

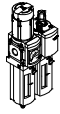
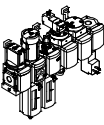



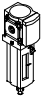

Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, MS series



Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, 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.../AQ...	0.7	2.5	4	7	12	16	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	-	-	-	-	-	-	-	-	-	-

Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, 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	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lf
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lf
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms9-lf
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lf
Fine and micro filters MS-LFM	4	■	■	■	■	■	-	-	-	-	-	-	-	-	-	■	ms4-lfm
	6	■	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms6-lfm
	9	-	■	■	■	■	■	-	-	-	-	-	-	-	-	■	ms9-lfm
	12	-	■	■	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lfm
Activated carbon filters MS-LFX	4	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms4-lfx
	6	■	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms6-lfx
	9	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms9-lfx
	12	-	■	-	-	-	-	-	-	-	-	-	-	-	-	■	ms12-lfx
Water separators MS-LWS	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms6-lws
	9	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms9-lws
	12	-	■	-	-	■	■	-	-	-	-	-	-	-	-	■	ms12-lws

Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, 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	0.05	0.1	0.3	0.1	0.5	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...	0.7	2.5	4	7	12	16	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	-	-	-	-	-	-	■	■	■

Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, 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	-	-	■	■	■	■	■	■	■	-	■	8
	6	-	-	■	■	-	■	■	■	■	-	■	8
	9	-	-	■	■	-	■	■	■	■	-	■	74
	12	-	-	■	■	-	■	-	■	■	-	■	86
Pressure regulators MS-LRB	4	-	-	■	■	■	■	■	■	■	-	■	22
	6	-	-	■	■	-	■	■	■	■	-	■	22
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRP	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	-	■	■	■	■	■	-	■	36
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Precision pressure regulators MS-LRPB	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	-	■	■	■	■	■	-	■	50
	9	-	-	-	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-	-	-	-
Electrical pressure regulators MS-LRE	4	-	-	-	-	-	-	-	-	-	-	-	-
	6	-	-	■	■	-	■	-	-	-	-	■	66
	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

Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, 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, connection pattern to EN 175301	24 V DC, connection M12 to IEC 61076-2-101/ to EN 60947-5-2	110 V AC, connection pattern to EN 175301	230 V AC, connection pattern to EN 175301	
Code			AG.../AQ...	C	D	E	V24	V24P	V110	V230	
Individual devices											
Soft start and exhaust valves MS-SV-C		4	–								
		6	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	–								
Soft start and exhaust valves MS-SV-D		4	–								
		6	G1/2	G1/4, G3/8, G1/2, G3/4	–	■	–	■	■	–	–
		9	–								
		12	–								
Soft start and exhaust valves MS-SV-E		4	–								
		6	G1/2	G1/4, G3/8, G1/2, G3/4	–	–	■	■	–	–	–
		9	–								
		12	–								
Membrane air dryers MS-LDM1		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	–	–	–	–	–
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	–	–	–	–
		9	–								
		12	–								
Branching modules MS-FRM		4	G1/8, G1/4	G1/8, G1/4, G3/8	–	–	–	–	–	–	–
		6	G1/4, G3/8, G1/2	G1/4, G3/8, G1/2, G3/4	–	–	–	–	–	–	–
		9	G3/4, G1	G1/2, G3/4, G1, G1 1/4, G1 1/2	–	–	–	–	–	–	–
		12	–	G1, G1 1/4, G1 1/2, G2	–	–	–	–	–	–	–
Distributor blocks MS-FRM-FRZ		4	G1/4	–	–	–	–	–	–	–	–
		6	G1/2	–	–	–	–	–	–	–	–
		9	–								
		12	–								
Flow sensors SFAM		4	–								
		6	G1/2	G1/2	–	–	–	–	–	–	–
		9	–	G1, G1 1/2	–	–	–	–	–	–	–
		12	–								

Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, MS series

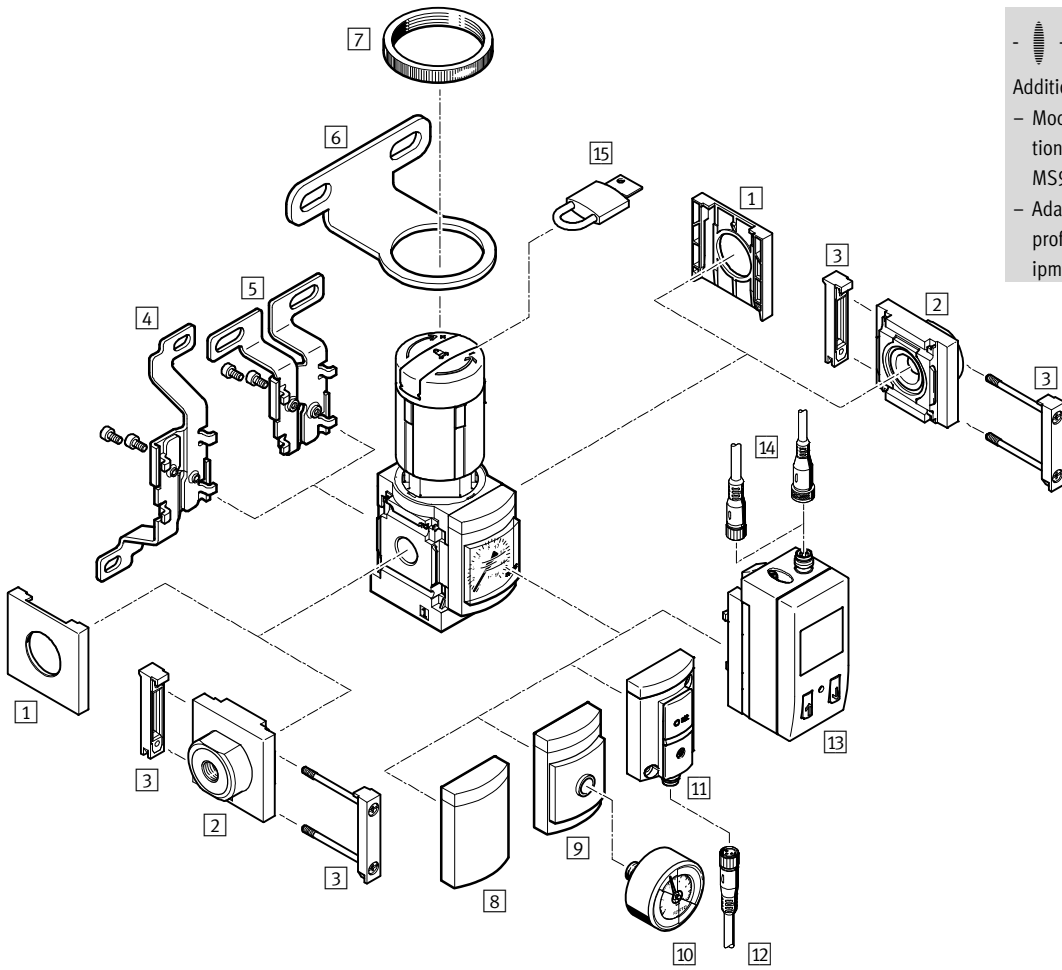
Product range overview – MS series service units


Type	Size	Bowl guard		Pressure indicator				Switch output			Options		→ Page/ Internet
		Plastic bowl with plastic bowl guard	Metal bowl	Cover plate (without pressure gauge)	Integrated MS pressure gauge	Adapter plate for EN pressure gauge G1/8	Adapter plate for EN pressure gauge G1/4	Pressure sensor	2x PNP or NPN, 1 analogue output 4 ... 20 mA	2x PNP or NPN, 1 analogue output 0 ... 10 V	Silencer	Flow direction from right to left	
Code		R	U	VS	AG	A8	A4	AD...	2SA	2SV	S	Z/R	
Individual devices													
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	-											-
	12	-											-
Soft start and exhaust valves MS-SV-E	4	-											-
	6	-	-	■	■	-	■	■	-	-	■	■	ms6-sv
	9	-											-
	12	-											-
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	-											-

Pressure regulators MS4/MS6-LR, MS series

Peripherals overview

Pressure regulator MS4/MS6-LR



-  - Note

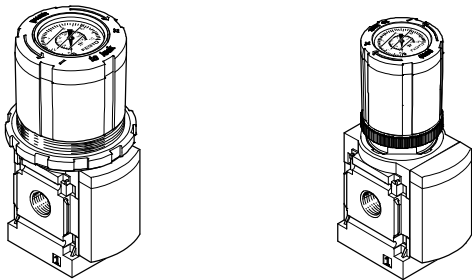
Additional accessories:

- 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

Pressure regulator with rotary knob pressure gauge

MS4-LR-...-DM2

MS4-LR-...-DM1/MS6-LR-...-DM2



Pressure regulators MS4/MS6-LR, MS series

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate-SET MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
	Connecting plate-SET MS4/6-AQ...	-	■	-	■	ms4-aq, ms6-aq
3	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
4	Mounting bracket MS4/6-WB	■	■	-	-	ms4-wb, ms6-wb
5	Mounting bracket MS4-WBM	■	■	-	-	ms4-wbm
6	Mounting bracket MS4/6-WR	■	■	-	-	ms4-wr, ms6-wr
7	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Cover plate VS	■	■	■	■	20
9	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	20
10	Pressure gauge MA	■	■	■	■	95
11	Pressure sensor without display AD7 ... AD10	■	■	■	■	20
12	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
13	Pressure sensor with display AD1 ... AD4	■	■	■	■	20
14	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	95
15	Padlock LRVS-D	■	■	■	■	95
-	Mounting bracket MS4/6-WP/WPB/WPE/WPM	-	■	■	■	ms4-wp, ms6-wp

Pressure regulators MS4/MS6-LR, MS series

Type codes

MS 6 - LR - 1/2 - D5 - AS

Series

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

Size

4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function

LR	Pressure regulator
----	--------------------

Connection size

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

Pressure regulation range

D5	0.3 ... 4 bar
D6	0.3 ... 7 bar
D7	0.5 ... 12 bar

Security

AS	Standard rotary knob with detent, lockable via accessories
----	------------------------------------------------------------

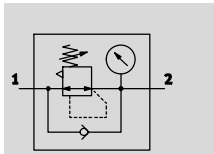
Additional variants can be ordered using the modular system → 20





- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Rotary knob alternative
- Alternative mounting position
- Security
- Type of mounting
- EU certification
- UL certification
- Flow direction

Pressure regulators MS4/MS6-LR, MS series

Technical data

With pressure gauge



-  Flow rate
1,000 ... 7,500 l/min
-  Temperature range
-10 ... +60 °C
-  Operating pressure
0.8 ... 20 bar
-  www.festo.com


Wearing parts kits
→ 19



The pressure regulator maintains a constant working pressure (secondary side), regardless of the pressure variations in the system (primary side) and the air consumption.

- Good regulation characteristics with low hysteresis and primary pressure compensation
- High flow rate with minimal pressure drop
- Available with and without secondary venting
- Regulator lock for protecting the values against adjustment
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Two pressure gauge connections for different fitting options
- Return flow option for exhausting from output 2 to output 1 already integrated
- Optional pressure sensor
- Optional rotary knob pressure gauge
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

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	Directly-actuated diaphragm regulator	
Regulating function	Output pressure constant, with primary pressure compensation, with return flow action, with/without secondary venting	
Type of mounting	Via accessories In-line installation Front panel mounting	
Mounting position	Any	
Regulator lock	Rotary knob with detent Rotary knob with detent, lockable via accessories Rotary knob with integrated lock	
Pressure regulation range/operation	D5 [bar] D6 [bar] D7 [bar] D8 [bar]	0.3 ... 4, manually operated ¹⁾ 0.3 ... 7, manually operated ¹⁾ 0.5 ... 12, manually operated (0.5 ... 10 with pressure sensor AD... or with UL certification) ¹⁾ –
Max. hysteresis [bar]	0.25 (0.4 with rotary knob pressure gauge DM1/DM2)	0.25 (0.4 with rotary knob pressure gauge DM2)
Pressure display	Via pressure sensor for displaying output pressure via LCD display and electrical output Via pressure sensor for displaying output pressure via operational status indicator and electrical output Via pressure gauge for displaying output pressure Via pressure gauge with red/green scale for displaying output pressure Via pressure gauge in rotary knob for displaying output pressure G $\frac{1}{8}$ prepared G $\frac{1}{4}$ prepared	

1) MS4: For pressure regulators with rotary knob pressure gauge DM..., the pressure regulation range begins at 0.8 bar.
-  Note: This product conforms to ISO 1179-1 and to ISO 228-1

Pressure regulators MS4/MS6-LR, 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 $\frac{1}{2}$
Pressure regulation range	D5	1,200 ²⁾	2,100 ²⁾	2,400 ²⁾	5,500 ²⁾	7,500 ²⁾
	D6	1,150	1,800	3,000	5,800	6,500
	D7	1,000	1,700 ³⁾	2,700	4,500	5,500
	D8	–	–	2,200	4,000	4,500

- 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
- 3) In the case of the DM1/DM2 pressure regulator/gauge with rotary knob, q_{nN} is equal to 800 litres per minute and $q_{n \max}$ amounts to 2,200 litres per minute.

Operating and environmental conditions		
Size	MS4	MS6
Operating pressure [bar]	0.8 ... 14 (0.8 ... 10) ¹⁾	
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
	Inert gases	
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)	
Ambient temperature [°C]	-10 ... +60 (0 ... +50) ²⁾	
Temperature of medium [°C]	-10 ... +60 (0 ... +50) ²⁾	
Storage temperature [°C]	-10 ... +60	
Corrosion resistance class CRC ³⁾	2	
UL certification	cULus recognized (OL)	

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

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)

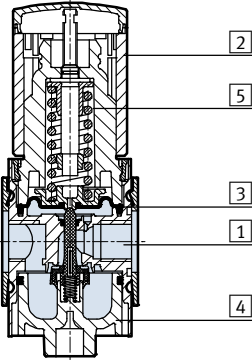
Weight [g]		
Size	MS4	MS6
Pressure regulator	225	730
Pressure regulator with rotary knob with integrated lock E11	350	1,000

Pressure regulators MS4/MS6-LR, MS series

Technical data

Materials

Sectional view



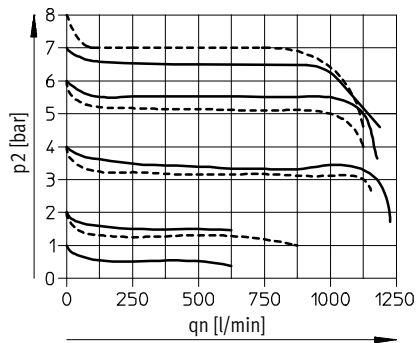
Pressure regulator

1	Housing	Die-cast aluminium
2	Rotary knob	PA/POM
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	NBR
4	Cap, bottom	PET
5	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant Free of copper and PTFE only with cover plate VS

Standard flow rate q_n as a function of output pressure p_2

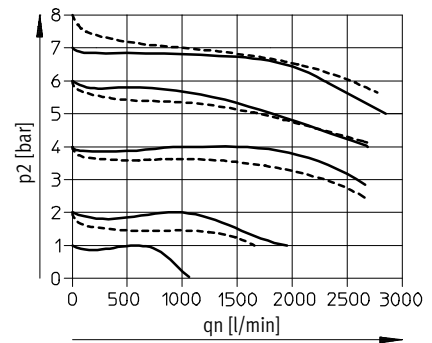
Input pressure $p_1 = 10$ bar

MS4-LR-1/8



— D6: 0.3 ... 7 bar
- - - D7: 0.5 ... 12 bar¹⁾

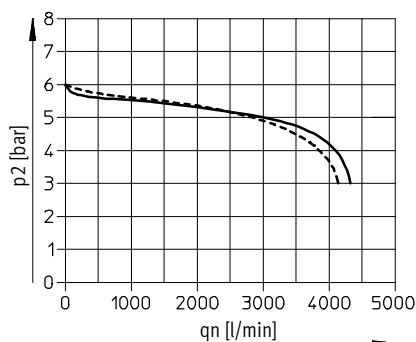
MS4-LR-1/4



1) There is a higher initial pressure drop for the characteristic curve of the DM1/DM2 variant.

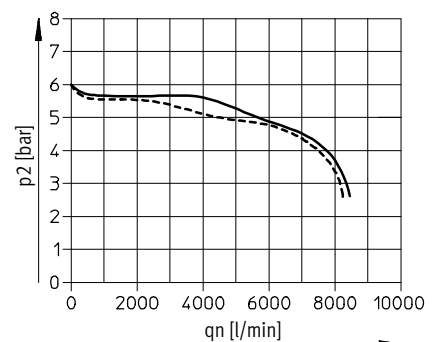
MS6-LR-1/4

Input pressure $p_1 = 10$ bar



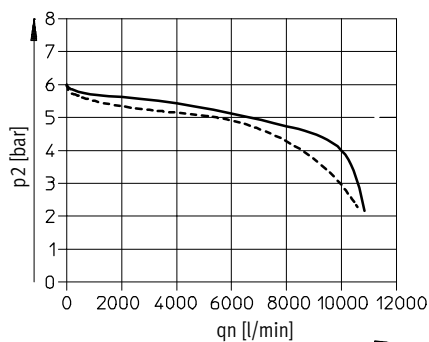
— D6: 0.3 ... 7 bar
- - - D7: 0.5 ... 12 bar

MS6-LR-3/8



MS6-LR-1/2

Input pressure $p_1 = 10$ bar



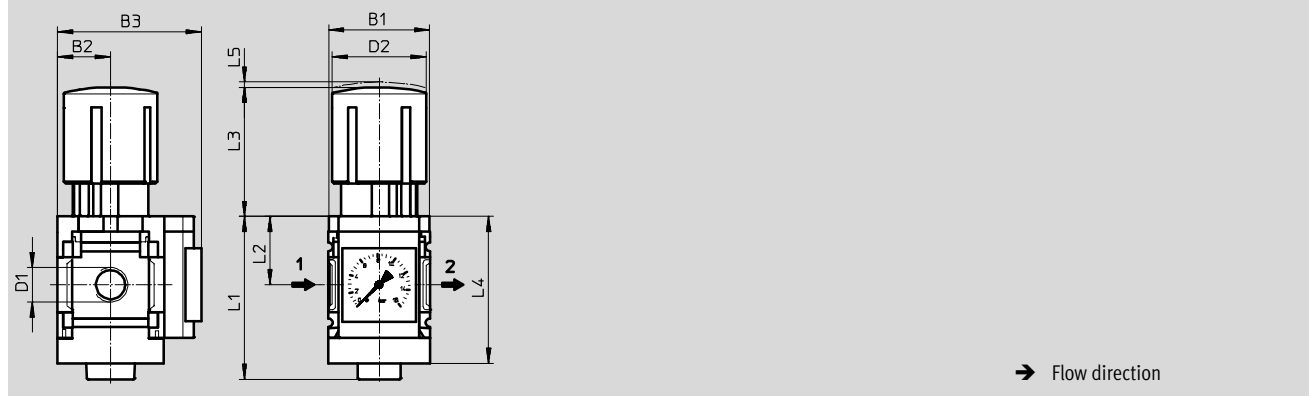
— D6: 0.3 ... 7 bar
- - - D7: 0.5 ... 12 bar

Pressure regulators MS4/MS6-LR, MS series

Technical data

Dimensions – Basic version Download CAD data → www.festo.com

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

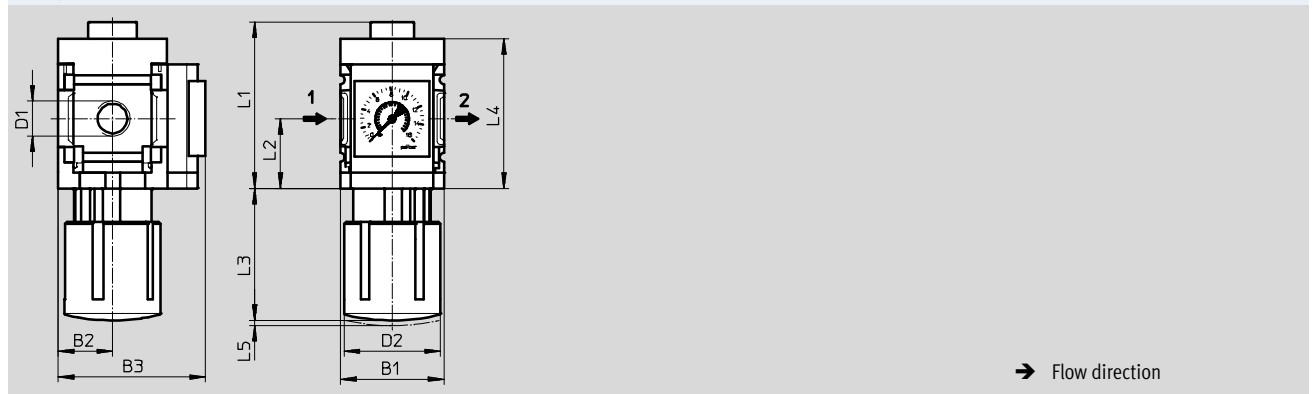


Type	B1	B2	B3		D1	D2	L1	L2	L3	L4	L5
			Standard scale	Red-green scale							
MS4-LR-1/8	40	21	57	58.5	G1/8	37.2	64.4	27	51.1	58.5	2
MS4-LR-1/4					G1/4						
MS6-LR-1/4	62	31	77	78.5	G1/4	51.2	94	39	86	85	5
MS6-LR-3/8					G3/8						
MS6-LR-1/2					G1/2						

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

Dimensions – Alternative mounting position Download CAD data → www.festo.com

Rotary knob underneath KD

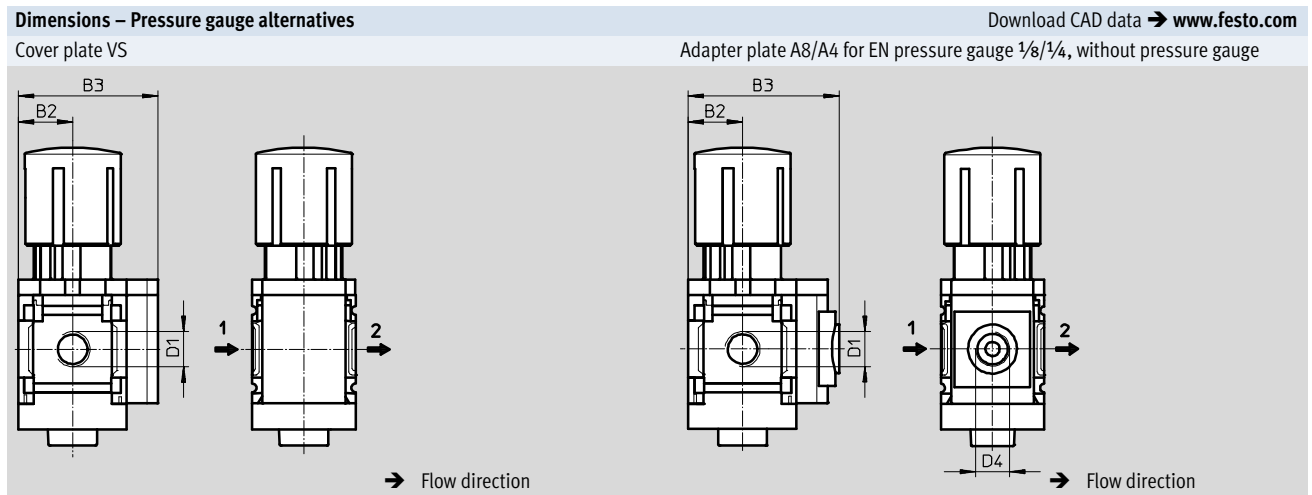


Type	B1	B2	B3	D1	D2	L1	L2	L3	L4	L5
MS4-LR-1/8-...-KD	40	21	57	G1/8	37.2	64.4	27	51.1	58.5	2
MS4-LR-1/4-...-KD				G1/4						
MS6-LR-1/4-...-KD	62	31	77	G1/4	51.2	94	39	86	85	5
MS6-LR-3/8-...-KD				G3/8						
MS6-LR-1/2-...-KD				G1/2						

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

Pressure regulators MS4/MS6-LR, MS series

Technical data



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

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

Pressure regulators MS4/MS6-LR, MS series

Technical data



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

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

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

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

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

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

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

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

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

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

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

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

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

Pressure regulators MS4/MS6-LR, MS series

Technical data

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Dimensions – Rotary knob

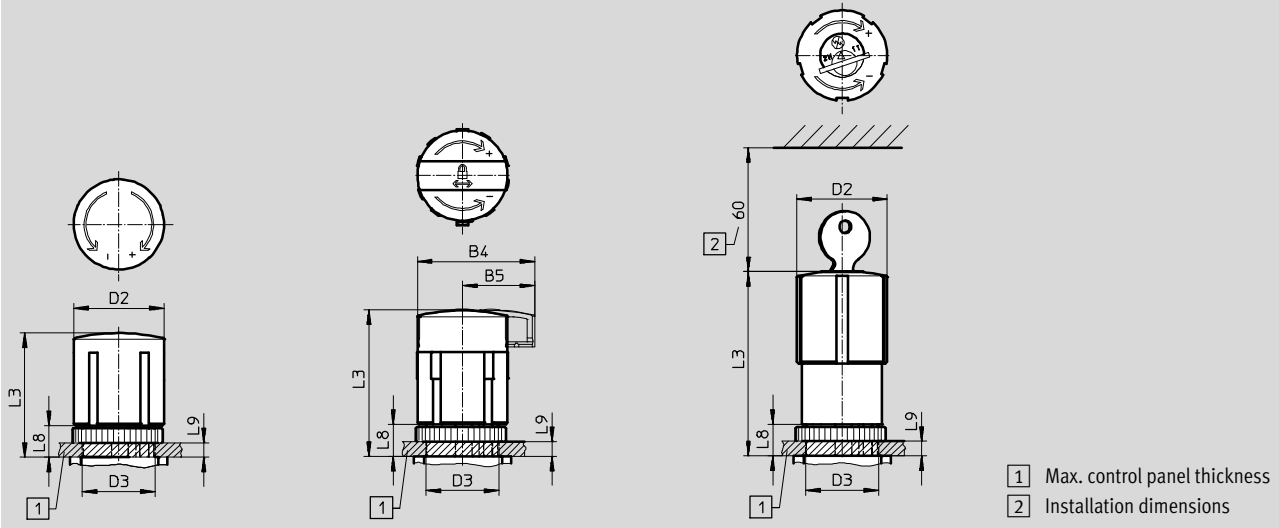
Download CAD data → www.festo.com

For installation into control panel

Standard rotary knob with detent

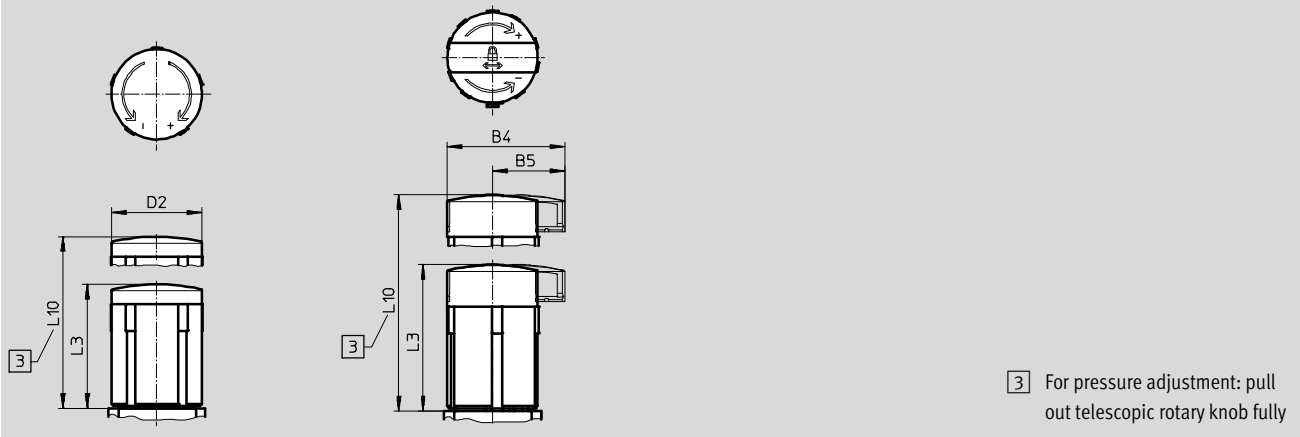
Standard rotary knob with detent,
lockable via accessories AS

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-LR-...	-	-	37.2	30	51.1	13	6	-
MS4-LR-...-AS	48.6	30			60.2			
MS4-LR-...-E11	-	-			76			
MS4-LR-...-LD	-	-	37.2	-	51.1	-	-	76.8
MS4-LR-...-LD-AS	48.6	30			60			85.7
MS6-LR-...	-	-	51.2	44	86	22	14	-
MS6-LR-...-AS	64.4	38.8			93			
MS6-LR-...-E11	-	-			110			
MS6-LR-...-LD	-	-	51.2	-	86	-	-	139
MS6-LR-...-LD-AS	64.4	38.8			95.5			148.5

Pressure regulators MS4/MS6-LR, MS series

Technical data

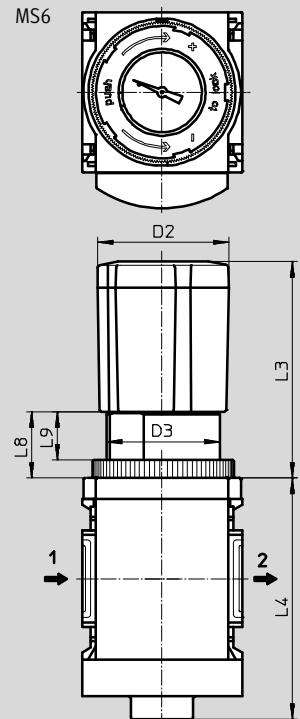
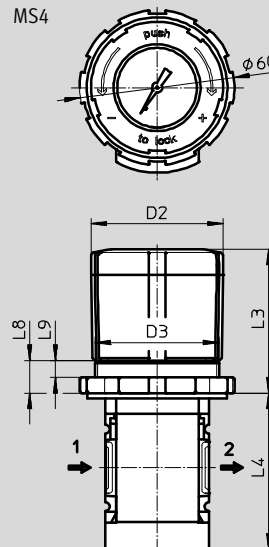
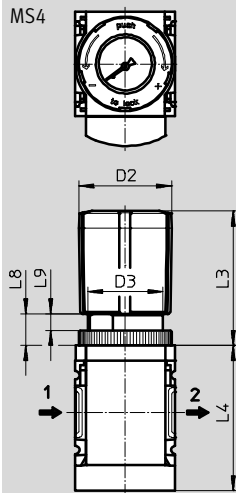


Dimensions – Rotary knob with pressure gauge

Download CAD data → www.festo.com

Small DM1

Large DM2



-H- Note
Due to the protruding rotary knob, only a distributor block MS4-FRM-FRZ or a branching module MS4-FRM can be connected as a directly adjacent service unit component.

