

Filter regulators MS-LFR, MS series

FESTO



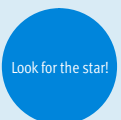
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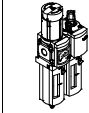
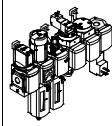
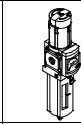
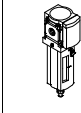
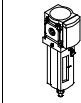
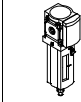
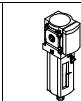
★ Ready for dispatch in 5 days maximum from stock
Assembled for you in 4 service centres worldwide
Up to 6×10^{12} variants per product series



Filter regulators MS-LFR, MS series



Product range overview – MS series service units

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]						Grade of filtration [µm]			
				0.05 ...	0.05 ...	0.1 ...	0.3 ...	0.1 ...	0.5 ...	0.01	1	5	40
Code			AG.../AQ...	D2	D4	D5	D6	D7	D8	A	B	C	E
Service unit combinations													
MSB-FRC 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	■	■
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	■	■
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Service unit combinations (further variants can be ordered using the configurator → Internet: msb4, msb6 or msb9)													
MSB 	4	G1/4	G1/8, G1/4, G3/8	-	-	-	■	■	-	-	-	■	■
	6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	■	■	-	-	-	■	■
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Individual devices													
Filter regulators MS-LFR 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	■	■
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	■	■
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	■	■	■	■	-	-	■	■
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	■	■	■	-	-	■	■
Filters MS-LF 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	■	■
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	■	■
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	■	■
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	■	■
Fine and micro filters MS-LFM 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	■	■	-	-
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	■	■	-	-
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	■	■	-	-
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	-	-
Activated carbon filters MS-LFX 	4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-	-
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	-
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-
Water separators MS-LWS 	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-	-
	9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-	-
	12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-	-

Filter regulators MS-LFR, MS series

Product range overview – MS series service units



Type	Size	Bowl guard		Condensate drains				Pressure indicator				Security		Options		→ Page/ Internet	
		Plastic bowl with plastic bowl guard	Metal bowl	Manual rotary	Semi-automatic	Fully automatic	External, fully automatic, electrical	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor	Rotary knob with detent, lockable via accessories	Rotary knob with integrated lock	Silencer		Flow direction from right to left
Code		R	U	M	H	V	E...	VS	AG	A8	A4	AD...	AS	E11	S	Z	
Service unit combinations																	
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	■	■	■	■	■	-	■	■	■	■	■	■	■	-	■	8
	6	■	■	■	■	■	■	■	■	■	■	■	■	■	-	■	8
	9	-	■	■	■	■	■	■	■	■	■	■	■	■	-	■	26
	12	-	■	■	-	■	■	■	■	■	■	■	■	■	-	■	40
Filters MS-LF	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lf
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lf
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms9-lf
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lf
Fine and micro filters MS-LFM	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lfm
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lfm
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms9-lfm
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lfm
Activated carbon filters MS-LFX	4	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms4-lfx
	6	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms6-lfx
	9	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms9-lfx
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms12-lfx
Water separators MS-LWS	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms6-lws
	9	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms9-lws
	12	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lws

Filter regulators MS-LFR, MS series

Product range overview – MS series service units



Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]						Supply voltage			
				0.05 ... 0.7	0.05 ... 2.5	0.1 ... 4	0.3 ... 7	0.1 ... 12	0.5 ... 16	24 V DC, connection pattern to EN 175301	24 V DC, connection M12 to IEC 61076-2-101	110 V AC, connection pattern to EN 175301	230 V AC, connection pattern to EN 175301
Code			AG.../AQ...	D2	D4	D5	D6	D7	D8	V24	V24P	V110	V230
Individual devices													
Pressure regulators MS-LR		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	■	■	■	■	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	■	■	■	-	-	-
Pressure regulators MS-LRB		4	G1/4	G1/8, G1/4, G3/8	-	-	■	■	■	-	-	-	-
		6	G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRP		4	-	-	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRPB		4	-	-	-	-	-	-	-	-	-	-	-
		6	G1/2	G1/4, G3/8, G1/2, G3/4	■	■	■	-	■	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-
Electrical pressure regulators MS-LRE		4	-	-	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	■	■	■	■	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	-	-	-	-	-	-	-	-	-	-
Lubricators MS-LOE		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
On-off valves, manually actuated MS-EM(1)		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
On-off valves, electrically actuated MS-EE		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	■	-	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	■	-	■
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	■	■	■
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	■
Soft-start valves, pneumatically actuated MS-DL		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-	-	-
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-	-	-
Soft-start valves, electrically actuated MS-DE		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	■	-	■
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	■	-	■
		9	-	-	-	-	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	■	■	■

Filter regulators MS-LFR, MS series

Product range overview – MS series service units



Type	Size	Bowl guard		Pressure indicator				Security			Options		→ Page/ Internet
		Plastic bowl with plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor	Rotary knob with detent, lockable via accessories	Rotary knob with integrated lock	Silencer	Flow direction from right to left	
Code		R	U	VS	AG	A8	A4	AD...	AS	E11	S	Z	
Individual devices													
Pressure regulators MS-LR	4	-	-	■	■	■	■	■	■	■	-	■	ms4-lr
	6	-	-	■	■	-	■	■	■	■	-	■	ms6-lr
	9	-	-	■	■	-	■	■	■	■	-	■	ms9-lr
	12	-	-	■	■	-	■	-	■	■	-	■	ms12-lr
Pressure regulators MS-LRB	4	-	-	■	■	■	■	■	■	■	-	■	ms4-lrb
	6	-	-	■	■	-	■	■	■	■	-	■	ms6-lrb
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRP	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	-	■	■	■	■	■	-	■	ms6-lrp
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRPB	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	-	■	■	■	■	■	-	■	ms6-lrpb
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Electrical pressure regulators MS-LRE	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	■	-	■	-	-	-	-	■	ms6-lre
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Lubricators MS-LOE	4	■	■	-	-	-	-	-	-	-	-	■	ms4-loe
	6	■	■	-	-	-	-	-	-	-	-	■	ms6-loe
	9	-	■	-	-	-	-	-	-	-	-	■	ms9-loe
	12	-	■	-	-	-	-	-	-	-	-	■	ms12-loe
On-off valves, manually actuated MS-EM(1)	4	-	-	■	■	■	■	■	-	-	■	■	ms4-em1
	6	-	-	■	■	-	■	■	-	-	■	■	ms6-em1
	9	-	-	■	■	-	■	-	-	-	■	■	ms9-em
	12	-	-	■	■	-	■	-	-	-	■	■	ms12-em
On-off valves, electrically actuated MS-EE	4	-	-	■	■	■	■	■	-	-	■	■	ms4-ee
	6	-	-	■	■	-	■	■	-	-	■	■	ms6-ee
	9	-	-	■	■	-	■	■	-	-	■	■	ms9-ee
	12	-	-	■	■	-	■	-	-	-	■	■	ms12-ee
Soft-start valves, pneumatically actuated MS-DL	4	-	-	■	■	■	■	■	-	-	-	■	ms4-dl
	6	-	-	■	■	-	■	■	-	-	-	■	ms6-dl
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	■	■	-	■	-	-	-	-	■	ms12-dl
Soft-start valves, electrically actuated MS-DE	4	-	-	■	■	■	■	■	-	-	-	■	ms4-de
	6	-	-	■	■	-	■	■	-	-	-	■	ms6-de
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	■	■	-	■	-	-	-	-	■	ms12-de

Filter regulators MS-LFR, MS series

Product range overview – MS series service units



Type	Size	Pneumatic connection in housing	Connecting plate	Performance Level			Supply voltage					
				Category 1, 1-channel	Category 3, 2-channel	Category 4, 2-channel with self-monitoring	24 V DC, Sub-D, 9-pin	24 V DC, connection pattern to EN 175301	24 V DC, connection M12 to IEC 61076-2-101	110/230 V AC, connection pattern to EN 175301	22 ... 31.6 V DC, connection M12, AS-i Safety at Work	
Code			AG.../AQ...	C	D	E	10V24	10V24/ V24	10V24P	V110/ V230	ASIS	
Individual devices												
Soft start and exhaust valves MS-SV-C		4	–									
		6	G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	■	–	–	–	■	■	–	–
		9	G $\frac{3}{4}$, G1	G $\frac{1}{2}$, G $\frac{3}{4}$, G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$	■	–	–	–	■	■	■	–
		12	–									
Soft start and exhaust valves MS-SV-D		4	–									
		6	G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	■	–	–	■	■	–	–
		9	–									
		12	–									
Soft start and exhaust valves MS-SV-E		4	–									
		6	G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	■	■	–	–	–	■
		9	–									
		12	–									
Membrane air dryers MS-LDM1		4	G $\frac{1}{8}$, G $\frac{1}{4}$	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	–	–	–	–
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	–	–	–	–
		9	–									
		12	–									
Branching modules MS-FRM		4	G $\frac{1}{8}$, G $\frac{1}{4}$	G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$	–	–	–	–	–	–	–	–
		6	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$	–	–	–	–	–	–	–	–
		9	G $\frac{3}{4}$, G1	G $\frac{1}{2}$, G $\frac{3}{4}$, G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$	–	–	–	–	–	–	–	–
		12	–	G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$, G2	–	–	–	–	–	–	–	–
Distributor blocks MS-FRM-FRZ		4	G $\frac{1}{4}$	–	–	–	–	–	–	–	–	–
		6	G $\frac{1}{2}$	–	–	–	–	–	–	–	–	–
		9	–									
		12	–									
Flow sensors SFAM		4	–									
		6	G $\frac{1}{2}$	G $\frac{1}{2}$	–	–	–	–	–	–	–	–
		9	–	G1, G1 $\frac{1}{2}$	–	–	–	–	–	–	–	–
		12	–									

Filter regulators MS-LFR, MS series

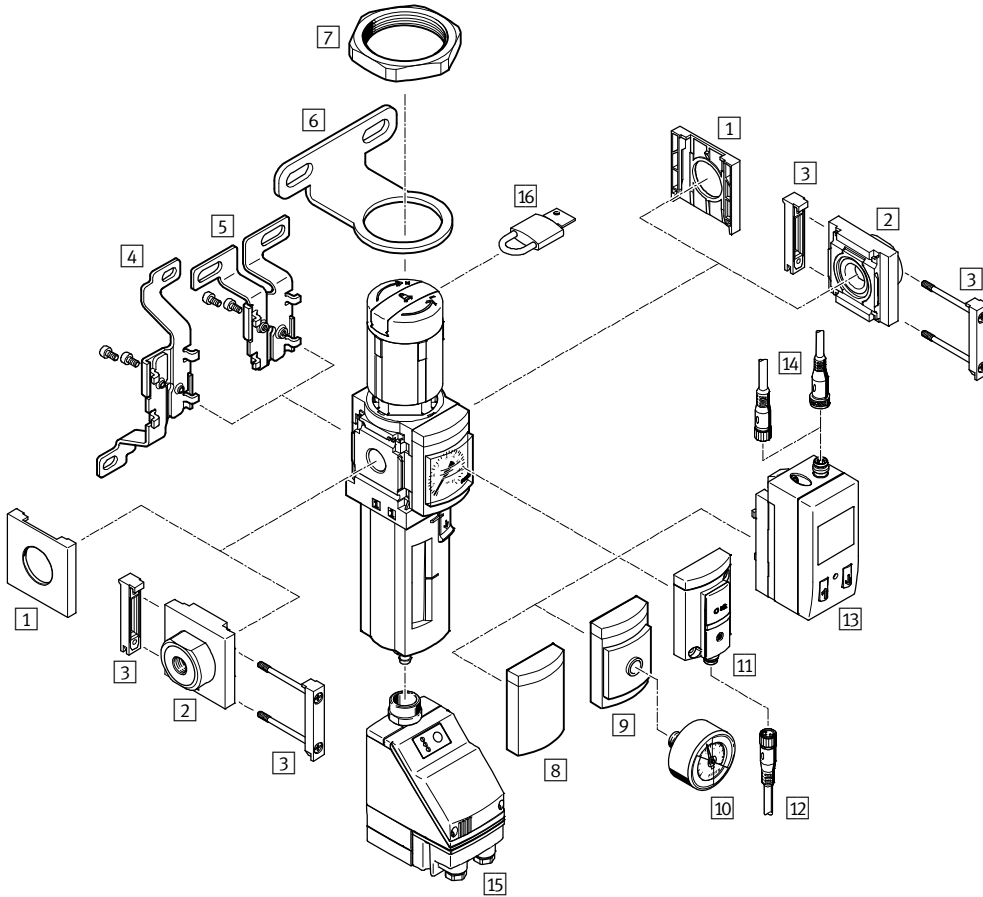
Product range overview – MS series service units

Type	Size	Bowl guard		Pressure indicator					Switch output		Options		→ Page/ Internet
		Plastic bowl with plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G ¹ / ₈	Adapter plate for EN pressure gauge G ¹ / ₄	Pressure sensor	2x PNP or NPN, 1 analogue output 4 ... 20 mA	2x PNP or NPN, 1 analogue output 0 ... 10 V	Silencer	Flow direction from right to left	
Code		R	U	VS	AG	A8	A4	AD...	2SA	2SV	S	Z/R	
Individual devices													
Soft start and exhaust valves MS-SV-C	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	■	-	■	■	-	-	■	■	ms6-sv
	9	-	-	■	■	-	■	■	-	-	■	■	ms9-sv
	12	-	-	-	-	-	-	-	-	-	-	-	-
Soft start and exhaust valves MS-SV-D	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	■	-	■	■	-	-	■	■	ms6-sv
	9	-	-	-	-	-	-	-	-	-	-	-	-
Soft start and exhaust valves MS-SV-E	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	■	-	■	■	-	-	■	■	ms6-sv
	9	-	-	-	-	-	-	-	-	-	-	-	-
Membrane air dryers MS-LDM1	4	-	■	-	-	-	-	-	-	-	-	■	ms4-ldm1
	6	-	■	-	-	-	-	-	-	-	-	■	ms6-ldm1
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Branching modules MS-FRM	4	-	-	■	■	■	■	■	-	-	-	■	ms4-frm
	6	-	-	■	■	-	■	■	-	-	-	■	ms6-frm
	9	-	-	■	■	-	■	■	-	-	-	■	ms9-frm
	12	-	-	■	-	-	-	-	-	-	-	-	ms12-frm
Distributor blocks MS-FRM-FRZ	4	-	-	-	-	-	-	-	-	-	-	■	ms4-frm
	6	-	-	-	-	-	-	-	-	-	-	■	ms6-frm
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Flow sensors SFAM	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	■	■	-	■	sfam-62
	9	-	-	-	-	-	-	-	■	■	-	■	sfam-90
	12	-	-	-	-	-	-	-	-	-	-	-	-

Filter regulators MS4/MS6-LFR, MS series

Peripherals overview

Filter regulator MS4/MS6-LFR



Note

Additional accessories:

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

Filter regulators MS4/MS6-LFR, MS series

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/ Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate-SET MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
	Connecting plate-SET MS4/6-AQ...	-	■	-	■	ms4-aq, ms6-aq
3	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
4	Mounting bracket MS4/6-WB	■	■	-	-	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	-	-	ms4-wbm
6	Mounting bracket MS4/6-WR	■	■	-	-	ms4-wr, ms6-wr
7	Hex nut MS4/6-WRS	■	■	■	■	ms4-wrs, ms6-wrs
8	Cover plate VS	■	■	■	■	24
9	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	24
10	Pressure gauge MA	■	■	■	■	50
11	Pressure sensor without display AD7 ... AD10	■	■	■	■	24
12	Connecting cable NEBU-M8...-LE3	■	■	■	■	50
13	Pressure sensor with display AD1 ... AD4	■	■	■	■	24
14	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	50
15	Fully automatic condensate drain, electrically actuated E2/E3/E4	■	■	■	■	24
16	Padlock LRVS-D	■	■	■	■	50
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

Filter regulators MS4/MS6-LFR, MS series

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Type codes

MS 6 - LFR - 1/2 - D7 - E R M - AS

Series	
MS	Standard service unit

Size	
4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function	
LFR	Filter regulator

Pneumatic connection	
MS4	
1/8	Female thread G1/8
1/4	Female thread G1/4
MS6	
1/4	Female thread G1/4
3/8	Female thread G3/8
1/2	Female thread G1/2

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

Grade of filtration	
C	5 µm
E	40 µm

Bowl guard	
R	Plastic bowl guard
U	Integrated as metal bowl

Condensate drain	
M	Manual rotary
V	Fully automatic

Security	
AS	Rotary knob with detent, lockable via accessories

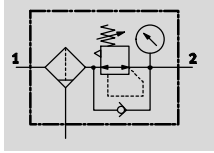
Additional variants can be ordered using the modular system → 24

- Pneumatic connection
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Rotary knob
- Security
- Type of mounting
- EU certification
- UL certification
- Flow direction

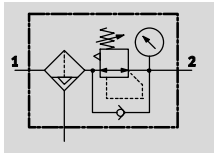
Filter regulators MS4/MS6-LFR, MS series

