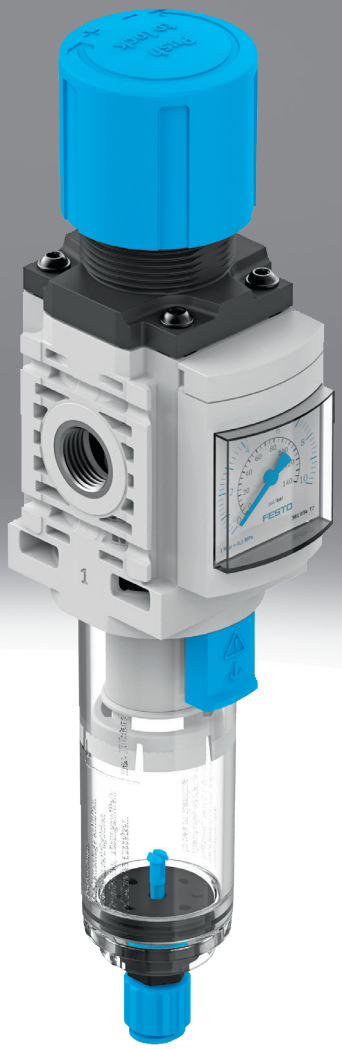
Filter regulator MS-LFR-B



Characteristics

At a glance

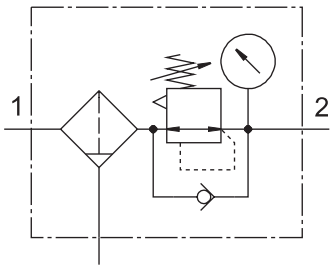
- Very compact and extremely lightweight series for use close to the process directly in the machine.
- Stable control response
- With secondary exhaust
- Integrated secondary exhaust and primary exhaust with return flow function
- The rotary knob locks into place to prevent unintentional rotation

Diagrams

Link ms-lfr-b

The diagrams shown in this document are also available online. These can be used to display precise values.

Function



- For stepless, precise adjustment of the required operating pressure
- The pressure regulator keeps the working pressure largely constant, irrespective of compressed air fluctuations in the network and due to air consumption

Pneumatic connection

Depending on the size, different connection types can be selected:
Individual fittings that are fastened via a female thread

- Built-in connections into which the tubing can be directly inserted

Pressure regulation range

The following ranges can be set:
- With MS2-...: 0.5 ... 7 bar
- With MS4-... and MS6-...: 0.3 ... 7 bar

Grade of filtration

Grade of filtration of 5 µm or 40 µm can be selected.

Condensate drain

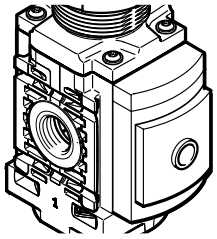
The following functions can be selected:
- Manual
- Fully automatic, normally closed

Characteristics

Pressure gauge alternatives

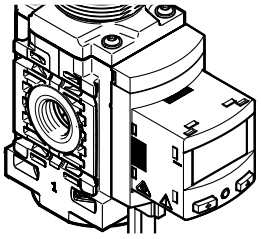
The pressure regulator can be ordered with or without a pressure gauge. The interface has a thread of G1/8.

[A8]	Adapter for EN pressure gauge 1/8, without pressure gauge



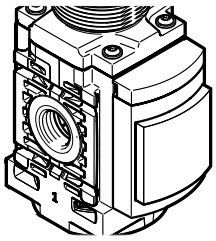
With female thread G1/8 for connecting a pressure gauge.

[AD13]	Pressure sensor (SPAN-B) with LCD display, cable 2.5 m OE, 4-pin, PNP, NPN



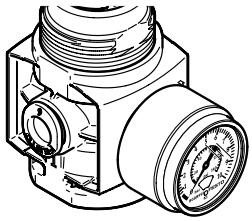
The optional pressure sensor SPAN-B is suitable for monitoring compressed air and non-corrosive gases. The measuring method is based on a piezoresistive measuring cell for relative pressure measurement. The pressure value is transmitted to the connected controller as a switching signal, as an analogue signal or via IO-Link® depending on the sensor variant and selected parameters.

[AG]	MS pressure gauge



With integrated pressure gauge for sizes 4 and 6.

[AR]	With pressure gauge



With screwed-in pressure gauge PAGN for size 2.

Alternative pressure gauge scale

The scaling of the built-in pressure gauge can be selected. The unit options available are [MPa], [bar] / [psi].

Special material properties

[F1A]	Recommended for production plants for manufacturing lithium-ion batteries, F1A

Metals with more than 1% copper by mass are excluded from use. Exceptions are circuit boards, cables, electrical plug connectors and coils

Version

[B]	Second generation

Basic component with sturdy and lightweight polymer housing. Fully compatible with the MS series.

Type code

001	Series	
MS	MS series	

002	Size	
2	Grid dimension 25 mm	
4	Grid dimension 40 mm	
6	Grid dimension 62 mm	

003	Function	
LFR	Filter regulator	

004	Pneumatic connection	
1/4	Female thread G1/4	
1/2	Female thread G1/2	
M5	Female thread M5	
QS6	Push-in connector 6 mm	

005	Pressure regulation range	
D6	0.3 ... 7 bar	

006	Filter design	
C	5 µm	
E	40 µm	

007	Bowl type	
P	Polymer	

008	Condensate drain	
M	Manually	
VC	Fully automatic, normally closed	

009	Pressure gauge alternatives	
A8	Adapter for EN pressure gauge 1/8, without pressure gauge	
AD13	Pressure sensor (SPAN-B) with LCD display, cable 2.5 m OE, 4-pin, PNP, NPN	
AG	MS pressure gauge	
AR	With pressure gauge	

010	Alternative pressure gauge scale	
	MS pressure gauge	
BAR	bar	
MPA	MPa	

011	Special material properties	
	None	
F1A	Recommended for production plants for manufacturing lithium-ion batteries, F1A	

012	Version	
B	Second generation	

Datasheet

General technical data

Grade of filtration	5 µm				40 µm	
Size	2		4	6	4	6
Pneumatic connection, port 1	M5	QS-6	G1/4	G1/2	G1/4	G1/2
Pneumatic connection, port 2	M5	QS-6	G1/4	G1/2	G1/4	G1/2
Standard nominal flow rate (standardised to DIN 1343)	140 l/min	310 l/min	1,500 l/min	4,750 l/min	1,700 l/min	5,300 l/min
Pressure regulation range	0.05 ... 0.7 MPa		0.03 ... 0.7 MPa			
Pressure regulation range	0.5 ... 7 bar		0.3 ... 7 bar			
Pressure regulation range	7.25 ... 101.5 psi		4.35 ... 101.5 psi			
Max. pressure hysteresis	0.025 MPa		0.05 MPa	0.035 MPa	0.05 MPa	0.035 MPa
Max. pressure hysteresis	0.25 bar		0.5 bar	0.35 bar	0.5 bar	0.35 bar
Max. pressure hysteresis	3.625 psi		7.25 psi	5.075 psi	7.25 psi	5.075 psi
Design	Filter regulator with pressure gauge Filter regulator without pressure gauge		Filter regulator with pressure gauge Filter regulator without pressure gauge Directly actuated piston regulator			
Condensate drain	Manual, rotating		Fully automatic, Manual, non-detenting, Manual, rotating			
Degree of condensate separation	–		>75%			
Pore size	–		5 µm		40 µm	
Controller function	Output pressure constant, With secondary exhausting, With return flow function					
Type of mounting	Either:, Front panel mounting, Inline installation, With accessories					
Mounting position	Vertical +/-5°					
Actuator lock	Rotary knob with detent					
Pressure gauge (ANALOG) or Pressure display (DIGITAL)	Prepared for G1/8, With pressure gauge					

Operating and environmental conditions

Grade of filtration	5				40	
Size	2		4	6	4	6
Pneumatic connection, port 1	M5	QS-6	G1/4	G1/2	G1/4	G1/2
Condensate drain	Manual, rotating		Fully automatic, Manual, non-detenting, Manual, rotating			
Operating pressure	0.1 ... 1 MPa	0.1 ... 0.8 MPa	0.1 ... 1 MPa			
Operating pressure	1 ... 10 bar	1 ... 8 bar	1 ... 10 bar			
Operating pressure	14.5 ... 145 psi	14.5 ... 116 psi	14.5 ... 145 psi			
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4], Inert gas					
Ambient temperature	-5 ... 50°C					
Media temperature	-5 ... 50°C					
Storage temperature	-5 ... 50°C					
Corrosion resistance class CRC [1]	1 - Low corrosion stress					

1) More information www.festo.com/x/topic/kbk

Materials

Grade of filtration	5				40	
Size	2		4	6	4	6
Pneumatic connection, port 1	M5	QS-6	G1/4	G1/2	G1/4	G1/2
Material housing	Reinforced PA					
Material rotary knob	POM					
Material valve stem	Wrought aluminium alloy, NBR		POM			
Material membrane	NBR		–			
Material spring	High-alloy steel		High-alloy steel, Galvanised steel			
Material filter	Packaging unit					
Note on materials	RoHS compliant					
LABS (PWIS) conformity	VDMA24364-B1/B2-L					
Air purity class at output	Compressed air to ISO 8573-1:2010 [6:4:4]				Compressed air to ISO 8573-1:2010 [7:4:4]	
Cleanroom suitability, measured according to ISO 14644-14	Class 6 according to ISO 14644-1		Class 7 according to ISO 14644-1			

