

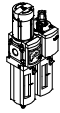
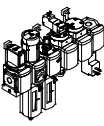


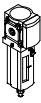
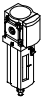

Filters MS-LF/LFM/LFX, MS series



Filters MS-LF/LFM/LFX, 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	-	-	-	-	-	-	-	-	-	-

Filters MS-LF/LFM/LFX, 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	■	■	■	■	■	-	■	■	■	■	■	■	■	-	■	ms4-lfr
	6	■	■	■	■	■	■	■	■	■	■	■	■	■	-	■	ms6-lfr
	9	-	■	■	■	■	■	■	■	■	■	■	■	■	-	■	ms9-lfr
	12	-	■	■	-	■	■	■	■	■	■	■	■	■	-	■	ms12-lfr
Filters MS-LF	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	8, 10
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	8, 10
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	39
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	67
Fine and micro filters MS-LFM	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	8, 20
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	8, 20
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	47
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	74
Activated carbon filters MS-LFX	4	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	8, 34
	6	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	8, 34
	9	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	60
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	83
Water separators MS-LWS	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms6-lws
	9	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms9-lws
	12	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lws

Filters MS-LF/LFM/LFX, 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	-	-	-	-	-	-	■	■	■

Filters MS-LF/LFM/LFX, 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

Filters MS-LF/LFM/LFX, 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	–									

Filters MS-LF/LFM/LFX, MS series

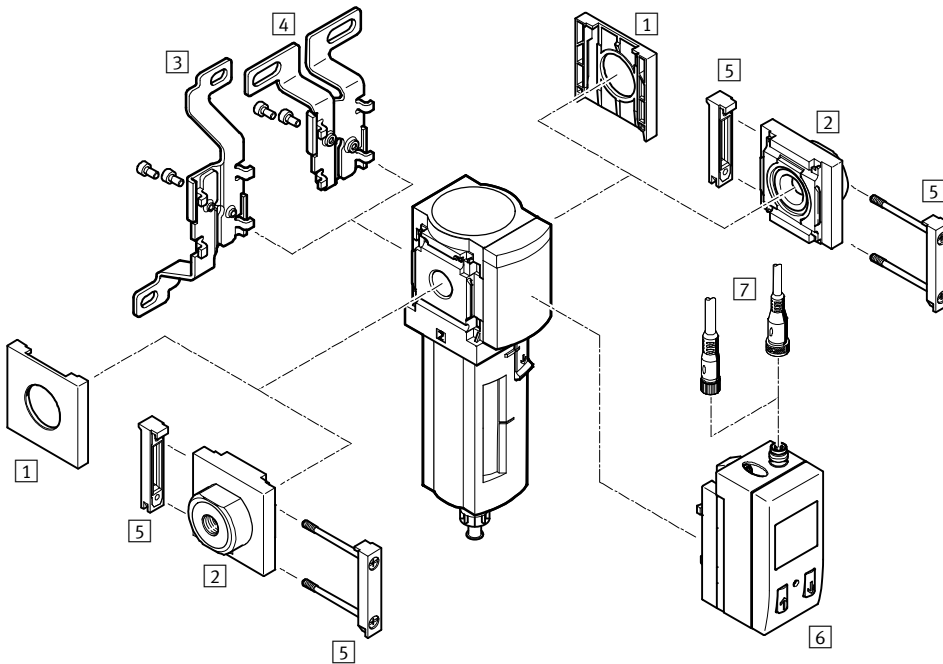
Product range overview – MS series service units




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

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

Peripherals overview



 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 plate 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	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	Filter pollution indicator DP/DN/DPI/DNI	■ for LFM	■ for LFM	■ for LFM	■ for LFM	32
7	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■ for LFM	■ for LFM	■ for LFM	■ for LFM	nebu
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

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

Type codes

MS 6 - LFM - 1/4 - A R M - - DA

Series

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

Size

4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function

LF	Filter
LFM	Fine and micro filter
LFX	Activated carbon filter

Pneumatic connection

MS4	
1/8	G1/8 thread
1/4	G1/4 thread
MS6	
1/4	G1/4 thread
3/8	G3/8 thread
1/2	G1/2 thread

Grade of filtration (for LF and LFM only)

A	0.01 µm
B	1 µm
C	5 µm
E	40 µm

Bowl guard

R	Plastic bowl guard
U	Integrated as metal bowl

Condensate drain (for LF and LFM only)

M	Manual rotary
V	Fully automatic

Flow rate (for LFM and LFX only)

	Standard
HF	High flow rate

Filter change sensor (for LFM only)

	Without differential pressure indicator
DA	Differential pressure indicator

Further variants can be ordered using the modular system

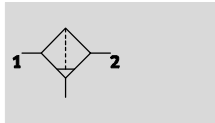
Filters LF	→ 18
Fine and micro filters LFM	→ 32
Activated carbon filters LFX	→ 38

- Pneumatic connection
- Condensate drain
- Range of application (only for LFM and LFX)
- Filter pollution indicator (for LFM only)
- Type of mounting
- EU certification
- UL certification
- Flow direction

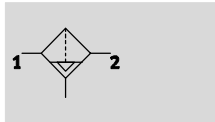
Filters MS4/MS6-LF, MS series





Technical data

Function
Condensate drain
manual rotary



semi or fully automatic




-  - Flow rate
1,000 ... 4,100 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0 ... 20 bar
-  - www.festo.com



The sintered filter with centrifugal separation removes contamination, rust and condensate from the compressed air. The filter cartridges are replaceable.

- Good particle and condensate separation
- High flow rate with minimal pressure drop
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- 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 → 89

General technical data		MS4	MS6
Size			
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 $\frac{3}{4}$
Design		Sintered filter with centrifugal separation	
Type of mounting		Via accessories In-line installation	
Assembly 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 [6:8:4] (Grade of filtration 5 µm) Compressed air in accordance with ISO 8573-1:2010 [7:8:4] (Grade of filtration 40 µm)	
Bowl guard		Plastic bowl guard Integrated as metal bowl	
Condensate drain		Manual rotary Semi-automatic Fully automatic - Fully automatic, electrical	
Max. condensate volume	[cm 3]	19 (with plastic bowl guard) 25 (with metal bowl) 38	

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

Standard nominal flow rate q_{nN^1} [l/min]						
Size		MS4		MS6		
Pneumatic connection		G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Grade of filtration	5 µm	1,000	1,300	2,000	3,000	3,200
	40 µm	1,100	1,700	2,500	3,800	4,100

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

Filters MS4/MS6-LF, MS series

Technical data

Operating and environmental conditions							
Condensate drain	Manual rotary M		Semi-automatic H		Fully automatic V		Fully automatic, electrical E2/E3/E4
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS6
Operating pressure [bar]	0 ... 14 (0 ... 10) ¹⁾	0 ... 20 (0 ... 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 [-:9:-]		Compressed air in accordance with ISO 8573-1:2010 [-:9:-]		Compressed air in accordance with ISO 8573-1:2010 [7:9:-]		Compressed air in accordance with ISO 8573-1:2010 [-:9:-]
	Inert gases						
Ambient temperature [°C]	-10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Temperature of medium [°C]	-10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Storage temperature [°C]	-10 ... +60		-10 ... +60		-10 ... +60		+1 ... +60
Corrosion resistance class CRC ²⁾	2						
UL certification	cULus recognized (OL)						

1) Value in brackets applies to MS4/MS6-LF with UL certification.

2) 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 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)

Weights [g]		
Size	MS4	MS6
Filter with plastic bowl guard R	189	600
Filter with metal bowl U	349	820
Filter with metal bowl U and fully automatic, electrically actuated condensate drain E2/E3/E4	-	1,800

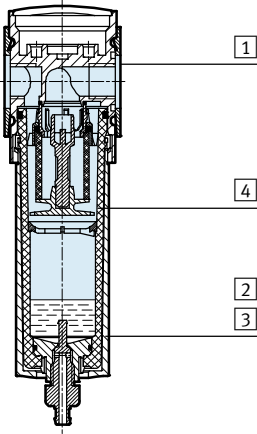
Filters MS4/MS6-LF, MS series

Technical data



Materials

Sectional view



Filters

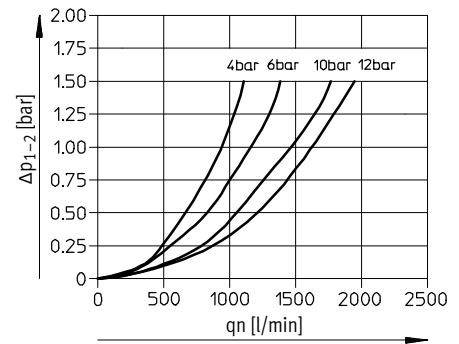
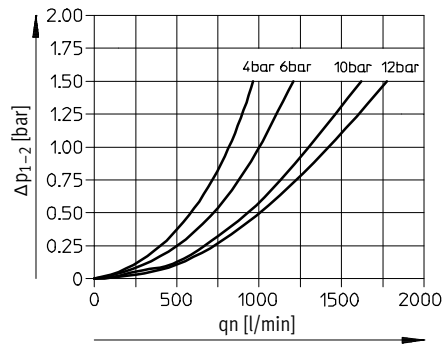
1	Body	Die-cast aluminium
2	Plastic bowl guard	PC
3	Metal bowl	Wrought aluminium alloy, die-cast aluminium
	Viewing window	PA
4	Filter element	PE
-	Seals	NBR
Note on materials		RoHS-compliant (not with variant E2, E3 or E4) Free of copper and PTFE

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

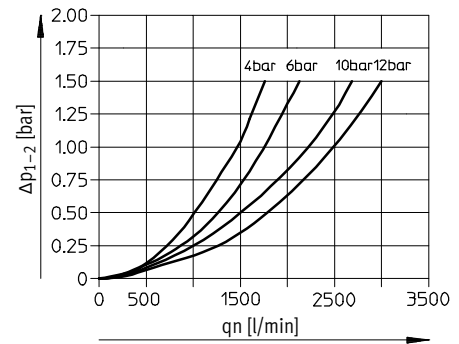
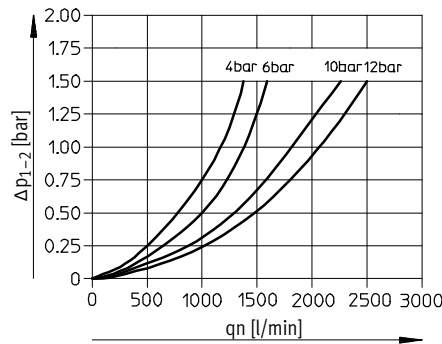
Grade of filtration 5 μm

Grade of filtration 40 μm

MS4-LF-1/8



MS4-LF-1/4



Filters MS4/MS6-LF, MS series

Technical data

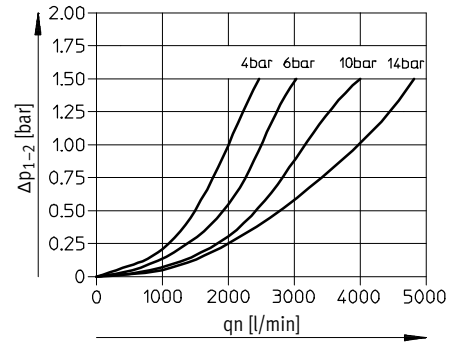
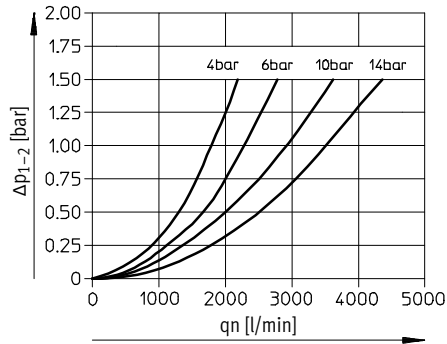


Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

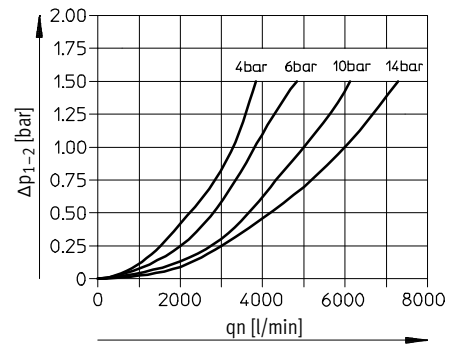
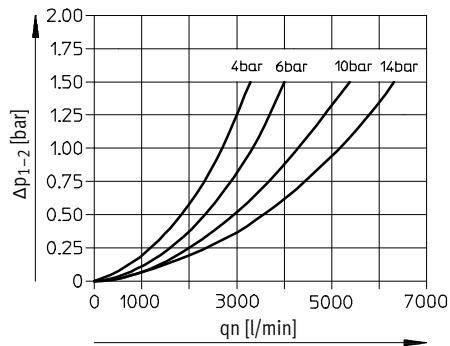
Grade of filtration 5 μm

Grade of filtration 40 μm

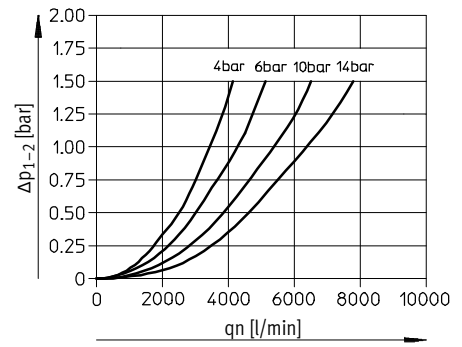
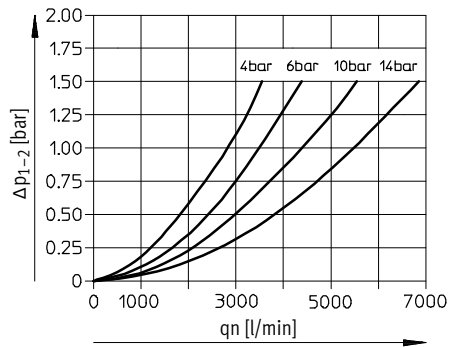
MS6-LF-1/4



MS6-LF-3/8



MS6-LF-1/2



Filters MS4/MS6-LF, MS series

Technical data



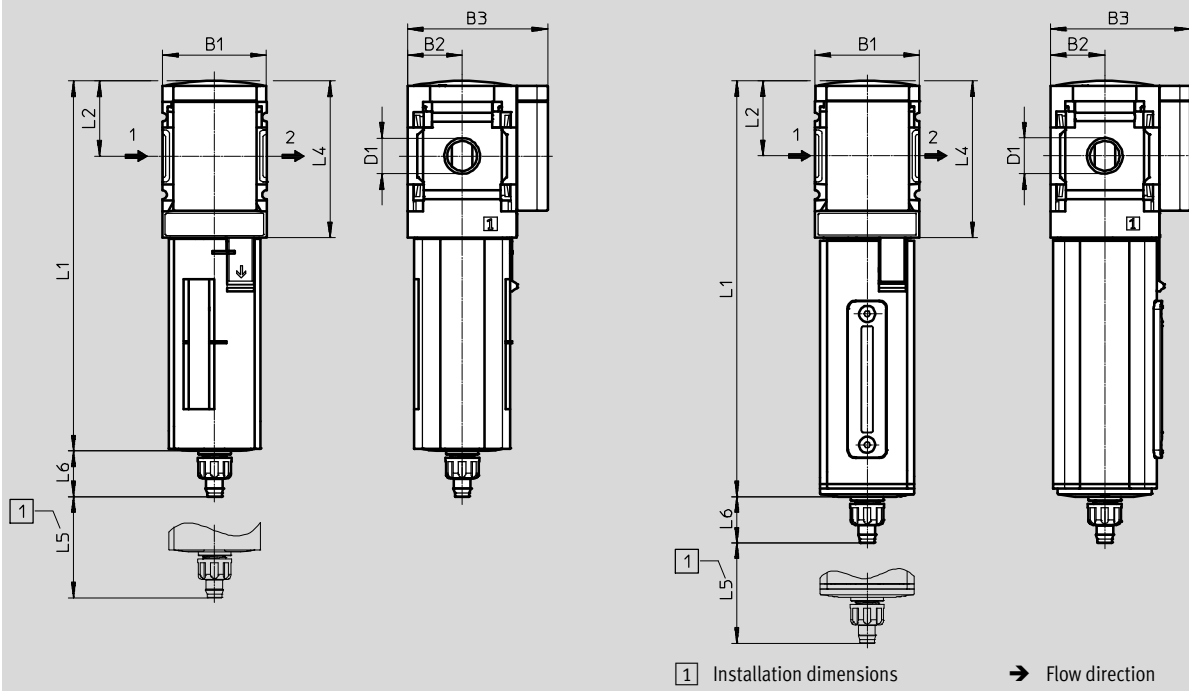
Dimensions – Basic version MS4-LF

Download CAD data → www.festo.com

Manual rotary condensate drain

With plastic bowl guard R

With metal bowl U



Type	B1	B2	B3	D1	L1		L2	L4	L5	L6
					Plastic bowl guard	Metal bowl				
MS4-LF-1/8	40	21	54	G1/8	142.8	159.4	29	60.5	75	17.7
MS4-LF-1/4				G1/4						

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

Filters MS4/MS6-LF, MS series

Technical data

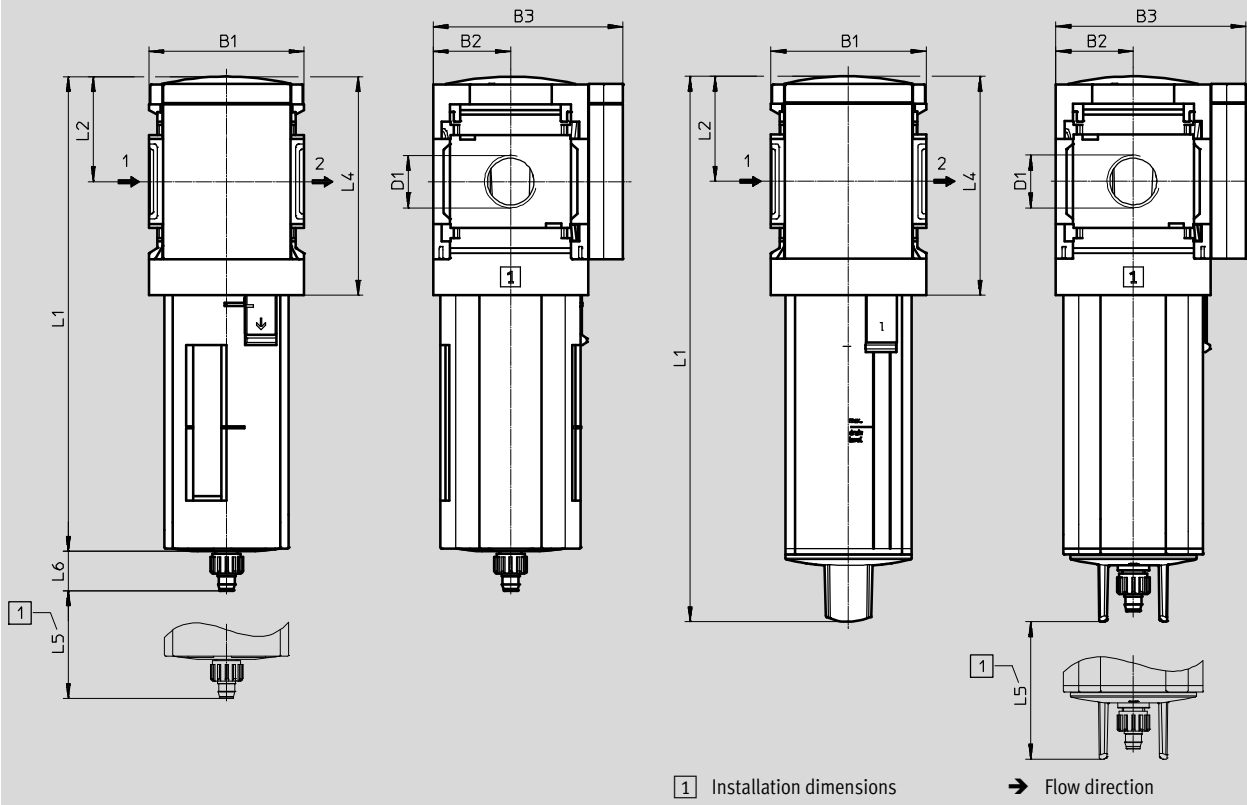
Dimensions – Basic version MS6-LF

Download CAD data → www.festo.com

Manual rotary condensate drain

With plastic bowl guard R

With metal bowl U



Type	B1	B2	B3	D1	L1		L2	L4	L5	L6
					Plastic bowl guard	Metal bowl				
MS6-LF-1/4	62	31	76	G1/4	190	218	42	87.5	74	15.8
MS6-LF-3/8				G3/8						
MS6-LF-1/2				G1/2						

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

Filters MS4/MS6-LF, MS series

Technical data

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-LF-...-M	5.6	17.7
MS6-LF-...-M		15.8
Metal bowl U		
MS4-LF-...-M	5.6	17.7
MS6-LF-...-M		–

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

Type	D6 Ø	L6
Plastic bowl guard R		
MS4-LF-...-V	5.6	20.4
MS6-LF-...-V		18.5
Metal bowl U		
MS4-LF-...-V	5.6	20.4
MS6-LF-...-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-LF-...-E2/E3/E4	72	140	108	15	174.5

Filters MS4/MS6-LF, MS series

Technical data

Ordering data						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MS4	manual rotary	G $\frac{1}{8}$	529403	MS4-LF- $\frac{1}{8}$ -CRM	529407	MS4-LF- $\frac{1}{8}$ -ERM
		G $\frac{1}{4}$	529395	MS4-LF- $\frac{1}{4}$ -CRM	529399	MS4-LF- $\frac{1}{4}$ -ERM
	fully automatic	G $\frac{1}{8}$	529405	MS4-LF- $\frac{1}{8}$ -CRV	-	-
		G $\frac{1}{4}$	529397	MS4-LF- $\frac{1}{4}$ -CRV	529401	MS4-LF- $\frac{1}{4}$ -ERV
MS6	manual rotary	G $\frac{1}{4}$	529623	MS6-LF- $\frac{1}{4}$ -CRM	529631	MS6-LF- $\frac{1}{4}$ -ERM
		G $\frac{3}{8}$	529639	MS6-LF- $\frac{3}{8}$ -CRM	529647	MS6-LF- $\frac{3}{8}$ -ERM
		G $\frac{1}{2}$	529607	MS6-LF- $\frac{1}{2}$ -CRM	529615	MS6-LF- $\frac{1}{2}$ -ERM
	fully automatic	G $\frac{1}{4}$	529625	MS6-LF- $\frac{1}{4}$ -CRV	-	-
		G $\frac{3}{8}$	529641	MS6-LF- $\frac{3}{8}$ -CRV	529649	MS6-LF- $\frac{3}{8}$ -ERV
		G $\frac{1}{2}$	529609	MS6-LF- $\frac{1}{2}$ -CRV	529617	MS6-LF- $\frac{1}{2}$ -ERV
Integrated as metal bowl						
MS4	manual rotary	G $\frac{1}{4}$	535654	MS4-LF- $\frac{1}{4}$ -CUM	535660	MS4-LF- $\frac{1}{4}$ -EUM
	fully automatic	G $\frac{1}{4}$	-	-	535658	MS4-LF- $\frac{1}{4}$ -EUV
MS6	manual rotary	G $\frac{1}{2}$	529611	MS6-LF- $\frac{1}{2}$ -CUM	529619	MS6-LF- $\frac{1}{2}$ -EUM
	fully automatic	G $\frac{1}{2}$	529613	MS6-LF- $\frac{1}{2}$ -CUV	529621	MS6-LF- $\frac{1}{2}$ -EUV

Filters MS4/MS6-LF, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527695	527668			
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Filters			-LF	-LF
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	<input type="checkbox"/>	- $\frac{1}{8}$	
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	<input type="checkbox"/>	- $\frac{1}{4}$	
		–	Female thread G $\frac{3}{8}$	<input type="checkbox"/>	- $\frac{3}{8}$	
		–	Female thread G $\frac{1}{2}$	<input type="checkbox"/>	- $\frac{1}{2}$	
		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 $\frac{1}{8}$	–	<input type="checkbox"/>	-AQK	
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	<input type="checkbox"/>	-AQN	
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	<input type="checkbox"/>	-AQP	
		–	Connecting plate NPT $\frac{1}{2}$	<input type="checkbox"/>	-AQR	
		–	Connecting plate NPT $\frac{3}{4}$	<input type="checkbox"/>	-AQS	
	Grade of filtration	40 μ m			-E	
		5 μ m			-C	
	Bowl	Plastic bowl with plastic bowl guard			-R	
		Metal bowl			-U	

$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, **AQK, AQN, AQP, AQR, AQS, E2, E3, E4, WPM**
Not with EU certification EX4

- Mandatory data
- Options

Transfer order code

MS - **LF** - - -

Filters MS4/MS6-LF, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Condensate drain	Manual			-M	
		Semi-automatic (P1 max. 12 bar)			-H	
		Fully automatic (P1 max. 12 bar)			-V	
		-	External fully automatic condensate drain, electrical, 110 V AC, terminals	1 2	-E2	
		-	External fully automatic condensate drain, electrical, 230 V AC, terminals	1 2	-E3	
		-	External fully automatic condensate drain, electrical, 24 V DC, terminals	1 2	-E4	
O	Type of mounting	Mounting bracket standard design		3	-WP	
		Mounting bracket for attaching the service units		1 3	-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)		
UL certification		cULus, ordinary location for Canada and USA			-UL1	
Flow direction		Flow direction from right to left			-Z	

2 E2, E3, E4 Only with metal bowl U.

3 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS.