Technical data

Manual rotary condensate drain, with pressure gauge



Semi or fully automatic condensate drain, with pressure gauge



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

- - Flow rate
850 ... 7,200 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0.8 ... 20 bar
- - www.festo.com



- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Available with or without secondary venting
- High flow rate
- Directly-actuated diaphragm regulator
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Regulator lock for protecting the values against adjustment
- Two pressure gauge connections for different fitting options
- Return flow option for exhausting from output 2 to output 1 already integrated
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 49

General technical data		
Size	MS4	MS6
Pneumatic connection 1, 2		
Female thread	G $\frac{1}{8}$ or G $\frac{1}{4}$	G $\frac{1}{4}$, G $\frac{3}{8}$ or G $\frac{1}{2}$
Connecting plate AG...	G $\frac{1}{8}$, G $\frac{1}{4}$ or G $\frac{3}{8}$	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$ or G $\frac{3}{4}$
Connecting plate AQ...	NPT $\frac{1}{8}$, NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$	NPT $\frac{1}{4}$, NPT $\frac{3}{8}$, NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$
Constructional design	Filter regulator with/without pressure display	
Regulating function	Output pressure constant, with return flow action, with/without secondary venting	
Type of mounting	Via accessories In-line installation Front panel mounting	
Mounting position	Vertical $\pm 5^\circ$	
Grade of filtration [µm]	5 40	
Air purity class at the output	Compressed air in accordance with ISO 8573-1:2010 [6:4:4] (Grade of filtration 5 µm) Compressed air in accordance with ISO 8573-1:2010 [7:4:4] (Grade of filtration 40 µm)	
Bowl guard	Plastic bowl guard Integrated as metal bowl	
Condensate drain	Manual rotary Semi-automatic Fully automatic - Fully automatic, electrically actuated	
Regulator lock	Rotary knob with detent, lockable via accessories Rotary knob with integrated lock	

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

Filter regulators MS4/MS6-LFR, MS series

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Technical data

General technical data		
Size	MS4	MS6
Pressure regulation range	D5 [bar]	0.3 ... 4
	D6 [bar]	0.3 ... 7
	D7 [bar]	0.5 ... 12 (0.5 ... 10 with pressure sensor variant AD... or with UL certification)
	D8 [bar]	–
Max. hysteresis	[bar]	0.25
Pressure display	Via pressure sensor for displaying output pressure via LCD display and electrical output	
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output	
	Via pressure gauge for displaying output pressure	
	Via pressure gauge with red/green scale for displaying output pressure	
	G $\frac{1}{8}$ prepared	–
G $\frac{1}{4}$ prepared		
Max. condensate volume	[cm ³]	19 (with plastic bowl guard) 25 (with metal bowl)
		38

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 $\frac{1}{2}$
D5 – Pressure regulation range 0.3 ... 4 bar						
Grade of filtration	5 µm	900 ²⁾	1,800 ²⁾	2,000 ²⁾	5,500 ²⁾	6,900 ²⁾
	40 µm	1,100 ²⁾	1,900 ²⁾	2,200 ²⁾	6,000 ²⁾	7,200 ²⁾
D6 – Pressure regulation range 0.3 ... 7 bar						
Grade of filtration	5 µm	900	1,500	2,700	5,000	5,600
	40 µm	1,000	1,700	2,800	5,700	6,200
D7 – Pressure regulation range 0.5 ... 12 bar						
Grade of filtration	5 µm	850	1,200	2,200	3,500	4,000
	40 µm	900	1,500	2,500	4,000	4,500
D8 – Pressure regulation range 0.5 ... 16 bar						
Grade of filtration	5 µm	–	–	2,000	3,300	3,800
	40 µm	–	–	2,300	3,500	4,000

- 1) Measured at p₁ = 10 bar and p₂ = 6 bar, Δp = 1 bar
 2) Measured at p₁ = 10 bar and p₂ = 3 bar, Δp = 1 bar

Operating and environmental conditions								
Condensate drain	Manual rotary		Semi-automatic		Fully automatic		Fully automatic, electrical E2/E3/E4	
	M		H		V			
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS6	
Operating pressure	[bar]	0.8 ... 14 (0.8 ... 10) ¹⁾	0.8 ... 20 (0.8 ... 10) ¹⁾	1.5 ... 12 (1.5 ... 10) ¹⁾	1.5 ... 12 (1.5 ... 10) ¹⁾	2 ... 12 (2 ... 10) ¹⁾	2 ... 12 (2 ... 10) ¹⁾	0.8 ... 16 (0.8 ... 10) ¹⁾
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [-:4:-]		Compressed air in accordance with ISO 8573-1:2010 [-:4:-]		Compressed air in accordance with ISO 8573-1:2010 [7:4:-]		Compressed air in accordance with ISO 8573-1:2010 [-:4:-]	
	Inert gases							
Ambient temperature	[°C]	-10 ... +60 (0 ... +50) ²⁾	+5 ... +60 (+5 ... +50) ²⁾	+5 ... +60 (+5 ... +50) ²⁾	+5 ... +60 (+5 ... +50) ²⁾	+5 ... +60 (+5 ... +50) ²⁾	+1 ... +60 (+1 ... +50) ²⁾	
Temperature of medium	[°C]	-10 ... +60 (0 ... +50) ²⁾	+5 ... +60 (+5 ... +50) ²⁾	+5 ... +60 (+5 ... +50) ²⁾	+5 ... +60 (+5 ... +50) ²⁾	+5 ... +60 (+5 ... +50) ²⁾	+1 ... +60 (+1 ... +50) ²⁾	
Storage temperature	[°C]	-10 ... +60	-10 ... +60	-10 ... +60	-10 ... +60	-10 ... +60	+1 ... +60	
Corrosion resistance class CRC ³⁾		2						
UL certification		cULus recognized (OL)						

- 1) Value in brackets applies to MS4/MS6-LFR with UL certification.
 2) Value in brackets applies to MS4/MS6-LFR with pressure sensor AD...
 3) Corrosion resistance class CRC 2 to Festo standard FN 940070
 Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Filter regulators MS4/MS6-LFR, MS series

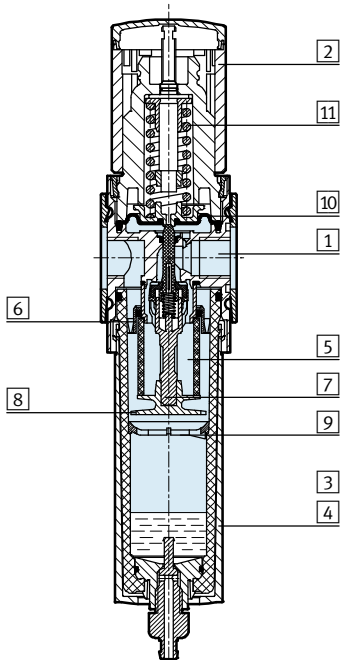
Technical data

ATEX	
EU certification	EX4
ATEX category gas	II 2G
Ex-ignition protection type gas	c T6 X
ATEX category dust	II 2D
EX-ignition protection type dust	c 60 °C X
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C (manual rotary condensate drain M)
	+5 °C ≤ Ta ≤ +60 °C (semi-automatic/fully automatic condensate drain H/V)
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Weight [g]				
Size	MS4		MS6	
Rotary knob	Without integrated lock E11	With integrated lock E11	Without integrated lock E11	With integrated lock E11
Filter regulator with plastic bowl guard R	275	400	875	1,145
Filter regulator with metal bowl U	475	600	1,087	1,627
Filter regulator with metal bowl U and fully automatic condensate drain, electrically actuated E2/E3/E4	-	-	1,800	2,070

Materials

Sectional view



Filter regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	PA/POM
	Rotary knob with integrated lock E11	Aluminium
3	Plastic bowl guard	PC
4	Metal bowl	Wrought aluminium alloy, die-cast aluminium
	Inspection window	PA
5	Filter element	PE
6	Spin disc	POM
7	Filter holder	POM
8	Separating plate	POM
9	Stabilising disc	POM
10	Diaphragm	NBR
11	Spring	Steel
-	Seals	NBR
Note on materials		RoHS-compliant (not with variant E2, E3 or E4)
		Free of copper and PTFE only with cover plate VS

Filter regulators MS4/MS6-LFR, MS series

Technical data

Standard flow rate q_n as a function of output pressure p_2

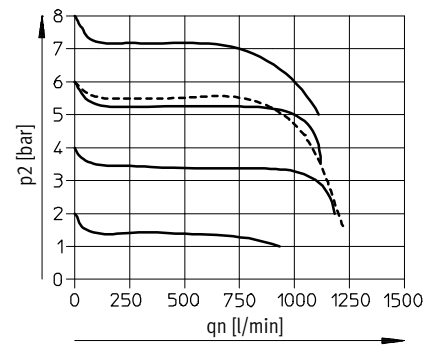
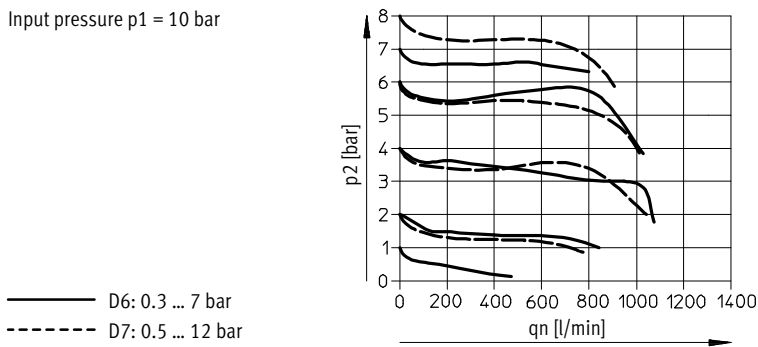
Pressure regulation range D6 or D7

Grade of filtration 5 μm

Grade of filtration 40 μm

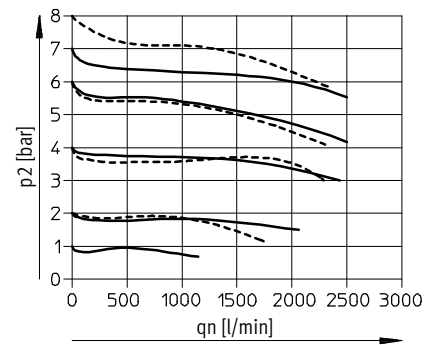
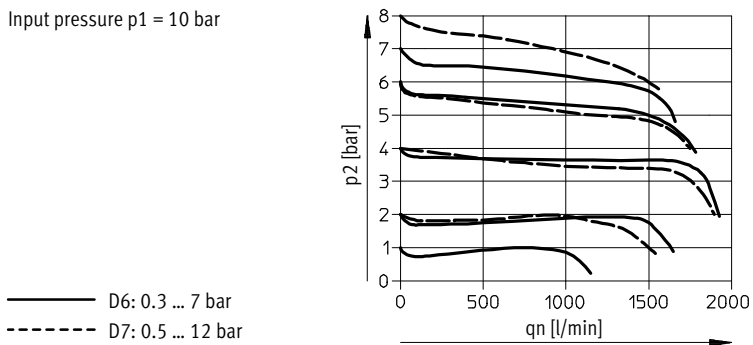
MS4-LFR-1/8

Input pressure $p_1 = 10$ bar



MS4-LFR-1/4

Input pressure $p_1 = 10$ bar



Filter regulators MS4/MS6-LFR, MS series

Technical data

Standard flow rate q_n as a function of output pressure p_2

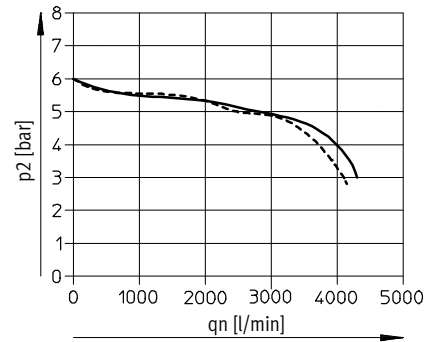
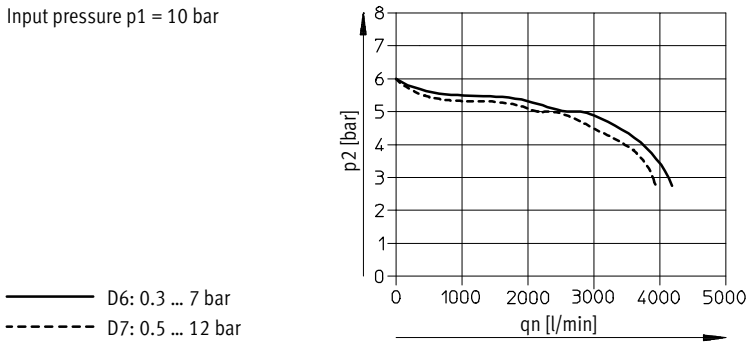
Pressure regulation range D6 or D7

Grade of filtration 5 μm

Grade of filtration 40 μm

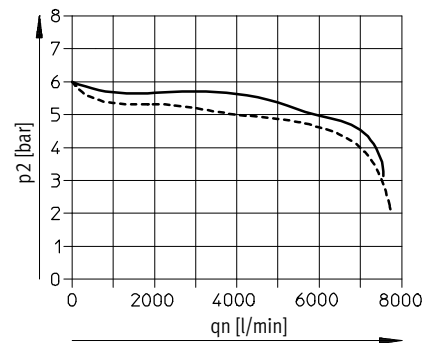
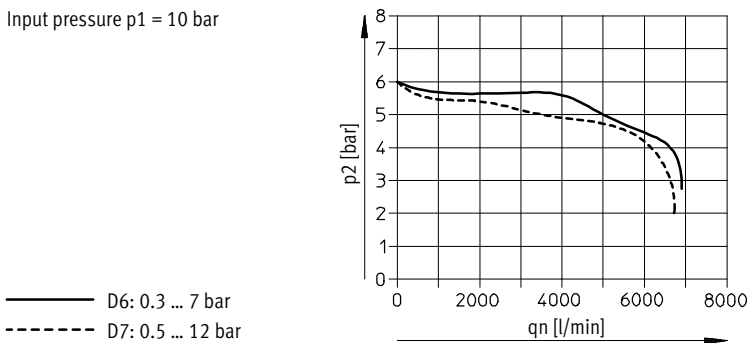
MS6-LFR-1/4

Input pressure $p_1 = 10$ bar



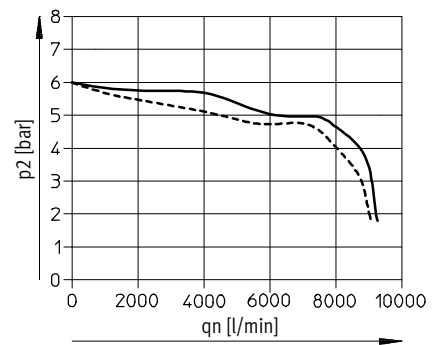
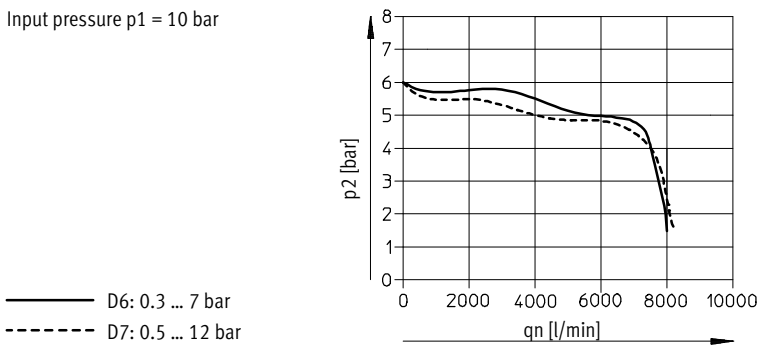
MS6-LFR-3/8