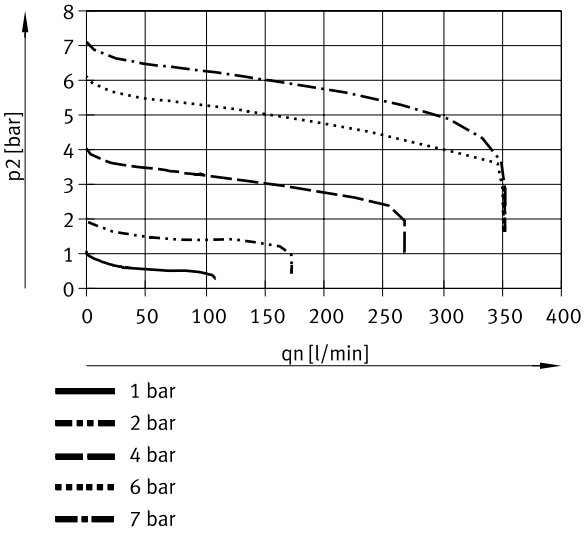
Datasheet

Additional material specifications – products for battery production

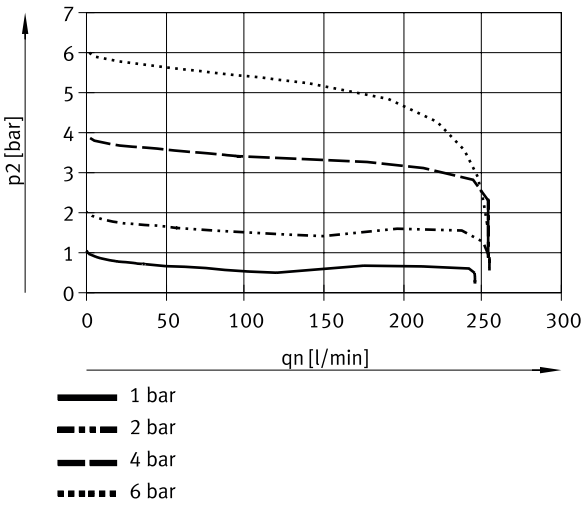
Suitability for the production of Li-ion batteries[1)]	Suitable for battery production with reduced Cu/Zn/Ni values (F1a)

1) only valid for MS...-F1A-B

Standard flow rate qn as a function of output pressure p2 (p1 = 10 bar) – MS2-LFR-M5-..-B (grade of filtration: 5 µm)

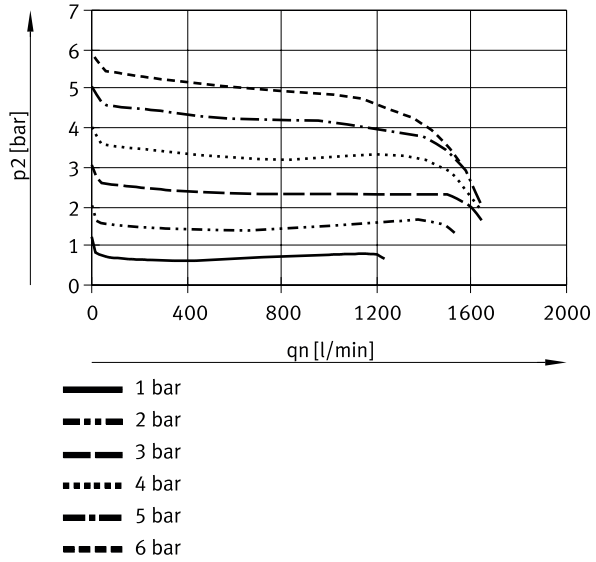


Standard flow rate qn as a function of output pressure p2 (p1 = 7 bar) – MS2-LFR-QS6-..-B (grade of filtration: 5 µm)

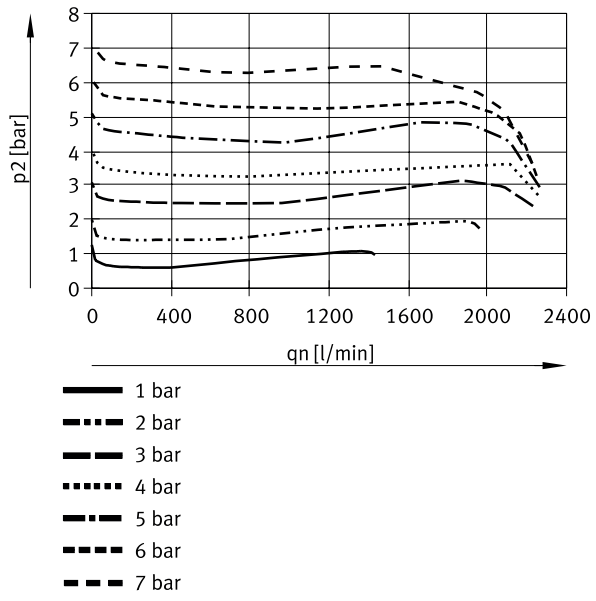


Datasheet

Standard flow rate qn as a function of output pressure p2 (p1 = 7 bar) – MS4-LFR-..-C-..-B (filter fineness: 5 µm)

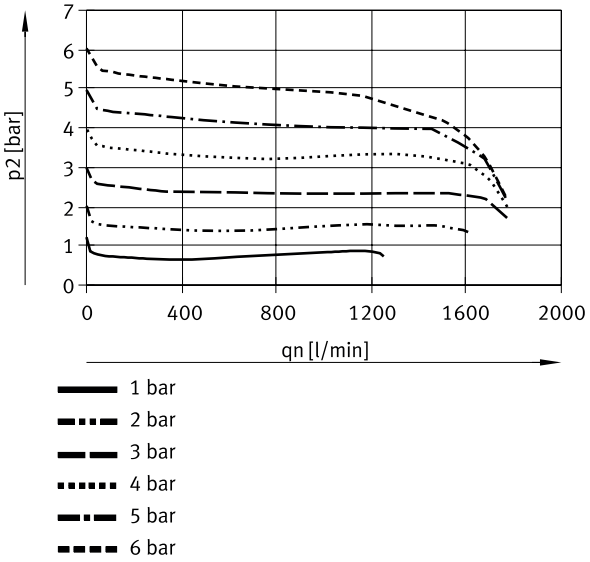


Standard flow rate qn as a function of output pressure p2 (p1 = 10 bar) – MS4-LFR-..-C-..-B (filter fineness: 5 µm)

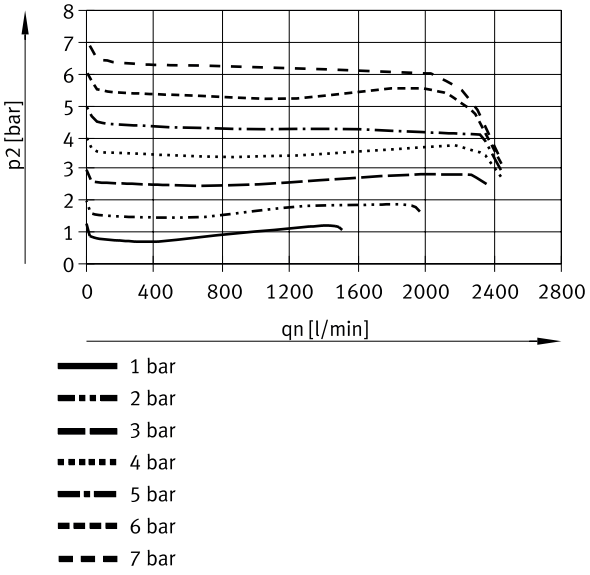


Datasheet

Standard flow rate qn as a function of output pressure p2 (p1 = 7 bar) – MS4-LFR-..-E-..-B (filter fineness: 40 µm)

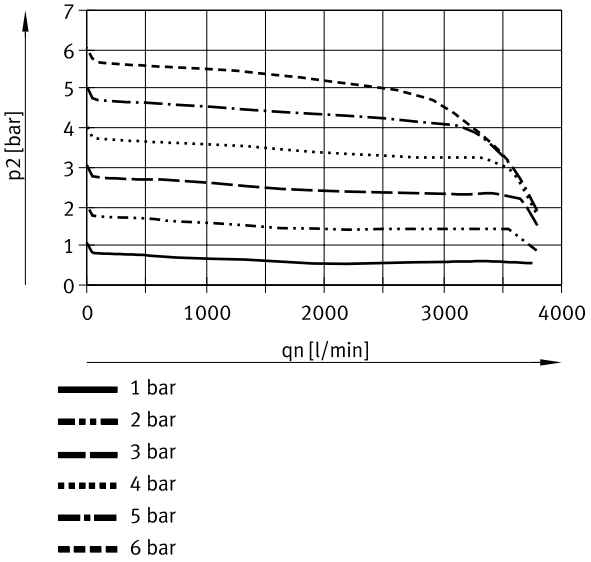


Standard flow rate qn as a function of output pressure p2 (p1 = 10 bar) – MS4-LFR-..-E-..-B (filter fineness: 40 µm)

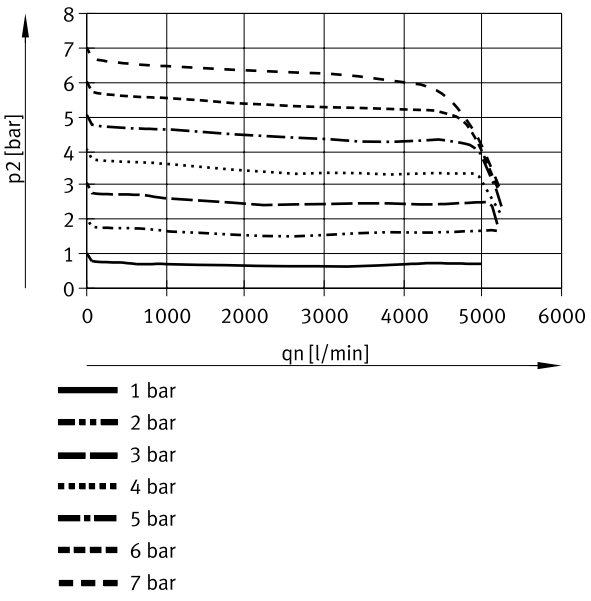


Datasheet

Standard flow rate qn as a function of output pressure p2 (p1 = 7 bar) – MS6-LFR-..-C-..-B (filter fineness: 5 µm)

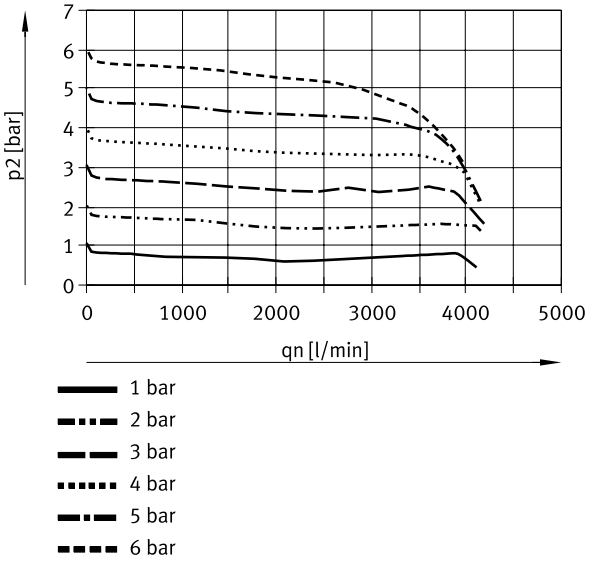


Standard flow rate qn as a function of output pressure p2 (p1 = 10 bar) – MS6-LFR-..-C-..-B (filter fineness: 5 µm)

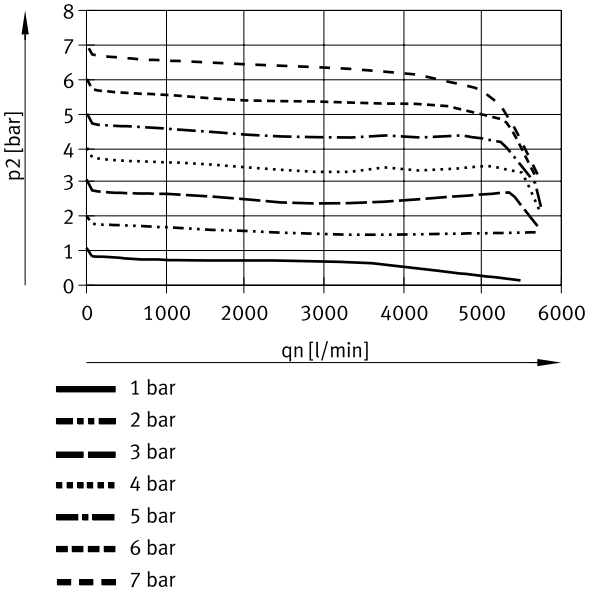


Datasheet

Standard flow rate qn as a function of output pressure p2 (p1 = 7 bar) – MS6-LFR-..-E-..-B (filter fineness: 40 µm)

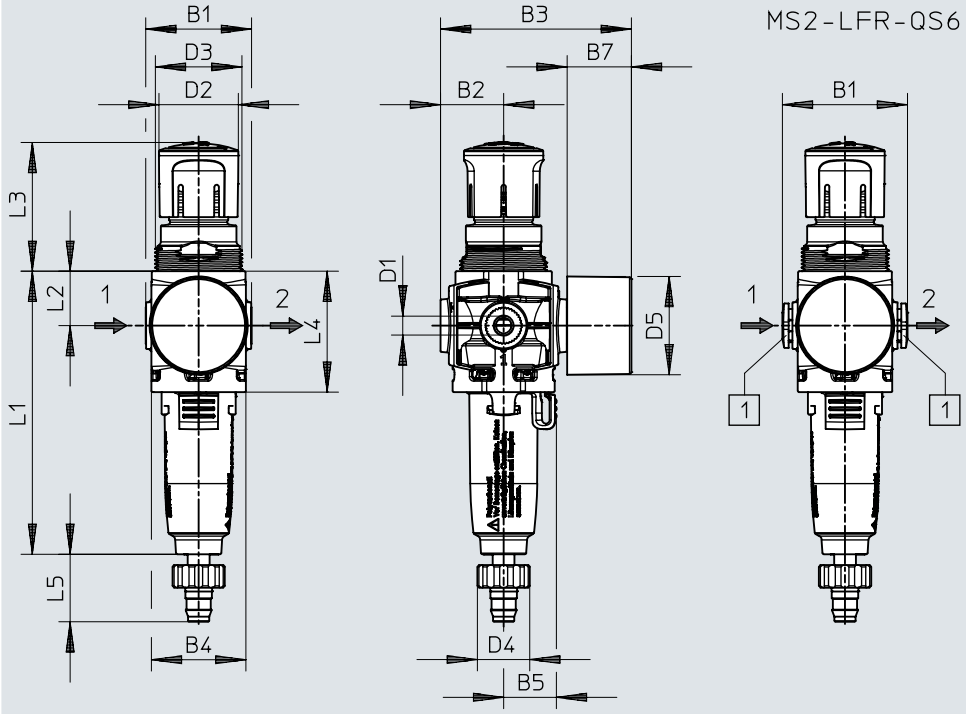


Standard flow rate qn as a function of output pressure p2 (p1 = 10 bar) – MS6-LFR-..-E-..-B (filter fineness: 40 µm)



Dimensions

Dimensions – MS2-LFR-...-B with pressure gauge Download CAD data www.festo.com



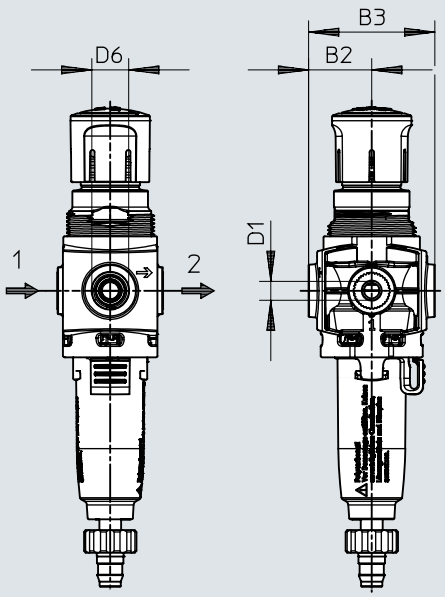
[1] Pneumatic connection QS-6

	B1	B2	B3	B4	B5	B7	D1	D2 ø	D3 ø	D4	D5 ø	L1	L2	L3	L4	L5
MS2-LFR-M5-...-AR	28	16,7	51	25	14	17	M5	21	M23x1	13,8	26	74,9	14,4	34,1	32	17,9
MS2-LFR-QS6-...-AR	33,1						QS-6									

Dimensions

Dimensions – MS2-LFR-...-B adaptor for EN pressure gauge 1/8, without pressure gauge

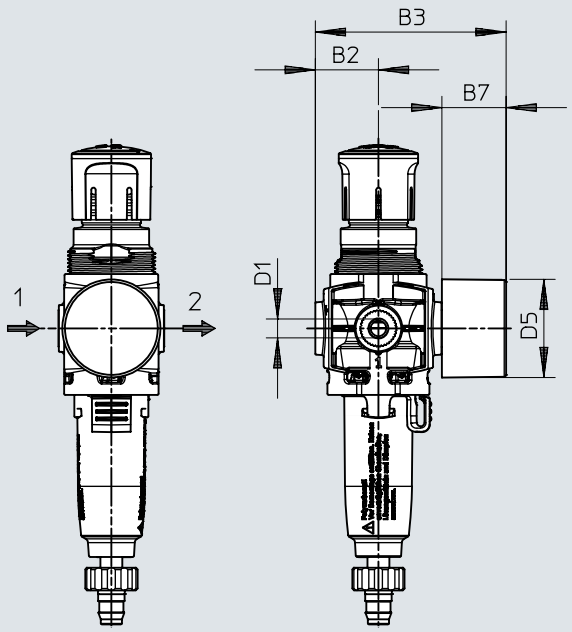
Download CAD data www.festo.com



	B2	B3	D1	D6
MS2-LFR-M5-...-A8	16,7	33,4	M5	G1/8
MS2-LFR-QS6-...-A8			QS-6	

Dimensions

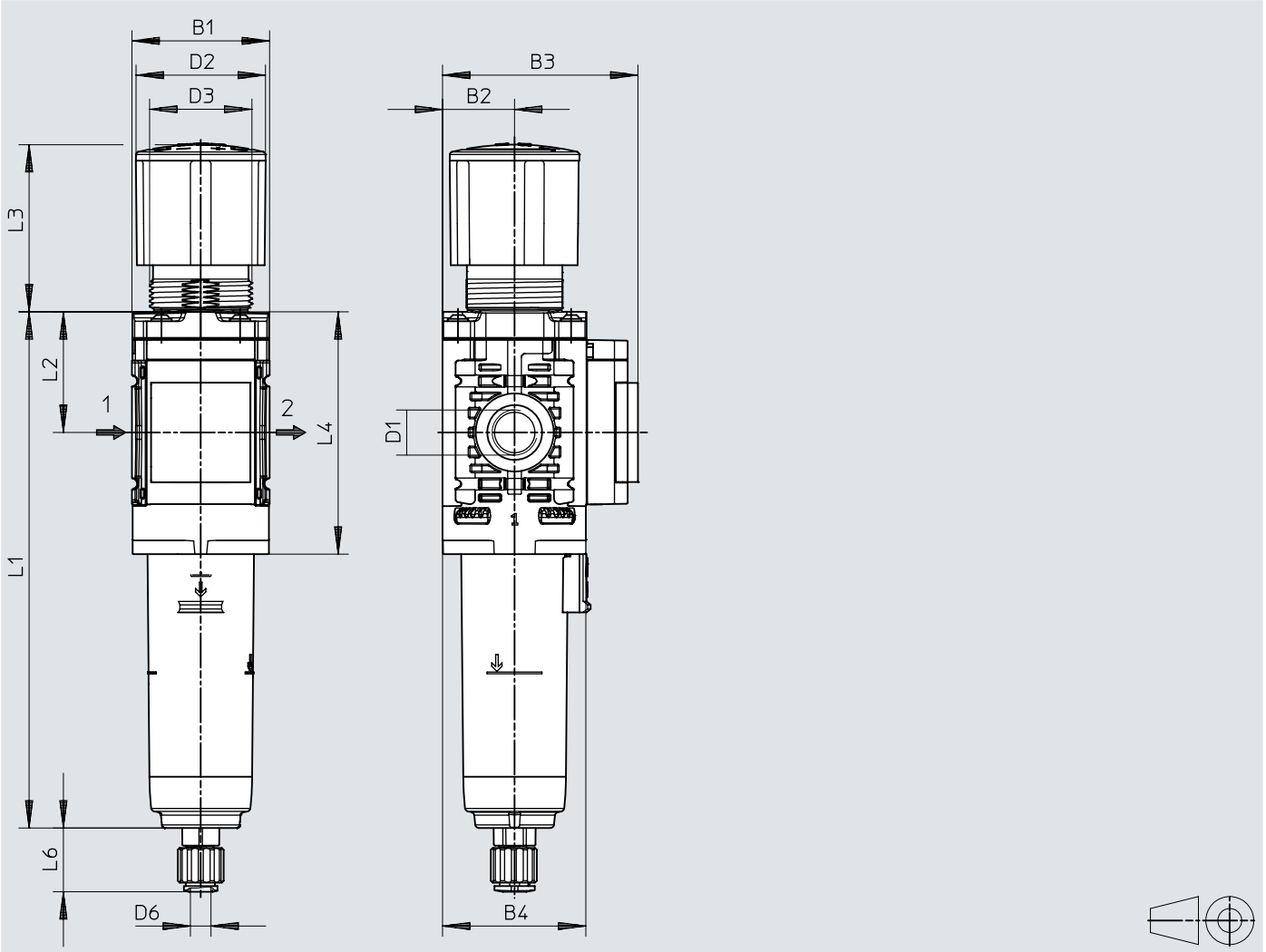
Dimensions – MS2-LFR-...-B pressure gauge Download CAD data www.festo.com



	B2	B3	B7	D1	D5 ø
MS2-LFR-M5-...-AR	16,7	51	17	M5	26
MS2-LFR-QS6-...-AR				QS-6	

Dimensions

Dimensions – MS4-LFR-...-B with pressure gauge Download CAD data www.festo.com

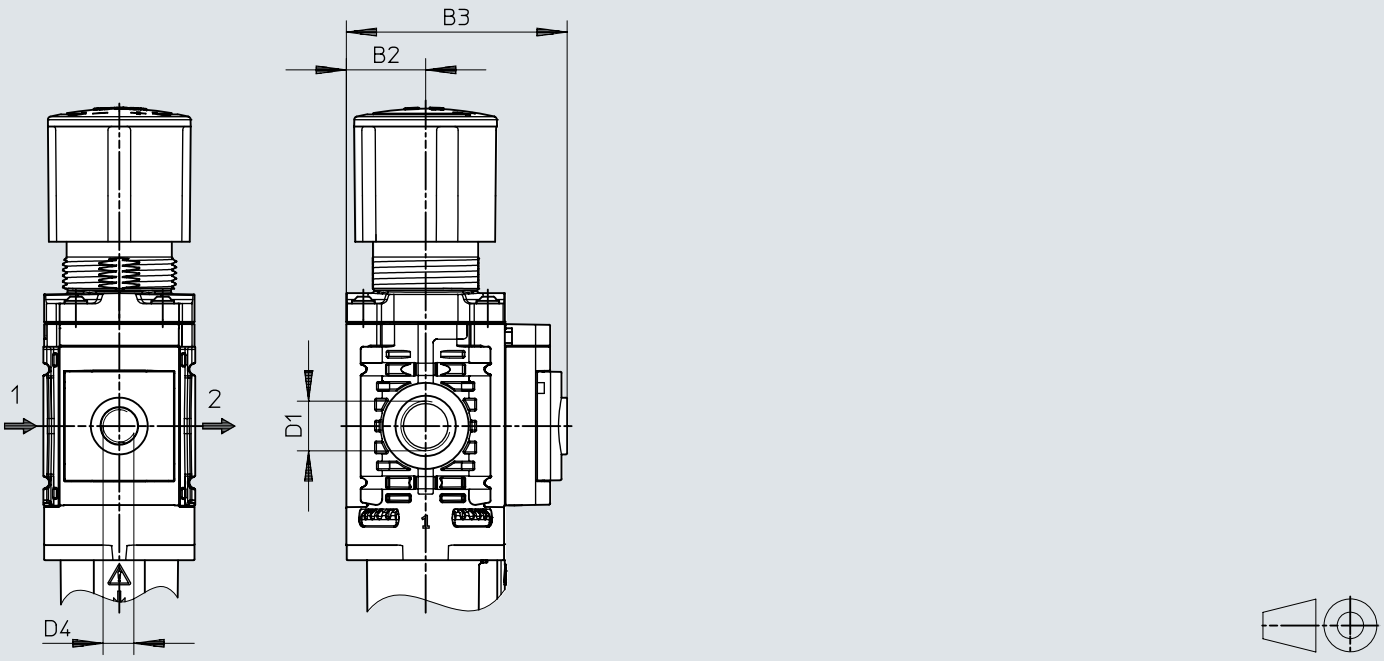


	B1	B2	B3	B4	D1	D2 ø	D3	D6	L1	L2	L3	L4	L6
MS4-LFR-1/4-...-AG	40,2	21	57	41,8	G1/4	37,8	M30x1,5	QS6	150,6	34,9	49,4	70,7	18,6

Dimensions

Dimensions – MS4-LFR-...-B without pressure gauge, adapter for EN pressure gauge 1/8