- M Mandatory data
- O Options

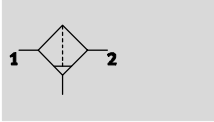
Transfer order code

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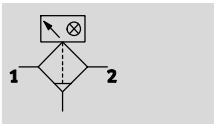
Fine and micro filters MS4/MS6-LFM, MS series

Technical data

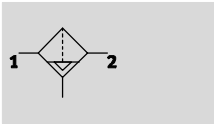
Function
Condensate drain
manual rotary
without differential pressure indicator



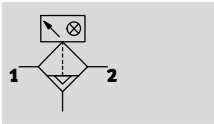
with differential pressure indicator or
filter pollution indicator







Condensate drain
semi or fully automatic
without differential pressure indicator



with differential pressure indicator or
filter pollution indicator




-  Flow rate
54 ... 3,000 l/min
-  Temperature range
-10 ... +60 °C
-  Operating pressure
0 ... 20 bar
-  www.festo.com



- High-performance filter for exceptionally clean compressed air
- Air quality to ISO 8573-1:2010
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- Available with differential pressure indicator for display of filter pollution
- Available with electronic filter pollution indicator
- Optionally with filter cartridge for low flow rates, suitable for sealing air and cleaning air
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22
- Choice of filter cartridges: 0.01 µm or 1 µm
- New filter cartridges → 89

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	Fibre filter	
Type of mounting	Via accessories In-line installation	
Mounting position	Vertical $\pm 5^\circ$	
Grade of filtration [µm]	0.01 (micro filter MS-LFM-A) 1 (fine filter MS-LFM-B)	
Air purity class at the output	Compressed air in accordance with ISO 8573-1:2010 [1:7:2] (Grade of filtration 0.01µm, micro filter MS-LFM-A) Compressed air in accordance with ISO 8573-1:2010 [5:7:3] (Grade of filtration 1µm, fine filter MS-LFM-B)	
Filter efficiency [%]	99.9999 (Grade of filtration 0.01µm, micro filter MS-LFM-A) 99.99 (Grade of filtration 1µm, fine filter MS-LFM-B)	
Bowl guard	Plastic bowl guard Integrated as metal bowl	
Condensate drain	Manual rotary Semi-automatic Fully automatic - Fully automatic, electrically actuated	
Differential pressure indication ¹⁾	Visual display With filter pollution indicator based on differential pressure	

1) Recommended max. differential pressure for changing the filter cartridge is $\Delta p_{1-2} = 0.35$ bar; for the micro filter MS6-LFM-A with range of application HP $\Delta p_{1-2} = 0.5$ bar
 -  Note: This product conforms to ISO 1179-1 and to ISO 228-1

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

FESTO

Technical data

General technical data		
Size	MS4	MS6
Residual oil content [mg/m ³]	≤0.01 (micro filter MS-LFM-A) ≤0.5 (fine filter MS-LFM-B)	
Max. condensate volume [cm ³]	19 (with plastic bowl guard) 25 (with metal shell)	38

Standard flow rate $q_n^{1)}$ [l/min]				
Size	MS4	MS6	Range of application HP, suitable for sealing air and cleaning air	
Variant	Standard	Standard	High flow rate HF	
Micro filter MS-LFM-A				
Max. standard flow rate for air purity class $q_{n \max}$	360	900	2,500	400
Min. standard flow rate for air purity class $q_{n \min}$	54	135	150	60
Fine filter MS-LFM-B				
Max. standard flow rate for air purity class $q_{n \max}$	360	950	3,000	500
Min. standard flow rate for air purity class $q_{n \min}$	54	140	188	60

1) Measured at $p_1 = 6$ bar.

• 125 l/min must be available for the fully automatic condensate drain to close correctly.

Technical data – Filter pollution indicator				
Filter pollution indicator	DP	DN	DPI	DNI
Pressure measuring range [bar]	0 ... +1			
Measured variable	Differential pressure; percentage value for filter pollution			
Switch output	PNP	NPN	PNP	NPN
Analogue output [mA]	–		4 ... 20	
Operating voltage range [V DC]	15 ... 30			
Max. output current [mA]	150			
Protection class	IP65			
CE mark (see declaration of conformity)	In accordance with EU EMC directive In accordance with EU Low Voltage Directive			

Operating and environmental conditions							
Condensate drain	Manual rotary M		Semi-automatic H		Fully automatic V		Fully automatic, electrical E2/E3/E4
	MS4	MS6	MS4	MS6	MS4	MS6	MS6
Operating pressure [bar]	0 ... 14 (0 ... 10) ¹⁾	0 ... 20 (0 ... 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 [6:8:4] ²⁾ Inert gases						
Ambient temperature [°C]	–10 ... +60 (0 ... +50) ³⁾		+5 ... +60 (+5 ... +50) ³⁾		+5 ... +60 (+5 ... +50) ³⁾		+1 ... +60 (+1 ... +50) ³⁾
Temperature of medium [°C]	–10 ... +60 (0 ... +50) ³⁾		+5 ... +60 (+5 ... +50) ³⁾		+5 ... +60 (+5 ... +50) ³⁾		+1 ... +60 (+1 ... +50) ³⁾
Storage temperature [°C]	–10 ... +60 (0 ... +50) ³⁾		–10 ... +60 (0 ... +50) ³⁾		–10 ... +60 (0 ... +50) ³⁾		+1 ... +60 (+1 ... +50) ³⁾
Corrosion resistance class CRC ⁴⁾	2						
UL certification	cULus recognized (OL)						

1) Value in brackets applies to MS4/MS6-LFM with UL certification or with filter pollution indicator DP/DN/DPI/DPN.

2) It is recommended to prefilter the compressed air for the micro filter MS-LFM-A using a fine filter MS-LFM-B (grade of filtration 1 µm).

3) Value in brackets applies to MS4/MS6-LFM with filter pollution indicator DP/DN/DPI/DPN.

4) 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.

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

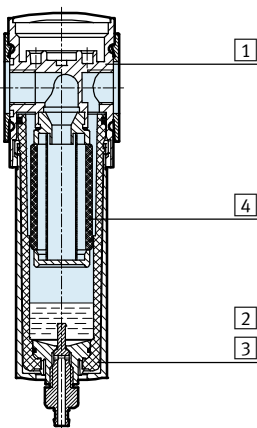
Technical data

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	
Variant	Standard	Standard/Range of application HP	High flow rate HF
Fine and micro filter with plastic bowl guard R	190	600	1,280
Fine and micro filter with metal bowl U	350	820	1,500
Fine and micro filter with metal bowl guard U and fully automatic, electrically actuated condensate drain E2/E3/E4	-	1,800	2,180
Filter pollution indicator	80	100	100

Materials

Sectional view



Fine and micro filters	
1 Housing	Die-cast aluminium
2 Plastic bowl guard	PC
3 Metal bowl	Wrought aluminium alloy, die-cast aluminium
Viewing window	PA
4 Filter	Borosilicate fibre
- Seals	NBR
Note on materials	RoHS-compliant (not with variant E2, E3 or E4)
	Free of copper and PTFE

Filter pollution indicator	
Housing	PA POM
Adapter	PA
Display	PC
Seals	NBR
Note on materials	Free of copper and PTFE

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

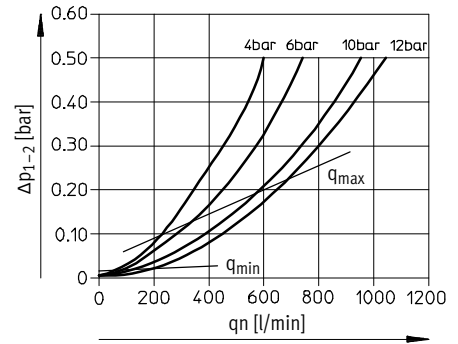
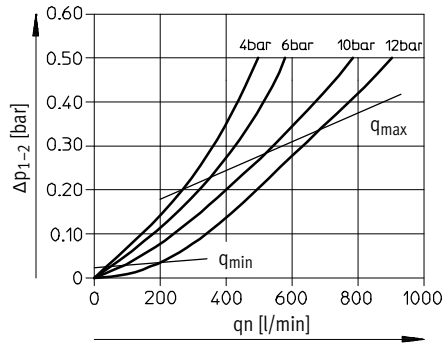
Technical data

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

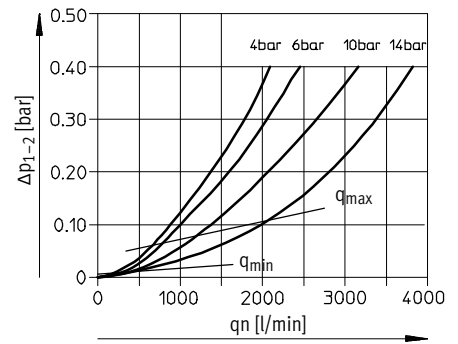
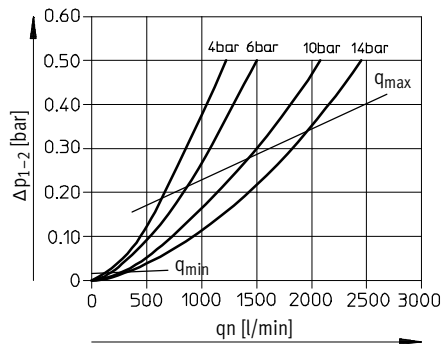
Grade of filtration 0.01 μm

Grade of filtration 1 μm

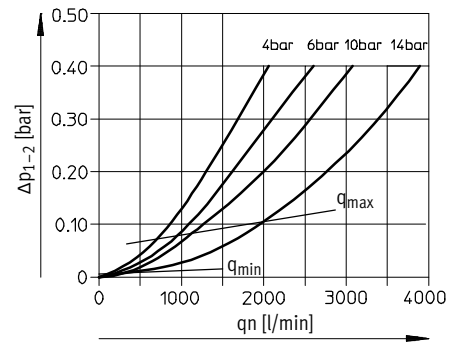
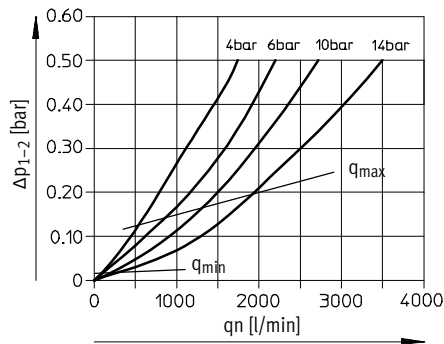
MS4-LFM-1/8 and MS4-LFM-1/4



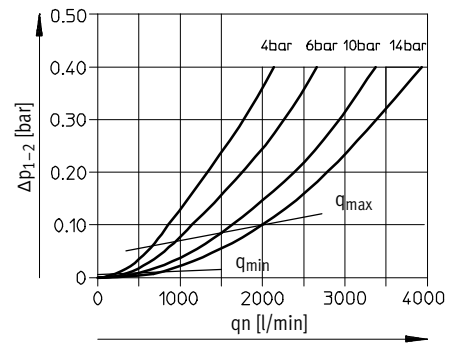
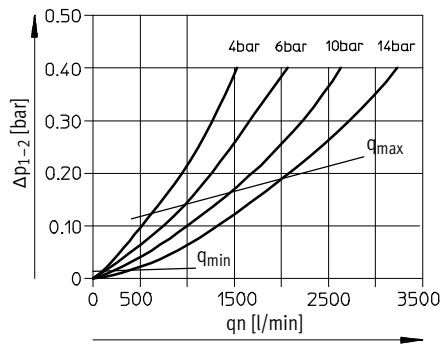
MS6-LFM-1/4



MS6-LFM-3/8



MS6-LFM-1/2



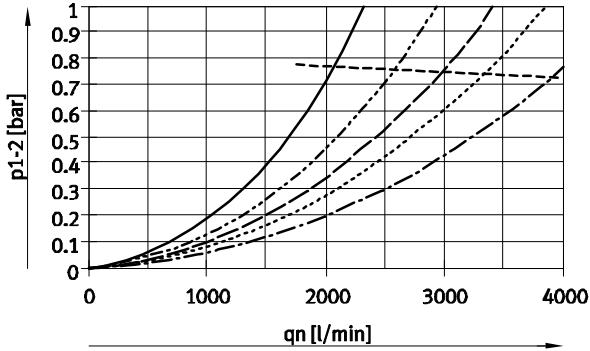
Fine and micro filters MS4/MS6-LFM, MS series

Technical data

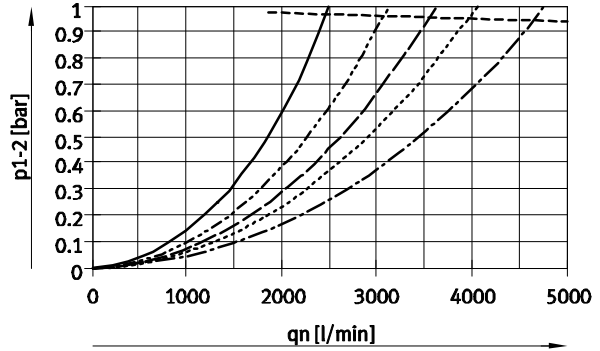


Standard flow rate q_n as a function of the differential pressure p_{1-2}

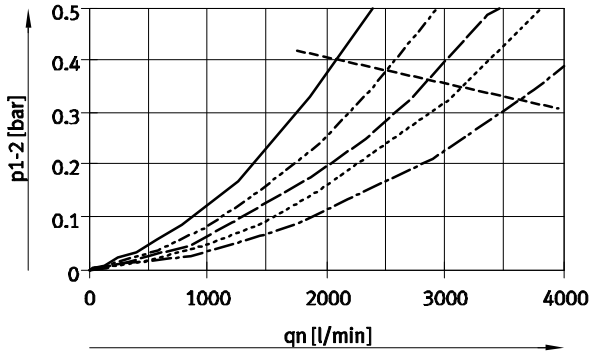
MS6-LFM-1/4-...-HF, Grade of filtration 0.01 μm



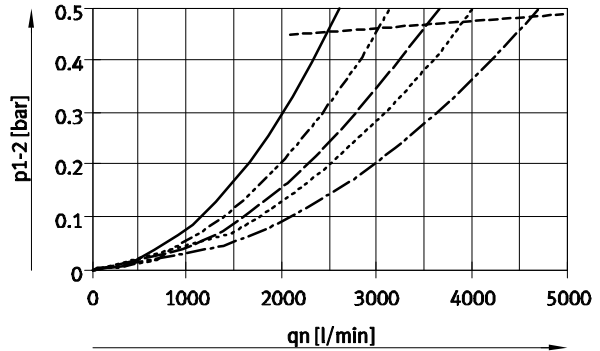
MS6-LFM-1/4-...-HF, Grade of filtration 1 μm



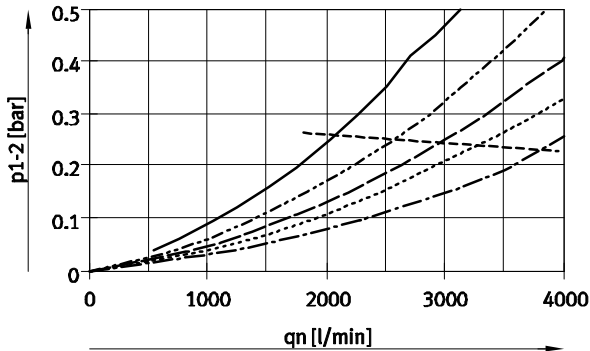
MS6-LFM-3/8-...-HF, Grade of filtration 0.01 μm



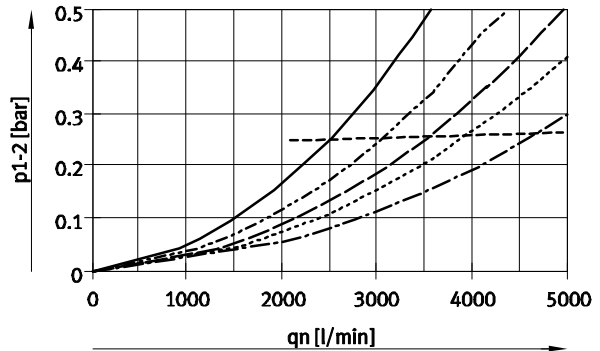
MS6-LFM-3/8-...-HF, Grade of filtration 1 μm



MS6-LFM-1/2-...-HF, Grade of filtration 0.01 μm



MS6-LFM-1/2-...-HF, Grade of filtration 1 μm



- p1: 4 bar (q_{min} : 103 l/min)
- - - p1: 6 bar (q_{min} : 125 l/min)
- - - p1: 8 bar
- - - p1: 10 bar (q_{min} : 162 l/min)
- - - p1: 14 bar (q_{min} : 192 l/min)
- - - q_{max}

- p1: 4 bar (q_{min} : 124 l/min)
- - - p1: 6 bar (q_{min} : 150 l/min)
- - - p1: 8 bar
- - - p1: 10 bar (q_{min} : 194 l/min)
- - - p1: 14 bar (q_{min} : 230 l/min)
- - - q_{max}

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

Technical data

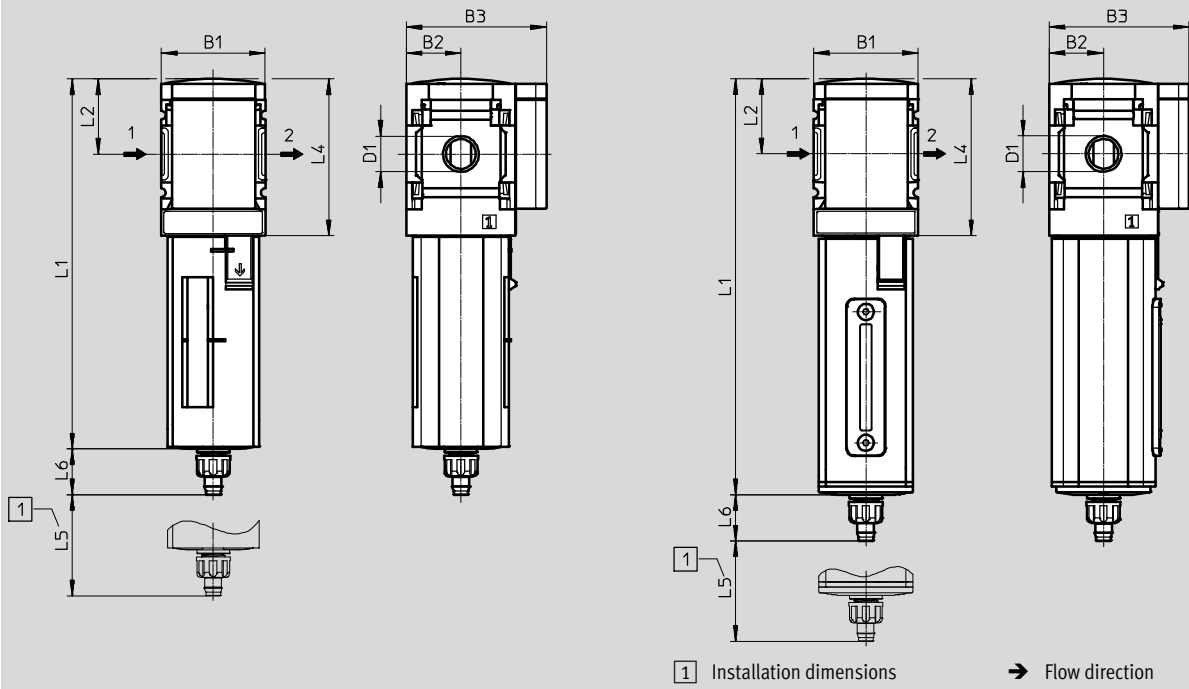
Dimensions – Basic version MS4-LFM

Download CAD data → www.festo.com

Manual rotary condensate drain

With plastic bowl guard R

With metal bowl U



Type	B1	B2	B3	D1	L1		L2	L4	L5	L6
					Plastic bowl guard	Metal bowl				
MS4-LFM-1/8	40	21	54	G1/8	141.6	160	29	60.5	25	17.7
MS4-LFM-1/4				G1/4						

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

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

Technical data



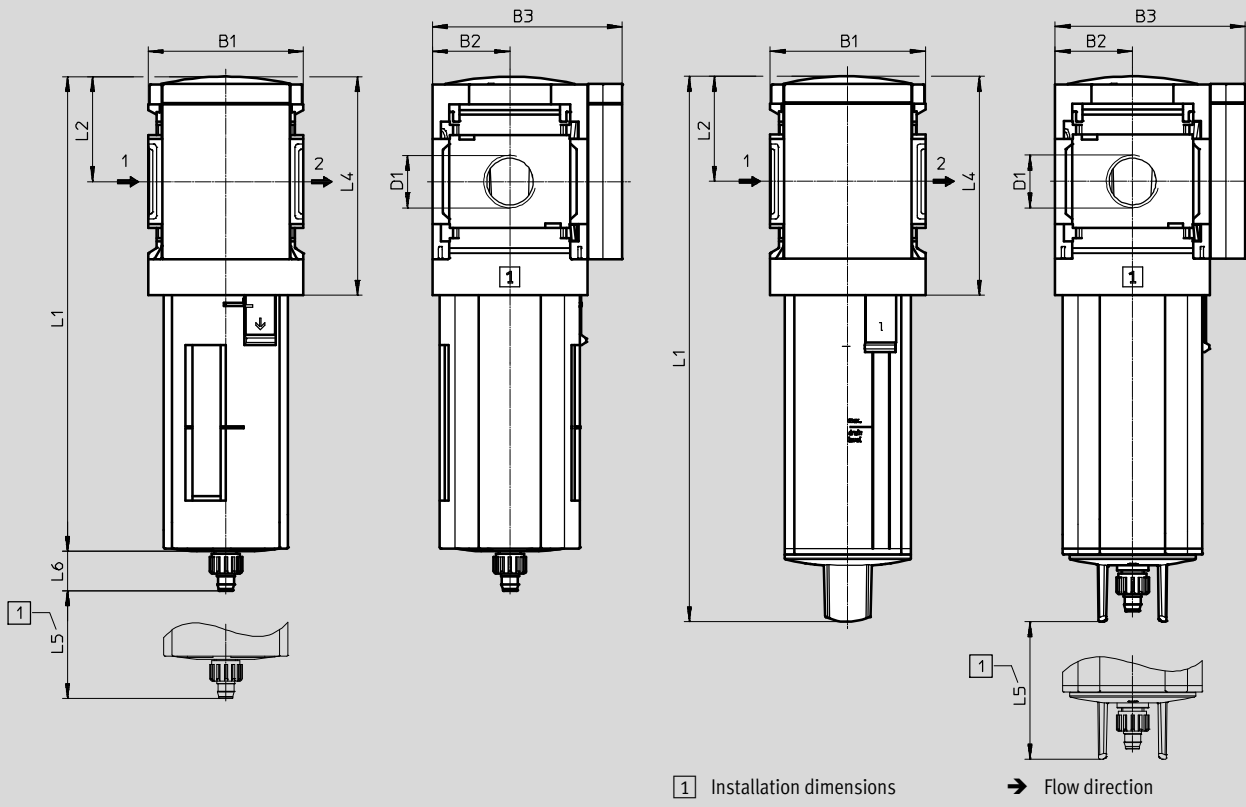
Dimensions – Basic version MS6-LFM

Download CAD data → www.festo.com

Manual rotary condensate drain

With plastic bowl guard R

With metal bowl U



Type	B1	B2	B3	D1	L1		L2	L4	L5	L6
					Plastic bowl guard	Metal bowl				
MS6-LFM-1/4	62	31	76	G1/4	193	221	42	88	75	15.8
MS6-LFM-3/8				G3/8						
MS6-LFM-1/2				G1/2						

