Filter regulators LFR-EX4, D series, metal

FESTO
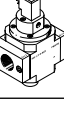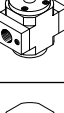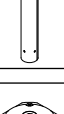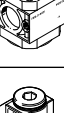
Product range overview – Service unit components D series, metal

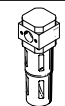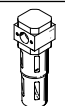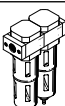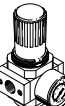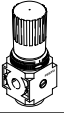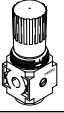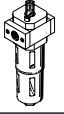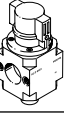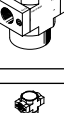| Type		Size	Pneumatic connection										Pressure regulation range [bar]			Grade of filtration [µm]			
			M5	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	QS4	QS6	0.5 ... 7	0.5 ... 12	2.5 ... 12	0.01	1	5	40
Service units																			
FRC/FRCS		Micro	■	■	■	–	–	–	–	–	■	■	■	–	–	–	–	■	–
		Mini	–	–	■	■	■	–	–	–	–	–	■	■	–	–	–	■	■
		Midi	–	–	–	■	■	■	■	–	–	–	■	■	–	–	–	■	■
		Maxi	–	–	–	–	–	■	■	■	–	–	■	■	–	–	–	■	■
FRC-K		Micro	–																
		Mini	–	–	■	■	–	–	–	–	–	–	–	■	■	–	–	–	■
		Midi	–	–	–	■	■	■	–	–	–	–	–	■	■	–	–	–	■
		Maxi	–	–	–	–	–	■	■	–	–	–	–	■	■	–	–	–	■
LFR-K **LFRS-K**		Micro	–																
		Mini	–	–	■	■	–	–	–	–	–	–	–	■	■	–	–	–	■
		Midi	–	–	–	■	■	■	–	–	–	–	–	■	■	–	–	–	■
		Maxi	–	–	–	–	–	■	■	–	–	–	–	■	■	–	–	–	■
Individual devices																			
Filter regulators **LFR/LFRS**		Micro	■	■	■	–	–	–	–	–	■	■	■	–	–	–	–	■	–
		Mini	–	–	■	■	■	–	–	–	–	–	■	■	–	–	–	■	■
		Midi	–	–	–	■	■	■	■	–	–	–	■	■	–	–	–	■	■
		Maxi	–	–	–	–	–	■	■	■	–	–	■	■	–	–	–	■	■
Filter **LF**		Micro	■	■	■	–	–	–	–	–	■	■	–	–	–	–	–	■	–
		Mini	–	–	■	■	■	–	–	–	–	–	–	–	–	–	–	■	■
		Midi	–	–	–	■	■	■	■	–	–	–	–	–	–	–	–	■	■
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–	–	–	–	■	■
Fine and micro filters **LFMA/LFMB**		Micro	–																
		Mini	–	–	■	■	■	–	–	–	–	–	–	–	–	■	■	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–	–	■	■	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–	–	■	■	–	–
Activated carbon filters **LFX**		Micro	–																
		Mini	–	–	■	■	■	–	–	–	–	–	–	–	–	–	–	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–	–	–	–	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–	–	–	–	–	–
Filter combinations **LFMBA**		Micro	–																
		Mini	–	–	■	■	■	–	–	–	–	–	–	–	–	■	■	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–	–	■	■	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–	–	■	■	–	–
Pressure regulators **LR/LRS**		Micro	■	■	■	–	–	–	–	–	■	■	■	–	–	–	–	–	–
		Mini	–	–	■	■	■	–	–	–	–	–	■	■	–	–	–	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	■	■	–	–	–	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	■	■	–	–	–	–	–

Product range overview – Service unit components, D series, metal

Type	Size	Bowl guard		Condensate drain			Pressure indicator		Actuator lock		Supply voltage			Options			→ Page/ Internet
		Metal bowl guard	Plastic bowl	Manual	Semi-automatic	Fully automatic	With pressure gauge	Without pressure gauge	Rotary knob with latch	Rotary knob with integrated lock	24 V DC	110 V AC	230 V AC	Directly actuated pressure regulator with integrated return flow function	Pilot actuated pressure regulator with integrated return flow function	Differential pressure display	
Service units																	
FRC/FRCS	Micro	–	■	■	■	–	■	■	■	–	–	–	–	–	–	–	frc
	Mini	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Midi	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	■	■	■	–	–	–	■	■	–	
FRC-K	Micro	–															frc
	Mini	■	–	■	–	■	■	–	■	–	■	–	–	–	–	–	
	Midi	■	–	■	–	■	■	–	■	–	■	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	–	■	–	■	–	–	■	■	–	
LFR-K **LFRS-K**	Micro	–															frc
	Mini	■	–	■	–	■	■	–	■	■	■	–	–	–	–	–	
	Midi	■	–	■	–	■	■	–	■	■	■	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	–	■	■	■	–	–	■	■	–	
Individual devices																	
Filter regulators **LFR/LFRS**	Micro	–	■	■	■	–	■	■	■	–	–	–	–	–	–	–	lfr
	Mini	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Midi	■	–	■	–	■	■	■	■	■	–	–	–	–	–	–	
	Maxi	■	–	■	–	■	■	■	■	■	–	–	–	■	■	–	
Filter **LF**	Micro	–	■	■	■	–	–	–	–	–	–	–	–	–	–	–	lf
	Mini	■	–	■	–	■	–	–	–	–	–	–	–	–	–	–	
	Midi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	–	
	Maxi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	–	
Fine and micro filters **LFMA/LFMB**	Micro	–															lfma, lfmb
	Mini	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
	Midi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
	Maxi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
Activated carbon filters **LFX**	Micro	–															lfx
	Mini	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Midi	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Maxi	■	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Filter combinations **LFMBA**	Micro	–															lfmba
	Mini	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
	Midi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
	Maxi	■	–	■	–	■	–	–	–	–	–	–	–	–	–	■	
Pressure regulators **LR/LRS**	Micro	–	–	–	–	–	■	■	■	–	–	–	–	–	–	–	lr
	Mini	–	–	–	–	–	■	■	■	■	–	–	–	■	–	–	
	Midi	–	–	–	–	–	■	■	■	■	–	–	–	■	–	–	
	Maxi	–	–	–	–	–	■	■	■	■	–	–	–	■	■	–	

Product range overview – Service unit components, D series, metal

Type		Size	Pneumatic connection										Pressure regulation range [bar]	
													0.5 ... 7	0.5 ... 12
			M5	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	QS4	QS6		
Individual devices														
Pressure regulators **LRB/LRBS**		Micro	–											
		Mini	–	–	–	■	–	–	–	–	–	–	■	■
		Midi	–	–	–	–	■	–	–	–	–	–	■	■
		Maxi	–											
Pressure regulator manifolds **LRB-K**		Micro	–											
		Mini	–	–	–	■	■	–	–	–	–	–	■	■
		Midi	–	–	–	–	■	■	–	–	–	–	■	■
		Maxi	–											
Lubricators **LOE**		Micro	■	■	■	–	–	–	–	–	■	■	–	–
		Mini	–	–	■	■	■	–	–	–	–	–	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–
On/off valves **HE**		Micro	–											
		Mini	–	–	■	■	■	–	–	–	–	–	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–
On/off valves **HEE**		Micro	–											
		Mini	–	–	■	■	■	–	–	–	–	–	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–
On/off valves **HEP**		Micro	–											
		Mini	–	–	■	■	■	–	–	–	–	–	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–
Soft-start valves **HEL**		Micro	–											
		Mini	–	–	■	■	■	–	–	–	–	–	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–
Membrane air dryers **LDM1**		Micro	–											
		Mini	–											
		Midi	–											
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–
Branching modules **FRM**		Micro	–											
		Mini	–	–	■	■	■	–	–	–	–	–	–	–
		Midi	–	–	–	■	■	■	■	–	–	–	–	–
		Maxi	–	–	–	–	–	■	■	■	–	–	–	–
Distributor block **FRZ**		Micro	–	–	–	–	–	–	–	–	–	–	–	–
		Mini	–	–	–	–	–	–	–	–	–	–	–	–
		Midi	–	–	–	–	–	–	–	–	–	–	–	–
		Maxi	–	–	–	–	–	–	–	–	–	–	–	–

Product range overview – Service unit components, D series, metal

Type	Size	Bowl guard		Pressure indicator		Actuator lock		Supply voltage			Options		→ Page/Internet
		Metal bowl guard	Plastic bowl	With pressure gauge	Without pressure gauge	Rotary knob with latch	Rotary knob with integrated lock	24 V DC	110 V AC	230 V AC	With non-return function	Pressure switch	
Individual devices													
Pressure regulators **LRB/LRBS**	Micro	–											lrb
	Mini	–	–	–	■	■	■	–	–	–	–	–	
	Midi	–	–	–	■	■	■	–	–	–	–	–	
	Maxi	–	–										
Pressure regulator manifolds **LRB-K**	Micro	–											lrb
	Mini	–	–	–	■	■	–	–	–	–	–	–	
	Midi	–	–	–	■	■	–	–	–	–	–	–	
	Maxi	–	–										
Lubricators **LOE**	Micro	–	■	–	■	–	–	–	–	–	–	–	loe
	Mini	■	–	–	■	–	–	–	–	–	–	–	
	Midi	■	–	–	■	–	–	–	–	–	–	–	
	Maxi	■	–	–	■	–	–	–	–	–	–	–	
On/off valves **HE**	Micro	–											he
	Mini	–	–	–	■	■	–	–	–	–	–	–	
	Midi	–	–	–	■	■	–	–	–	–	–	–	
	Maxi	–	–	–	■	■	–	–	–	–	–	–	
On/off valves **HEE**	Micro	–											hee
	Mini	–	–	–	■	–	–	■	■	■	–	–	
	Midi	–	–	–	■	–	–	■	■	■	–	–	
	Maxi	–	–	–	■	–	–	■	■	■	–	–	
On/off valves **HEP**	Micro	–											hep
	Mini	–	–	–	■	–	–	–	–	–	–	–	
	Midi	–	–	–	■	–	–	–	–	–	–	–	
	Maxi	–	–	–	■	–	–	–	–	–	–	–	
Soft-start valves **HEL**	Micro	–											hel
	Mini	–	–	–	■	–	–	–	–	–	–	–	
	Midi	–	–	–	■	–	–	–	–	–	–	–	
	Maxi	–	–	–	■	–	–	–	–	–	–	–	
Membrane air dryers **LDM1**	Micro	–											ldm1
	Mini	–											
	Midi	–											
	Maxi	■	–	–	■	–	–	–	–	–	–	–	
Branching modules **FRM**	Micro	–											frm
	Mini	–	–	–	■	–	–	–	–	–	■	■	
	Midi	–	–	–	■	–	–	–	–	–	■	■	
	Maxi	–	–	–	■	–	–	–	–	–	■	■	
Distributor block **FRZ**	Micro	–	–	–	■	–	–	–	–	–	–	–	frz
	Mini	–	–	–	■	–	–	–	–	–	–	–	
	Midi	–	–	–	■	–	–	–	–	–	–	–	
	Maxi	–	–	–	■	–	–	–	–	–	–	–	

Peripherals overview

Midi
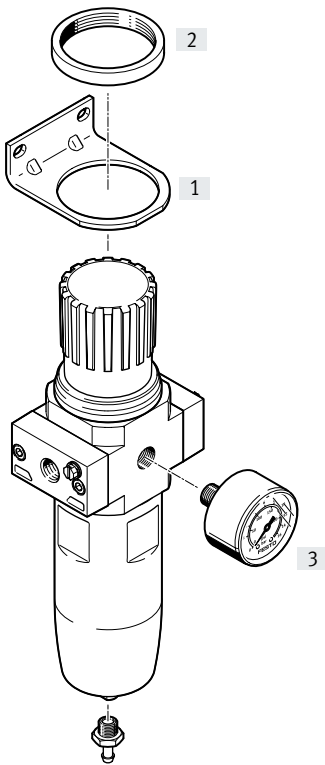
| Mounting attachments and accessories		
		➜ Page/Internet
[1]	Mounting bracket HR-D-R3	12
[2]	Knurled nut (included in the scope of delivery) HMR	–
[3]	Pressure gauge MA	12

Type codes

001	Series	
LFR	Filter regulator	

002	Pneumatic connection	
1/4	Female thread G1/4	
1/2	Female thread G1/2	
N1/2	Female thread 1/2 NPT	
N1/4	Female thread 1/4 NPT	

003	Version	
D	D series, metal	

004	Pressure regulation range	
	0.5 … 12 bar (0.05 … 1.2 MPa)	
16	0.5 … 16 bar	

005	Grade of filtration	
	40 µm	
5M	5 µm	

006	Pressure gauge	
O	Without pressure gauge	

007	Size	
MIDI	Grid dimension 55 mm (without connecting plates)	

008	Temperature range	
T3	-40 … +80°C	
T18	-20 … +80°C	

009	EU certification	
EX4	II 2GD	

Datasheet

Function
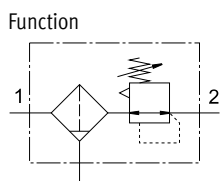
- ▯▮ - Flow rate
1150 ... 3400 l/min

- ▮ - Temperature range
−40 ... +80°C

- ▲ - Operating pressure
1 ... 20 bar

- Space-saving design with filter and regulator in a single unit
- Good particle separation and high flow rate
- Good regulation characteristics with minimal hysteresis

- Robust housing for the specific requirements of process automation
- Suitable for use outdoors and at temperatures down to −40°C

- Resistant to UV radiation and corrosive environments
- Two pressure regulation ranges: 0.5°... 12 bar and 0.5 ... 16 bar
- Two pressure gauge connections for flexible installation

- Setting values are secured by locking the rotary knob
- Suitable for use in potentially explosive environments in zones 1 and 21
- New filter cartridges ➜ page 12

General technical data

Size	Midi			
Pneumatic connection 1, 2[1]	G1/4	G1/2	1/4 NPT	1/2 NPT
Design	Filter regulator without pressure gauge			
Type of mounting	Via accessories			
	In-line installation			
Mounting position	Vertical ±5°			
Grade of filtration [μm]	5			
	40			
Air purity class at the output	Compressed air to ISO 8573-1:2010 [6:8:4] (grade of filtration 5 μm)			
	Compressed air to ISO 8573-1:2010 [7:8:4] (grade of filtration 40 μm)			
	Inert gases			
Bowl guard	Integrated as metal bowl			
Condensate drain	Manual			
Actuator lock	Rotary knob with latch			
Pressure regulation range [bar]	0.5 ... 12			
	0.5 ... 16 (0.5 ... 12 in temperature range +60 ... +80°C)			
Max. pressure hysteresis [MPa]	0.02			
[psi]	2.9			
Pressure indicator	Prepared for G1/4			
Max. condensate volume [cm³]	42			

1) Connecting plates with female thread

Standard nominal flow rate q_{nN}[1] [l/min]

Type	LFR-...-T18		LFR-...-T3	
Pneumatic connection 1, 2	G1/4, 1/4 NPT	G1/2, 1/2 NPT	G1/4, 1/4 NPT	G1/2, 1/2 NPT
Pressure regulation range 0.5 ... 12 bar				
Grade of filtration 40 μm	2000	3400	2000	3400
5 μm	1600	2600	1600	2600
Pressure regulation range 0.5 ... 16 bar				
Grade of filtration 40 μm	1475	1970	1190	1760
5 μm	1370	1665	1150	1660

1) Measured at p1 = 10 bar, p2 = 6 bar and Δp = 1 bar.

Datasheet

Operating and environmental conditions

Type		LFR-...-T18	LFR-...-T3
Operating pressure	[bar]	1 ... 20	
Operating medium		Compressed air to ISO 8573-1:2010 [–:9:–]	
		Inert gases	
LABS (PWIS) conformity		VDMA24364 zone III	
Ambient temperature	[°C]	–20 ... +80	–40 ... +80
Temperature of medium	[°C]	–20 ... +80	–40 ... +80
Storage temperature	[°C]	–20 ... +80	–40 ... +80
Corrosion resistance class CRC[1]		3	

1) Corrosion resistance class CRC 3 to Festo standard FN 940070
High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional surface requirements that are in direct contact with a normal industrial environment.

ATEX

Type	LFR-...-T18-EX4	LFR-...-T3-EX4
ATEX category for gas	II 2G	
Type of ignition protection for gas	Ex h IIC T6 Gb X	
ATEX category for dust	II 2D	
Type of ignition protection for dust	Ex h IIIC T85°C Db X	
Explosion-proof ambient temperature	–20°C ≤ Ta ≤ +80°C	–40°C ≤ Ta ≤ +80°C
CE marking (see declaration of conformity)[1]	To EU Explosion Protection Directive (ATEX)	
UKCA marking (see declaration of conformity)[1]	To UK regulations for explosions	
Explosion protection certification outside the EU[1]	EPL Db (GB)	
	EPL Gb (GB)	

1) Additional information www.festo.com/catalogue/lfr ➔ Support/Downloads.

Weight [g]

Size	Midi
Filter regulator LFR-...-EX4	1400

Materials

Housing	Die-cast zinc
Connecting plates	Die-cast zinc/aluminium
Regulating knob	POM
Knurled nut	Aluminium
Bowl	Wrought aluminium alloy
Seals	NBR
Note on materials	RoHS-compliant

Datasheet

Dimensions   Download CAD data ➔ www.festo.com

Midi
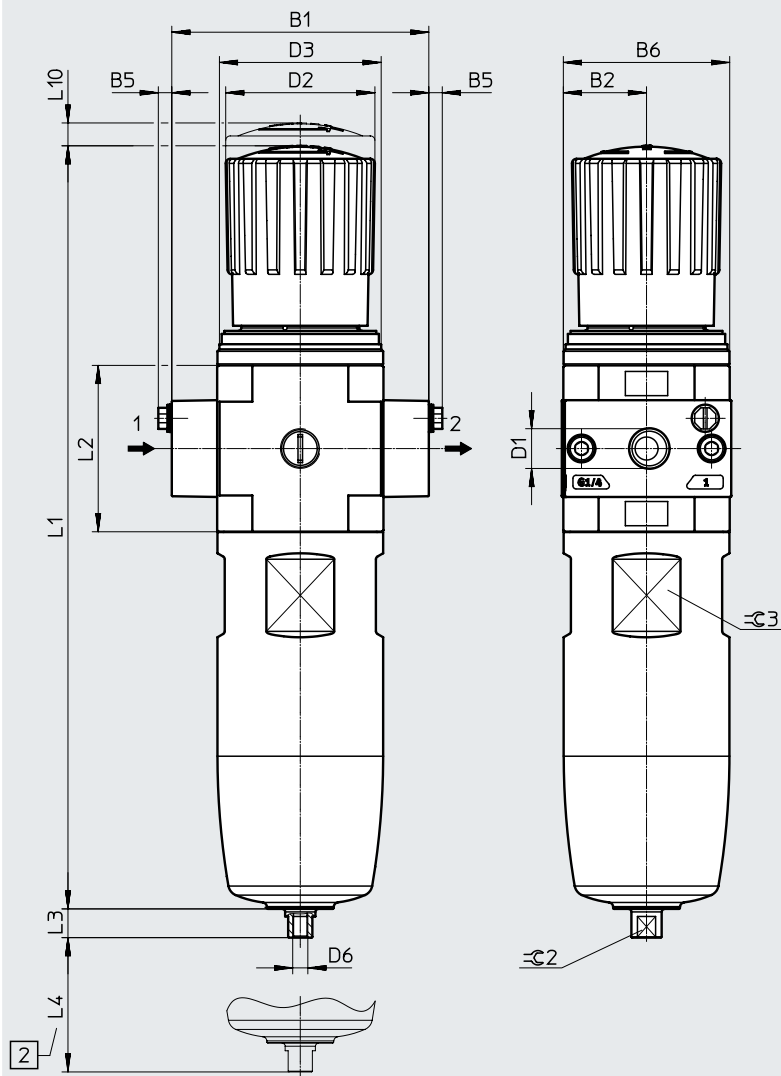
[2]   Installation dimension   ➔   Flow direction

Type	B1	B2	B5	B6	D1	D2 Ø	D3	D6
LFR-1/4-...-MIDI	85	27.5	~4.5	55	G1/4	49	M52x1.5	M5
LFR-1/2-...-MIDI					G1/2			
LFR-N1/4-...-MIDI					1/4 NPT			
LFR-N1/2-...-MIDI					1/2 NPT			

Type	L1	L2	L3	L4 min.	L10	⊏⊐ 2	⊏⊐ 3
LFR-1/4-...-MIDI	252.5	55	9.5	80	2.5	8	50
LFR-1/2-...-MIDI							
LFR-N1/4-...-MIDI							
LFR-N1/2-...-MIDI							

⧸ Note: This product corresponds to ISO 1179-1 and ISO 228-1.

Datasheet

Dimensions – Accessories

With mounting bracket HR-D-R3

Mounting bracket HR-D-R3
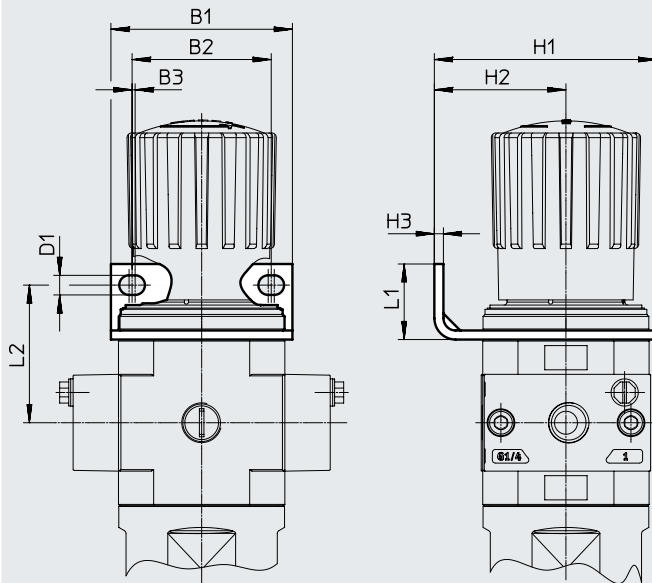
B1	B2	B3	D1	H1	H2	H3	L1	L2
60	46	1	6.5	73.5	43.5	3	25	45.5

Ordering data

Temperature range –20 ... +80°C, rotary knob with latch, connecting plates with threaded connection

Size	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
		Part no.	Type	Part no.	Type
Pressure regulation range 0.5 ... 12 bar					
Midi	G1/4	4772764	LFR-1/4-D-5M-O-MIDI-T18-EX4	4772765	LFR-1/4-D-O-MIDI-T18-EX4
	G1/2	4772768	LFR-1/2-D-5M-O-MIDI-T18-EX4	4772769	LFR-1/2-D-O-MIDI-T18-EX4
	1/4 NPT	4772772	LFR-N1/4-D-5M-O-MIDI-T18-EX4	4772773	LFR-N1/4-D-O-MIDI-T18-EX4
	1/2 NPT	4772776	LFR-N1/2-D-5M-O-MIDI-T18-EX4	4772777	LFR-N1/2-D-O-MIDI-T18-EX4
Pressure regulation range 0.5 ... 16 bar					
Midi	G1/4	4772766	LFR-1/4-D-16-5M-O-MIDI-T18-EX4	4772767	LFR-1/4-D-16-O-MIDI-T18-EX4
	G1/2	4772770	LFR-1/2-D-16-5M-O-MIDI-T18-EX4	4772771	LFR-1/2-D-16-O-MIDI-T18-EX4
	1/4 NPT	4772774	LFR-N1/4-D-16-5M-O-MIDI-T18-EX4	4772775	LFR-N1/4-D-16-O-MIDI-T18-EX4
	1/2 NPT	4772778	LFR-N1/2-D-16-5M-O-MIDI-T18-EX4	4772779	LFR-N1/2-D-16-O-MIDI-T18-EX4