Input pressure $p_1 = 10$ bar



MS6-LFR-1/2

Input pressure $p_1 = 10$ bar



Filter regulators MS4/MS6-LFR, MS series

Technical data



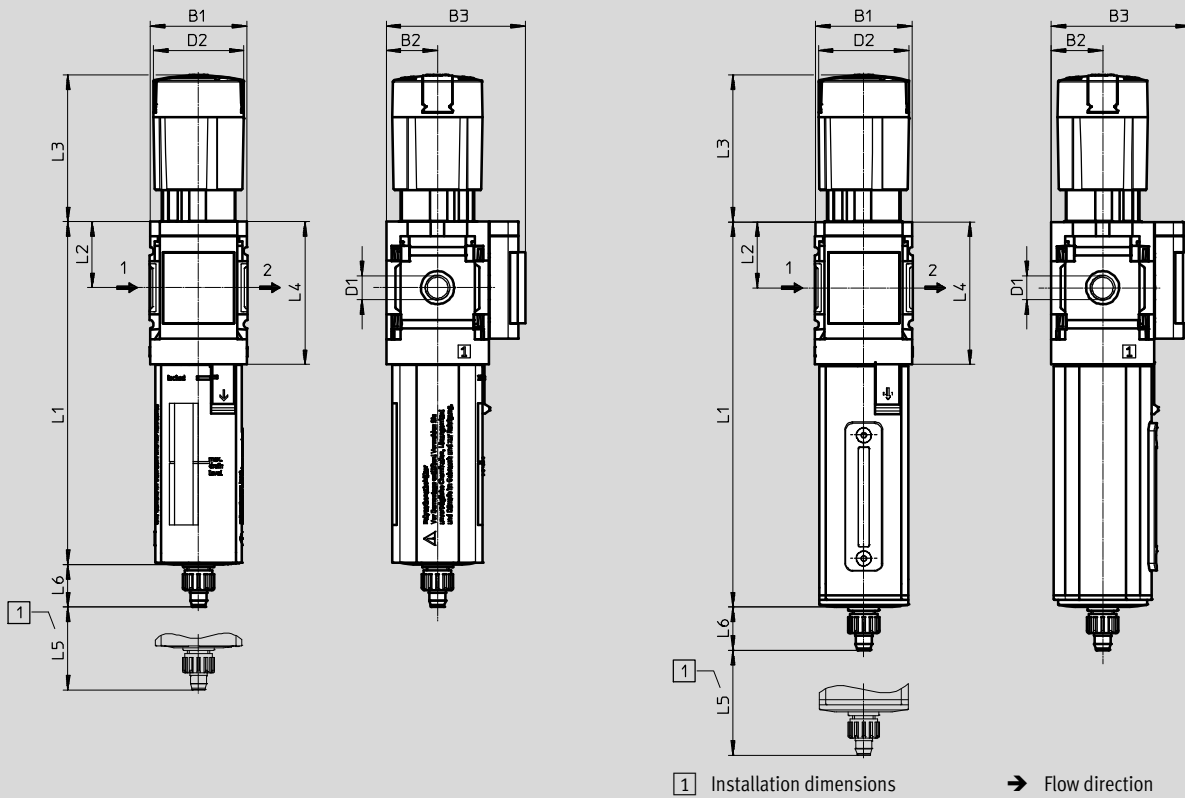
Dimensions – Basic version MS4-LFR

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale, manual rotary condensate drain, rotary knob with detent, lockable via accessories

With plastic bowl guard R

With metal bowl U



Type	B1	B2	B3	D1	D2	L1		L2	L3	L4	L5	L6
						Plastic bowl guard	Metal bowl					
MS4-LFR-1/8	40	21	57	G1/8	37.2	140.6	158	27	60.2	58.5	25	17.7
MS4-LFR-1/4				G1/4								

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

Filter regulators MS4/MS6-LFR, MS series

Technical data



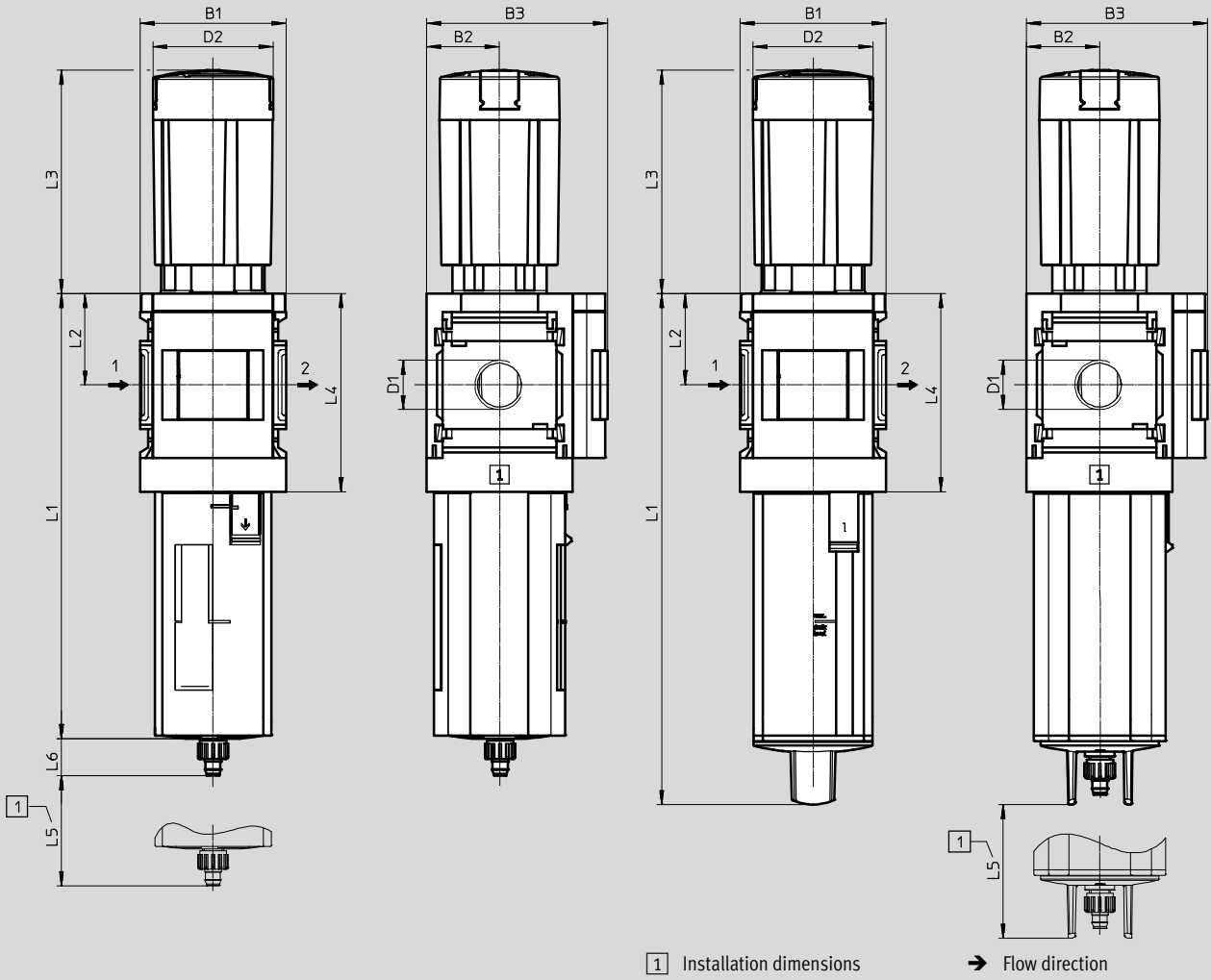
Dimensions – Basic version MS6-LFR

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale, manual rotary condensate drain, rotary knob with detent, lockable via accessories

With plastic bowl guard R

With metal bowl U



Type	B1	B2	B3	D1	D2	L1		L2	L3	L4	L5	L6
						Plastic bowl guard	Metal bowl					
MS6-LFR-1/4	62	31	77	G1/4	51.2	190	218	39	95.1	85	68	15.8
MS6-LFR-3/8				G3/8								
MS6-LFR-1/2				G1/2								

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

Filter regulators MS4/MS6-LFR, MS series

Technical data

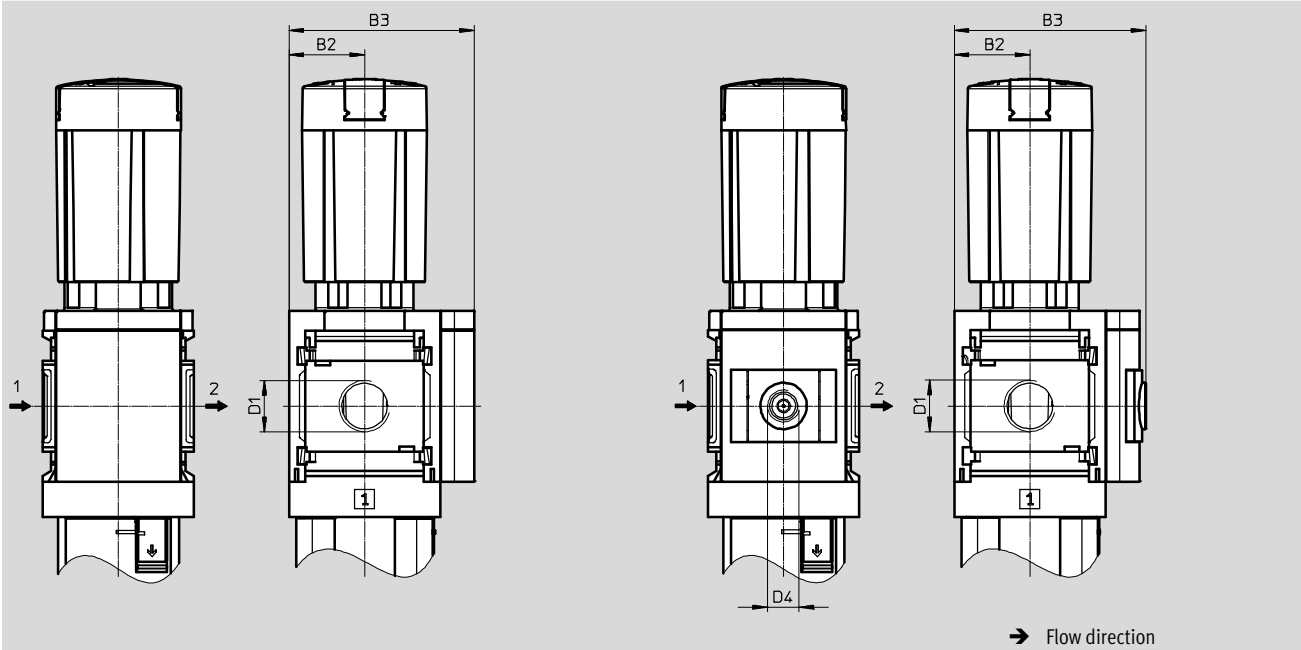
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Cover plate VS

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



Type	B2	B3	D1	D4
MS4-LFR-1/8-...-VS	21	54	G1/8	-
MS4-LFR-1/4-...-VS			G1/4	
MS4-LFR-1/8-...-A8	21	58.5	G1/8	G1/8
MS4-LFR-1/4-...-A8			G1/4	
MS4-LFR-1/8-...-A4	21	58.5	G1/8	G1/4
MS4-LFR-1/4-...-A4			G1/4	
MS6-LFR-1/4-...-VS	31	76	G1/4	-
MS6-LFR-3/8-...-VS			G3/8	
MS6-LFR-1/2-...-VS			G1/2	
MS6-LFR-1/4-...-A4	31	78.5	G1/4	G1/4
MS6-LFR-3/8-...-A4			G3/8	
MS6-LFR-1/2-...-A4			G1/2	

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

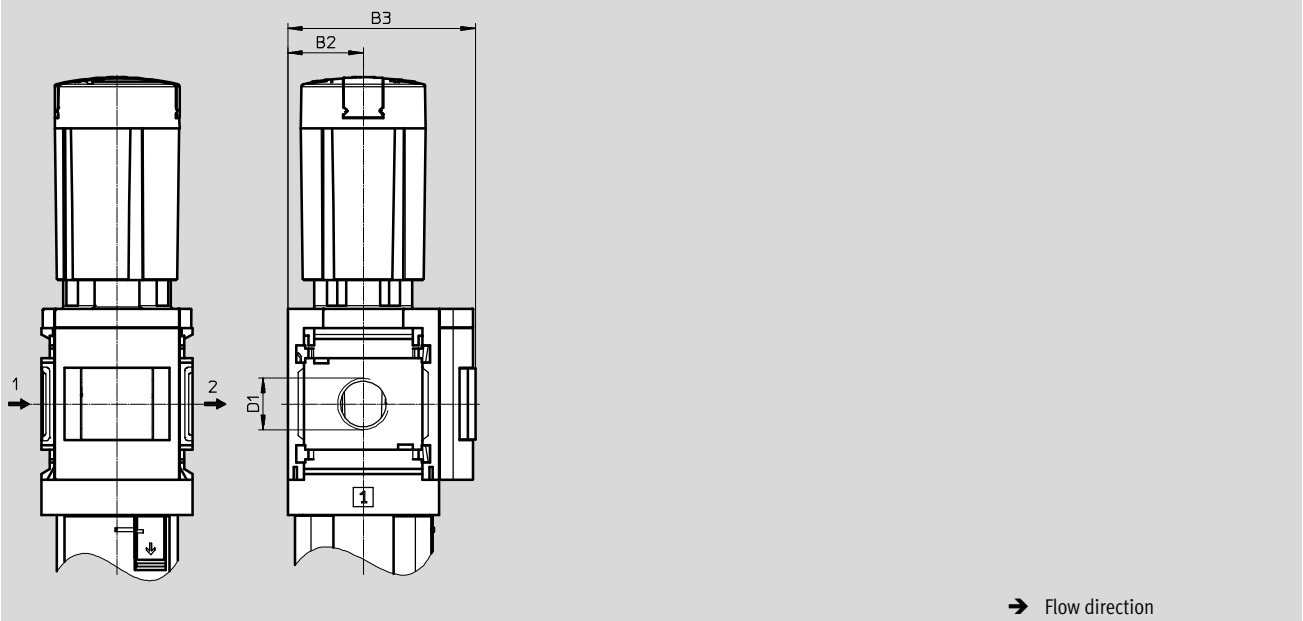
Filter regulators MS4/MS6-LFR, MS series

Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge with red/green scale RG



Type	B2	B3	D1
MS4-LFR-1/8-...-RG	21	58.5	G1/8
MS4-LFR-1/4-...-RG			G1/4
MS6-LFR-1/4-...-RG	31	78.5	G1/4
MS6-LFR-3/8-...-RG			G3/8
MS6-LFR-1/2-...-RG			G1/2

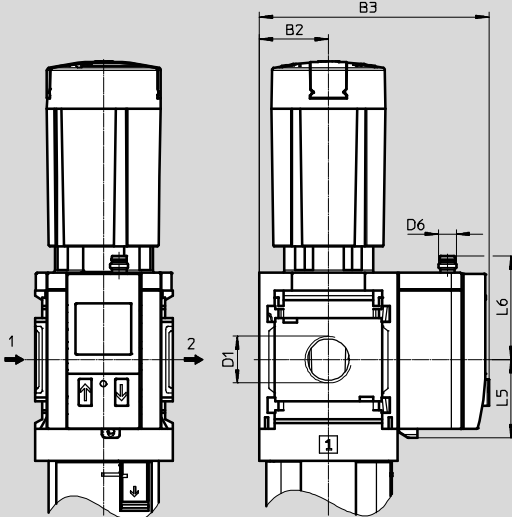
• || - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Filter regulators MS4/MS6-LFR, MS series

Technical data

FESTO

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



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

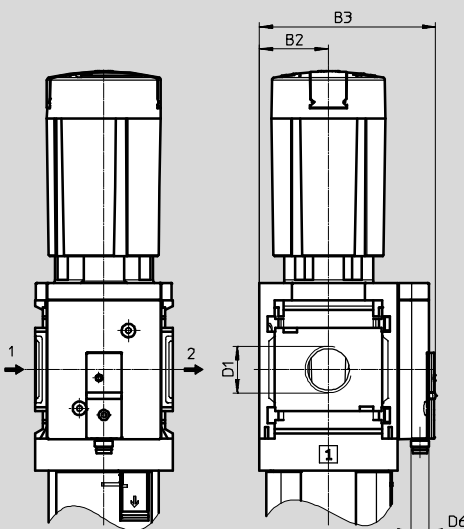
Variant AD2:
SDE1-D10-G2-MS-L-N1-M8 with 3-pin plug M8x1, 1 switching output NPN

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

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

→ Flow direction

Pressure sensor without LCD display (operational status indicator only) AD7 ... AD10 Technical data → Internet: sde5



