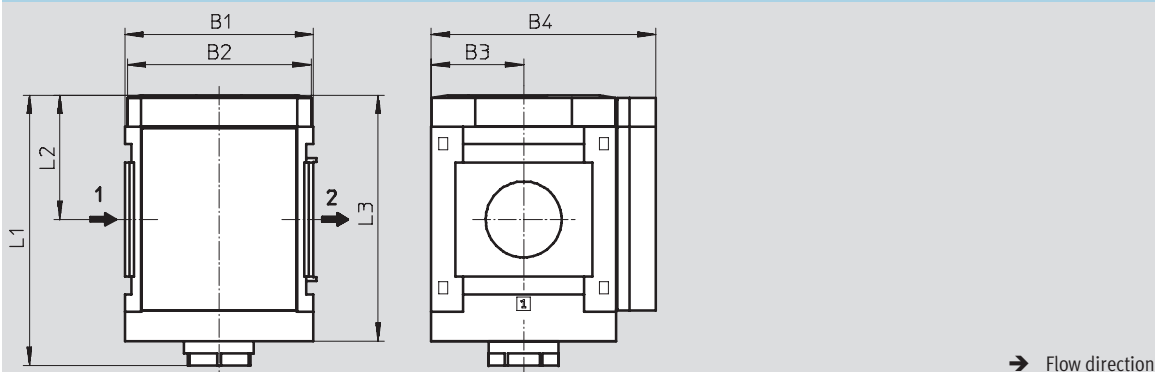
Soft-start valves MS12-DL, MS series

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

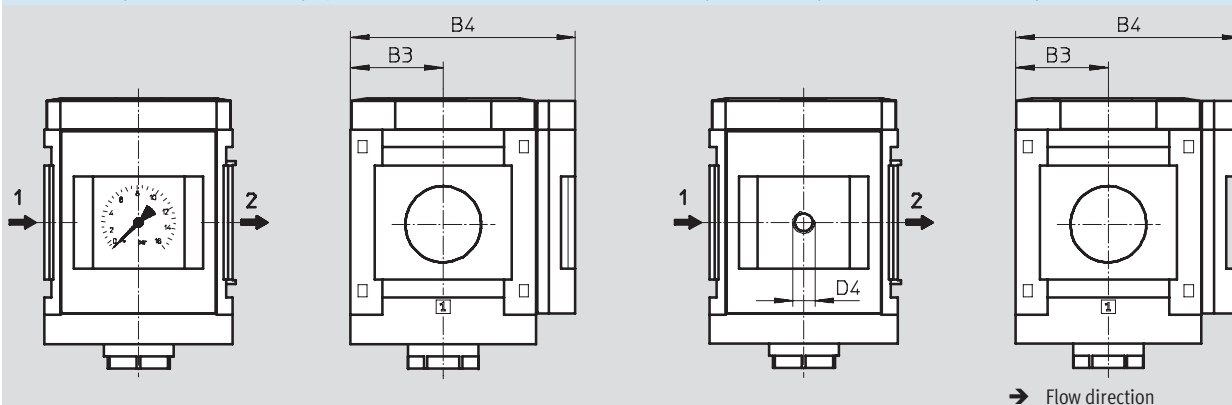
• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



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

Ordering data

Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	541 497	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 with the ISO 1179-1 standard and the ISO 228-1 standard.

Soft-start valves MS12-DL, MS series

FESTO

Ordering data – Modular products

M Mandatory data					O Options			
Module No.	Series	Size	Function	Connection size	Pressure gauge/adaptor	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535 033	MS	12	DL	AGF AGG AGH AGI G	AG A4	PSI MPa	WP	Z
Order example								
535 033	MS	12	- DL	- AGI	- AG	- MPA	- WP	- Z