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

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

Technical data

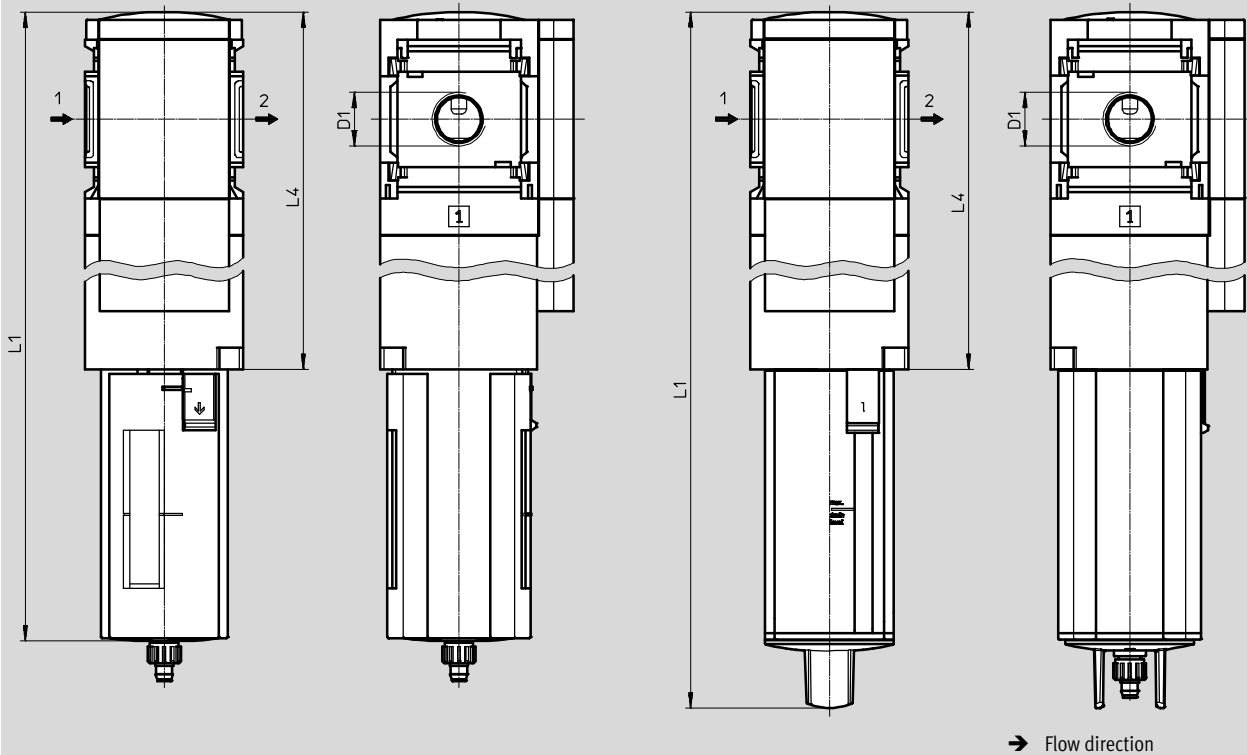
Dimensions – High flow rate HF

Download CAD data → www.festo.com

Manual rotary condensate drain

With plastic bowl guard R

With metal bowl U



Type	D1	L1		L4
		Plastic bowl guard	Metal bowl	
MS6-LFM-1/4-...-HF	G1/4	313	340	207
MS6-LFM-3/8-...-HF	G3/8			
MS6-LFM-1/2-...-HF	G1/2			

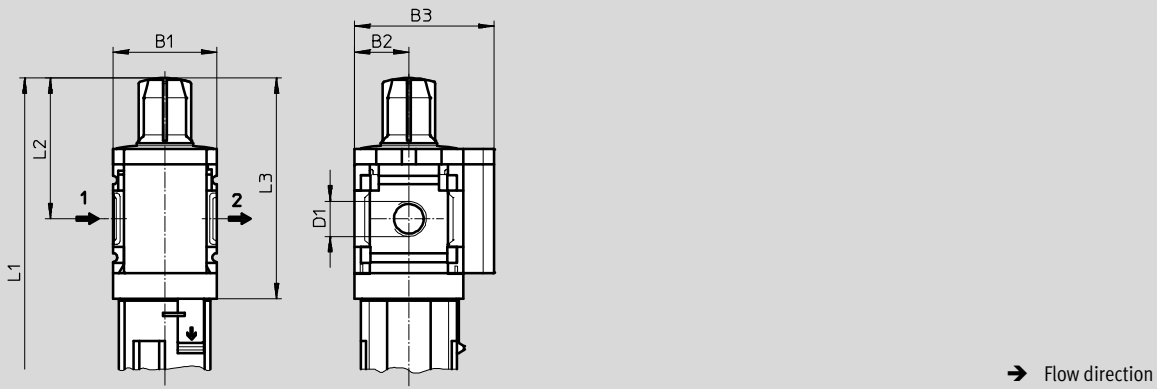
• † - Note: This product conforms to ISO 1179-1 and to ISO 228-1

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

Technical data

Dimensions – Differential pressure indicator DA

Download CAD data → www.festo.com



Type	B1	B2	B3	D1	L1		L2	L3
					Plastic bowl guard	Metal bowl		
MS4-LFM-1/8-...-DA	40	21	54	G1/8	168.4	186.8	55.8	87.3
MS4-LFM-1/4-...-DA				G1/4				
MS6-LFM-1/4-...-DA	62	31	76	G1/4	229	257	78	124
MS6-LFM-3/8-...-DA				G3/8				
MS6-LFM-1/2-...-DA				G1/2				
MS6-LFM-1/4-...-HF-DA	62	31	76	G1/4	349	376	78	124
MS6-LFM-3/8-...-HF-DA				G3/8				
MS6-LFM-1/2-...-HF-DA				G1/2				

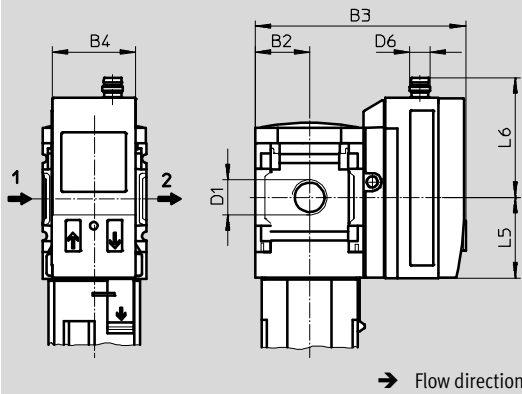
• Note: This product conforms to ISO 1179-1 and to ISO 228-1

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

Technical data

Dimensions – Filter pollution indicator DP/DN/DPI/DNI

Download CAD data → www.festo.com



Variant DP:
Filter pollution indicator with 3-pin
M8x1 plug, 1 switch output PNP

Variant DN:
Filter pollution indicator with 3-pin
M8x1 plug, 1 switch output NPN

Variant DPI:
Filter pollution indicator with 4-pin
M12x1 plug, 1 switch output PNP
and 4 ... 20 mA analogue

Variant DNI:
Filter pollution indicator with 4-pin
M12x1 plug, 1 switch output NPN
and 4 ... 20 mA analogue

Type	B2	B3	B4	D1	D6	L5	L6
MS4-LFM-1/8-...-DP/DN	21	82.6	32.3	G1/8	M8x1	35.1	46.7
MS4-LFM-1/4-...-DP/DN				G1/4			
MS4-LFM-1/8-...-DPI/DNI	21	82.6	32.3	G1/8	M12x1	35.1	55.8
MS4-LFM-1/4-...-DPI/DNI				G1/4			
MS6-LFM-1/4-...-DP/DN	31	103	32.3	G1/4	M8x1	35.1	46.7
MS6-LFM-3/8-...-DP/DN				G3/8			
MS6-LFM-1/2-...-DP/DN				G1/2			
MS6-LFM-1/4-...-DPI/DNI	31	103	32.3	G1/4	M12x1	35.1	55.8
MS6-LFM-3/8-...-DPI/DNI				G3/8			
MS6-LFM-1/2-...-DPI/DNI				G1/2			

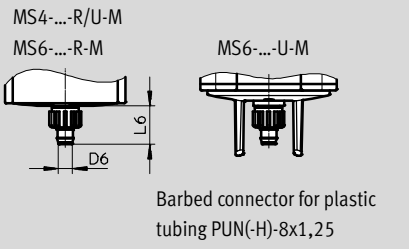
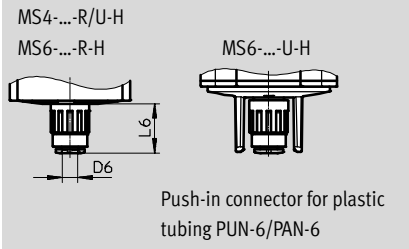
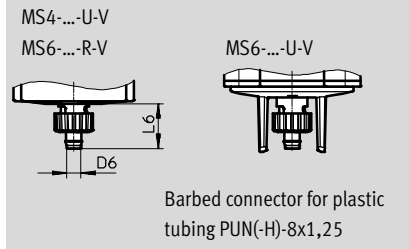
-||- Note: This product conforms to ISO 1179-1 and to ISO 228-1

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

Technical data

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

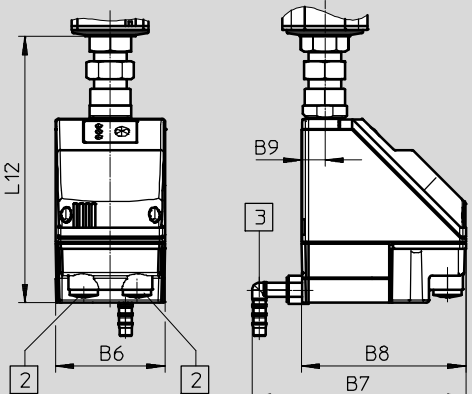
Manual rotary M	Semi-automatic H	Fully automatic V
MS4-...-R/U-M MS6-...-R-M  <p style="text-align: center;">Barbed connector for plastic tubing PUN(H)-8x1,25</p>	MS4-...-R/U-H MS6-...-R-H  <p style="text-align: center;">Push-in connector for plastic tubing PUN-6/PAN-6</p>	MS4-...-U-V MS6-...-R-V  <p style="text-align: center;">Barbed connector for plastic tubing PUN(H)-8x1,25</p>

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

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

Type	D6 Ø	L6
Plastic bowl guard R		
–	–	–
MS6-LFM-...-V	5.6	18.5
Metal bowl U		
MS4-LFM-...-V	5.6	20.4
MS6-LFM-...-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-LFM-...-E2/E3/E4	72	140	108	15	174.5

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

Technical data

Ordering data						
Without differential pressure indicator						
Size	Condensate drain	Connection	Micro filter		Fine filter	
			Grade of filtration 0.01 µm		Grade of filtration 1 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MS4	Manual rotary	G $\frac{1}{8}$	529463	MS4-LFM- $\frac{1}{8}$ -ARM	529465	MS4-LFM- $\frac{1}{8}$ -BRM
		G $\frac{1}{4}$	529459	MS4-LFM- $\frac{1}{4}$ -ARM	529461	MS4-LFM- $\frac{1}{4}$ -BRM
MS6	Manual rotary	G $\frac{1}{4}$	529663	MS6-LFM- $\frac{1}{4}$ -ARM	529667	MS6-LFM- $\frac{1}{4}$ -BRM
		G $\frac{3}{8}$	529671	MS6-LFM- $\frac{3}{8}$ -ARM	529675	MS6-LFM- $\frac{3}{8}$ -BRM
		G $\frac{1}{2}$	529655	MS6-LFM- $\frac{1}{2}$ -ARM	529659	MS6-LFM- $\frac{1}{2}$ -BRM
	Fully automatic	G $\frac{1}{4}$	530510	MS6-LFM- $\frac{1}{4}$ -ARV	530514	MS6-LFM- $\frac{1}{4}$ -BRV
		G $\frac{3}{8}$	530518	MS6-LFM- $\frac{3}{8}$ -ARV	-	-
		G $\frac{1}{2}$	530502	MS6-LFM- $\frac{1}{2}$ -ARV	530506	MS6-LFM- $\frac{1}{2}$ -BRV
Integrated as metal bowl						
MS4	Fully automatic	G $\frac{1}{4}$	535768	MS4-LFM- $\frac{1}{4}$ -AUV	535766	MS4-LFM- $\frac{1}{4}$ -BUV
MS6	Fully automatic	G $\frac{1}{4}$	529665	MS6-LFM- $\frac{1}{4}$ -AUV	-	-
		G $\frac{3}{8}$	529673	MS6-LFM- $\frac{3}{8}$ -AUV	-	-
		G $\frac{1}{2}$	529657	MS6-LFM- $\frac{1}{2}$ -AUV	529661	MS6-LFM- $\frac{1}{2}$ -BUV

Ordering data						
With differential pressure indicator						
Size	Condensate drain	Connection	Micro filter		Fine filter	
			Grade of filtration 0.01 µm		Grade of filtration 1 µm	
			Part No.	Type	Part No.	Type
Plastic bowl guard						
MS4	Manual rotary	G $\frac{1}{8}$	536821	MS4-LFM- $\frac{1}{8}$ -ARM-DA	-	-
		G $\frac{1}{4}$	536822	MS4-LFM- $\frac{1}{4}$ -ARM-DA	536818	MS4-LFM- $\frac{1}{4}$ -BRM-DA
MS6	Manual rotary	G $\frac{1}{4}$	536869	MS6-LFM- $\frac{1}{4}$ -ARM-DA	536833	MS6-LFM- $\frac{1}{4}$ -BRM-DA
		G $\frac{3}{8}$	536870	MS6-LFM- $\frac{3}{8}$ -ARM-DA	-	-
		G $\frac{1}{2}$	536871	MS6-LFM- $\frac{1}{2}$ -ARM-DA	536835	MS6-LFM- $\frac{1}{2}$ -BRM-DA
	Fully automatic	G $\frac{1}{2}$	536877	MS6-LFM- $\frac{1}{2}$ -ARV-DA	536841	MS6-LFM- $\frac{1}{2}$ -BRV-DA
Integrated as metal bowl						
MS4	Fully automatic	G $\frac{1}{4}$	537214	MS4-LFM- $\frac{1}{4}$ -AUV-DA	-	-
MS6	Fully automatic	G $\frac{1}{2}$	536883	MS6-LFM- $\frac{1}{2}$ -AUV-DA	536847	MS6-LFM- $\frac{1}{2}$ -BUV-DA
Integrated as metal bowl and high flow rate						
MS6	Fully automatic	G $\frac{1}{2}$	552926	MS6-LFM- $\frac{1}{2}$ -AUV-HF-DA	552925	MS6-LFM- $\frac{1}{2}$ -BUV-HF-DA

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



Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527697	527670			
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Fine and micro filter			-LFM	-LFM
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	<input type="checkbox"/>	- $\frac{1}{8}$	
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	<input type="checkbox"/>	- $\frac{1}{4}$	
		–	Female thread G $\frac{3}{8}$	<input type="checkbox"/>	- $\frac{3}{8}$	
		–	Female thread G $\frac{1}{2}$	<input type="checkbox"/>	- $\frac{1}{2}$	
		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 $\frac{1}{8}$	–	<input type="checkbox"/>	-AQK	
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	<input type="checkbox"/>	-AQN	
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	<input type="checkbox"/>	-AQP	
		–	Connecting plate NPT $\frac{1}{2}$	<input type="checkbox"/>	-AQR	
		–	Connecting plate NPT $\frac{3}{4}$	<input type="checkbox"/>	-AQS	
	Grade of filtration	1 μ m			-B	
		0.01 μ m			-A	
	Bowl	Plastic bowl with plastic bowl guard			-R	
		Metal bowl			-U	

$\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, **AQK, AQN, AQP, AQR, AQS, E2, E3, E4, DP, DN, DPI, DNI, WPM**
Not with EU certification EX4

- Mandatory data
- Options

Transfer order code

MS - **LFM** - -

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

Ordering data – Modular products

Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
↓ [M]	Condensate drain	Manual			-M		
		Semi-automatic (P1 max. 12 bar)			-H		
		Fully automatic (P1 max. 12 bar)			[2]	-V	
		–	External fully automatic condensate drain, electrical, 110 V AC, terminals	[1]	[3]	-E2	
		–	External fully automatic condensate drain, electrical, 230 V AC, terminals	[1]	[3]	-E3	
		–	External fully automatic condensate drain, electrical, 24 V DC, terminals	[1]	[3]	-E4	
[O]	Flow rate	–	High flow rate		-HF		
	Range of application	–	Suitable for sealing air and cleaning air	[4]	-HP		
	Filter contamination sensing	Differential pressure indicator, visual			-DA		
		Filter contamination indicator, M8 plug, PNP, 3-pin		[1]	[5]	-DP	
		Filter contamination indicator, M8 plug, NPN, 3-pin		[1]	[5]	-DN	
		Filter contamination indicator, M12 plug, PNP, 4-pin, analogue output 4 ... 20 mA		[1]	[5]	-DPI	
		Filter contamination indicator, M12 plug, PNP, 4-pin, analogue output 4 ... 20 mA		[1]	[5]	-DNI	
	Type of mounting	Mounting bracket standard design		[6]	-WP		
		Mounting bracket for attaching the service units		[1]	[6]	-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		

[2] V Size 4: only with metal bowl U

[3] E2, E3, E4 Only with metal bowl U

[4] HP Not with flow rate HF or filter contamination sensing DA

[5] DP, DN, DPI, DNI Measuring range max. 10 bar

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

[M] Mandatory data

[O] Options

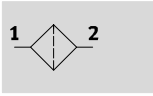
Transfer order code

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

Active carbon filters MS4/MS6-LFX, MS series

Technical data

Function



- - Flow rate
max. 2,500 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0 ... 20 bar
- - www.festo.com



- - Note
Prefiltration with micro filter MS-LFM-A, grade of filtration 0.01 µm, recommended.

- Removal of liquid and gaseous oil particles from compressed air using active carbon
- Eliminates odours and vapours
- Optionally with filter cartridge for low flow rates, suitable for sealing air and cleaning air
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22
- New filter cartridges → 89

General technical data		MS4	MS6
Size			
Pneumatic connection 1, 2			
Female thread		G ¹ / ₈ or G ¹ / ₄	G ¹ / ₄ , G ³ / ₈ or G ¹ / ₂
Connecting plate AG...		G ¹ / ₈ , G ¹ / ₄ or G ³ / ₈	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ or G ³ / ₄
Connecting plate AQ...		NPT ¹ / ₈ , NPT ¹ / ₄ or NPT ³ / ₈	NPT ¹ / ₄ , NPT ³ / ₈ , NPT ¹ / ₂ or NPT ³ / ₄
Design		Active carbon filter	
Type of mounting		Via accessories In-line installation	
Assembly position		Vertical ±5°	
Air purity class at the output ¹⁾		Compressed air in accordance with ISO 8573-1:2010 [1:4:1]	
Bowl guard		Plastic bowl guard Integrated as metal bowl	
Residual oil content	[mg/m ³]	≤0.003	

1) We recommend that the filter cartridge be replaced by a new one after 1,000 operating hours. (Applies to an ambient temperature of 21 °C. At higher temperatures the service life of the filter cartridge will be reduced.)
 - - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Standard flow rate q _n ¹⁾ [l/min]				
Size	MS4	MS6		
Variant	Standard	Standard	High flow rate HF	Range of application HP, suitable for sealing air and cleaning air
Max. standard flow rate for air purity class q _{n max}	360	900	2,500	900

1) Measured at p₁ = 6 bar.

Active carbon filters MS4/MS6-LFX, MS series

Technical data

Operating and environmental conditions		
Size	MS4	MS6
Operating pressure [bar]	0 ... 14 (0 ... 10) ¹⁾	0 ... 20 (0 ... 10) ¹⁾
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [1:4:2] Inert gases	
Ambient temperature [°C]	-10 ... +60	
Temperature of medium [°C]	+5 ... +30	
Storage temperature [°C]	-10 ... +60	
Corrosion resistance class CRC ²⁾	2	
UL certification	cULus recognized (OL)	

1) Value in brackets applies to MS4/MS6-LFX with UL certification.