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

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

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

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

→ Flow direction

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

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

Filter regulators MS4/MS6-LFR, MS series

Technical data

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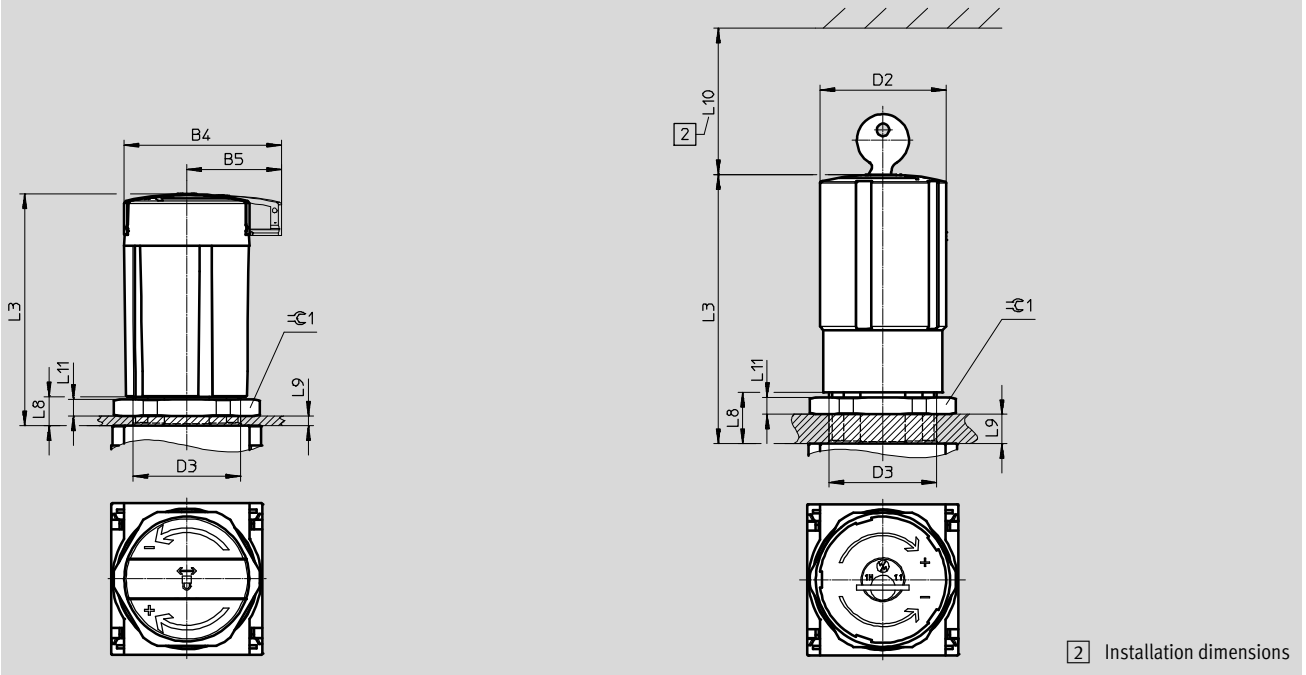
Dimensions – Rotary knob

Download CAD data → www.festo.com

For installation into control panel or attaching with hex nut MS4/6-WRS (not included in the scope of delivery)

Rotary knob with detent, lockable via accessories AS

Rotary knob with integrated lock E11



Long rotary knob with detent, lockable via accessories LD-AS



Type	B4	B5	D2	D3	L3	L8	L9	L10	L11	±C 1
MS4-LFR...-AS	48.6	30	37.2	M30x1.5	60.2	13	6	-	6	36
MS4-LFR...-E11	-	-			76			60		
MS4-LFR...-LD-AS	48.6	30	37.2	-	60	-	-	85.7	-	-
MS6-LFR...-AS	64.4	38.8	51.2	M44x1	95.1	12	5	-	7	55
MS6-LFR...-E11	-	-			110			60		
MS6-LFR...-LD-AS	64.4	38.8			95.5			148.5		

Filter regulators MS4/MS6-LFR, MS series

Technical data

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

Manual rotary M

MS4-...-R/U-M
MS6-...-R-M

MS6-...-U-M

Barbed connector for plastic tubing PUN(H)-8x1,25

Semi-automatic H

MS4-...-R/U-H
MS6-...-R-H

MS6-...-U-H

Push-in connector for plastic tubing PUN-6/PAN-6

Fully automatic V

MS4-...-R/U-V
MS6-...-R-V

MS6-...-U-V

Barbed connector for plastic tubing PUN(H)-8x1,25

Type	D6 Ø	L6
Plastic bowl guard R		
MS4-LFR-...-M	5.6	17.7
MS6-LFR-...-M		15.8
Metal bowl U		
MS4-LFR-...-M	5.6	17.7
MS6-LFR-...-M		–

Type	D6 Ø	L6
Plastic bowl guard R		
MS4-LFR-...-H	6.2	22.1
MS6-LFR-...-H		20.4
Metal bowl U		
MS4-LFR-...-H	6.2	22.1
MS6-LFR-...-H		–

Type	D6 Ø	L6
Plastic bowl guard R		
MS4-LFR-...-V	5.6	20.4
MS6-LFR-...-V		18.5
Metal bowl U		
MS4-LFR-...-V	5.6	20.4
MS6-LFR-...-V		–

Fully automatic, electrically actuated E2/E3/E4 Technical data → Internet: pwea

Condensate drain PWEA:

- 2 Electrical connection: Screw terminal PG9
- 3 Connection 360° rotatable for plastic tubing PUN-H-12x2

Type	B6	B7	B8	B9	L12
MS6-LFR-...-E2/E3/E4	72	140	108	15	174.5

Filter regulators MS4/MS6-LFR, MS series

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Technical data

★ Core product range

Ordering data						
Size	Connection	Condensate drain	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Pressure regulation range 0.3 ... 7 bar, plastic bowl guard, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with detent, lockable via accessories						
MS4	G1/4	Manual rotary	★ 529144	MS4-LFR-1/4-D6-CRM-AS	★ 529148	MS4-LFR-1/4-D6-ERM-AS
		Fully automatic	★ 529146	MS4-LFR-1/4-D6-CRV-AS	★ 529150	MS4-LFR-1/4-D6-ERV-AS
MS6	G1/2	Manual rotary	★ 529176	MS6-LFR-1/2-D6-CRM-AS	★ 529180	MS6-LFR-1/2-D6-ERM-AS
		Fully automatic	★ 529178	MS6-LFR-1/2-D6-CRV-AS	★ 529182	MS6-LFR-1/2-D6-ERV-AS
Pressure regulation range 0.5 ... 12 bar, plastic bowl guard, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with detent, lockable via accessories						
MS4	G1/4	Manual rotary	★ 529152	MS4-LFR-1/4-D7-CRM-AS	★ 529156	MS4-LFR-1/4-D7-ERM-AS
		Fully automatic	★ 529154	MS4-LFR-1/4-D7-CRV-AS	★ 529158	MS4-LFR-1/4-D7-ERV-AS
MS6	G1/2	Manual rotary	★ 529184	MS6-LFR-1/2-D7-CRM-AS	★ 529188	MS6-LFR-1/2-D7-ERM-AS
		Fully automatic	★ 529186	MS6-LFR-1/2-D7-CRV-AS	★ 529190	MS6-LFR-1/2-D7-ERV-AS
Pressure regulation range 0.5 ... 12 bar, integrated as metal bowl, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with detent, lockable via accessories						
MS4	G1/4	Manual rotary	-	-	★ 535724	MS4-LFR-1/4-D7-EUM-AS
		Fully automatic	★ 535720	MS4-LFR-1/4-D7-CUV-AS	★ 535722	MS4-LFR-1/4-D7-EUV-AS
MS6	G1/2	Manual rotary	★ 530338	MS6-LFR-1/2-D7-CUM-AS	★ 529192	MS6-LFR-1/2-D7-EUM-AS
		Fully automatic	★ 530340	MS6-LFR-1/2-D7-CUV-AS	★ 529194	MS6-LFR-1/2-D7-EUV-AS

Ordering data						
Size	Connection	Condensate drain	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Pressure regulation range 0.3 ... 7 bar, plastic bowl guard, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with detent, lockable via accessories						
MS4	G1/8	Manual rotary	529160	MS4-LFR-1/8-D6-CRM-AS	529164	MS4-LFR-1/8-D6-ERM-AS
		Fully automatic	529162	MS4-LFR-1/8-D6-CRV-AS	529166	MS4-LFR-1/8-D6-ERV-AS
MS6	G1/4	Manual rotary	529196	MS6-LFR-1/4-D6-CRM-AS	529200	MS6-LFR-1/4-D6-ERM-AS
		Fully automatic	-	-	529202	MS6-LFR-1/4-D6-ERV-AS
	G3/8	Manual rotary	529216	MS6-LFR-3/8-D6-CRM-AS	529220	MS6-LFR-3/8-D6-ERM-AS
		Fully automatic	529218	MS6-LFR-3/8-D6-CRV-AS	529222	MS6-LFR-3/8-D6-ERV-AS
Pressure regulation range 0.5 ... 12 bar, plastic bowl guard, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with detent, lockable via accessories						
MS4	G1/8	Manual rotary	529168	MS4-LFR-1/8-D7-CRM-AS	529172	MS4-LFR-1/8-D7-ERM-AS
		Fully automatic	529170	MS4-LFR-1/8-D7-CRV-AS	529174	MS4-LFR-1/8-D7-ERV-AS
MS6	G1/4	Manual rotary	529204	MS6-LFR-1/4-D7-CRM-AS	529208	MS6-LFR-1/4-D7-ERM-AS
		Fully automatic	529206	MS6-LFR-1/4-D7-CRV-AS	529210	MS6-LFR-1/4-D7-ERV-AS
	G3/8	Manual rotary	529224	MS6-LFR-3/8-D7-CRM-AS	529228	MS6-LFR-3/8-D7-ERM-AS
		Fully automatic	529226	MS6-LFR-3/8-D7-CRV-AS	529230	MS6-LFR-3/8-D7-ERV-AS
Pressure regulation range 0.5 ... 12 bar, integrated as metal bowl, integrated MS pressure gauge with standard scale, display unit [bar], rotary knob with detent, lockable via accessories						
MS6	G3/8	Manual rotary	-	-	529232	MS6-LFR-3/8-D7-EUM-AS
		Fully automatic	530348	MS6-LFR-3/8-D7-CUV-AS	529234	MS6-LFR-3/8-D7-EUV-AS

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products



Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	526489	526490				
	Series	Standard			MS	MS	
	Size	4	6		...		
	Function	Filter regulator			-LFR	-LFR	
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	1	- $\frac{1}{8}$		
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	1	★- $\frac{1}{4}$		
		–	Female thread G $\frac{3}{8}$	1	- $\frac{3}{8}$		
		–	Female thread G $\frac{1}{2}$	1	★- $\frac{1}{2}$		
		Connecting plate G $\frac{1}{8}$	–		-AGA		
		Connecting plate G $\frac{1}{4}$	Connecting plate G $\frac{1}{4}$		★-AGB		
		Connecting plate G $\frac{3}{8}$	Connecting plate G $\frac{3}{8}$		-AGC		
		–	Connecting plate G $\frac{1}{2}$		★-AGD		
		–	Connecting plate G $\frac{3}{4}$		-AGE		
		Connecting plate NPT $\frac{1}{8}$	–	1	-AQK		
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	1	-AQN		
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	1	-AQP		
		–	Connecting plate NPT $\frac{1}{2}$	1	-AQR		
		–	Connecting plate NPT $\frac{3}{4}$	1	-AQS		
	Pressure regulation range	0.3 ... 4 bar			★-D5		
		0.3 ... 7 bar			★-D6		
		0.5 ... 12 bar			★-D7		
		–	0.5 ... 16 bar	1	-D8		
	Grade of filtration	40 μ m			★-E		
		5 μ m			★-C		
	Bowl	Plastic bowl with plastic bowl guard			★-R		
		Metal bowl			-U		
	Condensate drain	Manual			★-M		
		Semi-automatic (P1 max. 12 bar)		2	-H		
		Fully automatic (P1 max. 12 bar)		2	★-V		
		External, fully automatic, electrical	–	110 V AC, terminals	1 3	-E2	
			–	230 V AC, terminals	1 3	-E3	
	–		24 V DC, terminals	1 3	-E4		

1 $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, AQK, AQN, AQP, AQR, AQS, D8, E2, E3, E4, AD1 ... AD4, AD7 ... AD10, **3** E2, E3, E4 Only with metal bowl U

E11, WPM

Not with EU certification EX4

2 H, V Not with pressure regulation range D8

M Mandatory data

O Options

Transfer order code

MS - **LFR** - - - - -

Festo core product range

★ Ready for dispatch from the Festo factory in 24 hours

★ Ready for dispatch in 5 days maximum from stock

Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products

Ordering table		40	62	Condi- tions	Code	Enter code	
[O] Pressure gauge alternatives	Cover plate				★ -VS		
	Adapter plate for EN pressure gauge 1/8, without pressure gauge	-			-A8		
	Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4		
	Integrated pressure gauge, red-green scale			[4]	-RG		
	Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin			[1] [5]	-AD1		
	Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin			[1] [5]	-AD2		
	Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			[1] [5]	-AD3		
	Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			[1] [5]	-AD4		
	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact			[1] [5]	-AD7		
	Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact			[1] [5]	-AD8		
	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact			[1] [5]	-AD9		
	Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact			[1] [5]	-AD10		
	Alternative pressure gauge scale	psi			[6]	-PSI	
		MPa			[6]	-MPA	
Secondary venting	Without secondary venting				-OS		
Rotary knob	Long rotary knob			[7]	-LD		
[M] Security	Lockable via accessories				★ -AS		
	With integrated lock			[1]	-E11		
[O] Type of mounting	Mounting bracket with knurled nut for regulator head			[8]	★ -WR		
	Mounting bracket standard design			[9]	-WP		
	Mounting bracket for attaching the service units			[1] [9]	-WPM		
	Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required				★ -WB		
	Mounting bracket centrally at rear (wall mounting top), connecting plates not required	-			-WBM		
EU certification	II 2GD to EU Explosion Protection Directive (ATEX)				-EX4		
UL certification	cULus, ordinary location for Canada and USA				-UL1		
Flow direction	Flow direction from right to left				-Z		

[4] **RG** Alternative pressure gauge scale PSI serves only as an auxiliary scale

[5] **AD1 ... AD4, AD7 ... AD10**
Measuring range max. 10 bar
Not with pressure regulation range D8

[6] **PSI, MPA** Not with pressure gauge alternatives VS, A8, A4, AD1 ... AD4, AD7 ... AD10

[7] **LD** Not with security E11

[8] **WR** Not with long rotary knob LD

[9] **WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS

[M] Mandatory data

[O] Options

Transfer order code

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

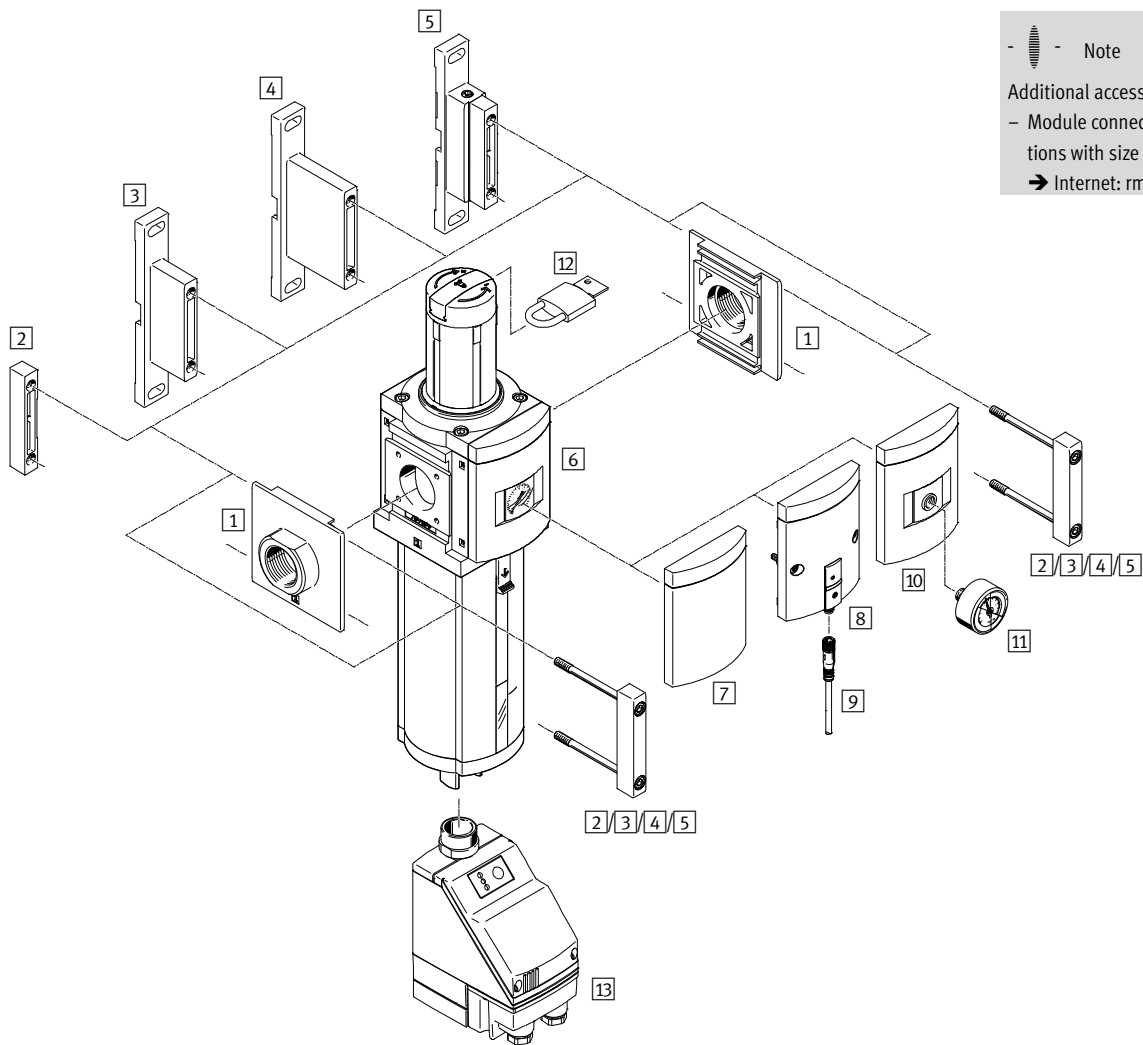
Festo core product range


★ Ready for dispatch from the Festo factory in 24 hours

☆ Ready for dispatch in 5 days maximum from stock

Filter regulators MS9-LFR, MS series

Peripherals overview



-  - Note

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

Filter regulators MS9-LFR, MS series

Peripherals overview

Mounting attachments and accessories					
		Individual unit		Combination Module without connect- ing thread, without connecting plate G/NG	→ Page/ Internet
		With female thread 3/4/1/N3/4/N1	With connecting plate AG.../AQ... Without EU certification EX4		
1	Connecting plate-SET MS9-AG...	-	■	■	ms9-ag
	Connecting plate-SET MS9-AQ...	-	■	-	ms9-aq
2	Module connector MS9-MV	-	-	■	ms9-mv
3	Mounting bracket MS9-WP	■	■	■	ms9-wp
4	Mounting bracket MS9-WPB	■	■	■	ms9-wp
5	Mounting bracket MS9-WPM	■	■	-	ms9-wp
6	MS pressure gauge AG	■	■	■	38
7	Cover plate VS	■	■	■	38
8	Pressure sensor without display AD7 ... AD10	■	■	-	38
9	Connecting cable NEBU-M8...-LE3	■	■	-	50
10	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	38
11	Pressure gauge MA	■	■	■	50
12	Padlock LRVS-D	■	■	■	50
13	Condensate drain, fully automatic, electrically actuated E2/E3/E4	■	■	-	38