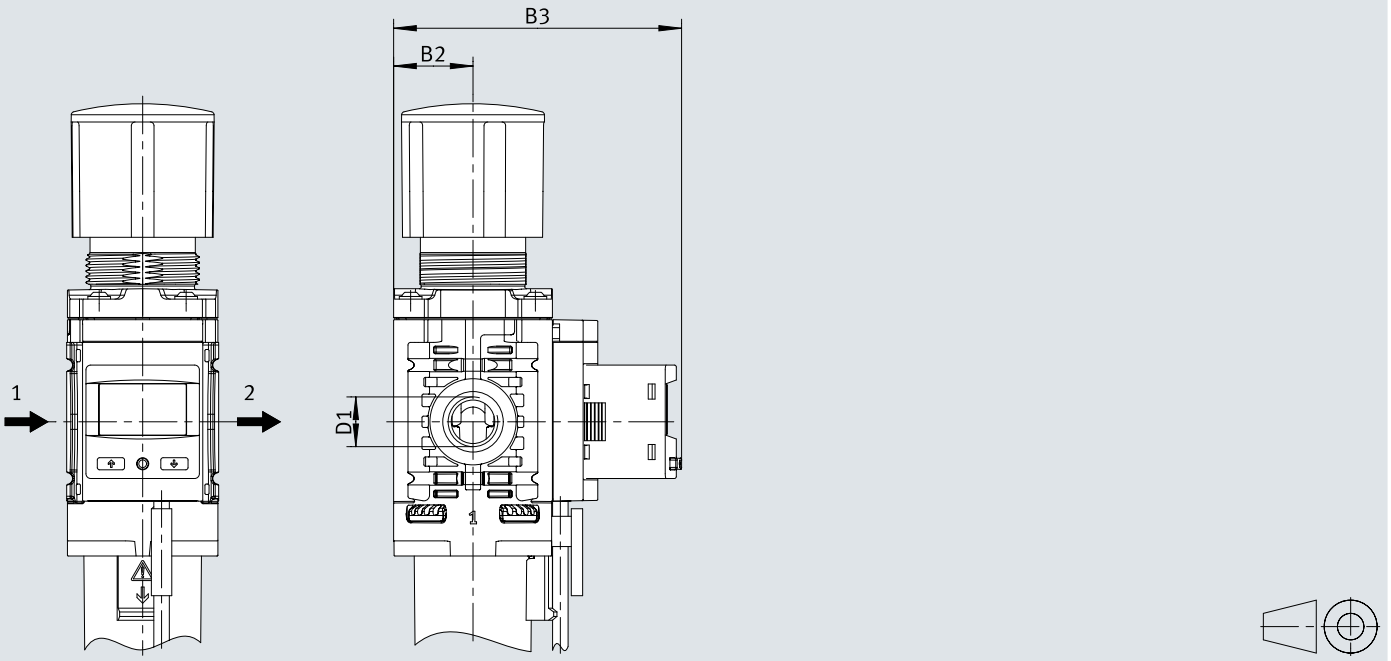
Download CAD data www.festo.com



	B2	B3	D1	D4
MS4-LFR-1/4-...-A8	21	59,6	G1/4	G1/8

Dimensions

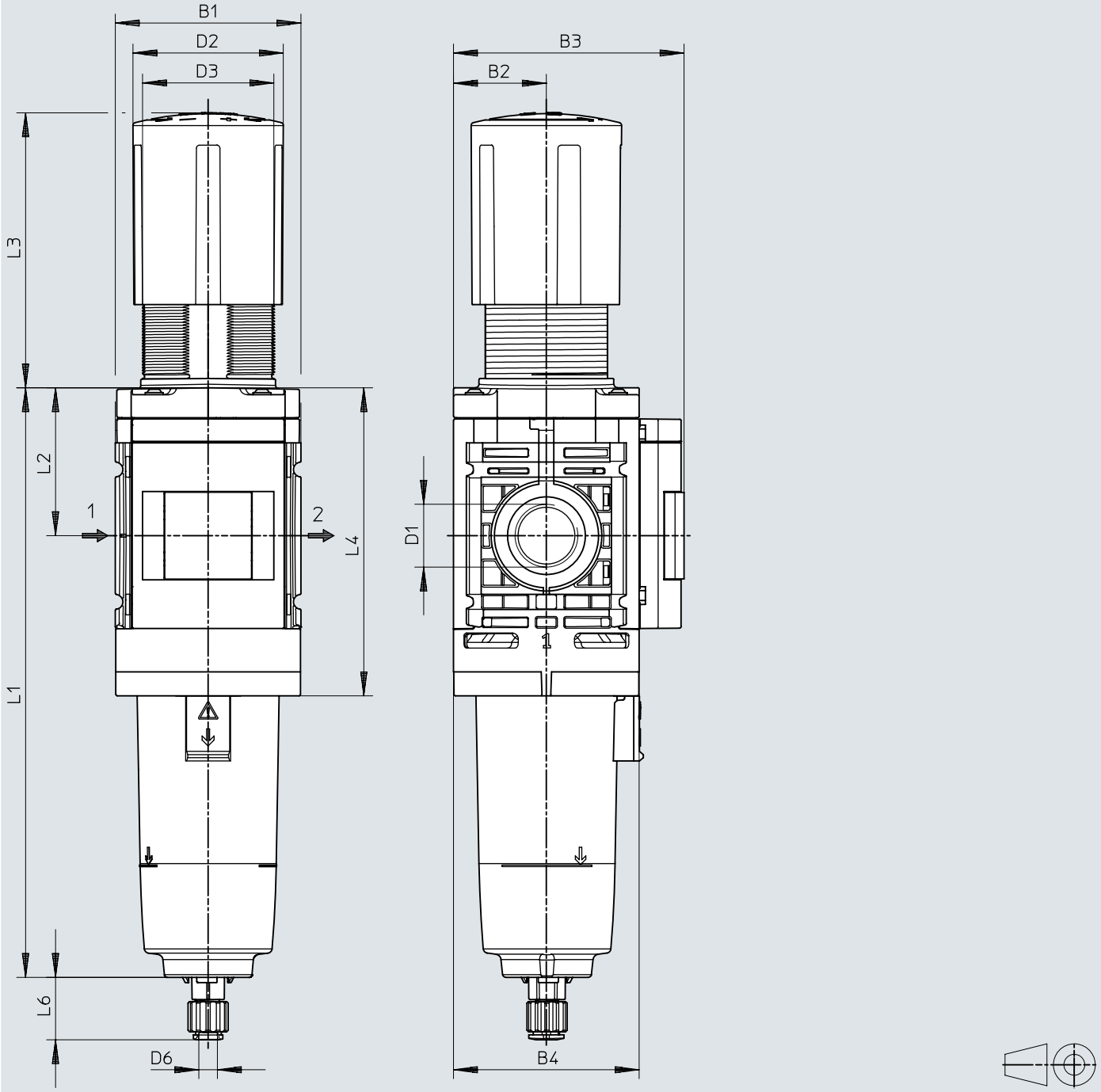
Dimensions – MS4-LFR-...-B with pressure sensor SPAN-B Download CAD data www.festo.com



	B2	B3	D1
MS4-LFR-1/4-...-AD13-B	21	76,2	G1/4

Dimensions

Dimensions – MS6-LFR-...-B with pressure gauge Download CAD data www.festo.com

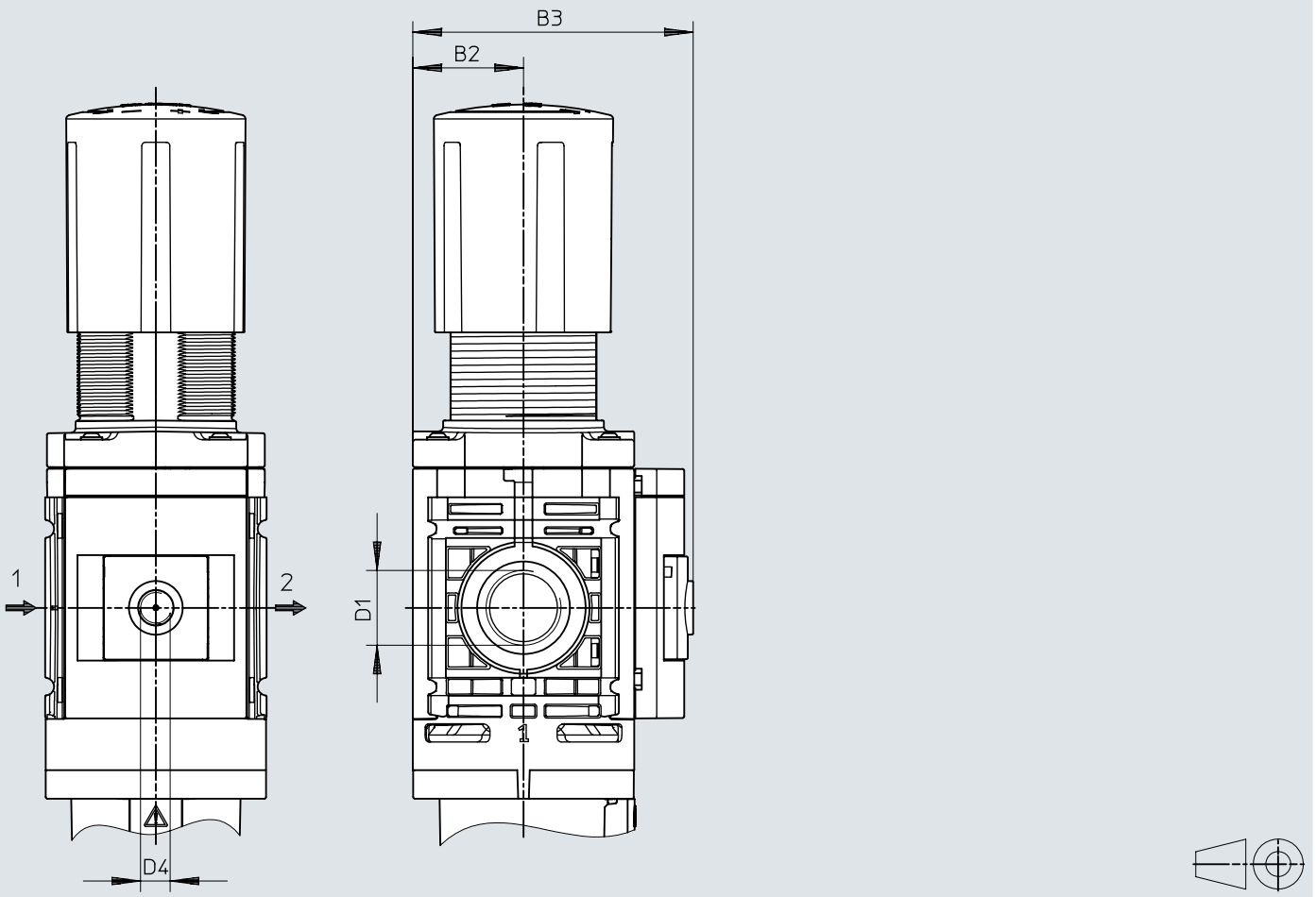


	B1	B2	B3	B4	D1	D2 ø	D3 ø	D6	L1	L2	L3	L4	L6
MS6-LFR-1/2-...-AG-...-M	62	31	77	62	G1/2	50,2	43,9	QS6	197	49,4	91,8	102,9	20,9
MS6-LFR-1/2-...-AG-...-VC													22,3

Dimensions

Dimensions – MS6-LFR-...-B without pressure gauge, adapter for EN pressure gauge 1/8