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

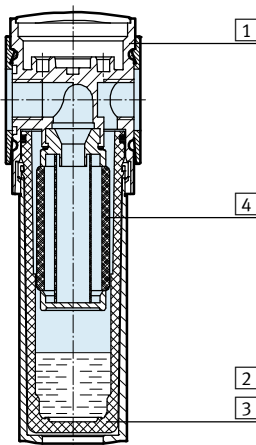
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

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 60 °C X
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Weights [g]			
Size	MS4	MS6	
Variant	Standard	Standard/Range of application HP	High flow rate HF
Active carbon filter with plastic bowl guard R	190	600	1,280
Active carbon filter with metal bowl U	350	820	1,500

Materials

Sectional view



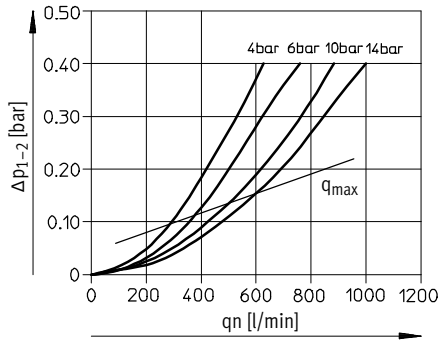
Active carbon filter		
1	Body	Die-cast aluminium
2	Plastic bowl guard	PC
3	Metal bowl	Wrought aluminium alloy, die-cast aluminium
	Viewing window	PA
4	Filters	Active carbon
-	Seals	NBR
Note on materials		RoHS-compliant Free of copper and PTFE

Active carbon filters MS4/MS6-LFX, MS series

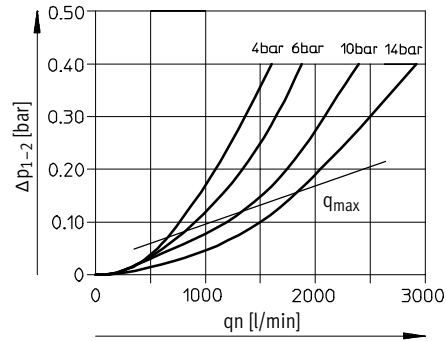
Technical data

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

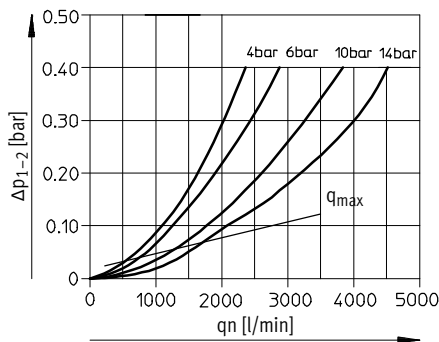
MS4-LFX-1/8 and MS4-LFX-1/4



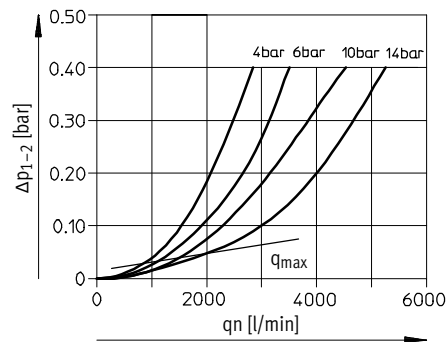
MS6-LFX-1/4



MS6-LFX-3/8

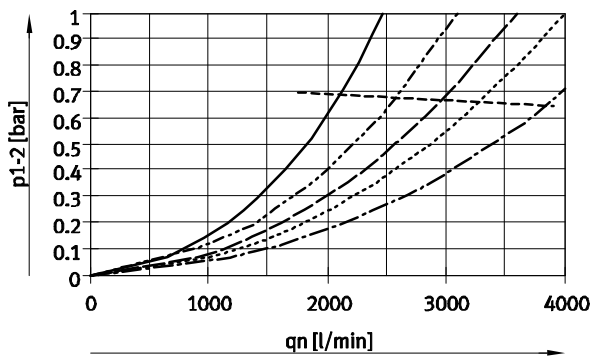


MS6-LFX-1/2

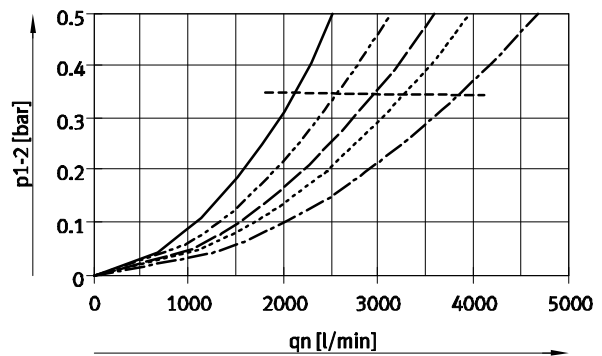


Standard flow rate q_n as a function of the differential pressure p_{1-2}

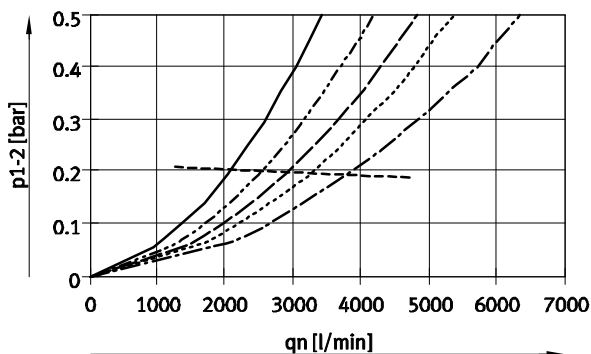
MS6-LFX-1/4-...-HF



MS6-LFX-3/8-...-HF



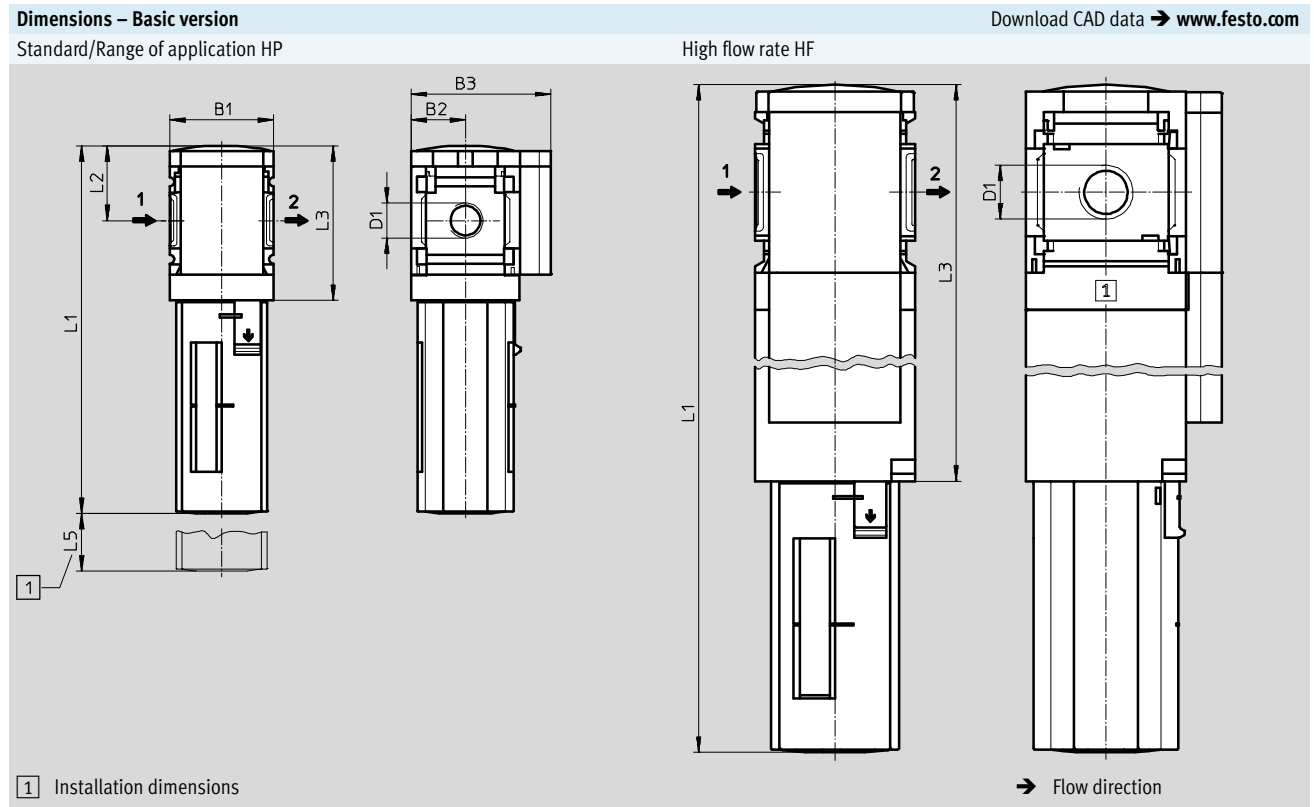
MS6-LFX-1/2-...-HF



- p1: 4 bar
- - - p1: 6 bar
- · - p1: 8 bar
- · · p1: 10 bar
- · - p1: 14 bar
- - - q_{max}

Active carbon filters MS4/MS6-LFX, MS series

Technical data



Type	B1	B2	B3	D1	L1		L2	L3	L5
					Bowl guard				
					Plastic	Metal			
MS4-LFX-1/8	40	21	54	G1/8	142.8	160.4	29	60	73
MS4-LFX-1/4				G1/4					
MS6-LFX-1/4	62	31	76	G1/4	192	198	42	88	100
MS6-LFX-3/8				G3/8					
MS6-LFX-1/2				G1/2					
MS6-LFX-1/4-...-HF	62	31	76	G1/4	312	318	42	207	100
MS6-LFX-3/8-...-HF				G3/8					
MS6-LFX-1/2-...-HF				G1/2					

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

Ordering data					
Size	Connection	Plastic bowl guard		Integrated as metal bowl	
		Part No.	Type	Part No.	Type
MS4	G1/8	-	-	536709	MS4-LFX-1/8-U
	G1/4	529467	MS4-LFX-1/4-R	535782	MS4-LFX-1/4-U
MS6	G1/4	529683	MS6-LFX-1/4-R	529685	MS6-LFX-1/4-U
	G3/8	529687	MS6-LFX-3/8-R	-	-
	G1/2	529679	MS6-LFX-1/2-R	529681	MS6-LFX-1/2-U
High flow rate					
MS6	G1/2	-	-	552927	MS6-LFX-1/2-U-HF

Activated carbon filters MS4/MS6-LFX, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527699	527672			
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Activated carbon filter			-LFX	-LFX
	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	
	Bowl	Plastic bowl with plastic bowl guard			-R	
		Metal bowl			-U	
O	Flow rate	–	High flow rate		-HF	
	Range of application	–	Suitable for sealing air and cleaning air	2	-HP	
	Type of mounting	Mounting bracket standard design		3	-WP	
		Mounting bracket for attaching the service units		1 3	-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	

1 $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, **AQK, AQN, AQP, AQR, AQS, WPM**

Not with EU certification EX4

2 **HP**

Not with flow rate HF

3 **WP, WPM**

Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS.

M Mandatory data

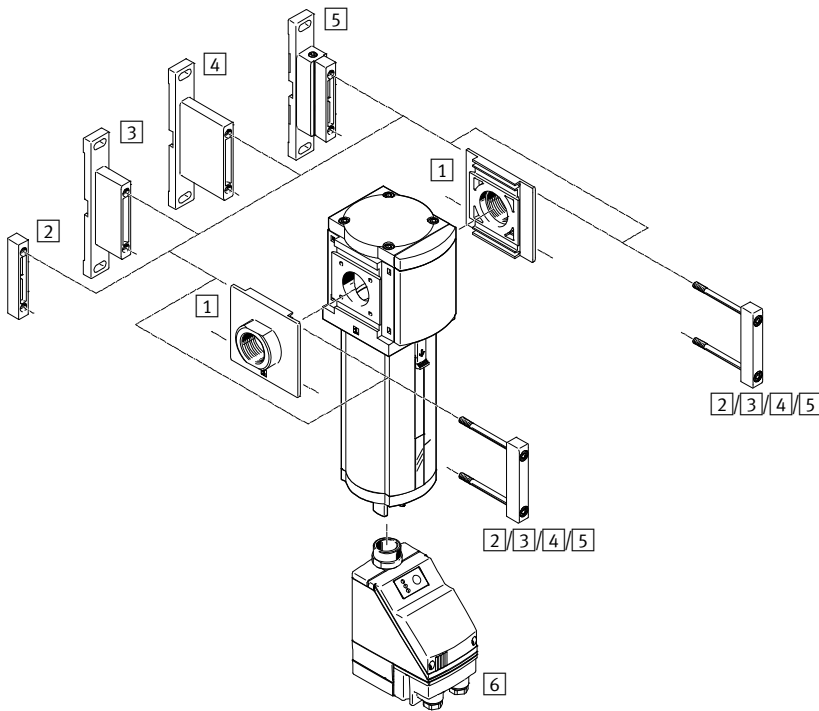
O Options


Transfer order code

MS - **LFX** - - - - - - - - - -

Filters MS9-LF, MS series

Peripherals overview



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

Mounting attachments and accessories						
		Individual device			Combination Module without connecting thread, without connecting plate G	→ Page/ Internet
		With female thread 3/4/1/N3/4/N1	With connecting plate AG.../AQ...			
			Without EU certification EX4	With 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	Condensate drain, fully automatic, electrically actuated E2/E3/E4	■	■	-	■	46

Filters MS9-LF, MS series

Type codes

Series		MS	9	-	LF	-	G	-	E	U	M
Series											
MS	Standard service unit										
Size											
9	Grid dimension 90 mm										
Service function											
LF	Filter										
Connection size											
G	Module without connecting thread, without connecting plate										
Grade of filtration											
C	5 µm										
E	40 µm										
Bowl guard											
U	Integrated as metal bowl										
Condensate drain											
M	Manual rotary										
V	Fully automatic										

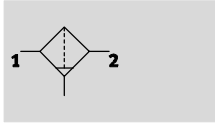
Additional variants can be ordered using the modular system → 46

- Pneumatic connection
- Condensate drain
- Type of mounting
- EU certification
- UL certification
- Flow direction

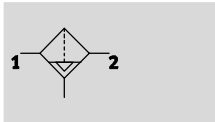
Filters MS9-LF, MS series

Technical data

Condensate drain,
manual rotary



Condensate drain,
semi or fully automatic



- - Flow rate
6,000 ... 16,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0 ... 20 bar



- Good particle and condensate separation
- High flow rate with minimal pressure drop
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 90
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data	
Size	MS9
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	-
Design	Sintered filter with centrifugal separator
Type of mounting	Via accessories In-line installation
Mounting position	Vertical ±5°
Grade of filtration [µm]	5 40
Air purity class at the output	Compressed air in accordance with ISO 8573-1:2010 [6:8:4] (grade of filtration 5 µm) Compressed air in accordance with ISO 8573-1:2010 [7:8:4] (grade of filtration 40 µm)
Bowl guard	Integrated as metal bowl
Condensate drain	Manual rotary Semi-automatic Fully automatic Fully automatic, electrically actuated
Max. condensate volume [ml]	220

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

Standard nominal flow rate qnN ¹⁾ [l/min]				
Pneumatic connection		G1/2/NPT1/2	G3/4/NPT3/4	G1/G1 1/4/G1 1/2/ NPT1/NPT1 1/4/NPT1 1/2
Grade of filtration	5 µm	6,000	8,500	9,500
	40 µm	8,000	12,500	16,000

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

Filters MS9-LF, MS series

Technical data

Operating and environmental conditions				
Condensate drain	Manual rotary M	Semi-automatic H	Fully automatic V	Fully automatic, electrically actuated E2/E3/E4
Operating pressure [bar]	0 ... 20	1.5 ... 12	2 ... 12	1 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [-:9:-]	Compressed air in accordance with ISO 8573-1:2010 [-:9:-]	Compressed air in accordance with ISO 8573-1:2010 [7:9:-]	Compressed air in accordance with ISO 8573-1:2010 [-:9:-]
Ambient temperature [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Temperature of medium [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Storage temperature [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Corrosion resistance class CRC ¹⁾	2			
UL certification	cULus recognized (OL)			

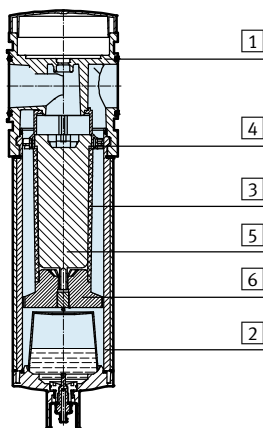
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial 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 ≤ 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]	
Filter	2,000
Filter with condensate drain, fully automatic, electrically actuated E2/E3/E4	2,400

Materials

Sectional view



Filter		
1	Housing	Die-cast aluminium
2	Bowl	Wrought aluminium alloy
	Inspection window	PA
3	Filter	PE
4	Spin disc	POM
5	Filter holder	POM
6	Separating plate	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)

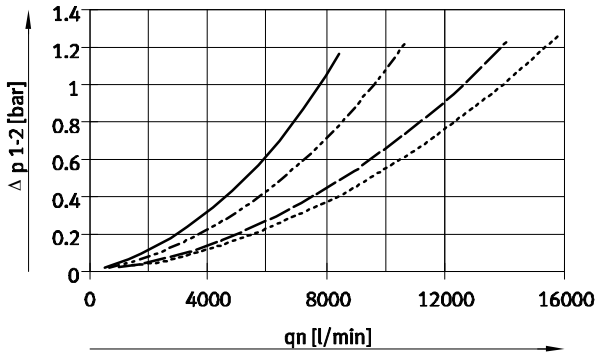
Filters MS9-LF, MS series

Technical data



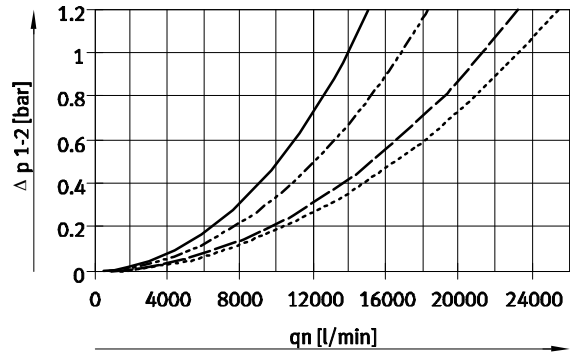
Standard flow rate q_n as a function of differential pressure Δp_{1-2}

Grade of filtration 5 μm , pneumatic connection G1/NPT1



— 4 bar - · - · 10 bar
 - - - 6 bar · · · · 12 bar

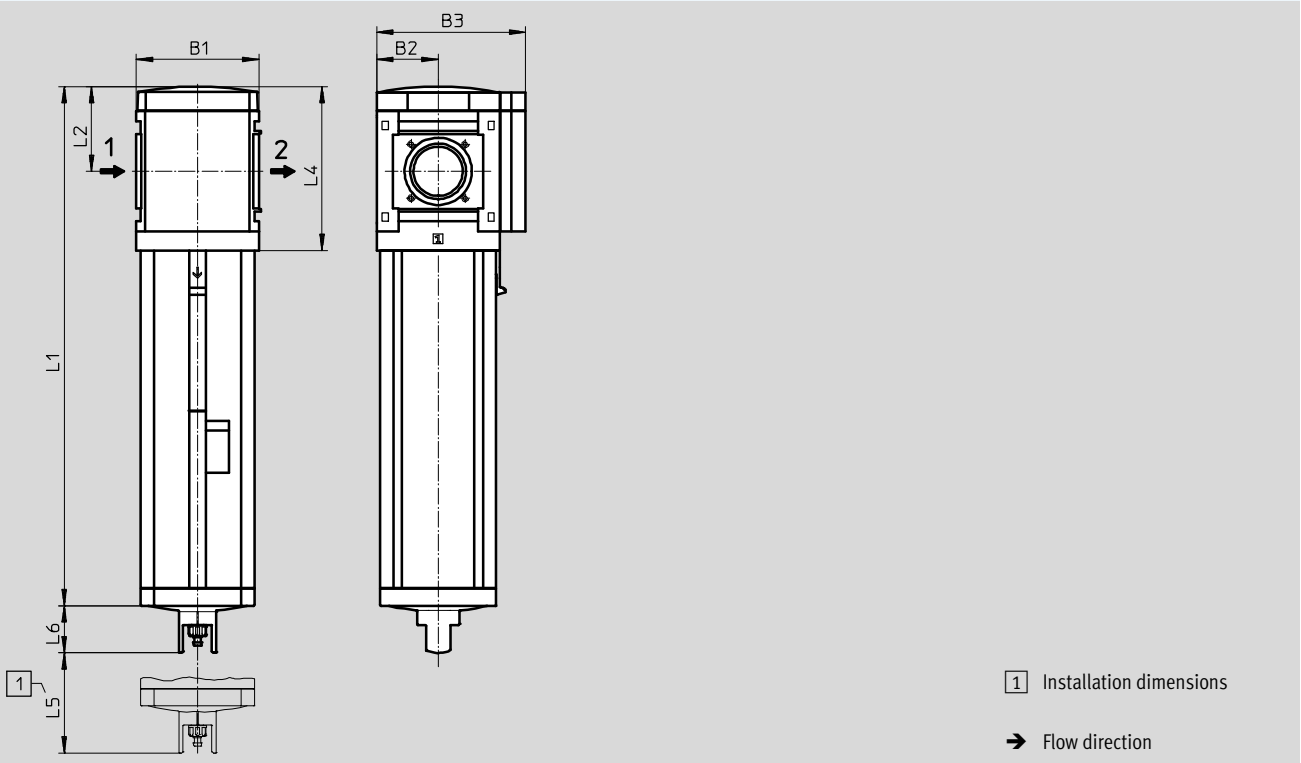
Grade of filtration 40 μm , pneumatic connection G1/NPT1



Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G



Type	B1	B2	B3	L1	L2	L4	L5	L6
MS9-LF-G	90	45	109	310.5	62	120	150	34.5

Filters MS9-LF, MS series

Technical data

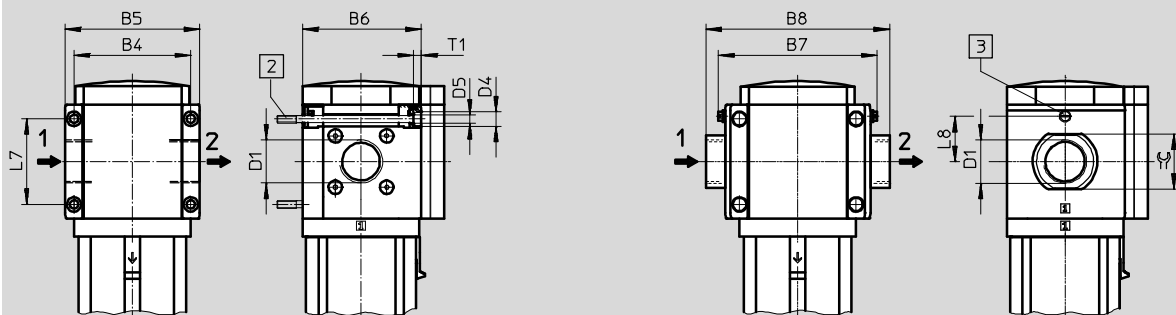
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Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

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

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



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

3 Earthing screw M4x8 (only with MS9-...-EX4)

→ Flow direction

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

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

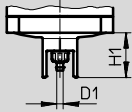
Filters MS9-LF, MS series

Technical data

Dimensions – Condensate drain

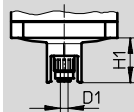
Download CAD data → www.festo.com

Manual rotary M/fully automatic V



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

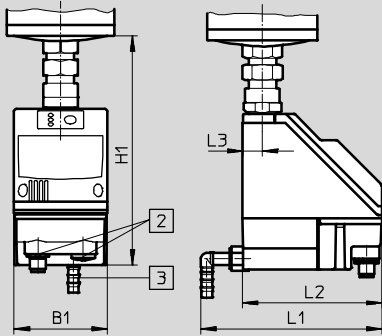
Semi-automatic H



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

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

Ordering data

Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
MS9	Manual rotary	-	564108	MS9-LF-G-CUM	564106	MS9-LF-G-EUM
	Fully automatic	-	564109	MS9-LF-G-CUV	564107	MS9-LF-G-EUV

Filters MS9-LF, MS series

Ordering data – Modular products



Ordering table		Grid dimension	[mm]	90	Condi- tions	Code	Enter code	
M	Module No.	562532						
	Series	Standard				MS	MS	
	Size	9				9	9	
	Function	Filter				-LF	-LF	
	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		
	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			
O	Type of mounting	Mounting bracket standard design			2	-WP		
		Mounting bracket for attaching the service units			1 2	-WPM		
		Mounting bracket for large wall gap			2	-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 $\frac{3}{4}$, 1, N $\frac{3}{4}$, N1, AQR, AQS, AQT, AQU, AQV, G, E2, E3, E4, WPM

Not with EU certification EX4

2 **WP, WPM, WPB** Not with pneumatic connection G

M Mandatory data

O Options

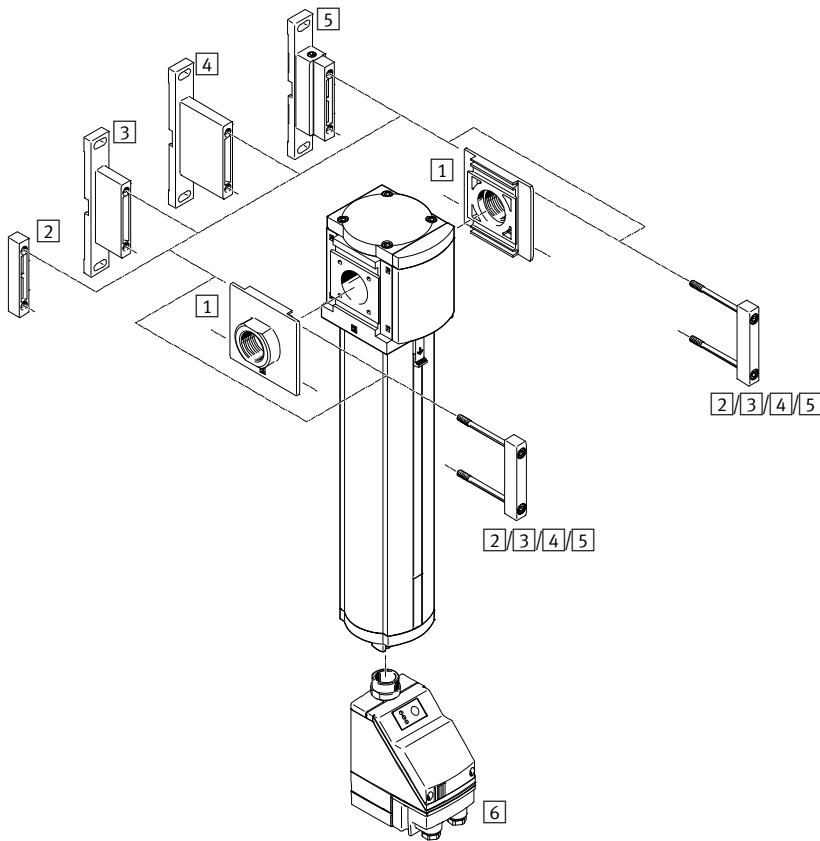
Transfer order code


562532 MS 9 - LF - - - U - - - - -

Fine and micro filters MS9-LFM, MS series

Peripherals overview

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-  - Note
 Other accessories:
 - Module connector for combination with size MS6, MS9 or MS12
 → Internet: rmv, armv