Filter regulators MS9-LFR, MS series

Type codes

FESTO

		MS	9	-	LFR	-	G	-	D6	-	E	U	M	-	DI	-	AG	-	BAR	-	AS
Series																					
MS	Standard service unit																				
Size																					
9	Grid dimension 90 mm																				
Service function																					
LFR	Filter regulator																				
Pneumatic connection																					
G	Module without connecting thread, without connecting plate																				
NG	Module without connecting thread, without connecting plate (inch)																				
Pressure regulation range/operation mode																					
D6	0.5 ... 7 bar, manually operated																				
D7	0.5 ... 12 bar, manually operated																				
Grade of filtration																					
C	5 µm																				
E	40 µm																				
Bowl guard																					
U	Integrated as metal bowl																				
Condensate drain																					
M	Manual rotary																				
V	Fully automatic																				
Regulator type																					
	Pilot																				
DI	Directly actuated																				
Pressure gauge																					
AG	MS pressure gauge																				
Pressure gauge scale																					
BAR	bar																				
PSI	psi																				
Security																					
AS	Rotary knob with detent, can be locked using accessories																				

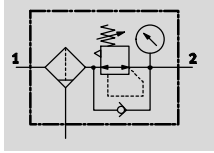
Additional variants can be ordered using the modular system → 38

- Pneumatic connection
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Security lock
- Type of mounting
- EU certification
- UL certification
- Flow direction

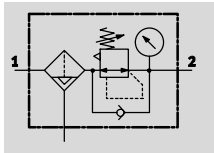
Filter regulators MS9-LFR, MS series

Technical data

Manual rotary condensate drain, with pressure gauge



Semi or fully automatic condensate drain, with pressure gauge



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

- - Flow rate
6,000 ... 23,000 l/min
- - Temperature range
-10 ... +60 °C
- - Supply pressure
1 ... 20 bar
- - www.festo.com



- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Piloted or directly actuated filter-diaphragm regulator
- High flow rates
- Available with or without secondary venting
- Four pressure regulation ranges: 0.5 ... 4 bar, 0.5 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Pressure gauge connection for different fitting options
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- Actuator lock to protect set values against adjustment
- Optional pressure sensor
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 49
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data		
Pneumatic connection 1, 2		
	Female thread	G3/4, G1, NPT3/4 or NPT1
	Connecting plate AG...	G1/2, G3/4, G1, G1 1/4 or G1 1/2
	Connecting plate AQ...	NPT1/2, NPT3/4, NPT1, NPT1 1/4 or NPT1 1/2
	Module without connecting thread/plate G/NG	-
Design		
	Piloted	Output pressure constant, with return flow action, with primary pressure compensation, with secondary venting
	Directly actuated	Output pressure constant, with return flow action, with/without secondary venting
Type of mounting		
		Via accessories
		In-line installation
Mounting position		
		Vertical ±5°
Grade of filtration [µm]		
		5 (air purity class at the output: compressed air in accordance with ISO 8573-1:2010 [6:4:4])
		40 (air purity class at the output: compressed air in accordance with ISO 8573-1:2010 [7:4:4])
Bowl guard		
		Integrated as metal bowl
Condensate drain		
		Manual rotary
		Semi-automatic
		Fully automatic
		Fully automatic, electrically actuated
Security		
		Rotary knob with detent, lockable via accessories
		Rotary knob with integrated lock
Pressure regulation range/operation mode		
	D5 [bar]	0.5 ... 4, manually operated
	D6 [bar]	0.5 ... 7, manually operated
	D7 [bar]	0.5 ... 12, manually operated (0.5 ... 10 with pressure sensor variant AD...)
	D8 [bar]	0.5 ... 16, manually operated (0.5 ... 10 with pressure sensor variant AD...)

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

Filter regulators MS9-LFR, MS series

FESTO

Technical data

General technical data	
Max. pressure hysteresis [bar]	0.4
Pressure display	Via pressure sensor for displaying output pressure via operational status indicator and electrical output
	Via pressure gauge for displaying output pressure
	Via pressure gauge with red/green scale for displaying output pressure
	G $\frac{3}{4}$ prepared
Max. condensate volume [ml]	220

Standard nominal flow rate $q_{nN^{1)2)}$ [l/min]					
Design	Piloted filter-diaphragm regulator			Directly actuated filter-diaphragm regulator DI	
Pneumatic connection	G $\frac{3}{4}$ /NPT $\frac{3}{4}$	G1/NPT1	G $\frac{3}{4}$ /NPT $\frac{3}{4}$	G1/NPT1	
D5 – Pressure regulation range 0.5 ... 4 bar					
Grade of filtration	5 μ m	17,000 ³⁾	20,000 ³⁾	16,000 ³⁾	18,000 ³⁾
	40 μ m	18,000 ³⁾	23,000 ³⁾	16,000 ³⁾	20,000 ³⁾
D6 – Pressure regulation range 0.5 ... 7 bar					
Grade of filtration	5 μ m	15,000	18,000	12,000	10,000
	40 μ m	16,000	20,000	12,000	10,000
D7 – Pressure regulation range 0.5 ... 12 bar					
Grade of filtration	5 μ m	15,000	18,000	–	–
	40 μ m	16,000	20,000	–	–
D8 – Pressure regulation range 0.5 ... 16 bar					
Grade of filtration	5 μ m	15,000	18,000	–	–
	40 μ m	16,000	20,000	–	–

1) All values $\pm 15\%$

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

3) Measured at $p_1 = 10$ bar and $p_2 = 4$ bar, $\Delta p = 1$ bar

Operating and environmental conditions				
Condensate drain	Manual rotary	Semi-automatic	Fully automatic	Fully automatic, electrically actuated
	M	H	V	E2/E3/E4
Operating pressure [bar]	1 ... 20	1.5 ... 12	2 ... 12	1 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [-:4:-]	Compressed air in accordance with ISO 8573-1:2010 [-:4:-]	Compressed air in accordance with ISO 8573-1:2010 [7:4:-]	Compressed air in accordance with ISO 8573-1:2010 [-:4:-]
Ambient temperature [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Ambient temperature with pressure sensor AD [°C]	0 ... +50	+5 ... +50	+5 ... +50	+1 ... +50
Temperature of medium [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Temperature of medium with pressure sensor AD [°C]	0 ... +50	+5 ... +50	+5 ... +50	+1 ... +50
Storage temperature [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Corrosion resistance class CRC ¹⁾	2			
Certification (variant UL1)	cULus recognized (OL)			

1) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

ATEX	
EU certification	EX4
ATEX category gas	II 2G
Ex-ignition protection type gas	c T6 X
ATEX category dust	II 2D
EX-ignition protection type dust	c T60 °C X
ATEX ambient temperature	-10 °C \leq Ta \leq +60 °C (manual rotary condensate drain M)
	+5 °C \leq Ta \leq +60 °C (semi-automatic/fully automatic condensate drain H/V)
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Filter regulators MS9-LFR, MS series

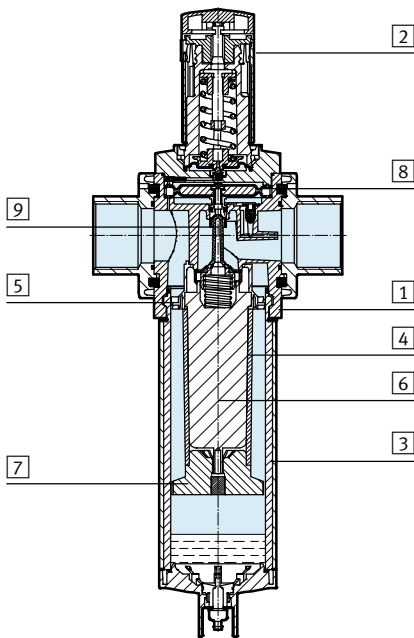
Technical data



Weight [g]		
Rotary knob	Without integrated lock E11	With integrated lock E11
Filter regulator with metal bowl U	2,400	2,700
Filter regulator with metal bowl U and fully automatic condensate drain, electrically actuated E2/E3/E4	2,800	3,100

Materials

Sectional view

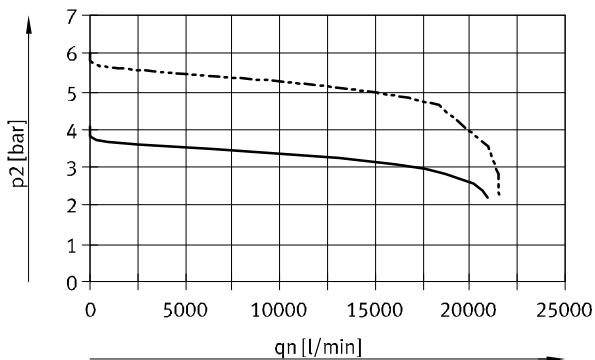


Filter regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	PA
	Rotary knob with integrated lock E11	Aluminium
3	Bowl	Wrought aluminium alloy
	Inspection window	PA
4	Filter element	PE
5	Spin disc	POM
6	Filter holder	POM
7	Separating plate	POM
8	Diaphragm	NBR
9	Valve stem	Wrought aluminium alloy, NBR, POM
-	Cover	PA reinforced
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
-	Seals	NBR
Note on materials		RoHS-compliant (not with variant E2, E3 or E4)

Standard flow rate q_n as a function of output pressure p_2 at operating pressure $p_1 = 10$ bar

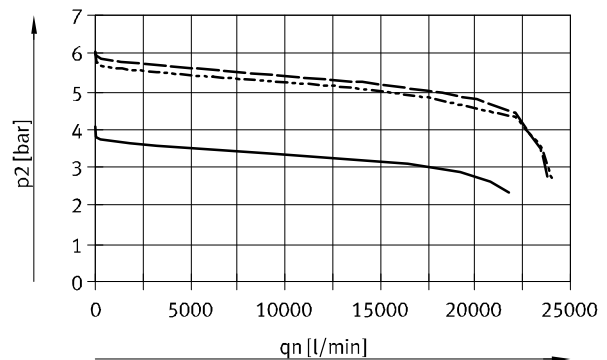
Piloted filter-diaphragm regulator

Grade of filtration 5 μm , pneumatic connection G $\frac{3}{4}$ /NPT $\frac{3}{4}$



— MS9-LFR-...-D5
 - - - MS9-LFR-...-D6/D7/D8

Grade of filtration 40 μm , pneumatic connection G $\frac{3}{4}$ /NPT $\frac{3}{4}$



— MS9-LFR-...-D5
 - - - MS9-LFR-...-D6/D8
 - · - MS9-LFR-...-D7

Filter regulators MS9-LFR, MS series

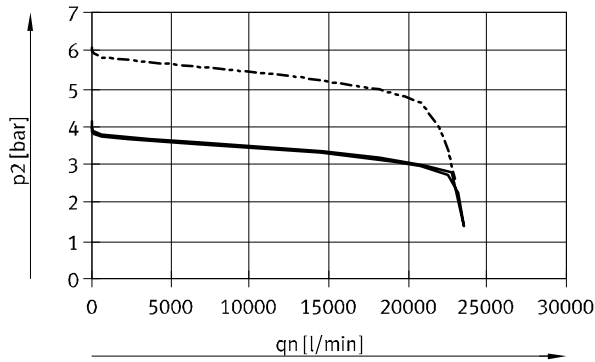
Technical data

FESTO

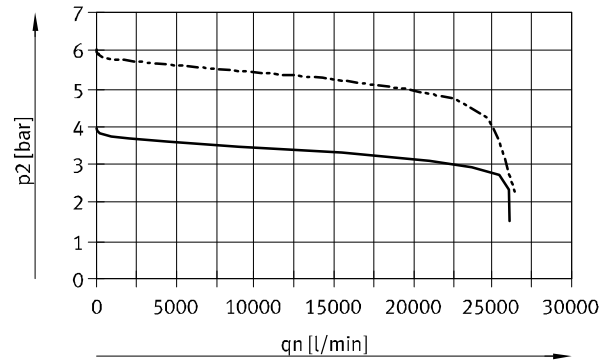
Standard flow rate q_n as a function of output pressure p_2 at operating pressure $p_1 = 10$ bar

Piloted filter-diaphragm regulator

Grade of filtration 5 μm , pneumatic connection G1/NPT1



Grade of filtration 40 μm , pneumatic connection G1/NPT1

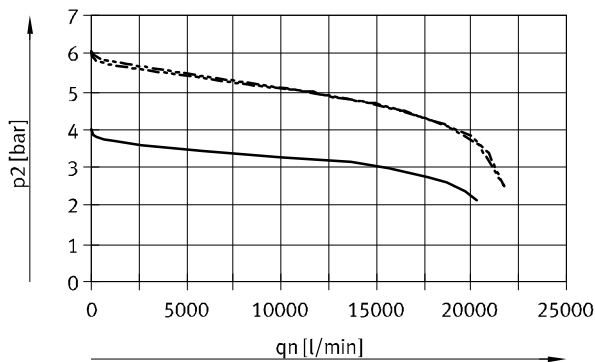


— MS9-LFR...-D5
 - - - MS9-LFR...-D6/D7/D8

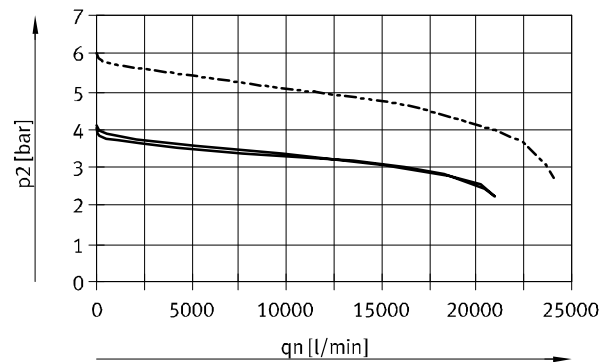
Standard flow rate q_n as a function of output pressure p_2 at operating pressure $p_1 = 10$ bar

Directly actuated filter-diaphragm regulator DI

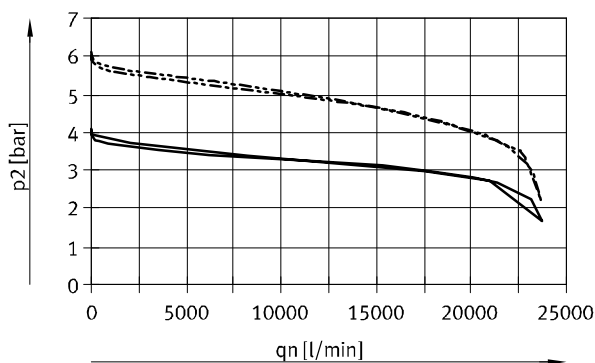
Grade of filtration 5 μm , pneumatic connection G $3/4$ /NPT $3/4$



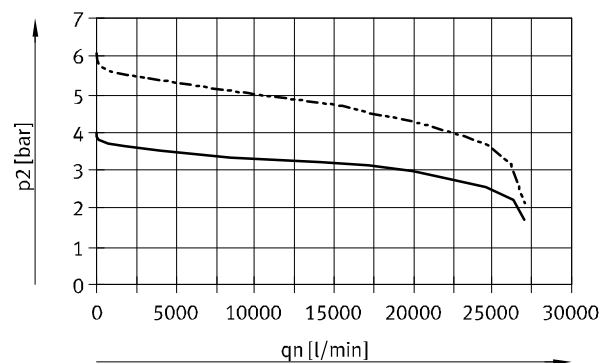
Grade of filtration 40 μm , pneumatic connection G $3/4$ /NPT $3/4$