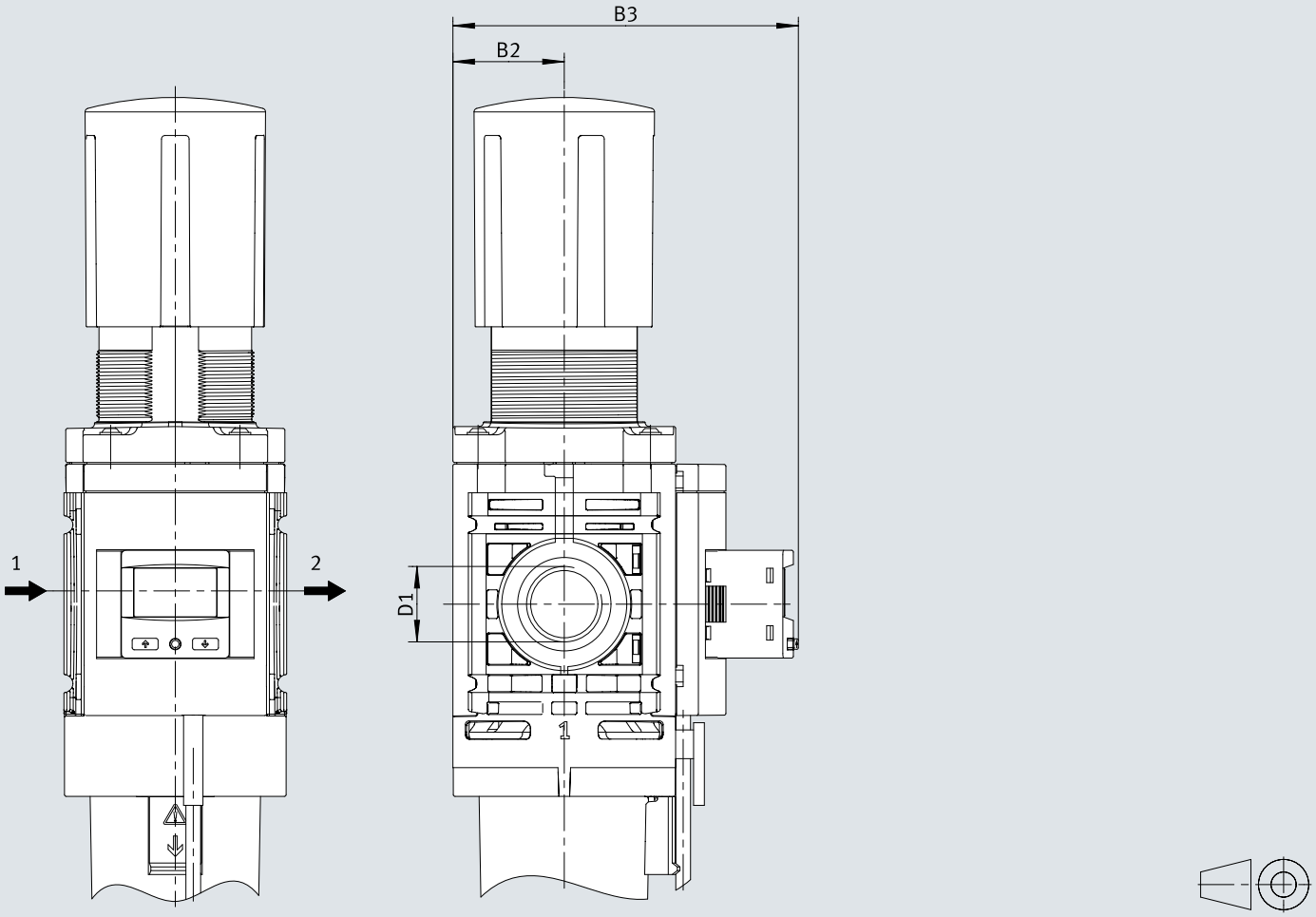
Download CAD data www.festo.com



	B2	B3	D1	D4
MS6-LFR-1/2-...-A8	31	78,5	G1/2	G1/8

Dimensions

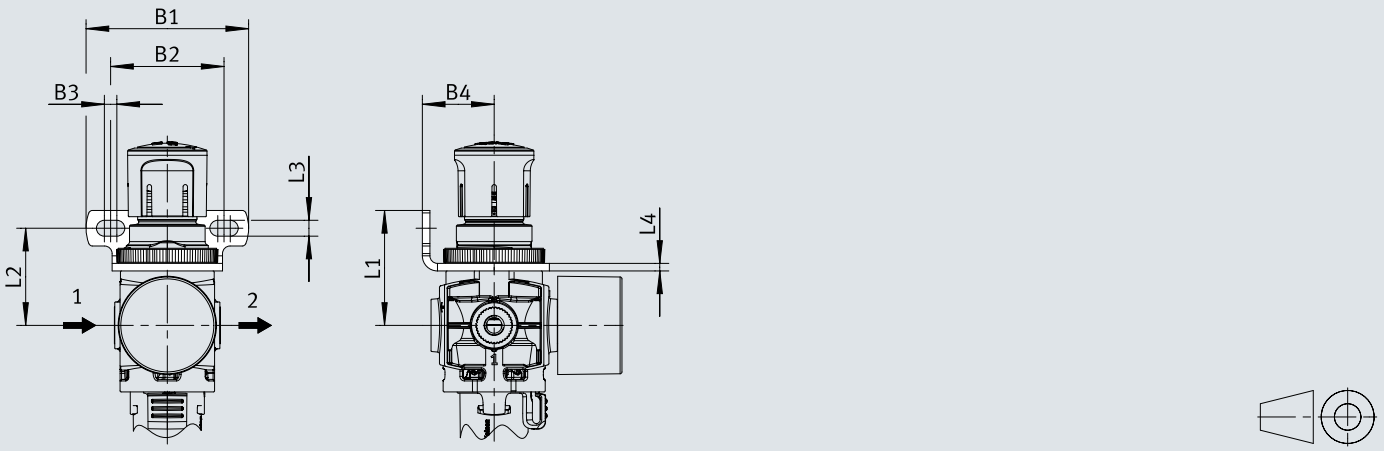
Dimensions – MS6-LFR-...-B with pressure sensor SPAN-B Download CAD data www.festo.com



	B2	B3	D1
MS6-LFR-1/2-...-AD13-B	31	96,2	G1/2

Dimensions

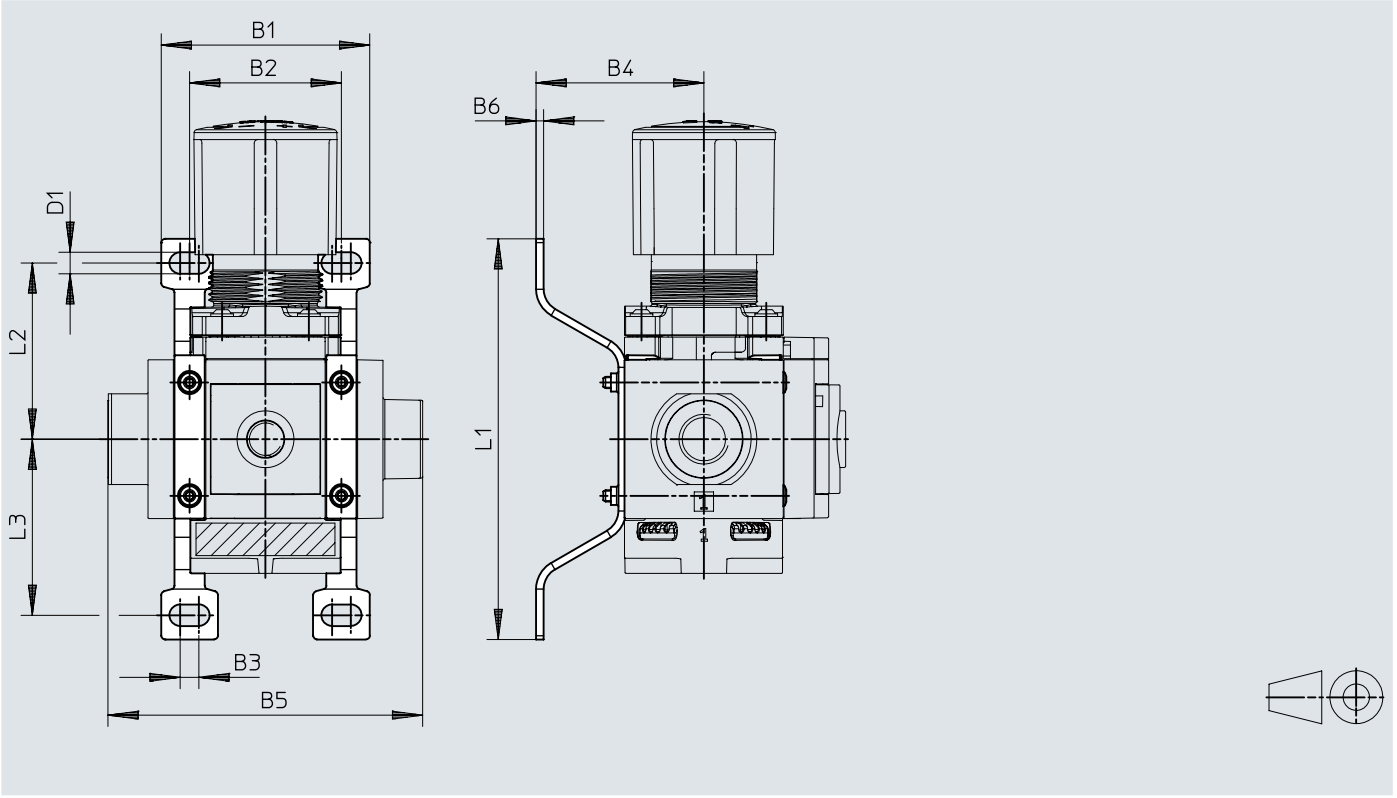
Dimensions – Mounting bracket MS...-WR-B Download CAD data www.festo.com



	B1 ±0,2	B2	B3	B4	L1	L2	L3 ±0,1	L4
MS2-WR-B	43	30	3,3	19	30,4	25,7	4,2	2
MS4-WR-B	68	38	14	40	52	44	7	2,5
MS6-WR-B	70	38,2	14,2	40	67	57	7,1	3

Dimensions

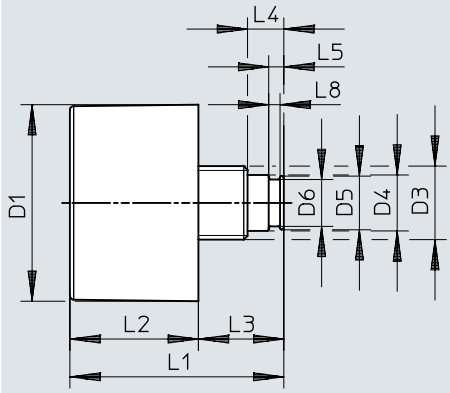
Dimensions – Wall mounting kit MS...-WPE-B Download CAD data www.festo.com



	B1	B2	B3	B4	B5	B6	D1 ø	L1	L2	L3
MS4-WPE-B	55,2	40,2	5	44,4	83,3	2	5,7	106	46,6	46,6
MS6-WPE-B	79	62	4,3	53,9	114,9	2	6,5	158	71	71

Dimensions

Dimensions – Pressure gauge PAGN Download CAD data www.festo.com



	D1 ø	D3	D4 ø ±0,05	D5 ø	D6 ø ±0,05	L1	L2	L3	L4	L5	L8 ±0,05
PAGN-26-10-G18S PAGN-26-1M-G18S	26	G1/8	7.4	7.1	6.2	28.3	17	11.3	4.8	2	1.5

Ordering data

Ordering data – condensate drain, manual

Size	Pneumatic connection, port 1	Grade of filtration	Pressure gauge (ANALOG) or Pressure display (DIGITAL)	Displayable units	Product weight	Part no.	Type
2	M5	5 µm	Prepared for G1/8		39 g	8086643	MS2-LFR-M5-D6-C-P-M-A8-B
			With pressure gauge	MPa	46.8 g	8086642	MS2-LFR-M5-D6-C-P-M-AR-MPA-B
				bar, psi		8086641	MS2-LFR-M5-D6-C-P-M-AR-BAR-B
	QS-6		Prepared for G1/8		35.7 g	8086646	MS2-LFR-QS6-D6-C-P-M-A8-B
			With pressure gauge	MPa	43.5 g	8086645	MS2-LFR-QS6-D6-C-P-M-AR-MPA-B
				bar, psi		8086644	MS2-LFR-QS6-D6-C-P-M-AR-BAR-B
4	G1/4		Prepared for G1/8		204 g	8098260	MS4-LFR-1/4-D6-C-P-M-A8-B
			With pressure sensor with LCD display	MPa, bar, inHg, kPa, mmHg, psi	274 g	8236706	MS4-LFR-1/4-D6-C-P-M-AD13-B
			With pressure gauge	MPa	207 g	8098265	MS4-LFR-1/4-D6-C-P-M-AG-MPA-B
				bar, psi		8098257	MS4-LFR-1/4-D6-C-P-M-AG-BAR-B
		40 µm	Prepared for G1/8		204 g	8098255	MS4-LFR-1/4-D6-E-P-M-A8-B
			With pressure sensor with LCD display	MPa, bar, inHg, kPa, mmHg, psi	274 g	8236704	MS4-LFR-1/4-D6-E-P-M-AD13-B
			With pressure gauge	MPa	207 g	8098254	MS4-LFR-1/4-D6-E-P-M-AG-MPA-B
				bar, psi		8098258	MS4-LFR-1/4-D6-E-P-M-AG-BAR-B
6	G1/2	5 µm	Prepared for G1/8		578 g	8098301	MS6-LFR-1/2-D6-C-P-M-A8-B
			With pressure sensor with LCD display	MPa, bar, inHg, kPa, mmHg, psi	649 g	8236715	MS6-LFR-1/2-D6-C-P-M-AD13-B
			With pressure gauge	MPa	581 g	8098310	MS6-LFR-1/2-D6-C-P-M-AG-MPA-B
				bar, psi		8098300	MS6-LFR-1/2-D6-C-P-M-AG-BAR-B
		40 µm	Prepared for G1/8		578 g	8098311	MS6-LFR-1/2-D6-E-P-M-A8-B
			With pressure sensor with LCD display	MPa, bar, inHg, kPa, mmHg, psi	649 g	8236713	MS6-LFR-1/2-D6-E-P-M-AD13-B
			With pressure gauge	MPa	581 g	8098307	MS6-LFR-1/2-D6-E-P-M-AG-MPA-B
				bar, psi		8098304	MS6-LFR-1/2-D6-E-P-M-AG-BAR-B

Ordering data – Manual condensate drain (products for battery production)

Size	Pneumatic connection, port 1	Grade of filtration	Pressure gauge (ANALOG) or Pressure display (DIGITAL)	Displayable units	Product weight	Part no.	Type
4	G1/4	5 µm	Prepared for G1/8		204 g	8175803	MS4-LFR-1/4-D6-C-P-M-A8-F1A-B
			With pressure gauge	MPa	207 g	8175801	MS4-LFR-1/4-D6-C-P-M-AG-MPA-F1A-B
				bar, psi		8175802	MS4-LFR-1/4-D6-C-P-M-AG-BAR-F1A-B
		40 µm	Prepared for G1/8		204 g	8175800	MS4-LFR-1/4-D6-E-P-M-A8-F1A-B
			With pressure gauge	MPa	207 g	8175798	MS4-LFR-1/4-D6-E-P-M-AG-MPA-F1A-B
				bar, psi		8175799	MS4-LFR-1/4-D6-E-P-M-AG-BAR-F1A-B
6	G1/2	5 µm	Prepared for G1/8		578 g	8175824	MS6-LFR-1/2-D6-C-P-M-A8-F1A-B
			With pressure gauge	MPa	581 g	8175822	MS6-LFR-1/2-D6-C-P-M-AG-MPA-F1A-B
				bar, psi		8175823	MS6-LFR-1/2-D6-C-P-M-AG-BAR-F1A-B
		40 µm	Prepared for G1/8		578 g	8175821	MS6-LFR-1/2-D6-E-P-M-A8-F1A-B
			With pressure gauge	MPa	581 g	8175819	MS6-LFR-1/2-D6-E-P-M-AG-MPA-F1A-B
				bar, psi		8175820	MS6-LFR-1/2-D6-E-P-M-AG-BAR-F1A-B

