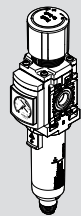


# MS4-LFR-...-B

## Filter regulator



# FESTO

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Operating instructions

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Translation of the original instructions

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## 1 Applicable documents

All available documents for the product → [www.festo.com/sp](http://www.festo.com/sp).

Documents	Product, type	Table of contents
Assembly instructions	Mounting bracket, MS4/6-WR	-

Tab. 1: Applicable documents

## 2 Safety

### 2.1 Safety instructions

- Only use the product in original status without unauthorised modifications.
- Only use the product if it is in perfect technical condition.
- Observe labelling on the product.
- Take into consideration the ambient conditions at the location of use.
- Prior to mounting, installation and maintenance work: Switch off compressed air supply and secure it from being switched back on.

### 2.2 Intended use

The filter regulator LFR is designed to regulate the compressed air in the downstream string to the set outlet pressure. The filter regulator LFR smooths pressure fluctuations and removes dirt particles and condensate from the compressed air.

### 2.3 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have knowledge and experience in pneumatics.

## 3 Additional information

- Contact the regional Festo contact if you have technical problems → [www.festo.com](http://www.festo.com).
- Accessories → [www.festo.com/catalogue](http://www.festo.com/catalogue).

## 4 Product design

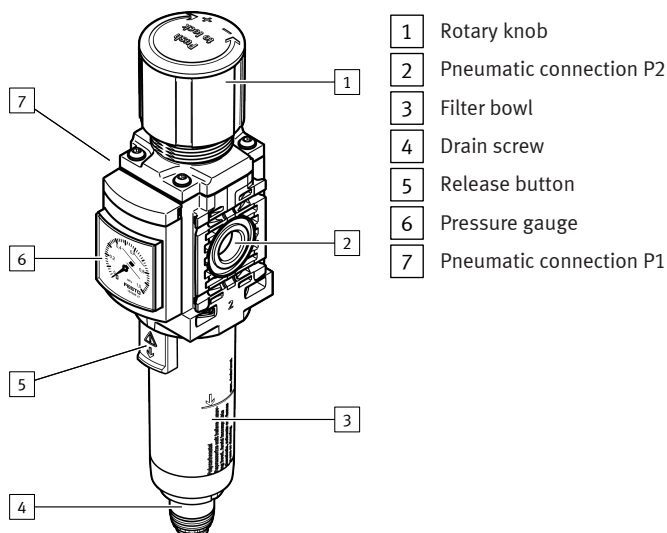


Fig. 1: Product design

## 5 Assembly

### 5.1 Mounting distances

- Maintain sufficient space around the product.
  - Space required above the product:  $\geq 20$  mm
  - Space required under the product:  $\geq 30$  mm
  - Space required left and right of the product:  $\geq 30$  mm

With sheet metal mounting:

- Mount product vertically.
- Observe the maximum permissible wall thickness. Wall thickness:  $\leq 2.5$  mm

### 5.2 Types of Mounting

Mount product with one of the following types of mountings depending on the purpose:

Type of mounting	Continuing description
Wall mounting with mounting bracket	- Assembly instructions → 1 Applicable documents - → 5.4 Installation
Sheet metal mounting	- → 5.1 Mounting distances - Accessories → <a href="http://www.festo.com/catalogue">www.festo.com/catalogue</a>

Tab. 2: Types of Mounting

## 5.3 Preparation

1. Observe the mounting position → Technical data.
2. Note the flow direction as shown by the numbers on the housing: from 1 to 2.
3. To exhaust the system for maintenance:  
Use shut-off valves in the compressed air supply line.
4. Use mounting accessories from the Festo catalogue → [www.festo.com/catalogue](http://www.festo.com/catalogue).
5. Note types of mounting.

## 5.4 Installation

1. Place product at the installation site.
2. Note the flow direction as shown by the numbers on the housing: from 1 to 2.
3. Observe mounting clearances → 5.1 Mounting distances.
4. Place the mounting bracket on the product.
5. Tighten mounting bracket with nut → 1 Applicable documents .
6. Secure mounting bracket to the mounting surface.

## 6 Installation, pneumatic

1. Use fittings, seals and suitable tubing from the Festo catalogue → [www.festo.com/catalogue](http://www.festo.com/catalogue).
2. Screw fittings into the pneumatic ports.
3. Note maximum screw-in depth of the connector thread. Screwing in deeper will reduce the flow rate. Screw-in depth:  $\leq 6.5$  mm
4. Push suitable tubing into the fitting up to the stop.
  - Position tubing axial to the pneumatic ports.
  - Do not bend the tubing more than the minimum bending radius.

## 7 Commissioning

### 7.1 Setting the output pressure

1. Unlock rotary knob [1] (pull).
2. Turn rotary knob [1] completely in the "-" direction.
3. Pressurise system slowly: turn the rotary knob in the "+" direction until the desired pressure is reached.  
Maintain permissible pressure regulation range → Technical data.  
The input pressure  $p_1$  should always be at least 0.1 MPa (1 bar, 15 psi) higher than the set output pressure  $p_2$ .
4. Lock rotary knob [1] (press).