Mounting attachments and accessories					
		Individual device		Combination Module without connecting thread, without connecting plate G	→ 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	Condensate drain, fully automatic, electrically actuated E2/E3/E4	■	■	-	59

Fine and micro filters MS9-LFM, MS series

Type codes

MS 9 - LFM - 1 - A U M - HF - DA

Series	
MS	Standard service unit

Size	
9	Grid dimension 90 mm

Service function	
LFM	Fine and micro filter

Pneumatic connection	
3/4	Thread G3/4
1	Thread G1
G	Module without connecting thread, without connecting plate

Grade of filtration	
A	0.01 µm
B	1 µm

Bowl guard	
U	Integrated as metal bowl

Condensate drain	
M	Manual rotary
V	Fully automatic

Flow rate	
	Standard
HF	High flow rate

Filter contamination sensor	
	Without differential pressure indicator
DA	Differential pressure indicator

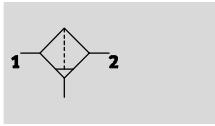
Further variants can be ordered using the modular system → 59

- Pneumatic connection
- Condensate drain
- Type of mounting
- EU certification
- UL certification
- Flow direction

Fine and micro filters MS9-LFM, MS series

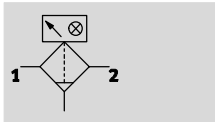
Technical data

Condensate drain
Manual rotary
Without differential pressure indicator

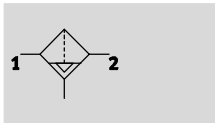


- - Flow rate
325 ... 10,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0 ... 20 bar

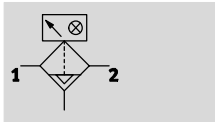
With differential pressure indicator



Condensate drain
Semi or fully automatic
Without differential pressure indicator



With differential pressure indicator



- High-performance filter for exceptionally clean compressed air
- Air quality to ISO 8573-1:2010
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- Available with differential pressure indicator for indication of contamination
- Choice of filter cartridges: 0.01 µm or 1 µm
- New filter cartridges → 90
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data	
Size	MS9
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	-
Constructional design	Fibre filter
Type of mounting	Via accessories In-line installation
Installation position	Vertical ±5°
Grade of filtration [µm]	0.01 (micro filter MS9-LFM-A) 1 (fine filter MS9-LFM-B)
Air purity class at the output	Compressed air in accordance with ISO 8573-1:2010 [1:7:2] (micro filter MS9-LFM-A) Compressed air in accordance with ISO 8573-1:2010 [5:7:3] (fine filter MS9-LFM-B)
Filter efficiency [%]	99.9999 (Grade of filtration 0.01 µm, micro filter MS9-LFM-A) 99.99 (Grade of filtration 1 µm, fine filter MS9-LFM-B)
Bowl guard	Integrated as metal bowl
Condensate drain	Manual rotary Semi-automatic Fully automatic Fully automatic, electrically actuated
Differential pressure indicator	Visual indicator
Residual oil content [mg/m³]	≤0.01 (micro filter MS9-LFM-A) ≤0.5 (fine filter MS9-LFM-B)
Max. condensate volume [cm³]	225

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

Fine and micro filters MS9-LFM, MS series

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Technical data

Standard flow rate $q_n^{1)}$ [l/min]		
Version	Standard	High flow rate HF
Micro filter MS9-LFM-A		
Max. standard flow rate for air purity class $q_{n \max}$	6,500	7,800
Min. standard flow rate for air purity class $q_{n \min}$	325	390
Fine filter MS9-LFM-B		
Max. standard flow rate for air purity class $q_{n \max}$	7,000	10,000
Min. standard flow rate for air purity class $q_{n \min}$	350	500

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

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]	0 ... 20	1.5 ... 12	2 ... 12	0.8 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [6:8:4] ¹⁾			
Ambient temperature [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Temperature of medium [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Storage temperature [°C]	-10 ... +60	+5 ... +60	-10 ... +60	+1 ... +60
Corrosion resistance class CRC ²⁾	2			
UL certification	cULus recognized (OL)			

1) It is recommended to prefilter the compressed air for the micro filter MS-LFM-A using a fine filter MS-LFM-B (grade of filtration 1 μm).

2) 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)

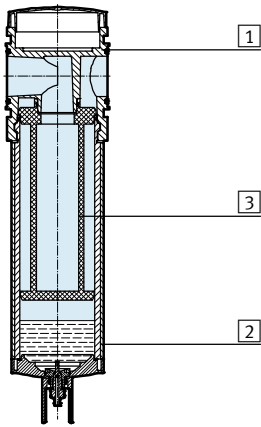
Fine and micro filters MS9-LFM, MS series

Technical data

Weights [g]		
Version	Standard	High flow rate HF
Fine and micro filter	2,000	2,500
Fine and micro filter with condensate drain fully automatic, electrically actuated E2/E3/E4	2,900	2,900

Materials

Sectional view



Fine and micro filters		
1	Housing	Die-cast aluminium
2	Bowl	Wrought aluminium alloy
	Inspection window	PA
3	Filter	Borosilicate fibre
-	Cover	PA reinforced
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
-	Seals	NBR
Note on materials		Free of copper and PTFE

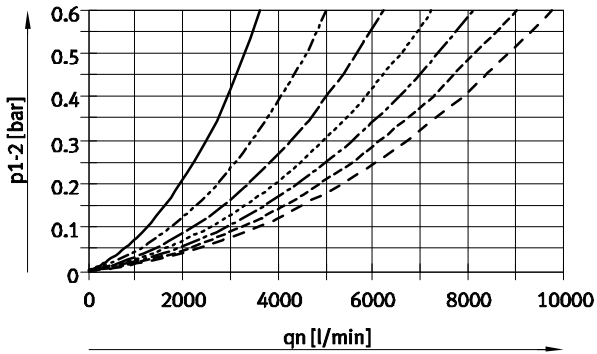
Fine and micro filters MS9-LFM, MS series

Technical data

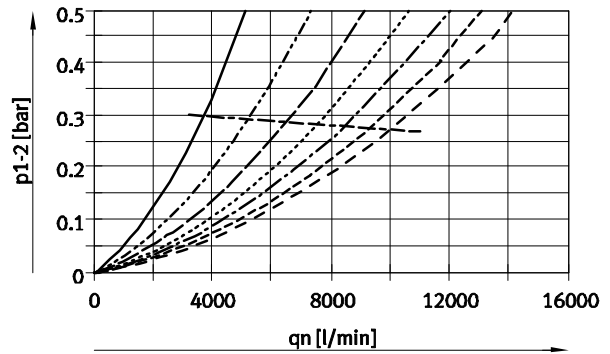


Standard flow rate q_n as a function of the differential pressure p_{1-2}

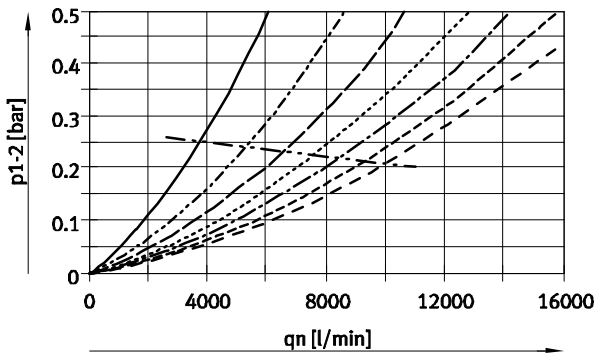
Grade of filtration 0.01 μm , pneumatic connection $G\frac{1}{2}/\text{NPT}\frac{1}{2}$



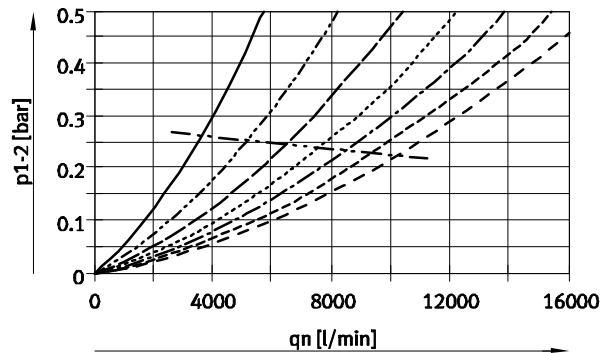
Grade of filtration 0.01 μm , pneumatic connection $G\frac{3}{4}/\text{NPT}\frac{3}{4}$



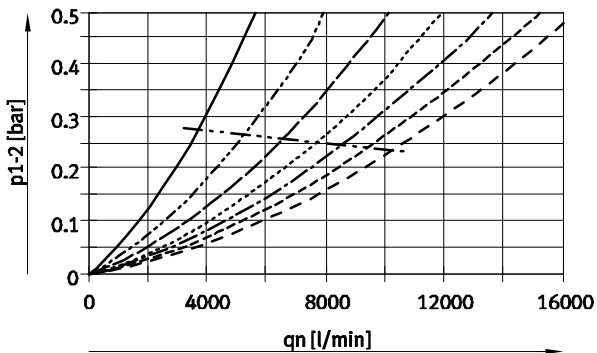
Grade of filtration 0.01 μm , pneumatic connection $G1/\text{NPT}1$



Grade of filtration 0.01 μm , pneumatic connection $G1\frac{1}{4}/\text{NPT}1\frac{1}{4}$



Grade of filtration 0.01 μm , pneumatic connection $G1\frac{1}{2}/\text{NPT}1\frac{1}{2}$



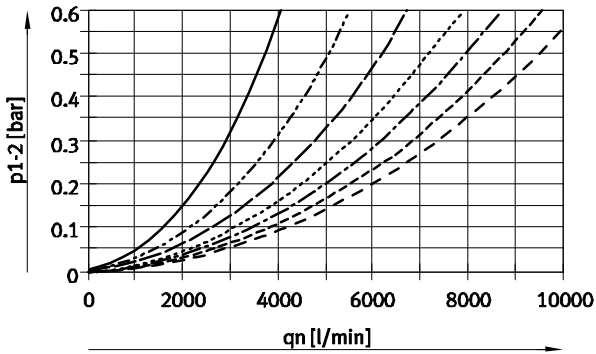
- 2 bar
- - - 4 bar ($q_{n \text{ min}}$: 268 l/min)
- · - 6 bar ($q_{n \text{ min}}$: 325 l/min)
- · · 8 bar
- - - 10 bar ($q_{n \text{ min}}$: 420 l/min)
- - - 12 bar
- - - 14 bar ($q_{n \text{ min}}$: 498 l/min)
- - - $q_{n \text{ max}}$
(with MS9-LFM-AGD/AQR: $q_{n \text{ max}}$ -values lie above the measured q_n -values)

Fine and micro filters MS9-LFM, MS series

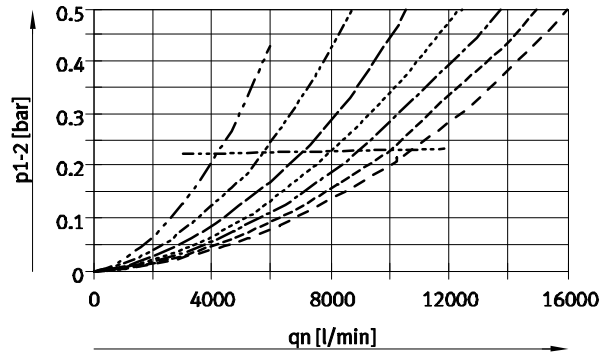
Technical data

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

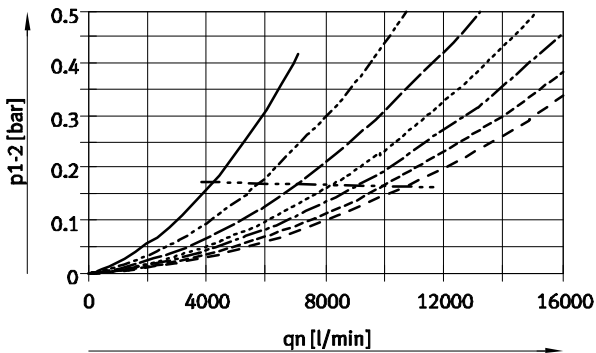
Grade of filtration 1 μm , pneumatic connection G $\frac{1}{2}$ /NPT $\frac{1}{2}$



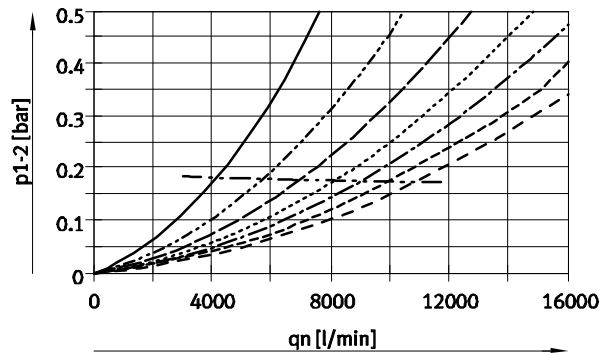
Grade of filtration 1 μm , pneumatic connection G $\frac{3}{4}$ /NPT $\frac{3}{4}$



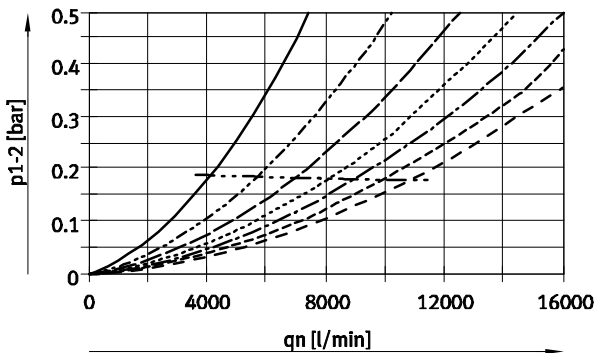
Grade of filtration 1 μm , pneumatic connection G1/NPT1



Grade of filtration 1 μm , pneumatic connection G1 $\frac{1}{4}$ /NPT1 $\frac{1}{4}$



Grade of filtration 1 μm , pneumatic connection G1 $\frac{1}{2}$ /NPT1 $\frac{1}{2}$



- 2 bar
- - - 4 bar ($q_{n \text{ min}}$: 289 l/min)
- · - · 6 bar ($q_{n \text{ min}}$: 350 l/min)
- · · · 8 bar
- - - - 10 bar ($q_{n \text{ min}}$: 450 l/min)
- - - - 12 bar
- - - - 14 bar ($q_{n \text{ min}}$: 540 l/min)
- - - - $q_{n \text{ max}}$
(with MS9-LFM-AGD/AQR: $q_{n \text{ max}}$ -values lie above the measured q_n -values)

Fine and micro filters MS9-LFM, MS series

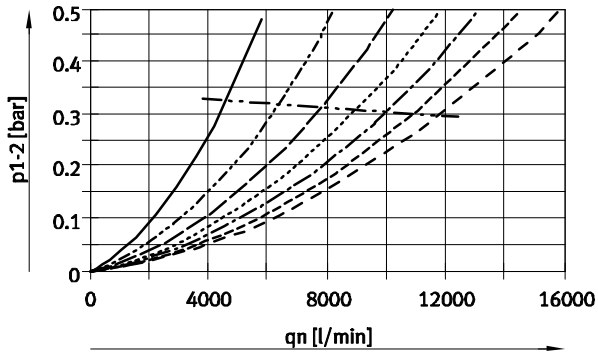
Technical data

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

Grade of filtration 0.01 μm , pneumatic connection $G\frac{3}{4}/NPT\frac{3}{4}$

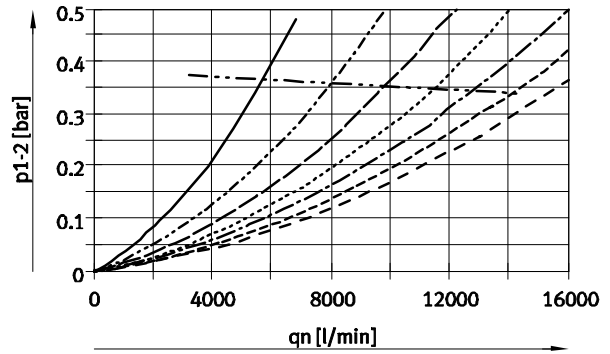
High flow rate HF



- 2 bar
- - - 4 bar
- · - 6 bar ($q_{n \text{ min}}: 390 \text{ l/min}$)
- · · 8 bar
- - - - 10 bar
- - - - 12 bar
- - - - 14 bar
- · - · - $q_{n \text{ max}}$

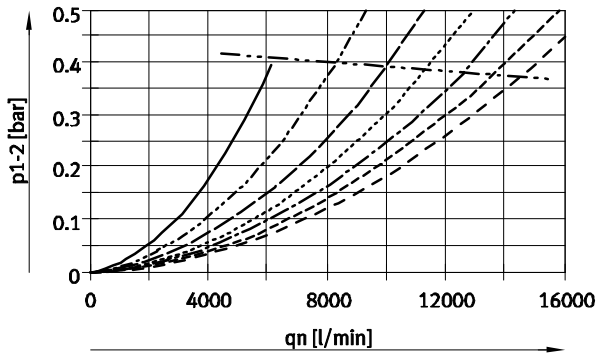
Grade of filtration 0.01 μm , pneumatic connection $G1/NPT1$

High flow rate HF



Grade of filtration 1 μm , pneumatic connection $G\frac{3}{4}/NPT\frac{3}{4}$

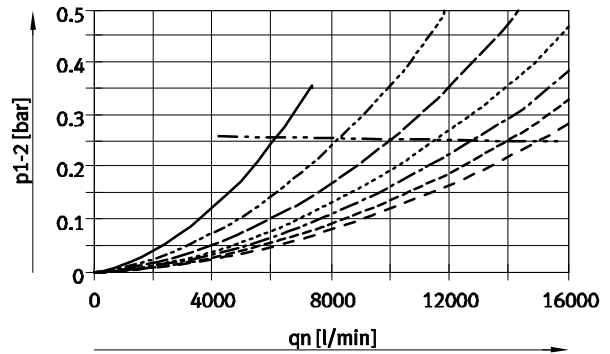
High flow rate HF



- 2 bar
- - - 4 bar
- · - 6 bar ($q_{n \text{ min}}: 500 \text{ l/min}$)
- · · 8 bar
- - - - 10 bar
- - - - 12 bar
- - - - 14 bar
- · - · - $q_{n \text{ max}}$

Grade of filtration 1 μm , pneumatic connection $G1/NPT1$

High flow rate HF



Fine and micro filters MS9-LFM, MS series

Technical data

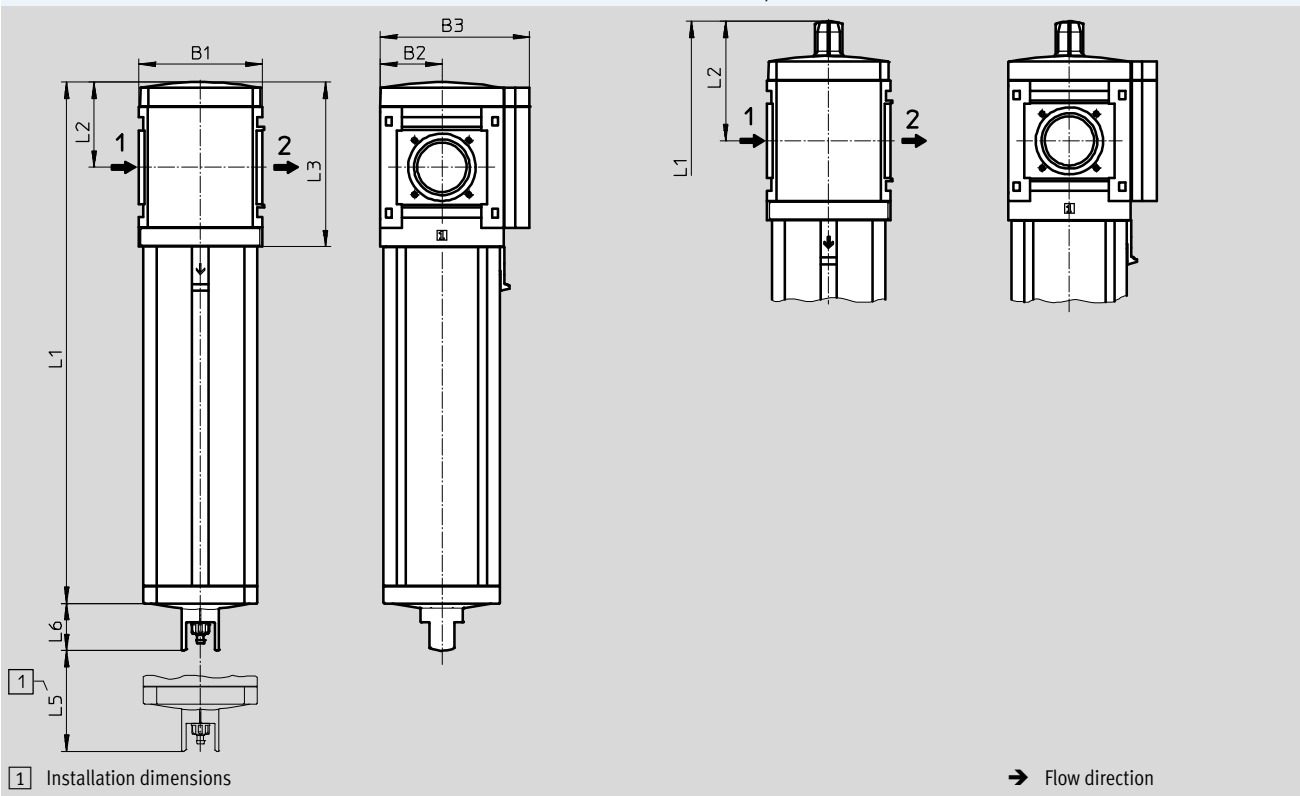


Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G

Module without connecting thread, without connecting plate G, with differential pressure indicator DA



Type	B1	B2	B3	L1		L2	L3	L5	L6
				Standard	High flow rate HF				
MS9-LFM-G	90	45	109	380.5	480.5	62	120	50	34.5
MS9-LFM-G-...-DA				405.5	505.5	88			

Fine and micro filters MS9-LFM, MS series

Technical data

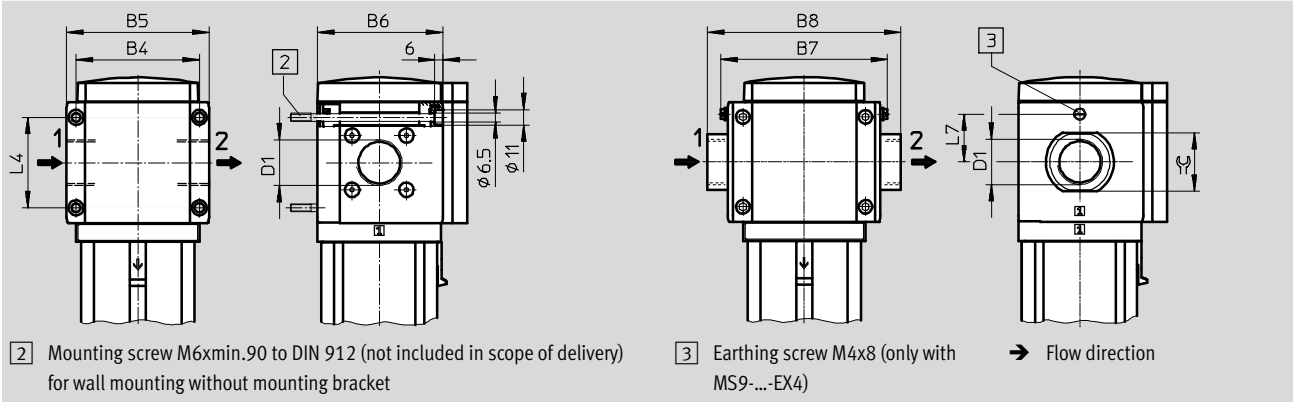
FESTO

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	L4	L7		≅
					EX4					EX4	
MS9-LFM-3/4	90	104	91.5	-	-	-	G3/4	66	-	-	
MS9-LFM-1							G1				
MS9-LFM-AGD	-	-	-	112	122	132	G1/2	-	35	30	
MS9-LFM-AGE						132	G3/4			36	
MS9-LFM-AGF						142	G1			41	
MS9-LFM-AGG						162	G1 1/4			50	
MS9-LFM-AGH						176	G1 1/2			55	
MS9-LFM-N3/4						90	104			91.5	-
MS9-LFM-N1	NPT1-11 1/2										
MS9-LFM-AQR	-	-	-	112	122	132	NPT1/2-14	-	35	30	
MS9-LFM-AQS						132	NPT3/4-14			36	
MS9-LFM-AQT						142	NPT1-11 1/2			41	
MS9-LFM-AQU						162	NPT1 1/4-11 1/2			50	
MS9-LFM-AQV						176	NPT1 1/2-11 1/2			55	