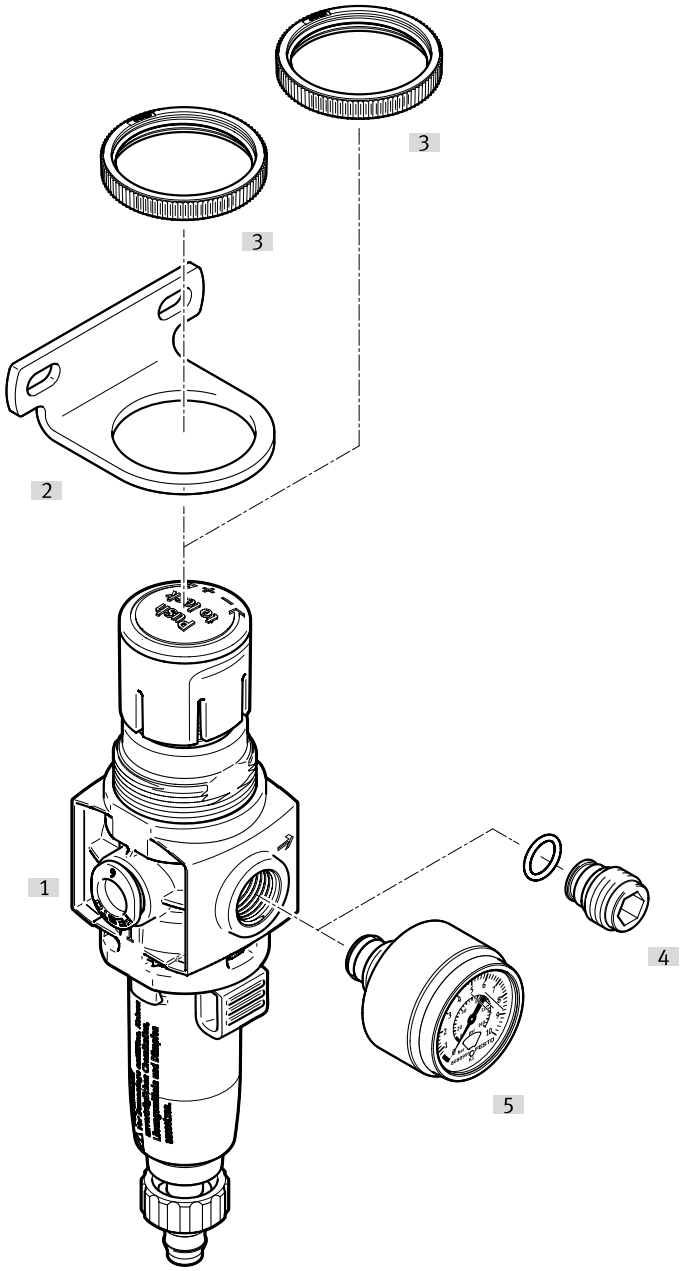
Ordering data

Ordering data – Condensate drain, fully automatic, manual, non-detenting

Size	Pneumatic connection, port 1	Grade of filtration	Pressure gauge (ANALOG) or Pressure display (DIGITAL)	Displayable units	Product weight	Part no.	Type
4	G1/4	5 µm	Prepared for G1/8		213 g	**8098263**	**MS4-LFR-1/4-D6-C-P-VC-A8-B**
			With pressure sensor with LCD display	MPa, bar, inHg, kPa, mmHg, psi	274 g	**8236707**	**MS4-LFR-1/4-D6-C-P-VC-AD13-B**
			With pressure gauge	MPa	216 g	**8098266**	**MS4-LFR-1/4-D6-C-P-VC-AG-MPA-B**
				bar, psi		**8098259**	**MS4-LFR-1/4-D6-C-P-VC-AG-BAR-B**
		40 µm	Prepared for G1/8		213 g	**8098262**	**MS4-LFR-1/4-D6-E-P-VC-A8-B**
			With pressure sensor with LCD display	MPa, bar, inHg, kPa, mmHg, psi	274 g	**8236705**	**MS4-LFR-1/4-D6-E-P-VC-AD13-B**
			With pressure gauge	MPa	216 g	**8098256**	**MS4-LFR-1/4-D6-E-P-VC-AG-MPA-B**
				bar, psi		**8098264**	**MS4-LFR-1/4-D6-E-P-VC-AG-BAR-B**
6	G1/2	5 µm	Prepared for G1/8		585 g	**8098303**	**MS6-LFR-1/2-D6-C-P-VC-A8-B**
			With pressure sensor with LCD display	MPa, bar, inHg, kPa, mmHg, psi	649 g	**8236716**	**MS6-LFR-1/2-D6-C-P-VC-AD13-B**
			With pressure gauge	MPa	589 g	**8098302**	**MS6-LFR-1/2-D6-C-P-VC-AG-MPA-B**
				bar, psi		**8098309**	**MS6-LFR-1/2-D6-C-P-VC-AG-BAR-B**
		40 µm	Prepared for G1/8		585 g	**8098306**	**MS6-LFR-1/2-D6-E-P-VC-A8-B**
			With pressure sensor with LCD display	MPa, bar, inHg, kPa, mmHg, psi	649 g	**8236714**	**MS6-LFR-1/2-D6-E-P-VC-AD13-B**
			With pressure gauge	MPa	589 g	**8098305**	**MS6-LFR-1/2-D6-E-P-VC-AG-MPA-B**
				bar, psi		**8098312**	**MS6-LFR-1/2-D6-E-P-VC-AG-BAR-B**

Peripherals

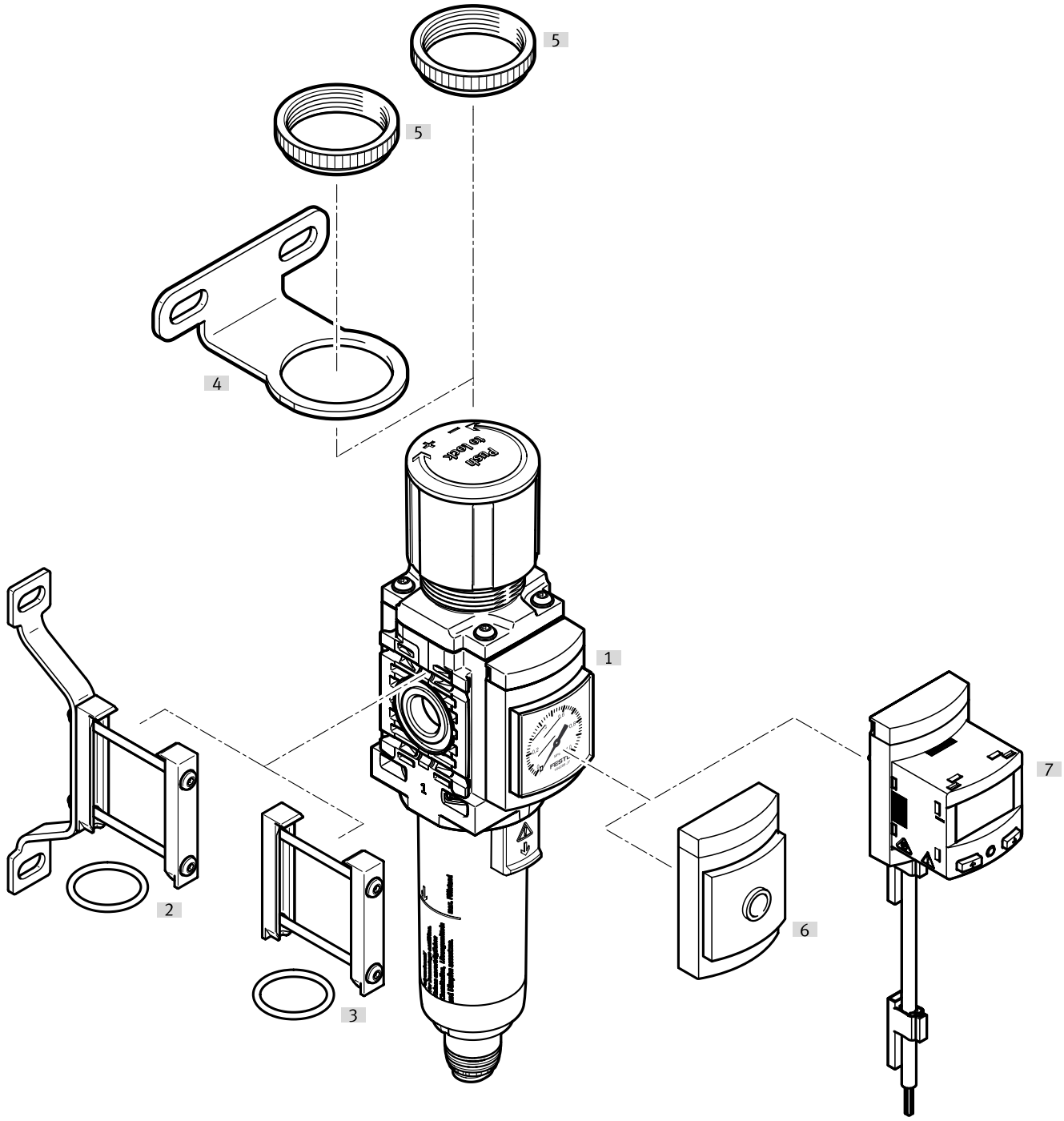
Peripherals overview size 2



Accessories			→ Link
	Type/order code	Description	
[1]	Filter regulator MS-2-LFR-...B		ms-lfr-b
[2]	Mounting bracket MS2-WR-B	For wall mounting, knurled nut included in the scope of delivery	27
[3]	Nut MS2-WRS	For front panel mounting	28
[4]	Plug screw MS2-G18S		28
[5]	Pressure gauge PAGN		27

Peripherals

Peripherals overview sizes 4 and 6



Accessories			→ Link
	Type/order code	Description	
[1]	Filter regulator MS4/6-LFR-...-B		ms-lfr-b
[2]	Wall mounting kit MS...-WPE-B	For connecting the modules for wall mounting	27
[3]	Module connector MS...-MV1	For connecting the modules	28
[4]	Mounting bracket MS...-WR-B	For wall mounting, knurled nut included in the scope of delivery	27
[5]	Nut MS...-WRS	For front panel mounting	28
[6]	Pressure sensor SPAN-B		28

Accessories

Pressure gauge PAGN



Nominal size of pressure gauge	Indicating range	Indicating range	Product weight	Part no.	Type
26		0 ... 10 bar	8 g	**8088985**	**PAGN-26-10-G18S**
	0 ... 1 MPa			**8088986**	**PAGN-26-1M-G18S**

Mounting bracket MS...-WR-B



Size	Suitability for the production of Li-ion batteries [1]	Product weight	Part no.	Type
		13.8 g	**8087978**	**MS2-WR-B**
	F1a	14.6 g	**8167322**	**MS2-WR-F1A-B**
4		49 g	**8149680**	**MS4-WR-B**
	F1a		**8176693**	**MS4-WR-F1A-B**
6		90 g	**8149681**	**MS6-WR-B**
	F1a		**8176696**	**MS6-WR-F1A-B**

1) More information www.festo.com/x/topic/bat

Wall mounting kit MS...-WPE-B



Size	Product weight	Part no.	Type
4	30 g	**8118600**	**MS4-WPE-B**
6	58 g	**8118599**	**MS6-WPE-B**

Filter cartridge MS...-LFP...



Size	Grade of filtration	Part no.	Type
4	5 µm	**8129064**	**MS4-LFP1-C**
	40 µm	**8129062**	**MS4-LFP1-E**
6	5 µm	**8129063**	**MS6-LFP1-C**
	40 µm	**8129061**	**MS6-LFP1-E**
Micro	5 µm	**526818**	**MS2/LFP-D-MICRO-5M**

Accessories

Module connector MS...-MV1



Size	Suitability for the production of Li-ion batteries [1]	Product weight	Part no.	Type
4		13 g	**8119201**	**MS4-MV1**
	F1a	36 g	**8176695**	**MS4-MV1-F1A**
6		33 g	**8119204**	**MS6-MV1**
	F1a	54 g	**8176697**	**MS6-MV1-F1A**

1) More information www.festo.com/x/topic/bat

Nut MS...-WRS



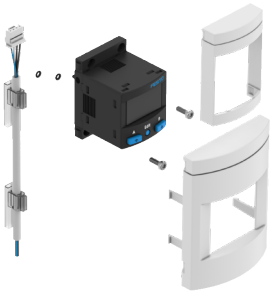
Size	Product weight	Part no.	Type
	0.7 g	**8098037**	**MS2-WRS**
4	6.9 g	**532187**	**MS4-WRS**
6	20.9 g	**532188**	**MS6-WRS**

Plug screw



Short type code	Product weight	Part no.	Type
MS2-G18S	4.6 g	**8095766**	**MS2-G18S**

Pressure sensor SPAN-B



Measurement method	Switching element function	Operational voltage range DC	Product weight	Part no.	Type
Piezoresistive pressure sensor	NC or NO, switchable	15 ... 30 V	105 g	**8218111**	**SPAN-B-B11R-MS-PN-L1**