Grade of filtration 5 μm , pneumatic connection G1/NPT1



Grade of filtration 40 μm , pneumatic connection G1/NPT1



— MS9-LFR...-D5
 - - - MS9-LFR...-D6

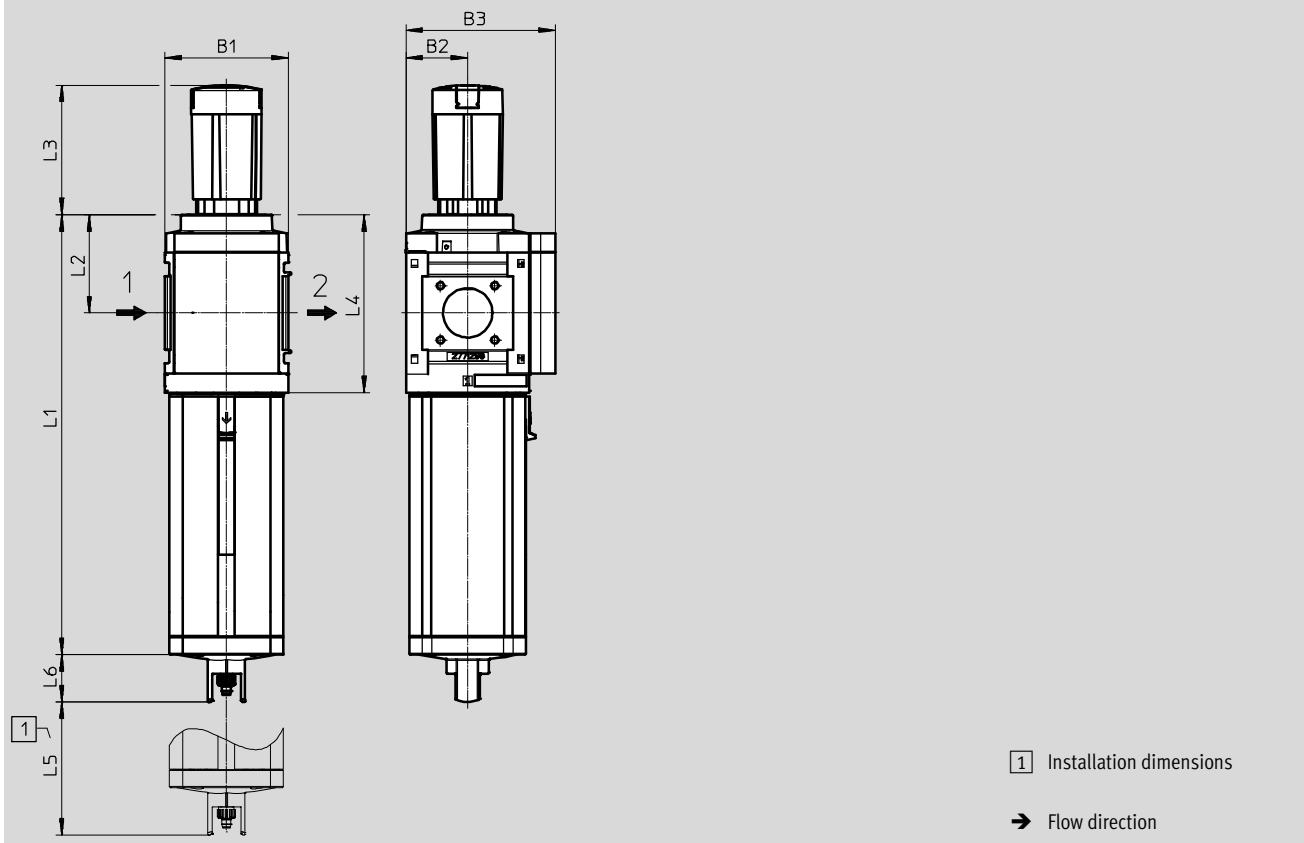
Filter regulators MS9-LFR, MS series

Technical data

Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G/NG, cover plate VS, rotary knob with detent, lockable via accessories



Type	B1	B2	B3	L1	L2	L3	L4	L5	L6
MS9-LFR-G/NG	90	45	109	320.5	71.5	94.5	127	150	34.5

Filter regulators MS9-LFR, MS series

Technical data

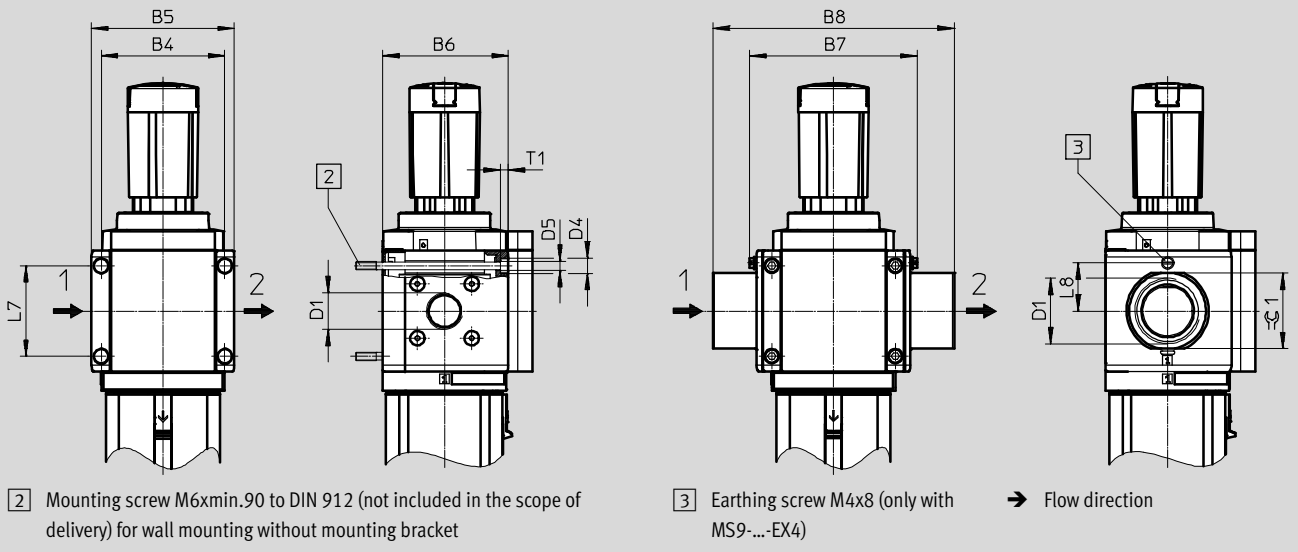
FESTO

Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

With female thread 3/4/1/N3/4/N1

With connecting plate AG.../AQ...



Type	B4	B5	B6	B7		B8	D1	D4	D5	L7	L8		T1	≅
					EX4							EX4		
MS9-LFR-3/4	90	104	91.5	-	-	-	G3/4	11	6.5	66	-	6	-	
MS9-LFR-1							G1							
MS9-LFR-AGD	-	-	-	112	122	-	132 G1/2	-	-	-	35	-	30	
MS9-LFR-AGE							132 G3/4						36	
MS9-LFR-AGF							142 G1						41	
MS9-LFR-AGG							162 G1 1/4						50	
MS9-LFR-AGH							176 G1 1/2						55	
MS9-LFR-N3/4	90	104	91.5	-	-	-	NPT3/4-14	11	6.5	66	-	6	-	
MS9-LFR-N1							NPT1-11 1/2							
MS9-LFR-AQR	-	-	-	112	-	-	132 NPT1/2-14	-	-	-	-	-	30	
MS9-LFR-AQS							132 NPT3/4-14						36	
MS9-LFR-AQT							142 NPT1-11 1/2						41	
MS9-LFR-AQU							162 NPT1 1/4-11 1/2						50	
MS9-LFR-AQV							176 NPT1 1/2-11 1/2						55	

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

Filter regulators MS9-LFR, MS series

Technical data

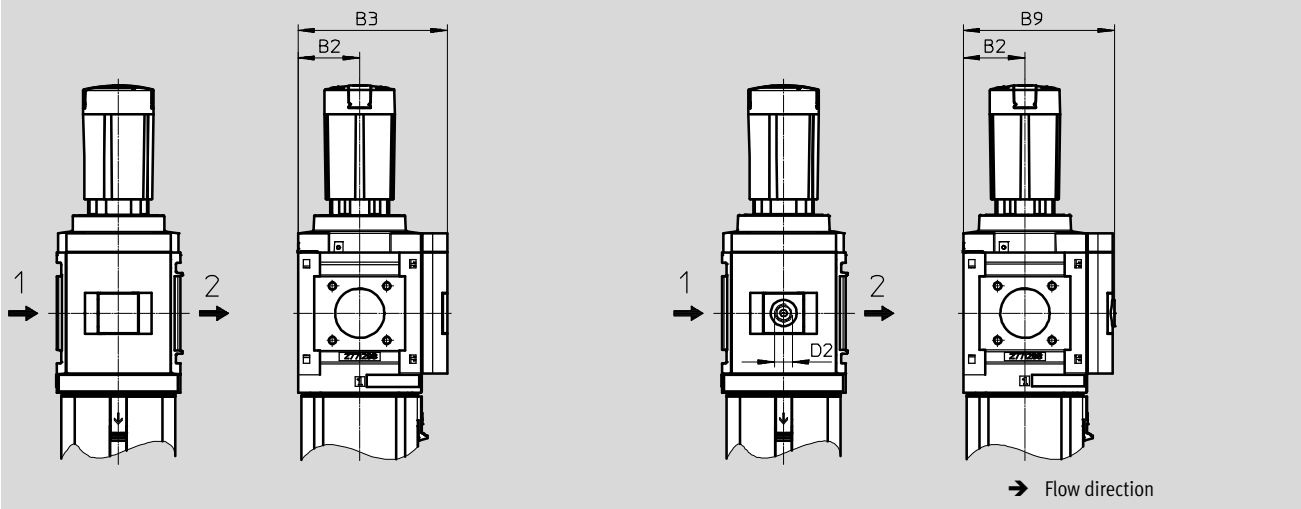
FESTO

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

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

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



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

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

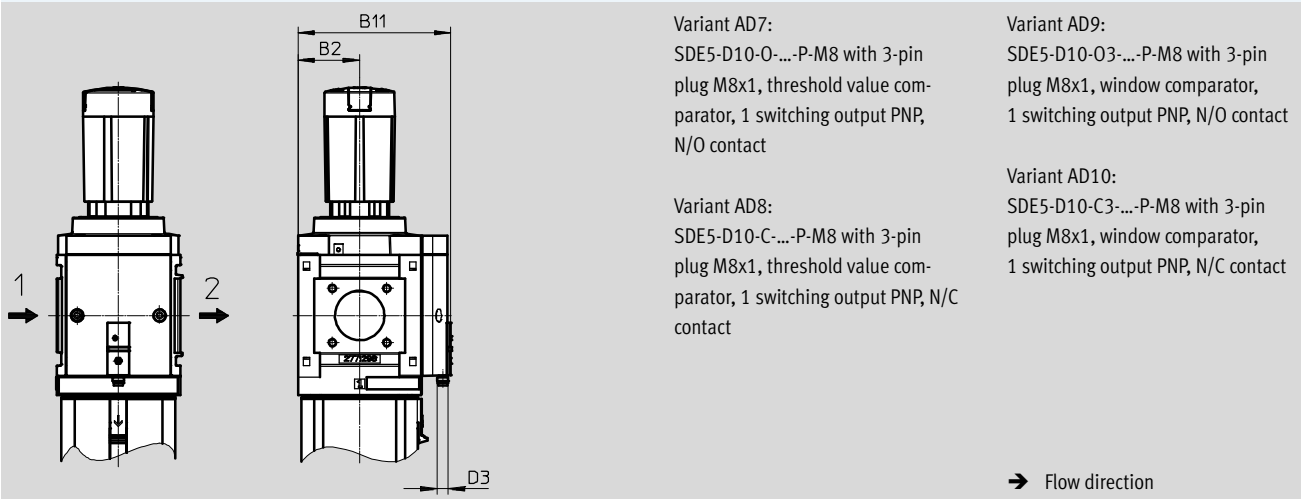
Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Pressure sensor without LCD display (operational status indicator only)

Technical data → Internet: sde5

AD7 ... AD10



Variant AD7:
SDE5-D10-0-...-P-M8 with 3-pin plug M8x1, threshold value comparator, 1 switching output PNP, N/O contact

Variant AD9:
SDE5-D10-03-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/O contact

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

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

Type	B2	B11	D3
MS9-LFR...-AD7/AD8/AD9/AD10	45	112	M8x1

Filter regulators MS9-LFR, MS series

Technical data

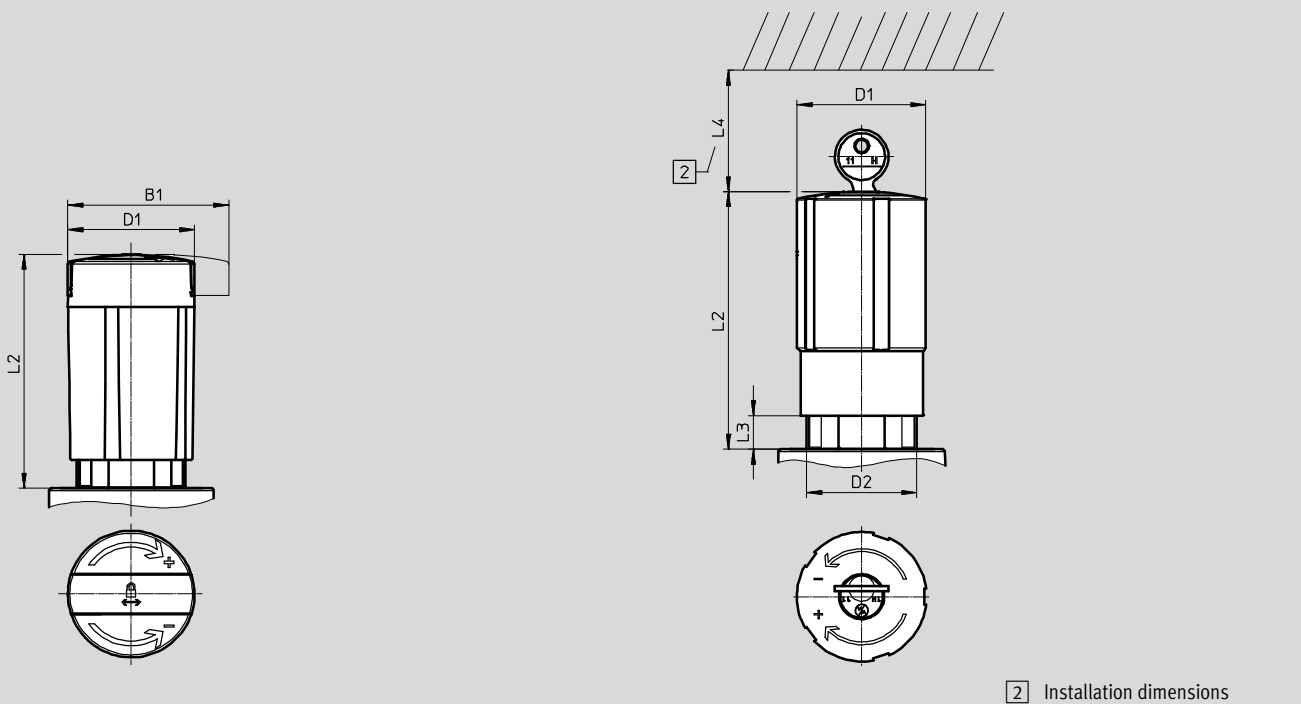
FESTO

Dimensions – Rotary knob

Download CAD data → www.festo.com

Rotary knob with detent, lockable via accessories AS

Rotary knob with integrated lock E11



2 Installation dimensions

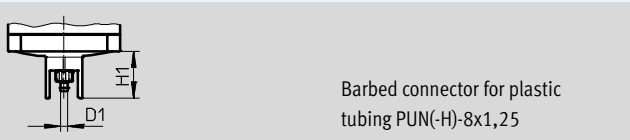
Type	B1	D1	D2	L2	L3	L4
MS9-LFR-...-AS	64.4	51.2	M44x1	94.5	-	-
MS9-LFR-...-E11	-			103.5	13.5	60

Dimensions – Condensate drain

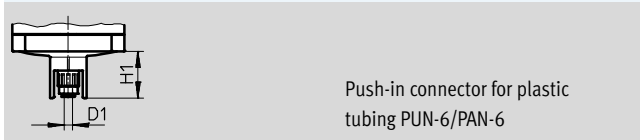
Download CAD data → www.festo.com

Manual rotary M/fully automatic V

Semi-automatic H



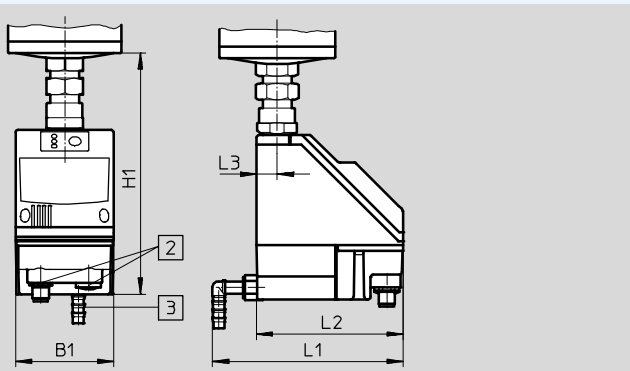
Barbed connector for plastic tubing PUN(-H)-8x1,25