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

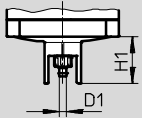
Fine and micro filters MS9-LFM, MS series

Technical data

Dimensions – Condensate drain

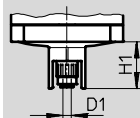
Download CAD data → www.festo.com

Manual rotary M/fully automatic V



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

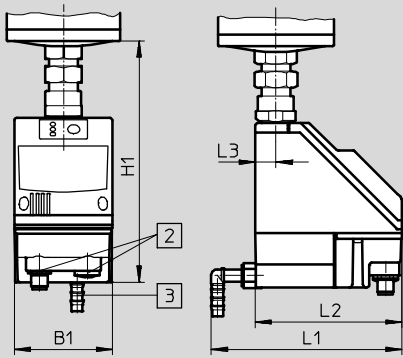
Semi-automatic H



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-LFM-...-M/V	-	5.6	34.5	-	-	-
MS9-LFM-...-H		6.2				
MS9-LFM-...-E2/E3/E4	72	-	178	140	108	15

Fine and micro filters MS9-LFM, MS series

Technical data

Ordering data						
Without differential pressure indicator						
Size	Condensate drain	Connection	Micro filter		Fine filter	
			Grade of filtration 0.01 µm		Grade of filtration 1 µm	
			Part No.	Type	Part No.	Type
Standard						
MS9	Manual rotary	G $\frac{3}{4}$	553070	MS9-LFM- $\frac{3}{4}$ -AUM	553074	MS9-LFM- $\frac{3}{4}$ -BUM
		G1	553000	MS9-LFM-1-AUM	553004	MS9-LFM-1-BUM
		–	564047	MS9-LFM-G-AUM	564039	MS9-LFM-G-BUM
	Fully automatic	G $\frac{3}{4}$	553072	MS9-LFM- $\frac{3}{4}$ -AUV	553076	MS9-LFM- $\frac{3}{4}$ -BUV
		G1	553002	MS9-LFM-1-AUV	553006	MS9-LFM-1-BUV
		–	564049	MS9-LFM-G-AUV	564041	MS9-LFM-G-BUV
High flow rate						
MS9	Manual rotary	G $\frac{3}{4}$	552964	MS9-LFM- $\frac{3}{4}$ -AUM-HF	552968	MS9-LFM- $\frac{3}{4}$ -BUM-HF
		G1	553038	MS9-LFM-1-AUM-HF	553042	MS9-LFM-1-BUM-HF
		–	564051	MS9-LFM-G-AUM-HF	564043	MS9-LFM-G-BUM-HF
	Fully automatic	G $\frac{3}{4}$	552966	MS9-LFM- $\frac{3}{4}$ -AUV-HF	552970	MS9-LFM- $\frac{3}{4}$ -BUV-HF
		G1	553040	MS9-LFM-1-AUV-HF	553044	MS9-LFM-1-BUV-HF
		–	564053	MS9-LFM-G-AUV-HF	564045	MS9-LFM-G-BUV-HF

Ordering data						
With differential pressure indicator						
Size	Condensate drain	Connection	Micro filter		Fine filter	
			Grade of filtration 0.01 µm		Grade of filtration 1 µm	
			Part No.	Type	Part No.	Type
Standard						
MS9	Manual rotary	G $\frac{3}{4}$	553078	MS9-LFM- $\frac{3}{4}$ -AUM-DA	553082	MS9-LFM- $\frac{3}{4}$ -BUM-DA
		G1	553008	MS9-LFM-1-AUM-DA	553012	MS9-LFM-1-BUM-DA
		–	564048	MS9-LFM-G-AUM-DA	564040	MS9-LFM-G-BUM-DA
	Fully automatic	G $\frac{3}{4}$	553080	MS9-LFM- $\frac{3}{4}$ -AUV-DA	553084	MS9-LFM- $\frac{3}{4}$ -BUV-DA
		G1	553010	MS9-LFM-1-AUV-DA	553014	MS9-LFM-1-BUV-DA
		–	564050	MS9-LFM-G-AUV-DA	564042	MS9-LFM-G-BUV-DA
High flow rate						
MS9	Manual rotary	G $\frac{3}{4}$	552972	MS9-LFM- $\frac{3}{4}$ -AUM-HF-DA	552976	MS9-LFM- $\frac{3}{4}$ -BUM-HF-DA
		G1	553046	MS9-LFM-1-AUM-HF-DA	553050	MS9-LFM-1-BUM-HF-DA
		–	564052	MS9-LFM-G-AUM-HF-DA	564044	MS9-LFM-G-BUM-HF-DA
	Fully automatic	G $\frac{3}{4}$	552974	MS9-LFM- $\frac{3}{4}$ -AUV-HF-DA	552978	MS9-LFM- $\frac{3}{4}$ -BUV-HF-DA
		G1	553048	MS9-LFM-1-AUV-HF-DA	553052	MS9-LFM-1-BUV-HF-DA
		–	564054	MS9-LFM-G-AUV-HF-DA	564046	MS9-LFM-G-BUV-HF-DA

Fine and micro filters MS9-LFM, MS series

Ordering data – Modular products

Ordering table		Grid dimension [mm]	90	Condi- tions	Code	Enter code	
M	Module No.	552940					
	Series	Standard service unit			MS	MS	
	Size	9			9	9	
	Function	Fine and micro filter			-LFM	-LFM	
	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		
	Grade of filtration	1 μ m			-B		
		0.01 μ m			-A		
	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, terminal strip (P1 max. 16 bar)		1	-E2	
			230 V AC, terminal strip (P1 max. 16 bar)		1	-E3	
	24 V DC, terminal strip (P1 max. 16 bar)		1	-E4			
O	Flow rate	High flow rate			-HF		
	Filter contamination sensor	Differential pressure indicator, visual			-DA		
	Type of mounting	Mounting bracket standard design		2	-WP		
		Mounting bracket for attaching the service units		1 2	-WPM		
		Wall mounting bracket for large wall gap		2	-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 $\frac{3}{4}$, 1, N $\frac{3}{4}$, N1, AQR, AQS, AQT, AQU, AQV, G, E2, E3, E4, WPM

Not with EU certification EX4

2 WP, WPM, WPB Not with pneumatic connection G

M Mandatory data

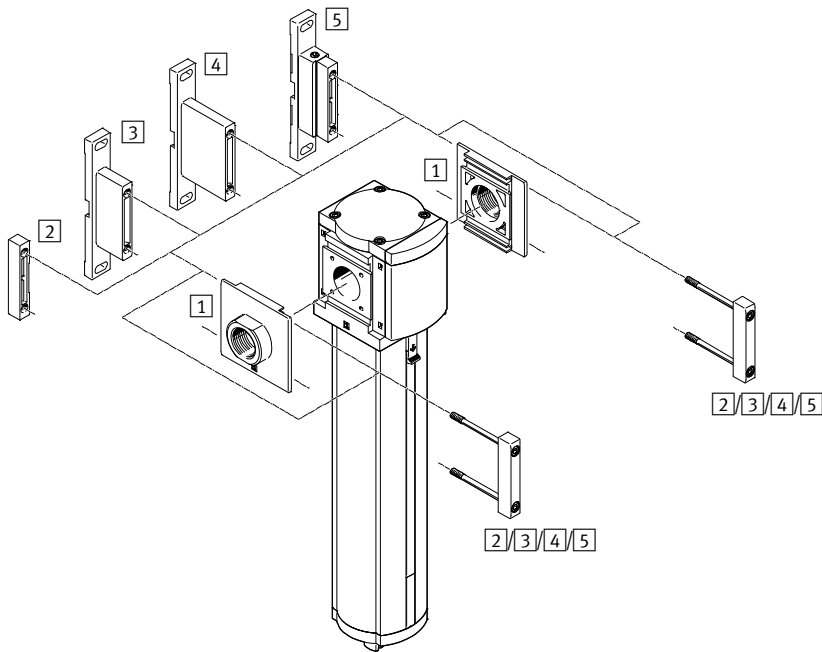
O Options


Transfer order code

552940 MS 9 - LFM - - - U - - - - -

Activated carbon filters MS9-LFX, MS series

Peripherals overview



-  - Note
 Other accessories:
 - Module connector for combination with size MS6, MS9 or MS12
 → Internet: rmv, armv

Mounting attachments and accessories					
		Individual device		Combination	→ Page/ Internet
		With female thread 3/4/1/N3/4/N1	With connecting plate AG.../AQ... Without EU certification EX4	With 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

Activated carbon filters MS9-LFX, MS series

Type codes

MS 9 - LFX - 3/4 - U

Series

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

Size

9	Grid dimension 90 mm
---	----------------------

Service function

LFX	Activated carbon filter
-----	-------------------------

Pneumatic connection

3/4	Thread G3/4
1	Thread G1
G	Module without connecting thread, without connecting plate

Bowl guard

U	Integrated as metal bowl
---	--------------------------

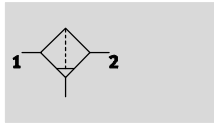
Further variants can be ordered using the modular system → 66

- Pneumatic connection
- Type of mounting
- EU certification
- UL certification
- Flow direction

Activated carbon filters MS9-LFX, MS series

FESTO

Technical data



- - Flow rate
max. 6,500 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0 ... 20 bar



- Removal of liquid and gaseous oil particles from compressed air using activated carbon
- Eliminates odours and vapours
- Prefiltration with micro filter MS9-LFM-A, grade of filtration 0.01 µm, recommended
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22
- New filter cartridges → 90

General technical data	
Size	MS9
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	-
Constructional design	Activated carbon filter
Type of mounting	Via accessories In-line installation
Installation position	Vertical ±5°
Air purity class at the output ¹⁾	Compressed air in accordance with ISO 8573-1:2010 [1:4:1]
Bowl guard	Integrated as metal bowl
Residual oil content [mg/m ³]	≤0.003

1) It is recommended to replace filter cartridges after 1,000 operating hours (applies to an ambient temperature of 21 °C). The service life of a filter cartridge is reduced at higher temperatures.
- Note: This product conforms to ISO 1179-1 and to ISO 228-1

Standard flow rate $q_n^{1)}$ [l/min]	
Max. standard flow rate for air purity class q_n max	6,500

1) Measured at $p_1 = 6$ bar

Operating and environmental conditions		
Operating pressure [bar]		0 ... 20
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [1:4:2]
Ambient temperature [°C]		-10 ... +60
Temperature of medium [°C]		+5 ... +30
Storage temperature [°C]		-10 ... +60
Corrosion resistance class CRC ¹⁾		2
UL certification		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.

Activated carbon filters MS9-LFX, MS series

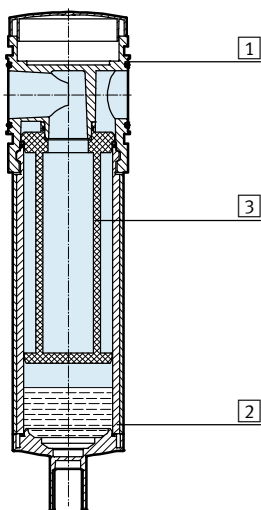
Technical data

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 T60 °C X
ATEX ambient temperature	-10 °C ≤ Ta ≤ +60 °C
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Weights [g]	
Activated carbon filter	2,000

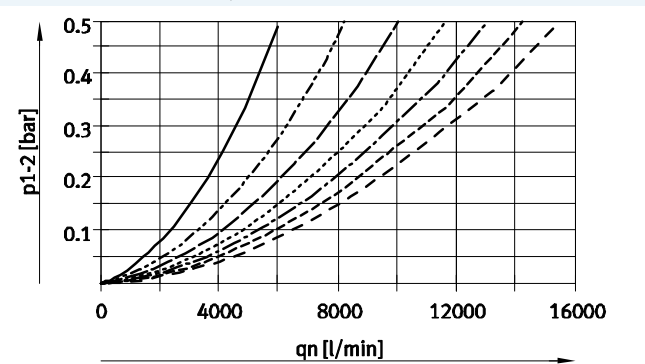
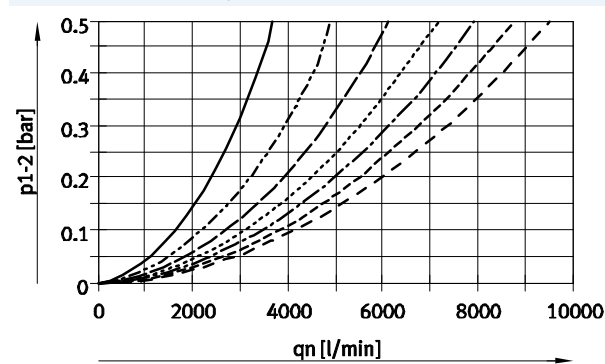
Materials

Sectional view



Activated carbon filter		
1	Housing	Die-cast aluminium
2	Bowl	Wrought aluminium alloy
	Inspection window	PA
3	Filter	Activated carbon
-	Cover	PA reinforced
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
-	Seals	NBR
Note on materials		Free of copper and PTFE

Standard flow rate qn as a function of the differential pressure p1-2



- 2 bar
- - - 4 bar
- · - 6 bar
- · · 8 bar
- - - - 10 bar
- · - · 12 bar
- · - · - 14 bar

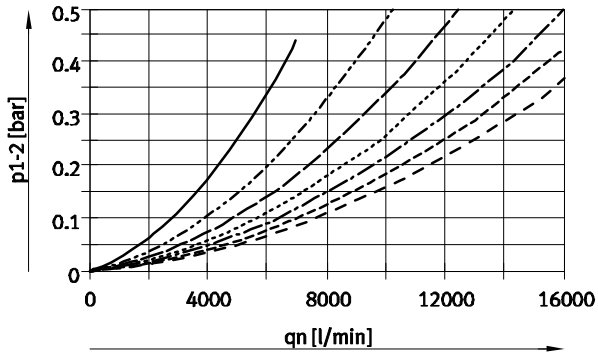
Activated carbon filters MS9-LFX, MS series

Technical data

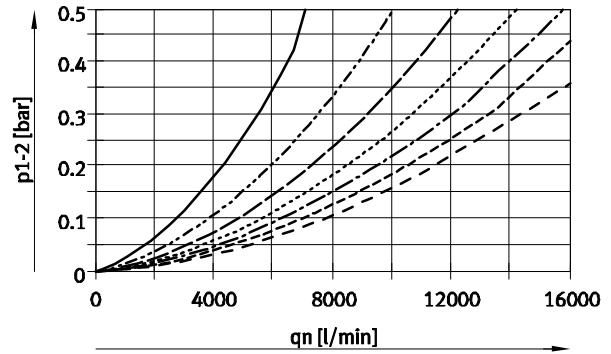
FESTO

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

Pneumatic connection G1/NPT1



Pneumatic connection G1½/NPT1½

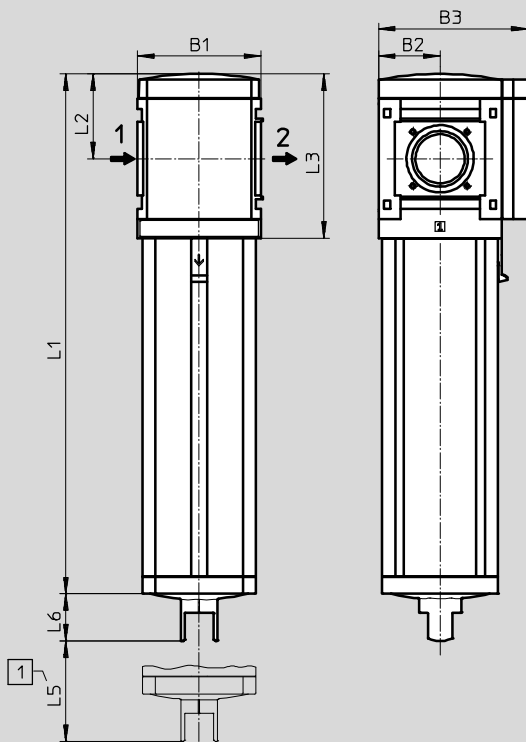


- 2 bar
- - - 4 bar
- · - · 6 bar
- · · · 8 bar
- · - · - · 10 bar
- - - - 12 bar
- · - · - · - · 14 bar

Dimensions – Basic version

Download CAD data → www.festo.com

Module without connecting thread, without connecting plate G



1 Installation dimensions

→ Flow direction

Type	B1	B2	B3	L1	L2	L3	L5	L6
MS9-LFX-G	90	45	109	380.5	62	120	50	34.5

Activated carbon filters MS9-LFX, MS series

Technical data

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...

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

3 Earthing screw M4x8 (only with MS9-...-EX4)

→ Flow direction

Type	B4	B5	B6	B7		B8	D1	L4	L7		=C
					EX4					EX4	
MS9-LFX-3/4	90	104	91.5	-	-	-	G3/4	66	-	-	-
MS9-LFX-1							G1				
MS9-LFX-AGD	-	-	-	112	122	132	G1/2	-	35	-	30
MS9-LFX-AGE							G3/4				36
MS9-LFX-AGF							G1				41
MS9-LFX-AGG							G1 1/4				50
MS9-LFX-AGH							G1 1/2				55
MS9-LFX-N3/4							90				104
MS9-LFX-N1	NPT1-11 1/2										
MS9-LFX-AQR	-	-	-	112	122	132	NPT1/2-14	-	35	-	30
MS9-LFX-AQS							NPT3/4-14				36
MS9-LFX-AQT							NPT1-11 1/2				41
MS9-LFX-AQU							NPT1 1/4-11 1/2				50
MS9-LFX-AQV							NPT1 1/2-11 1/2				55

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

Ordering data			
Size	Connection	Part No.	Type
MS9	G3/4	552996	MS9-LFX-3/4-U
	G1	553032	MS9-LFX-1-U
	-	564038	MS9-LFX-G-U

Activated carbon filters MS9-LFX, MS series

Ordering data – Modular products

Ordering table		Grid dimension [mm]	90	Condi- tions	Code	Enter code	
M	Module No.	552942					
	Series	Standard service unit			MS	MS	
	Size	9			9	9	
	Function	Activated carbon filter			-LFX	-LFX	
	Pneumatic connection	Female thread G $\frac{3}{4}$		<input type="checkbox"/>	-$\frac{3}{4}$		
		Female thread G1		<input type="checkbox"/>	-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 $\frac{3}{4}$		<input type="checkbox"/>	-N$\frac{3}{4}$		
		Female thread NPT1		<input type="checkbox"/>	-N1		
		Connecting plate NPT $\frac{1}{2}$		<input type="checkbox"/>	-AQR		
		Connecting plate NPT $\frac{3}{4}$		<input type="checkbox"/>	-AQS		
		Connecting plate NPT1		<input type="checkbox"/>	-AQT		
		Connecting plate NPT1 $\frac{1}{4}$		<input type="checkbox"/>	-AQU		
		Connecting plate NPT1 $\frac{1}{2}$		<input type="checkbox"/>	-AQV		
		Module without connecting thread, without connecting plate		<input type="checkbox"/>	-G		
		Bowl	Metal bowl			-U	-U
O	Type of mounting	Mounting bracket standard design		<input type="checkbox"/>	-WP		
		Mounting bracket for attaching the service units		<input type="checkbox"/>	<input type="checkbox"/>	-WPM	
		Wall mounting bracket for large wall gap		<input type="checkbox"/>	-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		

$\frac{3}{4}$, 1, N $\frac{3}{4}$, N1, AQR, AQS, AQT, AQU, AQV, G, WPM

Not with EU certification EX4

WP, WPM, WPB

Not with pneumatic connection G

M Mandatory data

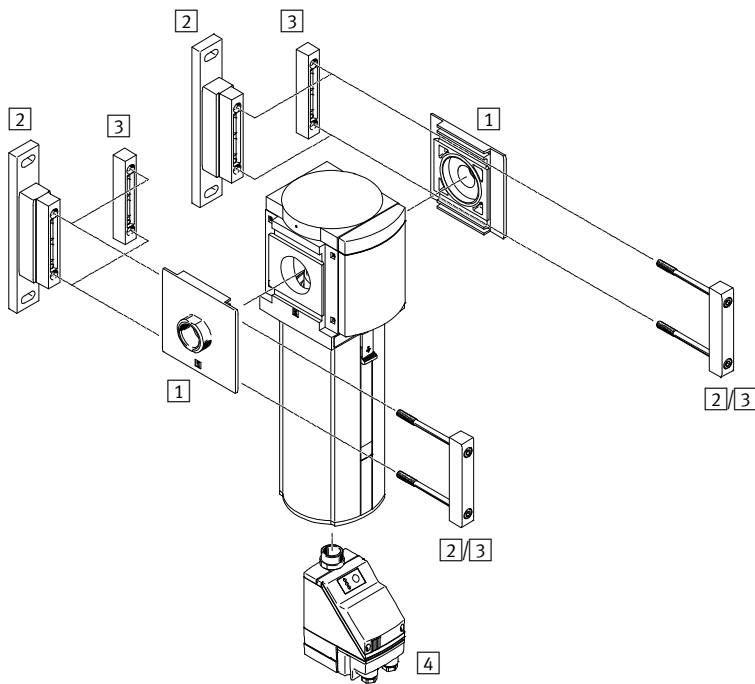
O Options


Transfer order code

552942 MS 9 - LFX - - U - - - -

Filters MS12-LF, MS series

Peripherals overview



-  - 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	Condensate drain, fully automatic, electrically actuated E2/E3/E4	73

Filters MS12-LF, MS series

Type codes

		MS	12	-	LF	-	G	-	C	U	V
Series											
MS	Standard service unit										
Size											
12	Grid dimension 124 mm										
Service function											
LF	Filter										
Connection size											
G	Module without connecting thread, without connecting plate Connecting plates → Accessories										
Grade of filtration											
C	5 µm										
E	40 µm										
Bowl guard											
U	Integrated as metal bowl										
Condensate drain											
V	Fully automatic										

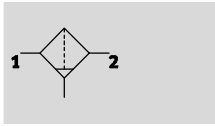
Further variants can be ordered using the modular system → 73

- Pneumatic connection
- Condensate drain
- Type of mounting
- Flow direction

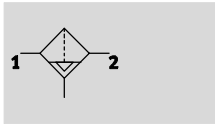
Filters MS12-LF, MS series




Technical data

Function
Condensate drain
manual rotary



fully automatic




-  - Flow rate
11,500 ... 16,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0.8 ... 20 bar



The sintered filter with centrifugal separation removes contamination, rust and condensate from the compressed air. The filter cartridges are replaceable.

- Good particle and condensate separation
- High flow rate with minimal pressure drop
- Available with manual, fully automatic or fully automatic, electrically actuated condensate drain
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 91

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	-
Design	Sintered filter with centrifugal separation
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 [6:8:4] (Grade of filtration 5 µm) Compressed air in accordance with ISO 8573-1:2010 [7:8:4] (Grade of filtration 40 µm)
Bowl guard	Integrated as metal bowl
Condensate drain	Manual rotary Fully automatic Fully automatic, electrical actuated
Max. condensate volume [cm³]	400

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

Standard nominal flow rate qnN ¹⁾ [l/min]					
Pneumatic connection		G1	G1¼	G1½	G2
Grade of filtration	5 µm	11,500	12,500	13,500	14,000
	40 µm	12,500	13,000	14,000	16,000

1) Dependent on connecting plate selected, must be ordered separately as an accessory → Internet: ms12-ag
Measured at p₁ = 6 bar and Δp = 0.5 bar

Filters MS12-LF, MS series

Technical data



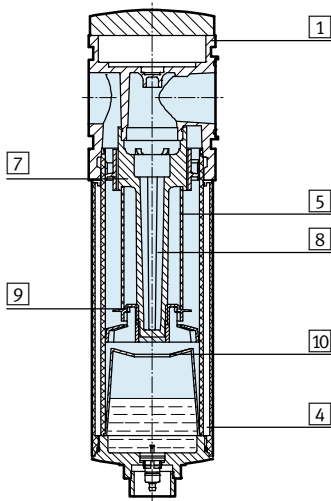
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical actuated E2/E3/E4
Operating pressure [bar]	0.8 ... 20	2 ... 12	0.8 ... 16
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [:-9:-]	Compressed air in accordance with ISO 8573-1:2010 [7:9:-]	Compressed air in accordance with ISO 8573-1:2010 [:-9:-]
	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 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]	
Filter with metal bowl U	6,500
Filter with metal bowl U and fully automatic, electrically actuated condensate drain E2/E3/E4	7,200

Materials

Sectional view



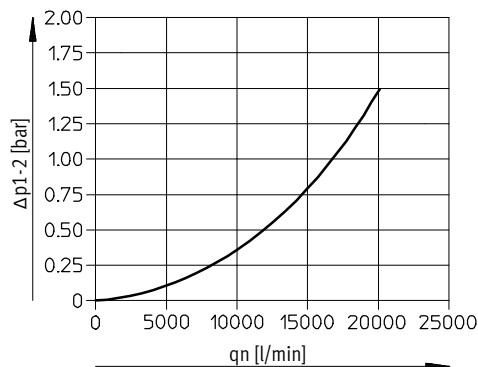
Filter		
1	Body	Die-cast aluminium
4	Metal bowl	Wrought aluminium alloy
5	Filter element	Sintered bronze
7	Spin disc	POM
8	Filter holder	POM
9	Separating plate	POM
10	Stabilising disc	POM
-	Seals	NBR

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

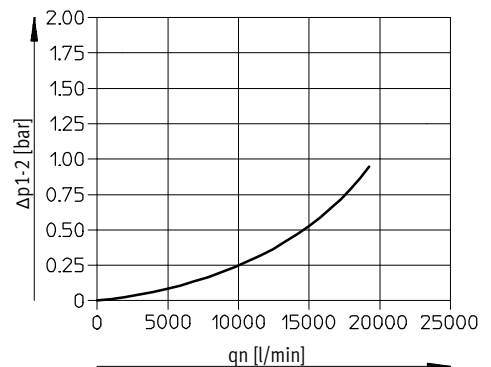
Grade of filtration 5 μm

$p_1 = 6 \text{ bar}$

With connecting plate MS12-AGF
Pneumatic connection G1



With connecting plate MS12-AGI
Pneumatic connection G2



Filters MS12-LF, MS series

Technical data



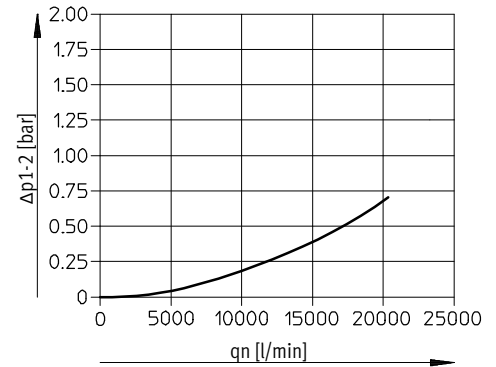
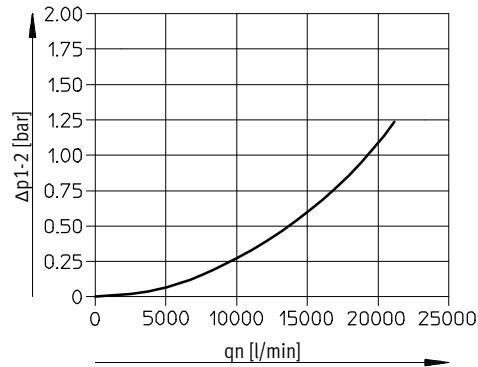
Standard flow rate q_n as a function of the differential pressure Δp_{1-2}

Grade of filtration 40 μm

With connecting plate MS12-AGF
Pneumatic connection G1

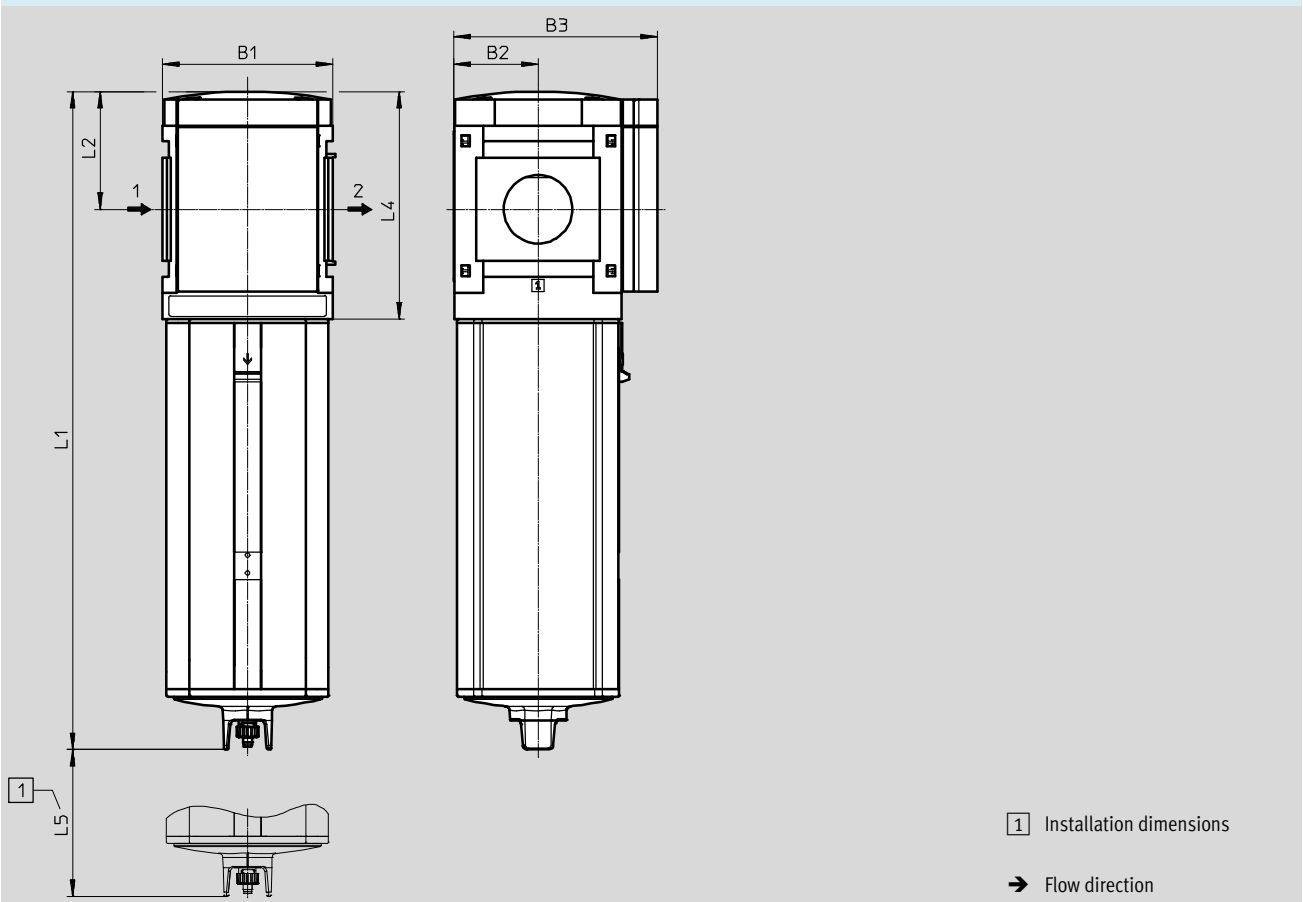
With connecting plate MS12-AGI
Pneumatic connection G2

$p_1 = 6 \text{ bar}$



Dimensions – Basic version

Download CAD data → www.festo.com



Type	B1	B2	B3	L1	L2	L4	L5
MS12-LF	124	61	148	480	86	166	250

Filters MS12-LF, MS series

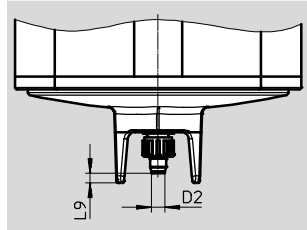
Technical data

FESTO

Dimensions – Condensate drain

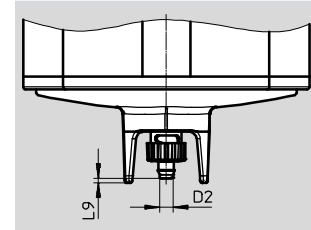
Download CAD data → www.festo.com

Manual rotary M



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

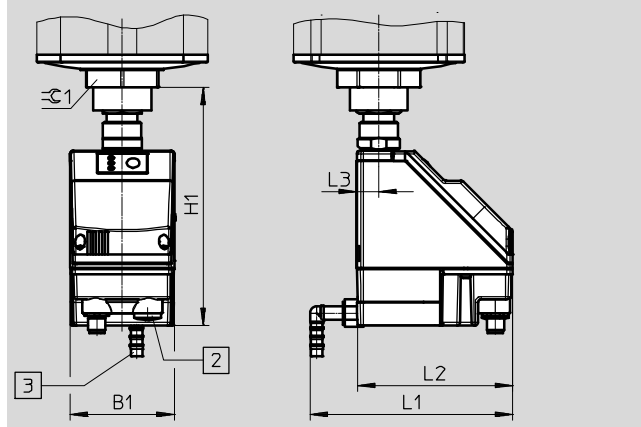
Fully automatic V



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-LF-...-M	-	5.6	-	-	-	-	4	-
MS12-LF-...-V	-	5.6	-	-	-	-	2	-
MS12-LF-...-E2/E3/E4	72	-	164	140	108	15	-	50

Ordering data						
Metal bowl						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
MS12	fully automatic	G1 ... G2 ¹⁾	537152	MS12-LF-G-CUV	537151	MS12-LF-G-EUV

1) Connecting plate must be ordered separately as an accessory → Internet: ms12-ag
 - † - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Filters MS12-LF, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	124	Condi- tions	Code	Enter code	
M	Module No.	535023				
	Series	Standard		MS	MS	
	Size	12		12	12	
	Function	Filter		-LF	-LF	
	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		
	Grade of filtration	40 µm		-E		
		5 µm		-C		
	Bowl	Metal bowl		-U	-U	
	Condensate drain	Manual		-M		
		Fully automatic (P1 max. 12 bar)		-V		
		External, fully automatic, electric	110 V AC, terminals (P1 max. 16 bar)			-E2
			230 V AC, terminals (P1 max. 16 bar)			-E3
			24 V DC, terminals (P1 max. 16 bar)			-E4
O	Type of mounting	Mounting bracket standard design	1	-WP		
	Flow direction	Flow direction from right to left		-Z		

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

M Mandatory data

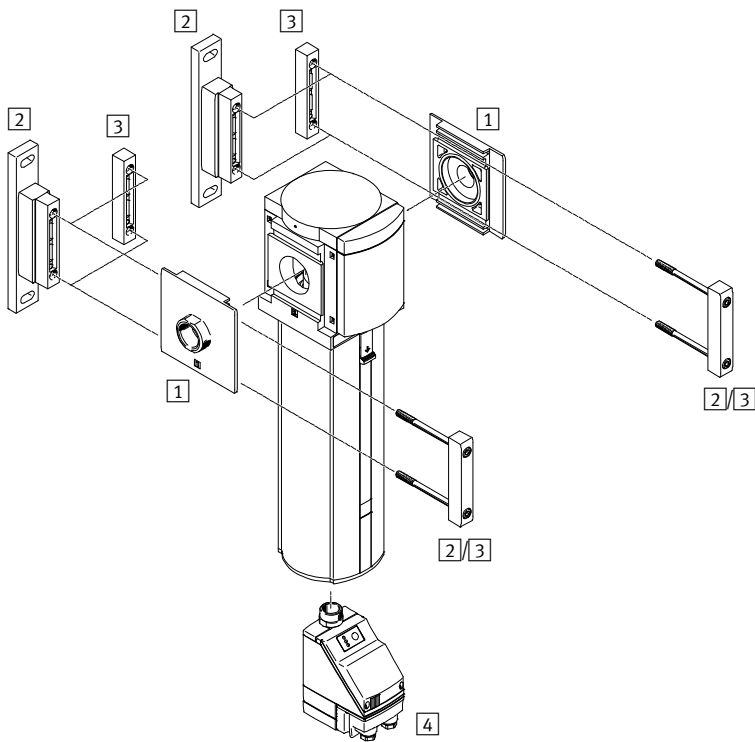
O Options


Transfer order code

535023 MS 12 - LF - [] - [] - U - [] - [] - []

Fine and micro filters MS12-LFM, MS series

Peripherals overview



-  - 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	Condensate drain, fully automatic, electrically actuated E2/E3/E4	82

Fine and micro filters MS12-LFM, MS series

Type codes

		MS	12	-	LFM	-	G	-	B	U	V
Series											
MS	Standard service unit										
Size											
12	Grid dimension 124 mm										
Service function											
LFM	Fine and micro filter										
Connection size											
G	Module without connecting thread, without connecting plate Connecting plates → Accessories										
Grade of filtration											
A	0.01 µm										
B	1 µm										
Bowl guard											
U	integrated as metal bowl										
Condensate drain											
V	Fully automatic										

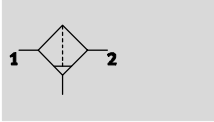
Further variants can be ordered using the modular system → 82




- Pneumatic connection
- Condensate drain
- Filter change sensor
- Type of mounting
- Flow direction

Fine and micro filters MS12-LFM, MS series

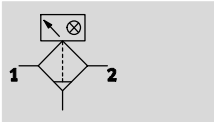
Technical data

Function
 Condensate drain
 manual rotary
 without differential pressure indicator

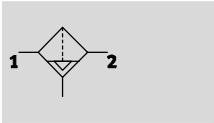


-  - Flow rate
500 ... 50,000 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0.8 ... 20 bar

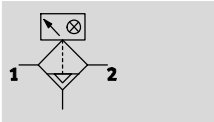
with differential pressure indicator



Condensate drain
 fully automatic
 without differential pressure indicator



with differential pressure indicator



- High-performance filter for exceptionally clean compressed air
- Air quality to ISO 8573-1:2010
- Available with manual, fully automatic or fully automatic, electrically actuated condensate drain
- Available with differential pressure indicator for optical indication of filter contamination
- Choice of filter cartridges: 0.01 µm or 1 µm
- New filter cartridges → 91

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	-
Design	Fibre filter
Type of mounting	Via accessories In-line installation
Assembly position	Vertical ±5°
Grade of filtration [µm]	0.01 (micro filter MS12-LFM-A) 1 (fine filter MS12-LFM-B)
Air purity class at the output	Compressed air in accordance with ISO 8573-1:2010 [1:7:2] (Grade of filtration 0.01µm, micro filter MS12-LFM-A) Compressed air in accordance with ISO 8573-1:2010 [5:7:3] (Grade of filtration 1µm, fine filter MS12-LFM-B)
Filter efficiency [%]	99.9999 (Grade of filtration 0.01µm, micro filter MS12-LFM-A) 99.99 (Grade of filtration 1µm, fine filter MS12-LFM-B)
Bowl guard	Integrated as metal bowl
Condensate drain	Manual rotary Fully automatic Fully automatic, electrical actuated
Max. condensate volume [cm³]	400

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

Fine and micro filters MS12-LFM, MS series

Technical data

Standard flow rate q_n [l/min]				
Operating pressure	4 bar	6 bar	10 bar	14 bar
Micro filter MS12-LFM-A				
Max. standard flow rate for air purity class $q_{n \max}$	16,670	23,300	36,670	50,000
Min. standard flow rate for air purity class $q_{n \min}$	500	700	1,100	1,500
Fine filter MS12-LFM-B				
Max. standard flow rate for air purity class $q_{n \max}$	16,670	23,300	36,670	50,000
Min. standard flow rate for air purity class $q_{n \min}$	625	950	1,390	1,675

Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical 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 [6:8:4] ¹⁾		
	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 CRC ²⁾	2		

1) It is recommended to prefilter the compressed air for the micro filter MS-LFM-A using a fine filter MS-LFM-B (grade of filtration 1 µm).

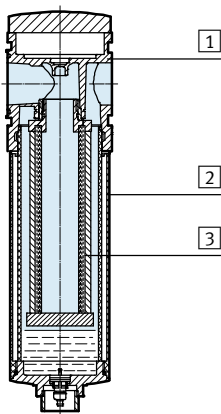
2) Corrosion resistance class CRC 2 to Festo standard FN 940070

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]	
Fine and micro filter with metal bowl U	7,000
Fine and micro filter with metal bowl U and fully automatic, electrically actuated condensate drain E2/E3/E4	7,700

Materials

Sectional view



Fine and micro filter		
1	Body	Die-cast aluminium
2	Metal bowl	Wrought aluminium alloy
	Viewing window	PC
3	Filter element	Borosilicate mesh
-	Seals	NBR
Note on materials		RoHS-compliant (not with variant E2, E3 or E4)
		Free of copper and PTFE

Fine and micro filters MS12-LFM, MS series

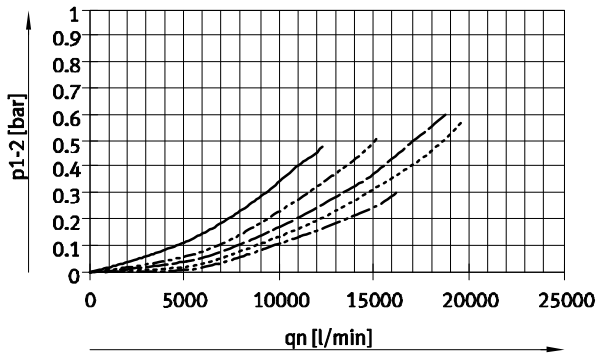
Technical data



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

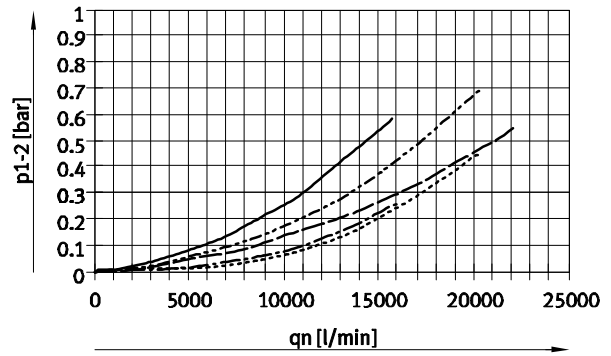
Grade of filtration 0.01 μm

With connecting plate MS12-AGF, Pneumatic connection G1



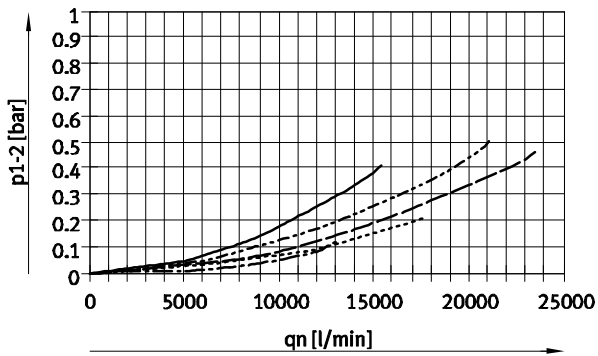
Grade of filtration 0.01 μm

With connecting plate MS12-AGG, Pneumatic connection G1¼



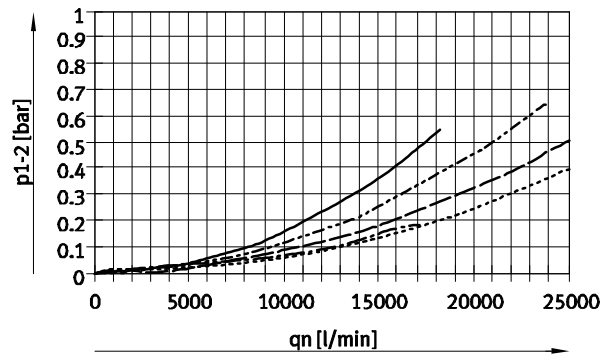
Grade of filtration 0.01 μm

With connecting plate MS12-AGH, Pneumatic connection G1½



Grade of filtration 0.01 μm

With connecting plate MS12-AGI, Pneumatic connection G2



- p1: 4 bar
- p1: 6 bar
- p1: 8 bar
- p1: 10 bar
- p1: 12 bar

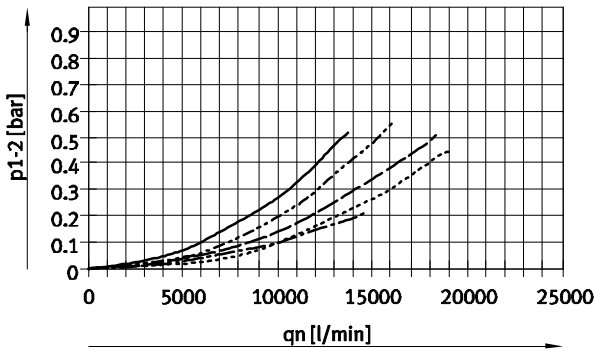
Fine and micro filters MS12-LFM, MS series

