

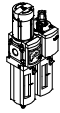
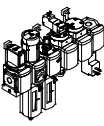


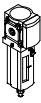
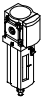

Filter regulators MS-LFR, MS series



Filter regulators MS-LFR, MS series



Product range overview – MS series service units

| Type | Size | Pneumatic connection in housing | Connecting plate | Pressure regulation range [bar] | | | | | | Grade of filtration [µm] | | | |
|--|------|---------------------------------|--------------------------------|---------------------------------|-------------|------------|------------|------------|------------|--------------------------|---|---|----|
| | | | | 0.05 ... | 0.05 ... | 0.1 ... | 0.3 ... | 0.1 ... | 0.5 ... | 0.01 | 1 | 5 | 40 |
| Code | | | AG.../AQ... | D2 | D4 | D5 | D6 | D7 | D8 | A | B | C | E |
| Service unit combinations | | | | | | | | | | | | | |
| MSB-FRC  | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | ■ | ■ | - | - | - | ■ | ■ |
| | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | ■ | ■ | - | - | - | ■ | ■ |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | - | - | - | - | - | - | - | - | - | - |
| Service unit combinations (further variants can be ordered using the configurator → Internet: msb4, msb6 or msb9) | | | | | | | | | | | | | |
| MSB  | 4 | G1/4 | G1/8, G1/4, G3/8 | - | - | - | ■ | ■ | - | - | - | ■ | ■ |
| | 6 | G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | ■ | ■ | - | - | - | ■ | ■ |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | - | - | - | - | - | - | - | - | - | - |
| Individual devices | | | | | | | | | | | | | |
| Filter regulators MS-LFR  | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | ■ | ■ | ■ | - | - | - | ■ | ■ |
| | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | ■ | ■ | ■ | ■ | - | - | ■ | ■ |
| | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | ■ | ■ | ■ | ■ | - | - | ■ | ■ |
| | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | ■ | ■ | ■ | - | - | ■ | ■ |
| Filters MS-LF  | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | - | - | - | - | - | ■ | ■ |
| | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | - | - | ■ | ■ |
| | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | - | - | - | - | - | - | ■ | ■ |
| | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | - | - | ■ | ■ |
| Fine and micro filters MS-LFM  | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | - | - | - | ■ | ■ | - | - |
| | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | ■ | ■ | - | - |
| | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | - | - | - | - | ■ | ■ | - | - |
| | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | ■ | ■ | - | - |
| Activated carbon filters MS-LFX  | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | - | - | - | - | - | - | - |
| | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | - | - | - | - |
| | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | - | - | - | - |
| Water separators MS-LWS  | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | - | - | - | - |
| | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | - | - | - | - |

Filter regulators MS-LFR, MS series

Product range overview – MS series service units



| Type | Size | Bowl guard | | Condensate drains | | | | Pressure indicator | | | | Security | | Options | | → Page/ Internet | |
|------------------------------------|------|--------------------------------------|------------|-------------------|----------------|-----------------|---------------------------------------|--------------------------------------|------------------------------|--|--|-----------------|---|----------------------------------|----------|---------------------|-----------------------------------|
| | | Plastic bowl with plastic bowl guard | Metal bowl | Manual rotary | Semi-automatic | Fully automatic | External, fully automatic, electrical | Cover plate (without pressure gauge) | Integrated MS pressure gauge | Adapter plate for EN pressure gauge G1/8 | Adapter plate for EN pressure gauge G1/4 | Pressure sensor | Rotary knob with detent, lockable via accessories | Rotary knob with integrated lock | Silencer | | Flow direction from right to left |
| Code | | R | U | M | H | V | E... | VS | AG | A8 | A4 | AD... | AS | E11 | S | Z | |
| Service unit combinations | | | | | | | | | | | | | | | | | |
| MSB-FRC | 4 | ■ | - | ■ | - | ■ | - | - | ■ | - | - | - | ■ | - | - | ■ | msb4 |
| | 6 | ■ | ■ | ■ | - | ■ | - | - | ■ | - | - | - | ■ | - | - | ■ | msb6 |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Service unit combinations | | | | | | | | | | | | | | | | | |
| MSB | 4 | ■ | ■ | ■ | - | ■ | - | - | ■ | - | - | - | ■ | - | - | ■ | msb4 |
| | 6 | ■ | ■ | ■ | - | ■ | - | - | ■ | - | - | - | ■ | - | - | ■ | msb6 |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Individual devices | | | | | | | | | | | | | | | | | |
| Filter regulators MS-LFR | 4 | ■ | ■ | ■ | ■ | ■ | - | ■ | ■ | ■ | ■ | ■ | ■ | ■ | - | ■ | 8 |
| | 6 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | - | ■ | 8 |
| | 9 | - | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | - | ■ | 24 |
| | 12 | - | ■ | ■ | - | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | - | ■ | 36 |
| Filters MS-LF | 4 | ■ | ■ | ■ | ■ | ■ | - | - | - | - | - | - | - | - | - | ■ | ms4-lf |
| | 6 | ■ | ■ | ■ | ■ | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms6-lf |
| | 9 | - | ■ | ■ | ■ | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms9-lf |
| | 12 | - | ■ | ■ | - | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms12-lf |
| Fine and micro filters MS-LFM | 4 | ■ | ■ | ■ | ■ | ■ | - | - | - | - | - | - | - | - | - | ■ | ms4-lfm |
| | 6 | ■ | ■ | ■ | ■ | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms6-lfm |
| | 9 | - | ■ | ■ | ■ | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms9-lfm |
| | 12 | - | ■ | ■ | - | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms12-lfm |
| Activated carbon filters MS-LFX | 4 | ■ | ■ | - | - | - | - | - | - | - | - | - | - | - | - | ■ | ms4-lfx |
| | 6 | ■ | ■ | - | - | - | - | - | - | - | - | - | - | - | - | ■ | ms6-lfx |
| | 9 | - | ■ | - | - | - | - | - | - | - | - | - | - | - | - | ■ | ms9-lfx |
| | 12 | - | ■ | - | - | - | - | - | - | - | - | - | - | - | - | ■ | ms12-lfx |
| Water separators MS-LWS | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | 6 | - | ■ | - | - | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms6-lws |
| | 9 | - | ■ | - | - | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms9-lws |
| | 12 | - | ■ | - | - | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms12-lws |

Filter regulators MS-LFR, MS series

Product range overview – MS series service units



| Type | Size | Pneumatic connection in housing | Connecting plate | Pressure regulation range [bar] | | | | | | Supply voltage | | | |
|---|------|---------------------------------|------------------|---------------------------------|--------------------|-----------------|-----------------|------------------|------------------|--|--|---|---|
| | | | | 0.05 ... 0.7 | 0.05 ... 2.5 | 0.1 ... 4 | 0.3 ... 7 | 0.1 ... 12 | 0.5 ... 16 | 24 V DC, connection pattern to EN 175301 | 24 V DC, connection M12 to IEC 61076-2-101 | 110 V AC, connection pattern to EN 175301 | 230 V AC, connection pattern to EN 175301 |
| Code | | | AG.../AQ... | D2 | D4 | D5 | D6 | D7 | D8 | V24 | V24P | V110 | V230 |
| Individual devices | | | | | | | | | | | | | |
| Pressure regulators MS-LR | | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | ■ | ■ | ■ | - | - | - | - |
| | | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | ■ | ■ | ■ | ■ | - | - | - |
| | | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | ■ | ■ | ■ | ■ | - | - | - |
| | | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | ■ | ■ | ■ | - | - | - |
| Pressure regulators MS-LRB | | 4 | G1/4 | G1/8, G1/4, G3/8 | - | - | ■ | ■ | ■ | - | - | - | - |
| | | 6 | G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | ■ | ■ | ■ | ■ | - | - | - |
| | | 9 | - | - | - | - | - | - | - | - | - | - | - |
| | | 12 | - | - | - | - | - | - | - | - | - | - | - |
| Precision pressure regulators MS-LRP | | 4 | - | - | - | - | - | - | - | - | - | - | - |
| | | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | ■ | ■ | ■ | - | ■ | - | - | - | - |
| | | 9 | - | - | - | - | - | - | - | - | - | - | - |
| | | 12 | - | - | - | - | - | - | - | - | - | - | - |
| Precision pressure regulators MS-LRPB | | 4 | - | - | - | - | - | - | - | - | - | - | - |
| | | 6 | G1/2 | G1/4, G3/8, G1/2, G3/4 | ■ | ■ | ■ | - | ■ | - | - | - | - |
| | | 9 | - | - | - | - | - | - | - | - | - | - | - |
| | | 12 | - | - | - | - | - | - | - | - | - | - | - |
| Electrical pressure regulators MS-LRE | | 4 | - | - | - | - | - | - | - | - | - | - | - |
| | | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | ■ | ■ | ■ | ■ | - | - | - |
| | | 9 | - | - | - | - | - | - | - | - | - | - | - |
| | | 12 | - | - | - | - | - | - | - | - | - | - | - |
| Lubricators MS-LOE | | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | - | - | - | - | - | - |
| | | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | - | - | - |
| | | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | - | - | - | - | - | - | - |
| | | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | - | - | - |
| On-off valves, manually actuated MS-EM(1) | | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | - | - | - | - | - | - |
| | | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | - | - | - |
| | | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | - | - | - | - | - | - | - |
| | | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | - | - | - |
| On-off valves, electrically actuated MS-EE | | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | - | - | - | ■ | - | ■ |
| | | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | ■ | - | ■ |
| | | 9 | G3/4, G1 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | - | - | - | - | - | - | ■ | ■ | ■ |
| | | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | ■ | ■ | ■ |
| Soft-start valves, pneumatically actuated MS-DL | | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | - | - | - | - | - | - |
| | | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | - | - | - |
| | | 9 | - | - | - | - | - | - | - | - | - | - | - |
| | | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | - | - | - |
| Soft-start valves, electrically actuated MS-DE | | 4 | G1/8, G1/4 | G1/8, G1/4, G3/8 | - | - | - | - | - | - | ■ | - | ■ |
| | | 6 | G1/4, G3/8, G1/2 | G1/4, G3/8, G1/2, G3/4 | - | - | - | - | - | - | ■ | - | ■ |
| | | 9 | - | - | - | - | - | - | - | - | - | - | - |
| | | 12 | - | G1, G1 1/4, G1 1/2, G2 | - | - | - | - | - | - | ■ | ■ | ■ |

Filter regulators MS-LFR, MS series

Product range overview – MS series service units



| Type | Size | Bowl guard | | Pressure indicator | | | | Security | | | Options | | → Page/ Internet |
|---|------|--------------------------------------|------------|--------------------------------------|------------------------------|--|--|-----------------|---|----------------------------------|----------|-----------------------------------|---------------------|
| | | Plastic bowl with plastic bowl guard | Metal bowl | Cover plate (without pressure gauge) | Integrated MS pressure gauge | Adapter plate for EN pressure gauge G1/8 | Adapter plate for EN pressure gauge G1/4 | Pressure sensor | Rotary knob with detent, lockable via accessories | Rotary knob with integrated lock | Silencer | Flow direction from right to left | |
| Code | | R | U | VS | AG | A8 | A4 | AD... | AS | E11 | S | Z | |
| Individual devices | | | | | | | | | | | | | |
| Pressure regulators MS-LR | 4 | - | - | ■ | ■ | ■ | ■ | ■ | ■ | ■ | - | ■ | ms4-lr |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | ■ | ■ | - | ■ | ms6-lr |
| | 9 | - | - | ■ | ■ | - | ■ | ■ | ■ | ■ | - | ■ | ms9-lr |
| | 12 | - | - | ■ | ■ | - | ■ | - | ■ | ■ | - | ■ | ms12-lr |
| Pressure regulators MS-LRB | 4 | - | - | ■ | ■ | ■ | ■ | ■ | ■ | ■ | - | ■ | ms4-lrb |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | ■ | ■ | - | ■ | ms6-lrb |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | - | - | - | - | - | - | - | - | - | - |
| Precision pressure regulators MS-LRP | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 6 | - | - | ■ | - | ■ | ■ | ■ | ■ | ■ | - | ■ | ms6-lrp |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | - | - | - | - | - | - | - | - | - | - |
| Precision pressure regulators MS-LRPB | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 6 | - | - | ■ | - | ■ | ■ | ■ | ■ | ■ | - | ■ | ms6-lrpb |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | - | - | - | - | - | - | - | - | - | - |
| Electrical pressure regulators MS-LRE | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 6 | - | - | ■ | ■ | - | ■ | - | - | - | - | ■ | ms6-lre |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | - | - | - | - | - | - | - | - | - | - |
| Lubricators MS-LOE | 4 | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms4-loe |
| | 6 | ■ | ■ | - | - | - | - | - | - | - | - | ■ | ms6-loe |
| | 9 | - | ■ | - | - | - | - | - | - | - | - | ■ | ms9-loe |
| | 12 | - | ■ | - | - | - | - | - | - | - | - | ■ | ms12-loe |
| On-off valves, manually actuated MS-EM(1) | 4 | - | - | ■ | ■ | ■ | ■ | ■ | - | - | ■ | ■ | ms4-em1 |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | - | - | ■ | ■ | ms6-em1 |
| | 9 | - | - | ■ | ■ | - | ■ | - | - | - | ■ | ■ | ms9-em |
| | 12 | - | - | ■ | ■ | - | ■ | - | - | - | ■ | ■ | ms12-em |
| On-off valves, electrically actuated MS-EE | 4 | - | - | ■ | ■ | ■ | ■ | ■ | - | - | ■ | ■ | ms4-ee |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | - | - | ■ | ■ | ms6-ee |
| | 9 | - | - | ■ | ■ | - | ■ | ■ | - | - | ■ | ■ | ms9-ee |
| | 12 | - | - | ■ | ■ | - | ■ | - | - | - | ■ | ■ | ms12-ee |
| Soft-start valves, pneumatically actuated MS-DL | 4 | - | - | ■ | ■ | ■ | ■ | ■ | - | - | - | ■ | ms4-dl |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | - | - | - | ■ | ms6-dl |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | ■ | ■ | - | ■ | - | - | - | - | ■ | ms12-dl |
| Soft-start valves, electrically actuated MS-DE | 4 | - | - | ■ | ■ | ■ | ■ | ■ | - | - | - | ■ | ms4-de |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | - | - | - | ■ | ms6-de |
| | 9 | - | - | - | - | - | - | - | - | - | - | - | - |
| | 12 | - | - | ■ | ■ | - | ■ | - | - | - | - | ■ | ms12-de |