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M Module No.	535 033				
Series	Standard			MS	MS
Size	12			12	12
Function	Soft-start valve, pneumatic			-DL	-DL
Connection size	Connecting plate G1			-AGF	
	Connecting plate G1¼			-AGG	
	Connecting plate G1½			-AGH	
	Connecting plate G2			-AGI	
	Module without connecting thread, without connecting plate			-G	
O Pressure gauge/adaptor	MS pressure gauge, bar			-AG	
	Adapter plate for EN pressure gauge ¼, without pressure gauge			-A4	
Alternative pressure gauge scale	psi		1	-PSI	
	MPa		1	-MPA	
Type of mounting	Mounting bracket		2	-WP	
Alternative flow direction	Flow direction from right to left			-Z	

1 PSI, MPA Only with pressure gauge AG.

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

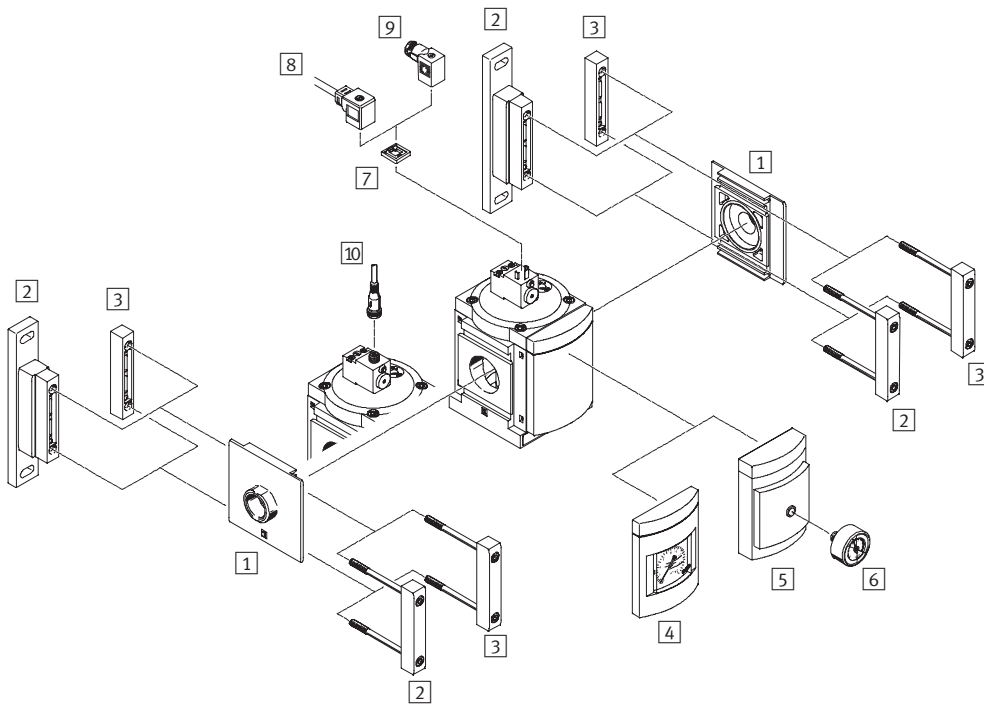
Transfer order code

535 033 MS 12 - DL - - - - -

Soft-start valves MS12-DE, MS series

Peripherals overview

FESTO



-  - 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	69
5	Adapter for EN pressure gauge 1/4 A4	69
6	Pressure gauge MA	71
7	Illuminating seal MC-LD	70
8	Plug socket with cable KMC	70
9	Plug socket MSSD-C	70
10	Plug socket with cable SIM-M12-4...	sim

Soft-start valves MS12-DE, MS series

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Type codes

		MS	12	–	DE	–	G	–	V24
Series									
MS	Standard service unit								
Size									
12	Grid dimension 124 mm								
Service function									
DE	Soft-start valve, solenoid actuated								
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

Soft-start valves DE → 69

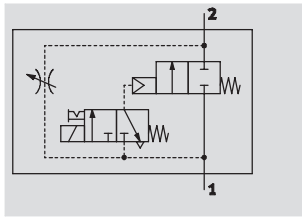
- Connecting plates
- Supply voltage
- Pressure gauge/adaptor
- Alternative pressure gauge scale
- Type of mounting
- Alternative flow direction

