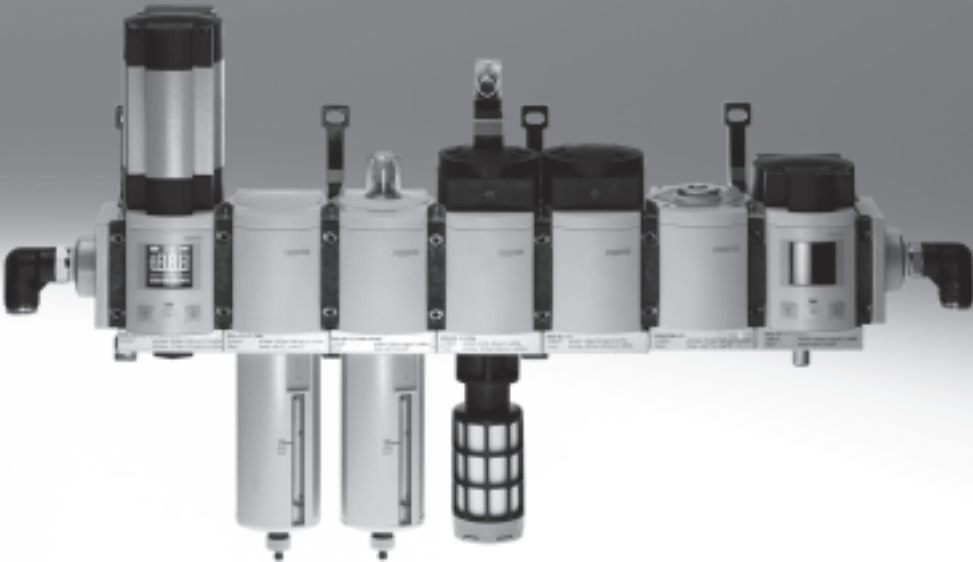


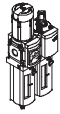
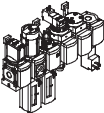




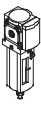
Filter regulators MS-LFR, MS series



# Filter regulators MS-LFR, MS series

FESTO

Product range overview – MS series service units

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

# Filter regulators MS-LFR, MS series

Product range overview – MS series service units



Type	Size	Bowl guard		Condensate drains			Pressure indicator					Security		Options		→ Page/ Internet	
		Plastic bowl with plastic bowl guard	Metal bowl	Manual rotary	Semi-automatic	Fully automatic	External, fully automatic, electrical	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G 1/8	Adapter plate for EN pressure gauge G 1/4	Pressure sensor	Rotary knob with detent, lockable via accessories	Rotary knob with integrated lock	Silencer		Flow direction from right to left
Code		R	U	M	H	V	E...	VS	AG	A8	A4	AD...	AS	E11	S	Z	
<b>Service units</b>																	
MSB-FRC	4	■	-	■	-	■	-	-	■	-	-	-	■	-	-	■	msb4
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	msb6
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Service unit combinations</b>																	
MSB	4	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	msb4
	6	■	■	■	-	■	-	-	■	-	-	-	■	-	-	■	msb6
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Individual devices</b>																	
Filter regulators MS-LFR	4	■	■	■	■	■	-	■	■	■	■	■	■	■	-	■	8
	6	■	■	■	■	■	■	■	■	-	■	■	■	■	-	■	8
	9	-	■	■	■	■	■	■	■	-	■	■	■	■	-	■	24
	12	-	■	■	-	■	■	■	■	-	■	-	■	■	-	■	36
Filters MS-LF	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lf
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lf
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms9-lf
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lf
Fine and micro filters MS-LFM	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lfm
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lfm
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms9-lfm
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lfm
Activated carbon filters MS-LFX	4	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms4-lfx
	6	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms6-lfx
	9	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms9-lfx
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms12-lfx
Water separators MS-LWS	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms6-lws
	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

# Filter regulators MS-LFR, MS series

Product range overview – MS series service units



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

# Filter regulators MS-LFR, MS series

Product range overview – MS series service units



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

# Filter regulators MS-LFR, MS series

Product range overview – MS series service units

Type	Size	Pneumatic connection in housing	Connecting plate	Pressure regulation range [bar]				Supply voltage			
				0.1 ... 4	0.3 ... 7	0.1 ... 12	0.5 ... 16	24 V DC, connection pattern to EN 175301	24 V DC, connection pattern M12 to DESINA	110 V AC, connection pattern to EN 175301	230 V AC, connection pattern to EN 175301
Code			AG...	D5	D6	D7	D8	V24	V24P	V110	V230
<b>Individual devices</b>											
Membrane air dryers <b>MS-LDM1</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-
		9	-								
		12	-								
Branching modules <b>MS-FRM</b>		4	G1/8, G1/4	G1/8, G1/4, G3/8	-	-	-	-	-	-	-
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	-	-	-	-	-	-	-
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	-	-	-	-	-	-	-
		12	-	G1, G1 1/4, G1 1/2, G2	-	-	-	-	-	-	-
Distributor blocks <b>MS-FRM-FRZ</b>		4	G1/4	-	-	-	-	-	-	-	-
		6	G1/2	-	-	-	-	-	-	-	-
		9	-								
		12	-								
Flow sensors <b>SFAM</b>		4	-								
		6	G1/2	G1/2	-	-	-	-	-	-	-
		9	-	G1, G1 1/2	-	-	-	-	-	-	-
		12	-								

# Filter regulators MS-LFR, MS series

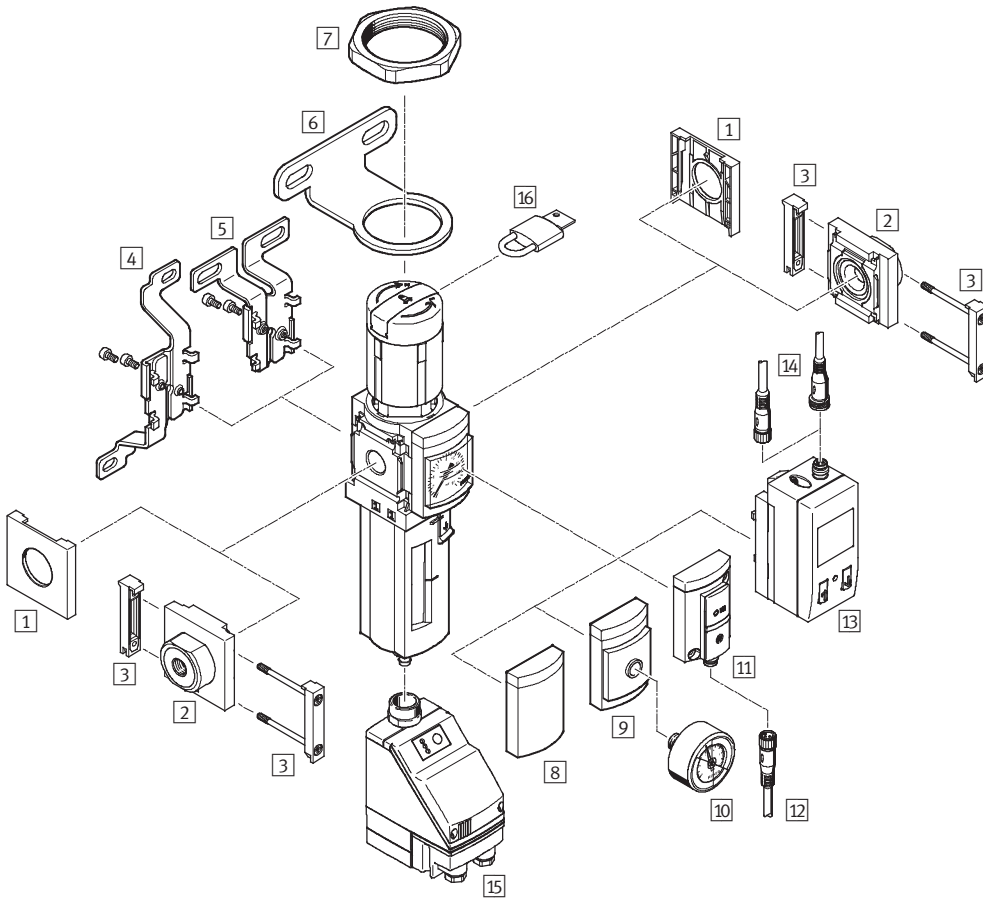
Product range overview – MS series service units


Type	Size	Bowl guard		Pressure indicator					Switch output		Options		→ Page/ Internet
		Plastic bowl with plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor	2x PNP or NPN, 1 analogue output 4 ... 20 mA	2x PNP or NPN, 1 analogue output 0 ... 10 V	Silencer	Flow direction from right to left	
Code		R	U	VS	AG	A8	A4	AD...	2SA	2SV	S	Z/R	
<b>Individual devices</b>													
Membrane air dryers <b>MS-LDM1</b>	4	-	■	-	-	-	-	-	-	-	-	■	ms4-ldm1
	6	-	■	-	-	-	-	-	-	-	-	■	ms6-ldm1
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Branching modules <b>MS-FRM</b>	4	-	-	■	■	■	■	■	-	-	-	■	ms4-frm
	6	-	-	■	■	-	■	■	-	-	-	■	ms6-frm
	9	-	-	■	■	-	■	■	-	-	-	■	ms9-frm
	12	-	-	■	-	-	-	-	-	-	-	-	ms12-frm
Distributor blocks <b>MS-FRM-FRZ</b>	4	-	-	-	-	-	-	-	-	-	-	■	ms4-frm
	6	-	-	-	-	-	-	-	-	-	-	■	ms6-frm
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Flow sensors <b>SFAM</b>	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	■	■	-	■	sfam-62
	9	-	-	-	-	-	-	-	■	■	-	■	sfam-90
	12	-	-	-	-	-	-	-	-	-	-	-	-

# Filter regulators MS4/MS6-LFR, MS series

Peripherals overview

## Filter regulator MS4/MS6-LFR



-  - Note

Additional accessories:

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



## Filter regulators MS4/MS6-LFR, MS series

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
3	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
4	Mounting bracket MS4/6-WB	■	■	-	-	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	-	-	ms4-wbm
6	Mounting bracket MS4/6-WR	■	■	-	-	ms4-wr, ms6-wr
7	Hex nut MS4/6-WRS	■	■	■	■	ms4-wrs, ms6-wrs
8	Cover plate VS	■	■	■	■	22
9	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	22
10	Pressure gauge MA	■	■	■	■	47
11	Pressure sensor without display AD7 ... AD10	■	■	■	■	22
12	Connecting cable NEBU-M8...-LE3	■	■	■	■	47
13	Pressure sensor with display AD1 ... AD4	■	■	■	■	22
14	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	47
15	Fully automatic condensate drain, electrically actuated E1 ... E4	■	■	■	■	22
16	Padlock LRVS-D	■	■	■	■	47
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

# Filter regulators MS4/MS6-LFR, MS series

Type codes

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

<b>Series</b>	
MS	Standard service unit
<b>Size</b>	
4	Grid dimension 40 mm
6	Grid dimension 62 mm
<b>Service function</b>	
LFR	Filter regulator
<b>Pneumatic connection</b>	
MS4	
1/8	Thread G1/8
1/4	Thread G1/4
MS6	
1/4	Thread G1/4
3/8	Thread G3/8
1/2	Thread G1/2
<b>Pressure regulation range</b>	
D6	Pressure regulation range 0.3 ... 7 bar
D7	Pressure regulation range 0.5 ... 12 bar
<b>Grade of filtration</b>	
C	5 µm
E	40 µm
<b>Bowl guard</b>	
R	Plastic bowl guard
U	Integrated as metal bowl
<b>Condensate drain</b>	
M	Manual rotary
V	Fully automatic
<b>Security</b>	
AS	Standard rotary knob with detent, lockable via accessories

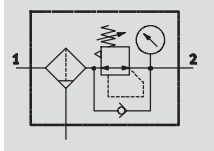
**Additional variants can be ordered using the modular system → 22**

- Connecting plates
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Rotary knob
- Security
- Type of mounting
- Alternative flow direction

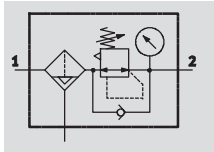
# Filter regulators MS4/MS6-LFR, MS series

Technical data

Manual rotary condensate drain, with pressure gauge



Semi or fully automatic condensate drain, with pressure gauge



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

- - Flow rate  
850 ... 7,200 l/min
- - Temperature range  
-10 ... +60 °C
- - Supply pressure  
0.8 ... 20 bar
- - [www.festo.com](http://www.festo.com)

Wearing parts kits  
→ 21



- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Available with or without secondary venting
- High flow rate
- Directly-actuated diaphragm regulator
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Regulator lock for protecting the values against adjustment
- Two pressure gauge connections for different fitting options
- Return flow option for exhausting from output 2 to output 1 already integrated
- Optional pressure sensor
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 46

General technical data					
Size	MS4		MS6		
Pneumatic connection 1, 2	G1/8	G1/4	G1/4	G3/8	G1/2
Constructional design	Filter regulator with/without pressure display				
Regulating function	Output pressure constant, with return flow action, with/without secondary venting				
Type of mounting	Via accessories				
	In-line installation				
	Front panel mounting				
Mounting position	Vertical ±5°				
Grade of filtration [µm]	5 (air quality class at the output 3.7.- to DIN ISO 8573-1)				
	40 (air quality class at the output 5.7.- to DIN ISO 8573-1)				
Bowl guard	Plastic bowl guard				
	Integrated as metal bowl				
Condensate drain	Manual rotary				
	Semi-automatic				
	Fully automatic				
Regulator lock	-				
	Fully automatic, electrically actuated				
	Rotary knob with detent				
Pressure regulation range	D5 [bar]	0.3 ... 4			
	D6 [bar]	0.3 ... 7			
	D7 [bar]	0.5 ... 12 (0.5 ... 10 with pressure sensor variant AD...)			
	D8 [bar]	-	0.5 ... 16		
Max. hysteresis [bar]	0.25				
Pressure display	Via pressure sensor for displaying output pressure via LCD display and electrical output				
	Via pressure sensor for displaying output pressure via operational status indicator and electrical output				
	Via pressure gauge for displaying output pressure				
Max. condensate volume [cm³]	19 (with plastic bowl guard)		38		
	25 (with metal bowl)				