Filter regulators MS-LFR, MS series

Product range overview – MS series service units



| Type | Size | Pneumatic connection in housing | Connecting plate | Performance Level | | | Supply voltage | | | | |
|---|------|---------------------------------|---|---|-----------------------|--|--|---|---|---|---|
| | | | | Category 1, 1-channel | Category 3, 2-channel | Category 4, 2-channel with self-monitoring | 24 V DC, connection pattern to EN 175301 | 24 V DC, connection M12 to IEC 61076-2-101/ to EN 60947-5-2 | 110 V AC, connection pattern to EN 175301 | 230 V AC, connection pattern to EN 175301 | |
| Code | | | AG.../AQ... | C | D | E | V24 | V24P | V110 | V230 | |
| Individual devices | | | | | | | | | | | |
| Soft start and exhaust valves MS-SV-C | | 4 | – | | | | | | | | |
| | | 6 | G $\frac{1}{2}$ | G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$ | ■ | – | – | ■ | ■ | ■ | ■ |
| | | 9 | G $\frac{3}{4}$, G1 | G $\frac{1}{2}$, G $\frac{3}{4}$, G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$ | ■ | – | – | ■ | ■ | ■ | ■ |
| | | 12 | – | | | | | | | | |
| Soft start and exhaust valves MS-SV-D | | 4 | – | | | | | | | | |
| | | 6 | G $\frac{1}{2}$ | G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$ | – | ■ | – | ■ | ■ | – | – |
| | | 9 | – | | | | | | | | |
| | | 12 | – | | | | | | | | |
| Soft start and exhaust valves MS-SV-E | | 4 | – | | | | | | | | |
| | | 6 | G $\frac{1}{2}$ | G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$ | – | – | ■ | ■ | – | – | – |
| | | 9 | – | | | | | | | | |
| | | 12 | – | | | | | | | | |
| Membrane air dryers MS-LDM1 | | 4 | G $\frac{1}{8}$, G $\frac{1}{4}$ | G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$ | – | – | – | – | – | – | – |
| | | 6 | G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$ | G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$ | – | – | – | – | – | – | – |
| | | 9 | – | | | | | | | | |
| | | 12 | – | | | | | | | | |
| Branching modules MS-FRM | | 4 | G $\frac{1}{8}$, G $\frac{1}{4}$ | G $\frac{1}{8}$, G $\frac{1}{4}$, G $\frac{3}{8}$ | – | – | – | – | – | – | – |
| | | 6 | G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$ | G $\frac{1}{4}$, G $\frac{3}{8}$, G $\frac{1}{2}$, G $\frac{3}{4}$ | – | – | – | – | – | – | – |
| | | 9 | G $\frac{3}{4}$, G1 | G $\frac{1}{2}$, G $\frac{3}{4}$, G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$ | – | – | – | – | – | – | – |
| | | 12 | – | G1, G1 $\frac{1}{4}$, G1 $\frac{1}{2}$, G2 | – | – | – | – | – | – | – |
| Distributor blocks MS-FRM-FRZ | | 4 | G $\frac{1}{4}$ | – | – | – | – | – | – | – | |
| | | 6 | G $\frac{1}{2}$ | – | – | – | – | – | – | – | |
| | | 9 | – | | | | | | | | |
| | | 12 | – | | | | | | | | |
| Flow sensors SFAM | | 4 | – | | | | | | | | |
| | | 6 | G $\frac{1}{2}$ | G $\frac{1}{2}$ | – | – | – | – | – | – | – |
| | | 9 | – | G1, G1 $\frac{1}{2}$ | – | – | – | – | – | – | – |
| | | 12 | – | | | | | | | | |

Filter regulators MS-LFR, MS series

Product range overview – MS series service units

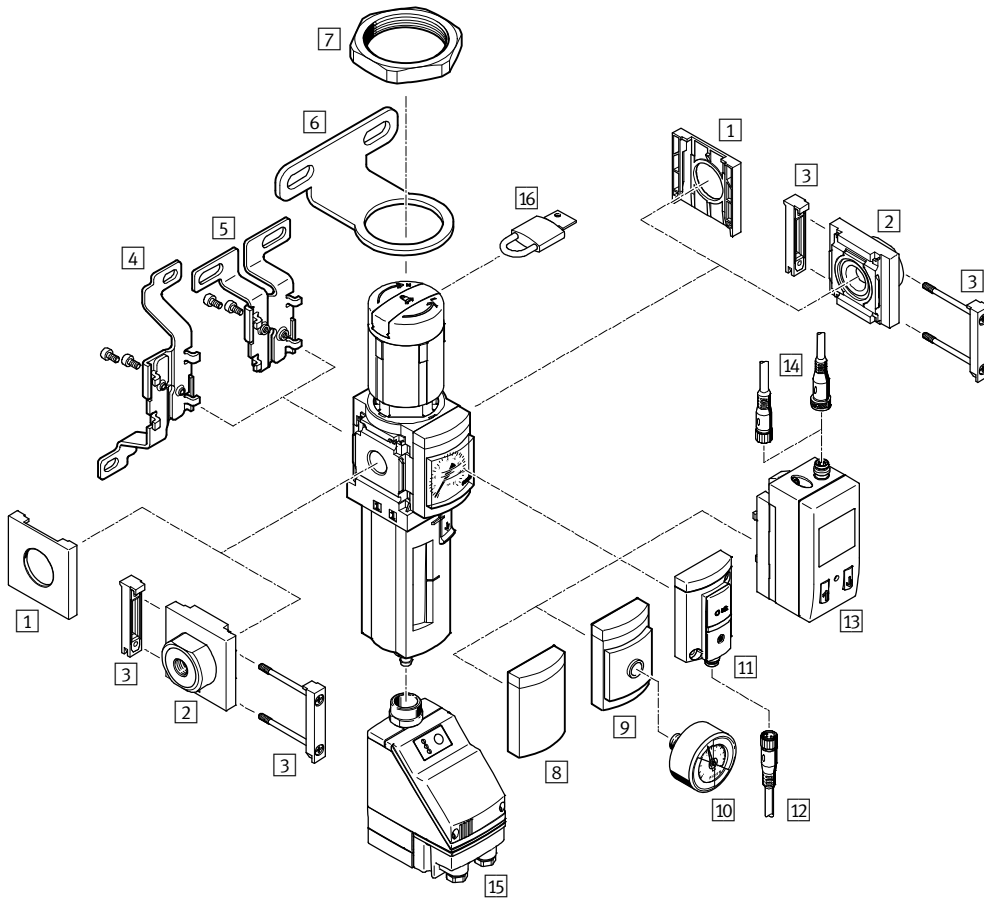



| Type | Size | Bowl guard | | Pressure indicator | | | | | Switch output | | | Options | | → Page/ Internet |
|---|------|--------------------------------------|------------|--------------------------------------|------------------------------|--|--|-----------------|--|---|----------|-----------------------------------|----------|---------------------|
| | | Plastic bowl with plastic bowl guard | Metal bowl | Cover plate (without pressure gauge) | Integrated MS pressure gauge | Adapter plate for EN pressure gauge G1/8 | Adapter plate for EN pressure gauge G1/4 | Pressure sensor | 2x PNP or NPN, 1 analogue output 4 ... 20 mA | 2x PNP or NPN, 1 analogue output 0 ... 10 V | Silencer | Flow direction from right to left | | |
| Code | | R | U | VS | AG | A8 | A4 | AD... | 2SA | 2SV | S | Z/R | | |
| Individual devices | | | | | | | | | | | | | | |
| Soft start and exhaust valves MS-SV-C | 4 | - | | | | | | | | | | | | |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | - | - | ■ | ■ | ms6-sv | |
| | 9 | - | - | ■ | ■ | - | ■ | ■ | - | - | ■ | ■ | ms9-sv | |
| | 12 | - | | | | | | | | | | | - | |
| Soft start and exhaust valves MS-SV-D | 4 | - | | | | | | | | | | | - | |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | - | - | ■ | ■ | ms6-sv | |
| | 9 | - | | | | | | | | | | | - | |
| | 12 | - | | | | | | | | | | | - | |
| Soft start and exhaust valves MS-SV-E | 4 | - | | | | | | | | | | | - | |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | - | - | ■ | ■ | ms6-sv | |
| | 9 | - | | | | | | | | | | | - | |
| | 12 | - | | | | | | | | | | | - | |
| Membrane air dryers MS-LDM1 | 4 | - | ■ | - | - | - | - | - | - | - | - | ■ | ms4-ldm1 | |
| | 6 | - | ■ | - | - | - | - | - | - | - | - | ■ | ms6-ldm1 | |
| | 9 | - | | | | | | | | | | | - | |
| | 12 | - | | | | | | | | | | | - | |
| Branching modules MS-FRM | 4 | - | - | ■ | ■ | ■ | ■ | ■ | - | - | - | ■ | ms4-frm | |
| | 6 | - | - | ■ | ■ | - | ■ | ■ | - | - | - | ■ | ms6-frm | |
| | 9 | - | - | ■ | ■ | - | ■ | ■ | - | - | - | ■ | ms9-frm | |
| | 12 | - | - | ■ | - | - | - | - | - | - | - | - | ms12-frm | |
| Distributor blocks MS-FRM-FRZ | 4 | - | - | - | - | - | - | - | - | - | - | ■ | ms4-frm | |
| | 6 | - | - | - | - | - | - | - | - | - | - | ■ | ms6-frm | |
| | 9 | - | | | | | | | | | | | - | |
| | 12 | - | | | | | | | | | | | - | |
| Flow sensors SFAM | 4 | - | | | | | | | | | | | - | |
| | 6 | - | - | - | - | - | - | - | ■ | ■ | - | ■ | sfam-62 | |
| | 9 | - | - | - | - | - | - | - | ■ | ■ | - | ■ | sfam-90 | |
| | 12 | - | | | | | | | | | | | - | |

Filter regulators MS4/MS6-LFR, MS series

Peripherals overview

Filter regulator MS4/MS6-LFR



-  - Note

Additional accessories:

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

Filter regulators MS4/MS6-LFR, MS series

Peripherals overview

| Mounting attachments and accessories | | | | | | |
|--------------------------------------|---|--------------------------|-----------------------|--------------------------|-----------------------|---------------------|
| | | Individual device | | Combination | | → Page/ Internet |
| | | Without connecting plate | With connecting plate | Without connecting plate | With connecting plate | |
| 1 | Cover cap MS4/6-END | ■ | - | ■ | - | ms4-end, ms6-end |
| 2 | Connecting plate-SET MS4/6-AG... | - | ■ | - | ■ | ms4-ag, ms6-ag |
| | Connecting plate-SET MS4/6-AQ... | - | ■ | - | ■ | ms4-aq, ms6-aq |
| 3 | Module connector MS4/6-MV | - | ■ | ■ | ■ | ms4-mv, ms6-mv |
| 4 | Mounting bracket MS4/6-WB | ■ | ■ | - | - | ms4-wb, ms6-wb |
| 5 | Mounting bracket MS4-WBM | ■ | ■ | - | - | ms4-wbm |
| 6 | Mounting bracket MS4/6-WR | ■ | ■ | - | - | ms4-wr, ms6-wr |
| 7 | Hex nut MS4/6-WRS | ■ | ■ | ■ | ■ | ms4-wrs, ms6-wrs |
| 8 | Cover plate VS | ■ | ■ | ■ | ■ | 22 |
| 9 | Adapter plate for EN pressure gauge 1/8/1/4 A8/A4 | ■ | ■ | ■ | ■ | 22 |
| 10 | Pressure gauge MA | ■ | ■ | ■ | ■ | 47 |
| 11 | Pressure sensor without display AD7 ... AD10 | ■ | ■ | ■ | ■ | 22 |
| 12 | Connecting cable NEBU-M8...-LE3 | ■ | ■ | ■ | ■ | 47 |
| 13 | Pressure sensor with display AD1 ... AD4 | ■ | ■ | ■ | ■ | 22 |
| 14 | Connecting cable NEBU-M8...-LE3/NEBU-M12...-LE4 | ■ | ■ | ■ | ■ | 47 |
| 15 | Fully automatic condensate drain, electrically actuated E2/E3/E4 | ■ | ■ | ■ | ■ | 22 |
| 16 | Padlock LRVS-D | ■ | ■ | ■ | ■ | 47 |
| - | Mounting bracket MS4/6-WP/WPB/WPE/WPM | - | ■ | ■ | ■ | ms4-wp, ms6-wp |

Filter regulators MS4/MS6-LFR, MS series

FESTO

Type codes

MS 6 - LFR - 1/2 - D7 - E R M - AS

| Series | |
|--------|-----------------------|
| MS | Standard service unit |

| Size | |
|------|----------------------|
| 4 | Grid dimension 40 mm |
| 6 | Grid dimension 62 mm |

| Service function | |
|------------------|------------------|
| LFR | Filter regulator |

| Pneumatic connection | |
|----------------------|-------------|
| MS4 | |
| 1/8 | Thread G1/8 |
| 1/4 | Thread G1/4 |
| MS6 | |
| 1/4 | Thread G1/4 |
| 3/8 | Thread G3/8 |
| 1/2 | Thread G1/2 |

| Pressure regulation range | |
|---------------------------|--|
| D6 | Pressure regulation range 0.3 ... 7 bar |
| D7 | Pressure regulation range 0.5 ... 12 bar |

| Grade of filtration | |
|---------------------|-------|
| C | 5 µm |
| E | 40 µm |

| Bowl guard | |
|------------|--------------------------|
| R | Plastic bowl guard |
| U | Integrated as metal bowl |

| Condensate drain | |
|------------------|-----------------|
| M | Manual rotary |
| V | Fully automatic |

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

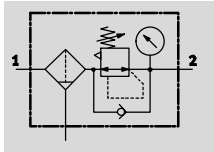
Additional variants can be ordered using the modular system → 22

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

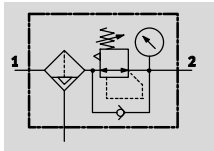
Filter regulators MS4/MS6-LFR, MS series

Technical data

Manual rotary condensate drain, with pressure gauge



Semi or fully automatic condensate drain, with pressure gauge



With this device, the filter and pressure regulator are combined into a single unit. The sintered filter with water separator removes contamination, pipe sinter, rust and condensate from the compressed air.

- - Flow rate
850 ... 7,200 l/min

- - Temperature range
-10 ... +60 °C

- - Operating pressure
0.8 ... 20 bar

- - www.festo.com

Wearing parts kits
→ 21



- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Available with or without secondary venting
- High flow rate
- Directly-actuated diaphragm regulator
- Four pressure regulation ranges: 0.3 ... 4 bar, 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Regulator lock for protecting the values against adjustment
- Two pressure gauge connections for different fitting options
- Return flow option for exhausting from output 2 to output 1 already integrated
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 46

| General technical data | | |
|--------------------------------|---|--|
| Size | MS4 | MS6 |
| Pneumatic connection 1, 2 | Female thread | G1/8 or G1/4 |
| | Connecting plate AG... | G1/8, G1/4 or G3/8 |
| | Connecting plate AQ... | NPT1/8, NPT1/4 or NPT3/8 |
| Constructional design | Filter regulator with/without pressure display | |
| Regulating function | Output pressure constant, with return flow action, with/without secondary venting | |
| Type of mounting | Via accessories | |
| | In-line installation | |
| | Front panel mounting | |
| Mounting position | Vertical ±5° | |
| Grade of filtration [µm] | 5 | |
| | 40 | |
| Air purity class at the output | Compressed air in accordance with ISO 8573-1:2010 [6:4:4] (Grade of filtration 5 µm) | |
| | Compressed air in accordance with ISO 8573-1:2010 [7:4:4] (Grade of filtration 40 µm) | |
| Bowl guard | Plastic bowl guard | |
| | Integrated as metal bowl | |
| Condensate drain | Manual rotary | |
| | Semi-automatic | |
| | Fully automatic | |
| | - | Fully automatic, electrically actuated |
| Regulator lock | Rotary knob with detent | |
| | Rotary knob with detent, lockable via accessories | |
| | Rotary knob with integrated lock | |

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

Filter regulators MS4/MS6-LFR, MS series

FESTO

Technical data

| General technical data | | |
|---------------------------|---|---|
| Size | MS4 | MS6 |
| Pressure regulation range | D5 [bar] | 0.3 ... 4 |
| | D6 [bar] | 0.3 ... 7 |
| | D7 [bar] | 0.5 ... 12 (0.5 ... 10 with pressure sensor variant AD... or with UL certification) |
| | D8 [bar] | – |
| Max. hysteresis | [bar] | 0.25 |
| Pressure display | Via pressure sensor for displaying output pressure via LCD display and electrical output | |
| | Via pressure sensor for displaying output pressure via operational status indicator and electrical output | |
| | Via pressure gauge for displaying output pressure | |
| Max. condensate volume | [cm ³] | 19 (with plastic bowl guard) 25 (with metal bowl) |

| Standard nominal flow rate q_{nN}^1 [l/min] | | | | | | |
|---|-----------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Size | MS4 | | | MS6 | | |
| Pneumatic connection | G $\frac{3}{8}$ | G $\frac{1}{4}$ | | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| D5 – Pressure regulation range 0.3 ... 4 bar | | | | | | |
| Grade of filtration | 5 μ m | 900 ²⁾ | 1,800 ²⁾ | 2,000 ²⁾ | 5,500 ²⁾ | 6,900 ²⁾ |
| | 40 μ m | 1,100 ²⁾ | 1,900 ²⁾ | 2,200 ²⁾ | 6,000 ²⁾ | 7,200 ²⁾ |
| D6 – Pressure regulation range 0.3 ... 7 bar | | | | | | |
| Grade of filtration | 5 μ m | 900 | 1,500 | 2,700 | 5,000 | 5,600 |
| | 40 μ m | 1,000 | 1,700 | 2,800 | 5,700 | 6,200 |
| D7 – Pressure regulation range 0.5 ... 12 bar | | | | | | |
| Grade of filtration | 5 μ m | 850 | 1,200 | 2,200 | 3,500 | 4,000 |
| | 40 μ m | 900 | 1,500 | 2,500 | 4,000 | 4,500 |
| D8 – Pressure regulation range 0.5 ... 16 bar | | | | | | |
| Grade of filtration | 5 μ m | – | – | 2,000 | 3,300 | 3,800 |
| | 40 μ m | – | – | 2,300 | 3,500 | 4,000 |

- 1) Measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 1$ bar
 2) Measured at $p_1 = 10$ bar and $p_2 = 3$ bar, $\Delta p = 1$ bar

| Operating and environmental conditions | | | | | | | | |
|--|--|--|--|--|--|---------------------------------------|--|--|
| Condensate drain | Manual rotary | | Semi-automatic | | Fully automatic | | Fully automatic, electrical | |
| | M | | H | | V | | E2/E3/E4 | |
| Size | MS4 | MS6 | MS4 | MS6 | MS4 | MS6 | MS6 | |
| Operating pressure | [bar] | 0.8 ... 14 (0.8 ... 10) ¹⁾ | 0.8 ... 20 (0.8 ... 10) ¹⁾ | 1.5 ... 12 (1.5 ... 10) ¹⁾ | 1.5 ... 12 (1.5 ... 10) ¹⁾ | 2 ... 12 (2 ... 10) ¹⁾ | 2 ... 12 (2 ... 10) ¹⁾ | 0.8 ... 16 (0.8 ... 10) ¹⁾ |
| Operating medium | Compressed air in accordance with ISO 8573-1:2010 [-:4:-] | | Compressed air in accordance with ISO 8573-1:2010 [-:4:-] | | Compressed air in accordance with ISO 8573-1:2010 [7:4:-] | | Compressed air in accordance with ISO 8573-1:2010 [-:4:-] | |
| | Inert gases | | | | | | | |
| Ambient temperature | [°C] | -10 ... +60 (0 ... +50) ²⁾ | | +5 ... +60 (+5 ... +50) ²⁾ | | +5 ... +60 (+5 ... +50) ²⁾ | | +1 ... +60 (+1 ... +50) ²⁾ |
| Temperature of medium | [°C] | -10 ... +60 (0 ... +50) ²⁾ | | +5 ... +60 (+5 ... +50) ²⁾ | | +5 ... +60 (+5 ... +50) ²⁾ | | +1 ... +60 (+1 ... +50) ²⁾ |
| Storage temperature | [°C] | -10 ... +60 | | -10 ... +60 | | -10 ... +60 | | +1 ... +60 |
| Corrosion resistance class CRC ³⁾ | | 2 | | | | | | |
| UL certification | | cULus recognized (OL) | | | | | | |

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

Filter regulators MS4/MS6-LFR, MS series

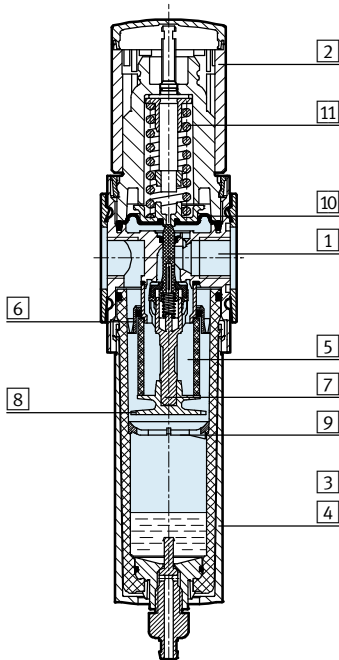
Technical data

| ATEX | |
|---|---|
| EU certification | EX4 |
| ATEX category gas | II 2G |
| Ex-ignition protection type gas | c T6 X |
| ATEX category dust | II 2D |
| EX-ignition protection type dust | c 60 °C X |
| ATEX ambient temperature | -10 °C ≤ Ta ≤ +60 °C (manual rotary condensate drain M) |
| | +5 °C ≤ Ta ≤ +60 °C (semi-automatic/fully automatic condensate drain H/V) |
| CE mark (see declaration of conformity) | To EU Explosion Protection Directive (ATEX) |

| Weight [g] | | | | |
|---|-----------------------------|--------------------------|-----------------------------|--------------------------|
| Size | MS4 | | MS6 | |
| Rotary knob | Without integrated lock E11 | With integrated lock E11 | Without integrated lock E11 | With integrated lock E11 |
| Filter regulator with plastic bowl guard R | 275 | 400 | 875 | 1,145 |
| Filter regulator with metal bowl U | 475 | 600 | 1,087 | 1,627 |
| Filter regulator with metal bowl U and fully automatic condensate drain, electrically actuated E2/E3/E4 | - | - | 1,800 | 2,070 |

Materials

Sectional view



| Filter regulator | | |
|-------------------|--------------------------------------|--|
| 1 | Housing | Die-cast aluminium |
| 2 | Rotary knob | PA/POM |
| | Rotary knob with integrated lock E11 | Aluminium |
| 3 | Plastic bowl guard | PC |
| 4 | Metal bowl | Wrought aluminium alloy, die-cast aluminium |
| | Inspection window | PA |
| 5 | Filter element | PE |
| 6 | Spin disc | POM |
| 7 | Filter holder | POM |
| 8 | Separating plate | POM |
| 9 | Stabilising disc | POM |
| 10 | Diaphragm | NBR |
| 11 | Spring | Steel |
| - | Seals | NBR |
| Note on materials | | RoHS-compliant (not with variant E2, E3 or E4) |
| | | Free of copper and PTFE only with cover plate VS |

Filter regulators MS4/MS6-LFR, MS series

Technical data



Standard flow rate q_n as a function of output pressure p_2

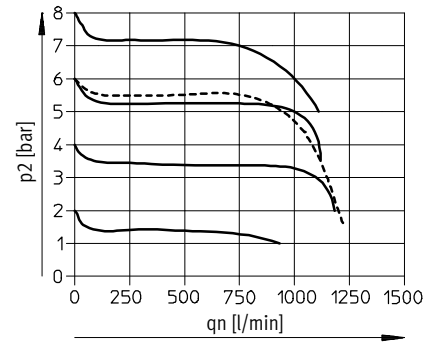
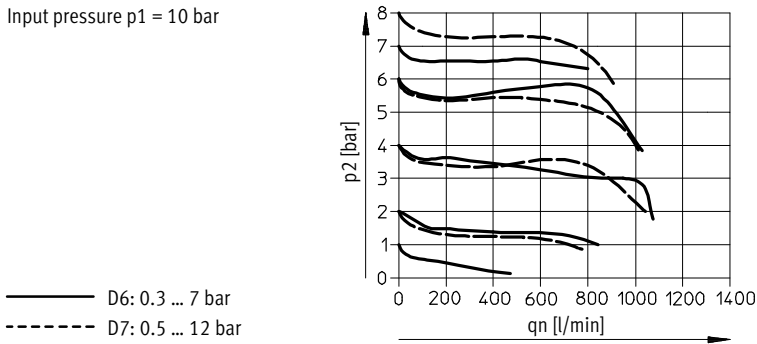
Pressure regulation range D6 or D7

Grade of filtration 5 μm

Grade of filtration 40 μm

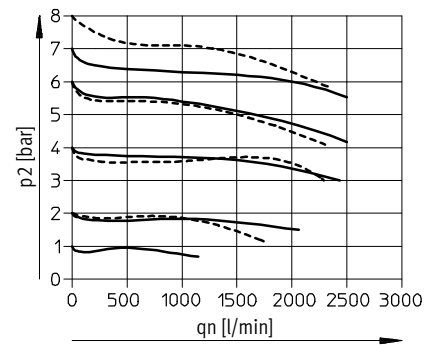
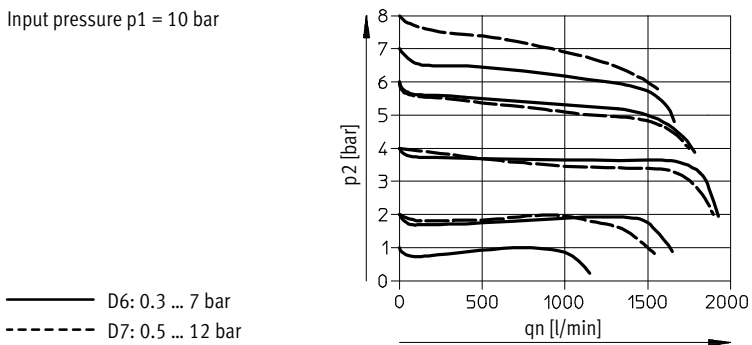
MS4-LFR-1/8

Input pressure $p_1 = 10$ bar



MS4-LFR-1/4

Input pressure $p_1 = 10$ bar



Filter regulators MS4/MS6-LFR, MS series

Technical data

Standard flow rate q_n as a function of output pressure p_2

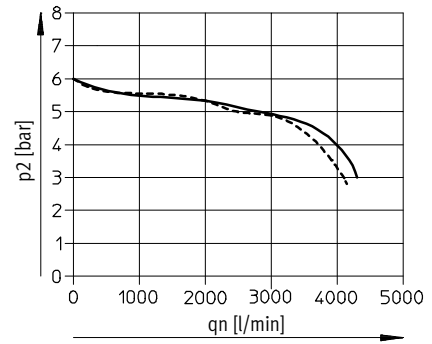
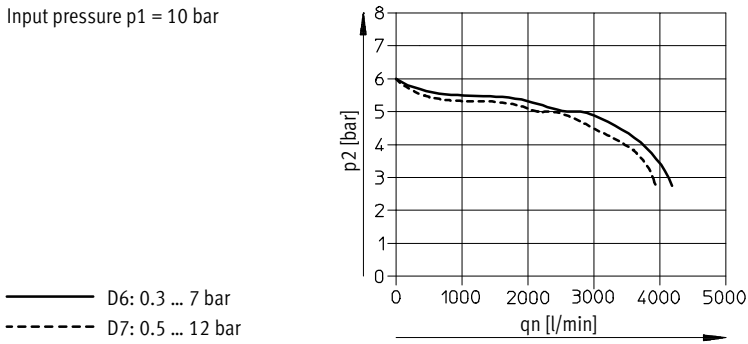
Pressure regulation range D6 or D7

Grade of filtration 5 μm

Grade of filtration 40 μm

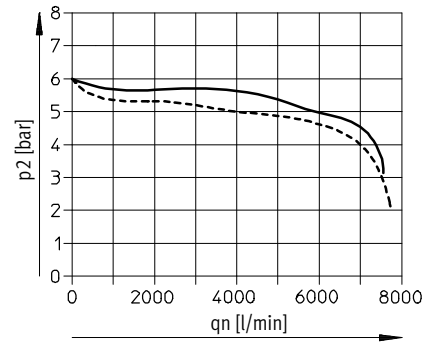
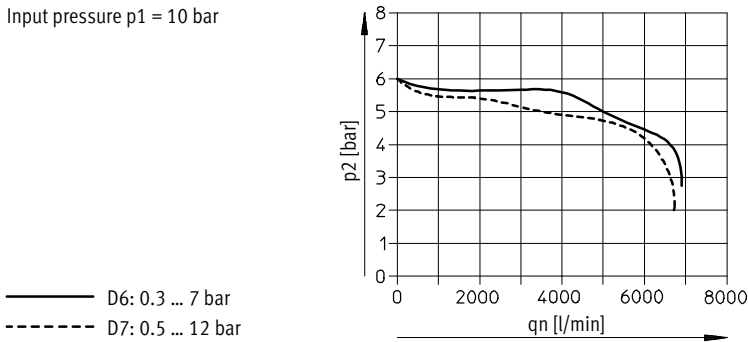
MS6-LFR-1/4

Input pressure $p_1 = 10$ bar



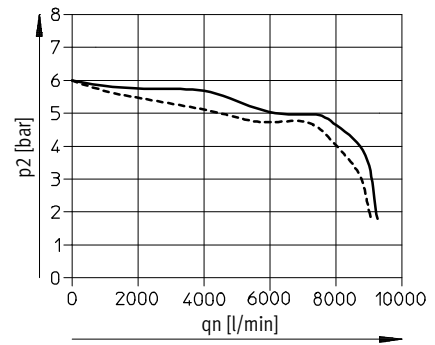
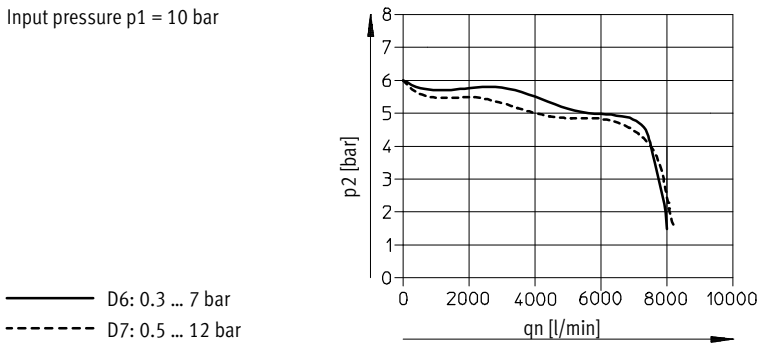
MS6-LFR-3/8

Input pressure $p_1 = 10$ bar



MS6-LFR-1/2

Input pressure $p_1 = 10$ bar



Filter regulators MS4/MS6-LFR, MS series

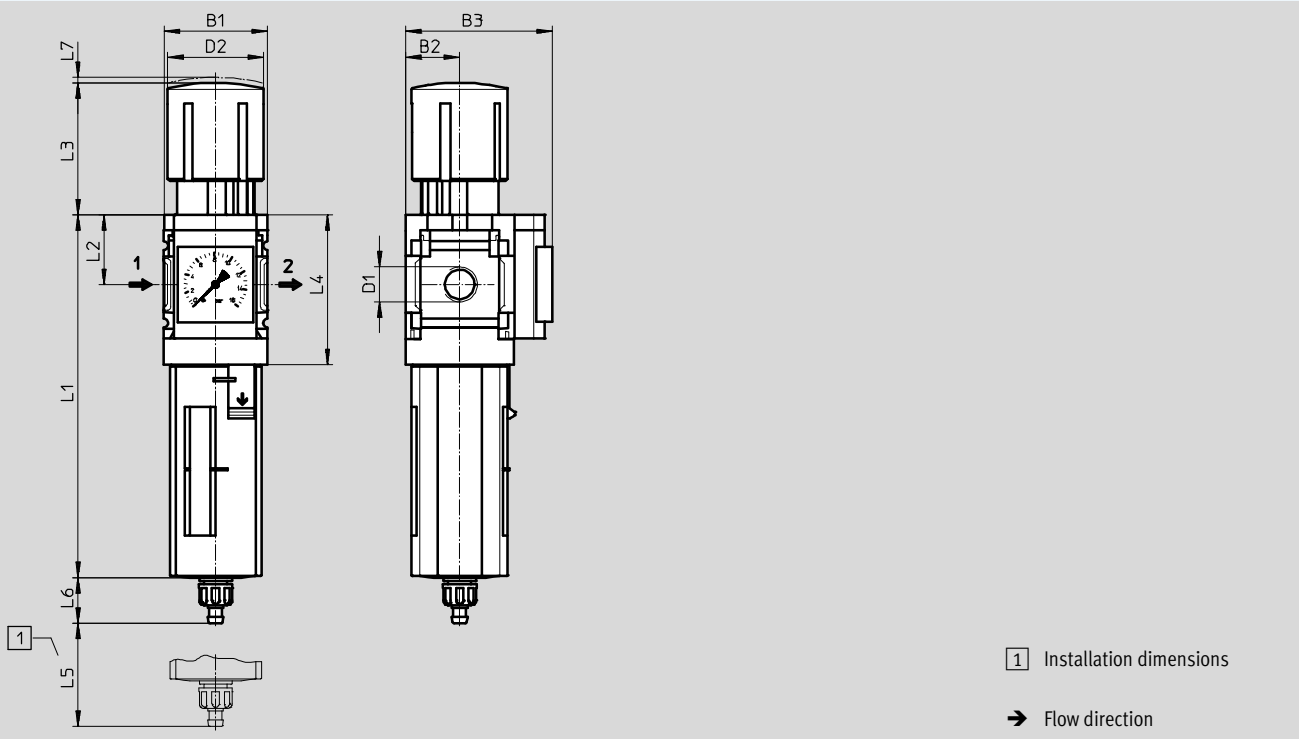
Technical data

FESTO

Dimensions – Standard

Download CAD data → www.festo.com

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



| Type | B1 | B2 | B3 | | D1 | D2 | L1 | | L2 | L3 | L4 | L5 | L6 | | L7 |
|-------------|----|----|----------------|-----------------|------|------|---------|-------|----|------|------|----|------------|-------|----|
| | | | Pressure gauge | | | | Plastic | Metal | | | | | Bowl guard | | |
| | | | Standard scale | Red-green scale | | | | | | | | | Plastic | Metal | |
| MS4-LFR-1/8 | 40 | 21 | 57 | 58.5 | G1/8 | 37.2 | 140.6 | 158.2 | 27 | 51.1 | 58.5 | 25 | 17.7 | 17.7 | 2 |
| MS4-LFR-1/4 | | | | | | | | | | | | | | | |
| MS6-LFR-1/4 | 62 | 31 | 77 | 78.5 | G1/4 | 51 | 189 | 194.4 | 39 | 86 | 84 | 68 | 15.8 | 19 | 5 |
| MS6-LFR-3/8 | | | | | G3/8 | | | | | | | | | | |
| MS6-LFR-1/2 | | | | | G1/2 | | | | | | | | | | |

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

Filter regulators MS4/MS6-LFR, MS series

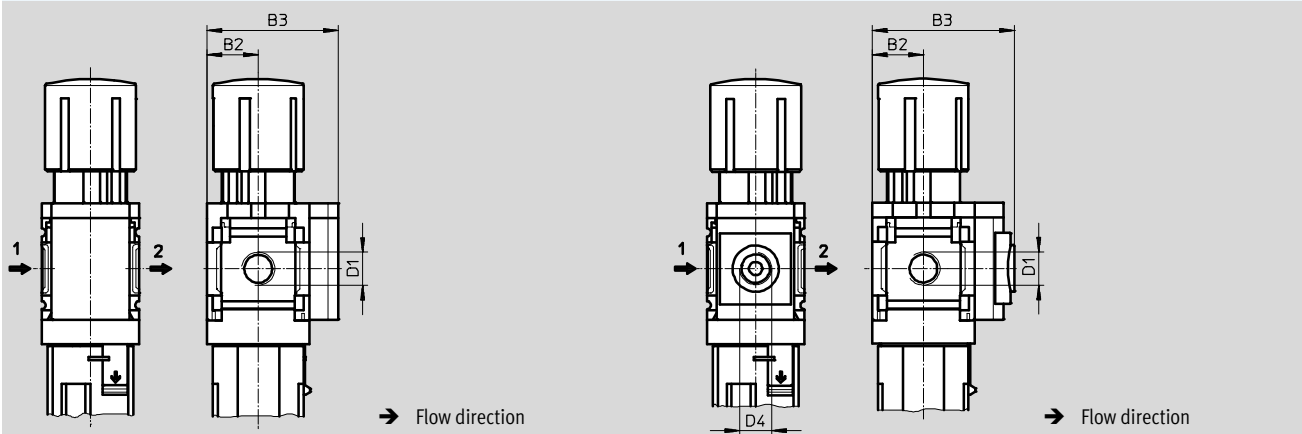
Technical data

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Cover plate VS

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



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

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

Filter regulators MS4/MS6-LFR, MS series

Technical data



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

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

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

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

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

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

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

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

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

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

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

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

Filter regulators MS4/MS6-LFR, MS series

Technical data

Dimensions – Rotary knob

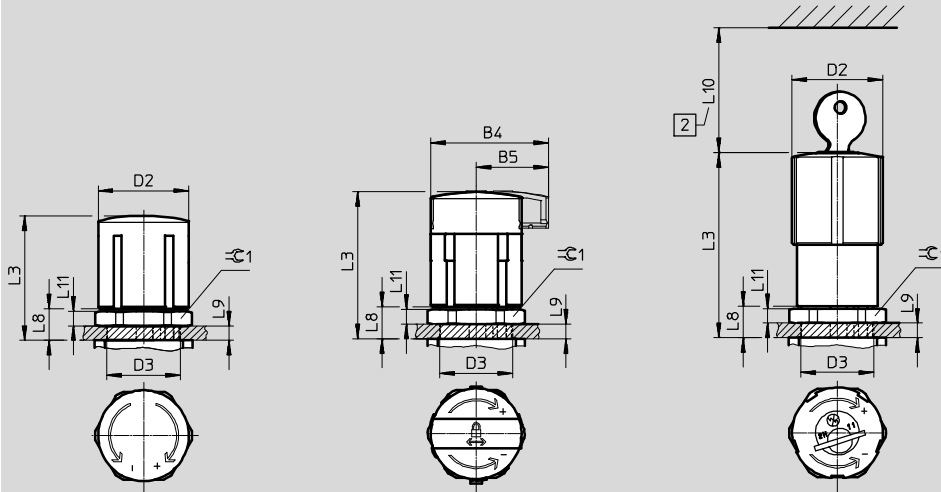
Download CAD data → www.festo.com

For installation into control panel or attaching with hex nut MS4/6-WRS (not included in the scope of delivery)

Standard rotary knob with detent

Standard rotary knob with detent,
lockable via accessories AS

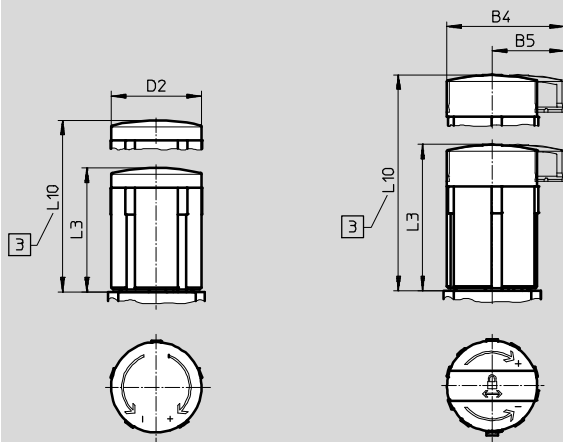
Rotary knob with integrated lock
E11



2 Installation dimensions

Long rotary knob with detent LD

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



3 For pressure adjustment: pull out telescopic rotary knob fully

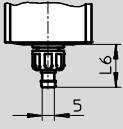
| Type | B4 | B5 | D2 | D3 +1 | L3 | L8 | L9 | L10 | L11 | ≈± 1 |
|-------------------|------|------|------|----------|-------|----|----|-------|-----|------|
| MS4-LFR-... | - | - | 37.2 | 30 | 51.1 | 13 | 6 | - | 6 | 36 |
| MS4-LFR-...-AS | 48.3 | 29.7 | | | 60.2 | | | | | |
| MS4-LFR-...-E11 | - | - | | | 76 | | | 60 | | |
| MS4-LFR-...-LD | - | - | 37.2 | - | 51.1 | - | - | 76.8 | - | - |
| MS4-LFR-...-LD-AS | 48.3 | 29.7 | | | 60.2 | | | 85.7 | | |
| MS6-LFR-... | - | - | 51 | 44 | 86 | 22 | 14 | - | 7 | 55 |
| MS6-LFR-...-AS | 64.4 | 39 | | | 95.5 | | | | | |
| MS6-LFR-...-E11 | - | - | 51.8 | - | 112.1 | - | - | 60 | - | - |
| MS6-LFR-...-LD | - | - | 51 | - | 86 | - | - | 139 | - | - |
| MS6-LFR-...-LD-AS | 64.4 | 39 | | | 95.5 | | | 148.5 | | |

Filter regulators MS4/MS6-LFR, MS series

Technical data

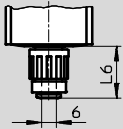
Dimensions – Condensate drain Download CAD data → www.festo.com

Manual rotary M



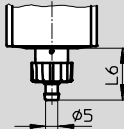
Barbed fitting for plastic tubing
PCN-4

Semi-automatic H



QS fitting for plastic tubing
PUN-6/PAN-6

Fully automatic V



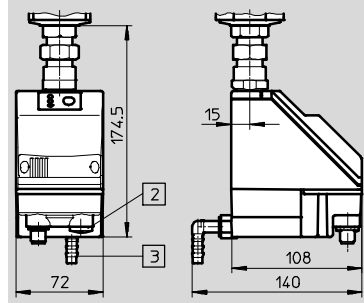
Barbed fitting for plastic tubing
PCN-4

| Type | L6 |
|---------------------------|------|
| Plastic bowl guard | |
| MS4-LFR-...-M | 17.7 |
| MS6-LFR-...-M | 15.8 |
| Metal bowl | |
| MS4-LFR-...-M | 17.7 |
| MS6-LFR-...-M | 19 |

| Type | L6 |
|---------------------------|------|
| Plastic bowl guard | |
| MS4-LFR-...-H | 22.1 |
| MS6-LFR-...-H | 20.2 |
| Metal bowl | |
| MS4-LFR-...-H | 22.1 |
| MS6-LFR-...-H | 22.8 |

| Type | L6 |
|---------------------------|------|
| Plastic bowl guard | |
| MS4-LFR-...-V | 20.4 |
| MS6-LFR-...-V | 18.5 |
| Metal bowl | |
| MS4-LFR-...-V | 20.4 |
| MS6-LFR-...-V | 22 |

Fully automatic, electrically actuated E2/E3/E4 Technical data → Internet: pwea



- Condensate drain PWEA:
- 2 Electrical connection: Screw terminal PG9
 - 3 Connection 360° rotatable for plastic tubing PUN-H-12x2

Filter regulators MS4/MS6-LFR, MS series

Technical data

| Ordering data | | | | | | |
|--|------------------|-----------------|--------------------------|-----------------------------------|---------------------------|-----------------------------------|
| Pressure regulation range 0.3 ... 7 bar, integrated pressure gauge, display unit [bar], standard rotary knob with detent, lockable via accessories | | | | | | |
| Size | Condensate drain | Connection | Grade of filtration 5 µm | | Grade of filtration 40 µm | |
| | | | Part No. | Type | Part No. | Type |
| Plastic bowl guard | | | | | | |
| MS4 | Manual rotary | G $\frac{1}{8}$ | 529160 | MS4-LFR- $\frac{1}{8}$ -D6-CRM-AS | 529164 | MS4-LFR- $\frac{1}{8}$ -D6-ERM-AS |
| | | G $\frac{1}{4}$ | 529144 | MS4-LFR- $\frac{1}{4}$ -D6-CRM-AS | 529148 | MS4-LFR- $\frac{1}{4}$ -D6-ERM-AS |
| | Fully automatic | G $\frac{1}{8}$ | 529162 | MS4-LFR- $\frac{1}{8}$ -D6-CRV-AS | 529166 | MS4-LFR- $\frac{1}{8}$ -D6-ERV-AS |
| | | G $\frac{1}{4}$ | 529146 | MS4-LFR- $\frac{1}{4}$ -D6-CRV-AS | 529150 | MS4-LFR- $\frac{1}{4}$ -D6-ERV-AS |
| MS6 | Manual rotary | G $\frac{1}{4}$ | 529196 | MS6-LFR- $\frac{1}{4}$ -D6-CRM-AS | 529200 | MS6-LFR- $\frac{1}{4}$ -D6-ERM-AS |
| | | G $\frac{3}{8}$ | 529216 | MS6-LFR- $\frac{3}{8}$ -D6-CRM-AS | 529220 | MS6-LFR- $\frac{3}{8}$ -D6-ERM-AS |
| | | G $\frac{1}{2}$ | 529176 | MS6-LFR- $\frac{1}{2}$ -D6-CRM-AS | 529180 | MS6-LFR- $\frac{1}{2}$ -D6-ERM-AS |
| | Fully automatic | G $\frac{1}{4}$ | – | – | 529202 | MS6-LFR- $\frac{1}{4}$ -D6-ERV-AS |
| | | G $\frac{3}{8}$ | 529218 | MS6-LFR- $\frac{3}{8}$ -D6-CRV-AS | 529222 | MS6-LFR- $\frac{3}{8}$ -D6-ERV-AS |
| | | G $\frac{1}{2}$ | 529178 | MS6-LFR- $\frac{1}{2}$ -D6-CRV-AS | 529182 | MS6-LFR- $\frac{1}{2}$ -D6-ERV-AS |

| Ordering data | | | | | | |
|---|------------------|-----------------|--------------------------|-----------------------------------|---------------------------|-----------------------------------|
| Pressure regulation range 0.5 ... 12 bar, integrated pressure gauge, display unit [bar], standard rotary knob with detent, lockable via accessories | | | | | | |
| Size | Condensate drain | Connection | Grade of filtration 5 µm | | Grade of filtration 40 µm | |
| | | | Part No. | Type | Part No. | Type |
| Plastic bowl guard | | | | | | |
| MS4 | Manual rotary | G $\frac{1}{8}$ | 529168 | MS4-LFR- $\frac{1}{8}$ -D7-CRM-AS | 529172 | MS4-LFR- $\frac{1}{8}$ -D7-ERM-AS |
| | | G $\frac{1}{4}$ | 529152 | MS4-LFR- $\frac{1}{4}$ -D7-CRM-AS | 529156 | MS4-LFR- $\frac{1}{4}$ -D7-ERM-AS |
| | Fully automatic | G $\frac{1}{8}$ | 529170 | MS4-LFR- $\frac{1}{8}$ -D7-CRV-AS | 529174 | MS4-LFR- $\frac{1}{8}$ -D7-ERV-AS |
| | | G $\frac{1}{4}$ | 529154 | MS4-LFR- $\frac{1}{4}$ -D7-CRV-AS | 529158 | MS4-LFR- $\frac{1}{4}$ -D7-ERV-AS |
| MS6 | Manual rotary | G $\frac{1}{4}$ | 529204 | MS6-LFR- $\frac{1}{4}$ -D7-CRM-AS | 529208 | MS6-LFR- $\frac{1}{4}$ -D7-ERM-AS |
| | | G $\frac{3}{8}$ | 529224 | MS6-LFR- $\frac{3}{8}$ -D7-CRM-AS | 529228 | MS6-LFR- $\frac{3}{8}$ -D7-ERM-AS |
| | | G $\frac{1}{2}$ | 529184 | MS6-LFR- $\frac{1}{2}$ -D7-CRM-AS | 529188 | MS6-LFR- $\frac{1}{2}$ -D7-ERM-AS |
| | Fully automatic | G $\frac{1}{4}$ | 529206 | MS6-LFR- $\frac{1}{4}$ -D7-CRV-AS | 529210 | MS6-LFR- $\frac{1}{4}$ -D7-ERV-AS |
| | | G $\frac{3}{8}$ | 529226 | MS6-LFR- $\frac{3}{8}$ -D7-CRV-AS | 529230 | MS6-LFR- $\frac{3}{8}$ -D7-ERV-AS |
| | | G $\frac{1}{2}$ | 529186 | MS6-LFR- $\frac{1}{2}$ -D7-CRV-AS | 529190 | MS6-LFR- $\frac{1}{2}$ -D7-ERV-AS |
| Integrated as metal bowl | | | | | | |
| MS4 | Manual rotary | G $\frac{1}{4}$ | – | – | 535724 | MS4-LFR- $\frac{1}{4}$ -D7-EUM-AS |
| | Fully automatic | G $\frac{1}{4}$ | 535720 | MS4-LFR- $\frac{1}{4}$ -D7-CUV-AS | 535722 | MS4-LFR- $\frac{1}{4}$ -D7-EUV-AS |
| MS6 | Manual rotary | G $\frac{3}{8}$ | – | – | 529232 | MS6-LFR- $\frac{3}{8}$ -D7-EUM-AS |
| | | G $\frac{1}{2}$ | 530338 | MS6-LFR- $\frac{1}{2}$ -D7-CUM-AS | 529192 | MS6-LFR- $\frac{1}{2}$ -D7-EUM-AS |
| | Fully automatic | G $\frac{3}{8}$ | 530348 | MS6-LFR- $\frac{3}{8}$ -D7-CUV-AS | 529234 | MS6-LFR- $\frac{3}{8}$ -D7-EUV-AS |
| | | G $\frac{1}{2}$ | 530340 | MS6-LFR- $\frac{1}{2}$ -D7-CUV-AS | 529194 | MS6-LFR- $\frac{1}{2}$ -D7-EUV-AS |

| Ordering data – Wearing parts kits | | |
|------------------------------------|----------|---------|
| Size | Part No. | Type |
| MS4 | 673647 | MS4-LFR |
| MS6 | 673648 | MS6-LFR |

Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products



M Mandatory data →

| Module No. | Series | Size | Function | Pneumatic connection | Pressure regulation range | Grade of filtration | Bowl | Condensate drain |
|--------------------------------|-----------|----------|--------------|--|---------------------------|---------------------|------------|------------------------|
| 526489 526490 | MS | 4 6 | LFR | 1/8, 1/4, 3/8, 1/2, AG..., AQ... | D5, D6, D7, D8 | E, C | R, U | M, H, V, E2, E3, E4 |
| Order example 526489 | MS | 4 | - LFR | - AGA | - D6 | - C | - R | - M |

Ordering table

| Grid dimension | [mm] | 40 | 62 | Condi- tions | Code | Enter code | |
|---------------------------|---------------------------------------|--------------------------------------|-------------------------|---------------------|-------------|---------------|--|
| M Module No. | | 526489 | 526490 | | | | |
| Series | | Standard | | | MS | MS | |
| Size | | 4 | 6 | | ... | | |
| Function | | Filter regulator | | | -LFR | -LFR | |
| Pneumatic connection | | Female thread G1/8 | - | 1 | -1/8 | | |
| | | Female thread G1/4 | Female thread G1/4 | 1 | -1/4 | | |
| | | - | Female thread G3/8 | 1 | -3/8 | | |
| | | - | Female thread G1/2 | 1 | -1/2 | | |
| | | Connecting plate G1/8 | - | | -AGA | | |
| | | Connecting plate G1/4 | Connecting plate G1/4 | | -AGB | | |
| | | Connecting plate G3/8 | Connecting plate G3/8 | | -AGC | | |
| | | - | Connecting plate G1/2 | | -AGD | | |
| | | - | Connecting plate G3/4 | | -AGE | | |
| | | Connecting plate NPT1/8 | - | 1 | -AQK | | |
| | | Connecting plate NPT1/4 | Connecting plate NPT1/4 | 1 | -AQN | | |
| | | Connecting plate NPT3/8 | Connecting plate NPT3/8 | 1 | -AQP | | |
| | | - | Connecting plate NPT1/2 | 1 | -AQR | | |
| | - | Connecting plate NPT3/4 | 1 | -AQS | | | |
| Pressure regulation range | | 0.3 ... 4 bar | | | -D5 | | |
| | | 0.3 ... 7 bar | | | -D6 | | |
| | | 0.5 ... 12 bar | | | -D7 | | |
| | | - | 0.5 ... 16 bar | 1 | -D8 | | |
| Grade of filtration | | 40 µm | | | -E | | |
| | | 5 µm | | | -C | | |
| Bowl | | Plastic bowl with plastic bowl guard | | | -R | | |
| | | Metal bowl | | | -U | | |
| Condensate drain | | Manual | | | -M | | |
| | | Semi-automatic (P1 max. 12 bar) | | 2 | -H | | |
| | | Fully automatic (P1 max. 12 bar) | | 2 | -V | | |
| | External, fully automatic, electrical | | - | 110 V AC, terminals | 1 3 | -E2 | |
| | | | - | 230 V AC, terminals | 1 3 | -E3 | |
| | | - | 24 V DC, terminals | 1 3 | -E4 | | |

1 1/8, 1/4, 3/8, 1/2, AQK, AQN, AQP, AQR, AQS, D8, E2, E3, E4, AD1 ... AD4, AD7 ... AD10, 3 E2, E3, E4 Only with metal bowl U

E11, WPM

Not with EU certification EX4

2 **H, V** Not with pressure regulation range D8

Transfer order code

| | | | | | | | | | | | | |
|--|-----------|--|---|------------|---|--|---|--|---|--|---|--|
| | MS | | - | LFR | - | | - | | - | | - | |
|--|-----------|--|---|------------|---|--|---|--|---|--|---|--|

Filter regulators MS4/MS6-LFR, MS series

Ordering data – Modular products



Options

| Pressure gauge alternatives | Alternative pressure gauge scale | Secondary venting | Rotary knob | Security | Type of mounting | EU certification | UL certification | Flow direction |
|---|----------------------------------|-------------------|-------------|----------|----------------------|------------------|------------------|----------------|
| VS, A8, A4, RG, AD1 ... AD4, AD7 ... AD10 | PSI, MPA | OS | LD | AS, E11 | WR, WP, WPM, WB, WBM | EX4 | UL1 | Z |
| - A8 | - | - | - LD | - AS | - WPM | - | - | - |

Ordering table

| Grid dimension | [mm] | 40 | 62 | Conditions | Code | Enter code |
|-------------------------------|--|-----|----|------------|-------|------------|
| 0 Pressure gauge alternatives | Cover plate | | | | -VS | |
| | Adapter plate for EN pressure gauge 1/8, without pressure gauge | | - | | -A8 | |
| | Adapter plate for EN pressure gauge 1/4, without pressure gauge | | | | -A4 | |
| | Integrated pressure gauge, red-green scale | | | 4 | -RG | |
| | Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin | | | 1 5 | -AD1 | |
| | Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin | | | 1 5 | -AD2 | |
| | Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA | | | 1 5 | -AD3 | |
| | Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA | | | 1 5 | -AD4 | |
| | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact | | | 1 5 | -AD7 | |
| | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact | | | 1 5 | -AD8 | |
| | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact | | | 1 5 | -AD9 | |
| | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact | | | 1 5 | -AD10 | |
| | Alternative pressure gauge scale | psi | | | 6 | -PSI |
| MPa | | | | 6 | -MPA | |
| Secondary venting | Without secondary venting | | | | -OS | |
| Rotary knob | Long rotary knob | | | 7 | -LD | |
| Security | Lockable via accessories | | | | -AS | |
| | With integrated lock | | | 1 | -E11 | |
| Type of mounting | Mounting bracket with knurled nut for regulator head | | | 8 | -WR | |
| | Mounting bracket standard design | | | 9 | -WP | |
| | Mounting bracket for attaching the service units | | | 1 9 | -WPM | |
| | Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required | | | | -WB | |
| | Mounting bracket centrally at rear (wall mounting top), connecting plates not required | | | | -WBM | |
| EU certification | II 2GD to EU Directive 94/9/EG | | | | -EX4 | |
| UL certification | cULus, ordinary location for Canada and USA | | | | -UL1 | |
| Flow direction | Flow direction from right to left | | | | -Z | |

4 RG Alternative pressure gauge scale PSI serves only as an auxiliary scale

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

Measuring range max. 10 bar

Not with pressure regulation range D8

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

7 LD Not with security E11

8 WR Not with long rotary knob LD

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

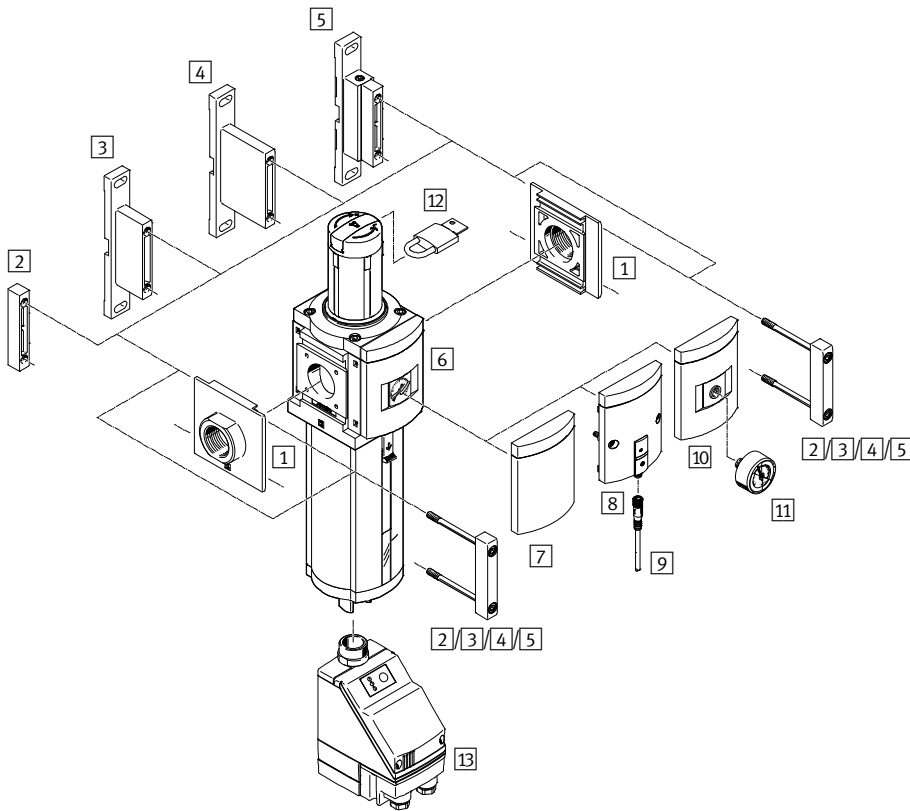
Transfer order code


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

Filter regulators MS9-LFR, MS series

Peripherals overview

FESTO



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

| Mounting attachments and accessories | | | | | |
|--------------------------------------|--|--------------------------------|---------------------------------|------------------------------|---------------------|
| | | Individual unit | | Combination | → Page/ Internet |
| | | With female thread 3/4 or 1 | With connecting plate AG... | | |
| | | | Without EU certification EX4 | With EU certification EX4 | |
| 1 | Connecting plate-SET MS9-AG... | - | ■ | ■ | ms9-ag |
| 2 | Module connector MS9-MV | - | - | - | ms9-mv |
| 3 | Mounting bracket MS9-WP | ■ | ■ | ■ | ms9-wp |
| 4 | Mounting bracket MS9-WPB | ■ | ■ | ■ | ms9-wp |
| 5 | Mounting bracket MS9-WPM | ■ | ■ | - | ms9-wp |
| 6 | MS pressure gauge AG | ■ | ■ | ■ | 34 |
| 7 | Cover plate VS | ■ | ■ | ■ | 34 |
| 8 | Pressure sensor without display AD7 ... AD10 | ■ | ■ | - | 34 |
| 9 | Connecting cable NEBU-M8...-LE3 | ■ | ■ | - | 47 |
| 10 | Adapter plate for EN pressure gauge 1/4 A4 | ■ | ■ | ■ | 34 |
| 11 | Pressure gauge MA | ■ | ■ | ■ | 47 |
| 12 | Padlock LRVS-D | ■ | ■ | ■ | 47 |
| 13 | Condensate drain, fully automatic, electrically actuated E2/E3/E4 | ■ | ■ | - | 34 |

Filter regulators MS9-LFR, MS series

Type codes

MS 9 - LFR - G - D6 - E U M - DI - AG - BAR - AS

Series

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

Size

| | |
|---|----------------------|
| 9 | Grid dimension 90 mm |
|---|----------------------|

Service function

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

Connection size

| | |
|---|--|
| G | Module without connecting thread, without connecting plate |
|---|--|

Pressure regulation range/operation mode

| | |
|----|-----------------------------------|
| D6 | 0.5 ... 7 bar, manually operated |
| D7 | 0.5 ... 12 bar, manually operated |

Grade of filtration

| | |
|---|-------|
| C | 5 µm |
| E | 40 µm |

Bowl guard

| | |
|---|--------------------------|
| U | Integrated as metal bowl |
|---|--------------------------|

Condensate drain

| | |
|---|-----------------|
| M | Manual rotary |
| V | Fully automatic |

Regulator type

| | |
|----|--|
| | Piloted |
| DI | Directly actuated (only with pressure regulation range D6) |

Pressure gauge

| | |
|----|-------------------|
| AG | MS pressure gauge |
|----|-------------------|

Pressure gauge scale

| | |
|-----|-----|
| BAR | Bar |
|-----|-----|

Security

| | |
|----|--|
| AS | Rotary knob with detent, can be locked using accessories |
|----|--|

Additional variants can be ordered using the modular system → 34

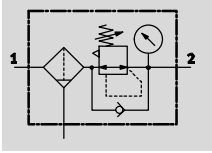
- Connecting plates
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Secondary venting
- Security lock
- Type of mounting
- EU certification
- UL certification
- Flow direction

Filter regulators MS9-LFR, MS series

Technical data

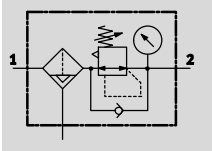
FESTO

Manual rotary condensate drain, with pressure gauge



- - Flow rate
6,000 ... 23,000 l/min
- - Temperature range
-10 ... +60 °C
- - Supply pressure
1 ... 20 bar

Semi or fully automatic condensate drain, with pressure gauge



With this component, the filter and pressure regulator are combined into a single unit. The sintered filter with water separator removes contamination, pipe sinter, rust and condensate from the compressed air.

- Good regulation characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- Piloted or directly actuated filter-diaphragm regulator
- High flow rates
- Available with or without secondary venting
- Four pressure regulation ranges: 0.5 ... 4 bar, 0.5 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Pressure gauge connection for different fitting options
- Available with manual, semi-automatic, fully automatic or fully automatic, electrically actuated condensate drain
- Actuator lock to protect set values against adjustment
- Optional pressure sensor
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 46
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22



| General technical data | | |
|--|--|---|
| Pneumatic connection 1, 2 | Female thread | G $\frac{3}{4}$ or G1 |
| | Connecting plate AG... | G $\frac{1}{2}$, G $\frac{3}{4}$, G1, G1 $\frac{1}{4}$ or G1 $\frac{1}{2}$ |
| | Module without connecting thread/plate G | - |
| Design | | Piloted filter-diaphragm regulator |
| | | Directly actuated filter-diaphragm regulator |
| Regulator type | Piloted | Output pressure constant, with return flow action, with primary pressure compensation, with secondary venting |
| | Directly actuated | Output pressure constant, with return flow action, with/without secondary venting |
| Type of mounting | | Via accessories |
| | | In-line installation |
| Mounting position | | Vertical $\pm 5^\circ$ |
| Grade of filtration | [µm] | 5 (air purity class at the output: compressed air in accordance with ISO 8573-1:2010 [6:4:4]) |
| | | 40 (air purity class at the output: compressed air in accordance with ISO 8573-1:2010 [7:4:4]) |
| Bowl guard | | Integrated as metal bowl |
| Condensate drain | | Manual rotary |
| | | Semi-automatic |
| | | Fully automatic |
| | | Fully automatic, electrically actuated |
| Security | | Rotary knob with detent |
| | | Rotary knob with detent, lockable via accessories |
| | | Rotary knob with integrated lock |
| Pressure regulation range/operation mode | D5 [bar] | 0.5 ... 4, manually operated |
| | D6 [bar] | 0.5 ... 7, manually operated |
| | D7 [bar] | 0.5 ... 12, manually operated (0.5 ... 10 with pressure sensor variant AD...) |
| | D8 [bar] | 0.5 ... 16, manually operated (0.5 ... 10 with pressure sensor variant AD...) |

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

Filter regulators MS9-LFR, MS series

FESTO

Technical data

| General technical data | |
|--------------------------------|---|
| Max. pressure hysteresis [bar] | 0.4 |
| Pressure display | Via pressure sensor for displaying output pressure via operational status indicator and electrical output |
| | Via pressure gauge for displaying output pressure |
| | Via pressure gauge with red/green scale for displaying output pressure |
| | G $\frac{3}{4}$ prepared |
| Max. condensate volume [ml] | 220 |

| Standard nominal flow rate $q_{nN^{1)2)}$ [l/min] | | | | | |
|---|------------------------------------|----------------------|----------------------|---|----------------------|
| Design | Piloted filter-diaphragm regulator | | | Directly actuated filter-diaphragm regulator DI | |
| Pneumatic connection | G $\frac{3}{4}$ | G1 | G $\frac{3}{4}$ | G1 | |
| D5 – Pressure regulation range 0.5 ... 4 bar | | | | | |
| Grade of filtration | 5 μ m | 17,000 ³⁾ | 20,000 ³⁾ | 16,000 ³⁾ | 18,000 ³⁾ |
| | 40 μ m | 18,000 ³⁾ | 23,000 ³⁾ | 16,000 ³⁾ | 20,000 ³⁾ |
| D6 – Pressure regulation range 0.5 ... 7 bar | | | | | |
| Grade of filtration | 5 μ m | 15,000 | 18,000 | 12,000 | 10,000 |
| | 40 μ m | 16,000 | 20,000 | 12,000 | 10,000 |
| D7 – Pressure regulation range 0.5 ... 12 bar | | | | | |
| Grade of filtration | 5 μ m | 15,000 | 18,000 | – | – |
| | 40 μ m | 16,000 | 20,000 | – | – |
| D8 – Pressure regulation range 0.5 ... 16 bar | | | | | |
| Grade of filtration | 5 μ m | 15,000 | 18,000 | – | – |
| | 40 μ m | 16,000 | 20,000 | – | – |

1) All values $\pm 15\%$

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

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

| Operating and environmental conditions | | | | |
|--|---|---|---|---|
| Condensate drain | Manual rotary | Semi-automatic | Fully automatic | Fully automatic, electrically actuated |
| | M | H | V | E2/E3/E4 |
| Operating pressure [bar] | 1 ... 20 | 1.5 ... 12 | 2 ... 12 | 1 ... 16 |
| Operating medium | Compressed air in accordance with ISO 8573-1:2010 [-:4:-] | Compressed air in accordance with ISO 8573-1:2010 [-:4:-] | Compressed air in accordance with ISO 8573-1:2010 [7:4:-] | Compressed air in accordance with ISO 8573-1:2010 [-:4:-] |
| Ambient temperature [°C] | -10 ... +60 | +5 ... +60 | +5 ... +60 | +1 ... +60 |
| Ambient temperature with pressure sensor AD [°C] | 0 ... +50 | +5 ... +50 | +5 ... +50 | +1 ... +50 |
| Temperature of medium [°C] | -10 ... +60 | +5 ... +60 | +5 ... +60 | +1 ... +60 |
| Temperature of medium with pressure sensor AD [°C] | 0 ... +50 | +5 ... +50 | +5 ... +50 | +1 ... +50 |
| Storage temperature [°C] | -10 ... +60 | +5 ... +60 | +5 ... +60 | +1 ... +60 |
| Corrosion resistance class CRC ¹⁾ | 2 | | | |
| Certification (variant UL1) | cULus recognized (OL) | | | |

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

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

| ATEX | |
|---|---|
| EU certification | EX4 |
| ATEX category gas | II 2G |
| Ex-ignition protection type gas | c T6 X |
| ATEX category dust | II 2D |
| EX-ignition protection type dust | c T60 °C X |
| ATEX ambient temperature | -10 °C \leq Ta \leq +60 °C (manual rotary condensate drain M) |
| | +5 °C \leq Ta \leq +60 °C (semi-automatic/fully automatic condensate drain H/V) |
| CE mark (see declaration of conformity) | To EU Explosion Protection Directive (ATEX) |

Filter regulators MS9-LFR, MS series

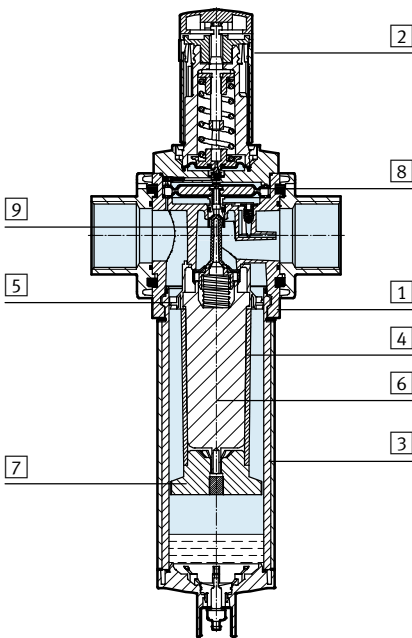
Technical data



| Weight [g] | | |
|---|-----------------------------|--------------------------|
| Rotary knob | Without integrated lock E11 | With integrated lock E11 |
| Filter regulator with metal bowl U | 2,400 | 2,700 |
| Filter regulator with metal bowl U and fully automatic condensate drain, electrically actuated E2/E3/E4 | 2,800 | 3,100 |

Materials

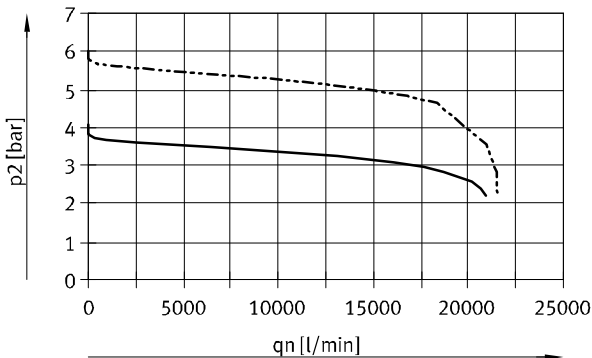
Sectional view



| Filter regulator | | |
|-------------------|--|--|
| 1 | Housing | Die-cast aluminium |
| 2 | Rotary knob | PA |
| | Rotary knob with integrated lock E11 | Aluminium |
| 3 | Bowl | Wrought aluminium alloy |
| | Inspection window | PA |
| 4 | Filter element | PE |
| 5 | Spin disc | POM |
| 6 | Filter holder | POM |
| 7 | Separating plate | POM |
| 8 | Diaphragm | NBR |
| 9 | Valve stem | Wrought aluminium alloy, NBR, POM |
| - | Cover | PA reinforced |
| - | Connecting plate, module connector, mounting bracket | Die-cast aluminium |
| - | Seals | NBR |
| Note on materials | | RoHS-compliant (not with variant E2, E3 or E4) |

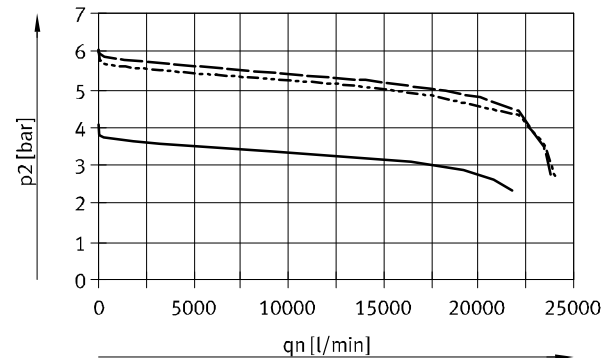
Standard flow rate q_n as a function of output pressure p_2 at operating pressure $p_1 = 10$ bar

Piloted filter-diaphragm regulator
Grade of filtration 5 μ m, pneumatic connection G $\frac{3}{4}$



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

Grade of filtration 40 μ m, pneumatic connection G $\frac{3}{4}$



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

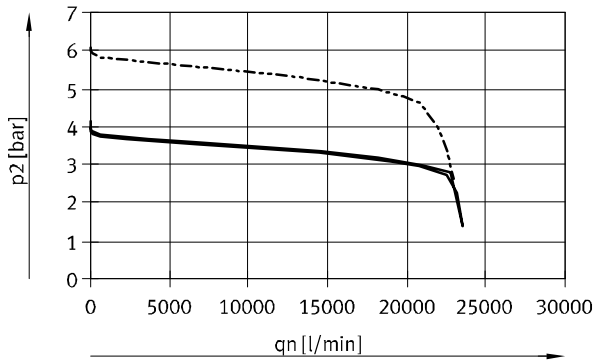
Filter regulators MS9-LFR, MS series

Technical data

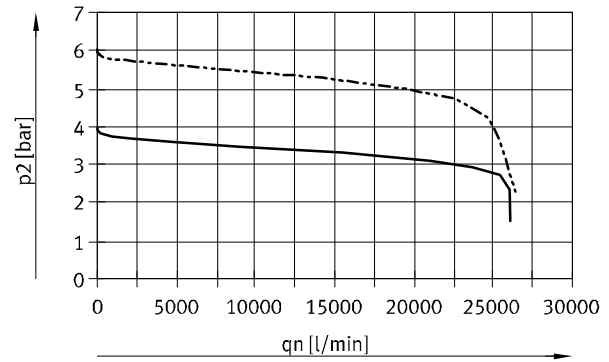
Standard flow rate q_n as a function of output pressure p_2 at operating pressure $p_1 = 10$ bar

Piloted filter-diaphragm regulator

Grade of filtration 5 μm , pneumatic connection G1



Grade of filtration 40 μm , pneumatic connection G1

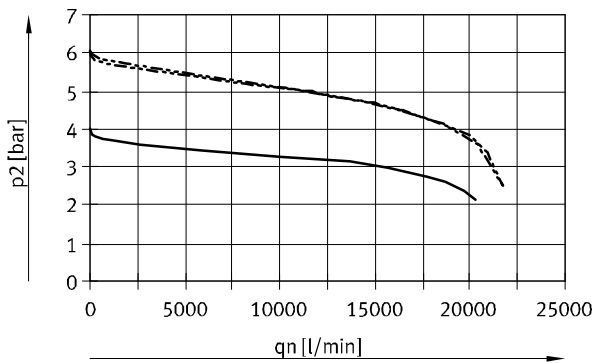


- D5: 0.5 ... 4 bar
- - - D6: 0.5 ... 7 bar,
- D7: 0.5 ... 12 bar,
- D8: 0.5 ... 16 bar

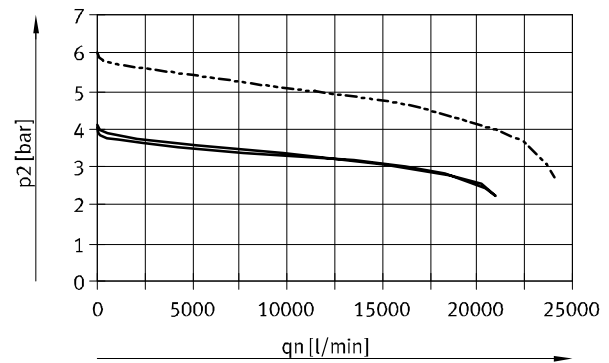
Standard flow rate q_n as a function of output pressure p_2 at operating pressure $p_1 = 10$ bar

Directly actuated filter-diaphragm regulator DI

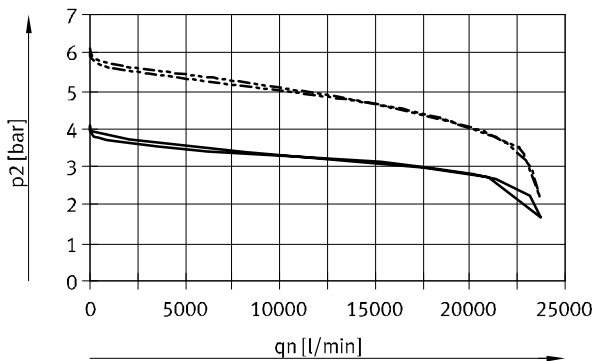
Grade of filtration 5 μm , pneumatic connection G $\frac{3}{4}$



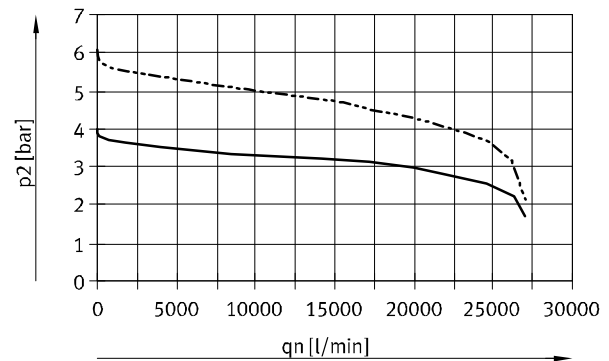
Grade of filtration 40 μm , pneumatic connection G $\frac{3}{4}$



Grade of filtration 5 μm , pneumatic connection G1



Grade of filtration 40 μm , pneumatic connection G1



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

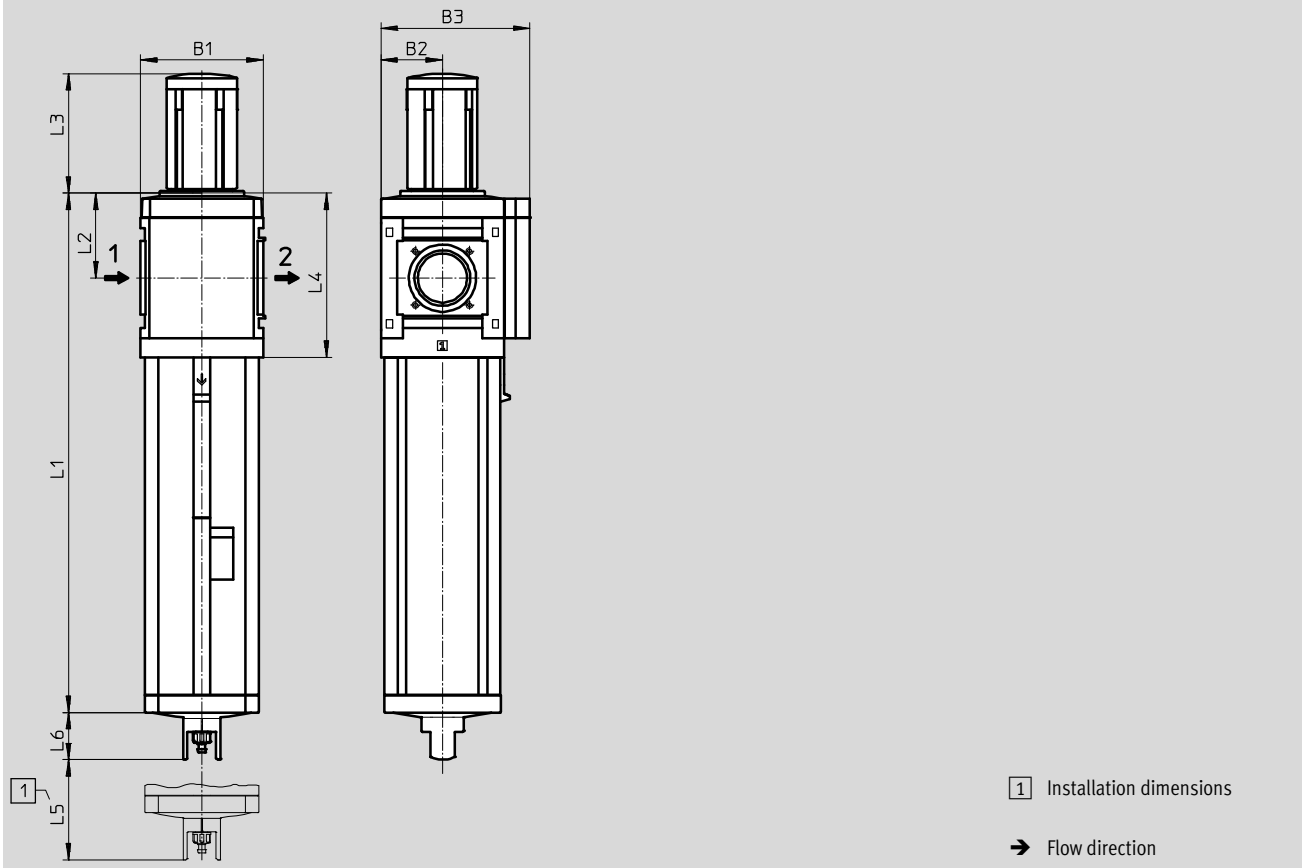
Filter regulators MS9-LFR, MS series

Technical data

Dimensions – Basic version

Download CAD data → www.festo.com

Without connecting thread G, cover plate VS, rotary knob with detent



| Type | B1 | B2 | B3 | L1 | | L2 | | L3 | L4 | | L5 | L6 |
|-----------|----|----|-----|----------------|----------------------|----------------|----------------------|----|----------------|----------------------|-----|------|
| | | | | pilot actuated | directly actuated DI | pilot actuated | directly actuated DI | | pilot actuated | directly actuated DI | | |
| MS9-LFR-G | 90 | 45 | 109 | 320 | 313 | 69 | 62 | 86 | 127 | 120 | 150 | 34.5 |