Push-in connector for plastic tubing PUN-6/PAN-6

Fully automatic, electrically actuated E2/E3/E4

Technical data → Internet: [pwea](http://pwea.com)



Condensate drain PWEA:

- 2 Electrical connection: Screw terminal PG9
- 3 Connection 360° rotatable for plastic tubing PUN-H-12x2

Type	B1	D1	H1	L1	L2	L3
MS9-LFR-...-M/V	-	5.6	34.5	-	-	-
MS9-LFR-...-H		6.2				
MS9-LFR-...-E2/E3/E4	72	-	178	140	108	15

Filter regulators MS9-LFR, MS series

Technical data

Ordering data					
Size	Condensate drain	Grade of filtration 5 µm		Grade of filtration 40 µm	
		Part No.	Type	Part No.	Type
Pressure regulation range 0.5 ... 7 bar, piloted filter-diaphragm regulator, integrated MS pressure gauge with standard scale AG, display unit [bar], rotary knob with detent, lockable via accessories					
MS9	Manual rotary	564114	MS9-LFR-G-D6-CUM-AG-BAR-AS	564110	MS9-LFR-G-D6-EUM-AG-BAR-AS
	Fully automatic	564115	MS9-LFR-G-D6-CUV-AG-BAR-AS	564111	MS9-LFR-G-D6-EUV-AG-BAR-AS
Pressure regulation range 0.5 ... 7 bar, directly actuated filter-diaphragm regulator, integrated MS pressure gauge with standard scale AG, display unit [bar], rotary knob with detent, lockable via accessories					
MS9	Manual rotary	564116	MS9-LFR-G-D6-CUM-DI-AG-BAR-AS	564112	MS9-LFR-G-D6-EUM-DI-AG-BAR-AS
	Fully automatic	564117	MS9-LFR-G-D6-CUV-DI-AG-BAR-AS	564113	MS9-LFR-G-D6-EUV-DI-AG-BAR-AS
Pressure regulation range 0.5 ... 7 bar, directly actuated filter-diaphragm regulator, integrated MS pressure gauge with standard scale AG, display unit [psi], rotary knob with detent, lockable via accessories					
MS9	Manual rotary	564128	MS9-LFR-NG-D6-CUM-DI-AG-PSI-AS	564124	MS9-LFR-NG-D6-EUM-DI-AG-PSI-AS
	Fully automatic	564129	MS9-LFR-NG-D6-CUV-DI-AG-PSI-AS	564125	MS9-LFR-NG-D6-EUV-DI-AG-PSI-AS
Pressure regulation range 0.5 ... 12 bar, piloted filter-diaphragm regulator, integrated MS pressure gauge with standard scale AG, display unit [bar], rotary knob with detent, lockable via accessories					
MS9	Manual rotary	564120	MS9-LFR-G-D7-CUM-AG-BAR-AS	564118	MS9-LFR-G-D7-EUM-AG-BAR-AS
	Fully automatic	564121	MS9-LFR-G-D7-CUV-AG-BAR-AS	564119	MS9-LFR-G-D7-EUV-AG-BAR-AS

Filter regulators MS9-LFR, MS series

Ordering data – Modular products

Ordering table		Grid dimension [mm]	90	Condi- tions	Code	Enter code	
M	Module No.	562531					
	Series	Standard			MS	MS	
	Size	9			9	9	
	Function	Filter regulator			-LFR	-LFR	
	Pneumatic connection	Female thread G $\frac{3}{4}$		1	-$\frac{3}{4}$		
		Female thread G1		1	-1		
		Connecting plate G $\frac{1}{2}$			-AGD		
		Connecting plate G $\frac{3}{4}$			-AGE		
		Connecting plate G1			-AGF		
		Connecting plate G1 $\frac{1}{4}$			-AGG		
		Connecting plate G1 $\frac{1}{2}$			-AGH		
		Female thread NPT $\frac{3}{4}$		1	-N$\frac{3}{4}$		
		Female thread NPT1		1	-N1		
		Connecting plate NPT $\frac{1}{2}$		1	-AQR		
		Connecting plate NPT $\frac{3}{4}$		1	-AQS		
		Connecting plate NPT1		1	-AQT		
		Connecting plate NPT1 $\frac{1}{4}$		1	-AQU		
		Connecting plate NPT1 $\frac{1}{2}$		1	-AQV		
		Module without connecting thread, without connecting plate		1	-G		
		Module without connecting thread, without connecting plate (inch)		1	-NG		
		Pressure regulation range/ operation mode	0.5 ... 4 bar, manually operated			-D5	
			0.5 ... 7 bar, manually operated			-D6	
	0.5 ... 12 bar, manually operated				-D7		
	0.5 ... 16 bar, manually operated			1	-D8		
	Grade of filtration	40 μ m			-E		
		5 μ m			-C		
	Bowl	Metal bowl			-U	-U	
	Condensate drain	Manual			-M		
		Semi-automatic (P1 max. 12 bar)			-H		
		Fully automatic (P1 max. 12 bar)			-V		
		External, fully automatic, electric	110 V AC, terminals (P1 max. 16 bar)		1	-E2	
			230 V AC, terminals (P1 max. 16 bar)		1	-E3	
	24 V DC, terminals (P1 max. 16 bar)		1	-E4			

1 $\frac{3}{4}$, 1, N $\frac{3}{4}$, N1, AQR, AQS, AQT, AQU, AQV, G, NG, D8, E2, E3, E4, AD7, AD8, AD9, AD10, E11, WPM
Not with EU certification EX4

- M** Mandatory data
- O** Options

Transfer order code

562531 MS 9 - LFR - [] - [] - [] - U - []

Filter regulators MS9-LFR, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	90	Condi- tions	Code	Enter code
<input type="checkbox"/>	Regulator type	Directly actuated	<input type="checkbox"/> 2	-DI	
<input type="checkbox"/>	Pressure gauge/pressure gauge alternatives	MS pressure gauge		-AG	
		Cover plate		-VS	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge		-A4	
		Integrated pressure gauge, red/green scale	<input type="checkbox"/> 3	-RG	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact	<input type="checkbox"/> 1 <input type="checkbox"/> 4	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact	<input type="checkbox"/> 1 <input type="checkbox"/> 4	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact	<input type="checkbox"/> 1 <input type="checkbox"/> 4	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact	<input type="checkbox"/> 1 <input type="checkbox"/> 4	-AD10	
<input type="checkbox"/>	Alternative pressure gauge scale	psi	<input type="checkbox"/> 5	-PSI	
		MPa	<input type="checkbox"/> 5	-MPA	
		bar	<input type="checkbox"/> 5	-BAR	
	Secondary venting	Without secondary venting	<input type="checkbox"/> 6	-OS	
<input type="checkbox"/>	Security	Lockable via accessories		-AS	
		With integrated lock	<input type="checkbox"/> 1	-E11	
<input type="checkbox"/>	Type of mounting	Mounting bracket standard design	<input type="checkbox"/> 7	-WP	
		Mounting bracket for attaching the service units	<input type="checkbox"/> 1 <input type="checkbox"/> 7	-WPM	
		Mounting bracket for large wall gap	<input type="checkbox"/> 7	-WPB	
	EU certification	II 2GD to EU Explosion Protection Directive (ATEX)		-EX4	
	UL certification	cULus, ordinary location for Canada and USA		-UL1	
	Flow direction	Flow direction from right to left		-Z	

- 1 3/4, 1, N3/4, N1, AQR, AQS, AQT, AQU, AQV, G, NG, D8, E2, E3, E4, AD7, AD8, AD9, AD10, 6 OS Only with regulator type DI
- E11, WPM** 7 WP, WPM, WPB Not with pneumatic connection G/NG
- Not with EU certification EX4
- 2 DI Not with pressure regulation range D7, D8
- 3 RG Not with alternative pressure gauge scale PSI
- PSI scale serves only as an auxiliary scale
- 4 AD7 ... AD10 Measuring range max. 10 bar
- 5 PSI, MPA, BAR Not with pressure gauge alternatives VS, A4, AD7, AD8, AD9, AD10

- M Mandatory data
- O Options

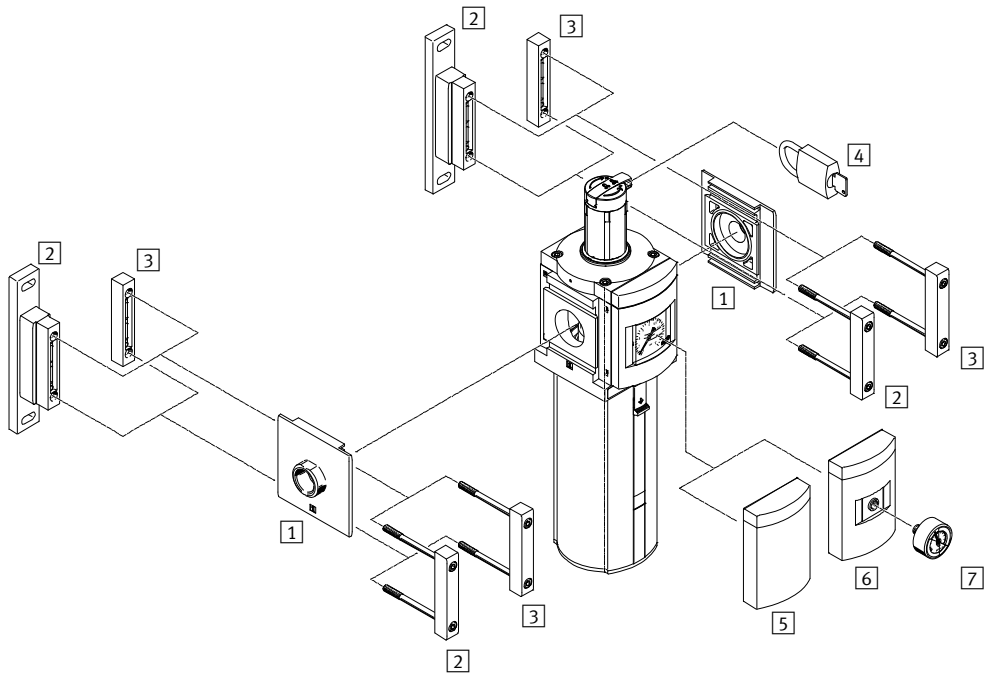
Transfer order code


- - - - - - - - - -

Filter regulators MS12-LFR, MS series

Peripherals overview

Filter regulators MS12-LFR



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

Mounting attachments and accessories

		→ Page/Internet
1	Connecting plate-SET MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	Padlock LRVS-D	50
5	Cover plate VS	48
6	Adapter for EN pressure gauge 1/4 A4	48
7	Pressure gauge MA	50

Filter regulators MS12-LFR, MS series

Type codes

MS 12 - LFR - G - D7 - C U V - LD - AS

Series	
MS	Standard service unit
Size	
12	Grid dimension 124 mm
Service function	
LFR	Filter regulator
Pneumatic connection	
G	Module without connecting thread, without connecting plate Connecting plates → Accessories
Pressure regulation range	
D7	Pressure regulation range 0.5 ... 12 bar
Grade of filtration	
C	5 µm
E	40 µm
Bowl guard	
U	Integrated as metal bowl
Condensate drain	
V	Fully automatic
Rotary knob	
LD	Long rotary knob
Security	
AS	Rotary knob with detent, lockable via accessories

Further variants can be ordered using the modular system → 48

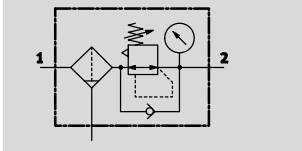
- Pneumatic connection
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Security
- Type of mounting
- Flow direction

Filter regulators MS12-LFR, MS series

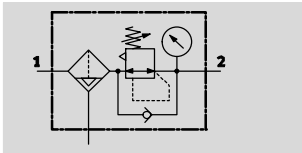
Technical data





FESTO

Function
Condensate drain
manual rotary
with pressure gauge



Condensate drain
fully automatic
with pressure gauge




-  - Flow rate
11,000 ... 17,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0.8 ... 20 bar
-  - www.festo.com



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

- Good control characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- High flow rates
- Pilot actuated diaphragm regulator without intrinsic air consumption
- Three pressure regulation ranges: 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Pressure gauge connection for different fitting options
- Available with manual, fully automatic or fully automatic, electrically actuated condensate drain
- Regulator lock for protecting the values against adjustment
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 49

General technical data		
Pneumatic connection 1, 2		
Connecting plate AG...		G1, G1¼, G1½ or G2
Module without connecting thread/plate G		–
Design		Filter regulator with/without pressure gauge Sintered filter with centrifugal separation Pilot actuated diaphragm regulator
Regulating function		Output pressure constant, with primary pressure compensation, with secondary venting
Type of mounting		Via accessories In-line installation
Assembly position		Vertical ±5°
Grade of filtration [µm]		5 40
Air purity class at the output		Compressed air in accordance with ISO 8573-1:2010 [6:4:4] (Grade of filtration 5 µm) Compressed air in accordance with ISO 8573-1:2010 [7:4:4] (Grade of filtration 40 µm)
Bowl guard		Integrated as metal bowl
Condensate drain		Manual rotary Fully automatic Fully automatic, electrical actuated
Regulator lock		Rotary knob with detent, lockable via accessories Rotary knob with integrated lock
Pressure regulation range	D6 [bar]	0.3 ... 7
	D7 [bar]	0.5 ... 12
	D8 [bar]	0.5 ... 16
Max. hysteresis [bar]		0.4
Pressure indicator		With pressure gauge
Max. condensate volume [cm³]		400

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

Filter regulators MS12-LFR, MS series

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]				
Pneumatic connection	G1	G1¼	G1½	G2
Grade of filtration	5 µm	11,000	11,500	12,000
	40 µm	12,000	12,500	13,000
				14,000
				17,000

1) Dependent on connecting plate selected, must be ordered separately as an accessory → Internet: ms12-ag
measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 0.5$ bar

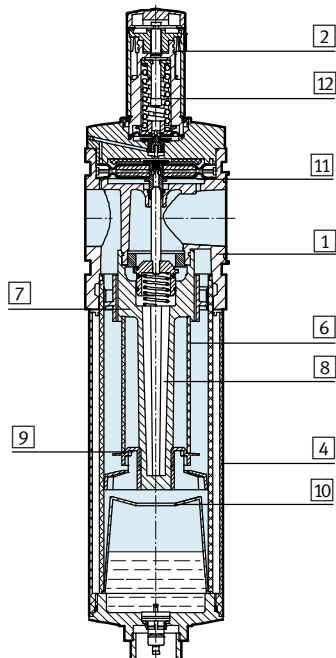
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrically actuated E2/E3/E4
Operating pressure [bar]	0.8 ... 20	2 ... 12	0.8 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [-:4:-]	Compressed air in accordance with ISO 8573-1:2010 [7:4:-]	Compressed air in accordance with ISO 8573-1:2010 [-:4:-]
	Inert gases		
Ambient temperature [°C]	-10 ... +60	+5 ... +60	+1 ... +60
Temperature of medium [°C]	-10 ... +60	+5 ... +60	+1 ... +60
Storage temperature [°C]	-10 ... +60	-10 ... +60	+1 ... +60
Corrosion resistance class CRC ¹⁾	2		

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Weights [g]		
Rotary knob	Without integrated lock E11	With integrated lock E11
Filter regulator with metal bowl U	7,000	7,300
Filter regulator with metal bowl U and fully automatic, electrically actuated condensate drain E2/E3/E4	7,700	8,000

Materials

Sectional view



Filter regulator		
1	Body	Die-cast aluminium
2	Rotary knob	PA
	Rotary knob with integrated lock E11	Aluminium
4	Metal bowl	Wrought aluminium alloy
6	Filter element	Sintered bronze
7	Spin disc	POM
8	Filter holder	POM
9	Separating plate	POM
10	Stabilising disc	POM
11	Diaphragm	NBR
12	Spring	Steel
-	Seals	NBR