Soft-start valves MS12-DE, MS series

Technical data

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Function



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



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

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

- Solenoid actuated soft-start valve for slowly pressurising and venting pneumatic installations
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- With solenoid coil without plug socket
- Switch-through pressure can be exactly controlled using a solenoid valve
- Adjustable switching time delay
- Three voltage ranges can be selected
- Non-detenting manual override (except variant V24P)

General technical data				
Pneumatic connection 1, 2 ¹⁾	G1	G1¼	G1½	G2
Design	Piston poppet valve			
Type of mounting	Via accessories			
	In-line installation			
Assembly position	Any			
Valve function	2/2-way valve			
Exhaust function	Flow control			
Type of reset	Mechanical spring			
Switching position display	Via accessories			
	LED (with variant V24P)			
Type of actuation	Piloted			
Pilot air supply	Internal			
Direction of flow	Non-reversible			
Coil characteristics	V24	24 V DC		
	V110	110 V AC		
	V230	230 V AC		

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

Soft-start valves MS12-DE, MS series

FESTO

Technical data

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

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

2) For energised solenoid valve

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

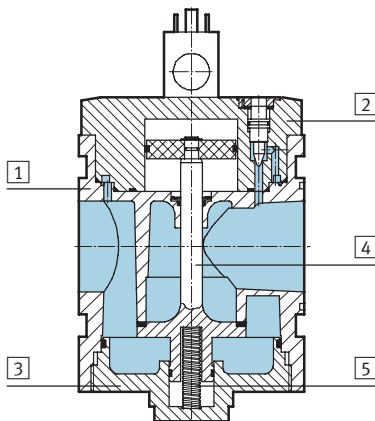
1) Corrosion resistance class 2 according to Festo standard 940 070

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

Weights [g]	
Soft-start valve	3,800

Materials

Sectional view



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

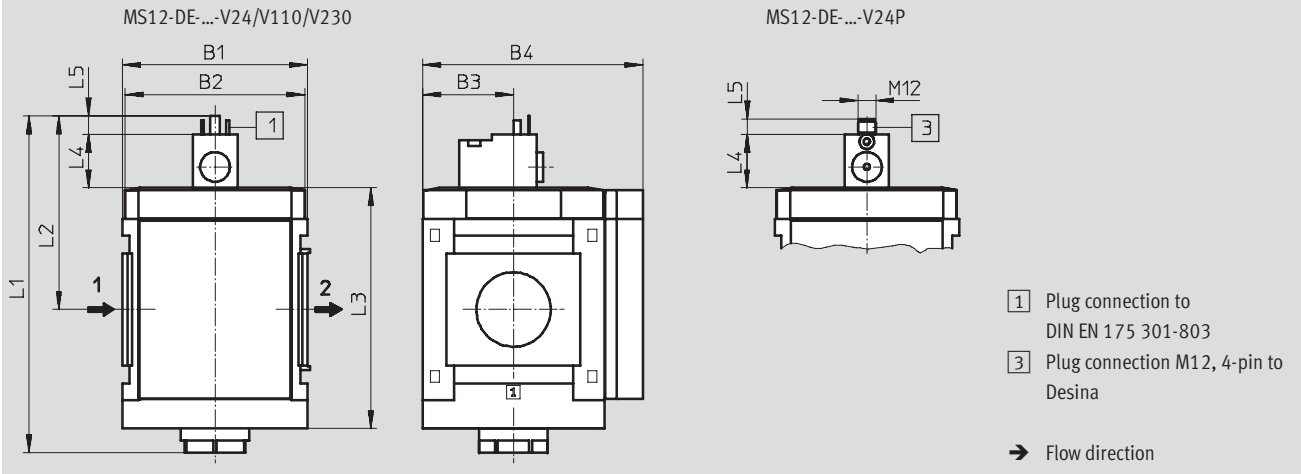
Soft-start valves MS12-DE, MS series

Technical data

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Dimensions – Standard

Download CAD data → www.festo.com



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

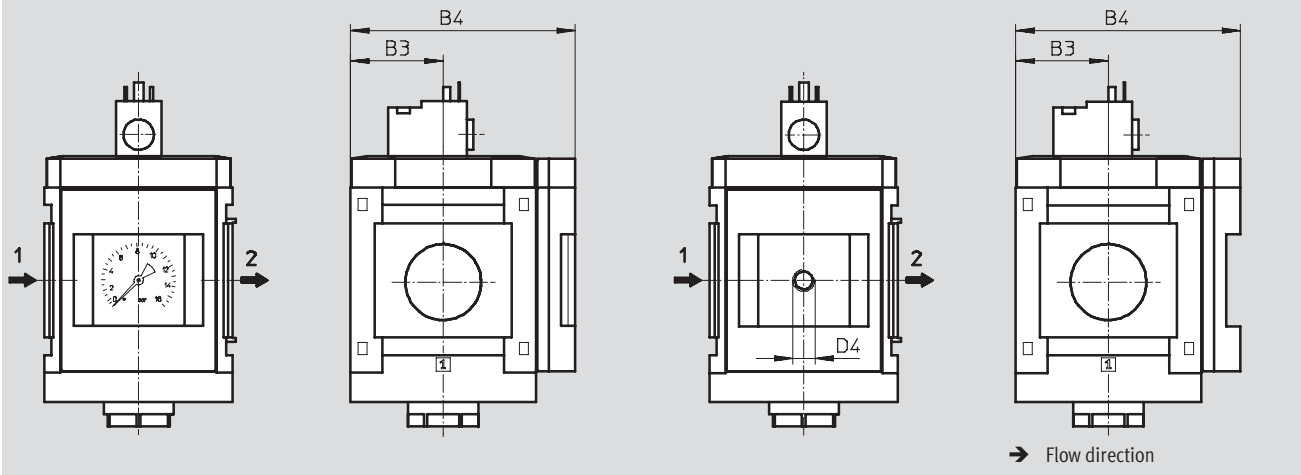
• Note: This product conforms with the ISO 1179-1 standard and the ISO 228-1 standard.

Dimensions – Pressure gauges/adapters

Download CAD data → www.festo.com

Integrated MS pressure gauge AG, display unit [bar]

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



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

Ordering data

Size	Connection	Supply voltage 24 V DC	
		Part No.	Type
MS12	G1 ... G2 ¹⁾	541 498	MS12-DE-G-V24 ²⁾

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

2) Free of copper and PTFE

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

Soft-start valves MS12-DE, MS series

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Ordering data – Modular products

M Mandatory data						O Options			
Module No.	Series	Size	Function	Connection size	Supply voltage	Pressure gauge/ adapter	Alternative pressure gauge scale	Type of mounting	Alternative flow direction
535 034	MS	12	DE	AGF AGG AGH AGI G	V24 V24P V110 V230	AG A4	PSI MPa	WP	Z
Order example									
535 034	MS	12	- DE	- AGH	- V230	- A4	-	- WP	- Z

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M Module No.	535 034				
Series	Standard			MS	MS
Size	12			12	12
Function	Soft-start valve, electrical			-DE	-DE
Connection size	Connecting plate G1			-AGF	
	Connecting plate G1¼			-AGG	
	Connecting plate G1½			-AGH	
	Connecting plate G2			-AGI	
	Module without connecting thread, without connecting plate			-G	
Supply voltage	24 V DC (connection pattern to EN 175301), 16 bar			-V24	
	24 V DC plug (connection pattern M12 to DESINA), 16 bar			-V24P	
	110 V AC (connection pattern to EN 175301), 16 bar			-V110	
	230 V AC (connection pattern to EN 175301), 16 bar			-V230	
O Pressure gauge/adapter	MS pressure gauge, bar			-AG	
	Adapter plate for EN pressure gauge ¼, without pressure gauge			-A4	
Alternative pressure gauge scale	psi		1	-PSI	
	MPa		1	-MPA	
Type of mounting	Mounting bracket		2	-WP	
Alternative flow direction	Flow direction from right to left			-Z	

1 PSI, MPa Only with pressure gauge AG.

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

Transfer order code

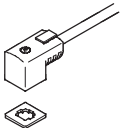
535 034	MS	12	- DE	-	-	-	-	-	-	-
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On-off/soft-start valves MS-EM/EE/DL/DE/SV, MS series

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Accessories

Ordering data – Plug socket MSSD					Technical data → Internet: mssd	
	Description	Operating voltage range	Electrical connection	Type of mounting cable connection	Part No.	Type
	for MS4/6-EE/DE	≤ 250 V AC/DC	3-pin	Clamping screws	151 687	MSSD-EB
			4-pin	Insulation displacement technology	192 745	MSSD-EB-S-M14
	for MS12-EE/DE	≤ 250 V AC/DC	3-pin	Clamping screws	34 583	MSSD-C
			4-pin	Insulation displacement technology	192 748	MSSD-C-S-M16

Ordering data – Plug socket with cable KMEB/KMC						Technical data → 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	547 268	KMEB-3-24-2,5-LED
					5	547 269	KMEB-3-24-5-LED
			3-pin	–	2.5	547 270	KMEB-3-24-2,5
					5	547 271	KMEB-3-24-5
		230 V AC	3-pin	LED	2.5	151 688	KMEB-1-24-2,5-LED
					5	151 689	KMEB-1-24-5-LED
			3-pin	–	10	193 457	KMEB-1-24-10-LED
					2.5	151 690	KMEB-1-230AC-2,5
	for MS12-EE/DE	24 V DC	3-pin	LED	5	151 691	KMEB-1-230AC-5
					2.5	30 931	KMC-1-24DC-2,5-LED
					5	30 933	KMC-1-24DC-5-LED
		230 V AC	3-pin	–	10	193 459	KMC-1-24-10-LED
					2.5	30 932	KMC-1-230AC-2,5
					5	30 934	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	151 717	MEB-LD-12-24DC	
		230 V DC/AC ±10%	151 718	MEB-LD-230AC	
	for plug socket with cable KMC and plug socket MSSD-C	12 ... 24 V DC	19 145	MC-LD-12-24DC	
		230 V DC/AC ±10%	19 146	MC-LD-230AC	

Ordering data – Locking clip CPV18-HV				Technical data → Internet: cpv18-hv	
	Description	Part No.	Type	PU ¹⁾	
	for MS4/6-EE/DE-...-V24		Cover for manual override, the clip prevents actuation	530 056	CPV18-HV
					10

1) Packaging unit quantity

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

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Accessories

Ordering data – Silencer U				Technical data → Internet: u	
	Description	Pneumatic connection	Part No.	Type	
	for MS4-EM1/EE	G $\frac{1}{4}$	6 842	U-$\frac{1}{4}$-B	
	for MS6-EM1/EE	G $\frac{1}{2}$	6 844	U-$\frac{1}{2}$-B	
	for MS12-EM/EE	G1	151 990	U-1-B	

Ordering data – Pressure gauge MA						
	Nominal size	Pneumatic connection	Indicating range		Part No.	Type
			[bar]	[psi]		
	Pressure gauge MA, DIN EN 837-1					Technical data ➔ Internet: ma
	40	G¼	0 ... 16	0 ... 232	183 901	MA-40-16-G¼-EN
	Pressure gauge MA, DIN EN 837-1, with red-green range					Technical data ➔ Internet: ma
	40	R⅛	0 ... 16	–	525 726	MA-40-16-R⅛-E-RG
	50	R¼	0 ... 16	–	525 729	MA-50-16-R¼-E-RG

Ordering data – Padlock LRV5-D			
	Weight [g]	Part No.	Type
	120	193 786	LRV5-D