## 8 Maintenance

### 8.1 Draining the condensate

#### Draining the condensate manually

If the condensate reaches a level approx. 10 mm below the filter element:

1. Turn drain screw [4] anticlockwise as seen from below.  
↳ The condensate flows out.
2. Turn drain screw [4] clockwise as seen from below.

#### Draining condensate automatically

The filter drains automatically.

### 8.2 Changing the filter

Replace the filter cartridge if the flow rate is reduced even though the pressure setting is unchanged.

1. Exhaust product.
2. Pull the release button [5] on the filter bowl down.
3. Turn filter bowl [3] anticlockwise manually (as seen from below) until the stop can be felt.
4. Pull filter bowl [3] from the housing.
5. Unlock the latch on the support module by pressing in on the upper edge.
6. Pull the support module upwards.
7. Unscrew the spin disc and remove the filter support.
8. Install new filter cartridge:

- Grip the filter cartridge and push it onto the filter support.
  - Screw in the spin disc and tighten it lightly by hand. Tightening torque: 0.4 Nm ± 10 %
9. Press the spin disc into the filter bowl until the lock audibly engages at the end stop.
10. Mount filter bowl [3]:
- Align lock release of filter bowl with the cutout on the housing and insert it.
  - Turn filter bowl clockwise until the lock audibly locks at the end stop.

### 8.3 Cleaning

- Clean the outside of the product as required with a soft cloth.  
Permissible cleaning agents:
  - Soap suds (max. +60 °C)
  - Petroleum ether (free of aromatic compounds)

## 9 Fault clearance

Fault description	Cause	Remedy
Low flow rate, operating pressure drops with air consumption.	Constriction in the supply line.	Check supply line.
	Filter cartridge dirty.	Replace filter cartridge ➔ Maintenance.
Pressure increases above the set working pressure.	Valve disc defective at sealing seat.	Replace product.
Continuous audible blowing noise at rotary knob.	Valve seat damaged.	Replace product.
Audible blowing noise at the drain screw.	Drain screw leaking.	Replace product.

Tab. 3: Fault clearance

## 10 Disassembly

1. Exhaust the complete system and product.
2. Release interlock at the fittings by pressing it and pull out hose assembly.
3. Release fittings at the connecting flanges and unscrew.

## 11 Technical data

### 11.1 Technical data, mechanical

MS4-LFR-...	-M	-VC
Mounting position [°]	vertical +/- 5	
Condensate drain function	manual turning	manual non-detenting
		fully automatic
Vibration and shock resistance	Severity level 1 in accordance with IEC 60068.	
Thread size		
Pneumatic connection P1	G1/4	
Pneumatic connection P2		
Temperature ranges		
Temperature of medium [°C]	-5 ... +50	5 ... 50
Ambient temperature [°C]	-5 ... +50	5 ... 50
Storage temperature [°C]	-5 ... +50	

Tab. 4: Technical data, mechanical

Type of severity level (SL)					
Vibration load					
Frequency range [Hz]		Acceleration [m/s <sup>2</sup> ]		Deflection [mm]	
SL1	SL2	SL1	SG2	SL1	SL2
2 ... 8	2 ... 8	-	-	±3.5	±3.5
8 ... 27	8 ... 27	10	10	-	-
27 ... 58	27 ... 60	-	-	±0.15	±0.35
58 ... 160	60 ... 160	20	50	-	-
160 ... 200	160 ... 200	10	10	-	-
Shock load					
Acceleration [m/s <sup>2</sup> ]		Duration [ms]		Shocks per direction	
SL1	SL2	SL1	SL2	SL1	SL2
±150	±300	11	11	5	5
Continuous shock load					
Acceleration [m/s <sup>2</sup> ]		Duration [ms]		Shocks per direction	
±150		6		1000	

Tab. 5: Type of severity level (SL)

### 11.2 Technical data, pneumatic

MS4-LFR-...	-M	-VC
Compressed air quality		
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
	Inert gas	
Note	Not compatible with ester oil.	
Air quality class at the output		
MS4-LFR-...-C Grade of filtration 5 µm	Compressed air in accordance with ISO 8573-1:2010 [6:4:4]	

MS4-LFR-...	-M	-VC	
MS4-LFR-...-E Grade of filtration 40 µm	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]		
Pneumatics			
Operating pressure	[MPa]	0.1 ... 1	0.2 ... 1
	[bar]	1 ... 10	2 ... 10
	[psi]	15 ... 145	29 ... 145
Pressure regulation range	[MPa]	0.03 ... 0.7	
	[bar]	0.3 ... 7	
	[psi]	4.35 ... 105	
Standard nominal flow rate			
MS4-LFR-...-C Grade of filtration 5 µm	[l/min]	1500	
MS4-LFR-...-E Grade of filtration 40 µm	[l/min]	1700	

Tab. 6: Technical data, pneumatic