→ Flow direction

Type	D2	D3	L3	L4	L8	L9
MS4-LR-...-DM1	37.2	M30x1.5	54	58.5	13	6.7
MS4-LR-...-DM2	51.2	M48x1.5	56	60.5	13	7
MS6-LR-...-DM2	51	M44x1	84	94	25	18

Pressure regulators MS4/MS6-LR, MS series

FESTO

Technical data

Ordering data							
Integrated pressure gauge, display unit [bar], standard rotary knob with detent, lockable via accessories							
Size	Connection	Pressure regulation range 0.3 ... 4 bar		Pressure regulation range 0.3 ... 7 bar		Pressure regulation range 0.5 ... 12 bar	
		Part No.	Type	Part No.	Type	Part No.	Type
MS4	G $\frac{1}{8}$	529421	MS4-LR- $\frac{1}{8}$ -D5-AS	529423	MS4-LR- $\frac{1}{8}$ -D6-AS	529425	MS4-LR- $\frac{1}{8}$ -D7-AS
	G $\frac{1}{4}$	529415	MS4-LR- $\frac{1}{4}$ -D5-AS	529417	MS4-LR- $\frac{1}{4}$ -D6-AS	529419	MS4-LR- $\frac{1}{4}$ -D7-AS
MS6	G $\frac{1}{4}$	529995	MS6-LR- $\frac{1}{4}$ -D5-AS	529997	MS6-LR- $\frac{1}{4}$ -D6-AS	529999	MS6-LR- $\frac{1}{4}$ -D7-AS
	G $\frac{3}{8}$	530001	MS6-LR- $\frac{3}{8}$ -D5-AS	530003	MS6-LR- $\frac{3}{8}$ -D6-AS	530005	MS6-LR- $\frac{3}{8}$ -D7-AS
	G $\frac{1}{2}$	529989	MS6-LR- $\frac{1}{2}$ -D5-AS	529991	MS6-LR- $\frac{1}{2}$ -D6-AS	529993	MS6-LR- $\frac{1}{2}$ -D7-AS

Ordering data – Wearing parts kits		
Size	Part No.	Type
MS4	673649	MS4-LR/LRB
MS6	673650	MS6-LR/LRB

Pressure regulators MS4/MS6-LR, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
M	Module No.	527690		527663		
	Series	Standard			MS	MS
	Size	4	6		...	
	Function	Pressure regulator			-LR	-LR
	Pneumatic connection	Female thread G $\frac{1}{8}$	–	1	-$\frac{1}{8}$	
		Female thread G $\frac{1}{4}$	Female thread G $\frac{1}{4}$	1	-$\frac{1}{4}$	
		–	Female thread G $\frac{3}{8}$	1	-$\frac{3}{8}$	
		–	Female thread G $\frac{1}{2}$	1	-$\frac{1}{2}$	
		Connecting plate G $\frac{1}{8}$	–		-AGA	
		Connecting plate G $\frac{1}{4}$	Connecting plate G $\frac{1}{4}$		-AGB	
		Connecting plate G $\frac{3}{8}$	Connecting plate G $\frac{3}{8}$		-AGC	
		–	Connecting plate G $\frac{1}{2}$		-AGD	
		–	Connecting plate G $\frac{3}{4}$		-AGE	
		Connecting plate NPT $\frac{1}{8}$	–	1	-AQK	
		Connecting plate NPT $\frac{1}{4}$	Connecting plate NPT $\frac{1}{4}$	1	-AQN	
		Connecting plate NPT $\frac{3}{8}$	Connecting plate NPT $\frac{3}{8}$	1	-AQP	
		–	Connecting plate NPT $\frac{1}{2}$	1	-AQR	
		–	Connecting plate NPT $\frac{3}{4}$	1	-AQS	
	Pressure regulation range/ operation	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	1 4	-D8	
O	Pressure gauge alternatives	Cover plate			-VS	
		Adapter plate for EN pressure gauge $\frac{1}{8}$, without pressure gauge	–		-A8	
		Adapter plate for EN pressure gauge $\frac{1}{4}$, without pressure gauge			-A4	
		Integrated pressure gauge, red-green scale		2 3 4	-RG	
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin		1 2 5	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin		1 2 5	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA		1 2 5	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA		1 2 5	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact		1 2 5	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact		1 2 5	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact		1 2 5	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact		1 2 5	-AD10	

1 $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, AQK, AQN, AQP, AQR, AQS, D8, AD1 ... AD4, AD7 ... AD10, DM1, DM2, KD, E11, WPM

Not with EU certification EX4

3 RG, OS, KD, AS

Not with rotary knob alternative DM1

2 RG, AD1 ... AD4, AD7 ... AD10, OS, KD, AS, WR, WB

MS4: Not with rotary knob alternative DM2

4 D8, RG, OS, KD, AS

MS6: Not with rotary knob alternative DM2

M Mandatory data

O Options

Transfer order code

MS - **LR** - -

Pressure regulators MS4/MS6-LR, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
0	Alternative pressure gauge scale	psi		6	-PSI	
		MPa		7	-MPA	
	Secondary venting	Without secondary venting		2 3 4	-OS	
	Rotary knob alternative	Long rotary knob		8	-LD	
		Rotary knob pressure gauge, small	-	1 8 9	-DM1	
		Rotary knob pressure gauge, large		1 8 9	-DM2	
	Alternative mounting position	Rotary knob underneath		1 2 3	-KD	
				4 10		
	Security	Lockable via accessories		2 3 4	-AS	
		With integrated lock		1	-E11	
	Type of mounting	Mounting bracket with knurled nut for regulator head		2 11	-WR	
		Mounting bracket standard design		12	-WP	
		Mounting bracket for attaching the service units		1 12	-WPM	
		Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required		2	-WB	
		Mounting bracket centrally at rear (wall mounting top), connecting plates not required	-			-WBM
	EU certification	II 2GD to EU Directive 94/9/EG			-EX4	
	UL certification	cULus, ordinary location for Canada and USA			-UL1	
	Flow direction	Flow direction from right to left			-Z	

5 AD1 ... AD4, AD7 ... AD10

Measuring range max. 10 bar
Not with pressure regulation range D8

6 PSI

Not with pressure gauge alternatives VS, A8, A4, RG, AD1 ... AD4, AD7 ... AD10

7 MPA

Not with pressure gauge alternatives VS, A8, A4, AD1 ... AD4, AD7 ... AD10
Not with rotary knob alternative DM1, DM2

8 LD, DM1, DM2

Not with integrated lock E11

9 DM1, DM2

Can only be combined with one pressure gauge alternative VS, A8, A4, AD1 ... AD4, AD7 ... AD10

10 KD

Not with pressure gauge alternative RG
Not with alternative pressure gauge scale MPA
Not with mounting type WP

11 WR

Not with long rotary knob LD

12 WP, WPM

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

M Mandatory data

0 Options

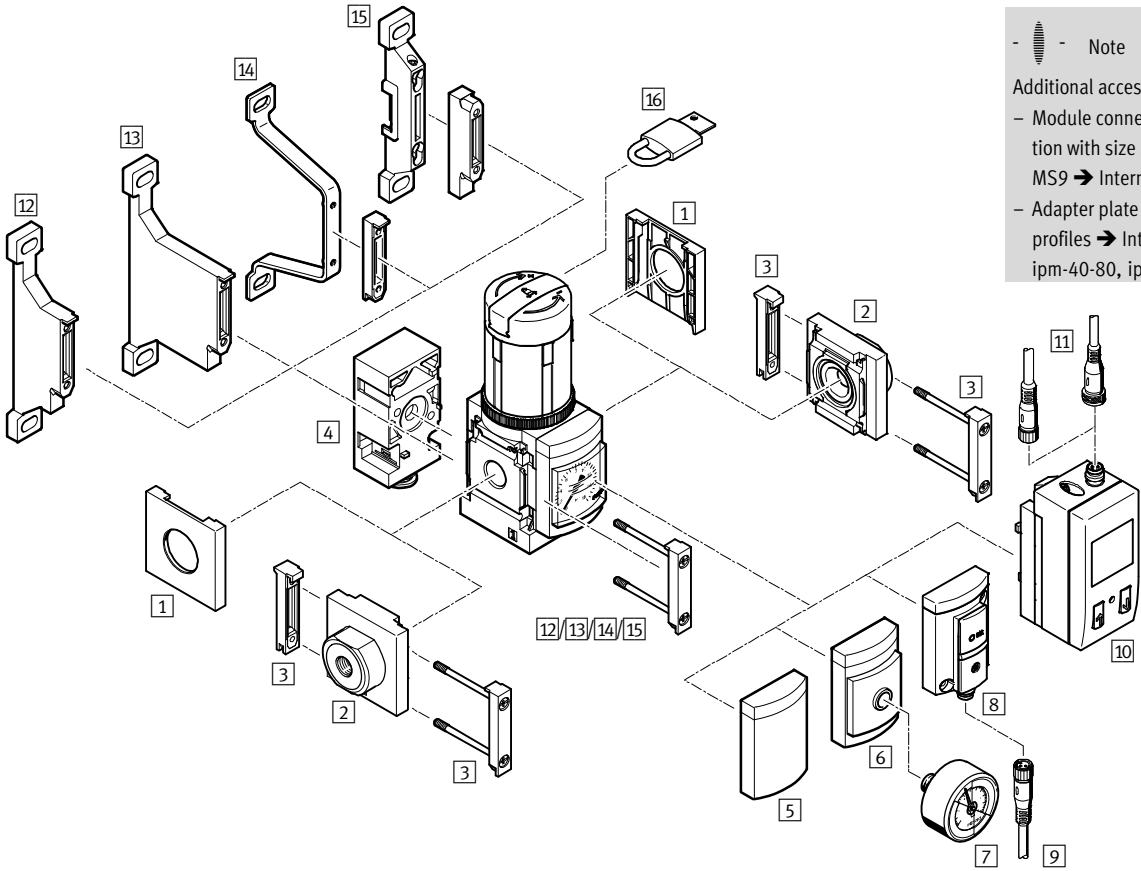
Transfer order code

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

Pressure regulators MS4/MS6-LRB, MS series

Peripherals overview

Pressure regulator MS4/MS6-LRB with pressure output to the rear



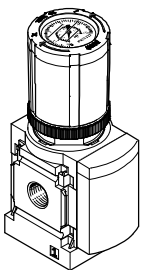
Note

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

Pressure regulator with rotary knob pressure gauge

MS4-LRB...-DM1/
MS6-LRB...-DM2



Pressure regulators MS4/MS6-LRB, MS series

Peripherals overview

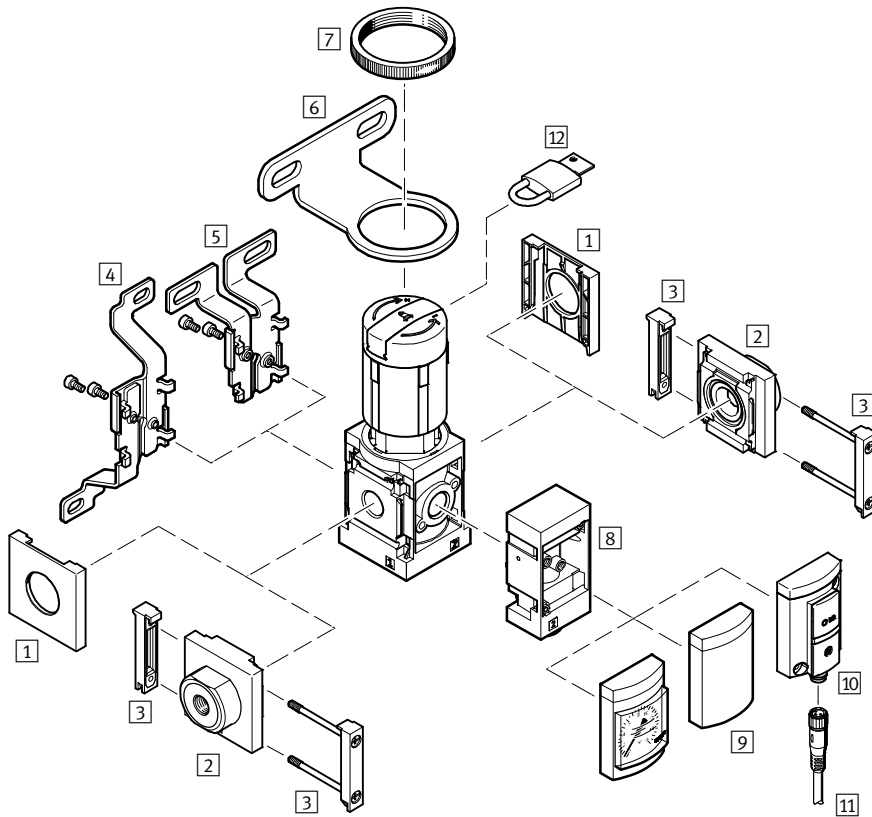
Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate-SET MS4/6-AG...	-	■	-	■	ms4-ag, ms6-ag
3	Module connector MS4/6-MV	-	■	■	■	ms4-mv, ms6-mv
4	Angled outlet block B...	■	■	■	■	34
5	Cover plate VS	■	■	■	■	34
6	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	34
7	Pressure gauge MA	■	■	■	■	95
8	Pressure sensor without display AD7 ... AD10	■	■	■	■	34
9	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
10	Pressure sensor with display AD1 ... AD4	■	■	■	■	34
11	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	95
12	Mounting bracket MS4/6-WP	-	■	■	■	ms4-wp, ms6-wp
13	Mounting bracket MS4/6-WPB	-	■	■	■	ms4-wp, ms6-wp
14	Mounting bracket MS4/6-WPE	-	■	■	■	ms4-wp, ms6-wp
15	Mounting bracket MS4/6-WPM	-	■	■	■	ms4-wp, ms6-wp
16	Padlock LRVS-D	■	■	■	■	95

Pressure regulators MS4/MS6-LRB, MS series

Peripherals overview

FESTO

Pressure regulator MS4/MS6-LRB with pressure output to the front



Note

Additional accessories:

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

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS4/6-END	■	-	■	-	ms4-end, ms6-end
2	Connecting plate-SET 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	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
8	Angled outlet block B...	■	■	■	■	34
9	Cover plate VS	■	■	■	■	34
10	Pressure sensor without display AD7 ... AD10	■	■	■	■	34
11	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
12	Padlock LRVS-D	■	■	■	■	95

Pressure regulators MS4/MS6-LRB, MS series

Type codes

MS 6 - LRB - 1/2 - D7 - - AS - BD

Series

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

Size

4	Grid dimension 40 mm
6	Grid dimension 62 mm

Service function

LRB	Pressure regulator for manifold assembly
-----	------------------------------------------

Connection size

MS4	
1/4	Thread G1/4
MS6	
1/2	Thread G1/2

Pressure regulation range

D5	0.3 ... 4 bar
D6	0.3 ... 7 bar
D7	0.5 ... 12 bar

Pressure gauge alternatives

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

Security

AS	Standard rotary knob with detent, lockable via accessories
----	------------------------------------------------------------

Pressure output

	Without angled outlet block
BD	Angled outlet block QS-8

Additional variants can be ordered using the modular system → 34

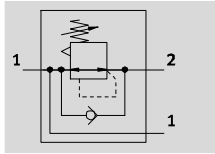
- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Rotary knob alternative
- Alternative mounting position
- Security
- Pressure output
- Type of mounting
- EU certification
- UL certification
- Flow direction

Pressure regulators MS4/MS6-LRB, MS series

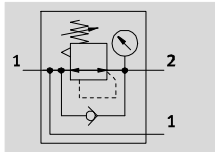
Technical data





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Without pressure gauge



With pressure gauge

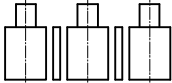


-  - Flow rate
300 ... 7,300 l/min
-  - Temperature range
-10 ... +60 °C
-  - Operating pressure
0.8 ... 20 bar
-  - www.festo.com

Wearing parts kits
→ 33




The pressure regulator is suitable for manifold assemblies with through air supply, for configuring a regulator manifold with separate, independent pressure regulation ranges. Pressure output is to the front or rear.



- Good regulation characteristics with low hysteresis and primary pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure regulation ranges
- Regulator lock for protecting the values against adjustment
- Available with and without secondary venting
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Return flow option for exhausting from output 2 to output 1 already integrated
- Optional pressure sensor
- Optional rotary knob pressure gauge
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data		MS4	MS6
Size			
Pneumatic connection 1			
	Female thread	G $\frac{1}{4}$	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 $\frac{3}{4}$
Pneumatic connection 2			
		G $\frac{1}{4}$	G $\frac{1}{2}$
		QS-6	QS-8
		QS-8	QS-10
Constructional design		Directly-actuated diaphragm regulator with through compressed air supply	
Regulating function		Output pressure constant, with primary pressure compensation, with return flow action, with/without secondary venting	
Type of mounting		Via accessories	
		In-line installation	
		Front panel mounting	
Mounting position		Any	
Regulator lock		Rotary knob with detent	
		Rotary knob with detent, lockable via accessories	
		Rotary knob with integrated lock	
Pressure regulation range/operation	D5 [bar]	0.3 ... 4, manually operated ¹⁾	
	D6 [bar]	0.3 ... 7, manually operated ¹⁾	
	D7 [bar]	0.5 ... 12, manually operated (0.5 ... 10 with pressure sensor AD... or with UL certification) ¹⁾	
	D8 [bar]	-	0.5 ... 16, manually operated (0.5 ... 10 with UL certification)
Max. hysteresis	[bar]	0.25	0.25 (0.4 with rotary knob pressure gauge DM2)
Pressure display		Via pressure sensor for displaying output pressure via LCD display and electrical output	
		Via pressure sensor for displaying output pressure via operational status indicator and electrical output	
		Via pressure gauge for displaying output pressure	
		Via pressure gauge with red/green scale for displaying output pressure	
		Via pressure gauge in rotary knob for displaying output pressure	
		G $\frac{1}{8}$ prepared	-
		G $\frac{1}{4}$ prepared	-

1) MS4: For pressure regulators with rotary knob pressure gauge DM1, the pressure regulation range begins at 0.8 bar.

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

Pressure regulators MS4/MS6-LRB, MS series

Technical data

Standard nominal flow rate $q_{nN}^{1)}$ [l/min]							
Size		MS4			MS6		
		Standard	Angled outlet block		Standard	Angled outlet block	
			QS-6	QS-8		QS-8	QS-10
Pressure regulation range	D5	1,900 ²⁾	300 ²⁾	650 ²⁾	7,300 ²⁾	600 ²⁾	750 ²⁾
	D6	1,700	350	840	6,300	880	1,000
	D7	1,500 ³⁾	350	640	5,500	800	950
	D8	–	–	–	4,500	750	850

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

3) In the case of the DM1/DM2 pressure regulator/gauge with rotary knob, q_{nN} is equal to 800 litres per minute and $q_{n \max}$ amounts to 2,200 litres per minute.

Operating and environmental conditions		
Size	MS4	MS6
Operating pressure [bar]	0.8 ... 14 (0.8 ... 10) ¹⁾	0.8 ... 20 (0.8 ... 10) ¹⁾
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
	Inert gases	
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)	
Ambient temperature [°C]	–10 ... +60 (0 ... +50) ²⁾	
Temperature of medium [°C]	–10 ... +60 (0 ... +50) ²⁾	
Storage temperature [°C]	–10 ... +60	
Corrosion resistance class CRC ³⁾	2	
UL certification	cULus recognized (OL)	

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

2) Value in brackets applies to MS4/MS6-LRB with pressure sensor AD...

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

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

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)

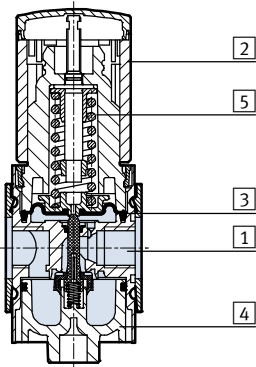
Weight [g]		
Size	MS4	MS6
Pressure regulator	222	747
Pressure regulator with rotary knob with integrated lock E11	347	1,017

Pressure regulators MS4/MS6-LRB, MS series

Technical data

Materials

Sectional view



Pressure regulator (manifold assembly)

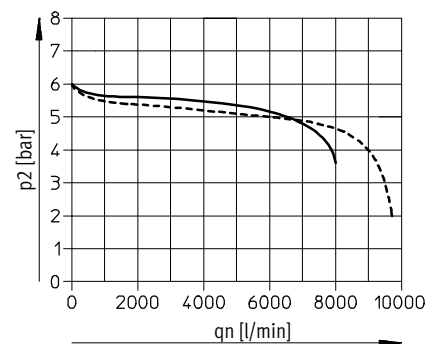
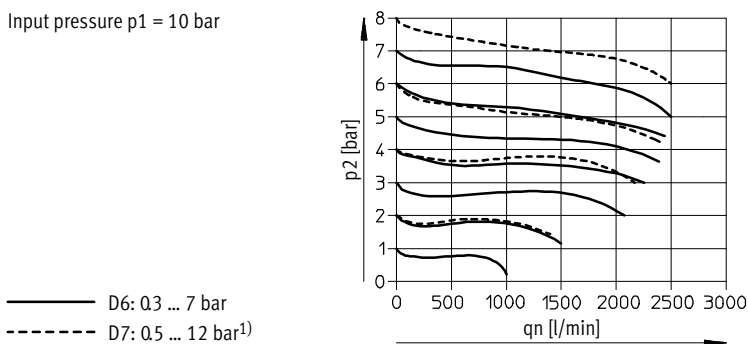
1	Housing	Die-cast aluminium
2	Rotary knob	PA/POM
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	NBR
4	Cap, bottom	PET
5	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE only with cover plate VS

Standard flow rate qn as a function of output pressure p2

MS4-LRB-1/4

MS6-LRB-1/2

Input pressure p1 = 10 bar



1) There is a higher initial pressure drop for the characteristic curve of the DM1 variant.

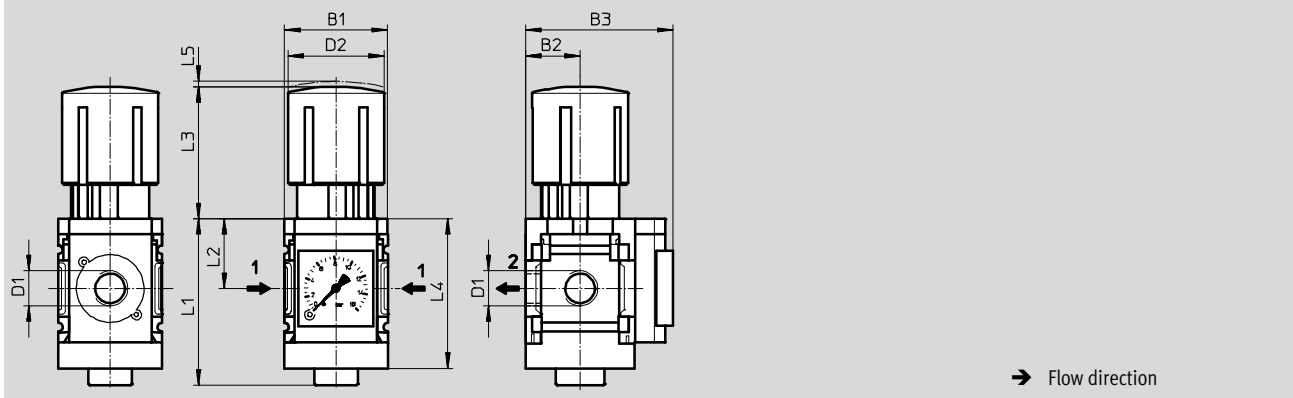
Pressure regulators MS4/MS6-LRB, MS series

Technical data

Dimensions – Basic version

Download CAD data → www.festo.com

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



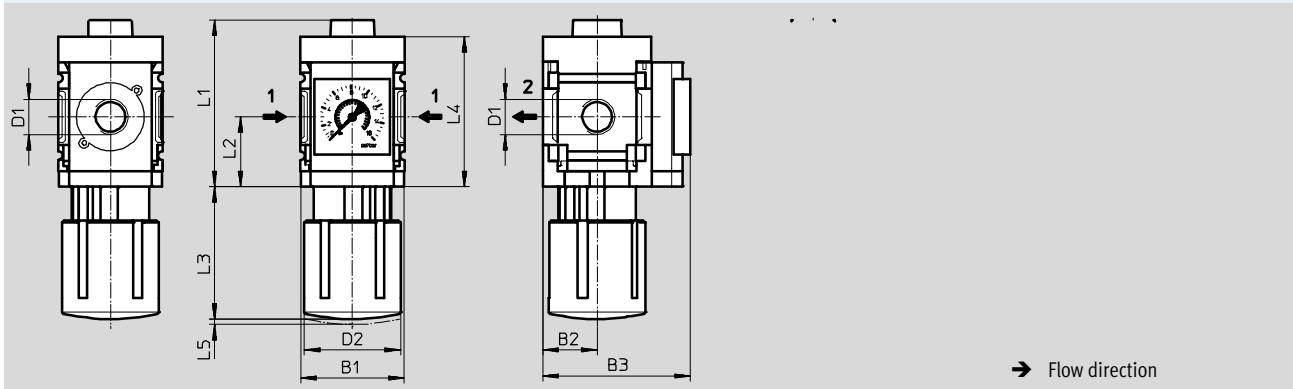
Type	B1	B2	B3		D1	D2	L1	L2	L3	L4	L5
			Standard scale	Red-green scale							
MS4-LRB-1/4	40	21	57	58.5	G1/4	37.2	64.4	27	51.1	58.5	2
MS6-LRB-1/2	62	31	77	78.5	G1/2	51.3	94	39	86	85	5

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

Dimensions – Alternative mounting position

Download CAD data → www.festo.com

Rotary knob underneath KD



Type	B1	B2	B3	D1	D2	L1	L2	L3	L4	L5
MS4-LRB-1/4-...-KD	40	21	57	G1/4	37.2	64.4	27	51.1	58.5	2
MS6-LRB-1/2-...-KD	62	31	77	G1/2	51.2	94	39	86	85	5

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

Pressure regulators MS4/MS6-LRB, MS series

Technical data



Dimensions – Angled outlet block BC/BD/BE Download CAD data → www.festo.com

<p>Pressure output to rear</p> <p>MS4 MS6 (not illustrated)</p>	<p>Pressure output to front Z</p> <p>MS4 (not illustrated) MS6</p>
---------------------------------------------------------------------	------------------------------------------------------------------------

Type	B1	B2	B3	B6	B7	B8	D1	D2	L1	L2	L3	L4	L5	L10
MS4-LRB-1/4-...-B...	40	21	57	21	75	-	G1/4	37.2	64.4	27	51.1	58.5	2	8
MS6-LRB-1/2-...-B...	62	31	77	23	99	23.4	G1/2	51.2	94	39	86	85	5	11

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

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

<p>Cover plate VS</p>	<p>Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge</p>
-----------------------	----------------------------------------------------------------------------------

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

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

Pressure regulators MS4/MS6-LRB, MS series

Technical data

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

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

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

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

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

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

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

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

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

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

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

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

Pressure regulators MS4/MS6-LRB, MS series



Technical data

Dimensions – Rotary knob

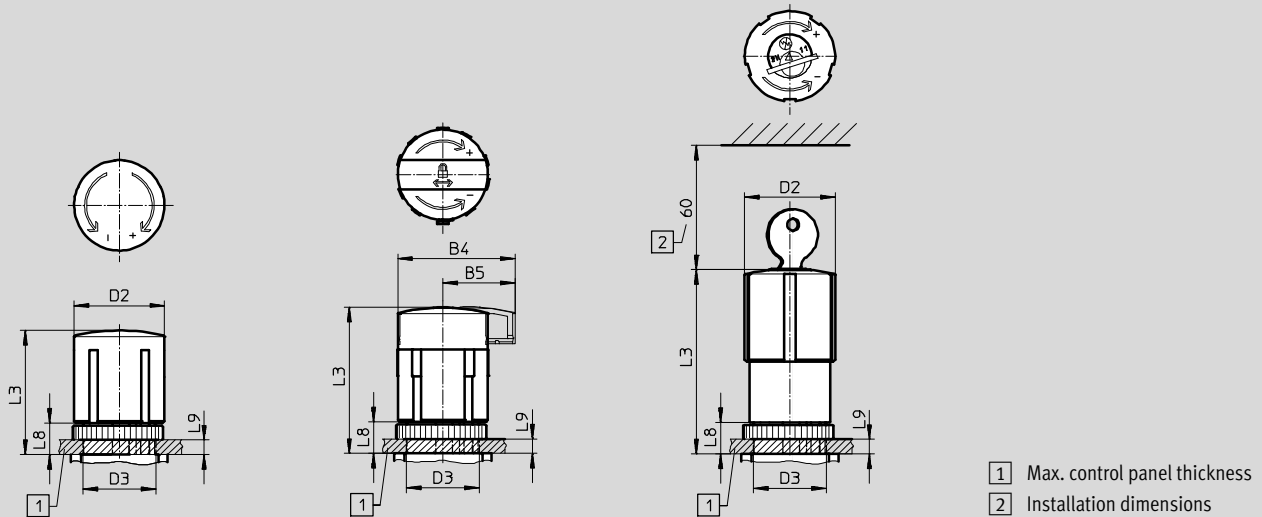
Download CAD data → www.festo.com

For installation into control panel

Standard rotary knob with detent

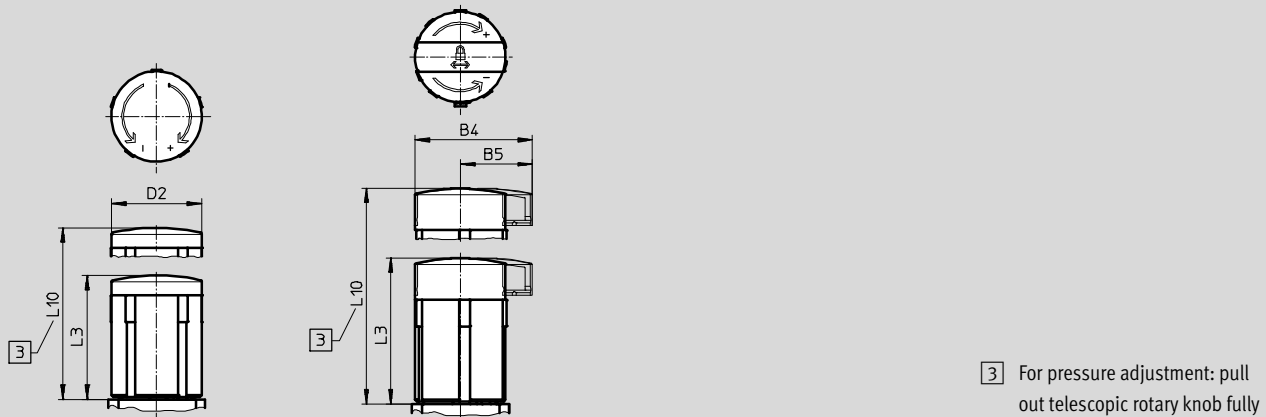
Standard rotary knob with detent,
lockable via accessories AS

Rotary knob with integrated lock
E11



Long rotary knob with detent LD

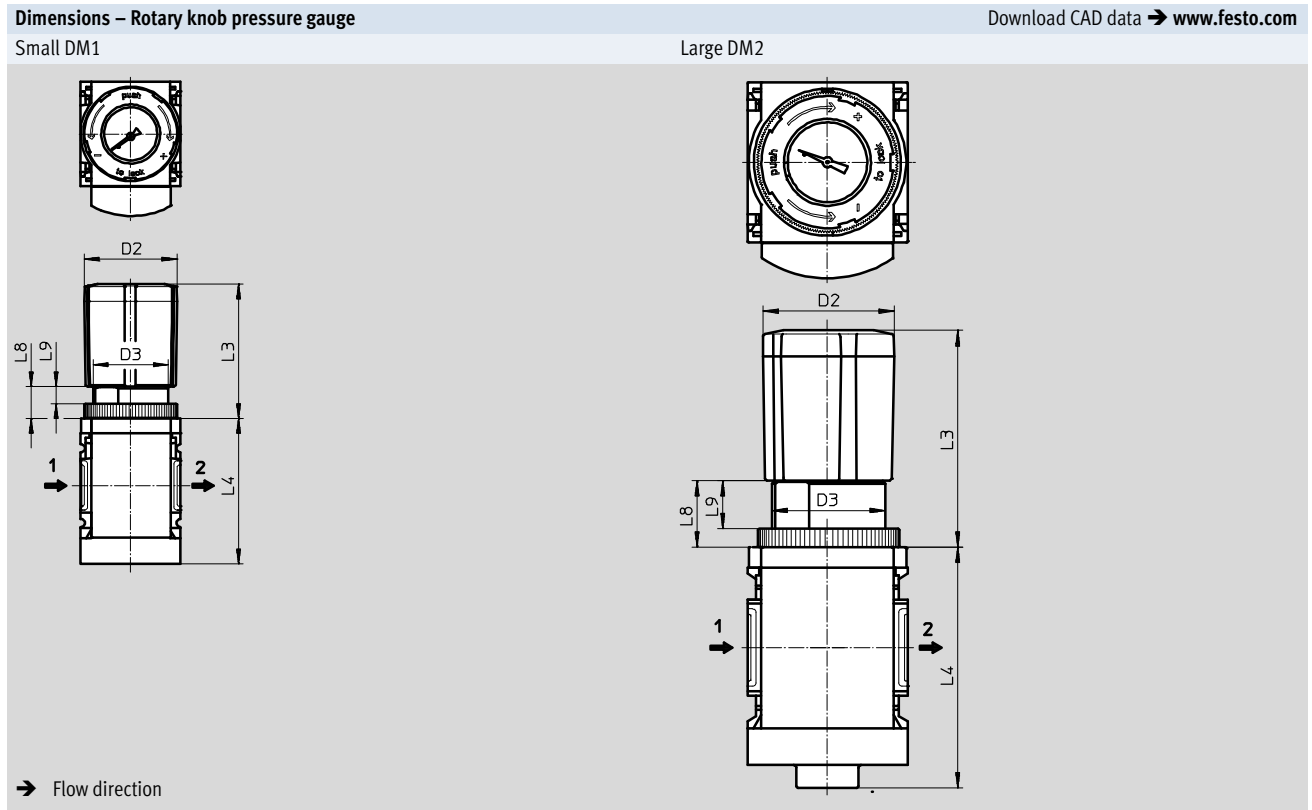
Long rotary knob with detent,
lockable via accessories LD-AS



Type	B4	B5	D2	D3 +1	L3	L8	L9	L10
MS4-LRB-...	-	-	37.2	30	51.1	13	6	-
MS4-LRB-...-AS	48.6	30			60.2			
MS4-LRB-...-E11	-	-			76			
MS4-LRB-...-LD	-	-	37.2	-	51.1	-	-	76.8
MS4-LRB-...-LD-AS	48.6	30			60			85.7
MS6-LRB-...	-	-	51.2	44	86	22	14	-
MS6-LRB-...-AS	64.4	38.8			93			
MS6-LRB-...-E11	-	-			51.8			
MS6-LRB-...-LD	-	-	51.2	-	86	-	-	139
MS6-LRB-...-LD-AS	64.4	38.8			95.5			148.5

Pressure regulators MS4/MS6-LRB, MS series

Technical data



Type	D2	D3	L3	L4	L8	L9
MS4-LRB-...-DM1	37.2	M30x1.5	56	58.5	13	6.7
MS6-LRB-...-DM2	51	M44x1	84	94	25	18

Ordering data							
Standard rotary knob with detent, lockable via accessories							
Size	Connection	Pressure regulation range 0.3 ... 4 bar		Pressure regulation range 0.3 ... 7 bar		Pressure regulation range 0.5 ... 12 bar	
		Part No.	Type	Part No.	Type	Part No.	Type
Integrated pressure gauge, display unit [bar], pressure output to rear without angled outlet block							
MS4	G $\frac{1}{4}$	529473	MS4-LRB- $\frac{1}{4}$ -D5-AS	529479	MS4-LRB- $\frac{1}{4}$ -D6-AS	529485	MS4-LRB- $\frac{1}{4}$ -D7-AS
MS6	G $\frac{1}{2}$	530322	MS6-LRB- $\frac{1}{2}$ -D5-AS	530328	MS6-LRB- $\frac{1}{2}$ -D6-AS	530334	MS6-LRB- $\frac{1}{2}$ -D7-AS
Integrated pressure gauge, display unit [bar], pressure output to rear with angled outlet block QS-8							
MS4	G $\frac{1}{4}$	529474	MS4-LRB- $\frac{1}{4}$ -D5-AS-BD	529480	MS4-LRB- $\frac{1}{4}$ -D6-AS-BD	529486	MS4-LRB- $\frac{1}{4}$ -D7-AS-BD
MS6	G $\frac{1}{2}$	-	-	530329	MS6-LRB- $\frac{1}{2}$ -D6-AS-BD	530335	MS6-LRB- $\frac{1}{2}$ -D7-AS-BD
Adapter plate A8 for EN pressure gauge $\frac{1}{8}$, pressure output to rear without angled outlet block							
MS4	G $\frac{1}{4}$	529471	MS4-LRB- $\frac{1}{4}$ -D5-A8-AS	529477	MS4-LRB- $\frac{1}{4}$ -D6-A8-AS	529483	MS4-LRB- $\frac{1}{4}$ -D7-A8-AS
Adapter plate A4 for EN pressure gauge $\frac{1}{4}$, pressure output to rear without angled outlet block							
MS6	G $\frac{1}{2}$	530320	MS6-LRB- $\frac{1}{2}$ -D5-A4-AS	530326	MS6-LRB- $\frac{1}{2}$ -D6-A4-AS	530332	MS6-LRB- $\frac{1}{2}$ -D7-A4-AS

Ordering data – Wearing parts kits		
Size	Part No.	Type
MS4	673649	MS4-LR/LRB
MS6	673650	MS6-LR/LRB

Pressure regulators MS4/MS6-LRB, MS series

Ordering data – Modular products



Ordering table							
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code	
M	Module No.	527692					
	Series	Standard			MS	MS	
	Size	4	6		...		
	Function	Pressure regulator for manifold assembly			-LRB	-LRB	
	Pneumatic connection	Female thread G $\frac{1}{4}$	–	1	-$\frac{1}{4}$		
		–	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		
	Pressure regulation range/ operation	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	1 2	-D8		
O	Pressure gauge alternatives	Cover plate		3	-VS		
		Adapter plate for EN pressure gauge $\frac{1}{8}$, without pressure gauge	–		4	-A8	
		Adapter plate for EN pressure gauge $\frac{1}{4}$, without pressure gauge			4	-A4	
		Integrated pressure gauge, red-green scale			2	-RG	
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin			1 4 5	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin			1 4 5	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			1 4 5	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			1 4 5	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact			1 5 6	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact			1 5 6	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact			1 5 6	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact			1 5 6	-AD10	
		Alternative pressure gauge scale	psi		7	-PSI	
	MPa			8	-MPA		

1 $\frac{1}{4}$, $\frac{1}{2}$, **D8**, **AD1** ... **AD4**, **AD7** ... **AD10**, **DM1**, **DM2**, **KD**, **E11**, **WPM**

Not with EU certification EX4

2 **D8**, **RG**, **OS**, **KD**, **AS**

Not with rotary knob pressure gauge DM1, DM2

3 **VS**

Must be selected if flow direction Z is selected without alternative mounting position KD and without pressure output BC, BD, BE.

Must be selected if alternative mounting position KD is selected without flow direction Z and without pressure output BC, BD, BE

M Mandatory data

O Options

Transfer order code

MS - **LRB** - - - -

Pressure regulators MS4/MS6-LRB, MS series

Ordering data – Modular products

Ordering table						
Grid dimension	[mm]	40	62	Condi- tions	Code	Enter code
0	Secondary venting	Without secondary venting		2	-OS	
	Rotary knob alternative	Long rotary knob		9	-LD	
		Rotary knob pressure gauge, small	–	1 9 10	-DM1	
		–	Rotary knob pressure gauge, large	1 9 10	-DM2	
	Alternative mounting position	Rotary knob underneath		1 2 11	-KD	
	Security	Lockable via accessories		2	-AS	
		With integrated lock		1	-E11	
	Pressure output (p _{max} = 10 bar)	Angled outlet block QS-6	–		-BC	
		Angled outlet block QS-8	Angled outlet block QS-8		-BD	
		–	Angled outlet block QS-10		-BE	
	Type of mounting	Mounting bracket with knurled nut for regulator head		12 13	-WR	
		Mounting bracket standard design		14 15	-WP	
		Mounting bracket for attaching the service units		1 12 14	-WPM	
		Mounting bracket for large wall gap		14 16	-WPB	
		Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required		12	-WB	
		Mounting bracket centrally at rear (wall mounting top), connecting plates not required	–	12	-WBM	
EU certification	II 2GD to EU Directive 94/9/EG			-EX4		
UL certification	cULus, ordinary location for Canada and USA			-UL1		
Flow direction	Pressure output to front (without pressure output, no pressure gauge)			-Z		

4 A8, A4, AD1 ... AD4

Not with flow direction Z.
In combination with flow direction Z only with alternative mounting position KD

5 AD1 ... AD4, AD7 ... AD10

Measuring range max. 10 bar
Not with pressure regulation range D8

6 AD7 ... AD10 In combination with flow direction Z only with pressure output BC, BD, BE or
In combination with flow direction Z only with alternative mounting position KD

7 PSI Not with pressure gauge alternatives VS, A8, A4, RG, AD1 ... AD4, AD7 ... AD10

In combination with flow direction Z only with pressure output BC, BD, BE

8 MPA Not with pressure gauge alternatives VS, A8, A4, AD1 ... AD4, AD7 ... AD10

Not with alternative mounting position KD.
Not with rotary knob alternative DM1, DM2
In combination with flow direction Z only with pressure output BC, BD, BE

9 LD, DM1, DM2

Not with integrated lock E11

10 DM1, DM2 Can only be selected in combination with pressure gauge alternative VS, A4, AD1 ... AD4, AD7 ... AD10

11 KD

Not with alternative pressure gauge scale MPA.
In combination with alternative pressure gauge scale PSI only with flow direction Z and/or only with pressure output BC, BD, BE

Not with mounting type WP, WPB.
In combination with mounting type WR, WPM, WB, WBM not with flow direction Z.
Not with pressure gauge alternative RG.

In combination with pressure gauge alternatives A8, A4, AD1, AD2, AD3, AD4 only with flow direction Z.

12 WR, WPM, WB, WBM

In combination with flow direction Z not with alternative mounting position KD

13 WR

Only with flow direction Z.
Not with rotary knob alternative LD

14 WP, WPM, WPB

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

15 WP

Only with flow direction Z and/or only with pressure output BC, BD, BE

16 WPB

Not with flow direction Z.
Not with pressure output BC, BD, BE

M Mandatory data

0 Options

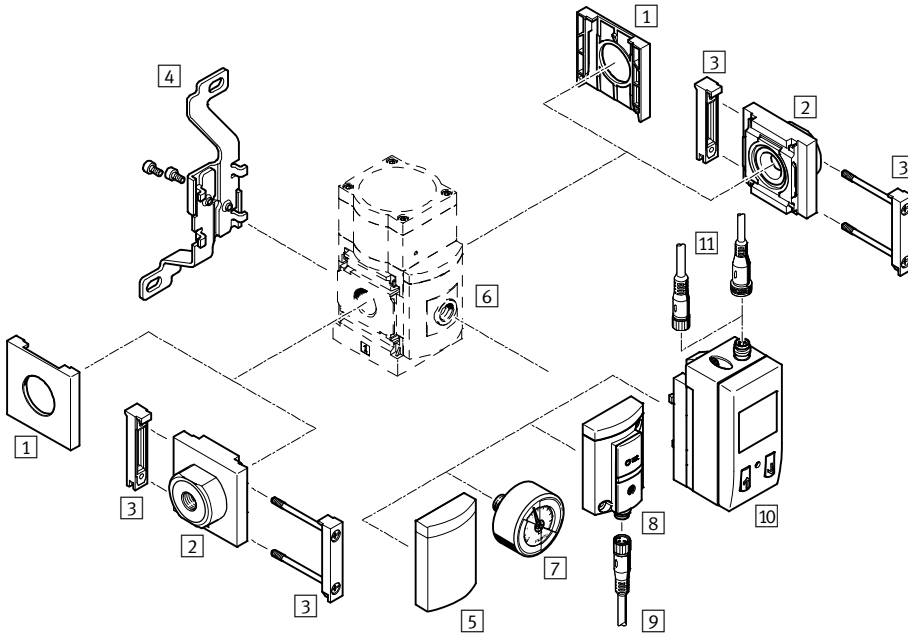
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Precision pressure regulators MS6-LRP, MS series

Peripherals overview

Precision pressure regulator MS6-LRP



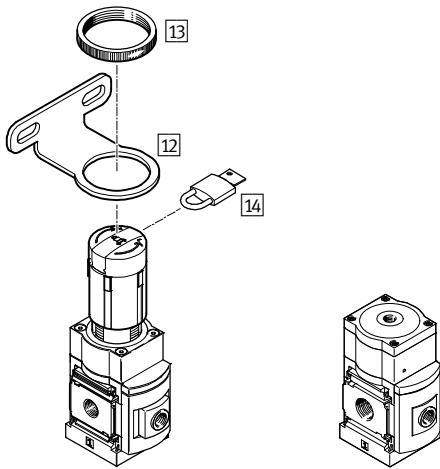
Note

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

Manually operated

Pneumatically actuated



Precision pressure regulators MS6-LRP, MS series

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	■	-	■	-	ms6-end
2	Connecting plate-SET MS6-AG...	-	■	-	■	ms6-ag
	Connecting plate-SET MS6-AQ...	-	■	-	■	ms6-aq
3	Module connector MS6-MV	-	■	■	■	ms6-mv
4	Mounting bracket MS6-WB	■	■	-	-	ms6-wb
5	Cover plate VS	■	■	■	■	48
6	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	48
7	Precision pressure gauge A8M/MAP	■	■	■	■	48, 95
8	Pressure sensor without display AD7 ... AD10	■	■	■	■	48
9	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
10	Pressure sensor with display AD1 ... AD4	■	■	■	■	48
11	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	95
12	Mounting bracket MS6-WR	■	■	-	-	ms6-wr
13	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
14	Padlock LRVS-D	■	■	■	■	95
-	Mounting bracket MS6-WP/WPB/WPE/WPM	-	■	■	■	ms6-wp

Precision pressure regulators MS6-LRP, MS series

Type codes

MS 6 - LRP - 1/2 - D7 - A8

Series	
MS	Standard service unit

Size	
6	Grid dimension 62 mm

Service function	
LRP	Precision pressure regulator

Connection size	
1/4	G1/4 thread
3/8	G3/8 thread
1/2	G1/2 thread

Pressure regulation range/operation	
D2	0.05 ... 0.7 bar, manually operated
D4	0.05 ... 2.5 bar, manually operated
D5	0.1 ... 4 bar, manually operated
D7	0.1 ... 12 bar, manually operated

Pressure gauge alternatives	
A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge

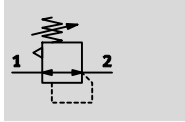
Further variants can be ordered using the modular system → 48

- Connecting plates
- Pressure regulation range/operation
- Pressure gauge alternatives
- Rotary knob alternatives
- Alternative mounting position
- Security
- Type of mounting
- EU certification
- UL certification
- Flow direction

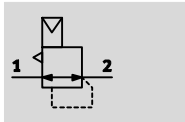
Precision pressure regulators MS6-LRP, MS series

Technical data

Pressure regulation range/operation manually operated D2/D4/D5/D7



pneumatically actuated PO



- - Flow rate
800 ... 5,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
1 ... 14 bar
- - www.festo.com



The precision pressure regulator is suitable for sensitive applications with a required hysteresis of 0.02 bar. The output pressure p2 can be set within the pressure regulation range either manually using the rotary knob or pneumatically via a pilot pressure p12

by an external pilot regulator (if possible using a precision pressure regulator). When switching off the input pressure p1, the output pressure p2 is vented via the connection 3 (secondary venting).

- Good regulation characteristics with low hysteresis and primary pressure compensation
- High flow rate with minimal pressure drop
- High secondary venting for fast response times
- Regulator lock for protecting the values against adjustment
- Four pressure regulation ranges: 0.05 ... 0.7 bar, 0.05 ... 2.5 bar, 0.1 ... 4 bar and 0.1 ... 12 bar
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data		
Size		MS6
Pneumatic connection 1, 2	Female thread	G $\frac{1}{4}$, G $\frac{3}{8}$ or G $\frac{1}{2}$
	Connecting plate AG...	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$ or G $\frac{3}{4}$
	Connecting plate AQ...	NPT $\frac{1}{4}$, NPT $\frac{3}{8}$, NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$
Pneumatic connection 3 (secondary venting)		G $\frac{1}{4}$
Pilot air connection 12 with variant PO		G $\frac{1}{8}$
Constructional design		Piloted precision diaphragm regulator
Regulating function		Output pressure constant, via secondary venting
Type of mounting		Via accessories
		In-line installation
		Front panel mounting
Mounting position		Any
Regulator lock		Rotary knob with detent
		Rotary knob with detent, lockable via accessories
		Rotary knob with integrated lock
Pressure regulation range/operation ¹⁾	D2 [bar]	0.05 ... 0.7, manually operated
	D4 [bar]	0.05 ... 2.5, manually operated
	D5 [bar]	0.1 ... 4, manually operated
	D7 [bar]	0.1 ... 12, manually operated (0.1 ... 10 with pressure sensor AD... or with UL certification)
	PO [bar]	0.1 ... 12, pneumatically actuated (0.1 ... 10 with pressure sensor AD... or with UL certification)
Max. hysteresis	[bar]	0.02
Pressure indication		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 precision pressure gauge for displaying output pressure
		G $\frac{1}{8}$ prepared
		G $\frac{1}{4}$ prepared

1) Variant D2/D4/D5/D7: Supply pressure p1 ≥ output pressure p2 + 1 bar. Variant PO: Output pressure p2 = pilot pressure p12 + max. 0.5 bar.
 - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Precision pressure regulators MS6-LRP, MS series

FESTO

Technical data

Flow rates					
Pressure regulation range		D2 (0.05 ... 0.7 bar)	D4 (0.05 ... 2.5 bar)	D5 (0.1 ... 4 bar)	D7/PO (0.1 ... 12 bar)
Standard nominal flow rate q_{nN} [l/min]					
$q_{nN} 1 \rightarrow 2$	G $\frac{1}{4}$	800 ¹⁾	1,100 ²⁾	1,400 ³⁾	3,000 ⁴⁾
	G $\frac{3}{8}$	1,100 ¹⁾	1,400 ²⁾	1,700 ³⁾	3,300 ⁴⁾
	G $\frac{1}{2}$	1,600 ¹⁾	2,300 ²⁾	3,000 ³⁾	5,000 ⁴⁾
Secondary venting flow rate [l/min]					
$q_{n2} 2 \rightarrow 3$		≥ 220 ⁵⁾	≥ 450 ⁶⁾	≥ 650 ⁷⁾	≥ 900 ⁸⁾

- 1) Measured at $p_1 = 10$ bar and $p_2 = 0.5$ bar, $\Delta p = 0.1$ bar
 2) Measured at $p_1 = 10$ bar and $p_2 = 1.5$ bar, $\Delta p = 0.1$ bar
 3) Measured at $p_1 = 10$ bar and $p_2 = 2.5$ bar, $\Delta p = 0.1$ bar
 4) Measured at $p_1 = 10$ bar and $p_2 = 6.0$ bar, $\Delta p = 0.1$ bar

- 5) Measured at $p_1 = 10$ bar and $p_2 = 0.7$ bar, $\Delta p_2 = 0.1$ bar
 6) Measured at $p_1 = 10$ bar and $p_2 = 2.5$ bar, $\Delta p_2 = 0.1$ bar
 7) Measured at $p_1 = 10$ bar and $p_2 = 4.0$ bar, $\Delta p_2 = 0.1$ bar
 8) Measured at $p_1 = 10$ bar and $p_2 = 6.0$ bar, $\Delta p_2 = 0.1$ bar

Operating and environmental conditions	
Operating pressure [bar]	1 ... 14 (1 ... 10) ¹⁾
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
	Inert gases
Note on operating/pilot medium	Operation with lubricated medium not possible
Ambient temperature [°C]	-10 ... +60 (0 ... +50) ²⁾
Temperature of medium [°C]	-10 ... +60 (0 ... +50) ²⁾
Storage temperature [°C]	-10 ... +60
Corrosion resistance class CRC ³⁾	2
UL certification	cULus recognized (OL)

- 1) Value in brackets applies to MS6-LRP with UL certification.
 2) Value in brackets applies to MS6-LRP with pressure sensor AD...
 3) Corrosion resistance class CRC 2 to Festo standard FN 940070

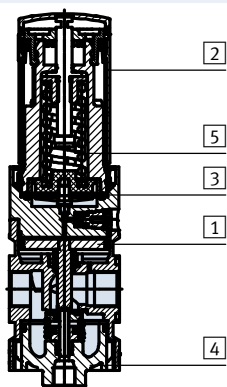
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

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 \leq Ta \leq +60 °C
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

Weight [g]	
Precision pressure regulator	1,000
Precision pressure regulator with rotary knob with integrated lock E11	1,120

Materials

Sectional view



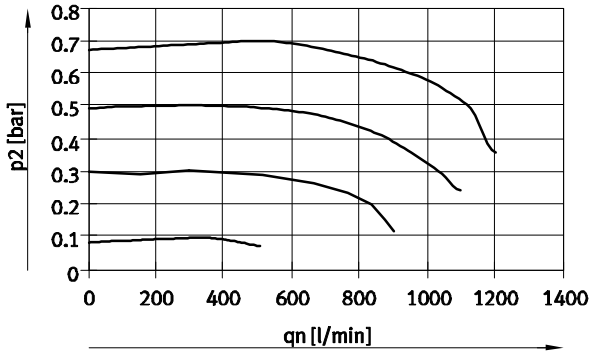
Precision pressure regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	PA/POM
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	NBR
4	Cap, bottom	PC
5	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant Free of copper and PTFE (not with variant A8M or AD...)

Precision pressure regulators MS6-LRP, MS series

Technical data

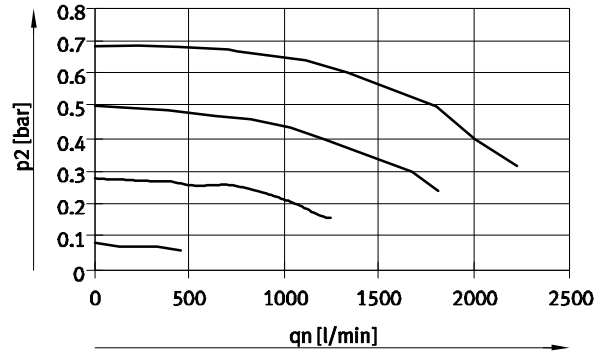
Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

MS6-LRP-1/4-D2



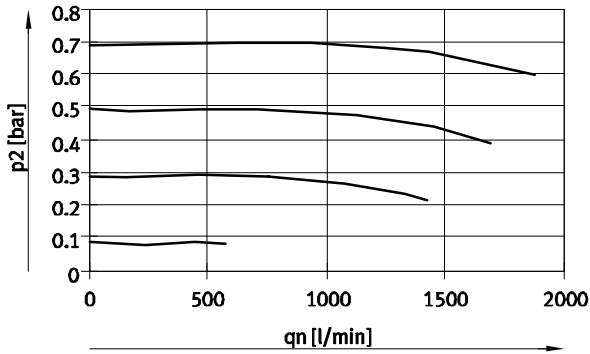
— D2: 0.05...0.7 bar

MS6-LRP-3/8-D2



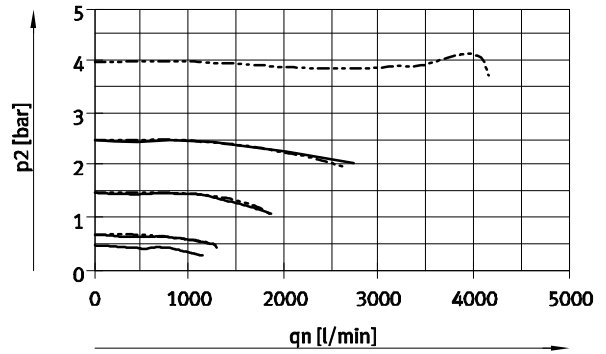
— D2: 0.05...0.7 bar

MS6-LRP-1/2-D2



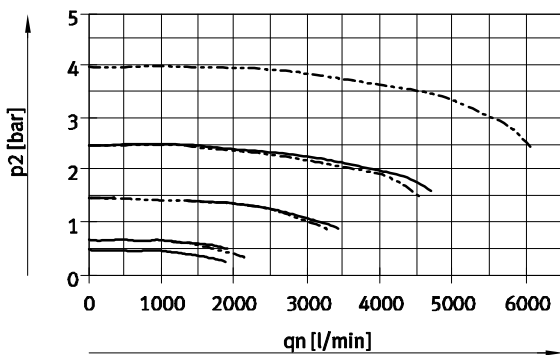
— D2: 0.05...0.7 bar

MS6-LRP-1/4-D4/D5



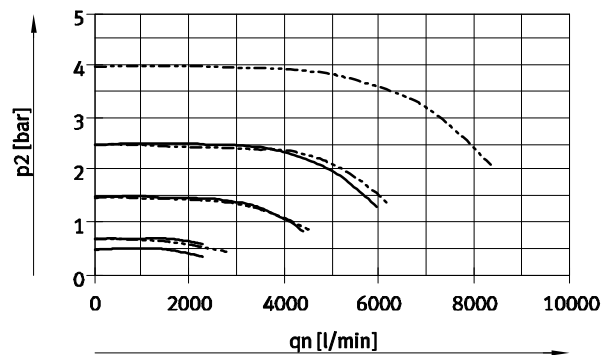
— D4: 0.05...2.5 bar
- - - D5: 0.1...4 bar

MS6-LRP-3/8-D4/D5



— D4: 0.05...2.5 bar
- - - D5: 0.1...4 bar

MS6-LRP-1/2-D4/D5



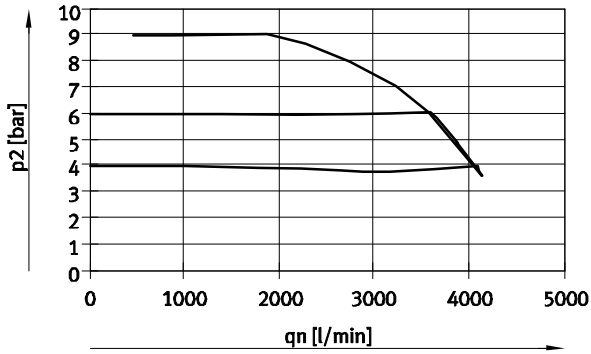
— D4: 0.05...2.5 bar
- - - D5: 0.1...4 bar

Precision pressure regulators MS6-LRP, MS series

Technical data

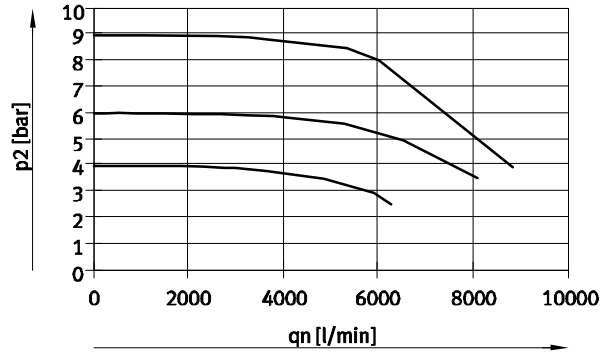
Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

MS6-LRP-1/4-D7/PO



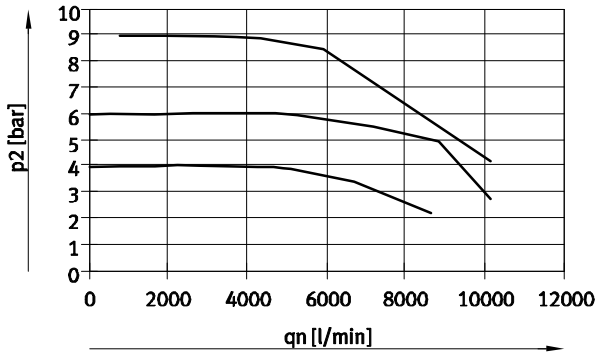
D7/PO: 0.1...12 bar

MS6-LRP-3/8-D7/PO



D7/PO: 0.1...12 bar

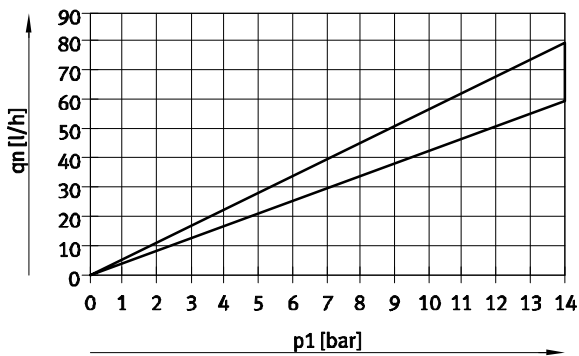
MS6-LRP-1/2-D7/PO



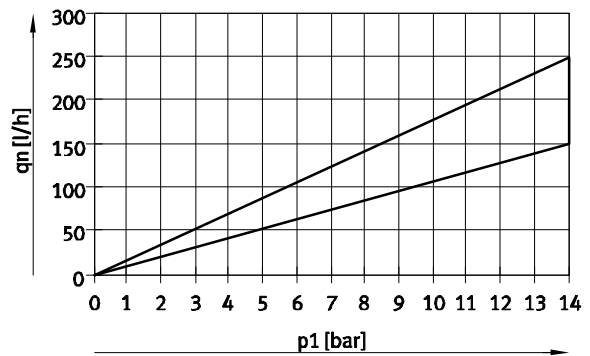
D7/PO: 0.1...12 bar

Internal air consumption q_n as a function of input pressure p_1

MS6-LRP-...-D2/D4



MS6-LRP-...-D5/D7/PO



Precision pressure regulators MS6-LRP, MS series

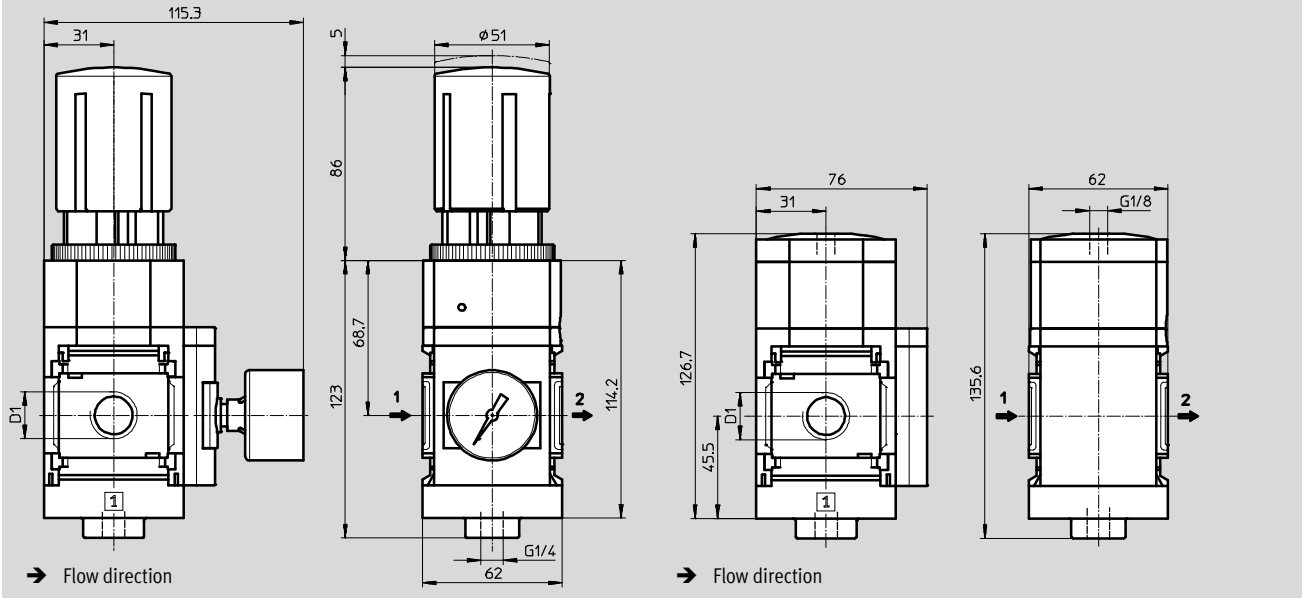
Technical data

Dimensions

Download CAD data → www.festo.com

manually operated D2/D4/D5/D7,
with adapter plate A8M for EN pressure gauge 1/8 as pressure gauge alternative
with precision pressure gauge MAP

pneumatically actuated PO,
with cover plate VS as pressure gauge alternative



Type	D1
MS6-LRP-1/4-D2/D4/D5/D7-A8M	G1/4
MS6-LRP-3/8-D2/D4/D5/D7-A8M	G3/8
MS6-LRP-1/2-D2/D4/D5/D7-A8M	G1/2

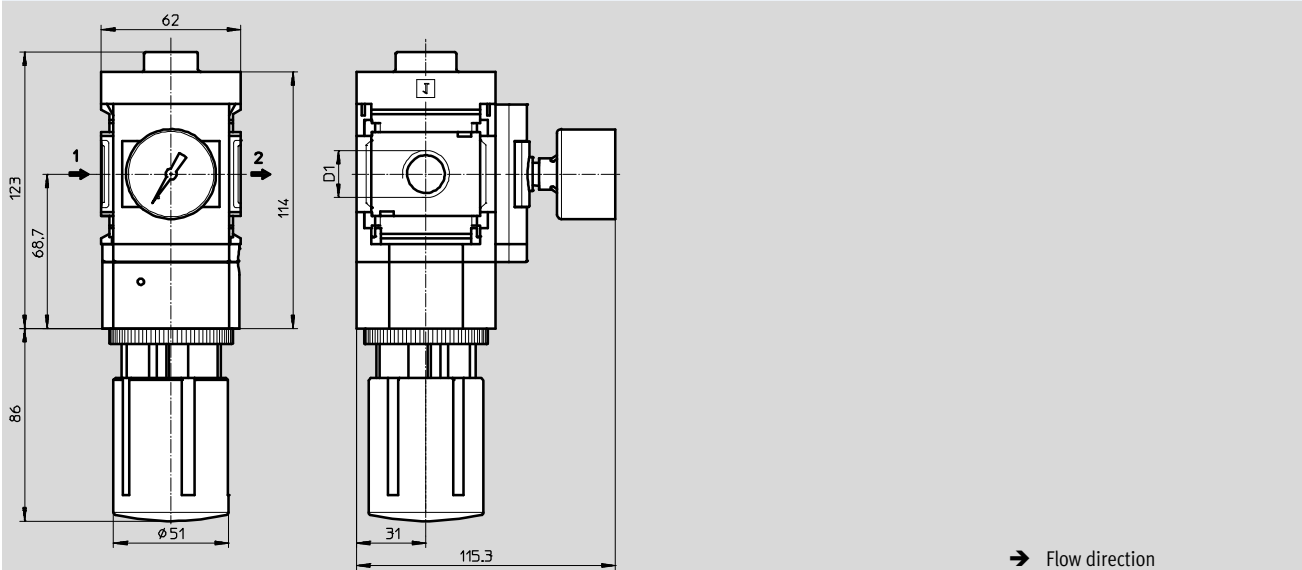
Type	D1
MS6-LRP-1/4-PO-VS	G1/4
MS6-LRP-3/8-PO-VS	G3/8
MS6-LRP-1/2-PO-VS	G1/2

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

Dimensions – Alternative mounting position

Download CAD data → www.festo.com

Rotary knob at bottom KD



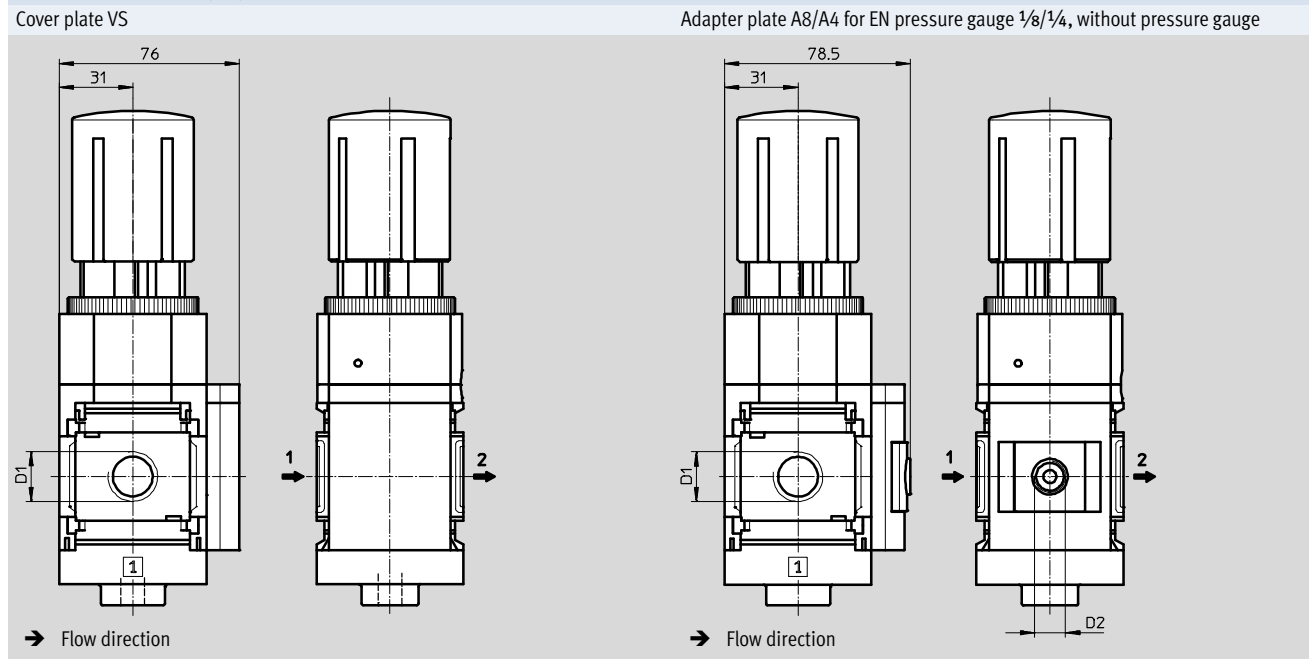
Type	D1
MS6-LRP-1/4-...-KD	G1/4
MS6-LRP-3/8-...-KD	G3/8
MS6-LRP-1/2-...-KD	G1/2

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

Precision pressure regulators MS6-LRP, MS series

Technical data

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



Type	D1	D2
MS6-LRP-1/4-...-VS	G1/4	-
MS6-LRP-3/8-...-VS	G3/8	
MS6-LRP-1/2-...-VS	G1/2	
MS6-LRP-1/4-...-A8	G1/4	G1/8
MS6-LRP-3/8-...-A8	G3/8	
MS6-LRP-1/2-...-A8	G1/2	
MS6-LRP-1/4-...-A4	G1/4	G1/4
MS6-LRP-3/8-...-A4	G3/8	
MS6-LRP-1/2-...-A4	G1/2	

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

Precision pressure regulators MS6-LRP, MS series

Technical data

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

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

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

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

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

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

Variant AD7:
SDE5-D10-0-...-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-D10-03-...-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	D1	D2	L1
MS6-LRP-1/4-...-AD1/AD2	G1/4	M8x1	46.7
MS6-LRP-3/8-...-AD1/AD2	G3/8		
MS6-LRP-1/2-...-AD1/AD2	G1/2		
MS6-LRP-1/4-...-AD3/AD4	G1/4	M12x1	55.8
MS6-LRP-3/8-...-AD3/AD4	G3/8		
MS6-LRP-1/2-...-AD3/AD4	G1/2		
MS6-LRP-1/4-...-AD7/AD8/AD9/AD10	G1/4	M8x1	-
MS6-LRP-3/8-...-AD7/AD8/AD9/AD10	G3/8		
MS6-LRP-1/2-...-AD7/AD8/AD9/AD10	G1/2		

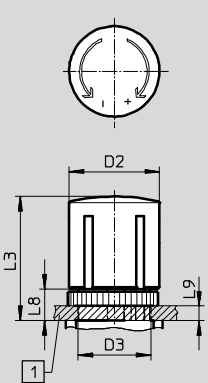
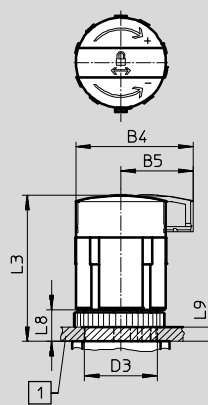
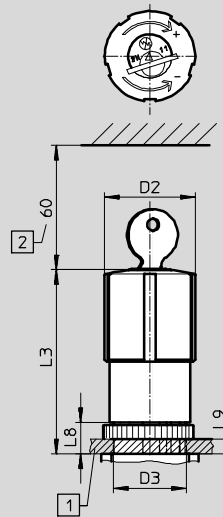
· || · Note: This product conforms to ISO 1179-1 and to ISO 228-1

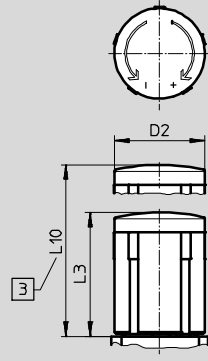
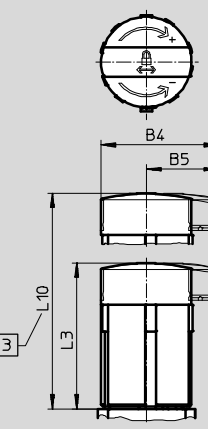
Precision pressure regulators MS6-LRP, MS series

Technical data

Dimensions – Rotary knob Download CAD data → www.festo.com

For installation into control panel

<p>Standard rotary knob with detent</p> 	<p>Standard rotary knob with detent, lockable via accessories AS</p> 	<p>Rotary knob with integrated lock E11</p> 	<p>1 Max. control panel thickness 2 Installation dimensions</p>
---------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------

<p>Long rotary knob with detent LD</p> 	<p>Long rotary knob with detent, lockable via accessories LD-AS</p> 	<p>3 For pressure adjustment: pull out telescopic rotary knob fully</p>
----------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------

Type	B4	B5	D2	D3 +1	L3	L8	L9	L10
MS6-LRP-...	-	-	51.2	44	86	22	14	-
MS6-LRP-...-AS	64.4	38.8			93			
MS6-LRP-...-E11	-	-	51.8		110			
MS6-LRP-...-LD	-	-	51.2	-	86	-	-	139
MS6-LRP-...-LD-AS	64.4	38.8			95.5			148.5

Precision pressure regulators MS6-LRP, MS series

Technical data

Ordering data			
Adapter plate for EN pressure gauge 1/8, standard rotary knob with detent			
Size	Connection	Part No.	Type
Pressure regulation range 0.05 ... 0.7 bar, manually operated			
MS6	G1/4	538004	MS6-LRP-1/4-D2-A8 ¹⁾
	G3/8	538012	MS6-LRP-3/8-D2-A8 ¹⁾
	G1/2	538020	MS6-LRP-1/2-D2-A8 ¹⁾
Pressure regulation range 0.05 ... 2.5 bar, manually operated			
MS6	G1/4	538006	MS6-LRP-1/4-D4-A8 ¹⁾
	G3/8	538014	MS6-LRP-3/8-D4-A8 ¹⁾
	G1/2	538022	MS6-LRP-1/2-D4-A8 ¹⁾
Pressure regulation range 0.1 ... 4 bar, manually operated			
MS6	G1/4	538008	MS6-LRP-1/4-D5-A8 ¹⁾
	G3/8	538016	MS6-LRP-3/8-D5-A8 ¹⁾
	G1/2	538024	MS6-LRP-1/2-D5-A8 ¹⁾
Pressure regulation range 0.1 ... 12 bar, manually operated			
MS6	G1/4	538010	MS6-LRP-1/4-D7-A8 ¹⁾
	G3/8	538018	MS6-LRP-3/8-D7-A8 ¹⁾
	G1/2	538026	MS6-LRP-1/2-D7-A8 ¹⁾

1) Free of copper and PTFE

Precision pressure regulators MS6-LRP, MS series

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Ordering data – Modular products

Ordering table		Grid dimension	[mm]	62	Condi- tions	Code	Enter code
M	Module No.	538028					
	Series	Standard				MS	MS
	Size	6				6	6
	Function	Precision pressure regulator				-LRP	-LRP
	Pneumatic connection	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 $\frac{1}{4}$				-AGB	
		Connecting plate G $\frac{3}{8}$				-AGC	
		Connecting plate G $\frac{1}{2}$				-AGD	
		Connecting plate G $\frac{3}{4}$				-AGE	
		Connecting plate NPT $\frac{1}{4}$			1	-AQN	
		Connecting plate NPT $\frac{3}{8}$			1	-AQP	
		Connecting plate NPT $\frac{1}{2}$			1	-AQR	
		Connecting plate NPT $\frac{3}{4}$			1	-AQS	
		Pressure regulation range/ operation	0.05 ... 0.7 bar, manually operated				-D2
	0.05 ... 2.5 bar, manually operated				-D4		
	0.1 ... 4 bar, manually operated				-D5		
	0.1 ... 12 bar, manually operated				-D7		
	0.1 ... 12 bar, pneumatically actuated (pressure range determined by means of pilot regulator)			1 2	-PO		
	Pressure gauge alternatives	Cover plate				-VS	
		Adapter plate for EN pressure gauge $\frac{1}{8}$, without pressure gauge				-A8	
		Adapter plate for EN pressure gauge $\frac{1}{8}$, with precision pressure gauge				-A8M	
		Adapter plate for EN pressure gauge $\frac{1}{4}$, without pressure gauge				-A4	
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin			1 3	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin			1 3	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			1 3	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			1 3	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact			1 4	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact			1 4	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact			1 4	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact			1 4	-AD10	

1 $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, **AQN, AQP, AQR, AQS, PO, AD1 ... AD4, AD7 ... AD10, KD, E11, WPM**
Not with EU certification EX4

2 **PO** Not with rotary knob alternative LD
Not with security AS, E11
Not with mounting type WR

- M** Mandatory data
- O** Options

Transfer order code

538028 **MS** **6** - **LRP** - - -

Precision pressure regulators MS6-LRP, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	62	Condi- tions	Code	Enter code
<input type="checkbox"/>	Rotary knob alternative	Long rotary knob	<input type="checkbox"/> 5	-LD	
	Alternative mounting position	Rotary knob underneath	<input type="checkbox"/> 1 <input type="checkbox"/> 6	-KD	
	Security	Lockable via accessories		-AS	
		With integrated lock	<input type="checkbox"/> 1	-E11	
	Type of mounting	Mounting bracket with knurled nut for regulator head	<input type="checkbox"/> 7	-WR	
		Mounting bracket standard design	<input type="checkbox"/> 8	-WP	
		Mounting bracket for attaching the service units	<input type="checkbox"/> 1 <input type="checkbox"/> 8	-WPM	
		Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required		-WB	
	EU certification	II 2GD to EU Directive 94/9/EG		-EX4	
	UL certification	cULus, ordinary location for Canada and USA		-UL1	
	Flow direction	Flow direction from right to left (without pressure output, no pressure gauge)		-Z	

- AD1 ... AD4** Measuring range max. 10 bar.
Not with pressure regulation range/operation D2, D4
- AD7 ... AD10** Measuring range max. 10 bar.
Not with pressure regulation range/operation D2
- LD** Not with integrated lock E11

- KD** Not with mounting type WP
- WR** Not with rotary knob alternative LD
- WP, WPM** Only with connecting plate AGB, AGC, AGD, AGE, AQN, AQP, AQR or AQS

- M** Mandatory data
- O** Options

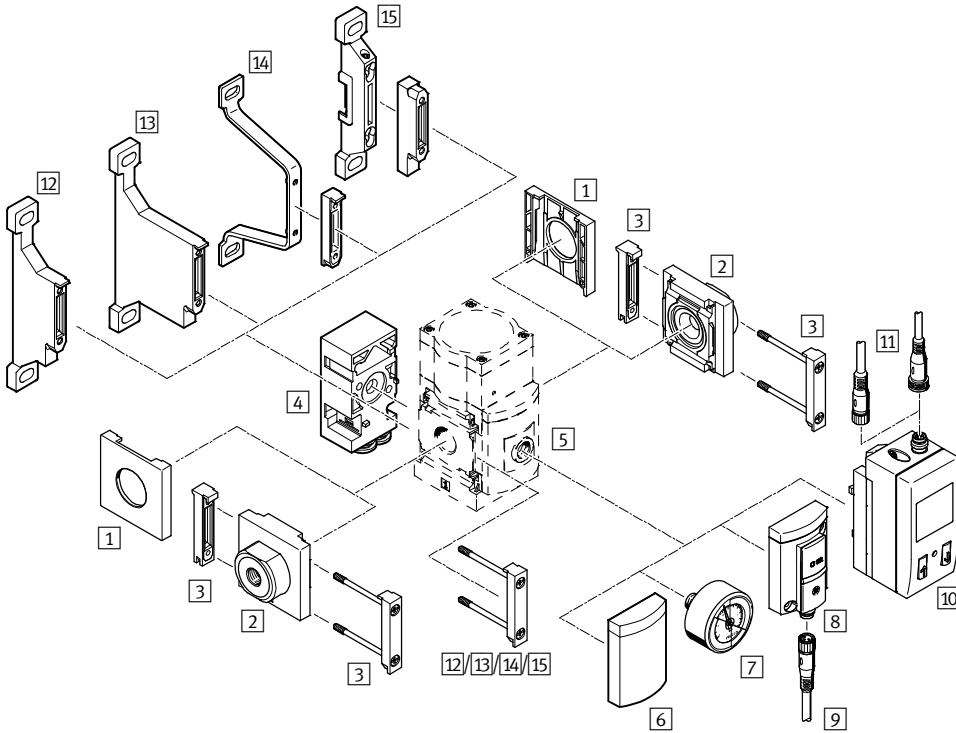
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Precision pressure regulators MS6-LRPB, MS series

Peripherals overview

Precision pressure regulator MS6-LRPB with pressure output to the rear



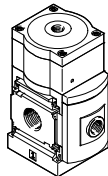
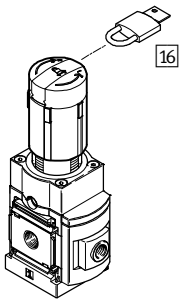
Note

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

Manually operated

Pneumatically actuated



Precision pressure regulators MS6-LRPB, MS series

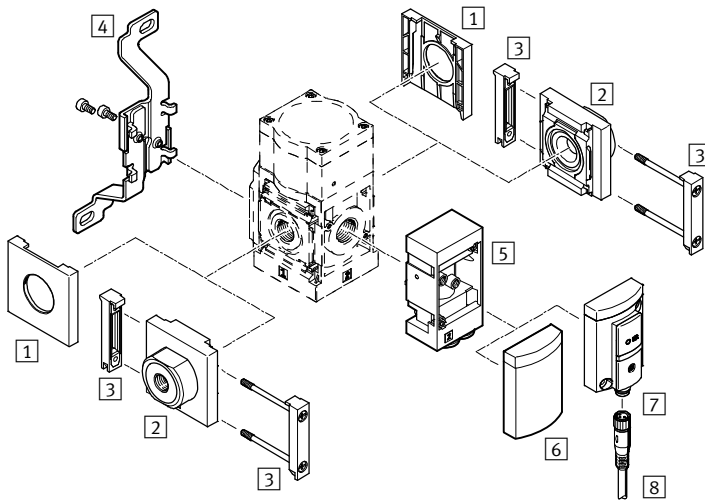
Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	■	-	■	-	ms6-end
2	Connecting plate-SET MS6-AG...	-	■	-	■	ms6-ag
3	Module connector MS6-MV	-	■	■	■	ms6-mv
4	Angled outlet block B...	■	■	■	■	64
5	Adapter plate for EN pressure gauge 1/8/1/4 A8/A4	■	■	■	■	64
6	Cover plate VS	■	■	■	■	64
7	Precision pressure gauge A8M/MAP	■	■	■	■	64, 95
8	Pressure sensor without display AD7 ... AD10	■	■	■	■	64
9	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
10	Pressure sensor with display AD1 ... AD4	■	■	■	■	64
11	Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4	■	■	■	■	95
12	Mounting bracket MS6-WP	-	■	■	■	ms6-wp
13	Mounting bracket MS6-WPB	-	■	■	■	ms6-wp
14	Mounting bracket MS6-WPE	-	■	■	■	ms6-wp
15	Mounting bracket MS6-WPM	-	■	■	■	ms6-wp
16	Padlock LRVS-D	■	■	■	■	95

Precision pressure regulators MS6-LRPB, MS series

Peripherals overview

Precision pressure regulator MS6-LRPB with pressure output to the front



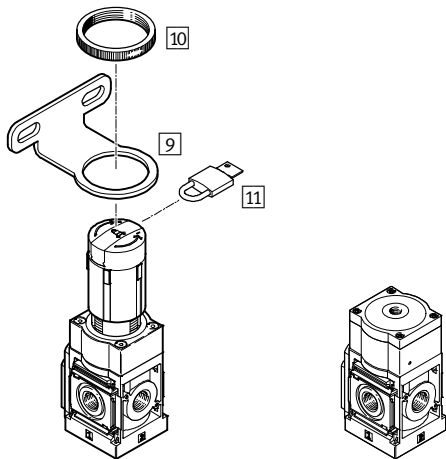
-  - Note

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

Manually operated

Pneumatically actuated



Precision pressure regulators MS6-LRPB, MS series

Peripherals overview

Mounting attachments and accessories						
		Individual device		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	■	-	■	-	ms6-end
2	Connecting plate-SET MS6-AG...	-	■	-	■	ms6-ag
3	Module connector MS6-MV	-	■	■	■	ms6-mv
4	Mounting bracket MS6-WB	■	■	-	-	ms6-wb
5	Angled outlet block B...	■	■	■	■	64
6	Cover plate VS	■	■	■	■	64
7	Pressure sensor without display AD7 ... AD10	■	■	■	■	64
8	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
9	Mounting bracket MS6-WR	■	■	-	-	ms6-wr
10	Knurled nut (included in scope of delivery) MS-LR	■	■	-	-	-
11	Padlock LRVS-D	■	■	■	■	95

Precision pressure regulators MS6-LRPB, MS series

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Type codes

MS 6 - LRPB - 1/2 - D7 - A8 - BD

Series	
MS	Standard service unit
Size	
6	Grid dimension 62 mm
Service function	
LRPB	Precision pressure regulator for manifold assembly
Connection size	
1/2	G1/2 thread
Pressure regulation range/operation	
D2	0.05 ... 0.7 bar, manually operated
D4	0.05 ... 2.5 bar, manually operated
D5	0.1 ... 4 bar, manually operated
D7	0.1 ... 12 bar, manually operated
Pressure gauge alternatives	
A8	Adapter plate for EN pressure gauge 1/8, without pressure gauge
Pressure output	
	Without angled outlet block
BD	Angled outlet block QS-8

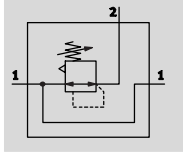
Further variants can be ordered using the modular system → 64

- Connecting plates
- Pressure regulation range/operation
- Pressure gauge alternatives
- Rotary knob alternatives
- Alternative mounting position
- Security
- Alternative pressure output
- Type of mounting
- EU certification
- UL certification
- Flow direction

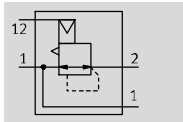
Precision pressure regulators MS6-LRPB, MS series

Technical data

Pressure regulation range/operation manually operated D2/D4/D5/D7



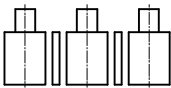
pneumatically actuated PO



- - Flow rate
1,600 ... 5,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
1 ... 14 bar
- - www.festo.com



Precision pressure regulator for manifold assembly:



The precision pressure regulator is suitable for sensitive applications requiring a hysteresis of 0.02 bar. The output pressure p2 can be set within

the pressure regulation range either manually using the rotary knob or pneumatically via a pilot pressure p12 by an external pilot regulator (if possible using a precision pressure regulator). When switching off the input pressure p1, the output pressure p2 is vented via connection 3 (secondary venting).

- Good regulation characteristics with low hysteresis and primary pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure regulation ranges
- Regulator lock for protecting the values against adjustment
- Four pressure regulation ranges: 0.05 ... 0.7 bar, 0.05 ... 2.5 bar, 0.1 ... 4 bar and 0.1 ... 12 bar
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data		MS6
Size		MS6
Pneumatic connection 1	Female thread	G $\frac{1}{2}$
	Connecting plate AG...	G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$ or G $\frac{3}{4}$
Pneumatic connection 2		G $\frac{1}{2}$
		QS-8 with angled outlet block BD
		QS-10 with angled outlet block BE
Pneumatic connection 3		G $\frac{1}{4}$
Pilot air connection 12 with variant PO		G $\frac{1}{8}$
Constructional design		Piloted precision diaphragm regulator with through pressure supply
Regulating function		Output pressure constant, via secondary venting
Type of mounting		Via accessories
		In-line installation
		Front panel mounting
Mounting position		Any
Regulator lock		Rotary knob with detent
		Rotary knob with detent, lockable via accessories
		Rotary knob with integrated lock
Pressure regulation range/operation ¹⁾	D2 [bar]	0.05 ... 0.7, manually operated
	D4 [bar]	0.05 ... 2.5, manually operated
	D5 [bar]	0.1 ... 4, manually operated
	D7 [bar]	0.1 ... 12, manually operated (0.1 ... 10 with pressure sensor AD... or with UL certification)
	PO [bar]	0.1 ... 12, pneumatically actuated (0.1 ... 10 with pressure sensor AD... or with UL certification)
Max. hysteresis	[bar]	0.02

1) Variant D2/D4/D5/D7: Supply pressure p1 \geq output pressure p2 + 1 bar. Variant PO: Output pressure p2 = pilot pressure p12 + max. 0.5 bar.
 - - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Precision pressure regulators MS6-LRPB, MS series

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Technical data

General technical data	
Size	MS6
Pressure indication	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
	G $\frac{1}{8}$ prepared
	G $\frac{1}{4}$ prepared

Flow rates				
Pressure regulation range	D2 (0.05 ... 0.7 bar)	D4 (0.05 ... 2.5 bar)	D5 (0.1 ... 4 bar)	D7/PO (0.1 ... 12 bar)
Standard nominal flow rate q _{nN} [l/min]				
q _{nN} 1 → 2	G $\frac{1}{2}$	1,600 ¹⁾	2,300 ²⁾	3,000 ³⁾
Secondary venting flow rate [l/min]				
q _n 2 → 3	≥ 220 ⁵⁾	≥ 450 ⁶⁾	≥ 650 ⁷⁾	≥ 900 ⁸⁾

- 1) Measured at p₁ = 10 bar and p₂ = 0.5 bar, Δp = 0.1 bar
 2) Measured at p₁ = 10 bar and p₂ = 1.5 bar, Δp = 0.1 bar
 3) Measured at p₁ = 10 bar and p₂ = 2.5 bar, Δp = 0.1 bar
 4) Measured at p₁ = 10 bar and p₂ = 6.0 bar, Δp = 0.1 bar

- 5) Measured at p₁ = 10 bar and p₂ = 0.7 bar, Δp₂ = 0.1 bar
 6) Measured at p₁ = 10 bar and p₂ = 2.5 bar, Δp₂ = 0.1 bar
 7) Measured at p₁ = 10 bar and p₂ = 4.0 bar, Δp₂ = 0.1 bar
 8) Measured at p₁ = 10 bar and p₂ = 6.0 bar, Δp₂ = 0.1 bar

Operating and environmental conditions	
Operating pressure [bar]	1 ... 14 (1 ... 10) ¹⁾
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
	Inert gases
Note on operating/pilot medium	Operation with lubricated medium not possible
Ambient temperature [°C]	-10 ... +60 (0 ... +50) ²⁾
Temperature of medium [°C]	-10 ... +60 (0 ... +50) ²⁾
Storage temperature [°C]	-10 ... +60
Corrosion resistance class CRC ³⁾	2
UL certification	cULus recognized (OL)

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

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)

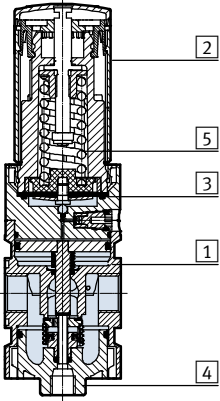
Weight [g]	
Precision pressure regulator	1,000
Precision pressure regulator with rotary knob with integrated lock E11	1,120

Precision pressure regulators MS6-LRPB, MS series

Technical data

Materials

Sectional view

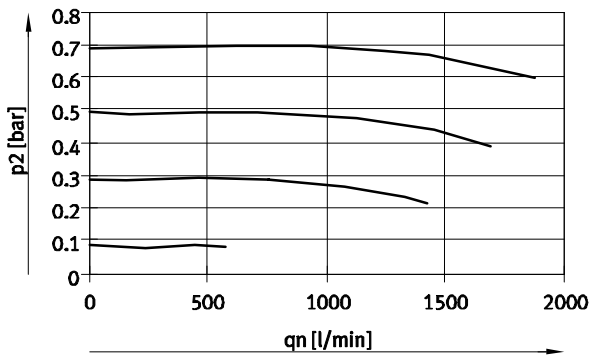


Precision pressure regulator (manifold assembly)

1	Housing	Die-cast aluminium
2	Rotary knob	PA/POM
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	NBR
4	Cap, bottom	PC
5	Springs	Steel
-	Seals	NBR
Note on materials		RoHS-compliant
		Free of copper and PTFE (not with variant A8M or AD...)

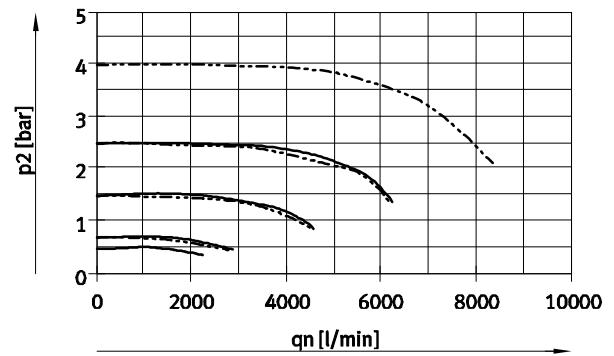
Standard flow rate q_n as a function of output pressure p_2 ($p_1 = 10$ bar)

MS6-LRPB-1/2-D2



— D2: 0.05...0.7 bar

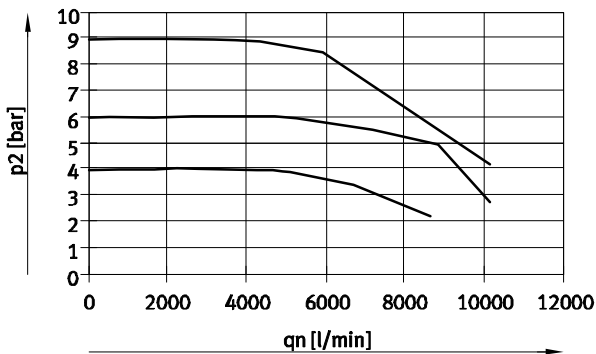
MS6-LRPB-1/2-D4/D5



— D4: 0.05...2.5 bar

- - - D5: 0.1...4 bar

MS6-LRPB-1/2-D7/PO



— D7/PO: 0.1...12 bar

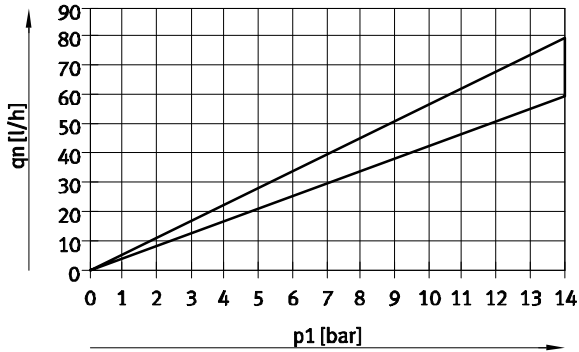
Precision pressure regulators MS6-LRPB, MS series

Technical data

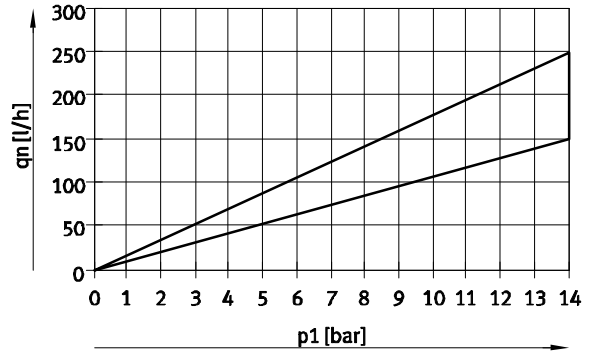
FESTO

Internal air consumption q_n as a function of input pressure p_1

MS6-LRPB-...-D2/D4



MS6-LRPB-...-D5/D7/PO

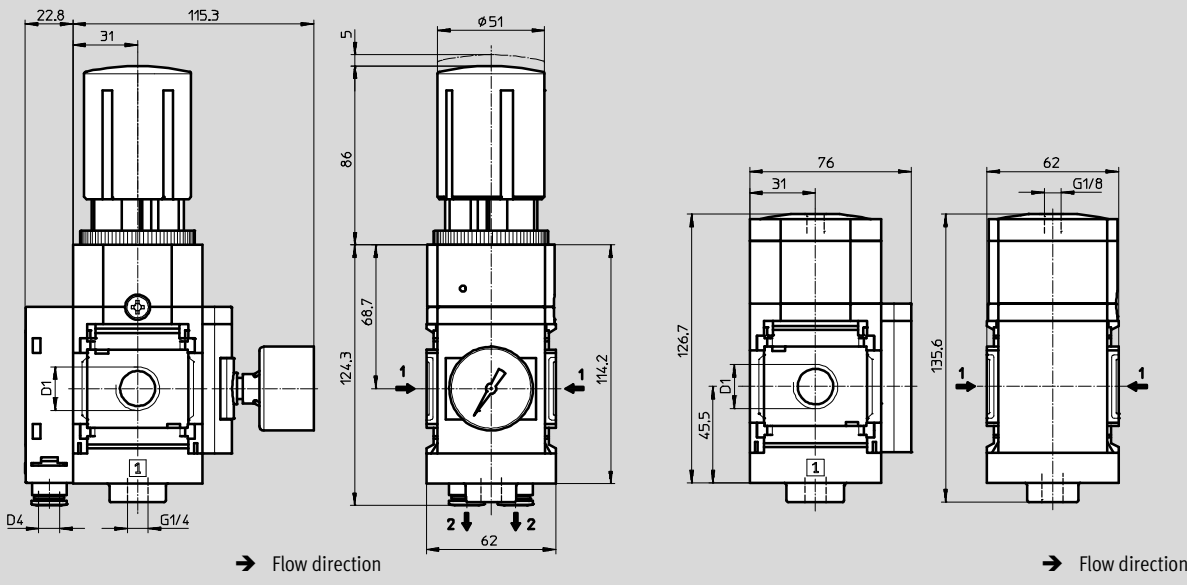


Dimensions

manually operated D2/D4/D5/D7,
with adapter plate A8M for EN pressure gauge $\frac{1}{8}$ as pressure gauge alternative,
with precision pressure gauge MAP, with angled outlet block BD/BE

pneumatically actuated PO,
with cover plate VS as pressure gauge alternative

Download CAD data → www.festo.com



Type	D1	D4
MS6-LRPB-1/2-D2/D4/D5/D7-A8M-BD	G $\frac{1}{2}$	QS-8
MS6-LRPB-1/2-D2/D4/D5/D7-A8M-BE		QS-10

Type	D1
MS6-LRPB-1/2-PO-VS	G $\frac{1}{2}$

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

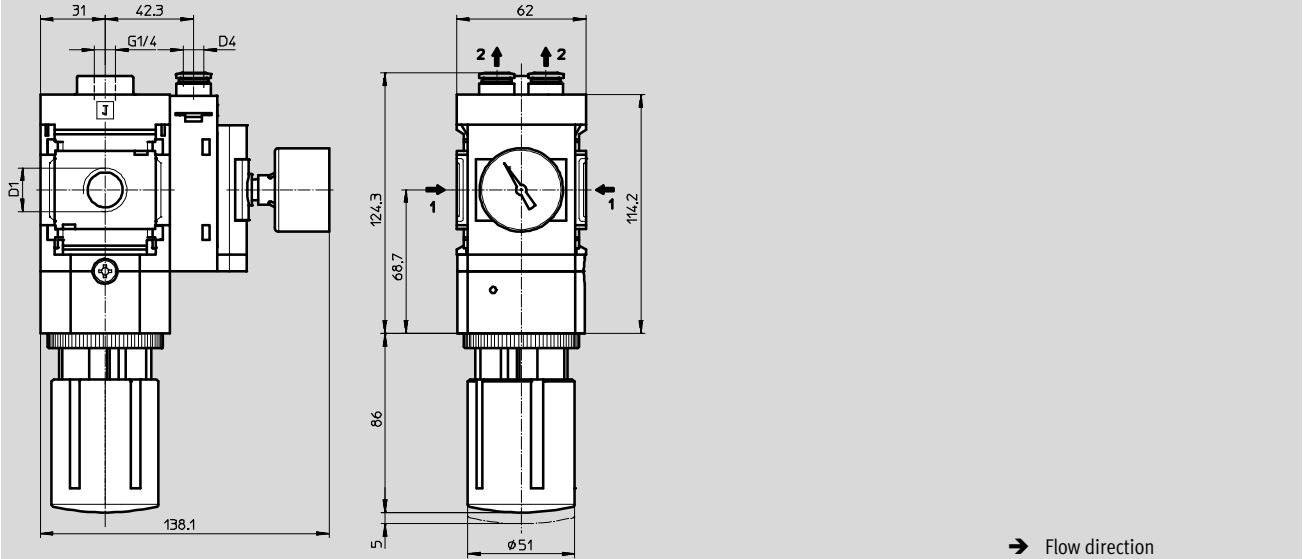
Precision pressure regulators MS6-LRPB, MS series

Technical data

Dimensions – Alternative mounting position

Download CAD data → www.festo.com

Rotary knob underneath KD, angled outlet block BD/BE



Type	D1	D4
MS6-LRPB-1/2-...-KD-BD	G1/2	QS-8
MS6-LRPB-1/2-...-KD-BE		QS-10

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

Precision pressure regulators MS6-LRPB, MS series



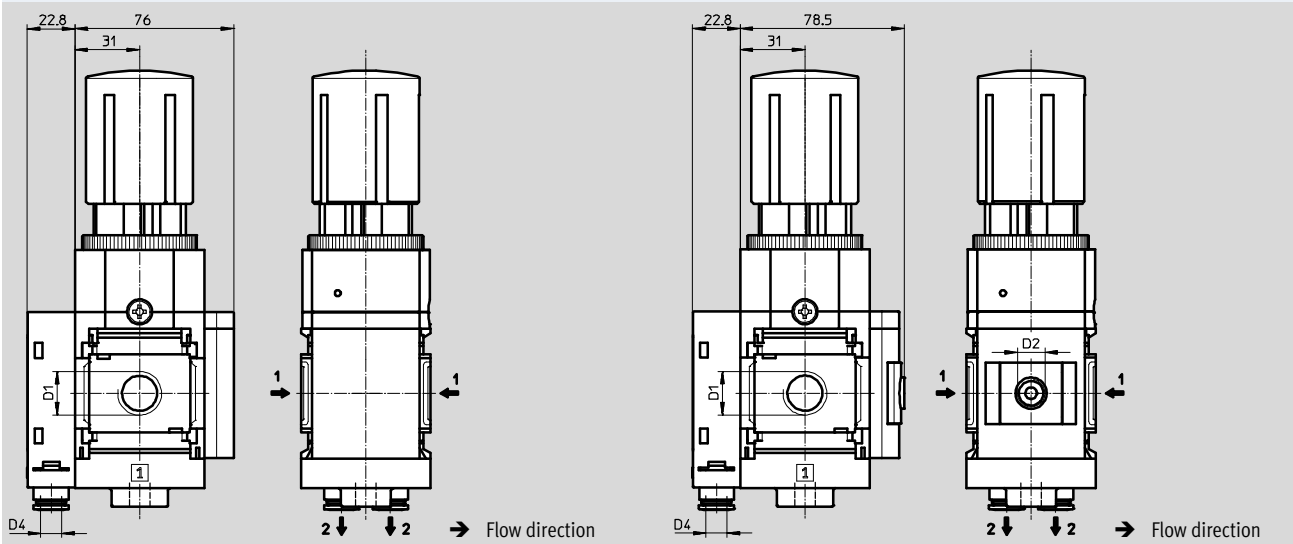
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Cover plate VS, angled outlet block BD/BE