Filter regulators MS12-LFR, MS series

Technical data



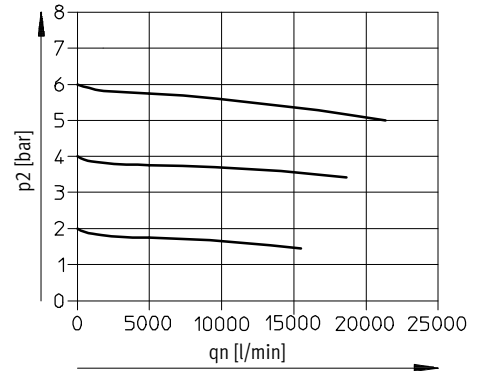
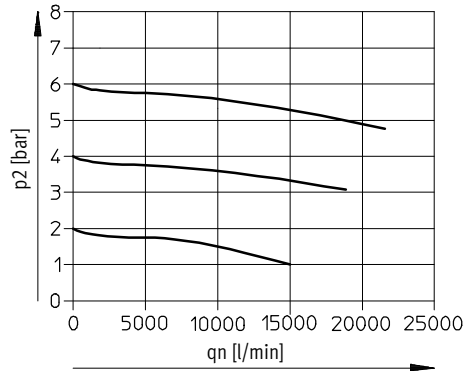
Standard flow rate q_n as a function of output pressure p_2

Grade of filtration 40 μm

With connecting plate MS12-AGF
Pneumatic connection G1

With connecting plate MS12-AGG
Pneumatic connection G1¼

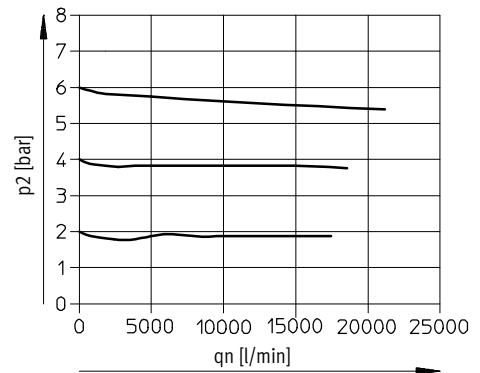
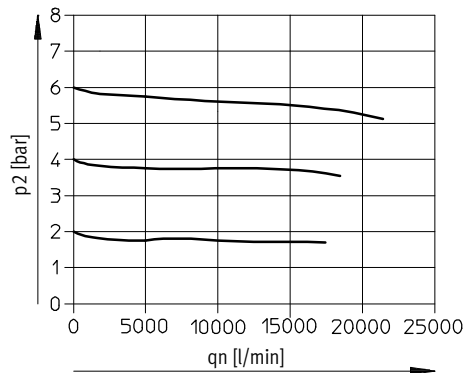
Input pressure $p_1 = 10$ bar



With connecting plate MS12-AGH
Pneumatic connection G1½

With connecting plate MS12-AGI
Pneumatic connection G2

Input pressure $p_1 = 10$ bar



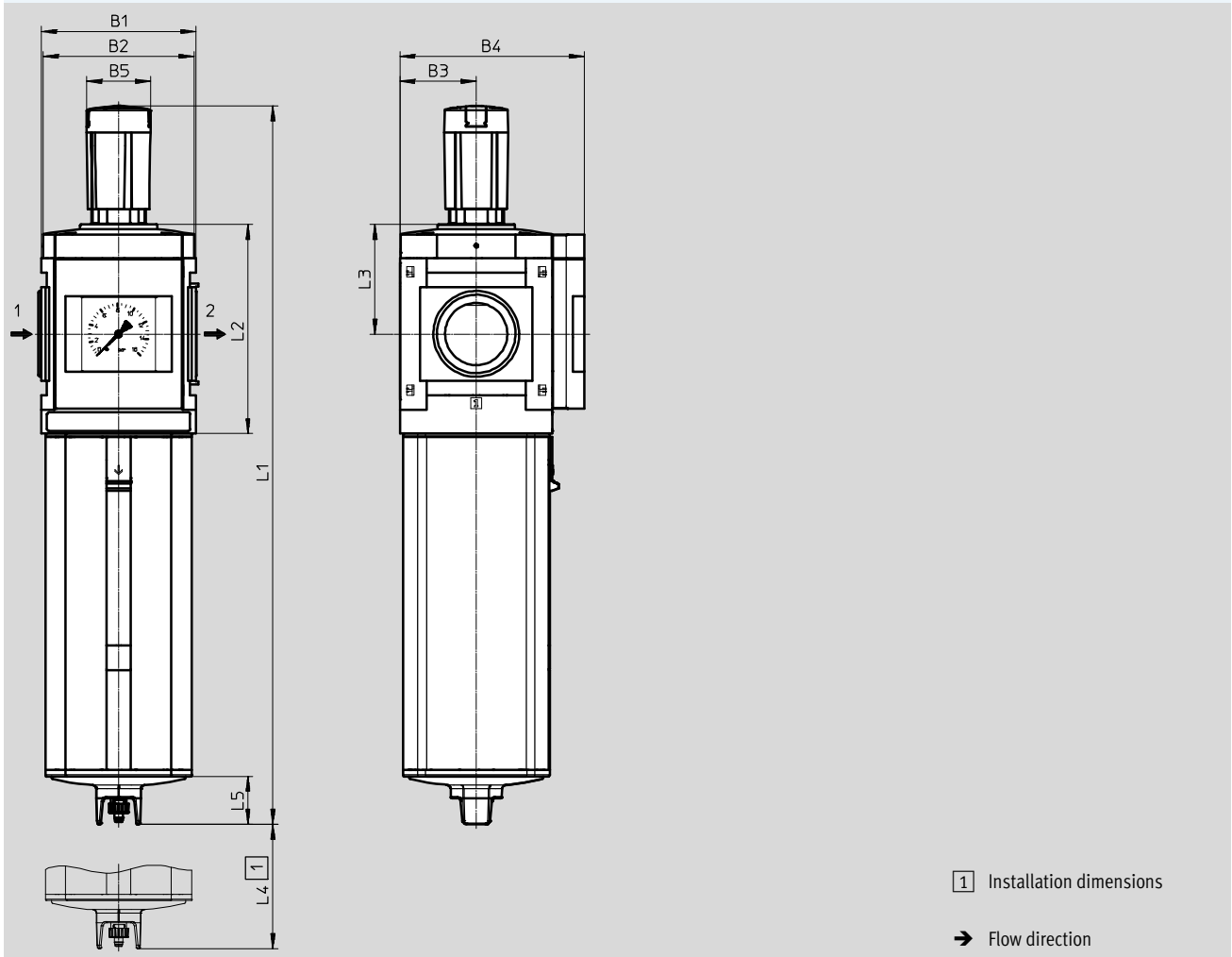
Filter regulators MS12-LFR, MS series

Technical data

Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate, integrated MS pressure gauge with standard scale, long rotary knob with detent, lockable via accessories



Type	B1	B2	B3	B4	B5	L1	L2	L3	L4	L5
MS12-LFR-G	124	122	61	148	51.2 ∅	577	168	88	250	39

Filter regulators MS12-LFR, MS series

Technical data

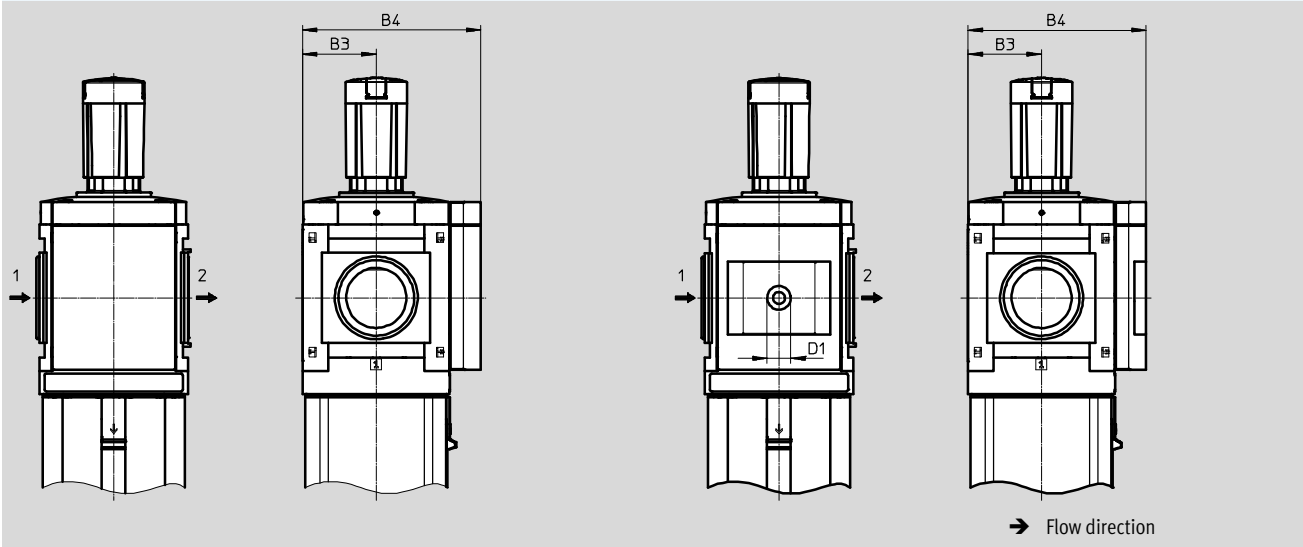
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Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Cover plate VS

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



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

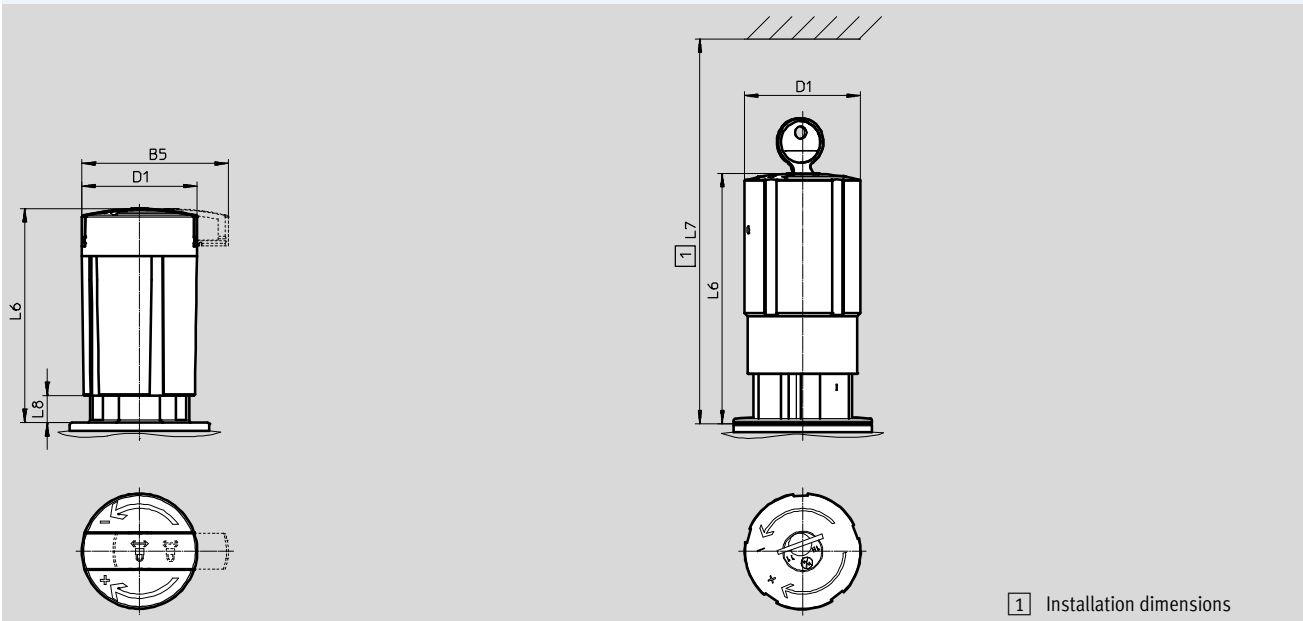
– Note: This product conforms to ISO 1179-1 and to ISO 228-1

Dimensions – Rotary knob

Download CAD data → www.festo.com

Long rotary knob with detent, lockable via accessories LD-AS

Rotary knob with integrated lock E11



Type	B5	D1	L6	L7	L8
MS12-LFR-...-LD-AS	64.4	51.2 ∅	96	–	12
MS12-LFR-...-E11	–	51.8	112	172	–

Filter regulators MS12-LFR, MS series

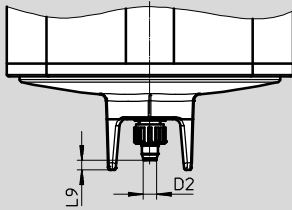
Technical data

FESTO

Dimensions – Condensate drain

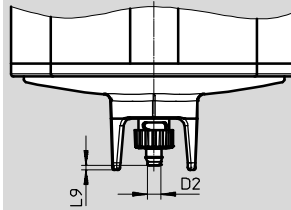
Download CAD data → www.festo.com

Manual rotary M



Barbed connector for plastic tubing PUN(-H)-8x1,25

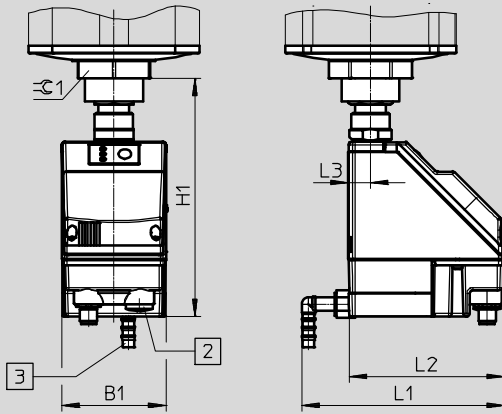
Fully automatic V



Barbed connector for plastic tubing PUN(-H)-8x1,25

Fully automatic, electrically actuated E2/E3/E4

Technical data → Internet: pwea



Condensate drain PWEA:

- 2 Electrical connection: Screw terminal PG9
- 3 Connection 360° rotatable for plastic tubing PUN-H-12x2

Type	B1	D2 Ø	H1	L1	L2	L3	L9	∠ 1
MS12-LFR:...-M	–	5.6	–	–	–	–	4	–
MS12-LFR:...-V	–	5.6	–	–	–	–	2	–
MS12-LFR:...-E2/E3/E4	72	–	164	140	108	15	–	50

Ordering data

Size	Condensate drain	Grade of filtration 5 µm		Grade of filtration 40 µm	
		Part No.	Type	Part No.	Type
Pressure regulation range 0.5 ... 12 bar, metal bowl, integrated MS pressure gauge with standard scale, display unit [bar], long rotary knob with detent, lockable via accessories					
MS12	Fully automatic	537150	MS12-LFR-G-D7-CUV-LD-AS	537149	MS12-LFR-G-D7-EUV-LD-AS

Filter regulators MS12-LFR, MS series

Ordering data – Modular products

Ordering table		Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535022					
	Series	Standard				MS	MS
	Size	12				12	12
	Function	Filter regulator				-LFR	-LFR
	Pneumatic connection	Connecting plate G1				-AGF	
		Connecting plate G1¼				-AGG	
		Connecting plate G1½				-AGH	
		Connecting plate G2				-AGI	
		Module without connecting thread, without connecting plate				-G	
	Pressure regulation range	0.3 ... 7 bar				-D6	
		0.5 ... 12 bar				-D7	
		0.5 ... 16 bar				-D8	
	Grade of filtration	40 µm				-E	
		5 µm				-C	
	Bowl	Metal bowl				-U	-U
	Condensate drain	Manual				-M	
		Fully automatic (P1 max. 12 bar)			1	-V	
		External fully automatic condensate drain, electrical, 110 V AC, terminal strip				-E2	
		External fully automatic condensate drain, electrical, 230 V AC, terminal strip				-E3	
		External fully automatic condensate drain, electrical, 24 V DC, terminal strip				-E4	
O	Pressure gauge alternatives	Cover plate				-VS	
		Adapter plate for EN pressure gauge ¼, without pressure gauge				-A4	
	Alternative pressure gauge scale	psi			2	-PSI	
		MPa			2	-MPA	
	Rotary knob	Long rotary knob			3	-LD	
M	Security	Lockable via accessories			4	-AS	
		With integrated lock				-E11	
O	Type of mounting	Mounting bracket standard design			5	-WP	
	Flow direction	Flow direction from right to left				-Z	

- 1 V** Not with pressure regulation range D8
- 2 PSI, MPA** Not with pressure gauge alternatives VS, A4
- 3 LD** Not with security E11
- 4 AS** Only with rotary knob LD
- 5 WP** Only with connecting plate AGF, AGG, AGH or AGI

M Mandatory data
O Options

Transfer order code

535022 MS 12 - LFR - - - - U - - - - -

Filter regulators MS-LFR, MS series

Accessories

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Filter cartridges

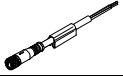





Ordering data			
Size	Grade of filtration [μm]	Part No.	Type
MS4	5 (colour: blue)	534501	MS4-LFP-C
	40 (colour: white)	534502	MS4-LFP-E
MS6	5 (colour: blue)	534499	MS6-LFP-C
	40 (colour: white)	534500	MS6-LFP-E
MS9	5	570309	MS9-LFP-C
	40	570310	MS9-LFP-E
MS12	5	537143	MS12-LFP-C
	40	537144	MS12-LFP-E


Filter regulators MS-LFR, MS series


Accessories

FESTO

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

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

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

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

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock