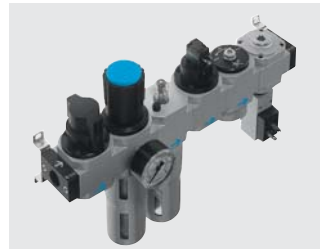


## D Series and DB Series Air Preparation Units

### D Series Air Preparation Units

- Rugged metal design
- Metric, G (BSPP), NPT threads; QS tubing connections
- FAST Program
- Filtration levels: 40  $\mu\text{m}$ , 5  $\mu\text{m}$ , 1  $\mu\text{m}$ , and 0.01  $\mu\text{m}$
- Port sizes up to 1 inch (G1 and 1 NPT)



### DB Series Air Preparation Units

- Value optimized polymer design
- G (BSPP) threads
- D and DB components can be combined
- Filtration levels: 40  $\mu\text{m}$  and 5  $\mu\text{m}$
- Port sizes 1/8 and 1/4 inch (G1/8 and G1/4)



# D Series and DB Series Air Preparation Units



## Ideal for All Applications

With a full range of manual, electrical, and pneumatic on/off valves, soft-start valves, as well as fine, micro, and coalescing filters, D Series and DB Series air preparation units meet whatever compressed air quality level your application requires.

## The Reliable Performer

Rugged **D Series metal** design combination and individual air preparation units can endure the harshest industrial environments. They are built for trouble-free, long-life operation in applications with all standard compressed air requirements.



Value optimized **DB Series polymer** design combination and individual air preparation units are ideal for applications requiring basic functionality and reliable quality.



## A Full Range of Sizes

D Series metal design units are available in four body sizes: Micro, Mini, Midi, and Maxi. Port thread sizes range from metric M5 to BSPP G1, and from 1/8 NPT to 1 NPT. Micro size lubricators and filters also feature port plates with QS4 and QS6 (4 mm and 6 mm) inserts for easy OD tubing connection.



DB Series Polymer design components are available in Mini body sizes, with BSP G1/8 and G1/4 body port thread sizes. Metal connecting plate kits are available with G (BSPP) and NPT 1/8, 1/4, and 3/8 ports.



## Modularity

The unique modular through-bolt joining system uses only one compression seal between units for leak-free assembly and mounting. This eliminates leakage and misalignment typical of our competitors' modular "joining block" systems.



Individual air preparation units (filters, regulators, lubricators) can be combined to form modular units, or ordered in a variety of standard or custom factory assembled combinations.

## Festo...Your Automation Partner Worldwide

As a global leader in industrial automation components and systems, with over \$1.8 billion sales worldwide, Festo has the resources and application experience to be your long-term partner for cost-effective automation solutions.

- 56 independent subsidiaries worldwide
- Representation in 180 countries
- Worldwide networking for consistent standards of products, consultancy, sales and services
- Worldwide support provided by over 11,500 team members

## Festo Quality Assurance, ISO 9001 Certification

Festo Corporation is committed to provide Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.










All Festo locations within the United States are registered to ISO 9001.

## Online Literature

Literature in PDF format is available for download at:  
[www.festo.com/us/airprep/d](http://www.festo.com/us/airprep/d)

# D Series and DB Series Air Preparation Units

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\*FAST (Festo Assured Shipping Time). This indicates that products of this type can be purchased from stock as individual parts to be assembled at your site.

# FAST Program

D Series and DB Series Air Preparation Units



1

## FAST...Festo Assured Shipping Time program

FAST enables designers and manufacturers to reduce inventory costs and “time-to-market” allowances for prototype and production equipment, with same-day shipment of thousands of automation components.

The selection of FAST components available for same-day / next-day shipment includes: cylinders, actuators, valves, unassembled individual and combination air preparation units, fittings, tubing, and sensors. FAST custom length cylinders and actuators, assembled individual combination air preparation units, and valve manifolds ship in 3 days.

For a complete list of FAST components and conditions, visit [www.festo.com/us/fast](http://www.festo.com/us/fast) or contact us to request FAST product literature.

## It's on time or it's shipped free!



Festo will reimburse the shipping charges for orders which do not meet the shipment times specified by the FAST program.

## FAST Program Conditions

Quantity limit to qualify for the FAST Program “It's on time, or it's shipped free” promise is 5 pieces per item, except for fittings/flow controls (100 pieces), tubing (100 meters), and mounting accessories (10 pieces).



For complete FAST components conditions and specific qualifying part numbers, call: 1.877.85.4FAST, e-mail: [fast@us.festo.com](mailto:fast@us.festo.com), visit: [www.festo.com/us/fast](http://www.festo.com/us/fast), or contact us to request FAST product literature.



Metric, G (BSPP), and Quick Star Tubing Connections																															
Product Specifications		Flow [l/min]	Pneumatic Connection									Pressure [bar]		Filtration [µm]				Bowl Guard	Bowl Drain			Gauge		Lock		Options	FAST <sup>1</sup>	See CD			
Type	Size		QS4	M5	QS6	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.5...7	0.5...12	0.01	1	5	40	Metal	Manual	Semiautomatic	Fully automatic	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with lock	Directly actuated pressure regulator with integrated return flow function	FAST Program Availability	PDF Page		
FRC / FRCS		Micro	90 to 140	■	■	■	■	■					■				■			■	■		■	■						22	
		Mini	600 to 1,500					■	■	■				■				■	■	■		■	■		■	■					
		Midi	1,300 to 2,800					■	■	■	■							■	■	■		■	■		■	■					
		Maxi	3,000 to 8,700								■	■	■		■				■	■	■		■	■		■	■	■			
NPT Connections		Flow [scfm]	Pressure [psi]							Filtration [µm]				Bowl Guard	Bowl Drain			Gauge		Lock		Options	FAST <sup>1</sup>	See CD							
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT	7...103	7...176	0.01	1	5	40																PDF Page	
FRC		Micro	3.2 to 4.9	■					■				■					■	■		■	■		■	■						22
		Mini	21.2 to 52.9	■	■	■				■			■	■				■	■		■	■		■	■						
		Midi	45.9 to 98.8		■	■	■	■					■	■				■	■		■	■		■	■						
		Maxi	105.9 to 307.1				■	■	■				■	■				■	■		■	■		■	■		■	■	■		

Standard ■ Available □ 1) FAST – Festo Assured Shipping Time, see page 2 for details.

**Type Code Description**  
 FRC = Filter/regulator-lubricator  
 FRCS = Filter/regulator-lubricator with rotary knob and lock



G (BSPP) Connections																											
Product Specifications		Flow [l/min]	Pneumatic Connection						Pressure [bar]		Filtration [µm]				Bowl Guard	Bowl Drain			Gauge		Lock		Voltage		Options	FAST	See CD
Type	Size		G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.5...12	2.5...12	0.01	1	5	40	Metal	Manual	Semiautomatic	Fully automatic	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with lock	24 VDC	110 VAC	Directly actuated pressure regulator with integrated return flow function	FAST Program Availability	PDF Page
FRC-K... With lubricator	 Mini	530 to 980	■	■				■	■				■	■	■		■		■								44
	Midi	1,060 to 2,500		■	■	■		■	■				■	■	■		■		■								
	Maxi	3,400 to 8,200				■	■		■	■				■	■		■		■					■			
LFR-K... / LFRS-K... Without lubricator	 Mini	575 to 1,150	■	■				■	■				■	■	■		■		■	■	■					63	
	Midi	1,370 to 3,150		■	■	■		■	■				■	■	■		■		■	■	■	■					
	Maxi	2,500 to 9,400				■	■		■	■				■	■		■		■	■	■	■		■			

Standard  Available

**Type Code Description**

- FRC-KA = Standard combination unit with filter/regulator, distributor block and lubricator
- FRC-KB = Standard combination unit with filter/regulator, distributor block with pressure switch, and lubricator
- FRC-KC = Standard combination unit with on/off valve, filter/regulator, distributor block with pressure switch, and lubricator
- FRC-KE = Standard combination unit with filter/regulator, lubricator, on/off valve with 24 VDC solenoid coil, and soft-start valve
- FRC-KF = Standard combination unit with on/off valve, filter/regulator, lubricator, on/off valve with 24 VDC solenoid coil, soft-start valve, and distributor block with pressure switch

- LFR-KA = Standard combination unit with filter/regulator and distributor block
- LFR-KB = Standard combination unit with on/off valve, filter/regulator and distributor block
- LFR-KC = Standard combination unit with on/off valve and filter/regulator
- LFR-KD = Standard combination unit with filter/regulator, on/off valve with 24 VDC solenoid coil, and soft/start valve
- LFR-KE = Standard combination unit with filter/regulator and distributor block with pressure switch
- LFR-KF = Standard combination unit with on/off valve, filter/regulator and distributor block with pressure switch
- LFR-KG = Standard combination unit with on/off valve, filter/regulator, on/off valve with 24 VDC solenoid coil, soft-start valve, and distributor block with pressure switch

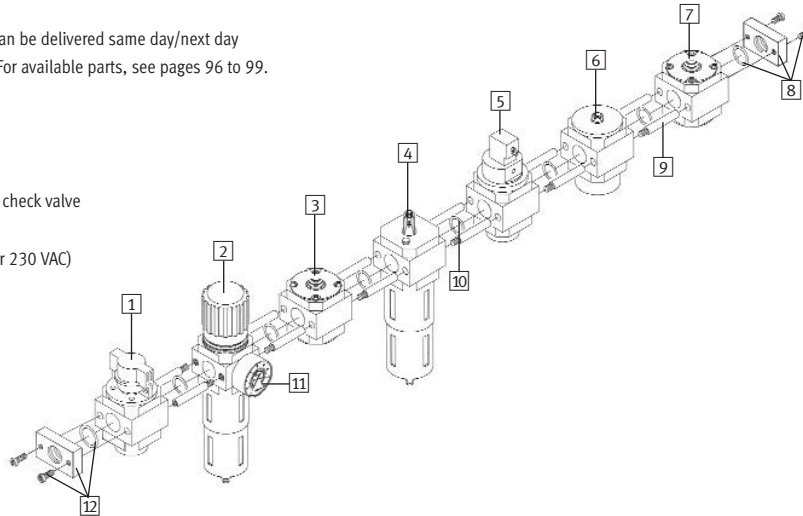
G (BSPP) Connections																														
Product Specifications		Flow [l/min]	Pneumatic Connection					Pressure [bar]		Filtration [µm]				Bowl Guard	Bowl Drain			Gauge		Lock		Voltage			Options		FAST <sup>1</sup>	See CD		
Type	Size		G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.5...7	0.5...12	0.01	1	5	40	Metal	Manual	Semiautomatic	Fully automatic	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with lock	24 VDC	110 VAC	230 VAC	Directly actuated pressure regulator with integrated return flow function	Pilot actuated pressure regulator with integrated return flow function	FAST Program Availability	PDF Page	
Configurable		Mini	104 to 2,640	■	■	■			■	■	■	■	■	■	■		■		■	■			■	■	■		□	□	96	
		Midi	280 to 7,040		■	■	■	■	■	■	■	■	■	■	■	■		■		■	■			■	■	■		□		□
		Maxi	600 to 16,000				■	■	■	■	■	■	■	■	■	■		■		■	■			■	■	■	□			□
NPT Connections																														
Type	Size	Flow [scfm]	Pressure [psi]					Filtration [µm]				Bowl Guard	Bowl Drain			Gauge		Lock		Voltage			Options		FAST <sup>1</sup>	PDF Page				
			1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT	7...103	7...176	0.01	1	5	40																
Configurable		Mini	3.7 to 93.2	■	■	■			■	■	■	■	■	■	■		■		■	■			■	■	■		□	□	96	
		Midi	9.9 to 248.5		■	■	■	■	■	■	■	■	■	■	■	■		■		■	■			■	■	■		□		□
		Maxi	21.2 to 564.8				■	■	■	■	■	■	■	■	■	■		■		■	■			■	■	■	□			□

Standard  Available  1) FAST – Festo Assured Shipping Time, see page 2 for details.



**Custom Combination Unit Example**

Custom combination air preparation units can be delivered same day/next day as separate parts for assembly at the site. For available parts, see pages 96 to 99. One possible combination is shown here.

- 1 HE on/off valve
- 2 LFR filter/regulator
- 3 FRM-H distributor block with integrated check valve
- 4 LOE lubricator
- 5 HEE solenoid-actuated valve (24, 110 or 230 VAC)
- 6 HEL soft-start valve
- 7 FRM distributor block
- 8 Right port block kit
- 9 Male-female attaching rod
- 10 Seal
- 11 Pressure gauge
- 12 Left port block kit
- 13 Mounting brackets (not shown)



2) Factory-assembled custom combination air preparation units are also available. Contact your local Festo representative for a quotation.

Metric, G (BSPP), and Quick Star Tubing Connections																												
Product Specifications		Flow [l/min]	Pneumatic Connection									Pressure [bar]		Filtration [µm]		Bowl Guard	Bowl Drain			Gauge		Lock		Options	FAST <sup>1</sup>	See CD		
Type	Size		QS4	M5	QS6	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.5...7	0.5...12	5	40	Metal	Manual	Semiautomatic	Fully automatic	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with lock	Directly actuated pressure regulator with integrated return flow function	FAST Program Availability	PDF Page	
LFR / LFRS		Micro	110 to 410	■	■	■	■	■				■		■			■	■		■	■	■					104	
		Mini	650 to 1,700					■	■	■		■	■	■	■	■	■			■	■	■	■			□		
		Midi	1,600 to 4,000						■	■	■	■	■	■	■	■	■	■			■	■	■	■			□	
		Maxi	4,000 to 11,000								■	■	■	■	■	■	■	■			■	■	■	■		□		
NPT Connections		Flow [scfm]	Pressure [psi]						Pressure [psi]		Filtration [µm]		Bowl Guard	Bowl Drain			Gauge		Lock		Options	FAST <sup>1</sup>	See CD					
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT	7...103	7...176	5	40																PDF Page
LFR		Micro	3.9 to 14.5	■						■		■		■			■	■		■	■	■					104	
		Mini	22.9 to 60.0	■	■	■				■	■	■	■	■	■	■	■			■	■	■	■			□		
		Midi	56.5 to 141.3		□	■	■	■		■	■	■	■	■	■	■	■			■	■	■	■			□		
		Maxi	141.3 to 388.5				□	■	■	■	■	■	■	■	■	■	■			■	■	■	■		□			

Standard ■ Available □ 1) FAST – Festo Assured Shipping Time, see page 2 for details.

Type Code Description

LFR = Filter/regulator  
LFRS = Filter/regulator with lockable rotary knob

Metric, G (BSPP), and Quick Star Tubing Connections																							
Product Specifications		Flow [l/min]	Pneumatic Connection									Pressure [bar]		Gauge		Lock		Options		FAST <sup>1</sup>	See CD		
Type	Size		QS4	M5	QS6	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.5...7	0.5...12	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with lock	Directly actuated pressure regulator with integrated return flow function			Pilot actuated pressure regulator with integrated return flow function	
LR / LRS		Micro	120 to 450	■	■	■	■	■					■		■	■	■					128	
		Mini	800 to 1,800					■	■	■			■	■	■	■	■	■		■			
		Midi	2,100 to 4,500						■	■	■	■	■	■	■	■	■	■		■			
		Maxi	5,400 to 12,500							■	■	■	■	■	■	■	■	■		■			
Type	Size					G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.5...7	0.5...12									PDF Page	
LRB / LRBS		Mini	1,600 to 1,800		■							■	■		■		■	■				147	
		Midi	3,200 to 3,800			■						■	■		■	■	■	■					
NPT Connections		Flow [scfm]	Pressure [psi]						Pressure [psi]		Gauge		Lock		Options		FAST <sup>1</sup>	PDF Page					
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT	7...103	7...176	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with lock	Directly actuated pressure regulator with integrated return flow function	Pilot actuated pressure regulator with integrated return flow function							
LR		Mini	28.3 to 63.6	■	■	■				■	■	■	■	■	■	■	■					128	
		Midi	74.2 to 158.9		□	■	■	■		■	■	■	■	■	■	■	■						
		Maxi	190.6 to 441.4				□	■	■	■	■	■	■	■	■	■	■	■					

► Metal Design ▷ Pressure Regulators ▷ Manifolds

G (BSPP) Connections			Flow [l/min]	Pressure [bar]									Pressure [psi]		Gauge		Lock		Options		FAST <sup>1</sup>	PDF Page
Type	Size			G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.5...7	0.5...12	With pressure gauge	Without pressure gauge	Rotary knob with detent	Rotary knob with lock	Directly actuated pressure regulator with integrated return flow function	Pilot actuated pressure regulator with integrated return flow function					
LRB-K...		Mini	1,600 to 1,800		■	■				■	■		■	■	■	■					156	
		Midi	3,200 to 3,800			■	■			■	■		■	■	■	■	■					

Standard  Available  1) FAST – Festo Assured Shipping Time, see page 2 for details.

**Type Code Description**

- LR = Pressure regulator
- LRS = Pressure regulator with lockable rotary knob
- LRB = Pressure regulator for manifold assembly
- LRBS = Pressure regulator for manifold assembly with lockable rotary knob
- LRB-K = Pressure regulator manifold (K... = number of regulators)

Metric, G (BSPP), and Quick Star Tubing Connections																										
Product Specifications			Flow [l/min]	Pneumatic Connection									Filtration [µm]				Bowl Guard	Bowl Drain			Options	FAST <sup>1</sup>	See CD			
Type	Size			QS4	M5	QS6	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.01	1	5		40	Manual	Semiautomatic				Fully automatic		
LF		Micro	170 to 290	■	■	■	■	■								■	■								166	
		Mini	800 to 1,400					■	■	■							■		■					□		
		Midi	1,600 to 3,000						■	■	■	■					■		■					□		
		Maxi	3,600 to 5,300								■	■	■				■		■					□		
NPT Connection																										
Type	Size		Flow [scfm]						0.01	1	5	40												PDF Page		
LF		Micro	6.0 to 10.2	■												■		■								166
		Mini	28.3 to 49.4	■	■	■										■		■						□		
		Midi	56.5 to 105.9			□	■	■	■							■		■						□		
		Maxi	127.1 to 187.2					□	■	■						■		■						□		

► Metal Design ► Filters ► Fine and Micro Individual Units



G (BSPP) Connections																									
Type	Size		Flow [l/min]									0.01	1	5	40										PDF Page
LFMB / LFMA		Mini	130 to 310	■	■	■									■	■							□	□	179
		Midi	350 to 1,000		■	■	■	■	■						■	■							□	□	
		Maxi	750 to 1,250					■	■	■					■	■							□	□	
NPT Connections																									
Type	Size		Flow [scfm]						0.01	1	5	40												PDF Page	
LFMB / LFMA		Mini	4.6 to 10.9	■	■	■									■	■							□	□	179
		Midi	12.4 to 35.3			□	■	■	■						■	■							□	□	
		Maxi	24.5 to 44.1					□	■	■					■	■							□	□	

Standard ■ Available □ 1) FAST – Festo Assured Shipping Time, see page 2 for details.


Type Code Description

- LF = Filter
- LFMB = Fine filter with filtration grade of 1 µm
- LFMA = Micro filter with filtration grade of 0.01 µm

► Metal Design ► Filters ► Fine and Micro Combination Units

G (BSPP) Connections																				
Product Specifications			Flow [l/min]	Pneumatic Connection						Filtration [µm]				Bowl Guard	Bowl Drain			Options	FAST	See CD
Type	Size			G1/8	G1/4	G3/8	G1/2	G3/4	G1	0.01	1	5	40	Metal	Manual rotary	Semiautomatic	Fully automatic	Differential pressure indicator	FAST Program Availability	PDF Page
LFMBA		Mini	125 to 140	■	■	■				■	■			■	■	■	<input type="checkbox"/>		192	
		Midi	300 to 350		■	■	■	■		■	■			■	■	■	<input type="checkbox"/>			
		Maxi	550 to 600				■	■	■	■	■			■	■	■	<input type="checkbox"/>			
NPT Connection																				
Product Specifications			Flow [scfm]	Pneumatic Connection						Filtration [µm]				Bowl Guard	Bowl Drain			Options	FAST	See CD
Type	Size			1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT	0.01	1	5	40	Metal	Manual rotary	Semiautomatic	Fully automatic	Differential pressure indicator	FAST Program Availability	PDF Page
LFMBA		Mini	4.4 to 4.9	■	■	■				■	■			■	■	■	<input type="checkbox"/>		192	
		Midi	10.6 to 12.4		<input type="checkbox"/>	■	■	■		■	■			■	■	■	<input type="checkbox"/>			
		Maxi	19.4 to 21.2				<input type="checkbox"/>	■	■	■	■			■	■	■	<input type="checkbox"/>			

► Metal Design ► Filters ► Active Carbon

G (BSPP) Connections																				
Product Specifications			Flow [l/min]	Pneumatic Connection						Residual Oil [mg/m³]				Bowl Guard	Bowl Drain			Options	FAST	See CD
Type	Size			G1/8	G1/4	G3/8	G1/2	G3/4	G1	≤ 0.003										PDF Page
LFX		Mini	300 to 400	■	■	■				■				■	■				201	
		Midi	650 to 1,100		■	■	■	■		■				■	■					
		Maxi	1,100 to 1,430				■	■	■	■				■	■					

Standard  Available


Type Code Description

LFMBA = Filter combination



LFX = Active carbon filter



► Metal Design ► Membrane Air Dryers

G (BSPP) Connections												
Product Specifications			Flow [l/min]	Pneumatic Connection						Bowl Guard	FAST <sup>1</sup>	See CD
Type	Size			G1/8	G1/4	G3/8	G1/2	G3/4	G1			
LDM1		Maxi	300 to 1,000				■	■	■	■	PDF Page	
											208	

► Metal Design ► Lubricators



Metric, G (BSPP), and Quick Star Tubing Connections															
Type	Size		QS4	M5	QS6	M7	G1/8	G1/4	G3/8	G1/2	G3/4	G1			PDF Page
LOE		Micro	160 to 430	■	■	■	■								216
		Mini	1,300 to 2,700				■	■	■				■	□	
		Midi	2,800 to 6,300					■	■	■	■		■	□	
		Maxi	8,300 to 9,000							■	■	■	■	□	
NPT Connections															
Type	Size	Flow [scfm]	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT							PDF Page
LOE		Micro	5.6 to 15.2	■											216
		Mini	45.9 to 95.4	■	■	■							■	□	
		Midi	98.9 to 222.5		□	■	■	■					■	□	
		Maxi	293.1 to 317.8				□	■	■				■	□	



Standard ■ Available □ 1) FAST – Festo Assured Shipping Time, see page 2 for details.

Type Code Description

LDM1 = Membrane air dryer

LOE = Lubricator

G (BSPP) Connections												
Product Specifications			Flow [l/min]	Pneumatic Connection						Knob Rotary knob with detent	FAST <sup>1</sup> FAST Program Availability	See CD PDF Page
Type	Size			G1/8	G1/4	G3/8	G1/2	G3/4	G1			
HE		Mini	1,000 to 1,600	■	■	■				■	<input type="checkbox"/>	228
		Midi	2,600 to 3,800		■	■	■	■		■	<input type="checkbox"/>	
		Maxi	5,600 to 6,500				■	■	■	■	<input type="checkbox"/>	
NPT Connections												
Product Specifications			Flow [scfm]	Pneumatic Connection						Knob Rotary knob with detent	FAST <sup>1</sup> FAST Program Availability	See CD PDF Page
Type	Size			1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT			
HE		Mini	35.3 to 56.5	■	■	■				■	<input type="checkbox"/>	228
		Midi	91.8 to 134.2		<input type="checkbox"/>	■	■	■		■	<input type="checkbox"/>	
		Maxi	197.8 to 229.5				<input type="checkbox"/>	■	■	■	<input type="checkbox"/>	



G (BSPP) Connections														
Product Specifications			Flow [l/min]	Pneumatic Connection						Supply Voltage			FAST <sup>1</sup> FAST Program Availability	See CD PDF Page
Type	Size			G1/8	G1/4	G3/8	G1/2	G3/4	G1	24 VDC	110 VAC	230 VAC		
HEE		Mini	1,000 to 1,600	■	■	■				■	■	■	<input type="checkbox"/>	237
		Midi	2,400 to 3,800		■	■	■	■		■	■	■	<input type="checkbox"/>	
		Maxi	5,600 to 6,500				■	■	■	■	■	■	<input type="checkbox"/>	
NPT Connections														
Product Specifications			Flow [scfm]	Pneumatic Connection						Supply Voltage			FAST <sup>1</sup> FAST Program Availability	See CD PDF Page
Type	Size			1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT	24 VDC	110 VAC	230 VAC		
HEE		Mini	91.8 to 134.2	■	■	■				■	■		<input type="checkbox"/>	237
		Midi	84.7 to 134.1		<input type="checkbox"/>	■	■	■		■	■		<input type="checkbox"/>	
		Maxi	197.8 to 229.5				<input type="checkbox"/>	■	■	■	■	■		

Standard ■ Available □

1) FAST – Festo Assured Shipping Time, see page 2 for details.

**Type Code Description**

HE = Manual on/off valve  
HEE = Electric on/off valve



G (BSPP) Connections										
Product Specifications		Flow [l/min]	Pneumatic Connection						FAST	See CD
Type	Size		G1/8	G1/4	G3/8	G1/2	G3/4	G1		
HEP		Mini	800 to 1,600	■	■	■				246
		Midi	1,900 to 4,100		■	■	■	■		
		Maxi	2,400 to 6,500				■	■	■	
NPT Connections										
Product Specifications		Flow [scfm]	Pneumatic Connection						FAST	See CD
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT		
HEP		Mini	28.2 to 56.4	□ <sup>2</sup>	□ <sup>2</sup>	□ <sup>2</sup>				246
		Midi	67.0 to 144.7		□ <sup>2</sup>	□ <sup>2</sup>	□ <sup>2</sup>	□ <sup>2</sup>		
		Maxi	84.7 to 229.5				□ <sup>2</sup>	□ <sup>2</sup>	□ <sup>2</sup>	

Standard  Available

1) **FAST** – Festo Assured Shipping Time, see page 2 for details.  
 2) Type HEP valves are available without threaded port block kits. Port block kits are purchased separately, see PDF page 235.

**Type Code Description**  
 HEP = Pneumatic on/off valve




► Metal Design ► Soft-start Valves

G (BSPP) Connections										
Product Specifications		Flow [l/min]	Pneumatic Connection						FAST <sup>1</sup>	See CD
Type	Size		G1/8	G1/4	G3/8	G1/2	G3/4	G1		
HEL		Mini	1,000 to 1,600	■	■	■			□	253
		Midi	2,600 to 3,800		■	■	■	■	□	
		Maxi	5,600 to 6,500				■	■	■	
NPT Connections										
Product Specifications		Flow [scfm]	Pneumatic Connection						FAST <sup>1</sup>	See CD
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT		
HEL		Mini	35.3 to 56.5	■	■	■			□	253
		Midi	91.8 to 134.2		□	■	■	■	□	
		Maxi	197.8 to 229.5				□	■	■	

Standard  Available

1) **FAST** – Festo Assured Shipping Time, see page 2 for details.

**Type Code Description**  
 HEL = Soft-start valve

G (BSPP) Connections													
Product Specifications			Flow [l/min]	Pneumatic Connection						Options		FAST <sup>1</sup>	See CD
Type	Size			G1/8	G1/4	G3/8	G1/2	G3/4	G1	With Check Valve	With Pressure Switch		
FRM With or without port blocks		Mini	1,300 to 3,300	■	■	■				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	262
		Midi	3,400 to 8,800		■	■	■	■		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		Maxi	9,600 to 20,000				■	■	■	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
FRZ Without port blocks		Micro	Flow rate is dependent on the air prep unit used.	■									271
		Mini			■								
		Midi					■						
		Maxi						■					
NPT Connections													
			Flow [scfm]	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	3/4 NPT	1 NPT				PDF Page
Type	Size												
FRM With or without port blocks		Mini	45.9 to 116.5	■	■	■				<input type="checkbox"/>		<input type="checkbox"/>	262
		Midi	120.1 to 310.8		□	■	■	■		<input type="checkbox"/>		<input type="checkbox"/>	
		Maxi	339.0 to 706.3				□	■	■	<input type="checkbox"/>		<input type="checkbox"/>	

Standard



Available

1) FAST – Festo Assured Shipping Time, see page 2 for details.

**Type Code Description**

FRM = Distributor block with or without port blocks



FRZ = Distributor block without port blocks

G (BSPP) Connections																	
Product Specifications		Flow [l/min]	Pneumatic Connection			Pressure [bar]	Filtration [µm]		Bowl Drain		Gauge		Lock	Regulating Functions		FAST <sup>1</sup>	See CD
Type	Size		G1/8	G1/4	G3/8		5	40	Manual	Semiautomatic	With pressure gauge	Without pressure gauge		Rotary knob with detent	With Secondary Venting		
FRC-DB		Mini	400 to 650	■	■	□ <sup>2</sup>	■	■	■	■	■	■	■	■	■	■	PDF Page
NPT Connections																	
		Flow [scfm]	Pressure [psi]														
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	7...103	5	40									PDF Page
FRC-DB		Mini	14.1 to 22.9	□ <sup>3</sup>	□ <sup>3</sup>	□ <sup>3</sup>	□	□	□	□	□	□	□	□	□	□	296

Standard  Available

- 1) FAST Program is not available for DB Series products.
  - 2) G3/8 connection is only available with optional threaded metal port block kit.
  - 3) NPT connections are only available with optional threaded metal port block kits.
- For full description of metal port block kits, see PDF page 331.



**Type Code Description**  
 FRC-DB = Filter/regulator-lubricator

G (BSPP) Connections																	
Product Specifications		Flow [l/min]	Pneumatic Connection			Pressure [bar]	Filtration [µm]		Bowl Drain		Gauge		Lock	Regulating Functions		FAST <sup>1</sup>	See CD
Type	Size		G1/8	G1/4	G3/8		5	40	Manual	Semiautomatic	With pressure gauge	Without pressure gauge		Rotary knob with detent	With Secondary Venting		
LFR-DB		Mini	500 to 1,200	■	■	□ <sup>2</sup>	■	■	■	■	■	■	■	■		306	
NPT Connections																	
		Flow [scfm]	Pressure [psi]												PDF Page		
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	7...103	5	40									
LFR-DB		Mini	14.1 to 22.9	□ <sup>3</sup>	□ <sup>3</sup>	□ <sup>3</sup>	□	□	□	□	□	□	□	□		306	



Standard  Available

- 1) FAST Program is not available for DB Series products.
  - 2) G3/8 connection is only available with optional threaded metal port block kit.
  - 3) NPT connections are only available with optional threaded metal port block kits.
- For full description of metal port block kits, see PDF page 331.

**Type Code Description**  
LFR-DB = Filter/regulator

G (BSPP) Connections													
Product Specifications		Flow [L/min]	Pneumatic Connection			Pressure [bar]	Gauge		Lock	Regulating Functions		FAST <sup>1</sup>	See CD
Type	Size		G1/8	G1/4	G3/8		With pressure gauge	Without pressure gauge		With Secondary Venting	With Return Flow Function		
LR-DB	 Mini	800 to 1,300	■	■	□ <sup>2</sup>	■	■	■	■	■		PDF Page	
NPT Connections													
		Flow [scfm]	Pressure [psi]										
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	7...103						PDF Page	
LR-DB	 Mini	28.2 to 45.8	□ <sup>3</sup>	□ <sup>3</sup>	□ <sup>3</sup>	□	■	■	□	□	□	314	

► Polymer Design ► Pressure Regulators ► Manifolds

G (BSPP) Connections												
Type	Size		G1/8	G1/4	G3/8	0.5...7						PDF Page
LRB-DB-K...	 Mini	1,000		■	□ <sup>2</sup>	■	□	■	■	■	■	320
NPT Connections												
		Flow [scfm]	Pressure [psi]									
Type	Size		1/8 NPT	1/4 NPT	3/8 NPT	7...103						PDF Page
LRB-DB-K...	 Mini	35.3		□ <sup>3</sup>	□ <sup>3</sup>	□	□	■	□	□	□	320

Standard ■ Available □

- 1) FAST Program is not available for DB Series products.
- 2) G (BSPP) connection is available with optional metal port block kit.
- 3) NPT connections are only available with optional metal port block kit, see PDF page 331.

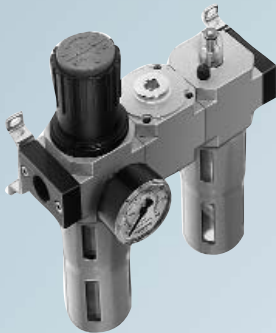
Type Code Description

LR-DB = Pressure regulator  
 LFB-DB-K = Pressure regulator manifold (K... = number of regulators)

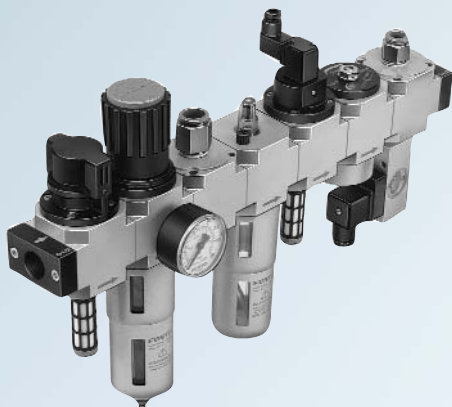




FRC-QS4-...-MICRO  
Filter/Regulator-Lubricator



FRC-...-KA  
Standard Combination



Custom Combination

**Section 2.1**  
FRC/FRCS  
Filter/Regulator-Lubricators  
S = with integrated lock

**Section 2.2**  
FRC-K, LFR-K/LFRS-K  
Standard Combinations  
FRC = with lubricator  
LFR = without lubricator  
S = with integrated lock

**Section 2.3**  
Custom Combinations





FRC-QS4-...-MICRO  
Filter/Regulator-Lubricator



FRC-1/4-D-MINI  
Filter/Regulator-Lubricator



FRCS-1/8-D-MINI  
Filter/Regulator-Lubricator

**FRC / FRCS  
Filter/Regulator-Lubricators**

DI = with integrated  
return flow

S = with integrated lock

Flow Rate:  
90 ... 8700 l/min

Working Pressure Ranges:  
0.5 ... 7 bar and  
0.5 ... 12 bar

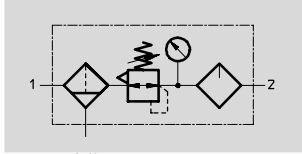
# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Technical Data

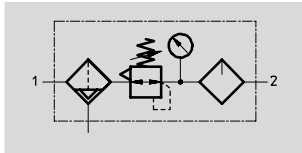
Function

FRC/FRCS-...-D-...

Condensate drain  
manual

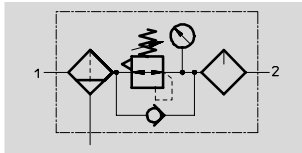


semi- or fully automatic

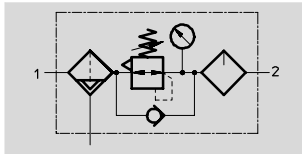


FRC/FRCS-...-D-DI-MAXI

Condensate drain  
manual



fully automatic



- - Flow rate  
90 ... 8700 l/min

- - Temperature range  
-10 ... +60 °C

- - Input pressure  
1 ... 16 bar



- Filter, regulator and lubricator functions in a single unit
- High flow rate and highly efficient removal of contaminants
- Good regulating characteristics with minimal pressure hysteresis
- Setting values are secured by locking the rotary knob
- Lockable rotary knob
- Two pressure regulation ranges: 0.5 ... 7 bar and 0.5 ... 12 bar
- Two pressure gauge connections for different fitting options
- Choice of filter cartridges: 5 µm or 40 µm
- With manual, semi-automatic or fully automatic condensate drain

General technical data																	
Size	Micro					Mini			Midi				Maxi				
Pneumatic connection	M5	M7	G $\frac{3}{8}$	QS4	QS6	G $\frac{3}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G $\frac{1}{2}$	G $\frac{3}{4}$	G1		
			$\frac{3}{8}$ NPT			$\frac{1}{8}$ NPT	$\frac{1}{4}$ NPT	$\frac{3}{8}$ NPT	$\frac{1}{4}$ NPT	$\frac{3}{8}$ NPT	$\frac{1}{2}$ NPT	$\frac{3}{4}$ NPT	$\frac{1}{2}$ NPT	$\frac{3}{4}$ NPT	1 NPT		
Operating medium	Compressed air					Compressed air											
Design	Filter regulator					Filter regulator											
	Proportional standard mist lubricator					Proportional standard mist lubricator											
Type of mounting	Via accessories					Via accessories											
	In-line installation					In-line installation											
Assembly position	Vertical $\pm 5^\circ$					Vertical $\pm 5^\circ$											
Grade of filtration	[µm] 5					5 or 40											
Max. hysteresis	[bar] 0.3					0.2											
Pressure regulation range	[bar] 0.5 ... 7					0.5 ... 7											
						0.5 ... 12											
Pressure indication	Via pressure gauge					Via pressure gauge											
Port connection	M5					G $\frac{3}{8}$			G $\frac{1}{4}$				G $\frac{1}{4}$				
Max. condensate volume	[cm $^3$ ] 3					22			43				80 <sup>1)</sup>				
Input pressure	[bar]																
Condensate drain	manual	1 ... 10					1 ... 16										
	semiautomatic	1 ... 10					-										
	fully automatic	-					2 ... 12										

1) The max. condensate volume for the FRC/FRCS-...-DI-MAXI is 43 cm $^3$ .

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Technical Data

Standard nominal flow rate <sup>1)</sup> q <sub>N</sub> [l/min]					
Connection	Female thread		Port block		
	M5	M7	G $\frac{1}{8}$ , $\frac{1}{8}$ NPT	QS4	QS6
Micro					
FRC/FRCS	90	170	140	100	140

1) Measured at p<sub>1</sub> = 10 bar, p<sub>2</sub> = 6 bar and  $\Delta p$  = 1 bar.  
A minimum flow rate of 125 l/min is required for flawless functioning.

Standard nominal flow rate <sup>2)</sup> q <sub>N</sub> [l/min]						
Connection	G $\frac{1}{8}$ , $\frac{1}{8}$ NPT	G $\frac{1}{4}$ , $\frac{1}{4}$ NPT	G $\frac{3}{8}$ , $\frac{3}{8}$ NPT	G $\frac{1}{2}$ , $\frac{1}{2}$ NPT	G $\frac{3}{4}$ , $\frac{3}{4}$ NPT	G1, 1 NPT
Mini						
FRC/FRCS-...-D-...(-A)	700	1000	1200	–	–	–
FRC/FRCS-...-D-7-...(-A)	800	1300	1500	–	–	–
FRC/FRCS-...-D-5M-...(-A)	600	850	1050	–	–	–
Midi						
FRC/FRCS-...-D-...(-A)	–	1500	2000	2600	2600	–
FRC/FRCS-...-D-7-...(-A)	–	1700	2000	2800	2800	–
FRC/FRCS-...-D-5M-...(-A)	–	1300	1700	1800	2100	–
Maxi						
FRC/FRCS-...-D-...(-A)	–	–	–	7600	8300	8500
FRC/FRCS-...-D-7-...(-A)	–	–	–	7700	8500	8700
FRC/FRCS-...-D-5M-...(-A)	–	–	–	6800	7000	7200
Maxi – Directly actuated pressure regulator with integrated return flow function						
FRC/FRCS-...-D-DI-...(-A)	–	–	–	3300	3800	4000
FRC/FRCS-...-D-7-DI-...(-A)	–	–	–	4500	5000	5200
FRC/FRCS-...-D-5M-DI-...(-A)	–	–	–	3000	3600	3800

2) Measured at p<sub>1</sub> = 10 bar, p<sub>2</sub> = 6 bar and  $\Delta p$  = 1 bar.  
A minimum flow rate of 125 l/min is required for flawless functioning.

Screw-in depth of connecting thread [mm]					
Connection	M5	M7	G $\frac{1}{8}$ , $\frac{1}{8}$ NPT	QS4	QS6
Micro					
In housing	5	6	–	–	–
In connecting plates	–	–	8	–	–

Ambient conditions				
Size	Micro	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60			
Temperature of medium [°C]	–10 ... +60			
Corrosion resistance class CRC <sup>3)</sup>	2			

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

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Technical Data

2

2.1

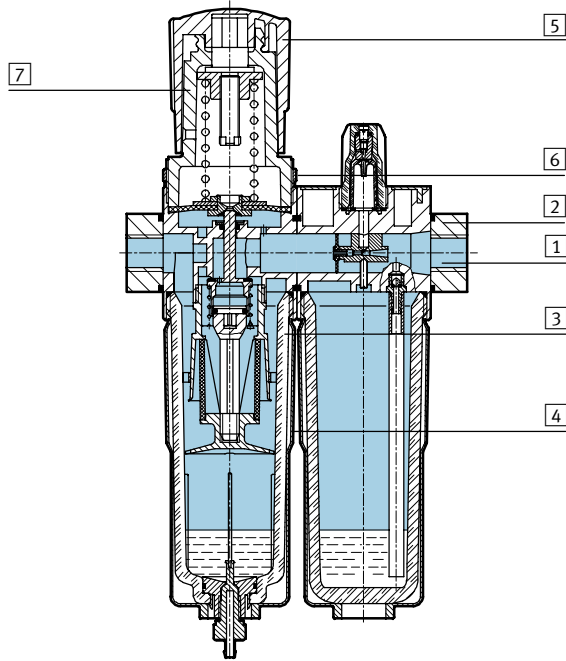
Weight [g]						
Size	Micro		Mini	Midi	Maxi	
	Female thread	Connecting plate			Connection G1/2, G3/4, 1/2 NPT, 3/4 NPT	Connection G1, 1 NPT
With pressure gauge						
FRC-...	113	133	660	1440	2390	2520
FRC-...-DI	-	-	-	-	2670	2670
FRCS-...	-	-	760	1680	2490	2620
FRCS-...-DI	-	-	-	-	2950	2950
Without pressure gauge						
FRC-...	103	123	600	1350	2280	2460
FRC-...-DI	-	-	-	-	2600	2600
FRCS-...	-	-	700	1590	2380	2560
FRCS-...-DI	-	-	-	-	2880	2880

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Technical Data

## Materials

Sectional view



2

2.1

Service units	Micro	Mini/Midi/Maxi
1 Housing	Wrought aluminum alloy	Die-cast zinc
2 Port blocks	Wrought aluminum alloy	Die-cast zinc/aluminum
3 Bowl	Polycarbonate	Polycarbonate
4 Metal bowl guard	–	Aluminum
5 Regulating knob	Polyacetal	Polyacetal
6 Knurled nut	Wrought aluminum alloy	Aluminum
7 Support	Polycarbonate	–
– Seals	Nitrile rubber	Nitrile rubber



# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

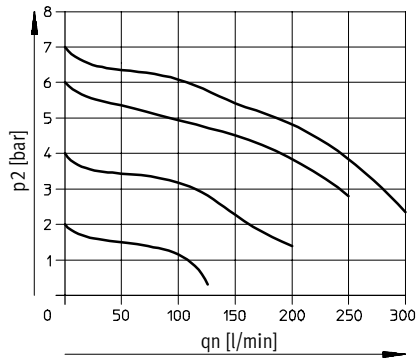
Technical Data

2

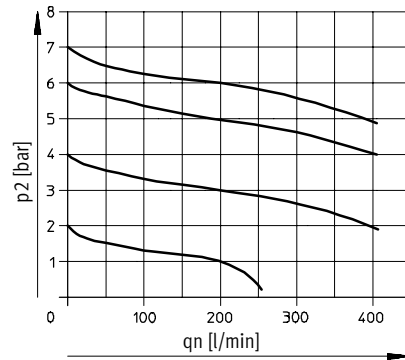
2.1

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

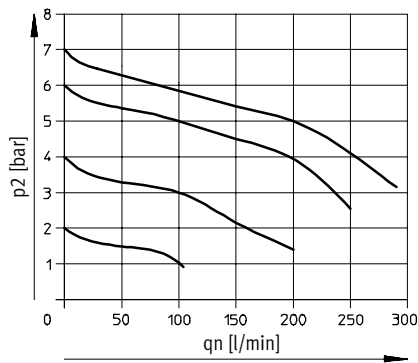
FRC-M5-...-MICRO



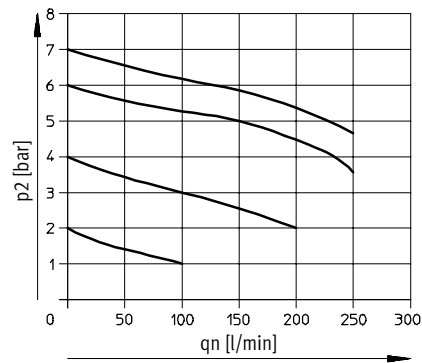
FRC-M7-...-MICRO B



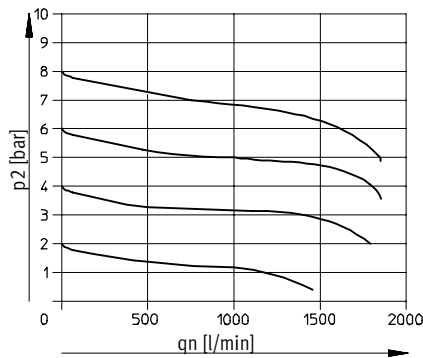
FRC-QS4-...-MICRO



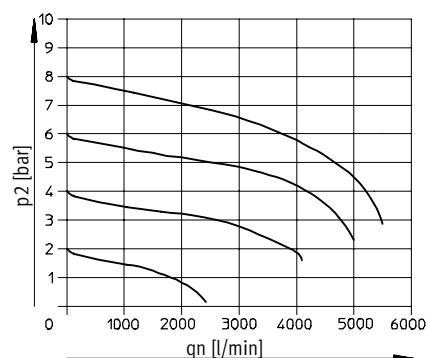
FRC-QS6-...-MICRO and FRC-1/8-...-MICRO



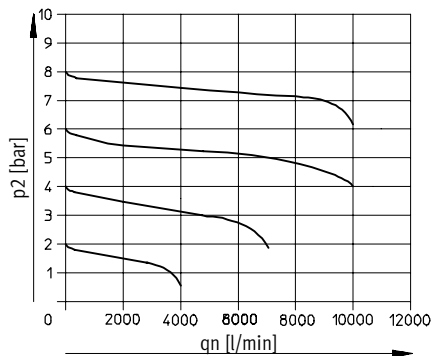
FRC/FRCS-1/4-D-MINI



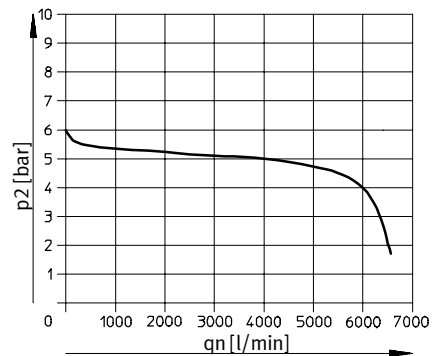
FRC/FRCS-1/2-D-MIDI



FRC/FRCS-1-D-MAXI



FRC/FRCS-1-D-DI-MAXI



Primary pressure  $p_1 = 10$  bar

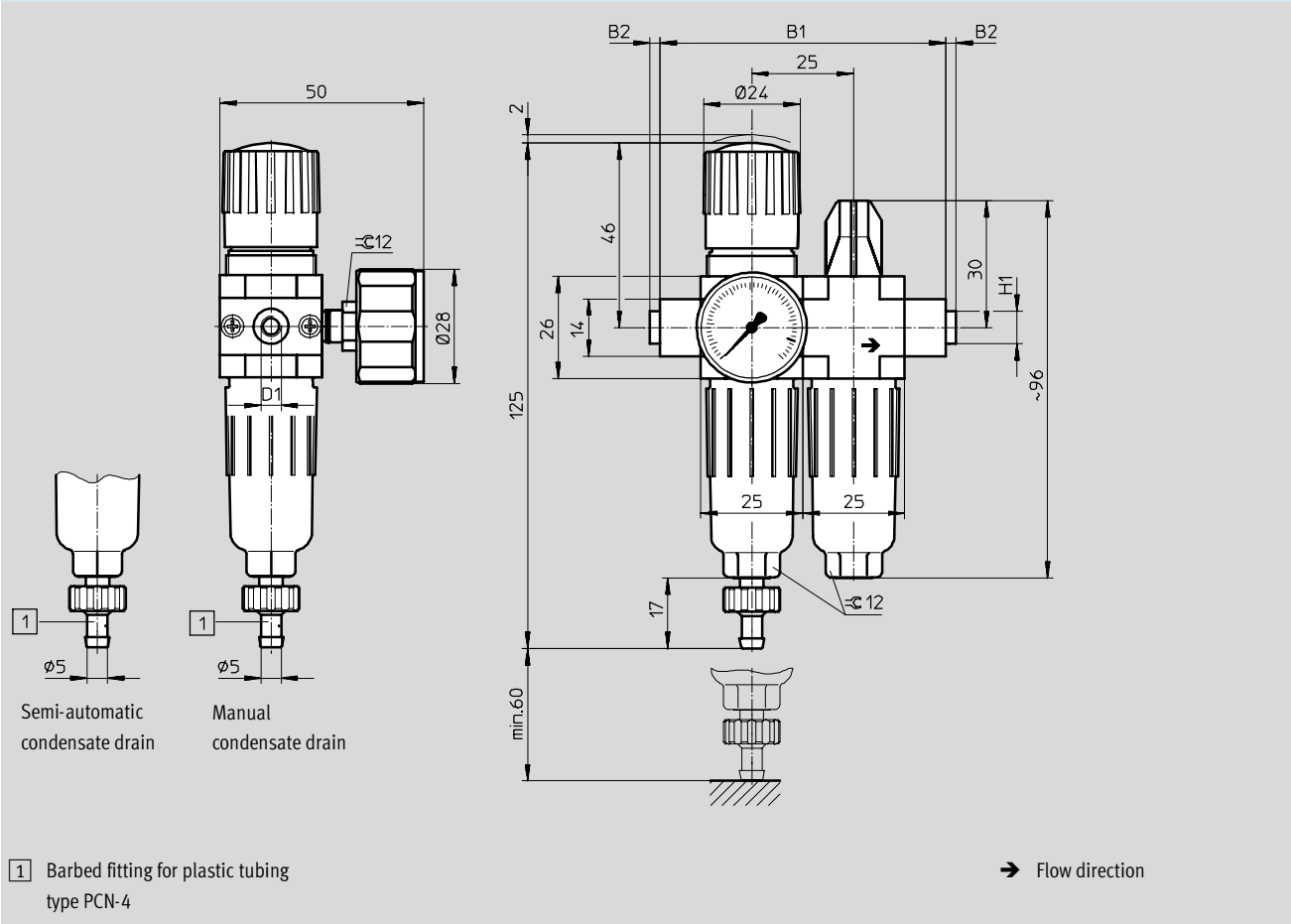
# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

Micro



2  
2.1

Type	B1	B2	D1	H1
FRC-M5-D-7-5M-MICRO (H)	50	-	M5	-
FRC-M7-D-7-5M-MICRO (H) B			M7	
FRC-1/8-D-7-5M-MICRO (H)	70	~2.5	G1/8, 1/8 NPT	~8
FRC-QS4-D-7-5M-MICRO (H)			QS4	
FRC-QS6-D-7-5M-MICRO (H)			QS6	

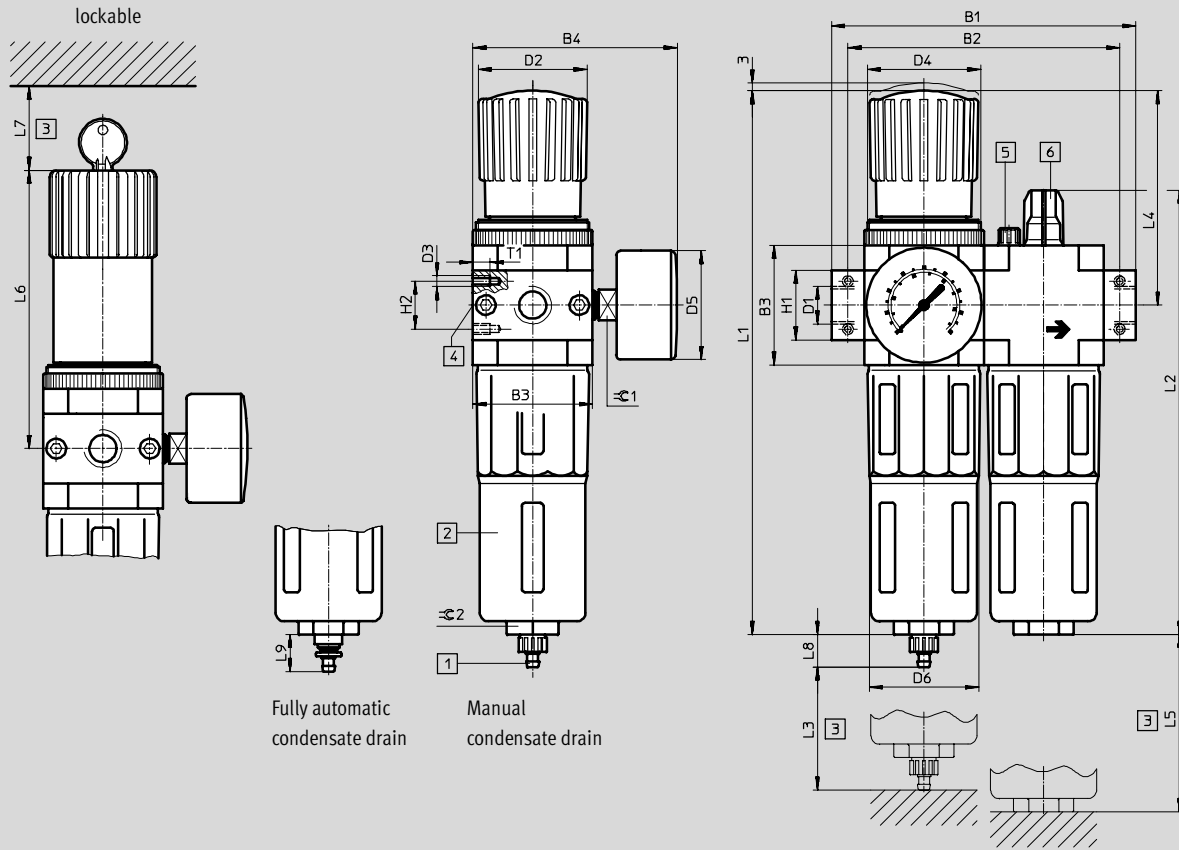
# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

Mini/Midi/Maxi



- 1 Barbed fitting for plastic tubing type PCN-4
  - 2 Metal bowl guard
  - 3 Installation dimensions
  - 4 Second pressure gauge connection
  - 5 Bleed screw for oil reservoir
  - 6 Oil adjusting screw
- ➔ Flow direction

Type	B1	B2	B3	B4	D1	D2 Ø	D3	D4	D5 Ø	D6 Ø
<b>Mini</b>										
FRC/FRCS-1/8-D-MINI, FRC-1/8-D-MINI-NPT	104	92	40	76	G1/8, 1/8 NPT	31	M4	M36x1.5	41	38
FRC/FRCS-1/4-D-MINI, FRC-1/4-D-MINI-NPT					G1/4, 1/4 NPT					
FRC/FRCS-3/8-D-MINI, FRC-3/8-D-MINI-NPT					G3/8, 3/8 NPT					
<b>Midi</b>										
FRC/FRCS-1/4-D-MIDI	140	125	55	95	G1/4	50	M5	M52x1.5	50	52
FRC/FRCS-3/8-D-MIDI, FRC-3/8-D-MIDI-NPT					G3/8, 3/8 NPT					
FRC/FRCS-1/2-D-MIDI, FRC-1/2-D-MIDI-NPT					G1/2, 1/2 NPT					
FRC/FRCS-3/4-D-MIDI, FRC-3/4-D-MIDI-NPT					G3/4, 3/4 NPT					

2

2.1

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Technical Data – Dimensional Drawings

Type	B1	B2	B3	B4	D1	D2 ∅	D3	D4	D5 ∅	D6 ∅
Maxi										
FRC/FRCS-1/2-D-MAXI, FRC-1/2-D-MAXI-NPT	162	146	66	107	G1/2, 1/2 NPT	31	M5	M36x1.5	50	65
FRC/FRCS-1/2-D-DI-MAXI						49		M52x1.5		
FRC/FRCS-3/4-D-MAXI, FRC-3/4-D-MAXI-NPT					G3/4, 3/4 NPT	31		M36x1.5		
FRC/FRCS-3/4-D-DI-MAXI						49		M52x1.5		
FRC/FRCS-1-D-MAXI, FRC-1-D-MAXI-NPT	182	157			G1, 1 NPT	31		M36x1.5		
FRC/FRCS-1-D-DI-MAXI						49		M52x1.5		

Type	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9	T1	≈C 1	≈C 2			
Mini																	
FRC/FRCS-1/8-D-MINI	20	11	193	169	60	69	100	98	60	15	19	7	14	22			
FRC/FRCS-1/4-D-MINI																	
FRC/FRCS-3/8-D-MINI																	
Midi																	
FRC/FRCS-1/4-D-MIDI	32	22	250	204	80	99	120	130	60	15	19	8	14	24			
FRC/FRCS-3/8-D-MIDI																	
FRC/FRCS-1/2-D-MIDI																	
FRC/FRCS-3/4-D-MIDI																	
Maxi																	
FRC/FRCS-1/2-D-MAXI	32	22	252	228	90	150	82	105	60	15	19	8	14	24			
FRC/FRCS-1/2-D-DI-MAXI			275												105	111	135
FRC/FRCS-3/4-D-MAXI			252												82	111	135
FRC/FRCS-3/4-D-DI-MAXI															275	105	111
FRC/FRCS-1-D-MAXI	40		252				82	105				8	14	24			
FRC/FRCS-1-D-DI-MAXI			275												105	111	135

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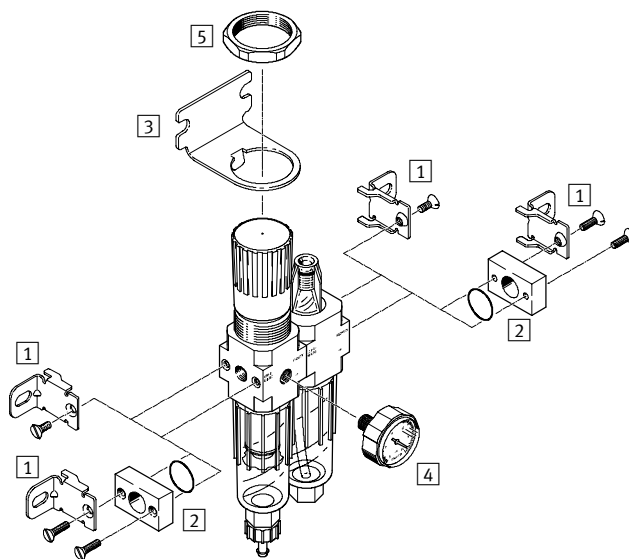
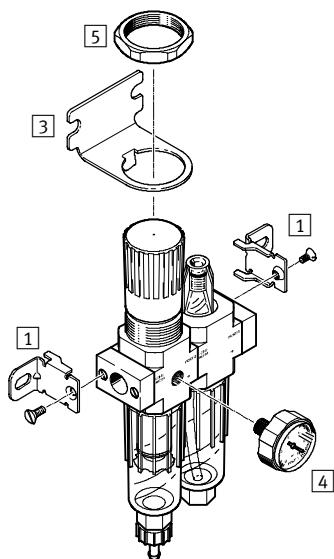
# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Accessories Overview

**Micro**

FRC filter/regulator-lubricator with port blocks, connection size G1/8, QS4 or QS6

FRC filter/regulator-lubricator without port blocks, connection size M5 or M7 in housing



2

2.1

**Mounting attachments and accessories**

	with port blocks	without port blocks	→ Page
1 Mounting bracket HFOE	■	■	276
2 Connecting plate kit PBL	-	■	280
3 Mounting bracket HRS	■	■	277
4 Pressure gauge MA-27	■	■	282
5 Hexagon nut (included in scope of delivery) HMR	■	■	-

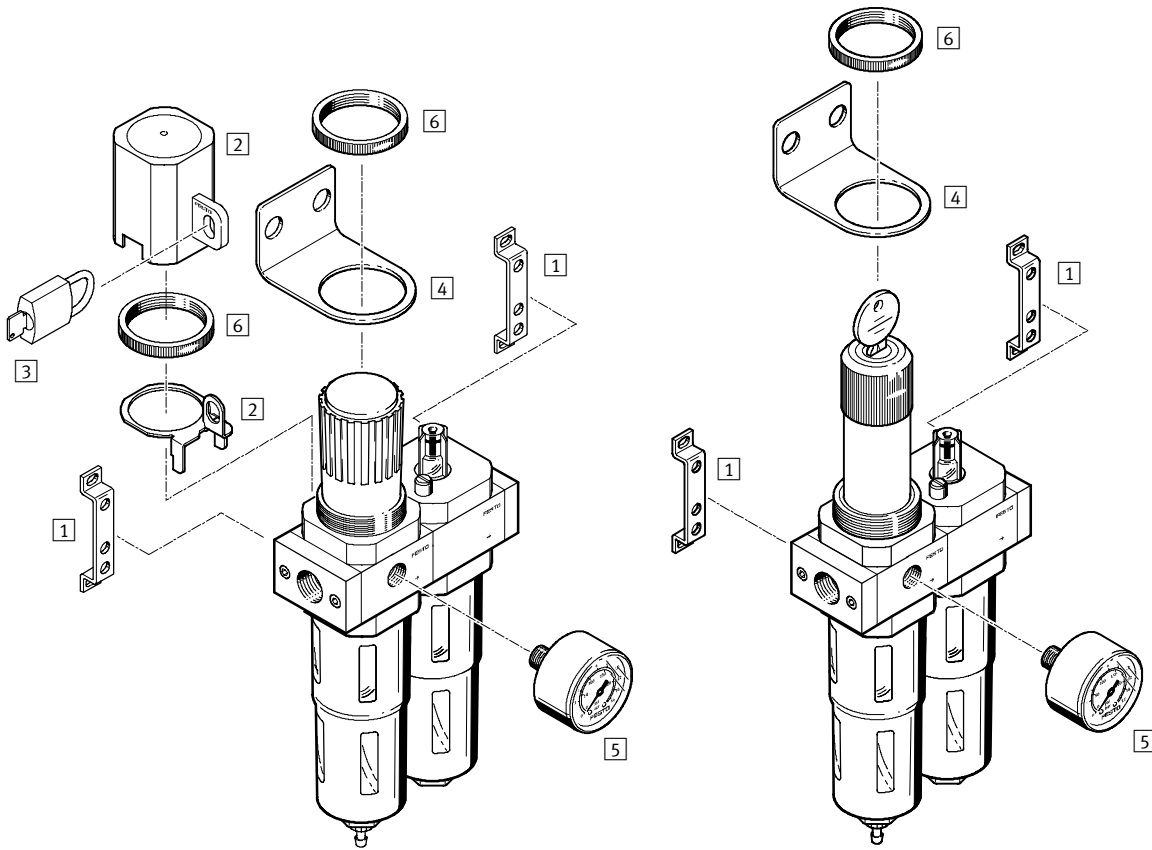
# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Accessories Overview

**Mini/Midi/Maxi**

FRC filter/regulator-lubricator

FRCS filter/regulator-lubricator, lockable



2  
2.1

**Mounting attachments and accessories**

	Rotary knob with detent	Rotary knob, lockable	→ Page
1 Mounting bracket HFOE	■	■	276
2 Regulator lock LRVS	■	—	281
3 Padlock LRVS-D	■	—	281
4 Mounting bracket HR-D	■	■	278
5 Pressure gauge MA	■	■	282
6 Knurled nut (included in scope of delivery) HMR	■	■	—

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Type Codes - Metric / QS / G (BSPP) Connections

2

2.1

FRC – 3/4 – D – – 5M – O – DI – MIDI – A

**Basic function**

FRC	Filter/regulator-lubricator
FRCS	Filter/regulator-lubricator, lockable

**Pneumatic connection**

M5	Thread M5
M7	Thread M7
QS4	Push-in fitting QS4
QS6	Push-in fitting QS6
1/8	Thread G1/8
1/4	Thread G1/4
3/8	Thread G3/8
1/2	Thread G1/2
3/4	Thread G3/4
1	Thread G1

**Series**

D	Series
---	--------

**Pressure regulation range**

	0.5 ... 12 bar
7	0.5 ... 7 bar

**Grade of filtration**

	40 µm
5M	5 µm

**Pressure gauge**

	With pressure gauge
O	Without pressure gauge

**Function (Maxi size only)**

DI	Directly actuated pressure regulator with integrated return flow function
----	---

**Size**

MICRO	Grid dimension 25 mm (without port blocks)
MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

**Condensate drain**

	Manual
H	Semiautomatic
A	Fully automatic



# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Type Codes – NPT Connections

FRC – 3/4 – D – 5M – MIDI – A – NPT

**Basic function**

FRC	Filter/regulator-lubricator
FRCS	Filter/regulator-lubricator, lockable

**Pneumatic connection**

N <sup>1</sup> / <sub>8</sub>	1/8 NPT Thread (for Micro only)
1/8	1/8 NPT Thread
1/4	1/4 NPT Thread
3/8	3/8 NPT Thread
1/2	1/2 NPT Thread
3/4	3/4 NPT Thread
1	1 NPT Thread

**Series**

D	Series
---	--------

**Pressure regulation range**

	0.5 ... 12 bar
7	0.5 ... 7 bar

**Grade of filtration**

	40 µm
5M	5 µm

**Pressure gauge**

	With pressure gauge
--	---------------------

**Size**

MICRO	Grid dimension 25 mm (without port blocks)
MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

**Condensate Drain**

	Manual
A	Fully automatic

**NPT Connection (where available)**

NPT	NPT threaded connection (not part of Micro type code)
-----	---

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# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

FESTO

Ordering Data

2

2.1

Ordering data						
Pressure regulation range 0.5 ... 7 bar						
Condensate drain	Size	Connection	Grade of filtration 5 µm			
			Part No.	Type		
With pressure gauge						
Manual	Micro	Without threaded port blocks, connecting thread in housing				
		M5	527860	FRC-M5-D-7-5M-MICRO	Q	
		M7	534189	FRC-M7-D-7-5M-MICRO B	Q	
		With threaded port blocks				
		G $\frac{1}{8}$	527864	FRC- $\frac{1}{8}$ -D-7-5M-MICRO	Q	
		$\frac{1}{8}$ NPT	527868	FRC-N $\frac{1}{8}$ -D-7-5M-MICRO	Q	
		With port block and push-in fitting				
		QS4	527876	FRC-QS4-D-7-5M-MICRO	Q	
		QS6	527880	FRC-QS6-D-7-5M-MICRO	Q	
		Semiautomatic	Micro	Without threaded port blocks, connecting thread in housing		
M5	527861			FRC-M5-D-7-5M-MICRO-H	Q	
M7	534190			FRC-M7-D-7-5M-MICRO-H B	Q	
With threaded port blocks						
G $\frac{1}{8}$	527865			FRC- $\frac{1}{8}$ -D-7-5M-MICRO-H	Q	
$\frac{1}{8}$ NPT	527869			FRC-N $\frac{1}{8}$ -D-7-5M-MICRO-H	Q	
With port block and push-in fitting						
QS4	527877			FRC-QS4-D-7-5M-MICRO-H	Q	
QS6	527881			FRC-QS6-D-7-5M-MICRO-H	Q	
Without pressure gauge						
Manual	Micro	Without threaded port blocks, connecting thread in housing				
		M5	527862	FRC-M5-D-7-0-5M-MICRO	Q	
		M7	534191	FRC-M7-D-7-0-5M-MICRO B	Q	
		With threaded port blocks				
		G $\frac{1}{8}$	527866	FRC- $\frac{1}{8}$ -D-7-0-5M-MICRO	Q	
		$\frac{1}{8}$ NPT	527870	FRC-N $\frac{1}{8}$ -D-7-0-5M-MICRO	Q	
		With port block and push-in fitting				
		QS4	527878	FRC-QS4-D-7-0-5M-MICRO	Q	
		QS6	527882	FRC-QS6-D-7-0-5M-MICRO	Q	
		Semiautomatic	Micro	Without threaded port blocks, connecting thread in housing		
M5	527863			FRC-M5-D-7-0-5M-MICRO-H	Q	
M7	534192			FRC-M7-D-7-0-5M-MICRO-H B	Q	
With threaded port blocks						
Semiautomatic	Micro	$\frac{1}{8}$ NPT	527871	FRC-N $\frac{1}{8}$ -D-7-0-5M-MICRO-H	Q	
Semiautomatic	Micro	With port block and push-in fitting				
		QS4	527879	FRC-QS4-D-7-0-5M-MICRO-H	Q	
		QS6	527883	FRC-QS6-D-7-0-5M-MICRO-H	Q	

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design



Ordering Data

Ordering data									
Pressure regulation range 0.5 ... 12 bar, metal bowl guard									
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm			
			Part No.	Type	LT	Part No.	Type	LT	
With pressure gauge									
Manual	Mini	G1/8	162770	FRC-1/8-D-5M-MINI	Q	159604	FRC-1/8-D-MINI	1W	
		G1/4	162771	FRC-1/4-D-5M-MINI	Q	159605	FRC-1/4-D-MINI	1W	
		G3/8	162772	FRC-3/8-D-5M-MINI	Q	162734	FRC-3/8-D-MINI	Q	
		1/8 NPT	173832	FRC-1/8-D-5M-MINI-NPT	Q	173828	FRC-1/8-D-MINI-NPT	1W	
		1/4 NPT	173840	FRC-1/4-D-5M-MINI-NPT	Q	173836	FRC-1/4-D-MINI-NPT	1W	
		3/8 NPT	173848	FRC-3/8-D-5M-MINI-NPT	Q	173844	FRC-3/8-D-MINI-NPT	Q	
	Midi	G1/4	186499	FRC-1/4-D-5M-MIDI	Q	186497	FRC-1/4-D-MIDI	Q	
		G3/8	162773	FRC-3/8-D-5M-MIDI	Q	159588	FRC-3/8-D-MIDI	1W	
		G1/2	162774	FRC-1/2-D-5M-MIDI	Q	159590	FRC-1/2-D-MIDI	1W	
		G3/4	162775	FRC-3/4-D-5M-MIDI	Q	162735	FRC-3/4-D-MIDI	Q	
		3/8 NPT	173856	FRC-3/8-D-5M-MIDI-NPT	Q	173852	FRC-3/8-D-MIDI-NPT	1W	
		1/2 NPT	173864	FRC-1/2-D-5M-MIDI-NPT	Q	173860	FRC-1/2-D-MIDI-NPT	1W	
		3/4 NPT	173872	FRC-3/4-D-5M-MIDI-NPT	Q	173868	FRC-3/4-D-MIDI-NPT	Q	
		Maxi	G1/2	186507	FRC-1/2-D-5M-MAXI	Q	186505	FRC-1/2-D-MAXI	Q
	G3/4		162776	FRC-3/4-D-5M-MAXI		159606	FRC-3/4-D-MAXI	1W	
	G1		162777	FRC-1-D-5M-MAXI	Q	159607	FRC-1-D-MAXI	1W	
	3/4 NPT		173880	FRC-3/4-D-5M-MAXI-NPT	Q	173876	FRC-3/4-D-MAXI-NPT	1W	
	1 NPT		173888	FRC-1-D-5M-MAXI-NPT		173884	FRC-1-D-MAXI-NPT	1W	
	Fully automatic		Mini	G1/8	162 778	FRC-1/8-D-5M-MINI-A	Q	159608	FRC-1/8-D-MINI-A
		G1/4		162 779	FRC-1/4-D-5M-MINI-A	Q	159609	FRC-1/4-D-MINI-A	1W
		G3/8		162 780	FRC-3/8-D-5M-MINI-A	Q	162736	FRC-3/8-D-MINI-A	1W
		1/8 NPT		173833	FRC-1/8-D-5M-MINI-A-NPT	Q	173829	FRC-1/8-D-MINI-A-NPT	Q
		1/4 NPT		173841	FRC-1/4-D-5M-MINI-A-NPT	Q	173837	FRC-1/4-D-MINI-A-NPT	1W
		3/8 NPT		173849	FRC-3/8-D-5M-MINI-A-NPT	Q	173845	FRC-3/8-D-MINI-A-NPT	Q
Midi		G1/4	186 502	FRC-1/4-D-5M-MIDI-A	Q	186500	FRC-1/4-D-MIDI-A	Q	
		G3/8	162 781	FRC-3/8-D-5M-MIDI-A	Q	159589	FRC-3/8-D-MIDI-A	1W	
		G1/2	162 782	FRC-1/2-D-5M-MIDI-A	Q	159591	FRC-1/2-D-MIDI-A	1W	
		G3/4	162 783	FRC-3/4-D-5M-MIDI-A	Q	162737	FRC-3/4-D-MIDI-A	Q	
		3/8 NPT	173857	FRC-3/8-D-5M-MIDI-A-NPT	Q	173853	FRC-3/8-D-MIDI-A-NPT	1W	
		1/2 NPT	173865	FRC-1/2-D-5M-MIDI-A-NPT	Q	173861	FRC-1/2-D-MIDI-A-NPT	1W	
		3/4 NPT	173873	FRC-3/4-D-5M-MIDI-A-NPT	Q	173869	FRC-3/4-D-MIDI-A-NPT	Q	
		Maxi	G1/2	186 510	FRC-1/2-D-5M-MAXI-A	Q	186508	FRC-1/2-D-MAXI-A	Q
G3/4			162 784	FRC-3/4-D-5M-MAXI-A	Q	159610	FRC-3/4-D-MAXI-A	1W	
G1			162 785	FRC-1-D-5M-MAXI-A	Q	159611	FRC-1-D-MAXI-A	1W	
3/4 NPT			173881	FRC-3/4-D-5M-MAXI-A-NPT	Q	173877	FRC-3/4-D-MAXI-A-NPT	1W	
1-NPT			173889	FRC-1-D-5M-MAXI-A-NPT	Q	173885	FRC-1-D-MAXI-A-NPT	1W	

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

2

2.1

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design



Ordering Data

2

2.1

Ordering data									
Pressure regulation range 0.5 ... 12 bar, metal bowl guard									
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm			
			Part No.	Type	LT	Part No.	Type	LT	
Without pressure gauge									
Manual	Mini	G $\frac{1}{8}$	192 650	FRC- $\frac{1}{8}$ -D-5M-O-MINI	Q	162738	FRC- $\frac{1}{8}$ -D-O-MINI	Q	
		G $\frac{1}{4}$	192 651	FRC- $\frac{1}{4}$ -D-5M-O-MINI	Q	162739	FRC- $\frac{1}{4}$ -D-O-MINI	Q	
		G $\frac{3}{8}$	192 652	FRC- $\frac{3}{8}$ -D-5M-O-MINI	Q	162740	FRC- $\frac{3}{8}$ -D-O-MINI	Q	
	Midi	G $\frac{1}{4}$	192 653	FRC- $\frac{1}{4}$ -D-5M-O-MIDI	Q	186498	FRC- $\frac{1}{4}$ -D-O-MIDI	Q	
		G $\frac{3}{8}$	192 654	FRC- $\frac{3}{8}$ -D-5M-O-MIDI	Q	162741	FRC- $\frac{3}{8}$ -D-O-MIDI	Q	
		G $\frac{1}{2}$	192 655	FRC- $\frac{1}{2}$ -D-5M-O-MIDI	Q	162742	FRC- $\frac{1}{2}$ -D-O-MIDI	Q	
		G $\frac{3}{4}$	192 656	FRC- $\frac{3}{4}$ -D-5M-O-MIDI	Q	162743	FRC- $\frac{3}{4}$ -D-O-MIDI	Q	
	Maxi	G $\frac{1}{2}$	192 657	FRC- $\frac{1}{2}$ -D-5M-O-MAXI	Q	186506	FRC- $\frac{1}{2}$ -D-O-MAXI	Q	
		G $\frac{3}{4}$	192 658	FRC- $\frac{3}{4}$ -D-5M-O-MAXI	Q	162744	FRC- $\frac{3}{4}$ -D-O-MAXI	Q	
		G1	192 659	FRC-1-D-5M-O-MAXI	Q	162745	FRC-1-D-O-MAXI	Q	
	Fully automatic	Mini	G $\frac{1}{8}$	192 660	FRC- $\frac{1}{8}$ -D-5M-O-MINI-A	Q	162746	FRC- $\frac{1}{8}$ -D-O-MINI-A	Q
			G $\frac{1}{4}$	192 661	FRC- $\frac{1}{4}$ -D-5M-O-MINI-A	Q	162747	FRC- $\frac{1}{4}$ -D-O-MINI-A	Q
G $\frac{3}{8}$			192 662	FRC- $\frac{3}{8}$ -D-5M-O-MINI-A	Q	162748	FRC- $\frac{3}{8}$ -D-O-MINI-A	Q	
Midi		G $\frac{1}{4}$	192 663	FRC- $\frac{1}{4}$ -D-5M-O-MIDI-A	Q	186501	FRC- $\frac{1}{4}$ -D-O-MIDI-A	Q	
		G $\frac{3}{8}$	192 664	FRC- $\frac{3}{8}$ -D-5M-O-MIDI-A	Q	162749	FRC- $\frac{3}{8}$ -D-O-MIDI-A	Q	
		G $\frac{1}{2}$	192 665	FRC- $\frac{1}{2}$ -D-5M-O-MIDI-A	Q	162750	FRC- $\frac{1}{2}$ -D-O-MIDI-A	Q	
		G $\frac{3}{4}$	192 666	FRC- $\frac{3}{4}$ -D-5M-O-MIDI-A	Q	162751	FRC- $\frac{3}{4}$ -D-O-MIDI-A	Q	
Maxi		G $\frac{1}{2}$	192 667	FRC- $\frac{1}{2}$ -D-5M-O-MAXI-A	Q	186509	FRC- $\frac{1}{2}$ -D-O-MAXI-A	Q	
		G $\frac{3}{4}$	192 668	FRC- $\frac{3}{4}$ -D-5M-O-MAXI-A	Q	162752	FRC- $\frac{3}{4}$ -D-O-MAXI-A	Q	
		G1	192 669	FRC-1-D-5M-O-MAXI-A	Q	162753	FRC-1-D-O-MAXI-A	Q	

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# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

FESTO

Ordering Data

Ordering data							
Pressure regulation range 0.5 ... 7 bar, metal bowl guard							
Condensate drain	Size	Connection	Grade of filtration 40 µm			LT	
			Part No.	Type			
With pressure gauge							
Manual	Mini	G1/8	162754	FRC-1/8-D-7-MINI		1W	
		G1/4	162755	FRC-1/4-D-7-MINI		1W	
		G3/8	162756	FRC-3/8-D-7-MINI		Q	
		1/8 NPT	173834	FRC-1/8-D-7-MINI-NPT		1W	
		1/4 NPT	173842	FRC-1/4-D-7-MINI-NPT		1W	
		3/8 NPT	173850	FRC-3/8-D-7-MINI-NPT		Q	
	Midi	G1/4	186503	FRC-1/4-D-7-MIDI		Q	
		G3/8	162757	FRC-3/8-D-7-MIDI		1W	
		G1/2	162758	FRC-1/2-D-7-MIDI		1W	
		G3/4	162759	FRC-3/4-D-7-MIDI		Q	
		3/8 NPT	173858	FRC-3/8-D-7-MIDI-NPT		1W	
		1/2 NPT	173866	FRC-1/2-D-7-MIDI-NPT		1W	
		3/4 NPT	173874	FRC-3/4-D-7-MIDI-NPT		Q	
	Maxi	G1/2	186511	FRC-1/2-D-7-MAXI		Q	
		G3/4	162760	FRC-3/4-D-7-MAXI		1W	
		G1	162761	FRC-1-D-7-MAXI		1W	
		3/4 NPT	173882	FRC-3/4-D-7-MAXI-NPT		1W	
		1 NPT	173890	FRC-1-D-7-MAXI-NPT		1W	
	Fully automatic	Mini	G1/8	162762	FRC-1/8-D-7-MINI-A		1W
			G1/4	162763	FRC-1/4-D-7-MINI-A		1W
			G3/8	162764	FRC-3/8-D-7-MINI-A		Q
1/8 NPT			173835	FRC-1/8-D-7-MINI-A-NPT		1W	
1/4 NPT			173843	FRC-1/4-D-7-MINI-A-NPT		1W	
3/8 NPT			173851	FRC-3/8-D-7-MINI-A-NPT		Q	
Midi		G1/4	186504	FRC-1/4-D-7-MIDI-A		Q	
		G3/8	162765	FRC-3/8-D-7-MIDI-A		1W	
		G1/2	162766	FRC-1/2-D-7-MIDI-A		1W	
		G3/4	162767	FRC-3/4-D-7-MIDI-A		Q	
		3/8 NPT	173859	FRC-3/8-D-7-MIDI-A-NPT		1W	
		1/2 NPT	173867	FRC-1/2-D-7-MIDI-A-NPT		1W	
		3/4 NPT	173875	FRC-3/4-D-7-MIDI-A-NPT		Q	
Maxi		G1/2	186512	FRC-1/2-D-7-MAXI-A		Q	
		G3/4	162768	FRC-3/4-D-7-MAXI-A		1W	
		G1	162769	FRC-1-D-7-MAXI-A		1W	
		3/4 NPT	173883	FRC-3/4-D-7-MAXI-A-NPT		1W	
		1 NPT	173891	FRC-1-D-7-MAXI-A-NPT		1W	

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

2

2.1

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

Ordering Data

2

2.1

Ordering data					
Pressure regulation range 0.5 ... 7 bar, metal bowl guard					
Condensate drain	Size	Connection	Grade of filtration 40 µm		
			Part No.	Type	LT
Without pressure gauge					
Manual	Mini	G1/8	192 630	FRC-1/8-D-7-O-MINI	Q
		G1/4	192 631	FRC-1/4-D-7-O-MINI	Q
		G3/8	192 632	FRC-3/8-D-7-O-MINI	Q
	Midi	G1/4	192 633	FRC-1/4-D-7-O-MIDI	Q
		G3/8	192 634	FRC-3/8-D-7-O-MIDI	Q
		G1/2	192 635	FRC-1/2-D-7-O-MIDI	Q
		G3/4	192 636	FRC-3/4-D-7-O-MIDI	Q
	Maxi	G1/2	192 637	FRC-1/2-D-7-O-MAXI	Q
		G3/4	192 638	FRC-3/4-D-7-O-MAXI	Q
		G1	192 639	FRC-1-D-7-O-MAXI	Q
Fully automatic	Mini	G1/8	192 640	FRC-1/8-D-7-O-MINI-A	Q
		G1/4	192 641	FRC-1/4-D-7-O-MINI-A	Q
		G3/8	192 642	FRC-3/8-D-7-O-MINI-A	Q
	Midi	G1/4	192 643	FRC-1/4-D-7-O-MIDI-A	Q
		G3/8	192 644	FRC-3/8-D-7-O-MIDI-A	Q
		G1/2	192 645	FRC-1/2-D-7-O-MIDI-A	Q
		G3/4	192 646	FRC-3/4-D-7-O-MIDI-A	Q
	Maxi	G1/2	192 647	FRC-1/2-D-7-O-MAXI-A	Q
		G3/4	192 648	FRC-3/4-D-7-O-MAXI-A	Q
		G1	192 649	FRC-1-D-7-O-MAXI-A	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

FESTO

Ordering Data

2

2.1

Ordering data								
Pressure regulation range 0.5 ... 12 bar, directly actuated pressure regulator with integrated return flow function, metal bowl guard								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Maxi	G1/2	192406	FRC-1/2-D-5M-DI-MAXI	Q	192404	FRC-1/2-D-DI-MAXI	Q
		G3/4	192412	FRC-3/4-D-5M-DI-MAXI	Q	192410	FRC-3/4-D-DI-MAXI	Q
		G1	192418	FRC-1-D-5M-DI-MAXI	Q	192416	FRC-1-D-DI-MAXI	Q
Fully automatic	Maxi	G1/2	192424	FRC-1/2-D-5M-DI-MAXI-A	Q	192422	FRC-1/2-D-DI-MAXI-A	Q
		G3/4	192430	FRC-3/4-D-5M-DI-MAXI-A	Q	192428	FRC-3/4-D-DI-MAXI-A	Q
		G1	192436	FRC-1-D-5M-DI-MAXI-A	Q	192434	FRC-1-D-DI-MAXI-A	Q
Without pressure gauge								
Manual	Maxi	G1/2	192407	FRC-1/2-D-5M-O-DI-MAXI	Q	192405	FRC-1/2-D-O-DI-MAXI	Q
		G3/4	192413	FRC-3/4-D-5M-O-DI-MAXI	Q	192411	FRC-3/4-D-O-DI-MAXI	Q
		G1	192419	FRC-1-D-5M-O-DI-MAXI	Q	192417	FRC-1-D-O-DI-MAXI	Q
Fully automatic	Maxi	G1/2	192425	FRC-1/2-D-5M-O-DI-MAXI-A	Q	192423	FRC-1/2-D-O-DI-MAXI-A	Q
		G3/4	192431	FRC-3/4-D-5M-O-DI-MAXI-A	Q	192429	FRC-3/4-D-O-DI-MAXI-A	Q
		G1	192437	FRC-1-D-5M-O-DI-MAXI-A	Q	192435	FRC-1-D-O-DI-MAXI-A	Q

Ordering data								
Pressure regulation range 0.5 ... 7 bar, directly actuated pressure regulator with integrated return flow function, metal bowl guard								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Maxi	G1/2	-		Q	192408	FRC-1/2-D-7-DI-MAXI	Q
		G3/4	-		Q	192414	FRC-3/4-D-7-DI-MAXI	Q
		G1	-		Q	192420	FRC-1-D-7-DI-MAXI	Q
Fully automatic	Maxi	G1/2	-		Q	192426	FRC-1/2-D-7-DI-MAXI-A	Q
		G3/4	-		Q	192432	FRC-3/4-D-7-DI-MAXI-A	Q
		G1	-		Q	192438	FRC-1-D-7-DI-MAXI-A	Q
Without pressure gauge								
Manual	Maxi	G1/2	-		Q	192409	FRC-1/2-D-7-O-DI-MAXI	Q
		G3/4	-		Q	192415	FRC-3/4-D-7-O-DI-MAXI	Q
		G1	-		Q	192421	FRC-1-D-7-O-DI-MAXI	Q
Fully automatic	Maxi	G1/2	-		Q	192427	FRC-1/2-D-7-O-DI-MAXI-A	Q
		G3/4	-		Q	192433	FRC-3/4-D-7-O-DI-MAXI-A	Q
		G1	-		Q	192439	FRC-1-D-7-O-DI-MAXI-A	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design



Ordering Data

2

2.1

Ordering data									
Pressure regulation range 0.5 ... 12 bar, metal bowl guard, lockable <sup>1)</sup>									
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm			
			Part No.	Type	LT	Part No.	Type	LT	
With pressure gauge									
Manual	Mini	G $\frac{1}{8}$	194860	FRCS- $\frac{1}{8}$ -D-5M-MINI	Q	194852	FRCS- $\frac{1}{8}$ -D-MINI	Q	
		G $\frac{1}{4}$	194872	FRCS- $\frac{1}{4}$ -D-5M-MINI	Q	194864	FRCS- $\frac{1}{4}$ -D-MINI	Q	
		G $\frac{3}{8}$	194884	FRCS- $\frac{3}{8}$ -D-5M-MINI	Q	194876	FRCS- $\frac{3}{8}$ -D-MINI	Q	
	Midi	G $\frac{1}{4}$	194896	FRCS- $\frac{1}{4}$ -D-5M-MIDI	Q	194888	FRCS- $\frac{1}{4}$ -D-MIDI	Q	
		G $\frac{3}{8}$	194908	FRCS- $\frac{3}{8}$ -D-5M-MIDI	Q	194900	FRCS- $\frac{3}{8}$ -D-MIDI	Q	
		G $\frac{1}{2}$	194920	FRCS- $\frac{1}{2}$ -D-5M-MIDI	Q	194912	FRCS- $\frac{1}{2}$ -D-MIDI	Q	
		G $\frac{3}{4}$	194932	FRCS- $\frac{3}{4}$ -D-5M-MIDI	Q	194924	FRCS- $\frac{3}{4}$ -D-MIDI	Q	
	Maxi	G $\frac{1}{2}$	194944	FRCS- $\frac{1}{2}$ -D-5M-MAXI	Q	194936	FRCS- $\frac{1}{2}$ -D-MAXI	Q	
		G $\frac{3}{4}$	194956	FRCS- $\frac{3}{4}$ -D-5M-MAXI	Q	194948	FRCS- $\frac{3}{4}$ -D-MAXI	Q	
		G1	194968	FRCS-1-D-5M-MAXI	Q	194960	FRCS-1-D-MAXI	Q	
	Fully automatic	Mini	G $\frac{1}{8}$	194862	FRCS- $\frac{1}{8}$ -D-5M-MINI-A	Q	194853	FRCS- $\frac{1}{8}$ -D-MINI-A	Q
			G $\frac{1}{4}$	194874	FRCS- $\frac{1}{4}$ -D-5M-MINI-A	Q	194865	FRCS- $\frac{1}{4}$ -D-MINI-A	Q
G $\frac{3}{8}$			194886	FRCS- $\frac{3}{8}$ -D-5M-MINI-A	Q	194877	FRCS- $\frac{3}{8}$ -D-MINI-A	Q	
Midi		G $\frac{1}{4}$	194898	FRCS- $\frac{1}{4}$ -D-5M-MIDI-A	Q	194889	FRCS- $\frac{1}{4}$ -D-MIDI-A	Q	
		G $\frac{3}{8}$	194910	FRCS- $\frac{3}{8}$ -D-5M-MIDI-A	Q	194901	FRCS- $\frac{3}{8}$ -D-MIDI-A	Q	
		G $\frac{1}{2}$	194922	FRCS- $\frac{1}{2}$ -D-5M-MIDI-A	Q	194913	FRCS- $\frac{1}{2}$ -D-MIDI-A	Q	
		G $\frac{3}{4}$	194934	FRCS- $\frac{3}{4}$ -D-5M-MIDI-A	Q	194925	FRCS- $\frac{3}{4}$ -D-MIDI-A	Q	
Maxi		G $\frac{1}{2}$	194946	FRCS- $\frac{1}{2}$ -D-5M-MAXI-A	Q	194937	FRCS- $\frac{1}{2}$ -D-MAXI-A	Q	
		G $\frac{3}{4}$	194958	FRCS- $\frac{3}{4}$ -D-5M-MAXI-A	Q	194949	FRCS- $\frac{3}{4}$ -D-MAXI-A	Q	
		G1	194970	FRCS-1-D-5M-MAXI-A	Q	194961	FRCS-1-D-MAXI-A	Q	
Without pressure gauge									
Manual		Mini	G $\frac{1}{8}$	194861	FRCS- $\frac{1}{8}$ -D-5M-O-MINI	Q	194854	FRCS- $\frac{1}{8}$ -D-O-MINI	Q
	G $\frac{1}{4}$		194873	FRCS- $\frac{1}{4}$ -D-5M-O-MINI	Q	194866	FRCS- $\frac{1}{4}$ -D-O-MINI	Q	
	G $\frac{3}{8}$		194885	FRCS- $\frac{3}{8}$ -D-5M-O-MINI	Q	194878	FRCS- $\frac{3}{8}$ -D-O-MINI	Q	
	Midi	G $\frac{1}{4}$	194897	FRCS- $\frac{1}{4}$ -D-5M-O-MIDI	Q	194890	FRCS- $\frac{1}{4}$ -D-O-MIDI	Q	
		G $\frac{3}{8}$	194909	FRCS- $\frac{3}{8}$ -D-5M-O-MIDI	Q	194902	FRCS- $\frac{3}{8}$ -D-O-MIDI	Q	
		G $\frac{1}{2}$	194921	FRCS- $\frac{1}{2}$ -D-5M-O-MIDI	Q	194914	FRCS- $\frac{1}{2}$ -D-O-MIDI	Q	
		G $\frac{3}{4}$	194933	FRCS- $\frac{3}{4}$ -D-5M-O-MIDI	Q	194926	FRCS- $\frac{3}{4}$ -D-O-MIDI	Q	
	Maxi	G $\frac{1}{2}$	194945	FRCS- $\frac{1}{2}$ -D-5M-O-MAXI	Q	194938	FRCS- $\frac{1}{2}$ -D-O-MAXI	Q	
		G $\frac{3}{4}$	194957	FRCS- $\frac{3}{4}$ -D-5M-O-MAXI	Q	194950	FRCS- $\frac{3}{4}$ -D-O-MAXI	Q	
		G1	194969	FRCS-1-D-5M-O-MAXI	Q	194962	FRCS-1-D-O-MAXI	Q	
	Fully automatic	Mini	G $\frac{1}{8}$	194863	FRCS- $\frac{1}{8}$ -D-5M-O-MINI-A	Q	194855	FRCS- $\frac{1}{8}$ -D-O-MINI-A	Q
			G $\frac{1}{4}$	194875	FRCS- $\frac{1}{4}$ -D-5M-O-MINI-A	Q	194867	FRCS- $\frac{1}{4}$ -D-O-MINI-A	Q
G $\frac{3}{8}$			194887	FRCS- $\frac{3}{8}$ -D-5M-O-MINI-A	Q	194879	FRCS- $\frac{3}{8}$ -D-O-MINI-A	Q	
Midi		G $\frac{1}{4}$	194899	FRCS- $\frac{1}{4}$ -D-5M-O-MIDI-A	Q	194891	FRCS- $\frac{1}{4}$ -D-O-MIDI-A	Q	
		G $\frac{3}{8}$	194911	FRCS- $\frac{3}{8}$ -D-5M-O-MIDI-A	Q	194903	FRCS- $\frac{3}{8}$ -D-O-MIDI-A	Q	
		G $\frac{1}{2}$	194923	FRCS- $\frac{1}{2}$ -D-5M-O-MIDI-A	Q	194915	FRCS- $\frac{1}{2}$ -D-O-MIDI-A	Q	
		G $\frac{3}{4}$	194935	FRCS- $\frac{3}{4}$ -D-5M-O-MIDI-A	Q	194927	FRCS- $\frac{3}{4}$ -D-O-MIDI-A	Q	
Maxi		G $\frac{1}{2}$	194947	FRCS- $\frac{1}{2}$ -D-5M-O-MAXI-A	Q	194939	FRCS- $\frac{1}{2}$ -D-O-MAXI-A	Q	
		G $\frac{3}{4}$	194959	FRCS- $\frac{3}{4}$ -D-5M-O-MAXI-A	Q	194951	FRCS- $\frac{3}{4}$ -D-O-MAXI-A	Q	
		G1	194971	FRCS-1-D-5M-O-MAXI-A	Q	194963	FRCS-1-D-O-MAXI-A	Q	

1) For Spare Key ordering information, see page 280.

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time



# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design



Ordering Data

Ordering data							
Pressure regulation range 0.5 ... 7 bar, metal bowl guard, lockable <sup>1)</sup>							
Condensate drain	Size	Connection	Grade of filtration 40 µm			LT	
			Part No.	Type			
With pressure gauge							
Manual	Mini	G1/8	194856	FRCS-1/8-D-7-MINI		Q	
		G1/4	194868	FRCS-1/4-D-7-MINI		Q	
		G3/8	194880	FRCS-3/8-D-7-MINI		Q	
	Midi	G1/4	194892	FRCS-1/4-D-7-MIDI		Q	
		G3/8	194904	FRCS-3/8-D-7-MIDI		Q	
		G1/2	194916	FRCS-1/2-D-7-MIDI		Q	
		G3/4	194928	FRCS-3/4-D-7-MIDI		Q	
	Maxi	G1/2	194940	FRCS-1/2-D-7-MAXI		Q	
		G3/4	194952	FRCS-3/4-D-7-MAXI		Q	
		G1	194964	FRCS-1-D-7-MAXI		Q	
	Fully automatic	Mini	G1/8	194858	FRCS-1/8-D-7-MINI-A		Q
			G1/4	194870	FRCS-1/4-D-7-MINI-A		Q
G3/8			194882	FRCS-3/8-D-7-MINI-A		Q	
Midi		G1/4	194894	FRCS-1/4-D-7-MIDI-A		Q	
		G3/8	194906	FRCS-3/8-D-7-MIDI-A		Q	
		G1/2	194918	FRCS-1/2-D-7-MIDI-A		Q	
		G3/4	194930	FRCS-3/4-D-7-MIDI-A		Q	
Maxi		G1/2	194942	FRCS-1/2-D-7-MAXI-A		Q	
		G3/4	194954	FRCS-3/4-D-7-MAXI-A		Q	
		G1	194966	FRCS-1-D-7-MAXI-A		Q	
Without pressure gauge							
Manual		Mini	G1/8	194857	FRCS-1/8-D-7-0-MINI		Q
	G1/4		194869	FRCS-1/4-D-7-0-MINI		Q	
	G3/8		194881	FRCS-3/8-D-7-0-MINI		Q	
	Midi	G1/4	194893	FRCS-1/4-D-7-0-MIDI		Q	
		G3/8	194905	FRCS-3/8-D-7-0-MIDI		Q	
		G1/2	194917	FRCS-1/2-D-7-0-MIDI		Q	
		G3/4	194929	FRCS-3/4-D-7-0-MIDI		Q	
	Maxi	G1/2	194941	FRCS-1/2-D-7-0-MAXI		Q	
		G3/4	194953	FRCS-3/4-D-7-0-MAXI		Q	
		G1	194965	FRCS-1-D-7-0-MAXI		Q	
	Fully automatic	Mini	G1/8	194859	FRCS-1/8-D-7-0-MINI-A		Q
			G1/4	194871	FRCS-1/4-D-7-0-MINI-A		Q
G3/8			194883	FRCS-3/8-D-7-0-MINI-A		Q	
Midi		G1/4	194895	FRCS-1/4-D-7-0-MIDI-A		Q	
		G3/8	194907	FRCS-3/8-D-7-0-MIDI-A		Q	
		G1/2	194919	FRCS-1/2-D-7-0-MIDI-A		Q	
		G3/4	194931	FRCS-3/4-D-7-0-MIDI-A		Q	
Maxi		G1/2	194943	FRCS-1/2-D-7-0-MAXI-A		Q	
		G3/4	194955	FRCS-3/4-D-7-0-MAXI-A		Q	
		G1	194967	FRCS-1-D-7-0-MAXI-A		Q	

1) For Spare Key ordering information, see page 280.

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

2  
2.1

# FRC/FRCS Filter/Regulator-Lubricators – D Series, Metal Design

FESTO

Ordering Data

2

2.1

Ordering data								
Pressure regulation range 0.5 ... 12 bar, directly actuated pressure regulator with integrated return flow function, lockable <sup>1)</sup>								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Maxi	G1/2	194974	FRCS-1/2-D-5M-DI-MAXI	Q	194972	FRCS-1/2-D-DI-MAXI	Q
		G3/4	194980	FRCS-3/4-D-5M-DI-MAXI	Q	194978	FRCS-3/4-D-DI-MAXI	Q
		G1	194986	FRCS-1-D-5M-DI-MAXI	Q	194984	FRCS-1-D-DI-MAXI	Q
Fully automatic	Maxi	G1/2	194992	FRCS-1/2-D-5M-DI-MAXI-A	Q	194990	FRCS-1/2-D-DI-MAXI-A	Q
		G3/4	194998	FRCS-3/4-D-5M-DI-MAXI-A	Q	194996	FRCS-3/4-D-DI-MAXI-A	Q
		G1	195004	FRCS-1-D-5M-DI-MAXI-A	Q	195002	FRCS-1-D-DI-MAXI-A	Q
Without pressure gauge								
Manual	Maxi	G1/2	194975	FRCS-1/2-D-5M-O-DI-MAXI	Q	194973	FRCS-1/2-D-O-DI-MAXI	Q
		G3/4	194981	FRCS-3/4-D-5M-O-DI-MAXI	Q	194979	FRCS-3/4-D-O-DI-MAXI	Q
		G1	194987	FRCS-1-D-5M-O-DI-MAXI	Q	194985	FRCS-1-D-O-DI-MAXI	Q
Fully automatic	Maxi	G1/2	194993	FRCS-1/2-D-5M-O-DI-MAXI-A	Q	194991	FRCS-1/2-D-O-DI-MAXI-A	Q
		G3/4	194999	FRCS-3/4-D-5M-O-DI-MAXI-A	Q	194997	FRCS-3/4-D-O-DI-MAXI-A	Q
		G1	195005	FRCS-1-D-5M-O-DI-MAXI-A	Q	195003	FRCS-1-D-O-DI-MAXI-A	Q

Ordering data								
Pressure regulation range 0.5 ... 7 bar, directly actuated pressure regulator with integrated return flow function, lockable <sup>1)</sup>								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Maxi	G1/2	–			194976	FRCS-1/2-D-7-DI-MAXI	Q
		G3/4	–			194982	FRCS-3/4-D-7-DI-MAXI	Q
		G1	–			194988	FRCS-1-D-7-DI-MAXI	Q
Fully automatic	Maxi	G1/2	–			194994	FRCS-1/2-D-7-DI-MAXI-A	Q
		G3/4	–			195000	FRCS-3/4-D-7-DI-MAXI-A	Q
		G1	–			195006	FRCS-1-D-7-DI-MAXI-A	Q
Without pressure gauge								
Manual	Maxi	G1/2	–			194977	FRCS-1/2-D-7-O-DI-MAXI	Q
		G3/4	–			194983	FRCS-3/4-D-7-O-DI-MAXI	Q
		G1	–			194989	FRCS-1-D-7-O-DI-MAXI	Q
Fully automatic	Maxi	G1/2	–			194995	FRCS-1/2-D-7-O-DI-MAXI-A	Q
		G3/4	–			195001	FRCS-3/4-D-7-O-DI-MAXI-A	Q
		G1	–			195007	FRCS-1-D-7-O-DI-MAXI-A	Q

1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time



FRC-KA  
Standard combination with lubricator



LFR-KC  
Standard combination without lubricator

**Standard Combinations**

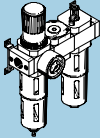
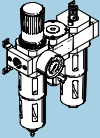
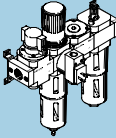
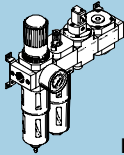
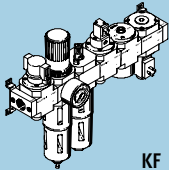
FRC-K = with lubricator  
LFR-K = without lubricator

DI = with integrated  
return flow  
S = with integrated lock

# FRC-K Standard Combinations – With Lubricator, D Series, Metal Design

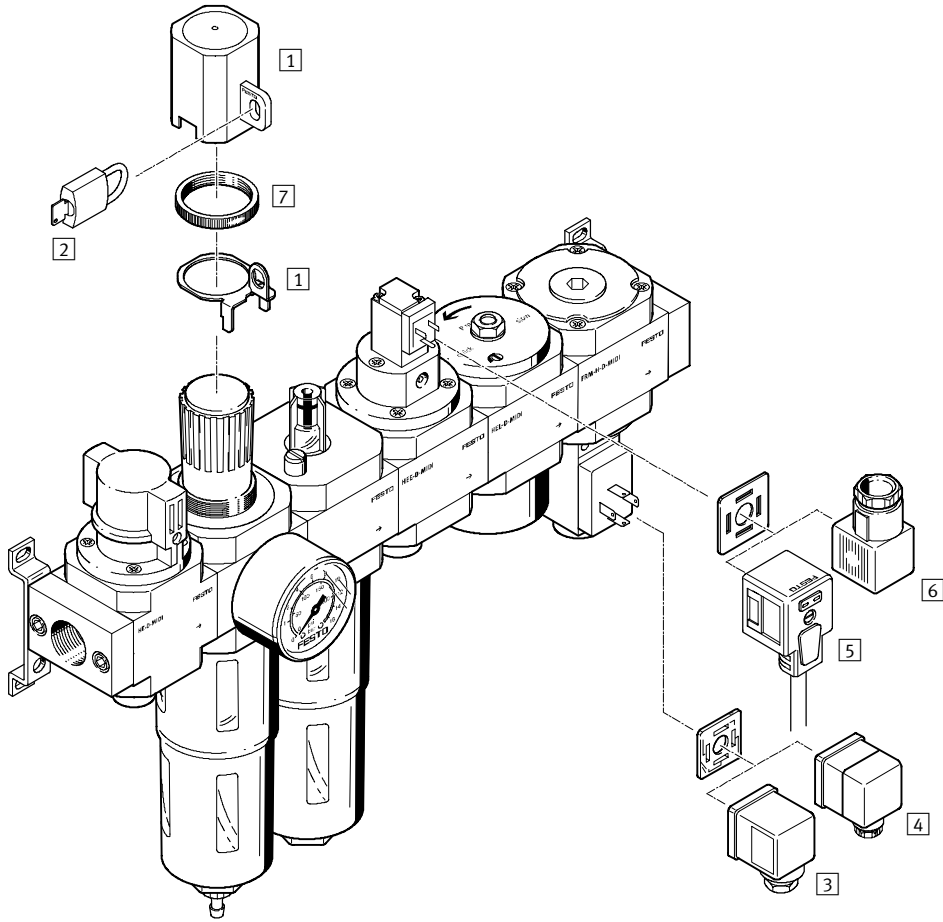
Product Range Overview

2  
2.2

FRC Rotary knob with detent	 KA	 KB	 KC	 KE	 KF
<b>Individual devices</b>					
On/off valve, manual	-	-	■	-	■
Filter regulator with pressure gauge	■	■	■	■	■
Lubricator	-	-	-	■	■
On/off valve with 24 V DC solenoid coil	-	-	-	■	■
Soft-start valve	-	-	-	■	■
Distributor block with pressure switch	-	-	-	-	■
Distributor block with pressure switch and lubricator	-	■	■	-	-
Branching module and lubricator	■	-	-	-	-
Mounting bracket and metal bowl guard	■	■	■	■	■
→ Page	47	50	53	56	59

# FRC-K Standard Combinations – With Lubricator, D Series, Metal Design

Accessories Overview



**Note**

The choice of accessories depends on the selected combination air preparation unit. The example shows an FRC-KF combination unit.