Adapter plate A8/A4 for EN pressure gauge 1/8/1/4, without pressure gauge, angled outlet block BD/BE



Type	D1	D2	D4
MS6-LRPB-1/2-...-VS-BD	G1/2	-	QS-8
MS6-LRPB-1/2-...-VS-BE			QS-10
MS6-LRPB-1/2-...-A8-BD	G1/2	G1/8	QS-8
MS6-LRPB-1/2-...-A8-BE			QS-10
MS6-LRPB-1/2-...-A4-BD	G1/2	G1/4	QS-8
MS6-LRPB-1/2-...-A4-BE			QS-10

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

Precision pressure regulators MS6-LRPB, MS series

Technical data

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

Pressure sensor with LCD display AD1 ... AD4, angled outlet block BD/BE 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, angled outlet block BD/BE 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	D1	D3	D4	L1
MS6-LRPB-1/2-...-AD1/AD2-BD	G1/2	M8x1	QS-8	46.7
MS6-LRPB-1/2-...-AD1/AD2-BE			QS-10	
MS6-LRPB-1/2-...-AD3/AD4-BD	G1/2	M12x1	QS-8	55.8
MS6-LRPB-1/2-...-AD3/AD4-BE			QS-10	
MS6-LRPB-1/2-...-AD7/AD8/AD9/AD10-BD	G1/2	M8x1	QS-8	-
MS6-LRPB-1/2-...-AD7/AD8/AD9/AD10-BE			QS-10	

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

Precision pressure regulators MS6-LRPB, MS series

Technical data

Dimensions – Rotary knob Download CAD data → www.festo.com

For installation into control panel

<p>Standard rotary knob with detent</p>	<p>Standard rotary knob with detent, lockable via accessories AS</p>	<p>Rotary knob with integrated lock E11</p>
-----------------------------------------	----------------------------------------------------------------------	---------------------------------------------

1 Max. control panel thickness
2 Installation dimensions

<p>Long rotary knob with detent LD</p>	<p>Long rotary knob with detent, lockable via accessories LD-AS</p>
----------------------------------------	---------------------------------------------------------------------

3 For pressure adjustment: pull out telescopic rotary knob fully

Type	B4	B5	D2	D3 +1	L3	L8	L9	L10
MS6-LRPB-...	-	-	51.2	44	86	22	14	-
MS6-LRPB-...-AS	64.4	38.8			93			
MS6-LRPB-...-E11	-	-	51.8	-	110	-	-	-
MS6-LRPB-...-LD	-	-	51.2	-	86	-	-	139
MS6-LRPB-...-LD-AS	64.4	38.8			95.5			148.5

Precision pressure regulators MS6-LRPB, MS series

Technical data

Ordering data			
Adapter plate A8 for EN pressure gauge 1/8, standard rotary knob with detent, pressure output to rear without angled outlet block			
Size	Connection	Part No.	Type
Pressure regulation range 0.05 ... 2.5 bar, manually operated			
MS6	G1/2	534914	MS6-LRPB-1/2-D4-A8 ¹⁾
Pressure regulation range 0.1 ... 4 bar, manually operated			
MS6	G1/2	534917	MS6-LRPB-1/2-D5-A8 ¹⁾

1) Free of copper and PTFE

Ordering data			
Adapter plate A8 for EN pressure gauge 1/8, standard rotary knob with detent, pressure output to rear with angled outlet block QS-8			
Size	Connection	Part No.	Type
Pressure regulation range 0.05 ... 0.7 bar, manually operated			
MS6	G1/2	534865	MS6-LRPB-1/2-D2-A8-BD ¹⁾
Pressure regulation range 0.1 ... 12 bar, manually operated			
MS6	G1/2	534874	MS6-LRPB-1/2-D7-A8-BD ¹⁾

1) Free of copper and PTFE

Precision pressure regulators MS6-LRPB, MS series

Ordering data – Modular products

Ordering table		Grid dimension	[mm]	62	Condi- tions	Code	Enter code
M	Module No.	535007					
	Series	Standard				MS	MS
	Size	6				6	6
	Function	Precision pressure regulator for manifold assembly				-LRPB	-LRPB
	Pneumatic connection	Female thread G $\frac{1}{2}$			1	- $\frac{1}{2}$	
		Connecting plate G $\frac{1}{4}$				-AGB	
		Connecting plate G $\frac{3}{8}$				-AGC	
		Connecting plate G $\frac{1}{2}$				-AGD	
		Connecting plate G $\frac{3}{4}$				-AGE	
	Pressure regulation range/ operation	0.05 ... 0.7 bar, manually operated				-D2	
		0.05 ... 2.5 bar, manually operated				-D4	
		0.1 ... 4 bar, manually operated				-D5	
		0.1 ... 12 bar, manually operated				-D7	
		0.1 ... 12 bar, pneumatically actuated (pressure range determined by means of pilot regulator)			1 2	-PO	
	Pressure gauge alternatives	Cover plate			3	-VS	
		Adapter plate for EN pressure gauge $\frac{1}{8}$, without pressure gauge			4	-A8	
		Adapter plate for EN pressure gauge $\frac{1}{8}$, with precision pressure gauge			4	-A8M	
		Adapter plate for EN pressure gauge $\frac{1}{4}$, without pressure gauge			4	-A4	
		Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin			1 4 5	-AD1	
		Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin			1 4 5	-AD2	
		Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA			1 4 5	-AD3	
		Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA			1 4 5	-AD4	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact			1 5 6	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact			1 5 6	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact			1 5 6	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact			1 5 6	-AD10	

1 $\frac{1}{2}$, **PO**, **AD1 ... AD4**, **AD7 ... AD10**, **KD**, **E11**, **WPM**

2 **PO**
Not with EU certification EX4
Not with long rotary knob LD
Not with security AS, E11
Not with mounting type WR

3 **VS**
Must be selected with flow direction Z without alternative mounting position KD or
without alternative pressure output BD, BE
Must be selected with alternative mounting position KD without flow direction Z or
without alternative pressure output BD, BE

4 **A8**, **A8M**, **A4**, **AD1 ... AD4**

In combination with flow direction Z only with alternative mounting position KD

5 **AD1 ... AD4**, **AD7 ... AD10**

Measuring range max. 10 bar
Not with pressure regulation range/operation D2, D4

6 **AD7 ... AD10** In combination with flow direction Z only with alternative pressure output BD, BE or
In combination with flow direction Z only with alternative mounting position KD

M Mandatory data

O Options

Transfer order code

535007 **MS** **6** - **LRPB** - - -

Precision pressure regulators MS6-LRPB, MS series

Ordering data – Modular products

Ordering table				Condi- tions	Code	Enter code
Grid dimension	[mm]	62				
0	Rotary knob alternative	Long rotary knob	7		-LD	
	Alternative mounting position	Rotary knob underneath	1 8		-KD	
	Security	Lockable via accessories			-AS	
		With integrated lock	1		-E11	
	Alternative pressure output (p max = 10 bar)	Angled outlet block QS-8			-BD	
		Angled outlet block QS-10			-BE	
	Type of mounting	Mounting bracket with knurled nut for regulator head	9 10		-WR	
		Mounting bracket standard design	11 12		-WP	
		Mounting bracket for attaching the service units	1 9 11		-WPM	
		Mounting bracket for large wall gap	11 13		-WPB	
		Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required	9		-WB	
	EU certification	II 2GD to EU Directive 94/9/EG			-EX4	
	UL certification	cULus, ordinary location for Canada and USA			-UL1	
	Flow direction	Pressure output to front (without pressure output, no pressure gauge)			-Z	

- | | | | |
|-----------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 7 LD | Not with integrated lock E11 | 11 WP, WPM, WPB | Only with connecting plate AGB, AGC, AGD or AGE |
| 8 KD | In combination with pressure gauge alternatives A8, A4, AD1 ... AD4, AD7 ... AD10 only with flow direction Z | 12 WP | Not with alternative mounting position KD
Either only with flow direction Z
or only with alternative pressure output BD, BE |
| 9 WR, WB, WPM | Only with flow direction Z
Not with alternative mounting position KD | 13 WPB | Not with alternative mounting position KD
Not with alternative pressure output BD, BE
Not with flow direction Z |
| 10 WR | Only with flow direction Z
Not with long rotary knob LD | | |

- M** Mandatory data
- 0** Options

Transfer order code

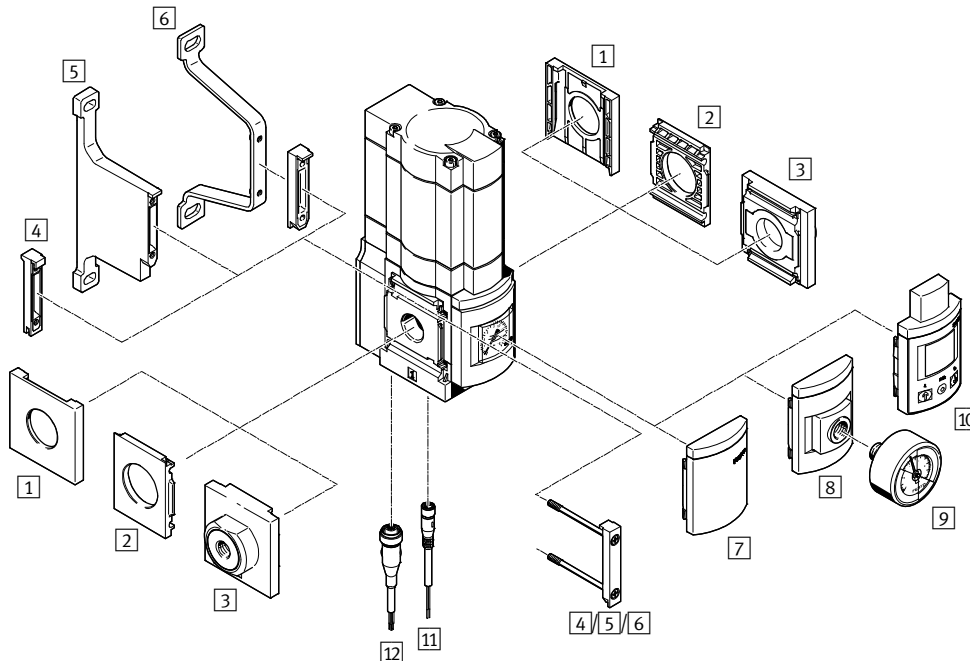
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Electrical pressure regulators MS6-LRE, MS series

Peripherals overview



Electrical pressure regulators MS6-LRE



Note

Additional accessories:

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

Mounting attachments and accessories						
		Individual unit		Combination		→ Page/Internet
		Without connecting plate	With connecting plate	Without connecting plate	With connecting plate	
1	Cover cap MS6-END	–	–	■	–	ms6-end
2	Mounting plate MS6-AEND	■ ¹⁾	–	■ ²⁾	–	ms6-aend
3	Connecting plate-SET MS6-AG...	–	■ ¹⁾	–	■ ²⁾	ms6-ag
	Connecting plate-SET MS6-AQ...	–	■ ¹⁾	–	■ ²⁾	ms6-aq
4	Module connector MS6-MV	–	–	■	■	ms6-mv
5	Mounting bracket MS6-WPB	■	■	■	■	ms6-wpb
6	Mounting bracket MS6-WPE	■	■	■	■	ms6-wpe
7	Cover plate VS	■	■	■	■	73
8	Adapter plate for EN pressure gauge 1/4 A4	■	■	■	■	73
9	Pressure gauge MA	■	■	■	■	95
10	Control unit with display OP	■	■	■	■	73
11	Connecting cable NEBU-M8...-LE3	■	■	■	■	95
12	Connecting cable NEBU-M12...-LE5	■	■	■	■	95

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

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

Electrical pressure regulators MS6-LRE, MS series

Type codes

	MS	6	-	LRE	-	1/4	-	D6	-	PU
Series										
MS	Standard service unit									
Size										
6	Grid dimension 62 mm									
Service function										
LRE	Electrical pressure regulator									
Pneumatic connection										
1/4	Thread G1/4									
1/2	Thread G1/2									
Pressure regulation range										
D6	Pressure regulation range 0.3 ... 7 bar									
D7	Pressure regulation range 0.5 ... 12 bar									
Electrically controlled pressure output (integrated pressure sensor with electrical output)										
	None									
PU	Plug, M8, 3-pin, V out									

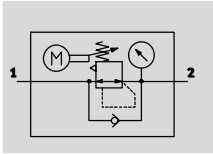
Further variants can be ordered using the modular system → 73

- Female thread
- Connecting plates
- Pressure regulation range
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Electrically controlled pressure output
- Sensor cables
- Supply cables
- Type of mounting
- UL certification
- Flow direction

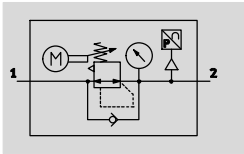
Electrical pressure regulators MS6-LRE, MS series




Technical data

with pressure gauge




with pressure gauge and integrated pressure sensor



-  - Flow rate
2,200 ... 7,500 l/min
-  - Temperature range
0 ... +50 °C
-  - Operating pressure
0.8 ... 20 bar




-  - Note
The electrical pressure regulator is not suitable for the set-up of closed control loops.

The electrical pressure regulator maintains incoming compressed air at the set output pressure. It also maintains a constant output pressure independent of pressure fluctuations and air consumption.
The output pressure is set indirectly via an integrated electrical drive unit. The drive unit can be operated either with digital inputs via the M12 plug or

using the optional control and display unit.
The direction of rotation of the drive unit is thus pre-set, which makes adjustment of the output pressure in the rising or falling direction possible.
In the event of a power failure, the last drive unit or output pressure setting is saved. Pneumatic pressure regulation continues to function.

- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Optional control unit with display
- Optional integrated pressure sensor with electrical output
- Constant output pressure even in the event of a power failure thanks to the fail-safe function
- Available with or without secondary venting

General technical data		
Size	MS6	
Pneumatic connection 1, 2	Female thread	G ¹ / ₄ , G ³ / ₈ or G ¹ / ₂
	Connecting plate AG...	G ¹ / ₄ , G ³ / ₈ , G ¹ / ₂ or G ³ / ₄
	Connecting plate AQ...	NPT ¹ / ₄ , NPT ³ / ₈ , NPT ¹ / ₂ or NPT ³ / ₄
Design	Electrically adjustable pressure regulator	
Regulating function	Output pressure constant, with primary pressure compensation, with/without secondary venting	
Type of mounting	Via accessories	
	In-line installation	
Assembly position	Any, preferably vertical	
Pressure regulation range	D5 [bar]	0.3 ... 4
	D6 [bar]	0.3 ... 7
	D7 [bar]	0.5 ... 12
	D8 [bar]	0.5 ... 16
Max. hysteresis	[bar]	0.25
Pressure indicator	With pressure gauge	
	With control unit	

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

Electrical pressure regulators MS6-LRE, MS series

Technical data

Standard nominal flow rate q_{N1} [l/min]				
Pneumatic connection		G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$
Pressure regulation range	D5	2,400 ²⁾	5,500 ²⁾	7,500 ²⁾
	D6	3,000	5,800	6,500
	D7	2,700	4,500	5,500
	D8	2,200	4,000	4,500

- 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

Electrical data					
		Without integrated pressure sensor		With integrated pressure sensor	
				PI (I out)	PU (V out)
Analogue output	[V]	-		-	0 ... 10
	[mA]	-		4 ... 20	-
Analogue outputs, absolute accuracy at 25 °C	[%]	-		±3	±3
Cable interface	Inputs	Plug M12x1, 5-pin			
	Outputs	-		Plug M8x1, 3-pin	
Design of inputs	To IEC 61131-2, no electrical isolation				
Nominal operating voltage	[V DC]	24			
Permissible voltage fluctuations	[%]	±10			
Nominal current consumption	[A]	Max. 1			
Max. current consumption	[A]	3.5			
Duration of actuation at 25°C	[s]	Max. 90 ¹⁾			
Protection against short circuit	For all electrical connections				
Protection class	IP65				

- 1) In order to prevent the drive from overheating, a control/pause ratio of 1:3 must be observed.

Operating and environmental conditions	
Operating pressure	[bar] 0.8 ... 20 (0.8 ... 10) ¹⁾
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
	Inert gases
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature	[°C] 0 ... +50
Temperature of medium	[°C] 0 ... +50
Storage temperature	[°C] -10 ... +50
Corrosion resistance class CRC ²⁾	2
CE symbol (declaration of conformance)	In accordance with EU EMC Directive ³⁾
UL certification	cULus recognized (OL)

- 1) Value in brackets applies to MS6-LRE 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.
 3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp → User documentation.
 If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Electrical pressure regulators MS6-LRE, MS series

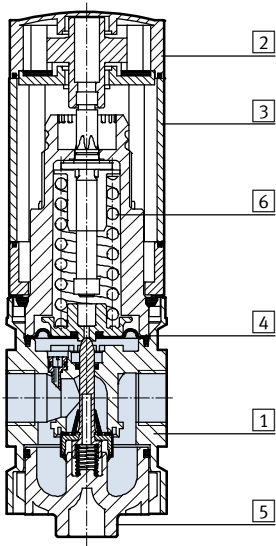
Technical data

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Weights [g]	
Electrical pressure regulator	1,280

Materials

Sectional view

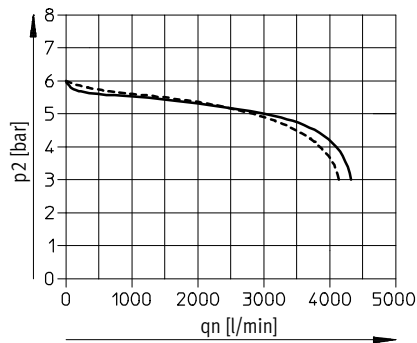


Electrical pressure regulator		
1	Body	Die-cast aluminium
2	Drive housing	PA, reinforced
3	Profile housing	Wrought aluminium alloy
4	Diaphragm	NBR
5	Bottom cap	PET, fibreglass reinforced
6	Springs	Steel
-	Display and control unit	PA
-	Seals	NBR

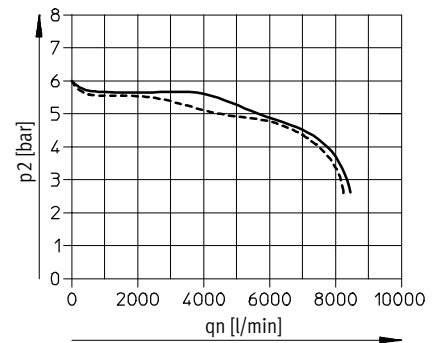
Standard flow rate q_n as a function of output pressure p_2

Input pressure $p_1 = 10$ bar

MS6-LRE-1/4

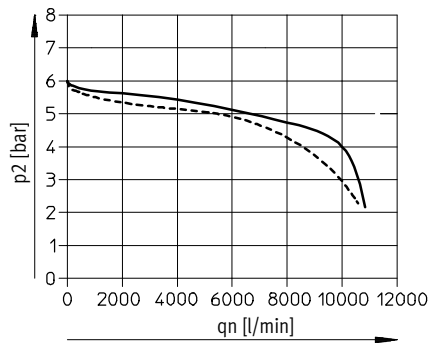


MS6-LRE-3/8



MS6-LRE-1/2

Input pressure $p_1 = 10$ bar

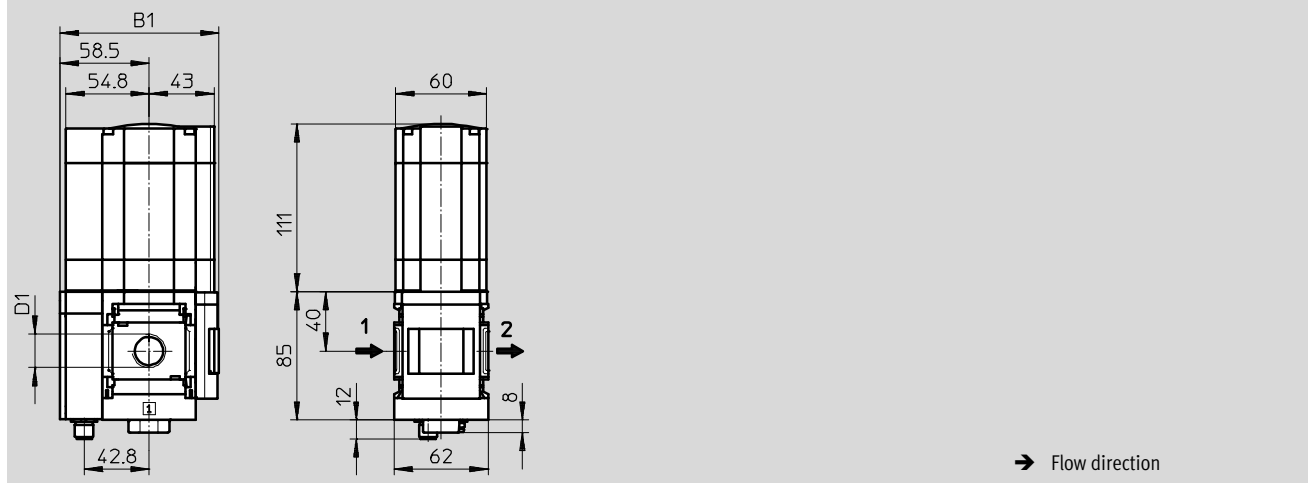


Electrical pressure regulators MS6-LRE, MS series

Technical data

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

With pressure gauge, display unit [bar]



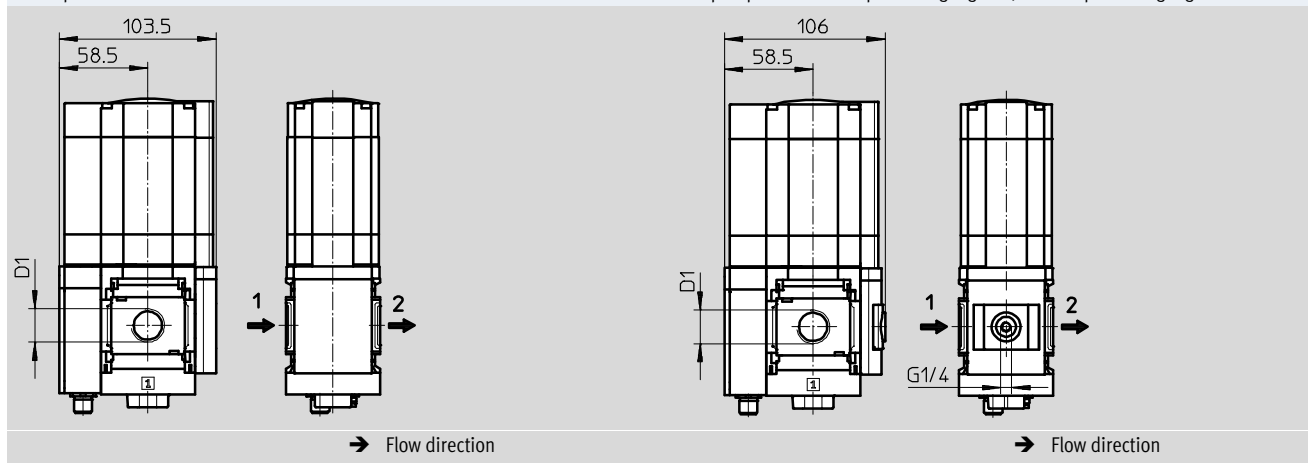
Type	B1 Pressure gauge		D1
	Standard scale	Red-green scale	
MS6-LRE-1/4	104.5	106	G1/4
MS6-LRE-3/8			G3/8
MS6-LRE-1/2			G1/2

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

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

Cover plate VS

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



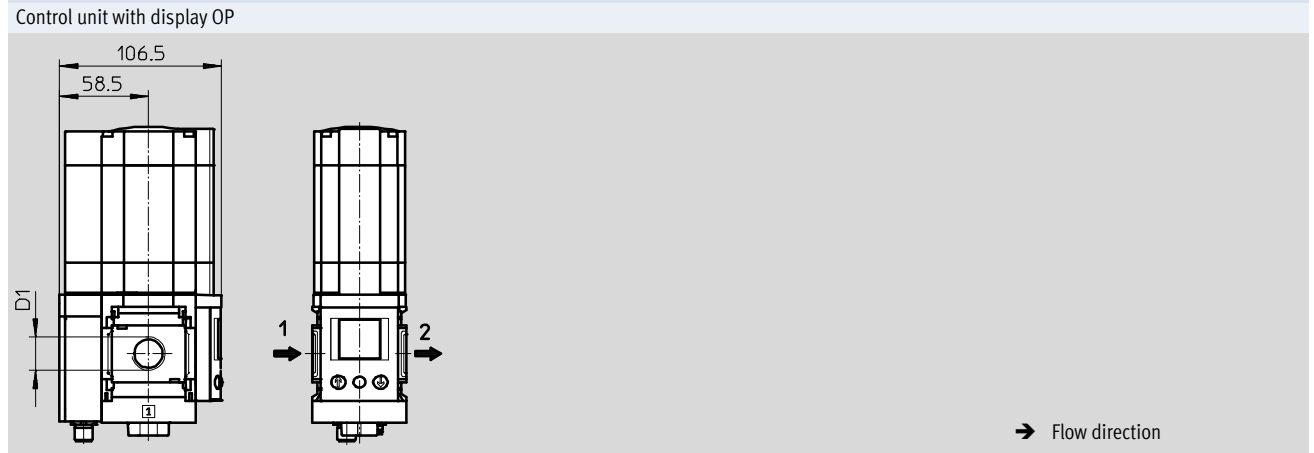
Type	D1
MS6-LRE-1/4	G1/4
MS6-LRE-3/8	G3/8
MS6-LRE-1/2	G1/2

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

Electrical pressure regulators MS6-LRE, MS series

Technical data

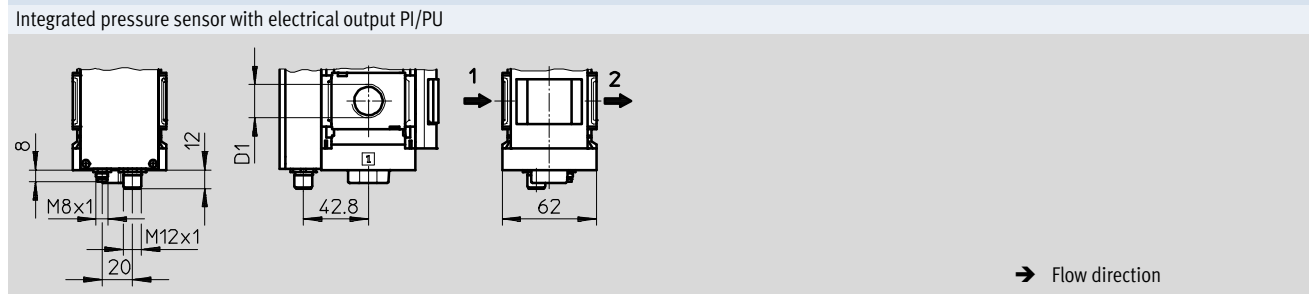
Dimensions – Pressure gauge alternatives Download CAD data → www.festo.com



Type	D1
MS6-LRE-1/4	G1/4
MS6-LRE-3/8	G3/8
MS6-LRE-1/2	G1/2

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

Dimensions – Electrically controlled pressure output Download CAD data → www.festo.com



Ordering data					
Pressure gauge					
Size	Connection	Pressure regulation range 0.3... 7 bar		Pressure regulation range 0.5... 12 bar	
		Part No.	Type	Part No.	Type
Standard					
MS6	G1/4	-	-	535364	MS6-LRE-1/4-D7
	G1/2	535348	MS6-LRE-1/2-D6	-	-
Electrically controlled pressure output (integrated pressure sensor with voltage output), M8x1 plug, 3-pin					
MS6	G1/4	535362	MS6-LRE-1/4-D6-PU	-	-

Electrical pressure regulators MS6-LRE, MS series

Ordering data – Modular products

FESTO

Ordering table						
Grid dimension	[mm]	62	Condi- tions	Code	Enter code	
M	Module No.	535191				
	Series	Standard		MS	MS	
	Size	6		6	6	
	Function	Electrical pressure regulator		-LRE	-LRE	
	Pneumatic connection	Female thread G $\frac{1}{4}$		- $\frac{1}{4}$		
		Female thread G $\frac{3}{8}$		- $\frac{3}{8}$		
		Female thread G $\frac{1}{2}$		- $\frac{1}{2}$		
		Connecting plate G $\frac{1}{4}$		-AGB		
		Connecting plate G $\frac{3}{8}$		-AGC		
		Connecting plate G $\frac{1}{2}$		-AGD		
		Connecting plate G $\frac{3}{4}$		-AGE		
		Connecting plate NPT $\frac{1}{4}$		-AQN		
		Connecting plate NPT $\frac{3}{8}$		-AQP		
		Connecting plate NPT $\frac{1}{2}$		-AQR		
		Connecting plate NPT $\frac{3}{4}$		-AQS		
		Pressure regulation range	0.3 ... 4 bar		-D5	
			0.3 ... 7 bar		-D6	
	0.5 ... 12 bar			-D7		
	0.5 ... 16 bar			-D8		
O	Pressure gauge alternatives	Cover plate		-VS		
		Adapter plate for EN pressure gauge $\frac{1}{4}$, without pressure gauge		-A4		
		Integrated pressure gauge, red-green scale		-RG		
		Control unit with display	1	-OP		
	Alternative pressure gauge scale	psi	2	-PSI		
		MPa	2	-MPA		
	Secondary venting	Without secondary venting		-OS		
	Electrically controlled pressure output	Plug, M8, 3-pin, analogue current output I _{out}		-PI		
		Plug, M8, 3-pin, analogue voltage output V _{out}		-PU		
	Sensor cables	Plug socket, M8, with cable, 2.5 m	1	-SK2		
		Plug socket, M8, with cable, 5 m	1	-SK5		
	Supply cable	Plug socket, M12, with cable, 2.5 m		-VK2		
		Plug socket, M12, with cable, 5 m		-VK5		
	Type of mounting	Mounting bracket for large wall gap at low loads	3	-WBE		
		Mounting bracket for large wall gap	4	-WPB		
	UL certification	cULus, ordinary location for Canada and USA		-UL1		
	Flow direction	Flow direction from right to left		-Z		

- 1 **OP, SK2, SK5** Only with electrical pressure output PI, PU
- 2 **PSI, MPA** Not with pressure gauge alternatives VS, A4, RG, OP
- 3 **WBE** Only with female thread $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$
- 4 **WPB** Only with connecting plate AGB, AGC, AGD, AGE, AQN, AQP, AQR or AQS

- M Mandatory data
- O Options

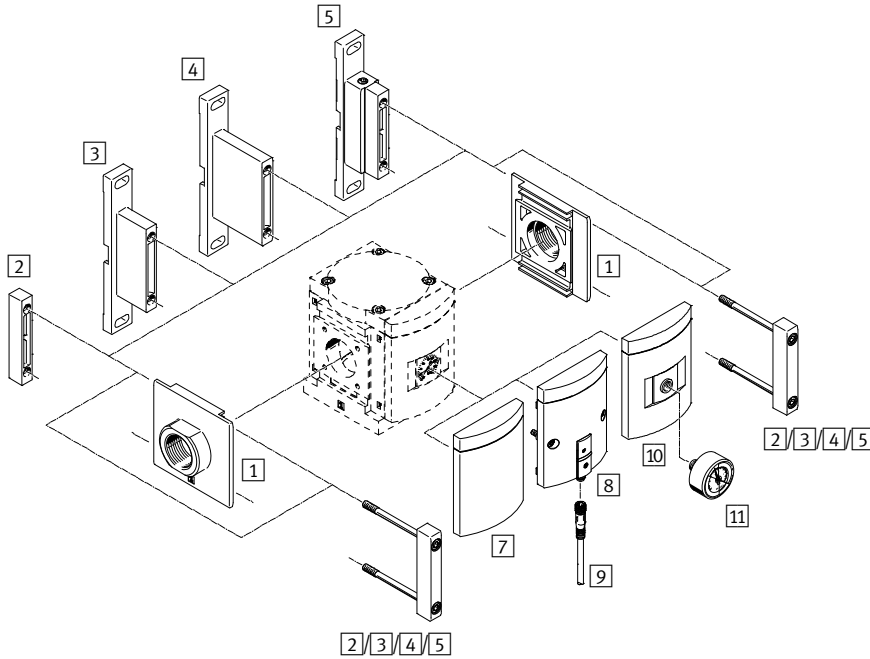
Transfer order code


535191 MS 6 - LRE - - - - - - - - - - - - - -

Pressure regulators MS9-LR, MS series

Peripherals overview

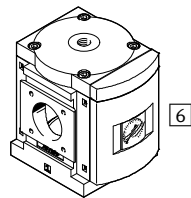
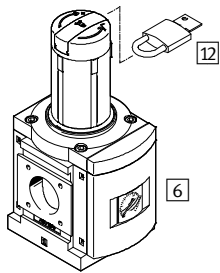
Pressure regulator MS9-LR



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

manually operated

pneumatically actuated



Pressure regulators MS9-LR, MS series

Peripherals overview

Mounting attachments and accessories					
		Individual unit		Combination Module without connect- ing thread, without connecting plate G	→ Page/ Internet
		With female thread ¾ or 1	With connecting plate AG...		
			Without EU certification EX4	With EU certification EX4	
1	Connecting plate-SET 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	■	■	■	84
7	Cover plate VS	■	■	■	84
8	Pressure sensor without display AD7 ... AD10	■	■	-	84
9	Connecting cable NEBU-M8...-LE3	■	■	-	95
10	Adapter plate for EN pressure gauge ¼ A4	■	■	■	84
11	Pressure gauge MA	■	■	■	95
12	Padlock LRVS-D	■	■	■	95

Pressure regulators MS9-LR, MS series

Type codes

FESTO

		MS	9	-	LR	-	G	-	D5	-	DI	-	AG	-	BAR	-	AS
Series																	
MS	Standard service unit																
Size																	
9	Grid dimension 90 mm																
Service function																	
LR	Pressure regulator																
Connection size																	
G	Module without connecting thread, without connecting plate																
Pressure regulation range/operation																	
D5	0.5 ... 4 bar, manually operated																
D6	0.5 ... 7 bar, manually operated																
D7	0.5 ... 12 bar, manually operated																
Alternative actuation principle																	
	Piloted																
DI	Directly actuated (only with pressure regulation range D5/D6)																
Pressure gauge																	
AG	MS pressure gauge																
Pressure gauge scale																	
BAR	Bar																
Security																	
AS	Rotary knob with detent, can be locked using accessories																

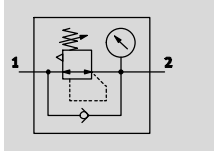
Additional variants can be ordered using the modular product system → 84

- Connecting plates
- Pressure regulation range/operation
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Security lock
- Type of mounting
- EU certification
- UL certification
- Flow direction

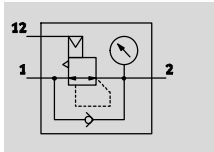
Pressure regulators MS9-LR, MS series




Technical data

Pressure regulation range/operation D5/D6/D7/D8, manually operated



P0, pneumatically actuated



-  Flow rate
6,500 ... 33,000 l/min
-  Temperature range
-10 ... +60 °C
-  Operating pressure
1 ... 20 bar



The pressure regulator maintains an essentially constant output pressure p2 independent of pressure fluctuations in the system and air consumption. The output pressure p2 can be set within the pressure regulation range either manually using the rotary

knob or pneumatically via a pilot pressure p12 by an external pilot regulator. When switching off the operating pressure, the output pressure p2 is vented via connection 3 (secondary venting).

- Good regulation characteristics with low hysteresis and primary pressure compensation
- High flow rate with minimal pressure drop
- Piloted or directly actuated diaphragm regulator
- Four pressure regulation ranges: 0.5 ... 4 bar, 0.5 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Available with or without secondary venting
- Actuator lock to protect set values against adjustment
- Return flow option for exhausting from output port 2 to output port 1 already integrated
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

General technical data		
Pneumatic connection 1, 2		
	Female thread	G3/4 or G1
	Connecting plate AG...	G1/2, G3/4, G1, G1 1/4 or G1 1/2
	Module without connecting thread/plate G	-
Pilot air connection 12 with pressure regulation range/operation P0		
		G1/4
Design		
		Piloted diaphragm regulator
		Directly actuated 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
		Front panel mounting
Mounting position		
		Any ¹⁾
Actuation security		
		Rotary knob with detent
		Rotary knob with detent, can be locked using accessories
		Rotary knob with integrated lock
Pressure regulation range/operation	D5 [bar]	0.5 ... 4, manually operated
	D6 [bar]	0.5 ... 7, manually operated
	D7 [bar]	0.5 ... 12, manually operated (0.5 ... 10 with pressure sensor variant AD...)
	D8 [bar]	0.5 ... 16, manually operated (0.5 ... 10 with pressure sensor variant AD...)
	P0 [bar]	0.5 ... 16, pneumatically actuated ²⁾
Max. pressure hysteresis [bar]		0.4

1) The pressure regulator must be mounted vertically when combined with a pressure sensor as condensate must not collect in the pressure sensor.

2) Output pressure p2 corresponds roughly to the applied pilot pressure p12.

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

Pressure regulators MS9-LR, MS series

FESTO

Technical data

General technical data	
Pressure display	Via pressure sensor for displaying output pressure via operational status indicator and electrical output
	Via pressure gauge for displaying output pressure
	Via pressure gauge with red/green scale for displaying output pressure
	G $\frac{3}{4}$ prepared

Standard nominal flow rate $q_{nN}^{1)2)}$ [l/min]					
Design		Piloted diaphragm regulator		Directly actuated diaphragm regulator DI	
Pneumatic connection		G $\frac{3}{4}$	G1	G $\frac{3}{4}$	G1
Pressure regulation range	D5	19,000 ³⁾	26,000 ³⁾	14,000 ³⁾	20,000 ³⁾
	D6	17,000	20,000	14,000	11,000
	D7	17,000	20,000	–	–
	D8	17,000	20,000	–	–
	P0	21,000	25,000	–	–

1) All values $\pm 15\%$

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

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

Operating and environmental conditions		
EU certification	–	EX4
Operating pressure [bar]	1 ... 20	
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)	Operation with lubricated medium not possible
Ambient temperature [°C]	–10 ... +60 (0 ... +50) ¹⁾	
Temperature of medium [°C]	–10 ... +60 (0 ... +50) ¹⁾	
Storage temperature [°C]	–10 ... +60	
Corrosion resistance class CRC ²⁾	2	
UL certification	cULus recognized (OL)	

1) Value in brackets applies to MS9-LR with pressure sensor AD...

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
CE mark (see declaration of conformity)	To EU Explosion Protection Directive (ATEX)

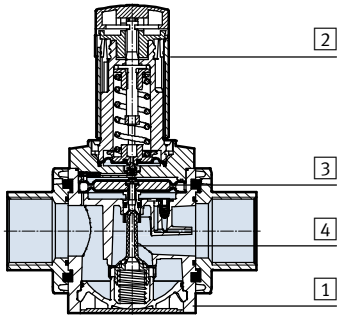
Pressure regulators MS9-LR, MS series

Technical data

Weight [g]	
Pressure regulator	1,400
Pressure regulator with rotary knob with integrated lock E11	1,700

Materials

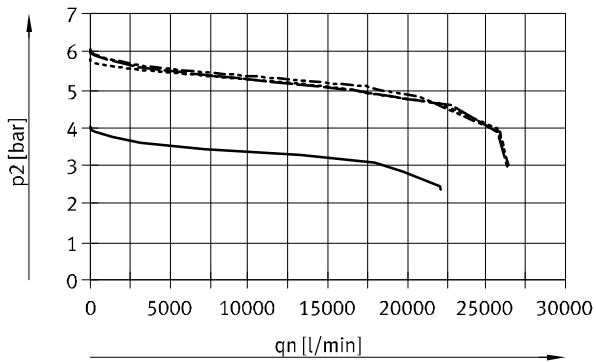
Sectional view



Pressure regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	PA
	Rotary knob with integrated lock E11	Aluminium
3	Diaphragm	NBR
4	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

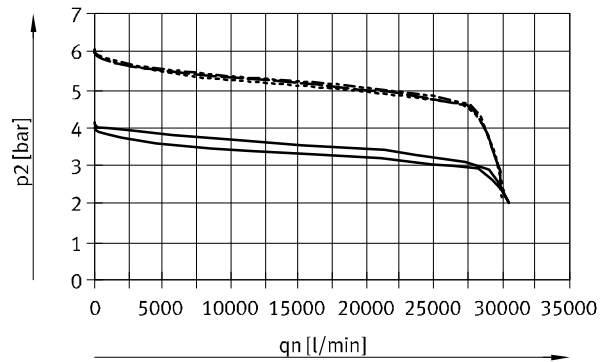
Standard flow rate q_n as a function of output pressure p_2 at operating pressure $p_1 = 10$ bar

Piloted diaphragm regulator
Pneumatic connection $G\frac{3}{4}$



— D5: 0.5 ... 4 bar - - - - D7: 0.5 ... 12 bar
 - - - - D6: 0.5 ... 7 bar ······ D8: 0.5 ... 16 bar

Pneumatic connection G1



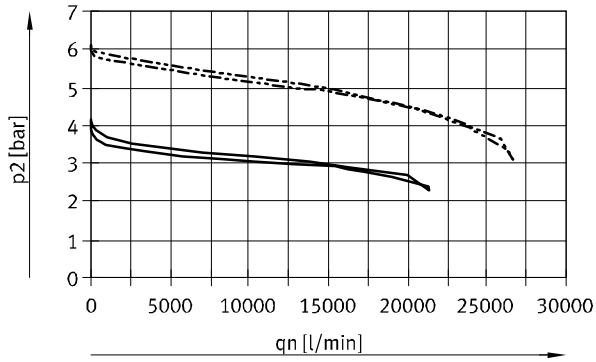
Pressure regulators MS9-LR, MS series

Technical data

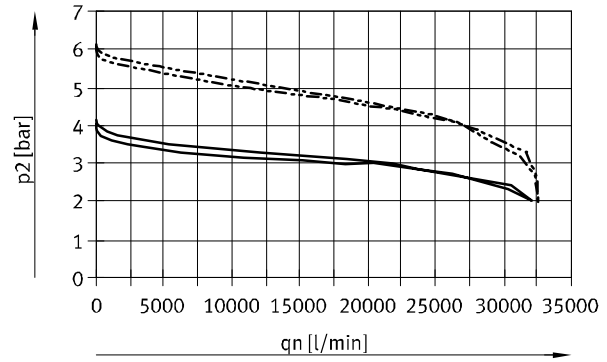
Standard flow rate q_n as a function of output pressure p_2 at operating pressure $p_1 = 10$ bar

Directly actuated diaphragm regulator DI

Pneumatic connection G $\frac{3}{4}$



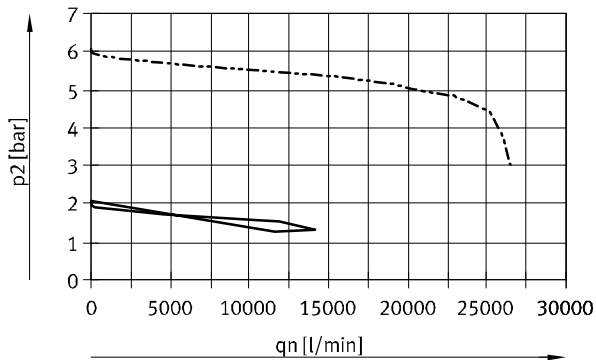
Pneumatic connection G1



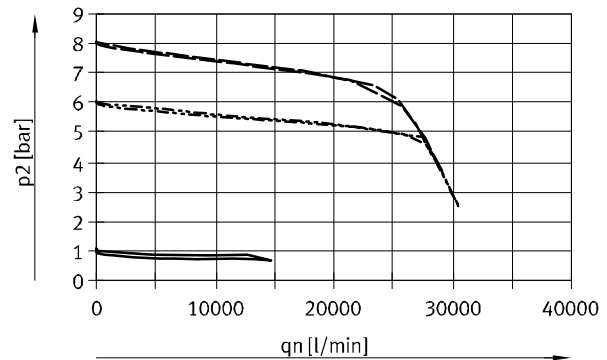
— D5: 0.5 ... 4 bar
 - - - D6: 0.5 ... 7 bar

External pilot regulator, pressure regulation range/operation PO

Pneumatic connection G $\frac{3}{4}$



Pneumatic connection G1



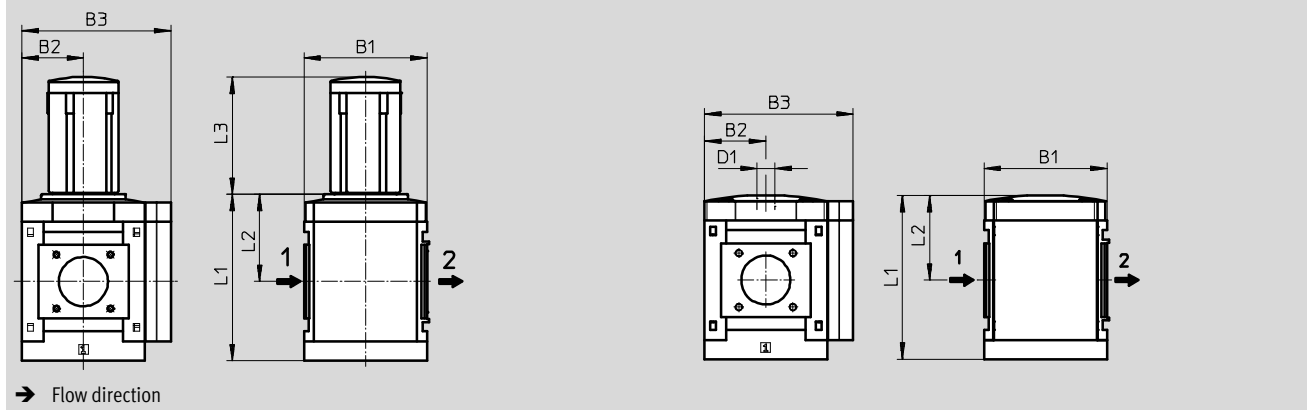
Pressure regulators MS9-LR, MS series

Technical data

Dimensions – Basic version Download CAD data → www.festo.com

Pressure regulation range/operation D5/D6/D7/D8, manually operated, without connecting thread G, cover plate VS, rotary knob with detent

Pressure regulation range/operation PO, pneumatically actuated, without connecting thread G, cover plate VS

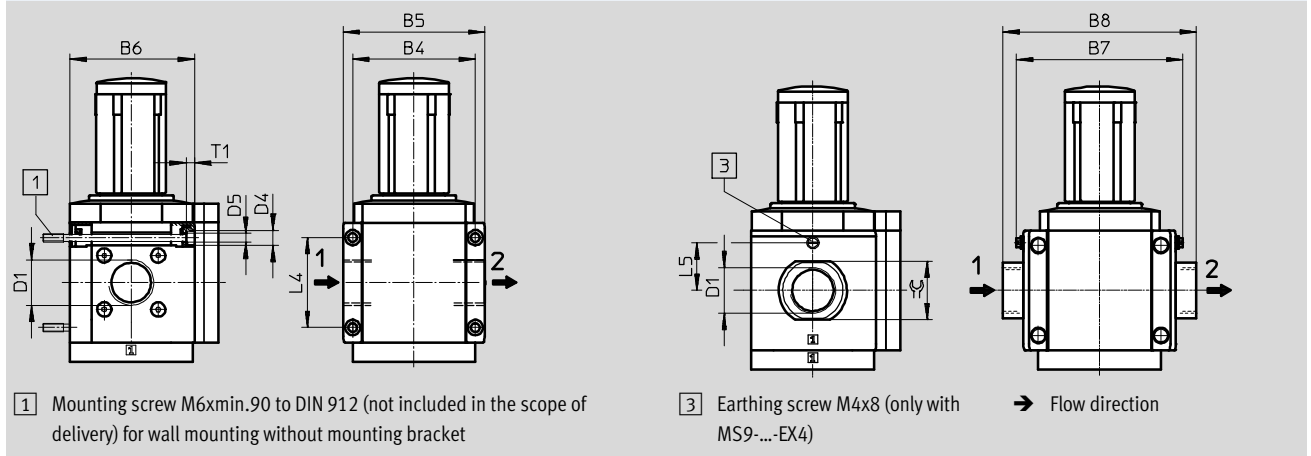


Type	B1	B2	B3	D1	L1		L2		L3
					Piloted	Directly actuated DI	Piloted	Directly actuated DI	
MS9-LR-G-D5/D6/D7/D8	90	45	109	–	129	122	71.4	64	86
MS9-LR-G-PO				G $\frac{3}{4}$	120	–	62	–	–

Dimensions – Connecting thread/connecting plate Download CAD data → www.festo.com

With connecting thread $\frac{3}{4}$ or 1

With connecting plate AG...



Type	B4	B5	B6	B7		B8	D1	D4	D5	L4	L5	T1	⌀
				EX4	EX4								
MS9-LR- $\frac{3}{4}$	90	104	91.5	–	–	–	G $\frac{3}{4}$	11	6.5	66	–	6	–
MS9-LR-1						G1	–						
MS9-LR-AGD	–	–	–	112	122	132	G $\frac{1}{2}$	–	–	–	35	–	30
MS9-LR-AGE						132	G $\frac{3}{4}$						36
MS9-LR-AGF						142	G1						41
MS9-LR-AGG						162	G $1\frac{1}{4}$						50
MS9-LR-AGH						176	G $1\frac{1}{2}$						55

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

Pressure regulators MS9-LR, MS series

Technical data

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

Integrated MS pressure gauge with standard scale AG or red/green scale RG Adapter plate A4 for EN pressure gauge 1/4, without pressure gauge

→ Flow direction

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

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

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

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

→ Flow direction

Variant AD7:
SDE5-D10-0-...-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-D10-03-...-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

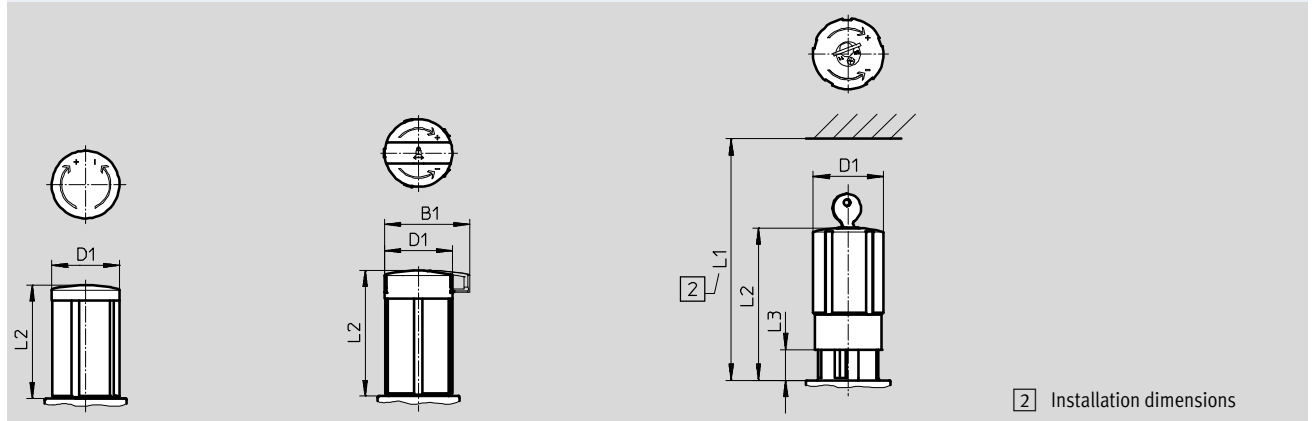
Type	B2	B11	D3
MS9-LR-...-AD7/AD8/AD9/AD10	45	112	M8

Pressure regulators MS9-LR, MS series

Technical data

Dimensions – Rotary knob Download CAD data → 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-LR	–	52	–	86	–
MS9-LR-...-AS	65	52	–	96	–
MS9-LR-...-E11	–	52	174	114	25

Ordering data

Integrated pressure gauge, display unit [bar], rotary knob with detent, can be locked using accessories

Size	Connection	Piloted diaphragm regulator		Directly actuated diaphragm regulator	
		Part No.	Type	Part No.	Type
Pressure regulation range 0.5 ... 4 bar, manually operated					
MS9	–	564134	MS9-LR-G-D5-AG-BAR-AS	564135	MS9-LR-G-D5-DI-AG-BAR-AS
Pressure regulation range 0.5 ... 7 bar, manually operated					
MS9	–	564136	MS9-LR-G-D6-AG-BAR-AS	564137	MS9-LR-G-D6-DI-AG-BAR-AS
Pressure regulation range 0.5 ... 12 bar, manually operated					
MS9	–	564138	MS9-LR-G-D7-AG-BAR-AS	–	–

Pressure regulators MS9-LR, MS series

Ordering data – Modular products

Ordering table		Grid dimension	[mm]	90	Condi- tions	Code	Enter code
M	Module No.	562530					
	Series	Standard				MS	MS
	Size	9				9	9
	Function	Pressure regulator				-LR	-LR
	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	
		Module without connecting thread, without connecting plate			1	-G	
	Pressure regulation range/ operation	0.5 ... 4 bar, manually operated				-D5	
		0.5 ... 7 bar, manually operated				-D6	
		0.5 ... 12 bar, manually operated				-D7	
		0.5 ... 16 bar, manually operated			1	-D8	
		Max. 16 bar, pneumatically actuated (pressure range defined by means of pilot regulator)			2	-PO	
O	Regulator type	Directly actuated			3	-DI	
M	Pressure gauge/pressure gauge alternatives	MS pressure gauge				-AG	
		Cover plate				-VS	
		Adapter plate for EN pressure gauge $\frac{1}{4}$, without pressure gauge				-A4	
		Integrated pressure gauge, red/green scale			4	-RG	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact			1 5	-AD7	
		Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact			1 5	-AD8	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact			1 5	-AD9	
		Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact			1 5	-AD10	

- 1** $\frac{3}{4}$, 1, G, D8, AD7, AD8, AD9, AD10, E11, WPM
Not with EU certification EX4
- 2** PO
Not with regulator type DI
Not with security AS, E11

- 3** DI
Not with pressure regulation range D7, D8
- 4** RG
Not with alternative pressure gauge scale PSI,
PSI scale serves only as an auxiliary scale
- 5** AD7 ... AD10
Measuring range max. 10 bar

- M** Mandatory data
- O** Options

Transfer order code

562530 MS 9 - LR - [] - [] - [] - []

Pressure regulators MS9-LR, MS series

Ordering data – Modular products

Ordering table					
Grid dimension	[mm]	90	Condi- tions	Code	Enter code
0	Alternative pressure gauge scale	psi	6	-PSI	
		MPa	6	-MPA	
		bar	6	-BAR	
	Secondary venting	Without secondary venting	7	-OS	
	Alternative mounting position	Rotary knob underneath (connection underneath with PO)		-KD	
	Security	Lockable via accessories		-AS	
		With integrated lock	1	-E11	
	Type of mounting	Mounting bracket standard design	8	-WP	
		Mounting bracket for attaching the service units	1 8	-WPM	
		Mounting bracket for large wall gap	8	-WPB	
	EU certification	II 2GD to EU Directive 94/9/EG		-EX4	
	UL certification	cULus, ordinary location for Canada and USA		-UL1	
	Flow direction	Flow direction from right to left		-Z	

1 3/4, 1, G, D8, AD7, AD8, AD9, AD10, E11, WPM

Not with EU certification EX4

7 OS

Only with regulator type DI

8 WP, WPM, WPB

Not with pneumatic connection G

6 PSI, MPA, BAR

Not with pressure gauge alternatives VS, A4, AD7, AD8, AD9, AD10

M Mandatory data

0 Options

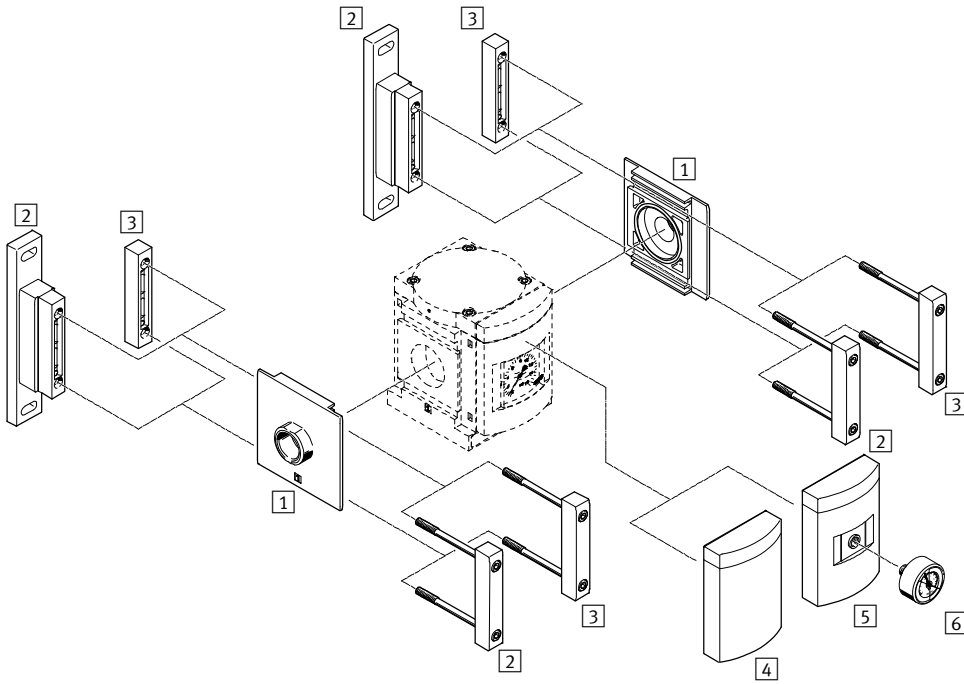
Transfer order code


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Pressure regulators MS12-LR, MS series

Peripherals overview

Pressure regulator MS12-LR

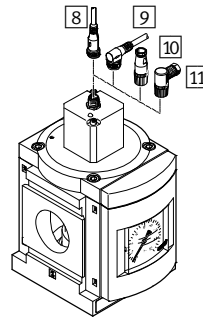
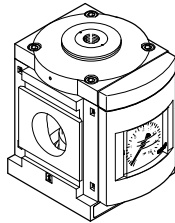
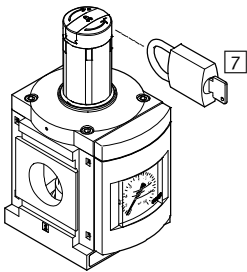


-  - Note
 Additional accessories:
 - Module connector
 for combination with size MS9
 → Internet: armv

manually operated

pneumatically actuated

solenoid actuated



Pressure regulators MS12-LR, MS series

Peripherals overview

FESTO

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	Cover plate VS	94
5	Adapter plate for EN pressure gauge 1/4 A4	94
6	Pressure gauge MA	95
7	Padlock LRVS-D	95
8	Connecting cable NEBU-M12G...-LE4	95
9	Connecting cable NEBU-M12W...-LE4	95
10	Sensor socket SIE-GD	95
11	Angled plug socket SIE-WD	95

Pressure regulators MS12-LR, MS series

Type codes

MS 12 - LR - G - D7 - LD - AS

Series

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

Size

12	Grid dimension 124 mm
----	-----------------------

Service function

LR	Pressure regulator
----	--------------------

Connection size

G	Module without connecting thread, without connecting plate Connecting plates → Accessories
---	-----------------------------------------------------------------------------------------------

Pressure regulation range/actuation mode

D7	0.5 ... 12 bar, manually operated
PO	0.5 ... 16 bar, pneumatically actuated
PE6	0.15 ... 6 bar, solenoid actuated

Rotary knob

Pressure regulation range/actuation mode D7	
LD	Long rotary knob
Pressure regulation range/actuation mode PO/PE6	
	No rotary knob

Security

Pressure regulation range/actuation mode D7	
AS	Rotary knob with detent, lockable via accessories
Pressure regulation range/actuation mode PO/PE6	
	No rotary knob

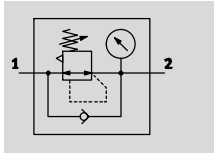
Further variants can be ordered using the modular system → 94

- Connecting plates
- Pressure regulation range/actuation mode
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Security
- Type of mounting
- Flow direction

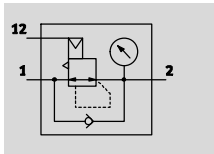
Pressure regulators MS12-LR, MS series

Technical data

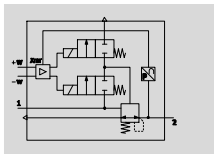
Pressure regulation range/actuation mode
D6/D7/D8, manually operated



PO, pneumatically actuated



PE6, solenoid actuated



- - Flow rate
12,000 ... 22,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0.8 ... 21 bar
- - www.festo.com

Wearing parts kits
→ 93



The pressure regulator maintains an essentially constant output pressure p2 independent of pressure fluctuations in the system and air consumption. The output pressure p2 can be set within the pressure regulation range either manually using the rotary knob, pneumatically via a pilot

pressure p12 by an external pilot regulator or electrically via setpoint signals. When the operating pressure or the voltage for the setpoint signals is switched off, the output pressure p2 is vented via connection 3 (secondary venting).

- Good regulation characteristics with low hysteresis and primary pressure compensation
- High flow rate with minimal pressure drop
- Regulator lock for protecting the values against adjustment
- With secondary venting
- Pressure gauge connection for different fitting options

General technical data		
Pneumatic connection 1, 2	Connecting plate AG...	G1, G1¼, G1½ or G2
	Module without connecting thread/plate G	-
Pilot air connection 12 with pressure regulation range/actuation mode PO		G¾
Constructional design		Pressure regulator with/without pressure gauge
		Pilot actuated diaphragm regulator (except pressure regulation range/actuation mode PO)
		Diaphragm regulator (with pressure regulation range/actuation mode PO)
Regulating function		Output pressure constant, via primary pressure compensation, via return flow function, via secondary venting
Type of mounting		Via accessories
		In-line installation
Mounting position		Any
Regulator lock		Rotary knob with detent
		Rotary knob with detent, lockable via accessories
		Rotary knob with integrated lock
Pressure regulation range/operation	D6 [bar]	0.3 ... 7, manually operated
	D7 [bar]	0.5 ... 12, manually operated
	D8 [bar]	0.5 ... 16, manually operated
	PO [bar]	0.5 ... 16, pneumatically actuated ¹⁾
	PE6 [bar]	0.15 ... 6, solenoid actuated
Max. hysteresis	[bar]	0.4 with pressure regulation range/actuation mode D6/D7/D8/PO
	[bar]	0.04 with pressure regulation range/actuation mode PE6
Pressure display		Via pressure gauge

1) Output pressure p2 corresponds roughly to the applied pilot pressure p12.

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

Pressure regulators MS12-LR, MS series

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Technical data

Flow rates		
Pressure regulation range/ actuation mode	D6/D7/D8/PO ¹⁾	PE6 ²⁾
Standard nominal flow rate $q_{nN}^{3)}$ [l/min]		
$q_{nN} 1 \rightarrow 2$	G1	13,000
	G1¼	13,500
	G1½	16,000
	G2	22,000
Secondary venting flow rate [l/min]		
$q_{nN} 2 \rightarrow 3$	≤ 600	≤ 600

1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 0.5$ bar

2) Measured at $p_1 = 7$ bar and $p_2 = 6$ bar, $\Delta p = 0.5$ bar

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

Electrical data (pressure regulation range/actuation mode PE6 only)		
Operating voltage range	[V DC]	21.6 ... 26.4
Nominal operating voltage	[V DC]	24
Residual ripple	[%]	10
Analogue input signal range	[V]	0 ... 10
Max. current consumption	[A]	0.15
Max. electrical power consumption	[W]	3.6
Protection class		IP65

Operating and environmental conditions		
Pressure regulation range/ actuation mode	D6/D7/D8/PO	PE6
Operating pressure	[bar]	0.8 ... 21
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]
Ambient temperature	[°C]	-10 ... +60
Temperature of medium	[°C]	-10 ... +60
Storage temperature	[°C]	-10 ... +60
Corrosion resistance class	CRC ¹⁾	2
CE mark (see declaration of conformity)	-	To EU EMC Directive

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.

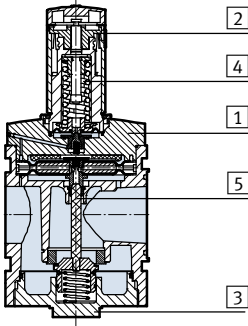
Weight [g]	
Pressure regulator	4,000
Pressure regulator with rotary knob with integrated lock E11	4,300

Pressure regulators MS12-LR, MS series

Technical data

Materials

Sectional view

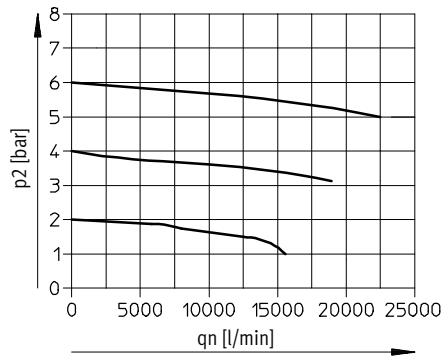


Pressure regulator		
1	Housing	Die-cast aluminium
2	Rotary knob	PA-reinforced, POM
	Rotary knob with integrated lock E11	Wrought aluminium alloy
3	Cap (bottom)	Wrought aluminium alloy
4	Spring	Spring steel
5	Valve stem	Wrought aluminium alloy, NBR, high alloy steel non-corrosive
-	Seals, diaphragm	NBR
	Note on materials	RoHS-compliant
		Free of copper and PTFE only with cover plate VS

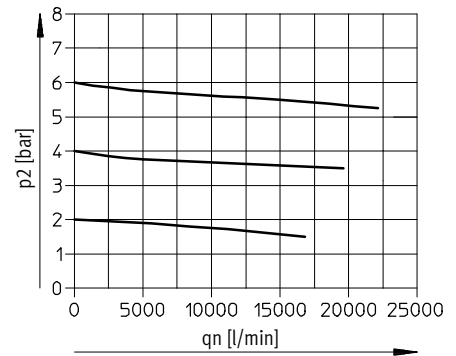
Standard flow rate q_n as a function of output pressure p_2 (MS12-LR-...-D6/D7/D8/PO only)

With connecting plate MS12-AGF
Pneumatic connection G1

Input pressure $p_1 = 10$ bar

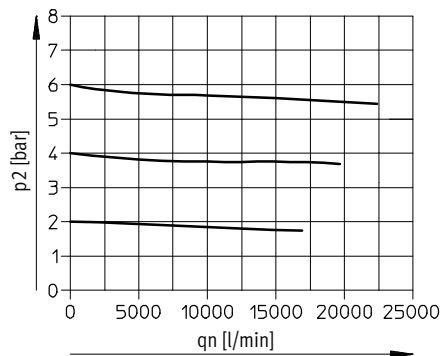


With connecting plate MS12-AGG
Pneumatic connection G1¼

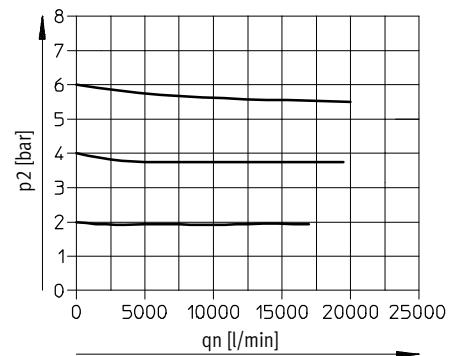


With connecting plate MS12-AGH
Pneumatic connection G1½

Input pressure $p_1 = 10$ bar



With connecting plate MS12-AGI
Pneumatic connection G2



Pressure regulators MS12-LR, MS series

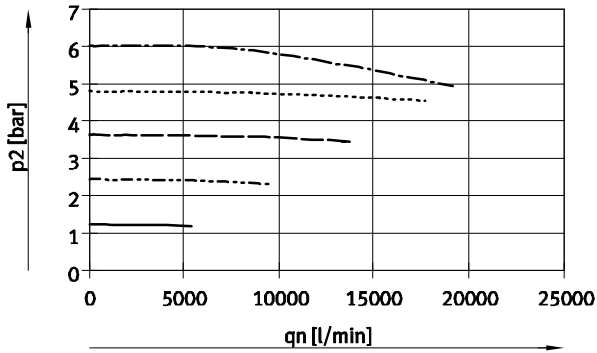
Technical data



Standard flow rate q_n as a function of output pressure p_2 (MS12-LR-...-PE6 only)

With connecting plate MS12-AGH

Pneumatic connection G1½



Input pressure $p_1 = 7$ bar

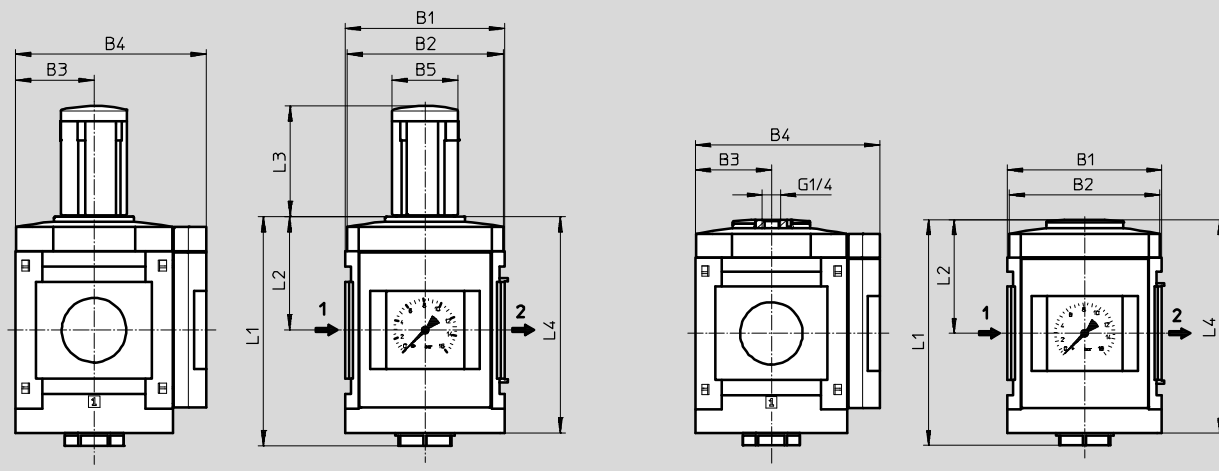
- 2 volts
- - - 4 volts
- · - 6 volts
- · · 8 volts
- - - - 10 volts

Dimensions

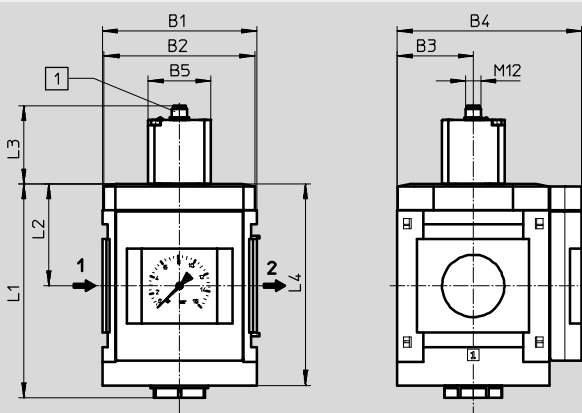
Pressure regulation range/actuation mode D6/D7/D8, manually operated, integrated pressure gauge, display unit [bar], long rotary knob

Download CAD data → www.festo.com

Pressure regulation range/actuation mode PO, pneumatically actuated, integrated pressure gauge, display unit [bar]



Pressure regulation range/actuation mode PE6, solenoid actuated, integrated pressure gauge, display unit [bar]



- 1 Suitable for
- Connecting cable NEBU-M12G...-LE4/NEBU-M12W...-LE4
 - Sensor socket SIE-GD
 - Angled plug socket SIE-WD-TR

→ Flow direction

Type	B1	B2	B3	B4	B5	L1	L2	L3	L4
MS12-LR-...-D6/D7/D8					52	178	88	86	168
MS12-LR-...-PO	124	122	61	148	-	181	91	-	171
MS12-LR-...-PE6					50	172	82	62.7	162

Pressure regulators MS12-LR, MS series

Technical data

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

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

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

→ Flow direction

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

Dimensions – Rotary knob Download CAD data → www.festo.com

Long rotary knob with detent LD Long rotary knob with detent, lockable via accessories LD-AS Rotary knob with integrated lock E11

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

□ Installation dimensions

Ordering data

Integrated pressure gauge, display unit [bar]

Size	Connection	Pressure regulation range	Pressure regulation range	Pressure regulation range
		0.5 ... 12 bar, manually actuated, long rotary knob with detent, lockable via accessories	0.5 ... 16 bar, pneumatically actuated	0.15 ... 6 bar, solenoid actuated
		Part No. Type	Part No. Type	Part No. Type
MS12	G1 ... G2 ¹⁾	537148 MS12-LR-G-D7-LD-AS	541680 MS12-LR-G-PO	564888 MS12-LR-G-PE6

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

Ordering data – Wearing parts kits

Size	Part No. Type
MS12	673586 MS12-LR/LFR

Pressure regulators MS12-LR, MS series

Ordering data – Modular products

Ordering table		Grid dimension [mm]	124	Condi- tions	Code	Enter code
M	Module No.	535021				
	Series	Standard			MS	MS
	Size	12			12	12
	Function	Pressure regulator			-LR	-LR
	Pneumatic connection	Connecting plate G1			-AGF	
		Connecting plate G1¼			-AGG	
		Connecting plate G1½			-AGH	
		Connecting plate G2			-AGI	
		Module without connecting thread, without connecting plate			-G	
	Pressure regulation range/ actuation mode	0.3 ... 7 bar, manually operated			-D6	
		0.5 ... 12 bar, manually operated			-D7	
		0.5 ... 16 bar, manually operated			-D8	
		Max. 16 bar, pneumatically actuated (pressure range defined by means of pilot regulator)		<input type="checkbox"/> <input type="checkbox"/>	-PO	
		0.15 ... 6 bar, solenoid actuated (pilot control via proportional pressure regulator)		<input type="checkbox"/> <input type="checkbox"/>	-PE6	
O	Pressure gauge alternatives	Cover plate			-VS	
		Adapter plate for EN pressure gauge ¼, without pressure gauge			-A4	
	Alternative pressure gauge scale	psi		<input type="checkbox"/>	-PSI	
		MPa		<input type="checkbox"/>	-MPA	
	Rotary knob alternative	Long rotary knob		<input type="checkbox"/> <input type="checkbox"/>	-LD	
	Security	Lockable via accessories			-AS	
		With integrated lock		<input type="checkbox"/>	-E11	
	Type of mounting	Mounting bracket standard design		<input type="checkbox"/>	-WP	
	Flow direction	Flow direction from right to left			-Z	

- PO, PE6** Not with rotary knob alternative LD
Not with security AS
- PO, PE6, LD** Not with security E11
- PSI, MPA** Not with pressure gauge alternatives VS, A4
- LD, E11** When selecting D6/D7/D8, rotary knob alternative LD or security E11 must be selected
- WP** Only with connecting plate AGF, AGG, AGH or AGI

- M** Mandatory data
- O** Options


Transfer order code


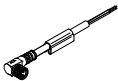
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Pressure regulators MS-LR/LRB/LRP/LRPB/LRE, MS series

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Accessories


Ordering data – Pressure gauge MA					
	Nominal size	Pneumatic connection	Indicating range		Part No. Type
			[bar]	[psi]	
	Pressure gauge MA, EN 837-1 Technical data → Internet: ma				
	40	R $\frac{1}{4}$	0 ... 16	0 ... 232	187080 MA-40-16-R $\frac{1}{4}$ -EN
		G $\frac{1}{4}$	0 ... 16	0 ... 232	183901 MA-40-16-G $\frac{1}{4}$ -EN
	Pressure gauge MA, 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	
Precision pressure gauge MAP, EN 837-1 Technical data → Internet: map					
40	R $\frac{1}{8}$	0 ... 1	0 ... 15	161126 MAP-40-1- $\frac{1}{8}$ -EN	
		0 ... 4	0 ... 58	162842 MAP-40-4- $\frac{1}{8}$ -EN	
		0 ... 6	0 ... 87	161127 MAP-40-6- $\frac{1}{8}$ -EN	
		0 ... 16	0 ... 232	161128 MAP-40-16- $\frac{1}{8}$ -EN	

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	
		5	2.5	541330	NEBU-M12G5-K-2.5-LE5	
			5	541331	NEBU-M12G5-K-5-LE5	
	M12x1, angled socket	4	2.5	550325	NEBU-M12W5-K-2.5-LE4	
			5	541329	NEBU-M12W5-K-5-LE4	

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

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

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

Product Range and Company Overview

A Complete Suite and Company Overview

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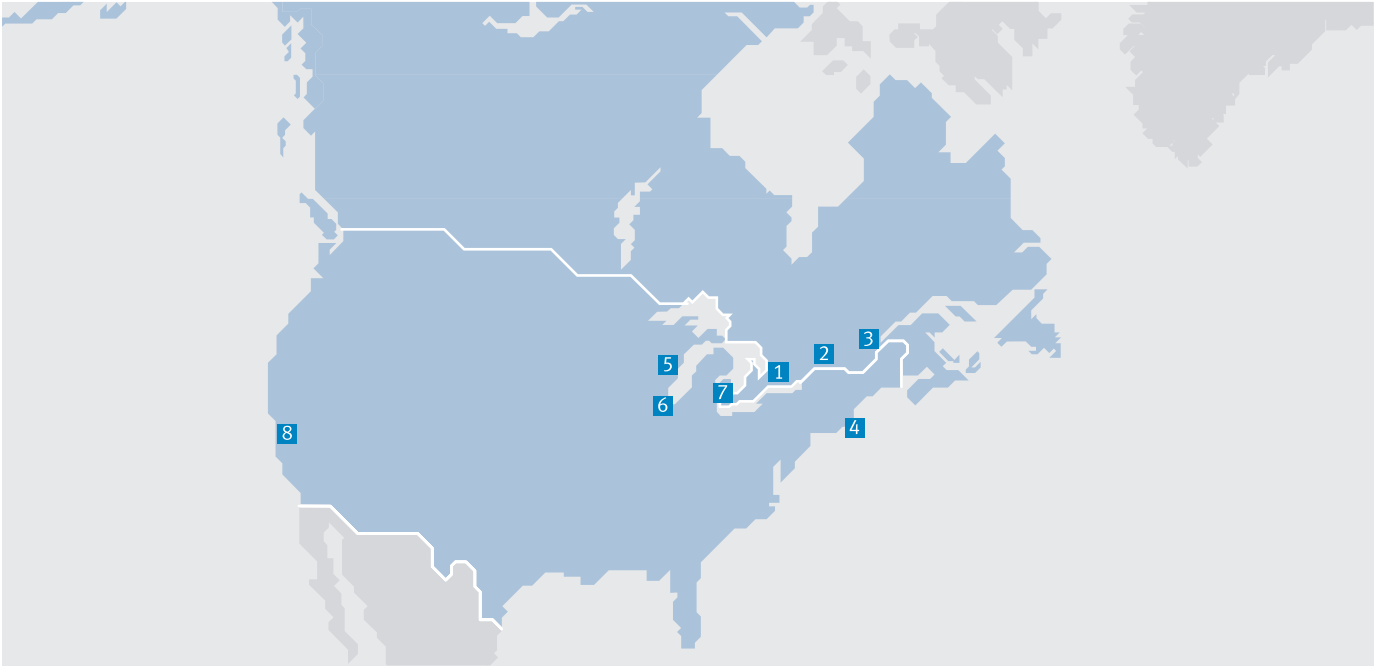


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Festo North America



**1 Festo Canada
Headquarters
Festo Inc.**
5300 Explorer Drive
Mississauga, ON
L4W 5G4

2 Montréal
5600, Trans-Canada
Pointe-Claire, QC
H9R 1B6

3 Québec City
2930, rue Watt#117
Québec, QC
G1X 4G3



**4 Festo United States
Headquarters
Festo Corporation**
395 Moreland Road
Hauppauge, NY
11788

5 Appleton
North 922 Tower View Drive, Suite N
Greenville, WI
54942

7 Detroit
1441 West Long Lake Road
Troy, MI
48098

6 Chicago
85 W Algonquin - Suite 340
Arlington Heights, IL
60005

8 Silicon Valley
4935 Southfront Road, Suite F
Livermore, CA
94550

Festo Regional Contact Center

Canadian Customers

Commercial Support:
Tel: 1 877 GO FESTO (1 877 463 3786)
Fax: 1 877 FX FESTO (1 877 393 3786)
Email: festo.canada@ca.festo.com

Technical Support:
Tel: 1 866 GO FESTO (1 866 463 3786)
Fax: 1 877 FX FESTO (1 877 393 3786)
Email: technical.support@ca.festo.com

USA Customers

Commercial Support:
Tel: 1 800 99 FESTO (1 800 993 3786)
Fax: 1 800 96 FESTO (1 800 963 3786)
Email: customer.service@us.festo.com

Technical Support:
Tel: 1 866 GO FESTO (1 866 463 3786)
Fax: 1 800 96 FESTO (1 800 963 3786)
Email: product.support@us.festo.com