Technical data

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

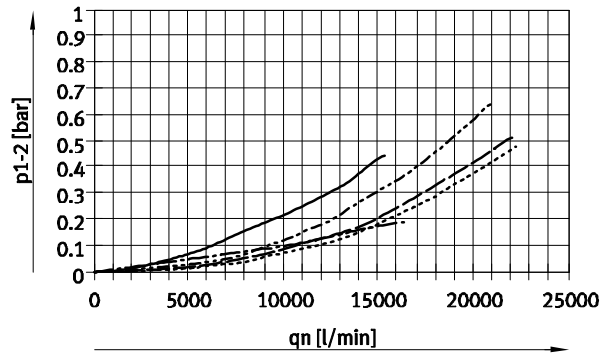
Grade of filtration $1 \mu\text{m}$

With connecting plate MS12-AGF, Pneumatic connection G1



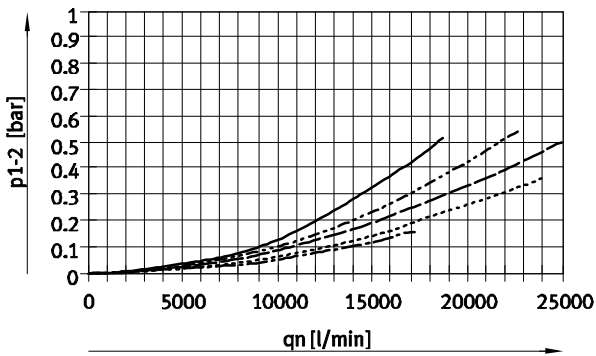
Grade of filtration $1 \mu\text{m}$

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



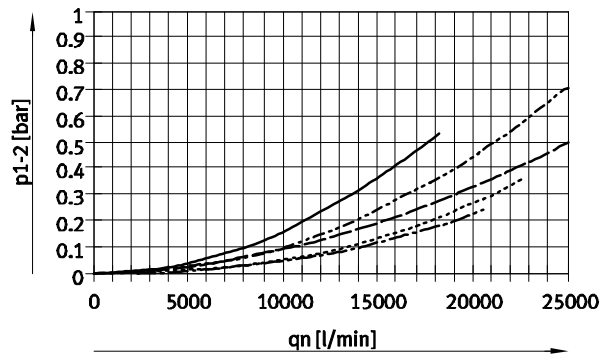
Grade of filtration $1 \mu\text{m}$

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



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

With connecting plate MS12-AGI, Pneumatic connection G2



- p1: 4 bar
- p1: 6 bar
- p1: 8 bar
- p1: 10 bar
- · — · p1: 12 bar

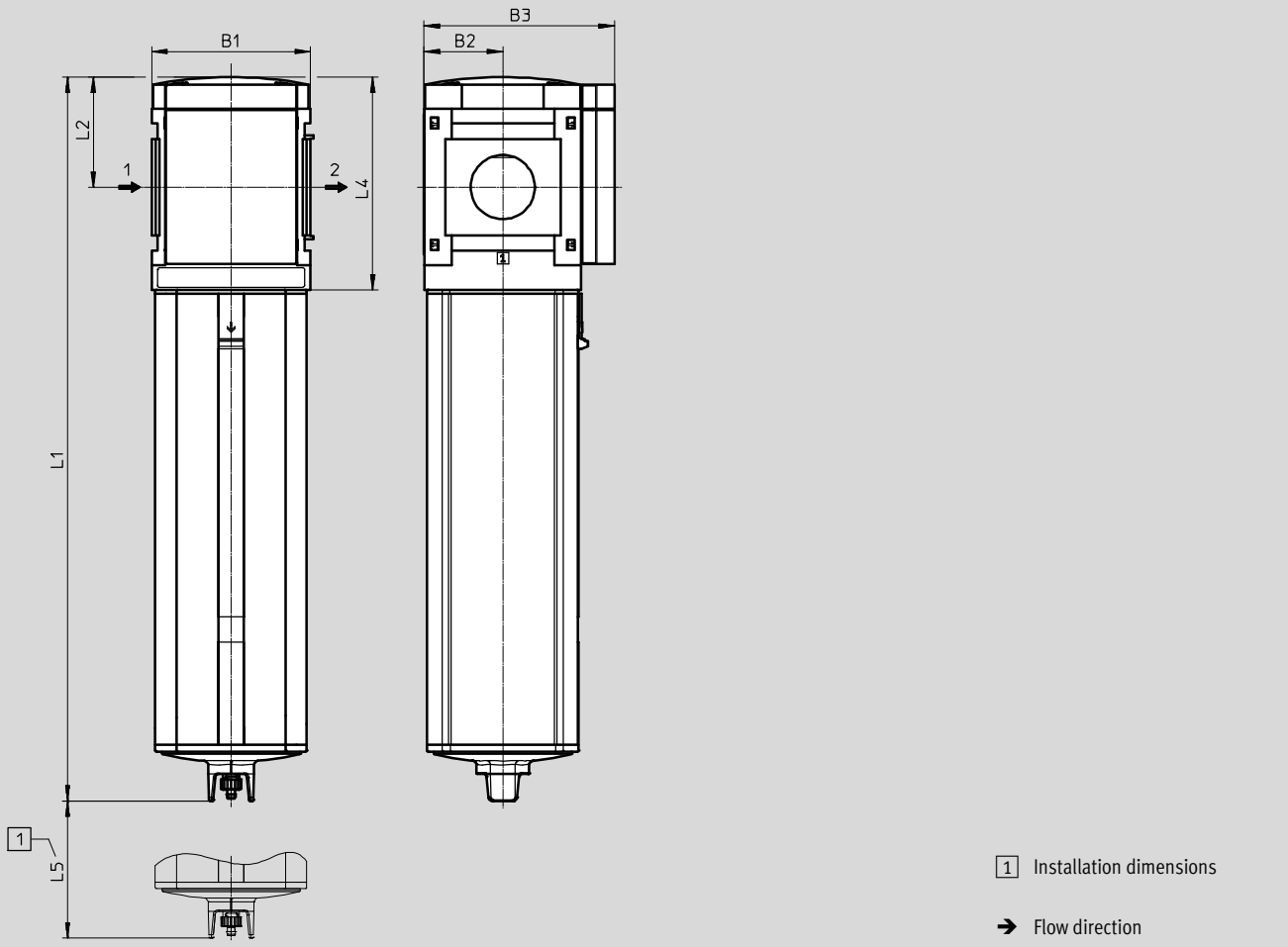
Fine and micro filters MS12-LFM, MS series

Technical data

FESTO

Dimensions – Basic version

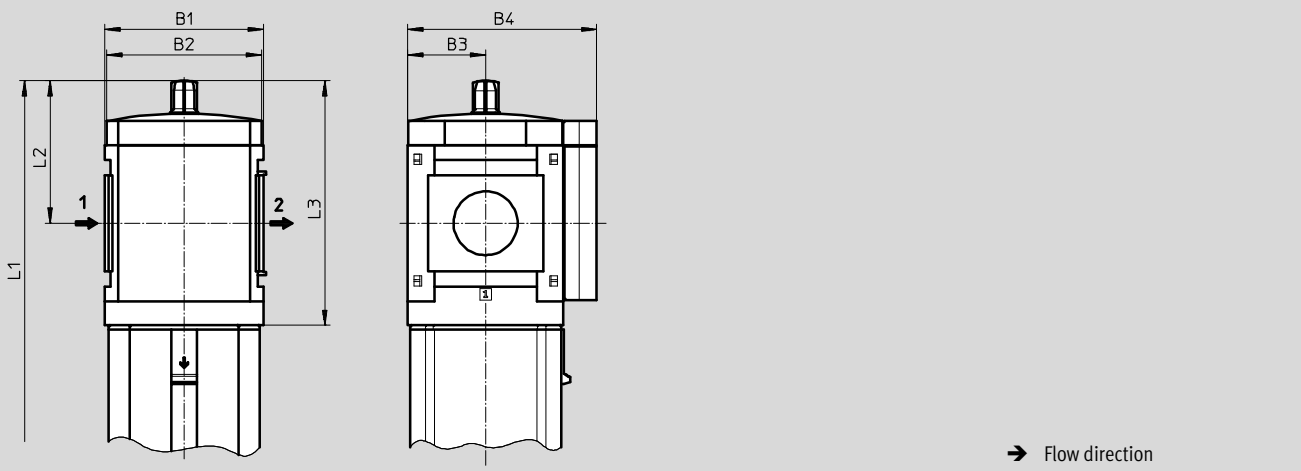
Download CAD data → www.festo.com



Type	B1	B2	B3	L1	L2	L4	L5
MS12-LFM	124	61	148	565	86	166	350

Dimensions – Differential pressure indicator

Download CAD data → www.festo.com



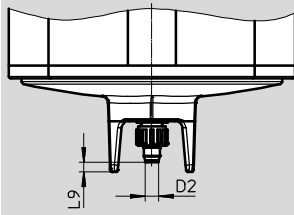
Type	B1	B2	B3	B4	L1	L2	L3
MS12-LFM-...-DA	124	122	61	148	590	112	192

Fine and micro filters MS12-LFM, MS series

Technical data

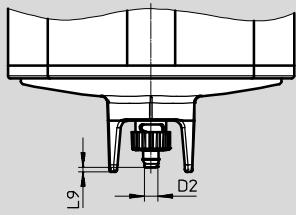
Dimensions – Condensate drain Download CAD data → www.festo.com

Manual rotary M



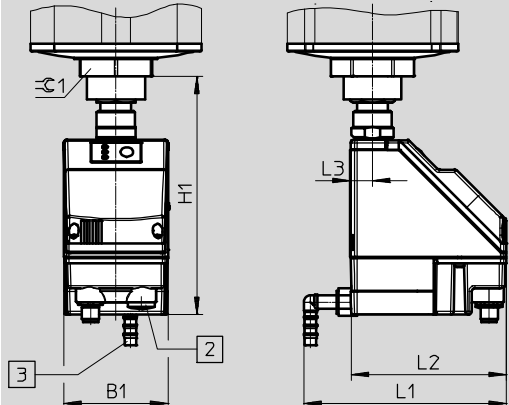
Barbed connector for plastic tubing PUN(-H)-8x1,25

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-LFM-...-M	-	5.6	-	-	-	-	4	-
MS12-LFM-...-V	-	5.6	-	-	-	-	2	-
MS12-LFM-...-E2/E3/E4	72	-	164	140	108	15	-	50

Ordering data							
Metal bowl							
Size	Condensate drain	Connection	Micro filter		Fine filter		
			Grade of filtration 0.01 µm	Part No.	Type	Grade of filtration 1 µm	Part No.
MS12	fully automatic	G1 ... G2 ¹⁾	537154	MS12-LFM-G-AUV	537153	MS12-LFM-G-BUV	

1) Connecting plate must be ordered separately as an accessory → Internet: ms12-ag
 - † - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Fine and micro filters MS12-LFM, MS series

Ordering data – Modular products

Ordering table		Grid dimension	[mm]	124	Condi- tions	Code	Enter code	
M	Module No.	535042						
	Series	Standard				MS	MS	
	Size	12				12	12	
	Function	Fine and micro filter				-LFM	-LFM	
	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		
	Grade of filtration	1 µm				-B		
		0.01 µm				-A		
	Bowl	Metal bowl				-U	-U	
	Condensate drain	Manual				-M		
		Fully automatic (P1 max. 12 bar)				-V		
		External, fully automatic, electric	110 V AC, terminals (P1 max. 16 bar)					-E2
			230 V AC, terminals (P1 max. 16 bar)					-E3
			24 V DC, terminals (P1 max. 16 bar)					-E4
O	Filter change sensor	Differential pressure indicator, optical				-DA		
	Type of mounting	Mounting bracket standard design			1	-WP		
	Flow direction	Flow direction from right to left				-Z		

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

M Mandatory data

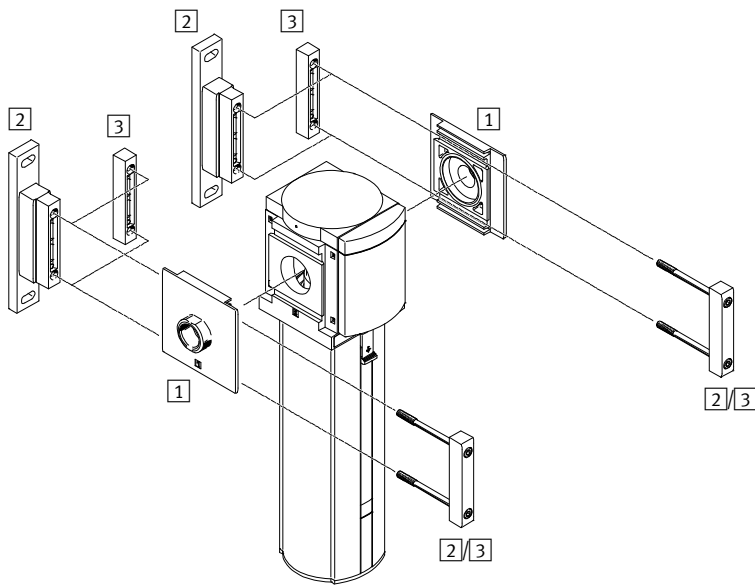
O Options


Transfer order code

535042 MS 12 - LFM - [] - [] - U - [] - [] - [] - []

Active carbon filters MS12-LFX, MS series

Peripherals overview



-  - 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

Active carbon filters MS12-LFX, MS series

Type codes

		MS	12	-	LFX	-	G	-	U
Series									
MS	Standard service unit								
Size									
12	Grid dimension 124 mm								
Service function									
LFX	Active carbon filter								
Connection size									
G	Module without connecting thread, without connecting plate Connecting plates → Accessories								
Bowl guard									
U	Integrated as metal bowl								

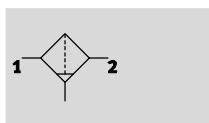
Further variants can be ordered using the modular system → 88

- Pneumatic connection
- Type of mounting
- Flow direction

Active carbon filters MS12-LFX, MS series

Technical data

Function



- - Flow rate
5,065 ... 15,190 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0 ... 20 bar



- Removal of liquid and gaseous oil particles from compressed air using active carbon
- Eliminates odours and vapours
- Prefiltration with micro filter MS12-LFM-A, grade of filtration 0.01 µm, recommended
- New filter cartridges → 91

General technical data	
Pneumatic connection 1, 2	
Connecting plate AG...	G1, G1¼, G1½ or G2
Module without connecting thread/plate G	-
Design	Active carbon filter
Type of mounting	Via accessories In-line installation
Assembly position	Vertical ±5°
Air purity class at the output ¹⁾	Compressed air in accordance with ISO 8573-1:2010 [1:4:1]
Bowl guard	Integrated as metal bowl
Residual oil content [mg/m ³]	≤ 0.003

1) We recommend that the filter cartridge be replaced by a new one after 1,000 operating hours. (Applies to an ambient temperature of 21 °C. At higher temperatures the service life of the filter cartridge will be reduced.)
 - - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Standard flow rate q _n [l/min]				
Operating pressure	4 bar	6 bar	10 bar	14 bar
Max. standard flow rate for air purity class q _{n max}	5,065	7,090	11,150	15,190

Operating and environmental conditions	
Operating pressure [bar]	0 ... 20
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [1:4:2] Inert gases
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	+5 ... +30
Storage temperature [°C]	-10 ... +60
Corrosion resistance CRC ¹⁾	2

1) Corrosion resistance class 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]	
Active carbon filter with metal bowl U	7,000

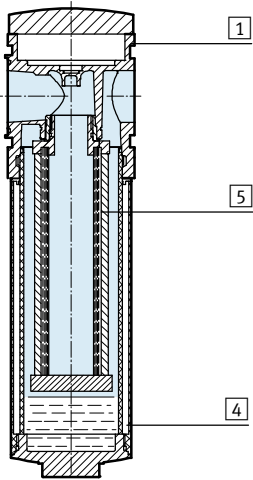
Active carbon filters MS12-LFX, MS series

Technical data



Materials

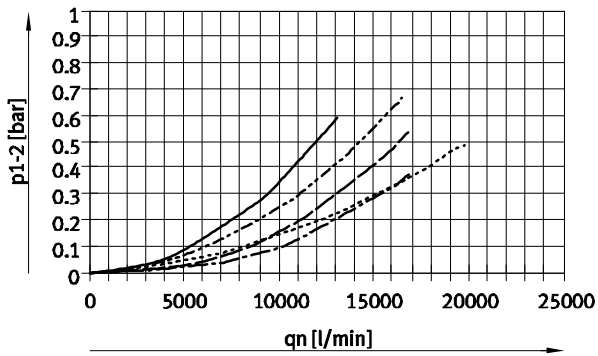
Sectional view



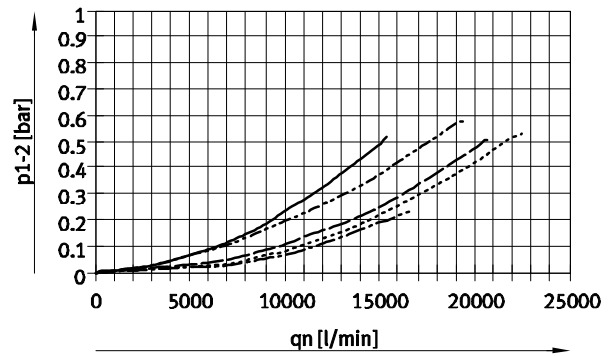
Active carbon filter		
1	Body	Die-cast aluminium
4	Metal bowl	Wrought aluminium alloy
	Viewing window	PC
5	Filter	Active carbon
-	Seals	NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE

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

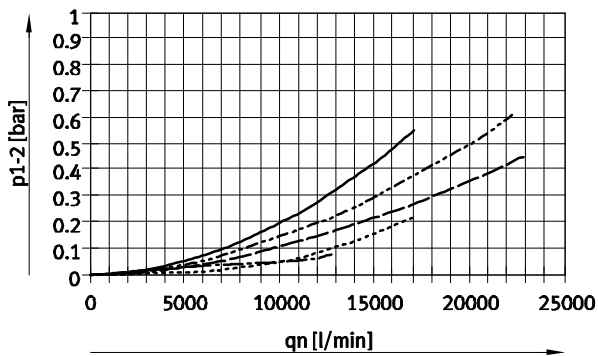
With connecting plate MS12-AGF, Pneumatic connection G1



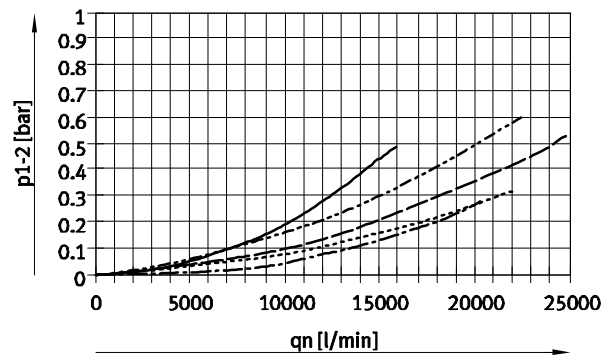
With connecting plate MS12-AGG, Pneumatic connection G1¼



With connecting plate MS12-AGH, Pneumatic connection G1½



With connecting plate MS12-AGI, Pneumatic connection G2



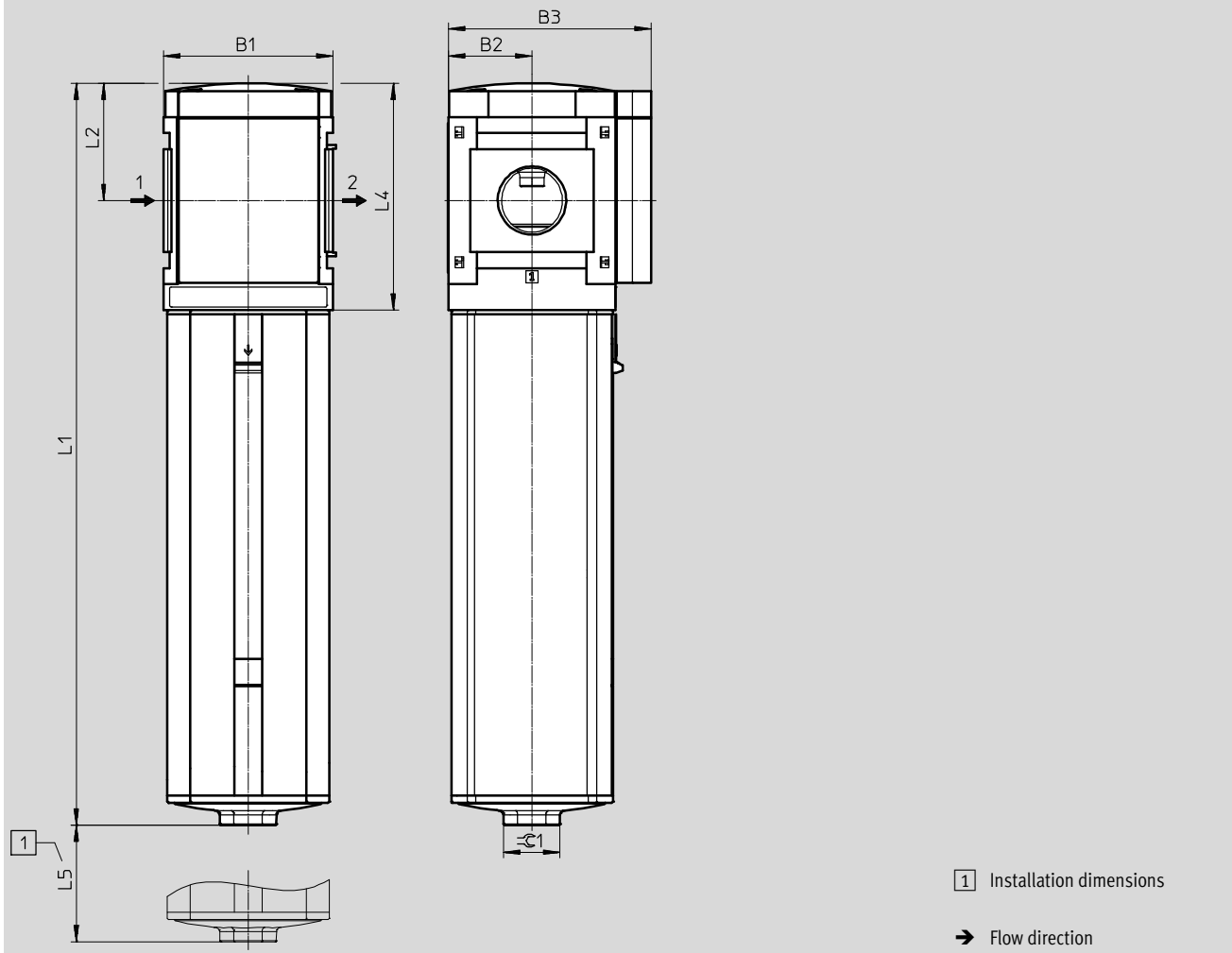
- p1: 4 bar
- - - p1: 6 bar
- · - p1: 8 bar
- · · p1: 10 bar
- · - p1: 12 bar

Active carbon filters MS12-LFX, MS series

Technical data

Dimensions – Basic version

Download CAD data → www.festo.com



Type	B1	B2	B3	L1	L2	L4	L5	±0.1
MS12-LFX	124	61	148	542	86	166	350	36

Ordering data

Metal bowl

Size	Connection	Part No.	Type
MS12	G1 ... G2 ¹⁾	537155	MS12-LFX-G-U

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

Active carbon filters MS12-LFX, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
M	Module No.	535043			
	Series	Standard		MS	MS
	Size	12		12	12
	Function	Active carbon filter		-LFX	-LFX
	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	
	Bowl	Metal bowl		-U	-U
O	Type of mounting	Mounting bracket standard design	1	-WP	
	Flow direction	Flow direction from right to left		-Z	

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

M Mandatory data

O Options

Transfer order code

535043 MS 12 - LFX - [] - U - [] - []

Filters MS-LF/LFM/LFX, MS series

Accessories

Filter cartridges, MS4/MS6 series



Ordering data				
Size	Filter cartridge	Grade of filtration [µm]	Part No.	Type
MS4	Micro-filter cartridge	0.01	162674	MS4/D-MINI-LFM-A
	Fine-filter cartridge	1	162677	MS4/D-MINI-LFM-B
	Filter cartridge (colour: blue)	5	534501	MS4-LFP-C
	Filter cartridge (colour: white)	40	534502	MS4-LFP-E
	Activated carbon filter cartridge	–	532912	MS4/D-MINI-LFX
MS6	Micro-filter cartridge	0.01	532909	MS6-LFM-A
	Fine-filter cartridge	1	532910	MS6-LFM-B
	Filter cartridge (colour: blue)	5	534499	MS6-LFP-C
	Filter cartridge (colour: white)	40	534500	MS6-LFP-E
	Activated carbon filter cartridge	–	532911	MS6-LFX
High flow rate HF				
MS6	Micro-filter cartridge	0.01	552093	MS6-LFM-A-HF
	Fine-filter cartridge	1	552092	MS6-LFM-B-HF
	Activated carbon filter cartridge	–	552094	MS6-LFX-HF
Range of application HP, suitable for sealing air and cleaning air				
MS6	Micro-filter cartridge	0,01	547922	MS6-LFM-AI
	Fine-filter cartridge	1	547923	MS6-LFM-BI
	Activated carbon filter cartridge	–	547925	MS6-LFX-AKI

Filters MS-LF/LFM/LFX, MS series

Accessories

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Filter cartridges, MS9 series



Ordering data				
Size	Filter cartridge	Grade of filtration [µm]	Part No.	Type
MS9	Micro-filter cartridge	0.01	553036	MS9-LFM-A
	Fine-filter cartridge	1	553037	MS9-LFM-B
	Filter cartridge	5	570309	MS9-LFP-C
	Filter cartridge	40	570310	MS9-LFP-E
	Activated carbon filter cartridge	–	552946	MS9-LFX
High flow rate HF				
MS9	Micro-filter cartridge	0.01	552944	MS9-LFM-A-HF
	Fine-filter cartridge	1	552945	MS9-LFM-B-HF

Filters MS-LF/LFM/LFX, MS series

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Accessories

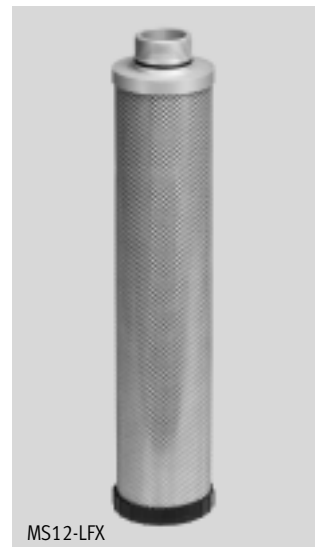
Filter cartridges, MS12 series



MS12-LFM-B



MS12-LFM-A



MS12-LFX

Ordering data				
Size	Filter cartridge	Grade of filtration [µm]	Part No.	Type
MS12	Micro-filter cartridge	0.01	537146	MS12-LFM-A
	Fine-filter cartridge	1	537145	MS12-LFM-B
	Filter cartridge	5	537143	MS12-LFP-C
	Filter cartridge	40	537144	MS12-LFP-E
	Activated carbon filter cartridge	-	537147	MS12-LFX