Range of accessories

→ Accessories pages of individual units

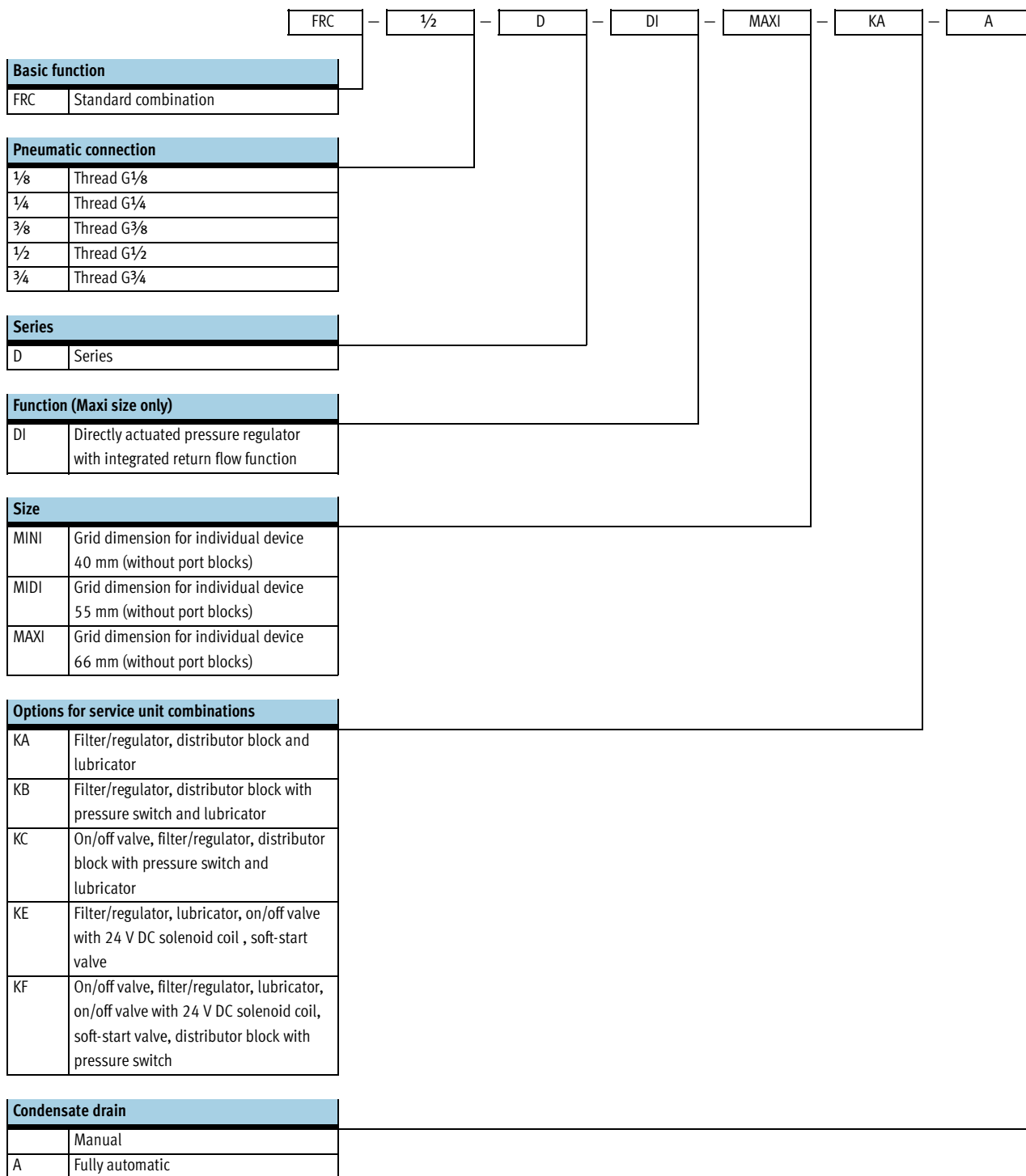
Mounting attachments and accessories		→ Page
1	Regulator lock LRVS	281
2	Padlock LRVS-D	281
3	Plug socket MSSD-C	286
4	Angled plug socket PEV-...-WD-LED	286
5	Plug socket with cable KMEB-1	287
6	Plug socket MSSD-EB	287
7	Knurled nut (included in scope of delivery) HMR	-

# FRC-K Standard Combinations – With Lubricator, D Series, Metal Design

Type Codes

2

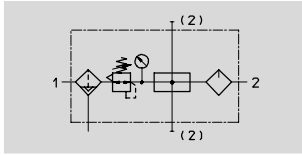
2.2



# FRC-KA Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data

Function



- Flow rate  
650 ... 8200 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar



- LFR Filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent
  - pressure gauge
- FRM distributor block
- LOE lubricator
  - metal bowl guard
- Mounting accessories

- For lubricated and unlubricated compressed air
- One connection for lubricated compressed air supply
- Two connections for unlubricated compressed air supply

2

2.2

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories						
	In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.25	0.2	0.25	0.35	0.3	0.1	0.2
Pressure regulation range [bar]	0.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]	1 ... 16						
Condensate drain	Manual	1 ... 16					
	Fully automatic	2 ... 12					

1) The max. condensate volume for the FRC-...-DI-MAXI-KA is 43 cm<sup>3</sup>.

# FRC-KA Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data

2

2.2

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
FRC-...-D-...	650	980	–	–	–
<b>Midi</b>					
FRC-...-D-...	–	1400	2100	2500	–
<b>Maxi</b>					
FRC-...-D-...	–	–	–	7500	8200
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
FRC-...-D-DI-...	–	–	–	5200	5800

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>	2		

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

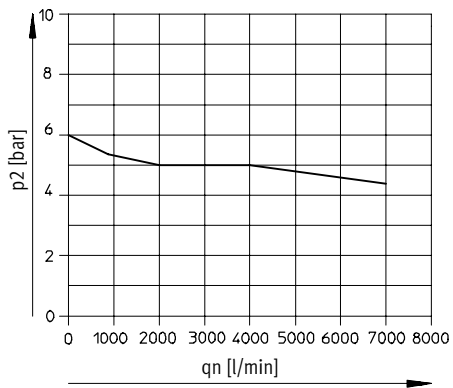
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
FRC	1000	2400	3500	3700

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

FRC-1/2-D-DI-MAXI-KA(-A)



Primary pressure p1 = 10 bar



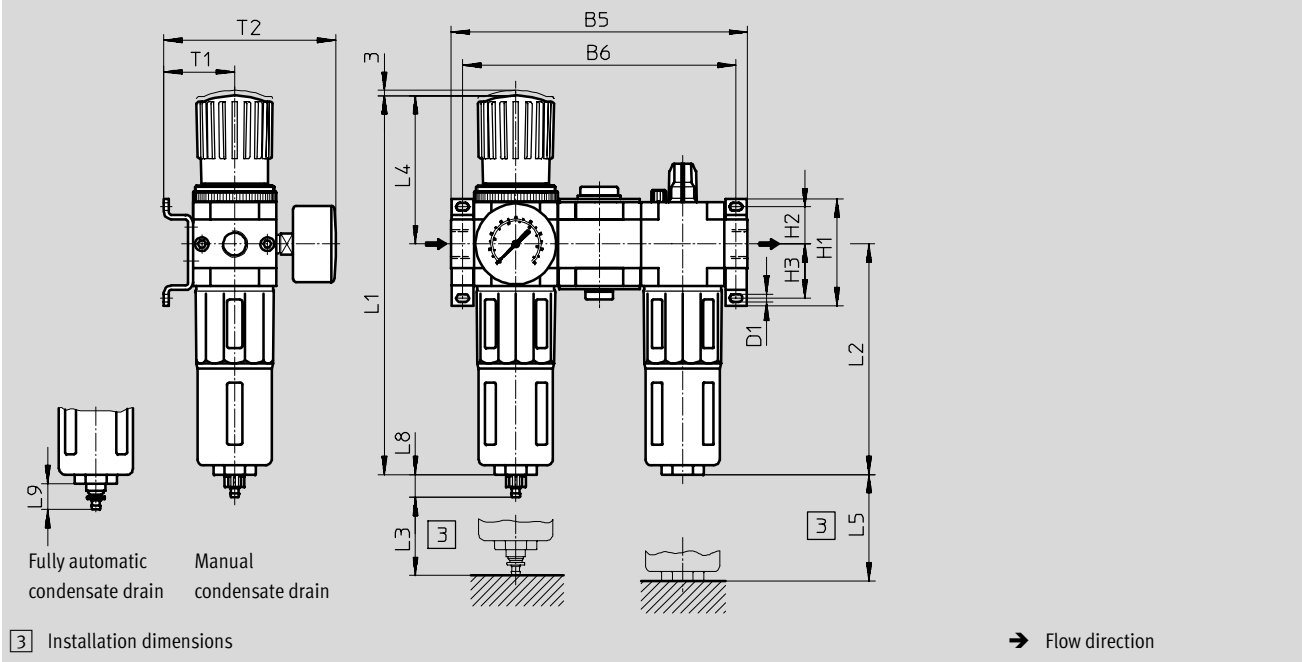
# FRC-KA Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data – Dimensional Drawings / Ordering Data

**Dimensions**

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

FRC-...-KA



2  
2.2

Type	B5	B6	D1	H1	H2	H3	L1	L2	L3	L4	L5	L8	L9	T1	T2
<b>Mini</b>															
FRC-...-D-MINI-KA (-A)	144	132	4.3	43	17.5	17.5	193	124	60	68	100	15	19	39	95
<b>Midi</b>															
FRC-...-D-MIDI-KA (-A)	195	180	5.3	70	24.5	35.5	250	152	80	99	120	15	19	47	114
<b>Maxi</b>															
FRC-...-D-MAXI-KA (-A)	228	212	5.3	70	24.5	35.5	252	171	90	82	150	15	19	53	126
FRC-...-D-DI-MAXI-KA (-A)							275			105					

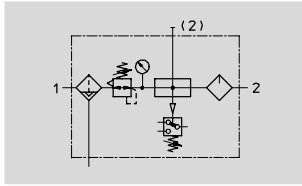
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Mini	G <sup>1</sup> / <sub>8</sub>	185791	FRC- <sup>1</sup> / <sub>8</sub> -D-MINI-KA	Q	185792	FRC- <sup>1</sup> / <sub>8</sub> -D-MINI-KA-A	Q
	G <sup>1</sup> / <sub>4</sub>	185793	FRC- <sup>1</sup> / <sub>4</sub> -D-MINI-KA	Q	185794	FRC- <sup>1</sup> / <sub>4</sub> -D-MINI-KA-A	Q
Midi	G <sup>1</sup> / <sub>4</sub>	185795	FRC- <sup>1</sup> / <sub>4</sub> -D-MIDI-KA	Q	185796	FRC- <sup>1</sup> / <sub>4</sub> -D-MIDI-KA-A	Q
	G <sup>3</sup> / <sub>8</sub>	185797	FRC- <sup>3</sup> / <sub>8</sub> -D-MIDI-KA	Q	185798	FRC- <sup>3</sup> / <sub>8</sub> -D-MIDI-KA-A	Q
	G <sup>1</sup> / <sub>2</sub>	185799	FRC- <sup>1</sup> / <sub>2</sub> -D-MIDI-KA	Q	185800	FRC- <sup>1</sup> / <sub>2</sub> -D-MIDI-KA-A	Q
Maxi	G <sup>1</sup> / <sub>2</sub>	186053	FRC- <sup>1</sup> / <sub>2</sub> -D-MAXI-KA	Q	186054	FRC- <sup>1</sup> / <sub>2</sub> -D-MAXI-KA-A	Q
	G <sup>3</sup> / <sub>4</sub>	185801	FRC- <sup>3</sup> / <sub>4</sub> -D-MAXI-KA	Q	185802	FRC- <sup>3</sup> / <sub>4</sub> -D-MAXI-KA-A	Q
<b>Directly actuated pressure regulator with integrated return flow function</b>							
Maxi	G <sup>1</sup> / <sub>2</sub>	192468	FRC- <sup>1</sup> / <sub>2</sub> -D-DI-MAXI-KA	Q	192478	FRC- <sup>1</sup> / <sub>2</sub> -D-DI-MAXI-KA-A	Q
	G <sup>3</sup> / <sub>4</sub>	192473	FRC- <sup>3</sup> / <sub>4</sub> -D-DI-MAXI-KA	Q	192483	FRC- <sup>3</sup> / <sub>4</sub> -D-DI-MAXI-KA-A	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# FRC-KB Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data

Function



- Flow rate  
650 ... 8200 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar



2

2.2

- LFR filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent
  - pressure gauge
- FRM distributor block
  - Pressure switch without display
- LOE lubricator
  - metal bowl guard
- Mounting accessories

- Electrical pressure monitoring with adjustable switching pressure
- For lubricated and unlubricated compressed air
- One connection for unlubricated compressed air supply
- One connection for lubricated compressed air supply

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{2}$	G $\frac{1}{2}$	G $\frac{3}{4}$
Operating medium	Compressed air						
Type of mounting	Via accessories						
	In-line installation						
Assembly position	Vertical $\pm 5^\circ$						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.25	0.2	0.25	0.35	0.35	0.1	0.2
Pressure regulation range [bar]	0.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]							
Condensate drain	manual	1 ... 16					
	fully automatic	2 ... 12					

1) The max. condensate volume for the FRC...-DI-MAXI-KB is 43 cm<sup>3</sup>.

# FRC-KB Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
Mini					
FRC-...-D-...	650	980	–	–	–
Midi					
FRC-...-D-...	–	1400	2100	2500	–
Maxi					
FRC-...-D-...	–	–	–	7500	8200
Maxi – Directly actuated pressure regulator with integrated return flow function					
FRC-...-D-DI-...	–	–	–	5000	6000

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>	2		

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

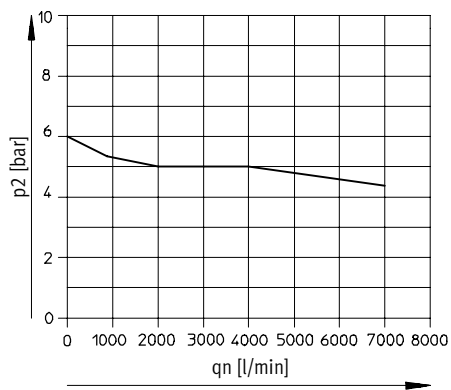
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
FRC	1200	2600	3500	3700

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

FRC-1/2-D-DI-MAXI-KB(-A)



Primary pressure p1 = 10 bar

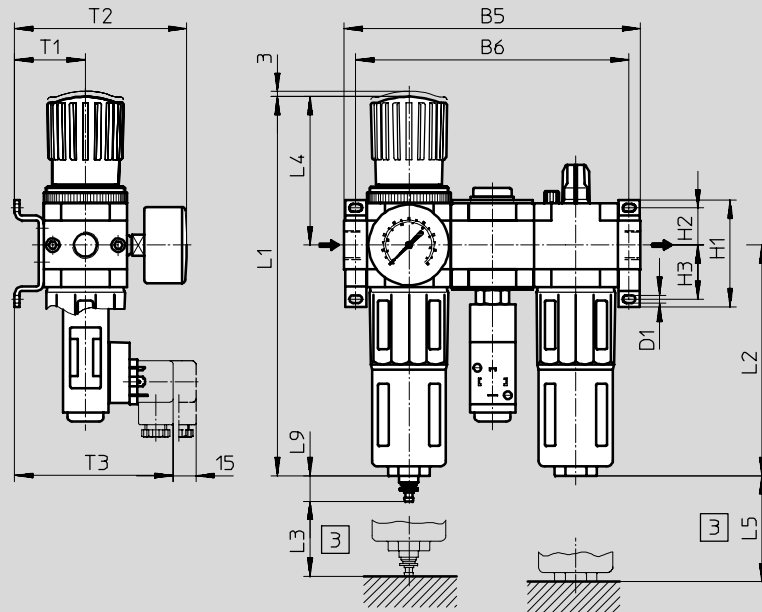
# FRC-KB Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data – Dimensional Drawings / Ordering Data

**Dimensions**

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

FRC...-KB



3 Installation dimensions

→ Flow direction

Type	B5	B6	D1	H1	H2	H3	L1	L2	L3	L4	L5	L9	T1	T2	T3
<b>Mini</b>															
FRC...-D-MINI-KB (-A)	144	132	4.3	43	17.5	17.5	193	124	60	68	100	19	39	95	97
<b>Midi</b>															
FRC...-D-MIDI-KB (-A)	195	180	5.3	70	24.5	35.5	250	152	80	99	120	19	47	114	105
<b>Maxi</b>															
FRC...-D-MAXI-KB (-A)	228	212	5.3	70	24.5	35.5	252	171	90	82	150	19	53	126	111
FRC...-D-DI-MAXI-KB (-A)							275			105					

**Ordering data**

Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Mini	G1/8	185803	FRC-1/8-D-MINI-KB	Q	185804	FRC-1/8-D-MINI-KB-A	Q
	G1/4	185805	FRC-1/4-D-MINI-KB	Q	185806	FRC-1/4-D-MINI-KB-A	Q
Midi	G1/4	185807	FRC-1/4-D-MIDI-KB	Q	185808	FRC-1/4-D-MIDI-KB-A	Q
	G3/8	185809	FRC-3/8-D-MIDI-KB	Q	185810	FRC-3/8-D-MIDI-KB-A	Q
	G1/2	185811	FRC-1/2-D-MIDI-KB	Q	185812	FRC-1/2-D-MIDI-KB-A	Q
Maxi	G1/2	186055	FRC-1/2-D-MAXI-KB	Q	186056	FRC-1/2-D-MAXI-KB-A	Q
	G3/4	185813	FRC-3/4-D-MAXI-KB	Q	185814	FRC-3/4-D-MAXI-KB-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192469	FRC-1/2-D-DI-MAXI-KB	Q	192479	FRC-1/2-D-DI-MAXI-KB-A	Q
	G3/4	192474	FRC-3/4-D-DI-MAXI-KB	Q	192484	FRC-3/4-D-DI-MAXI-KB-A	Q

LT = Lead time

1D typically ships same day/next day

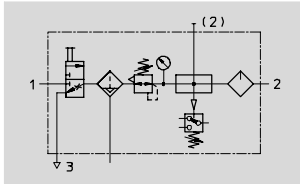
1W typically ships within 1 week

Q request a quote for lead time

# FRC-KC Standard Combinations – With Lubricator, D Series, Metal Design

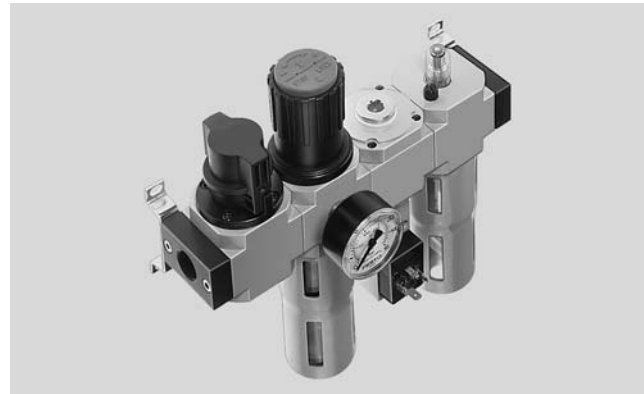
Technical Data

Function



- Flow rate  
640 ... 7800 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar

- HE on/off valve
  - manually actuated
- LFR filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent
  - pressure gauge
- FRM distributor block
  - pressure switch without display
- LOE lubricator
  - metal bowl guard
- Mounting accessories



- For lubricated and unlubricated compressed air
- One connection for unlubricated compressed air supply
- One connection for lubricated compressed air supply
- Electrical pressure monitoring with adjustable switching pressure
- The system is vented when supply air is closed
- To ensure a fast venting of the system, an additional quick exhaust valve is necessary at the output of the combination air preparation unit

2  
2.2

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories						
	In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.2	0.2	0.4	0.3	0.3	0.15	0.15
Pressure regulation range [bar]	0.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]	1 ... 16						
Condensate drain	Manual	1 ... 16					
	Fully automatic	1.5 ... 12					

1) The max. condensate volume for the FRC-...DI-MAXI-KC is 43 cm<sup>3</sup>.

# FRC-KC Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data

2

2.2

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
FRC-...-D-...	640	870	–	–	–
<b>Midi</b>					
FRC-...-D-...	–	1320	1870	2400	–
<b>Maxi</b>					
FRC-...-D-...	–	–	–	6600	7800
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
FRC-...-D-DI-...	–	–	–	4800	5400

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>	2		

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

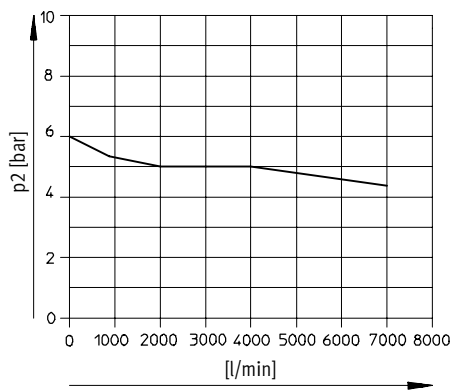
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
FRC	1400	3000	4600	4800

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

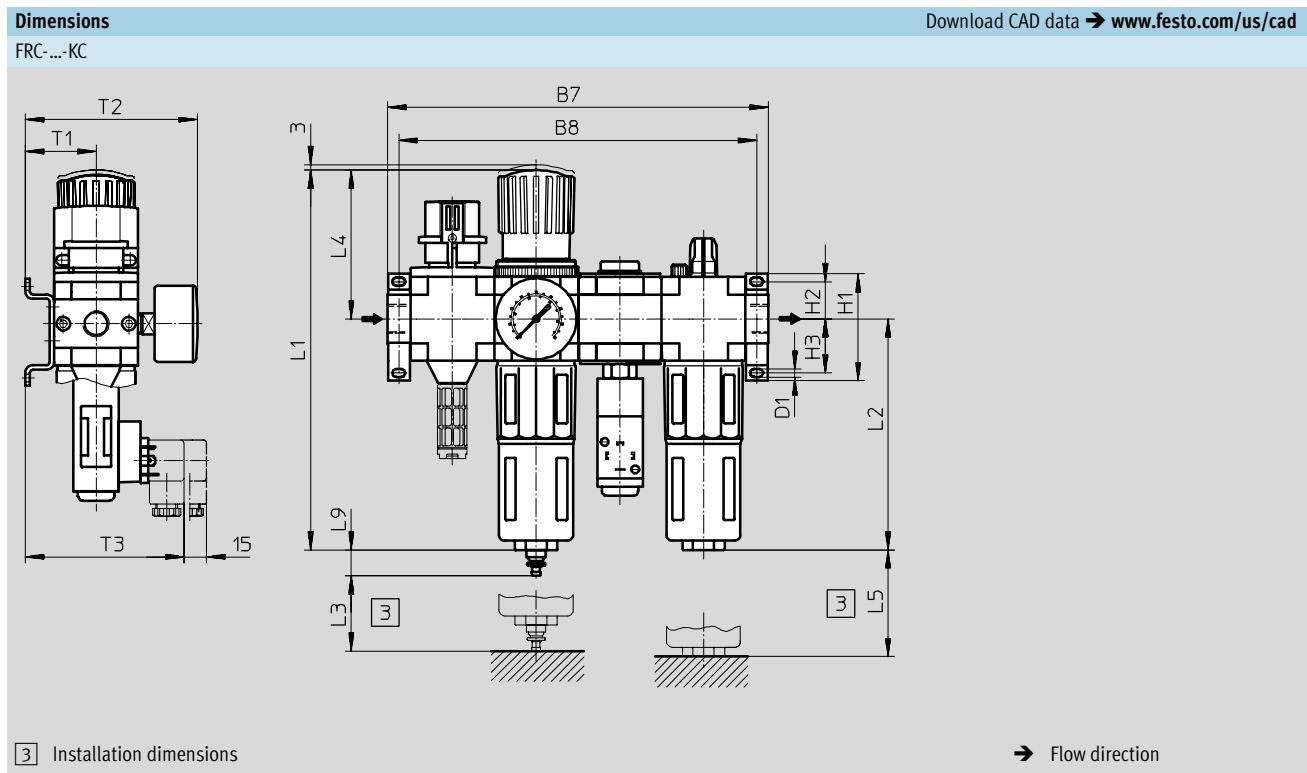
FRC-1/2-D-DI-MAXI-KC(-A)



Primary pressure p1 = 10 bar

# FRC-KC Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data – Dimensional Drawings / Ordering Data



2

2.2

Type	B7	B8	D1	H1	H2	H3	L1	L2	L3	L4	L5	L9	T1	T2	T3
<b>Mini</b>															
FRC...-D-MINI-KC (-A)	184	172	4.3	43	17.5	17.5	193	124	60	68	100	19	39	95	97
<b>Midi</b>															
FRC...-D-MIDI-KC (-A)	250	235	5.3	70	24.5	35.5	250	152	80	99	120	19	47	114	105
<b>Maxi</b>															
FRC...-D-MAXI-KC (-A)	294	278	5.3	70	24.5	35.5	252	171	90	82	150	19	53	126	111
FRC...-D-DI-MAXI-KC (-A)							275			105					

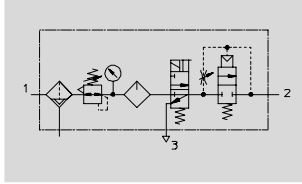
<b>Ordering data</b>							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Mini	G $\frac{1}{8}$	<b>185815</b>	FRC- $\frac{1}{8}$ -D-MINI-KC	Q	<b>185816</b>	FRC- $\frac{1}{8}$ -D-MINI-KC-A	Q
	G $\frac{1}{4}$	<b>185817</b>	FRC- $\frac{1}{4}$ -D-MINI-KC	Q	<b>185818</b>	FRC- $\frac{1}{4}$ -D-MINI-KC-A	Q
Midi	G $\frac{1}{4}$	<b>185819</b>	FRC- $\frac{1}{4}$ -D-MIDI-KC	Q	<b>185820</b>	FRC- $\frac{1}{4}$ -D-MIDI-KC-A	Q
	G $\frac{3}{8}$	<b>185821</b>	FRC- $\frac{3}{8}$ -D-MIDI-KC	Q	<b>185822</b>	FRC- $\frac{3}{8}$ -D-MIDI-KC-A	Q
	G $\frac{1}{2}$	<b>185823</b>	FRC- $\frac{1}{2}$ -D-MIDI-KC	Q	<b>185824</b>	FRC- $\frac{1}{2}$ -D-MIDI-KC-A	Q
Maxi	G $\frac{1}{2}$	<b>186057</b>	FRC- $\frac{1}{2}$ -D-MAXI-KC	Q	<b>186058</b>	FRC- $\frac{1}{2}$ -D-MAXI-KC-A	Q
	G $\frac{3}{4}$	<b>185825</b>	FRC- $\frac{3}{4}$ -D-MAXI-KC	Q	<b>185826</b>	FRC- $\frac{3}{4}$ -D-MAXI-KC-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G $\frac{1}{2}$	<b>192470</b>	FRC- $\frac{1}{2}$ -D-DI-MAXI-KC	Q	<b>192480</b>	FRC- $\frac{1}{2}$ -D-DI-MAXI-KC-A	Q
	G $\frac{3}{4}$	<b>192475</b>	FRC- $\frac{3}{4}$ -D-DI-MAXI-KC	Q	<b>192485</b>	FRC- $\frac{3}{4}$ -D-DI-MAXI-KC-A	Q

LT = Lead time      **1D** typically ships same day/next day      **1W** typically ships within 1 week      **Q** request a quote for lead time

# FRC-KE Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data

Function



- Flow rate  
550 ... 6000 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
3 ... 16 bar



2

2.2

- LFR filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent
  - pressure gauge
- LOE lubricator
  - metal bowl guard
- HEE on/off valve
  - solenoid actuated
  - 24 V DC
- HELsoft-start valve
  - pneumatically actuated
- Mounting accessories

- Gradual pressure buildup prevents sudden, unpredictable movements
- Provides three outlet connections for lubricated compressed air supply
- When supply pressure is closed, quick venting ensures rapid pressure reduction

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.15	0.18	0.25	0.35	0.4	0.3	0.3
Pressure regulation range [bar]	2.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]	3 ... 16						
Condensate drain	Manual	3 ... 16					
	Fully automatic	3 ... 12					

1) The max. condensate volume for the FRC...-DI-MAXI-KE is 43 cm<sup>3</sup>.



# FRC-KE Standard Combinations – With Lubicator, D Series, Metal Design

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
Mini					
FRC-...-D-...	550	650	–	–	–
Midi					
FRC-...-D-...	–	1100	1420	1590	–
Maxi					
FRC-...-D-...	–	–	–	3500	3800
Maxi – Directly actuated pressure regulator with integrated return flow function					
FRC-...-D-DI-...	–	–	–	5000	6000

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>	2		

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

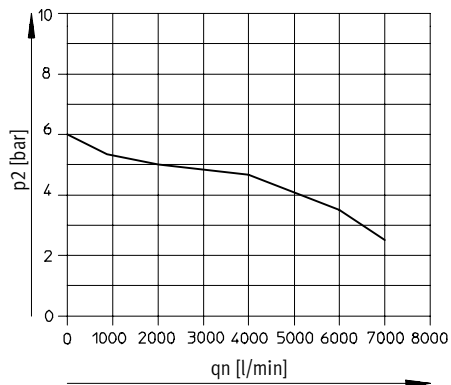
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
FRC	1200	2800	4200	4400

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

FRC-1/2-D-DI-MAXI-KE(-A)



Primary pressure p1 = 10 bar

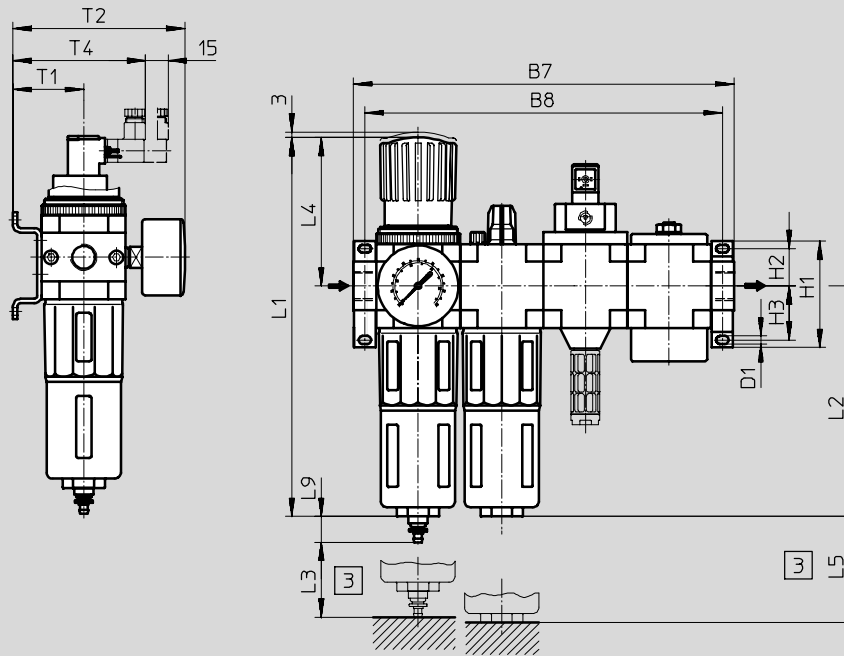
# FRC-KE Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data – Dimensional Drawings / Ordering Data

## Dimensions

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

FRC...-KE



3 Installation dimensions

→ Flow direction

Type	B7	B8	D1	H1	H2	H3	L1	L2	L3	L4	L5	L9	T1	T2	T4
<b>Mini</b>															
FRC...-D-MINI-KE (-A)	184	172	4.3	43	17.5	17.5	193	124	60	68	100	19	39	95	78
<b>Midi</b>															
FRC...-D-MIDI-KE (-A)	250	235	5.3	70	24.5	35.5	250	152	80	99	120	19	47	114	86
<b>Maxi</b>															
FRC...-D-MAXI-KE (-A)	294	278	5.3	70	24.5	35.5	252	171	90	82	150	19	53	126	92
FRC...-D-DI-MAXI-KE (-A)							275			105					

## Ordering data

Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Mini	G1/8	185827	FRC-1/8-D-MINI-KE	Q	185828	FRC-1/8-D-MINI-KE-A	Q
	G1/4	185829	FRC-1/4-D-MINI-KE	Q	185830	FRC-1/4-D-MINI-KE-A	Q
Midi	G1/4	185831	FRC-1/4-D-MIDI-KE	Q	185832	FRC-1/4-D-MIDI-KE-A	Q
	G3/8	185833	FRC-3/8-D-MIDI-KE	Q	185834	FRC-3/8-D-MIDI-KE-A	Q
	G1/2	185835	FRC-1/2-D-MIDI-KE	Q	185836	FRC-1/2-D-MIDI-KE-A	Q
Maxi	G1/2	186059	FRC-1/2-D-MAXI-KE	Q	186060	FRC-1/2-D-MAXI-KE-A	Q
	G3/4	185837	FRC-3/4-D-MAXI-KE	Q	185838	FRC-3/4-D-MAXI-KE-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192471	FRC-1/2-D-DI-MAXI-KE	Q	192481	FRC-1/2-D-DI-MAXI-KE-A	Q
	G3/4	192476	FRC-3/4-D-DI-MAXI-KE	Q	192486	FRC-3/4-D-DI-MAXI-KE-A	Q

LT = Lead time

1D typically ships same day/next day

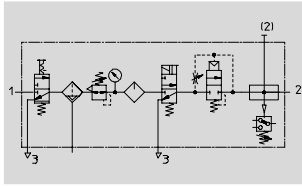
1W typically ships within 1 week

Q request a quote for lead time

# FRC-KF Standard Combinations – With Lubricator, D Series, Metal Design

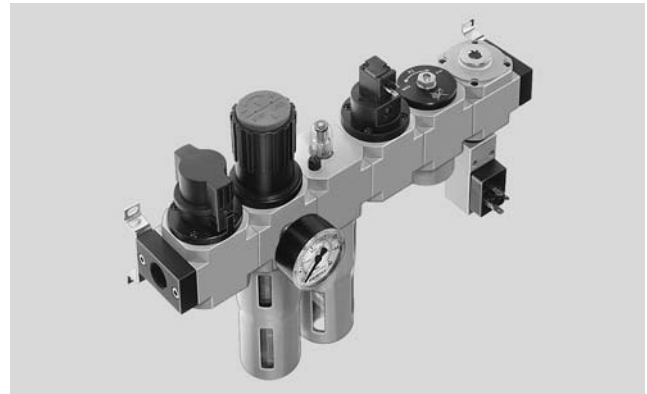
Technical Data

Function



- Flow rate  
530 ... 6000 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
3 ... 16 bar

- HE on/off valve
  - manually actuated
- LFR filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent
  - pressure gauge
- LOE lubricator
  - metal bowl guard
- HEE on/off valve
  - solenoid actuated
  - 24 V DC
- HEL soft-start valve
  - pneumatically actuated
- FRM distribution block
  - pressure switch without display
- Mounting accessories



- Provides two additional air connections for lubricated compressed air supply
- Supply pressure can be opened and closed
- Gradual pressure buildup prevents sudden, unpredictable movements
- To ensure a fast venting of the system, an additional quick exhaust valve is necessary at the output of the combination air preparation unit

2

2.2

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories						
	In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.2	0.3	0.4	0.3	0.35	0.25	0.3
Pressure regulation range [bar]	2.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]	3 ... 16						
Condensate drain	Manual	3 ... 16					
	Fully automatic	3 ... 12					

1) The max. condensate volume for the FRC-...-DI-MAXI-KF is 43 cm<sup>3</sup>.

# FRC-KF Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data

2

2.2

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
FRC-...-D-...	530	620	–	–	–
<b>Midi</b>					
FRC-...-D-...	–	1060	1150	1220	–
<b>Maxi</b>					
FRC-...-D-...	–	–	–	3400	3700
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
FRC-...-D-DI-...	–	–	–	5000	6000

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>	2		

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

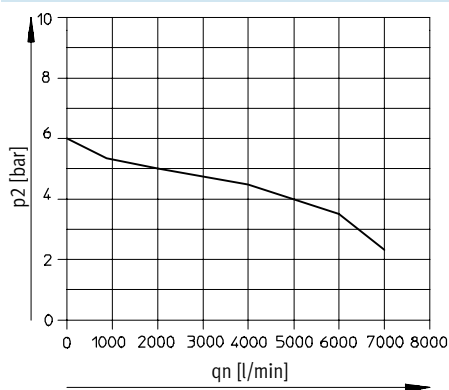
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
FRC	1800	4000	6300	6500

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

FRC-1/2-D-DI-MAXI-KF(-A)



Primary pressure p1 = 10 bar

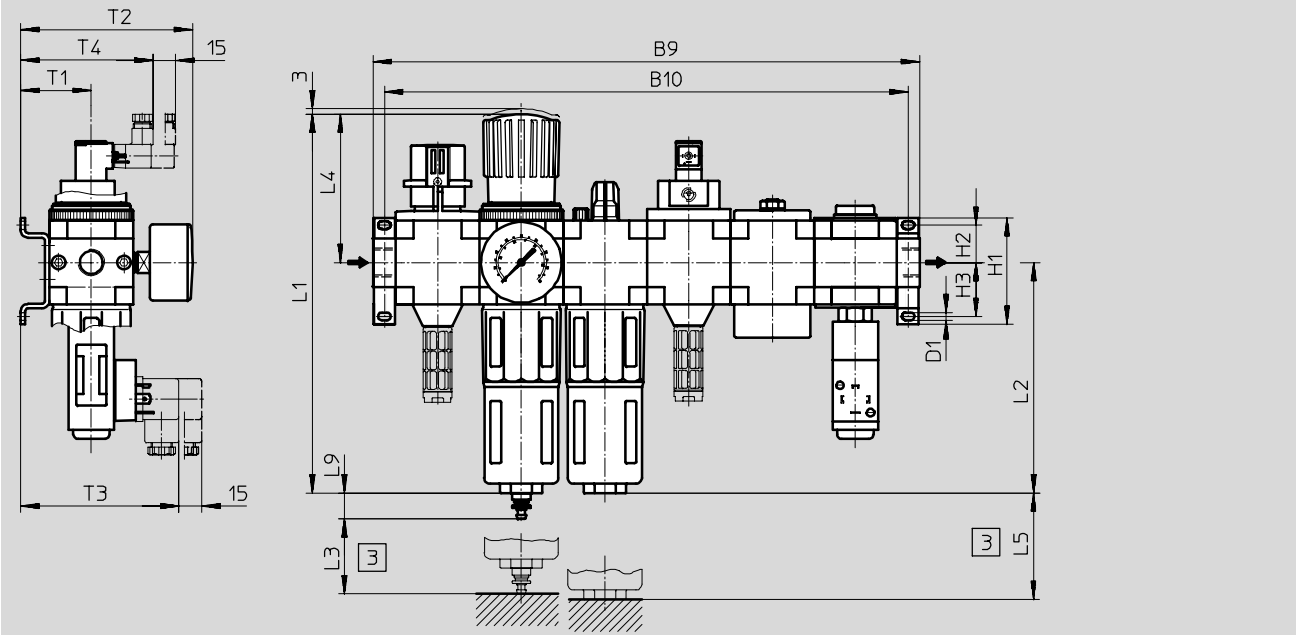
# FRC-KF Standard Combinations – With Lubricator, D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

FRC-...-KF



3 Installation dimensions

→ Flow direction

2  
2.2

Type	B9	B10	D1	H1	H2	H3	L1	L2	L3	L4	L5	L9	T1	T2	T3	T4
<b>Mini</b>																
FRC-...-D-MINI-KF (-A)	264	252	4.3	43	17.5	17.5	193	124	60	68	100	19	39	95	97	78
<b>Midi</b>																
FRC-...-D-MIDI-KF (-A)	360	344	5.3	70	24.5	35.5	250	152	80	99	120	19	47	114	105	86
<b>Maxi</b>																
FRC-...-D-MAXI-KF (-A)	426	410	5.3	70	24.5	35.5	252	171	90	82	150	19	53	126	111	92
FRC-...-D-DI-MAXI-KF (-A)							275			105						

# FRC-KF Standard Combinations – With Lubricator, D Series, Metal Design



Ordering Data

2

2.2

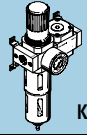
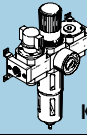
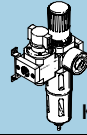
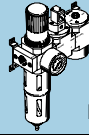
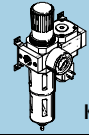
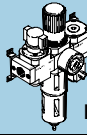
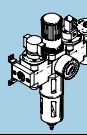
Ordering data							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Mini	G1/8	185839	FRC-1/8-D-MINI-KF	Q	185840	FRC-1/8-D-MINI-KF-A	Q
	G1/4	185841	FRC-1/4-D-MINI-KF	Q	185842	FRC-1/4-D-MINI-KF-A	Q
Midi	G1/4	185843	FRC-1/4-D-MIDI-KF	Q	185844	FRC-1/4-D-MIDI-KF-A	Q
	G3/8	185845	FRC-3/8-D-MIDI-KF	Q	185846	FRC-3/8-D-MIDI-KF-A	Q
	G1/2	185847	FRC-1/2-D-MIDI-KF	Q	185848	FRC-1/2-D-MIDI-KF-A	Q
Maxi	G1/2	186061	FRC-1/2-D-MAXI-KF	Q	186062	FRC-1/2-D-MAXI-KF-A	Q
	G3/4	185849	FRC-3/4-D-MAXI-KF	Q	185850	FRC-3/4-D-MAXI-KF-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192472	FRC-1/2-D-DI-MAXI-KF	Q	192482	FRC-1/2-D-DI-MAXI-KF-A	Q
	G3/4	192477	FRC-3/4-D-DI-MAXI-KF	Q	192487	FRC-3/4-D-DI-MAXI-KF-A	Q

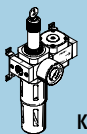
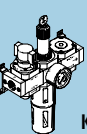
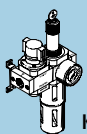
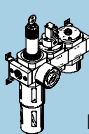
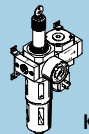
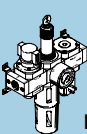
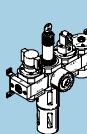
LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LFR-K / LFRS-K Standard Combinations – Without Lubricator

Product Range Overview

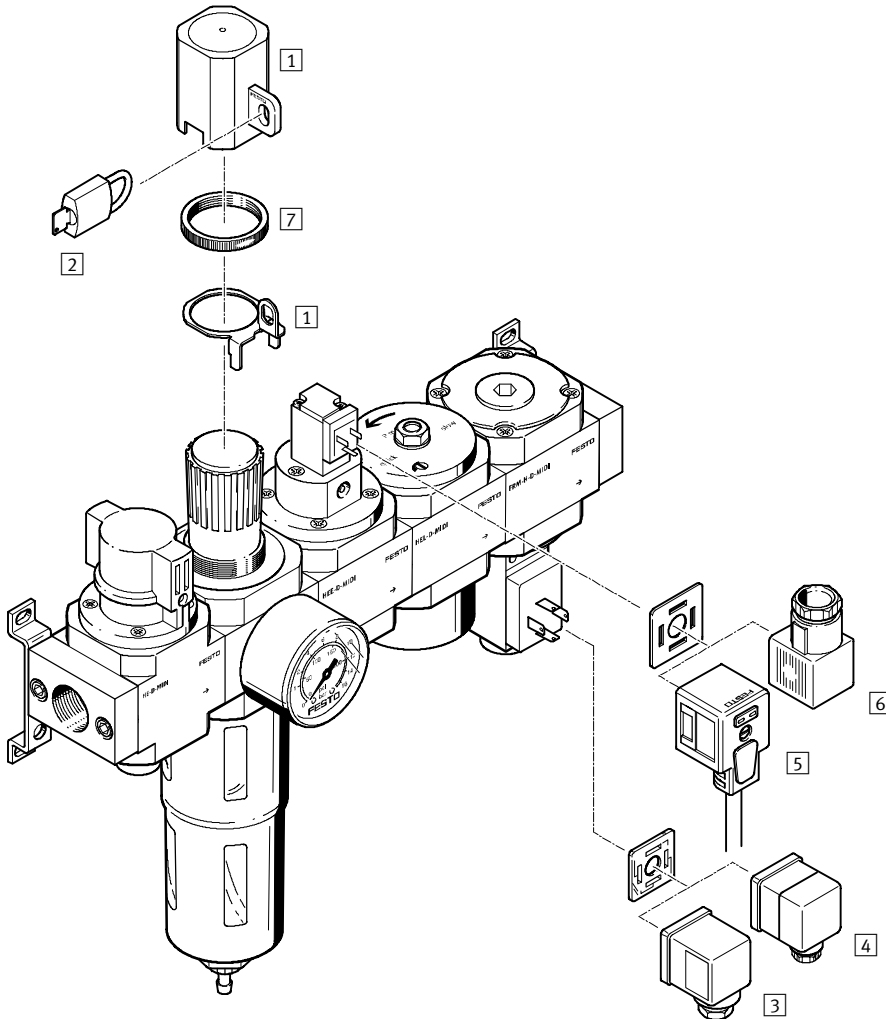
2  
2.2

LFR Rotary knob with detent	 KA	 KB	 KC	 KD	 KE	 KF	 KG
<b>Individual devices</b>							
On-off valve, manual	-	■	■	-	-	■	■
Filter regulator with pressure gauge	■	■	■	■	■	■	■
Branching module	■	■	-	-	-	-	-
On-off valve with solenoid coil 24 V DC	-	-	-	■	-	-	■
Soft-start valve	-	-	-	■	-	-	■
Branching module with pressure switch	-	-	-	-	■	■	■
Mounting bracket and metal bowl guard	■	■	■	■	■	■	■
→ Page	66	70	74	78	82	86	90

LFRS Rotary knob with integrated lock	 KA	 KB	 KC	 KD	 KE	 KF	 KG
<b>Individual devices</b>							
On-off valve, manual	-	■	■	-	-	■	■
Filter regulator with pressure gauge	■	■	■	■	■	■	■
Branching module	■	■	-	-	-	-	-
On-off valve with solenoid coil 24 V DC	-	-	-	■	-	-	■
Soft-start valve	-	-	-	■	-	-	■
Branching module with pressure switch	-	-	-	-	■	■	■
Mounting bracket and metal bowl guard	■	■	■	■	■	■	■
→ Page	66	70	74	78	82	86	90

# LFR-K / LFRS-K Standard Combinations – Without Lubricator

Accessories Overview



**Note**

The choice of accessories depends on the selected combination air preparation unit. The example shows an LFR-KG combination air preparation unit. This combination can also be obtained with a lockable rotary regulator as an LFRS-KG combination air preparation unit.

Range of accessories

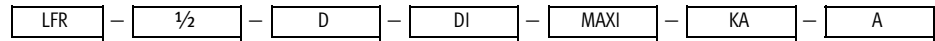
→ Accessories pages of the individual devices

Mounting attachments and accessories		→ Page
1	Regulator lock LRVS	281
2	Padlock LRVS	281
3	Plug socket MSSD-C	286
4	Angled plug socket PEV-...-WD-LED	286
5	Plug socket with cable KMEB-1	287
6	Plug socket MSSD-EB	287
7	Knurled nut (included in scope of delivery) HMR	-



# LFR-K / LFRS-K Standard Combinations – Without Lubricator

Type Codes



**Basic function**

LFR	Standard combination
LFRS	Standard combination, lockable

**Pneumatic connection**

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

**Series**

D	Series
---	--------

**Function (Maxi size only)**

DI	Directly actuated pressure regulator with integrated return flow function
----	---

**Size**

MINI	Grid dimension for individual device 40 mm (without port blocks)
MIDI	Grid dimension for individual device 55 mm (without port blocks)
MAXI	Grid dimension for individual device 66 mm (without port blocks)

**Options for service unit combinations**

KA	Filter regulator, branching module
KB	On-off valve, filter regulator, branching module
KC	On-off valve, filter regulator
KD	Filter regulator, on-off valve with solenoid coil 24 V DC, soft-start valve
KE	Filter regulator, branching module with pressure switch
KF	On-off valve, filter regulator, branching module with pressure switch
KG	On-off valve, filter regulator, on-off valve with solenoid coil 24 V DC, soft-start valve, branching module with pressure switch

**Condensate drain**

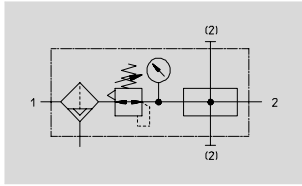
	Manual
A	Fully automatic

2  
2.2

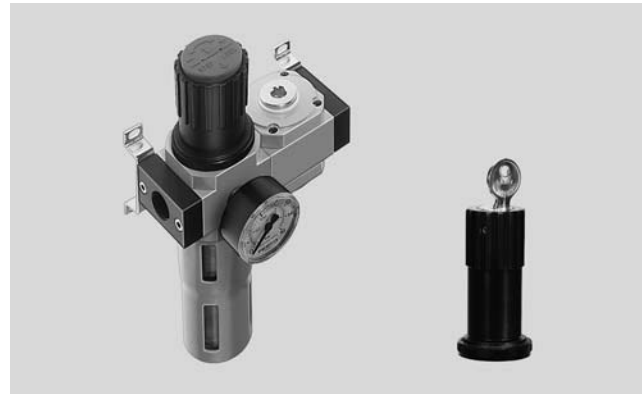
# LFR-KA / LFRS-KA Standard Combinations – Without Lubricator

Technical Data

Function



- Flow rate  
720 ... 9400 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar



2

2.2

- LFR/LFRS filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent or lockable rotary knob
  - pressure gauge
- FRM distributor block
  - Pressure switch without display
- Mounting accessories

- Provides three outlet air connections for unlubricated compressed air supply

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories						
	In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.15	0.15	0.25	0.2	0.2	0.2	0.3
Pressure regulation range [bar]	0.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]							
Condensate drain	Manual	1 ... 16					
	Fully automatic	2 ... 12					

1) The max. condensate volume for the LFR/LFRS-...-DI-MAXI-KA is 43 cm<sup>3</sup>.

# LFR-KA / LFRS-KA Standard Combinations – Without Lubricator

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
LFR/LFRS-...-D-...	720	1140	–	–	–
<b>Midi</b>					
LFR/LFRS-...-D-...	–	1850	2620	3050	–
<b>Maxi</b>					
LFR/LFRS-...-D-...	–	–	–	9200	9400
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
LFR/LFRS-...-D-...	–	–	–	5200	5800

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	2		

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

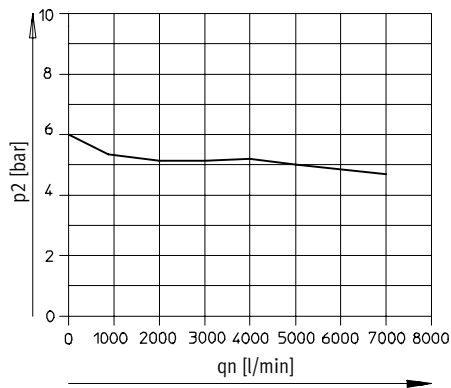
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
LFR	800	1800	2400	2600
LFRS	900	2040	2500	2840

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

LFR/LFRS-1/2-D-DI-MAXI-KA(-A)



Primary pressure p1 = 10 bar

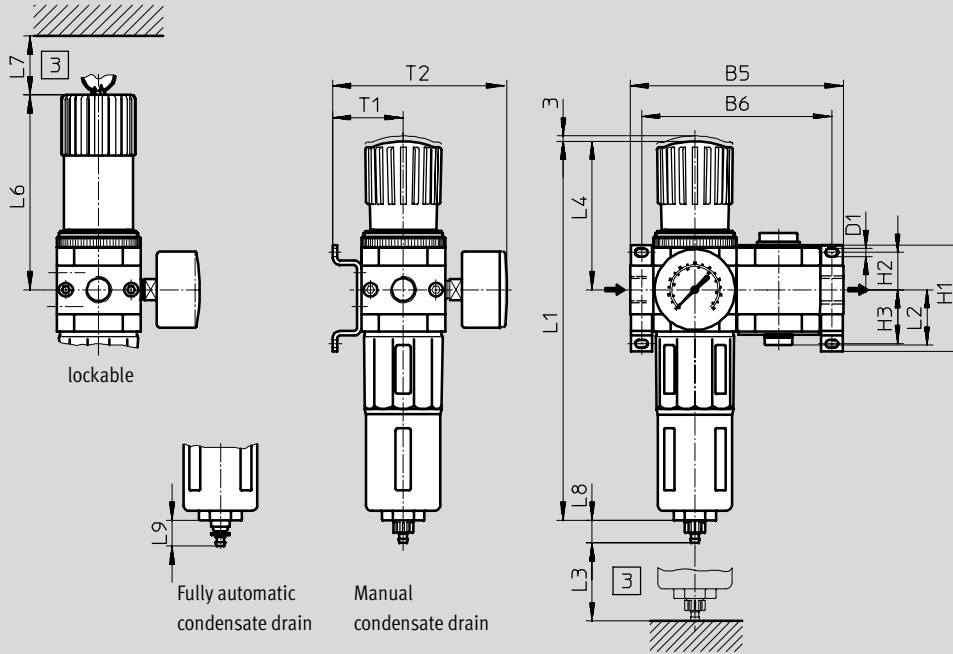
# LFR-KA / LFRS-KA Standard Combinations – Without Lubricator

Technical Data – Dimensional Drawings

**Dimensions**

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

LFR/LFRS-...-KA



3 Installation dimensions

→ Flow direction

Type	B5	B6	D1	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L8	L9	T1	T2						
<b>Mini</b>																							
LFR-...-D-MINI-KA (A)	104	92	4.3	43	17.5	17.5	193	28	60	68	100	98	60	15	19	39	95						
LFRS-...-D-MINI-KA (A)																							
<b>Midi</b>																							
LFR-...-D-MIDI-KA (A)	140	125	5.3	70	24.5	35.5	250	36.5	80	99	120	130	60	15	19	47	114						
LFRS-...-D-MIDI-KA (A)																							
<b>Maxi</b>																							
LFR-...-D-MAXI-KA (A)	162	146	5.3	70	24.5	35.5	252	42	90	82	111	60	15	19	53	126							
LFRS-...-D-MAXI-KA (A)							275			105	135												
LFR-...-D-DI-MAXI-KA (A)																							
LFRS-...-D-DI-MAXI-KA (A)																							

# LFR-KA / LFRS-KA Standard Combinations – Without Lubricator



Ordering Data

2

2.2

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
Size	Connection	Part No.	Type	LT	Part No.	Type	LT
Filter regulator, branching module							
Mini	G <sup>1</sup> / <sub>8</sub>	185707	LFR- <sup>1</sup> / <sub>8</sub> -D-MINI-KA	Q	185708	LFR- <sup>1</sup> / <sub>8</sub> -D-MINI-KA-A	Q
	G <sup>1</sup> / <sub>4</sub>	185709	LFR- <sup>1</sup> / <sub>4</sub> -D-MINI-KA	Q	185710	LFR- <sup>1</sup> / <sub>4</sub> -D-MINI-KA-A	Q
Midi	G <sup>1</sup> / <sub>4</sub>	185711	LFR- <sup>1</sup> / <sub>4</sub> -D-MIDI-KA	Q	185712	LFR- <sup>1</sup> / <sub>4</sub> -D-MIDI-KA-A	Q
	G <sup>3</sup> / <sub>8</sub>	185713	LFR- <sup>3</sup> / <sub>8</sub> -D-MIDI-KA	Q	185714	LFR- <sup>3</sup> / <sub>8</sub> -D-MIDI-KA-A	Q
	G <sup>1</sup> / <sub>2</sub>	185715	LFR- <sup>1</sup> / <sub>2</sub> -D-MIDI-KA	Q	185716	LFR- <sup>1</sup> / <sub>2</sub> -D-MIDI-KA-A	Q
Maxi	G <sup>1</sup> / <sub>2</sub>	186039	LFR- <sup>1</sup> / <sub>2</sub> -D-MAXI-KA	Q	186040	LFR- <sup>1</sup> / <sub>2</sub> -D-MAXI-KA-A	Q
	G <sup>3</sup> / <sub>4</sub>	185717	LFR- <sup>3</sup> / <sub>4</sub> -D-MAXI-KA	Q	185718	LFR- <sup>3</sup> / <sub>4</sub> -D-MAXI-KA-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G <sup>1</sup> / <sub>2</sub>	192440	LFR- <sup>1</sup> / <sub>2</sub> -D-DI-MAXI-KA	Q	192454	LFR- <sup>1</sup> / <sub>2</sub> -D-DI-MAXI-KA-A	Q
	G <sup>3</sup> / <sub>4</sub>	192447	LFR- <sup>3</sup> / <sub>4</sub> -D-DI-MAXI-KA	Q	192461	LFR- <sup>3</sup> / <sub>4</sub> -D-DI-MAXI-KA-A	Q

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard, lockable <sup>1)</sup>							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
Size	Connection	Part No.	Type	LT	Part No.	Type	LT
Filter regulator, branching module							
Mini	G <sup>1</sup> / <sub>8</sub>	195008	LFRS- <sup>1</sup> / <sub>8</sub> -D-MINI-KA	Q	195009	LFRS- <sup>1</sup> / <sub>8</sub> -D-MINI-KA-A	Q
	G <sup>1</sup> / <sub>4</sub>	195022	LFRS- <sup>1</sup> / <sub>4</sub> -D-MINI-KA	Q	195023	LFRS- <sup>1</sup> / <sub>4</sub> -D-MINI-KA-A	Q
Midi	G <sup>1</sup> / <sub>4</sub>	195036	LFRS- <sup>1</sup> / <sub>4</sub> -D-MIDI-KA	Q	195037	LFRS- <sup>1</sup> / <sub>4</sub> -D-MIDI-KA-A	Q
	G <sup>3</sup> / <sub>8</sub>	195050	LFRS- <sup>3</sup> / <sub>8</sub> -D-MIDI-KA	Q	195051	LFRS- <sup>3</sup> / <sub>8</sub> -D-MIDI-KA-A	Q
	G <sup>1</sup> / <sub>2</sub>	195064	LFRS- <sup>1</sup> / <sub>2</sub> -D-MIDI-KA	Q	195065	LFRS- <sup>1</sup> / <sub>2</sub> -D-MIDI-KA-A	Q
Maxi	G <sup>1</sup> / <sub>2</sub>	195078	LFRS- <sup>1</sup> / <sub>2</sub> -D-MAXI-KA	Q	195079	LFRS- <sup>1</sup> / <sub>2</sub> -D-MAXI-KA-A	Q
	G <sup>3</sup> / <sub>4</sub>	195092	LFRS- <sup>3</sup> / <sub>4</sub> -D-MAXI-KA	Q	195093	LFRS- <sup>3</sup> / <sub>4</sub> -D-MAXI-KA-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G <sup>1</sup> / <sub>2</sub>	195176	LFRS- <sup>1</sup> / <sub>2</sub> -D-DI-MAXI-KA	Q	195177	LFRS- <sup>1</sup> / <sub>2</sub> -D-DI-MAXI-KA-A	Q
	G <sup>3</sup> / <sub>4</sub>	195190	LFRS- <sup>3</sup> / <sub>4</sub> -D-DI-MAXI-KA	Q	195191	LFRS- <sup>3</sup> / <sub>4</sub> -D-DI-MAXI-KA-A	Q

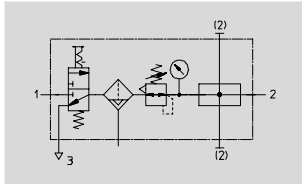
1) For Spare Key ordering information, see page 280.

**LT** = Lead time      **1D** typically ships same day/next day      **1W** typically ships within 1 week      **Q** request a quote for lead time

# LFR-KB / LFRS-KB Standard Combinations – Without Lubricator

Technical Data

Function



- Flow rate  
700 ... 8400 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar



2

2.2

- HE on/off valve
  - manually actuated
- LFR/LFRS filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent or lockable rotary knob
  - pressure gauge
- FRM distributor block
  - Pressure switch without display
- Mounting accessories

- Supply pressure can be opened and closed
- Provides three outlet air connections for unlubricated compressed air supply
- To ensure a fast venting of the system, an additional quick exhaust valve is necessary at the output of the combination air preparation unit

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.2	0.2	0.25	0.3	0.25	0.2	0.2
Pressure regulation range [bar]	0.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]							
Condensate drain	Manual		1 ... 16				
	Fully automatic		2 ... 12				

1) The max. condensate volume for the LFR/LFRS-...-DI-MAXI-KB is 43 cm<sup>3</sup>.

# LFR-KB / LFRS-KB Standard Combinations – Without Lubricator

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
LFR/LFRS-...-D-...	700	1050	–	–	–
<b>Midi</b>					
LFR/LFRS-...-D-...	–	1720	2420	2920	–
<b>Maxi</b>					
LFR/LFRS-...-D-...	–	–	–	8000	8400
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
LFR/LFRS-...-D-...	–	–	–	5400	7000

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	2		

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

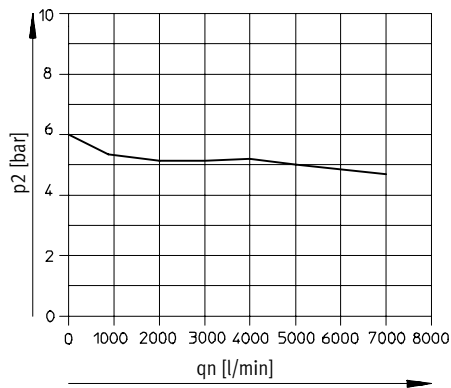
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
LFR	1000	2200	3300	3500
LFRS	1100	2440	3400	3740

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

LFR/LFRS-1/2-D-DI-MAXI-KB-(A)



Primary pressure p1 = 10 bar

# LFR-KB / LFRS-KB Standard Combinations – Without Lubricator

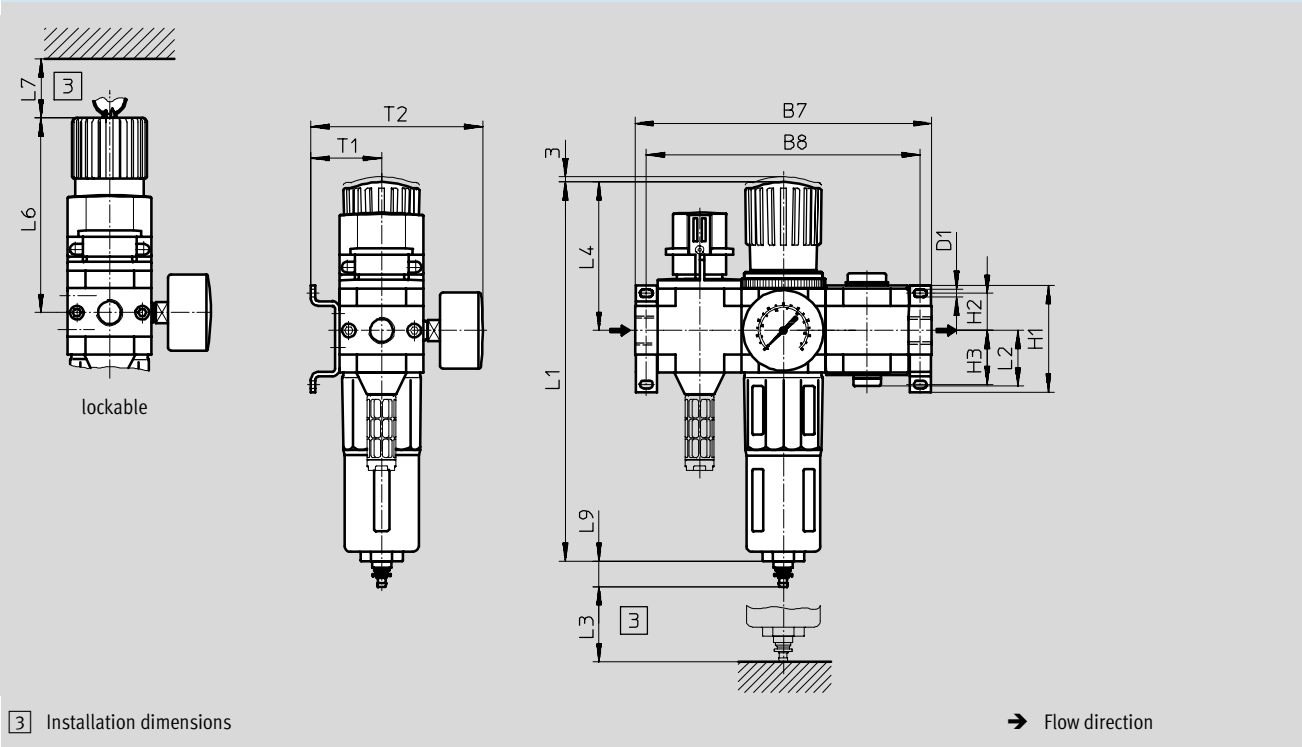
Technical Data – Dimensional Drawings

2

2.2

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

LFR/LFRS-...-KB



Type	B7	B8	D1	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L9	T1	T2
<b>Mini</b>																
LFR-...-D-MINI-KB (A)	144	132	4.3	43	17.5	17.5	193	28	60	68	100	98	60	19	39	95
LFRS-...-D-MINI-KB (A)																
<b>Midi</b>																
LFR-...-D-MIDI-KB (A)	195	180	5.3	70	24.5	35.5	250	36.5	80	99	120	130	60	19	47	114
LFRS-...-D-MIDI-KB (A)																
<b>Maxi</b>																
LFR-...-D-MAXI-KB (A)	228	212	5.3	70	24.5	35.5	252	42	90	82	150	111	60	19	53	126
LFRS-...-D-MAXI-KB (A)							275			105		135				
LFR-...-D-DI-MAXI-KB (A)																
LFRS-...-D-DI-MAXI-KB (A)																



# LFR-KB / LFRS-KB Standard Combinations – Without Lubricator

Ordering Data

2  
2.2

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
On-off valve, filter regulator, branching module							
Mini	G1/8	185719	LFR-1/8-D-MINI-KB	Q	185720	LFR-1/8-D-MINI-KB-A	Q
	G1/4	185721	LFR-1/4-D-MINI-KB	Q	185722	LFR-1/4-D-MINI-KB-A	Q
Midi	G1/4	185723	LFR-1/4-D-MIDI-KB	Q	185724	LFR-1/4-D-MIDI-KB-A	Q
	G3/8	185725	LFR-3/8-D-MIDI-KB	Q	185726	LFR-3/8-D-MIDI-KB-A	Q
	G1/2	185727	LFR-1/2-D-MIDI-KB	Q	185728	LFR-1/2-D-MIDI-KB-A	Q
Maxi	G1/2	186041	LFR-1/2-D-MAXI-KB	Q	186042	LFR-1/2-D-MAXI-KB-A	Q
	G3/4	185729	LFR-3/4-D-MAXI-KB	Q	185730	LFR-3/4-D-MAXI-KB-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192441	LFR-1/2-D-DI-MAXI-KB	Q	192455	LFR-1/2-D-DI-MAXI-KB-A	Q
	G3/4	192448	LFR-3/4-D-DI-MAXI-KB	Q	192462	LFR-3/4-D-DI-MAXI-KB-A	Q

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard, lockable <sup>1)</sup>							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
On-off valve, filter regulator, branching module							
Mini	G1/8	195010	LFRS-1/8-D-MINI-KB	Q	195011	LFRS-1/8-D-MINI-KB-A	Q
	G1/4	195024	LFRS-1/4-D-MINI-KB	Q	195025	LFRS-1/4-D-MINI-KB-A	Q
Midi	G1/4	195038	LFRS-1/4-D-MIDI-KB	Q	195039	LFRS-1/4-D-MIDI-KB-A	Q
	G3/8	195052	LFRS-3/8-D-MIDI-KB	Q	195053	LFRS-3/8-D-MIDI-KB-A	Q
	G1/2	195066	LFRS-1/2-D-MIDI-KB	Q	195067	LFRS-1/2-D-MIDI-KB-A	Q
Maxi	G1/2	195080	LFRS-1/2-D-MAXI-KB	Q	195081	LFRS-1/2-D-MAXI-KB-A	Q
	G3/4	195094	LFRS-3/4-D-MAXI-KB	Q	195095	LFRS-3/4-D-MAXI-KB-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	195178	LFRS-1/2-D-DI-MAXI-KB	Q	195179	LFRS-1/2-D-DI-MAXI-KB-A	Q
	G3/4	195192	LFRS-3/4-D-DI-MAXI-KB	Q	195193	LFRS-3/4-D-DI-MAXI-KB-A	Q

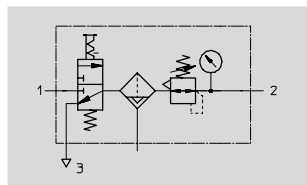
1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LFR-KC / LFRS-KC Standard Combinations – Without Lubricator

Technical Data

Function



- Flow rate  
750 ... 8400 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar



2

2.2

- HE on/off valve
  - manually actuated
- LFR/LFRS filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent or lockable rotary knob
  - pressure gauge
- Mounting accessories

- For unlubricated compressed air
- Supply pressure can be opened and closed
- To ensure a fast venting of the system, an additional quick exhaust valve is necessary at the output of the combination air preparation unit

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Pressure regulation range [bar]	0.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]							
Condensate drain	Manual	1 ... 16					
	Fully automatic	2 ... 12					

1) The max. condensate volume for the LFR/LFRS-...-DI-MAXI-KC is 43 cm<sup>3</sup>.

# LFR-KC / LFRS-KC Standard Combinations – Without Lubricator

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qn [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
LFR/LFRS-...-D-...	750	1150	–	–	–
<b>Midi</b>					
LFR/LFRS-...-D-...	–	1900	2700	3150	–
<b>Maxi</b>					
LFR/LFRS-...-D-...	–	–	–	8100	8400
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
LFR/LFRS-...-D-...	–	–	–	4800	5400

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	2		

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

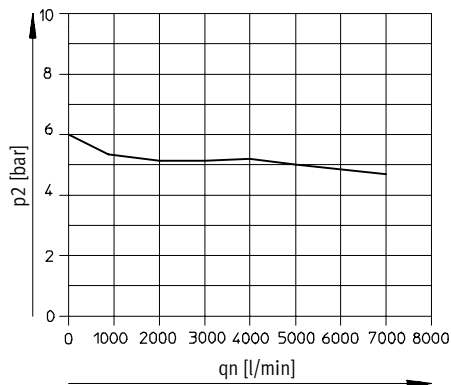
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
LFR	700	1600	2300	2600
LFRS	1000	1840	2400	2840

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

LFR/LFRS-1/2-D-DI-MAXI-KC(-A)



Primary pressure p1 = 10 bar

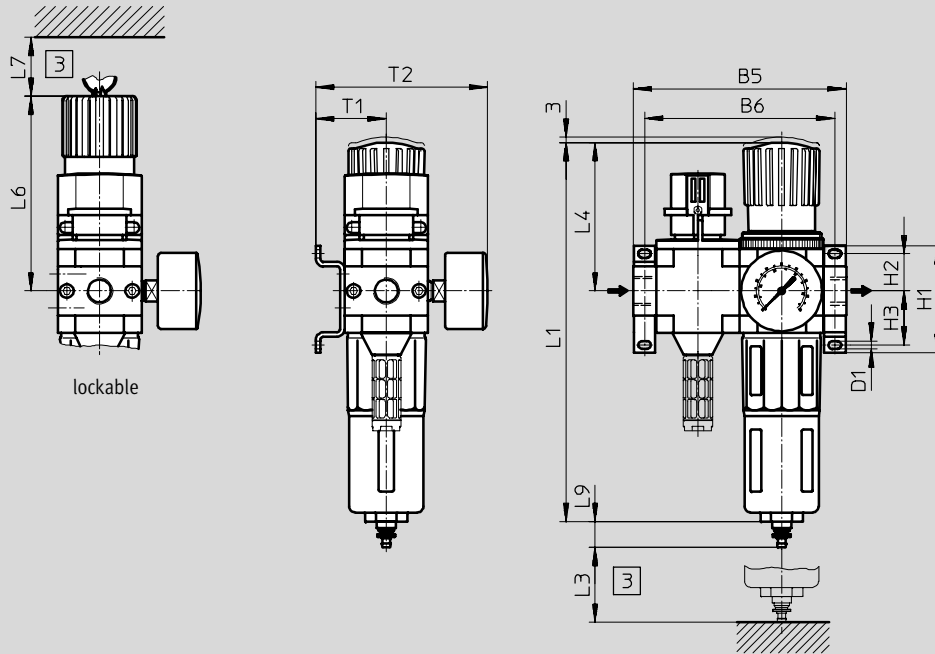
# LFR-KC / LFRS-KC Standard Combinations – Without Lubricator

Technical Data – Dimensional Drawings

**Dimensions**

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

LFR/LFRS-...-KC



3 Installation dimensions

→ Flow direction

Type	B5	B6	D1	H1	H2	H3	L1	L3	L4	L5	L6	L7	L9	T1	T2
<b>Mini</b>															
LFR-...-D-MINI-KC (A)	104	92	4.3	43	17.5	17.5	193	60	68	100	98	60	19	39	95
LFRS-...-D-MINI-KC (A)															
<b>Midi</b>															
LFR-...-D-MIDI-KC (A)	140	125	5.3	70	24.5	35.5	250	80	99	120	130	60	19	47	114
LFRS-...-D-MIDI-KC (A)															
<b>Maxi</b>															
LFR-...-D-MAXI-KC (A)	162	146	5.3	70	24.5	35.5	252	90	82	150	111	60	19	53	126
LFRS-...-D-MAXI-KC (A)							275		105		135				
LFR-...-D-DI-MAXI-KC (A)															
LFRS-...-D-DI-MAXI-KC (A)															

# LFR-KC / LFRS-KC Standard Combinations – Without Lubricator

Ordering Data

2  
2.2

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
Size	Connection	Part No.	Type	LT	Part No.	Type	LT
On-off valve, filter regulator							
Mini	G1/8	185731	LFR-1/8-D-MINI-KC	Q	185732	LFR-1/8-D-MINI-KC-A	Q
	G1/4	185733	LFR-1/4-D-MINI-KC	Q	185734	LFR-1/4-D-MINI-KC-A	Q
Midi	G1/4	185735	LFR-1/4-D-MIDI-KC	Q	185736	LFR-1/4-D-MIDI-KC-A	Q
	G3/8	185737	LFR-3/8-D-MIDI-KC	Q	185738	LFR-3/8-D-MIDI-KC-A	Q
	G1/2	185739	LFR-1/2-D-MIDI-KC	Q	185740	LFR-1/2-D-MIDI-KC-A	Q
Maxi	G1/2	186043	LFR-1/2-D-MAXI-KC	Q	186044	LFR-1/2-D-MAXI-KC-A	Q
	G3/4	185741	LFR-3/4-D-MAXI-KC	Q	185742	LFR-3/4-D-MAXI-KC-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192442	LFR-1/2-D-DI-MAXI-KC	Q	192456	LFR-1/2-D-DI-MAXI-KC-A	Q
	G3/4	192449	LFR-3/4-D-DI-MAXI-KC	Q	192463	LFR-3/4-D-DI-MAXI-KC-A	Q

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard, lockable <sup>1)</sup>							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
Size	Connection	Part No.	Type	LT	Part No.	Type	LT
On-off valve, filter regulator							
Mini	G1/8	195012	LFRS-1/8-D-MINI-KC	Q	195013	LFRS-1/8-D-MINI-KC-A	Q
	G1/4	195026	LFRS-1/4-D-MINI-KC	Q	195027	LFRS-1/4-D-MINI-KC-A	Q
Midi	G1/4	195040	LFRS-1/4-D-MIDI-KC	Q	195041	LFRS-1/4-D-MIDI-KC-A	Q
	G3/8	195054	LFRS-3/8-D-MIDI-KC	Q	195055	LFRS-3/8-D-MIDI-KC-A	Q
	G1/2	195068	LFRS-1/2-D-MIDI-KC	Q	195069	LFRS-1/2-D-MIDI-KC-A	Q
Maxi	G1/2	195082	LFRS-1/2-D-MAXI-KC	Q	195083	LFRS-1/2-D-MAXI-KC-A	Q
	G3/4	195096	LFRS-3/4-D-MAXI-KC	Q	195097	LFRS-3/4-D-MAXI-KC-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	195180	LFRS-1/2-D-DI-MAXI-KC	Q	195181	LFRS-1/2-D-DI-MAXI-KC-A	Q
	G3/4	195194	LFRS-3/4-D-DI-MAXI-KC	Q	195195	LFRS-3/4-D-DI-MAXI-KC-A	Q

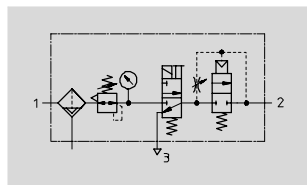
1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

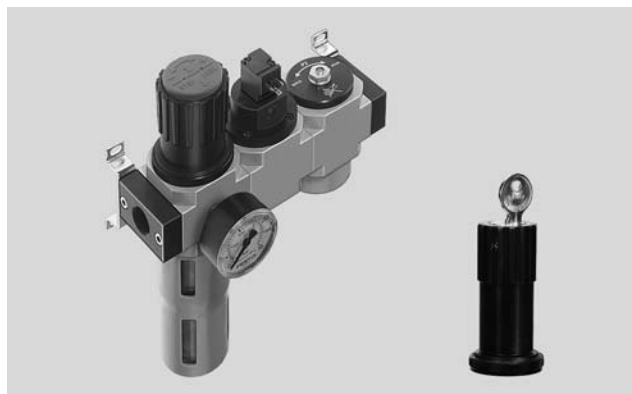
# LFR-KD / LFRS-KD Standard Combinations – Without Lubricator

Technical Data

Function



- Flow rate  
595 ... 5000 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
3 ... 16 bar



2

2.2

- LFR/LFRS filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent or lockable rotary knob
  - pressure gauge
- HEE on/off valve
  - solenoid actuated
  - 24 V DC
- HEL soft-start valve
  - pneumatically actuated
- Mounting accessories

- For unlubricated compressed air
- Gradual pressure buildup prevents sudden, unpredictable movements
- When supply pressure is closed, quick venting ensures rapid pressure reduction

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>
Operating medium	Compressed air						
Type of mounting	Via accessories In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.15	0.15	0.25	0.25	0.25	0.3	0.2
Pressure regulation range [bar]	2.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]	3 ... 16						
Condensate drain	Manual	3 ... 16					
	Fully automatic	3 ... 12					

1) The max. condensate volume for the LFR/LFRS-...-DI-MAXI-KD is 43 cm<sup>3</sup>.

# LFR-KD / LFRS-KD Standard Combinations – Without Lubricator

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qn [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
LFR/LFRS-...-D-...	595	730	-	-	-
<b>Midi</b>					
LFR/LFRS-...-D-...	-	1440	1890	2000	-
<b>Maxi</b>					
LFR/LFRS-...-D-...	-	-	-	4300	5000
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
LFR/LFRS-...-D-DI-...	-	-	-	3000	2800

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	-10 ... +60		
Temperature of medium [°C]	-10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	2		

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

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

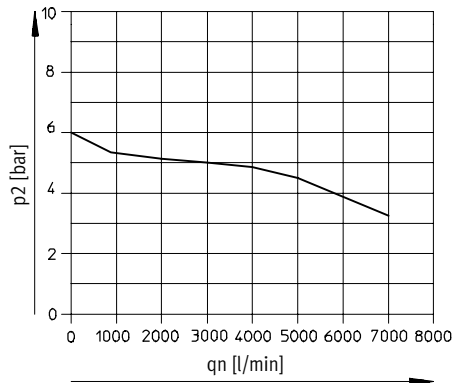
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
LFR	900	2100	3100	3300
LFRS	1000	2340	3200	3540

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

LFR/LFRS-1/2-D-DI-MAXI-KD-(A)



Primary pressure p1 = 10 bar

# LFR-KD / LFRS-KD Standard Combinations – Without Lubricator

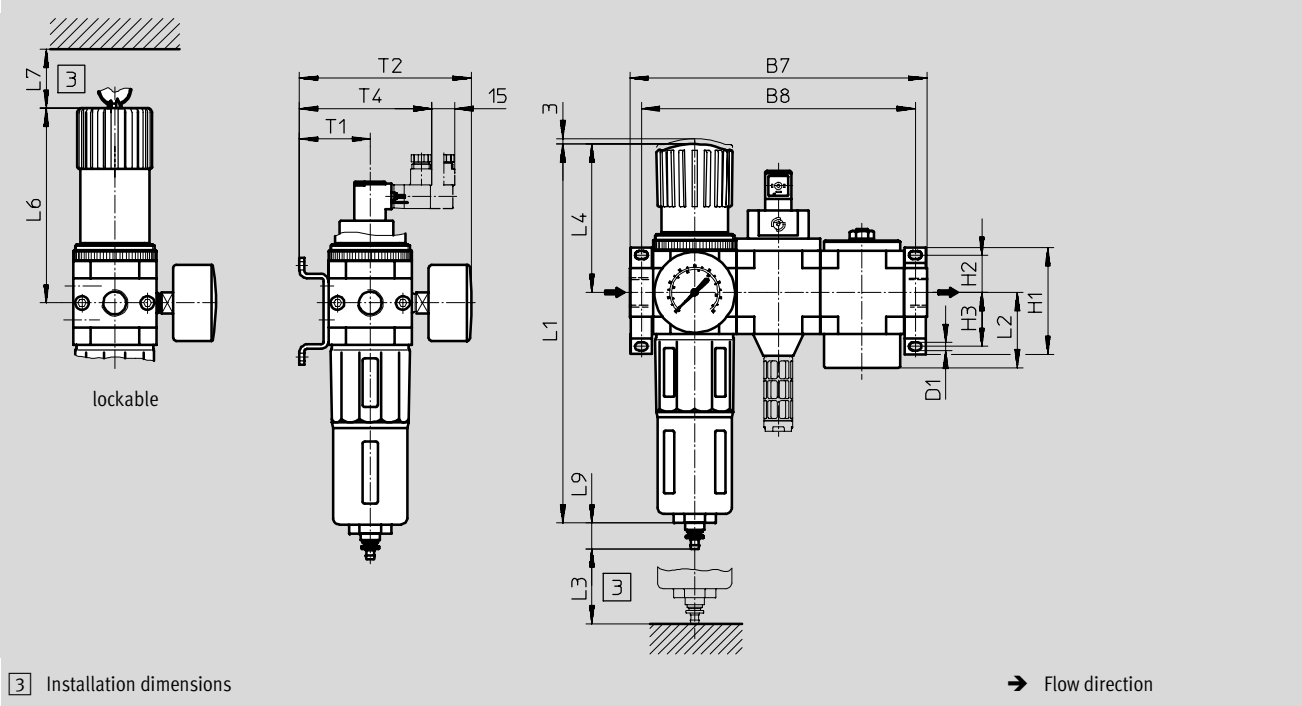
Technical Data – Dimensional Drawings

2

2.2

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

LFR/LFRS-...-KD



Type	B7	B8	D1	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L9	T1	T2	T4
<b>Mini</b>																	
LFR-...-D-MINI-KD (A)	144	132	4.3	43	17.5	17.5	193	36	60	68	100	98	60	19	39	95	78
LFRS-...-D-MINI-KD (A)																	
<b>Midi</b>																	
LFR-...-D-MIDI-KD (A)	195	180	5.3	70	24.5	35.5	250	49.5	80	99	120	130	60	19	47	114	86
LFRS-...-D-MIDI-KD (A)																	
<b>Maxi</b>																	
LFR-...-D-MAXI-KD (A)	228	212	5.3	70	24.5	35.5	252	56.4	90	82	150	111	60	19	53	126	92
LFRS-...-D-MAXI-KD (A)							275			105		135					
LFR-...-D-DI-MAXI-KD (A)																	
LFRS-...-D-DI-MAXI-KD (A)																	



# LFR-KD / LFRS-KD Standard Combinations – Without Lubricator

Ordering Data

2  
2.2

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Filter regulator, on-off valve with solenoid coil 24 V DC, soft-start valve							
Mini	G1/8	185743	LFR-1/8-D-MINI-KD	Q	185744	LFR-1/8-D-MINI-KD-A	Q
	G1/4	185745	LFR-1/4-D-MINI-KD	Q	185746	LFR-1/4-D-MINI-KD-A	Q
Midi	G1/4	185747	LFR-1/4-D-MIDI-KD	Q	185748	LFR-1/4-D-MIDI-KD-A	Q
	G3/8	185749	LFR-3/8-D-MIDI-KD	Q	185750	LFR-3/8-D-MIDI-KD-A	Q
	G1/2	185751	LFR-1/2-D-MIDI-KD	Q	185752	LFR-1/2-D-MIDI-KD-A	Q
Maxi	G1/2	186045	LFR-1/2-D-MAXI-KD	Q	186046	LFR-1/2-D-MAXI-KD-A	Q
	G3/4	185753	LFR-3/4-D-MAXI-KD	Q	185754	LFR-3/4-D-MAXI-KD-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192443	LFR-1/2-D-DI-MAXI-KD	Q	192457	LFR-1/2-D-DI-MAXI-KD-A	Q
	G3/4	192450	LFR-3/4-D-DI-MAXI-KD	Q	192464	LFR-3/4-D-DI-MAXI-KD-A	Q

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard, lockable <sup>1)</sup>							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Filter regulator, on-off valve with solenoid coil 24 V DC, soft-start valve							
Mini	G1/8	195014	LFRS-1/8-D-MINI-KD	Q	195015	LFRS-1/8-D-MINI-KD-A	Q
	G1/4	195028	LFRS-1/4-D-MINI-KD	Q	195029	LFRS-1/4-D-MINI-KD-A	Q
Midi	G1/4	195042	LFRS-1/4-D-MIDI-KD	Q	195043	LFRS-1/4-D-MIDI-KD-A	Q
	G3/8	195056	LFRS-3/8-D-MIDI-KD	Q	195057	LFRS-3/8-D-MIDI-KD-A	Q
	G1/2	195070	LFRS-1/2-D-MIDI-KD	Q	195071	LFRS-1/2-D-MIDI-KD-A	Q
Maxi	G1/2	195084	LFRS-1/2-D-MAXI-KD	Q	195085	LFRS-1/2-D-MAXI-KD-A	Q
	G3/4	195098	LFRS-3/4-D-MAXI-KD	Q	195099	LFRS-3/4-D-MAXI-KD-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	195182	LFRS-1/2-D-DI-MAXI-KD	Q	195183	LFRS-1/2-D-DI-MAXI-KD-A	Q
	G3/4	195196	LFRS-3/4-D-DI-MAXI-KD	Q	195197	LFRS-3/4-D-DI-MAXI-KD-A	Q

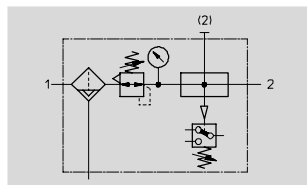
1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

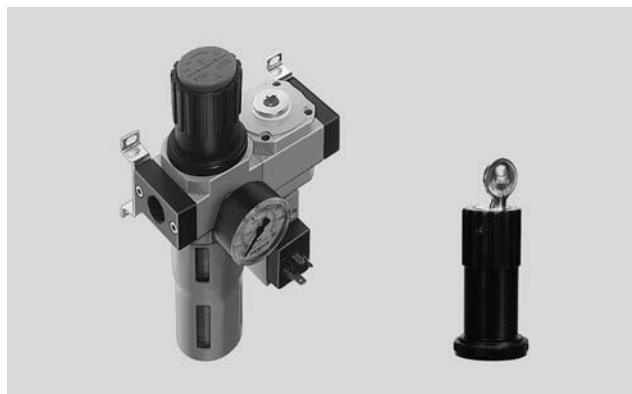
# LFR-KE / LFRS-KE Standard Combinations – Without Lubricator

Technical Data

Function



- Flow rate  
720 ... 9400 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar



2

2.2

- LFR/LFRS filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, turned manually or fully automatic
  - rotary knob with detent or lockable rotary knob
  - pressure gauge
- FRM distributor block
  - pressure switch without display
- Mounting accessories

- Provides two outlet air connections for unlubricated compressed air supply
- Electrical pressure monitoring with adjustable switching pressure

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories						
	In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.15	0.15	0.25	0.2	0.2	0.2	0.3
Pressure regulation range [bar]	0.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]							
Condensate drain	Manual	1 ... 16					
	Fully automatic	2 ... 12					

1) The max. condensate volume for the LFR/LFRS-...-DI-MAXI-KE is 43 cm<sup>3</sup>.

# LFR-KE / LFRS-KE Standard Combinations – Without Lubricator

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
LFR/LFRS-...-D-...	720	1140	–	–	–
<b>Midi</b>					
LFR/LFRS-...-D-...	–	1850	2620	3050	–
<b>Maxi</b>					
LFR/LFRS-...-D-...	–	–	–	9200	9400
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
LFR/LFRS-...-D-DI-...	–	–	–	5000	6000

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	2		

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

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

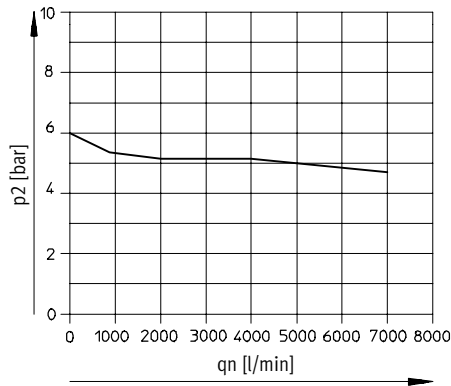
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
LFR	1000	2000	2400	2600
LFRS	1100	2240	2500	2840

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

LFR/LFRS-1/2-D-DI-MAXI-KE(-A)



Primary pressure p1 = 10 bar

# LFR-KE / LFRS-KE Standard Combinations – Without Lubricator

Technical Data – Dimensional Drawings

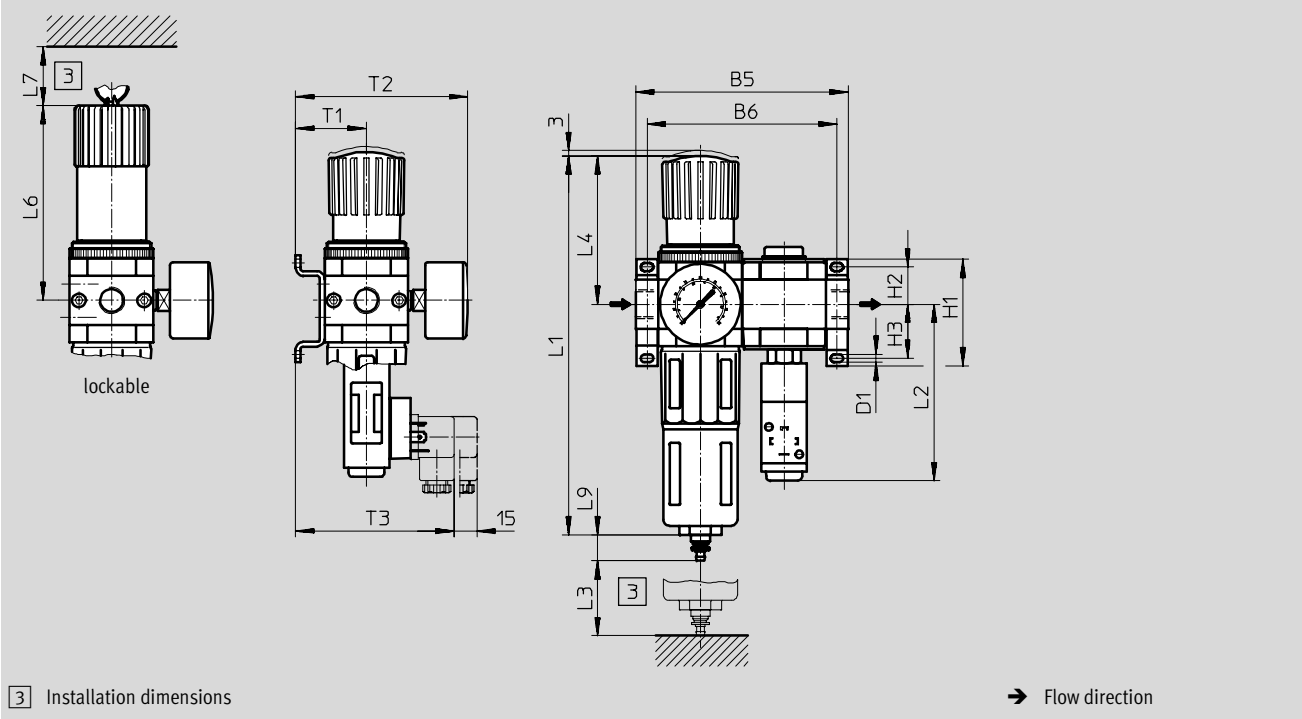
2

2.2

**Dimensions**

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

LFR/LFRS-...-KE



Type	B5	B6	D1	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L9	T1	T2	T3
<b>Mini</b>																	
LFR-...-D-MINI-KE (A)	104	92	4.3	43	17.5	17.5	193	108	60	68	100	98	60	19	39	95	97
LFRS-...-D-MINI-KE (A)																	
<b>Midi</b>																	
LFR-...-D-MIDI-KE (A)	140	125	5.3	70	24.5	35.5	250	117	80	99	120	130	60	19	47	114	109
LFRS-...-D-MIDI-KE (A)																	
<b>Maxi</b>																	
LFR-...-D-MAXI-KE (A)	162	146	5.3	70	24.5	35.5	252	122	90	82	150	111	60	19	53	126	111
LFRS-...-D-MAXI-KE (A)							275			105		135					
LFR-...-D-DI-MAXI-KE (A)																	
LFRS-...-D-DI-MAXI-KE (A)																	

# LFR-KE / LFRS-KE Standard Combinations – Without Lubricator

Ordering Data

2  
2.2

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Filter regulator, branching module with pressure switch							
Mini	G1/8	185755	LFR-1/8-D-MINI-KE	Q	185756	LFR-1/8-D-MINI-KE-A	Q
	G1/4	185757	LFR-1/4-D-MINI-KE	Q	185758	LFR-1/4-D-MINI-KE-A	Q
Midi	G1/4	185759	LFR-1/4-D-MIDI-KE	Q	185760	LFR-1/4-D-MIDI-KE-A	Q
	G3/8	185761	LFR-3/8-D-MIDI-KE	Q	185762	LFR-3/8-D-MIDI-KE-A	Q
	G1/2	185763	LFR-1/2-D-MIDI-KE	Q	185764	LFR-1/2-D-MIDI-KE-A	Q
Maxi	G1/2	186047	LFR-1/2-D-MAXI-KE	Q	186048	LFR-1/2-D-MAXI-KE-A	Q
	G3/4	185765	LFR-3/4-D-MAXI-KE	Q	185766	LFR-3/4-D-MAXI-KE-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192444	LFR-1/2-D-DI-MAXI-KE	Q	192458	LFR-1/2-D-DI-MAXI-KE-A	Q
	G3/4	192451	LFR-3/4-D-DI-MAXI-KE	Q	192465	LFR-3/4-D-DI-MAXI-KE-A	Q

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard, lockable <sup>1)</sup>							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Filter regulator, branching module with pressure switch							
Mini	G1/8	195016	LFRS-1/8-D-MINI-KE	Q	195017	LFRS-1/8-D-MINI-KE-A	Q
	G1/4	195030	LFRS-1/4-D-MINI-KE	Q	195031	LFRS-1/4-D-MINI-KE-A	Q
Midi	G1/4	195044	LFRS-1/4-D-MIDI-KE	Q	195045	LFRS-1/4-D-MIDI-KE-A	Q
	G3/8	195058	LFRS-3/8-D-MIDI-KE	Q	195059	LFRS-3/8-D-MIDI-KE-A	Q
	G1/2	195072	LFRS-1/2-D-MIDI-KE	Q	195073	LFRS-1/2-D-MIDI-KE-A	Q
Maxi	G1/2	195086	LFRS-1/2-D-MAXI-KE	Q	195087	LFRS-1/2-D-MAXI-KE-A	Q
	G3/4	195100	LFRS-3/4-D-MAXI-KE	Q	195101	LFRS-3/4-D-MAXI-KE-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	195184	LFRS-1/2-D-DI-MAXI-KE	Q	195185	LFRS-1/2-D-DI-MAXI-KE-A	Q
	G3/4	195198	LFRS-3/4-D-DI-MAXI-KE	Q	195199	LFRS-3/4-D-DI-MAXI-KE-A	Q

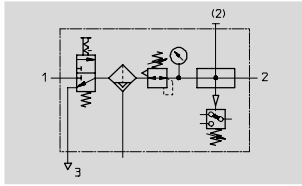
1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

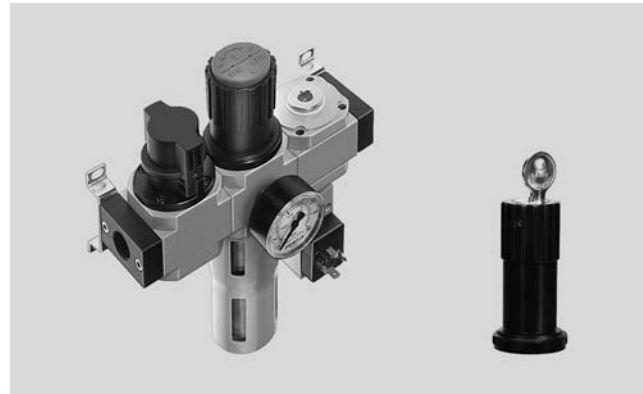
# LFR-KF / LFRS-KF Standard Combinations – Without Lubricator

Technical Data

Function



- Flow rate  
700 ... 8400 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
1 ... 16 bar



2

2.2

- HE on/off valve
  - manually actuated
- LFR/LFRS filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent or lockable rotary knob
  - pressure gauge
- FRM distributor block
  - pressure switch without display
- Mounting accessories

- For unlubricated compressed air
- Supply pressure can be opened and closed
- Provides two additional air connections
- Electrical pressure monitoring with adjustable switching pressure
- To ensure a fast venting of the system, an additional quick exhaust valve is necessary at the output of the combination air preparation unit

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G1/2	G1/2	G3/4
Operating medium	Compressed air						
Type of mounting	Via accessories In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.2	0.2	0.25	0.3	0.25	0.2	0.2
Pressure regulation range [bar]	0.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]							
Condensate drain	Manual	1 ... 16					
	Fully automatic	2 ... 12					

1) The max. condensate volume for the LFR/LFRS-...-DI-MAXI-KF is 43 cm<sup>3</sup>.

# LFR-KF / LFRS-KF Standard Combinations – Without Lubricator

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qn [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
<b>Mini</b>					
LFR/LFRS-...-D-...	700	1050	–	–	–
<b>Midi</b>					
LFR/LFRS-...-D-...	–	1720	2420	2920	–
<b>Maxi</b>					
LFR/LFRS-...-D-...	–	–	–	8000	8400
<b>Maxi – Directly actuated pressure regulator with integrated return flow function</b>					
LFR/LFRS-...-D-DI-...	–	–	–	5000	6000

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	2		

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

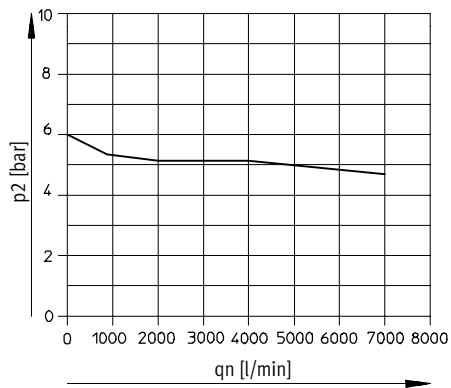
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
LFR	1200	2400	3300	3500
LFRS	1300	2640	3400	3740

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

LFR/LFRS-1/2-D-DI-MAXI-KF(-A)



Primary pressure p1 = 10 bar

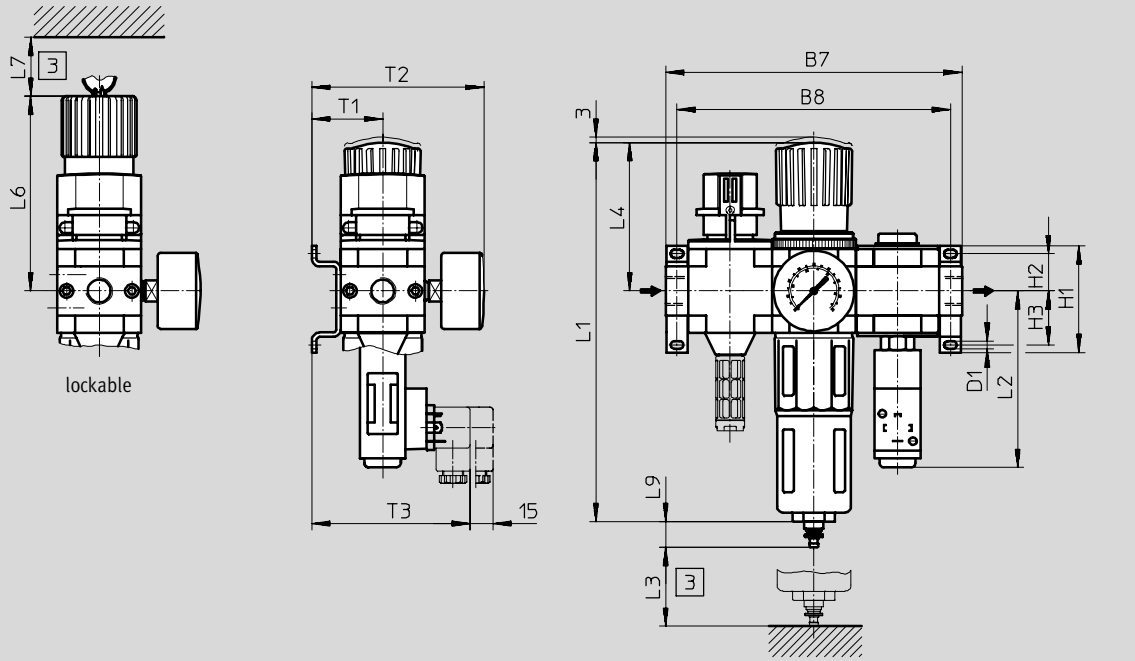
# LFR-KF / LFRS-KF Standard Combinations – Without Lubricator

Technical Data – Dimensional Drawings

**Dimensions**

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

LFR/LFRS-...-KF



3 Installation dimensions

→ Flow direction

Type	B7	B8	D1	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L9	T1	T2	T3
<b>Mini</b>																	
LFR-...-D-MINI-KF (A)	144	132	4.3	43	17.5	17.5	193	108	60	68	100	98	60	19	39	95	97
LFRS-...-D-MINI-KF (A)																	
<b>Midi</b>																	
LFR-...-D-MIDI-KF (A)	195	180	5.3	70	24.5	35.5	250	117	80	99	120	130	60	19	47	114	105
LFRS-...-D-MIDI-KF (A)																	
<b>Maxi</b>																	
LFR-...-D-MAXI-KF (A)	228	212	5.3	70	24.5	35.5	252	122	90	82	150	111	60	19	53	126	111
LFRS-...-D-MAXI-KF (A)							275			105		135					
LFR-...-D-DI-MAXI-KF (A)																	
LFRS-...-D-DI-MAXI-KF (A)																	



# LFR-KF / LFRS-KF Standard Combinations – Without Lubricator

Ordering Data

2  
2.2

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard							
Size	Connection	Condensate drain manual				Condensate drain fully automatic	
		Part No.	Type	LT	Part No.	Type	LT
On-off valve, filter regulator, branching module with pressure switch							
Mini	G1/8	185767	LFR-1/8-D-MINI-KF	Q	185768	LFR-1/8-D-MINI-KF-A	Q
	G1/4	185769	LFR-1/4-D-MINI-KF	Q	185770	LFR-1/4-D-MINI-KF-A	Q
Midi	G1/4	185771	LFR-1/4-D-MIDI-KF	Q	185772	LFR-1/4-D-MIDI-KF-A	Q
	G3/8	185773	LFR-3/8-D-MIDI-KF	Q	185774	LFR-3/8-D-MIDI-KF-A	Q
	G1/2	185775	LFR-1/2-D-MIDI-KF	Q	185776	LFR-1/2-D-MIDI-KF-A	Q
Maxi	G1/2	186049	LFR-1/2-D-MAXI-KF	Q	186050	LFR-1/2-D-MAXI-KF-A	Q
	G3/4	185777	LFR-3/4-D-MAXI-KF	Q	185778	LFR-3/4-D-MAXI-KF-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192445	LFR-1/2-D-DI-MAXI-KF	Q	192459	LFR-1/2-D-DI-MAXI-KF-A	Q
	G3/4	192452	LFR-3/4-D-DI-MAXI-KF	Q	192466	LFR-3/4-D-DI-MAXI-KF-A	Q

Ordering data							
Pressure regulation range 0.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard, lockable <sup>1)</sup>							
Size	Connection	Condensate drain manual				Condensate drain fully automatic	
		Part No.	Type	LT	Part No.	Type	LT
On-off valve, filter regulator, branching module with pressure switch							
Mini	G1/8	195018	LFRS-1/8-D-MINI-KF	Q	195019	LFRS-1/8-D-MINI-KF-A	Q
	G1/4	195032	LFRS-1/4-D-MINI-KF	Q	195033	LFRS-1/4-D-MINI-KF-A	Q
Midi	G1/4	195046	LFRS-1/4-D-MIDI-KF	Q	195047	LFRS-1/4-D-MIDI-KF-A	Q
	G3/8	195060	LFRS-3/8-D-MIDI-KF	Q	195061	LFRS-3/8-D-MIDI-KF-A	Q
	G1/2	195074	LFRS-1/2-D-MIDI-KF	Q	195075	LFRS-1/2-D-MIDI-KF-A	Q
Maxi	G1/2	195088	LFRS-1/2-D-MAXI-KF	Q	195089	LFRS-1/2-D-MAXI-KF-A	Q
	G3/4	195102	LFRS-3/4-D-MAXI-KF	Q	195103	LFRS-3/4-D-MAXI-KF-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	195186	LFRS-1/2-D-DI-MAXI-KF	Q	195187	LFRS-1/2-D-DI-MAXI-KF-A	Q
	G3/4	195200	LFRS-3/4-D-DI-MAXI-KF	Q	195201	LFRS-3/4-D-DI-MAXI-KF-A	Q

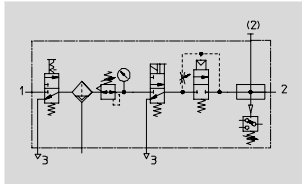
1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

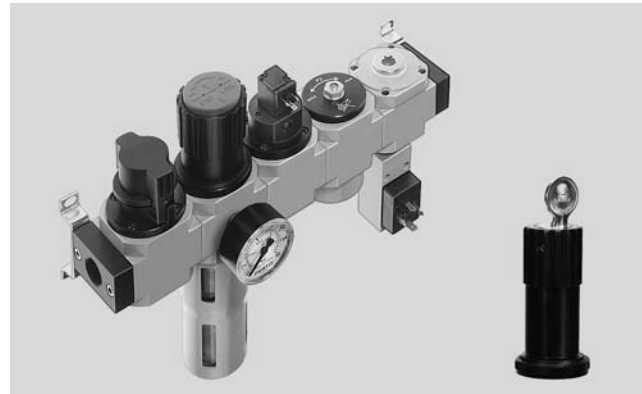
# LFR-KG / LFRS-KG Standard Combinations – Without Lubricator

Technical Data

Function



- Flow rate  
575 ... 4900 l/min
- Temperature range  
-10 ... +60 °C
- Input pressure  
3 ... 16 bar



2

2.2

- HE on/off valve
  - manually actuated
- LFR/LFRS filter/regulator
  - grade of filtration 40 µm
  - metal bowl guard
  - condensate drain, manual or fully automatic
  - rotary knob with detent or lockable rotary knob
  - pressure gauge
- HEE on-off valve
  - solenoid actuated
  - 24 V DC
- HELsoft-start valve
  - pneumatically actuated
- FRM distributor block
  - pressure switch without display
- Mounting accessories

- Provides two outlet air connections for unlubricated compressed air supply
- Gradual pressure buildup prevents sudden, unpredictable movements
- Electrical pressure monitoring with adjustable switching pressure
- To ensure a fast venting of the system, an additional quick exhaust valve is necessary at the output of the combination air preparation unit

General technical data							
Size	Mini		Midi			Maxi	
Pneumatic connection	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>
Operating medium	Compressed air						
Type of mounting	Via accessories In-line installation						
Assembly position	Vertical ±5°						
Grade of filtration [µm]	40						
Max. hysteresis [bar]	0.15	0.15	0.25	0.2	0.2	0.25	0.25
Pressure regulation range [bar]	2.5 ... 12						
Pressure indication	Via pressure gauge						
Max. condensate volume [cm <sup>3</sup> ]	22		43			80 <sup>1)</sup>	
Input pressure [bar]	3 ... 16						
Condensate drain	Manual	3 ... 16					
	Fully automatic	3 ... 12					

1) The max. condensate volume for the LFR/LFRS-...-DI-MAXI-KG is 43 cm<sup>3</sup>.

# LFR-KG / LFRS-KG Standard Combinations – Without Lubricator

Technical Data

2  
2.2

Standard nominal flow rate <sup>1)</sup> qn [l/min]					
Connection	G1/8	G1/4	G3/8	G1/2	G3/4
Mini					
LFR/LFRS-...-D-...	575	715	–	–	–
Midi					
LFR/LFRS-...-D-...	–	1370	1680	1740	–
Maxi					
LFR/LFRS-...-D-...	–	–	–	4200	4900
Maxi – Directly actuated pressure regulator with integrated return flow function					
LFR/LFRS-...-D-DI-...	–	–	–	2500	3000

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

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	2		

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

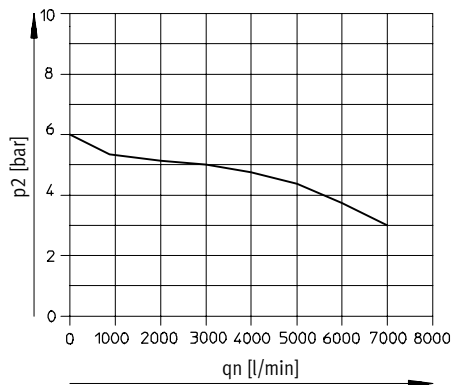
Weight [g]				
Size	Mini	Midi	Maxi	
			D	D-DI
LFR	1500	3400	5200	5400
LFRS	1600	3640	5300	5640

**Note**

Materials → Technical data of the individual devices

**Standard flow rate qn as a function of the output pressure p2**

LFR/LFRS-1/2-D-DI-MAXI-KG-(A)



Primary pressure p1 = 10 bar

# LFR-KG / LFRS-KG Standard Combinations – Without Lubricator

Technical Data – Dimensional Drawings

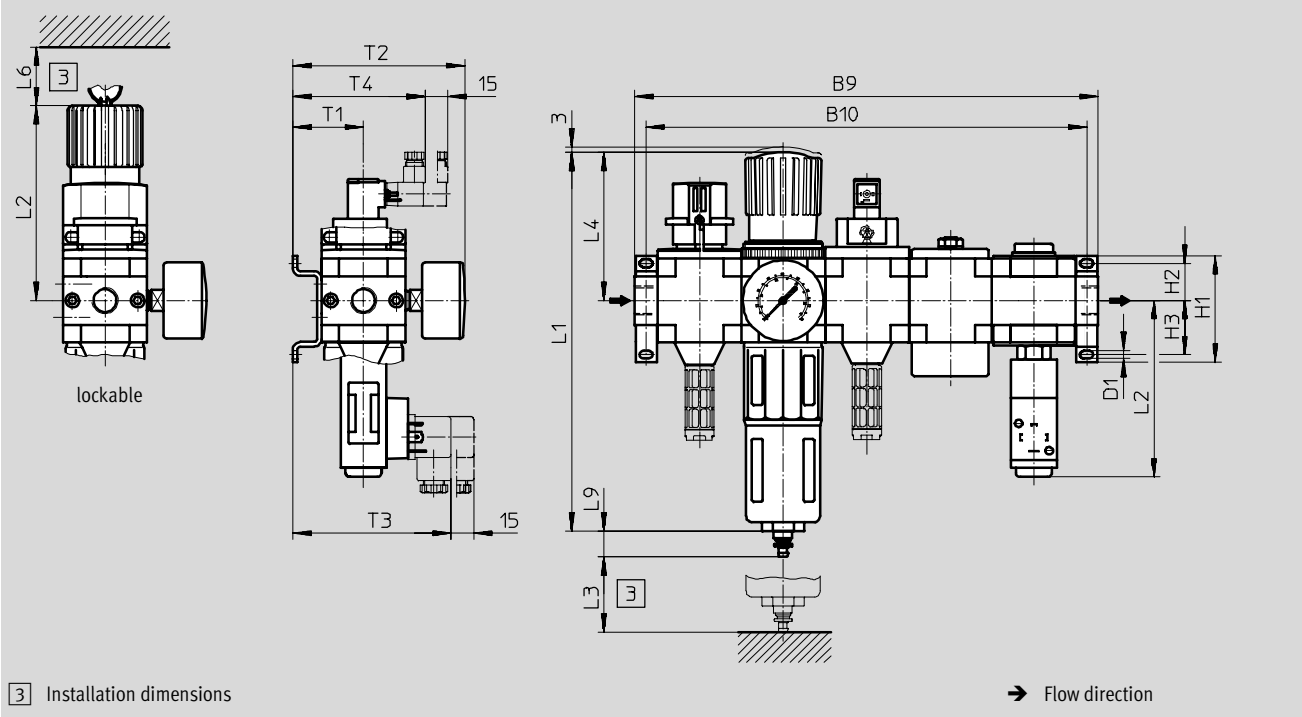
2

2.2

**Dimensions**

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

LFR/LFRS-...-KG



Type	B9	B10	D1	H1	H2	H3	L1	L2	L3	L4	L5	L6	L7	L9	T1	T2	T3	T4
<b>Mini</b>																		
LFR-...-D-MINI-KG (A)	244	212	4.3	43	17.5	17.5	193	108	60	68	100	98	60	19	39	95	97	78
LFRS-...-D-MINI-KG (A)																		
<b>Midi</b>																		
LFR-...-D-MIDI-KG (A)	305	290	5.3	70	24.5	35.5	250	117	80	99	120	130	60	19	47	114	105	86
LFRS-...-D-MIDI-KG (A)																		
<b>Maxi</b>																		
LFR-...-D-MAXI-KG (A)	360	344	5.3	70	24.5	35.5	252	122	90	82	150	111	60	19	53	126	111	92
LFRS-...-D-MAXI-KG (A)							275			105		135						
LFR-...-D-DI-MAXI-KG (A)																		
LFRS-...-D-DI-MAXI-KG (A)																		

# LFR-KG / LFRS-KG Standard Combinations – Without Lubricator

Ordering Data

2

2.2

Ordering data							
Pressure regulation range 2.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
On-off valve, filter regulator, on-off valve with solenoid coil 24 V DC, soft-start valve, branching module with pressure switch							
Mini	G1/8	185779	LFR-1/8-D-MINI-KG	Q	185780	LFR-1/8-D-MINI-KG-A	Q
	G1/4	185781	LFR-1/4-D-MINI-KG	Q	185782	LFR-1/4-D-MINI-KG-A	Q
Midi	G1/4	185783	LFR-1/4-D-MIDI-KG	Q	185784	LFR-1/4-D-MIDI-KG-A	Q
	G3/8	185785	LFR-3/8-D-MIDI-KG	Q	185786	LFR-3/8-D-MIDI-KG-A	Q
	G1/2	185787	LFR-1/2-D-MIDI-KG	Q	185788	LFR-1/2-D-MIDI-KG-A	Q
Maxi	G1/2	186051	LFR-1/2-D-MAXI-KG	Q	186052	LFR-1/2-D-MAXI-KG-A	Q
	G3/4	185789	LFR-3/4-D-MAXI-KG	Q	185790	LFR-3/4-D-MAXI-KG-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	192446	LFR-1/2-D-DI-MAXI-KG	Q	192460	LFR-1/2-D-DI-MAXI-KG-A	Q
	G3/4	192453	LFR-3/4-D-DI-MAXI-KG	Q	192467	LFR-3/4-D-DI-MAXI-KG-A	Q

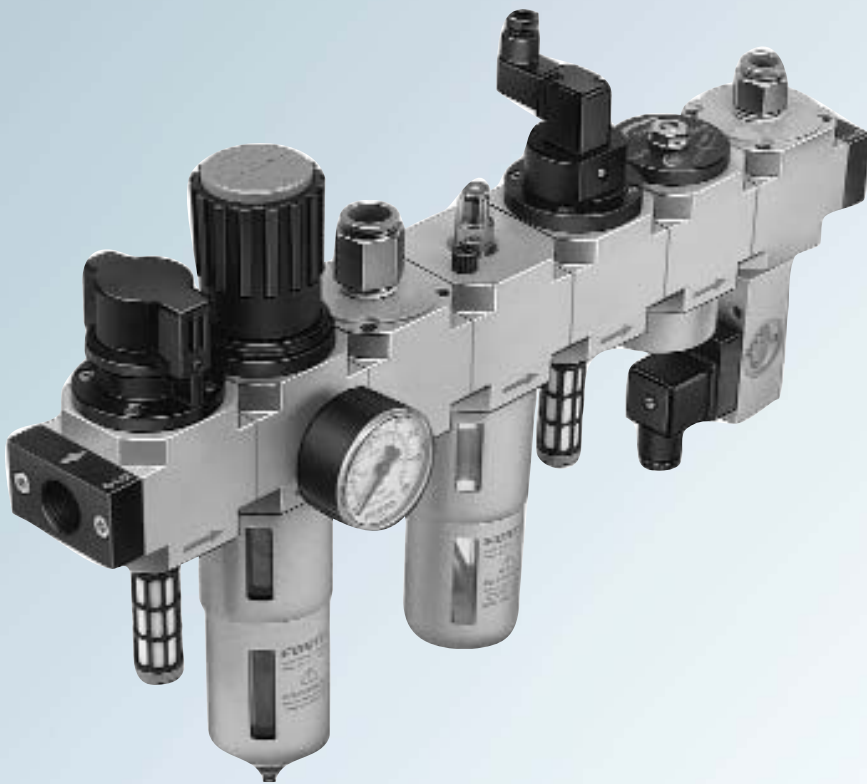
Ordering data							
Pressure regulation range 2.5 ... 12 bar, grade of filtration 40 µm, mounting bracket and metal bowl guard, lockable <sup>1)</sup>							
Size	Connection	Condensate drain manual			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
On-off valve, filter regulator, on-off valve with solenoid coil 24 V DC, soft-start valve, branching module with pressure switch							
Mini	G1/8	195020	LFRS-1/8-D-MINI-KG	Q	195021	LFRS-1/8-D-MINI-KG-A	Q
	G1/4	195034	LFRS-1/4-D-MINI-KG	Q	195035	LFRS-1/4-D-MINI-KG-A	Q
Midi	G1/4	195048	LFRS-1/4-D-MIDI-KG	Q	195049	LFRS-1/4-D-MIDI-KG-A	Q
	G3/8	195062	LFRS-3/8-D-MIDI-KG	Q	195063	LFRS-3/8-D-MIDI-KG-A	Q
	G1/2	195076	LFRS-1/2-D-MIDI-KG	Q	195077	LFRS-1/2-D-MIDI-KG-A	Q
Maxi	G1/2	195090	LFRS-1/2-D-MAXI-KG	Q	195091	LFRS-1/2-D-MAXI-KG-A	Q
	G3/4	195104	LFRS-3/4-D-MAXI-KG	Q	195105	LFRS-3/4-D-MAXI-KG-A	Q
Directly actuated pressure regulator with integrated return flow function							
Maxi	G1/2	195188	LFRS-1/2-D-DI-MAXI-KG	Q	195189	LFRS-1/2-D-DI-MAXI-KG-A	Q
	G3/4	195202	LFRS-3/4-D-DI-MAXI-KG	Q	195203	LFRS-3/4-D-DI-MAXI-KG-A	Q

1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

2

2.2



Example of an assembled custom combination

### Custom Combinations

Custom combinations can be delivered same day / next day as separate parts for assembly at the site.

Factory-assembled custom combinations are also available. Contact Festo.

# FAST\* Program – Custom Combination Selector Guide

Custom Combinations– D Series, Metal Design

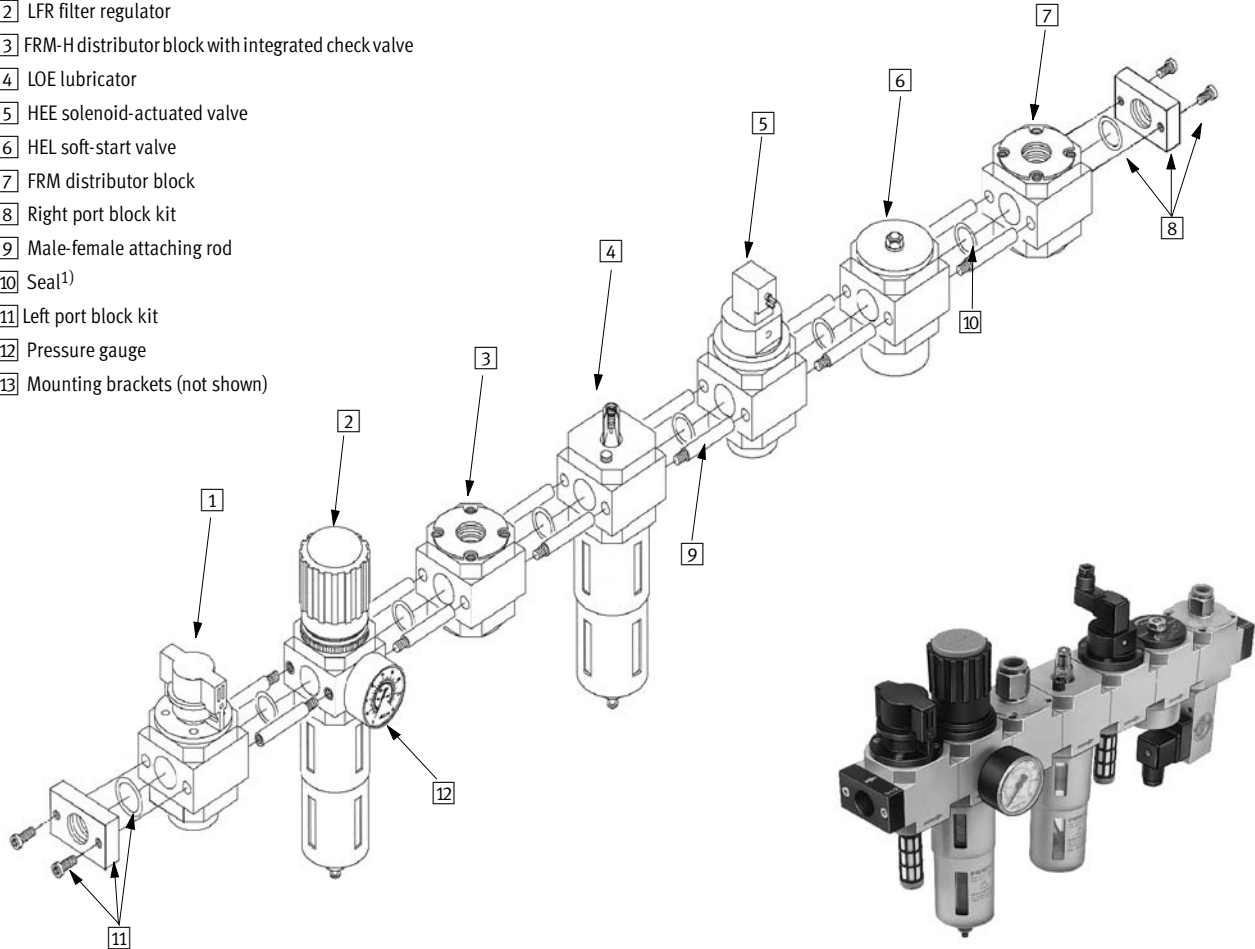
\*FAST = Festo Assured Shipping Time

Custom combinations can be delivered same day / next day as separate parts for assembly at the site. Available parts are listed in this section.

Factory assembled custom combinations are also available. Contact your local Festo representative for details.

A combination is an assembly which combines different air preparation functions into a single unit. An example would be as follows

- 1 HE on/off valve
- 2 LFR filter regulator
- 3 FRM-H distributor block with integrated check valve
- 4 LOE lubricator
- 5 HEE solenoid-actuated valve
- 6 HEL soft-start valve
- 7 FRM distributor block
- 8 Right port block kit
- 9 Male-female attaching rod
- 10 Seal<sup>1)</sup>
- 11 Left port block kit
- 12 Pressure gauge
- 13 Mounting brackets (not shown)



<sup>1)</sup> Note: For MAXI sizes only, 2 seals are required.  
(The material number is a set of 2 seals.)

Example of an assembled D Series combination

## Selecting Components for Combinations

The following steps can be used to select the component part numbers and determine quantities needed to assemble a combination.

As an example within each step, the above unit will be used with these requirements:

- Maximum pressure: 7 bar
- Minimum filtration: 40 µm
- Automatic drain filter
- Flow: 2000 l/min
- NPT thread
- 24 V DC system

Parts selected for the example will be highlighted like this.



# FAST Program – Custom Combination Selector Guide

Custom Combinations– D Series, Metal Design

**Step 1:** Based upon the required functions and flow for a given port, determine the port size and unit type (MINI, MIDI, or MAXI). The flow for an assembly of units will be approximately 80 % of the lowest flow unit selected (as shown in the chart).

**Example:**

Based upon the functions required, and a flow of 2000 l/min, the minimum suggested port size and unit type is a 3/8" MIDI. The appropriate maximum flow will be 2480 l/min based on the flow rate of the lowest flow component.

**80 % of Maximum Flow Per Unit Type (l/min / scfm)**

Function	Type	1/8		3/8		
		MINI	MIDI	MINI	MIDI	
On/Off Valve	HE, HEE, HEL	800/28.2	1200/42.4	2080/73.4	1280/45.2	2560/90.4
Filter Regulator	LFR (40 micron)	600/21.2	1200/42.4	1600/56.5	1280/45.2	2480/87.5
	LFR (5 micron)	520/18.4	960/33.9	1280/45.2	1080/38.1	1920/67.8
Regulator	LR	800/28.2	1280/45.2	1760/62.1	1440/50.8	1440/50.8
Filter	LF (40 micron)	800/28.2	960/33.9	1520/53.7	1120/39.5	2160/76.2
	LF (5 micron)	640/22.6	760/26.8	1280/45.2	880/31.1	1440/50.8
Micro Filter	LFMA (0.01 micron)	104/3.7	128/4.5	280/9.9	144/5.1	304/10.7
Fine Filter	LFMB (1 micron)	200/7.1	240/8.5	400/14.1	248/8.8	560/19.8
Lubicator	LOE	1040/36.7	1840/65.0	2240/79.1	2160/76.2	4400/153.3
Distribution Block	FRM	1200/42.4	2640/93.2	2800/98.8	2640/93.2	5600/197.7
	FRM-H w/check valve	1040/36.7	1600/56.5	2720/96.0	1680/59.3	4400/155.3

Function	Type	1/2		3/4		1
		MIDI	MAXI	MIDI	MAXI	MAXI
On/Off Valve	HE, HEE, HEL	2880/101.7	4480/158.1	3040/107.3	4800/169.4	5200/183.6
Filter Regulator	LFR (40 micron)	2720/96.0	7520/265.5	2720/96.0	7760/273.9	8000/282.4
	LFR (5 micron)	2000/70.6	6064/214.1	2080/73.4	6080/214.6	6400/225.9
Regulator	LR	3200/113.0	8560/302.2	3600/127.1	9600/338.9	10000/353.0
Filter	LF (40 micron)	2400/84.7	3520/124.3	2400/84.7	4000/141.2	4240/149.7
	LF (5 micron)	1600/56.5	2960/104.5	1600/56.5	2880/101.7	3040/107.3
Micro Filter	LFMA (0.01 micron)	720/25.4	920/32.5	800/28.2	960/33.9	1000/35.3
Fine Filter	LFMB (1 micron)	320/11.3	600/21.2	368/13.0	720/25.4	760/26.8
Lubicator	LOE	4880/172.3	6640/234.4	5040/177.9	6720/273.3	7200/254.2
Distribution Block	FRM	6560/231.2	9360/330.4	7040/248.5	16000/564.8	13920/491.4
	FRM-H w/check valve	4480/158.1	7680/271.1	4400/155.3	12000/423.6	10720/378.4

# FAST Program – Custom Combination Selector Guide

Custom Combinations – D Series, Metal Design

**Step 2:** Using this chart, select the Main Unit component part numbers by unit type (MINI, MIDI, or MAXI).

**Example:**

Based upon the requirements and unit type selected in step 1 (MIDI), the Main Unit(items [1] - [7]) part numbers can be selected.

Application	Description	Type	MINI	MIDI	Item No.	MAXI	
Control Function	Manual On/Off Valve	HE-...	170681	170682	[1]	170683	
	Solenoid Actuated On/Off Valve	HEE-...	24 V DC	172956	172959	[5]	172962
			110 V AC	172957	172960		172963
			230 V AC	172958	172961		172964
Soft-start Valve	HEL-...	170690	170691	[6]	170692		
Filtration / Pressure Regulation	Filter / Pressure Regulator Unit	LFR-...	7 bar, 40 micron, Manual Drain	546456	546463		546470
			7 bar, 40 micron, Auto Drain	546457	546463	[2]	546471
			12 bar, 40 micron, Manual Drain	546432	546425		546537
			12 bar, 40 micron, Auto Drain	546433	546426		546438
			12 bar, 5 micron, Manual Drain	546454	546461		546468
			12 bar, 5 micron, Auto Drain	546455	546462		546469
Pressure Regulation	Pressure Regulator Unit	LR-...	7 bar	546452	546458		546465
			12 bar	546430	546424		546436
Filtration	Filter Unit	LF-...	40 micron, Manual Drain	546428	546422		546434
			40 micron, Auto Drain	546429	546423		546435
			5 micron, Manual Drain	546451	546459		546466
			5 micron, Auto Drain	546453	546460		546467
	Micro Filter Unit	LFMA-...	0.01 micron, Manual Drain	546439	546443		546447
			0.01 micron, Auto Drain	546441	546446		546449
Fine Filter Unit	LFMB-...	1 micron, Manual Drain	546440	546444		546448	
		1 micron, Auto Drain	546442	546445		546450	
Lubrication	Lubricator Unit	LOE-...	546431	546427	[4]	546517	
Distribution	Distributor Block w/ Threads	FRM-...	170684	170685	[7]	170686	
	Distributor Block w/ Check Valve	FRM-H-...	170687	170688	[3]	170689	
	Distributor Block w/o Port Blocks	FRZ	162786	159582		162787	

**Step3:** Based upon the type and number of Main Units being joined, choose the part number and quantity of attaching rods and seals.

**Example:**

n = 7

Unit Type	Male-Female Attaching Rod	Item No.	Female-Female Attaching Rod	Item No.	Seals	Item No.
MINI	546481 (set of 2)		546483 (set of 2)		546478	
MIDI	546480 (set of 2)	[9]	546489	N/A	546474	[10]
MAXI	546476 (set of 2)		546494		546477 (set of 2)	

n = number of Main Units to be assembled	Qty of Male-Female Attaching Rods	Qty of Female-Female Attaching Rods	Number of Seals
Without an LFR or LR	$(n - 1) \times 2$	2	n - 1
With an LFR or LR	$(n - 1) \times 2$	0	n - 1
	$(7 - 1) \times 2$	0	7 - 1 = 6
	$(6) \times 2 = 12$		

# FAST Program – Custom Combination Selector Guide

Custom Combinations – D Series, Metal Design

**Step 4:** Use this chart to select the Port Block Kit part numbers by unit type (MINI, MIDI, or MAXI) based upon the size and type.

**Example:**

3/8 NPT MIDI

Inch / NPT

Type	1/8 NPT		1/4 NPT		3/8 NPT			1/2 NPT		3/4 NPT		1 NPT		
	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Item No.	Right Port Block Kit	Item No.	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit
Mini	546520	546521	546522	546523	546524		546525		–	–	–	–	–	–
Midi	–	–	546536	546537	546530	11	546531	8	546526	546527	546528	546529	–	–
Maxi	–	–	–	–	–		–		546538	546539	546490	546492	546491	546493

Metric / BSP (G)

Type	G1/8		G1/4		G3/8		G1/2		G3/4		G1	
	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit
Mini	546495	546496	546497	546498	546499	546500	–	–	–	–	–	–
Midi	–	–	546532	546533	546501	546502	546503	546504	546505	546506	–	–
Maxi	–	–	–	–	–	–	546534	546535	546507	546508	546509	546510

**Step 5:** Use this chart to select the Gauge (if required) and the (optional) Mounting Brackets by unit type (MINI, MIDI, or MAXI).

**Example:**

MIDI size

Gauge Selection (if required)

Type	7 bar	Item	12 bar
Mini	546485		546479
Midi	546484	12	546482
Maxi	546484		546482

Mounting Brackets (2 brackets included)

Type	Mounting Brackets	Item
Mini	159638	
Midi	159593	13
Maxi	159593	

For more information on Mounting Brackets, see Tab Section 3.8 – Accessories for D Series Metal Design Components, Page 276.

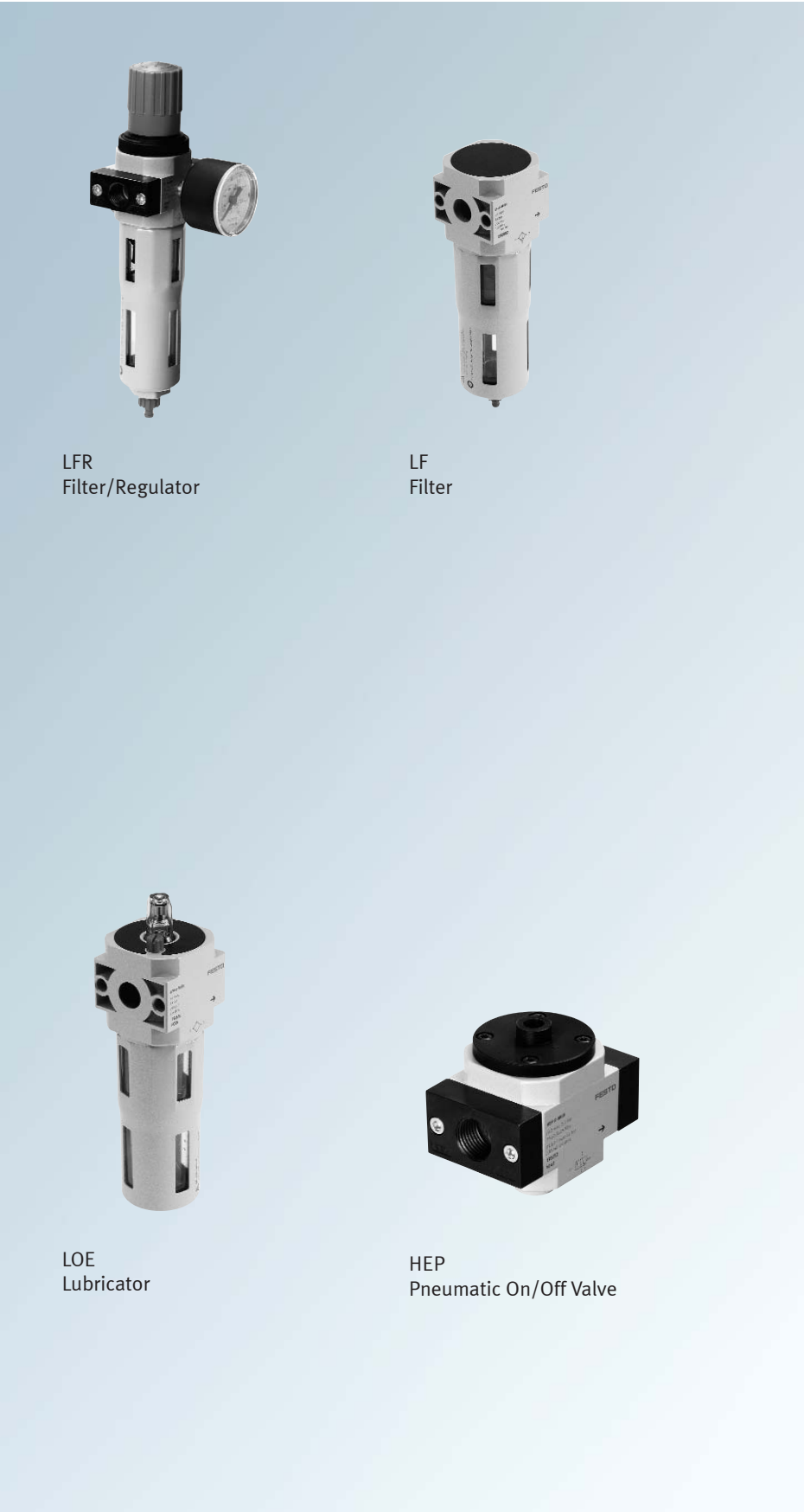
**Example:**

Result:

Item	Part No.	Qty	
1	HE On/Off Valve	170682	1
2	LFR Filter Regulator	546464	1
3	FRM-H Distributor Block with Integrated Check Valve	170688	1
4	LOE Lubricator	546427	1
5	HEE Solenoid Actuated On-Off Valve	172959	1
6	HEL Soft-start Valve	170691	1
7	FRM Distributor Block	170685	1
8	Right Port Block Kit	546531	1
9	Male-Female Attaching Rod	546480	6
10	Seal	546474	6
11	Left Port Block Kit	546530	1
12	MA Pressure Gauge	546484	1
13	Mounting Brackets (not shown)	159593	1

2

2.3



LFR  
Filter/Regulator

LF  
Filter

LOE  
Lubricator

HEP  
Pneumatic On/Off Valve

- Section 3.1**  
Filter/Regulators
- Section 3.2**  
Pressure Regulators and  
Pressure Regulator  
Manifolds
- Section 3.3**  
Filters
- Section 3.4**  
Membrane Air Dryers
- Section 3.5**  
Lubricator
- Section 3.6**  
On/Off Valves and  
Soft-start Valves
- Section 3.7**  
Distributor Blocks
- Section 3.8**  
Accessories for D Series Metal  
Design Components

**3**

3.0



LFR-...-MICRO-H  
Filter/Regulator



LFR-...-MINI  
Filter/Regulator

3

3.1

### Filter/Regulators

Filter, pressure regulator,  
and gauge combined in a  
single unit

DI = with integrated return flow  
S = with integrated regulator lock

Flow Rate:  
110 ... 11000 l/min

Working Pressure Ranges:  
0.5 ... 7 bar and 0.5 ... 12 bar

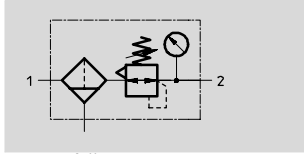
# LFR/LFRS Filter/Regulators – D Series, Metal Design

Technical Data

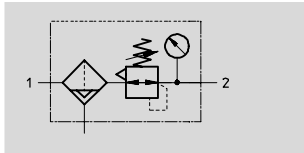
Function

LFR/LFRS-...-D-...

Condensate drain  
manual

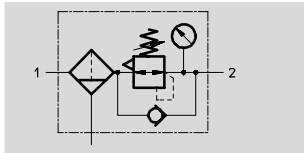


semi- or fully automatic

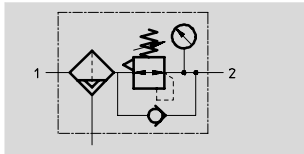


LFR/LFRS-...-D-DI-MAXI

Condensate drain  
manual



fully automatic



- - Flow rate  
110 ... 11000 l/min
- - Temperature range  
-10 ... +60 °C
- - Input pressure  
1 ... 16 bar



- Space-saving design with filter and regulator in a single unit
- Good particle separation and high flow rate
- Good regulating characteristics with minimal hysteresis
- Two pressure regulation ranges: 0.5 ... 7 bar and 0.5 ... 12 bar
- Two pressure gauge connections for flexible installation
- With manual, semi-automatic or fully automatic condensate drain
- Setting values are secured by locking the rotary knob
- Choice of filter cartridges: 5 µm or 40 µm
- Filter cartridges → 291
- Pressure sensor (optional) → 283

3

3.1

General technical data																	
Size	Micro					Mini			Midi				Maxi				
Pneumatic connection	M5	M7	G1/8 1/8 NPT	QS4	QS6	G1/8 1/8 NPT	G1/4 1/4 NPT	G3/8 3/8 NPT	G1/4 1/4 NPT <sup>1)</sup>	G3/8 3/8 NPT	G1/2 1/2 NPT	G3/4 3/4 NPT	G1/2 1/2 NPT <sup>1)</sup>	G3/4 3/4 NPT	G1 1 NPT		
Operating medium	Compressed air					Compressed air											
Design	Directly actuated diaphragm regulator					Directly actuated diaphragm regulator								Pilot actuated piston regulator			
														Directly actuated diaphragm regulator			
Type of mounting	Via accessories					Via accessories											
	In-line installation					In-line installation											
	Front panel mounting					Front panel mounting											
Assembly position	Vertical ±5°					Vertical ±5°											
Grade of filtration [µm]	5					5 or 40											
Max. hysteresis [bar]	0.3					0.2								0.4			
Pressure regulation range [bar]	0.5 ... 7					0.5 ... 7			0.5 ... 12								
Pressure indication	Via pressure gauge					Via pressure gauge											
Port connection	M5					G1/8			G1/4				G1/4				
Max. condensate volume [cm <sup>3</sup> ]	3					22			43				80 <sup>2)</sup>				
Input pressure [bar]	1 ... 16																
Condensate drain	Manual	1 ... 10					1 ... 16										
	Semiautomatic	1 ... 10					-										
	Fully automatic	-					2 ... 12										

1) Available via the FAST program. See page 124.

2) The max. condensate volume for the LFR/LFRS-...-DI-MAXI is 43 cm<sup>3</sup>.



# LFR/LFRS Filter/Regulators – D Series, Metal Design

Technical Data

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	Female thread		Port block		
	M5	M7	G $\frac{1}{8}$ , 1/8 NPT	QS4	QS6
Micro					
LFR	110	280	410	150	410

Standard nominal flow rate <sup>1)</sup> qnN [l/min]						
Connection	G $\frac{1}{8}$ , 1/8 NPT	G $\frac{1}{4}$ , 1/4 NPT	G $\frac{3}{8}$ , 3/8 NPT	G $\frac{1}{2}$ , 1/2 NPT	G $\frac{3}{4}$ , 3/4 NPT	G1, 1 NPT
Mini						
LFR/LFRS-...-D-...	750	1400	1600	–	–	–
LFR/LFRS-...-D-7-...	900	1500	1700	–	–	–
LFR/LFRS-...-D-5M-...	650	1200	1350	–	–	–
Midi						
LFR/LFRS-...-D-...	–	2000	3100	3400	3400	–
LFR/LFRS-...-D-7-...	–	2100	3200	3900	4000	–
LFR/LFRS-...-D-5M-...	–	1600	2400	2600	2600	–
Maxi						
LFR/LFRS-...-D-...	–	–	–	9400	9700	10000
LFR/LFRS-...-D-7-...	–	–	–	9500	10000	11000
LFR/LFRS-...-D-5M-...	–	–	–	7500	7600	8000
Maxi – Directly actuated diaphragm regulator with integrated return flow function						
LFR/LFRS-...-D-...-DI	–	–	–	4500	6800	7000
LFR/LFRS-...-D-7-...-DI	–	–	–	7600	7700	7800
LFR/LFRS-...-D-5M-...-DI	–	–	–	4000	5800	6000

Screw-in depth of connecting thread [mm]					
Connection	M5	M7	G $\frac{1}{8}$	QS4	QS6
Micro					
In housing	5	6	–	–	–
In connecting plates	–	–	8	–	–

Ambient conditions		Micro	Mini	Midi	Maxi
Size					
Ambient temperature	[°C]	–10 ... +60			
Temperature of medium	[°C]	–10 ... +60			
Corrosion resistance class	CRC <sup>2)</sup>	2			

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

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

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

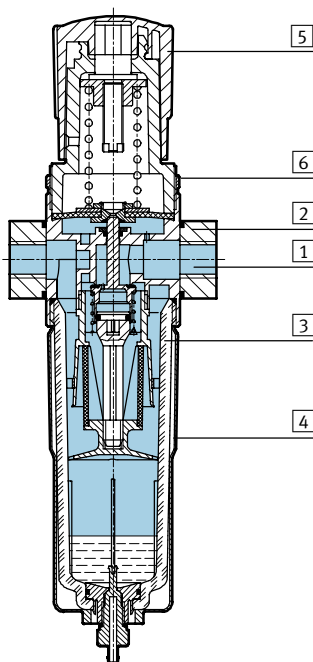
# LFR/LFRS Filter/Regulators – D Series, Metal Design

Technical Data

Weight [g]						
Size	Micro		Mini	Midi	Maxi	
	Female thread	Port block			Connection G $\frac{1}{2}$ , G $\frac{3}{4}$ , $\frac{3}{4}$ NPT	Connection G1, 1 NPT
With pressure gauge						
LFR-...	74	94	460	920	1370	1470
LFR-...-DI	-	-	-	-	1670	1670
LFRS-...	-	-	560	1160	1470	1570
LFRS-...-DI	-	-	-	-	1950	1950
Without pressure gauge						
LFR-...	64	84	410	830	1300	1400
LFR-...-DI	-	-	-	-	1600	1600
LFRS-...	-	-	510	1070	1400	1500
LFRS-...-DI	-	-	-	-	1880	1880

## Materials

Sectional view



Filter regulator	Micro	Mini/Midi/Maxi
1 Housing	Wrought aluminum alloy	Die-cast zinc
2 Port blocks	Wrought aluminum alloy	Die-cast zinc/aluminum
3 Bowl	Polycarbonate	Polycarbonate
4 Metal bowl guard	-	Aluminum
5 Regulating knob	Polyacetal	Polyacetal
6 Knurled nut	Wrought aluminum alloy	Aluminum
- Seals	Nitrile rubber	Nitrile rubber
Note on materials	-	Designs free of copper and PTFE → Ordering data

3

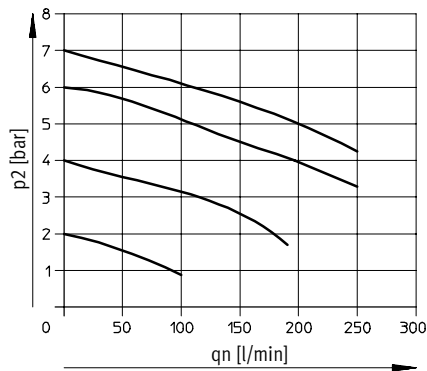
3.1

# LFR/LFRS Filter/Regulators – D Series, Metal Design

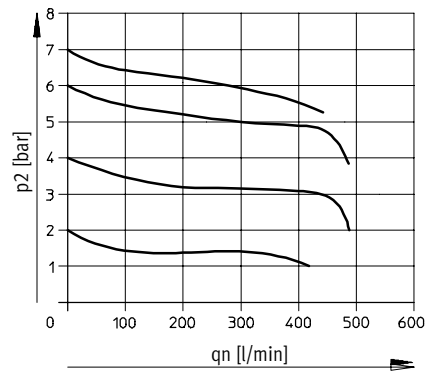
Technical Data

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

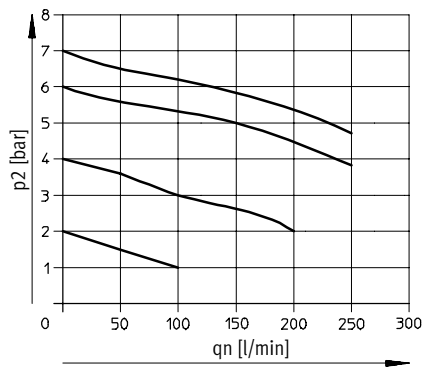
LFR-M5-...-MICRO



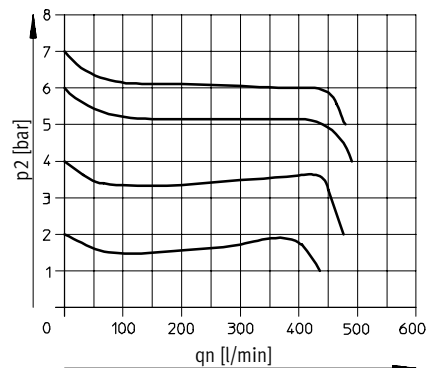
LFR-M7-...-MICRO B



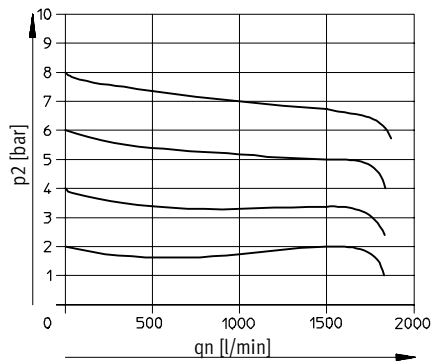
LFR-QS4-...-MICRO



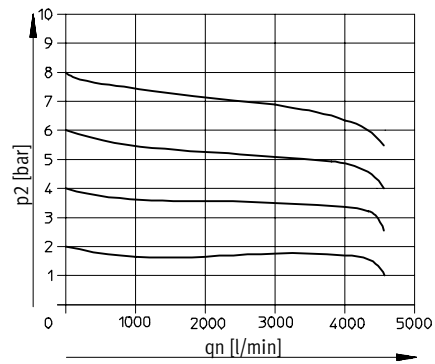
LFR-QS6-...-MICRO and LFR-1/8-...-MICRO



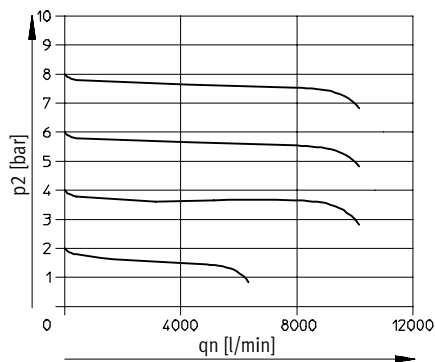
LFR/LFRS-1/4-D-MINI



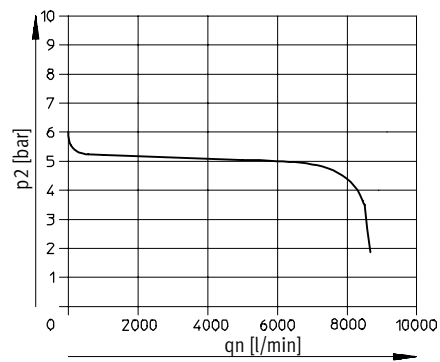
LFR/LFRS-1/2-D-MIDI



LFR/LFRS-1-D-MAXI



LFR/LFRS-1-D-DI-MAXI



Primary pressure  $p_1 = 10$  bar



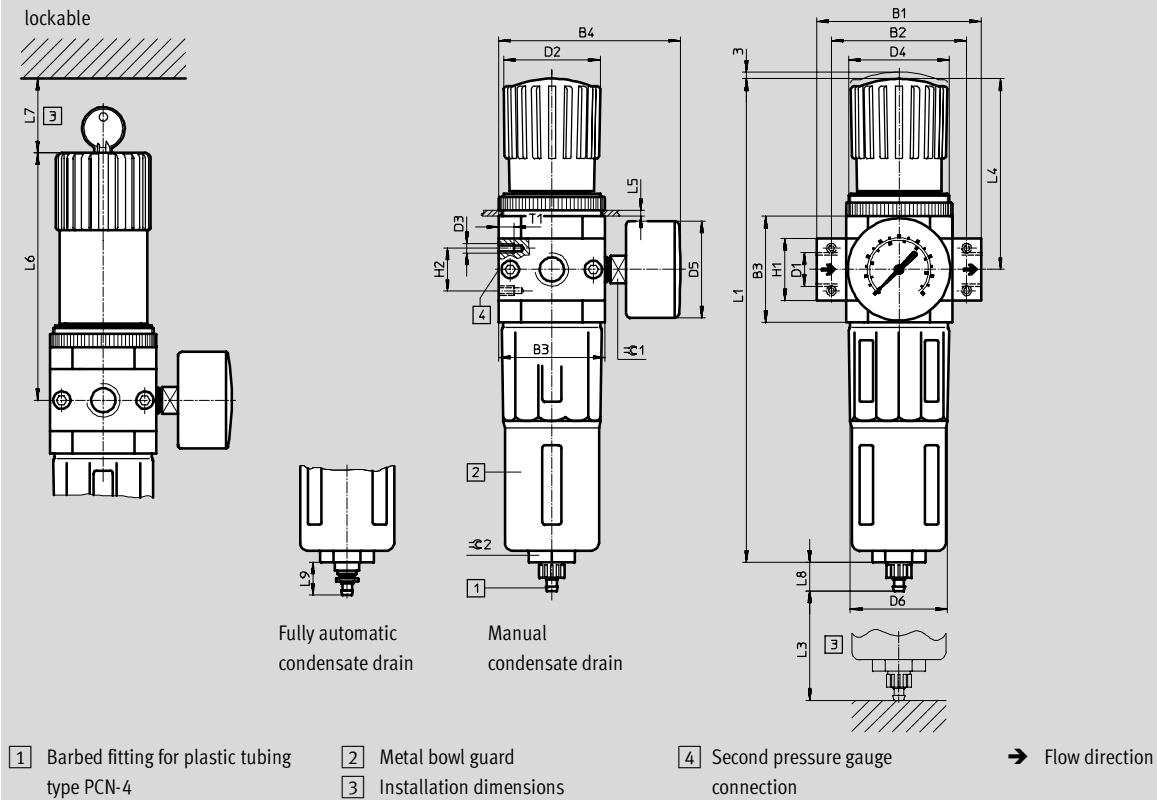
# LFR/LFRS Filter/Regulators – D Series, Metal Design

Technical Data – Dimensional Drawings

## Dimensions

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

Mini/Midi/Maxi



Type	B1	B2	B3	B4	D1	D2 ∅	D3	D4	D5 ∅	D6 ∅
<b>Mini</b>										
LFR/LFRS-1/8-D-MINI (A) (NPT)	64	52	40	76	G1/8, 1/8 NPT	31	M4	M36x1.5	41	38
LFR/LFRS-1/4-D-MINI (A) (NPT)					G1/4, 1/4 NPT					
LFR/LFRS-3/8-D-MINI (A) (NPT)	70				G3/8, 3/8 NPT					
<b>Midi</b>										
LFR/LFRS-1/4-D-MIDI (A)	85	70	55	95	G1/4	50	M5	M52x1.5	50	52
LFR/LFRS-3/8-D-MIDI (A) (NPT)					G3/8, 3/8 NPT					
LFR/LFRS-1/2-D-MIDI (A) (NPT)					G1/2, 1/2 NPT					
LFR/LFRS-3/4-D-MIDI (A) (NPT)					G3/4, 3/4 NPT					
<b>Maxi</b>										
LFR/LFRS-1/2-D-MAXI (A)	96	80	66	107	G1/2	31	M5	M36x1.5	50	65
LFR/LFRS-1/2-D-DI-MAXI (A)						49		M52x1.5		
LFR/LFRS-3/4-D-MAXI (A) (NPT)					G3/4, 3/4 NPT	31		M36x1.5		
LFR/LFRS-3/4-D-DI-MAXI (A)						49		M52x1.5		
LFR/LFRS-1-D-MAXI (A) (NPT)	116	91			G1, 1 NPT	31	M36x1.5			
LFR/LFRS-1-D-DI-MAXI (A)						49	M52x1.5			

# LFR/LFRS Filter/Regulators – D Series, Metal Design

Technical Data – Dimensional Drawings

Type	H1	H2	L1	L3	L4	L5 max.	L6	L7	L8	L9	T1	≅ 1	≅ 2	
<b>Mini</b>														
LFR/LFRS-1/8-D-MINI (A) (NPT)	20	11	193	60	68	3	98	60	15	19	7	14	22	
LFR/LFRS-1/4-D-MINI (A) (NPT)														
LFR/LFRS-3/8-D-MINI (A) (NPT)														
<b>Midi</b>														
LFR/LFRS-1/4-D-MIDI (A)	32	22	250	80	99	5	130	60	15	19	8	14	24	
LFR/LFRS-3/8-D-MIDI (A) (NPT)														
LFR/LFRS-1/2-D-MIDI (A) (NPT)														
LFR/LFRS-3/4-D-MIDI (A) (NPT)														
<b>Maxi</b>														
LFR/LFRS-1/2-D-MAXI (A)	32	22	252	90	82	4	111	60	15	19	8	14	24	
LFR/LFRS-1/2-D-DI-MAXI (A)			275		105		135							
LFR/LFRS-3/4-D-MAXI (A) (NPT)			252		82		111							
LFR/LFRS-3/4-D-DI-MAXI (A)			275		105		135							
LFR/LFRS-1-D-MAXI (A) (NPT)			40		252		82							111
LFR/LFRS-1-D-DI-MAXI (A)					275		105							135

## 3

### 3.1

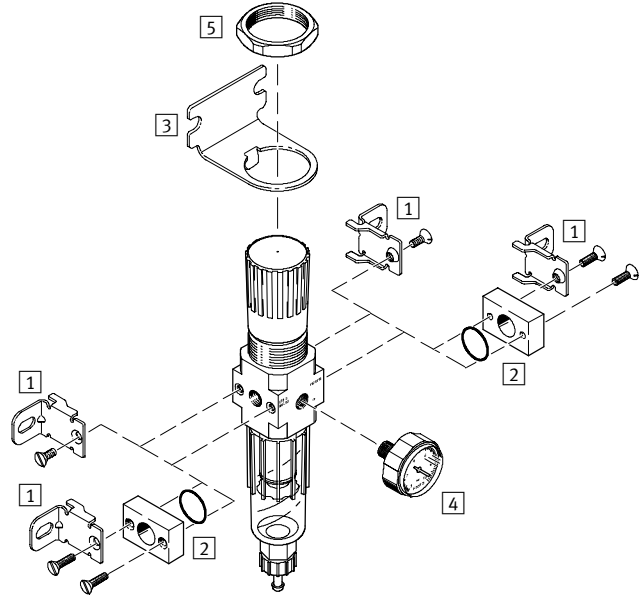
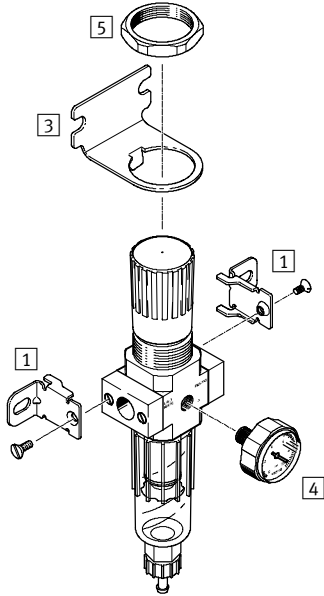
# LFR/LFRS Filter/Regulators – D Series, Metal Design

Accessories Overview

**Micro**

Individual unit with port blocks, connection size G1/8, QS4 or QS6

Individual unit without port blocks, for combination unit connection size M5 or M7 in housing



**Mounting attachments and accessories**

	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	■	■	■	276
2 Port block kit PBL	-	■	-	■	280
3 Mounting bracket HRS	■	■	■	■	277
4 Pressure gauge MA-27	■	■	■	■	282
5 Hexagon nut (included in scope of delivery) HMR	■	■	■	■	-

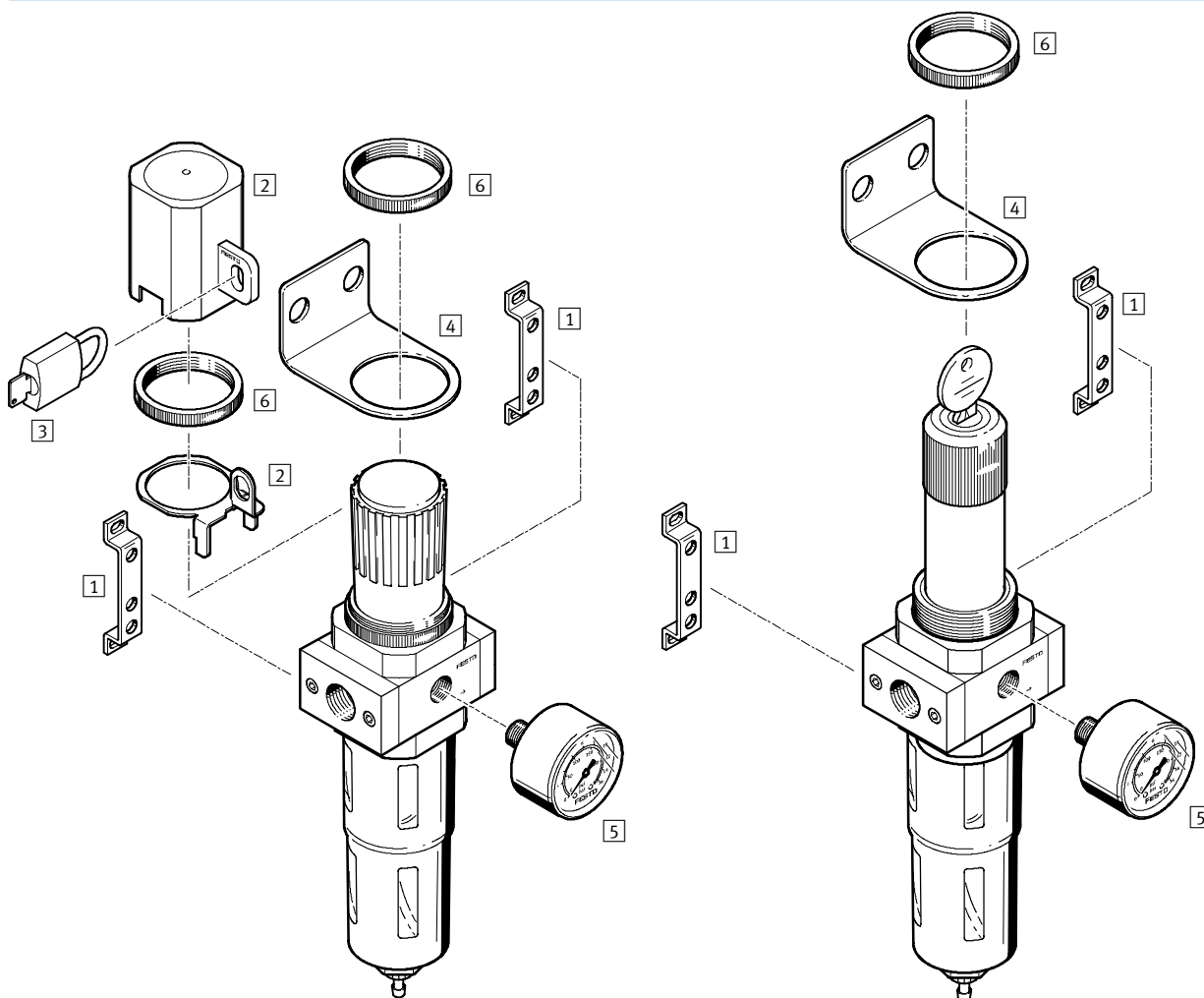
# LFR/LFRS Filter/Regulators – D Series, Metal Design

Accessories Overview

Mini/Midi/Maxi

Filter regulator LFR

Filter regulator LFRS, lockable



3

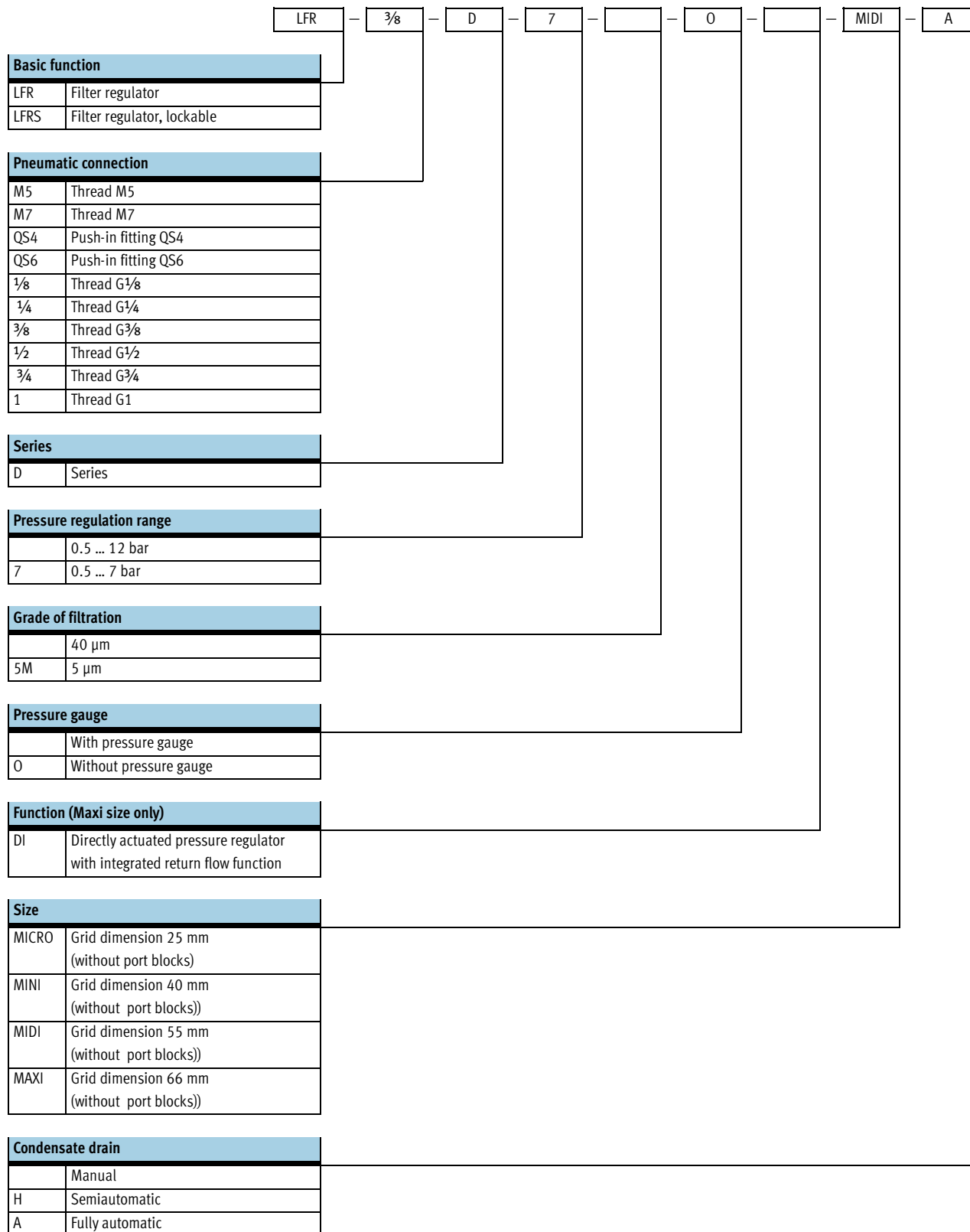
3.1

Mounting attachments and accessories			
	Rotary knob with detent	Rotary knob, lockable	→ Page
1 Mounting bracket HFOE	■	■	276
2 Regulator lock LRVS	■	-	281
3 Padlock LRVS-D	■	-	281
4 Mounting bracket HR-D	■	■	278
5 Pressure gauge MA	■	■	282
6 Knurled nut (included in scope of delivery) HMR	■	■	-



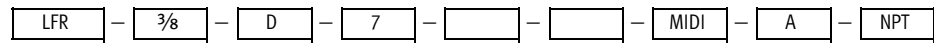
# LFR/LFRS Filter/Regulators – D Series, Metal Design

Type Codes – Metric / QS / G (BSPP) Connections



# LFR Filter/Regulators – D Series, Metal Design

Type Codes – NPT Connections



**Basic function**

LFR	Filter regulator
-----	------------------

**Pneumatic connection**

N1/8	1/8 NPT Thread (for Micro only)
1/8	1/8 NPT Thread
1/4	1/4 NPT Thread
3/8	3/8 NPT Thread
1/2	1/2 NPT Thread
3/4	3/4 NPT Thread
1	1 NPT Thread

**Series**

D	Series
---	--------

**Pressure regulation range**

	0.5 ... 12 bar
7	0.5 ... 7 bar

**Grade of filtration**

	40 µm
5M	5 µm

**Pressure gauge**

	With pressure gauge
--	---------------------

**Size**

MICRO	Grid dimension 25 mm (without port blocks)
MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

**Condensate drain**

	Manual
H	Semiautomatic
A	Fully automatic

**NPT connection (where available)**

NPT	NPT threaded connection (not in type code for Micro)
-----	--

3

3.1

# LFR/LFRS Filter/Regulators – D Series, Metal Design

Ordering Data

Ordering data					
Pressure regulation range 0.5 ... 7 bar					
Condensate drain	Size	Connection	Grade of filtration 5 µm		
			Part No.	Type	
LT					
With pressure gauge					
Manual	Micro	Without threaded port blocks, connecting thread in housing			
		M5	526273	LFR-M5-D-7-5M-MICRO	1D
		M7	534184	LFR-M7-D-7-5M-MICRO B	Q
		With threaded port blocks			
		G1/8	526277	LFR-1/8-D-7-5M-MICRO	1D
		1/8 NPT	526281	LFR-N1/8-D-7-5M-MICRO	1D
		With port block and push-in fitting			
		QS4	526289	LFR-QS4-D-7-5M-MICRO	Q
		QS6	526293	LFR-QS6-D-7-5M-MICRO	Q
		Semiautomatic	Micro	Without threaded port blocks, connecting thread in housing	
M5	526274			LFR-M5-D-7-5M-MICRO-H	1D
M7	534185			LFR-M7-D-7-5M-MICRO-H B	Q
With threaded port blocks					
G1/8	526278			LFR-1/8-D-7-5M-MICRO-H	1D
1/8 NPT	526282			LFR-N1/8-D-7-5M-MICRO-H	1D
With port block and push-in fitting					
QS4	526290			LFR-QS4-D-7-5M-MICRO-H	Q
QS6	526294			LFR-QS6-D-7-5M-MICRO-H	Q
Without pressure gauge					
Manual	Micro	Without threaded port blocks, connecting thread in housing			
		M5	526275	LFR-M5-D-7-0-5M-MICRO	Q
		M7	534186	LFR-M7-D-7-0-5M-MICRO B	Q
		With threaded port blocks			
		G1/8	526279	LFR-1/8-D-7-0-5M-MICRO	Q
		1/8 NPT	526283	LFR-N1/8-D-7-0-5M-MICRO	Q
		With port block and push-in fitting			
		QS4	526291	LFR-QS4-D-7-0-5M-MICRO	Q
		QS6	526295	LFR-QS6-D-7-0-5M-MICRO	Q
		Semiautomatic	Micro	Without threaded port blocks, connecting thread in housing	
M5	526276			LFR-M5-D-7-0-5M-MICRO-H	Q
M7	534187			LFR-M7-D-7-0-5M-MICRO-H B	Q
With threaded port blocks					
G1/8	526280			LFR-1/8-D-7-0-5M-MICRO-H	Q
1/8 NPT	526284			LFR-N1/8-D-7-0-5M-MICRO-H	Q
With port block and push-in fitting					
QS4	526292			LFR-QS4-D-7-0-5M-MICRO-H	Q
QS6	526296			LFR-QS6-D-7-0-5M-MICRO-H	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LFR/LFRS Filter/Regulators – D Series, Metal Design



Ordering Data

Ordering data									
Pressure regulation range 0.5 ... 12 bar, metal bowl guard									
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm			
			Part No.	Type	LT	Part No.	Type	LT	
With pressure gauge									
Manual	Mini	G $\frac{1}{8}$	162718	LFR- $\frac{1}{8}$ -D-5M-MINI	Q	159630	LFR- $\frac{1}{8}$ -D-MINI	1W	
		G $\frac{1}{4}$	162719	LFR- $\frac{1}{4}$ -D-5M-MINI	Q	159631	LFR- $\frac{1}{4}$ -D-MINI	1D	
		G $\frac{3}{8}$	162720	LFR- $\frac{3}{8}$ -D-5M-MINI	Q	162682	LFR- $\frac{3}{8}$ -D-MINI	Q	
		$\frac{1}{8}$ NPT	173760	LFR- $\frac{1}{8}$ -D-5M-MINI-NPT	Q	173756	LFR- $\frac{1}{8}$ -D-MINI-NPT	1W	
		$\frac{1}{4}$ NPT	173768	LFR- $\frac{1}{4}$ -D-5M-MINI-NPT	Q	173764	LFR- $\frac{1}{4}$ -D-MINI-NPT	1W	
		$\frac{3}{8}$ NPT	173776	LFR- $\frac{3}{8}$ -D-5M-MINI-NPT	Q	173772	LFR- $\frac{3}{8}$ -D-MINI-NPT	Q	
		Midi	G $\frac{1}{4}$	186483	LFR- $\frac{1}{4}$ -D-5M-MIDI	Q	186481	LFR- $\frac{1}{4}$ -D-MIDI	Q
	G $\frac{3}{8}$		162721	LFR- $\frac{3}{8}$ -D-5M-MIDI	Q	159582	LFR- $\frac{3}{8}$ -D-MIDI	1W	
	G $\frac{1}{2}$		162722	LFR- $\frac{1}{2}$ -D-5M-MIDI	Q	159584	LFR- $\frac{1}{2}$ -D-MIDI	1W	
	G $\frac{3}{4}$		162723	LFR- $\frac{3}{4}$ -D-5M-MIDI	Q	162683	LFR- $\frac{3}{4}$ -D-MIDI	Q	
	$\frac{3}{8}$ NPT		173784	LFR- $\frac{3}{8}$ -D-5M-MIDI-NPT	1W	173780	LFR- $\frac{3}{8}$ -D-MIDI-NPT	1W	
	$\frac{1}{2}$ NPT		173792	LFR- $\frac{1}{2}$ -D-5M-MIDI-NPT	Q	173788	LFR- $\frac{1}{2}$ -D-MIDI-NPT	1W	
	$\frac{3}{4}$ NPT		173800	LFR- $\frac{3}{4}$ -D-5M-MIDI-NPT	Q	173796	LFR- $\frac{3}{4}$ -D-MIDI-NPT	Q	
	Maxi	G $\frac{1}{2}$	186491	LFR- $\frac{1}{2}$ -D-5M-MAXI	Q	186489	LFR- $\frac{1}{2}$ -D-MAXI	Q	
		G $\frac{3}{4}$	162724	LFR- $\frac{3}{4}$ -D-5M-MAXI	Q	159632	LFR- $\frac{3}{4}$ -D-MAXI	1W	
		G1	162725	LFR-1-D-5M-MAXI	Q	159633	LFR-1-D-MAXI	1W	
		$\frac{3}{4}$ NPT	173808	LFR- $\frac{3}{4}$ -D-5M-MAXI-NPT	Q	173804	LFR- $\frac{3}{4}$ -D-MAXI-NPT	1W	
		1 NPT	173816	LFR-1-D-5M-MAXI-NPT	Q	173812	LFR-1-D-MAXI-NPT	1W	
	Fully automatic	Mini	G $\frac{1}{8}$	162726	LFR- $\frac{1}{8}$ -D-5M-MINI-A	Q	159634	LFR- $\frac{1}{8}$ -D-MINI-A	1W
			G $\frac{1}{4}$	162727	LFR- $\frac{1}{4}$ -D-5M-MINI-A	Q	159635	LFR- $\frac{1}{4}$ -D-MINI-A	1W
			G $\frac{3}{8}$	162728	LFR- $\frac{3}{8}$ -D-5M-MINI-A	Q	162684	LFR- $\frac{3}{8}$ -D-MINI-A	Q
$\frac{1}{8}$ NPT			173761	LFR- $\frac{1}{8}$ -D-5M-MINI-A-NPT	Q	173757	LFR- $\frac{1}{8}$ -D-MINI-A-NPT	1W	
$\frac{1}{4}$ NPT			173769	LFR- $\frac{1}{4}$ -D-5M-MINI-A-NPT	Q	173765	LFR- $\frac{1}{4}$ -D-MINI-A-NPT	1W	
$\frac{3}{8}$ NPT			173777	LFR- $\frac{3}{8}$ -D-5M-MINI-A-NPT	Q	173773	LFR- $\frac{3}{8}$ -D-MINI-A-NPT	Q	
Midi			G $\frac{1}{4}$	186486	LFR- $\frac{1}{4}$ -D-5M-MIDI-A	Q	186484	LFR- $\frac{1}{4}$ -D-MIDI-A	Q
		G $\frac{3}{8}$	162729	LFR- $\frac{3}{8}$ -D-5M-MIDI-A	Q	159583	LFR- $\frac{3}{8}$ -D-MIDI-A	1W	
		G $\frac{1}{2}$	162730	LFR- $\frac{1}{2}$ -D-5M-MIDI-A	Q	159585	LFR- $\frac{1}{2}$ -D-MIDI-A	1W	
		G $\frac{3}{4}$	162731	LFR- $\frac{3}{4}$ -D-5M-MIDI-A	Q	162685	LFR- $\frac{3}{4}$ -D-MIDI-A	1W	
		$\frac{3}{8}$ NPT	173785	LFR- $\frac{3}{8}$ -D-5M-MIDI-A-NPT	Q	173781	LFR- $\frac{3}{8}$ -D-MIDI-A-NPT	1W	
		$\frac{1}{2}$ NPT	173793	LFR- $\frac{1}{2}$ -D-5M-MIDI-A-NPT	Q	173789	LFR- $\frac{1}{2}$ -D-MIDI-A-NPT	1W	
		$\frac{3}{4}$ NPT	173801	LFR- $\frac{3}{4}$ -D-5M-MIDI-A-NPT	Q	173797	LFR- $\frac{3}{4}$ -D-MIDI-A-NPT	Q	
Maxi		G $\frac{1}{2}$	186494	LFR- $\frac{1}{2}$ -D-5M-MAXI-A	Q	186492	LFR- $\frac{1}{2}$ -D-MAXI-A	Q	
		G $\frac{3}{4}$	162732	LFR- $\frac{3}{4}$ -D-5M-MAXI-A	Q	159636	LFR- $\frac{3}{4}$ -D-MAXI-A	1W	
		G1	162733	LFR-1-D-5M-MAXI-A	Q	159637	LFR-1-D-MAXI-A	1W	
		$\frac{3}{4}$ NPT	173809	LFR- $\frac{3}{4}$ -D-5M-MAXI-A-NPT	Q	173805	LFR- $\frac{3}{4}$ -D-MAXI-A-NPT	1W	
		1 NPT	173817	LFR-1-D-5M-MAXI-A-NPT	Q	173813	LFR-1-D-MAXI-A-NPT	1W	

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

3

3.1

# LFR/LFRS Filter/Regulators – D Series, Metal Design

Ordering Data

Ordering data									
Pressure regulation range 0.5 ... 12 bar, metal bowl guard									
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm			
			Part No.	Type	LT	Part No.	Type	LT	
Without pressure gauge									
Manual	Mini	G1/8	192610	LFR-1/8-D-5M-O-MINI <sup>1)</sup>	Q	162686	LFR-1/8-D-O-MINI <sup>1)</sup>	Q	
		G1/4	192611	LFR-1/4-D-5M-O-MINI <sup>1)</sup>	Q	162687	LFR-1/4-D-O-MINI <sup>1)</sup>	Q	
		G3/8	192612	LFR-3/8-D-5M-O-MINI <sup>1)</sup>	Q	162688	LFR-3/8-D-O-MINI <sup>1)</sup>	Q	
	Midi	G1/4	192613	LFR-1/4-D-5M-O-MIDI <sup>1)</sup>	Q	186482	LFR-1/4-D-O-MIDI <sup>1)</sup>	Q	
		G3/8	192614	LFR-3/8-D-5M-O-MIDI <sup>1)</sup>	Q	162689	LFR-3/8-D-O-MIDI <sup>1)</sup>	Q	
		G1/2	192615	LFR-1/2-D-5M-O-MIDI <sup>1)</sup>	Q	162690	LFR-1/2-D-O-MIDI <sup>1)</sup>	Q	
		G3/4	192616	LFR-3/4-D-5M-O-MIDI <sup>1)</sup>	Q	162691	LFR-3/4-D-O-MIDI <sup>1)</sup>	Q	
	Maxi	G1/2	192617	LFR-1/2-D-5M-O-MAXI <sup>1)</sup>	Q	186490	LFR-1/2-D-O-MAXI <sup>1)</sup>	Q	
		G3/4	192618	LFR-3/4-D-5M-O-MAXI <sup>1)</sup>	Q	162692	LFR-3/4-D-O-MAXI <sup>1)</sup>	Q	
		G1	192619	LFR-1-D-5M-O-MAXI <sup>1)</sup>	Q	162693	LFR-1-D-O-MAXI <sup>1)</sup>	Q	
	Fully automatic	Mini	G1/8	192620	LFR-1/8-D-5M-O-MINI-A <sup>1)</sup>	Q	162694	LFR-1/8-D-O-MINI-A <sup>1)</sup>	Q
			G1/4	192621	LFR-1/4-D-5M-O-MINI-A <sup>1)</sup>	Q	162695	LFR-1/4-D-O-MINI-A <sup>1)</sup>	Q
G3/8			192622	LFR-3/8-D-5M-O-MINI-A <sup>1)</sup>	Q	162696	LFR-3/8-D-O-MINI-A <sup>1)</sup>	Q	
Midi		G1/4	192623	LFR-1/4-D-5M-O-MIDI-A <sup>1)</sup>	Q	186485	LFR-1/4-D-O-MIDI-A <sup>1)</sup>	Q	
		G3/8	192624	LFR-3/8-D-5M-O-MIDI-A <sup>1)</sup>	Q	162697	LFR-3/8-D-O-MIDI-A <sup>1)</sup>	Q	
		G1/2	192625	LFR-1/2-D-5M-O-MIDI-A <sup>1)</sup>	Q	162698	LFR-1/2-D-O-MIDI-A <sup>1)</sup>	Q	
		G3/4	192626	LFR-3/4-D-5M-O-MIDI-A <sup>1)</sup>	Q	162699	LFR-3/4-D-O-MIDI-A <sup>1)</sup>	Q	
Maxi		G1/2	192627	LFR-1/2-D-5M-O-MAXI-A <sup>1)</sup>	Q	186493	LFR-1/2-D-O-MAXI-A <sup>1)</sup>	Q	
		G3/4	192628	LFR-3/4-D-5M-O-MAXI-A <sup>1)</sup>	Q	162700	LFR-3/4-D-O-MAXI-A <sup>1)</sup>	Q	
		G1	192629	LFR-1-D-5M-O-MAXI-A <sup>1)</sup>	Q	162701	LFR-1-D-O-MAXI-A <sup>1)</sup>	Q	

1) Free of copper and PTFE

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LFR/LFRS Filter/Regulators – D Series, Metal Design

Ordering Data

Ordering data						
Pressure regulation range 0.5 ... 7 bar, metal bowl guard						
Condensate drain	Size	Connection	Grade of filtration 40 µm			
			Part No.	Type	LT	
With pressure gauge						
Manual	Mini	G1/8	162702	LFR-1/8-D-7-MINI	1W	
		G1/4	162703	LFR-1/4-D-7-MINI	1W	
		G3/8	162704	LFR-3/8-D-7-MINI	Q	
		1/8 NPT	173762	LFR-1/8-D-7-MINI-NPT	1W	
		1/4 NPT	173770	LFR-1/4-D-7-MINI-NPT	1W	
		3/8 NPT	173778	LFR-3/8-D-7-MINI-NPT	Q	
		Midi	G1/4	186487	LFR-1/4-D-7-MIDI	Q
	G3/8		162705	LFR-3/8-D-7-MIDI	1W	
	G1/2		162706	LFR-1/2-D-7-MIDI	1W	
	G3/4		162707	LFR-3/4-D-7-MIDI	Q	
	3/8 NPT		173786	LFR-3/8-D-7-MIDI-NPT	1W	
	1/2 NPT		173794	LFR-1/2-D-7-MIDI-NPT	1W	
	3/4 NPT		173802	LFR-3/4-D-7-MIDI-NPT	Q	
	Maxi	G1/2	186495	LFR-1/2-D-7-MAXI	Q	
		G3/4	162708	LFR-3/4-D-7-MAXI	1W	
		G1	162709	LFR-1-D-7-MAXI	1W	
		3/4 NPT	173810	LFR-3/4-D-7-MAXI-NPT	1W	
		1 NPT	173818	LFR-1-D-7-MAXI-NPT	1W	
	Fully automatic	Mini	G1/8	162710	LFR-1/8-D-7-MINI-A	1W
			G1/4	162711	LFR-1/4-D-7-MINI-A	1W
			G3/8	162712	LFR-3/8-D-7-MINI-A	Q
1/8 NPT			173763	LFR-1/8-D-7-MINI-A-NPT	1W	
1/4 NPT			173771	LFR-1/4-D-7-MINI-A-NPT	1W	
3/8 NPT			173779	LFR-3/8-D-7-MINI-A-NPT	Q	
Midi			G1/4	186488	LFR-1/4-D-7-MIDI-A	Q
		G3/8	162713	LFR-3/8-D-7-MIDI-A	1W	
		G1/2	162714	LFR-1/2-D-7-MIDI-A	1W	
		G3/4	162715	LFR-3/4-D-7-MIDI-A	Q	
		3/8 NPT	173787	LFR-3/8-D-7-MIDI-A-NPT	1W	
		1/2 NPT	173795	LFR-1/2-D-7-MIDI-A-NPT	1W	
		3/4 NPT	173803	LFR-3/4-D-7-MIDI-A-NPT	Q	
Maxi		G1/2	186496	LFR-1/2-D-7-MAXI-A	Q	
		G3/4	162716	LFR-3/4-D-7-MAXI-A	1W	
		G1	162717	LFR-1-D-7-MAXI-A	1W	
		3/4 NPT	173811	LFR-3/4-D-7-MAXI-A-NPT	1W	
		1 NPT	173819	LFR-1-D-7-MAXI-A-NPT	1W	

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

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3.1

# LFR/LFRS Filter/Regulators – D Series, Metal Design

Ordering Data

Ordering data						
Pressure regulation range 0.5 ... 7 bar, metal bowl guard						
Condensate drain	Size	Connection	Grade of filtration 40 µm			
			Part No.	Type	LT	
Without pressure gauge						
Manual	Mini	G1/8	192590	LFR-1/8-D-7-O-MINI <sup>1)</sup>	Q	
		G1/4	192591	LFR-1/4-D-7-O-MINI <sup>1)</sup>	Q	
		G3/8	192592	LFR-3/8-D-7-O-MINI <sup>1)</sup>	Q	
	Midi	G1/4	192593	LFR-1/4-D-7-O-MIDI <sup>1)</sup>	Q	
		G3/8	192594	LFR-3/8-D-7-O-MIDI <sup>1)</sup>	Q	
		G1/2	192595	LFR-1/2-D-7-O-MIDI <sup>1)</sup>	Q	
		G3/4	192596	LFR-3/4-D-7-O-MIDI <sup>1)</sup>	Q	
	Maxi	G1/2	192597	LFR-1/2-D-7-O-MAXI <sup>1)</sup>	Q	
		G3/4	192598	LFR-3/4-D-7-O-MAXI <sup>1)</sup>	Q	
		G1	192599	LFR-1-D-7-O-MAXI <sup>1)</sup>	Q	
	Fully automatic	Mini	G1/8	192600	LFR-1/8-D-7-O-MINI-A <sup>1)</sup>	Q
			G1/4	192601	LFR-1/4-D-7-O-MINI-A <sup>1)</sup>	Q
G3/8			192602	LFR-3/8-D-7-O-MINI-A <sup>1)</sup>	Q	
Midi		G1/4	192603	LFR-1/4-D-7-O-MIDI-A <sup>1)</sup>	Q	
		G3/8	192604	LFR-3/8-D-7-O-MIDI-A <sup>1)</sup>	Q	
		G1/2	192605	LFR-1/2-D-7-O-MIDI-A <sup>1)</sup>	Q	
		G3/4	192606	LFR-3/4-D-7-O-MIDI-A <sup>1)</sup>	Q	
Maxi		G1/2	192607	LFR-1/2-D-7-O-MAXI-A <sup>1)</sup>	Q	
		G3/4	192608	LFR-3/4-D-7-O-MAXI-A <sup>1)</sup>	Q	
		G1	192609	LFR-1-D-7-O-MAXI-A <sup>1)</sup>	Q	

1) Free of copper and PTFE

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LFR/LFRS Filter/Regulators – D Series, Metal Design

FESTO

Ordering Data

Ordering data								
Pressure regulation range 0.5 ... 12 bar, directly actuated diaphragm regulator with integrated return flow function								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Maxi	G1/2	192370	LFR-1/2-D-5M-DI-MAXI	1W	192368	LFR-1/2-D-DI-MAXI	1W
		G3/4	192376	LFR-3/4-D-5M-DI-MAXI	1W	192374	LFR-3/4-D-DI-MAXI	1W
		G1	192382	LFR-1-D-5M-DI-MAXI	1W	192380	LFR-1-D-DI-MAXI	1W
Fully automatic	Maxi	G1/2	192388	LFR-1/2-D-5M-DI-MAXI-A	1W	192386	LFR-1/2-D-DI-MAXI-A	1W
		G3/4	192394	LFR-3/4-D-5M-DI-MAXI-A	1W	192392	LFR-3/4-D-DI-MAXI-A	1W
		G1	192400	LFR-1-D-5M-DI-MAXI-A	1W	192398	LFR-1-D-DI-MAXI-A	1W
Without pressure gauge								
Manual	Maxi	G1/2	192371	LFR-1/2-D-5M-O-DI-MAXI	Q	192369	LFR-1/2-D-O-DI-MAXI	Q
		G3/4	192377	LFR-3/4-D-5M-O-DI-MAXI	Q	192375	LFR-3/4-D-O-DI-MAXI	Q
		G1	192383	LFR-1-D-5M-O-DI-MAXI	Q	192381	LFR-1-D-O-DI-MAXI	Q
Fully automatic	Maxi	G1/2	192389	LFR-1/2-D-5M-O-DI-MAXI-A	Q	192387	LFR-1/2-D-O-DI-MAXI-A	Q
		G3/4	192395	LFR-3/4-D-5M-O-DI-MAXI-A	Q	192393	LFR-3/4-D-O-DI-MAXI-A	Q
		G1	192401	LFR-1-D-5M-O-DI-MAXI-A	Q	192399	LFR-1-D-O-DI-MAXI-A	Q

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3.1

Ordering data								
Pressure regulation range 0.5 ... 7 bar, directly actuated diaphragm regulator with integrated return flow function								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Maxi	G1/2	–			192372	LFR-1/2-D-7-DI-MAXI	1W
		G3/4	–			192378	LFR-3/4-D-7-DI-MAXI	1W
		G1	–			192384	LFR-1-D-7-DI-MAXI	1W
Fully automatic	Maxi	G1/2	–			192390	LFR-1/2-D-7-DI-MAXI-A	1W
		G3/4	–			192396	LFR-3/4-D-7-DI-MAXI-A	1W
		G1	–			192402	LFR-1-D-7-DI-MAXI-A	1W
Without pressure gauge								
Manual	Maxi	G1/2	–			192373	LFR-1/2-D-7-O-DI-MAXI	Q
		G3/4	–			192379	LFR-3/4-D-7-O-DI-MAXI	Q
		G1	–			192385	LFR-1-D-7-O-DI-MAXI	Q
Fully automatic	Maxi	G1/2	–			192391	LFR-1/2-D-7-O-DI-MAXI-A	Q
		G3/4	–			192397	LFR-3/4-D-7-O-DI-MAXI-A	Q
		G1	–			192403	LFR-1-D-7-O-DI-MAXI-A	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time



# LFR/LFRS Filter/Regulators – D Series, Metal Design



Ordering Data

Ordering data									
Pressure regulation range 0.5 ... 12 bar, lockable <sup>1)</sup>									
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm			
			Part No.	Type	LT	Part No.	Type	LT	
<b>With pressure gauge</b>									
Manual	Mini	G1/8	194704	LFRS-1/8-D-5M-MINI	Q	194696	LFRS-1/8-D-MINI	Q	
		G1/4	194716	LFRS-1/4-D-5M-MINI	Q	194708	LFRS-1/4-D-MINI	Q	
		G3/8	194728	LFRS-3/8-D-5M-MINI	Q	194720	LFRS-3/8-D-MINI	Q	
	Midi	G1/4	194740	LFRS-1/4-D-5M-MIDI	Q	194732	LFRS-1/4-D-MIDI	Q	
		G3/8	194752	LFRS-3/8-D-5M-MIDI	Q	194744	LFRS-3/8-D-MIDI	Q	
		G1/2	194764	LFRS-1/2-D-5M-MIDI	Q	194756	LFRS-1/2-D-MIDI	Q	
		G3/4	194776	LFRS-3/4-D-5M-MIDI	Q	194768	LFRS-3/4-D-MIDI	Q	
	Maxi	G1/2	194788	LFRS-1/2-D-5M-MAXI	Q	194780	LFRS-1/2-D-MAXI	Q	
		G3/4	194800	LFRS-3/4-D-5M-MAXI	Q	194792	LFRS-3/4-D-MAXI	Q	
		G1	194812	LFRS-1-D-5M-MAXI	Q	194804	LFRS-1-D-MAXI	Q	
	Fully automatic	Mini	G1/8	194706	LFRS-1/8-D-5M-MINI-A	Q	194697	LFRS-1/8-D-MINI-A	Q
			G1/4	194718	LFRS-1/4-D-5M-MINI-A	Q	194709	LFRS-1/4-D-MINI-A	Q
			G3/8	194730	LFRS-3/8-D-5M-MINI-A	Q	194721	LFRS-3/8-D-MINI-A	Q
		Midi	G1/4	194742	LFRS-1/4-D-5M-MIDI-A	Q	194733	LFRS-1/4-D-MIDI-A	Q
			G3/8	194754	LFRS-3/8-D-5M-MIDI-A	Q	194745	LFRS-3/8-D-MIDI-A	Q
G1/2			194766	LFRS-1/2-D-5M-MIDI-A	Q	194757	LFRS-1/2-D-MIDI-A	Q	
G3/4			194778	LFRS-3/4-D-5M-MIDI-A	Q	194769	LFRS-3/4-D-MIDI-A	Q	
Maxi		G1/2	194790	LFRS-1/2-D-5M-MAXI-A	Q	194781	LFRS-1/2-D-MAXI-A	Q	
		G3/4	194802	LFRS-3/4-D-5M-MAXI-A	Q	194793	LFRS-3/4-D-MAXI-A	Q	
		G1	194814	LFRS-1-D-5M-MAXI-A	Q	194805	LFRS-1-D-MAXI-A	Q	
<b>Without pressure gauge</b>									
Manual		Mini	G1/8	194705	LFRS-1/8-D-5M-O-MINI	Q	194698	LFRS-1/8-D-O-MINI	Q
			G1/4	194717	LFRS-1/4-D-5M-O-MINI	Q	194710	LFRS-1/4-D-O-MINI	Q
			G3/8	194729	LFRS-3/8-D-5M-O-MINI	Q	194722	LFRS-3/8-D-O-MINI	Q
		Midi	G1/4	194741	LFRS-1/4-D-5M-O-MIDI	Q	194734	LFRS-1/4-D-O-MIDI	Q
	G3/8		194753	LFRS-3/8-D-5M-O-MIDI	Q	194746	LFRS-3/8-D-O-MIDI	Q	
	G1/2		194765	LFRS-1/2-D-5M-O-MIDI	Q	194758	LFRS-1/2-D-O-MIDI	Q	
	G3/4		194777	LFRS-3/4-D-5M-O-MIDI	Q	194770	LFRS-3/4-D-O-MIDI	Q	
	Maxi	G1/2	194789	LFRS-1/2-D-5M-O-MAXI	Q	194782	LFRS-1/2-D-O-MAXI	Q	
		G3/4	194801	LFRS-3/4-D-5M-O-MAXI	Q	194794	LFRS-3/4-D-O-MAXI	Q	
		G1	194813	LFRS-1-D-5M-O-MAXI	Q	194806	LFRS-1-D-O-MAXI	Q	
	Fully automatic	Mini	G1/8	194707	LFRS-1/8-D-5M-O-MINI-A	Q	194699	LFRS-1/8-D-O-MINI-A	Q
			G1/4	194719	LFRS-1/4-D-5M-O-MINI-A	Q	194711	LFRS-1/4-D-O-MINI-A	Q
			G3/8	194731	LFRS-3/8-D-5M-O-MINI-A	Q	194723	LFRS-3/8-D-O-MINI-A	Q
		Midi	G1/4	194743	LFRS-1/4-D-5M-O-MIDI-A	Q	194735	LFRS-1/4-D-O-MIDI-A	Q
			G3/8	194755	LFRS-3/8-D-5M-O-MIDI-A	Q	194747	LFRS-3/8-D-O-MIDI-A	Q
G1/2			194767	LFRS-1/2-D-5M-O-MIDI-A	Q	194759	LFRS-1/2-D-O-MIDI-A	Q	
G3/4			194779	LFRS-3/4-D-5M-O-MIDI-A	Q	194771	LFRS-3/4-D-O-MIDI-A	Q	
Maxi		G1/2	194791	LFRS-1/2-D-5M-O-MAXI-A	Q	194783	LFRS-1/2-D-O-MAXI-A	Q	
		G3/4	194803	LFRS-3/4-D-5M-O-MAXI-A	Q	194795	LFRS-3/4-D-O-MAXI-A	Q	
		G1	194815	LFRS-1-D-5M-O-MAXI-A	Q	194807	LFRS-1-D-O-MAXI-A	Q	

1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LFR/LFRS Filter/Regulators – D Series, Metal Design

Ordering Data

Ordering data						
Pressure regulation range 0.5 ... 7 bar, lockable						
Condensate drain	Size	Connection	Grade of filtration 40 µm			
			Part No.	Type	LT	
With pressure gauge						
Manual	Mini	G1/8	194700	LFRS-1/8-D-7-MINI	Q	
		G1/4	194712	LFRS-1/4-D-7-MINI	Q	
		G3/8	194724	LFRS-3/8-D-7-MINI	Q	
	Midi	G1/4	194736	LFRS-1/4-D-7-MIDI	Q	
		G3/8	194748	LFRS-3/8-D-7-MIDI	Q	
		G1/2	194760	LFRS-1/2-D-7-MIDI	Q	
		G3/4	194772	LFRS-3/4-D-7-MIDI	Q	
	Maxi	G1/2	194784	LFRS-1/2-D-7-MAXI	Q	
		G3/4	194796	LFRS-3/4-D-7-MAXI	Q	
		G1	194808	LFRS-1-D-7-MAXI	Q	
Fully automatic	Mini	G1/8	194702	LFRS-1/8-D-7-MINI-A	Q	
		G1/4	194714	LFRS-1/4-D-7-MINI-A	Q	
		G3/8	194726	LFRS-3/8-D-7-MINI-A	Q	
	Midi	G1/4	194738	LFRS-1/4-D-7-MIDI-A	Q	
		G3/8	194750	LFRS-3/8-D-7-MIDI-A	Q	
		G1/2	194762	LFRS-1/2-D-7-MIDI-A	Q	
		G3/4	194774	LFRS-3/4-D-7-MIDI-A	Q	
	Maxi	G1/2	194786	LFRS-1/2-D-7-MAXI-A	Q	
		G3/4	194798	LFRS-3/4-D-7-MAXI-A	Q	
		G1	194810	LFRS-1-D-7-MAXI-A	Q	
	Without pressure gauge					
	Manual	Mini	G1/8	194701	LFRS-1/8-D-7-O-MINI	Q
G1/4			194713	LFRS-1/4-D-7-O-MINI	Q	
G3/8			194725	LFRS-3/8-D-7-O-MINI	Q	
Midi		G1/4	194737	LFRS-1/4-D-7-O-MIDI	Q	
		G3/8	194749	LFRS-3/8-D-7-O-MIDI	Q	
		G1/2	194761	LFRS-1/2-D-7-O-MIDI	Q	
		G3/4	194773	LFRS-3/4-D-7-O-MIDI	Q	
Maxi		G1/2	194785	LFRS-1/2-D-7-O-MAXI	Q	
		G3/4	194797	LFRS-3/4-D-7-O-MAXI	Q	
		G1	194809	LFRS-1-D-7-O-MAXI	Q	
Fully automatic	Mini	G1/8	194703	LFRS-1/8-D-7-O-MINI-A	Q	
		G1/4	194715	LFRS-1/4-D-7-O-MINI-A	Q	
		G3/8	194727	LFRS-3/8-D-7-O-MINI-A	Q	
	Midi	G1/4	194739	LFRS-1/4-D-7-O-MIDI-A	Q	
		G3/8	194751	LFRS-3/8-D-7-O-MIDI-A	Q	
		G1/2	194763	LFRS-1/2-D-7-O-MIDI-A	Q	
		G3/4	194775	LFRS-3/4-D-7-O-MIDI-A	Q	
	Maxi	G1/2	194787	LFRS-1/2-D-7-O-MAXI-A	Q	
		G3/4	194799	LFRS-3/4-D-7-O-MAXI-A	Q	
		G1	194811	LFRS-1-D-7-O-MAXI-A	Q	

1) For Spare Key ordering information, see page 280.

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

# LFR/LFRS Filter/Regulators – D Series, Metal Design

Ordering Data

Ordering data								
Pressure regulation range 0.5 ... 12 bar, directly actuated diaphragm regulator with integrated return flow function, lockable								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Maxi	G1/2	194818	LFRS-1/2-D-5M-DI-MAXI	Q	194816	LFRS-1/2-D-DI-MAXI	Q
		G3/4	194824	LFRS-3/4-D-5M-DI-MAXI	Q	194822	LFRS-3/4-D-DI-MAXI	Q
		G1	194830	LFRS-1-D-5M-DI-MAXI	Q	194828	LFRS-1-D-DI-MAXI	Q
Fully automatic	Maxi	G1/2	194836	LFRS-1/2-D-5M-DI-MAXI-A	Q	194834	LFRS-1/2-D-DI-MAXI-A	Q
		G3/4	194842	LFRS-3/4-D-5M-DI-MAXI-A	Q	194840	LFRS-3/4-D-DI-MAXI-A	Q
		G1	194848	LFRS-1-D-5M-DI-MAXI-A	Q	194846	LFRS-1-D-DI-MAXI-A	Q
Without pressure gauge								
Manual	Maxi	G1/2	194819	LFRS-1/2-D-5M-O-DI-MAXI	Q	194817	LFRS-1/2-D-O-DI-MAXI	Q
		G3/4	194825	LFRS-3/4-D-5M-O-DI-MAXI	Q	194823	LFRS-3/4-D-O-DI-MAXI	Q
		G1	194831	LFRS-1-D-5M-O-DI-MAXI	Q	194829	LFRS-1-D-O-DI-MAXI	Q
Fully automatic	Maxi	G1/2	194837	LFRS-1/2-D-5M-O-DI-MAXI-A	Q	194835	LFRS-1/2-D-O-DI-MAXI-A	Q
		G3/4	194843	LFRS-3/4-D-5M-O-DI-MAXI-A	Q	194841	LFRS-3/4-D-O-DI-MAXI-A	Q
		G1	194849	LFRS-1-D-5M-O-DI-MAXI-A	Q	194847	LFRS-1-D-O-DI-MAXI-A	Q

Ordering data								
Pressure regulation range 0.5 ... 7 bar, directly actuated diaphragm regulator with integrated return flow function, lockable								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Maxi	G1/2	-		Q	194820	LFRS-1/2-D-7-DI-MAXI	Q
		G3/4	-		Q	194826	LFRS-3/4-D-7-DI-MAXI	Q
		G1	-		Q	194832	LFRS-1-D-7-DI-MAXI	Q
Fully automatic	Maxi	G1/2	-		Q	194838	LFRS-1/2-D-7-DI-MAXI-A	Q
		G3/4	-		Q	194844	LFRS-3/4-D-7-DI-MAXI-A	Q
		G1	-		Q	194850	LFRS-1-D-7-DI-MAXI-A	Q
Without pressure gauge								
Manual	Maxi	G1/2	-		Q	194821	LFRS-1/2-D-7-O-DI-MAXI	Q
		G3/4	-		Q	194827	LFRS-3/4-D-7-O-DI-MAXI	Q
		G1	-		Q	194833	LFRS-1-D-7-O-DI-MAXI	Q
Fully automatic	Maxi	G1/2	-		Q	194839	LFRS-1/2-D-7-O-DI-MAXI-A	Q
		G3/4	-		Q	194845	LFRS-3/4-D-7-O-DI-MAXI-A	Q
		G1	-		Q	194851	LFRS-1-D-7-O-DI-MAXI-A	Q

1) For Spare Key ordering information, see page 280.

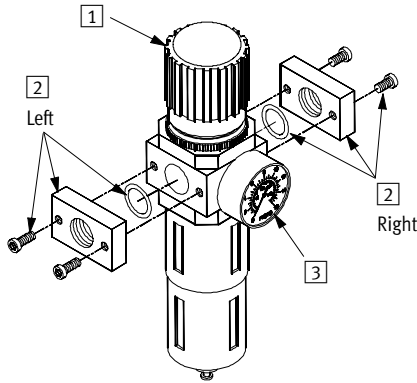
LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

3

3.1

# FAST\* Program – Filter/Regulator Selector Guide

LFR Filter/Regulators – D Series, Metal Design



A complete filter regulator assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block Kit	2 (one left, one right)
3	Gauge	1
4	Mounting Bracket Kit (Optional) (Not shown)	1

**Note:** Joining rods (not shown here) are not needed in this assembly.

\*FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.

**Step 1:** Based upon the required Port Size, Maximum Output Pressure, Maximum Flow, Filtration Level, Drain Type, and Thread Type, select the Main Unit (Item 1), the Left and Right Port Block Kits (Item 2), and (if required) the Gauge (Item 3).

3

3.1

Port size	Max. Output Pressure (bar/psi)	Max. Flow (l/min/scfm)	Filtration Level (µm)	Drain	Product Type/Description	Item					Gauge (if required)								
						Main Unit	NPT Thread		BSP Thread										
							Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit									
1/8	7/102	900/31.8	40	Man.	LFR...-D-MINI-...	546456	546520	546521	546495	546496	546485								
				Auto		546457													
		Man.			546432														
		Auto			546433														
	12/174	750/26.5	5	Man.		546454	546520	546521	546495	546496	546485								
				Auto		546455													
		Man.			546454														
		Auto			546455														
1/4	7/102	1400/49.4	40	Man.	LFR...-D-MINI-...	546456	546522	546523	546497	546498	546485								
				Auto		546457													
		Man.		LFR...-D-MIDI-...	546463	546536						546537	546532	546533					
		Auto			546464														
		Man.		LFR...-D-MINI-...	546432										546522	546523	546497	546498	
		Auto			546433														
	Man.	LFR...-D-MIDI-...	546425	546536	546537		546532	546533											
	Auto		546426																
	12/174	1500/52.9	5			Man.			LFR...-D-MINI-...	546454	546522	546523	546497	546498					546482
						Auto				546455									
		Man.	LFR...-D-MIDI-...			546461			546536	546537					546532	546533			
		Auto				546462													
Man.		LFR...-D-MINI-...	546454	546522	546523	546497	546498												
Auto			546455																
Man.	LFR...-D-MIDI-...	546461	546536					546537			546532	546533							
Auto		546462																	
3/8	7/102	1700/60.0							40	Man.			LFR...-D-MINI-...	546456	546524	546525	546499	546500	546485
										Auto				546457					
		Man.		LFR...-D-MIDI-...	546463	546530	546531			546501			546502						
		Auto			546464														
	Man.	LFR...-D-MINI-...	546432	546524	546525			546499	546500										
	Auto		546433																
	Man.	LFR...-D-MIDI-...	546425			546530	546531			546501	546502								
	Auto		546426																
	12/174	1600/56.5	5	Man.	LFR...-D-MINI-...			546454	546524			546525	546499	546500	546479				
				Auto				546455											
Man.		LFR...-D-MIDI-...	546461	546530	546531	546501	546502												
Auto			546462																
Man.		LFR...-D-MINI-...	546454					546524		546525	546499					546500			
Auto			546455																
Man.	LFR...-D-MIDI-...	546461	546530						546531			546501	546502						
Auto		546462																	

# FAST Program – LFR Filter/Regulator Selector Guide

LFR Filter/Regulators – D Series, Metal Design

						Item									
Port size	Max. Output Pressure (bar/psi)	Max. Flow (l/min/scfm)	Filtration Level (µm)	Drain	Product Type/Description	Main Unit	NPT Thread		BSP Thread		Gauge (If required)				
							Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit					
												[1]	[2]		
½	7/102	3900/137.7	40	Man.	LFR-...-D-MIDI-...	546463	546526	546527	546503	546504	546484				
				Auto		546464									
		9500/335.5		Man.	LFR-...-D-MAXI-...	546470	546538	546539	546534	546535					
				Auto		546471									
				Man.	LFR-D-...-DI-MAXI-...*	546514									
				Auto		546518									
	12/174	3400/120.1	5	Man.	LFR-...-D-MIDI-...	546425	546526	546527	546503	546504	546482				
				Auto		546426									
		9400/331.9		Man.	LFR-...-D-MAXI-...	546437	546538	546539	546534	546535					
				Auto		546438									
				Man.	LFR-D-...-DI-MAXI-...*	546512									
				Auto		546515									
2500/88.3	5	Man.	LFR-...-D-MIDI-...	546461	546526	546527	546503	546504	546482						
		Auto		546462											
7580/267.7	5	Man.	LFR-...-D-MAXI-...	546468	546538	546539	546534	546535							
		Auto		546469											
¾	7/102	4000/141.3	40	Man.	LFR-...-D-MIDI-...	546463	546528	546529	546507	546508	546484				
				Auto		546464									
		10000/353.2		Man.	LFR-...-D-MAXI-...	546470	546490	546492	546507	546508					
				Auto		546471									
				Man.	LFR-D-...-DI-MAXI-...*	546514									
				Auto		546518									
	12/174	3400/120.1	5	Man.	LFR-...-D-MIDI-...	546425	546528	546529	546505	546506	546482				
				Auto		546426									
		9700/342.6		Man.	LFR-...-D-MAXI-...	546437	546490	546492	546507	546508					
				Auto		546438									
				Man.	LFR-D-...-DI-MAXI-...*	546512									
				Auto		546515									
	2600/91.8	5	Man.	LFR-...-D-MIDI-...	546461	546528	546529	546505	546506	546482					
			Auto		546462										
	7600/268.4	5	Man.	LFR-...-D-MAXI-...	546468	546490	546492	546507	546508						
			Auto		546469										
	1	7/102	11000/388.5	40	Man.		546470	546491	546493	546509	546510	546484			
					Auto		546471								
					Man.	LFR-D-...-DI-MAXI-...*	546514								
					Auto		546518								
12/174					10000/353.2	5	Man.	LFR-...-D-MAXI-...	546437						546482
							Auto		546438						
			Man.	LFR-D-...-DI-MAXI-...*	546512										
			Auto		546515										
		8000/282.5	5	Man.	LFR-...-D-MAXI-...		546468								
				Auto			546469								

\* DI = Directly actuated diaphragm regulator with integrated return flow function.

## FAST Program – LFR Filter/Regulator Selector Guide

LFR Filter/Regulators – D Series, Metal Design

**Step 2:** Based upon the Product Type/Description from Step 1, select the (optional) Mounting Bracket Kit (Item 4).

	Item <span style="border: 1px solid black; padding: 0 2px;">4</span> (Not shown)
Product Type/ Description	Mounting Bracket Kit (Optional) For more information on Mounting Brackets, see Tab Section 2.17 – Accessories for D Series Metal Design Components.
LFR ...-D-MINI-...	159638
LFR ...-D-MIDI-...	159593
LFR ...-D-MAXI-...	159593

**Step3:** Determine the appropriate quantity of each Item.

**Ordering Example:**

Required: ¼ port size, 8 bar output pressure, 1800 l/min flow, 40µm filtration, automatic drain, BSP threads, gauge, and mounting bracket kit.

	Item	Part No.	Qty	Description
Order:	<span style="border: 1px solid black; padding: 0 2px;">1</span>	546426	1	Main Unit
	<span style="border: 1px solid black; padding: 0 2px;">2</span>	546532	1	Left Port Block Kit
		546533	1	Right Port Block Kit
	<span style="border: 1px solid black; padding: 0 2px;">3</span>	546482	1	Gauge
	<span style="border: 1px solid black; padding: 0 2px;">4</span>	159593	1	Mounting Bracket Kit



LR-...-MIDI  
Pressure Regulator



LRB-...-K4-MIDI  
Pressure Regulator Manifold

3

3.2

## Pressure Regulators and Manifolds

LR = pressure regulator  
DI = with integrated return flow  
S = with integrated lock

LRB = pressure regulator for manifold assembly

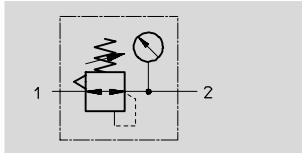
LRB-K = pressure regulator manifold

# LR/LRS Pressure Regulators – D Series, Metal Design

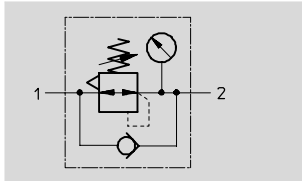
Technical Data

Function

LR/LRS-...-D-...



LR/LRS-...-D-DI-MAXI



- - Flow rate  
120 ... 12500 l/min
- - Temperature range  
-10 ... +60 °C
- - Input pressure  
1 ... 16 bar



Integrated universal locking for pressure regulators of D series which prevents alteration of the set secondary pressure (p2) by unauthorized persons. Universal locking means that multiple locks can be closed with the same key. A cylinder lock is integrated in the rotary knob.

- Also suitable for front panel mounting
- Two pressure gauge connections for different fitting options
- Mini and Midi sizes: Directly actuated diaphragm regulator
- Maxi size: Pilot actuated piston regulator, diaphragm regulator LRS-DI
- Good regulating characteristics with minimal pressure hysteresis
- High flow rate
- Two pressure regulation ranges: 0.5 ... 7 bar and 0.5 ... 12 bar
- Setting values are secured by locking the rotary knob
- Return flow option for venting from output 2 to input 1
- Pressure sensor (optional)

3

3.2

General technical data																
Size	Micro				Mini			Midi				Maxi				
Pneumatic connection	M5	M7	G <sup>1</sup> / <sub>8</sub>	QS	QS	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G1	
			1/8 NPT	4	6	1/8 NPT	1/4 NPT	3/8 NPT	1/4 NPT <sup>1)</sup>	3/8 NPT	1/2 NPT	3/4 NPT	1/2 NPT <sup>1)</sup>	3/4 NPT	1 NPT	
Operating medium	Compressed air					Filtered compressed air, lubricated or unlubricated, grade of filtration 40 µm										
Design	Diaphragm regulator					Directly actuated diaphragm regulator							Pilot actuated piston regulator			
													Directly actuated diaphragm regulator			
Type of mounting	Via accessories					Via accessories										
	In-line installation					In-line installation										
	Front panel mounting					Front panel mounting										
Assembly position	Any					Any										
Max. hysteresis [bar]	0.3					0.2							0.4			
Input pressure [bar]	1 ... 10					1 ... 16										
Pressure regulation range [bar]	0.5 ... 7					0.5 ... 7							0.5 ... 12			
Pressure indication	Via pressure gauge					Via pressure gauge										
Port connection	M5					G <sup>1</sup> / <sub>8</sub>			G <sup>1</sup> / <sub>4</sub>				G <sup>1</sup> / <sub>4</sub>			

1) Available via the FAST program. See page 144.



# LR/LRS Pressure Regulators – D Series, Metal Design

Technical Data

Standard nominal flow rate <sup>1)</sup> qnN [l/min]					
Connection	Female thread		Port block		
	M5	M7	G1/8, 1/8 NPT	QS4	QS6
Micro					
LR	120	300	450	160	450

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

Standard nominal flow rate <sup>2)</sup> qnN [l/min]						
Connection	G1/8, 1/8 NPT	G1/4, 1/4 NPT	G3/8, 3/8 NPT	G1/2, 1/2 NPT	G3/4, 3/4 NPT	G1, 1 NPT
Mini						
Pressure regulation range 0.5 ... 7 bar	1000	1600	1800	–	–	–
Pressure regulation range 0.5 ... 12 bar	800	1500	1700	–	–	–
Midi						
Pressure regulation range 0.5 ... 7 bar	–	2200	3300	4000	4500	–
Pressure regulation range 0.5 ... 12 bar	–	2100	3200	3500	3500	–
Maxi						
Pressure regulation range 0.5 ... 7 bar	–	–	–	10700	12000	12500
Pressure regulation range 0.5 ... 12 bar	–	–	–	10500	11000	11500
Maxi – Directly actuated pressure regulator with integrated return flow function						
Pressure regulation range 0.5 ... 7 bar	–	–	–	5400	6800	7000
Pressure regulation range 0.5 ... 12 bar	–	–	–	7300	8350	8400

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

Screw-in depth of connecting thread [mm]					
Connection	M5	M7	G1/8	QS4	QS6
Micro					
In housing	5	6	–	–	–
In connecting plates	–	–	8	–	–

Ambient conditions				
Size	Micro	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60			
Temperature of medium [°C]	–10 ... +60			
Corrosion resistance class CRC <sup>3)</sup>	2			

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

Weight [g]					
Size	Micro		Mini	Midi	Maxi
	Female thread	Connecting plate			
With pressure gauge					
LR	60	80	350	720	1200
LRS	–	–	520	1250	1290
Without pressure gauge					
LR	50	70	300	660	1 100
LRS	–	–	470	1 180	1 215

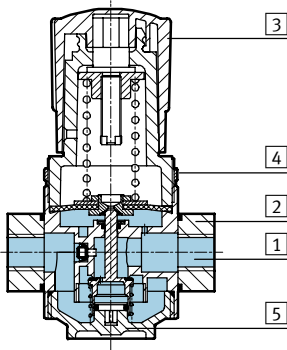


# LR/LRS Pressure Regulators – D Series, Metal Design

Technical Data

## Materials

Sectional view



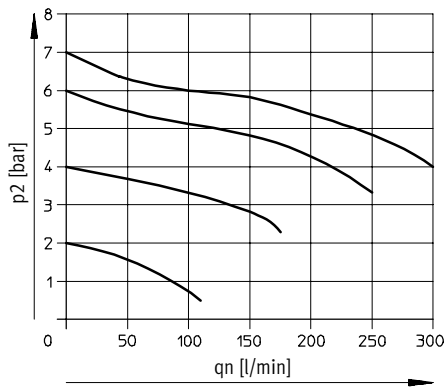
Pressure regulator	Micro	Mini/Midi/Maxi
1 Housing	Wrought aluminum alloy	Die-cast zinc/aluminum
2 Port blocks	Wrought aluminum alloy	Die-cast zinc/aluminum
3 Regulating knob	Polyacetal	Polyacetal
4 Knurled nut	–	Aluminum
5 Plug cap	Polycarbonate	Polycarbonate
– Seals	Nitrile rubber	Nitrile rubber
Note on materials	–	Designs free of copper, PTFE and silicone → Ordering data

3

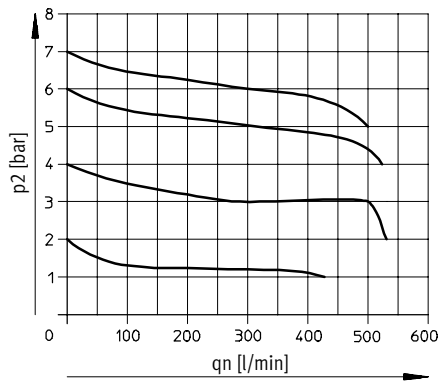
3.2

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

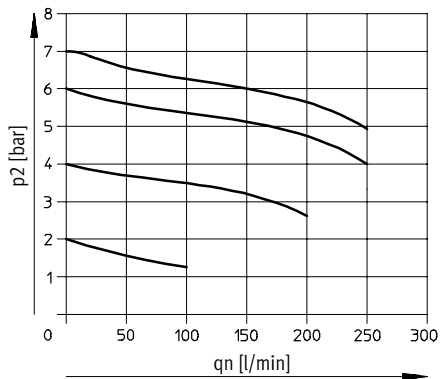
LR-M5-...-MICRO



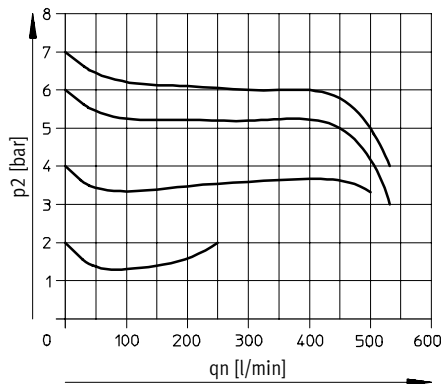
LR-M7-...-MICRO B



LR-QS4-...-MICRO



LR-QS6-...-MICRO and LR-1/8-...-MICRO



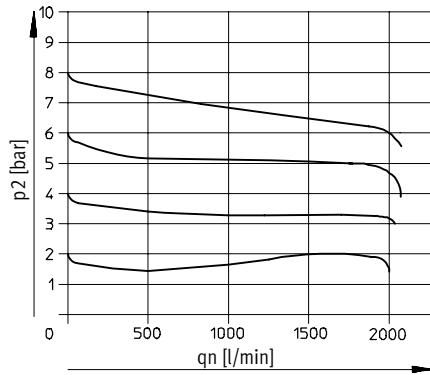
Primary pressure  $p_1 = 10$  bar

# LR/LRS Pressure Regulators – D Series, Metal Design

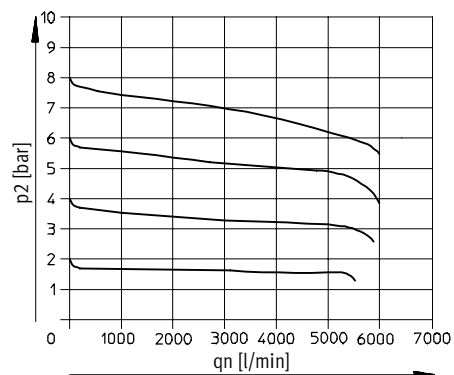
Technical Data

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

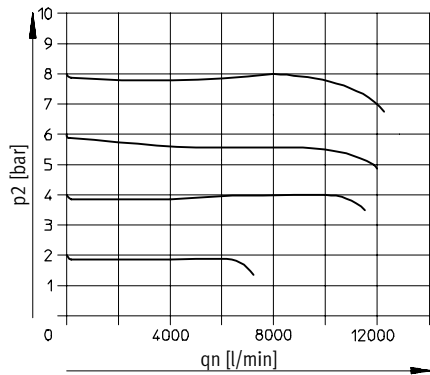
LR/LRS-1/4-D-MINI



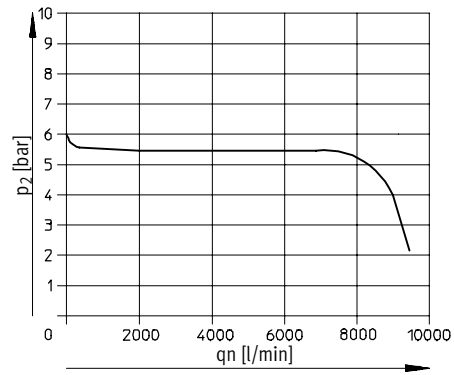
LR/LRS-1/2-D-MIDI



LR/LRS-1-D-MAXI



LR/LRS-1-D-DI-MAXI



Primary pressure  $p_1 = 10$  bar

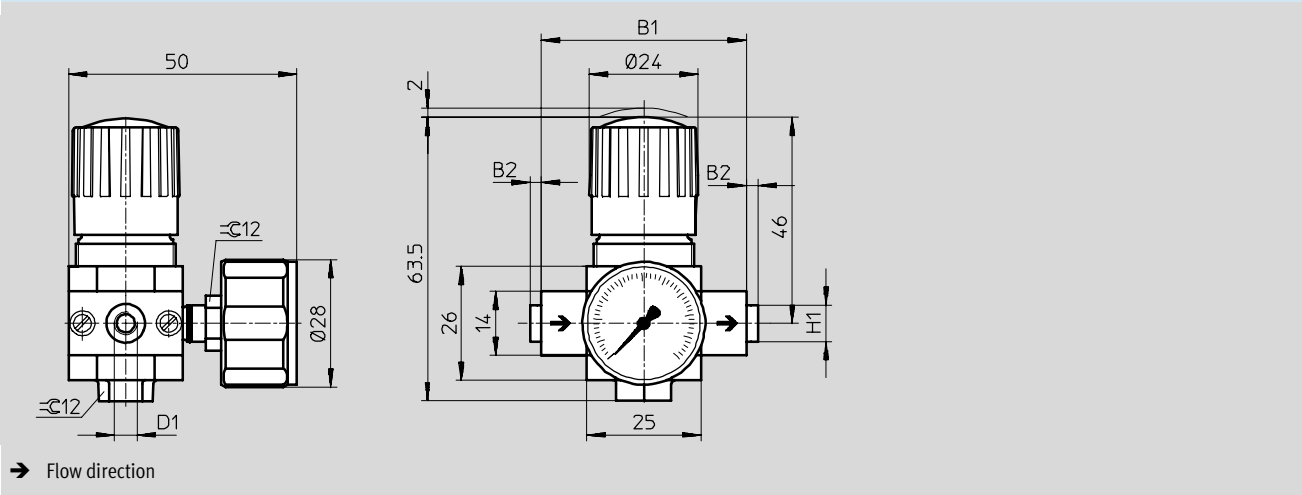
# LR/LRS Pressure Regulators – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

Micro



Type	B1	B2	D1	H1
Micro				
LR-M5-D-7-MICRO	25	-	M5	-
LR-M7-D-7-MICRO B			M7	
LR-1/8-D-7-MICRO, L-N1/8-D-7-MICRO	45	~2.5	G1/8, 1/8 NPT	-
LR-QS4-D-7-MICRO			QS4	~8
LR-QS6-D-7-MICRO			QS6	~10

3

3.2

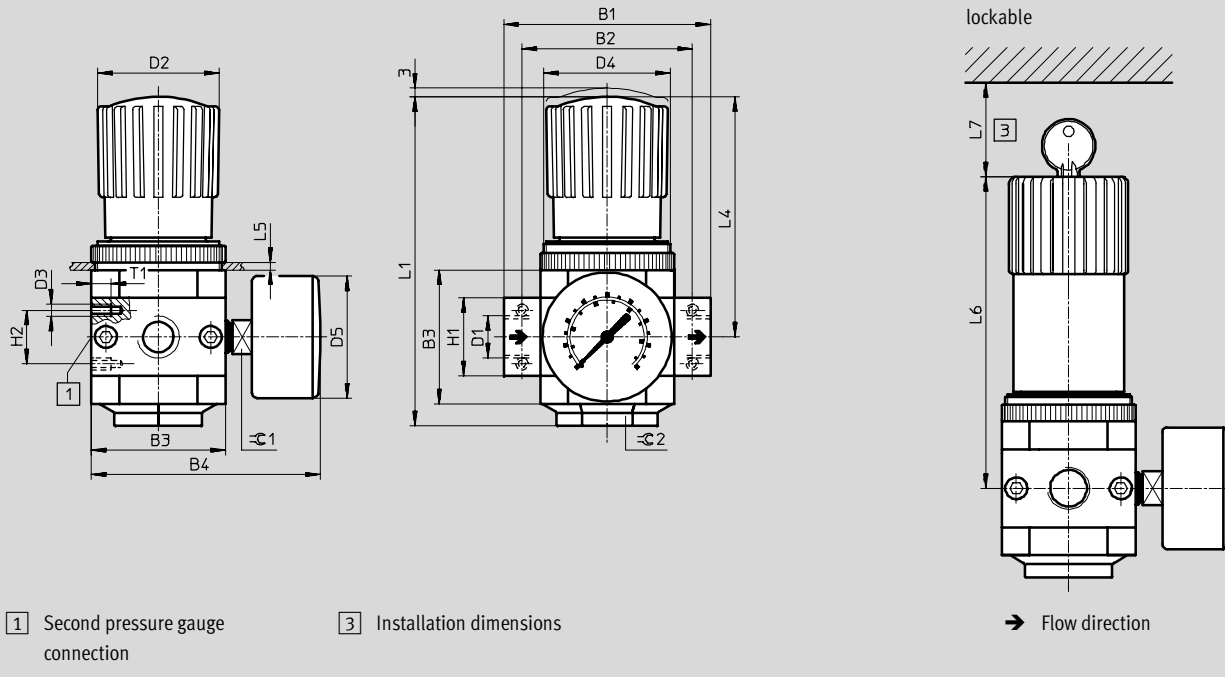
# LR/LRS Pressure Regulators – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

Mini/Midi/Maxi



3

3.2

Type	B1	B2	B3	B4	D1	D2 Ø	D3	D4	D5 Ø
<b>Mini</b>									
LR/LRS-1/8-D-(I)-MINI (NPT)	64	52	40	76	G1/8 1/8 NPT	31	M4	M36x1.5	41
LR/LRS-1/4-D-(I)-MINI (NPT)					G1/4 1/4 NPT				
LR/LRS-3/8-D-(I)-MINI (NPT)					G3/8 3/8 NPT				
<b>Midi</b>									
LR/LRS-1/4-D-(I)-MIDI	85	70	55	95	G1/4	50	M5	M52x1.5	50
LR/LRS-3/8-D-(I)-MIDI (NPT)					G3/8 3/8 NPT				
LR/LRS-1/2-D-(I)-MIDI (NPT)					G1/2 1/2 NPT				
LR/LRS-3/4-D-(I)-MIDI (NPT)					G3/4 3/4 NPT				
<b>Maxi</b>									
LR/LRS-1/2-D-MAXI	96	80	66	107	G1/2	31	M5	M36x1.5	50
LR/LRS-1/2-D-DI-MAXI						49		M52x1.5	
LR/LRS-3/4-D-MAXI (NPT)					G3/4 3/4 NPT	31		M36x1.5	
LR/LRS-3/4-D-DI-MAXI						49		M52x1.5	
LR/LRS-1-D-MAXI (NPT)					116	91		G1 1 NPT	
LR/LRS-1-D-DI-MAXI	49	M52x1.5							

Additional data, see next page.

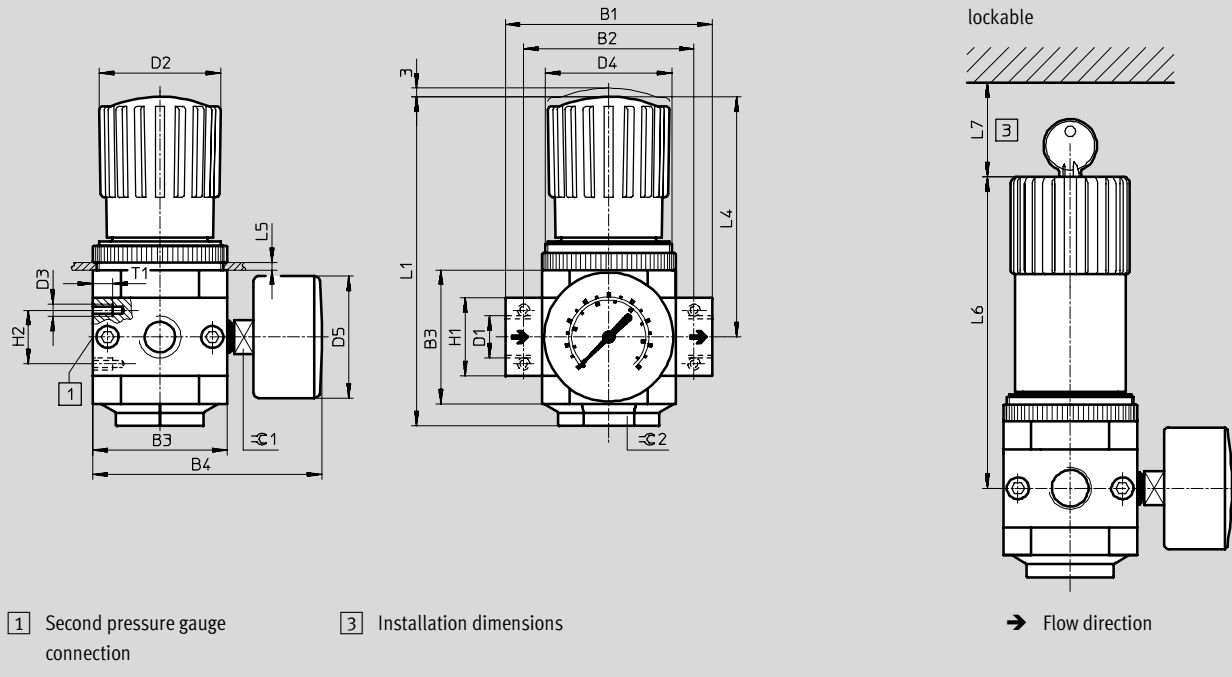
# LR/LRS Pressure Regulators – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

Mini/Midi/Maxi



3

3.2

Type	H1	H2	L1	L4	L5 max.	L6	L7	T1	⌀C1	⌀C2		
<b>Mini</b>												
LR/LRS-1/8-D-MINI (NPT)	20	11	96	68	3	98	60	7	14	17		
LR/LRS-1/4-D-MINI (NPT)												
LR/LRS-3/8-D-MINI (NPT)												
<b>Midi</b>												
LR/LRS-1/4-D-MIDI	32	22	135	99	5	130	60	8	14	36		
LR/LRS-3/8-D-MIDI (NPT)												
LR/LRS-1/2-D-MIDI (NPT)												
LR/LRS-3/4-D-MIDI (NPT)												
<b>Maxi</b>												
LR/LRS-1/2-D-MAXI	32	22	125	82	4	111	60	8	14	22		
LR/LRS-1/2-D-DI-MAXI			148	105		135						
LR/LRS-3/4-D-MAXI (NPT)			125	82		111						
LR/LRS-3/4-D-DI-MAXI			148	105		135						
LR/LRS-1-D-MAXI (NPT)			40			125					82	111
LR/LRS-1-D-DI-MAXI						148					105	135

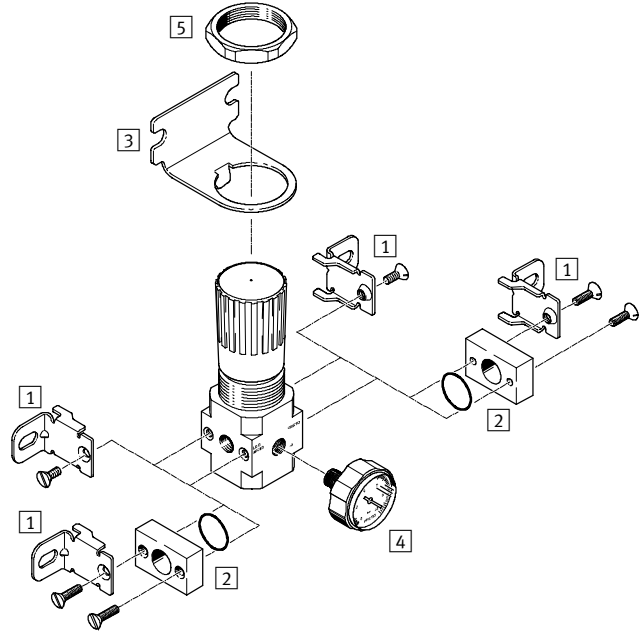
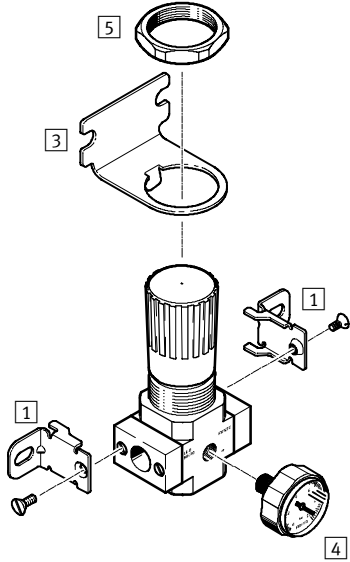
# LR/LRS Pressure Regulators – D Series, Metal Design

Accessories Overview

**Micro**

Individual unit with port blocks, connection size G1/8, QS4 or QS6

Individual unit without port blocks, for service unit combination connection size M5 or M7 in housing



3

3.2

Mounting attachments and accessories					
	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	■	■	■	276
2 Port block kit PBL	-	■	-	■	280
3 Mounting bracket HRS	■	■	■	■	277
4 Pressure gauge MA-27	■	■	■	■	282
5 Hexagon nut (included in scope of delivery) HMR	■	■	■	■	-

# LR/LRS Pressure Regulators – D Series, Metal Design

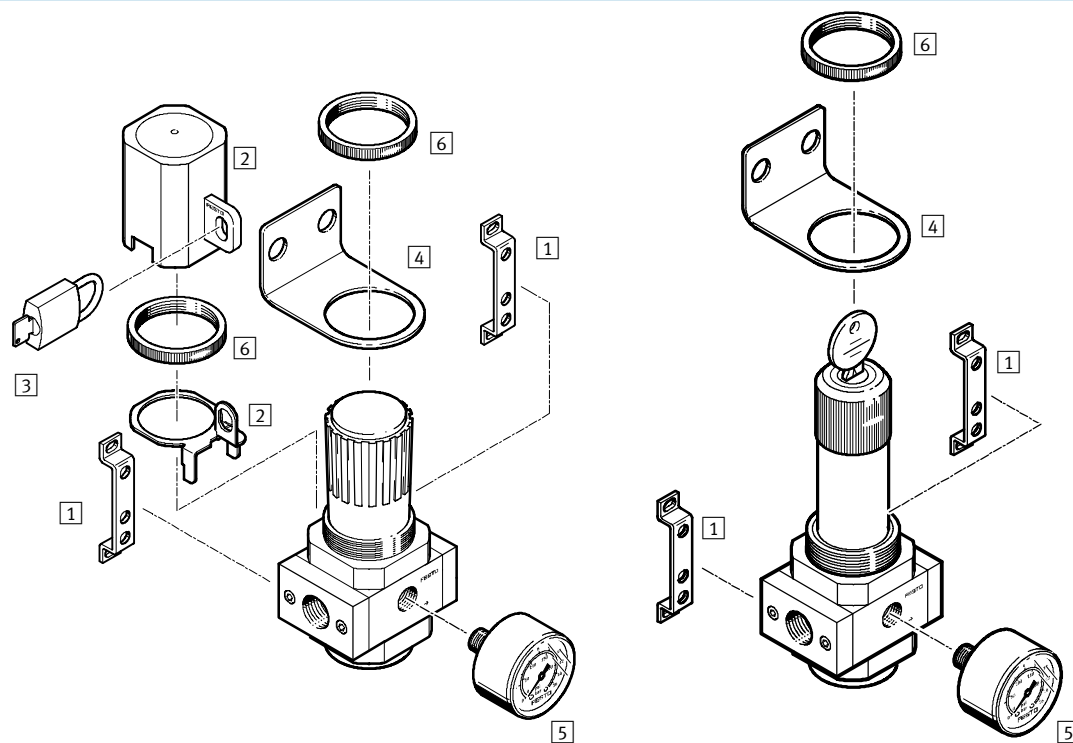
Accessories Overview

FESTO

## Mini/Midi/Maxi

Pressure regulator LR

Pressure regulator LRS, lockable



3

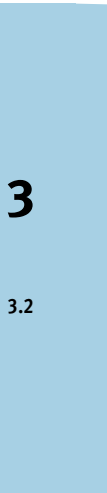
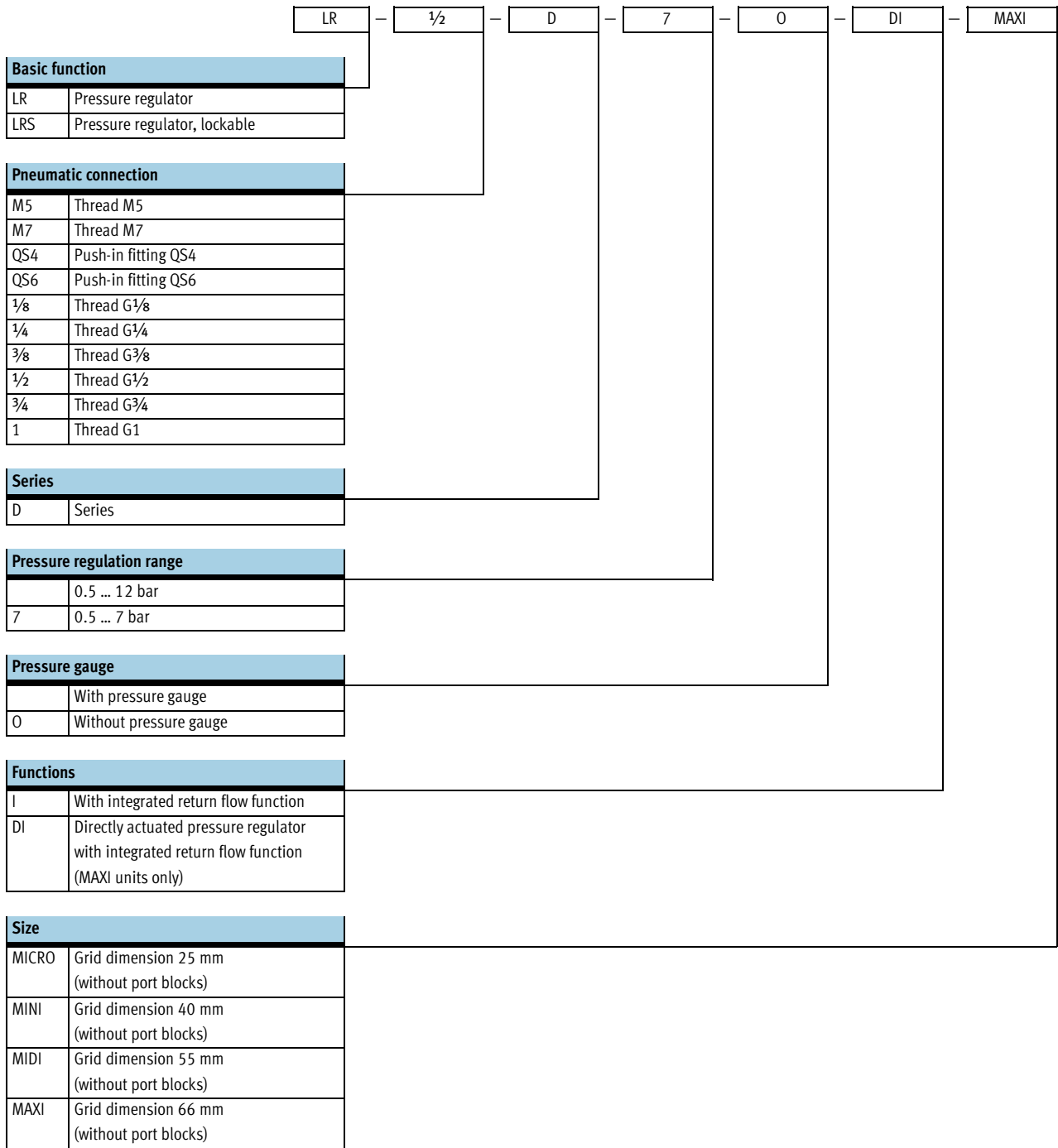
3.2

Mounting attachments and accessories		Rotary knob with detent	Rotary knob, lockable	→ Page
1	Mounting bracket HFOE	■	■	276
2	Regulator lock LRVS	■	-	281
3	Padlock LRVS-D	■	-	281
4	Mounting bracket HR-D	■	■	278
5	Pressure gauge MA	■	■	282
6	Knurled nut (included in scope of delivery) HMR	■	■	-



# LR/LRS Pressure Regulators – D Series, Metal Design

Type Codes – Metric / QS / G (BSPP) Connections



3

3.2

# LR Pressure Regulators – D Series, Metal Design

Type Codes – NPT Connections

LR – 1/2 – D – 7 – 0 – MIDI – NPT

### Basic function

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

### Pneumatic connection

N1/8	1/8 NPT Thread (for Micro only)
1/8	1/8 NPT Thread
1/4	1/4 NPT Thread
3/8	3/8 NPT Thread
1/2	1/2 NPT Thread
3/4	3/4 NPT Thread
1	1 NPT Thread

### Series

D	Series
---	--------

### Pressure regulation range

	0.5 ... 12 bar
7	0.5 ... 7 bar

### Pressure gauge

	With pressure gauge
0	Without pressure gauge

### Size

MICRO	Grid dimension 25 mm (without port blocks)
MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

### NPT connection (where available)

NPT	NPT threaded connection (not type code for Micro)
-----	--

3

3.2

# LR/LRS Pressure Regulators – D Series, Metal Design

Ordering Data

Ordering data				
Size	Connection	Pressure regulation range 0.5 ... 7 bar		
		Part No.	Type	LT
With pressure gauge				
Micro	Without threaded connecting plates, connecting thread in housing			
	M5	526261	LR-M5-D-7-MICRO	1D
	M7	534180	LR-M7-D-7-MICRO B	Q
	With threaded connecting plates			
	G $\frac{1}{8}$	526263	LR- $\frac{1}{8}$ -D-7-MICRO	1D
	$\frac{1}{8}$ NPT	526265	LR-N $\frac{1}{8}$ -D-7-MICRO	Q
	With connecting plate and push-in fitting			
	QS4	526269	LR-QS4-D-7-MICRO	Q
QS6	526271	LR-QS6-D-7-MICRO	Q	
Without pressure gauge				
Micro	Without threaded connecting plates, connecting thread in housing			
	M5	526262	LR-M5-D-0-7-MICRO	Q
	M7	534181	LR-M7-D-0-7-MICRO B	Q
	With threaded connecting plates			
	G $\frac{1}{8}$	526264	LR- $\frac{1}{8}$ -D-0-7-MICRO	Q
	$\frac{1}{8}$ NPT	526266	LR-N $\frac{1}{8}$ -D-0-7-MICRO	Q
	With connecting plate and push-in fitting			
	QS4	526270	LR-QS4-D-0-7-MICRO	Q
QS6	526272	LR-QS6-D-0-7-MICRO	Q	

Ordering data							
Size	Connection	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
		Part No.	Type	LT	Part No.	Type	LT
With pressure gauge							
Mini	G $\frac{1}{8}$	162582	LR- $\frac{1}{8}$ -D-7-MINI	1W	159624	LR- $\frac{1}{8}$ -D-MINI	1W
	G $\frac{1}{4}$	162583	LR- $\frac{1}{4}$ -D-7-MINI	1W	159625	LR- $\frac{1}{4}$ -D-MINI	1W
	G $\frac{3}{8}$	162584	LR- $\frac{3}{8}$ -D-7-MINI	Q	162580	LR- $\frac{3}{8}$ -D-MINI	Q
	$\frac{1}{8}$ NPT	173646	LR- $\frac{1}{8}$ -D-7-MINI-NPT	1W	173644	LR- $\frac{1}{8}$ -D-MINI-NPT	1W
	$\frac{1}{4}$ NPT	173650	LR- $\frac{1}{4}$ -D-7-MINI-NPT	1W	173648	LR- $\frac{1}{4}$ -D-MINI-NPT	1W
	$\frac{3}{8}$ NPT	173654	LR- $\frac{3}{8}$ -D-7-MINI-NPT	Q	173652	LR- $\frac{3}{8}$ -D-MINI-NPT	Q
Midi	G $\frac{1}{4}$	186453	LR- $\frac{1}{4}$ -D-7-MIDI	Q	186451	LR- $\frac{1}{4}$ -D-MIDI	Q
	G $\frac{3}{8}$	162585	LR- $\frac{3}{8}$ -D-7-MIDI	1W	159580	LR- $\frac{3}{8}$ -D-MIDI	1W
	G $\frac{1}{2}$	162586	LR- $\frac{1}{2}$ -D-7-MIDI	1W	159581	LR- $\frac{1}{2}$ -D-MIDI	1W
	G $\frac{3}{4}$	162587	LR- $\frac{3}{4}$ -D-7-MIDI	Q	162581	LR- $\frac{3}{4}$ -D-MIDI	Q
	$\frac{3}{8}$ NPT	173658	LR- $\frac{3}{8}$ -D-7-MIDI-NPT	1W	173656	LR- $\frac{3}{8}$ -D-MIDI-NPT	1W
	$\frac{1}{2}$ NPT	173662	LR- $\frac{1}{2}$ -D-7-MIDI-NPT	1W	173660	LR- $\frac{1}{2}$ -D-MIDI-NPT	1W
	$\frac{3}{4}$ NPT	173666	LR- $\frac{3}{4}$ -D-7-MIDI-NPT	Q	173664	LR- $\frac{3}{4}$ -D-MIDI-NPT	Q
Maxi	G $\frac{1}{2}$	186457	LR- $\frac{1}{2}$ -D-7-MAXI	Q	186455	LR- $\frac{1}{2}$ -D-MAXI	Q
	G $\frac{3}{4}$	162588	LR- $\frac{3}{4}$ -D-7-MAXI	1W	159626	LR- $\frac{3}{4}$ -D-MAXI	1W
	G1	162589	LR-1-D-7-MAXI	1W	159627	LR-1-D-MAXI	1W
	$\frac{3}{4}$ NPT	173670	LR- $\frac{3}{4}$ -D-7-MAXI-NPT	1W	173668	LR- $\frac{3}{4}$ -D-MAXI-NPT	1W
	1 NPT	173674	LR-1-D-7-MAXI-NPT	1W	173672	LR-1-D-MAXI-NPT	1W

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time



3

3.2

# LR/LRS Pressure Regulators – D Series, Metal Design

Ordering Data

Ordering data							
Size	Connection	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
		Part No.	Type	LT	Part No.	Type	LT
Without pressure gauge							
Mini	G1/8	162598	LR-1/8-D-7-O-MINI <sup>1)</sup>	Q	162590	LR-1/8-D-O-MINI <sup>1)</sup>	Q
	G1/4	162599	LR-1/4-D-7-O-MINI <sup>1)</sup>	Q	162591	LR-1/4-D-O-MINI <sup>1)</sup>	Q
	G3/8	162600	LR-3/8-D-7-O-MINI <sup>1)</sup>	Q	162592	LR-3/8-D-O-MINI <sup>1)</sup>	Q
	1/8 NPT	173647	LR-1/8-D-7-O-MINI-NPT <sup>1)</sup>	Q	173645	LR-1/8-D-O-MINI-NPT <sup>1)</sup>	Q
	1/4 NPT	173651	LR-1/4-D-7-O-MINI-NPT <sup>1)</sup>	Q	173649	LR-1/4-D-O-MINI-NPT <sup>1)</sup>	Q
	3/8 NPT	173655	LR-3/8-D-7-O-MINI-NPT <sup>1)</sup>	Q	173653	LR-3/8-D-O-MINI-NPT <sup>1)</sup>	Q
Midi	G1/4	186454	LR-1/4-D-7-O-MIDI <sup>1)</sup>	Q	186452	LR-1/4-D-O-MIDI <sup>1)</sup>	Q
	G3/8	162601	LR-3/8-D-7-O-MIDI <sup>1)</sup>	Q	162593	LR-3/8-D-O-MIDI <sup>1)</sup>	Q
	G1/2	162602	LR-1/2-D-7-O-MIDI <sup>1)</sup>	Q	162594	LR-1/2-D-O-MIDI <sup>1)</sup>	Q
	G3/4	162603	LR-3/4-D-7-O-MIDI <sup>1)</sup>	Q	162595	LR-3/4-D-O-MIDI <sup>1)</sup>	Q
	3/8 NPT	173659	LR-3/8-D-7-O-MIDI-NPT <sup>1)</sup>	Q	173657	LR-3/8-D-O-MIDI-NPT <sup>1)</sup>	Q
	1/2 NPT	173663	LR-1/2-D-7-O-MIDI-NPT <sup>1)</sup>	Q	173661	LR-1/2-D-O-MIDI-NPT <sup>1)</sup>	Q
	3/4 NPT	173667	LR-3/4-D-7-O-MIDI-NPT <sup>1)</sup>	Q	173665	LR-3/4-D-O-MIDI-NPT <sup>1)</sup>	Q
Maxi	G1/2	186458	LR-1/2-D-7-O-MAXI <sup>1)</sup>	Q	186456	LR-1/2-D-O-MAXI <sup>1)</sup>	Q
	G3/4	162604	LR-3/4-D-7-O-MAXI <sup>1)</sup>	Q	162596	LR-3/4-D-O-MAXI <sup>1)</sup>	Q
	G1	162605	LR-1-D-7-O-MAXI <sup>1)</sup>	Q	162597	LR-1-D-O-MAXI <sup>1)</sup>	Q
	3/4 NPT	173671	LR-3/4-D-7-O-MAXI-NPT <sup>1)</sup>	Q	173669	LR-3/4-D-O-MAXI-NPT <sup>1)</sup>	Q
	1 NPT	173675	LR-1-D-7-O-MAXI-NPT <sup>1)</sup>	Q	173673	LR-1-D-O-MAXI-NPT <sup>1)</sup>	Q

1) Free of copper, PTFE and silicone

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LR/LRS Pressure Regulators – D Series, Metal Design

Ordering Data

Ordering data							
Pressure regulator with integrated return flow function							
Size	Connection	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
		Part No.	Type	LT	Part No.	Type	LT
With pressure gauge							
Mini	G $\frac{1}{8}$	192299	LR- $\frac{1}{8}$ -D-7-I-MINI	Q	192298	LR- $\frac{1}{8}$ -D-I-MINI	Q
	G $\frac{1}{4}$	192301	LR- $\frac{1}{4}$ -D-7-I-MINI	Q	192300	LR- $\frac{1}{4}$ -D-I-MINI	Q
	G $\frac{3}{8}$	192303	LR- $\frac{3}{8}$ -D-7-I-MINI	Q	192302	LR- $\frac{3}{8}$ -D-I-MINI	Q
Midi	G $\frac{1}{4}$	192311	LR- $\frac{1}{4}$ -D-7-I-MIDI	Q	192310	LR- $\frac{1}{4}$ -D-I-MIDI	Q
	G $\frac{3}{8}$	192313	LR- $\frac{3}{8}$ -D-7-I-MIDI	Q	192312	LR- $\frac{3}{8}$ -D-I-MIDI	Q
	G $\frac{1}{2}$	192315	LR- $\frac{1}{2}$ -D-7-I-MIDI	Q	192314	LR- $\frac{1}{2}$ -D-I-MIDI	Q
	G $\frac{3}{4}$	192317	LR- $\frac{3}{4}$ -D-7-I-MIDI	Q	192316	LR- $\frac{3}{4}$ -D-I-MIDI	Q
Without pressure gauge							
Mini	G $\frac{1}{8}$	192305	LR- $\frac{1}{8}$ -D-7-O-I-MINI <sup>1)</sup>	Q	192304	LR- $\frac{1}{8}$ -D-O-I-MINI <sup>1)</sup>	Q
	G $\frac{1}{4}$	192307	LR- $\frac{1}{4}$ -D-7-O-I-MINI <sup>1)</sup>	Q	192306	LR- $\frac{1}{4}$ -D-O-I-MINI <sup>1)</sup>	Q
	G $\frac{3}{8}$	192309	LR- $\frac{3}{8}$ -D-7-O-I-MINI <sup>1)</sup>	Q	192308	LR- $\frac{3}{8}$ -D-O-I-MINI <sup>1)</sup>	Q
Midi	G $\frac{1}{4}$	192319	LR- $\frac{1}{4}$ -D-7-O-I-MIDI <sup>1)</sup>	Q	192318	LR- $\frac{1}{4}$ -D-O-I-MIDI <sup>1)</sup>	Q
	G $\frac{3}{8}$	192321	LR- $\frac{3}{8}$ -D-7-O-I-MIDI <sup>1)</sup>	Q	192320	LR- $\frac{3}{8}$ -D-O-I-MIDI <sup>1)</sup>	Q
	G $\frac{1}{2}$	192323	LR- $\frac{1}{2}$ -D-7-O-I-MIDI <sup>1)</sup>	Q	192322	LR- $\frac{1}{2}$ -D-O-I-MIDI <sup>1)</sup>	Q
	G $\frac{3}{4}$	192325	LR- $\frac{3}{4}$ -D-7-O-I-MIDI <sup>1)</sup>	Q	192324	LR- $\frac{3}{4}$ -D-O-I-MIDI <sup>1)</sup>	Q

1) Free of copper, PTFE and silicone

Ordering data							
Directly actuated pressure regulator with integrated return flow function							
Size	Connection	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
		Part No.	Type	LT	Part No.	Type	LT
With pressure gauge							
Maxi	G $\frac{1}{2}$	192358	LR- $\frac{1}{2}$ -D-7-DI-MAXI	1W	192356	LR- $\frac{1}{2}$ -D-DI-MAXI	1W
	G $\frac{3}{4}$	192362	LR- $\frac{3}{4}$ -D-7-DI-MAXI	1W	192360	LR- $\frac{3}{4}$ -D-DI-MAXI	1W
	G1	192366	LR-1-D-7-DI-MAXI	1W	192364	LR-1-D-DI-MAXI	1W
Without pressure gauge							
Maxi	G $\frac{1}{2}$	192359	LR- $\frac{1}{2}$ -D-7-O-DI-MAXI <sup>1)</sup>	Q	192357	LR- $\frac{1}{2}$ -D-O-DI-MAXI <sup>2)</sup>	Q
	G $\frac{3}{4}$	192363	LR- $\frac{3}{4}$ -D-7-O-DI-MAXI <sup>1)</sup>	Q	192361	LR- $\frac{3}{4}$ -D-O-DI-MAXI <sup>2)</sup>	Q
	G1	192367	LR-1-D-7-O-DI-MAXI <sup>1)</sup>	Q	192365	LR-1-D-O-DI-MAXI <sup>2)</sup>	Q

2) Free of copper, PTFE and silicone

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

3

3.2

# LR/LRS Pressure Regulators – D Series, Metal Design

Ordering Data

Ordering data							
Pressure regulator, lockable <sup>1)</sup>							
Size	Connection	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
		Part No.	Type	LT	Part No.	Type	LT
With pressure gauge							
Mini	G1/8	194606	LRS-1/8-D-7-MINI	Q	194602	LRS-1/8-D-MINI	Q
	G1/4	194614	LRS-1/4-D-7-MINI	Q	194610	LRS-1/4-D-MINI	Q
	G3/8	194622	LRS-3/8-D-7-MINI	Q	194618	LRS-3/8-D-MINI	Q
Midi	G1/4	194630	LRS-1/4-D-7-MIDI	Q	194626	LRS-1/4-D-MIDI	Q
	G3/8	194638	LRS-3/8-D-7-MIDI	Q	194634	LRS-3/8-D-MIDI	Q
	G1/2	194646	LRS-1/2-D-7-MIDI	Q	194642	LRS-1/2-D-MIDI	Q
	G3/4	194656	LRS-3/4-D-7-MIDI	Q	194650	LRS-3/4-D-MIDI	Q
Maxi	G1/2	194660	LRS-1/2-D-7-MAXI	Q	194658	LRS-1/2-D-MAXI	Q
	G3/4	194662	LRS-3/4-D-7-MAXI	Q	194664	LRS-3/4-D-MAXI	Q
	G1	194668	LRS-1-D-7-MAXI	Q	194666	LRS-1-D-MAXI	Q
Without pressure gauge							
Mini	G1/8	194608	LRS-1/8-D-7-O-MINI	Q	194604	LRS-1/8-D-O-MINI	Q
	G1/4	194616	LRS-1/4-D-7-O-MINI	Q	194612	LRS-1/4-D-O-MINI	Q
	G3/8	194624	LRS-3/8-D-7-O-MINI	Q	194620	LRS-3/8-D-O-MINI	Q
Midi	G1/4	194632	LRS-1/4-D-7-O-MIDI	Q	194628	LRS-1/4-D-O-MIDI	Q
	G3/8	194640	LRS-3/8-D-7-O-MIDI	Q	194636	LRS-3/8-D-O-MIDI	Q
	G1/2	194648	LRS-1/2-D-7-O-MIDI	Q	194644	LRS-1/2-D-O-MIDI	Q
	G3/4	194654	LRS-3/4-D-7-O-MIDI	Q	194652	LRS-3/4-D-O-MIDI	Q
Maxi	G1/2	194661	LRS-1/2-D-7-O-MAXI	Q	194659	LRS-1/2-D-O-MAXI	Q
	G3/4	194663	LRS-3/4-D-7-O-MAXI	Q	194665	LRS-3/4-D-O-MAXI	Q
	G1	194669	LRS-1-D-7-O-MAXI	Q	194667	LRS-1-D-O-MAXI	Q

1) For Spare Key ordering information, see page 280.

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LR/LRS Pressure Regulators – D Series, Metal Design

Ordering Data

Ordering data							
Pressure regulator with integrated return flow function, lockable <sup>1)</sup>							
Size	Connection	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
		Part No.	Type	LT	Part No.	Type	LT
With pressure gauge							
Mini	G $\frac{1}{8}$	194607	LRS- $\frac{1}{8}$ -D-7-I-MINI	Q	194603	LRS- $\frac{1}{8}$ -D-I-MINI	Q
	G $\frac{1}{4}$	194615	LRS- $\frac{1}{4}$ -D-7-I-MINI	Q	194611	LRS- $\frac{1}{4}$ -D-I-MINI	Q
	G $\frac{3}{8}$	194623	LRS- $\frac{3}{8}$ -D-7-I-MINI	Q	194619	LRS- $\frac{3}{8}$ -D-I-MINI	Q
Midi	G $\frac{1}{4}$	194631	LRS- $\frac{1}{4}$ -D-7-I-MIDI	Q	194627	LRS- $\frac{1}{4}$ -D-I-MIDI	Q
	G $\frac{3}{8}$	194639	LRS- $\frac{3}{8}$ -D-7-I-MIDI	Q	194635	LRS- $\frac{3}{8}$ -D-I-MIDI	Q
	G $\frac{1}{2}$	194647	LRS- $\frac{1}{2}$ -D-7-I-MIDI	Q	194643	LRS- $\frac{1}{2}$ -D-I-MIDI	Q
	G $\frac{3}{4}$	194657	LRS- $\frac{3}{4}$ -D-7-I-MIDI	Q	194651	LRS- $\frac{3}{4}$ -D-I-MIDI	Q
Without pressure gauge							
Mini	G $\frac{1}{8}$	194609	LRS- $\frac{1}{8}$ -D-7-O-I-MINI	Q	194605	LRS- $\frac{1}{8}$ -D-O-I-MINI	Q
	G $\frac{1}{4}$	194617	LRS- $\frac{1}{4}$ -D-7-O-I-MINI	Q	194613	LRS- $\frac{1}{4}$ -D-O-I-MINI	Q
	G $\frac{3}{8}$	194625	LRS- $\frac{3}{8}$ -D-7-O-I-MINI	Q	194621	LRS- $\frac{3}{8}$ -D-O-I-MINI	Q
Midi	G $\frac{1}{4}$	194633	LRS- $\frac{1}{4}$ -D-7-O-I-MIDI	Q	194629	LRS- $\frac{1}{4}$ -D-O-I-MIDI	Q
	G $\frac{3}{8}$	194641	LRS- $\frac{3}{8}$ -D-7-O-I-MIDI	Q	194637	LRS- $\frac{3}{8}$ -D-O-I-MIDI	Q
	G $\frac{1}{2}$	194649	LRS- $\frac{1}{2}$ -D-7-O-I-MIDI	Q	194645	LRS- $\frac{1}{2}$ -D-O-I-MIDI	Q
	G $\frac{3}{4}$	194655	LRS- $\frac{3}{4}$ -D-7-O-I-MIDI	Q	194653	LRS- $\frac{3}{4}$ -D-O-I-MIDI	Q

Ordering data							
Directly actuated pressure regulator with integrated return flow function, lockable							
Size	Connection	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
		Part No.	Type	LT	Part No.	Type	LT
With pressure gauge							
Maxi	G $\frac{1}{2}$	194 672	LRS- $\frac{1}{2}$ -D-7-DI-MAXI	Q	194 670	LRS- $\frac{1}{2}$ -D-DI-MAXI	Q
	G $\frac{3}{4}$	194 676	LRS- $\frac{3}{4}$ -D-7-DI-MAXI	Q	194 674	LRS- $\frac{3}{4}$ -D-DI-MAXI	Q
	G1	194 680	LRS-1-D-7-DI-MAXI	Q	194 678	LRS-1-D-DI-MAXI	Q
Without pressure gauge							
Maxi	G $\frac{1}{2}$	194 673	LRS- $\frac{1}{2}$ -D-7-O-DI-MAXI	Q	194 671	LRS- $\frac{1}{2}$ -D-O-DI-MAXI	Q
	G $\frac{3}{4}$	194 677	LRS- $\frac{3}{4}$ -D-7-O-DI-MAXI	Q	194 675	LRS- $\frac{3}{4}$ -D-O-DI-MAXI	Q
	G1	194 681	LRS-1-D-7-O-DI-MAXI	Q	194 679	LRS-1-D-O-DI-MAXI	Q

1) For Spare Key ordering information, see page 280.

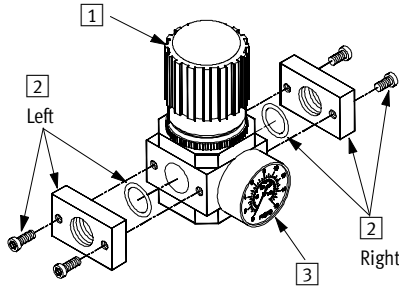
LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

3  
3.2

# FAST\* Program – LR Pressure Regulator Selector Guide

LR Pressure Regulators – D Series, Metal Design

\* FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.



A complete regulator assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block Kit	2 (one left, one right)
3	Gauge	1
4	Mounting Bracket Kit (Optional) (Not shown)	1

**Note:** Joining rods (not shown here) are not needed in this assembly.

**Step 1:** Based upon the required Port Size, Maximum Output Pressure, Maximum Flow, and Thread Type, select the Main Unit (Item 1), the Left and Right Port Block Kits (Item 2), and (if required) the Gauge (Item 4).

3

3.2

Port size	Max. Output Pressure [bar/psi]	Max. Flow (l/min/sfcm)	Product Type/Description	Item					Gauge [If required]
				1	2		4		
				Main Body	NPT Thread		BSP Thread		
					Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit	
1/8	7/102	1000/35.3	LR-...-D-MINI-...	546452	546520	546521	546495	546496	546485
	12/174	800/28.3		546430					546479
1/4	7/102	1600/56.5	LR-...-D-MIDI-...	546452	546522	546523	546497	546498	546485
		2200/77.7		546458	546536	546537	546532	546533	546484
	12/174	1500/52.9	LR-...-D-MINI-...	546430	546522	546523	546497	546498	546479
		2100/74.2	LR-...-D-MIDI-...	546424	546536	546537	546532	546533	546482
3/8	7/102	1800/63.6	LR-...-D-MINI-...	546452	546524	546525	546499	546500	546485
		3300/116.5	LR-...-D-MIDI-...	546458	546530	546531	546501	546502	546484
	12/174	1700/60.0	LR-...-D-MINI-...	546430	546524	546525	546499	546500	546479
		3200/113.0	LR-...-D-MIDI-...	546424	546530	546531	546501	546502	546482
1/2	7/102	4000/141.3	LR-...-D-MAXI-...	546458	546526	546527	546503	546504	546484
		10700/377.9		546465	546538	546539	546534	546535	
	12/174	3500/123.6	LR-...-D-MIDI-...	546424	546526	546527	546503	546504	546482
10500/370.8		LR-...-D-MAXI-...	546436	546538	546539	546534	546535		
3/4	7/102	4500/158.9	LR-...-D-MIDI-...	546458	546528	548529	546505	546506	546484
		12000/423.8	LR-...-D-MAXI-...	546465	546490	546492	546507	546508	
	12/174	3500/123.8	LR-...-D-MIDI-...	546424	546528	546529	546505	546506	546482
11000/388.5		LR-...-D-MAXI-...	546436	546490	546492	546507	546508		
1	7/102	12500/441.4		546465	546491	546493	546509	546510	546484
		11500/406.1		546436					546482



# FAST Program – LR Pressure Regulator Selector Guide

LR Pressure Regulators – D Series, Metal Design

**Step 2:** If required, select the (optional) Mounting Bracket Kit (Item 4).

	Item <span style="border: 1px solid black; padding: 0 2px;">4</span> (Not shown)
Product Type/ Description	Mounting Bracket Kit (Optional) For more information on Mounting Brackets, see Tab Section 2.17 – Accessories for D Series Metal Design Components.
LR-...-D-MINI-...	159 638
LR-...-D-MIDI-...	159 593
LR-...-D-MAXI-...	

**Step3:** Determine the appropriate quantity of each Item.

**Ordering Example:**

Required: 3/8 port size, 8 bar output pressure, 1600 l/min flow, BSP threads, gauge and mounting bracket kit.

	Item	Part No.	Qty	Description
Order:	<span style="border: 1px solid black; padding: 0 2px;">1</span>	546430	1	Main Unit
	<span style="border: 1px solid black; padding: 0 2px;">2</span>	546499	1	Left Port Block Kit
		546500		Right Port Block Kit
	<span style="border: 1px solid black; padding: 0 2px;">3</span>	546479	4	Gauge
<span style="border: 1px solid black; padding: 0 2px;">4</span>	159638	1	Mounting Bracket Kit	

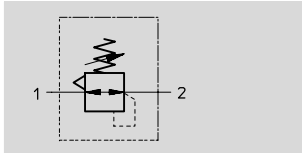
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# LRB/LRBS Pressure Regulators – D Series, Metal Design

Technical Data

Function



- - Flow rate  
1600 ... 3800 l/min
- - Temperature range  
-10 ... +60 °C
- - Input pressure  
1 ... 16 bar



This pressure regulator is suitable for manifold assemblies with through air supply on both sides, for configuring a regulator manifold with separate, independent pressure ranges. Pressure output is at the front or rear. Pressure gauge is optional.

- Good control characteristics with low hysteresis and primary pressure compensation
- Two pressure regulation ranges: 0.5 ... 7 bar and 0.5 ... 12 bar

- Pressure settings are secured via detent on knob and push-in adjustment lock
- Directly actuated diaphragm regulator

General technical data				
Size	Mini		Midi	
Inlet pneumatic connection 1 <sup>1)</sup>	G1/4	G3/8	G3/8	G1/2
Outlet pneumatic connection 2	G1/4		G3/8	
Operating medium	Compressed air, filtered, grade of filtration 40 µm			
Design	Directly actuated diaphragm regulator with through pressure supply			
Type of mounting	Via accessories In-line installation			
Assembly position	Any			
Max. hysteresis [bar]	0.2			
Input pressure p1 [bar]	1 ... 16			
Pressure regulation range [bar]	0.5 ... 7 0.5 ... 12			

1) Requires a port block, which must be ordered separately as an accessory → 280

Standard nominal flow rate <sup>2)</sup> qnN [l/min]		
Size	Mini	Midi
Pressure regulation range 0.5 ... 7 bar	1800	3800
Pressure regulation range 0.5 ... 12 bar	1600	3200

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

Ambient conditions		
Size	Mini	Midi
Ambient temperature [°C]	-10 ... +60 °C	
Temperature of medium [°C]	-10 ... +60 °C	
Corrosion resistance class CRC <sup>3)</sup>	2	

3) Corrosion resistance class 2 according to Festo standard 940070  
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

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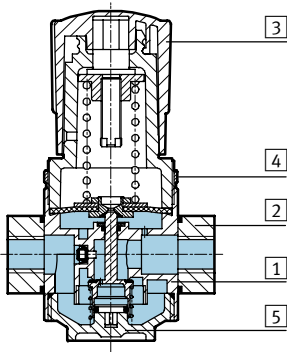
# LRB/LRBS Pressure Regulators – D Series, Metal Design

Technical Data

Weight [g]		
Size	Mini	Midi
Pressure regulator	250	700
Pressure regulator, lockable	350	940

## Materials

Sectional view



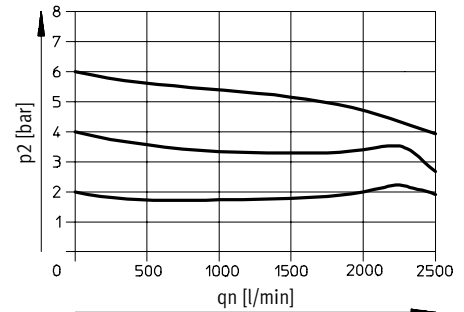
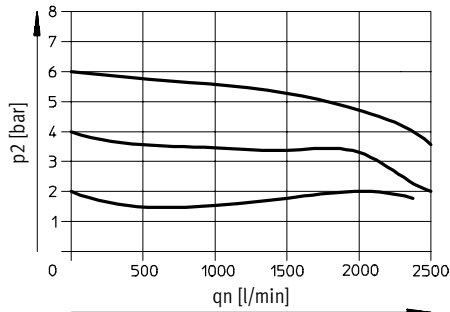
Pressure regulator		
1	Housing	Die-cast zinc
2	Port blocks	Die-cast zinc
3	Regulating knob	Polyacetal
4	Knurled nut	Aluminum
5	Plug cap	Polycarbonate
-	Seals	Nitrile rubber
Note on materials		Free of copper, PTFE and silicone

3

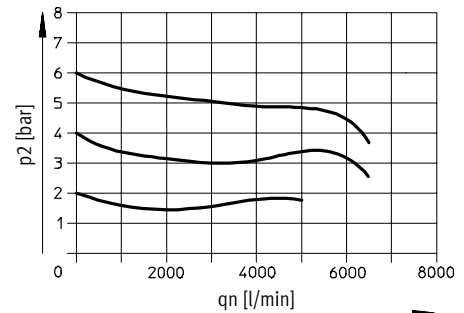
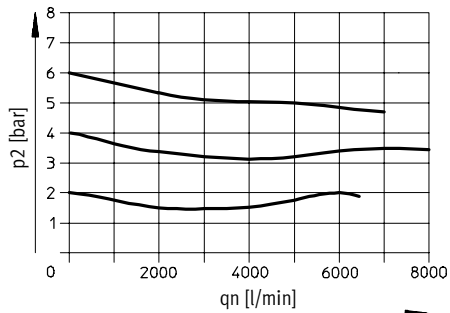
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## Standard flow rate $q_n$ as a function of the output pressure $p_2$

Mini Pressure regulation range 0.5 ... 7 bar Midi Pressure regulation range 0.5 ... 12 bar



Midi Pressure regulation range 0.5 ... 7 bar Midi Pressure regulation range 0.5 ... 12 bar



Primary pressure  $p_1 = 10$  bar

# LRB/LRBS Pressure Regulators – D Series, Metal Design

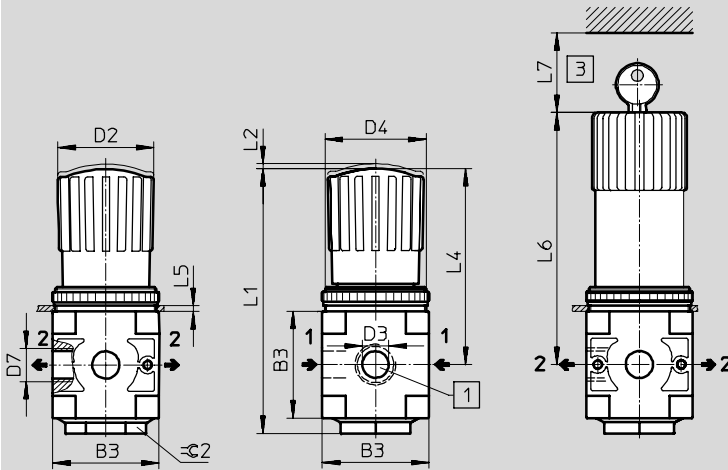
Technical Data – Dimensional Drawings

**Dimensions**

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

Pressure regulator LRB

Pressure regulator, lockable LRBS



1 Pressure gauge connection

3 Installation dimensions

→ Flow direction, Input pressure p1 can be applied from both directions

Type	B3	D2	D3	D4	D7	L1	L2	L4	L5 max.	L6	L7 min.	±0.2
<b>Mini</b>												
LRB-D-...-MINI	40	31	G1/8	M36x1.5	G1/4	~95.4	3	~68.9	3	98	60	17
LRBS-D-...-MINI												
<b>Midi</b>												
LRB-D-...-MIDI	55	50	G1/4	M52x1.5	G3/8	~135.8	3	~100.3	5	129.2	60	36
LRBS-D-...-MIDI												

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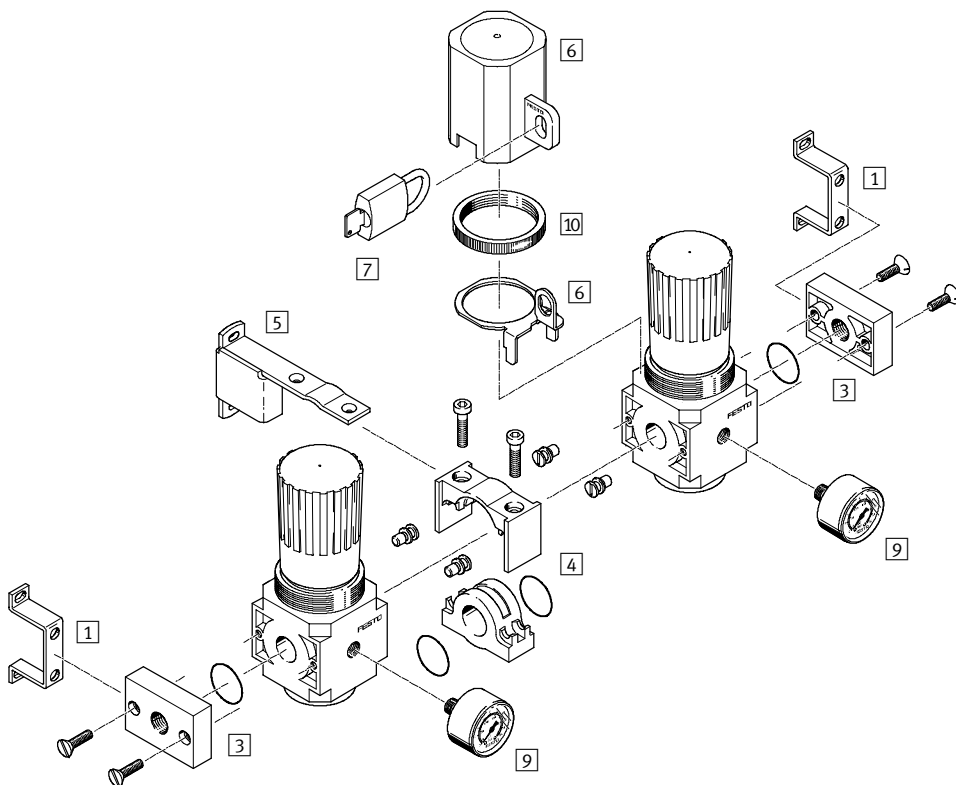
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# LRB/LRBS Pressure Regulators – D Series, Metal Design

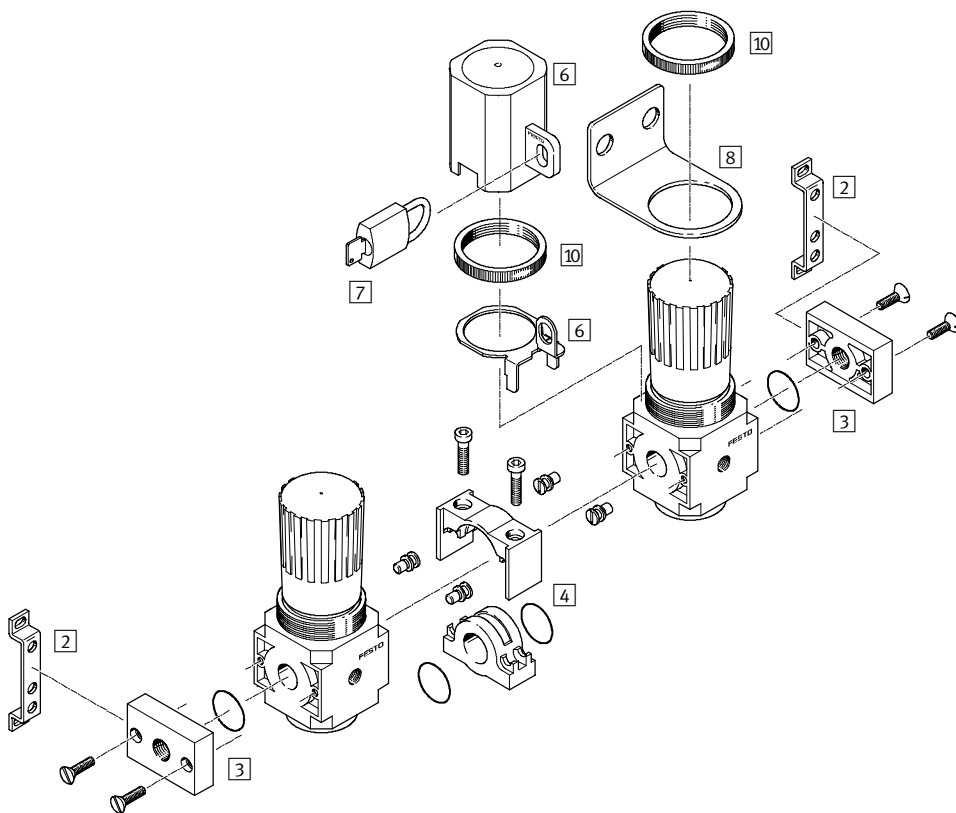
Accessories Overview

## Mini/Midi

Pressure regulator LRB – pressure output at rear



Pressure regulator LRB – pressure output at front



3

3.2

# LRB/LRBS Pressure Regulators – D Series, Metal Design

Accessories Overview

Mounting attachments and accessories			
Pressure regulator LRB	Pressure output at rear	Pressure output at front	→ Page
1) Mounting bracket HRB	■	-	277
2) Mounting bracket HFOE	-	■	276
3) Port blocks LRBAS	■	■	280
4) Adapter kit HRBC	■	■	279
5) Mounting bracket HRBK	■ <sup>1)</sup>	-	276
6) Regulator lock LRVS	■	■	281
7) Padlock LRVS-D	■	■	281
8) Mounting bracket HR-D	-	■	278
9) Pressure gauge MA	■	-	282
10) Knurled nut (included in scope of delivery) HMR	■	■	-

1) A mounting bracket must be mounted after every second pressure regulator.



3

3.2

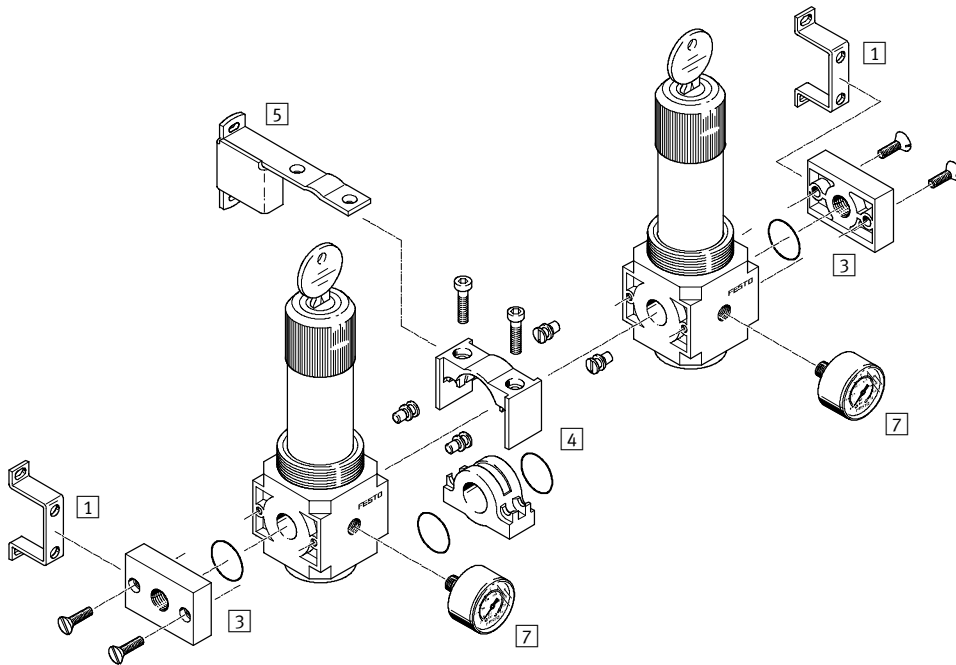
# LRB/LRBS Pressure Regulators – D Series, Metal Design

Accessories Overview

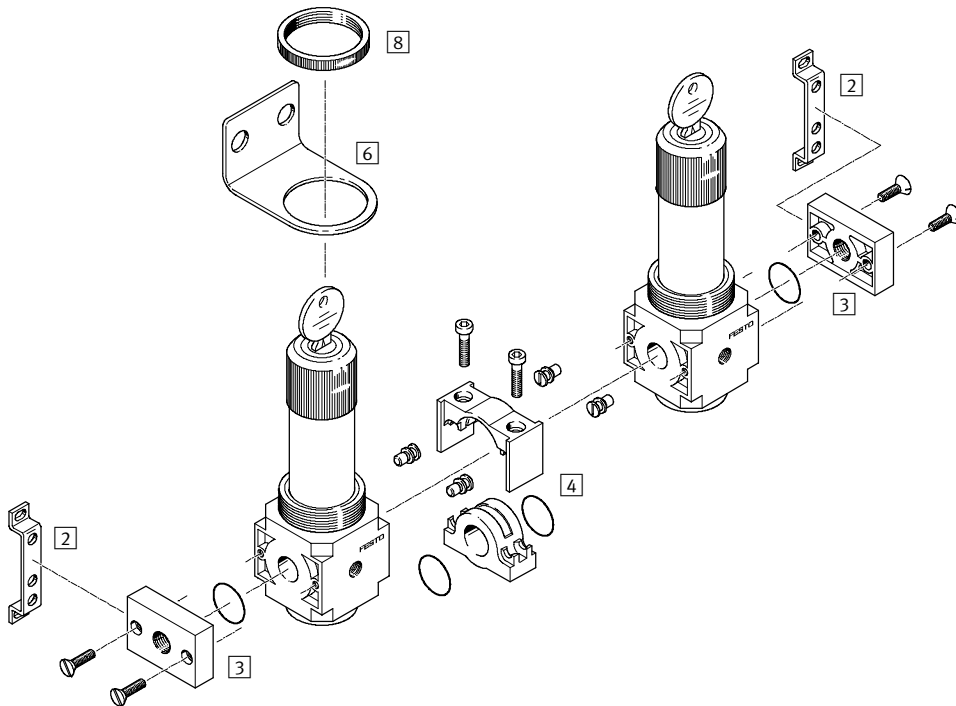
FESTO

## Mini/Midi

Pressure regulator LRBS lockable – pressure output at rear



Pressure regulator LRBS lockable – pressure output at front



3

3.2



# LRB/LRBS Pressure Regulators – D Series, Metal Design

Accessories Overview

Mounting attachments and accessories			
Pressure regulator LRBS, lockable	Pressure output at rear	Pressure output at front	→ Page
1) Mounting bracket HRB	■	-	277
2) Mounting bracket HFOE	-	■	276
3) Port blocks LRBAS	■	■	280
4) Adapter kit HRBC	■	■	279
5) Mounting bracket HRBK	■ <sup>1)</sup>	-	276
6) Mounting bracket HR-D	-	■	278
7) Pressure gauge MA	■	-	282
8) Knurled nut (included in scope of delivery) HMR	■	■	-

1) A mounting bracket must be mounted after every second pressure regulator.

# LRB/LRBS Pressure Regulators – D Series, Metal Design

Type Codes – G (BSP) Connections

LRB – D – 7 – 0 – MINI

**Basic function**

LRB	Pressure regulator for manifold assembly
LRBS	Pressure regulator for manifold assembly, lockable

**Series**

D	Series
---	--------

**Pressure regulation range**

	0.5 ... 12 bar
7	0.5 ... 7 bar

**Pressure gauge**

0	Without pressure gauge
---	------------------------

**Size**

MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)

3

3.2

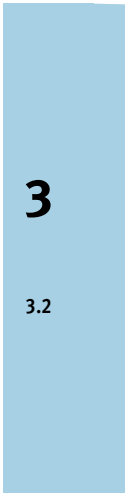
# LRB/LRBS Pressure Regulators – D Series, Metal Design

Ordering Data

Ordering data						
Pressure regulator for manifold assembly						
Size	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
	Part No.	Type	LT	Part No.	Type	LT
Without pressure gauge						
Mini	197534	LRB-D-7-O-MINI	1D	197535	LRB-D-O-MINI	1D
Midi	197538	LRB-D-7-O-MIDI	1D	197539	LRB-D-O-MIDI	1D
Lockable <sup>1)</sup>						
Mini	194683	LRBS-D-7-O-MINI	Q	194682	LRBS-D-O-MINI	Q
Midi	194687	LRBS-D-7-O-MIDI	Q	194686	LRBS-D-O-MIDI	Q

1) For Spare Key ordering information, see page 280.

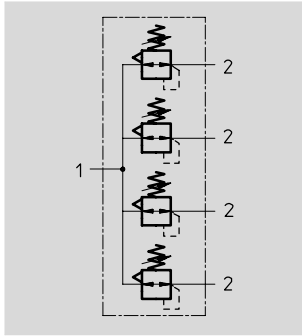
LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time



# LRB-K Pressure Regulator Manifolds– D Series, Metal Design

Technical Data

Function



- - Flow rate  
1600 ... 3800 l/min
- - Temperature range  
-10 ... +60 °C
- - Input pressure  
1 ... 16 bar



Preassembled pressure regulator combinations

LRB-...-D-...-O-K2

LRB-...-D-...-O-K3

LRB-...-D-...-O-K4

LRB-...-D-...-O-K5

with through pressure supply for manifold assembly

- Good control characteristics with low hysteresis and primary pressure compensation
- Manifold assembly with through air supply
- For configuring a regulator manifold with independent pressure ranges
- Two pressure regulation ranges: 0.5 ... 7 bar and 0.5 ... 12 bar
- Settings secured via detent on knob and push-in adjustment lock
- Directly actuated diaphragm regulator

3

3.2

General technical data				
Size	Mini		Midi	
Pneumatic connection 1	G1/4	G3/8	G3/8	G1/2
Pneumatic connection 2	G1/4		G3/8	
Operating medium	Compressed air, filtered, grade of filtration 40 µm			
Design	Directly actuated diaphragm regulator with through pressure supply			
Type of mounting	Via accessory (mounting bracket HRB or HRBK included in scope of delivery)			
Assembly position	Any			
Max. hysteresis [bar]	0.2			
Input pressure p1 [bar]	1 ... 16			
Pressure regulation range [bar]	0.5 ... 7			
	0.5 ... 12			

Standard nominal flow rate <sup>1)</sup> qnN [l/min]		
Size	Mini	Midi
Pressure regulation range 0.5 ... 7 bar	1800	3800
Pressure regulation range 0.5 ... 12 bar	1600	3200

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

# LRB-K Pressure Regulator Manifolds – D Series, Metal Design

Technical Data

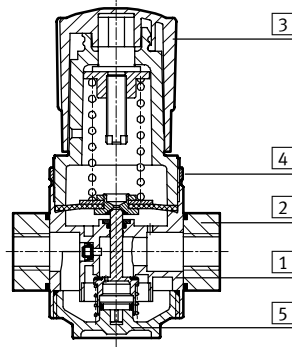
Ambient conditions		
Size		
		Mini   Midi
Ambient temperature	[°C]	-10 ... +60 °C
Temperature of medium	[°C]	-10 ... +60 °C
Corrosion resistance class	CRC <sup>1)</sup>	2

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

Weight [g]		
Size		
		Mini   Midi
Manifold with 2 pressure regulators		
LRB-...-K2	760	1950
Manifold with 3 pressure regulators		
LRB-...-K3	1090	3144
Manifold with 4 pressure regulators		
LRB-...-K4	1480	3834
Manifold with 5 pressure regulators		
LRB-...-K5	1860	4820

## Materials

Sectional view



Pressure regulator	Mini/Midi
1 Housing	Die-cast zinc
2 Port blocks	Die-cast zinc
3 Regulating knob	Polyacetal
4 Knurled nut	Aluminum
5 Plug cap	Polycarbonate
- Seals	Nitrile rubber

3

3.2

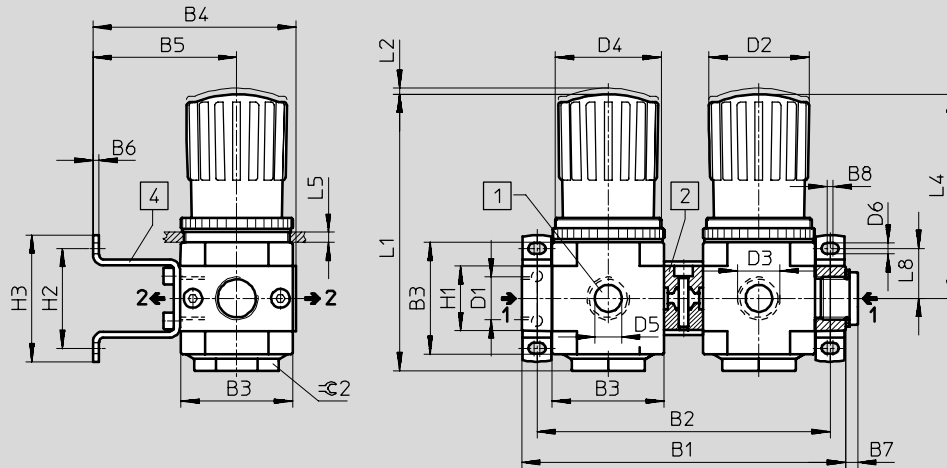
# LRB-K Pressure Regulator Manifolds – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

LRB-...-D-...-K2-...



- 1 Pressure gauge connection
  - 2 Connecting kit HRBC-D-...
  - 3 Installation dimensions
  - 4 Mounting bracket HRB-D-...
- ➔ Flow direction, both directions possible

3

3.2

Type	B1	B2	B3	B4	B5	B6	B7	B8	D1	D2	D3	D4
<b>Mini</b>												
LRB-1/4-D-...-K2-MINI	119	~107	40	80.7	59.2	2.5	5	7.3	G1/4	31	G1/4	M36x1.5
LRB-3/8-D-...-K2-MINI	125								G3/8			
<b>Midi</b>												
LRB-3/8-D-...-K2-MIDI	159	~144	55	99.9	70.6	3	5	8.3	G3/8	50	G3/8	M52x1.5
LRB-1/2-D-...-K2-MIDI							6		G1/2			

Type	D5	D6	H1	H2 ±0.2	H3	L1	L2	L4	L5 max.	L8	⊖ 2
<b>Mini</b>											
LRB-1/4-D-...-K2-MINI	G1/8	4.3	20	35	47.3	~95.4	3	~68.9	3	17.5	17
LRB-3/8-D-...-K2-MINI											
<b>Midi</b>											
LRB-3/8-D-...-K2-MIDI	G1/4	5.3	32	49	62.3	~135.8	3	~100.3	5	31.2	36
LRB-1/2-D-...-K2-MIDI											

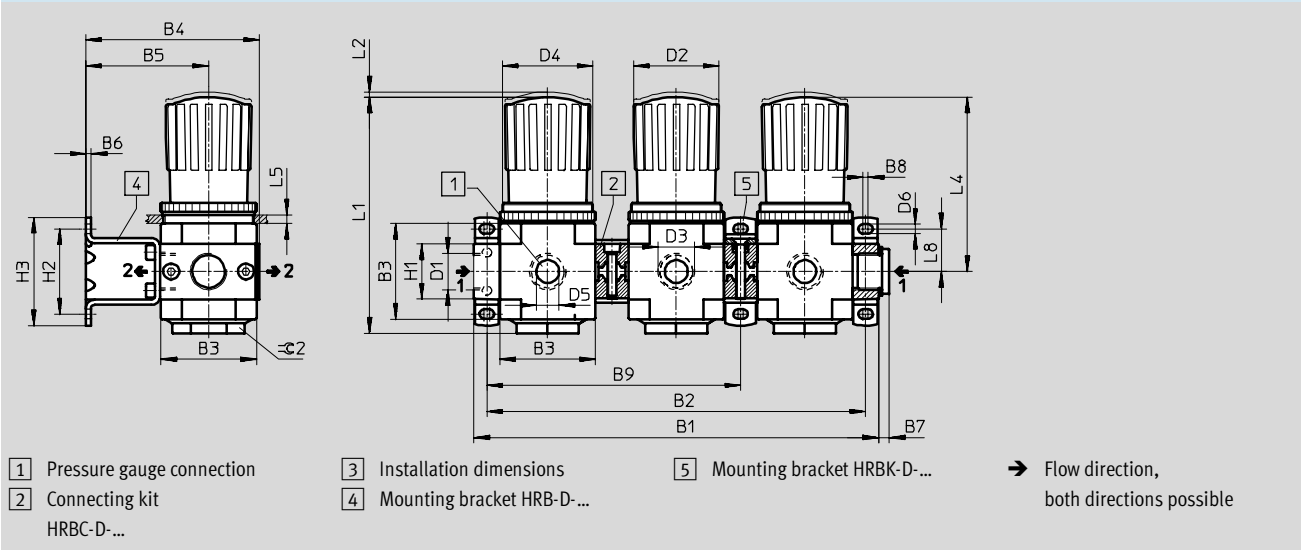
# LRB-K Pressure Regulator Manifolds – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

LRB-...-D-...-K3-...



Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1	D2	D3	D4
<b>Mini</b>													
LRB-1/4-D-...-K3-MINI	174	~162	40	80.7	59.2	2.5	5	7.3	108.5	G1/4	31	G1/4	M36x1.5
LRB-3/8-D-...-K3-MINI	180									G3/8			
<b>Midi</b>													
LRB-3/8-D-...-K3-MIDI	233	~218	55	99.9	70.6	3	5	8.3	146	G3/8	50	G3/8	M52x1.5
LRB-1/2-D-...-K3-MIDI							6			G1/2			

Type	D5	D6	H1	H2 ±0.2	H3	L1	L2	L4	L5 max.	L8	⊙ 2
<b>Mini</b>											
LRB-1/4-D-...-K3-MINI	G1/8	4.3	20	35	47.3	~95.4	3	~68.9	3	17.5	17
LRB-3/8-D-...-K3-MINI											
<b>Midi</b>											
LRB-3/8-D-...-K3-MIDI	G1/4	5.3	32	49	62.3	~135.8	3	~100.3	5	31.2	36
LRB-1/2-D-...-K3-MIDI											

3

3.2

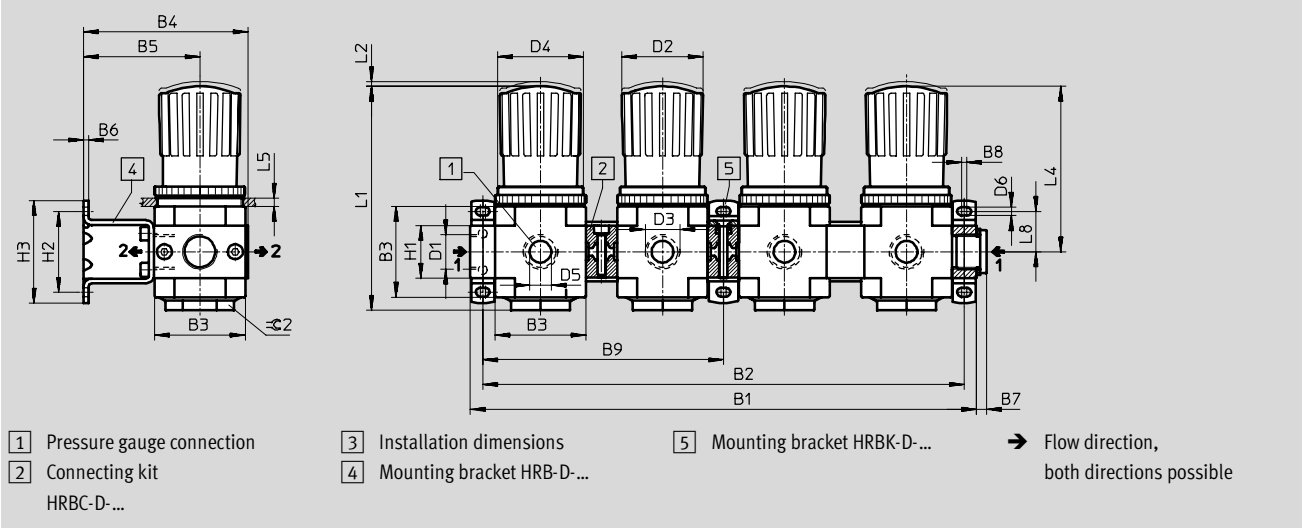
# LRB-K Pressure Regulator Manifolds – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

LRB-...-D-...-K4-...



Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	D1	D2	D3	D4
<b>Mini</b>													
LRB-1/4-D-...-K4-MINI	229	~217	40	80.7	59.2	2.5	5	7.3	108.5	G1/4	31	G1/4	M36x1.5
LRB-3/8-D-...-K4-MINI	235									G3/8			
<b>Midi</b>													
LRB-3/8-D-...-K4-MIDI	307	~292	55	99.9	70.6	3	5	8.3	146	G3/8	50	G3/8	M52x1.5
LRB-1/2-D-...-K4-MIDI							6			G1/2			

Type	D5	D6	H1	H2 ±0.2	H3	L1	L2	L4	L5 max.	L8	⊖ 2
<b>Mini</b>											
LRB-1/4-D-...-K4-MINI	G1/8	4.3	20	35	47.3	~95.4	3	~68.9	3	17.5	17
LRB-3/8-D-...-K4-MINI											
<b>Midi</b>											
LRB-3/8-D-...-K4-MIDI	G1/4	5.3	32	49	62.3	~135.8	3	~100.3	5	31.2	36
LRB-1/2-D-...-K4-MIDI											

3

3.2



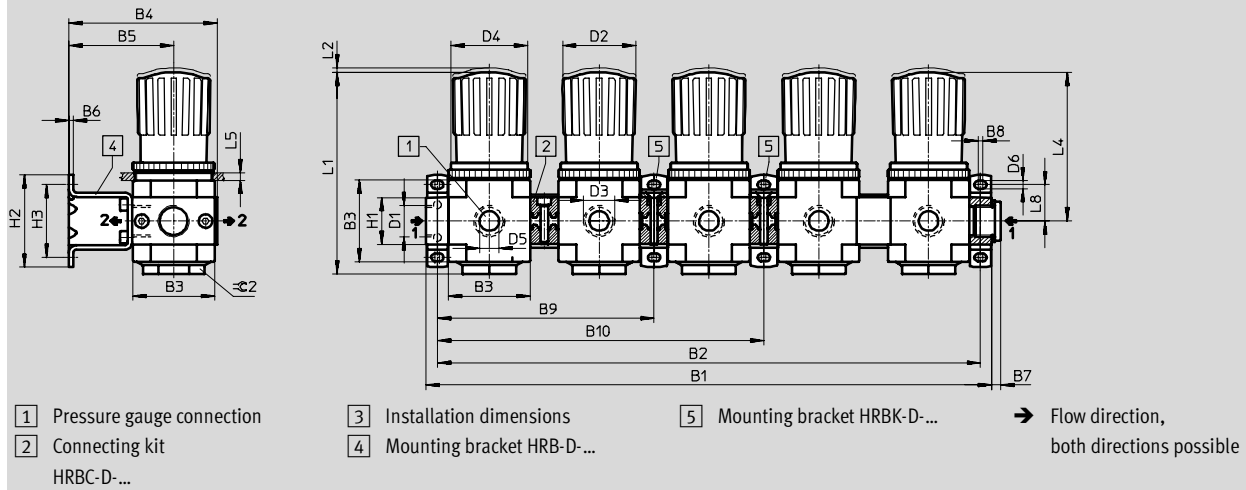
# LRB-K Pressure Regulator Manifolds – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

LRB-...-D-...-K5-...



Type	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	D1	D2	D3	D4
<b>Mini</b>														
LRB-1/4-D-...-K5-MINI	284	~272	40	80.7	59.2	2.5	5	7.3	108.5	146	G1/4	31	G1/4	M36x1.5
LRB-3/8-D-...-K5-MINI	290										G3/8			
<b>Midi</b>														
LRB-3/8-D-...-K5-MIDI	381	~366	55	99.9	70.6	3	5	8.3	146	186	G3/8	50	G3/8	M52x1.5
LRB-1/2-D-...-K5-MIDI							6				G1/2			

Type	D5	D6	H1	H2 ±0.2	H3	L1	L2	L4	L5 max.	L8	≈C 2
<b>Mini</b>											
LRB-1/4-D-...-K5-MINI	G1/8	4.3	20	35	47.3	~95.4	3	~68.9	3	17.5	17
LRB-3/8-D-...-K5-MINI											
<b>Midi</b>											
LRB-3/8-D-...-K5-MIDI	G1/4	5.3	32	49	62.3	~135.8	3	~100.3	5	31.2	36
LRB-1/2-D-...-K5-MIDI											

3

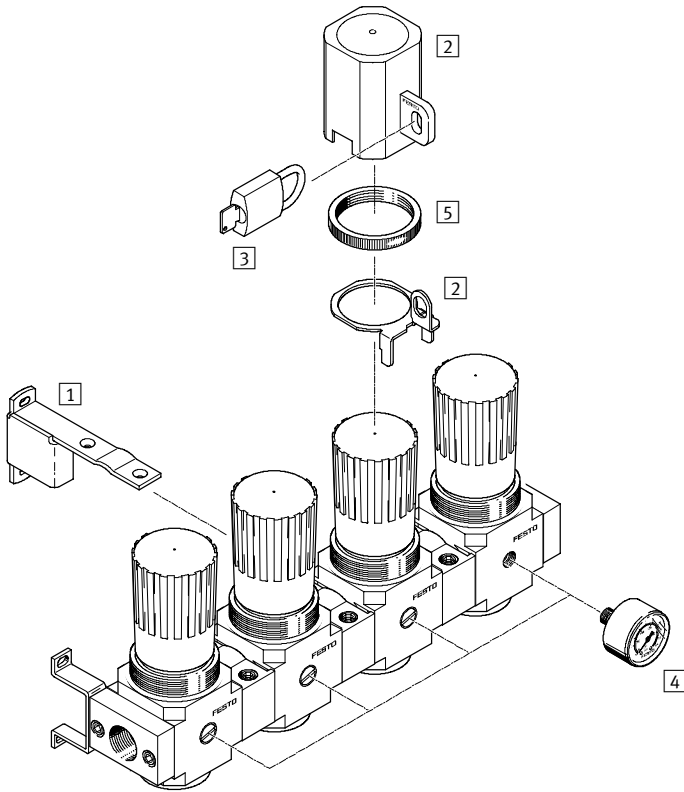
3.2

# LRB-K Pressure Regulator Manifolds – D Series, Metal Design

Accessories Overview

**Mini/Midi**

LRB-K Pressure Regulator Manifold



3

3.2

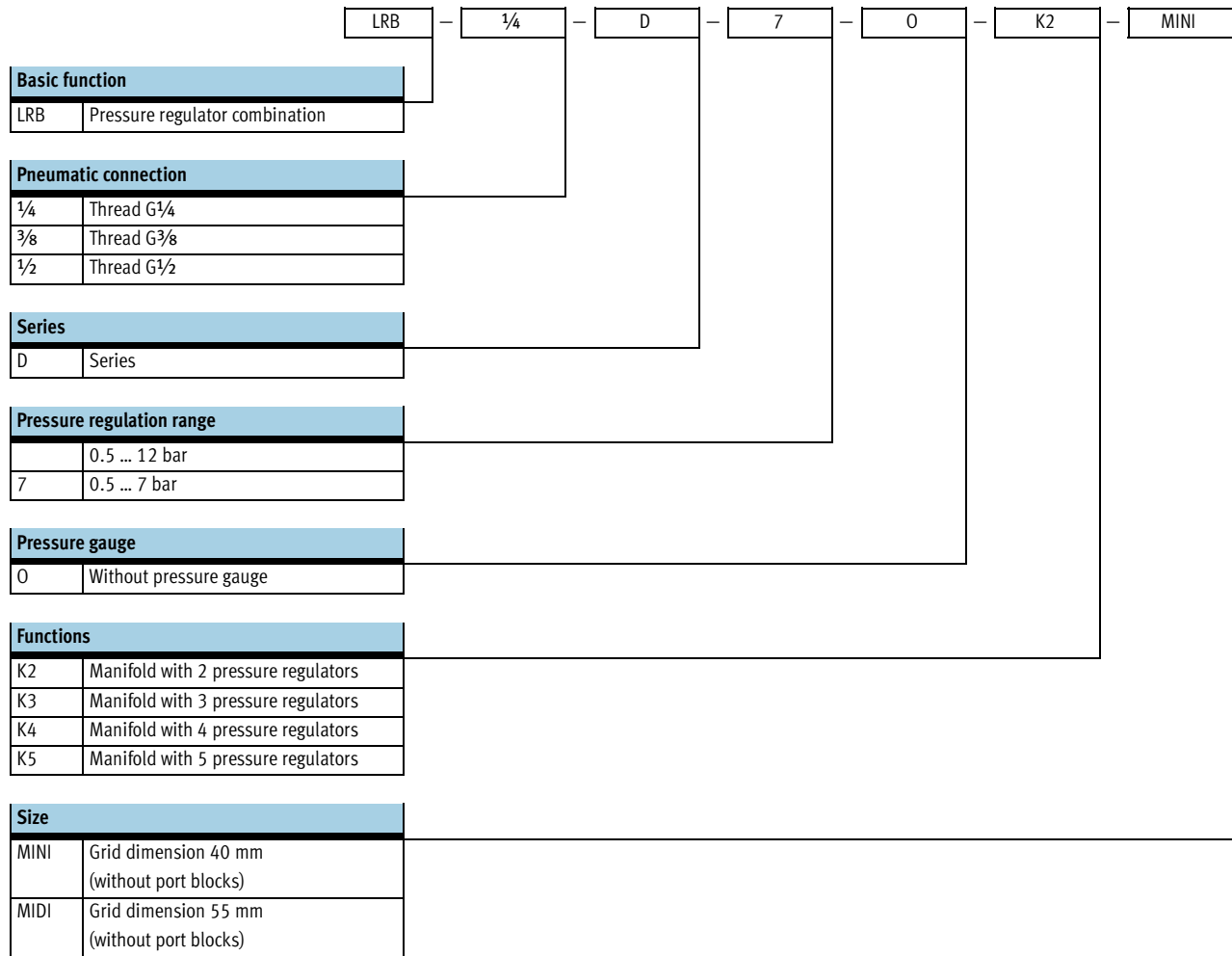
**Mounting attachments and accessories**

	→ Page
1) Mounting bracket HRBK <sup>1)</sup>	276
2) Regulator lock LRVS	281
3) Padlock LRVS-D	281
4) Pressure gauge MA	282
5) Knurled nut (included in scope of delivery) HMR	-

1) The mounting bracket must be mounted after every second pressure regulator.

# LRB-K Pressure Regulator Manifolds – D Series, Metal Design

Type Codes



# LRB-K Pressure Regulator Manifolds – D Series, Metal Design

Ordering Data

Ordering data							
Connecting kit, connecting plate and mounting bracket							
Size	Connection	Pressure regulation range 0.5 ... 7 bar			Pressure regulation range 0.5 ... 12 bar		
		Part No.	Type	LT	Part No.	Type	LT
Manifold with 2 pressure regulators							
Mini	G $\frac{1}{4}$	528952	LRB- $\frac{1}{4}$ -D-7-O-K2-MINI	Q	528954	LRB- $\frac{1}{4}$ -D-O-K2-MINI	Q
	G $\frac{3}{8}$	528953	LRB- $\frac{3}{8}$ -D-7-O-K2-MINI	Q	528955	LRB- $\frac{3}{8}$ -D-O-K2-MINI	Q
Midi	G $\frac{3}{8}$	528956	LRB- $\frac{3}{8}$ -D-7-O-K2-MIDI	Q	528958	LRB- $\frac{3}{8}$ -D-O-K2-MIDI	Q
	G $\frac{1}{2}$	528957	LRB- $\frac{1}{2}$ -D-7-O-K2-MIDI	Q	528959	LRB- $\frac{1}{2}$ -D-O-K2-MIDI	Q
Manifold with 3 pressure regulators							
Mini	G $\frac{1}{4}$	528968	LRB- $\frac{1}{4}$ -D-7-O-K3-MINI	Q	528970	LRB- $\frac{1}{4}$ -D-O-K3-MINI	Q
	G $\frac{3}{8}$	528969	LRB- $\frac{3}{8}$ -D-7-O-K3-MINI	Q	528971	LRB- $\frac{3}{8}$ -D-O-K3-MINI	Q
Midi	G $\frac{3}{8}$	528972	LRB- $\frac{3}{8}$ -D-7-O-K3-MIDI	Q	528974	LRB- $\frac{3}{8}$ -D-O-K3-MIDI	Q
	G $\frac{1}{2}$	528973	LRB- $\frac{1}{2}$ -D-7-O-K3-MIDI	Q	528975	LRB- $\frac{1}{2}$ -D-O-K3-MIDI	Q
Manifold with 4 pressure regulators							
Mini	G $\frac{1}{4}$	528984	LRB- $\frac{1}{4}$ -D-7-O-K4-MINI	Q	528986	LRB- $\frac{1}{4}$ -D-O-K4-MINI	Q
	G $\frac{3}{8}$	528985	LRB- $\frac{3}{8}$ -D-7-O-K4-MINI	Q	528987	LRB- $\frac{3}{8}$ -D-O-K4-MINI	Q
Midi	G $\frac{3}{8}$	528988	LRB- $\frac{3}{8}$ -D-7-O-K4-MIDI	Q	528990	LRB- $\frac{3}{8}$ -D-O-K4-MIDI	Q
	G $\frac{1}{2}$	528989	LRB- $\frac{1}{2}$ -D-7-O-K4-MIDI	Q	528991	LRB- $\frac{1}{2}$ -D-O-K4-MIDI	Q
Manifold with 5 pressure regulators							
Mini	G $\frac{1}{4}$	529000	LRB- $\frac{1}{4}$ -D-7-O-K5-MINI	Q	529002	LRB- $\frac{1}{4}$ -D-O-K5-MINI	Q
	G $\frac{3}{8}$	529001	LRB- $\frac{3}{8}$ -D-7-O-K5-MINI	Q	529003	LRB- $\frac{3}{8}$ -D-O-K5-MINI	Q
Midi	G $\frac{3}{8}$	529004	LRB- $\frac{3}{8}$ -D-7-O-K5-MIDI	Q	529006	LRB- $\frac{3}{8}$ -D-O-K5-MIDI	Q
	G $\frac{1}{2}$	529005	LRB- $\frac{1}{2}$ -D-7-O-K5-MIDI	Q	529007	LRB- $\frac{1}{2}$ -D-O-K5-MIDI	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

3

3.2



LF-D-MIDI  
Filter



LFMA-D-MIDI-DA  
Filter Combination

3  
3.3

**Filters**

LF Filter  
5 or 40 micron  
sintered filter cartridge

LFMB Fine Filter  
1 micron  
fiber filter cartridge

LFMA Micro Filter  
0.01 micron  
fiber filter cartridge

LFMBA Filter Combination  
Combines a Fine Filter and a  
Micro Filter  
DA = with differential pressure  
indicator

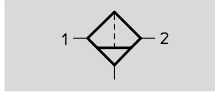
LFX Active Carbon Filter  
Provides odor and oil free air to  
food industry standards

# LF Filters – D Series, Metal Design

Technical Data

Function

Condensate drain turned manually



semi- or fully automatic



- - Flow rate  
170 ... 5300 l/min
- - Temperature range  
-10 ... +60 °C
- - Input pressure  
0 ... 16 bar



- Good particle and condensate separation
- High flow rate with minimal pressure drop
- With manual, semiautomatic, or fully automatic condensate drain
- Choice of filter cartridges: 5 µm or 40 µm
- Filter cartridges → 291

3

3.3

General technical data																
Size	Micro					Mini			Midi				Maxi			
Pneumatic connection	M5	M7	G <sup>1</sup> / <sub>8</sub> 1/8 NPT	QS4	QS6	G <sup>1</sup> / <sub>8</sub> 1/8 NPT	G <sup>1</sup> / <sub>4</sub> 1/4 NPT	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>4</sub> 1/4 NPT <sup>1)</sup>	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>2</sub> 1/2 NPT	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G <sup>1</sup> / <sub>2</sub> 1/2 NPT <sup>1)</sup>	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G1 1 NPT	
Operating medium	Compressed air					Compressed air										
Design	Sintered filter with centrifugal separation					Sintered filter with centrifugal separation										
Type of mounting	Via accessories					Via accessories										
	In-line installation					In-line installation										
Assembly position	Vertical ±5°					Vertical ±5°										
Grade of filtration [µm]	5					5 or 40										
Max. condensate volume [cm <sup>3</sup> ]	3					22			43				80			
Input pressure [bar]																
Condensate drain	manual	0 ... 10				0 ... 16										
	semiautomatic	1 ... 10				-										
	fully automatic	-				2 ... 12										

Standard nominal flow rate <sup>2)</sup> qnN [l/min]						
Connection	Female thread			Port block		
	M5	M7		G <sup>1</sup> / <sub>8</sub> , 1/8 NPT	QS4	QS6
Micro						
LF	170	280		290	170	280

1) Available via the FAST program. See page 177.

2) Measured at p<sub>1</sub> = 6 bar and Δp = 1 bar. A minimum flow rate of 125 l/min is required for flawless functioning.

# LF Filters – D Series, Metal Design

Technical Data

Standard nominal flow rate <sup>1)</sup> q <sub>N</sub> [l/min]						
Connection	G <sup>1</sup> / <sub>8</sub> , 1/8 NPT	G <sup>1</sup> / <sub>4</sub> , 1/4 NPT	G <sup>3</sup> / <sub>8</sub> , 3/8 NPT	G <sup>1</sup> / <sub>2</sub> , 1/2 NPT	G <sup>3</sup> / <sub>4</sub> , 3/4 NPT	G1, 1 NPT
<b>Mini</b>						
LF-...-D-...(-A)	1000	1200	1400	–	–	–
LF-...-D-5M-...(-A)	800	950	1100	–	–	–
<b>Midi</b>						
LF-...-D-...(-A)	–	1900	2700	3000	3000	–
LF-...-D-5M-...(-A)	–	1600	1800	2000	2000	–
<b>Maxi</b>						
LF-...-D-...(-A)	–	–	–	4400	5000	5300
LF-...-D-5M-...(-A)	–	–	–	3700	3600	3800

1) Measured at p<sub>1</sub> = 6 bar and Δp = 1 bar.  
A minimum flow rate of 125 l/min is required for flawless functioning.

Screw-in depth of connecting thread [mm]					
Connection	M5	M7	G <sup>1</sup> / <sub>8</sub>	QS4	QS6
<b>Micro</b>					
In housing	5	6	–	–	–
In port blocks	–	–	8	–	–

Ambient conditions				
Size	Micro	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60			
Temperature of medium [°C]	–10 ... +60			
Corrosion resistance class CRC <sup>2)</sup>	2			

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

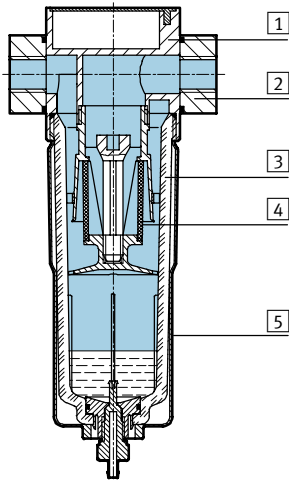
Weight [g]						
Size	Micro		Mini	Midi	Maxi	
	Female thread	Port block			Connection G <sup>1</sup> / <sub>2</sub> , G <sup>3</sup> / <sub>4</sub> , 3/4 NPT	Connection G1, 1 NPT
LF-...	44	64	250	700	1340	1440

# LF Filters – D Series, Metal Design

Technical Data

## Materials

Sectional view



Filter	Micro	Mini/Midi/Maxi
1 Housing	Wrought aluminum alloy	Die-cast zinc
2 Port blocks	Wrought aluminum alloy	Die-cast zinc/aluminum
3 Bowl	Polycarbonate	Polycarbonate
4 Filter cartridge	Polyethylene	Polyethylene
5 Metal bowl guard	-	Aluminum
- Seals	Nitrile rubber	Nitrile rubber

3

3.3

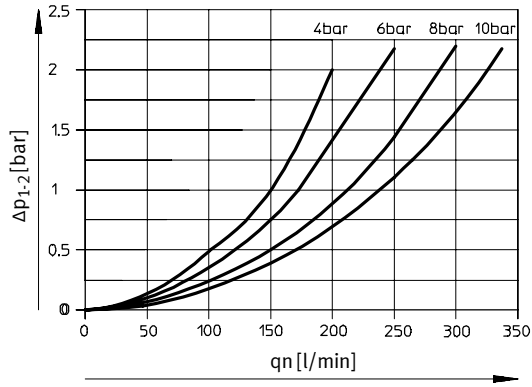


# LF Filters – D Series, Metal Design

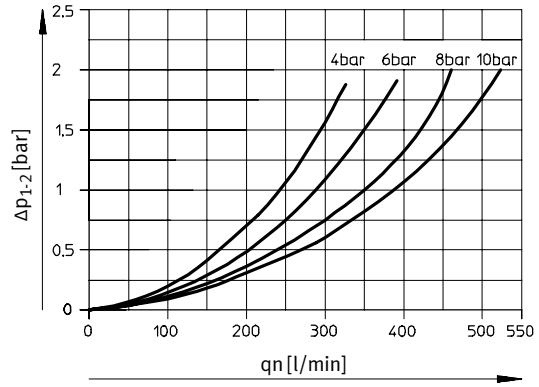
Technical Data

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

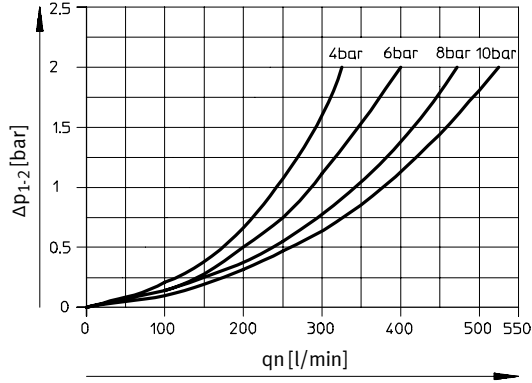
LF-M5-...-MICRO and LF-QS4-...-MICRO



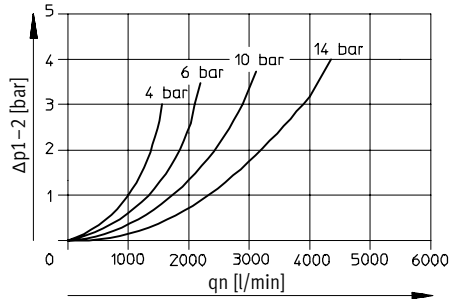
LF-1/8-...-MICRO



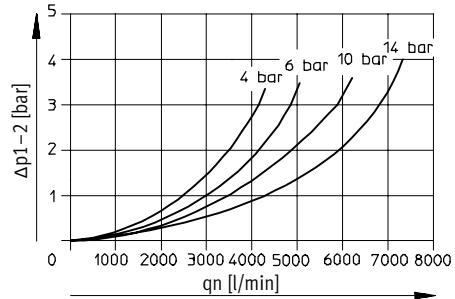
LF-M7-...-MICRO B and LF-QS6-...-MICRO



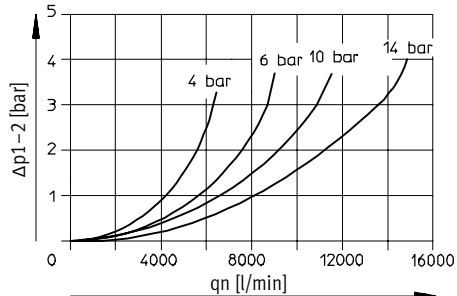
LF-1/4-D-MINI



LF-1/2-D-MIDI



LF-1-D-MAXI



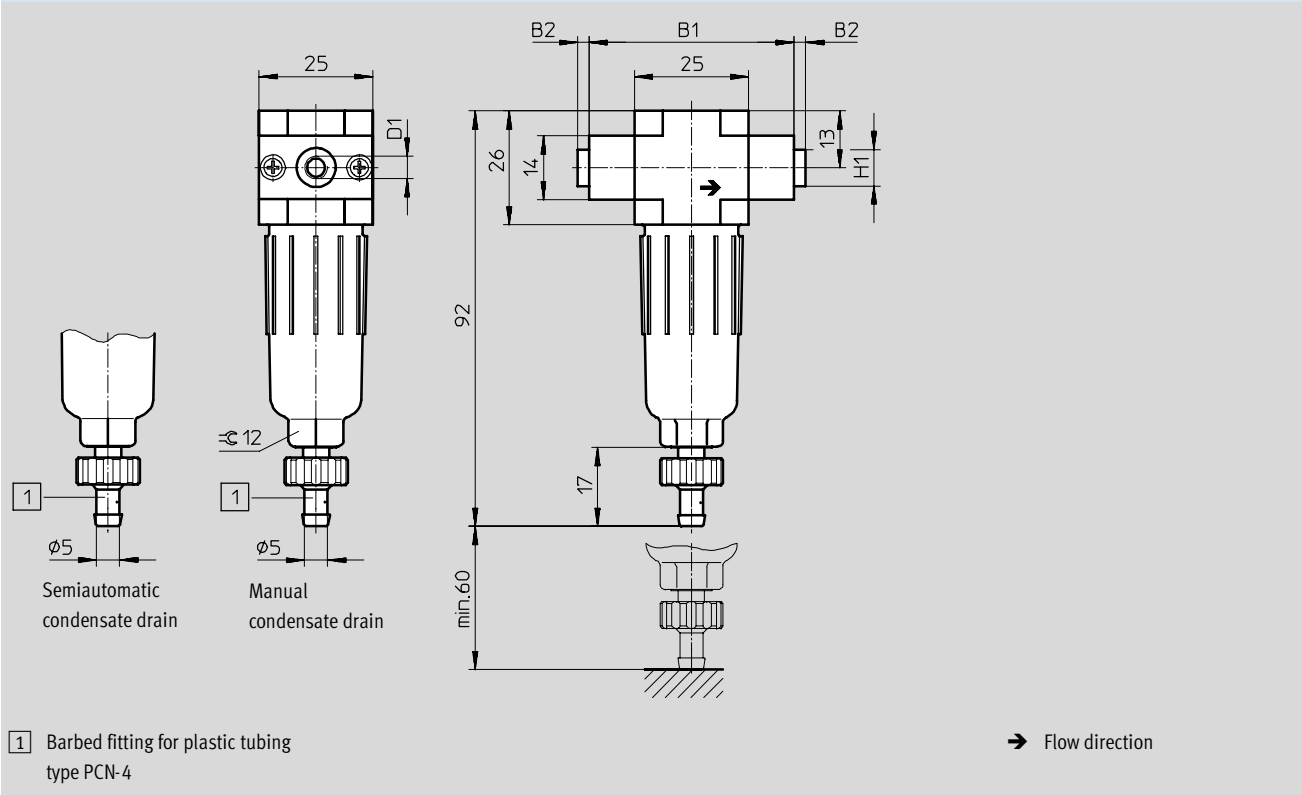
# LF Filters – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

Micro



3

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Type	B1	B2	D1	H1
LF-M5-D-5M-MICRO (H)	25	-	M5	-
LF-M7-D-5M-MICRO (H) B			M7	
LF-1/8-D-5M-MICRO (H)			G1/8	
LF-QS4-D-5M-MICRO (H)	45	~2.5	QS4	~8
LF-QS6-D-5M-MICRO (H)			QS6	~10

# LF Filters – D Series, Metal Design

Technical Data – Dimensional Drawings

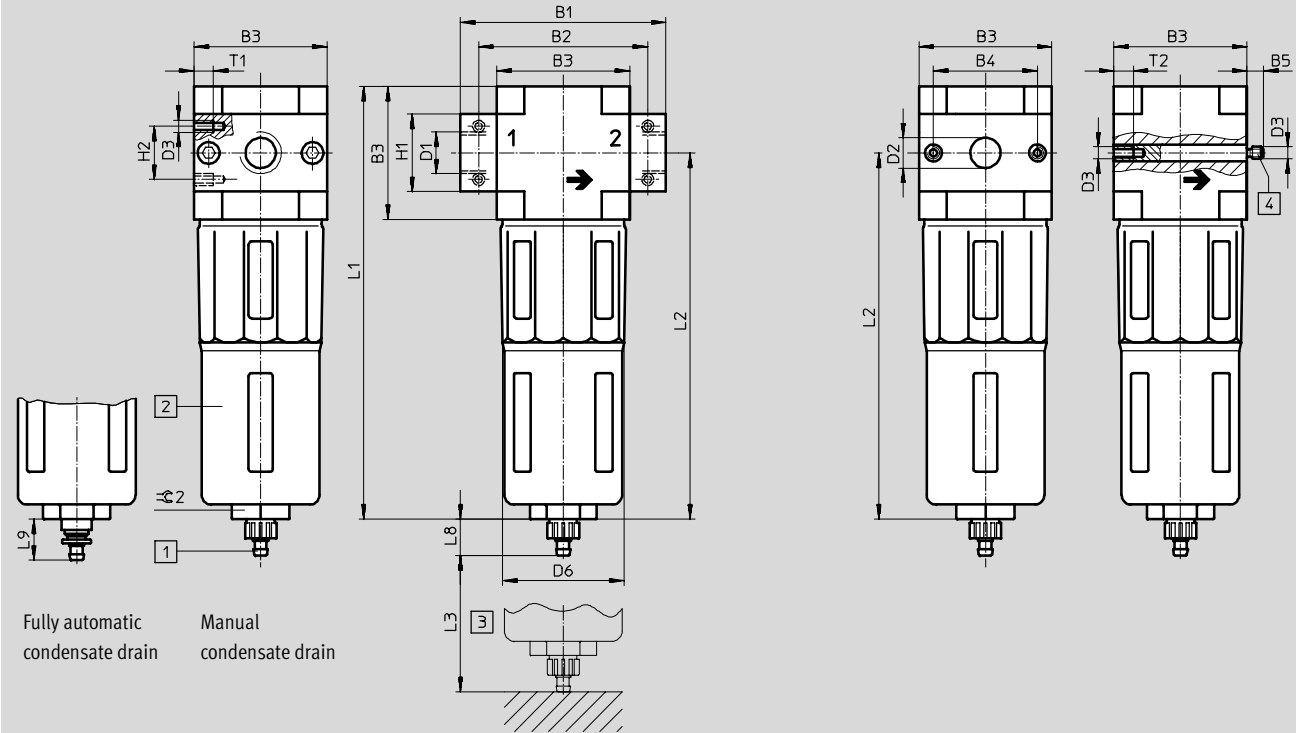
## Dimensions

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

Mini/Midi/Maxi

With threaded port blocks

Without threaded port blocks



- 1 Barbed fitting for plastic tubing type PCN-4
- 2 Metal bowl guard
- 3 Installation dimensions
- 4 Threaded pin (exchangeable)
- Flow direction

3

3.3

Type	B1	B2	B3	B4	B5	D1	D2	D3	D6	H1	H2	L1	L2	L3	L8	L9	T1	T2	$\approx C 2$
<b>Mini</b>																			
LF-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	38	20	11	144	124	60	15	19	7	-	22
LF-1/4-D-MINI						1/8 NPT													
LF-3/8-D-MINI						1/4 NPT													
LF-D-MINI	-	-	-	-	5.8	-	11	-	-	-	-	-	-	-	-	-	-	-	10
<b>Midi</b>																			
LF-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	52	32	22	179	151	80	15	19	8	-	24
LF-3/8-D-MIDI						3/8 NPT													
LF-1/2-D-MIDI						1/2 NPT													
LF-3/4-D-MIDI						3/4 NPT													
LF-D-MIDI	-	-	-	-	6.8	-	24	-	-	-	-	-	-	-	-	-	-	-	11
<b>Maxi</b>																			
LF-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	65	32	22	203	170	90	15	19	8	-	24
LF3/4-D-MAXI						3/4 NPT													
LF-1-D-MAXI						1 NPT													
LF-D-MAXI	-	-	-	-	6.8	-	30	-	-	-	-	-	-	-	-	-	-	-	11

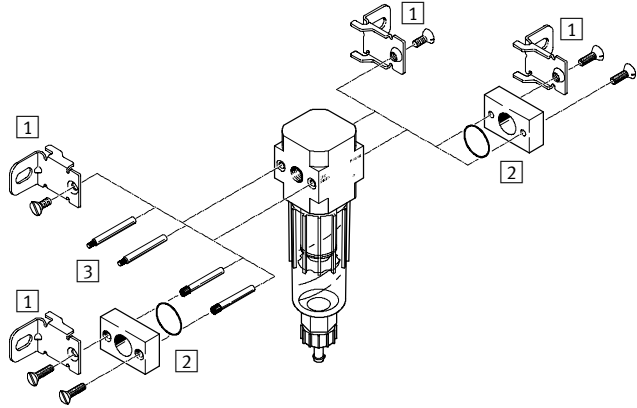
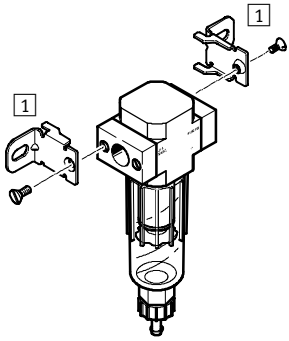
# LF Filters – D Series, Metal Design

AccessoriesOverview

## Micro

Individual unit with port blocks, connection size G $\frac{1}{8}$ , QS4 or QS6

Individual unit without port blocks, for combination unit connection size M5 or M7 in housing



### Mounting attachments and accessories

	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	■	■	■	276
2 Port block kit PBL	-	■	-	■	280
3 Threaded pin FRB	-	-	■	■	278

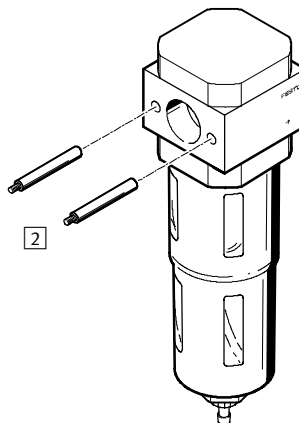
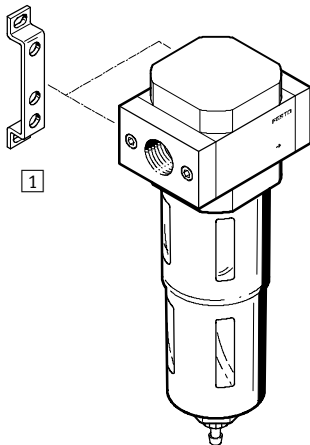
3

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## Mini/Midi/Maxi

Individual unit with port blocks

Individual unit without port blocks, for combination unit



### Mounting attachments and accessories

	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	-	■	-	276
2 Threaded pin (included in scope of delivery) FRB	-	-	■	■	278

# LF Filters – D Series, metal Design

Type Codes – Metric, / QS / G (BSPP) Connections

LF		3/8	D	5M	MIDI	A
<b>Basic function</b>						
LF	Filter					
<b>Pneumatic connection</b>						
M5	Thread M5					
M7	Thread M7					
QS4	Push-in fitting QS4					
QS6	Push-in fitting QS6					
1/8	Thread G1/8					
1/4	Thread G1/4					
3/8	Thread G3/8					
1/2	Thread G1/2					
3/4	Thread G3/4					
1	Thread G1					
<b>Series</b>						
D	Series					
<b>Grade of filtration</b>						
5M	5 µm					
	40 µm					
<b>Size</b>						
MICRO	Grid dimension 25 mm (without port blocks)					
MINI	Grid dimension 40 mm (without port blocks)					
MIDI	Grid dimension 55 mm (without port blocks)					
MAXI	Grid dimension 66 mm (without port blocks)					
<b>Condensate drain</b>						
	Turned manually					
H	Semiautomatic					
A	Fully automatic					

# LF Filters – D Series, Metal Design

Type Codes – NPT Connections

LF – 3/8 – D – 5M – MIDI – A – NPT

**Basic function**

LF	Filter
----	--------

**Pneumatic connection**

N1/8	1/8 NPT Thread (for Micro only)
1/8	1/8 NPT Thread
1/4	1/4 NPT Thread
3/8	3/8 NPT Thread
1/2	1/2 NPT Thread
3/4	3/4 NPT Thread
1	1 NPT Thread

**Series**

D	Series
---	--------

**Grade of filtraion**

5M	5 µm
	40 µm

**Size**

MICRO	Grid dimension 25 mm (without port blocks)
MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

**Condensate drain**

	Turned manually
A	Fully automatic

**NPT connection (where available)**

NPT	NPT threaded connection (not in type code for Micro)
-----	---

3

3.3

# LF Filters – D Series, Metal Design

Ordering Data

Ordering data						
Input pressure 1 ... 10 bar						
Condensate drain	Size	Connection	Grade of filtration 5 µm			
			Part No.	Type		
Turned manually	Micro	Without threaded port blocks, connecting thread in housing				
		M5	526297	LF-M5-D-5M-MICRO	1D	
		M7	534182	LF-M7-D-5M-MICRO-B	Q	
		With threaded port blocks				
		G1/8	526299	LF-1/8-D-5M-MICRO	1D	
		1/8 NPT	526301	LF-N1/8-D-5M-MICRO	1D	
		With port block and push-in fitting				
		QS4	526305	LF-QS4-D-5M-MICRO	Q	
		QS6	526307	LF-QS6-D-5M-MICRO	Q	
		Semiautomatic	Micro	Without threaded port blocks, connecting thread in housing		
M5	526298			LF-M5-D-5M-MICRO-H	1D	
M7	534183			LF-M7-D-5M-MICRO-H-B	Q	
With threaded port blocks						
G1/8	526300			LF-1/8-D-5M-MICRO-H	1D	
1/8 NPT	526302			LF-N1/8-D-5M-MICRO-H	1D	
With port block and push-in fitting						
QS4	526306			LF-QS4-D-5M-MICRO-H	Q	
QS6	526308			LF-QS6-D-5M-MICRO-H	Q	

Ordering data						
Input pressure 0 ... 16 bar, metal bowl guard						
Condensate drain	Size	Grade of filtration 5 µm			Grade of filtration 40 µm	
		Part No.	Type	LT	Part No.	Type
Without threaded port blocks						
Turned manually	Mini	192557	LF-D-5M-MINI	Q	192551	LF-D-MINI
	Midi	192558	LF-D-5M-MIDI	Q	192552	LF-D-MIDI
	Maxi	192559	LF-D-5M-MAXI	Q	192553	LF-D-MAXI
Fully automatic	Mini	192560	LF-D-5M-MINI-A	Q	192554	LF-D-MINI-A
	Midi	192561	LF-D-5M-MIDI-A	Q	192555	LF-D-MIDI-A
	Maxi	192562	LF-D-5M-MAXI-A	Q	192556	LF-D-MAXI-A

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# LF Filters – D Series, Metal Design

Ordering Data

Ordering data									
Input pressure 0 ... 16 bar, metal bowl guard									
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm			
			Part No.	Type	LT	Part No.	Type	LT	
With threaded port blocks									
Turned manually	Mini	G $\frac{1}{8}$	162610	LF- $\frac{1}{8}$ -D-5M-MINI	1W	159612	LF- $\frac{1}{8}$ -D-MINI	1W	
		G $\frac{1}{4}$	162611	LF- $\frac{1}{4}$ -D-5M-MINI	1W	159613	LF- $\frac{1}{4}$ -D-MINI	1W	
		G $\frac{3}{8}$	162612	LF- $\frac{3}{8}$ -D-5M-MINI	Q	162606	LF- $\frac{3}{8}$ -D-MINI	Q	
		$\frac{1}{8}$ NPT	173678	LF- $\frac{1}{8}$ -D-5M-MINI-NPT	1W	173676	LF- $\frac{1}{8}$ -D-MINI-NPT	1W	
		$\frac{1}{4}$ NPT	173682	LF- $\frac{1}{4}$ -D-5M-MINI-NPT	1W	173680	LF- $\frac{1}{4}$ -D-MINI-NPT	1W	
		$\frac{3}{8}$ NPT	173686	LF- $\frac{3}{8}$ -D-5M-MINI-NPT	Q	173684	LF- $\frac{3}{8}$ -D-MINI-NPT	Q	
	Midi	G $\frac{1}{4}$	186460	LF- $\frac{1}{4}$ -D-5M-MIDI	Q	186459	LF- $\frac{1}{4}$ -D-MIDI	Q	
		G $\frac{3}{8}$	162613	LF- $\frac{3}{8}$ -D-5M-MIDI	1W	159576	LF- $\frac{3}{8}$ -D-MIDI	1W	
		G $\frac{1}{2}$	162614	LF- $\frac{1}{2}$ -D-5M-MIDI	1W	159578	LF- $\frac{1}{2}$ -D-MIDI	1W	
		G $\frac{3}{4}$	162615	LF- $\frac{3}{4}$ -D-5M-MIDI	Q	162607	LF- $\frac{3}{4}$ -D-MIDI	Q	
		$\frac{3}{8}$ NPT	173690	LF- $\frac{3}{8}$ -D-5M-MIDI-NPT	1W	173688	LF- $\frac{3}{8}$ -D-MIDI-NPT	1W	
		$\frac{1}{2}$ NPT	173694	LF- $\frac{1}{2}$ -D-5M-MIDI-NPT	Q	173692	LF- $\frac{1}{2}$ -D-MIDI-NPT	1W	
		$\frac{3}{4}$ NPT	173698	LF- $\frac{3}{4}$ -D-5M-MIDI-NPT	Q	173696	LF- $\frac{3}{4}$ -D-MIDI-NPT	Q	
	Maxi	G $\frac{1}{2}$	186464	LF- $\frac{1}{2}$ -D-5M-MAXI	Q	186463	LF- $\frac{1}{2}$ -D-MAXI	Q	
		G $\frac{3}{4}$	162616	LF- $\frac{3}{4}$ -D-5M-MAXI	1W	159614	LF- $\frac{3}{4}$ -D-MAXI	1W	
		G1	162617	LF-1-D-5M-MAXI	1W	159615	LF-1-D-MAXI	1W	
		$\frac{3}{4}$ NPT	173702	LF- $\frac{3}{4}$ -D-5M-MAXI-NPT	1W	173700	LF- $\frac{3}{4}$ -D-MAXI-NPT	1W	
		1 NPT	173706	LF-1-D-5M-MAXI-NPT	1W	173704	LF-1-D-MAXI-NPT	1W	
	Fully automatic	Mini	G $\frac{1}{8}$	162618	LF- $\frac{1}{8}$ -D-5M-MINI-A	1W	159616	LF- $\frac{1}{8}$ -D-MINI-A	1W
			G $\frac{1}{4}$	162619	LF- $\frac{1}{4}$ -D-5M-MINI-A	1W	159617	LF- $\frac{1}{4}$ -D-MINI-A	1W
			G $\frac{3}{8}$	162620	LF- $\frac{3}{8}$ -D-5M-MINI-A	Q	162608	LF- $\frac{3}{8}$ -D-MINI-A	Q
$\frac{1}{8}$ NPT			173679	LF- $\frac{1}{8}$ -D-5M-MINI-A-NPT	1W	173677	LF- $\frac{1}{8}$ -D-MINI-A-NPT	1W	
$\frac{1}{4}$ NPT			173683	LF- $\frac{1}{4}$ -D-5M-MINI-A-NPT	1W	173681	LF- $\frac{1}{4}$ -D-MINI-A-NPT	1W	
$\frac{3}{8}$ NPT			173687	LF- $\frac{3}{8}$ -D-5M-MINI-A-NPT	Q	173685	LF- $\frac{3}{8}$ -D-MINI-A-NPT	Q	
Midi		G $\frac{1}{4}$	186462	LF- $\frac{1}{4}$ -D-5M-MIDI-A	Q	186461	LF- $\frac{1}{4}$ -D-MIDI-A	Q	
		G $\frac{3}{8}$	162621	LF- $\frac{3}{8}$ -D-5M-MIDI-A	1W	159577	LF- $\frac{3}{8}$ -D-MIDI-A	1W	
		G $\frac{1}{2}$	162622	LF- $\frac{1}{2}$ -D-5M-MIDI-A	1W	159579	LF- $\frac{1}{2}$ -D-MIDI-A	1W	
		G $\frac{3}{4}$	162623	LF- $\frac{3}{4}$ -D-5M-MIDI-A	Q	162609	LF- $\frac{3}{4}$ -D-MIDI-A	Q	
		$\frac{3}{8}$ NPT	173691	LF- $\frac{3}{8}$ -D-5M-MIDI-A-NPT	1W	173689	LF- $\frac{3}{8}$ -D-MIDI-A-NPT	1W	
		$\frac{1}{2}$ NPT	173695	LF- $\frac{1}{2}$ -D-5M-MIDI-A-NPT	1W	173693	LF- $\frac{1}{2}$ -D-MIDI-A-NPT	1W	
		$\frac{3}{4}$ NPT	173699	LF- $\frac{3}{4}$ -D-5M-MIDI-A-NPT	Q	173697	LF- $\frac{3}{4}$ -D-MIDI-A-NPT	Q	
Maxi		G $\frac{1}{2}$	186466	LF- $\frac{1}{2}$ -D-5M-MAXI-A	Q	186465	LF- $\frac{1}{2}$ -D-MAXI-A	Q	
		G $\frac{3}{4}$	162624	LF- $\frac{3}{4}$ -D-5M-MAXI-A	1W	159618	LF- $\frac{3}{4}$ -D-MAXI-A	1W	
		G1	162625	LF-1-D-5M-MAXI-A	1W	159619	LF-1-D-MAXI-A	1W	
		$\frac{3}{4}$ NPT	173703	LF- $\frac{3}{4}$ -D-5M-MAXI-A-NPT	1W	173701	LF- $\frac{3}{4}$ -D-MAXI-A-NPT	1W	
		1 NPT	173707	LF-1-D-5M-MAXI-A-NPT	1W	173705	LF-1-D-MAXI-A-NPT	1W	

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

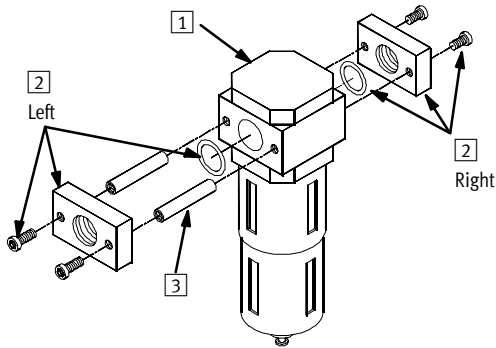
Q request a quote for lead time



# FAST\* Program – LF Filter Selector Guide

LF Filters – D Series, Metal Design

\*FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.



A complete filter assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block Kit	2 (one left, one right)
3	Single Unit Joining Rod	2
4	Mounting Bracket Kit (Optional) (Not shown)	1

**Step 1:** Based upon the required Port Size, Maximum Flow, Filtration Level, Drain Type, and Thread Type, select the Main Unit [Item 1] and the Left and Right Port Block Kits (Item 2).

				Item					
				1	2				
Port size	Max. Flow (l/min/scfm)	Filtration Level (µm)	Drain	Product Type / Description	Main Unit	NPT Thread		BSP Thread	
						Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit
1/8	1000/35.3	40	Man.	LF-...-D-MINI-...	546428	546520	546521	546495	546496
			Auto		546429				
	800/28.3	5	Man.	546451					
			Auto	546453					
1/4	1200/42.4	40	Man.	LF-...-D-MINI-...	546428	546522	546523	546497	546498
			Auto		546429				
	1900/67.1	5	Man.	LF-...-D-MIDI-...	546422	546538	546537	546532	546533
			Auto		546423				
	950/33.5	5	Man.	LF-...-D-MINI-...	546451	546522	546532	546497	3546498
			Auto		546453				
1600/56.5	5	Man.	LF-...-D-MIDI-...	546453	546536	546537	546532	546533	
		Auto		546459					
3/8	1400/49.4	40	Man.	LF-...-D-MINI-...	546428	546524	546525	546499	546500
			Auto		546429				
	2700/95.4	5	Man.	LF-...-D-MIDI-...	546422	546530	546531	546501	546502
			Auto		546423				
	1100/38.8	5	Man.	LF-...-D-MINI-...	546451	546524	546525	546499	546500
			Auto		546543				
	1800/63.6	5	Man.	LF-...-D-MIDI-...	546459	546530	546531	546501	546502
			Auto		548460				

# FAST Program – LF Filter Selector Guide

LF Filters – D Series, Metal Design

3

3.3

					Item				
					1	2			
Port size	Max. Flow (l/min/scfm)	Filtration Level (µm)	Drain	Product Type / Description	Main Unit	NPT Thread		BSP Thread	
						Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit
½	3000/105.9	40	Man.	LF...-D-MIDI-...	546422	546526	546527	546503	546504
			Auto		546423				
	4400/155.4	40	Man.	LF...-D-MAXI-...	546434	546538	546539	546534	546535
			Auto		546435				
	2000/70.6	5	Man.	LF...-D-MIDI-...	546459	546526	546527	546503	546504
			Auto		546460				
	3600/127.1	5	Man.	LF...-D-MAXI-...	546466	546538	546539	546534	546535
			Auto		546467				
¾	3000/105.9	40	Man.	LF...-D-MIDI-...	546422	546528	546529	546505	546506
			Auto		546423				
	5000/176.6	40	Man.	LF...-D-MAXI-...	546434	546490	546492	546507	546508
			Auto		546435				
	2000/70.6	5	Man.	LF...-D-MIDI-...	546459	546528	546529	546505	546506
			Auto		546460				
	3700/130.7	5	Man.	LF...-D-MAXI-...	546466	546490	546492	546507	546508
			Auto		546467				
1	5300/187.2	40	Man.		546434	546491	546493	546509	546510
			Auto		546435				
	3800/134.2	5	Man.		546466				
			Auto		546467				

**Step 2:** Based upon the Product Type/Description from Step 1, select the Joining Rods (Item 3) and the (optional) Mounting Bracket Kit (Item 4).

		Item	
		3	4 (Not shown)
Product Type / Description	Single Unit Joining Rod	Mounting Bracket Kit (Optional)	
LF...-D-MINI-...	546483	159638	
LF...-D-MINI-...	546489	159593	
LF...-D-MINI-...	546494		

**Step3:** Determine the appropriate quantity of each Item.

**Ordering Example:**

Required: ¼ port size, 1100 l/min flow, 40 µm filtration, automatic drain, BSP threads, and mounting bracket kit.

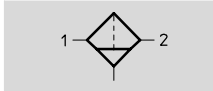
	Item	Part No.	Qty	Description
Order:	1	546429	1	Main Unit
	2	546497	1	Left Port Block Kit
		546498	1	Right Port Block Kit
	3	546483	2	Single Unit Joining Rod
	4	159638	1	Mounting Bracket Kit

# LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

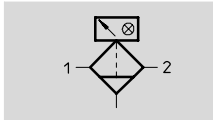
Technical Data

Function

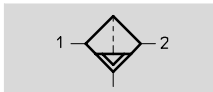
Condensate drain  
turned manually  
without differential pressure indicator



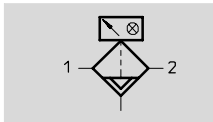
with differential pressure indicator






Condensate drain  
fully automatic  
without differential pressure indicator



with differential pressure indicator



-  - Flow rate  
130 ... 1250 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Input pressure  
1 ... 16 bar



- High efficiency filter for special requirements
- Air quality to DIN ISO 8573-1
- With or without threaded port blocks
- Version with differential pressure indicator for optical indication of filter pollution
- Choice of filter cartridges: 0.01 µm or 1 µm
- Filter cartridges → 291

LFMA:  
ISO class 1 for particles:  
max. particle density 0.1 mg/m<sup>3</sup>  
ISO class 2 for oil aerosols:  
max. oil concentration 0.1 mg/m<sup>3</sup>  
Filter efficiency 99.9999%

LFMB:  
ISO class 2 for particles:  
max. particle density 1 mg/m<sup>3</sup>  
ISO class 3 for oil aerosols:  
max. oil concentration 1 mg/m<sup>3</sup>  
Filter efficiency 99.99%

General technical data											
Size	Mini			Midi				Maxi			
Pneumatic connection	G1/8 1/8 NPT	G1/4 1/4 NPT	G3/8 3/8 NPT	G1/4 1/4 NPT <sup>1)</sup>	G3/8 3/8 NPT	G1/2 1/2 NPT	G3/4 3/4 NPT	G1/2 1/2 NPT <sup>1)</sup>	G3/4 3/4 NPT	G1 1 NPT	
Design	Fibre filter										
Type of mounting	Via accessories In-line installation										
Assembly position	Vertical ±5°										
Operating medium											
Micro filter LFMA	Filtered compressed air, lubricated or unlubricated, grade of filtration 1 µm										
Fine filter LFMB	Filtered compressed air, lubricated or unlubricated, grade of filtration 5 µm										
Grade of filtration	[µm]										
Micro filter LFMA	0.01										
Fine filter LFMB	1										
Air purity class at the output											
Grade of filtration	0.01 µm	1.7.2 to DIN ISO 8573-1									
	1 µm	2.7.3 to DIN ISO 8573-1									
Residual oil content	[mg/m <sup>3</sup> ]										
Micro filter LFMA	≤0.01										
Fine filter LFMB	≤0.5										
Input pressure	[bar]										
Condensate drain	Manual	1 ... 16									
	Fully automatic	1.5 ... 12									
Max. condensate volume	[cm <sup>3</sup> ]										
Micro filter LFMA/fine filter LFMB	22			43				80			

1) Available via the FAST program. See page 190.

# LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

Technical Data

Standard nominal flow rate <sup>1)</sup> q <sub>N</sub> [l/min]										
Connection	Mini			Midi				Maxi		
	G <sup>3</sup> / <sub>8</sub> 1/8 NPT	G <sup>1</sup> / <sub>4</sub> 1/4 NPT	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>2</sub> 1/2 NPT	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G1 1 NPT
Micro filter LFMA	130	160	180	350	380	400	460	750	900	950
Fine filter LFMB	250	300	310	500	700	900	1000	1150	1200	1250

1) Measured at p<sub>1</sub> = 6 bar and Δp = 70 mbar.  
A minimum flow rate of 125 l/min is required for flawless functioning.

Ambient conditions				
Size		Mini	Midi	Maxi
Ambient temperature	[°C]	-10 ... +60		
Temperature of medium	[°C]	+1.5 ... +60		
Corrosion resistance class	CRC <sup>1)</sup>	2		

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

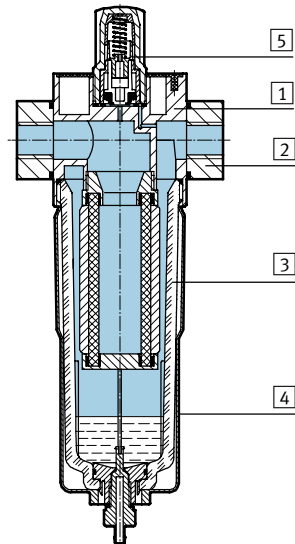
3

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Weight [g]			
Size	Mini	Midi	Maxi
Without differential pressure indicator	250	650	1200
With differential pressure indicator	368	834	1340

## Materials

Sectional view



Fine and micro filters		
1	Housing	Die-cast zinc
2	Port blocks	Aluminum
3	Bowl	Polycarbonate
4	Metal bowl guard	Aluminum
5	Housing for version with differential pressure indicator	Polycarbonate
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE

# LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

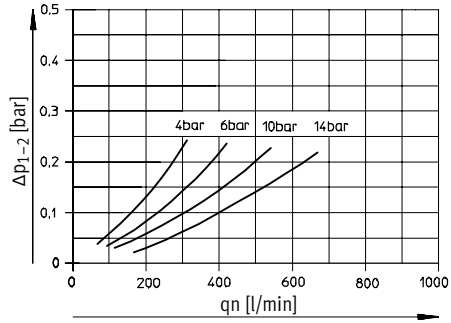
Technical Data

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

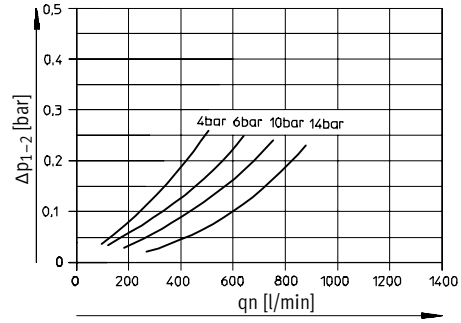
Grade of filtration 0.01  $\mu\text{m}$

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

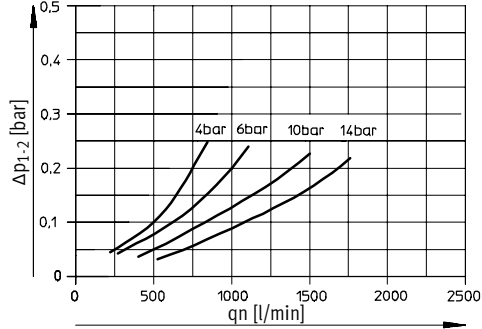
### LFMA-1/4-D-MINI and LFMA-1/4-D-MINI-A



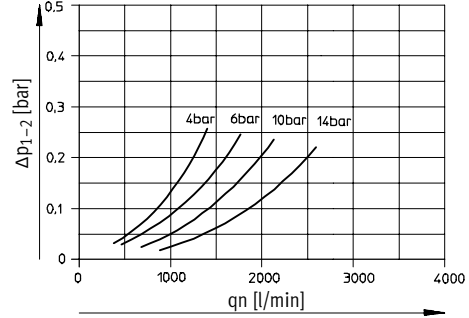
### LFMB-1/4-D-MINI and LFMB-1/4-D-MINI-A



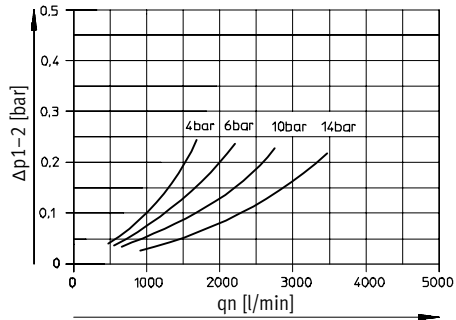
### LFMA-1/2-D-MIDI and LFMA-1/2-D-MIDI-A



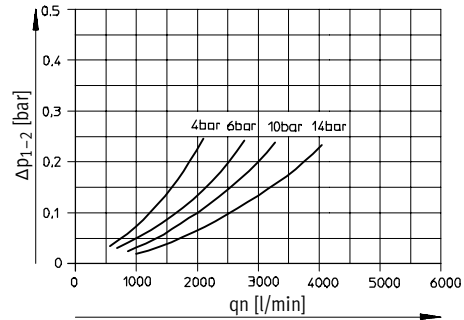
### LFMB-1/2-D-MIDI and LFMB-1/2-D-MIDI-A



### LFMA-1-D-MAXI and LFMA-1-D-MAXI-A

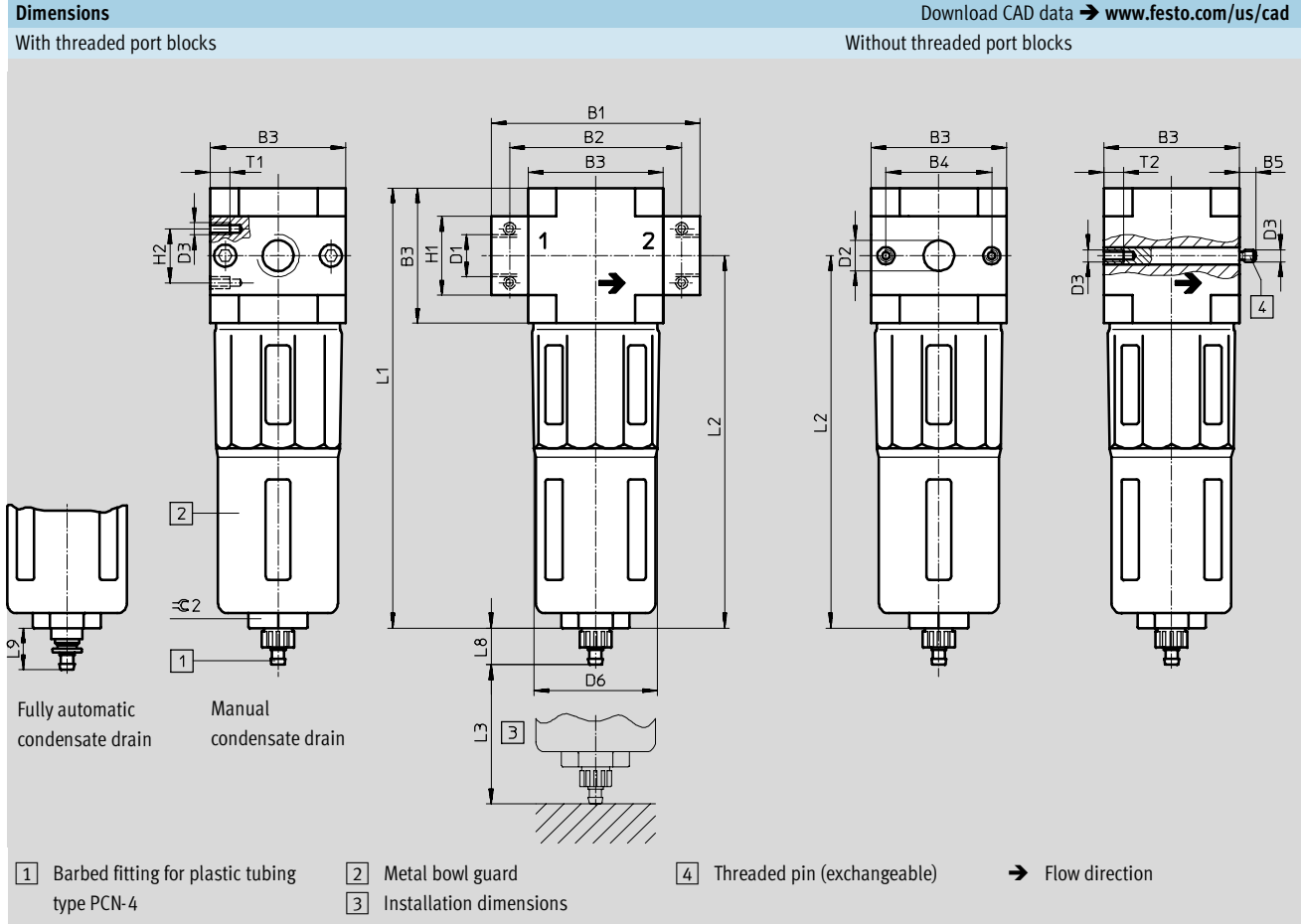


### LFMB-1-D-MAXI and LFMB-1-D-MAXI-A



# LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

Technical Data – Dimensional Drawings



Type	B1	B2	B3	B4	B5	D1	D2	D3	D6	H1	H2	L1	L2	L3	L8	L9	T1	T2	±0.2
<b>Mini</b>																			
LFMB/A-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	38	20	11	144	124	60	15	19	7	-	22
LFMB/A-1/4-D-MINI						G1/4													
LFMB/A-3/8-D-MINI						G3/8													
LFMB/A-D-MINI	-	-	-	-	5.8	-	11	-	-	-	-	-	-	-	-	-	-	10	-
<b>Midi</b>																			
LFMB/A-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	52	32	22	179	151	80	15	19	8	-	24
LFMB/A-3/8-D-MIDI						G3/8													
LFMB/A-1/2-D-MIDI						G1/2													
LFMB/A-3/4-D-MIDI						G3/4													
LFMB/A-D-MIDI	-	-	-	-	6.8	-	24	-	-	-	-	-	-	-	-	-	-	11	-
<b>Maxi</b>																			
LFMB/A-1/2-D-MAXI	96	80	66	46	-	G3/4	-	M5	65	32	22	203	170	90	15	19	8	-	24
LFMB/A-3/4-D-MAXI						3/4 NPT													
LFMB/A-1-D-MAXI						G1													
LFMB/A-D-MAXI	-	-	-	-	6.8	-	30	-	-	-	-	-	-	-	-	-	-	11	-

# LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

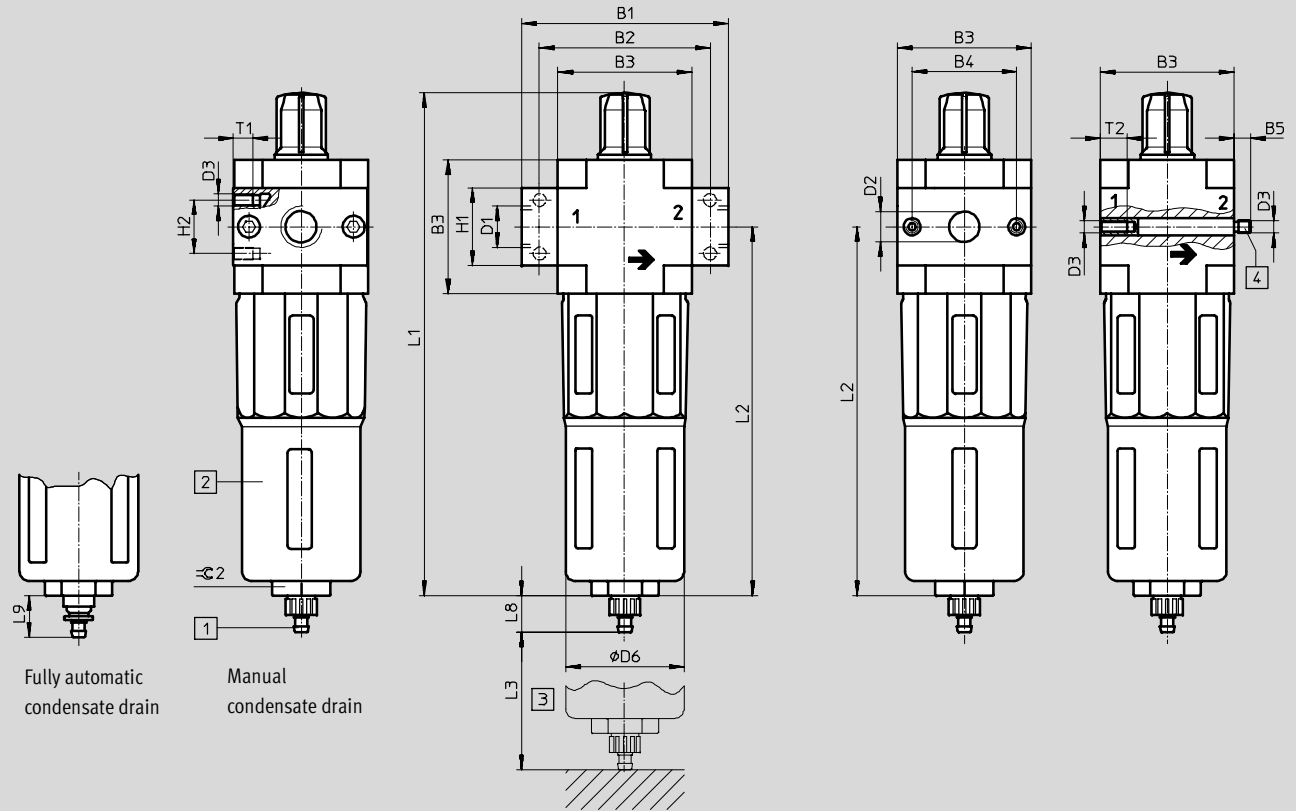
Technical Data – Dimensional Drawings

Dimensions with differential pressure indicator DA

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

With threaded port blocks

Without threaded port blocks



- 1 Barbed fitting for plastic tubing type PCN-4
- 2 Metal bowl guard
- 3 Installation dimensions
- 4 Threaded pin (exchangeable)
- Flow direction

3

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Type	B1	B2	B3	B4	B5	D1	D2	D3	D6	H1	H2	L1	L2	L3	L8	L9	T1	T2	∅ 2
<b>Mini</b>																			
LFMB/A-1/8-D-MINI-DA	64	52	40	30	-	G1/8	-	M4	38	20	11	173	124	60	15	19	7	-	22
LFMB/A-1/4-D-MINI-DA						G1/4													
LFMB/A-3/8-D-MINI-DA	70					G3/8													
LFMB/A-D-MINI-DA	-	-				5.8	-	11		-	-						-	10	
<b>Midi</b>																			
LFMB/A-1/4-D-MIDI-DA	85	70	55	43	-	G1/4	-	M5	52	32	22	207	151	80	15	19	8	-	24
LFMB/A-3/8-D-MIDI-DA						G3/8													
LFMB/A-1/2-D-MIDI-DA						G1/2													
LFMB/A-3/4-D-MIDI-DA						G3/4													
LFMB/A-D-MIDI-DA	-	-				6.8	-	24		-	-						-	11	
<b>Maxi</b>																			
LFMB/A-1/2-D-MAXI-DA	96	80	66	46	-	G1/2	-	M5	65	32	22	232	170	90	15	19	8	-	24
LFMB/A-3/4-D-MAXI-DA						G3/4													
LFMB/A-1-D-MAXI-DA	116	91								40									
LFMB/A-D-MAXI-DA	-	-				6.8	-	30		-	-							-	11

# LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

Accessories Overview

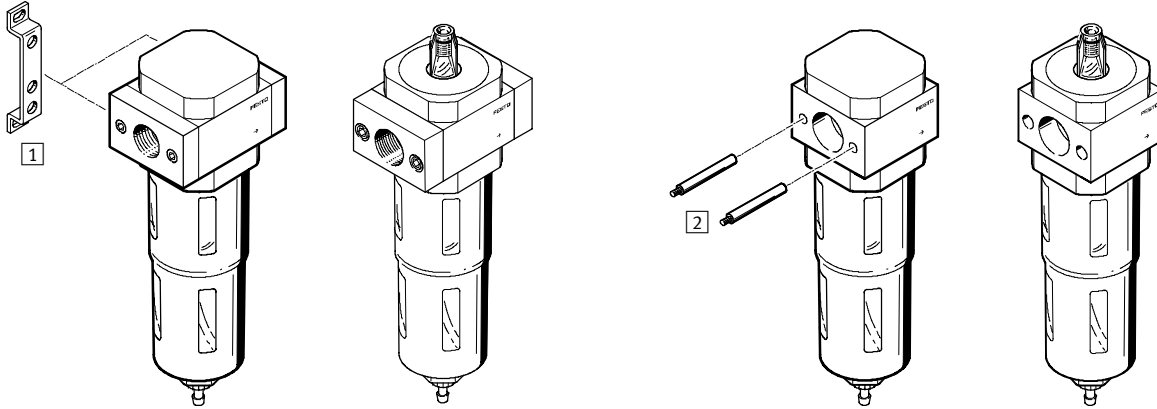
## Mini/Midi/Maxi

Individual unit with port blocks  
without differential pressure  
indicator

with differential pressure  
indicator

Individual unit without port blocks, for air preparation unit combination  
without differential pressure  
indicator

with differential pressure  
indicator



## Mounting attachments and accessories

	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
[1] Mounting bracket HFOE	■	-	■	-	276
[2] Threaded pin (included in scope of delivery) FRB	-	-	■	■	278

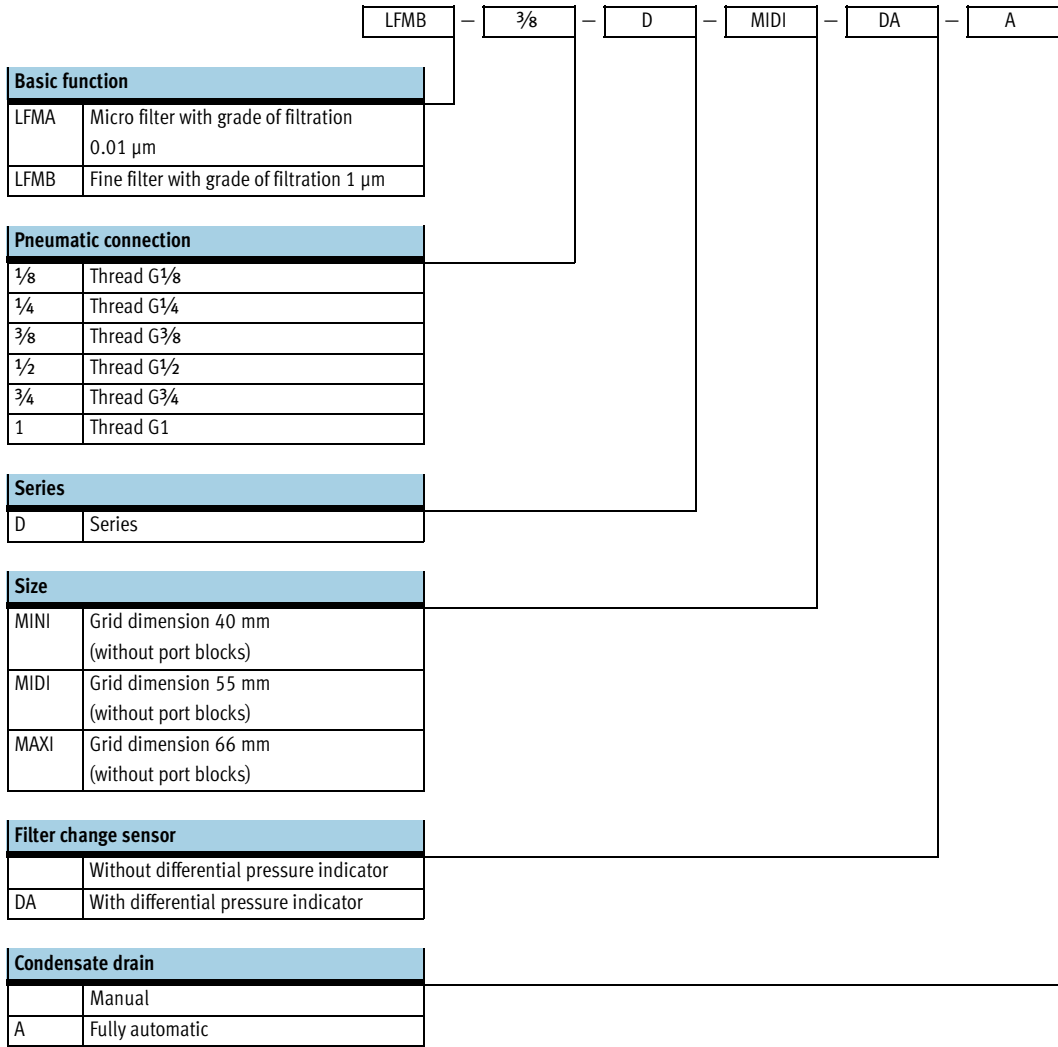
3

3.3



# LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

Types Codes – G (BSPP) Connections



# LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

Type Codes – NPT Connections



**Basic function**

LFMA	Micro filter with grade of filtration 0.01 µm
LFMB	Fine filter with grade of filtration 1 µm

**Pneumatic connection**

1/8	1/8 NPT Thread
1/4	1/4 NPT Thread
3/8	3/8 NPT Thread
1/2	1/2 NPT Thread
3/4	3/4 NPT Thread
1	1 NPT Thread

**Series**

D	Series
---	--------

**Size**

MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

**Condensate drain**

	Manual
A	Fully automatic

**NPT connection (where available)**

NPT	NPT threaded connection
-----	-------------------------

3

3.3

# LFMB/LFMA Fine and Micro Filters

Ordering Data

Ordering data – LFMA Micro filter							
Grade of filtration 0.01 µm, metal bowl guard							
Size	Connection	Input pressure 1 ... 16 bar			Input pressure 1.5 ... 12 bar		
		Condensate drain turned manually			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Without threaded connecting plates							
Mini		192563	LFMA-D-MINI	Q	192566	LFMA-D-MINI-A	Q
Midi		192564	LFMA-D-MIDI	Q	192567	LFMA-D-MIDI-A	Q
Maxi		192565	LFMA-D-MAXI	Q	192568	LFMA-D-MAXI-A	Q
With threaded connecting plates							
Mini	G $\frac{1}{8}$	162642	LFMA- $\frac{1}{8}$ -D-MINI	1W	162650	LFMA- $\frac{1}{8}$ -D-MINI-A	1W
	G $\frac{1}{4}$	162643	LFMA- $\frac{1}{4}$ -D-MINI	1W	162651	LFMA- $\frac{1}{4}$ -D-MINI-A	1W
	G $\frac{3}{8}$	162644	LFMA- $\frac{3}{8}$ -D-MINI	Q	162652	LFMA- $\frac{3}{8}$ -D-MINI-A	Q
	G $\frac{1}{8}$	173724	LFMA- $\frac{1}{8}$ -D-MINI-NPT	1W	173723	LFMA- $\frac{1}{8}$ -D-MINI-A-NPT	Q
	G $\frac{1}{4}$	173726	LFMA- $\frac{1}{4}$ -D-MINI-NPT	1W	173727	LFMA- $\frac{1}{4}$ -D-MINI-A-NPT	1W
	G $\frac{3}{8}$	173728	LFMA- $\frac{3}{8}$ -D-MINI-NPT	Q	173729	LFMA- $\frac{3}{8}$ -D-MINI-A-NPT	Q
Midi	G $\frac{1}{4}$	186469	LFMA- $\frac{1}{4}$ -D-MIDI	Q	186470	LFMA- $\frac{1}{4}$ -D-MIDI-A	Q
	G $\frac{3}{8}$	162645	LFMA- $\frac{3}{8}$ -D-MIDI	1W	162653	LFMA- $\frac{3}{8}$ -D-MIDI-A	1W
	G $\frac{1}{2}$	162646	LFMA- $\frac{1}{2}$ -D-MIDI	1W	162654	LFMA- $\frac{1}{2}$ -D-MIDI-A	1W
	G $\frac{3}{4}$	162647	LFMA- $\frac{3}{4}$ -D-MIDI	Q	162655	LFMA- $\frac{3}{4}$ -D-MIDI-A	Q
	G $\frac{3}{8}$	173730	LFMA- $\frac{3}{8}$ -D-MIDI-NPT	1W	173731	LFMA- $\frac{3}{8}$ -D-MIDI-A-NPT	1W
	G $\frac{1}{2}$	173732	LFMA- $\frac{1}{2}$ -D-MIDI-NPT	1W	173733	LFMA- $\frac{1}{2}$ -D-MIDI-A-NPT	1W
Maxi	G $\frac{3}{4}$	173734	LFMA- $\frac{3}{4}$ -D-MIDI-NPT	Q	173735	LFMA- $\frac{3}{4}$ -D-MIDI-A-NPT	Q
	G $\frac{1}{2}$	186476	LFMA- $\frac{1}{2}$ -D-MAXI	Q	186475	LFMA- $\frac{1}{2}$ -D-MAXI-A	Q
	G $\frac{3}{4}$	162648	LFMA- $\frac{3}{4}$ -D-MAXI	1W	162656	LFMA- $\frac{3}{4}$ -D-MAXI-A	1W
	G1	162649	LFMA-1-D-MAXI	1W	162657	LFMA-1-D-MAXI-A	1W
	G $\frac{3}{4}$	173736	LFMA- $\frac{3}{4}$ -D-MAXI-NPT	1W	173737	LFMA- $\frac{3}{4}$ -D-MAXI-A-NPT	1W
	G1	173738	LFMA-1-D-MAXI-NPT	1W	173739	LFMA-1-D-MAXI-A-NPT	1W

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

# LFMB/LFMA Fine and Micro Filters

Ordering Data

Ordering data – LFMB Fine filter							
Grade of filtration 1 µm, metal bowl guard							
Size	Connection	Input pressure 1 ... 16 bar			Input pressure 1.5 ... 12 bar		
		Condensate drain turned manually			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Without threaded connecting plates							
Mini		192569	LFMB-D-MINI	Q	192572	LFMB-D-MINI-A	Q
Midi		192570	LFMB-D-MIDI	Q	192573	LFMB-D-MIDI-A	Q
Maxi		192571	LFMB-D-MAXI	Q	192574	LFMB-D-MAXI-A	Q
With threaded connecting plates							
Mini	G1/8	162626	LFMB-1/8-D-MINI	1W	162634	LFMB-1/8-D-MINI-A	1W
	G1/4	162627	LFMB-1/4-D-MINI	1W	162635	LFMB-1/4-D-MINI-A	1W
	G3/8	162628	LFMB-3/8-D-MINI	Q	162636	LFMB-3/8-D-MINI-A	Q
	1/8 NPT	173708	LFMB-1/8-D-MINI-NPT	1W	173709	LFMB-1/8-D-MINI-A-NPT	1W
	1/4 NPT	173710	LFMB-1/4-D-MINI-NPT	1W	173711	LFMB-1/4-D-MINI-A-NPT	1W
	3/8 NPT	173712	LFMB-3/8-D-MINI-NPT	Q	17713	LFMB-3/8-D-MINI-A-NPT	Q
Midi	G1/4	186467	LFMB-1/4-D-MIDI	Q	186468	LFMB-1/4-D-MIDI-A	Q
	G3/8	162629	LFMB-3/8-D-MIDI	1W	162637	LFMB-3/8-D-MIDI-A	1W
	G1/2	162630	LFMB-1/2-D-MIDI	1W	162638	LFMB-1/2-D-MIDI-A	1W
	G3/4	162631	LFMB-3/4-D-MIDI	Q	162639	LFMB-3/4-D-MIDI-A	Q
	3/8 NPT	173714	LFMB-3/8-D-MIDI-NPT	1W	173715	LFMB-3/8-D-MIDI-A-NPT	1W
	1/2 NPT	173716	LFMB-1/2-D-MIDI-NPT	1W	173717	LFMB-1/2-D-MIDI-A-NPT	1W
Maxi	3/4 NPT	173718	LFMB-3/4-D-MIDI-NPT	Q	173719	LFMB-3/4-D-MIDI-A-NPT	Q
	G1/2	186473	LFMB-1/2-D-MAXI	Q	186474	LFMB-1/2-D-MAXI-A	Q
	G3/4	162632	LFMB-3/4-D-MAXI	1W	162640	LFMB-3/4-D-MAXI-A	1W
	G1	162633	LFMB-1-D-MAXI	1W	162641	LFMB-1-D-MAXI-A	1W
	3/4 NPT	173720	LFMB-3/4-D-MAXI-NPT	1W	173721	LFMB-3/4-D-MAXI-A-NPT	1W
	1 NPT	173722	LFMB-1-D-MAXI-NPT	1W	173723	LFMB-1-D-MAXI-A-NPT	1W

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

3

3.3

# LFMB/LFMA Fine and Micro Filters

Ordering Data

Ordering data – LFMA Micro filter with DA differential pressure indicator							
Working pressure 12 bar, grade of filtration 0.01 µm, metal bowl guard							
Size	Connection	Condensate drain turned manually			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Without threaded connecting plates							
Mini		532 837	LFMA-D-MINI-DA	Q	532 840	LFMA-D-MINI-DA-A	Q
Midi		532 838	LFMA-D-MIDI-DA	Q	532 841	LFMA-D-MIDI-DA-A	Q
Maxi		532 839	LFMA-D-MAXI-DA	Q	532 842	LFMA-D-MAXI-DA-A	Q
With threaded connecting plates							
Mini	G <sup>1</sup> / <sub>8</sub>	532 843	LFMA- <sup>1</sup> / <sub>8</sub> -D-MINI-DA	Q	532 853	LFMA- <sup>1</sup> / <sub>8</sub> -D-MINI-DA-A	Q
	G <sup>1</sup> / <sub>4</sub>	532 844	LFMA- <sup>1</sup> / <sub>4</sub> -D-MINI-DA	Q	532 854	LFMA- <sup>1</sup> / <sub>4</sub> -D-MINI-DA-A	Q
	G <sup>3</sup> / <sub>8</sub>	532 845	LFMA- <sup>3</sup> / <sub>8</sub> -D-MINI-DA	Q	532 855	LFMA- <sup>3</sup> / <sub>8</sub> -D-MINI-DA-A	Q
Midi	G <sup>1</sup> / <sub>4</sub>	532 846	LFMA- <sup>1</sup> / <sub>4</sub> -D-MIDI-DA	Q	532 856	LFMA- <sup>1</sup> / <sub>4</sub> -D-MIDI-DA-A	Q
	G <sup>3</sup> / <sub>8</sub>	532 847	LFMA- <sup>3</sup> / <sub>8</sub> -D-MIDI-DA	Q	532 857	LFMA- <sup>3</sup> / <sub>8</sub> -D-MIDI-DA-A	Q
	G <sup>1</sup> / <sub>2</sub>	532 848	LFMA- <sup>1</sup> / <sub>2</sub> -D-MIDI-DA	Q	532 858	LFMA- <sup>1</sup> / <sub>2</sub> -D-MIDI-DA-A	Q
	G <sup>3</sup> / <sub>4</sub>	532 849	LFMA- <sup>3</sup> / <sub>4</sub> -D-MIDI-DA	Q	532 859	LFMA- <sup>3</sup> / <sub>4</sub> -D-MIDI-DA-A	Q
Maxi	G <sup>1</sup> / <sub>2</sub>	532 850	LFMA- <sup>1</sup> / <sub>2</sub> -D-MAXI-DA	Q	532 860	LFMA- <sup>1</sup> / <sub>2</sub> -D-MAXI-DA-A	Q
	G <sup>3</sup> / <sub>4</sub>	532 851	LFMA- <sup>3</sup> / <sub>4</sub> -D-MAXI-DA	Q	532 861	LFMA- <sup>3</sup> / <sub>4</sub> -D-MAXI-DA-A	Q
	G1	532 852	LFMA-1-D-MAXI-DA	Q	532 862	LFMA-1-D-MAXI-DA-A	Q

Ordering data – LFMB Fine filter with DA differential pressure indicator							
Working pressure 12 bar, grade of filtration 1 µm, metal bowl guard							
Size	Connection	Condensate drain turned manually			Condensate drain fully automatic		
		Part No.	Type	LT	Part No.	Type	LT
Without threaded connecting plates							
Mini		532 811	LFMB-D-MINI-DA	Q	532 814	LFMB-D-MINI-DA-A	Q
Midi		532 812	LFMB-D-MIDI-DA	Q	532 815	LFMB-D-MIDI-DA-A	Q
Maxi		532 813	LFMB-D-MAXI-DA	Q	532 816	LFMB-D-MAXI-DA-A	Q
With threaded connecting plates							
Mini	G <sup>1</sup> / <sub>8</sub>	532 817	LFMB- <sup>1</sup> / <sub>8</sub> -D-MINI-DA	Q	532 827	LFMB- <sup>1</sup> / <sub>8</sub> -D-MINI-DA-A	Q
	G <sup>1</sup> / <sub>4</sub>	532 818	LFMB- <sup>1</sup> / <sub>4</sub> -D-MINI-DA	Q	532 828	LFMB- <sup>1</sup> / <sub>4</sub> -D-MINI-DA-A	Q
	G <sup>3</sup> / <sub>8</sub>	532 819	LFMB- <sup>3</sup> / <sub>8</sub> -D-MINI-DA	Q	532 829	LFMB- <sup>3</sup> / <sub>8</sub> -D-MINI-DA-A	Q
Midi	G <sup>1</sup> / <sub>4</sub>	532 820	LFMB- <sup>1</sup> / <sub>4</sub> -D-MIDI-DA	Q	532 830	LFMB- <sup>1</sup> / <sub>4</sub> -D-MIDI-DA-A	Q
	G <sup>3</sup> / <sub>8</sub>	532 821	LFMB- <sup>3</sup> / <sub>8</sub> -D-MIDI-DA	Q	532 831	LFMB- <sup>3</sup> / <sub>8</sub> -D-MIDI-DA-A	Q
	G <sup>1</sup> / <sub>2</sub>	532 822	LFMB- <sup>1</sup> / <sub>2</sub> -D-MIDI-DA	Q	532 832	LFMB- <sup>1</sup> / <sub>2</sub> -D-MIDI-DA-A	Q
	G <sup>3</sup> / <sub>4</sub>	532 823	LFMB- <sup>3</sup> / <sub>4</sub> -D-MIDI-DA	Q	532 833	LFMB- <sup>3</sup> / <sub>4</sub> -D-MIDI-DA-A	Q
Maxi	G <sup>1</sup> / <sub>2</sub>	532 824	LFMB- <sup>1</sup> / <sub>2</sub> -D-MAXI-DA	Q	532 834	LFMB- <sup>1</sup> / <sub>2</sub> -D-MAXI-DA-A	Q
	G <sup>3</sup> / <sub>4</sub>	532 825	LFMB- <sup>3</sup> / <sub>4</sub> -D-MAXI-DA	Q	532 835	LFMB- <sup>3</sup> / <sub>4</sub> -D-MAXI-DA-A	Q
	G1	532 826	LFMB-1-D-MAXI-DA	Q	532 836	LFMB-1-D-MAXI-DA-A	Q

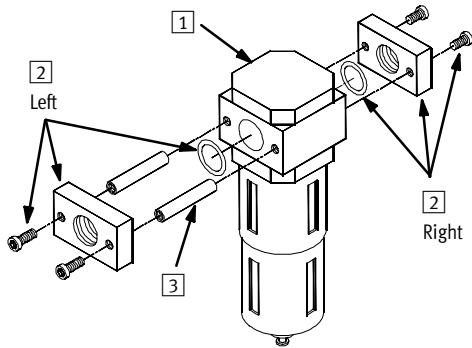
LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# FAST\* Program – LFMB Fine Filter / LFMA Micro Filter Selection Guide



LFMB / LFMA Fine and Micro Filters – D Series, Metal Design

\*FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.



A complete filter assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block	2 (one left, one right)
3	Single Unit Joining Rod	2
4	Mounting Bracket Kit (Optional) (Not shown)	1

**Step 1:** Based upon the required Port Size, Maximum Flow, Filtration Level, Drain Type, and Thread Type, select the Main Unit (Item 1) and the Left and Right Port Block Kits [Item 2].

					Item					
					1	2				
Port size	Max. Flow (l/min/scfm)	Filtration Level (µm)	Drain	Product Type / Description	Main Unit	NPT Thread		BSP Thread		
						Left Port Block	Right Port Block	Left Port Block	Right Port Block	
1/8	130/4.6	0.01	Man.	LFMA-...-D-MINI-...	546439	546520	546521	546495	546496	
			Auto		546441					
	250/8.8	1	Man.	LFMB-...-D-MINI-...	546440					
			Auto		546442					
1/4	160/5.7	0.01	Man.	LFMA-...-D-MINI-...	546439	546522	546523	546497	546498	
			Auto		546441					
	350/12.4		Man.	LFMA-...-D-MIDI-...	546443	546536	546537	546532	546533	
			Auto		546446					
	300/10.6	1		Man.	LFMB-...-D-MINI-...	546440	546522	546523	546497	546498
				Auto		546442				
		500/17.6		Man.	LFMB-...-D-MIDI-...	546444	546536	546537	546532	546533
				Auto		546445				
3/8	180/6.4	0.01	Man.	LFMA-...-D-MINI-...	546439	546524	546525	546499	546500	
			Auto		546441					
	380/13.4		Man.	LFMA-...-D-MIDI-...	546443	546530	546531	546501	546502	
			Auto		546446					
	310/10.9	1		Man.	LFMB-...-D-MINI-...	546440	546524	546525	546499	546500
				Auto		546442				
		700/24.7		Man.	LFMB-...-D-MIDI-...	546444	546530	546531	546501	546502
				Auto		546445				

3

3.3

# FAST Program – LFMB Fine Filter / LFMA Micro Filter Selection Guide

LFMB/LFMA Fine and Micro Filters – D Series, Metal Design

				Item									
				[1]	[2]								
Port size	Max. Flow (l/min/scfm)	Filtration Level (µm)	Drain	Product Type / Description	Main Unit	NPT Thread		BSP Thread					
						Left Port Block	Right Port Block	Left Port Block	Right Port Block				
½	400/14.1	0.01	Man.	LFMA-...-D-MIDI-...	546443	546526	546527	546503	546504				
			Auto		546446								
	750/24.5	0.01	Man.	LFMA-...-D-MAXI-...	546447	546538	546539	546534	546535				
			Auto		546449								
	900/31.8	1	Man.	LFMB-...-D-MIDI-...	546444	546526	546527	546503	546504				
			Auto		546445								
			Man.	LFMB-...-D-MAXI-...	546448					546538	546539	546534	546535
			Auto		546450								
¾	460/16.2	0.01	Man.	LFMA-...-D-MIDI-...	545443	546528	546529	546505	546506				
			Auto		545446								
	900/31.8	0.01	Man.	LFMA-...-D-MAXI-...	546447	546490	546492	546507	546508				
			Auto		546449								
	1000/35.3	1	Man.	LFMB-...-D-MIDI-...	546444	546528	546529	546505	506506				
			Auto		546445								
			Man.	LFMB-...-D-MAXI-...	546448					546490	546492	546507	546508
			Auto		546450								
1	950/33.5	0.01	Man.	LFMA-...-D-MAXI-...	546447	546491	546493	546509	546510				
			Auto		546449								
	1250/44.1	1	Man.	LFMB-...-D-MAXI-...	546448	546491	546493	546509	546510				
			Auto		546450								

3

3.3

**Step 2:** Based upon the Product Type/Description from Step 1, select the Joining Rods (Item [3]) and the (optional) Mounting Bracket Kit (Item [4]).

		Item	[4] [Not shown]
		[2]	
Product Type/Description	Single Unit Joining Rod		Mounting Bracket Kit (Optional)
LFMA-...-D-MINI-...	546483		159638
LFMB-...-D-MINI-...			
LFMA-...-D-MIDI-...	546489		159593
LFMB-...-D-MIDI-...			
LFMA-...-D-MAXI-...	546494		
LFMB-...-D-MAXI-...			

**Step3:** Determine the appropriate quantity of each Item.

**Ordering Example:**

Required: ¼ port size, 1100 l/min flow, 1 µm filtration, automatic drain, BSP threads, and mounting bracket kit.

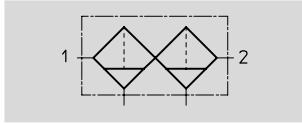
	Item	Part No.	Qty	Description
Order:	[1]	546442	1	Main Unit
	[2]	546497	1	Left Port Block Kit
		546498	1	Right Port Block Kit
	[3]	546483	2	Single Unit Joining Rod
	[4]	159638	1	Mounting Bracket Kit

# LFMBA Filter Combination – D Series, Metal Design

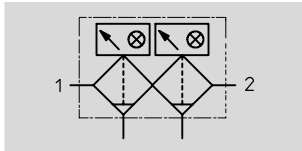
Technical Data

Function

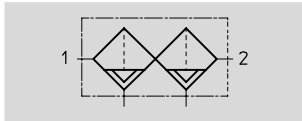
Condensate drain  
turned manually  
without differential pressure indicator



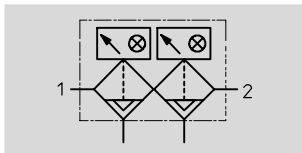
with differential pressure indicator






Condensate drain  
fully automatic  
without differential pressure indicator



with differential pressure indicator



-  - Flow rate  
125 ... 600 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Input pressure  
1 ... 16 bar



- High efficiency filter for special requirements
- Air quality to DIN ISO 8573-1
- Available as preassembled filter combination
- Version with differential pressure indicator for optical indication of filter pollution
- Filter cartridges with 1 µm and 0.01 µm
- Filter cartridges → 291

ISO class 1 for particles:  
max. particle density 0.1 mg/m<sup>3</sup>  
ISO class 2 for oil aerosols:  
max. oil concentration 0.1 mg/m<sup>3</sup>  
Filter efficiency 99.9999%

3

3.3

General technical data												
Size	Mini			Midi				Maxi				
Pneumatic connection	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G1		
	1/8 NPT	1/4 NPT	3/8 NPT		3/8 NPT	1/2 NPT	3/4 NPT		3/4 NPT	1 NPT		
Operating medium	Filtered compressed air, lubricated or unlubricated (grade of filtration: 5 µm)											
Design	Fiber filter											
Type of mounting	Via accessories In-line installation											
Assembly position	Vertical ±5°											
Grade of filtration [µm]	0.01 and 1											
Residual oil content [mg/m <sup>3</sup> ]	≤0.01											
Max. condensate volume [cm <sup>3</sup> ]	22			43				80				
Input pressure [bar]												
Condensate drain												
Manual	1 ... 16											
Fully automatic	1.5 ... 12											

Standard nominal flow rate <sup>1)</sup> qnN [l/min]											
Connection	Mini			Midi				Maxi			
	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G1	
LFMBA	125	130	140	300	350	350	350	550	550	600	

1) Measured at p<sub>1</sub> = 6 bar and Δp = 70 mbar.  
A minimum flow rate of 125 l/min is required for flawless functioning.



# LFMBA Filter Combination – D Series, Metal Design

Technical Data

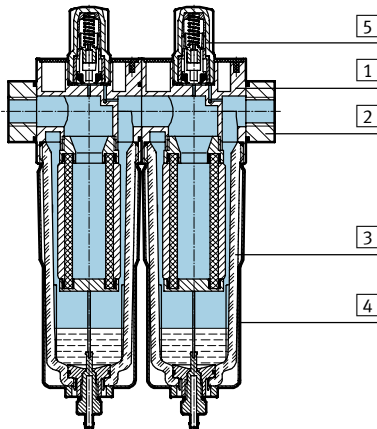
Ambient conditions		Mini	Midi	Maxi
Size				
Ambient temperature	[°C]	-10 ... +60		
Temperature of medium	[°C]	+1.5 ... +60		
Corrosion resistance class	CRC <sup>1)</sup>	2		

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

Weight [g]		Mini	Midi	Maxi
Size				
Without differential pressure indicator		500	1300	2400
With differential pressure indicator		651	1429	2362

## Materials

Sectional view



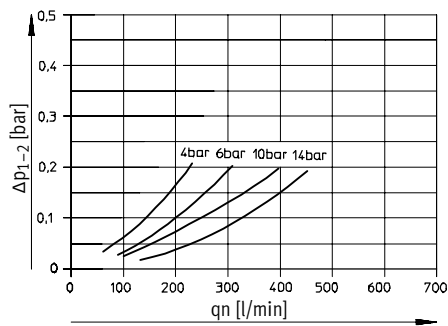
Filter combination		
1	Housing	Die-cast zinc
2	Port blocks	Die-cast zinc
3	Bowl	Polycarbonate
4	Bowl guard	Aluminum
5	Housing for version with differential pressure indicator	Polycarbonate
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE

3

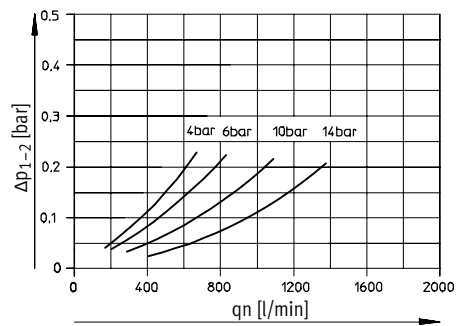
3.3

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

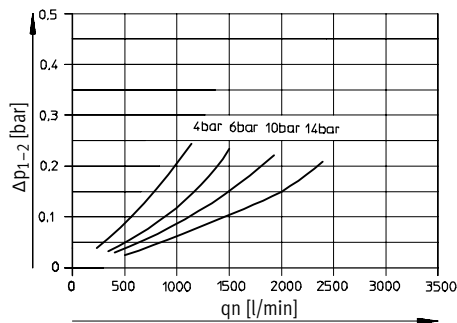
LFMBA-1/4-D-MINI and LFMBA-1/4-D-MINI-A



LFMBA-1/2-D-MIDI and LFMBA-1/2-D-MIDI-A



LFMBA-1-D-MAXI and LFMBA-1-D-MAXI-A

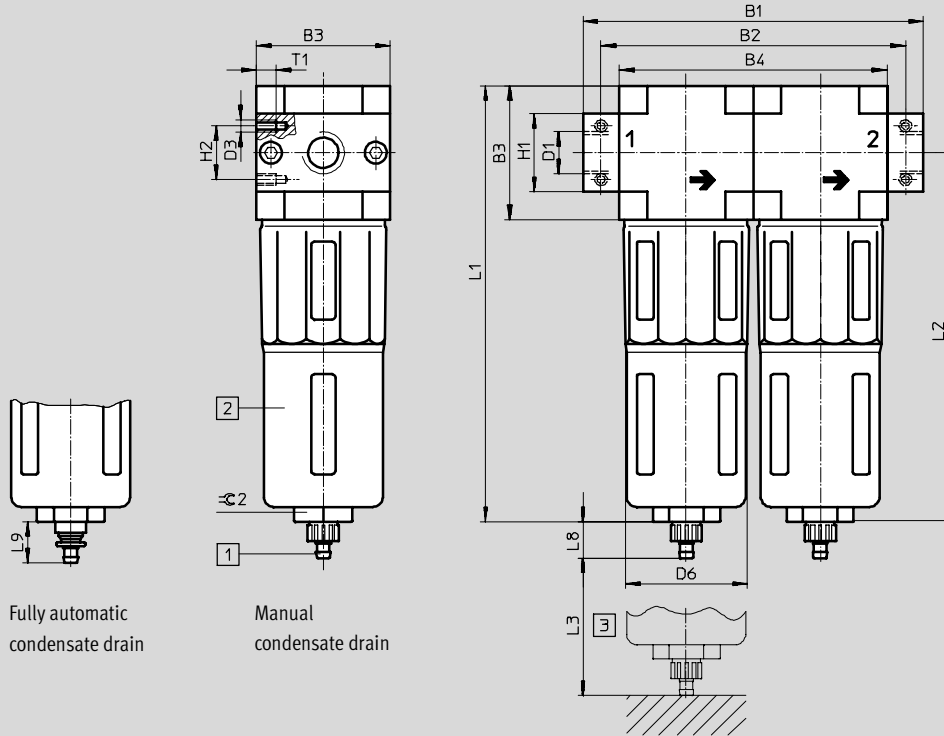


# LFMBA Filter Combination – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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



- 1 Barbed fitting for plastic tubing type PCN-4
- 2 Metal bowl guard
- 3 Installation dimensions

→ Flow direction

Type	B1	B2	B3	B4	D1	D3	D6	H1	H2	L1	L2	L3	L8	L9	T1	∅ 2
<b>Mini</b>																
LFMBA-1/8-D-MINI	104	92	40	80	G1/8 1/8 NPT	M4	38	20	11	144	124	60	15	19	7	22
LFMBA-1/4-D-MINI																
LFMBA-3/8-D-MINI																
<b>Midi</b>																
LFMBA-1/4-D-MIDI	140	125	55	110	G1/4	M5	52	32	22	179	151	80	15	19	8	24
LFMBA-3/8-D-MIDI					G3/8 3/8 NPT											
LFMBA-1/2-D-MIDI					G1/2 1/2 NPT											
LFMBA-3/4-D-MIDI					G3/4 3/4 NPT											
<b>Maxi</b>																
LFMBA-1/2-D-MAXI	162	146	66	132	G1/2	M5	65	32	22	203	170	90	15	19	8	24
LFMBA-3/4-D-MAXI					G3/4 3/4 NPT											
LFMBA-1-D-MAXI					G1 1 NPT											

3

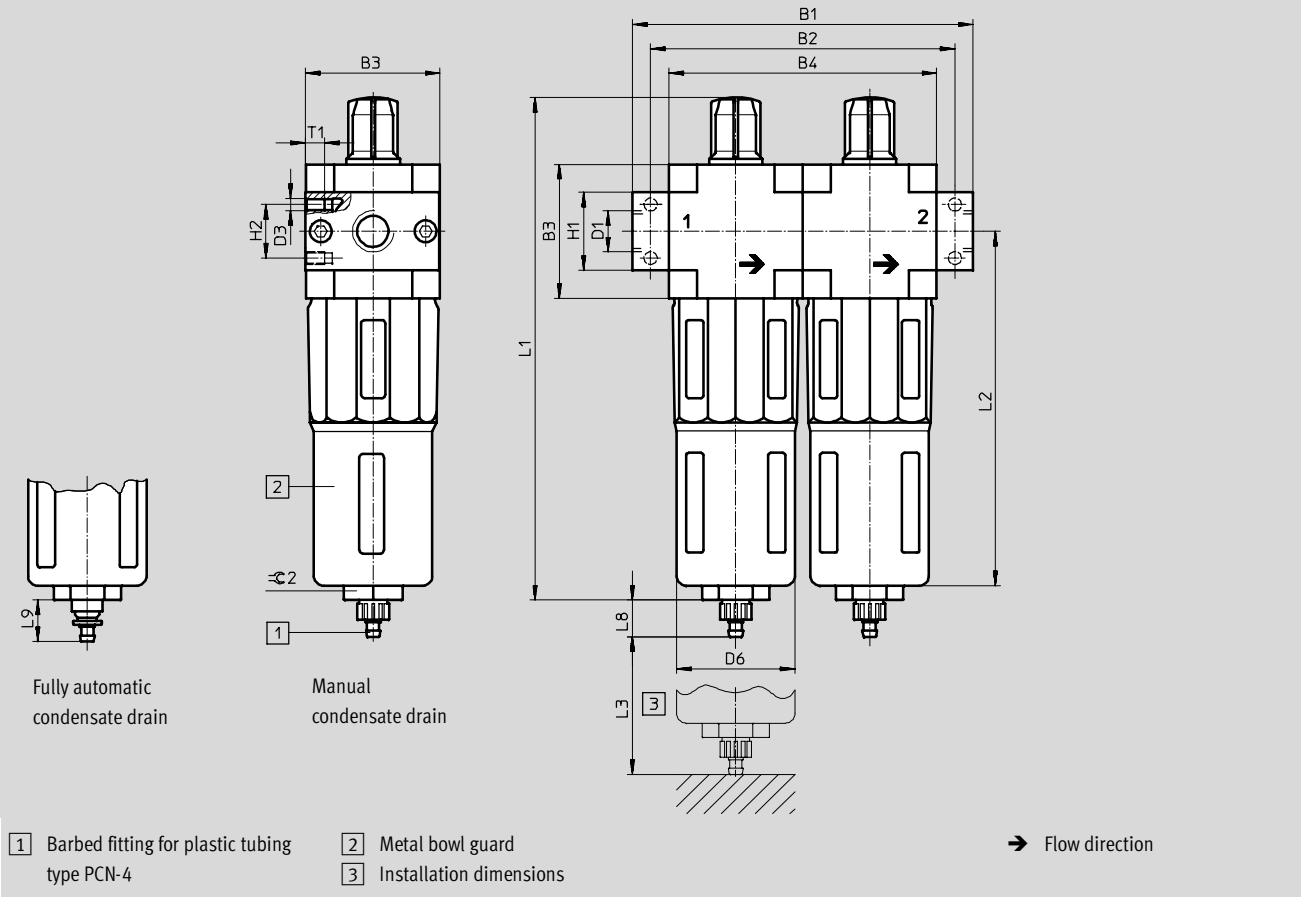
3.3

# LFMBA Filter Combination – D Series, Metal Design

Technical Data – Dimensional Drawings

Dimensions with differential pressure indicator

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



3

3.3

Type	B1	B2	B3	B4	D1	D3	D6 ∅	H1	H2	L1	L2	L3	L8	L9	T1	$\varnothing 2$
<b>Mini</b>																
LFMBA-1/8-D-MINI-DA	104	92	40	80	G1/8	M4	38	20	11	173	124	60	15	19	7	22
LFMBA-1/4-D-MINI-DA					G1/4											
LFMBA-3/8-D-MINI-DA					G3/8											
<b>Midi</b>																
LFMBA-1/4-D-MIDI-DA	140	125	55	110	G1/4	M5	52	32	22	206	151	80	15	19	8	24
LFMBA-3/8-D-MIDI-DA					G3/8											
LFMBA-1/2-D-MIDI-DA					G1/2											
LFMBA-3/4-D-MIDI-DA					G3/4											
<b>Maxi</b>																
LFMBA-1/2-D-MAXI-DA	162	146	66	132	G1/2	M5	65	32	22	231	170	90	15	19	8	24
LFMBA-3/4-D-MAXI-DA					G3/4											
LFMBA-1-D-MAXI-DA					G1											

# LFMBA Filter Combinations – D Series, Metal Design

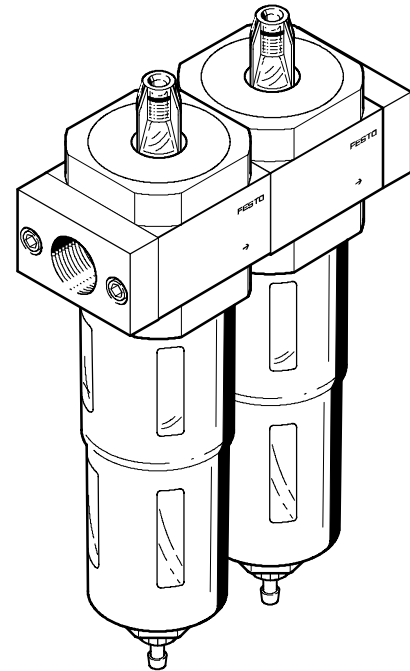
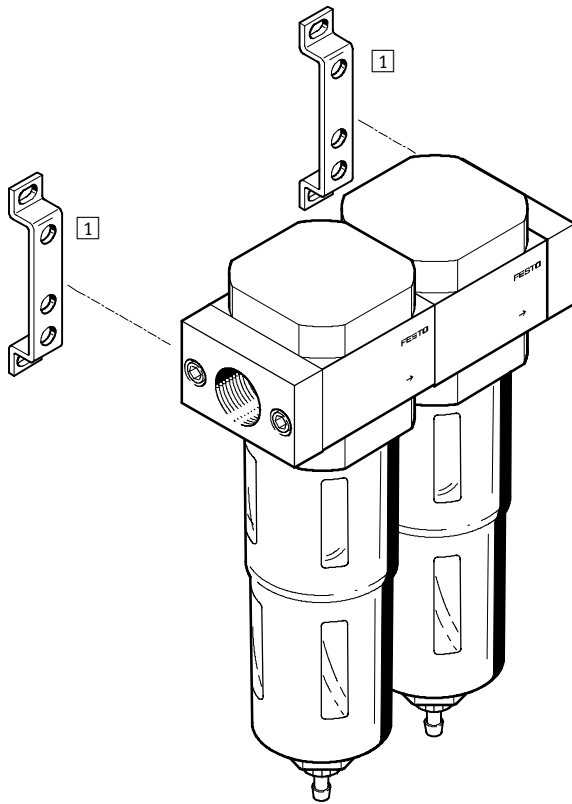
Accessories Overview



## Mini/Midi/Maxi

without differential pressure indicator

with differential pressure indicator



3

3.3

### Mounting components

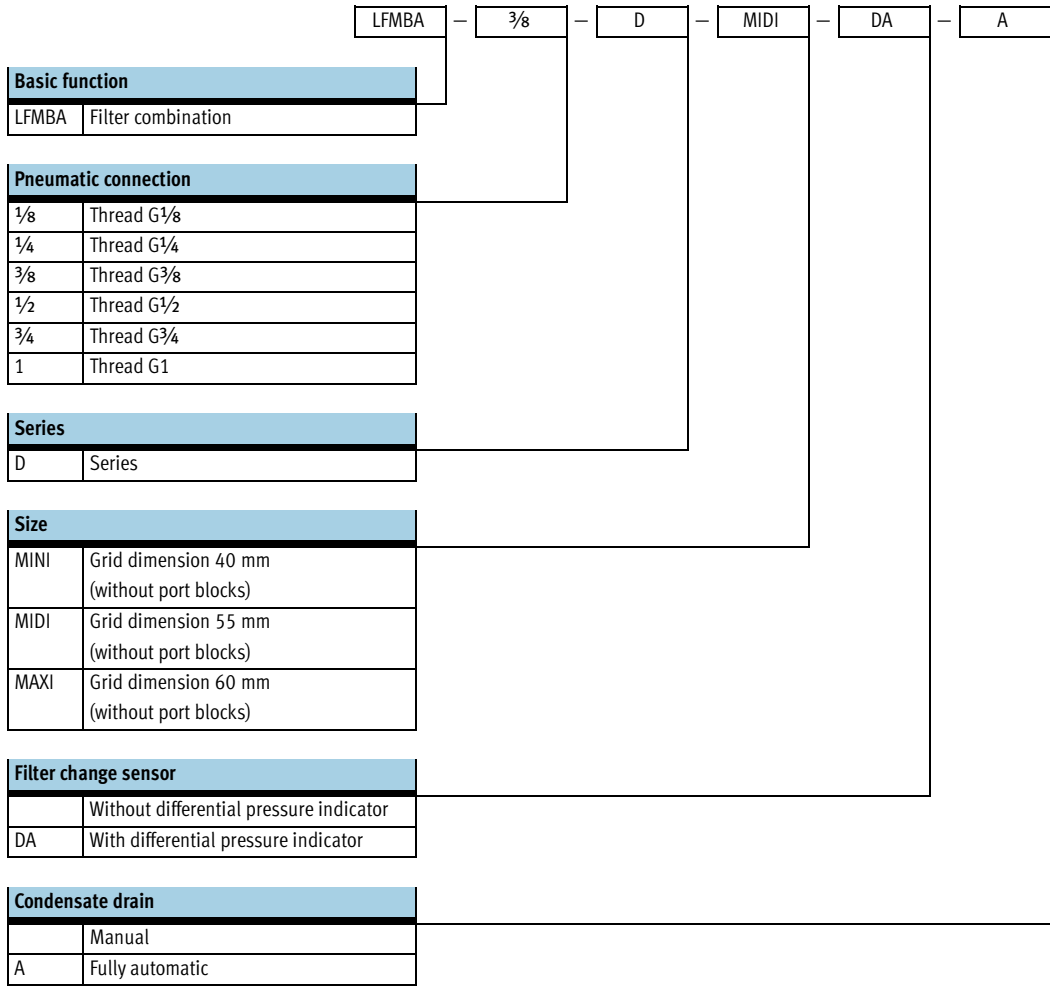
→ Page

1 Mounting bracket  
HFOE

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# LFMBA Filter Combinations – D Series, Metal Design

Type Codes – G (BSPP) Connections



# LFMBA Filter Combinations – D Series, Metal Design

Type Codes – NPT Connections

LFMBA – 3/8 – D – MIDI – A – NPT

**Basic function**

LFMBA	Filter combination
-------	--------------------

**Pneumatic connection**

1/8	1/8 NPT Thread
1/4	1/4 NPT Thread
3/8	3/8 NPT Thread
1/2	1/2 NPT Thread
3/4	3/4 NPT Thread
1	1 NPT Thread

**Series**

D	Series
---	--------

**Size**

MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 60 mm (without port blocks)

**Condensate drain**

	Manual
A	Fully automatic

**NPT Connection (where available)**

NPT	NPT threaded connection
-----	-------------------------

3

3.3

# LFMBA Filter Combinations – D Series, Metal Design

Ordering Data

Ordering data – LFMBA Filter combination								
Grade of filtration 1 µm and 0.01 µm, metal bowl guard								
Size	Connection	Input pressure 1 ... 16 bar				Input pressure 1.5 ... 12 bar		
		Condensate drain turned manually				Condensate drain fully automatic		
		Part No.	Type		LT	Part No.	Type	LT
Mini	G1/8	162658	LFMBA-1/8-D-MINI		Q	162666	LFMBA-1/8-D-MINI-A	Q
	G1/4	162659	LFMBA-1/4-D-MINI		Q	162667	LFMBA-1/4-D-MINI-A	Q
	G3/8	162660	LFMBA-3/8-D-MINI		Q	162668	LFMBA-3/8-D-MINI-A	Q
	G1/8	173740	LFMBA-1/8-D-MINI-NPT		Q	173741	LFMBA-1/8-D-MINI-A-NPT	Q
	G1/4	173742	LFMBA-1/4-D-MINI-NPT		Q	173743	LFMBA-1/4-D-MINI-A-NPT	Q
	G3/8	173744	LFMBA-3/8-D-MINI-NPT		Q	173745	LFMBA-3/8-D-MINI-A-NPT	Q
Midi	G1/4	186471	LFMBA-1/4-D-MIDI		Q	186472	LFMBA-1/4-D-MIDI-A	Q
	G3/8	162661	LFMBA-3/8-D-MIDI		Q	162669	LFMBA-3/8-D-MIDI-A	Q
	G1/2	162662	LFMBA-1/2-D-MIDI		Q	162670	LFMBA-1/2-D-MIDI-A	Q
	G3/4	162663	LFMBA-3/4-D-MIDI		Q	162671	LFMBA-3/4-D-MIDI-A	Q
	G3/8	173746	LFMBA-3/8-D-MIDI-NPT		Q	173747	LFMBA-3/8-D-MIDI-A-NPT	Q
	G1/2	173748	LFMBA-1/2-D-MIDI-NPT		Q	173749	LFMBA-1/2-D-MIDI-A-NPT	Q
	G3/4	173750	LFMBA-3/4-D-MIDI-NPT		Q	173751	LFMBA-3/4-D-MIDI-A-NPT	Q
	Maxi	G1/2	186477	LFMBA-1/2-D-MAXI		Q	186478	LFMBA-1/2-D-MAXI-A
G3/4		162664	LFMBA-3/4-D-MAXI		Q	162672	LFMBA-3/4-D-MAXI-A	Q
G1		162665	LFMBA-1-D-MAXI		Q	162673	LFMBA-1-D-MAXI-A	Q
G3/4		173752	LFMBA-3/4-D-MAXI-NPT		Q	173753	LFMBA-3/4-D-MAXI-A-NPT	Q
G1		173754	LFMBA-1-D-MAXI-NPT		Q	173755	LFMBA-1-D-MAXI-A-NPT	Q

Ordering data – LFMBA Filter combination with DA differential pressure indicator								
Grade of filtration 1 µm and 0.01 µm, metal bowl guard								
Size	Connection	Input pressure 1 ... 16 bar				Input pressure 1.5 ... 12 bar		
		Condensate drain turned manually				Condensate drain fully automatic		
		Part No.	Type		LT	Part No.	Type	LT
Mini	G1/8	532 863	LFMBA-1/8-D-MINI-DA		Q	532 873	LFMBA-1/8-D-MINI-DA-A	Q
	G1/4	532 864	LFMBA-1/4-D-MINI-DA		Q	532 874	LFMBA-1/4-D-MINI-DA-A	Q
	G3/8	532 865	LFMBA-3/8-D-MINI-DA		Q	532 875	LFMBA-3/8-D-MINI-DA-A	Q
Midi	G1/4	532 866	LFMBA-1/4-D-MIDI-DA		Q	532 876	LFMBA-1/4-D-MIDI-DA-A	Q
	G3/8	532 867	LFMBA-3/8-D-MIDI-DA		Q	532 877	LFMBA-3/8-D-MIDI-DA-A	Q
	G1/2	532 868	LFMBA-1/2-D-MIDI-DA		Q	532 878	LFMBA-1/2-D-MIDI-DA-A	Q
	G3/4	532 869	LFMBA-3/4-D-MIDI-DA		Q	532 879	LFMBA-3/4-D-MIDI-DA-A	Q
Maxi	G1/2	532 870	LFMBA-1/2-D-MAXI-DA		Q	532 880	LFMBA-1/2-D-MAXI-DA-A	Q
	G3/4	532 871	LFMBA-3/4-D-MAXI-DA		Q	532 881	LFMBA-3/4-D-MAXI-DA-A	Q
	G1	532 872	LFMBA-1-D-MAXI-DA		Q	532 882	LFMBA-1-D-MAXI-DA-A	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

**3**

3.3

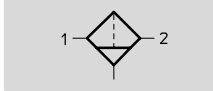


# LFX Active Carbon Filters – D Series, Metal Design

Technical Data

Function

Condensate drain  
turned manually



- - Flow rate  
300 ... 1430 l/min
- - Temperature range  
-10 ... +60 °C
- - Input pressure  
0 ... 16 bar



- Removal of liquid and gaseous oil particles from compressed air using active carbon
- Active carbon filter cartridges provide odor and oil-free air to food industry standard
- Prefiltration down to a particle size of 0.01µm is recommended
- Filter cartridges → 291

General technical data										
Size	Mini			Midi			Maxi			
Pneumatic connection	G1/8	G1/4	G3/8	G1/4	G3/8	G1/2	G3/4	G1/2	G3/4	G1
Operating medium	Compressed air, filtered, unlubricated, grade of filtration 0.01 µm									
Design	Fiber filter (filter fabric made of active carbon)									
Type of mounting	Via accessories In-line installation									
Assembly position	Vertical ±5°									
Residual oil content [mg/m <sup>3</sup> ]	≤0.003									
Air purity class at the output	1.7.1 to DIN ISO 8573-1									
Input pressure [bar]	0 ... 16									

Standard nominal flow rate <sup>1)</sup> qnN and standard flow rate qn [l/min]						
Connection	G1/8	G1/4	G3/8	G1/2	G3/4	G1
<b>Mini</b>						
qnN	300	330	400	–	–	–
qn max	360	360	360	–	–	–
<b>Midi</b>						
qnN	–	650	950	1050	1100	–
qn max	–	900	900	900	900	–
<b>Maxi</b>						
qnN	–	–	–	1350	1400	1430
qn max	–	–	–	1100	1100	1100

1) Measured at p1 = 6 bar and Δp = 70 mbar.  
A minimum flow rate of 125 l/min is required for flawless functioning.

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	-10 ... +60 °C		
Temperature of medium [°C]	+5 ... +30 °C		
Corrosion resistance class CRC <sup>2)</sup>	2		

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

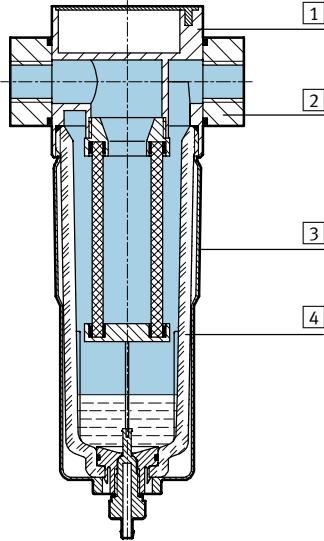
# LFX Active Carbon Filters – D Series, Metal Design

Technical Daten

Weight [g]			
Size	Mini	Midi	Maxi
With port blocks	376	816	1191
Without port blocks	283	600	921

## Materials

Sectional view



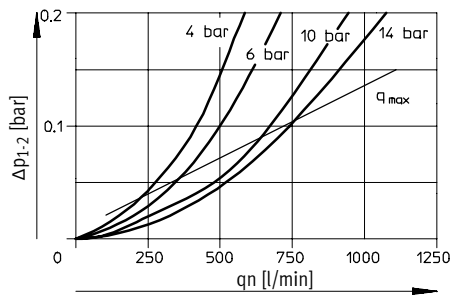
Active carbon filter		
1	Housing	Die-cast zinc
2	Port blocks	Aluminum
3	Bowl	Polycarbonate
4	Metal bowl guard	Aluminum
-	Seals	Nitrile rubber
Note on materials		Free of copper, PTFE and silicone

3

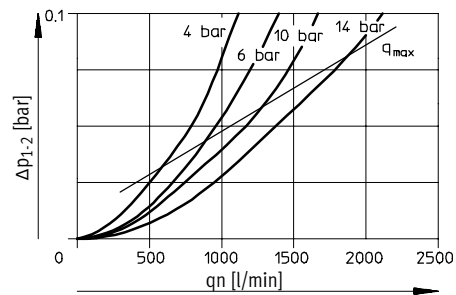
3.3

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

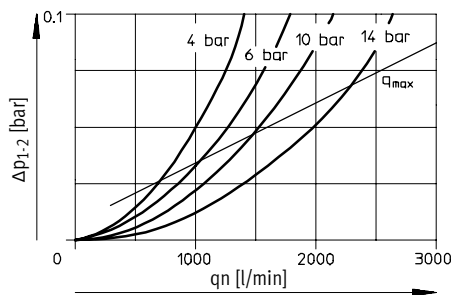
LFX-1/4-D-MINI



LFX-1/2-D-MIDI



LFX-1-D-MAXI



# LFX Active Carbon Filters – D Series, Metal Design

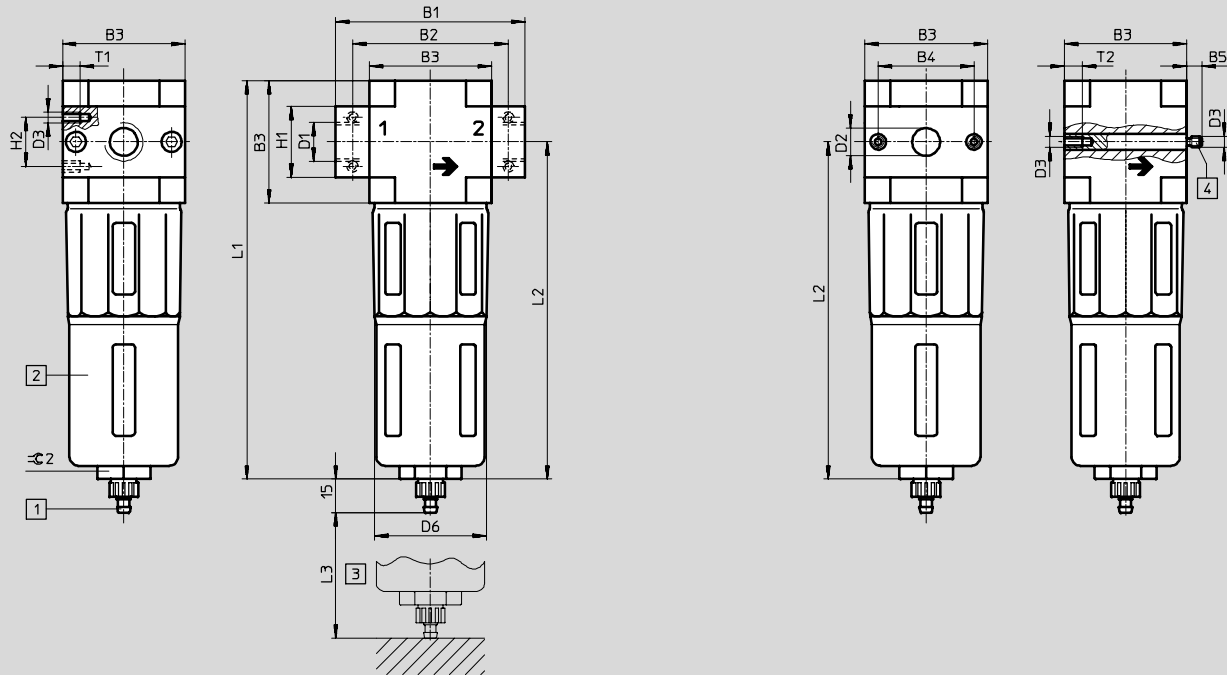
Technical Data - Dimensional Drawings

**Dimensions**

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

With threaded port blocks

Without threaded port blocks



- 1 Barbed fitting for plastic tubing type PCN-4
- 2 Metal bowl guard
- 3 Installation dimensions
- 4 Threaded pin (exchangeable)
- Flow direction

Type	B1	B2	B3	B4	B5	D1	D2	D3	D6	H1	H2	L1	L2	L3	T1	T2	±0.2
<b>Mini</b>																	
LFX-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	38	20	11	144	124	60	7	-	22
LFX-1/4-D-MINI						G1/4											
LFX-3/8-D-MINI						G3/8											
LFX-D-MINI	-	-	-	-	5.8	-	11	-	-	-	-	-	-	-	-	10	-
<b>Midi</b>																	
LFX-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	52	32	22	179	151	80	8	-	24
LFX-3/8-D-MIDI						G3/8											
LFX-1/2-D-MIDI						G1/2											
LFX-3/4-D-MIDI						G3/4											
LFX-D-MIDI	-	-	-	-	6.8	-	24	-	-	-	-	-	-	-	-	11	-
<b>Maxi</b>																	
LFX-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	65	32	22	203	170	90	8	-	24
LFX-3/4-D-MAXI						G3/4											
LFX-1-D-MAXI						G1											
LFX-D-MAXI	-	-	-	-	6.8	-	30	-	-	-	-	-	-	-	-	11	-

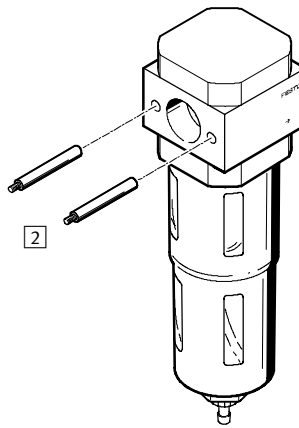
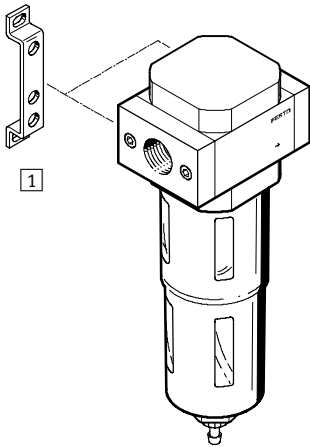
# LFX Active Carbon Filters

Accessories Overview

## Mini/Midi/Maxi

Individual unit with port blocks

Individual unit without port blocks, for service unit combination



### Mounting attachments and accessories

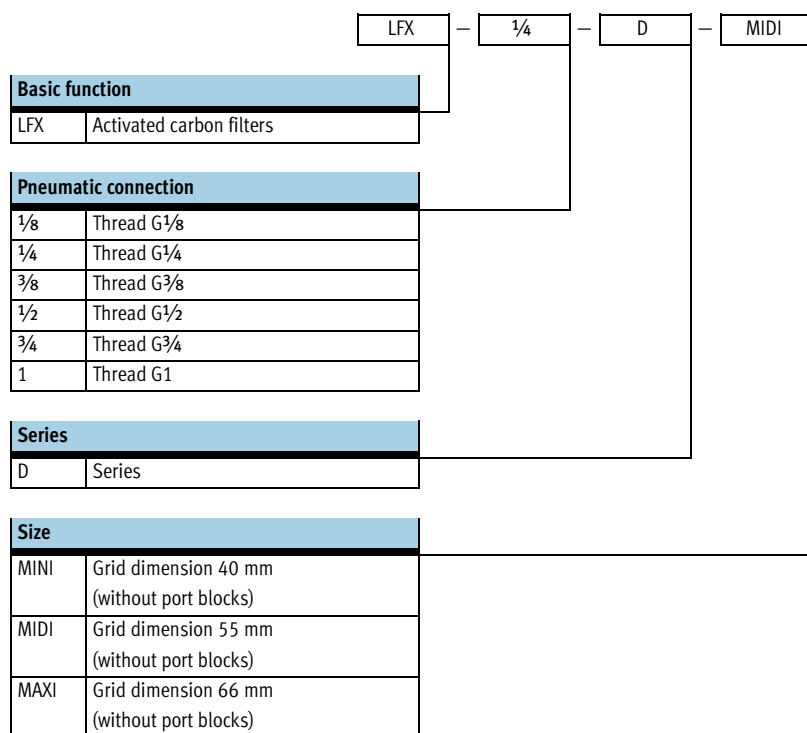
	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	-	■	-	276
2 Threaded pin (included in scope of delivery) FRB	-	-	■	■	278

3

3.3

# LFX Active Carbon Filters – D Series, Metal Design

Type Codes



# LFX Active Carbon Filters – D Series, Metal Design

Ordering Data

Ordering data			
Active carbon filter with metal bowl guard			
Size	Part No.	Type	LT
Without threaded port blocks			
Mini	532776	LFX-D-MINI	Q
Midi	532777	LFX-D-MIDI	Q
Maxi	532778	LFX-D-MAXI	Q

Ordering data				
Active carbon filter with metal bowl guard				
Size	Connection	Part No.	Type	LT
With threaded port blocks				
Mini	G $\frac{1}{8}$	532779	LFX- $\frac{1}{8}$ -D-MINI	Q
	G $\frac{1}{4}$	532802	LFX- $\frac{1}{4}$ -D-MINI	Q
	G $\frac{3}{8}$	532780	LFX- $\frac{3}{8}$ -D-MINI	Q
Midi	G $\frac{1}{4}$	532781	LFX- $\frac{1}{4}$ -D-MIDI	Q
	G $\frac{3}{8}$	532782	LFX- $\frac{3}{8}$ -D-MIDI	Q
	G $\frac{1}{2}$	532783	LFX- $\frac{1}{2}$ -D-MIDI	Q
	G $\frac{3}{4}$	532784	LFX- $\frac{3}{4}$ -D-MIDI	Q
Maxi	G $\frac{1}{2}$	532785	LFX- $\frac{1}{2}$ -D-MAXI	Q
	G $\frac{3}{4}$	532786	LFX- $\frac{3}{4}$ -D-MAXI	Q
	G1	532787	LFX-1-D-MAXI	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

3

3.3



LDM1-D-MAXI  
Membrane Air Dryer  
With Port Blocks

**3**  
3.4

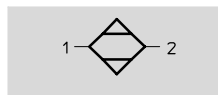
The LDM1 membrane air dryer is the optimal final dryer with excellent operational reliability

Prefiltration with an LFMA Micro filter down to a particle size of 0.01 micron is required

# LDM1 Membrane Air Dryers – D Series, Metal Design

## Technical Data

### Function



- - Flow rate  
300 ... 1,000 l/min

- - Temperature range  
+2 ... +50 °C

- - Input pressure  
3 ... 12.5 bar

Pressure dew point reduction:

LDM1-...-300/600: 20 K

LDM1-...-1000: 17 K



- Optimum final dryer with excellent operational reliability
- Suitable for use as an individual device or for integration in existing service unit combinations

- Flow rate-dependent dew point reduction
- Wear-free function requiring no external energy
- 15% purge air flow rate with the LDM1-...-300/600 and 20% with the LDM1-...-1000

### Typical areas of application:

- Drying, cleaning of precision parts
- Measuring technology
- Rinsing of precision glass scales
- Painting systems
- Paper and packaging machines

### Note

Prefiltration of the compressed air using a micro filter LFMA-D-MAXI, grade of filtration 0.01 µm (residual particles < 0.1 µm, residual oil content < 0.1 mg/m<sup>3</sup>) is vital for flawless functioning of the unit.

3

3.4

General technical data			
Size	Maxi		
Pneumatic connection 1 <sup>1)</sup>	G1½	G¾	G1
Pneumatic connection 2 <sup>1)</sup>	G1½	G¾	G1
Operating medium	Compressed air, air quality class 1.7.2 to DIN ISO 8573-1		
Design	Membrane dryer with internal air consumption		
Type of mounting	Via accessories In-line installation		
Assembly position	Vertical ±5°		

1) with connection plates

Standard flow rate qn [l/min]			
Size	LDM1-D-MAXI-300 <sup>2)</sup>	LDM1-D-MAXI-600 <sup>2)</sup>	LDM1-D-MAXI-1000 <sup>3)</sup>
Input qn In	353	706	1250
Output qn Out	300	600	1000
Purge air qn Purge	53	106	250

2) Measured at p<sub>1</sub> = 6.9 bar, T<sub>pd In</sub> = 25 °C, T<sub>pd Out</sub> = 5 °C ± 1.5 °C (T<sub>pA Out</sub> = -21.5 °C ± 1.2 °C), T<sub>amb</sub> = 25 °C

3) Measured at p<sub>1</sub> = 6.9 bar, T<sub>pd In</sub> = 25 °C, T<sub>pd Out</sub> = 8 °C ± 1.5 °C (T<sub>pA Out</sub> = -19.1 °C ± 1.2 °C), T<sub>amb</sub> = 25 °C

Operating and environmental conditions			
Type	LDM1-...-300	LDM1-...-600	LDM1-...-1000
Input pressure [bar]	3 ... 12.5		
Pressure dew point reduction [K]	20		17
Ambient temperature [°C]	+2 ... +50		
Temperature of medium [°C]	+2 ... +50		
Storage temperature [°C]	-20 ... +60		
Corrosion resistance class CRC <sup>4)</sup>	2		

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



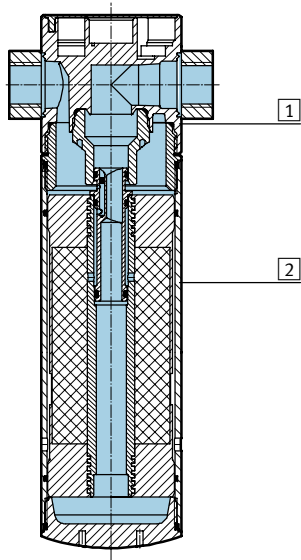
# LDM1 Membrane Air Dryers – D Series, Metal Design

Technical Data

Weight [g]				
Port	Without port blocks	With port blocks		
		G1/2	G3/4	G1
LDM1-....-300	1,650	1,800	1,900	2,000
LDM1-....-600	2,100	2,250	2,350	2,450
LDM1-....-1000	2,100	2,250	2,350	2,450

## Materials

Sectional view



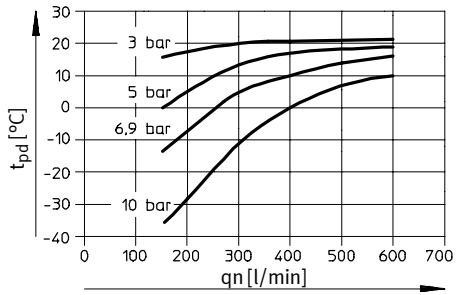
Membrane air dryer		
1	Housing	Die-cast zinc
2	Bowl	Wrought aluminum alloy
-	Seals	Nitrile rubber

# LDM1 Membrane Air Dryers – D Series, Metal Design

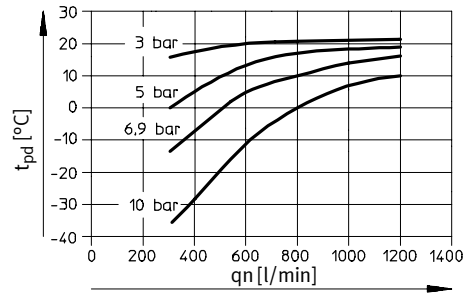
Technical Data

## Pressure dew point $t_{pd}$ (output) as a function of the standard flow rate at output $q_n$

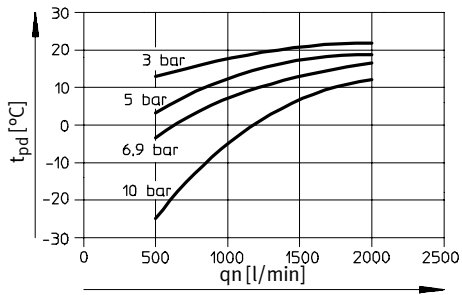
LDM1-...-300



LDM1-...-600



LDM1-...-1000

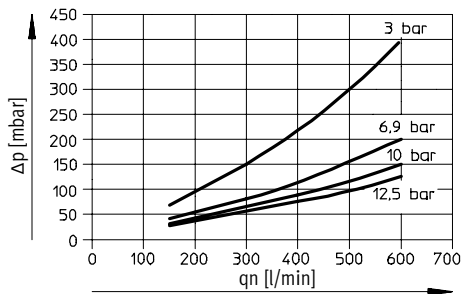


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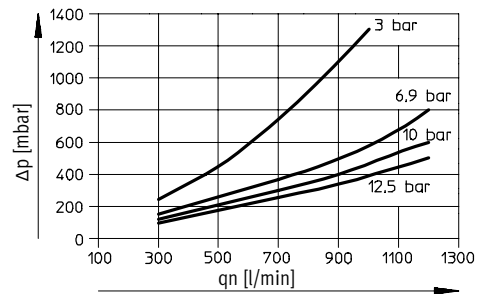
3.4

## Differential pressure $\Delta p$ as a function of the standard flow rate at output $q_n$

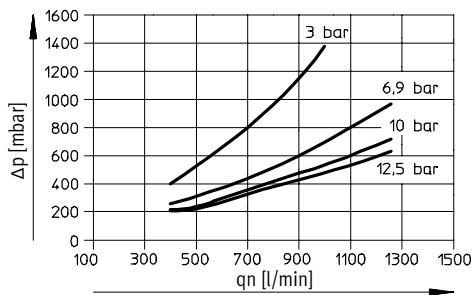
LDM1-...-300



LDM1-...-600



LDM1-...-1000



# LDM1 Membrane Air Dryers – D Series, Metal Design

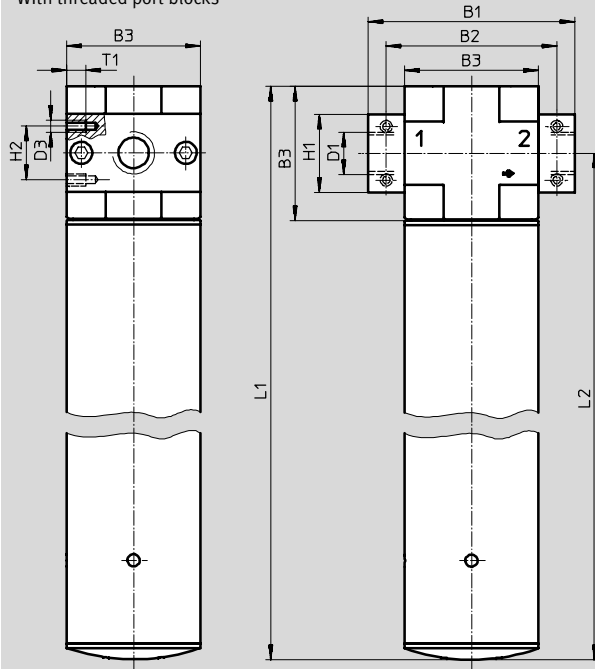
Technical Data - Dimensional Drawings

**Dimensions**

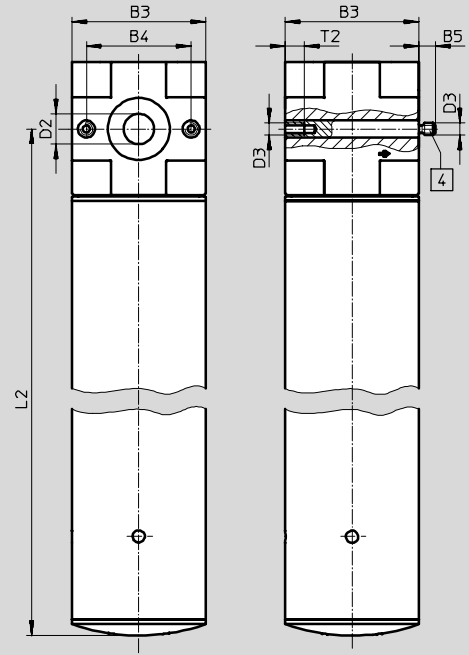
Download CAD data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

Maxi

With threaded port blocks



Without threaded port blocks



4 Threaded pin (exchangeable)

→ Flow direction

Type	B1	B2	B3	B4	B5	D1	D2 Ø	D3	H1	H2	L1	L2	T1	T2
LDM1-1/2-D-MAXI-300	96	80	66	46	-	G1/2	-	M5	32	22	329	296	8	-
LDM1-1/2-D-MAXI-600											519	486		
LDM1-1/2-D-MAXI-1000											519	486		
LDM1-3/4-D-MAXI-300	96	80	66	46	-	G3/4	-	M5	36	22	329	296	8	-
LDM1-3/4-D-MAXI-600											519	486		
LDM1-3/4-D-MAXI-1000											519	486		
LDM1-1-D-MAXI-300	116	91	66	46	-	G1	-	M5	41	22	329	296	8	-
LDM1-1-D-MAXI-600											519	486		
LDM1-1-D-MAXI-1000											519	486		
LDM1-D-MAXI-300	-	-	66	46	7	-	30	M5	-	-	329	296	-	11
LDM1-D-MAXI-600											519	486		
LDM1-D-MAXI-1000											519	486		

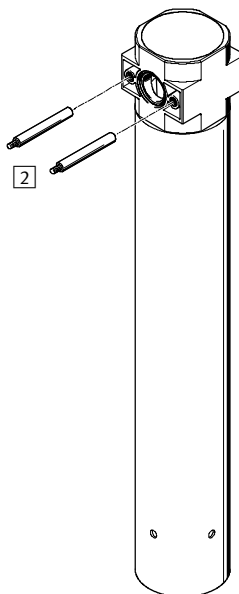
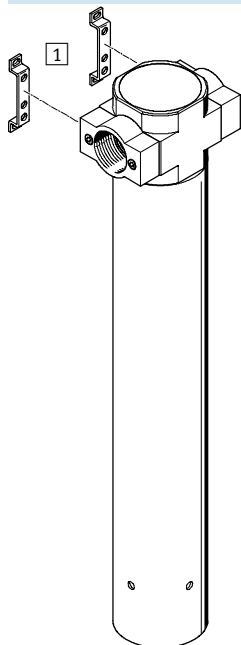
# LDM1 Membrane Air Dryers – D Series, Metal Design

Accessories Overview

**Maxi**

Individual unit with port blocks

Individual unit without port blocks, for combination unit



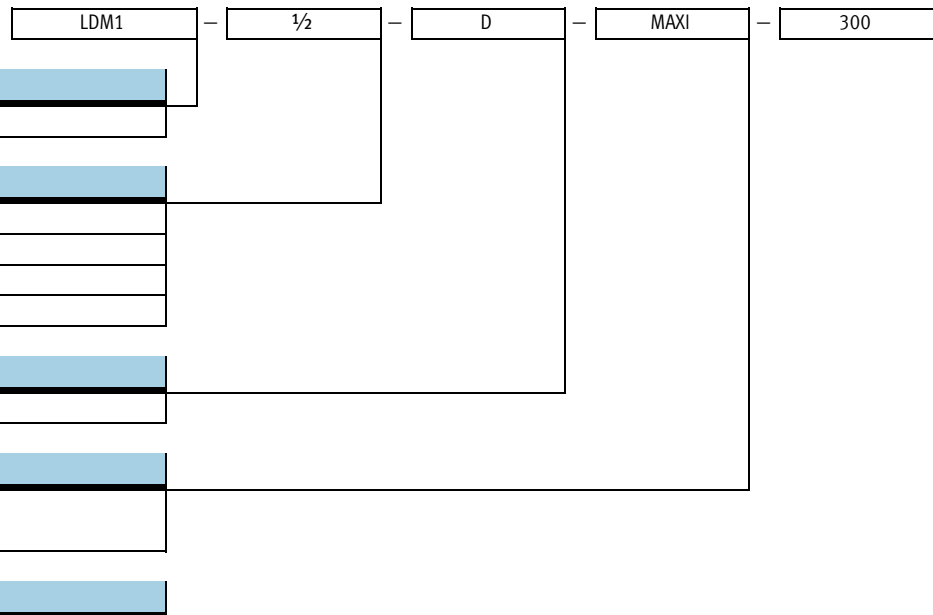
3

3.4

Mounting attachments and accessories					
	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	-	■	-	276
2 Threaded pin (included in scope of delivery) FRB	-	-	■	■	278

# LDM1 Membrane Air Dryers – D Series, Metal Design

Type Codes



**Basic function**

LDM1	Membrane air dryer
------	--------------------

**Pneumatic connection**

–	Without port blocks
1/2	Thread G1/2
3/4	Thread G3/4
1	Thread G1

**Series**

D	Series
---	--------

**Size**

MAXI	Grid dimension 66 mm (without port blocks)
------	---

**Standard flow rate at output q<sub>n Off</sub>**

300	300 l/min
600	600 l/min
1000	1,000 l/min

# LDM1 Membrane Air Dryers – D Series, Metal Design

Ordering Data

Ordering data – Without port blocks											
Size	LDM1-...-300				LDM1-...-600				LDM1-...-1000		
	Part No.	Type		LT	Part No.	Type		LT	Part No.	Type	LT
Maxi	543664	LDM1-D-MAXI-300		Q	543665	LDM1-D-MAXI-600		Q	543666	LDM1-D-MAXI-1000	Q

Ordering data – With port blocks												
Size	Connection	LDM1-...-300				LDM1-...-600				LDM1-...-1000		
		Part No.	Type		LT	Part No.	Type		LT	Part No.	Type	LT
Maxi	G $\frac{1}{2}$	543667	LDM1- $\frac{1}{2}$ -D-MAXI-300		Q	543668	LDM1- $\frac{1}{2}$ -D-MAXI-600		Q	543669	LDM1- $\frac{1}{2}$ -D-MAXI-1000	Q
	G $\frac{3}{4}$	543670	LDM1- $\frac{3}{4}$ -D-MAXI-300		Q	543671	LDM1- $\frac{3}{4}$ -D-MAXI-600		Q	543672	LDM1- $\frac{3}{4}$ -D-MAXI-1000	Q
	G1	543673	LDM1-1-D-MAXI-300		Q	543674	LDM1-1-D-MAXI-600		Q	543675	LDM1-1-D-MAXI-1000	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time



LOE-D-MICRO  
Lubricator



LOE-D-MIDI  
Lubricator

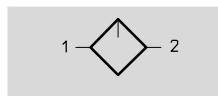
3  
3.5

LOE proportional lubricator adds a metered quantity of oil to the compressed air stream

# LOE Lubricators – D Series, Metal Design

Technical Data

Function



- - Flow rate  
160 ... 9000 l/min
- - Temperature range  
-10 ... +60 °C
- - Input pressure  
1 ... 16 bar

The proportional lubricator adds a precision adjustable quantity of oil to the compressed air stream.

The pressure drop that occurs when air flows through a Venturi nozzle is used to convey oil from the container to the drip cap. From here, the oil drips into the air duct directly behind the proportional valve, where it is atomised. The oil mist component is proportional to the compressed air flow rate.



- Proportional lubricator with precision oil metering
- Reduces wear on drive units subject to high loading
- High flow rate
- Quick and easy oil top-up
- Robust metal housing
- Transparent lubricator bowl with metallic bowl guard

The following oils are recommended for Festo components:

Viscosity range to ISO 3448, ISO class VG 32  
32 mm<sup>2</sup>/s (= cSt) at 40 °C

- Festo special oil  
→ See page 225
- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

3

3.5

General technical data																	
Size	Micro					Mini			Midi					Maxi			
Pneumatic connection	M5	M7	G <sup>1</sup> / <sub>8</sub>	QS4	QS6	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G1		
			1/8 NPT			1/8 NPT	1/4 NPT	3/8 NPT	1/4 NPT <sup>1)</sup>	3/8 NPT	1/2 NPT	3/4 NPT	1/2 NPT <sup>1)</sup>	3/4 NPT	1 NPT		
Operating medium	Filtered compressed air, unlubricated, grade of filtration 5 µm					Filtered compressed air, unlubricated, grade of filtration 40 µm											
Design	Proportional standard mist lubricator																
Type of mounting	Via accessories																
	In-line installation																
Assembly position	Vertical ±5°																
Input pressure [bar]	0 ... 10					0 ... 16											
Minimum flow for lubricator operation [l/min]	3					3			8					10			
Maximum oil capacity [cm <sup>3</sup> ]	6.5					45			110					190			

Standard nominal flow rate <sup>2)</sup> q <sub>N</sub> [l/min]						
Connection	Female thread			Port block		
	M5	M7		G <sup>1</sup> / <sub>8</sub>	QS4	QS6
Micro						
LOE	200	430		410	160	330

1) Available via the FAST program. See page 226.  
2) Measured at p<sub>1</sub> = 6 bar and Δp = 1 bar.



# LOE Lubricators – D Series, Metal Design

Technical Data

Standard nominal flow rate <sup>1)</sup> qnN [l/min]						
Connection	G1/8, 1/8 NPT	G1/4, 1/4 NPT	G3/8, 3/8 NPT	G1/2, 1/2 NPT	G3/4, 3/4 NPT	G1, 1 NPT
<b>Mini</b>						
LOE	1300	2300	2700	–	–	–
<b>Midi</b>						
LOE	–	2800	5500	6100	6300	–
<b>Maxi</b>						
LOE	–	–	–	8300	8400	9000

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

Screw-in depth of connecting thread [mm]					
Connection	M5	M7	G1/8	QS4	QS6
<b>Micro</b>					
In housing	5	6	–	–	–
In port blocks	–	–	8	–	–

Ambient conditions				
Size	Micro	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60			
Temperature of medium [°C]	–10 ... +60			
Corrosion resistance class CRC <sup>2)</sup>	2			

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

Weight [g]						
Size	Micro		Mini	Midi	Maxi	
	Female thread	Port block			Connection G1/2, G3/4, 3/4 NPT	Connection G1, 1 NPT
LOE	39	59	270	630	1100	1200

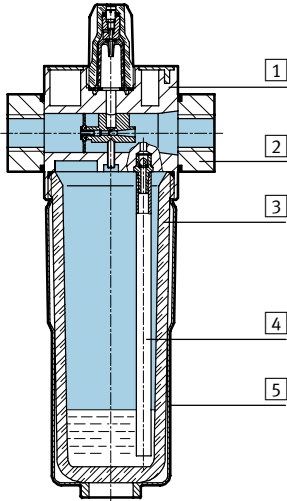


# LOE Lubricators – D Series, Metal Design

Technical Data

## Materials

Sectional view



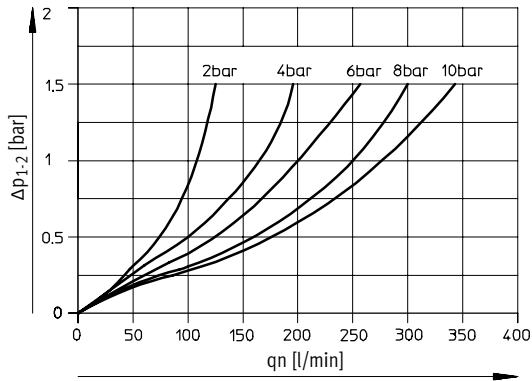
Lubricator	Micro	Mini/Midi/Maxi
1 Housing	Wrought aluminum alloy	Die-cast zinc/aluminum
2 Port blocks	Wrought aluminum alloy	Die-cast zinc/aluminum
3 Bowl	Polycarbonate	Polycarbonate
4 Tubing	Polyethylene	Polyethylene
5 Metal bowl guard	-	Aluminium
- Seals	Nitrile rubber	Nitrile rubber

3

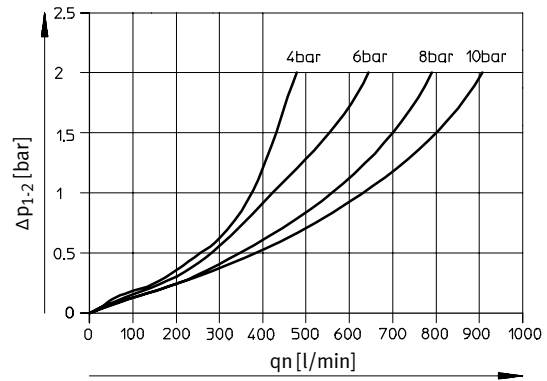
3.5

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

LOE-M5-D-MICRO



LOE-M7-D-MICRO B

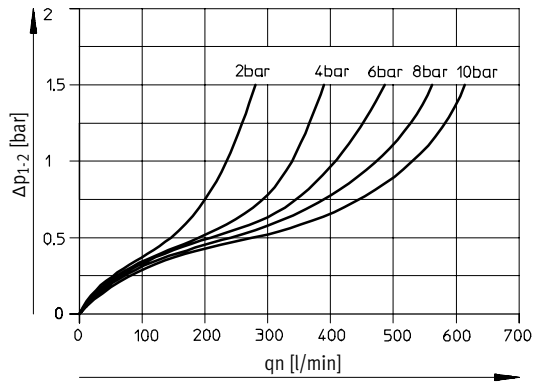


# LOE Lubricators – D Series, Metal Design

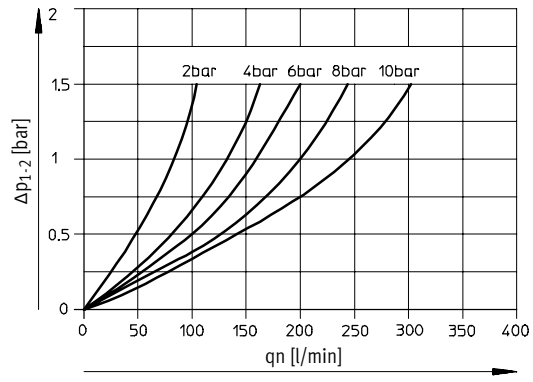
Technical Data

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

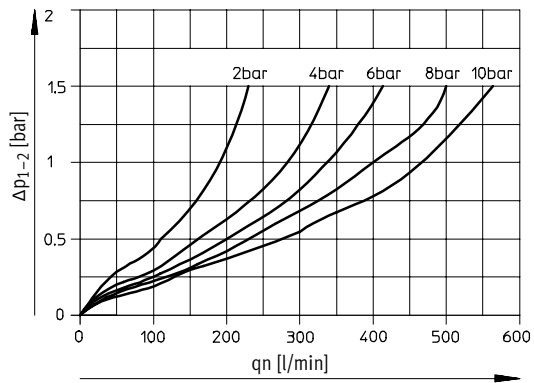
LOE-1/8-D-MICRO



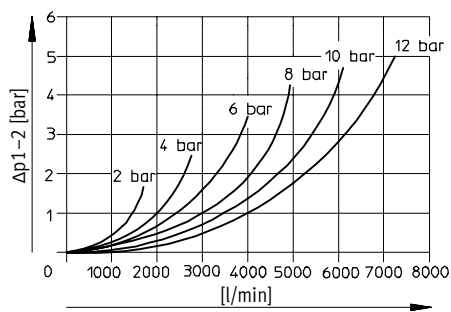
LOE-QS4-D-MICRO



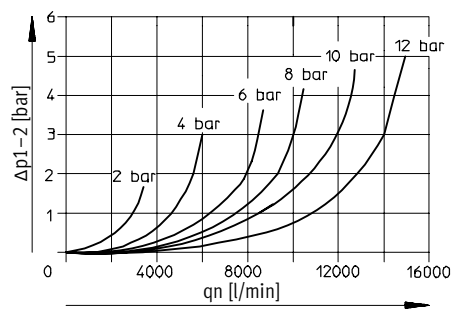
LOE-QS6-D-MICRO



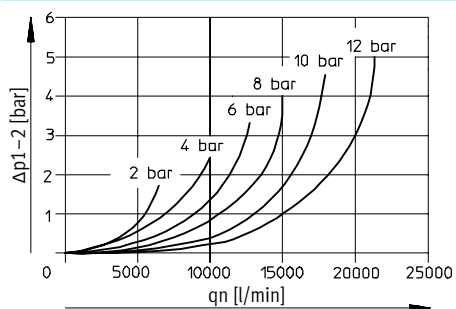
LOE-1/4-D-MINI



LOE-1/2-D-MIDI



LOE-1-D-MAXI



Primary pressure  $p_1 = 10$  bar

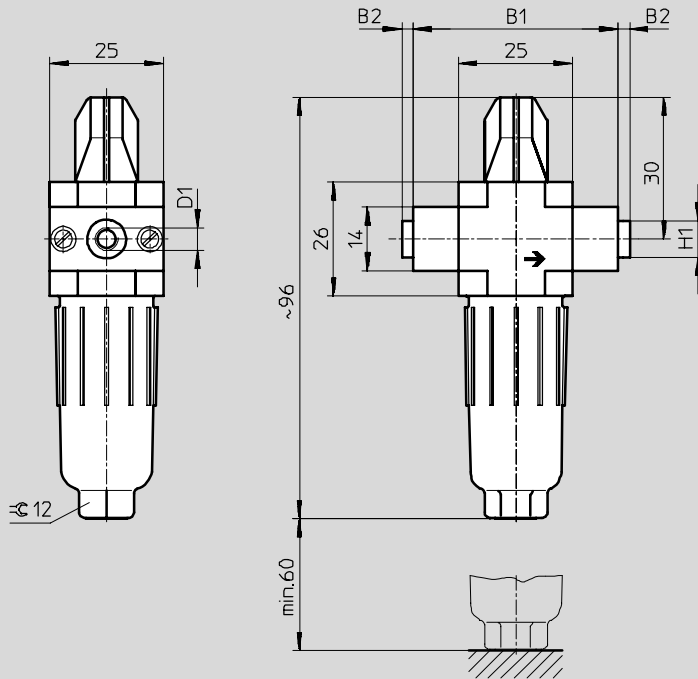
# LOE Lubricators – D Series, Metal Design

Technical Data – Dimensional Drawings

**Dimensions**

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

Micro



→ Flow direction

Type	B1	B2	D1	H1
MICRO				
LOE-M5-D-MICRO	25	-	M5	-
LOE-M7-D-MICRO B			M7	
LOE-1/8-D-MICRO			G1/8	
LOE-QS4-D-MICRO	45	~2.5	QS4	~8
LOE-QS6-D-MICRO			QS6	~10

3

3.5

# LOE Lubricators – D Series, Metal Design

Technical Data – Dimensional Drawings

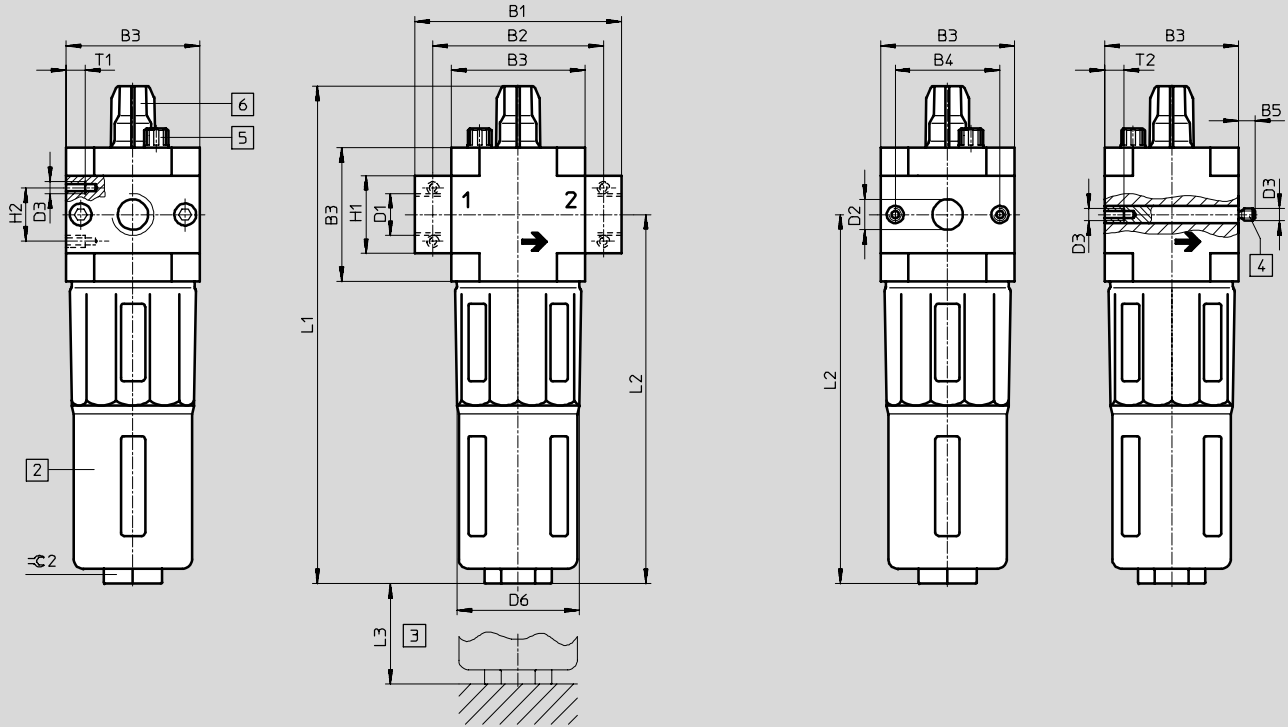
## Dimensions

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

Mini/Midi/Maxi

With threaded port blocks

Without threaded port blocks



- 1 Metal bowl guard
- 2 Installation dimensions
- 3 Threaded pin (exchangeable)
- 4 Bleed screw for oil reservoir
- 5 Oil adjusting screw
- 6 Flow direction

Type	B1	B2	B3	B4	B5	D1	D2	D3	D6	H1	H2	L1	L2	L3	T1	T2	∅ 2
<b>Mini</b>																	
LOE-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	38	20	11	169	124	100	7	-	22
LOE-1/4-D-MINI						1/8 NPT											
LOE-3/8-D-MINI	70					1/4 NPT											
LOE-D-MINI	-	-			5.8	-	11			-	-				-	10	
<b>Midi</b>																	
LOE-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	52	32	22	204	151	120	8	-	24
LOE-3/8-D-MIDI						3/8 NPT											
LOE-1/2-D-MIDI						G1/2											
LOE-3/4-D-MIDI						3/4 NPT											
LOE-D-MIDI	-	-			6.8	-	24			-	-				-	11	
<b>Maxi</b>																	
LOE-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	65	32	22	228	170	150	8	-	24
LOE-3/4-D-MAXI						3/4 NPT											
LOE-1-D-MAXI	116	91				G1				40							
LOE-D-MAXI	-	-			6.8	-	30			-	-				-	11	

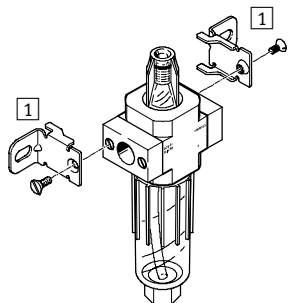
# LOE Lubricators – D Series, Metal Design

Accessories Overview

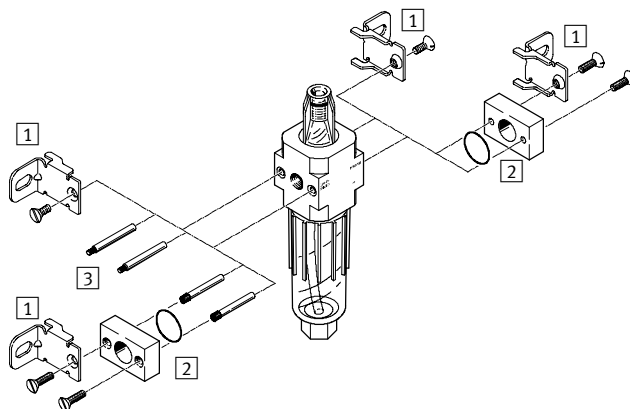
FESTO

## Micro

Individual unit with port blocks, connection size G $\frac{1}{8}$ , QS4 or QS6



Individual unit without port blocks, for combination unit connection size M5 or M7 in housing

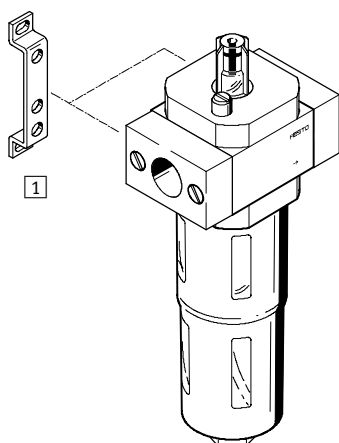


### Mounting attachments and accessories

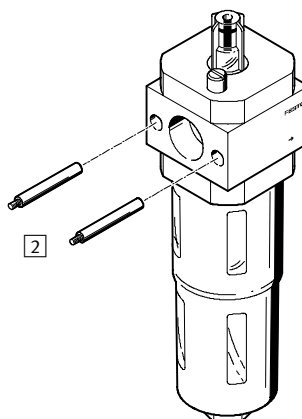
	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	■	■	■	276
2 Connecting plate kit PBL	-	■	-	■	280
3 Threaded pin FRB	-	-	■	■	278

## Mini/Midi/Maxi

Individual unit with port blocks



Individual unit without port blocks, for combination unit



### Mounting attachments and accessories

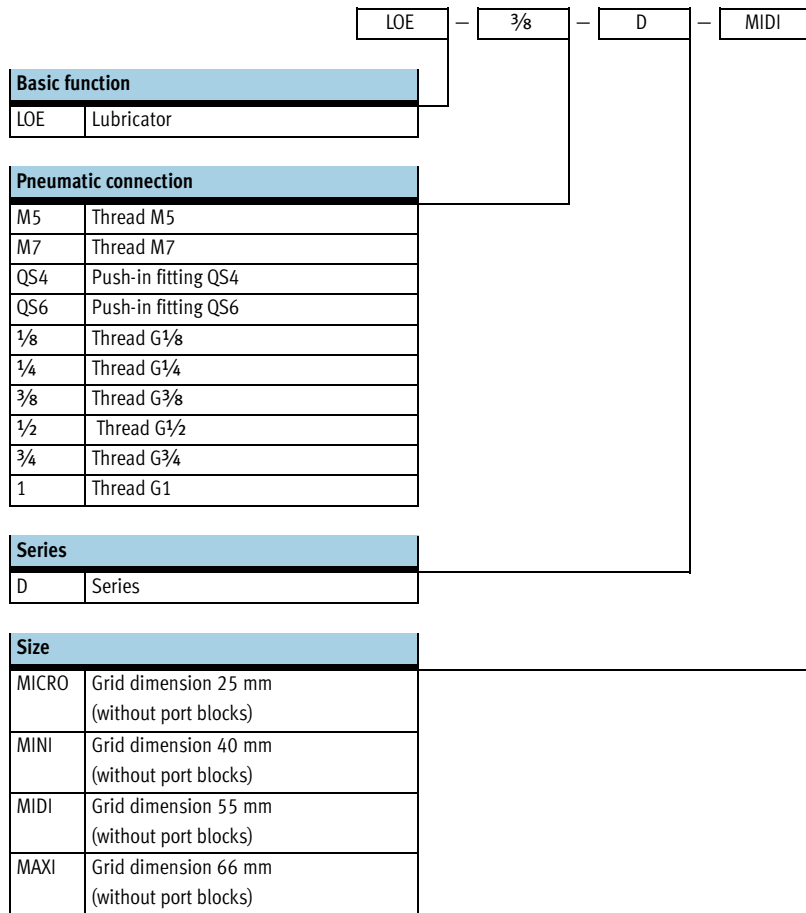
	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	-	■	-	276
2 Threaded pin (included in scope of delivery) FRB	-	-	■	■	278

3

3.5

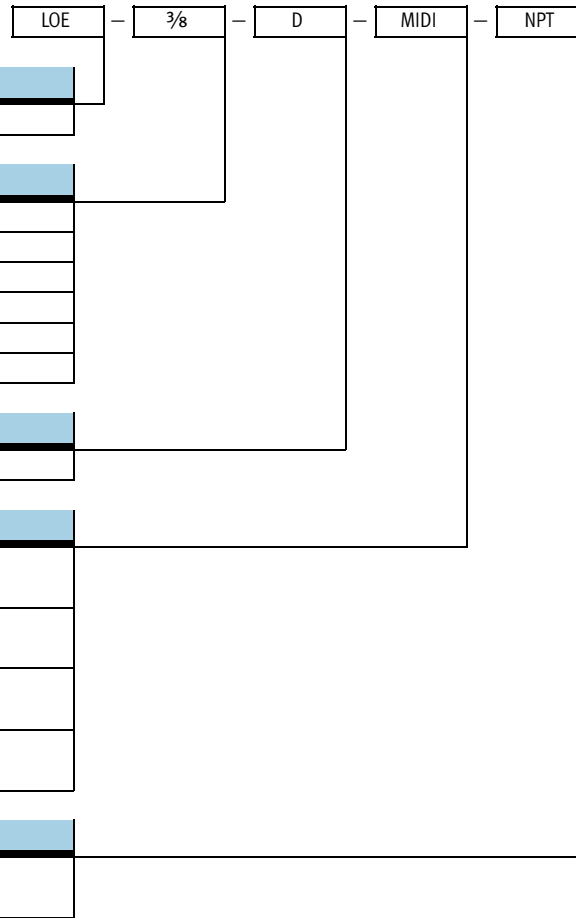
# LOE Lubricators – D Series, Metal Design

Type Codes – Metric / QS / G (BSPP) Connections



# LOE Lubricators – D Series, Metal Design

Type Codes – NPT Connections



**Basic function**

LOE	Lubricator
-----	------------

**Pneumatic connection**

N <sup>1</sup> / <sub>8</sub>	1/8 NPT Thread (for Micro only)
1/8	1/8 NPT Thread
1/4	1/4 NPT Thread
3/8	3/8 NPT Thread
3/4	3/4 NPT Thread
1	1 NPT Thread

**Series**

D	Series
---	--------

**Size**

MICRO	Grid dimension 25 mm (without port blocks)
MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 60 mm (without port blocks)

**NPT connection (where available)**

NPT	NPT threaded connection (not in typecode for Micro)
-----	--

3

3.5




# LOE Lubricators – D Series, Metal Design

Ordering Data

Ordering data				
Lubricator, input pressure 0 ... 10 bar				
Size	Connection	Part No.	Type	LT
Micro	Without threaded port blocks, connecting thread in housing			
	M5	526309	LOE-M5-D-MICRO	1D
	M7	534188	LOE-M7-D-MICRO-B	Q
	With threaded connecting plates			
	G $\frac{1}{8}$	526310	LOE- $\frac{1}{8}$ -D-MICRO	1D
	$\frac{1}{8}$ NPT	526311	LOE-N $\frac{1}{8}$ -D-MICRO	1D
	With port block and push-in fitting			
	QS4	526313	LOE-QS4-D-MICRO	Q
QS6	526314	LOE-QS6-D-MICRO	Q	

Ordering data				
Lubricator, input pressure 0 ... 16 bar, metal bowl guard				
Size	Part No.	Type	LT	
Without threaded port blocks				
Mini	192575	LOE-D-MINI	Q	
Midi	192576	LOE-D-MIDI	Q	
Maxi	192577	LOE-D-MAXI	Q	

Ordering data				
Lubricator, input pressure 0 ... 16 bar, metal bowl guard				
Size	Connection	Part No.	Type	LT
With threaded port blocks				
Mini	G $\frac{1}{8}$	159620	LOE- $\frac{1}{8}$ -D-MINI	1W
	G $\frac{1}{4}$	159621	LOE- $\frac{1}{4}$ -D-MINI	1W
	G $\frac{3}{8}$	162680	LOE- $\frac{3}{8}$ -D-MINI	Q
	$\frac{1}{8}$ NPT	173820	LOE- $\frac{1}{8}$ -D-MINI-NPT	1W
	$\frac{1}{4}$ NPT	173821	LOE- $\frac{1}{4}$ -D-MINI-NPT	1W
	$\frac{3}{8}$ NPT	173822	LOE- $\frac{3}{8}$ -D-MINI-NPT	Q
Midi	G $\frac{1}{4}$	186479	LOE- $\frac{1}{4}$ -D-MIDI	Q
	G $\frac{3}{8}$	159586	LOE- $\frac{3}{8}$ -D-MIDI	1W
	G $\frac{1}{2}$	159587	LOE- $\frac{1}{2}$ -D-MIDI	1W
	G $\frac{3}{4}$	162681	LOE- $\frac{3}{4}$ -D-MIDI	Q
	G $\frac{3}{8}$ NPT	173823	LOE- $\frac{3}{8}$ -D-MIDI-NPT	1W
	G $\frac{1}{2}$ NPT	173824	LOE- $\frac{1}{2}$ -D-MIDI-NPT	1W
Maxi	G $\frac{3}{4}$ NPT	173825	LOE- $\frac{3}{4}$ -D-MIDI-NPT	Q
	G $\frac{1}{2}$	186480	LOE- $\frac{1}{2}$ -D-MAXI	Q
	G $\frac{3}{4}$	159622	LOE- $\frac{3}{4}$ -D-MAXI	1W
	G1	159623	LOE-1-D-MAXI	1W
	G $\frac{3}{4}$ NPT	173826	LOE- $\frac{3}{4}$ -D-MAXI-NPT	1W
	G1 NPT	173827	LOE-1-D-MAXI-NPT	1W

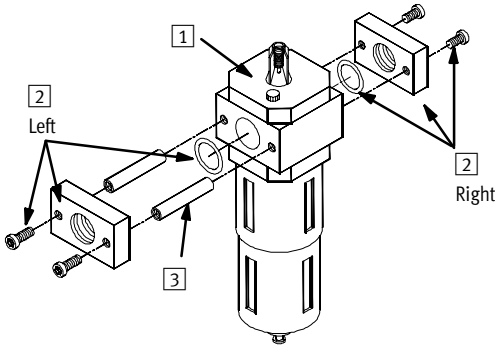
Ordering data – Special Oil				
	Scope of delivery	Part No.	Type	LT
	1 liter	152811	OFSW-32	1D

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# FAST\* Program – LOE Lubricator Selector Guide

LOE Lubricators – D Series, Metal Design

\*FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.



A complete Lubricator assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block Kit	2 (one left, one right)
3	Single Unit Joining Rod	2
4	Mounting Bracket Kit (Optional) (Not shown)	1

**Step 1:** Based upon the required Port Size, Maximum Flow, and Thread Type, select the Main Unit (Item 1) and the Left and Right Port Block Kits (Item 2).

		Item					
		1	2				
Port size	Max. Flow (l/min/scfm)	Product Type / Description	Main Unit	NPT Thread		BSP Thread	
				Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit
1/8	1300/45.9	LOE...-D-MINI-...	546431	546520	546521	546495	546496
1/4	2300/81.2	LOE...-D-MIDI-...	546427	546522	546523	546497	546498
	2800/98.9			546536	546537	546532	546533
3/8	2700/95.4	LOE...-D-MINI-...	546431	546524	546525	546499	546500
	5500/194.2	LOE...-D-MIDI-...	546427	546530	546531	546501	546502
1/2	6100/215.4	LOE...-D-MIDI-...	546517	546526	546527	546503	546504
	8300/293.1	LOE...-D-MAXI-...		546538	546539	546534	546535
3/4	6300/222.5	LOE...-D-MIDI-...	546427	546528	546529	546505	546506
	8400/296.6	LOE...-D-MAXI-...	546517	546490	546492	546507	546508
1	9000/317.8			546491	546493	546509	546510

**Step 2:** Based upon the Product Type/Description from Step 1, select the Joining Rods (Item 3) and the (optional) Mounting Bracket Kit (Item 4).

		Item 3	Item 4 (Optional)
Product Type/Description	Single Unit Joining Rod	Mounting Bracket Kit (not shown)	
LOE...-D-MINI-...	546483	159638	
LOE...-D-MIDI-...	546489	159593	
LOE...-D-MAXI-...	546494		

**Step 3:** Determine the appropriate quantity of each Item.

### Ordering Example:

Required: 3/8 port size, 5000 l/min flow, BSP threads, and Mounting Bracket Kit.

	Item	Part No.	Qty	Description
Order:	1	546427	1	Main Unit
	2	546501	1	Left Port Block Kit
		546502	1	Right Port Block Kit
	3	546489	2	Single Unit Joining Rod
	4	159593	1	Mounting Bracket Kit



HE-D-MINI  
Manual On/Off valve



HEE-...-D-MINI-24  
Electrical On/Off valve



HEP1/2--D-MIDI  
Pneumatic On/Off valve



HEL-D-M...  
Soft-Start Valve

3  
3.6

- HE Manual On/Off Valves
- HEE Electrical On/Off Valves
- HEP Pneumatic On/Off Valves
- HEL Soft-start Valves

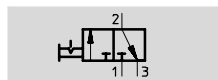
Flow Rate:  
1000 - 6500 l/min

Working Pressure Range:  
3 ... 16 bar

# HE Manual On/Off Valves – D Series, Metal Design

Technical Data

Function



- - Flow rate  
1000 ... 6500 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
0 ... 16 bar



- 3/2-way manual shut-off valve
- The unit is vented when switched off
- Ducted exhaust possible via a threaded connection
- The switching position is immediately recognizable
- Commercially available padlock can be used for security

3

3.6

General technical data											
Size	Mini			Midi				Maxi			
Pneumatic connection	G <sup>1</sup> / <sub>8</sub> 1/8 NPT	G <sup>1</sup> / <sub>4</sub> 1/4 NPT	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>4</sub> 1/4 NPT <sup>1)</sup>	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>2</sub> 1/2 NPT	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G <sup>1</sup> / <sub>2</sub> 1/2 NPT <sup>1)</sup>	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G1 1 NPT	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm										
Design	Piston spool valve										
Type of mounting	Via accessories In-line installation										
Assembly position	Any										
Operating pressure [bar]	0 ... 16										
Valve function	3/2-way valve, single solenoid										
Exhaust function	Without flow control										
Reset method	Mechanical spring										
C value [l/sbar]	4.4	7.2	7.5	9.9	15.7	17.0	17.3	23.7	26.8	25.9	
b value	0.44	0.28	0.27	0.45	0.30	0.30	0.42	0.32	0.35	0.37	
Direction of flow	Non-reversible										

Standard nominal flow rate <sup>2)</sup> qnN [l/min]						
Connection	G <sup>1</sup> / <sub>8</sub> , 1/8 NPT	G <sup>1</sup> / <sub>4</sub> , 1/4 NPT	G <sup>3</sup> / <sub>8</sub> , 3/8 NPT	G <sup>1</sup> / <sub>2</sub> , 1/2 NPT	G <sup>3</sup> / <sub>4</sub> , 3/4 NPT	G1, 1 NPT
<b>Mini</b>						
HE	1000	1500	1600	–	–	–
<b>Midi</b>						
HE	–	2600	3200	3600	3800	–
<b>Maxi</b>						
HE	–	–	–	5600	6000	6500

1) Available via the FAST program. See page 234.

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

# HE Manual On/Off Valves – D Series, Metal Design

Technical Data

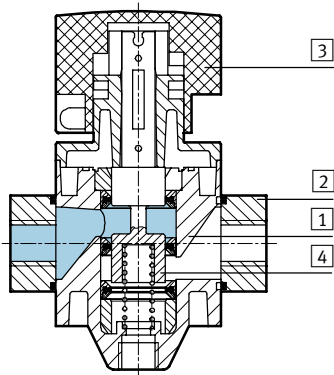
Ambient conditions				
Size		Mini	Midi	Maxi
Ambient temperature	[°C]	-10 ... +60		
Temperature of medium	[°C]	-10 ... +60		
Corrosion resistance class	CRC <sup>1)</sup>	2		

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

Weight [g]				
Size		Mini	Midi	Maxi
HE		192	511	796

## Materials

Sectional view



On-off valve		
1	Housing	Die-cast aluminum
2	Port blocks	Wrought aluminum alloy
3	Rotary knob	Polyamide
4	Piston	Stainless steel
-	Seals	Nitrile rubber
Note on materials		Free of copper, PTFE and silicone

# HE Manual On/Off Valves – D Series, Metal Design

Technical Data – Dimensional Drawings

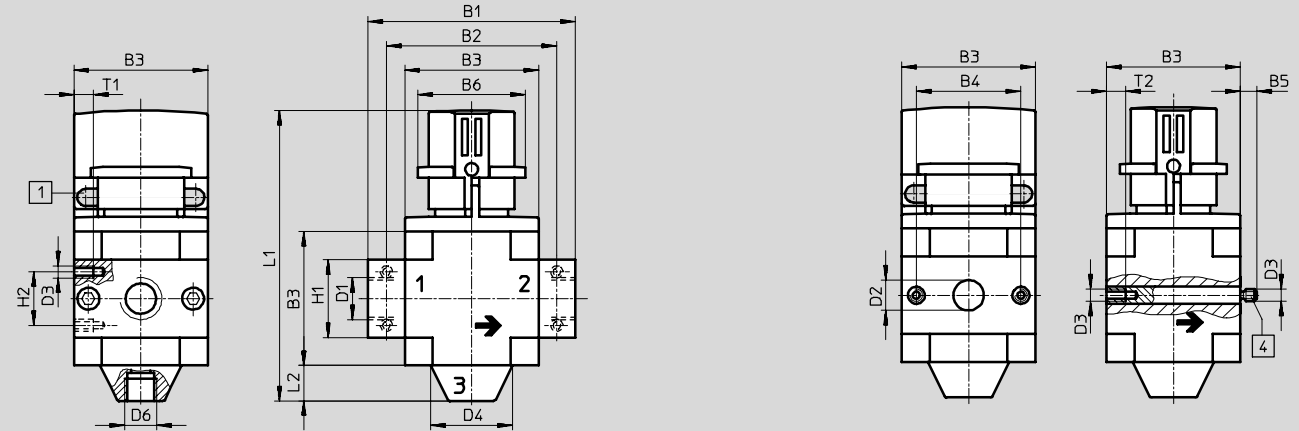
**Dimensions**

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

Mini/Midi/Maxi

With threaded port blocks

Without threaded port blocks



1 Hole for locking with padlock

4 Threaded pin (exchangeable)

→ Flow direction

3

3.6

Type	B1	B2	B3	B4	B5	B6	D1	D2	D3	D4	D6	H1	H2	L1	L2	T1	T2
<b>Mini</b>																	
HE-1/8-D-MINI	64	52	40	30	-	32	G1/8	-	M4	24	G1/8	20	11	98	11	7	-
HE-1/4-D-MINI							1/8 NPT										
HE-3/8-D-MINI	70						G3/8										
HE-D-MINI	-	-			5.8		-	11				-	-			-	10
<b>Midi</b>																	
HE-1/4-D-MIDI	85	70	55	43	-	44	G1/4	-	M5	34	G1/4	32	22	119	14	8	-
HE-3/8-D-MIDI							G3/8										
HE-1/2-D-MIDI							3/8 NPT										
HE-3/4-D-MIDI							G1/2										
HE-D-MIDI	-	-			6.8		-	24				-	-			-	11
<b>Maxi</b>																	
HE-1/2-D-MAXI	96	80	66	46	-	44	G1/2	-	M5	38	G3/8	32	22	132	16	8	-
HE-3/4-D-MAXI							G3/4										
HE-1-D-MAXI	116	91					G1					40					
HE-D-MAXI	-	-			6.8		-	30				-	-			-	11

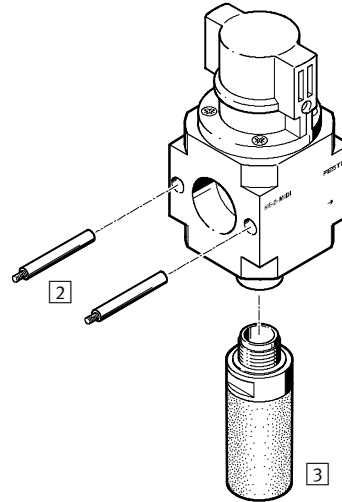
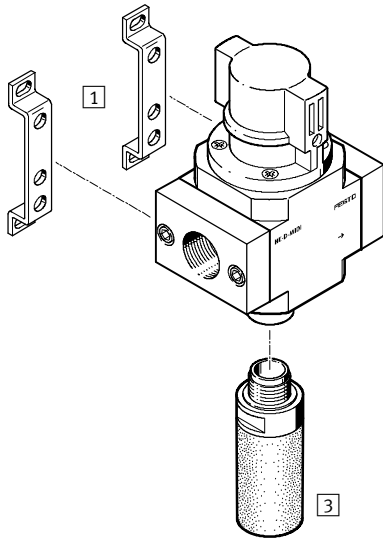
# HE Manual On/Off Valves – D Series, Metal Design

Accessories Overview

## Mini/Midi/Maxi

Individual unit with port blocks

Individual unit without port blocks, for combination unit

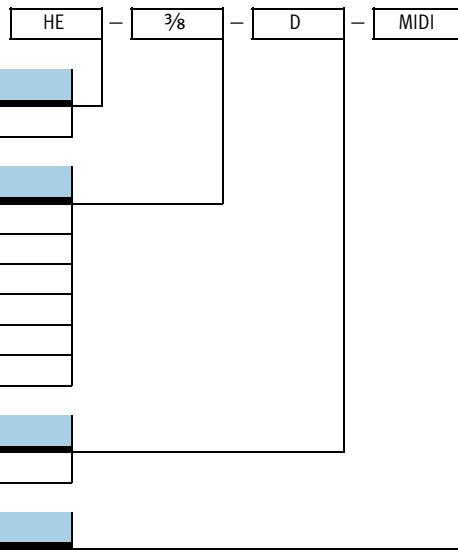


### Mounting attachments and accessories

	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
[1] Mounting bracket HFOE	■	-	■	-	276
[2] Threaded pin (included in scope of delivery) FRB	-	-	■	■	278
[3] Silencer U	■	■	■	■	284

# HE Manual On/Off Valves – D Series, Metal Design

Type Codes – G (BSP) Connections



**Basic function**

HE	On-off valve, manual
----	----------------------

**Pneumatic connection**

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

**Series**

D	Series
---	--------

**Size**

MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

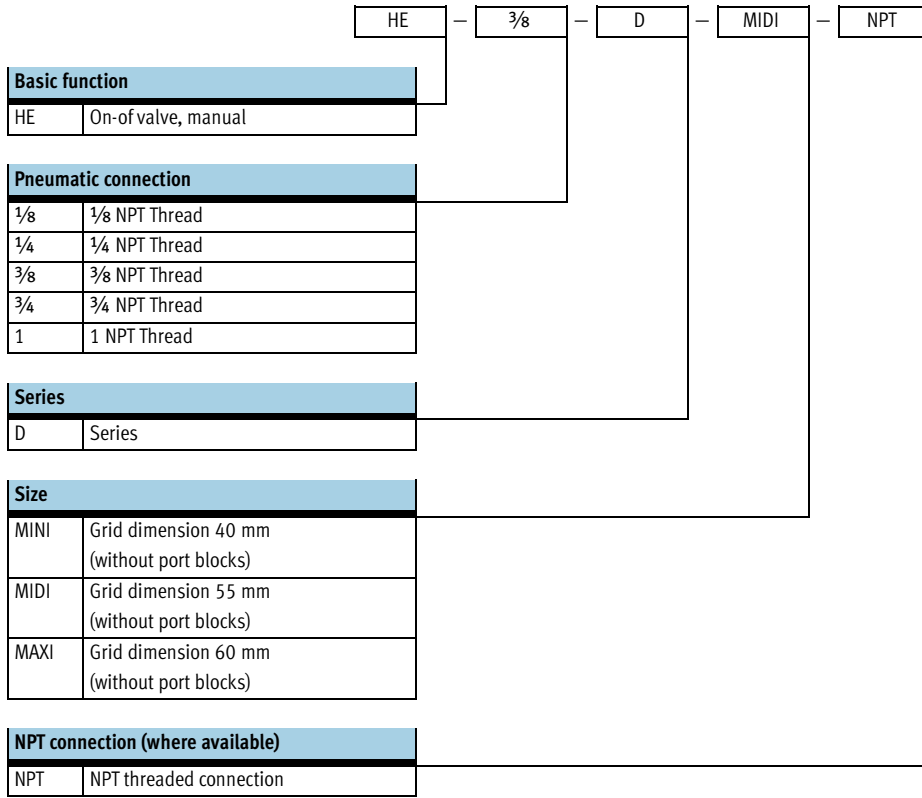
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# HE Manual On/Off Valves D Series, Metal Design

Type Codes – NPT Connections



# HE Manual On/Off Valves – D Series, Metal Design

Ordering Data

Ordering data			
3/2-way valve, operating pressure 0 ... 16 bar, normally closed			
Size	Part No.	Type	LT
Without threaded port blocks			
Mini	170681	HE-D-MINI	1D
Midi	170682	HE-D-MIDI	1D
Maxi	170683	HE-D-MAXI	1D

Ordering data				
3/2-way valve, operating pressure 0 ... 16 bar, normally closed				
Size	Connection	Part No.	Type	LT
With threaded port blocks				
Mini	G $\frac{1}{8}$	162806	HE- $\frac{1}{8}$ -D-MINI	1W
	G $\frac{1}{4}$	162807	HE- $\frac{1}{4}$ -D-MINI	1W
	G $\frac{3}{8}$	162808	HE- $\frac{3}{8}$ -D-MINI	Q
	$\frac{1}{8}$ NPT	173892	HE- $\frac{1}{8}$ -D-MINI-NPT	1W
	$\frac{1}{4}$ NPT	173893	HE- $\frac{1}{4}$ -D-MINI-NPT	1W
	$\frac{3}{8}$ NPT	173894	HE- $\frac{3}{8}$ -D-MINI-NPT	Q
Midi	G $\frac{1}{4}$	186513	HE- $\frac{1}{4}$ -D-MIDI	Q
	G $\frac{3}{8}$	162809	HE- $\frac{3}{8}$ -D-MIDI	1W
	G $\frac{1}{2}$	162810	HE- $\frac{1}{2}$ -D-MIDI	1W
	G $\frac{3}{4}$	162811	HE- $\frac{3}{4}$ -D-MIDI	Q
	$\frac{3}{8}$ NPT	173895	HE- $\frac{3}{8}$ -D-MIDI-NPT	1W
	$\frac{1}{2}$ NPT	173896	HE- $\frac{1}{2}$ -D-MIDI-NPT	1W
	$\frac{3}{4}$ NPT	173897	HE- $\frac{3}{4}$ -D-MIDI-NPT	Q
Maxi	G $\frac{1}{2}$	186514	HE- $\frac{1}{2}$ -D-MAXI	Q
	G $\frac{3}{4}$	162812	HE- $\frac{3}{4}$ -D-MAXI	1W
	G1	162813	HE-1-D-MAXI	1W
	$\frac{3}{4}$ NPT	173898	HE- $\frac{3}{4}$ -D-MAXI-NPT	1W
	1 NPT	173899	HE-1-D-MAXI-NPT	1W

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

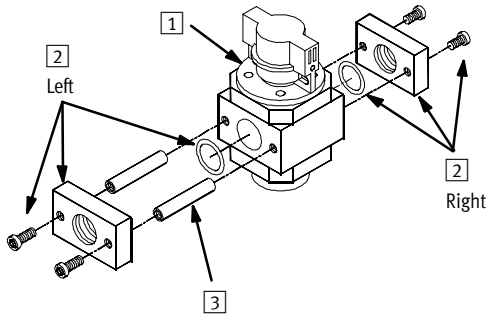
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# FAST\* Program – HE Manual On/Off Valve Selector Guide

HE Manual On/Off Valves – D Series, Metal Design

\*FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.



A complete valve assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block Kit	2 (one left, one right)
3	Single Unit Joining Rod	2
4	Mounting Bracket Kit (Not shown)	1

**Step 1:** Based upon the required Port Size, Maximum Flow, and Thread Type, select the Main Unit (Item 1) and the Left and Right Port Block Kits (Item 2).

Port size	Max. Flow (l/min/scfm)	Product Type / Description	Item				
			1	2		2	
			Main Unit	NPT Thread		BSP Thread	
				Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit
1/8	1000/35.3	HE...-D-MINI-...	170681	546520	546521	546495	546496
1/4	1500/52.9	HE...-D-MIDI-...	170682	546522	546523	546497	546498
	2600/91.8			546536	546537	546532	543533
3/8	1600/56.5	HE...-D-MINI-...	170681	546524	546525	546499	546500
	3200/113.0	HE...-D-MIDI-...	170682	546530	546531	546501	546502
1/2	3600/127.1	HE...-D-MIDI-...	170683	546526	546527	546503	546504
	5600/197.8	HE...-D-MAXI-...		546538	546539	546534	546535
3/4	3800/134.2	HE...-D-MIDI-...	170682	546528	546529	546505	546506
	6000/211.9	HE...-D-MAXI-...	170683	546490	546492	546507	546508
1	6500/229.5			546491	546493	546509	546510

**Step 2:** Based upon the Product Type/Description from Step 1, select the Joining Rods (Item 3) and the Mounting Bracket Kit (Item 4).

Product Type / Description	Item	
	3	4 [Not shown]
HE...-D-MINI-...	546483	159 638
HE...-D-MIDI-...	546489	159 593
HE...-D-MAXI-...	546494	

**Step 3:** Determine the appropriate quantity of each Item.

**Ordering Example:**

Required: 3/8 port size, 3000 l/min flow, BSP threads, and mounting bracket.

	Item	Part No.	Qty	Description
Order:	1	170682	1	Main Unit
	2	546501	1	Left Port Block Kit
		546502	1	Right Port Block Kit
	3	546489	2	Single Unit Joining Rod
	4	159593	1	Mounting Bracket Kit

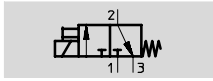
**3**

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# HEE Electrical On/Off Valves – D Series, Metal Design

Technical Data

Function



- - Flow rate  
1000 ... 6500 l/min

- - Temperature range  
-10 ... +60 °C

- - Operating pressure  
2.5 ... 16 bar

Selected types according to ATEX  
directive for explosive atmospheres  
→ [www.festo.com/en/ex](http://www.festo.com/en/ex)



- Electrical on-off valve for pressurising and venting pneumatic installations
- With solenoid coil without plug socket
- Three voltage ranges can be selected
- Manual override via pushing and detenting (using override tool AHB-MD/MF/MV)
- Solenoid head can be repositioned by 4 x 90°

General technical data											
Size	Mini			Midi				Maxi			
Pneumatic connection	G1/8 1/8 NPT	G1/4 1/4 NPT	G3/8 3/8 NPT	G1/4 1/4 NPT <sup>1)</sup>	G3/8 3/8 NPT	G1/2 1/2 NPT	G3/4 3/4 NPT	G1/2 1/2 NPT <sup>1)</sup>	G3/4 3/4 NPT	G1 1 NPT	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm										
Design	Piston spool valve										
Type of mounting	Via accessories In-line installation										
Assembly position	Any										
Operating pressure [bar]	2.5 ... 16										
Valve function	3/2-way valve, single solenoid										
Exhaust function	Without flow control										
Type of actuation	Mechanical spring										
Direction of flow	Non-reversible										
Supply voltage [V DC/AC]	24, 110, 230										
Electrical connection	Plug to DIN 43 650, type C										
Duty cycle	100%										
Protection class	IP65										

Standard nominal flow rate <sup>1)</sup> qnN [l/min]						
Connection	G1/8, 1/8 NPT	G1/4, 1/4 NPT	G3/8, 3/8 NPT	G1/2, 1/2 NPT	G3/4, 3/4 NPT	G1, 1 NPT
<b>Mini</b>						
HEE	1000	1500	1600	–	–	–
<b>Midi</b>						
HEE	–	2600	3200	3600	3800	–
<b>Maxi</b>						
HEE	–	–	–	5600	6000	6500

1) Available via the FAST program. See page 244.  
2) Measured at p1 = 6 bar and Δp = 1 bar.

# HEE Electrical On/Off Valves – D Series, Metal Design

Technical Data

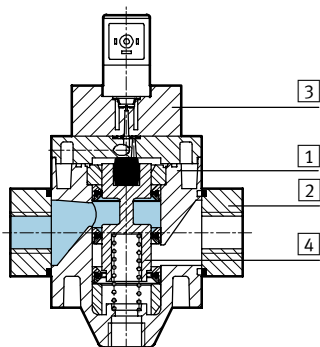
Ambient conditions				
Size		Mini	Midi	Maxi
Ambient temperature	[°C]	-10 ... +60		
Temperature of medium	[°C]	-10 ... +60		
Corrosion resistance class	CRC <sup>1)</sup>	2		

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

Weight [g]				
Size		Mini	Midi	Maxi
HEE		223	500	800

## Materials

Sectional view



On-off valve		
1	Housing	Die-cast aluminum
2	Port blocks	Wrought aluminum alloy
3	Solenoid and intermediate plate	Polyamide
4	Piston	Stainless steel
-	Seals	Nitrile rubber
Note on materials		Free of copper, PTFE and silicone

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# HEE Electrical On/Off Valves – D Series, Metal Design

Technical Data – Dimensional Drawings

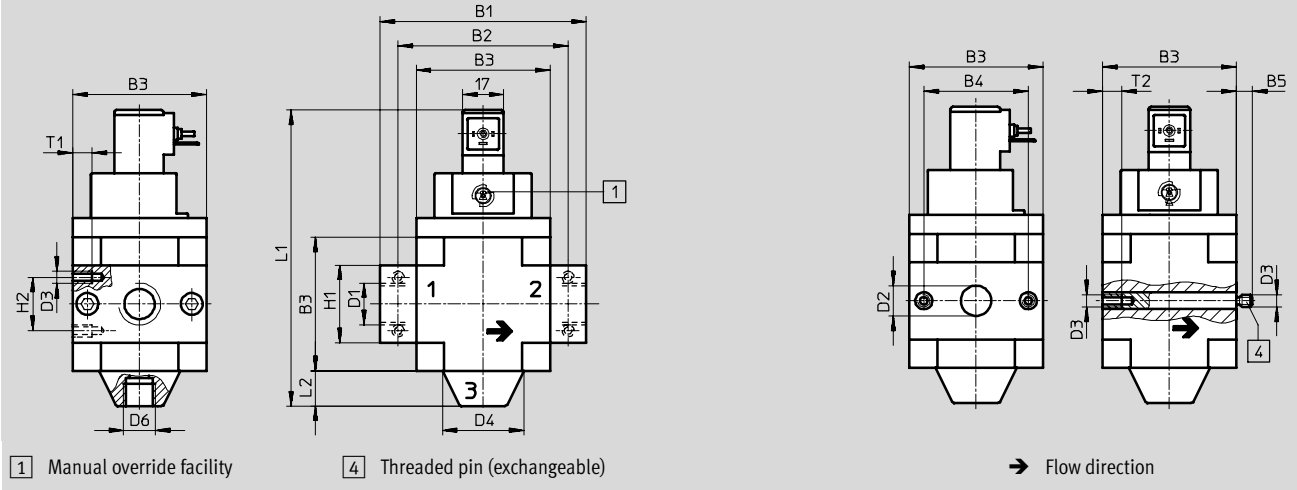
## Dimensions

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

Mini/Midi/Maxi

With threaded port blocks

Without threaded port blocks



Type	B1	B2	B3	B4	B5	D1	D2	D3	D4	D6	H1	H2	L1	L2	T1	T2
<b>Mini</b>																
HEE-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	24	G1/8	20	11	104	11	7	-
HEE-1/4-D-MINI						1/8 NPT										
HEE-3/8-D-MINI	70					1/4 NPT										
HEE-D-MINI	-	-			5.8	G3/8	11				-	-			-	10
						3/8 NPT										
<b>Midi</b>																
HEE-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	34	G1/4	32	22	122	14	8	-
HEE-3/8-D-MIDI						G3/8										
HEE-1/2-D-MIDI						1/2 NPT										
HEE-3/4-D-MIDI						G3/4										
HEE-D-MIDI	-	-			6.8	3/4 NPT	24				-	-			-	11
<b>Maxi</b>																
HEE-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	38	G3/8	32	22	135	16	8	-
HEE-3/4-D-MAXI						G3/4										
HEE-1-D-MAXI	116	91				3/4 NPT					40					
HEE-D-MAXI	-	-			6.8	G1	30				-	-			-	11
						1 NPT										

3  
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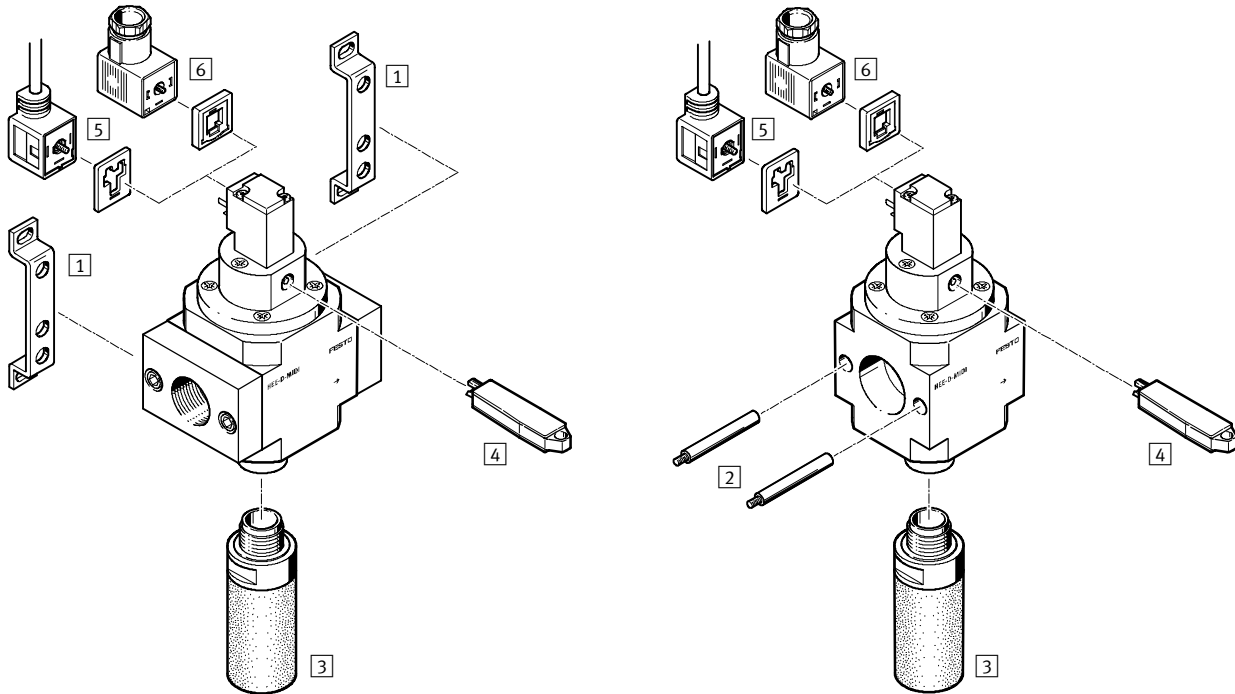
# HEE Electrical On/Off Valves – D Series, Metal Design

Accessories Overview

## Mini/Midi/Maxi

Individual unit with port blocks

Individual unit without port blocks, for air preparation unit combination



3

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### Mounting attachments and accessories

	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
[1] Mounting bracket HFOE	■	-	■	-	276
[2] Threaded pin (included in scope of delivery) FRB	-	-	■	■	278
[3] Silencer U	■	■	■	■	284
[4] Manual override tool, non-detenting AHB-MD/MF/MY	■	■	■	■	-
[5] Plug socket with cable KMEB-1	■	■	■	■	287
[6] Plug socket MSSD-EB	■	■	■	■	287



# HEE Electrical On/Off Valves – D Series, Metal Design

Type Codes – G (BSPP) Connections

	HEE	–	3/8	–	D	–	MIDI	–	110
<b>Basic function</b>									
HEE	On-off valve, electrical								
<b>Pneumatic connection</b>									
3/8	Thread G3/8								
1/4	Thread G1/4								
3/8	Thread G3/8								
1/2	Thread G1/2								
3/4	Thread G3/4								
1	Thread G1								
<b>Series</b>									
D	Series								
<b>Size</b>									
MINI	Grid dimension 40 mm (without port blocks)								
MIDI	Grid dimension 55 mm (without port blocks)								
MAXI	Grid dimension 66 mm (without port blocks)								
<b>Voltage</b>									
24	Supply voltage 24 V DC								
110	Supply voltage 110 V AC								
230	Supply voltage 230 V AC								

# HEE Electrical On/Off Valves – D Series, Metal Design

Type Codes – NPT Connections

HEE – 3/8 – D – MIDI – 110 – NPT

**Basic function**

LFMBA	Filter combination
-------	--------------------

**Pneumatic connection**

1/8	1/8 NPT Thread
1/4	1/4 NPT Thread
3/8	3/8 NPT Thread
1/2	1/2 NPT Thread
3/4	3/4 NPT Thread
1	1 NPT Thread

**Series**

D	Series
---	--------

**Size**

MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 60 mm (without port blocks)

**Voltage**

24	24 V DC supply voltage
110	110 V DC supply voltage

**NPT Connection (where available)**

NPT	NPT threaded connection
-----	-------------------------

3

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# HEE Electrical On/Off Valves – D Series, Metal Design

Ordering Data

Ordering data										
3/2-way valve, operating pressure 2.5 ... 16 bar, normally closed										
Size	Connection	24 V DC			110 V AC			230 V AC		
		Part No.	Type	LT	Part No.	Type	LT	Part No.	Type	LT
Without threaded port blocks										
Mini		172956	HEE-D-MINI-24	1D	172957	HEE-D-MINI-110	1D	172958	HEE-D-MINI-230	1D
Midi		172959	HEE-D-MIDI-24	1D	172960	HEE-D-MIDI-110	1D	172961	HEE-D-MIDI-230	1D
Maxi		172962	HEE-D-MAXI-24	1D	172963	HEE-D-MAXI-110	1D	172964	HEE-D-MAXI-230	1D

Ordering data										
3/2-way valve, operating pressure 2.5 ... 16 bar, normally closed										
Size	Connection	24 V DC			110 V AC			230 V AC		
		Part No.	Type	LT	Part No.	Type	LT	Part No.	Type	LT
With threaded port blocks										
Mini	G1/8	165068	HEE-1/8-D-MINI-24	Q	165069	HEE-1/8-D-MINI-110	Q	165070	HEE-1/8-D-MINI-230	Q
	G1/4	165071	HEE-1/4-D-MINI-24	Q	165072	HEE-1/4-D-MINI-110	Q	165073	HEE-1/4-D-MINI-230	Q
	G3/8	165074	HEE-3/8-D-MINI-24	Q	165075	HEE-3/8-D-MINI-110	Q	172940	HEE-3/8-D-MINI-230	Q
	1/8 NPT	173900	HEE-1/8-D-MINI-24-NPT	1W	173901	HEE-1/8-D-MINI-110-NPT	1W			
	1/4 NPT	173902	HEE-1/4-D-MINI-24-NPT	1W	173903	HEE-1/4-D-MINI-110-NPT	1W			
	3/8 NPT	173904	HEE-3/8-D-MINI-24-NPT	Q	176905	HEE-3/8-D-MINI-110-NPT	Q			
Midi	G1/4	186515	HEE-1/4-D-MIDI-24	Q	186517	HEE-1/4-D-MIDI-110	Q	186516	HEE-1/4-D-MIDI-230	Q
	G3/8	172941	HEE-3/8-D-MIDI-24	Q	172942	HEE-3/8-D-MIDI-110	Q	172943	HEE-3/8-D-MIDI-230	Q
	G1/2	172944	HEE-1/2-D-MIDI-24	Q	172945	HEE-1/2-D-MIDI-110	Q	172946	HEE-1/2-D-MIDI-230	Q
	G3/4	172947	HEE-3/4-D-MIDI-24	Q	172948	HEE-3/4-D-MIDI-110	Q	172949	HEE-3/4-D-MIDI-230	Q
	3/8 NPT	173906	HEE-3/8-D-MIDI-24-NPT	1W	173907	HEE-3/8-D-MIDI-110-NPT	1W			
	1/2 NPT	173908	HEE-1/2-D-MIDI-24-NPT	1W	173909	HEE-1/2-D-MIDI-110-NPT	1W			
	3/4 NPT	173910	HEE-3/4-D-MIDI-24-NPT	Q	173911	HEE-3/4-D-MIDI-110-NPT	Q			
Maxi	G1/2	186518	HEE-1/2-D-MAXI-24	Q	186520	HEE-1/2-D-MAXI-110	Q	186519	HEE-1/2-D-MAXI-230	Q
	G3/4	172950	HEE-3/4-D-MAXI-24	Q	172951	HEE-3/4-D-MAXI-110	Q	172952	HEE-3/4-D-MAXI-230	Q
	G1	172953	HEE-1-D-MAXI-24	Q	172954	HEE-1-D-MAXI-110	Q	172955	HEE-1-D-MAXI-230	Q
	3/4 NPT	173912	HEE-3/4-D-MAXI-24-NPT	1W	173913	HEE-3/4-D-MAXI-110-NPT	1W			
	1 NPT	173914	HEE-1-D-MAXI-24-NPT	1W	173915	HEE-1-D-MAXI-110-NPT	1W			

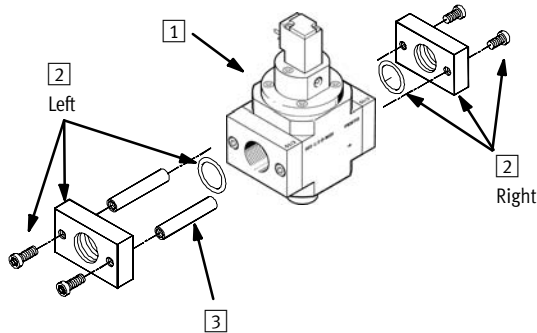
LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# FAST\* Program – HEE Electric On/Off Valve Selector Guide



HEE Electric On/Off Valves – D Series, Metal Design

\*FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.



A complete valve assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block Kit	2 (one left, one right)
3	Single Unit Joining Rod	2
4	Mounting Bracket Kit (Optional) (Not shown)	1

**Step 1:** Based upon the required Port Size, Maximum Flow, and Thread Type, select the Main Unit (Item 1) and the Left and Right Port Block Kits (Item 2).

Port size	Max. Flow (l/min/scfm)	Coil Voltage	Product Type / Description	Item				
				1	2			
				Main Unit	NPT Thread		BSP Thread	
					Left Port Block	Right Port Block	Left Port Block	Right Port Block
1/8	1000/35.3	24	HE...-D-MINI-...	172956	546520	546521	546495	546496
		110		172957				
		230		172958				
1/4	1500/52.9	24	HE...-D-MINI-...	172956	546522	546523	546497	546498
		110		172957				
		230		172958				
	2600/91.8	24	HE...-D-MIDI-...	172959	546536	546537	546532	546533
		110		172960				
		230		172961				
3/8	1600/56.5	24	HE...-D-MINI-...	172956	546524	546525	546499	546500
		110		172957				
		230		172958				
	3200/113.0	24	HE...-D-MIDI-...	172959	546530	546531	546501	546502
		110		172960				
		230		172961				
1/2	3600/127.1	24	HE...-D-MINI-...	172959	546526	546527	546503	546504
		110		172960				
		230		172961				
	5600/197.8	24	HE...-D-MAXI-...	172962	546538	546539	546534	546535
		110		172963				
		230		172963				
3/4	3800/134.2	24	HE...-D-MIDI-...	172959	546528	546529	546505	546506
		110		172960				
		230		172961				
	6000/211.9	24	HE...-D-MAXI-...	172962	546490	546492	546507	546508
		110		172963				
		230		172964				
1	6500/229.5	24	HE...-D-MAXI-...	172962	546491	546493	546509	546510
		110		172963				
		230		172964				

3

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# FAST Program – HEE Electric On/Off Valve Selector Guide

HEE Electric On/Off Valves – D Series, Metal Design

**Step 2:** Based upon the Product Type/Description from Step 1, select the Joining Rods (Item **3**) and the (optional) Mounting Bracket Kit (Item **4**).

	Item <b>3</b>	<b>4</b> (Not shown)
Product Type / Description	Single Unit Joining Rod	Mounting Bracket Kit (Optional)
HE...-D-MINI-...	546483	159638
HE...-D-MIDI-...	546489	159593
HE...-D-MAXI-...	546494	

**Step 3:** Determine the appropriate quantity of each Item.

**Ordering Example:**

Required: 3/8 port size, 3000 l/min flow, BSP threads, and mounting bracket kit.

	Item	Part No.	Qty	Description
Order:	<b>1</b>	172960	1	Main Unit
	<b>2</b>	546501	1	Left Port Block Kit
		546502	1	Right Port Block Kit
	<b>3</b>	546489	2	Single Unit Joining Rod
	<b>4</b>	159593	1	Mounting Bracket Kit



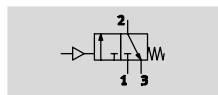
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# HEP Pneumatic On/Off Valves – D Series, Metal Design

Technical Data

Function



- - Flow rate  
800 ... 6500 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
2 ... 16 bar



- Pneumatically actuated on-off valve for pressurising and venting pneumatic installations
- The valve can be used as a single unit or in combination with other D series modules
- These valves are particularly suitable for applications in explosion protection areas

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General technical data										
Size	Mini			Midi				Maxi		
Pneumatic connection	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G1
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm									
Design	Piston spool valve									
Type of mounting	Via accessories In-line installation									
Assembly position	Any									
Operating pressure [bar]	2 ... 16									
Pilot pressure [bar]	3 ... 16									
Valve function	3/2-way valve									
Exhaust function	Without flow control									
Type of actuation	Mechanical spring									
C value [l/sbar]	4.3	7.2	7.7	10.1	15.5	16.6	16.2	24.2	28.0	27.6
b value	0.48	0.34	0.30	0.46	0.33	0.40	0.47	0.30	0.32	0.32
Direction of flow	Non-reversible									

Standard nominal flow rate <sup>1)</sup> q <sub>nN</sub> [l/min]						
Connection	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub>	G1
<b>Mini</b>						
HEP	1000	1500	1600	–	–	–
Without threaded port blocks	800			–	–	–
<b>Midi</b>						
HEP	–	2600	3500	3900	4100	–
Without threaded port blocks	–	1900				–
<b>Maxi</b>						
HEP	–	–	–	5600	6000	6500
Without threaded port blocks	–	–	–	2400		

1) Measured at p<sub>1</sub> = 6 bar and Δp = 1 bar.

# HEP Pneumatic On/Off Valves – D Series, Metal Design

Technical Data

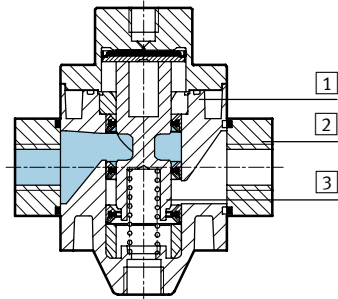
Ambient conditions		Mini	Midi	Maxi
Size				
Ambient temperature	[°C]	-10 ... +60 °C		
Temperature of medium	[°C]	-10 ... +60 °C		
Corrosion resistance class	CRC <sup>1)</sup>	2		

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

Weight [g]		Mini	Midi	Maxi
Size				
HEP		223	500	800

## Materials

Sectional view



On-off valve		
1	Housing	Die-cast aluminum
2	Port blocks	Wrought aluminum alloy
3	Piston	Stainless steel
-	Seals	Nitrile rubber
Note on materials		Free of copper, PTFE and silicone

# HEP Pneumatic On/Off Valves – D Series, Metal Design

Technical Data – Dimensional Drawings

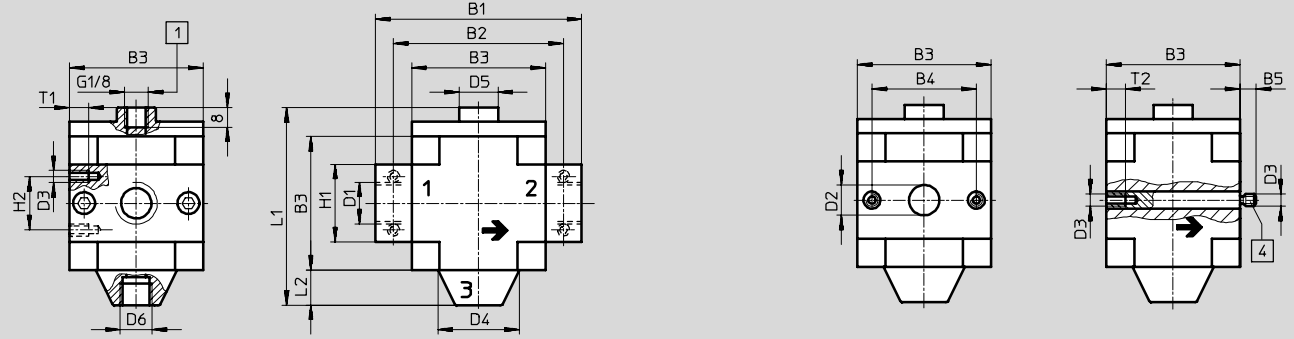
**Dimensions**

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

Mini/Midi/Maxi

With threaded port blocks

Without threaded port blocks



1 Threaded connection for pilot air (12)      4 Threaded pin (exchangeable)      → Flow direction

Type	B1	B2	B3	B4	B5	D1	D2	D3	D4	D5	D6	H1	H2	L1	L2	T1	T2
<b>Mini</b>																	
HEP-1/8-D-MINI	64	52	40	30	-	G1/8	-	M4	24	16	G1/8	20	11	73.8	11	7	-
HEP-1/4-D-MINI						G3/8											
HEP-3/8-D-MINI	70																
HEP-D-MINI	-	-			5.8	-	11					-	-			-	10
<b>Midi</b>																	
HEP-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	34	32	G1/4	32	22	94.6	14	8	-
HEP-3/8-D-MIDI						G3/8											
HEP-1/2-D-MIDI						G1/2											
HEP-3/4-D-MIDI						G3/4											
HEP-D-MIDI	-	-			6.8	-	24					-	-			-	11
<b>Maxi</b>																	
HEP-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	38	16	G3/8	32	22	95.6	16	8	-
HEP-3/4-D-MAXI						G3/4											
HEP-1-D-MAXI	116	91										40					
HEP-D-MAXI	-	-			6.8	-	30					-	-			-	11

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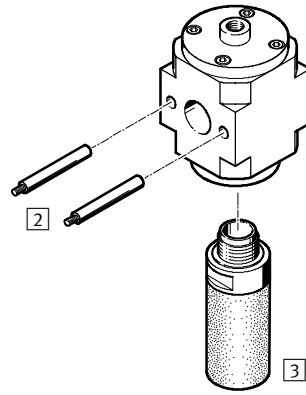
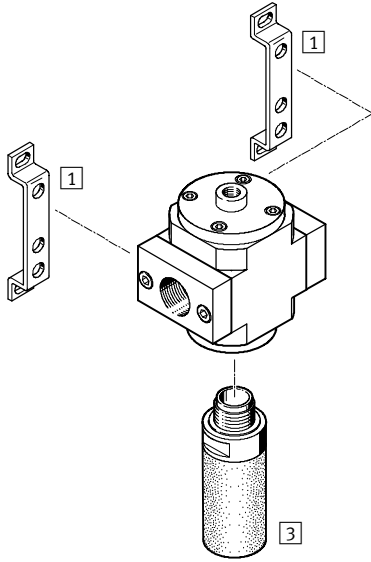
# HEP Pneumatic On/Off Valves – D Series, Metal Design

Accessories Overview

**Mini/Midi/Maxi**

Individual unit with port blocks

Individual unit without port blocks, for combination unit

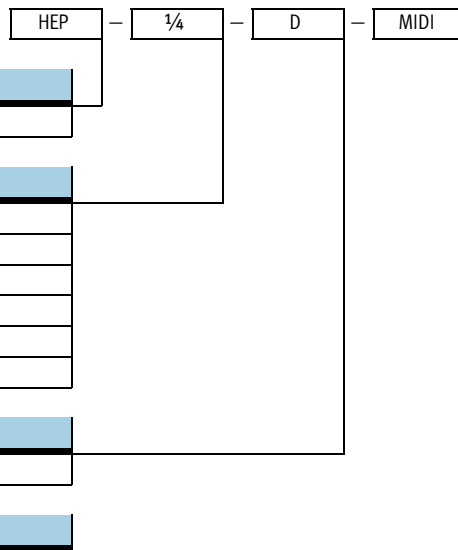


**Mounting attachments and accessories**

	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	-	■	-	276
2 Threaded pin (included in scope of delivery) FRB	-	-	■	■	278
3 Silencer U	■	■	■	■	284

# HEP Pneumatic On/Off Valves D Series, Metal Design

Type Codes



**Basic function**

HEP	On-off valve, pneumatic
-----	-------------------------

**Pneumatic connection**

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

**Series**

D	Series
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**Size**

MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

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# HEP Pneumatic On/Off Valves – D Series, Metal Design

Ordering Data

Ordering data			
Pneumatic actuation, 3/2-way valve, operating pressure 2 ... 16 bar, normally closed			
Size	Part No.	Type	LT
Without threaded port blocks			
Mini	193242	HEP-D-MINI	Q
Midi	193249	HEP-D-MIDI	Q
Maxi	193257	HEP-D-MAXI	Q

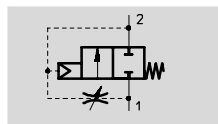
Ordering data				
Pneumatic actuation, 3/2-way valve, operating pressure 2 ... 16 bar, normally closed				
Size	Connection	Part No.	Type	LT
With threaded port blocks				
Mini	G1/8	193243	HEP-1/8-D-MINI	Q
	G1/4	193244	HEP-1/4-D-MINI	Q
	G3/8	193245	HEP-3/8-D-MINI	Q
Midi	G1/4	193250	HEP-1/4-D-MIDI	Q
	G3/8	193251	HEP-3/8-D-MIDI	Q
	G1/2	193252	HEP-1/2-D-MIDI	Q
	G3/4	193253	HEP-3/4-D-MIDI	Q
Maxi	G1/2	193258	HEP-1/2-D-MAXI	Q
	G3/4	193259	HEP-3/4-D-MAXI	Q
	G1	193260	HEP-1-D-MAXI	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# HEL Soft-Start Valves – D Series, Metal Design

Technical Data

Function



- - Flow rate  
1000 ... 6500 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
3 ... 16 bar



- Soft-start valve for gradual pressure build-up (for use with HE, HEE, and HEP on/off valves)
- Air cylinders etc. are moved slowly and safely to their initial positions
- Sudden and erratic movements are avoided
- Pressure switching approx. 50% of input pressure
- Adjustable switching time delay

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General technical data											
Size	Mini			Midi				Maxi			
Pneumatic connection	G $\frac{1}{8}$ 1/8 NPT	G $\frac{1}{4}$ 1/4 NPT	G $\frac{3}{8}$ 3/8 NPT	G $\frac{1}{4}$ 1/4 NPT <sup>1)</sup>	G $\frac{3}{8}$ 3/8 NPT	G $\frac{1}{2}$ 1/2 NPT	G $\frac{3}{4}$ 3/4 NPT	G $\frac{1}{2}$ 1/2 NPT <sup>1)</sup>	G $\frac{3}{4}$ 3/4 NPT	G1 1 NPT	
Operating medium	Filtered compressed air, lubricated or unlubricated, grade of filtration 50 µm										
Design	Piston spool valve										
Type of mounting	Via accessories In-line installation										
Assembly position	Any										
Operating pressure [bar]	3 ... 16										
Valve function	2/2-way valve, air operated, closed										
Exhaust function	Flow control										
Reset method	Mechanical spring										
C value [l/sbar]	4.4	7.9	9.1	10.0	18.4	21.0	22.5	26.9	31.0	29.0	
b value	0.46	0.38	0.29	0.49	0.33	0.29	0.36	0.36	0.30	0.38	
Type of actuation	Direct										
Direction of flow	Nonreversible										

1) Available via the FAST program. See page 260.

# HEL Soft-Start Valves – D Series, Metal Design

Technical Data

Standard nominal flow rate <sup>1)</sup> q <sub>N</sub> [l/min]						
Connection	G1/8, 1/8 NPT	G1/4, 1/4 NPT	G3/8, 3/8 NPT	G1/2, 1/2 NPT	G3/4, 3/4 NPT	G1, 1NPT
<b>Mini</b>						
HEL	1000	1500	1600	–	–	–
<b>Midi</b>						
HEL	–	2600	3200	3600	3800	–
<b>Maxi</b>						
HEL	–	–	–	5600	6000	6500

1) Measured at p<sub>1</sub> = 6 bar and Δp = 1 bar.

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>1)</sup>	2		

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

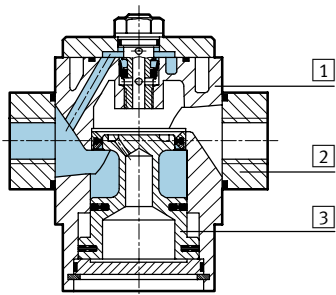
Weight [g]			
Size	Mini	Midi	Maxi
HEL	184	586	850

# HEL Soft-Start Valves – D Series, Metal Design

Technical Data

## Materials

Sectional view

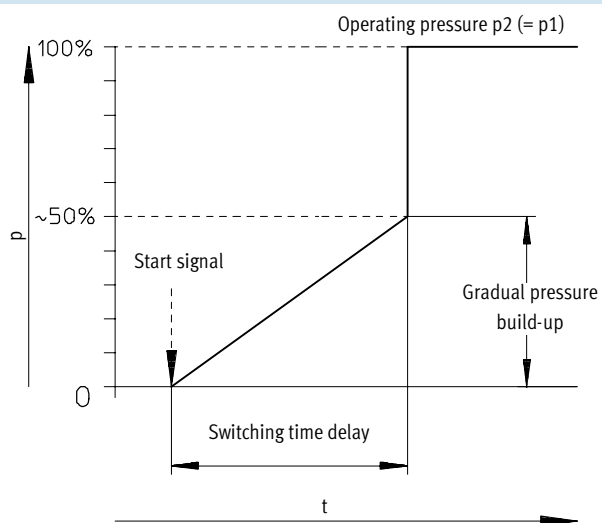


### On-off valve

1	Housing	Die-cast aluminum
2	Port blocks	Wrought aluminum alloy
3	Piston	Stainless steel
-	Seals	Nitrile rubber
Note on materials		Free of copper, PTFE and silicone

## Switching point

Pressure p as a function of time t



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# HEL Soft-Start Valves – D Series, Metal Design

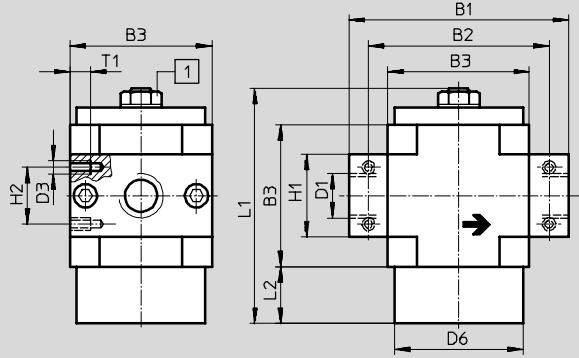
Technical Data – Dimensional Drawings

**Dimensions**

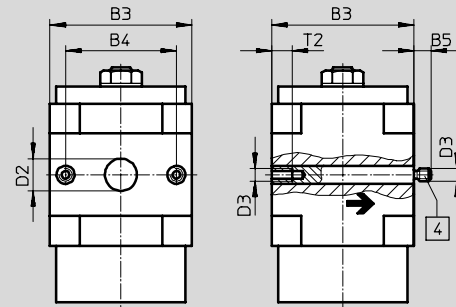
Download CAD data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

Mini/Midi

With threaded port blocks



Without threaded port blocks



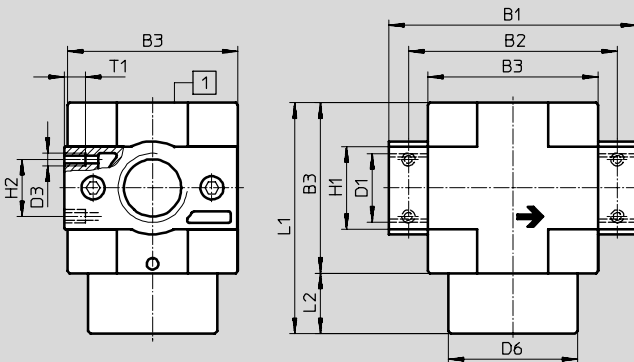
1 Regulating screw for flow control valve

4 Threaded pin (exchangeable)

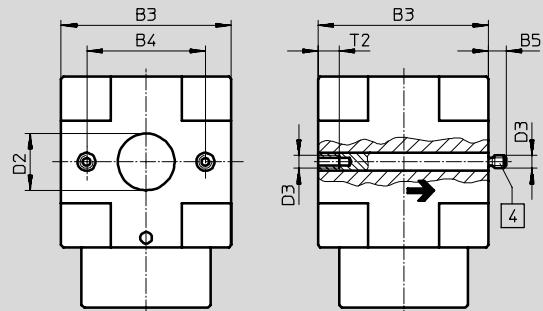
→ Flow direction

Maxi

With threaded port blocks



Without threaded port blocks



1 Regulating screw in housing

4 Threaded pin (exchangeable)

→ Flow direction

Type	B1	B2	B3	B4	B5	D1	D2 Ø	D3	D6	H1	H2	L1	L2	T1	T2
<b>Mini</b>															
HEL-1/8-D-MINI (NPT)	64	52	40	30	-	G1/8, 1/8 NPT	-	M4	30	20	11	66	16	7	-
HEL-1/4-D-MINI (NPT)						G1/4, 1/4 NPT									
HEL-3/8-D-MINI (NPT)						G3/8, 3/8 NPT									
HEL-D-MINI	-	-	-	-	5.8	-	11	-	-	-	-	-	-	-	10
<b>Midi</b>															
HEL-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	50	32	22	91	22	8	-
HEL-3/8-D-MIDI (NPT)						G3/8, 3/8 NPT									
HEL-1/2-D-MIDI (NPT)						G1/2, 1/2 NPT									
HEL-3/4-D-MIDI (NPT)						G3/4, 3/4 NPT									
HEL-D-MIDI	-	-	-	-	6.8	-	24	-	-	-	-	-	-	-	11
<b>Maxi</b>															
HEL-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	50	32	22	89	23	8	-
HEL-3/4-D-MAXI (NPT)						G3/4, 3/4 NPT									
HEL-1-D-MAXI (NPT)						G1, 1 NPT									
HEL-D-MAXI	-	-	-	-	6.8	-	30	-	-	-	-	-	-	-	11

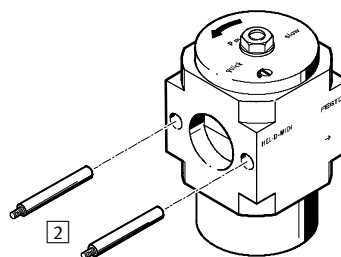
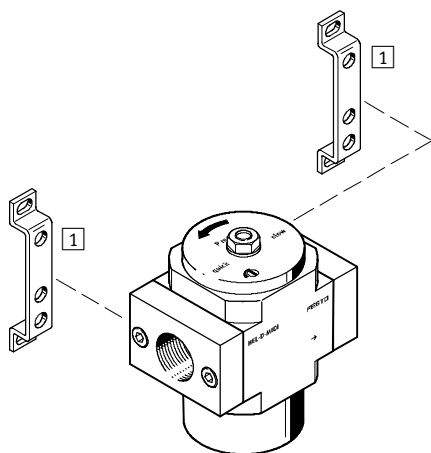
# HEL Soft-Start Valves – D Series, Metal Design

Accessories Overview

**Mini/Midi/Maxi**

Individual unit with port blocks

Individual unit without port blocks, for combination unit



**Mounting attachments and accessories**

	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
1 Mounting bracket HFOE	■	-	■	-	276
2 Threaded pin (included in scope of delivery) FRB	-	-	■	■	278

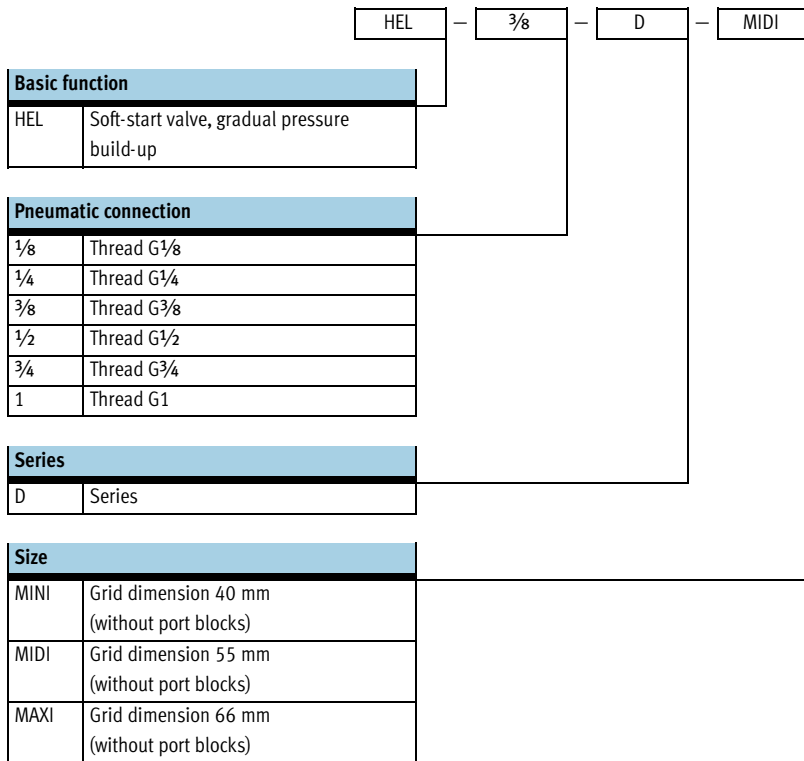
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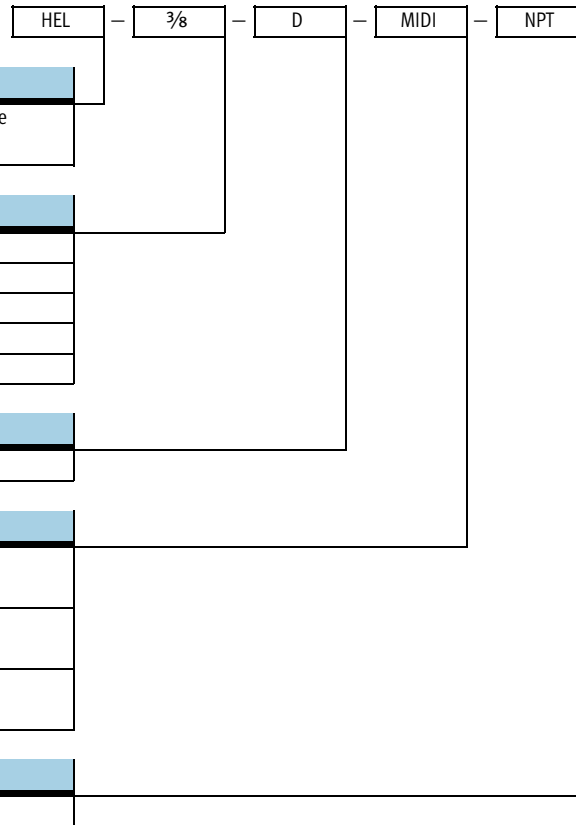
# HEL Soft-Start Valves – D Series, Metal Design

Type Codes – G (BSPP) Connections



# HEL Soft-Start Valves – D Series, Metal Design

Type Codes – NPT Connections



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# HEL Soft-Start Valves – D Series, Metal Design

Ordering Data

Ordering data			
Gradual pressure build-up, 2/2-way valve, operating pressure 3 ... 16 bar, normally closed			
Size	Part No.	Type	LT
Without threaded port blocks			
Mini	170690	HEL-D-MINI	1D
Midi	170691	HEL-D-MIDI	1D
Maxi	170692	HEL-D-MAXI	1D

Ordering data				
Gradual pressure build-up, 2/2-way valve, operating pressure 3 ... 16 bar, normally closed				
Size	Connection	Part No.	Type	LT
With threaded port blocks				
Mini	G $\frac{1}{8}$	165076	HEL- $\frac{1}{8}$ -D-MINI	1W
	G $\frac{1}{4}$	165077	HEL- $\frac{1}{4}$ -D-MINI	1W
	G $\frac{3}{8}$	165078	HEL- $\frac{3}{8}$ -D-MINI	Q
	G $\frac{1}{8}$	173916	HEL- $\frac{1}{8}$ -D-MINI-NPT	1W
	G $\frac{1}{4}$	173917	HEL- $\frac{1}{4}$ -D-MINI-NPT	1W
	G $\frac{3}{8}$	173918	HEL- $\frac{3}{8}$ -D-MINI-NPT	Q
Midi	G $\frac{1}{4}$	186521	HEL- $\frac{1}{4}$ -D-MIDI	Q
	G $\frac{3}{8}$	165079	HEL- $\frac{3}{8}$ -D-MIDI	1W
	G $\frac{1}{2}$	165080	HEL- $\frac{1}{2}$ -D-MIDI	1W
	G $\frac{3}{4}$	165081	HEL- $\frac{3}{4}$ -D-MIDI	Q
	G $\frac{3}{8}$	173919	HEL- $\frac{3}{8}$ -D-MIDI-NPT	1W
	G $\frac{1}{2}$	173920	HEL- $\frac{1}{2}$ -D-MIDI-NPT	1W
	G $\frac{3}{4}$	173921	HEL- $\frac{3}{4}$ -D-MIDI-NPT	Q
Maxi	G $\frac{1}{2}$	186522	HEL- $\frac{1}{2}$ -D-MAXI	Q
	G $\frac{3}{4}$	165082	HEL- $\frac{3}{4}$ -D-MAXI	1W
	G1	165083	HEL-1-D-MAXI	1W
	G $\frac{3}{4}$	173922	HEL- $\frac{3}{4}$ -D-MAXI-NPT	1W
	G1	173923	HEL-1-D-MAXI-NPT	1W

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time



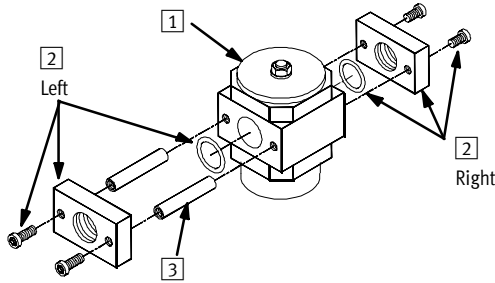
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# FAST\* Program – HEL Soft-Start Valve Selector Guide

HEL Soft-Start Valves – D Series, Metal Design

\*FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.



A complete valve assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block Kit	2 [one left, one right]
3	Single Unit Joining Rod	2
4	Mounting Bracket Kit (Not shown) (Optional)	1

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**Step 1:** Based upon the required Port Size, Maximum Flow, and Thread Type, select the Main Unit (Item 1) and the Left and Right Port Block Kits (Item 2).

Port size	Max. Flow (l/min/scfm)	Product Type / Description	Item				
			Main Unit	NPT Thread		BSP Thread	
				Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit
1/8	1000/35.3	HEL-...-D-MINI-...	170690	546520	546521	546495	546496
	1500/52.9			546522	546523	546497	546498
1/4	2600/91.8	HEL-...-D-MIDI-...	170691	546536	546537	546532	546533
	1600/56.5	HEL-...-D-MINI-...	170690	546524	546525	546499	546500
3/8	3200/113.0	HEL-...-D-MIDI-...	170691	546530	546531	546501	546502
	3600/127.1	HEL-...-D-MIDI-...		546526	546527	546503	546504
1/2	5600/197.8	HEL-...-D-MAXI-...	170692	546538	546539	546534	546535
	3800/134.2	HEL-...-D-MIDI-...	170691	546528	546529	546505	546506
3/4	6000/211.9	HEL-...-D-MAXI-...	170692	546490	546492	546507	546508
	6500/229.5			546491	546493	546509	546510

**Step 2:** Based upon the Product Type/Description from Step 1, select the Joining Rods (Item 3), and the Mounting Bracket Kit (Item 4).

Product Type / Description	Item	
	3	4 (Not shown)
Single Unit Joining Rod		Mounting Bracket Kit (Optional)
HEL-...-D-MINI-...	546483	159638
HEL-...-D-MIDI-...	546489	159593
HEL-...-D-MAXI-...	546494	

**Step3:** Determine the appropriate quantity of each Item.

**Ordering Example:**

Required: 3/8 port size, 3000 l/min flow, BSP threads, and mounting bracket kit.

Order:	Item	Part No.	Qty	Description
	1	170691	1	Main Unit
	2	546501	1	Left Port Block Kit
		546502	1	Right Port Block Kit
	3	546489	2	Single Unit Joining Rod
	4	159593	1	Mounting Bracket Kit



FRM-1/4-D-MIDI  
Distributor Block  
with port blocks



FRZ-D-MIDI  
Distributor Block  
with threaded pins

**Distributor Blocks**

FRM distributor blocks with or without port blocks

H = with integrated check valve


Y = with pressure switch

FRZ distributor blocks without port blocks

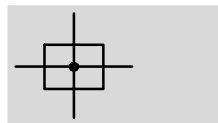
# FRM Distributor Blocks – D Series, Metal Design


## Technical Data

### Function

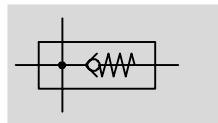
-  - Flow rate  
1,300 ... 20,000 l/min


### Standard



-  - Temperature range  
-10 ... +60 °C

### With integrated check valve



-  - Operating pressure  
0 ... 16 bar



■ Provides additional air connections for greater flexibility, i.e. for attachment of additional modules (pressure regulator, pressure switch, etc.)

■ An optional integrated check valve prevents return flow of lubricated compressed air

■ Can be used as an intermediate distributor for varying air qualities

3

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General technical data										
Size	Mini			Midi				Maxi		
Pneumatic connection 1 <sup>1)</sup>	G <sup>1</sup> / <sub>8</sub> 1/8 NPT	G <sup>1</sup> / <sub>4</sub> 1/4 NPT	G <sup>3</sup> / <sub>8</sub> , 3/8 NPT	G <sup>1</sup> / <sub>4</sub> 1/4 NPT <sup>2)</sup>	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>2</sub> 1/2 NPT	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G <sup>1</sup> / <sub>2</sub> 1/2 NPT <sup>2)</sup>	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G1 1 NPT
Pneumatic connection 2 <sup>1)</sup>	G <sup>1</sup> / <sub>8</sub> 1/8 NPT	G <sup>1</sup> / <sub>4</sub> 1/4 NPT	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>4</sub>	G <sup>3</sup> / <sub>8</sub> 3/8 NPT	G <sup>1</sup> / <sub>2</sub> 1/2 NPT	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G <sup>1</sup> / <sub>2</sub>	G <sup>3</sup> / <sub>4</sub> 3/4 NPT	G1 1 NPT
Pneumatic connection 3	G <sup>1</sup> / <sub>4</sub>			G <sup>1</sup> / <sub>2</sub>				G <sup>3</sup> / <sub>4</sub>		
Pneumatic connection 4	G <sup>1</sup> / <sub>4</sub>									
Operating medium	Filtered compressed air									
Design	Branching module									
Type of mounting	Via accessories									
	In-line installation									
Assembly position	Any									
Operating pressure [bar]										
Standard	0 ... 16									
With non-return function	0.15 ... 16			0.2 ... 16				0.25 ... 16		
With pressure switch	0 ... 12									

1) With port blocks.

2) Available via the FAST program. See page 269.

# FRM Distributor Blocks – D Series, Metal Design

Technical Data

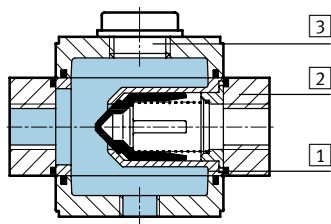
Standard nominal flow rate <sup>1)</sup> qnN [l/min]							
Port	Without port blocks	With port blocks					
		G <sup>1</sup> / <sub>8</sub> , 1/8 NPT	G <sup>1</sup> / <sub>4</sub> , 1/4 NPT	G <sup>3</sup> / <sub>8</sub> , 3/8 NPT	G <sup>1</sup> / <sub>2</sub> , 1/2 NPT	G <sup>3</sup> / <sub>4</sub> , 3/4 NPT	G1, 1 NPT
<b>Mini</b>							
Standard	3,300	1,500	3,300	3,300	–	–	–
With integrated check valve	2,000	1,300	2,000	2,100	–	–	–
With pressure switch	3,300	–	–	–	–	–	–
<b>Midi</b>							
Standard	8,200	–	3,500	7,000	8,200	8,800	–
With integrated check valve	5,600	–	3,400	5,500	5,600	5,500	–
With pressure switch	8,200	–	–	–	–	–	–
<b>Maxi</b>							
Standard	20,000	–	–	–	11,700	20,000	17,400
With integrated check valve	15,000	–	–	–	9,600	15,000	13,400
With pressure switch	20,000	–	–	–	–	–	–

Ambient conditions			
Size	Mini	Midi	Maxi
Ambient temperature [°C]	–10 ... +60		
Temperature of medium [°C]	–10 ... +60		
Storage temperature [°C]	–10 ... +60		
Corrosion resistance class CRC <sup>2)</sup>	2		

Weights [g]							
Port	Without port blocks	With port blocks					
		G <sup>1</sup> / <sub>8</sub> , 1/8 NPT	G <sup>1</sup> / <sub>4</sub> , 1/4 NPT	G <sup>3</sup> / <sub>8</sub> , 3/8 NPT	G <sup>1</sup> / <sub>2</sub> , 1/2 NPT	G <sup>3</sup> / <sub>4</sub> , 3/4 NPT	G1, 1 NPT
<b>Mini</b>							
Without pressure switch	210	290	280	290	–	–	–
With pressure switch	590	–	–	–	–	–	–
<b>Midi</b>							
Without pressure switch	520	–	770	760	740	710	–
With pressure switch	900	–	–	–	–	–	–
<b>Maxi</b>							
Without pressure switch	900	–	–	–	1,160	1,120	1,230
With pressure switch	1,280	–	–	–	–	–	–

## Materials

Sectional view



Branching module	
1	Housing Die-cast zinc
2	Port blocks Die-cast zinc
3	Cover plate Galvanized steel
–	Seals Nitrile rubber, polyvinyl chloride
Note on materials Free of copper, PTFE and silicone	

1) Measured at p<sub>1</sub> = 6 bar and Δp = 1 bar.

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

# FRM Distributor Blocks – D Series, Metal Design

Technical Data – Dimensional Drawings

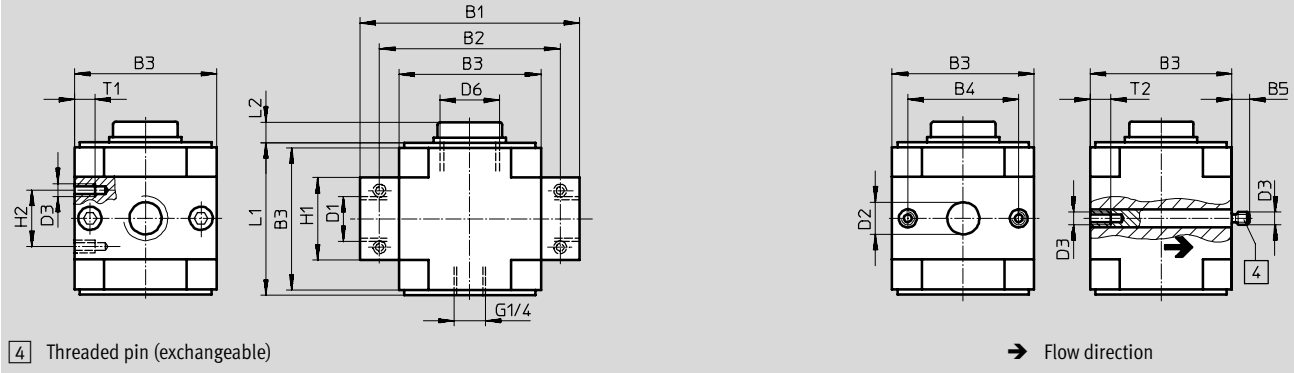
## Dimensions

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

Mini/Midi/Maxi

With port blocks

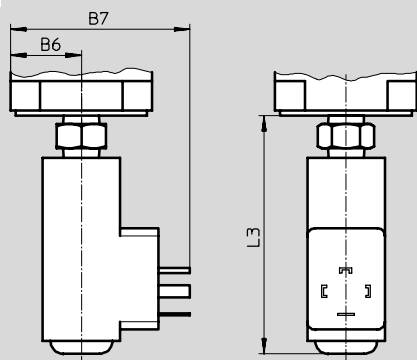
Without port blocks



Type	B1	B2	B3	B4	B5	D1	D2 ∅	D3	D6	H1	H2	L1	L2	T1	T2
<b>Mini</b>															
FRM-1/8-D-MINI (NPT)	64	52	40	30	-	G1/8, 1/8 NPT	-	M4	G1/4	20	11	42	7	7	-
FRM-1/4-D-MINI (NPT)						G1/4, 1/4 NPT									
FRM-3/8-D-MINI (NPT)						G3/8, 3/8 NPT									
FRM-D-MINI	-	-	40	30	5.8	-	11	M4	G1/4	-	-	42	7	-	10
<b>Midi</b>															
FRM-1/4-D-MIDI	85	70	55	43	-	G1/4	-	M5	G1/2	32	22	59	8	8	-
FRM-3/8-D-MIDI (NPT)						G3/8, 3/8 NPT									
FRM-1/2-D-MIDI (NPT)						G1/2, 1/2 NPT									
FRM-3/4-D-MIDI (NPT)						G3/4, 3/4 NPT									
FRM-D-MIDI	-	-	-	-	6.8	-	24	-	-	-	-	-	-	-	11
<b>Maxi</b>															
FRM-1/2-D-MAXI	96	80	66	46	-	G1/2	-	M5	G3/4	32	22	70	8	8	-
FRM-3/4-D-MAXI (NPT)						G3/4, 3/4 NPT									
FRM-1-D-MAXI (NPT)						G1, 1 NPT									
FRM-D-MAXI	-	-	-	-	6.8	-	30	-	-	-	-	-	-	-	11

## Dimensions – Pressure Switch PEV

Mini/Midi/Maxi



Pressure switch PEV-1/4-B-0D with adjustable pressure switching point, plug, square design to DIN EN 175 301, type A

Type	B6	B7	L3
FRM-Y-D-MINI	20	62	92.3
FRM-Y-D-MIDI	27.5	69.5	92.3
FRM-Y-D-MAXI	33	75	92.3



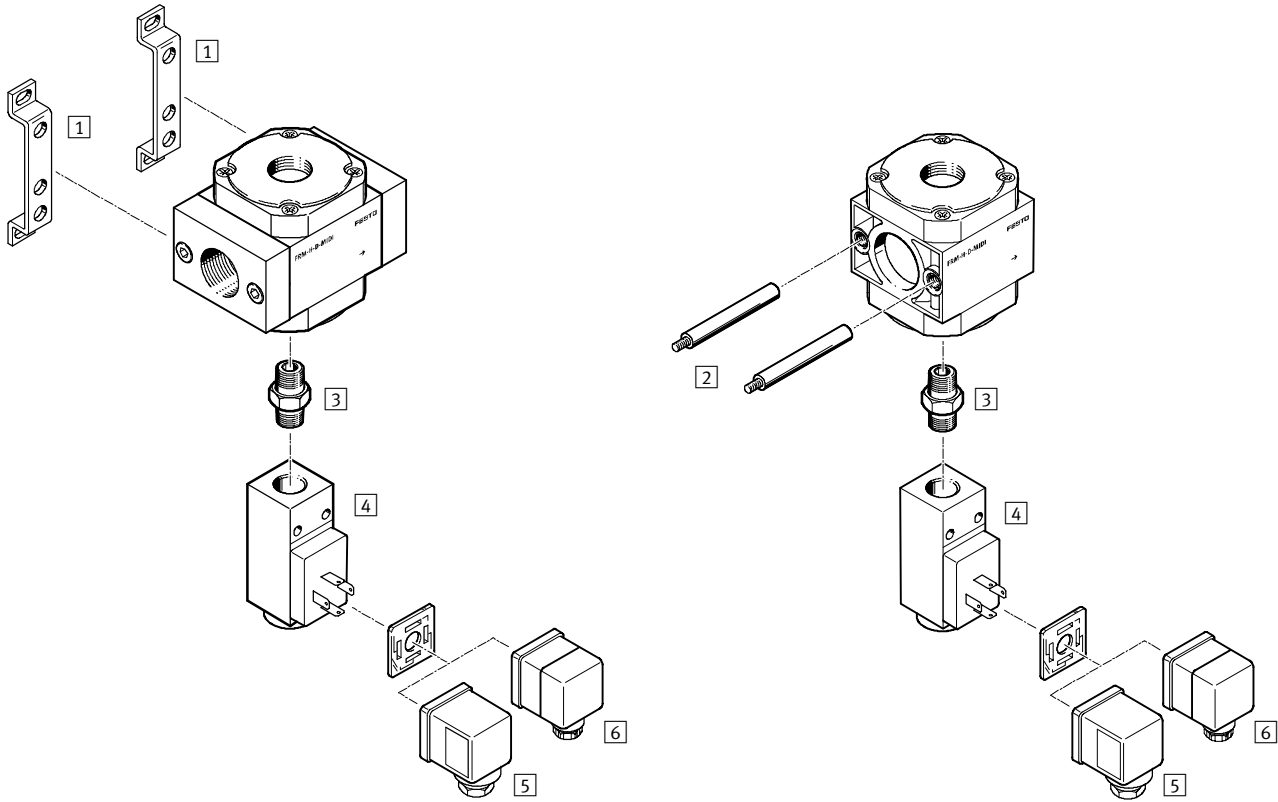
# FRM Distributor Blocks – D Series, Metal Design

Accessories Overview

**Mini/Midi/Maxi**

Individual unit with port blocks

Individual unit without port blocks, for combination unit



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Mounting attachments and accessories					
	Individual unit		Combination		→ Page
	with port blocks	without port blocks	with port blocks	without port blocks	
[1] Mounting bracket HFOE	■	-	■	-	276
[2] Threaded pin (included in scope of delivery) FRB	-	-	■	■	278
[3] Double nipple ESK	■	■	■	■	284
[4] Pressure switches PEV	■	■	■	■	285
[5] Plug socket MSSD-C	■	■	■	■	286
[6] Angled plug socket PEV-...-WD-LED	■	■	■	■	286

# FRM Distribution Blocks – D Series, Metal Design

Type Codes – G (BSPP) Connections



**Basic function**

FRM	Distributor block
-----	-------------------

**Non-return function/pressure switch**

	Standard
H	With integrated check valve
Y	With pressure switch

**Pneumatic connection**

	Without port blocks
1/8	Thread G1/8
1/4	Thread G1/4
3/8	Thread G3/8
1/2	Thread G1/2
3/4	Thread G3/4
1	Thread G1

**Series**

D	Series
---	--------

**Size**

MINI	Grid dimension 40 mm (without port blocks)
MIDI	Grid dimension 55 mm (without port blocks)
MAXI	Grid dimension 66 mm (without port blocks)

3

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# FRM Distributor Block – D Series, Metal Design

Type Codes – NPT Connections

FRM		H		3/8		D		MIDI		NPT	
<b>Basic function</b>											
FRM	Distributor block										
<b>Non-return function</b>											
	Standard										
H	With integrated check valve										
<b>Pneumatic Connection</b>											
	Without port blocks										
1/8	1/8 NPT Thread										
1/4	1/4 NPT Thread										
3/8	3/8 NPT Thread										
1/2	1/2 NPT Thread										
3/4	3/4 NPT Thread										
1	1 NPT Thread										
<b>Series</b>											
D	Series										
<b>Size</b>											
MINI	Grid dimension 40 mm (without port blocks)										
MIDI	Grid dimension 55 mm (without port blocks)										
MAXI	Grid dimension 60 mm (without port blocks)										
<b>NPT Connection (where available)</b>											
NPT	NPT threaded connection										

# FRM Distribution Blocks – D Series, Metal Design



Ordering Data

Ordering data – Without port blocks									
Size	Standard			With integrated non-return function			With pressure switch PEV-1/4-B-0D		
	Part No.	Type	LT	Part No.	Type	LT	Part No.	Type	LT
Mini	170684	FRM-D-MINI	1D	170687	FRM-H-D-MINI	1D	542184	FRM-Y-D-MINI	Q
Midi	170685	FRM-D-MIDI	1D	170688	FRM-H-D-MIDI	1D	542185	FRM-Y-D-MIDI	Q
Maxi	170686	FRM-D-MAXI	1D	170689	FRM-H-D-MAXI	1W	542186	FRM-Y-D-MAXI	Q

Ordering data – With port blocks									
Size	Connection	Standard			With integrated non-return function				
		Part No.	Type	LT	Part No.	Type	LT		
Mini	G1/8	164949	FRM-1/8-D-MINI	Q	162788	FRM-H-1/8-D-MINI	1W		
	G1/4	164950	FRM-1/4-D-MINI	Q	162789	FRM-H-1/4-D-MINI	1W		
	G3/8	164951	FRM-3/8-D-MINI	Q	162790	FRM-H-3/8-D-MINI	Q		
	1/8 NPT	173924	FRM-1/8-D-MINI-NPT	Q	173932	FRM-H-1/8-D-MINI-NPT	1W		
	1/4 NPT	173925	FRM-1/4-D-MINI-NPT	Q	173933	FRM-H-1/4-D-MINI-NPT	1W		
	3/8 NPT	173926	FRM-3/8-D-MINI-NPT	Q	173934	FRM-H-3/8-D-MINI-NPT	Q		
Midi	G1/4	186523	FRM-1/4-D-MIDI	Q	186525	FRM-H-1/4-D-MIDI	Q		
	G3/8	164952	FRM-3/8-D-MIDI	Q	162791	FRM-H-3/8-D-MIDI	1W		
	G1/2	164953	FRM-1/2-D-MIDI	Q	162792	FRM-H-1/2-D-MIDI	1W		
	G3/4	164954	FRM-3/4-D-MIDI	Q	162793	FRM-H-3/4-D-MIDI	Q		
	3/8 NPT	173927	FRM-3/8-D-MIDI-NPT	Q	173935	FRM-H-3/8-D-MIDI-NPT	1W		
	1/2 NPT	173928	FRM-1/2-D-MIDI-NPT	Q	173936	FRM-H-1/2-D-MIDI-NPT	1W		
Maxi	3/4 NPT	173929	FRM-3/4-D-MIDI-NPT	Q	173937	FRM-H-3/4-D-MIDI-NPT	Q		
	G1/2	186524	FRM-1/2-D-MAXI	Q	186526	FRM-H-1/2-D-MAXI	Q		
	G3/4	164955	FRM-3/4-D-MAXI	Q	162794	FRM-H-3/4-D-MAXI	1W		
	G1	164956	FRM-1-D-MAXI	Q	162795	FRM-H-1-D-MAXI	1W		
	3/4 NPT	173930	FRM-3/4-D-MAXI-NPT	Q	173938	FRM-H-3/4-D-MAXI-NPT	1W		
	1 NPT	173931	FRM-1-D-MAXI-NPT	Q	173939	FRM-H-1-D-MAXI-NPT	1W		

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

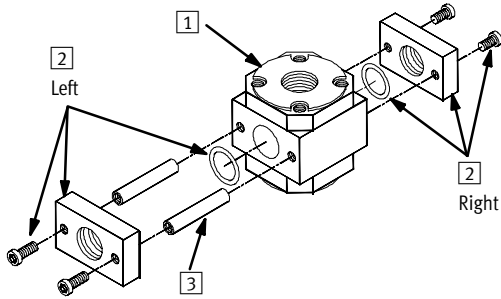
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# FAST\* Program – FRM Distributor Block Selector Guide

FRM Distributor Blocks – D Series, Metal Design

\*FAST = Festo Assured Shipping Time. Ordering via the FAST program means same day / next day shipping from our warehouse of the parts required to assemble a complete air preparation unit.



A complete distributor assembly consists of the following items:

Item	Description	Qty Required per Assy
1	Main Unit	1
2	Port Block Kit	2 (one left, one right)
3	Single Unit Joining Rod	2
4	Mounting Bracket Kit (Not shown) (Optional)	1

**Step 1:** Based upon the required Port Size, Maximum Flow, and Thread Type, select the Main Unit (Item 1) and the Left and Right Port Block (Item 2).

			Item									
			1	2								
Port Size	Max. Flow (l/min/scfm)	Check Valve	Product Type / Description	Main Unit	NPT Thread		BSP Thread					
					Left Port Block Kit	Right Port Block Kit	Left Port Block Kit	Right Port Block Kit				
1/8	1500/52.9	No	FRM-...-D-MINI-...	170684	546520	546521	546495	546496				
	1300/45.9	Yes	FRM-H-...-D-MINI-...	170687								
1/4	3300/116.5	No	FRM-...-D-MINI-...	170684	546522	546523	546497	546498				
	2000/70.6	Yes	FRM-H-...-D-MINI-...	170687								
	3500/123.6	No	FRM-...-D-MIDI-...	170685					546536	546537	546532	546489
	3400/120.1	Yes	FRM-H-...-D-MIDI-...	170688								
3/8	3300/116.5	No	FRM-...-D-MINI-...	170684	546524	546525	546499	546500				
	2100/74.2	Yes	FRM-H-...-D-MINI-...	172687								
	7000/247.2	No	FRM-...-D-MIDI-...	170685					546530	546531	546501	546502
	5500/194.2	Yes	FRM-H-...-D-MIDI-...	170688								
1/2	8200/289.6	No	FRM-...-D-MIDI-...	170685	546526	546527	546503	546504				
	5600/197.8	Yes	FRM-H-...-D-MIDI-...	170688								
	11700/413.2	No	FRM-...-D-MAXI-...	170686					546538	546539	546534	546535
	9600/339.0	Yes	FRM_H-...-D-MAXI-...	170689								
3/4	8800/310.8	No	FRM-...-D-MIDI-...	170685	546528	546529	546505	546506				
	5500/194.2	Yes	FRM_H-...-D-MIDI-...	170688								
	20000/706.3	No	FRM-...-D-MAXI-...	170686					546490	546492	546507	546508
	15000/529.7	Yes	FRM-H-...-D-MAXI-...	170689								
1	17400/614.5	No	FRM-...-D-MAXI-...	170686	546491	546493	546509	546510				
	13400/473.2	Yes	FRM-H-...-D-MAXI-...	170689								

**Step 2:** Based upon the Product Type/Description from Step 1, select the Joining Rods (Item 3) and the Mounting Bracket Kit (Item 4).

		Item	4 [Not shown]
Product Type / Description	Single Unit Joining Rod	Mounting Bracket Kit (Optional)	
FRM-...-D-MINI-...	359787	159638	
FRM-H-...-D-MINI-...			
FRM-...-D-MIDI-...	369989	159593	
FRM-H-...-D-MIDI-...			
FRM-...-D-MAXI-...	373059		
FRM-H-...-D-MAXI-...			

# FAST Program – FRM Distributor Block Selector Guide

FRM Distributor Blocks – D Series, Metal Design

**Step3:** Determine the appropriate quantity of each Item.

### Ordering Example:

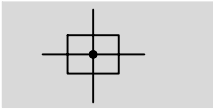
Required: 3/8 port size, 5000 l/min flow, non-return flow check valve, BSP threads, and mounting bracket kit.

	Item	Part No.	Qty	Description
Order:	1	170688	1	Main Unit
	2	380297	1	Left Port Block Kit
		380299	1	Right Port Block Kit
	3	369989	2	Single Unit Joining Rod
	4	159593	1	Mounting Bracket Kit

# FRZ Distributor Blocks – D Series, Metal Design

Technical Data / Dimensional Drawings

### Function



Additional air connections can be used to branch off filtered, unlubricated compressed air, e.g. to supply air barriers, sensors and control systems, or for especially clean air in combination with a coalescing filter (LFMB/LFMA).

Materials:

Housing: Aluminum

Cover plate: Galvanized steel

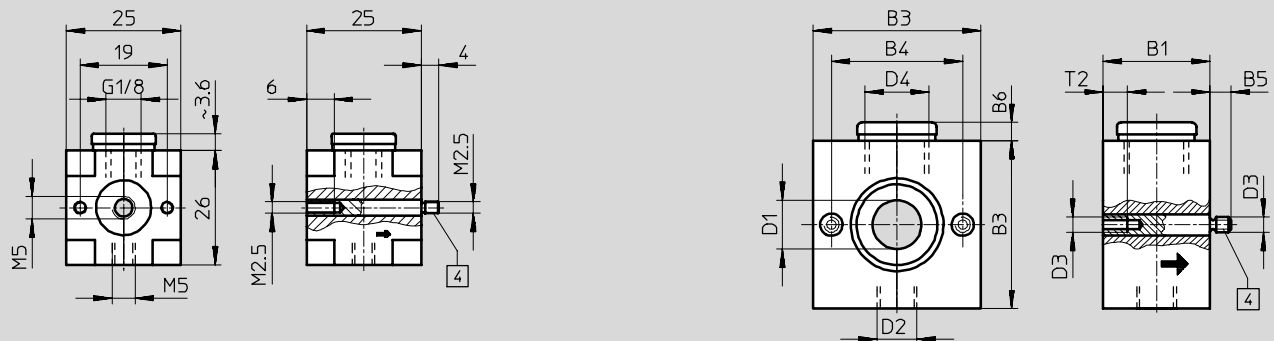
Operating pressure and flow rate are dependent on the air preparation unit connected.



### Dimensions

Micro

Mini/Midi/Maxi

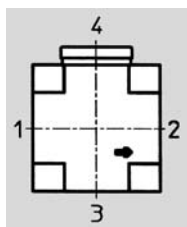


4 Threaded pin (exchangeable)

→ Flow direction

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Type	B1	B3	B4	B5	B6	D1 ∅	D2	D3	D4	T2
<b>Mini</b>										
FRZ-D-MINI	30	40	30	6	4.5	12	G1/4	M4	G1/4	12
<b>Midi</b>										
FRZ-D-MIDI	35	55	43	7	6	16	G1/4	M5	G1/2	8
<b>Maxi</b>										
FRZ-D-MAXI	40	65	30	7	6	22	G1/4	M5	G3/4	10

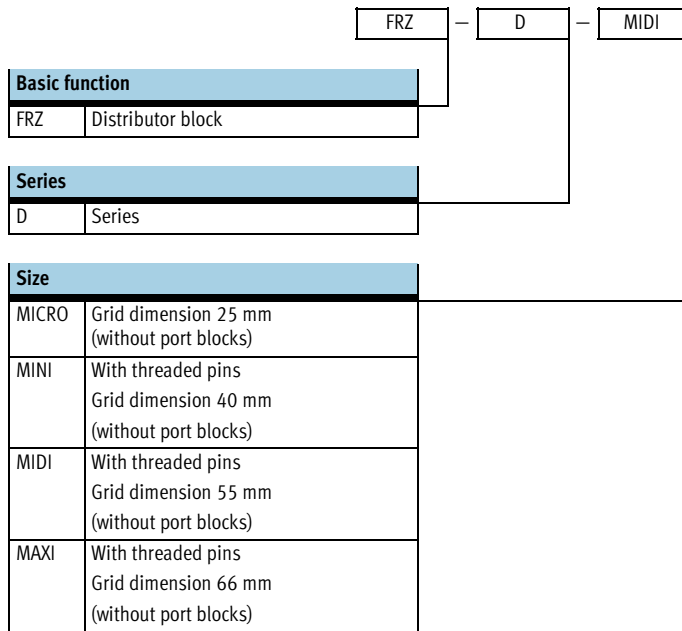


Standard nominal flow rate* (Micro size only)	
Flow direction	l/min
1-2	210
1-3	210
1-4	580

\* Measured at p1 = 6 bar and Δp = 1 bar.

# FRZ Distributor Blocks – D Series, Metal Design

Type Codes



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# FRZ Distributon Blocks – D Series, Metal Design

Ordering data

Ordering data			
Distributor block			
Size	Part No.	Type	LT
Without threaded port blocks			
Micro	526815	FRZ-D-MICRO	1D
Micro	526315	FRZ-D-MICRO-NPT	1D
Mini	162786	FRZ-D-MINI	Q
Midi	159592	FRZ-D-MIDI	Q
Maxi	162787	FRZ-D-MAXI	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

**3**

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HFOE  
Mounting Brackets



FMA  
Flanged Pressure Gauge



PEV  
Pressure Switch with Visual Scale

## Accessories for D Series Metal Design Components

Mounting Attachments

Connecting Plates

Security Components

Pressure Gauges

Additional Functions:

Pressure sensors

Pressure switches

Plastic tubing

Silencers (Mufflers)

Double Nipple

Electrical Connections

Illuminating Seals

Filter Cartridges

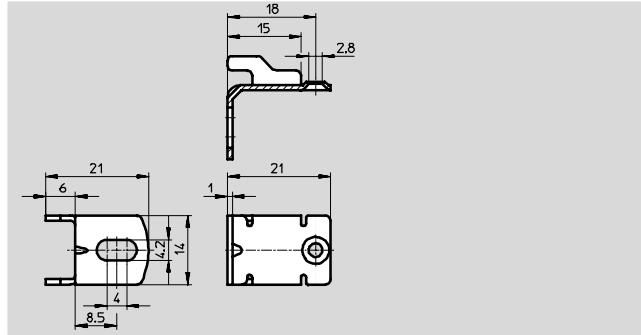
# Mounting Attachments

Accessories – D Series, Metal Design

## HFOE Mounting Bracket

Micro size  
For wall mounting

Material:  
Galvanized steel

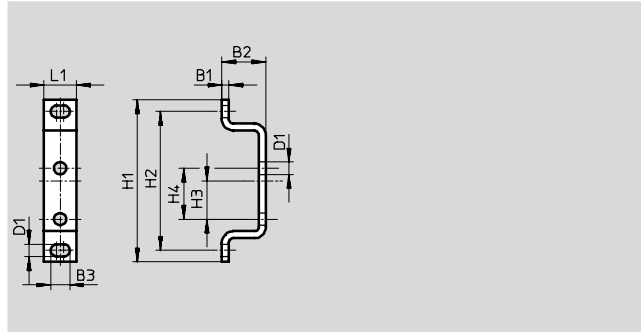


Ordering Data			
Size	Part No.	Type	LT
Micro	526317	HFOE-D-MICRO	1D

## HFOE Mounting Bracket

Mini/Midi/Maxi size  
For wall mounting

Material:  
Galvanized steel



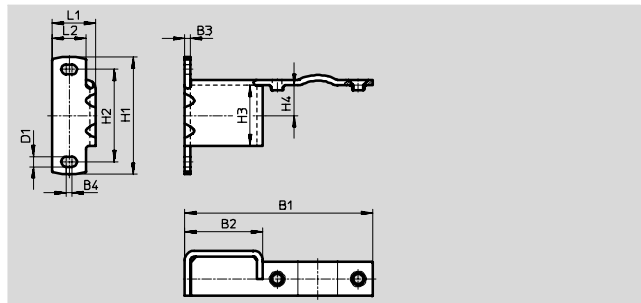
Dimensions and Ordering Data												
Size	B1	B2	B3	D1	H1	H2	H3	H4	L1	Part No.	Type	LT
Mini	2	19	7.3	4.3	43	35	5.5	11	12	159638	HFOE-D-MINI <sup>1)</sup>	1D
Midi/Maxi	3	19	8.3	5.3	70	60	16.5	22	14	159593	HFOE-D-MIDI/MAXI <sup>1)</sup>	1D

1) Free of copper, PTFE and silicone

## HRBK Mounting Bracket

For LRB/LRBS pressure regulators

Material:  
Galvanized steel



Dimensions and Ordering Data														
Size	B1	B2	B3	B4	D1 Ø	H1	H2	H3	H4	L1	L2	Part No.	Type	LT
Mini	80.5	37.5	2.5	3	4.3	47.3	35	20	10	18.5	14	525031	HRBK-D-MINI	1D
Midi	99.8	41.3	3	3	5.3	62.3	49	32	16	23	18	525032	HRBK-D-MIDI	1D

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

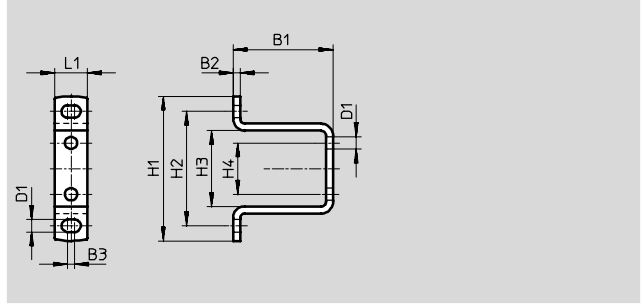
# Mounting Attachments

Accessories – D Series, Metal Design

## HRB Mounting Bracket

For LRB/LRBS pressure regulators

Material:  
Galvanized steel



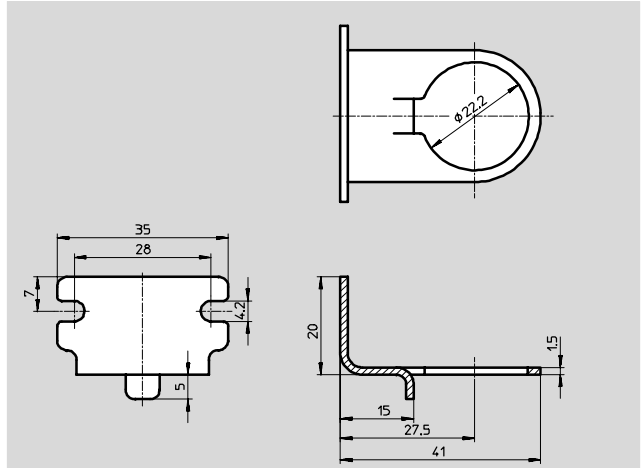
### Dimensions and Ordering Data

Size	B1	B2	B3	D1	H1	H2	H3	H4	L1	Part No.	Type	LT
Mini	38.5	2.5	3	4.3	47.3	35	20	11	12	525029	HRB-D-MINI	1D
Midi	42.7	3	3	5.3	62.3	49	32.5	22	14	525030	HRB-D-MIDI	1D

## HRS Mounting Bracket

Micro size  
For wall mounting

Material:  
Galvanized steel



### Ordering Data

Size	Part No.	Type	LT
Micro	526316	HRS-D-MICRO	1D

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# Mounting Attachments

Accessories – D Series, Metal Design

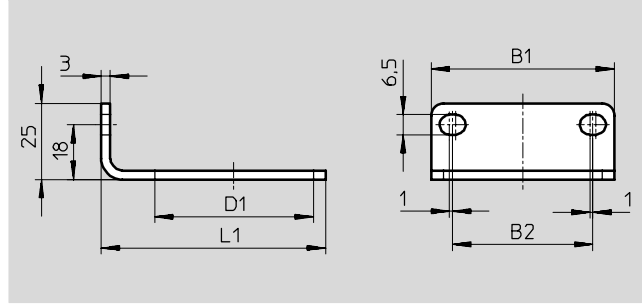


## HR-D Mounting Bracket

For wall mounting

Material:

Galvanized steel



Dimensions and Ordering Data							
Size	B1	B2	D1 Ø	L1	Part No.	Type	LT
Mini	42	28	36	57.5	<b>164936</b>	<b>HR-D-MINI</b>	1D
Midi	60	46	52	73.5	<b>162804</b>	<b>HR-D-MIDI</b>	1D
Maxi	64	51	36	82	<b>162805</b>	<b>HR-D-MAXI</b>	1D
Maxi for DI version	64	51	52	82	<b>193802</b>	<b>HR-D-DI-MAXI</b>	Q

3

3.8

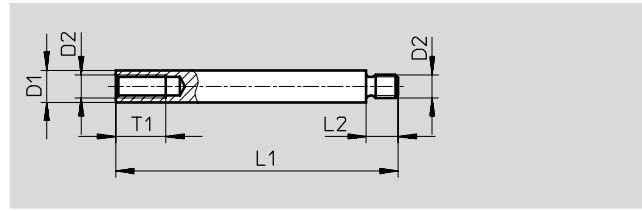
## FRB Threaded Pin

Male-female attaching rods

For attaching main units in custom combinations ordered via the FAST program.

Material:

High-alloy steel



Dimensions and Ordering Data								
Size	D1 Ø	D2	L1	L2	T1 min.	Part No.	Type	LT
Micro (kit as shown)	3.5	M2.5	28.4	4	6	<b>526817</b>	<b>FRB-D-MICRO</b>	1D
Mini (2 pins only)	6	M4	45.8	6	10	<b>546481</b>	<b>FRB-D-MINI-U<sup>1)</sup></b>	1D
Midi (2 pins only)	7	M5	61.8	7	11	<b>546480</b>	<b>FRB-D-MIDI-U<sup>1)</sup></b>	1D
Maxi (2 pins only)	7	M5	72.8	7	11	<b>546476</b>	<b>FRB-D-MAXI-U<sup>1)</sup></b>	1D

1) Free of copper, PTFE and silicone

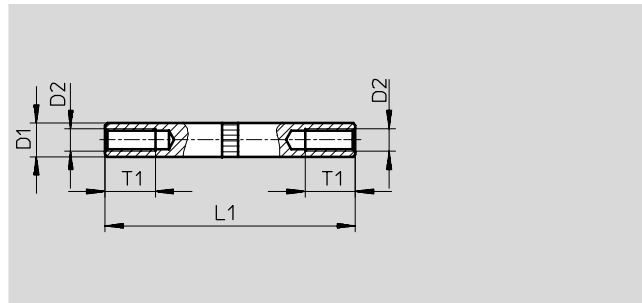
## LF/LOE Threaded Pin

Female-female attaching rods

For attaching port blocks to single units ordered via the FAST program

Material:

High-alloy steel



Dimensions and Ordering Data							
Size	D1 Ø	D2	L1	T1 min.	Part No.	Type	LT
Mini	6.3	M4	39.7	13	<b>546483</b>	<b>LF/LOE-D-MINI</b>	1D
Midi	7.3	M5	54.7	14	<b>546489</b>	<b>LF/LOE-D-MIDI</b>	1D
Maxi	7.0	M5	65.2	14	<b>546494</b>	<b>LF/LOE-D-MAXI</b>	1D

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

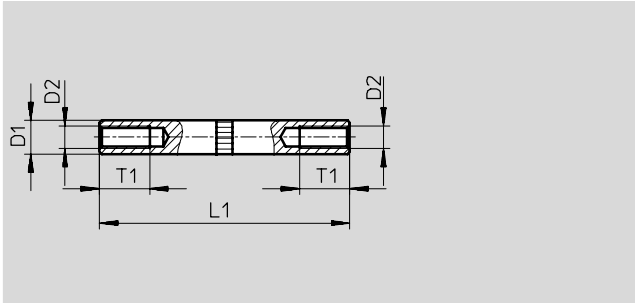
# Mounting Attachments

Accessories – D Series, Metal Design

### HSB Threaded Pin

Female-female attaching rods  
For attaching port blocks to  
LRB/LRBS pressure regulators

Material:  
High-alloy steel



Dimensions and Ordering Data							
Size	D1 Ø	D2	L1	T1 min.	Part No.	Type	LT
Mini	6.5	M4	39.7	10	531057	HSB-D-MINI	Q
Midi	7.5	M5	54.7	11	531058	HSB-D-MIDI	Q

### HMR Hex Nut

For securing LFR filter regulators and  
LR pressure regulators

Material:  
Wrought aluminum alloy

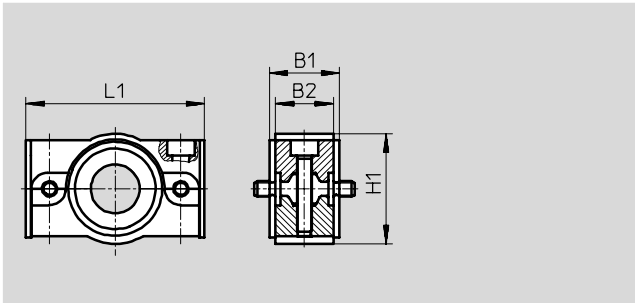


Ordering Data			
Size	Part No.	Type	LT
Micro	526816	HMR-D-MICRO	1D
Mini/Maxi	530025	HMR-D-MINI/MAXI	Q
Midi	530026	HMR-D-MIDI	Q

### HRBC Connecting Kit

For LRB/LRBS pressure regulators

Material:  
Die-cast zinc



Dimensions and Ordering Data							
Size	B1	B2	H1	L1	Part No.	Type	LT
Mini	17.4	14.8	20	43	529022	HRBC-D-MINI	1D
Midi	23	18.6	38	58.5	529023	HRBC-D-MIDI	1D

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

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3.8

# Connecting Plates

Accessories – D Series, Metal Design

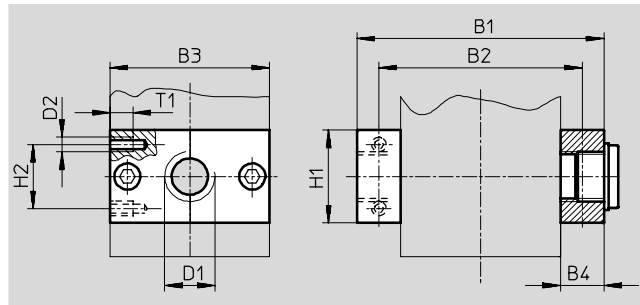


## LRBAS Port Blocks

Mini and Midi sizes

For LRB/LRBS pressure regulators

Material:  
Die-cast zinc



Dimensions and Ordering Data												
Connection	B1	B2	B3	B4	D1	D2	H1	H2	T1 max.	Part No.	Type	LT
G $\frac{1}{4}$	64	52	40	12	G $\frac{1}{4}$	M4	20	11	7	525033	LRBAS- $\frac{1}{4}$ -D-MINI	Q
G $\frac{3}{8}$	70	52	40	15	G $\frac{3}{8}$	M4	23	11	7	525034	LRBAS- $\frac{3}{8}$ -D-MINI	Q
G $\frac{3}{8}$	85	70	55	15	G $\frac{3}{8}$	M5	32	22	8	525035	LRBAS- $\frac{3}{8}$ -D-MIDI	Q
G $\frac{1}{2}$	85	70	55	15	G $\frac{1}{2}$	M5	32	22	8	525036	LRBAS- $\frac{1}{2}$ -D-MIDI	Q

3

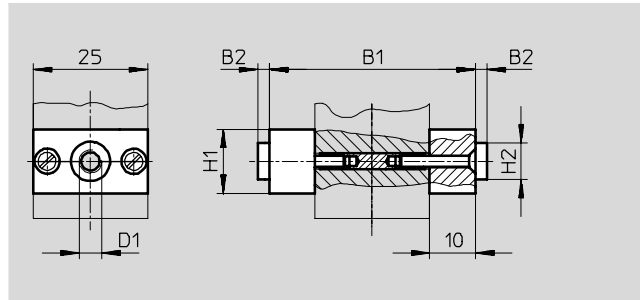
3.8

## PBL Port Block Kits

Micro size

For the following:  
FRC air preparation units  
LFR filter regulators  
LF filters  
LR pressure regulators  
LOE lubricators

Material:  
Wrought aluminum alloy



Dimensions and Ordering Data									
Connection	B1	B2	D1	H1	H2	Part No.	Type	LT	
G $\frac{1}{8}$	45	–	M5	10	–	526318	PBL- $\frac{1}{8}$ -D-MICRO	Q	
$\frac{1}{8}$ NPT	45	–	M5	10	–	526319	PBL-N $\frac{1}{8}$ -D-MICRO	1D	
QS4	45	2.5	QS4	10	8	526321	PBL-QS4-D-MICRO	1D	
QS6	45	2.5	QS6	10	10	526322	PBL-QS6-D-MICRO	1D	

## Spare Key

For lockable regulator knobs in the following:

FRCS filter/regulator-lubricators  
LRS pressure regulators  
LFRS filter/regulators



Ordering Data			
Descriptor	Part No.	Type	LT
Spare Key (knob not included)	649035	LRS/LFRS-D...	1D

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time



# Security Components

Accessories – D Series, Metal Design

## LRVS-D Padlock

For LRVS regulator lock (see below)

Used on LR pressure regulators, and HE on-off valves

Housing Material:  
Brass



### Ordering Data

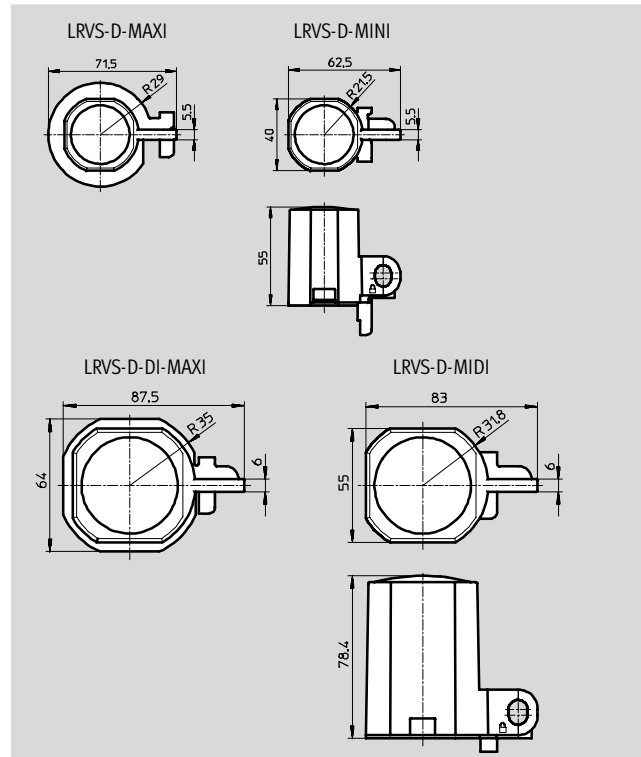
Weight [g]	Part No.	Type	LT
120	193786	LRVS-D	Q

## LRVS Regulator Lock

Lock plate is made of galvanized steel. It is mounted on a pressure regulating valve using a knurled nut.

A locking device is used to prevent unauthorized alteration of the set pressure of pressure and filter regulators.

Material:  
Cap: Polyacetal  
Lock plate: Steel  
Knurled nut: Aluminum



### Ordering Data

Size	Weight [g]	Part No.	Type	LT
Mini	40	193781	LRVS-D-MINI <sup>1)</sup>	1D
Midi	60	193782	LRVS-D-MIDI <sup>1)</sup>	1D
Maxi	56	193783	LRVS-D-MAXI <sup>1)</sup>	1D
Maxi for DI version	36	193784	LRVS-D-DI-MAXI <sup>1)</sup>	Q

1) Free of copper, PTFE and silicone

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# Pressure Gauges

Accessories – D Series, Metal Design

## MA Pressure Gauge

With metric threaded connection for Micro size devices



Ordering data					
Nominal size	Pneumatic connection	Indicating range	Part No.	Type	LT
27	M5	0 ... 10 bar	526323	MA-27-10-M5	1D
		0 ... 1 MPa	526324	MA-27-1.0-M5-MPA	Q
		0 ... 160 psi	527405	MA-27-160-M5-PSI	1D

## MA Pressure Gauge

With G (BSPP) threaded connection



Ordering data					
Nominal size	Pneumatic connection	Indicating range	Part No.	Type	LT
40	G $\frac{1}{8}$	0 ... 10 bar	546485	MA-40-10- $\frac{1}{8}$ -U	1D
		0 ... 16 bar	546479	MA-40-16- $\frac{1}{8}$ -U	1D
50	G $\frac{1}{4}$	0 ... 10 bar	546484	MA-50-10- $\frac{1}{4}$ -U	1D
		0 ... 16 bar	546482	MA-50-16- $\frac{1}{4}$ -U	1D

## FMA Flanged Pressure Gauge , DIN EN 837-1

- For pressure regulator combinations with front panel mounting
- With G (BSPP) threaded connection



Ordering data						
Nominal size	Pneumatic connection	Indicating range		Part No.	Type	LT
		[bar]	[psi]			
40	G $\frac{1}{4}$	0 ... 10	0 ... 145	159596	FMA-40-10- $\frac{1}{4}$ -EN	Q
	G $\frac{1}{4}$	0 ... 16	0 ... 232	159597	FMA-40-16- $\frac{1}{4}$ -EN	Q
50	G $\frac{1}{4}$	0 ... 10	0 ... 145	159599	FMA-50-10- $\frac{1}{4}$ -EN	Q
	G $\frac{1}{4}$	0 ... 16	0 ... 232	159600	FMA-50-16- $\frac{1}{4}$ -EN	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

## Additional Functions

Accessories – D Series, Metal Design

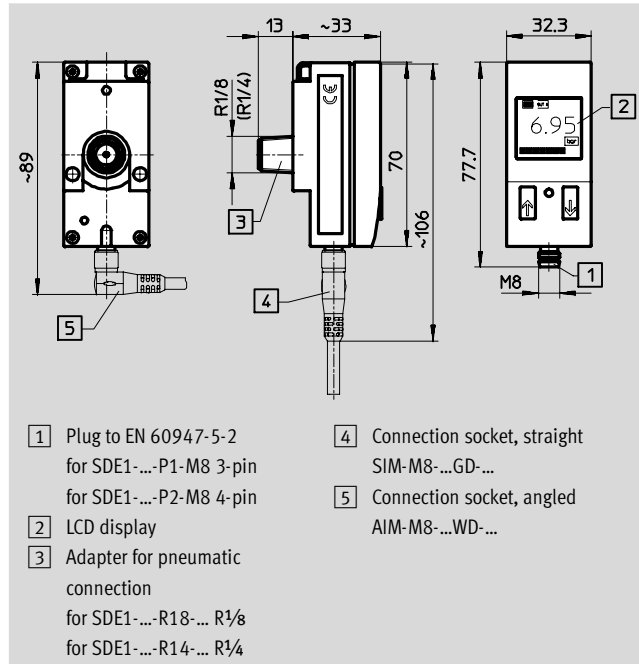
FESTO

### SDE1 Pressure Sensor with LCD display

Material: Polyacetal

Besides freely programmable switching pressures and hysteresis for each switching output, all SDE1-... variants provide the following setting possibilities:

- Selection of threshold value/ window comparator
- Selection of NO contacts / NC contacts
- Selection of pressure display in bar/kPa/psi
- Fast programming option through teach-in function
- Option for protecting against unauthorized programming via a PIN code

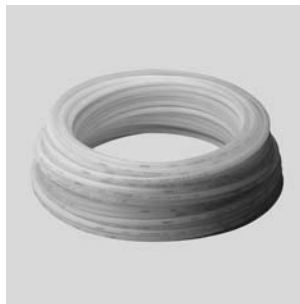


Ordering data				
Connection	Weight [g]	Part No.	Type	
Pressure measuring range 0 ... 10 bar, overload pressure max. 20 bar, temperature range 0 ... +50 °C				
R1/8-...-M8	95	192026	SDE1-D10-G2-R18-C-P1-M8	Q
R1/8-...-M8	95	192027	SDE1-D10-G2-R18-C-P2-M8	Q
R1/4-...-M8	95	192028	SDE1-D10-G2-R14-C-P1-M8	Q
R1/4-...-M8	95	192029	SDE1-D10-G2-R14-C-P2-M8	Q
R1/8-...-M12	95	534064	SDE1-D10-G2-R18-L-P1-M12	Q
R1/4-...-M12	95	534157	SDE1-D10-G2-R14-L-P2-M12	Q

### PCN Plastic Tubing

For condensate drain

Material:  
Polyvinyl chloride



Ordering data						
Tubing O.D. [mm]	Tubing I.D. [mm]	Weight [g/m]	Part No.	Type	LT	PU* [m]
6.5	4	25	7134	PCN-4-NT	Q	50

\* Packaging unit is 50 m coil. This part number may be ordered in lengths of 1 m.

LT = Lead time    1D typically ships same day/next day    1W typically ships within 1 week    Q request a quote for lead time

## Additional Functions

Accessories – D Series, Metal Design

FESTO

### U Silencer



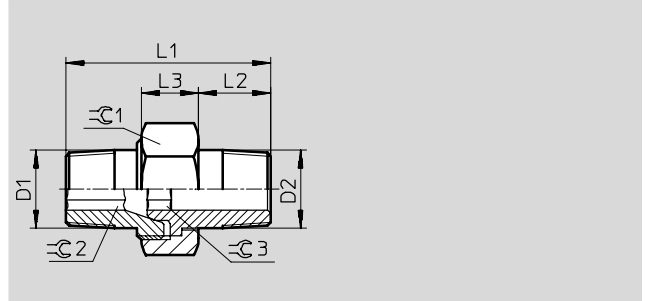
Ordering Data			
Pneumatic connection	Part No.	Type	LT
G $\frac{1}{8}$	6841	U- $\frac{1}{8}$ -B	Q
G $\frac{1}{4}$	6842	U- $\frac{1}{4}$ -B	Q
G $\frac{3}{8}$	6843	U- $\frac{3}{8}$ -B	Q

### ESK Double Nipple

Adjustable for angular compensation

- For retrofitting PEV pressure switch to FRM branching module

Material:  
Brass



Dimensions and Ordering Data											
Connection		L1	L2	L3	⌀ C1	⌀ C2	⌀ C3	Part No.	Type	LT	PU*
D1	D2										
R $\frac{1}{4}$	R $\frac{1}{4}$	34	12	9.5	19	6	6	151521	ESK- $\frac{1}{4}$ - $\frac{1}{4}$	Q	1

\* Packaging unit quantity

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

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## Additional Functions

Accessories – D Series, Metal Design

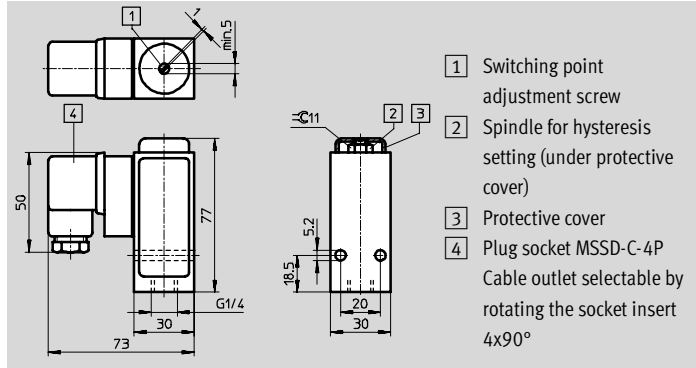
FESTO

### PEV Pressure Switch

Adjustable, with plug socket

Housing material:

Wrought aluminum alloy



#### Ordering Data

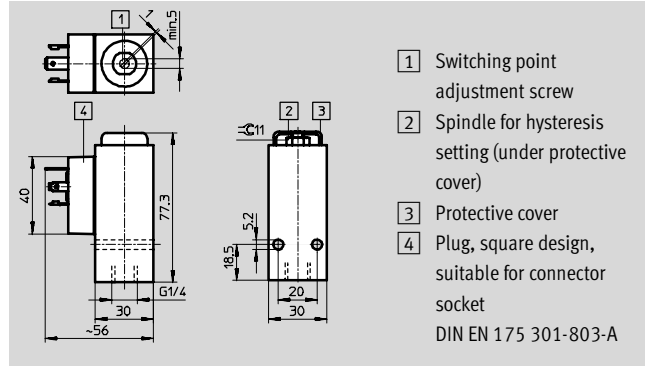
Connection	Weight [g]	Part No.	Type	LT
G1/4	231	10773	PEV-1/4-B	Q

### PEV Pressure Switch

Adjustable, without plug socket

Housing material:

Wrought aluminum alloy



#### Ordering Data

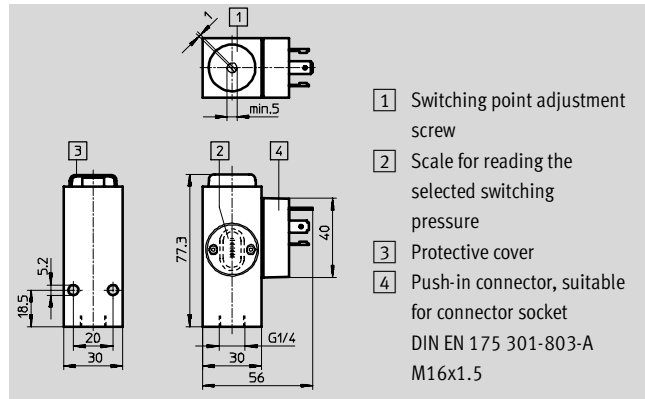
Connection	Weight [g]	Part No.	Type	LT
G1/4	220	175250	PEV-1/4-B-OD	Q

### PEV Pressure Switch

Adjustable with visual scale without plug socket

Housing material:

Wrought aluminum alloy



#### Ordering Data

Connection	Weight [g]	Part No.	Type	LT
G1/4	170	161760	PEV-1/4-SC-OD	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

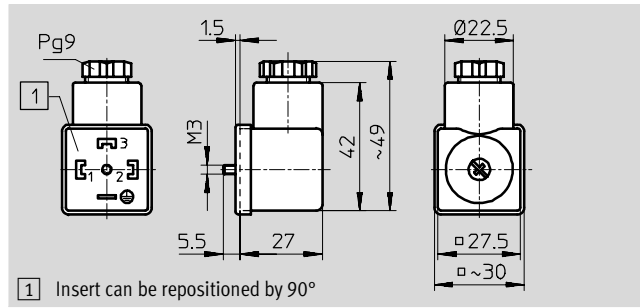
## Additional Functions

Accessories – D Series, Metal Design

FESTO

### MSSD Plug Socket

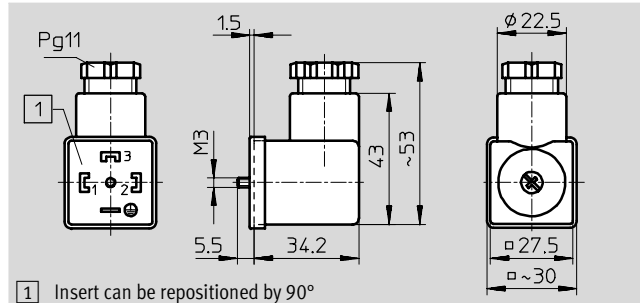
For PEV pressure switch



Ordering Data			
Weight [g]	Part No.	Type	LT
22	171157	MSSD-C-4P	Q

### Angled Plug Socket with LED

For PEV pressure switch



Ordering Data				
Voltage	Weight [g]	Part No.	Type	LT
24 V DC	22	164274	PEV-¼-WD-LED-24	Q
230 V AC	22	164275	PEV-¼-WD-LED-230	Q

### MEB Illuminating Seal

For HEE on-off valve

Material:

Polymer, silicone-free



Ordering Data				
Voltage	Weight [g]	Part No.	Type	LT
24 V DC	5	151717	MEB-LD-12-24DC	Q
230 V AC	5	151718	MEB-LD-230AC	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

## Additional Functions

Accessories – D Series, Metal Design

FESTO

### Plug Socket with KMEB

#### Cable and LED

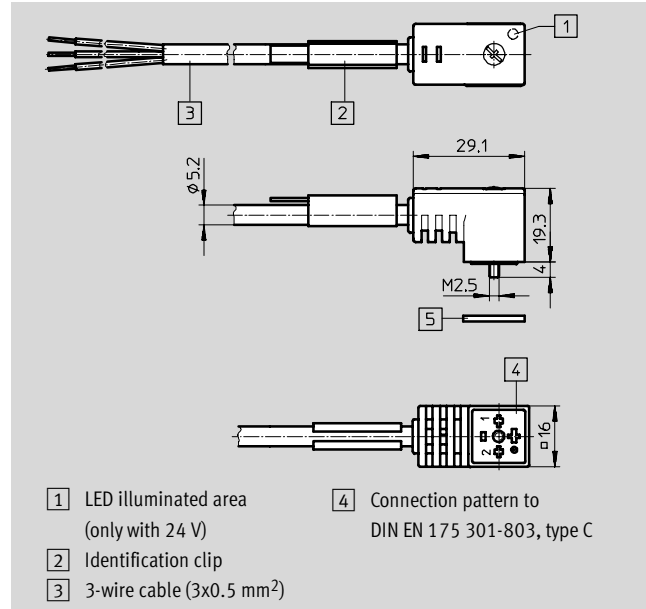
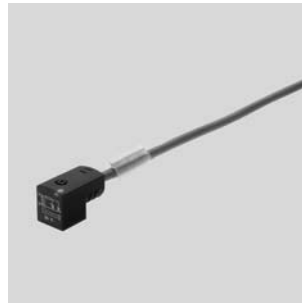
for HEE on-off valve

Material:

Housing: Polymer

Seal: Nitrile rubber

Cable: Polyvinyl chloride



Ordering Data						
Voltage	Cable length [m]	Weight [g]	Part No.	Type	LT	
24 V DC	2.5	125	151688	KMEB-1-24-2,5-LED	Q	
24 V DC	5	230	151689	KMEB-1-24-5-LED	Q	
24 V DC	10	460	193457	KMEB-1-24-10-LED	Q	
230 V AC	2.5	125	151690	KMEB-1-230AC-2,5	Q	
230 V AC	5	230	151691	KMEB-1-230AC-5	Q	

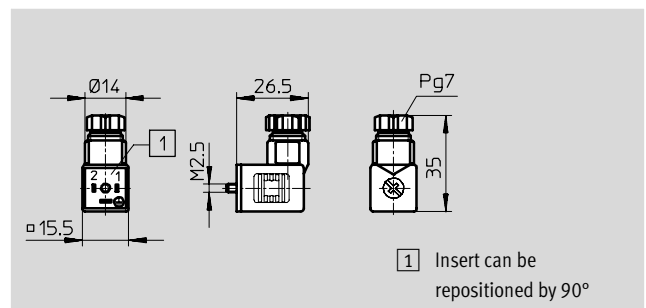
### MSSD Plug Socket

For HEE on-off valve

Material:

Housing: Polymer

Seal: Nitrile rubber



Ordering Data			
Weight [g]	Part No.	Type	LT
11	151687	MSSD-EB	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

3

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## Additional Functions

Accessories – D Series, Metal Design

FESTO

### MSSD Plug Socket

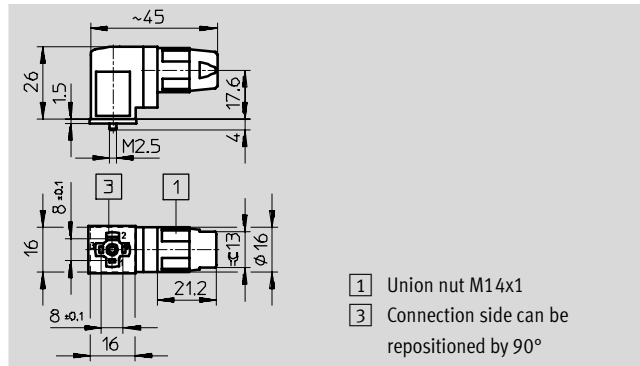
for HEE on-off valve

Insulation displacement technology

Material:

Housing: Polymer

Seal: Nitrile rubber



- 1 Union nut M14x1
- 3 Connection side can be repositioned by 90°

Ordering Data			
Weight [g]	Part No.	Type	LT
11	192745	MSSD-EB-S-M14	Q

3

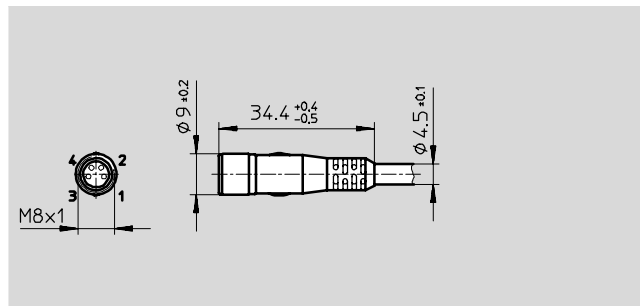
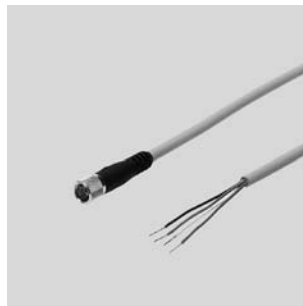
### Plug Socket with SIM Sable

M8, 4-pin

Straight socket

Material:

Polyurethane



Ordering Data			
Length [m]	Part No.	Type	LT
2.5	158960	SIM-M8-4GD-2.5-PU	Q
5	158961	SIM-M8-4GD-5-PU	Q

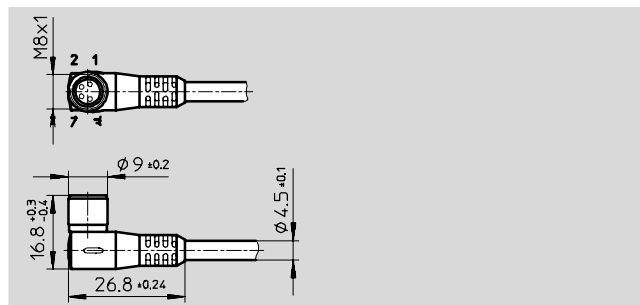
### Plug Socket with SIM Cable

M8, 4-pin

Angled socket

Material:

Polyurethane



Ordering Data			
Length [m]	Part No.	Type	LT
2.5	158962	SIM-M8-4WD-2.5-PU	Q
5	158963	SIM-M8-4WD-5-PU	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time



## Additional Functions

Accessories – D Series, Metal Design

FESTO

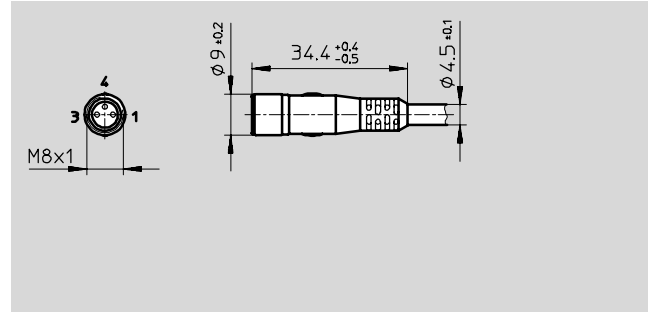
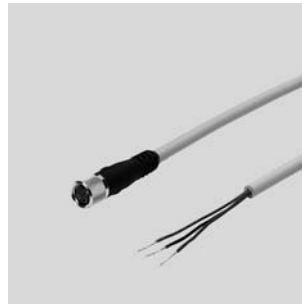
### Plug Socket with SIM Cable

M8, 3-pin

Straight socket

Material:

Polyurethane



Ordering Data			
Length [m]	Part No.	Type	LT
2.5	159420	SIM-M8-3GD-2,5-PU	Q
5	159421	SIM-M8-3GD-5-PU	Q

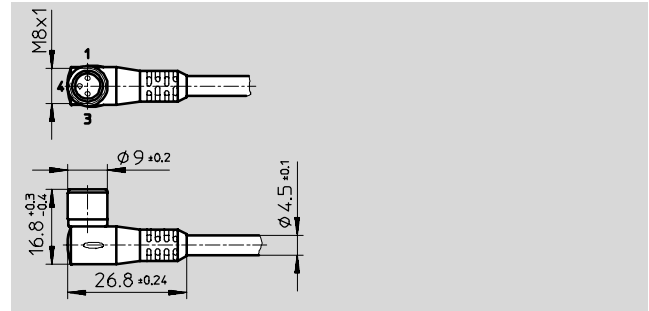
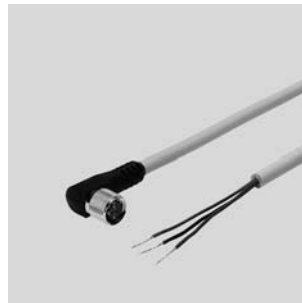
### Plug Socket with SIM Cable

M8, 3-pin

angled plug socket

Material:

Polyurethane



Ordering Data			
Length [m]	Part No.	Type	LT
2.5	159422	SIM-M8-3WD-2,5-PU	Q
5	159423	SIM-M8-3WD-5-PU	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

3

3.8

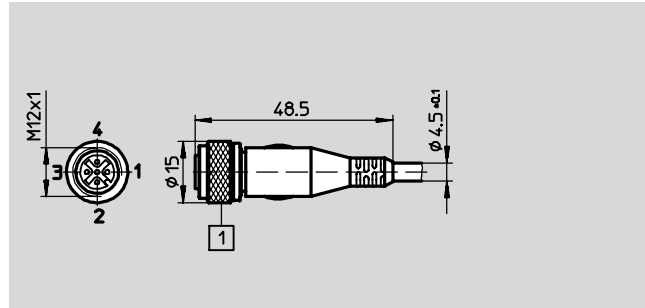
# Additional Functions

Accessories – D Series, Metal Design

## Plug Socket with SIM Cable

M12, 4-pin  
Straight socket

Material:  
Polyurethane



Ordering data			
Length [m]	Part No.	Type	LT
5	164259	SIM-M12-4GD-5-PU	Q

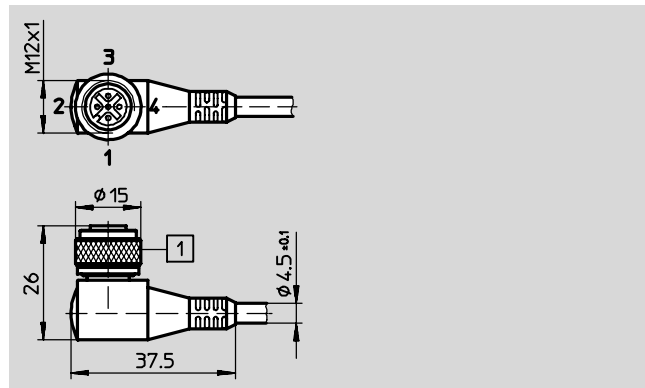
3

3.8

## Plug Socket with SIM Cable

M12, 4-pin  
Angled socket

Material:  
Polyurethane



Ordering data			
Length [m]	Part No.	Type	LT
5	164258	SIM-M12-4WD-5-PU	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

## Additional Functions

Accessories – D Series, Metal Design

FESTO

### Filter Cartridges



Ordering data					
Size	Filter cartridge	Grade of filtration [µm]	Part No.	Type	LT
Micro	Filter cartridge	5	526818	LFP-D-MICRO-5M	1D
Mini	Micro-filter cartridge	0.01	162674	MS4/D-MINI-LFM-A	1D
	Fine-filter cartridge	1	162677	MS4/D-MINI-LFM-B	1D
	Filter cartridge	5	159640	LFP-D-MINI-5M	1D
	Filter cartridge	40	546487	LFP-D-MINI-40M-U	1D
	Active carbon filter cartridge	Residual oil content ≤ 0.003 mg/m <sup>3</sup>	532912	MS4/D-MINI-LFX	Q
Midi	Micro-filter cartridge	0.01	162675	LFMAP-D-MIDI	1D
	Fine-filter cartridge	1	162678	LFMBP-D-MIDI	1D
	Filter cartridge	5	159594	LFP-D-MIDI-5M	1D
	Filter cartridge	40	546488	LFP-D-MIDI-40M-U	1D
	Active carbon filter cartridge	Residual oil content ≤ 0.003 mg/m <sup>3</sup>	532788	LFACP-MIDI	Q
Maxi	Micro-filter cartridge	0.01	162676	LFMAP-D-MAXI	1D
	Fine-filter cartridge	1	162679	LFMBP-D-MAXI	1D
	Filter cartridge	5	159641	LFP-D-MAXI-5M	1D
	Filter cartridge	40	546486	LFP-D-MAXI-40M-U	1D
	Active carbon filter cartridge	Residual oil content ≤ 0.003 mg/m <sup>3</sup>	532789	LFACP-MAXI	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

3

3.8

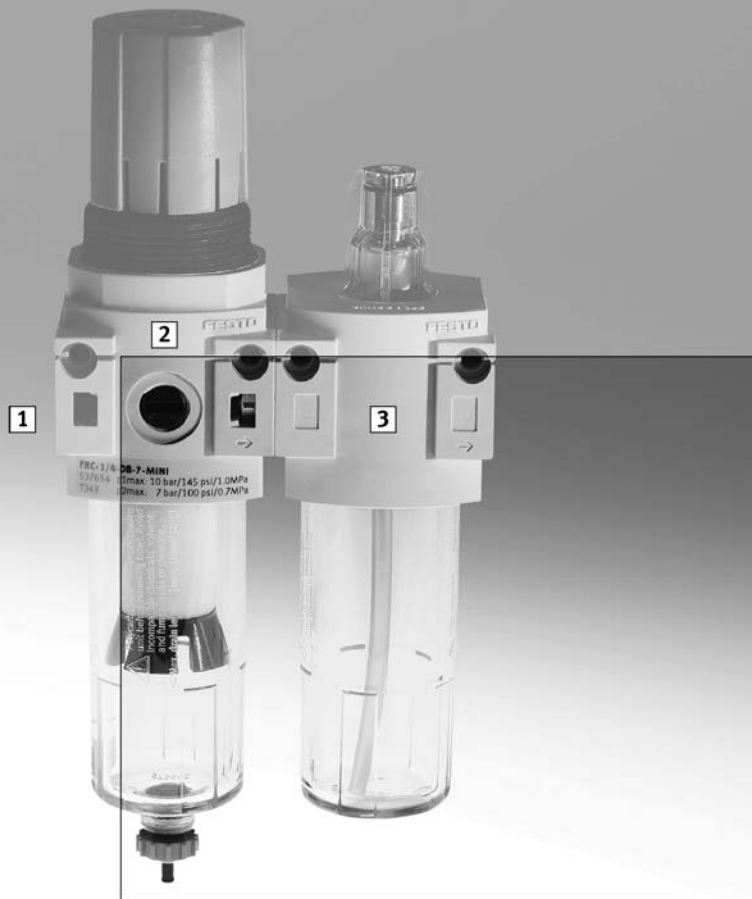
**3**

3.8



FRC-1/4-DB-MINI  
Filter/Regulator-Lubricator  
with optional metal port block kit

**Section 4.1**  
FRC-DB  
Filter/Regulator-Lubricators



- 1 Economical functionality: permissible primary pressure up to max. 10 bar.
- 2 Collective product range: filter/regulator, pressure regulator and filter/regulator-lubricator.
- 3 Reliable in use: high-strength housing made of long-fibre polyamide with integrated connecting threads – simple to install and use.

**Core functions of compressed air preparation: DB Series, polymer design**



**Easy to combine:**  
The DB Series polymer components and the D Series metal components can be easily fitted together to form hybrid combinations.

**Extendable functionality:**  
FRC-DB with on/off valve (left) and distributor block (right) from the metal components of the D Series.



FRC-1/4-DB-MINI  
Filter/Regulator-Lubricator

**FRC-DB  
Filter/Regulator-Lubricators**

0 = Without pressure gauge

Flow rate:  
40 ... 650 l/min

Working pressure range:  
0.5 ... 10 bar

4

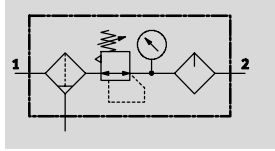
4.1

# FRC-DB Filter/Regulator-Lubricators – DB Series, Polymer Design

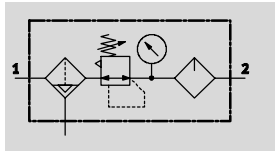
Technical Data

Function

Condensate drain  
manual rotary



semi-automatic



- - Flow rate  
400 ... 650 l/min
- - Temperature range  
-5 ... +50 °C
- - Input pressure  
1.5 ... 10 bar



- Filter, regulator and lubricator functions in a single unit
- High flow rate and highly efficient removal of contaminants
- Good regulating characteristics with minimal pressure hysteresis
- Setting values are secured by means of the rotary knob with detent
- With manual or semi-automatic condensate drain

The following oils are recommended for Festo components:

Viscosity range to  
ISO 3448 class VG 32  
32 mm<sup>2</sup>/s (cSt) at 40 °C

- Festo Special Oil  
→ 302
- ARAL Vitam GF 32
- BP Energol HLP 32
- Esso Nuto H 32
- Mobil DTE 24
- Shell Tellus Oil DO 32

General technical data		
Size	Mini	
Pneumatic connection <sup>1)</sup>	G1/8	G1/4
Operating medium	Compressed air	
Design	Filter/regulator/lubricator	
Regulating function	With return flow function	
	With secondary venting	
Type of mounting	Inline installation	
	Via through-holes	
	Via mounting bracket	
Assembly position	Vertical ±5°	
Grade of filtration [µm]	5 or 40	
Max. hysteresis [bar]	0.5	
Input pressure [bar]	1.5 ... 10	
Pressure regulation range [bar]	0.5 ... 7	
Pressure indication	Via pressure gauge	
Pressure gauge connection	G1/8	

Standard nominal flow rate <sup>2)</sup> qnN [l/min]		
Pneumatic connection	G1/8	G1/4
Mini		
Grade of filtration	5 µm	≥ 400
	40 µm	≥ 550
		≥ 650

1) Port blocks available to establish 1/8", 1/4", or 3/8" BSP (G) or NPT connections. See Page 331 – PBL Port Block Kit.

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



# FRC-DB Filter/Regulator-Lubricators – DB Series, Polymer Design

Technical Data

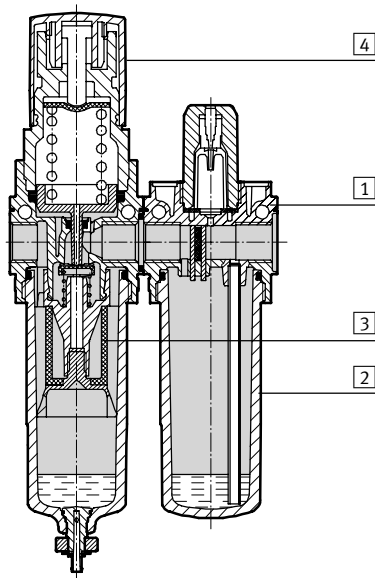
Ambient conditions		
Size		Mini
Ambient temperature	[°C]	-5 ... +50
Temperature of medium	[°C]	-5 ... +50
Corrosion resistance class	CRC <sup>1)</sup>	1

1) Corrosion resistance class 1 according to Festo standard 940 070  
 Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Weight [g]	
Size	Mini
Filter/regulator-lubricator	300

## Materials

Sectional view



Service unit	Mini
1) Housing	Polyamide, reinforced
2) Bowl	Polycarbonate
3) Filter	Polyethylene
4) Rotary knob	Polyacetate
- Seals	Nitrile rubber

# FRC-DB Filter/Regulator-Lubricators – DB Series, Polymer Design

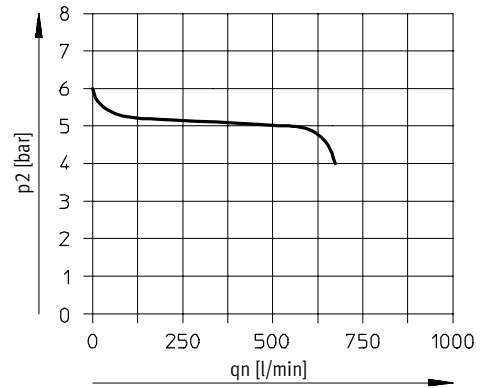
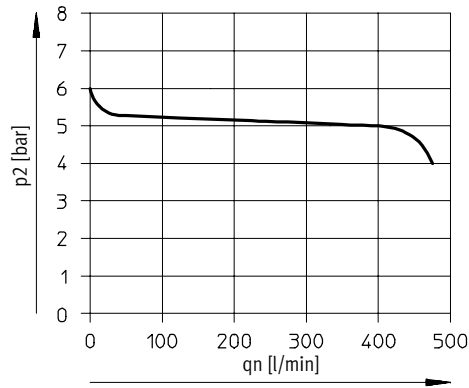
Technical Data

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

Pneumatic connection G $\frac{1}{8}$

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

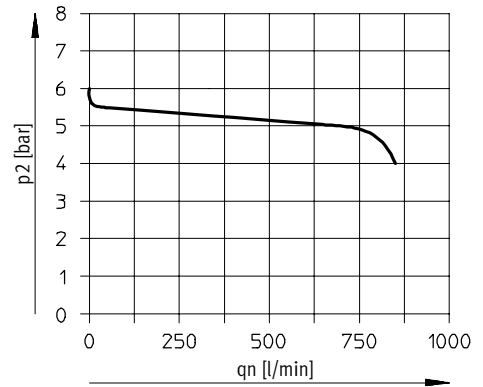
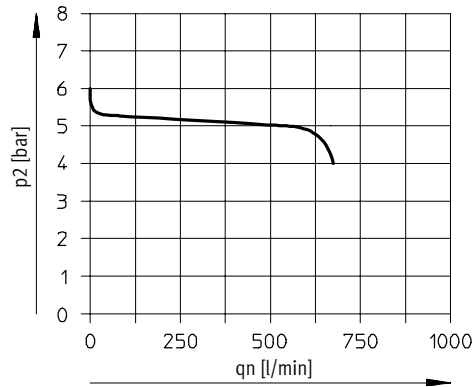
Grade of filtration 40  $\mu\text{m}$



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

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

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



Primary pressure  $p_1 = 10$  bar

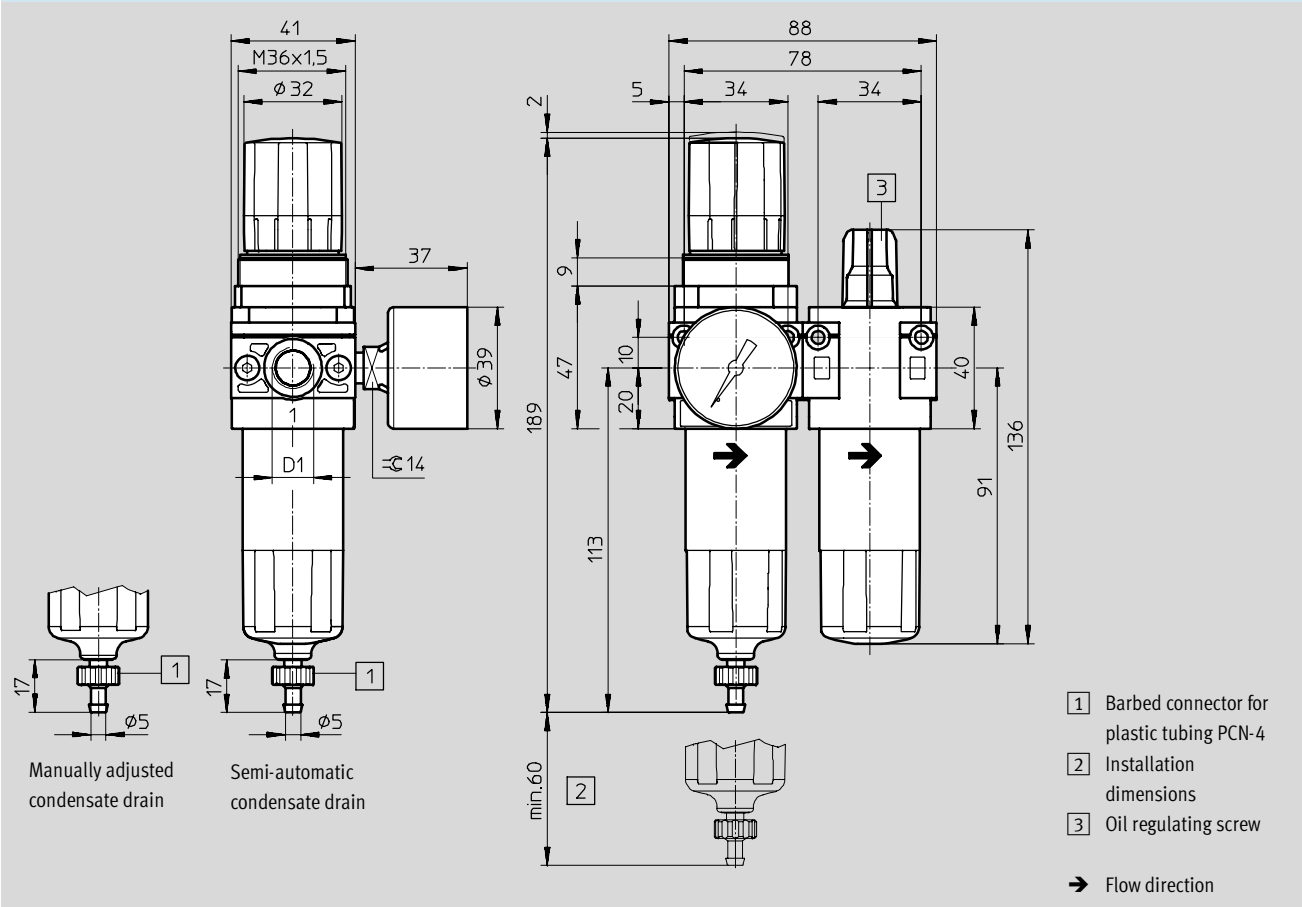
# FRC-DB Filter/Regulator-Lubricators – DB Series, Polymer Design

Technical Data - Dimensional Drawings

**Dimensions**

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

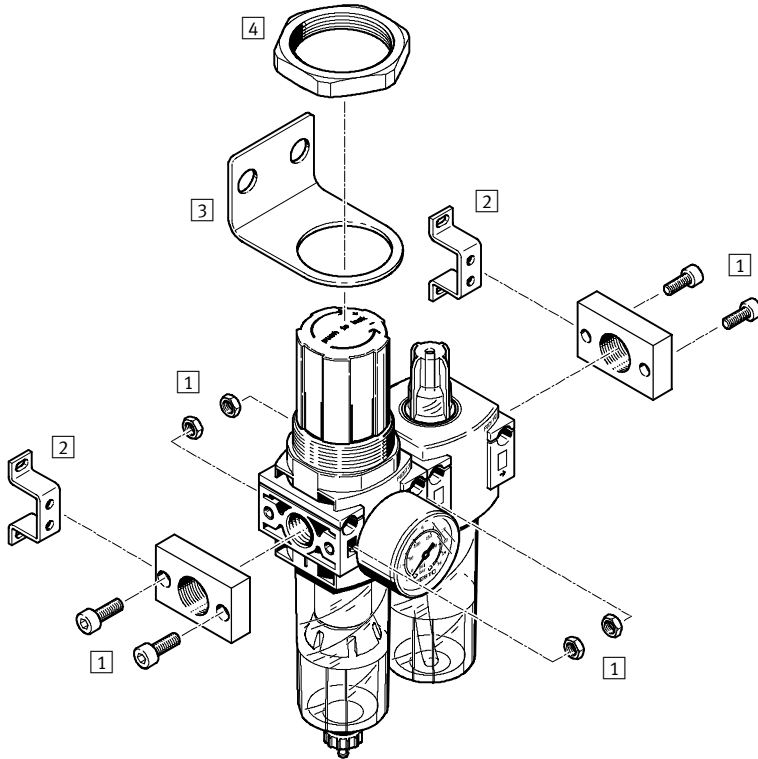
Mini



Type	D1
FRC-1/8-DB	G1/8
FRC-1/4-DB	G1/4

# FRC-DB Filter/Regulator-Lubricators – D Series, Polymer Design

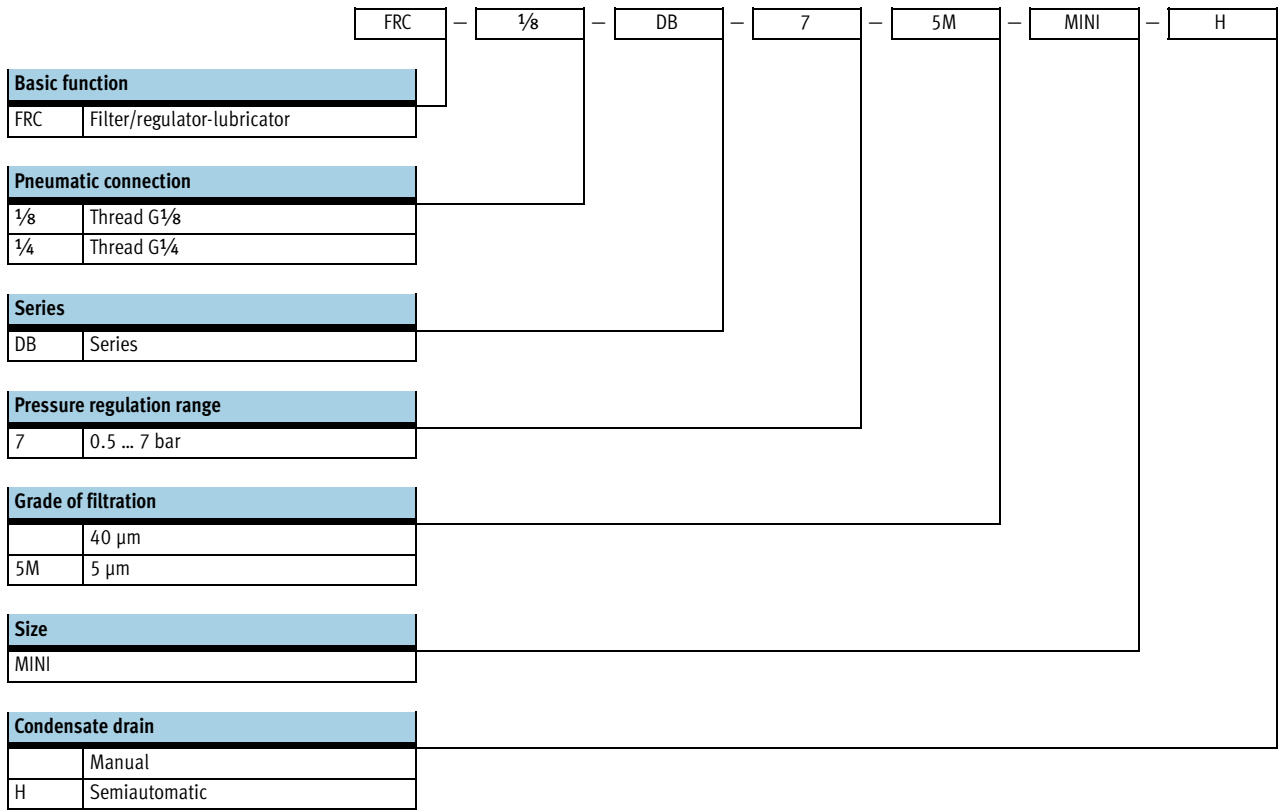
Accessories Overview



Mounting attachments and accessories		→ Page
1	Port block kit PBL Used to establish 1/8", 1/4", or 3/8" G (BSPP) or NPT connections.	331
2	Mounting bracket HFOE	331
3	Mounting bracket HR-D	330
4	Hex nut HMR	330

# FRC-DB Filter/Regulator-Lubricators – DB Series, Polymer Design


Type Codes



# FRC-DB Filter/Regulator-Lubricators – DB Series, Polymer Design

Ordering Data

Ordering data								
Pressure regulation range 0.5 ... 7 bar								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual rotary	Mini	G $\frac{1}{8}$	537659	FRC- $\frac{1}{8}$ -DB-7-5M-MINI	Q	537655	FRC- $\frac{1}{8}$ -DB-7-MINI	Q
		G $\frac{1}{4}$	537658	FRC- $\frac{1}{4}$ -DB-7-5M-MINI	Q	537654	FRC- $\frac{1}{4}$ -DB-7-MINI	Q
Semi-automatic	Mini	G $\frac{1}{8}$	537661	FRC- $\frac{1}{8}$ -DB-7-5M-MINI-H	Q	537657	FRC- $\frac{1}{8}$ -DB-7-MINI-H	Q
		G $\frac{1}{4}$	537660	FRC- $\frac{1}{4}$ -DB-7-5M-MINI-H	Q	537656	FRC- $\frac{1}{4}$ -DB-7-MINI-H	Q

Ordering data – Special Oil				
	Scope of delivery	Part No.	Type	LT
	1 liter	152811	OFSW-32	1D

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time



LFR-1/4-DB-7-O-MINI  
Filter/Regulator



LR-1/4-DB-7-MINI  
Pressure Regulator



FRB-DB-MINI  
Threaded Pins

**Section 5.1**  
LFR-DB Filter Regulators

**Section 5.2**  
LR-DB Pressure Regulators and  
LRB-DB-K Regulator Manifolds

**Section 5.3**  
Accessories for DB Series  
Polymer Design Components







LFR-1/4-DB-7-O-MINI  
Filter/Regulator

### Filter/Regulators

O = without pressure gauge

Flow rate:  
500 ... 1200 l/min

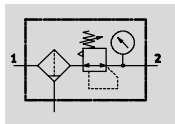
Working pressure range:  
0.5 ... 7 bar

# LFR-DB Filter/Regulators

## Technical Data

### Function

with pressure gauge  
Condensate drain  
manual rotary

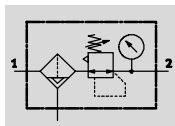


- - Flow rate  
500 ... 1200 l/min

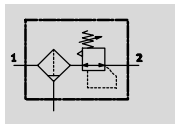
- - Temperature range  
-5 ... +50 °C

- - Input pressure  
1.5 ... 10 bar

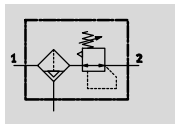
### semiautomatic



without pressure gauge  
Condensate drain  
manual rotary



### semi-automatic



- Space-saving design with filter and regulator in a single unit
- Good particle separation and high flow rate
- Good regulating characteristics with minimal hysteresis
- With manual or semiautomatic condensate drain
- Setting values are secured by locking the rotary knob
- Choice of filter cartridges: 5 µm or 40 µm
- Filter cartridges → 336

General technical data				
Size	Mini			
	with pressure gauge		without pressure gauge	
Pneumatic connection <sup>1)</sup>	G1/8	G1/4	G1/8	G1/4
Operating medium	Compressed air			
Design	Filter/regulator with pressure gauge		Filter/regulator without pressure gauge	
Regulating function	With return flow function			
	With secondary venting			
Type of mounting	Inline installation			
	Via through holes			
	Via mounting bracket			
Assembly position	Vertical ±5°			
Grade of filtration [µm]	5 or 40		5 or 40	
Max. hysteresis [bar]	0.5			
Input pressure [bar]	1.5 ... 10			
Pressure regulation range [bar]	0.5 ... 7			
Pressure indication	Via pressure gauge		G1/8 prepared	
Pressure gauge connection	G1/8			

1) Port blocks available to establish 1/8", 1/4", or 3/8" G (BSPP) or NPT connections. See Page 331 – PBL-DB Port Block Kit.

# LFR-DB Filter/Regulators

Technical Data

Standard nominal flow rate <sup>1)</sup> q <sub>N</sub> [l/min]			
Pneumatic connection	G1/8		G1/4
Mini			
Grade of filtration	5 μm	≥ 500	≥ 1000
	40 μm	≥ 700	≥ 1200

1) Measured at p<sub>1</sub> = 10 bar, p<sub>2</sub> = 6 bar and Δp = 1 bar.

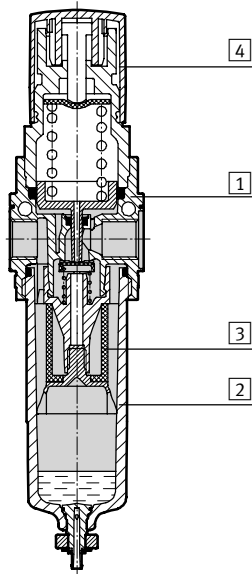
Ambient conditions			
Size	Mini		
Ambient temperature	[°C]	-5 ... +50	
Temperature of medium	[°C]	-5 ... +50	
Corrosion resistance class	CRC <sup>1)</sup>	1	

1) Corrosion resistance class 1 according to Festo standard 940 070  
Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Weight [g]	
Size	Mini
Filter/regulator	200

## Materials

Sectional view



Filter regulator	Mini
1 Housing	Polyamide, reinforced
2 Bowl	Polycarbonate
3 Filter	Polyethylene
4 Rotary knob	Polyacetate
- Seals	Nitrile rubber

# LFR-DB Filter/Regulators

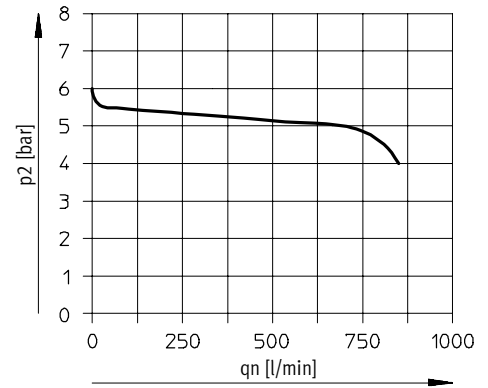
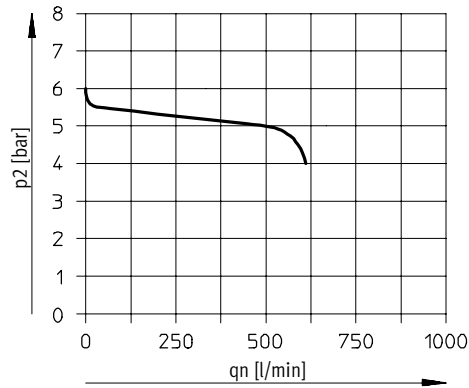
Technical Data

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

Pneumatic connection G $\frac{1}{8}$

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

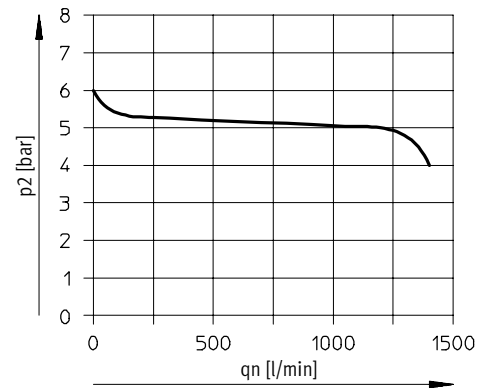
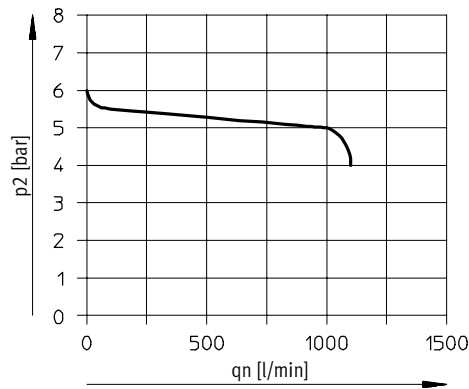
Grade of filtration 40  $\mu\text{m}$



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

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

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



Primary pressure  $p_1 = 10 \text{ bar}$

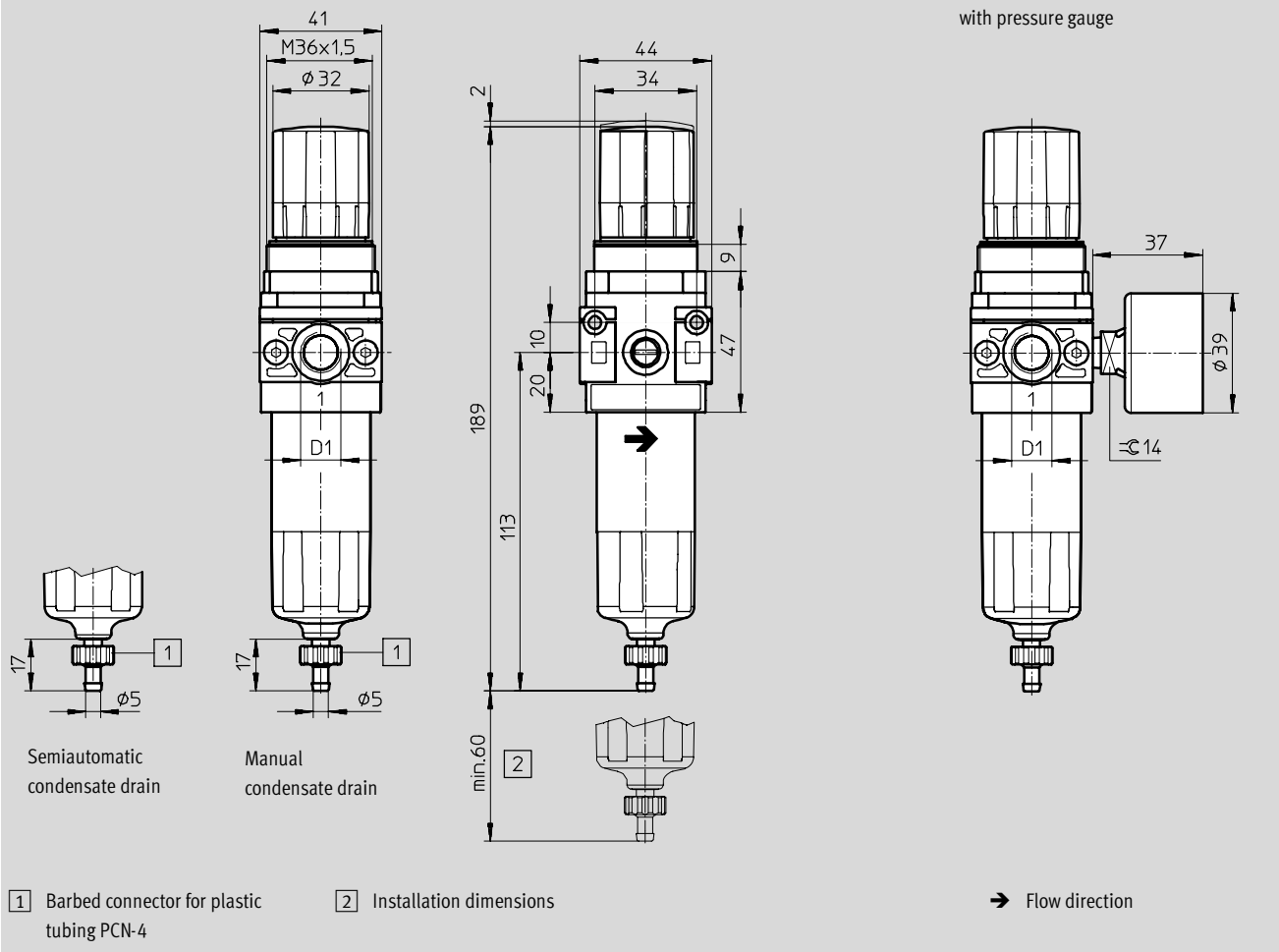
# LFR-DB Filter/Regulators

Technical Data – Dimensional Drawings

**Dimensions**

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

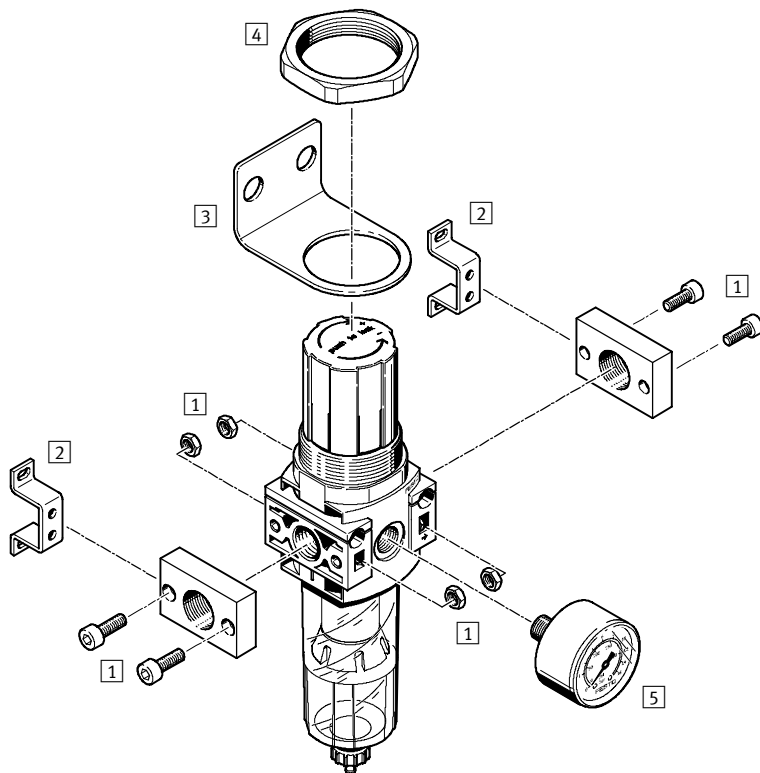
Mini



Type	D1
LFR-1/8-DB	G1/8
LFR-1/4-DB	G1/4

# LFR-DB Filter/Regulators – DB Series, Polymer Design

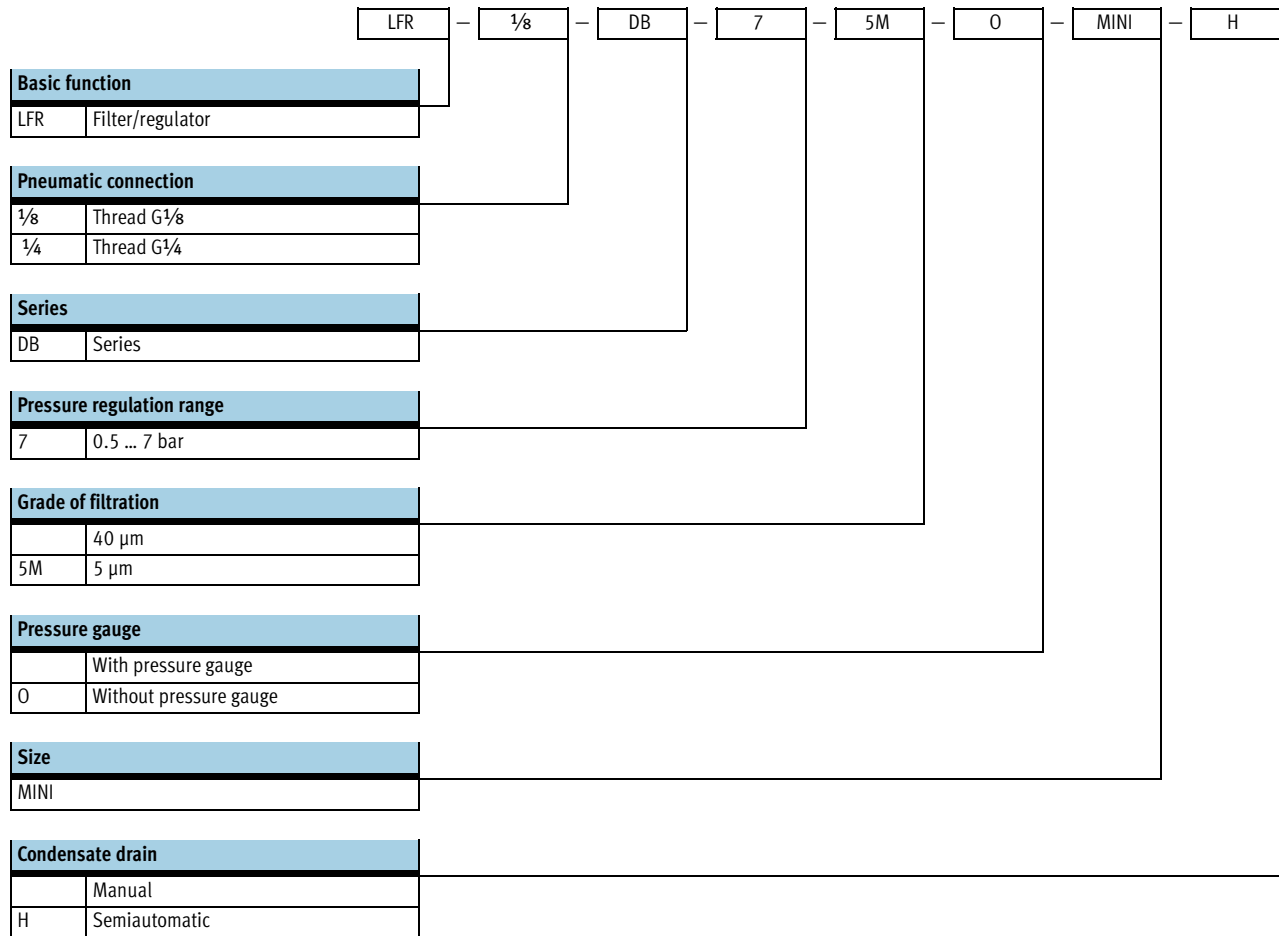
Accessories Overview



Mounting attachments and accessories		→ Page
1	Port block kit PBL Used to establish 1/8", 1/4", or 3/8" G (BSPP) or NPT connections.	331
2	Mounting bracket HFOE	331
3	Mounting bracket HR-D	330
4	Hex nut HMR	330
5	Pressure gauge MA	333

# LFR-DB Filter/Regulators – DB Series, Polymer Design

Type Codes



# LFR-DB Filter/Regulators – DB Series, Polymer Design



Ordering Data

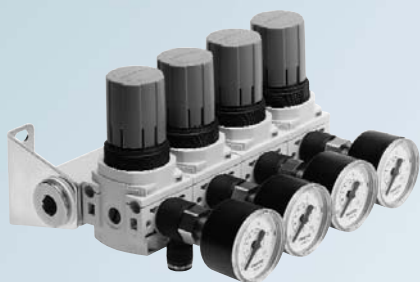
Ordering data								
Pressure regulation range 0.5 ... 7 bar								
Condensate drain	Size	Connection	Grade of filtration 5 µm			Grade of filtration 40 µm		
			Part No.	Type	LT	Part No.	Type	LT
With pressure gauge								
Manual	Mini	G $\frac{1}{8}$	539687	LFR- $\frac{1}{8}$ -DB-7-5M-MINI	Q	539683	LFR- $\frac{1}{8}$ -DB-7-MINI	Q
		G $\frac{1}{4}$	539689	LFR- $\frac{1}{4}$ -DB-7-5M-MINI	Q	539685	LFR- $\frac{1}{4}$ -DB-7-MINI	Q
Semiautomatic	Mini	G $\frac{1}{8}$	539688	LFR- $\frac{1}{8}$ -DB-7-5M-MINI-H	Q	539684	LFR- $\frac{1}{8}$ -DB-7-MINI-H	Q
		G $\frac{1}{4}$	539690	LFR- $\frac{1}{4}$ -DB-7-5M-MINI-H	Q	539686	LFR- $\frac{1}{4}$ -DB-7-MINI-H	Q
Without pressure gauge								
Manual	Mini	G $\frac{1}{8}$	537648	LFR- $\frac{1}{8}$ -DB-7-5M-O-MINI	Q	537651	LFR- $\frac{1}{8}$ -DB-7-O-MINI	Q
		G $\frac{1}{4}$	537644	LFR- $\frac{1}{4}$ -DB-7-5M-O-MINI	Q	537647	LFR- $\frac{1}{4}$ -DB-7-O-MINI	Q
Semiautomatic	Mini	G $\frac{1}{8}$	537650	LFR- $\frac{1}{8}$ -DB-7-5M-O-MINI-H	Q	537649	LFR- $\frac{1}{8}$ -DB-7-O-MINI-H	Q
		G $\frac{1}{4}$	537646	LFR- $\frac{1}{4}$ -DB-7-5M-O-MINI-H	Q	537645	LFR- $\frac{1}{4}$ -DB-7-O-MINI-H	Q

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time





LR-DB  
Pressure Regulator



LRB-DB-K  
Pressure Regulator Manifold

## Pressure Regulators and Manifolds

### LR-DB Pressure Regulators

Working pressure range:  
0.5 ... 7 bar

Flow rate:  
800 ... 1300 l/min

### LRB-DB-K Pressure Regulator Manifolds

Working pressure range:  
0.5 ... 7 bar

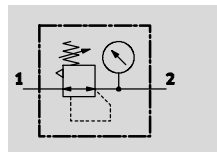
Flow rate:  
1000 l/min

# LR-DB Pressure Regulators – DB Series, Polymer Design

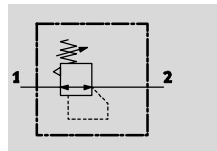
Technical Data




Function

with pressure gauge



without pressure gauge



-  - Flow rate  
800 ... 1300 l/min
-  - Temperature range  
-5 ... +50 °C
-  - Input pressure  
1.5 ... 10 bar



- Setting values are secured by locking the rotary knob
- High flow rate
- Good regulating characteristics with minimal pressure hysteresis

General technical data				
Size	Mini			
	With pressure gauge		Without pressure gauge	
Pneumatic connection	G1/8	G1/4	G1/8	G1/4
Operating medium	Compressed air			
Design	Pressure regulator with pressure gauge		Pressure regulator without pressure gauge	
Regulating function	With return flow function			
	With secondary venting			
Type of mounting	Inline installation			
	Via through-holes			
	Via mounting bracket			
	Front panel mounting			
Assembly position	Any			
Max. hysteresis [bar]	0.5			
Input pressure [bar]	1.5 ... 10			
Pressure regulation range [bar]	0.5 ... 7			
Pressure indication	Via pressure gauge		G1/8 prepared	
Pressure gauge connection	G1/8			

Standard nominal flow rate <sup>1)</sup> q <sub>N</sub> [l/min]		
Pneumatic connection <sup>2)</sup>	G1/8	G1/4
Mini		
Pressure regulation range 0.5 ... 7 bar	≥ 800	≥ 1300

1) Measured at p<sub>1</sub> = 10 bar, p<sub>2</sub> = 6 bar and Δp = 1 bar.

2) Port blocks available to establish 1/8", 1/4", or 3/8" G (BSPP) or NPT connections. See Page 331 – PBL-DB Port Block Kit.

# LR-DB Pressure Regulators – DB Series, Polymer Design

Technical Data

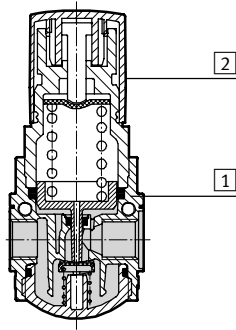
Ambient conditions		
Size		Mini
Ambient temperature	[°C]	-5 ... +50
Temperature of medium	[°C]	-5 ... +50
Corrosion resistance class	CRC <sup>1)</sup>	1

1) Corrosion resistance class 1 according to Festo standard 940 070  
 Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Weight [g]	
Size	Mini
Pressure regulator	150

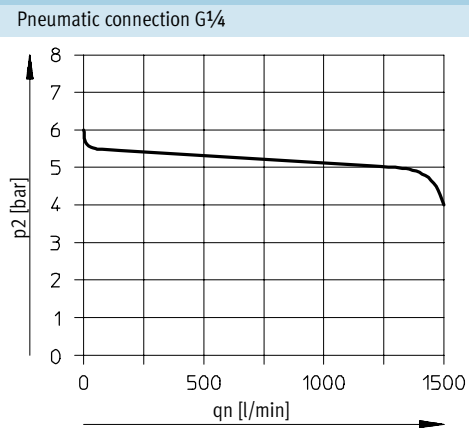
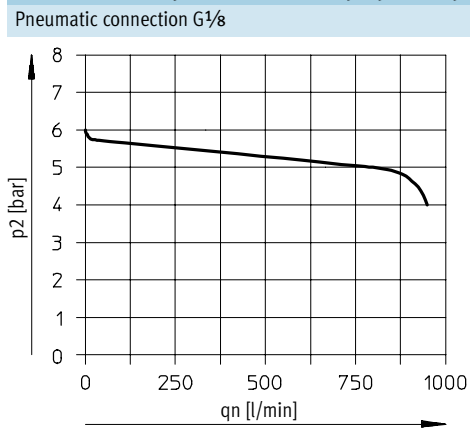
## Materials

Sectional view



Pressure regulator	Mini
1) Housing	Polyamide, reinforced
2) Rotary knob	Polyacetate
- Seals	Nitrile rubber

## Standard flow rate qn as a function of output pressure p2



Primary pressure p<sub>1</sub> = 10 bar

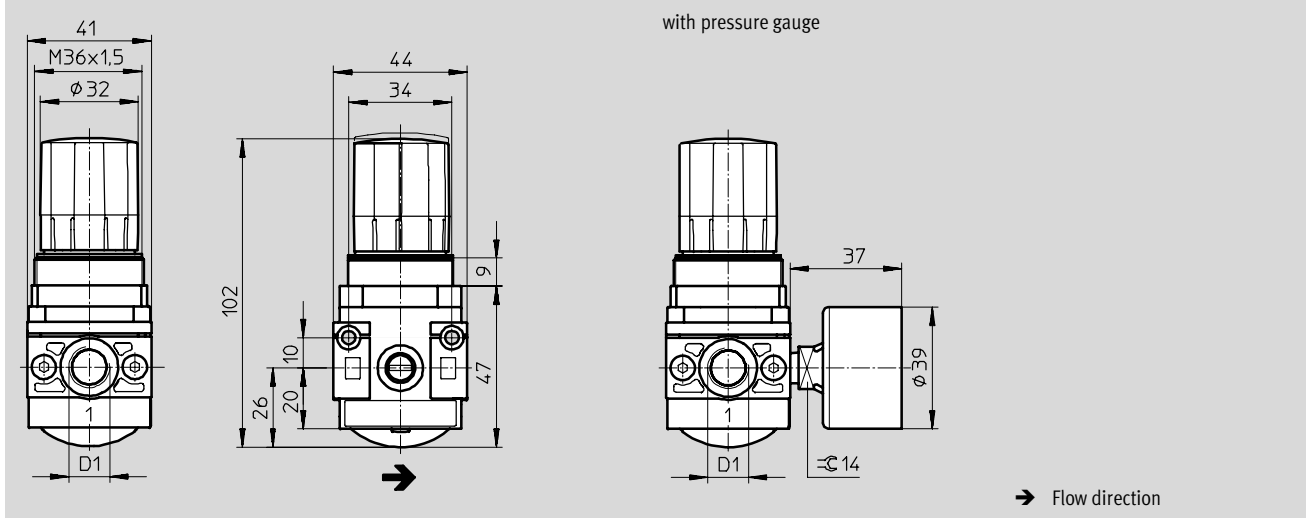
# LR-DB Pressure Regulators – DB Series, Polymer Design

Technical Data – Dimensional Drawings

**Dimensions**

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

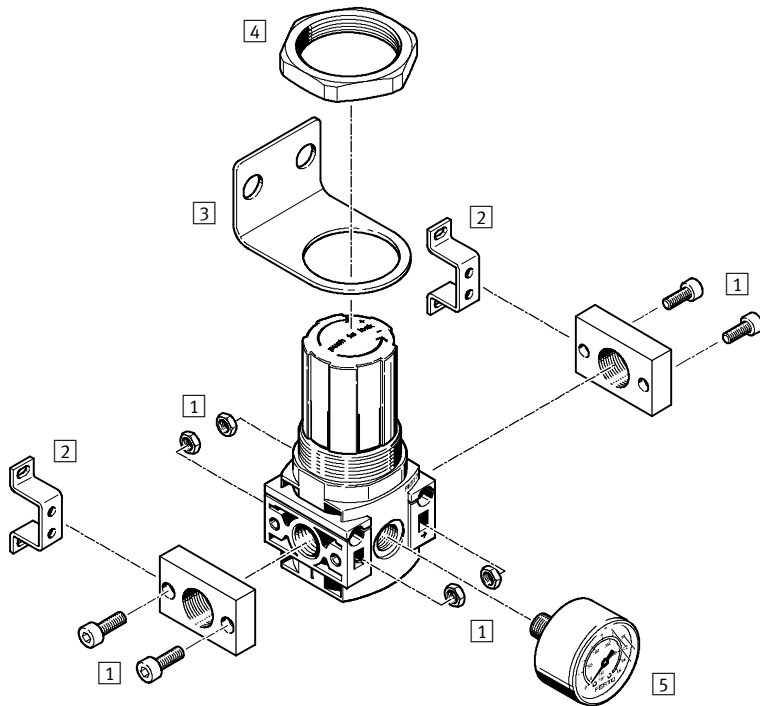
Mini



Type	D1
Mini	
LR-1/8-DB	G1/8
LR-1/4-DB	G1/4

# LR-DB Pressure Regulators – DB Series, Polymer Design

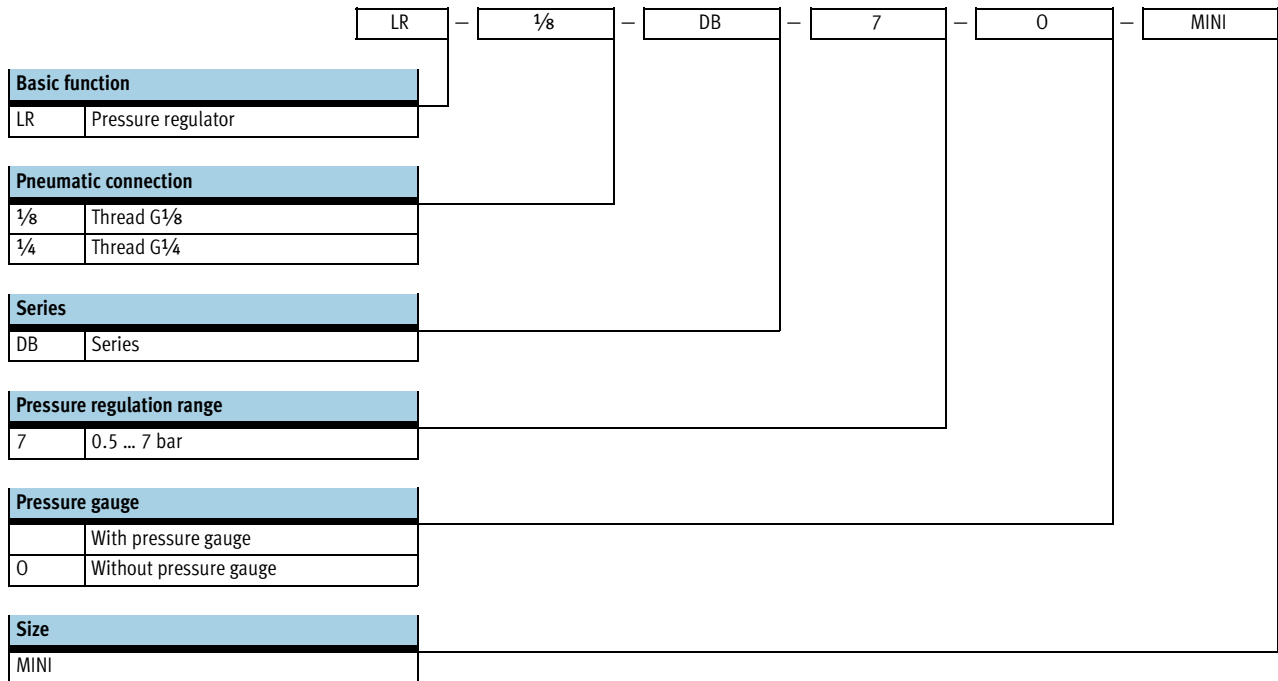
Accessories Overview



Mounting attachments and accessories		→ Page
1	Port block kit PBL Used to establish 1/8", 1/4", or 3/8" G (BSPP) or NPT connections.	331
2	Mounting bracket HFOE	331
3	Mounting bracket HR-D	330
4	Hex nut HMR	330
5	Pressure gauge MA	333

# LR-DB Pressure Regulators – DB Series, Polymer Design

Type Codes



# LR-DB Pressure Regulator – DB Series, Polymer Design

Ordering Data

Ordering data				
Size	Connection	Pressure regulation range 0.5 ... 7 bar		
		Part No.	Type	LT
With pressure gauge				
Mini	G <sup>1</sup> / <sub>8</sub>	539681	LR- <sup>1</sup> / <sub>8</sub> -DB-7-MINI	Q
	G <sup>1</sup> / <sub>4</sub>	539682	LR- <sup>1</sup> / <sub>4</sub> -DB-7-MINI	Q
Without pressure gauge				
Mini	G <sup>1</sup> / <sub>8</sub>	537642	LR- <sup>1</sup> / <sub>8</sub> -DB-7-O-MINI	Q
	G <sup>1</sup> / <sub>4</sub>	537643	LR- <sup>1</sup> / <sub>4</sub> -DB-7-O-MINI	Q

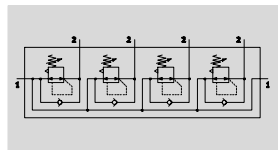
LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time




# LRB-DB-K Pressure Regulator Manifolds – DB Series, Polymer Design

## Technical Data

### Function

without pressure gauge



-  - Flow rate  
1000 l/min
-  - Temperature range  
-5 ... +50 °C
-  - Input pressure  
1.5 ... 10 bar



- Preassembled regulator manifold assembly with common air supply
- Good control characteristics with low hysteresis and primary pressure compensation
- Setting values are secured by locking the rotary knob

General technical data	
Size	Mini
Pneumatic connection 1	G½
Pneumatic connection 2	G¾
Operating medium	Compressed air
Regulating functions	Output pressure constant
	With return flow function
	With secondary venting
Design	Directly actuated piston regulator
	On P-manifold
Type of mounting	Front panel mounting
	Via accessories
Assembly position	Any
Max. hysteresis [bar]	0.5
Input pressure [bar]	1.5 ... 10
Pressure regulation range [bar]	0.5 ... 7

Standard nominal flow rate <sup>1)</sup> q <sub>N</sub> [l/min]	
Size	Mini
Pressure regulation range 0.5 ... 7 bar	≥ 1000

1) Measured at p<sub>1</sub> = 10 bar, p<sub>2</sub> = 6 bar and Δp = 1 bar.

Ambient conditions	
Ambient temperature [°C]	-5 ... +50
Temperature of medium [°C]	-5 ... +50
Corrosion resistance class CRC <sup>2)</sup>	1

2) Corrosion resistance class 1 according to Festo standard 940 070  
Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.



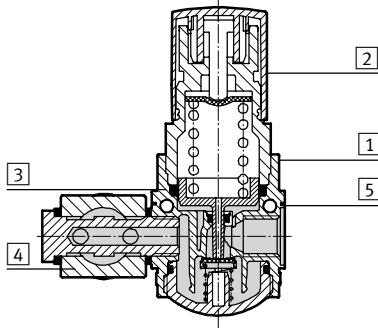
# LRB-DB-K Pressure Regulator Manifolds – DB Series, Polymer Design

Technical Data

Weight [g]	
Size	Mini
Manifold with 2 pressure regulators	
LRB-...-K2	500
Manifold with 3 pressure regulators	
LRB-...-K3	750
Manifold with 4 pressure regulators	
LRB-...-K4	1000
Manifold with 5 pressure regulators	
LRB-...-K5	1250

## Materials

Sectional view



Pressure regulator	Mini
1 Housing	Polyamide, reinforced
2 Rotary knob	Polyacetate
3 Sealing ring	Polyvinyl chloride
4 Manifold strip	Wrought aluminum alloy
5 Spacing bolt	Wrought aluminum alloy
- Seals	Nitrile rubber

# LRB-DB-K Pressure Regulator Manifolds – DB Series, Polymer Design

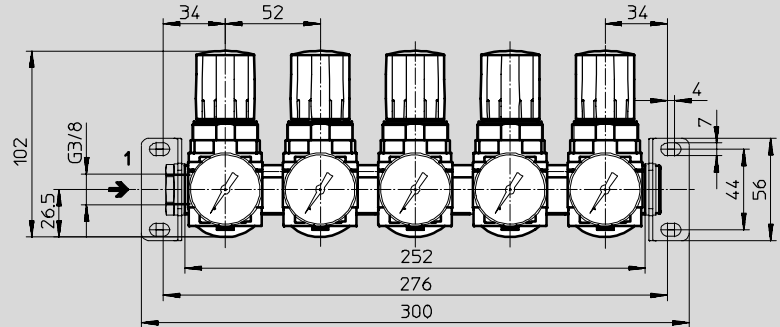
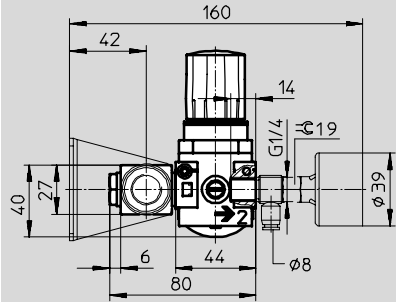
Technical Data – Dimensional Drawings

**Dimensions**

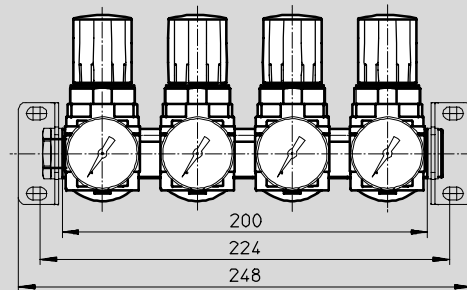
Download CAD data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

With mounting bracket

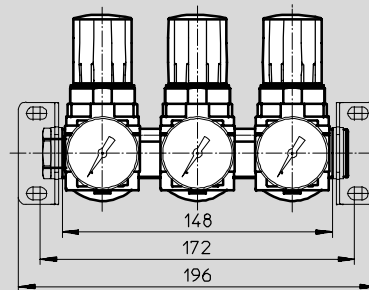
LRB-...-K5



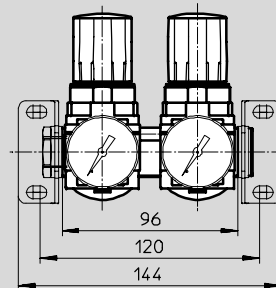
LRB-...-K4



LRB-...-K3



LRB-...-K2



→ Flow direction

# LRB-DB-K Pressure Regulator Manifolds – DB Series, Polymer Design

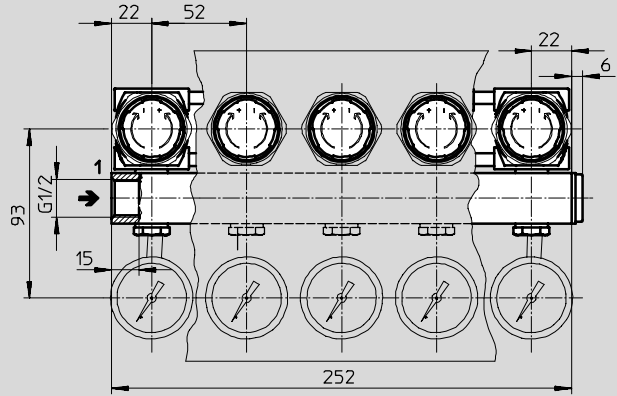
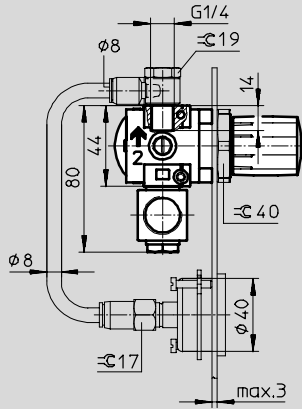
Technical Data – Dimensional Drawings

**Dimensions**

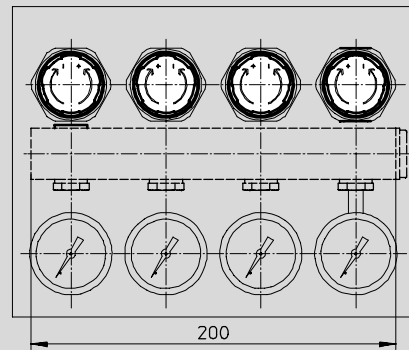
Download CAD data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

Front panel mounting

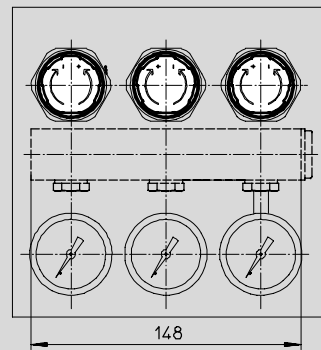
LRB-...-K5



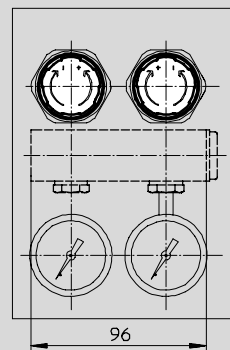
LRB-...-K4



LRB-...-K3



LRB-...-K2



→ Flow direction

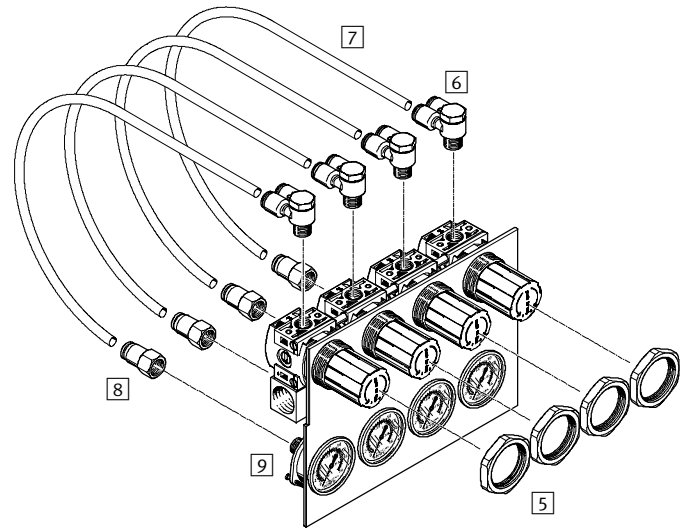
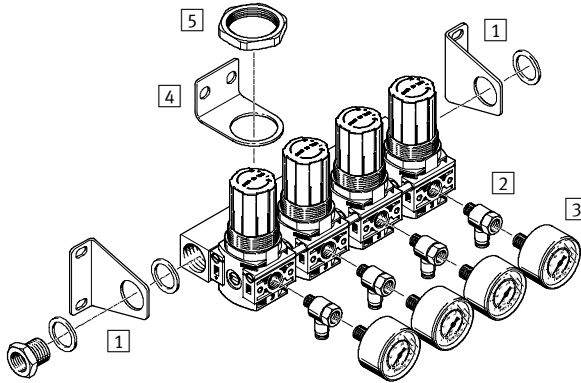
# LRB-DB-K Pressure Regulator Manifolds – DB Series, Polymer Design

Accessories Overview

## Mini

With mounting bracket

Front panel mounting



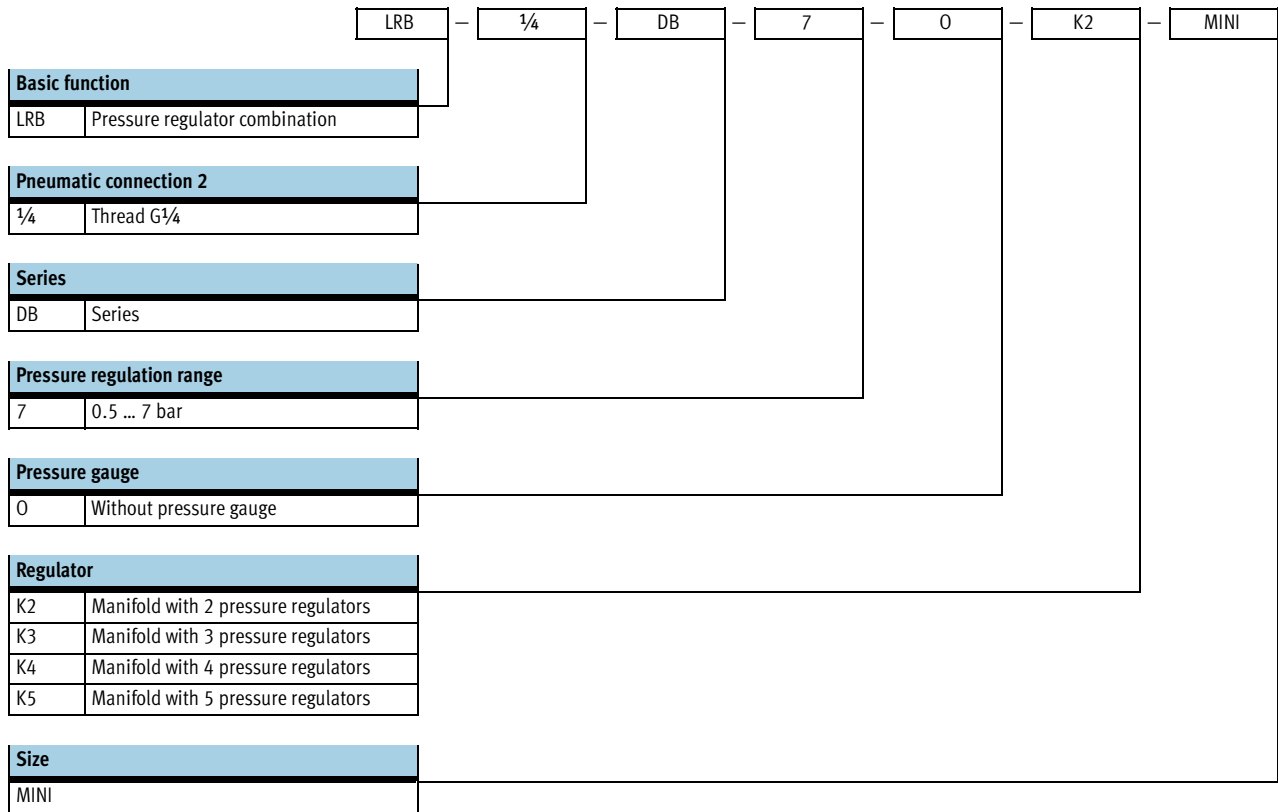
# LRB-DB-K Pressure Regulator Manifolds – DB Series, Polymer Design

Accessories Overview

Mounting attachments and accessories				
	With mounting bracket	Front panel mounting	→ Page	
1	Mounting bracket kit HRBS-DB-MINI	■	–	332
2	Push-in T-fitting QSTF	■	–	334
3	Pressure gauge MA	■	–	333
4	Mounting bracket HR-D	■	–	330
5	Hex nut HMR	■	■	330
6	Push-in Y-fitting QSYLV	–	■	334
7	Plastic tubing PUN-E	–	■	335
8	Push-in fitting QSF	–	■	334
9	Flanged pressure gauge FMA	–	■	333

# LRB-DB-K Pressure Regulator Manifolds – DB Series, Polymer Design

Type Codes



# LRB-DB-K Pressure Regulator Manifolds – DB Series, Polymer Design

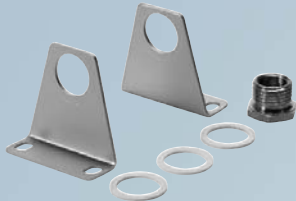
Ordering Data

Ordering data			
Size	Connection	Pressure regulation range 0.5 ... 7 bar	
		Part No.	Type
Manifold with 2 pressure regulators			
Mini	G $\frac{1}{4}$	540040	LRB- $\frac{1}{4}$ -DB-7-O-K2-MINI
Manifold with 3 pressure regulators			
Mini	G $\frac{1}{4}$	540041	LRB- $\frac{1}{4}$ -DB-7-O-K3-MINI
Manifold with 4 pressure regulators			
Mini	G $\frac{1}{4}$	540042	LRB- $\frac{1}{4}$ -DB-7-O-K4-MINI
Manifold with 5 pressure regulators			
Mini	G $\frac{1}{4}$	540043	LRB- $\frac{1}{4}$ -DB-7-O-K5-MINI

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time



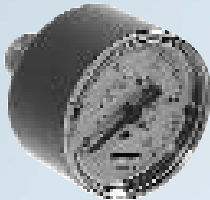




HRBS-DB-MINI  
Mounting Brackets



FRB-DB-MINI  
Threaded Pins



MA  
Pressure Gauge

**Accessories for DB Series  
Polymer Design Components**

- Mounting Attachments
- Pressure Gauges
- Push-in Fittings
- Plastic tubing
- Filter cartridges

# Mounting Attachments

Accessories – DB Series, Polymer Design

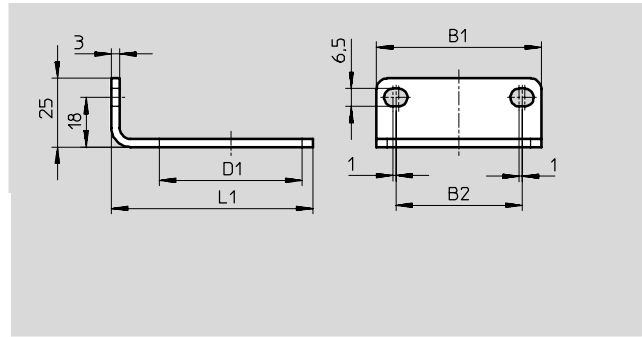
## HR-D Mounting Bracket

- For wall mounting

Material:  
Galvanized steel

### Note

The hex nut for attaching this bracket must be ordered separately.



Dimensions and ordering data								
Size	B1	B2	D1 Ø	L1	CRC <sup>1)</sup>	Part No.	Type	LT
Mini	42	28	36	57.5	2	<b>164936</b>	<b>HR-D-MINI</b>	Q

1) Corrosion resistance class 2 according to Festo standard 940070.  
Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

## HMR Hex Nut

- For front panel mounting
- For attaching the HR-D mounting bracket

Material:  
Wrought aluminum alloy



Ordering data			
Size	Part No.	Type	LT
Mini	<b>530025</b>	<b>HMR-D-MINI/MAXI</b>	Q

LT = Lead time      **1D** typically ships same day/next day      **1W** typically ships within 1 week      **Q** request a quote for lead time

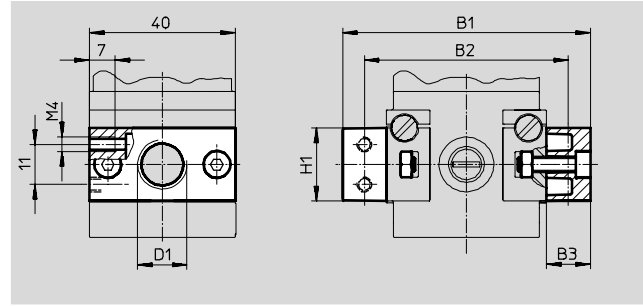
# Mounting Attachments

Accessories – DB Series, Polymer Design

## PBL-DB (Metal) Port Block Kit

- For wall mounting
- For establishing a pneumatic connection with G $\frac{1}{8}$ , G $\frac{1}{4}$ , G $\frac{3}{8}$ , or  $\frac{1}{8}$  NPT,  $\frac{1}{4}$  NPT,  $\frac{3}{8}$  NPT threads

Material:  
 Port block: Die-cast zinc  
 Nut, screws: Galvanized steel  
 Seals: Nitrile rubber



Note on materials:  
 Free of copper and PTFE

Dimensions and ordering data									
Size	B1	B2	B3	D1	H1	CRC <sup>1)</sup>	Part No.	Type	LT
Mini	68	56	12	G $\frac{1}{8}$	20	1	<b>542787</b>	<b>PBL-<math>\frac{1}{8}</math>-DB-MINI</b>	Q
	68	56	12	G $\frac{1}{4}$	20		<b>542788</b>	<b>PBL-<math>\frac{1}{4}</math>-DB-MINI</b>	Q
	74	56	15	G $\frac{3}{8}$	23		<b>542789</b>	<b>PBL-<math>\frac{3}{8}</math>-DB-MINI</b>	Q
	68	56	12	$\frac{1}{8}$ NPT	20	1	<b>549116</b>	<b>PBL-<math>\frac{1}{8}</math>-DB-MINI-NPT</b>	Q
	68	56	12	$\frac{1}{4}$ NPT	20		<b>549117</b>	<b>PBL-<math>\frac{1}{4}</math>-DB-MINI-NPT</b>	Q
	74	56	15	$\frac{3}{8}$ NPT	23		<b>542118</b>	<b>PBL-<math>\frac{3}{8}</math>-DB-MINI-NPT</b>	Q

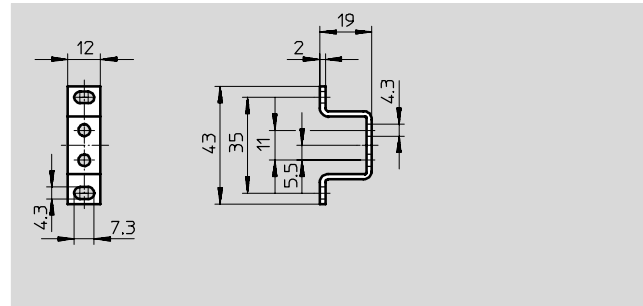
1) Corrosion resistance class 1 according to Festo standard 940070.  
 Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

## HFOE Mounting Bracket

- For wall mounting

Material:  
 Galvanized steel

Note on materials:  
 Free of copper and PTFE



Dimensions and ordering data				
Size	CRC <sup>2)</sup>	Part No.	Type	LT
Mini	2	<b>159638</b>	<b>HFOE-D-MINI</b>	Q

2) Corrosion resistance class 2 according to Festo standard 940070.  
 Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

LT = Lead time

**1D** typically ships same day/next day

**1W** typically ships within 1 week

**Q** request a quote for lead time

# Mounting Attachments

Accessories – DB Series, Polymer Design

## HRBS-DB-MINI Mounting Bracket Kit

■ For wall mounting

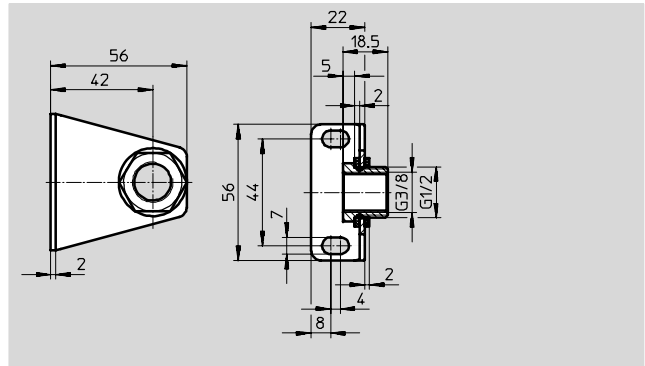
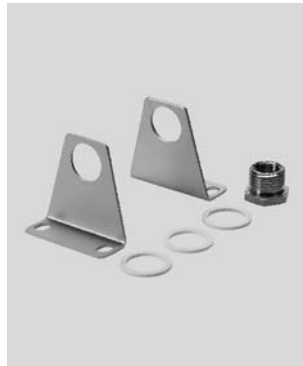
Material:

Hollow bolt, housing: Galvanized steel

Sealing ring: Polyvinyl chloride

Note on materials:

Free of copper and PTFE



Dimensions and ordering data						
Size	Pneumatic connection 1	CRC <sup>1)</sup>	Weight [g]	Part No.	Type	LT
Mini	G3/8	2	150	540791	HRBS-DB-MINI	Q

1) Corrosion resistance class 2 according to Festo standard 940070. Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

## FRB-DB Threaded Pin

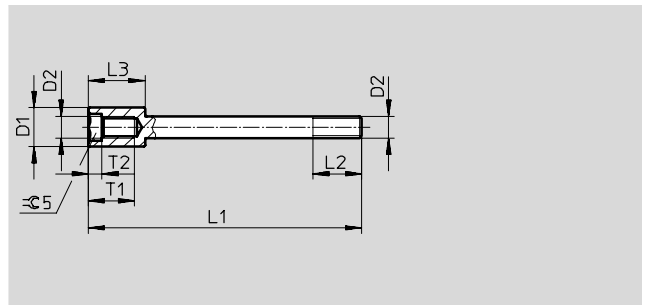
■ For service unit combinations

Material:

Steel

Note on materials:

Free of copper and PTFE



Dimensions and ordering data											
Size	D1	D2	L1	L2	L3	T1	T2	CRC <sup>1)</sup>	Part No.	Type	LT
Mini	∅ 7.2	M4	50.5	9 min.	10.5	8.5	2.5	1	542187	FRB-DB-MINI	Q

1) Corrosion resistance class 1 according to Festo standard 940070. Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

## M4-DB Nut Assortment

■ For service unit combinations

Material:

Galvanized steel

Note on materials:

Free of copper and PTFE



Ordering data				
Size	CRC <sup>1)</sup>	Part No.	Type	LT
Mini	1	542790	M4-DB-MINI	Q

1) Corrosion resistance class 1 according to Festo standard 940070. Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

# Pressure Gauges

Accessories – DB Series, Polymer Design

## MA Pressure Gauge, DIN EN 837-1

- For filter regulators and pressure regulators



Ordering data					
Pneumatic connection	Indicating range		Part No.	Type	LT
	[bar]	[psi]			
R1/8	0 ... 10	0 ... 145	162835	MA-40-10-1/8-EN	Q

## MA Pressure Gauge, DIN EN 837-1

- For pressure regulator combinations with mounting via bracket



Ordering data					
Pneumatic connection	Indicating range		Part No.	Type	LT
	[bar]	[psi]			
G1/4	0 ... 10	0 ... 145	183900	MA-40-10-G1/4-EN	Q

## FMA Flanged Pressure Gauge, DIN EN 837-1

- For pressure regulator combinations with front panel mounting



Ordering data						
Nominal size	Pneumatic connection	Indicating range		Part No.	Type	LT
		[bar]	[psi]			
40	G1/4	0 ... 10	0 ... 145	159596	FMA-40-10-1/4-EN	Q

LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time

# Push-in Fittings

Accessories – DB Series, Polymer Design

## QSTF Push-in T Fitting

360° rotatable  
with male and female thread

For use with pressure regulator combinations with mounting via bracket



Ordering data						
Pneumatic connection			Part No.	Type	LT	PU*
Male thread	Female thread	Tubing O.D.				
G $\frac{1}{4}$	G $\frac{1}{4}$	8	<b>186203</b>	<b>QSTF-G<math>\frac{1}{4}</math>-8</b>	Q	<b>1</b>

\* Packaging unit quantity

## QSYLV Push-in Y Fitting

360° rotatable  
Male thread  
with external hex

For use with pressure regulator combinations with front panel mounting



Ordering data						
Pneumatic connection		Tubing O.D.	Part No.	Type	LT	PU*
G $\frac{1}{4}$		8	<b>186210</b>	<b>QSYLV-G<math>\frac{1}{4}</math>-8</b>	Q	<b>1</b>

\* Packaging unit quantity

## QSF Push-in Fitting

Female thread  
with external hex

For use with pressure regulator combinations with front panel mounting



Ordering data						
Pneumatic connection		Tubing O.D.	Part No.	Type	LT	PU*
G $\frac{1}{4}$		8	<b>153026</b>	<b>QSF-<math>\frac{1}{4}</math>-8-B</b>	1D	<b>10</b>

\* Packaging unit quantity

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

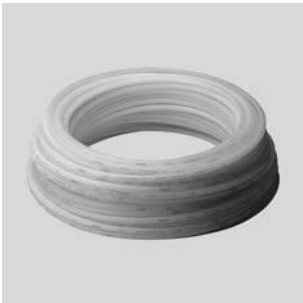
# Plastic Tubing

Accessories – DB Series, Polymer Design

## PCN Plastic Tubing

■ For condensate drain

Material: Polyvinyl chloride



Ordering data						
Tubing O.D. [mm]	Tubing I.D. [mm]	Weight [g/m]	Part No.	Type	LT	PU* [m]
6.5	4	25	7134	PCN-4-NT	Q	50

\* Packaging unit is 50 m coil. This part number may be ordered in lengths of 1 m.

## PUN-E Plastic Tubing

Highly flexible, hydrolysis and microbe resistant tubing

Material: Polyurethane

Note on materials:  
Free of copper and PTFE

For use with pressure regulator combinations



Ordering data						
Tubing O.D. [mm]	Color	Part No.	Type	LT	PU* [m]	
8	Silver	535322	PUN-E-8x1-SI	Q	50	
		534174	PUN-E-8x1-SI-400	Q	400	
	Blue	535327	PUN-E-8x1-BL	Q	50	
		534175	PUN-E-8x1-BL-400	Q	400	
	Black	538467	PUN-E-8x1-SW	Q	50	
		538462	PUN-E-8x1-SW-400	Q	400	

\* Packaging unit

LT = Lead time      1D typically ships same day/next day      1W typically ships within 1 week      Q request a quote for lead time

# Filter Cartridges

Accessories – DB Series, Polymer Design

## LFP Filter Cartridges



Ordering data				
Size	Grade of filtration [μm]	Part No.	Type	LT
Mini	5	547957	LFP-DB-MINI-5M	1D
	40	534502	MS4-LFP-E	1D

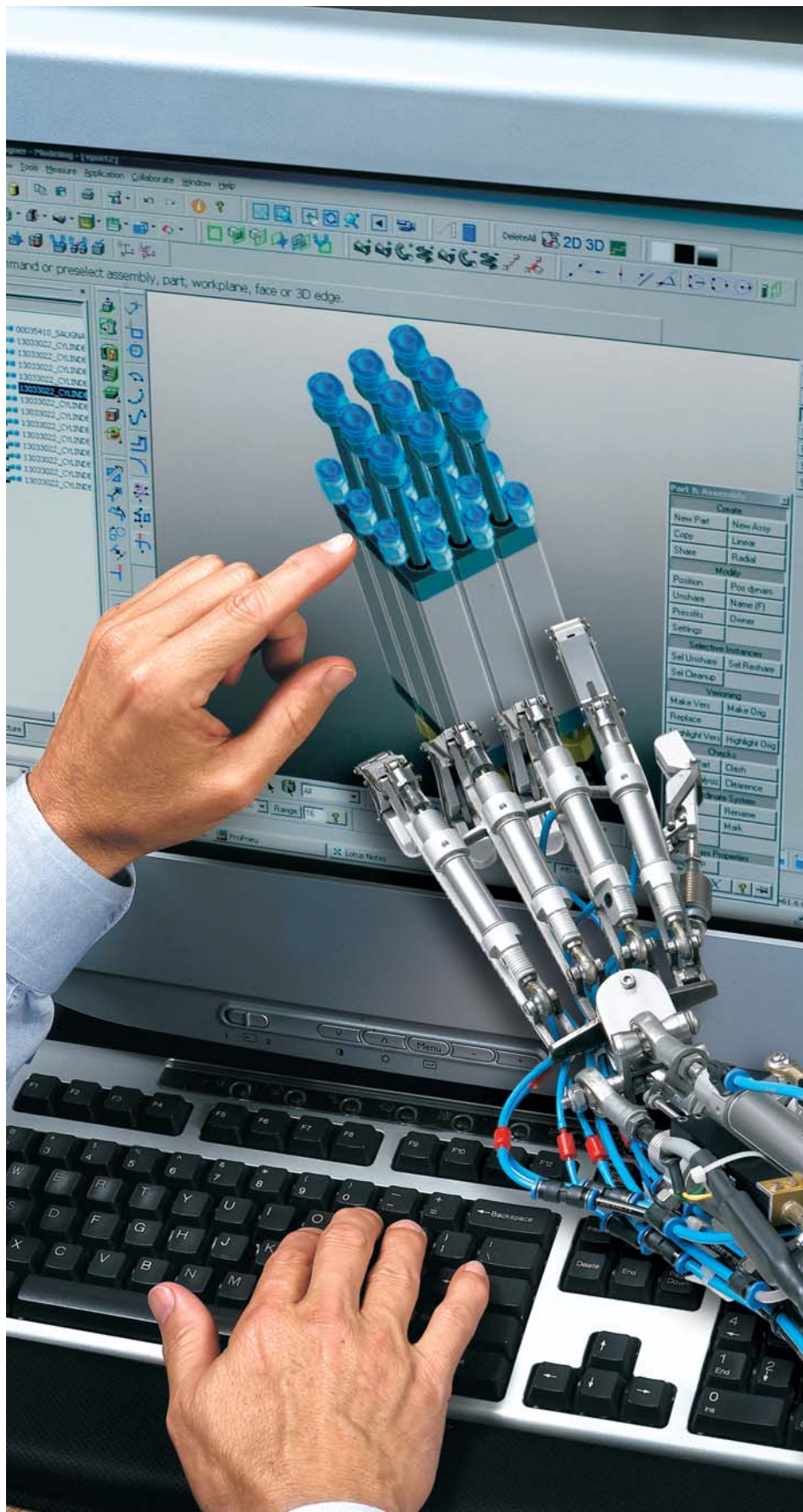
LT = Lead time

1D typically ships same day/next day

1W typically ships within 1 week

Q request a quote for lead time





Compressed Air  
Conditioning

System Design and Test

Sample Circuits

Air Quality

Operating  
Recommendations

Application Worksheet

## Compressed Air Distribution

Proper treatment of compressed air between production and consumption should never be neglected. Losses caused by leakage can be averted by the use of appropriate service units. Use of a new service unit reduces repair costs because less maintenance will be required.

The operational safety and durability of a pneumatic installation depends largely on how the compressed air is processed.

Contaminants in the compressed air such as scale, rust, dust particles, and liquids may cause considerable damage to a pneumatic installation. Pollutants increase the rate of wear on operating surfaces and sealing devices, shortening the life of pneumatic components.

Because the compressor cycles on-and-off, pressure fluctuations that could adversely affect operation of the facility may occur.

To eliminate these adverse effects, service units must be installed in every pneumatic control system.

## Operational Safety/Durability

The receiver is installed immediately after the compressor and should equalize pressure fluctuations coming from the compressor. Additionally, it serves as a storage unit for the entire system and aids in cooling the compressed air so incoming condensate can be separated. In larger compressor installations an air drier equipped with a water separator is installed between the compressor and receiver. In this way a large portion of the condensate can be separated in advance.

The compressed air storage unit equalizes pressure fluctuations within the system to ensure the highest common pressure for each user.

## Operation of Service Units

Compressed air filters purify the air by removing particles and vapor. Particles measuring greater than 50 microns are retained by sintered metal filters (depending on filter model). Fluids are separated and collected in a filtering bowl. The condensate in the filtering bowl must be periodically emptied.

Some applications, such as in the fields of chemistry, pharmaceutical, food processing, etc., require super-filtered air provided by coalescing filters. Festo coalescing filters remove almost all the vapor and oil droplets by coalescing filtration. Up to 99.999% air purity can be produced. Festo adsorption filters remove oil vapor and associated odors whether petroleum or synthetic based, keeping maximum down-stream remaining oil content to 0.003 ppm/wt.

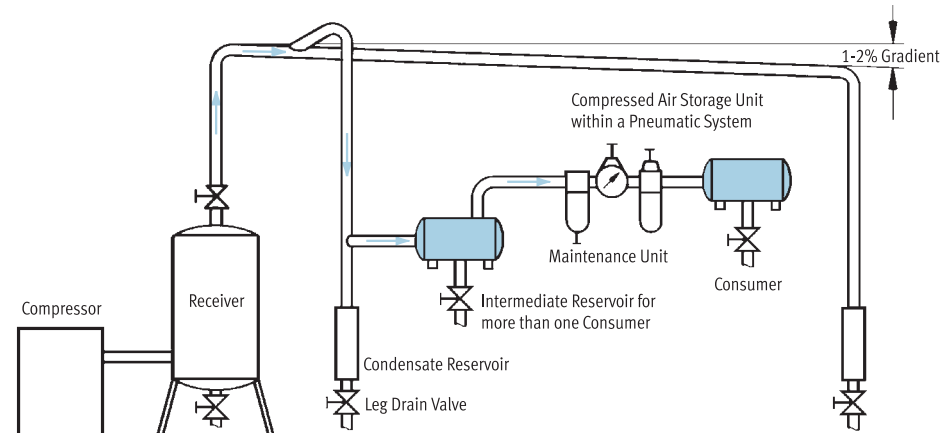
The pressure regulator maintains a constant operating pressure on the secondary side of the system by evening out pressure fluctuations from the primary side of the system. Note: input pressure should always be greater than the required operational pressure.

The compressed air lubricator dispenses lubricating oil to pneumatic components, when required. Lubricant is provided by a lubricator via the venturi principle and is dispersed in the flow of air.

When using low pressure components or pneumatic sensing devices, a primary and an auxiliary coalescing filter system should be provided.

## Typical Compressed Air Supply System

Diagram of a compressed air supply unit with manifold piping. Use of an intermediate reservoir within a pneumatic system depends on individual consumption and is only necessary if large quantities of air are consumed within a very short period of time.



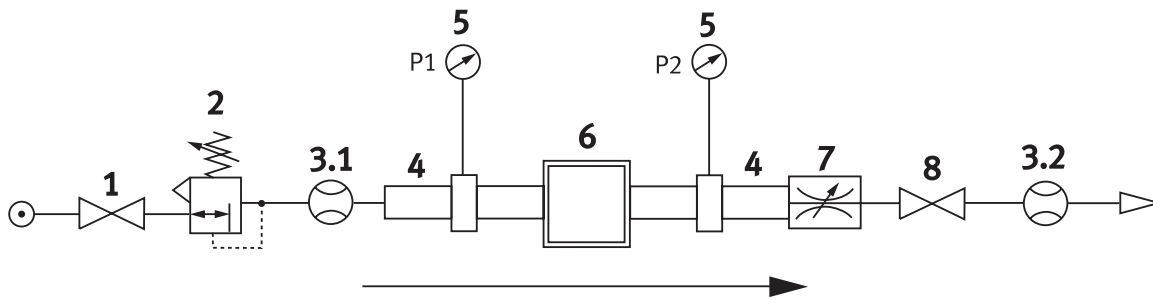
## Method Used to Determine Normal Flow Characteristics

### Control Direction (1 > 2)

The flow characteristic describes the relationship between the differential pressure ( $\Delta p = p_{2.0} - p_2$ ) and the normal flow rate  $q_n$  at a constant primary pressure ( $\Delta p_1$  [( $p = f(q_n)$ )]).

Item	Description
1, 8	Shut-off valve
2	Pressure regulating valve
3.1, 3.2	Flow meter
4	Measuring tube to ISO 6358 corresponding to the port size of the test specimen
5	Pressure gauge
6	Test Specimen
7	Flow control valve, adjustable

### Test Set-Up



### Test Procedure

At the beginning of the test, all components are closed and the final control elements of the pressure regulating valves are relieved.

1. Open shut-off valve 1.
2. Set primary pressure  $p_1$  on pressure regulating valve 2.
3. Set controlled variable  $p_{2.0}$  ( $q_n = 0$  l/min).
4. Fully open flow control valve 7.
5. Open shut-off valve 8 quickly, so that the controlled variable  $p_2$  drops by at least 1 bar or drops to 0 bar. Slowly close shut-off valve 8 again. Repeat steps 3 and 5 until the desired  $p_{2.0}$  value is reliably achieved.

**Important:** In order to ensure comparable preconditions for all tests, the controlled variable  $p_{2.0}$  must be set with increasing pressure.

6. Close flow control valve 7 and open shut-off valve 8.
7. Open flow control valve 7 in steps.
  - Keep primary pressure  $p_1$  constant.
  - Measure and document the normal flow rate  $q_n$  and controlled variable.
  - Repeat step 7 until flow control valve 7 is fully open or the maximum normal flow rate is achieved.

**Note:** If the pressure hysteresis is not to be determined, the measurement is now complete.

8. Close flow control valve 7 in steps.
  - Keep primary pressure  $p_1$  constant.
  - Measure and document the normal flow rate  $q_n$  and controlled variable.
  - Repeat step 8 until flow control valve 7 is fully closed or normal flow rate  $q_n = 0$  l/min is achieved.

### Definitions of Units and Symbols Used

Variable	Symbol	Unit
Pressure	$p$	bar; mbar
Normal flow rate	$q_n$	l/min
Standard nominal flow rate <sup>1</sup>	$q_{nN}$	l/min
Leakage	$q_n$	l/h
Internal air consumption	$q_{nE}$	l/h
Primary pressure	$p_1$	bar
Maximum primary pressure	$p_{1max}$	bar
Controlled variable at $q_n = 0$ l/min*	$p_{2.0}$	bar
Controlled variable at $q_n > 0$ l/min	$p_2$	bar
Maximum controlled variable	$p_{2max}$	bar
Minimum controlled variable	$p_{2min}$	bar
Pressure drop	$\Delta p$	bar; mbar
Hysteresis	$H$	bar; mbar
Disturbance variable	$Z$	bar; mbar
Degree of filtration	—	%
Oil delivery quantity	$q_{Oil}$	Drops/1000 l (Drops/min)

<sup>1</sup>**Important:** The standard nominal flow rate ( $q_{nN}$ ) is determined with a  $\Delta p$  of 1 bar.

\* $p_{2.0}$  is the set pressure on item 6 if the device has an adjustable output.

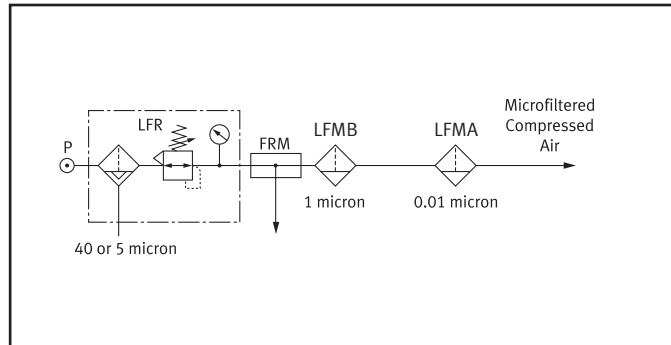
## Sample Circuits

Customarily The Following Arrangements of Elements Must Be Kept In Mind:

### Example 1

#### Microfiltered Compressed Air

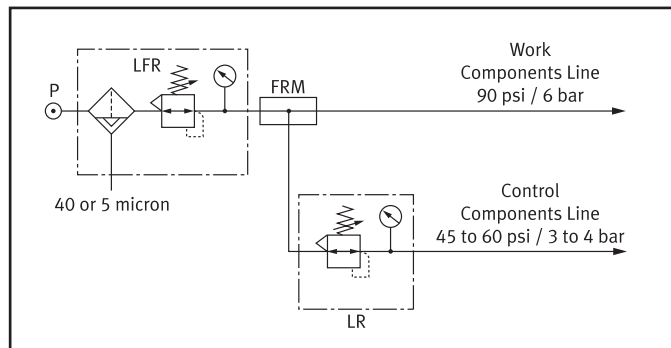
Certain applications require guaranteed oil and dust-free compressed air. A Filter-Regulator LFR... with 40 or 5 micron filtration provides a basic cleaning of the air and a constant working pressure. After that the air quality is enhanced in two steps with Fine (LFMB) and Micro (LFMA) filters. Thus it is possible to meet differing requirements for downstream air quality.



### Example 2

#### Different Pressure Zones

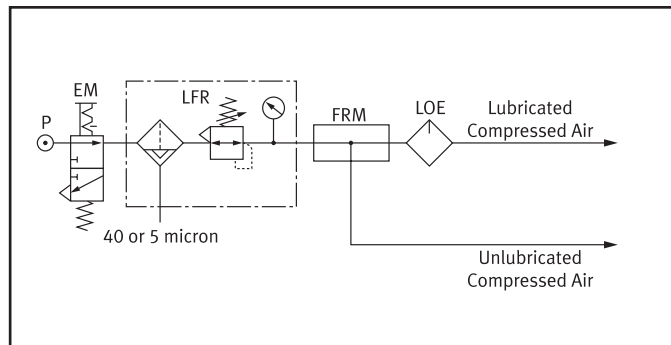
Control lines or certain working elements should be supplied with a lower input pressure. A Filter-Regulator LFR... with 40 or 5 micron filtration provides a basic cleaning of the air and a constant working pressure. After that a second pressure level is produced by means of another pressure regulator.



### Example 3

#### Shut-off and Exhaust Functions for a Pneumatic Installation

A master shut-off valve, Type EM-..., must be used to exhaust an installation before servicing work is carried out or a machine is set up. For security considerations, a padlock can be used.



## How Clean Must Compressed Air Be?

The answer is very simple, the compressed air must always be clean enough, so that it causes no malfunction or damage. Since every filter also represents a resistance to air flow, from an economical point of view the compressed air should only be as clean as required.

The quality of compressed air is identified by quality classes set forth in ISO 8573-1. Here it is established which contaminants are allowable in the corresponding compressed air quality classes.

The wide range of applications for compressed air accordingly imposes variable demands for air quality. If a high quality of compressed air is required, more steps of filtration must be used.

The determination of the quality class should consider the following information in the order in which it is listed.

1. The quality class of the solid contaminants.
2. The quality class for water content.
3. The quality class for total oil content (droplets, aerosols and vapors).

## Details of Quality Classes per DIN ISO 8573-1

Class	1. Particle Size		2. Water Content	3. Oil Content
	Max. Particle Size (micron)	Max. Particulate Density (ppm / mg/m <sup>3</sup> )	Max. Dew Point (°F / °C)	Max. Oil Concentration (ppm / mg/m <sup>3</sup> )
1	0.1	0.08 / 0.1	-94 / -70	0.01 / 0.01
2	1	0.83 / 1	-40 / -40	0.08 / 0.1
3	5	4.15 / 5	-4 / -20	0.83 / 1
4	15	6.64 / 8	37 / 3	4.15 / 5
5	40	8.30 / 10	45 / 7	20.75 / 25
6	–	–	50 / 10	–
7	–	–	not defined	–

## Classification of Product Categories

Application	Solids		Water Dew Point		Max. Oil Content	
	Class	(micron)	Class	(°F / °C)	Class	(ppm / mg/m <sup>3</sup> )
Mining	5	40	7	--	5	20.75 / 25
Laundry	5	40	6	50 / 10	4	4.15 / 5
Welding Equipment	5	40	6	50 / 10	5	20.75 / 25
Machine Tools	5	40	4	37 / 3	5	20.75 / 25
Compressed Air Cylinders	5	40	4	37 / 3	5	20.75 / 25
Compressed Air Valves	3 to 5	5 to 40	4	37 / 3	5	20.75 / 25
Packaging	5	40	4	37 / 3	3	0.83 / 1
Precision Air Regulator	3	5	4	37 / 3	3	0.83 / 1
Air Measurement	2	1	4	37 / 3	3	0.83 / 1
Warehouse Ventilation	2	1	3	-4 / -20	3	0.83 / 1
Sensors	2	1	2 to 3	-40 to -4 / -40 to -20	2	0.08 / 0.1
Food Processing	2	1	4	37 / 3	1	0.01 / 0.01
Photo Processing	1	0.01 to 0.1	2	-40 / -40	1	0.01 / 0.01

The sizing of air preparation units is dependent on the air requirements of the application. Undersizing leads to pressure fluctuations in the regulator and inadequate filter service life.

From an economical point of view high air qualities should be used only where they are actually required. Distributor modules between the individual filter grades make differing air qualities available.

### Important:

Elements at the beginning of a "maintenance line" should have higher nominal flow rates, in case they have to handle the entire air volume requirement.

## When Making Your Selection

- 1) Generally, install filters downstream of after coolers/separators and air receivers at the lowest temperature point and as close to the point of application as possible. This reduces the chance of additional water and oil vapor condensing after the filter.
- 2) Filters should not be installed downstream of quick opening valves and should be protected from possible reverse flow or other shock conditions.
- 3) It may be necessary to install a combination of mainline filtration near the compressor installation before entry to the main air distribution system as well as installing terminal filtration at the critical application points.

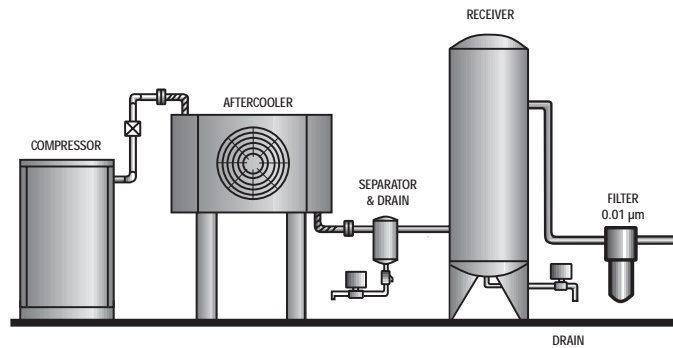
Remember, especially in existing installations, the contamination already in the pipe system downstream of the filters will take a long time to disappear and probably never will completely.

- 4) Purge all lines leading from the filters to the final application to be protected.
- 5) Install filters in a vertical position ensuring that there is sufficient room below the filters to facilitate element change.
- 6) Provide a facility to drain away collected liquids from the filter drains via properly sized tubing, taking care that there are no restrictions in the drain line.
- 7) Install a differential pressure gauge or pop-up indicator to monitor the pressure drop across the filters. This will provide an easy way of visually monitoring the filter element condition, indicating when to replace the element.

If you have a problem with filter selection or installation, please contact your local Festo office or distributor. Festo and their representatives will be pleased to help you in selecting the proper installation for your application requirements.

## General Purpose Protection

- General Compressed Air System Protection
- Liquid and Solid - Bulk Contamination Removal
- Particle Removal in "Dry" Systems
- Large Pneumatic Tools
- Shot-Blasting Air
- Low Cost Automation
- Pre-Filtration for Refrigeration Air Dryers
- Pre-Filtration to High Efficiency Dryers
- Pre-Filtration to Adsorption Air Dryers in "Oil-Free" Systems
- Pre-Filtration to Air Sterilization Filters in "Oil-Free" Systems





## When Making Your Selection

Always try to obtain as much information as possible including flow rates, inlet pressure, temperature and pipe size.

Select filtration air quality required to the application to be protected. Remember, it is better to over-specify than not provide enough protection.

Select size of filters by flow rate and inlet pressure at the point of filtration. Also keep in mind pressure drop, if this is critical it may be advisable to oversize the filters. Generally, for operating costs, it is best never to undersize filters. The higher pressure drop caused by undersizing actually increases system operating cost.

Be careful to consider working pressure drops. Although all filters start dry, in time they become wetted with liquid (a normal condition) and this increases pressure drop. Select filters for the highest flow rate and lowest working pressure they will operate under.

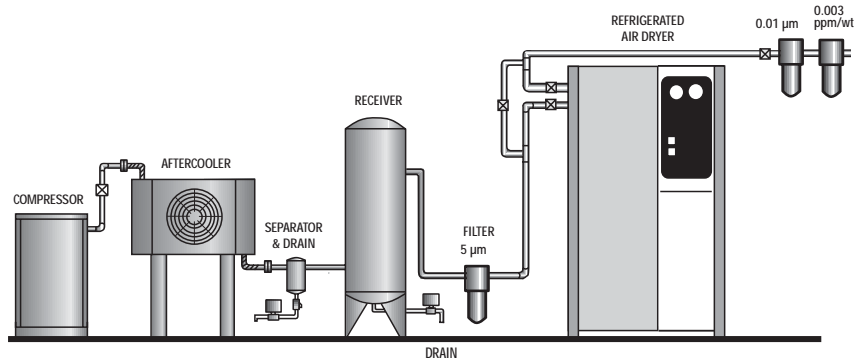
Check the pipe size of the installation. If possible, match pipe sizes. This may involve increasing the size of the filter. Never reduce the pipe size of the installation to match the filter. The restriction caused by this is expensive in terms of pressure drop and operating costs and is ongoing. Increasing the size of the filter on the other hand reduces pressure drop and increases the time between element changes. This more than offsets the initial higher cost.

## Critical Applications (Clean and “Oil-Free”)

Where dew point is not required to be less than 36-40°F (2.2-4.4°C). Ambient temperature should not be below 45°F (7.2°C). For example, interior of factories.

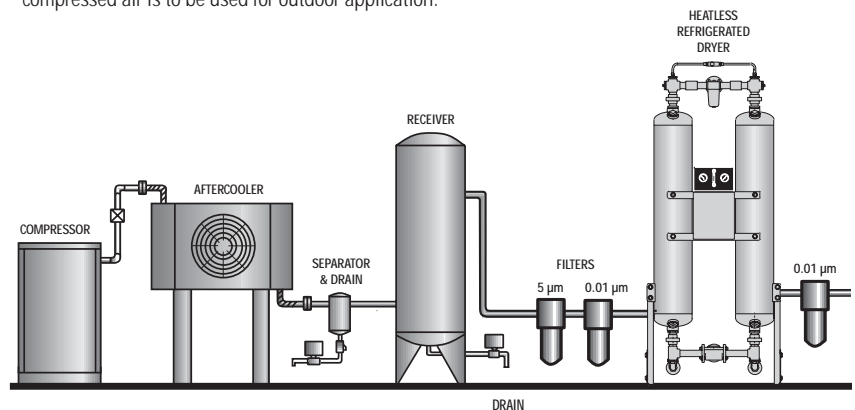
- Highest Quality – Clean, Oil and Odor-free Air
- Blow Molding of Plastic (such as P.E.T. Bottles)
- Film Processing
- Critical Instrumentation

- Advanced Pneumatics
- Air-Blast Circuit Breakers
- Decompression Chambers
- Cosmetic Production
- Foodstuffs Production/Packaging
- Pharmaceutical Production
- Dairy Production/Packaging/Transport
- Brewery Production/Packaging/Transport



## Extremely Low Dew Point System

Where dew point must be below 32°F (0°C). For example, indoor factory installation of dryer, but where compressed air is to be used for outdoor application.



## What Must Be Observed When Using Festo Components?

Specified limit values for technical data and any specific instructions must be adhered to by the user in order to ensure recommended operating conditions.

When pneumatic components are used, the user shall ensure that they are operated using correctly prepared compressed air without aggressive media.

When Festo components are used in safety-oriented applications, the user shall ensure that all applicable national and local safety laws and regulations, for example the Machine Directive, together with the relevant references to standards, are observed. Unauthorized conversions or modifications to products and systems from Festo involve a safety risk and are thus not permissible. Festo does not accept any liability for resulting damages.

You should contact Festo advisors if one of the following apply to your application:

- The ambient conditions and conditions of use or the operating medium differ from the specified technical data.
- The product is to perform a safety function.
- A risk or safety analysis is required.
- You are unsure about the product's suitability for use in the planned application.
- You are unsure about the product's suitability for use in safety-oriented applications.

All technical data applies at the time of going to print.



**Page 1 of 1**

For technical assistance from our team of expert automation engineers, please photocopy this page, fill in as much information as possible and fax to **1-800-96-FESTO**.

**Contact Information**

Name \_\_\_\_\_  
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 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_  
 Email \_\_\_\_\_

**Application Information**

■ **Flow** \_\_\_\_\_ scfm \_\_\_\_\_ l/min

■ **Pressure**

- Maximum Input \_\_\_\_\_ psi \_\_\_\_\_ bar
- Operating
  - Minimum \_\_\_\_\_ psi \_\_\_\_\_ bar
  - Maximum \_\_\_\_\_ psi \_\_\_\_\_ bar

■ **Connection**

- Thread Type
  - NPT     BSP (G)     Metric
- Thread Size
  - 1/8"     1/4"     3/8"     1/2"     3/4"     1"     M5     M7

• OD Tubing Connection (Micro sizes only)  
 QS4 (4 mm)     QS6 (6 mm)

■ **Pre-filtration**    ■ **Fine Filtration**    ■ **Active Carbon Filter**    ■ **Lubricator**

- 40 µ     1 µ     0.003 mg/m<sup>3</sup>     Include
- 5 µ     0.01 µ

■ **On/off Valve**

- Manual
- Electric     24 V DC     110 V AC     230 V AC

■ **Soft-start Valve**

- Pneumatic
- Electric     24 V DC     110 V DC     230 V AC

■ **Branching Module**

- With Electric Pressure Switch
- Without Electric Pressure Switch

■ **Options**

- Manual Drain (Filter)
- Automatic Drain (Filter)
- Differential Pressure Indicator (Fine Filtration Only)

**Notes/Other:**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

The conversion table below includes the most commonly used for designing a system. They are given to enable the user to make necessary calculations.

### Length or Distance

$$\text{m} > \text{ft} = \times 3.281$$

$$\text{mm} > \text{inch} = \times 25.4$$

### Volume

$$\text{cm}^3 > \text{in}^3 = \times 0.061$$

### Mass

$$\text{g} > \text{lb} = \times 0.002$$

$$\text{kg} > \text{lb} = \times 2.2046$$

### Pressure

$$\text{bar} > \text{psi} = \times 14.7$$

### Temperature

$$\text{C}^\circ > \text{F}^\circ = \times [1.8] + 32$$

### Flow

$$\text{l/min} > \text{Cv} = \times 0.001$$

$$\text{l/min} > \text{scfm} = \times 0.0353$$

### Force

$$\text{N} > \text{lbf} = \times 0.2248$$

$$\text{kgf} > \text{N} = \times 9.80665$$

### Torque

$$\text{Nm} > \text{lb-in} = \times 8.8507$$

$$\text{Nm} > \text{lb-ft} = \times 0.7376$$

### Moment of Inertia

$$\text{kg-cm}^2 > \text{lb-in}^2 = \times 0.3417$$

$$\text{kg-m} > \text{lb-ft} = \times 7.233$$

$$\text{kg-m}^2 > \text{oz-in}^2 = \times 5.4675$$

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Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

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