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

# Filter regulators MS4/MS6-LFR, MS series

FESTO

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]						
Size	MS4			MS6		
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	
<b>D5 – Pressure regulation range 0.3 ... 4 bar</b>						
Grade of filtration	5 $\mu$ m	900 <sup>2)</sup>	1,800 <sup>2)</sup>	2,000 <sup>2)</sup>	5,500 <sup>2)</sup>	6,900 <sup>2)</sup>
	40 $\mu$ m	1,100 <sup>2)</sup>	1,900 <sup>2)</sup>	2,200 <sup>2)</sup>	6,000 <sup>2)</sup>	7,200 <sup>2)</sup>
<b>D6 – Pressure regulation range 0.3 ... 7 bar</b>						
Grade of filtration	5 $\mu$ m	900	1,500	2,700	5,000	5,600
	40 $\mu$ m	1,000	1,700	2,800	5,700	6,200
<b>D7 – Pressure regulation range 0.5 ... 12 bar</b>						
Grade of filtration	5 $\mu$ m	850	1,200	2,200	3,500	4,000
	40 $\mu$ m	900	1,500	2,500	4,000	4,500
<b>D8 – Pressure regulation range 0.5 ... 16 bar</b>						
Grade of filtration	5 $\mu$ m	–	–	2,000	3,300	3,800
	40 $\mu$ m	–	–	2,300	3,500	4,000

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

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

Operating and environmental conditions							
Condensate drain	Manual rotary		Semi-automatic		Fully automatic		Fully automatic, electrically actuated E1 ... E4
	M		H		V		
Size	MS4	MS6	MS4	MS6	MS4	MS6	MS6
Supply pressure [bar]	0.8 ... 14	0.8 ... 20	1.5 ... 12	1.5 ... 12	2 ... 12	2 ... 12	0.8 ... 16
Operating medium	Filtered compressed air or inert gases, lubricated or unlubricated, grade of filtration 40 $\mu$ m						
Ambient temperature [°C]	–10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Ambient temperature with pressure sensor AD...	0 ... +50		+5 ... +50		+5 ... +50		+1 ... +50
Temperature of medium [°C]	–10 ... +60		+5 ... +60		+5 ... +60		+1 ... +60
Temperature of medium with pressure sensor AD...	0 ... +50		+5 ... +50		+5 ... +50		+1 ... +50
Storage temperature [°C]	–10 ... +60		–10 ... +60		–10 ... +60		+1 ... +60
Corrosion resistance class CRC <sup>1)</sup>	2						

1) Corrosion resistance class 2 as per Festo standard 940 070

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

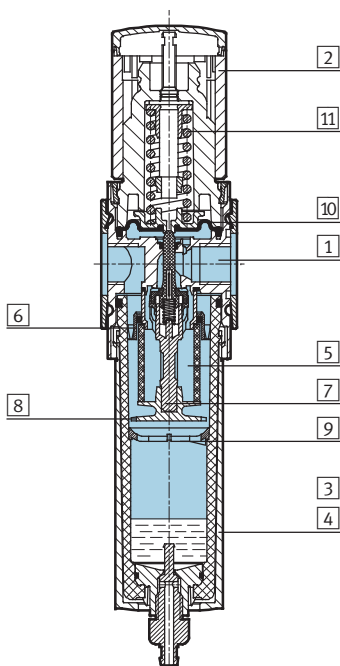
# Filter regulators MS4/MS6-LFR, MS series

Technical data

Weight [g]				
Size	MS4		MS6	
Rotary knob	Without integrated lock E11	With integrated lock E11	Without integrated lock E11	With integrated lock E11
Filter regulator with plastic bowl guard R	275	400	875	1,145
Filter regulator with metal bowl U	475	600	1,087	1,627
Filter regulator with metal bowl U and fully automatic condensate drain, electrically actuated E1 ... E4	-	-	1,800	2,070

## Materials

Sectional view



Filter regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	PA/POM
	Rotary knob with integrated lock E11	Aluminium
3	Plastic bowl guard	PC
4	Metal bowl	Wrought aluminium alloy, die-cast aluminium
	Inspection window	PA
5	Filter element	PE
6	Spin disc	POM
7	Filter holder	POM
8	Separating plate	POM
9	Stabilising disc	POM
10	Diaphragm	NBR
11	Spring	Steel
-	Seals	NBR
Note on materials		RoHS-compliant (not with variant E1, E2, E3 or E4)
		Free of copper and PTFE only with cover plate VS

# Filter regulators MS4/MS6-LFR, MS series

Technical data

## Standard flow rate $q_n$ as a function of output pressure $p_2$

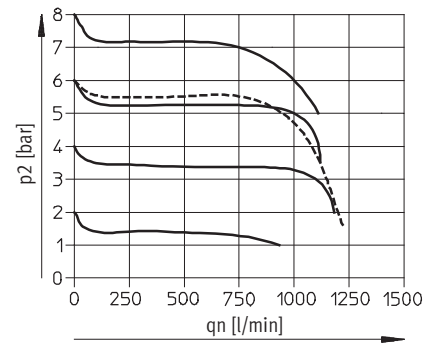
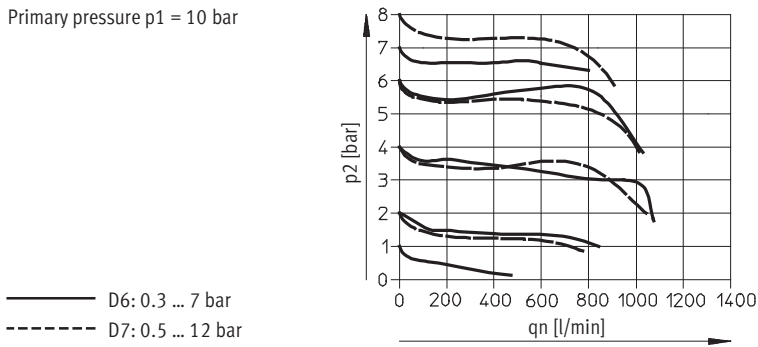
Pressure regulation range D6 or D7

Grade of filtration 5  $\mu\text{m}$

Grade of filtration 40  $\mu\text{m}$

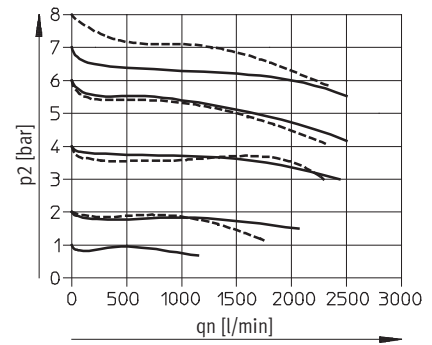
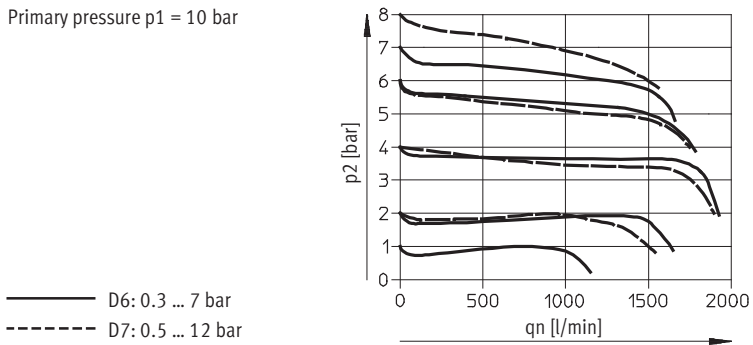
MS4-LFR-1/8

Primary pressure  $p_1 = 10$  bar



MS4-LFR-1/4

Primary pressure  $p_1 = 10$  bar



# Filter regulators MS4/MS6-LFR, MS series

Technical data

## Standard flow rate $q_n$ as a function of output pressure $p_2$

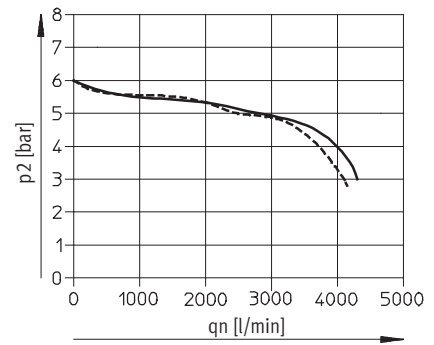
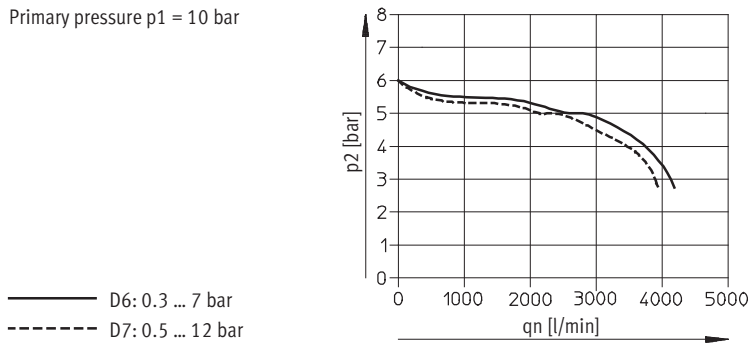
Pressure regulation range D6 or D7

Grade of filtration 5  $\mu\text{m}$

Grade of filtration 40  $\mu\text{m}$

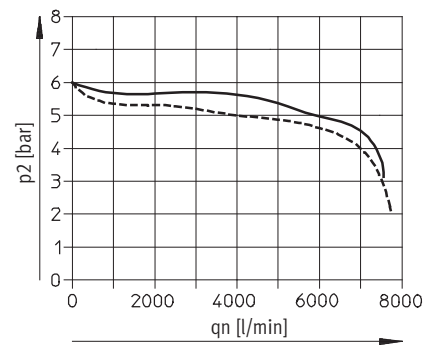
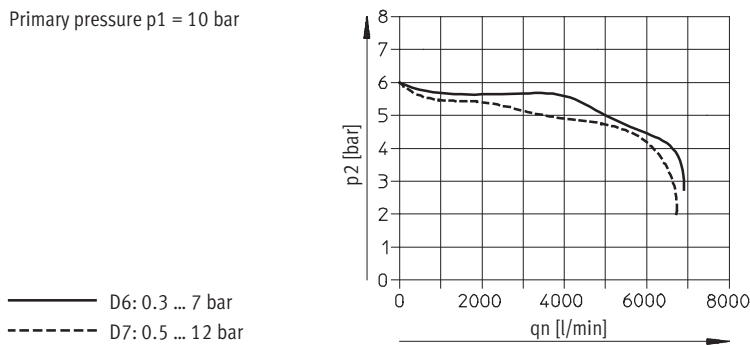
MS6-LFR-1/4

Primary pressure  $p_1 = 10$  bar



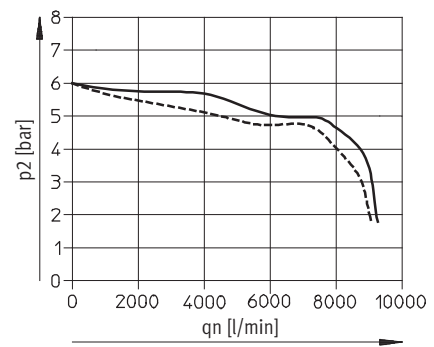
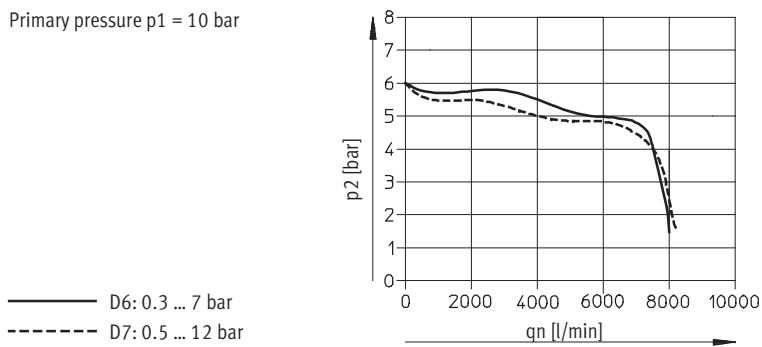
MS6-LFR-3/8