Ordering data

Temperature range –40 ... +80°C, rotary knob with latch, connecting plates with threaded connection

| Size	Connection	Grade of filtration 5 µm		Grade of filtration 40 µm	
		Part no.	Type	Part no.	Type
Pressure regulation range 0.5 ... 12 bar					
Midi	G1/4	5271792	LFR-1/4-D-5M-O-MIDI-T3-EX4	5271793	LFR-1/4-D-O-MIDI-T3-EX4
	G1/2	5271796	LFR-1/2-D-5M-O-MIDI-T3-EX4	5271797	LFR-1/2-D-O-MIDI-T3-EX4
	1/4 NPT	5271800	LFR-N1/4-D-5M-O-MIDI-T3-EX4	5271801	LFR-N1/4-D-O-MIDI-T3-EX4
	1/2 NPT	5271804	LFR-N1/2-D-5M-O-MIDI-T3-EX4	5271805	LFR-N1/2-D-O-MIDI-T3-EX4
Pressure regulation range 0.5 ... 16 bar					
Midi	G1/4	5271794	LFR-1/4-D-16-5M-O-MIDI-T3-EX4	5271795	LFR-1/4-D-16-O-MIDI-T3-EX4
	G1/2	5271798	LFR-1/2-D-16-5M-O-MIDI-T3-EX4	5271799	LFR-1/2-D-16-O-MIDI-T3-EX4
	1/4 NPT	5271802	LFR-N1/4-D-16-5M-O-MIDI-T3-EX4	5271803	LFR-N1/4-D-16-O-MIDI-T3-EX4
	1/2 NPT	5271806	LFR-N1/2-D-16-5M-O-MIDI-T3-EX4	5271807	LFR-N1/2-D-16-O-MIDI-T3-EX4

Accessories

Mounting bracket HR-D-R3

- For wall mounting an individual component

Material:
Steel

Note on materials:
RoHS-compliant
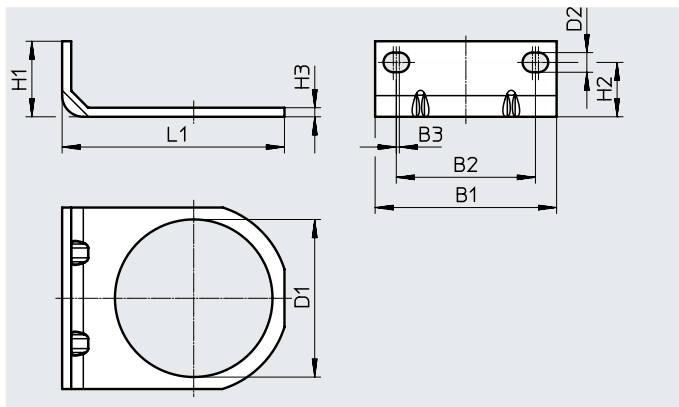
Dimensions

B1	B2	B3	D1 ∅	D2	H1	H2	H3	L1
60	46	1	52.1	6.5	25	18	3	73.5

Ordering data

Size	CRC[1]	Weight [g]	Part no.	Type
Midi	3	73	**4650310**	**HR-D-R3**

1) Corrosion resistance class CRC 3 to Festo standard FN 940070
   High corrosion stress. Outdoor exposure under moderate corrosive conditions. External visible parts with primarily functional surface requirements that are in direct contact with a normal industrial environment.

Filter cartridges, D series, metal

Ordering data

Size	Grade of filtration [μm]	Part no.	Type
Midi	5 (colour: blue)	**159594**	**LFP-D-MIDI-5M**
	40 (colour: white)	**363667**	**LFP-D-MIDI-40M**

Ordering data – Pressure gauge MA

Datasheets ➜ Internet: ma

	Nominal size	Pneumatic connection	Display range [bar]	[psi]	Part no.	Type
EN 837-1						
	40	G1/4	0 … 16	0 … 232	**183901**	**MA-40-16-G1/4-EN**
			0 … 25	0 … 360	**183902**	**MA-40-25-G1/4-EN**