Primary pressure  $p_1 = 10$  bar



MS6-LFR-1/2

Primary pressure  $p_1 = 10$  bar



# Filter regulators MS4/MS6-LFR, MS series

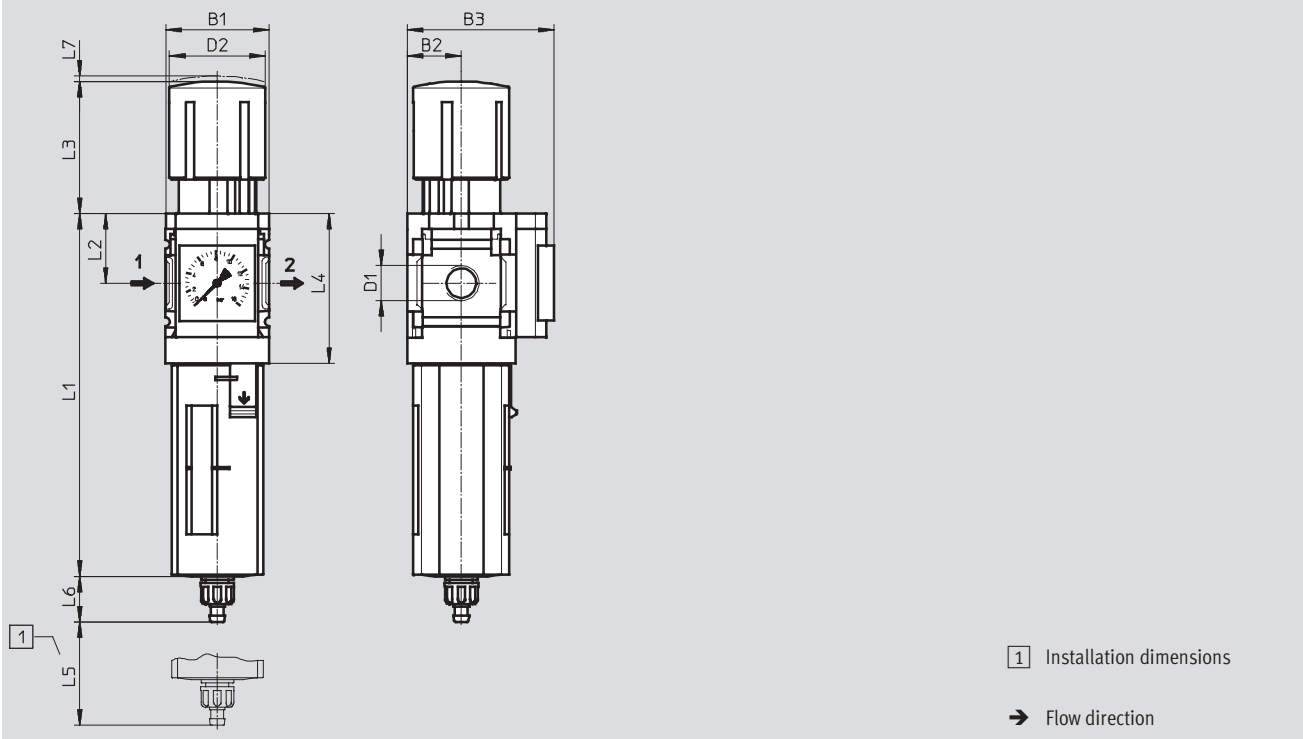
Technical data

FESTO

## Dimensions – Standard

Download CAD data → [www.festo.com](http://www.festo.com)

Integrated pressure gauge, display unit [bar], standard rotary knob with detent, manual rotary condensate drain



Type	B1	B2	B3		D1	D2	L1		L2	L3	L4	L5	L6		L7
			Pressure gauge				Plastic	Metal					Bowl guard		
			Stan- dard scale	Red- green scale									Plastic	Metal	
MS4-LFR-1/8	40	21	57	58.5	G1/8	37.2	140.6	158.2	27	51.1	58.5	25	17.7	17.7	2
MS4-LFR-1/4					G1/4										
MS6-LFR-1/4	62	31	77	78.5	G1/4	51	189	194.4	39	86	84	68	15.8	19	5
MS6-LFR-3/8					G3/8										
MS6-LFR-1/2					G1/2										

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



# Filter regulators MS4/MS6-LFR, MS series

Technical data

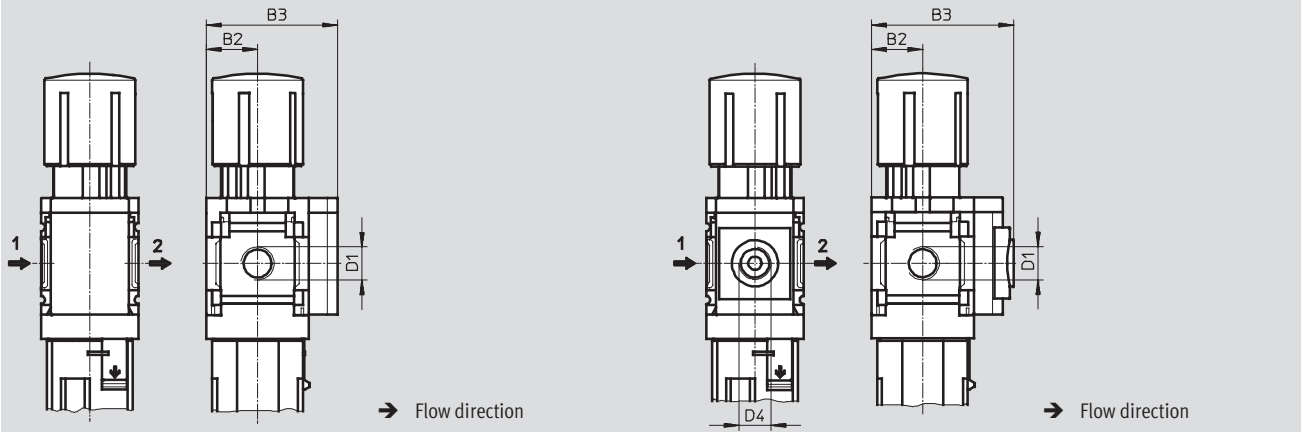
FESTO

## Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://www.festo.com)

Cover plate VS

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



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

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

# Filter regulators MS4/MS6-LFR, MS series

Technical data



**Dimensions – Pressure gauge alternatives** Download CAD data → [www.festo.com](http://www.festo.com)

Pressure sensor with LCD display AD1 ... AD4 Technical data → Internet: [sde1](#)

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

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

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

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

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

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

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

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

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

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

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

# Filter regulators MS4/MS6-LFR, MS series

Technical data

FESTO

## Dimensions – Rotary knob

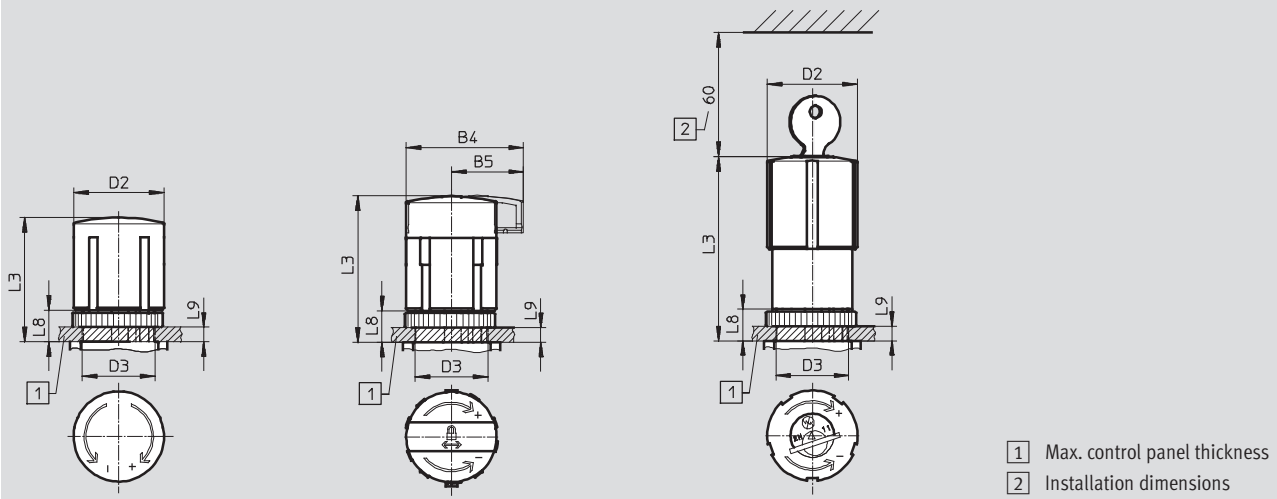
Download CAD data → [www.festo.com](http://www.festo.com)

For installation into control panel

Standard rotary knob with detent

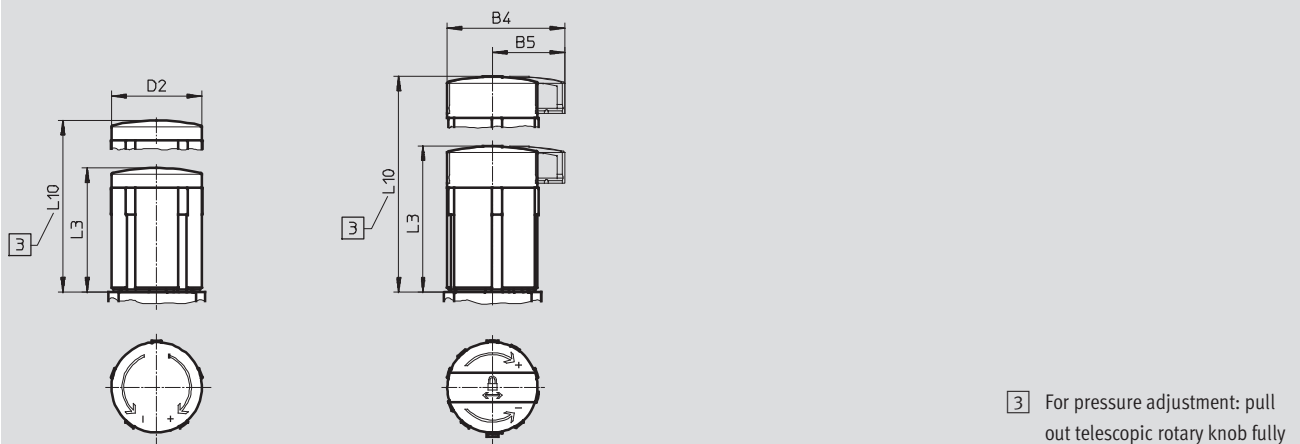
Standard rotary knob with detent,  
lockable via accessories AS

Rotary knob with integrated lock  
E11



Long rotary knob with detent LD

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



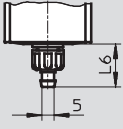
Type	B4	B5	D2	D3 +1	L3	L8	L9	L10
MS4-LFR-...	-	-	37.2	30	51.1	13	6	-
MS4-LFR-...-AS	48.3	29.7			60.2			
MS4-LFR-...-E11	-	-			76			
MS4-LFR-...-LD	-	-	37.2	-	51.1	-	-	76.8
MS4-LFR-...-LD-AS	48.3	29.7			60.2			85.7
MS6-LFR-...	-	-	51	44	86	22	14	-
MS6-LFR-...-AS	64.4	39			95.5			
MS6-LFR-...-E11	-	-			112.1			
MS6-LFR-...-LD	-	-	51	-	86	-	-	139
MS6-LFR-...-LD-AS	64.4	39			95.5			148.5

# Filter regulators MS4/MS6-LFR, MS series

Technical data

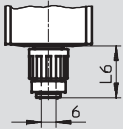
**Dimensions – Condensate drain** Download CAD data → [www.festo.com](http://www.festo.com)

**Manual rotary M**



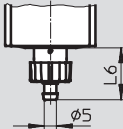
Barbed fitting for plastic tubing  
PCN-4

**Semi-automatic H**



QS fitting for plastic tubing  
PUN-6/PAN-6

**Fully automatic V**



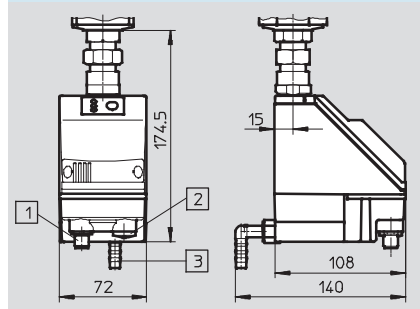
Barbed fitting for plastic tubing  
PCN-4

Type	L6
<b>Plastic bowl guard</b>	
MS4-LFR-...-M	17.7
MS6-LFR-...-M	15.8
<b>Metal bowl</b>	
MS4-LFR-...-M	17.7
MS6-LFR-...-M	19

Type	L6
<b>Plastic bowl guard</b>	
MS4-LFR-...-H	22.1
MS6-LFR-...-H	20.2
<b>Metal bowl</b>	
MS4-LFR-...-H	22.1
MS6-LFR-...-H	22.8

Type	L6
<b>Plastic bowl guard</b>	
MS4-LFR-...-V	20.4
MS6-LFR-...-V	18.5
<b>Metal bowl</b>	
MS4-LFR-...-V	20.4
MS6-LFR-...-V	22

**Fully automatic, electrically actuated E1 ... E4** Technical data → Internet: [pwea](http://pwea)



- 1 Variant E1  
PWEA-AP-... with plug M12x1, 5-pin for NEBU-M12...-LE5
- 2 Variant E2/E3/E4  
PWEA-AC-... with cable conduit fitting Pg9
- 3 Connection 360° rotatable for plastic tubing PUN-H-12x2-...

# Filter regulators MS4/MS6-LFR, MS series

Technical data

Ordering data						
Pressure regulation range 0.3 ... 7 bar, integrated pressure gauge, display unit [bar], standard rotary knob with detent, lockable via accessories						
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 $\frac{1}{8}$	529160	MS4-LFR- $\frac{1}{8}$ -D6-CRM-AS	529164	MS4-LFR- $\frac{1}{8}$ -D6-ERM-AS
		G $\frac{1}{4}$	529144	MS4-LFR- $\frac{1}{4}$ -D6-CRM-AS	529148	MS4-LFR- $\frac{1}{4}$ -D6-ERM-AS
	Fully automatic	G $\frac{1}{8}$	529162	MS4-LFR- $\frac{1}{8}$ -D6-CRV-AS	529166	MS4-LFR- $\frac{1}{8}$ -D6-ERV-AS
		G $\frac{1}{4}$	529146	MS4-LFR- $\frac{1}{4}$ -D6-CRV-AS	529150	MS4-LFR- $\frac{1}{4}$ -D6-ERV-AS
MS6	Manual rotary	G $\frac{1}{4}$	529196	MS6-LFR- $\frac{1}{4}$ -D6-CRM-AS	529200	MS6-LFR- $\frac{1}{4}$ -D6-ERM-AS
		G $\frac{3}{8}$	529216	MS6-LFR- $\frac{3}{8}$ -D6-CRM-AS	529220	MS6-LFR- $\frac{3}{8}$ -D6-ERM-AS
		G $\frac{1}{2}$	529176	MS6-LFR- $\frac{1}{2}$ -D6-CRM-AS	529180	MS6-LFR- $\frac{1}{2}$ -D6-ERM-AS
	Fully automatic	G $\frac{1}{4}$	529198	MS6-LFR- $\frac{1}{4}$ -D6-CRV-AS	529202	MS6-LFR- $\frac{1}{4}$ -D6-ERV-AS
		G $\frac{3}{8}$	529218	MS6-LFR- $\frac{3}{8}$ -D6-CRV-AS	529222	MS6-LFR- $\frac{3}{8}$ -D6-ERV-AS
		G $\frac{1}{2}$	529178	MS6-LFR- $\frac{1}{2}$ -D6-CRV-AS	529182	MS6-LFR- $\frac{1}{2}$ -D6-ERV-AS

Ordering data						
Pressure regulation range 0.5 ... 12 bar, integrated pressure gauge, display unit [bar], standard rotary knob with detent, lockable via accessories						
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 $\frac{1}{8}$	529168	MS4-LFR- $\frac{1}{8}$ -D7-CRM-AS	529172	MS4-LFR- $\frac{1}{8}$ -D7-ERM-AS
		G $\frac{1}{4}$	529152	MS4-LFR- $\frac{1}{4}$ -D7-CRM-AS	529156	MS4-LFR- $\frac{1}{4}$ -D7-ERM-AS
	Fully automatic	G $\frac{1}{8}$	529170	MS4-LFR- $\frac{1}{8}$ -D7-CRV-AS	529174	MS4-LFR- $\frac{1}{8}$ -D7-ERV-AS
		G $\frac{1}{4}$	529154	MS4-LFR- $\frac{1}{4}$ -D7-CRV-AS	529158	MS4-LFR- $\frac{1}{4}$ -D7-ERV-AS
MS6	Manual rotary	G $\frac{1}{4}$	529204	MS6-LFR- $\frac{1}{4}$ -D7-CRM-AS	529208	MS6-LFR- $\frac{1}{4}$ -D7-ERM-AS
		G $\frac{3}{8}$	529224	MS6-LFR- $\frac{3}{8}$ -D7-CRM-AS	529228	MS6-LFR- $\frac{3}{8}$ -D7-ERM-AS
		G $\frac{1}{2}$	529184	MS6-LFR- $\frac{1}{2}$ -D7-CRM-AS	529188	MS6-LFR- $\frac{1}{2}$ -D7-ERM-AS
	Fully automatic	G $\frac{1}{4}$	529206	MS6-LFR- $\frac{1}{4}$ -D7-CRV-AS	529210	MS6-LFR- $\frac{1}{4}$ -D7-ERV-AS
		G $\frac{3}{8}$	529226	MS6-LFR- $\frac{3}{8}$ -D7-CRV-AS	529230	MS6-LFR- $\frac{3}{8}$ -D7-ERV-AS
		G $\frac{1}{2}$	529186	MS6-LFR- $\frac{1}{2}$ -D7-CRV-AS	529190	MS6-LFR- $\frac{1}{2}$ -D7-ERV-AS
Integrated as metal bowl						
MS4	Manual rotary	G $\frac{1}{8}$	535702	MS4-LFR- $\frac{1}{8}$ -D7-CUM-AS	535708	MS4-LFR- $\frac{1}{8}$ -D7-EUM-AS
		G $\frac{1}{4}$	535718	MS4-LFR- $\frac{1}{4}$ -D7-CUM-AS	535724	MS4-LFR- $\frac{1}{4}$ -D7-EUM-AS
	Fully automatic	G $\frac{1}{8}$	535704	MS4-LFR- $\frac{1}{8}$ -D7-CUV-AS	535706	MS4-LFR- $\frac{1}{8}$ -D7-EUV-AS
		G $\frac{1}{4}$	535720	MS4-LFR- $\frac{1}{4}$ -D7-CUV-AS	535722	MS4-LFR- $\frac{1}{4}$ -D7-EUV-AS
MS6	Manual rotary	G $\frac{1}{4}$	530342	MS6-LFR- $\frac{1}{4}$ -D7-CUM-AS	529212	MS6-LFR- $\frac{1}{4}$ -D7-EUM-AS
		G $\frac{3}{8}$	530346	MS6-LFR- $\frac{3}{8}$ -D7-CUM-AS	529232	MS6-LFR- $\frac{3}{8}$ -D7-EUM-AS
		G $\frac{1}{2}$	530338	MS6-LFR- $\frac{1}{2}$ -D7-CUM-AS	529192	MS6-LFR- $\frac{1}{2}$ -D7-EUM-AS
	Fully automatic	G $\frac{1}{4}$	530344	MS6-LFR- $\frac{1}{4}$ -D7-CUV-AS	529214	MS6-LFR- $\frac{1}{4}$ -D7-EUV-AS
		G $\frac{3}{8}$	530348	MS6-LFR- $\frac{3}{8}$ -D7-CUV-AS	529234	MS6-LFR- $\frac{3}{8}$ -D7-EUV-AS
		G $\frac{1}{2}$	530340	MS6-LFR- $\frac{1}{2}$ -D7-CUV-AS	529194	MS6-LFR- $\frac{1}{2}$ -D7-EUV-AS

Ordering data – Wearing parts kits		
Size	Part No.	Type
MS4	673647	MS4-LFR
MS6	673648	MS6-LFR

- 1 - Variant E1 discontinued  
Available up until 2011

## Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products

FESTO

### M Mandatory data →

Module No.	Series	Size	Function	Connection size	Pressure regulation range	Grade of filtration	Bowl	Condensate drain
526489	MS	4	LFR	1/8, 1/4, 3/8, 1/2, AGA, AGB, AGC, AGD, AGE	D5 D6 D7 D8	E C	R U	M H V E1 ... E4
526490		6						
<b>Order example</b>								
526489	MS	4	LFR	AGA	D6	C	R	M

### Ordering table

Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	526489		526490			
	Series	Standard			MS	MS	
	Size	4	6		...		
	Function	Filter regulator			-LFR	-LFR	
	Connection size	Thread G1/8	-		-1/8		
		Thread G1/4	Thread G1/4		-1/4		
		-	Thread G3/8		-3/8		
		-	Thread G1/2		-1/2		
		Connecting plate G1/8	-		-AGA		
		Connecting plate G1/4	Connecting plate G1/4		-AGB		
		Connecting plate G3/8	Connecting plate G3/8		-AGC		
		-	Connecting plate G1/2		-AGD		
	-	Connecting plate G3/4		-AGE			
	Pressure regulation range	0.3 ... 4 bar			-D5		
		0.3 ... 7 bar			-D6		
		0.5 ... 12 bar			-D7		
		-	0.5 ... 16 bar			-D8	
	Grade of filtration	40 µm			-E		
		5 µm			-C		
	Bowl	Plastic bowl with plastic bowl guard			-R		
		Metal bowl			-U		
	Condensate drain	Manual			-M		
		Semi-automatic (P1 max. 12 bar)		[1]	-H		
		Fully automatic (P1 max. 12 bar)		[1]	-V		
		External, fully automatic, electrical	24 V DC, M12 - 1		[2]	-E1	
			110 V AC, terminals		[2]	-E2	
			230 V AC, terminals		[2]	-E3	
			24 V DC, terminals		[2]	-E4	

[1] H, V Not with pressure regulation range D8

[2] E1 ... E4 Only with metal bowl U

### Transfer order code

	MS		-	LFR		-			-			-	
--	----	--	---	-----	--	---	--	--	---	--	--	---	--

- 2 - Variant E1 discontinued  
Available up until 2011

## Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products

FESTO

### Options

Pressure gauge alternatives	Alternative pressure gauge scale	Secondary venting	Rotary knob	Security	Type of mounting	Alternative flow direction
VS, A8, A4, RG, AD1 ... AD4, AD7 ... AD10	PSI MPA	OS	LD	AS E11	WR WP WPM WB WBM	Z
- A8	-	-	- LD	- AS	- WPM	- Z

### Ordering table

Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
0 Pressure gauge alternatives	Cover plate				-VS	
	Adapter plate for EN pressure gauge 1/8, without pressure gauge				-A8	
	Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4	
	Integrated pressure gauge, red-green scale			4	-RG	
	Pressure sensor with display, plug M8, 1 switching output PNP, 3-pin			5	-AD1	
	Pressure sensor with display, plug M8, 1 switching output NPN, 3-pin			5	-AD2	
	Pressure sensor with display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			5	-AD3	
	Pressure sensor with display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			5	-AD4	
	Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O contact			5	-AD7	
	Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact			5	-AD8	
	Pressure sensor without display, plug M8, window comparator, PNP, N/O contact			5	-AD9	
	Pressure sensor without display, plug M8, window comparator, PNP, N/C contact			5	-AD10	
	Alternative pressure gauge scale	psi			6	-PSI
MPa				6	-MPA	
Secondary venting	Without secondary venting				-OS	
Rotary knob	Long rotary knob			7	-LD	
Security	Lockable via accessories				-AS	
	With integrated lock				-E11	
Type of mounting	Mounting bracket with knurled nut for regulator head			8	-WR	
	Mounting bracket			9	-WP	
	Mounting bracket			9	-WPM	
	Mounting bracket				-WB	
	Mounting bracket				-WBM	
Alternative flow direction	Flow direction from right to left				-Z	

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

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

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

7 **LD** Not with security E11

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

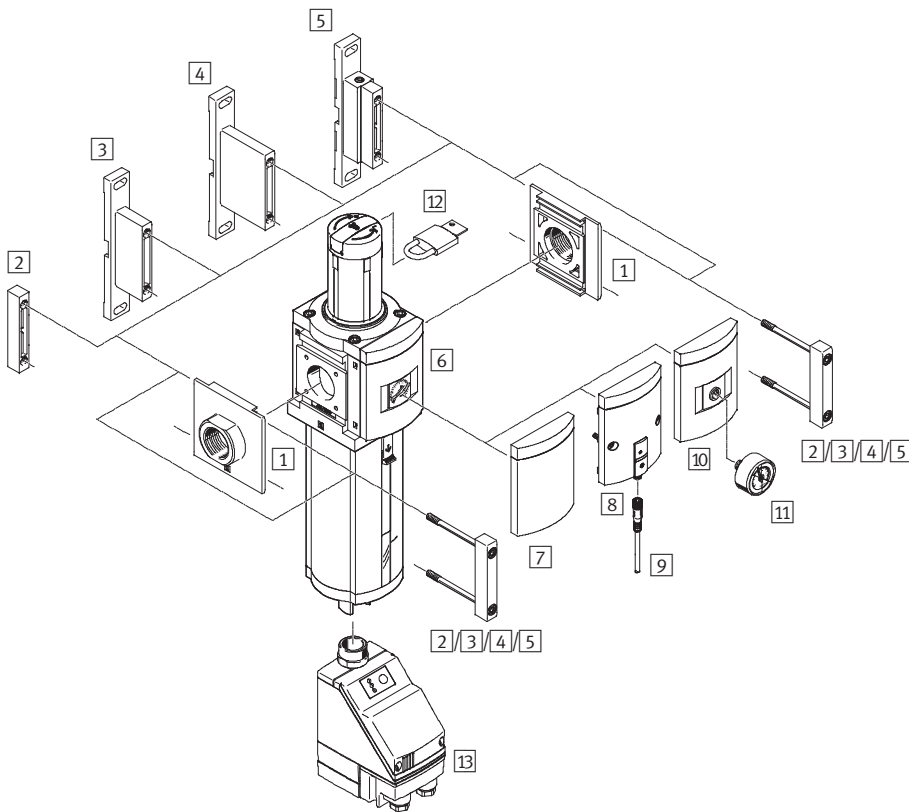
9 **WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD or AGE


### Transfer order code

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

**Filter regulators MS9-LFR, MS series**

Peripherals overview



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

Mounting attachments and accessories					
		Individual unit		Combination	→ Page/Internet
		Without connecting thread	With connecting thread 3/4 or 1		
1	Connecting plate MS9-AG...	■	–	■	ms9-ag
2	Module connector MS9-MV	■	–	■	ms9-mv
3	Mounting bracket MS9-WP	■	■	■	ms9-wp
4	Mounting bracket MS9-WPB	■	■	■	ms9-wp
5	Mounting bracket MS9-WPM	■	–	■	ms9-wp
6	MS pressure gauge AG	■	■	■	34
7	Cover plate VS	■	■	■	34
8	Pressure sensor without display AD7 ... AD10	■	■	■	34
9	Connecting cable NEBU-M8...-LE3	■	■	■	47
10	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	34
11	Pressure gauge MA	■	■	■	47
12	Padlock LRVS-D	■	■	■	47
13	Condensate drain, fully automatic, electrically actuated E1/E2/E3/E4	■	■	■	34



## Filter regulators MS9-LFR, MS series

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Type codes

		MS	9	-	LFR	-	G	-	D6	-	E	U	M	-	DI	-	AG	-	BAR	-	AS	
<b>Series</b>																						
MS	Standard service unit																					
<b>Size</b>																						
9	Grid dimension 90 mm																					
<b>Service function</b>																						
LFR	Filter regulator																					
<b>Connection size</b>																						
G	Module without connecting thread, without connecting plate																					
<b>Pressure regulation range/operation mode</b>																						
D6	0.3 ... 7 bar, manually operated																					
D7	0.5 ... 12 bar, manually operated																					
<b>Grade of filtration</b>																						
C	5 µm																					
E	40 µm																					
<b>Bowl guard</b>																						
U	Integrated as metal bowl																					
<b>Condensate drain</b>																						
M	Manual rotary																					
V	Fully automatic																					
<b>Regulator type</b>																						
	Piloted																					
DI	Directly actuated (only with pressure regulation range D6)																					
<b>Pressure gauge</b>																						
AG	MS pressure gauge																					
<b>Pressure gauge scale</b>																						
BAR	Bar																					
<b>Security</b>																						
AS	Rotary knob with detent, can be locked using accessories																					

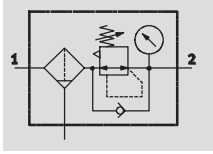
### Additional variants can be ordered using the modular system → 34




- Connecting plates
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Security lock
- Type of mounting
- Alternative flow direction

**Filter regulators MS9-LFR, MS series**

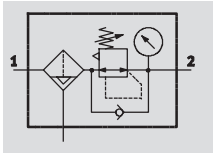
Technical data

Manual rotary condensate drain, with pressure gauge



-  - Flow rate  
3,600 ... 21,500 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Supply pressure  
0.8 ... 20 bar

Semi or fully automatic condensate drain, with pressure gauge



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

- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Piloted or directly actuated filter-diaphragm regulator
- High flow rates
- Available with or without secondary venting
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Actuator lock to protect set values against adjustment
- Pressure gauge connection for different fitting options
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- Optional pressure sensor
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 46



General technical data					
Pneumatic connection 1, 2		G3/4	G1	G1/2 ... G1 1/2 (with connecting plate AG...)	- (without connecting thread G)
Design		Piloted filter-diaphragm regulator			Directly actuated filter-diaphragm regulator
Regulator type	Piloted	Output pressure constant, with return flow action, with primary pressure compensation, with secondary venting			
	Directly actuated	Output pressure constant, with return flow action, with/without secondary venting			
Type of mounting		Via accessories			In-line installation
Mounting position		Vertical ±5°			
Grade of filtration	[µm]	5 (air quality class at the output 3.7.- to DIN ISO 8573-1)			40 (air quality class at the output 5.7.- to DIN ISO 8573-1)
		Bowl guard			
Condensate drain		Manual rotary			
		Semi-automatic			
		Fully automatic			
		Fully automatic, electrically actuated			
Security		Rotary knob with detent			
		Rotary knob with detent, can be locked using accessories			
		Rotary knob with integrated lock			
Pressure regulation range/operation mode	D5 [bar]	0.3 ... 4, manually operated			
	D6 [bar]	0.3 ... 7, manually operated			
	D7 [bar]	0.5 ... 12, manually operated (0.5 ... 10 with pressure sensor variant AD...)			
	D8 [bar]	0.5 ... 16, manually operated (0.5 ... 10 with pressure sensor variant AD...)			
Max. pressure hysteresis	[bar]	0.3			
Pressure display		Via pressure sensor for displaying output pressure via operational status indicator and electrical output			
		Via pressure gauge for displaying output pressure			
		Via pressure gauge with red/green scale for displaying output pressure			
		G1/4 prepared			
Max. condensate volume	[ml]	220			

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

## Filter regulators MS9-LFR, MS series

**FESTO**

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]			
Pneumatic connection	With connecting thread G $\frac{3}{4}$		With connecting thread G1
	With connecting plate AGD, AGE		With connecting plate AGE, AGG, AGH
Directly actuated diaphragm regulator DI			
Pressure regulation range	D5	8,000 $\pm 15\%^{2)}$	13,000 $\pm 15\%^{2)}$
	D6	7,000 $\pm 15\%$	10,000 $\pm 15\%$

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

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

Operating and environmental conditions				
Condensate drain	Manual rotary	Semi-automatic	Fully automatic	Fully automatic, electrically actuated
	M	H	V	E1 ... E4
Operating pressure [bar]	0.8 ... 20	1.5 ... 12	2 ... 12	0.8 ... 16
Operating medium	Air quality class 5:7:- to DIN ISO 8573-1			
Operating medium with pressure sensor AD	Filtered compressed air, lubricated or unlubricated, grade of filtration 40 $\mu$ m			
Ambient temperature [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Ambient temperature with pressure sensor AD [°C]	0 ... +50	+5 ... +50	+5 ... +50	+1 ... +50
Temperature of medium [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Temperature of medium with pressure sensor AD [°C]	0 ... +50	+5 ... +50	+5 ... +50	+1 ... +50
Storage temperature [°C]	-10 ... +60	+5 ... +60	+5 ... +60	+1 ... +60
Corrosion resistance class CRC <sup>1)</sup>	2			

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

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

Weight [g]		
Rotary knob	Without integrated lock E11	With integrated lock E11
Filter regulator with metal bowl U	2,400	2,700
Filter regulator with metal bowl U and fully automatic condensate drain, electrically actuated E1 ... E4	2,800	3,100

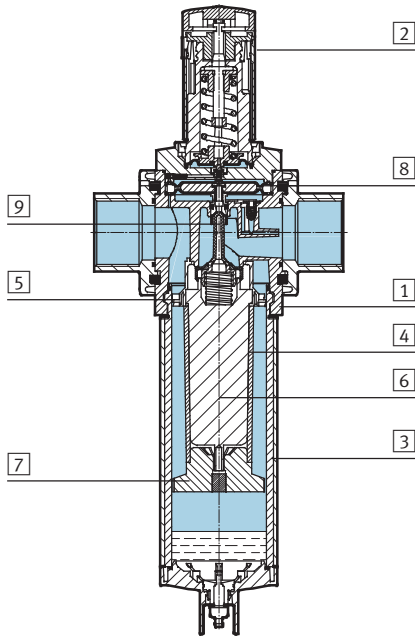
## Filter regulators MS9-LFR, MS series

Technical data

**FESTO**

### Materials

Sectional view



Filter regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	PA
	Rotary knob with integrated lock E11	Aluminium
3	Bowl	Wrought aluminium alloy
	Inspection window	PA
4	Filter element	PE
5	Spin disc	POM
6	Filter holder	POM
7	Separating plate	POM
8	Diaphragm	NBR
9	Valve stem	Wrought aluminium alloy, NBR, POM
-	Cover	PA reinforced
-	Connecting plate, module connector, mounting bracket	Die-cast aluminium
-	Seals	NBR
Note on materials		RoHS-compliant (not with variant E1, E2, E3 or E4)

## Filter regulators MS9-LFR, MS series

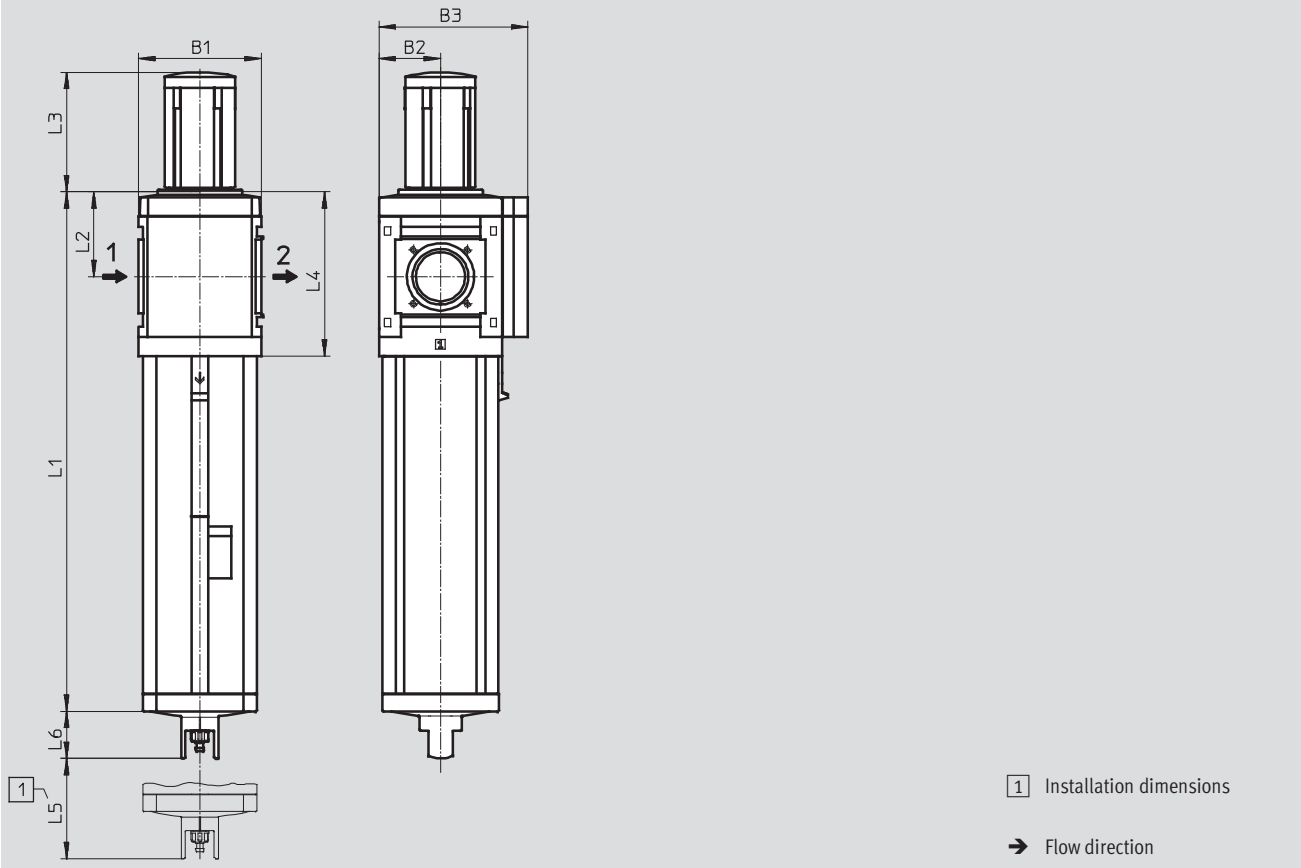
Technical data

**FESTO**

### Dimensions – Basic version

Download CAD data → [www.festo.com](http://www.festo.com)

Without connecting thread G, rotary knob with detent



Type	B1	B2	B3	L1		L2		L3	L4		L5	L6
				pilot actuated	directly actuated DI	pilot actuated	directly actuated DI		pilot actuated	directly actuated DI		
MS9-LFR-G	90	45	109	320	313	69	62	86	127	120	150	34.5

**Filter regulators MS9-LFR, MS series**

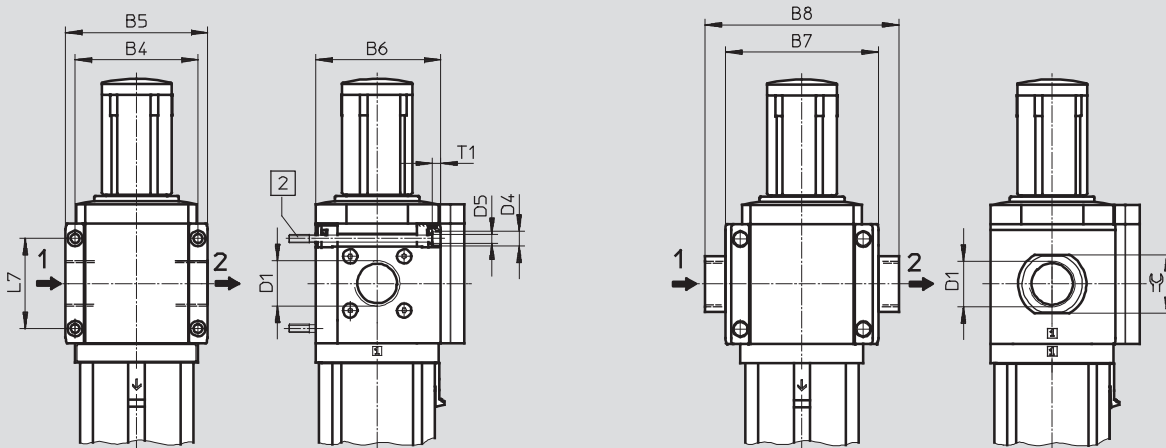
Technical data

**Dimensions – Connecting thread/connecting plate**

Download CAD data → [www.festo.com](http://www.festo.com)

With connecting thread 3/4 or 1

With connecting plate AG...



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

→ Flow direction

Type	B4	B5	B6	B7	B8	D1	D4	D5	L7	T1	⌀C
MS9-LFR-3/4	90	104	91.5	-	-	G3/4	11	6.5	66	6	-
MS9-LFR-1						G1					
MS9-LFR-AGD	-	-	-	112	132	G1/2	-	-	-	-	30
MS9-LFR-AGE					132	G3/4					36
MS9-LFR-AGF					G1	41					
MS9-LFR-AGG					G1 1/4	50					
MS9-LFR-AGH					176	G1 1/2					55

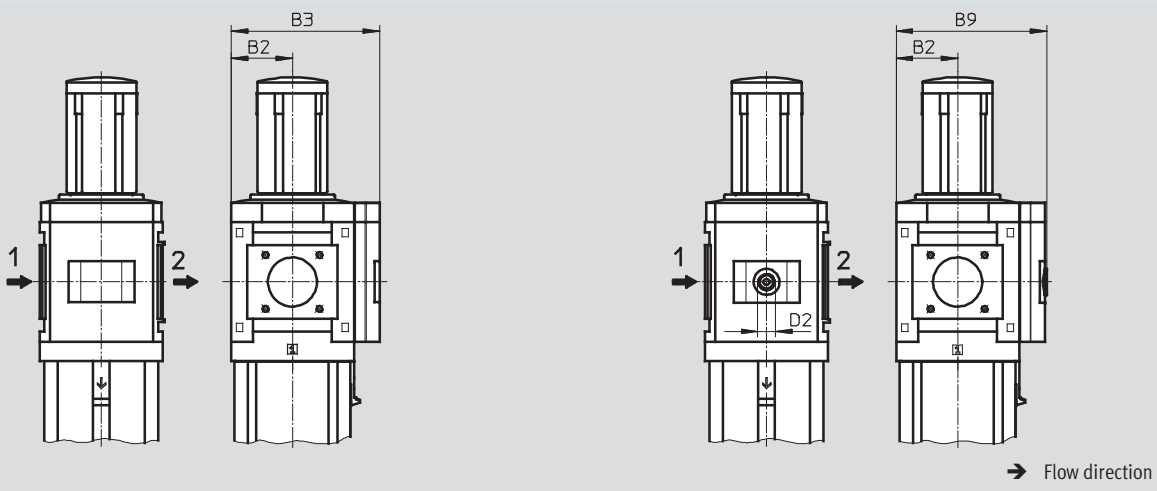
Note: This product conforms to ISO 1179-1 and to ISO 228-1

**Dimensions – Pressure gauge alternatives**

Download CAD data → [www.festo.com](http://www.festo.com)

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

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



→ Flow direction

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

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

## Filter regulators MS9-LFR, MS series

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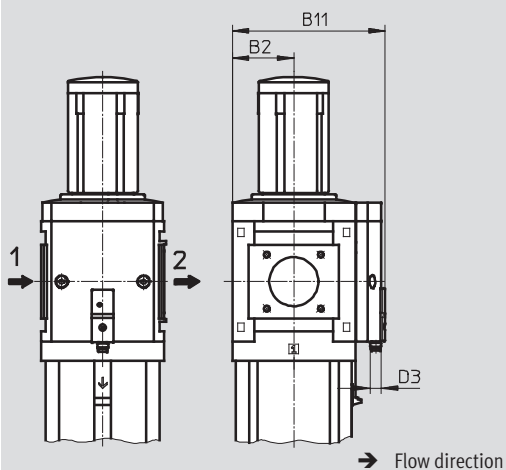
Technical data

### Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://www.festo.com)

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

Technical data → Internet: sde5



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

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

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

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

Type	B2	B1	D3
MS9-LFR-...-AD7/AD8/AD9/AD10	45	112	M8

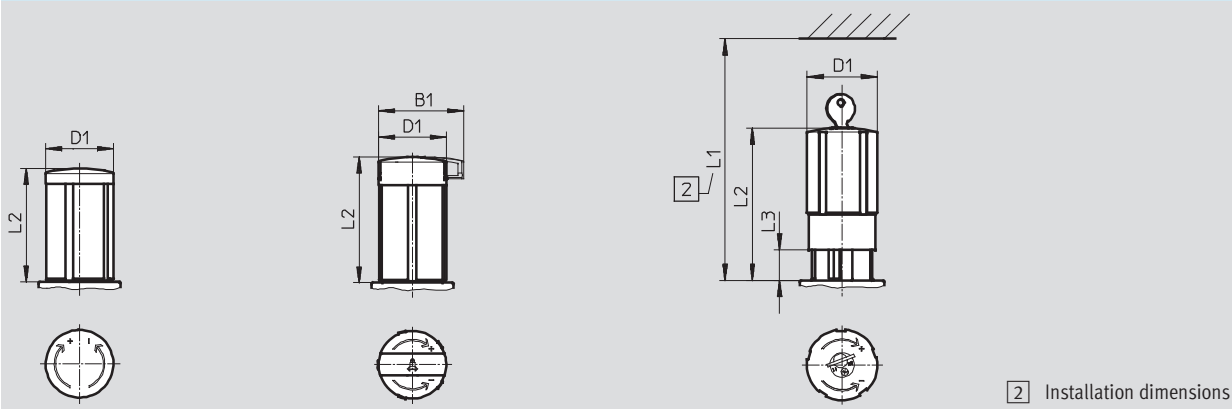
### Dimensions – Rotary knob

Download CAD data → [www.festo.com](http://www.festo.com)

Rotary knob with detent

Rotary knob with detent, can be  
locked using accessories AS

Rotary knob with integrated lock  
E11



Type	B1	D1	L1	L2	L3
MS9-LFR	–	52	–	86	–
MS9-LFR-...-AS	65	52	–	96	–
MS9-LFR-...-E11	–	52	174	114	25

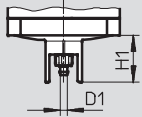
**Filter regulators MS9-LFR, MS series**

Technical data

**Dimensions – Condensate drain**

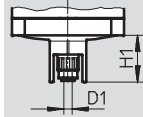
Download CAD data → [www.festo.com](http://www.festo.com)

**Manual rotary M/fully automatic V**



Barbed connector for plastic tubing PCN-4

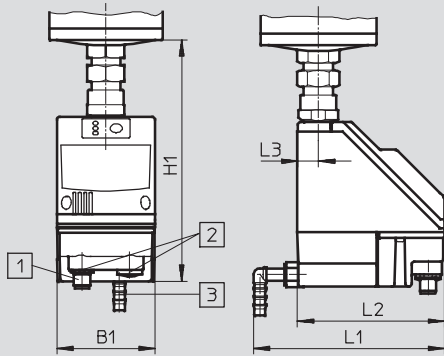
**Semi-automatic H**



QS connector for plastic tubing PUN-6/PAN-6

**Fully automatic, electrically actuated E1/E2/E3/E4**

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



- 1 Variant E1:  
Condensate drain PWEA-AP with plug M12x1, 5-pin for NEBU-M12...-LE5
- 2 Variant E2/E3/E4:  
Condensate drain PWEA-AC with cable connector Pg9

- 3 Connection 360° rotatable for plastic tubing PUN-H-12x2

Type	B1	D1	H1	L1	L2	L3
MS9-LFR-...M/V	-	5	34.5	-	-	-
MS9-LFR-...H		6				
MS9-LFR-...E1/E2/E3/E4	72	-	178	140	108	15



## Filter regulators MS9-LFR, MS series

FESTO

Technical data

Ordering data						
Pressure regulation range 0.3 ... 7 bar, integrated pressure gauge, display unit [bar], rotary knob with detent, can be locked using accessories						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Pilot filter-diaphragm regulator						
MS9	Manual rotary	–	564114	MS9-LFR-G-D6-CUM-AG-BAR-AS	564110	MS9-LFR-G-D6-EUM-AG-BAR-AS
	Fully automatic	–	564115	MS9-LFR-G-D6-CUV-AG-BAR-AS	564111	MS9-LFR-G-D6-EUV-AG-BAR-AS
Directly actuated filter-diaphragm regulator						
MS9	Manual rotary	–	564116	MS9-LFR-G-D6-CUM-DI-AG-BAR-AS	564112	MS9-LFR-G-D6-EUM-DI-AG-BAR-AS
	Fully automatic	–	564117	MS9-LFR-G-D6-CUV-DI-AG-BAR-AS	564113	MS9-LFR-G-D6-EUV-DI-AG-BAR-AS

Ordering data						
Pressure regulation range 0.5 ... 12 bar, integrated pressure gauge, display unit [bar], rotary knob with detent, can be locked using accessories						
Size	Condensate drain	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
			Part No.	Type	Part No.	Type
Pilot filter-diaphragm regulator						
MS9	Manual rotary	–	564120	MS9-LFR-G-D7-CUM-AG-BAR-AS	564118	MS9-LFR-G-D7-EUM-AG-BAR-AS
	Fully automatic	–	564121	MS9-LFR-G-D7-CUV-AG-BAR-AS	564119	MS9-LFR-G-D7-EUV-AG-BAR-AS

**Filter regulators MS9-LFR, MS series**

Ordering data – Modular products

M Mandatory data →								
Module No.	Series	Size	Function	Connection size	Pressure range/operation mode	Grade of filtration	Bowl	Condensate drain
562531	MS	9	LFR	¾, 1, AGD, AGE, AGF, AGG, AGH, G	D5, D6, D7, D8	E, C	U	M, H, V, E1 ... E4
<b>Ordering example</b>								
<b>562531</b>	<b>MS</b>	<b>9</b>	<b>- LFR</b>	<b>- G</b>	<b>- D5</b>	<b>- E</b>	<b>- U</b>	<b>- M</b>

Ordering table		Grid dimension	[mm]	90	Condi- tions	Code	Enter code	
M	Module No.	562531						
	Series	Standard				MS	MS	
	Size	9				9	9	
	Function	Filter regulator				-LFR	-LFR	
	Connection size	Thread G¾				-¾		
		Thread G1				-1		
		Connecting plate G½				-AGD		
		Connecting plate G¾				-AGE		
		Connecting plate G1				-AGF		
		Connecting plate G1¼				-AGG		
		Connecting plate G1½				-AGH		
		Module without connecting thread, without connecting plate				-G		
	Pressure range/operation mode	0.3 ... 4 bar, manually operated				-D5		
		0.3 ... 7 bar, manually operated				-D6		
		0.5 ... 12 bar, manually operated				-D7		
		0.5 ... 16 bar, manually operated				-D8		
	Grade of filtration	40 µm				-E		
		5 µm				-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	24 V DC, M12 (P1 max. 16 bar) - 7 -				-E1	
			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	

**Transfer order code**

562531	MS	9	- LFR	-	-	-	- U	-
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## Filter regulators MS9-LFR, MS series

FESTO

Ordering data – Modular products

Options		Mandatory data		Options			
Regulator type	Pressure gauge/ pressure gauge alternatives	Alternative pressure gauge scale	Secondary venting	Security	Type of mounting	Alternative flow direction	
DI	AG, VS, A4, RG, AD7 ... AD10	PSI, MPA, BAR	OS	AS, E11	WP, WPM, WPB	Z	
- DI	- AG	- BAR	- OS	- AS			

Ordering table		Grid dimension	[mm]	90	Condi- tions	Code	Enter code
Options	Regulator type	Directly actuated			1	-DI	
Mandatory	Pressure gauge/pressure gauge alternatives	MS pressure gauge				-AG	
		Cover plate				-VS	
		Adapter plate for EN pressure gauge 1/4, without pressure gauge				-A4	
		Integrated pressure gauge, red/green scale			2	-RG	
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/O contact			3	-AD7	
		Pressure sensor without display, plug M8, threshold value comparator, PNP, N/C contact			3	-AD8	
		Pressure sensor without display, plug M8, window comparator, PNP, N/O contact			3	-AD9	
		Pressure sensor without display, plug M8, window comparator, PNP, N/C contact			3	-AD10	
	Alternative pressure gauge scale	Psi			4	-PSI	
		MPa			4	-MPA	
		Bar			4	-BAR	
Options	Secondary venting	Without secondary venting			5	-OS	
	Security	Can be locked using accessories				-AS	
		With integrated lock				-E11	
	Type of mounting	Mounting bracket			6	-WP	
		Mounting bracket			6	-WPM	
		Mounting bracket for large wall gap			6	-WPB	
	Alternative flow direction	Flow direction from right to left				-Z	

- |                 |  |                |                             |
|-----------------|--|----------------|-----------------------------|
| 1 DI            | Not with pressure range D7, D8   | 5 OS           | Only with regulator type DI |
| 2 RG            | Not with alternative pressure gauge scale PSI<br>PSI scale serves only as an auxiliary scale | 6 WP, WPM, WPB | Not with module G           |
| 3 AD7 ... AD10  | Measuring range max. 10 bar  |                |                             |
| 4 PSI, MPA, BAR | Not with pressure gauge alternatives VS, A4, AD7, AD8, AD9, AD10                             |                |                             |

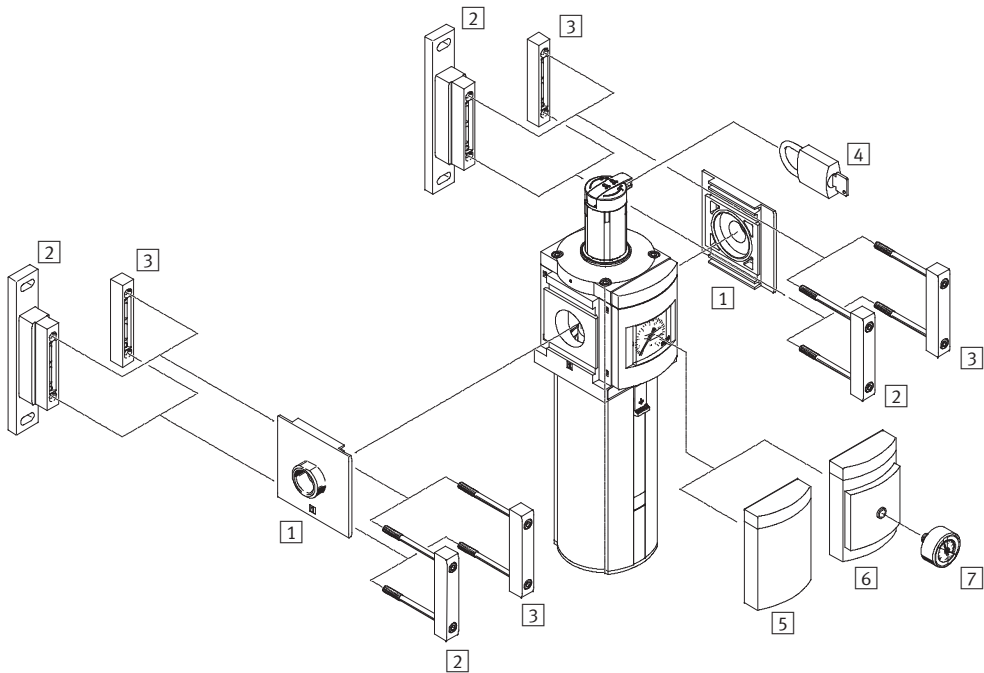
Transfer order code


-  -  -  -  -  -  -

# Filter regulators MS12-LFR, MS series

Peripherals overview

## Filter regulators MS12-LFR



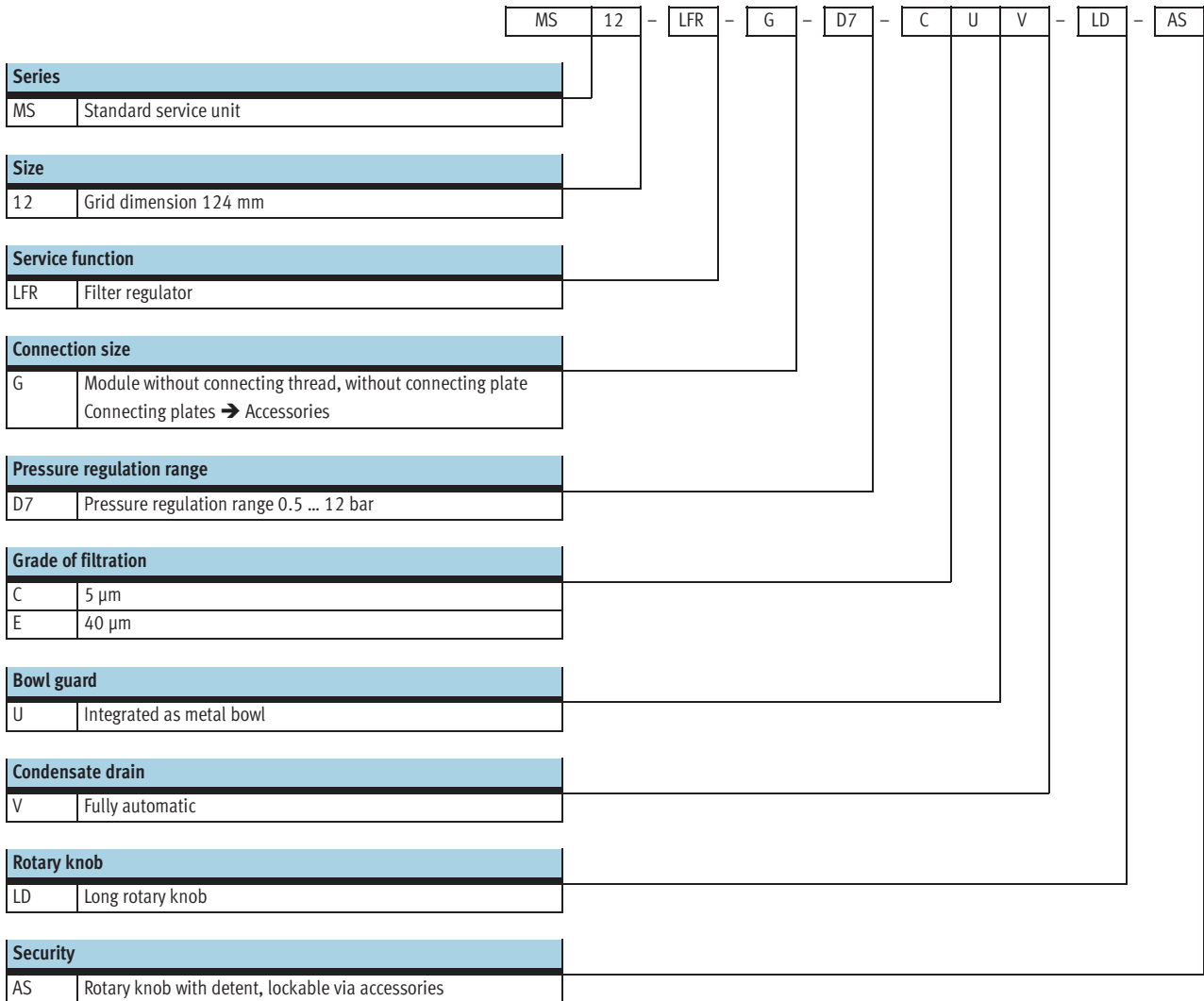
-  - Note  
 Additional accessories:  
 - Module connector for combination with size MS9 → Internet: armv

### Mounting attachments and accessories

		→ Page/Internet
1	Connecting plate MS12-AG...	ms12-ag
2	Mounting bracket MS12-WP	ms12-wp
3	Module connector MS12-MV	ms12-mv
4	Padlock LRVS-D	47
5	Cover plate VS	44
6	Adapter for EN pressure gauge 1/4 A4	44
7	Pressure gauge MA	47

# Filter regulators MS12-LFR, MS series

Type codes



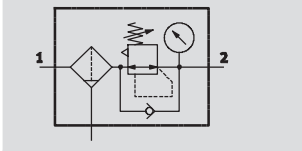
Further variants can be ordered using the modular system → 44

- Connecting plates
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Security
- Type of mounting
- Alternative flow direction

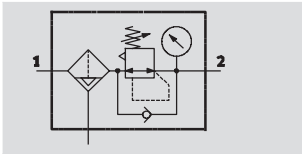
# Filter regulators MS12-LFR, MS series

Technical data

Function  
Condensate drain  
manual rotary  
with pressure gauge



Condensate drain  
fully automatic  
with pressure gauge



- - Flow rate  
11,000 ... 17,000 l/min
- - Temperature range  
-10 ... +60 °C
- - Input pressure  
0.8 ... 20 bar
- - [www.festo.com](http://www.festo.com)

Wearing parts kits  
→ 43



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

- Good control characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- High flow rates
- Pilot actuated diaphragm regulator without intrinsic air consumption
- Three pressure regulation ranges: 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Pressure gauge connection for different fitting options
- Available with manual, fully automatic or fully automatic, electrically actuated condensate drain
- Regulator lock for protecting the values against adjustment
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 46

General technical data		G1	G1¼	G1½	G2
Pneumatic connection 1, 2 <sup>1)</sup>		G1	G1¼	G1½	G2
Design		Filter regulator with/without pressure gauge			
		Sintered filter with centrifugal separation			
		Pilot actuated diaphragm regulator			
Regulating function		Output pressure constant, with primary pressure compensation, with secondary venting			
Type of mounting		Via accessories			
		In-line installation			
Assembly position		Vertical ±5°			
Grade of filtration [µm]		5 (air purity class at the output 3.7.- to DIN ISO 8573-1)			
		40 (air purity class at the output 5.7.- to DIN ISO 8573-1)			
Bowl guard		Integrated as metal bowl			
Condensate drain		Manual rotary			
		Fully automatic			
		Fully automatic, electrical actuated			
Regulator lock		Rotary knob with detent			
		Rotary knob with detent, lockable via accessories			
		Rotary knob with integrated lock			
Pressure regulation range		D6 [bar] 0.3 ... 7			
		D7 [bar] 0.5 ... 12			
		D8 [bar] 0.5 ... 16			
Max. hysteresis [bar]		0.4			
Pressure indicator		With pressure gauge			
Max. condensate volume [cm <sup>3</sup> ]		400			

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

# Filter regulators MS12-LFR, MS series

Technical data

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

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

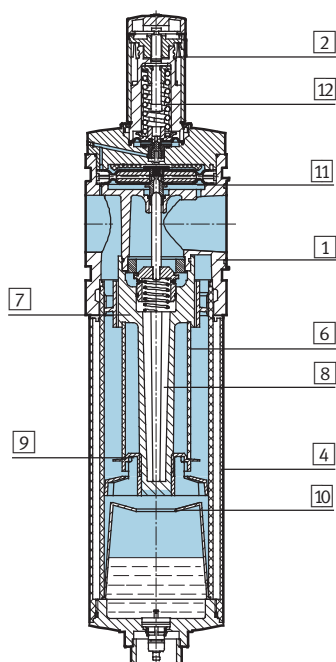
Operating and environmental conditions			
Condensate drain	Manual rotary M	Fully automatic V	Fully automatic, electrical actuated E1 ... E4
Input pressure [bar]	0.8 ... 20		0.8 ... 16
Operating medium	Compressed air, air quality class 5.7.- to DIN ISO 8573-1		
Ambient temperature [°C]	-10 ... +60	+5 ... +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 <sup>1)</sup>	2	

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

Weights [g]		
Rotary knob	Without integrated lock E11	With integrated lock E11
Filter regulator with metal bowl U	7,000	7,300
Filter regulator with metal bowl U and fully automatic, electrically actuated condensate drain E1 ... E4	7,700	8,000

## Materials

Sectional view



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

# Filter regulators MS12-LFR, MS series

Technical data



## Standard flow rate $q_n$ as a function of output pressure $p_2$

Grade of filtration 40  $\mu\text{m}$

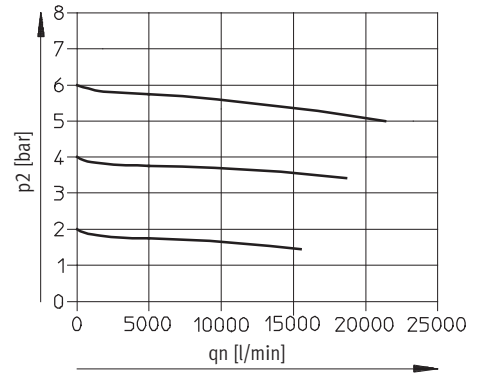
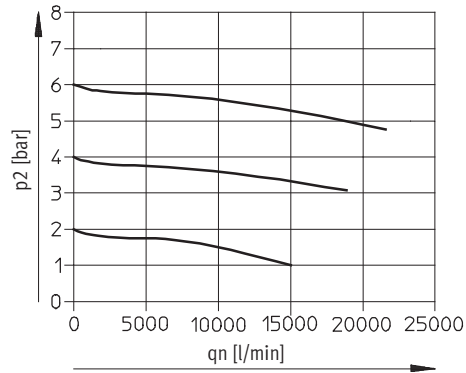
With connecting plate MS12-AGF

Pneumatic connection G1

With connecting plate MS12-AGG

Pneumatic connection G1 $\frac{1}{4}$

Primary pressure  $p_1 = 10$  bar



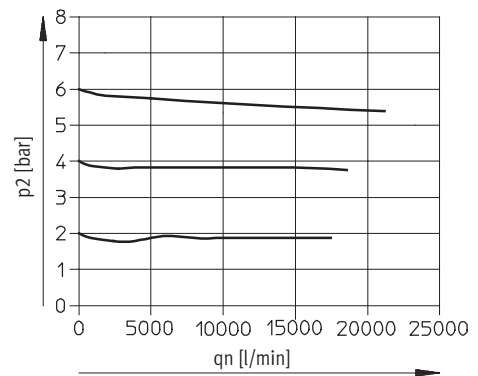
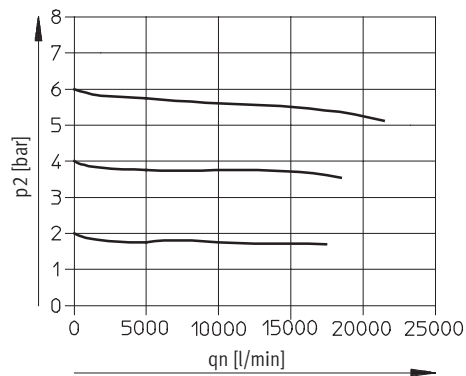
With connecting plate MS12-AGH

Pneumatic connection G1 $\frac{1}{2}$

With connecting plate MS12-AGI

Pneumatic connection G2

Primary pressure  $p_1 = 10$  bar





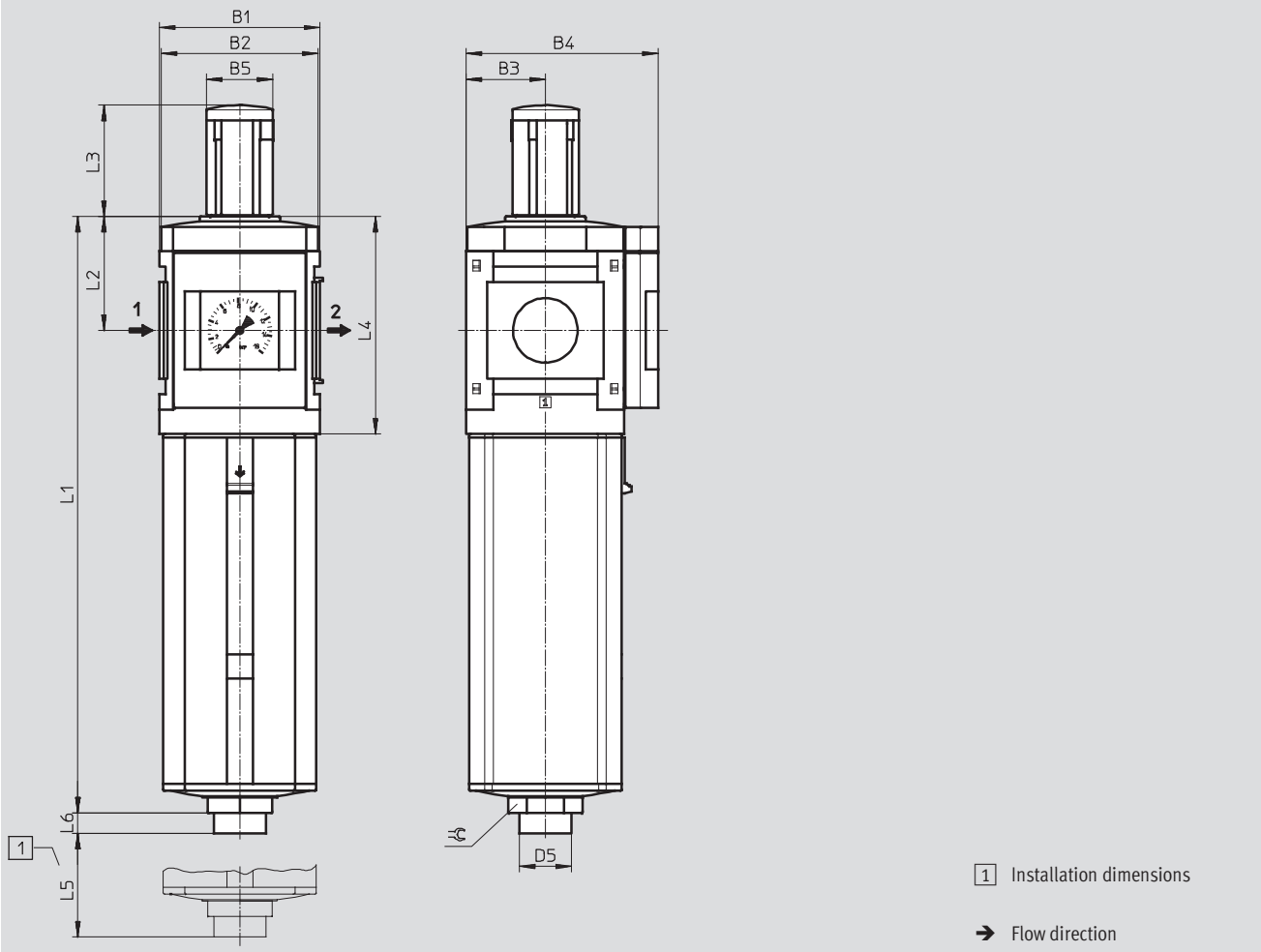
# Filter regulators MS12-LFR, MS series

Technical data

**Dimensions**

Download CAD data → [www.festo.com](http://www.festo.com)

Integrated pressure gauge, display unit [bar], long rotary knob with detent



Type	B1	B2	B3	B4	B5	D5 Ø	L1	L2	L3	L4	L5	L6
MS12-LFR-...-LD	124	122	61	148	52	40	460	88	86	168	250	16

# Filter regulators MS12-LFR, MS series

Technical data

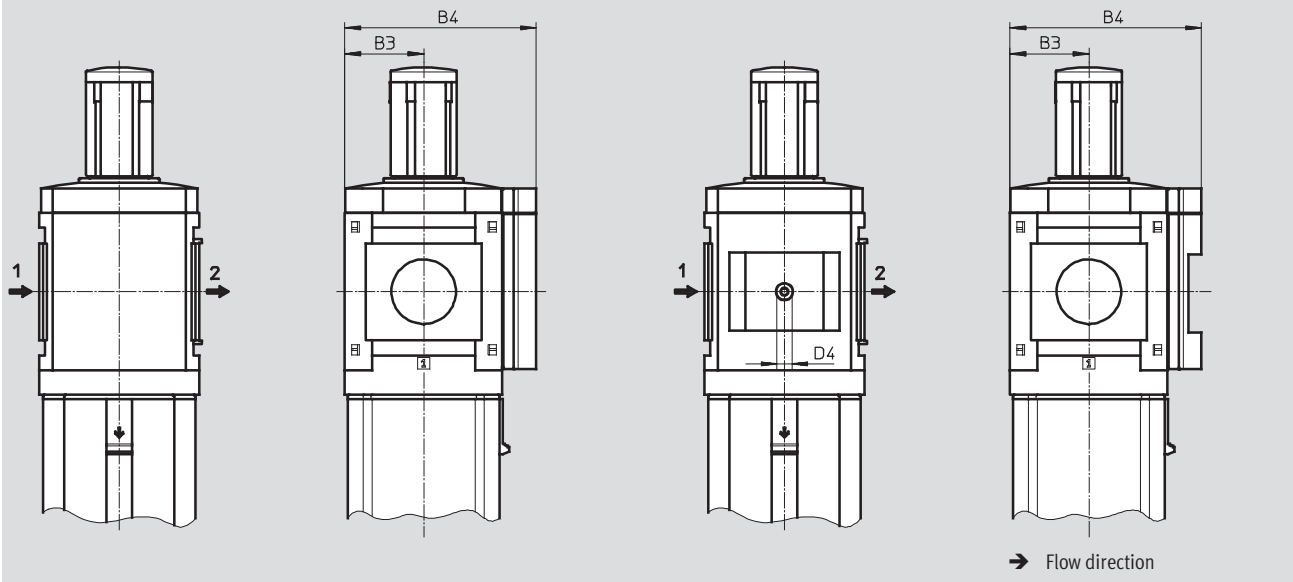
FESTO

## Dimensions – Pressure gauge alternatives

Download CAD data → [www.festo.com](http://www.festo.com)

Cover plate VS

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



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

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

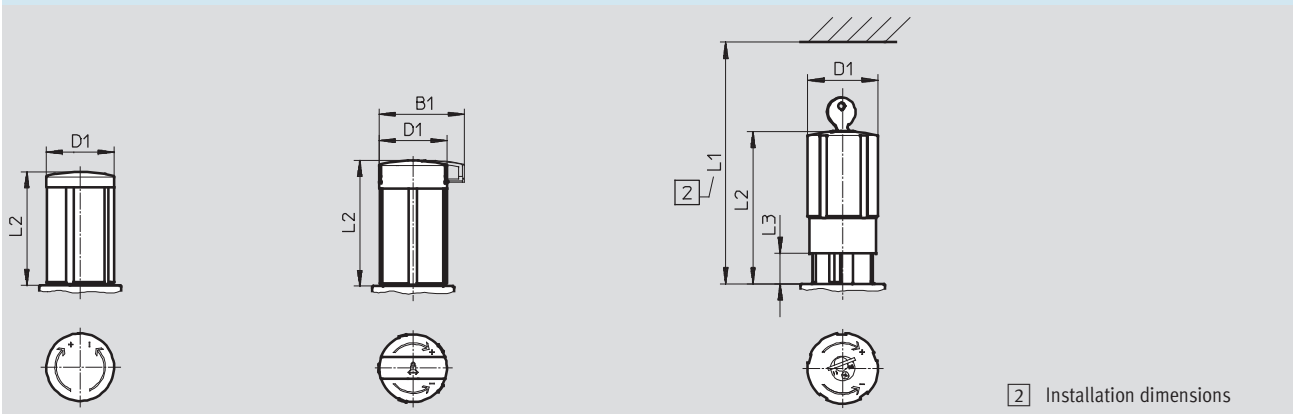
## Dimensions – Rotary knob

Download CAD data → [www.festo.com](http://www.festo.com)

Long rotary knob with detent LD

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

Rotary knob with integrated lock E11

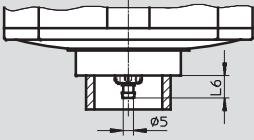
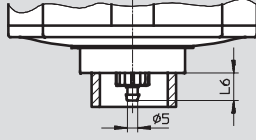


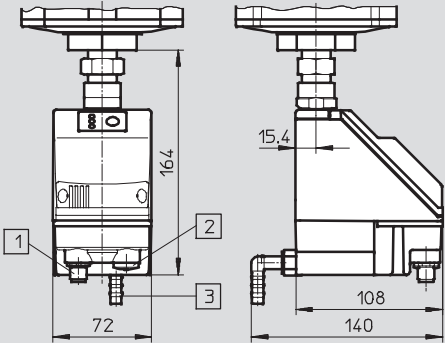
Type	B1	D1	L1	L2	L3
MS12-LFR-...-LD	–	52	–	86	–
MS12-LFR-...-LD-AS	65	52	–	96	–
MS12-LFR-...-E11	–	52	174	114	25

# Filter regulators MS12-LFR, MS series

Technical data

**FESTO**

Dimensions – Condensate drain		Download CAD data → <a href="http://www.festo.com">www.festo.com</a>
<b>Manual rotary M</b>		
	Barbed fitting for plastic tubing PCN-4	
<b>Fully automatic V</b>		
	Barbed fitting for plastic tubing PCN-4	
Type	L6	Type
MS12-LFR-...-M	11	MS12-LFR-...-V
Type	L6	Type
MS12-LFR-...-M	11	MS12-LFR-...-V

Fully automatic, electrically actuated E1 ... E4		Technical data → Internet: <a href="http://pwea.com">pwea</a>
		
		<ul style="list-style-type: none"> <li>1 Variant E1 PWEA-AP-... with M12x1 plug, 5-pin for SIM-M12-5GD-...</li> <li>2 Variant E2/E3/E4 PWEA-AC-... with cable conduit fitting Pg9</li> <li>3 Connection 360° rotatable for plastic tubing PUN-H-12x2-...</li> </ul>

Ordering data						
Pressure regulation range 0.5 ... 12 bar, metal bowl, integrated pressure gauge, display unit [bar], long rotary knob with detent, lockable via accessories						
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 <sup>1)</sup>	537150	MS12-LFR-G-D7-CUV-LD-AS	537149	MS12-LFR-G-D7-EUV-LD-AS

1) Connecting plate must be ordered separately as an accessory → Internet: [ms12-ag](http://ms12-ag.com)  
 - | - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Ordering data – Wearing parts kits		
Size	Part No.	Type
MS12	673586	MS12-LR/LFR

- 1 - Variant E1 discontinued  
Available up until 2011

## Filter regulators MS12-LFR, MS series

FESTO

Ordering data – Modular products

**M** Mandatory data →

Module No.	Series	Size	Function	Connection sizes	Pressure regulation range	Grade of filtration	Bowl
535022	MS	12	LFR	AGF AGG AGH AGI G	D6 D7 D8	E C	U
<b>Order example</b>							
535022	MS	12	- LFR	- AGF	- D6	- C	- U

**Ordering table**

Grid dimension	[mm]	124	Condi- tions	Code	Enter code
<b>M</b> Module No.	535022				
Series	Standard			MS	MS
Size	12			12	12
Function	Filter regulator			-LFR	-LFR
Connection sizes	Connecting plate G1			-AGF	
	Connecting plate G1¼			-AGG	
	Connecting plate G1½			-AGH	
	Connecting plate G2			-AGI	
	Module without connecting thread, without connecting plate			-G	
Pressure regulation range	0.3 ... 7 bar			-D6	
	0.5 ... 12 bar			-D7	
	0.5 ... 16 bar			-D8	
Grade of filtration	40 µm			-E	
	5 µm			-C	
<b>↓</b> Bowl	Metal bowl			-U	-U

Transfer order code

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

- 1 - Variant E1 discontinued  
Available up until 2011

## Filter regulators MS12-LFR, MS series

FESTO

Ordering data – Modular products

→ [M]		[O] Options				
Condensate drain	Pressure gauge alternatives	Alternative pressure gauge scale	Rotary knob	Security	Type of mounting	Alternative flow direction
M V E1 E2 E3 E4	VS A4	PSI MPA	LD	AS E11	WP	Z
- E1	-	-	- LD	- AS	- WP	- Z

Ordering table					
Grid dimension	[mm]	124	Condi- tions	Code	Enter code
↓ [M] Condensate drain	Manual			-M	
	Fully automatic (P1 max. 12 bar)		[1]	-V	
	External fully automatic condensate drain, electrical, 24 V DC, M12 - 1			-E1	
	External fully automatic condensate drain, electrical, 110 V AC, terminal strip			-E2	
	External fully automatic condensate drain, electrical, 230 V AC, terminal strip			-E3	
	External fully automatic condensate drain, electrical, 24 V DC, terminal strip			-E4	
[O] Pressure gauge alternatives	Cover plate			-VS	
	Adapter plate for EN pressure gauge 1/4, without pressure gauge			-A4	
Alternative pressure gauge scale	psi		[2]	-PSI	
	MPa		[2]	-MPA	
Rotary knob	Long rotary knob		[3] [4]	-LD	
Security	Lockable via accessories			-AS	
	With integrated lock		[3]	-E11	
Type of mounting	Mounting bracket		[5]	-WP	
Alternative flow direction	Flow direction from right to left			-Z	

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

Transfer order code

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



## Filter regulators MS-LFR, MS series

Accessories

**FESTO**

Filter cartridges

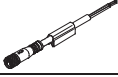





Ordering data			
Size	Grade of filtration [µm]	Part No.	Type
MS4	5 (colour: blue)	534501	MS4-LFP-C
	40 (colour: white)	534502	MS4-LFP-E
MS6	5 (colour: blue)	534499	MS6-LFP-C
	40 (colour: white)	534500	MS6-LFP-E
MS9	5	570309	MS9-LFP-C 
	40	570310	MS9-LFP-E 
MS12	5	537143	MS12-LFP-C
	40	537144	MS12-LFP-E


## Filter regulators MS-LFR, MS series


FESTO

Accessories

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

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

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

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