Filter regulators MS9-LFR, MS series

Technical data

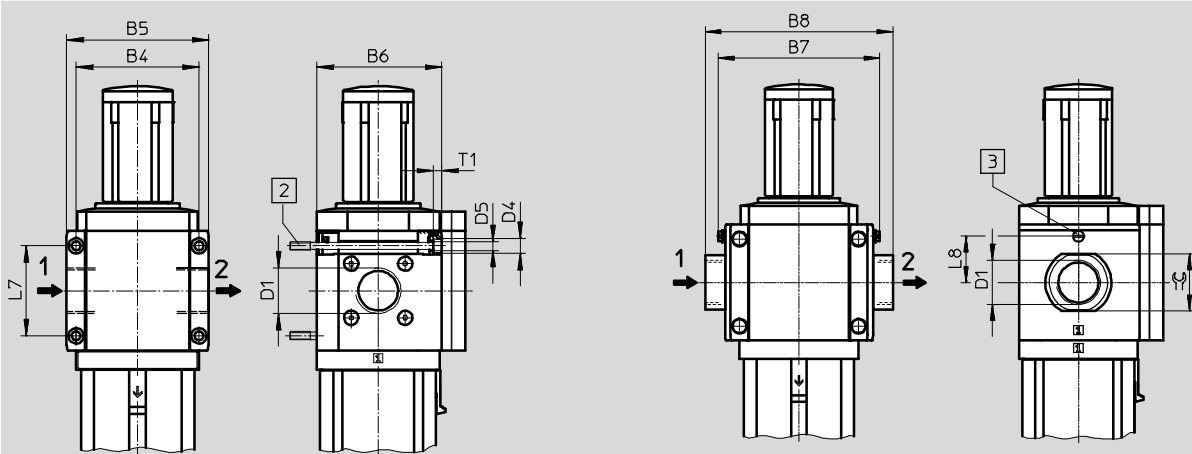
FESTO

Dimensions – Connecting thread/connecting plate

Download CAD data → www.festo.com

With connecting thread 3/4 or 1

With connecting plate AG...



2 Mounting screw M6xmin.90 to DIN 912 (not included in the scope of delivery) for wall mounting without mounting bracket

3 Earthing screw M4x8 (only with MS9-...-EX4)

→ Flow direction

| Type | B4 | B5 | B6 | B7 | | B8 | D1 | D4 | D5 | L7 | L8 | | T1 | ≅ |
|-------------|----|-----|------|-----|-----|-----|--------|----|-----|----|----|-----|----|---|
| | | | | | EX4 | | | | | | | EX4 | | |
| MS9-LFR-3/4 | 90 | 104 | 91.5 | - | - | - | G3/4 | 11 | 6.5 | 66 | - | 6 | - | |
| MS9-LFR-1 | | | | | | | G1 | | | | | | | |
| MS9-LFR-AGD | - | - | - | 112 | 122 | 132 | G1/2 | - | - | - | 35 | - | 30 | |
| MS9-LFR-AGE | | | | | | 132 | G3/4 | | | | | | 36 | |
| MS9-LFR-AGF | | | | | | 142 | G1 | | | | | | 41 | |
| MS9-LFR-AGG | | | | | | 162 | G1 1/4 | | | | | | 50 | |
| MS9-LFR-AGH | | | | | | 176 | G1 1/2 | | | | | | 55 | |

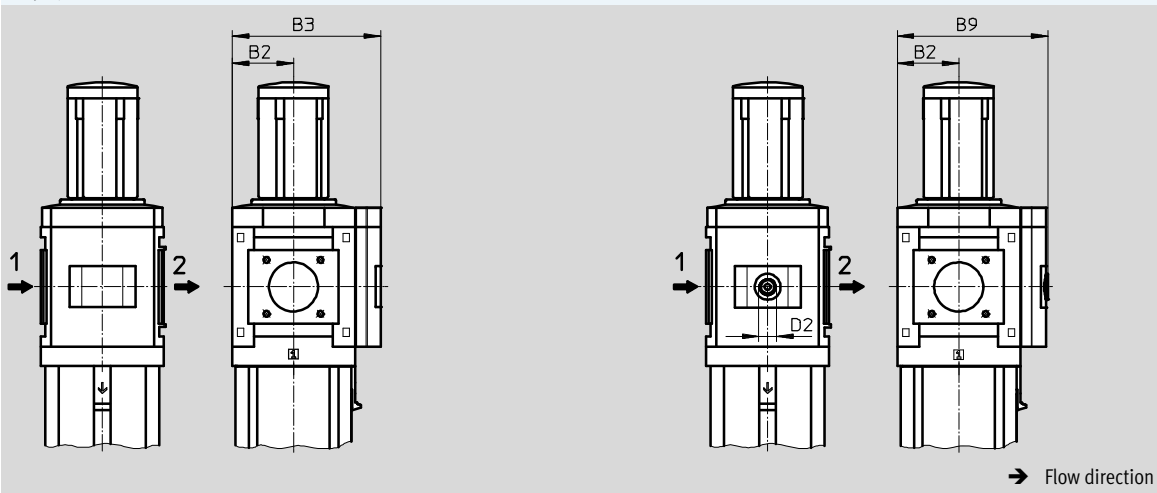
• Note: This product conforms to ISO 1179-1 and to ISO 228-1

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

Integrated MS pressure gauge with standard scale AG or red/green scale RG, display unit [bar]

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



→ Flow direction

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

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

Filter regulators MS9-LFR, MS series

Technical data



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

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

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

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

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

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

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

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

Rotary knob with detent Rotary knob with detent, can be locked using accessories AS Rotary knob with integrated lock E11

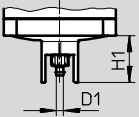
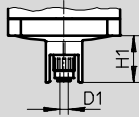
2 Installation dimensions

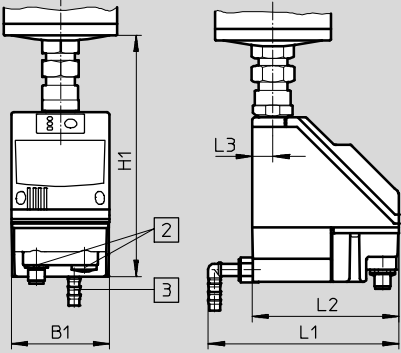
| Type | B1 | D1 | L1 | L2 | L3 |
|-----------------|----|----|-----|-----|----|
| MS9-LFR | - | 52 | - | 86 | - |
| MS9-LFR-...-AS | 65 | 52 | - | 96 | - |
| MS9-LFR-...-E11 | - | 52 | 174 | 114 | 25 |

Filter regulators MS9-LFR, MS series

Technical data

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| Dimensions – Condensate drain | | Download CAD data → www.festo.com |
|---|--|--|
| <p>Manual rotary M/fully automatic V</p>  <p style="text-align: center;">Barbed connector for plastic tubing PCN-4</p> | <p>Semi-automatic H</p>  <p style="text-align: center;">QS connector for plastic tubing PUN-6/PAN-6</p> | |

| Fully automatic, electrically actuated E2/E3/E4 | | Technical data → Internet: pwea |
|---|--|---|
|  | <p>Condensate drain PWEA:</p> <ul style="list-style-type: none"> 2 Electrical connection: Screw terminal PG9 3 Connection 360° rotatable for plastic tubing PUN-H-12x2 | |

| Type | B1 | D1 | H1 | L1 | L2 | L3 |
|----------------------|----|----|------|-----|-----|----|
| MS9-LFR-...-M/V | - | 5 | 34.5 | - | - | - |
| MS9-LFR-...-H | | 6 | | | | |
| MS9-LFR-...-E2/E3/E4 | 72 | - | 178 | 140 | 108 | 15 |

| Ordering data | | | | | | |
|--|------------------|------------|--------------------------|-------------------------------|---------------------------|-------------------------------|
| Pressure regulation range 0.5 ... 7 bar, integrated pressure gauge, display unit [bar], rotary knob with detent, can be locked using accessories | | | | | | |
| Size | Condensate drain | Connection | Grade of filtration 5 µm | | Grade of filtration 40 µm | |
| | | | Part No. | Type | Part No. | Type |
| Piloted filter-diaphragm regulator | | | | | | |
| MS9 | Manual rotary | - | 564114 | MS9-LFR-G-D6-CUM-AG-BAR-AS | 564110 | MS9-LFR-G-D6-EUM-AG-BAR-AS |
| | Fully automatic | - | 564115 | MS9-LFR-G-D6-CUV-AG-BAR-AS | 564111 | MS9-LFR-G-D6-EUV-AG-BAR-AS |
| Directly actuated filter-diaphragm regulator | | | | | | |
| MS9 | Manual rotary | - | 564116 | MS9-LFR-G-D6-CUM-DI-AG-BAR-AS | 564112 | MS9-LFR-G-D6-EUM-DI-AG-BAR-AS |
| | Fully automatic | - | 564117 | MS9-LFR-G-D6-CUV-DI-AG-BAR-AS | 564113 | MS9-LFR-G-D6-EUV-DI-AG-BAR-AS |

| Ordering data | | | | | | |
|---|------------------|------------|--------------------------|----------------------------|---------------------------|----------------------------|
| Pressure regulation range 0.5 ... 12 bar, integrated pressure gauge, display unit [bar], rotary knob with detent, can be locked using accessories | | | | | | |
| Size | Condensate drain | Connection | Grade of filtration 5 µm | | Grade of filtration 40 µm | |
| | | | Part No. | Type | Part No. | Type |
| Piloted filter-diaphragm regulator | | | | | | |
| MS9 | Manual rotary | - | 564120 | MS9-LFR-G-D7-CUM-AG-BAR-AS | 564118 | MS9-LFR-G-D7-EUM-AG-BAR-AS |
| | Fully automatic | - | 564121 | MS9-LFR-G-D7-CUV-AG-BAR-AS | 564119 | MS9-LFR-G-D7-EUV-AG-BAR-AS |

Filter regulators MS9-LFR, MS series

Ordering data – Modular products

| M Mandatory data → | | | | | | | | |
|-------------------------|-----------|----------|--------------|----------------------|--|---------------------|------------|---------------------|
| Module No. | Series | Size | Function | Pneumatic connection | Pressure regulation range/operation mode | Grade of filtration | Bowl | Condensate drain |
| 562531 | MS | 9 | LFR | ¾, 1, AG..., G | D5, D6, D7, D8 | E, C | U | M, H, V, E2, E3, E4 |
| Ordering example | | | | | | | | |
| 562531 | MS | 9 | - LFR | - G | - D5 | - E | - U | - M |

| Ordering table | | Grid dimension [mm] | 90 | Condi-tions | Code | Enter code | |
|----------------|--|--|--------------------------------------|-------------|------|------------|--|
| M | Module No. | 562531 | | | | | |
| | Series | Standard | | | MS | MS | |
| | Size | 9 | | | 9 | 9 | |
| | Function | Filter regulator | | | -LFR | -LFR | |
| | Pneumatic connection | Female thread G¾ | | 1 | -¾ | | |
| | | Female thread G1 | | 1 | -1 | | |
| | | Connecting plate G½ | | | -AGD | | |
| | | Connecting plate G¾ | | | -AGE | | |
| | | Connecting plate G1 | | | -AGF | | |
| | | Connecting plate G1¼ | | | -AGG | | |
| | | Connecting plate G1½ | | | -AGH | | |
| | | Module without connecting thread, without connecting plate | | 1 | -G | | |
| | Pressure regulation range/operation mode | 0.5 ... 4 bar, manually operated | | | -D5 | | |
| | | 0.5 ... 7 bar, manually operated | | | -D6 | | |
| | | 0.5 ... 12 bar, manually operated | | | -D7 | | |
| | | 0.5 ... 16 bar, manually operated | | 1 | -D8 | | |
| | Grade of filtration | 40 µm | | | -E | | |
| | | 5 µm | | | -C | | |
| | Bowl | Metal bowl | | | -U | -U | |
| | Condensate drain | Manual | | | -M | | |
| | | Semi-automatic (P1 max. 12 bar) | | | -H | | |
| | | Fully automatic (P1 max. 12 bar) | | | -V | | |
| | | External, fully automatic, electric | 110 V AC, terminals (P1 max. 16 bar) | | 1 | -E2 | |
| | | | 230 V AC, terminals (P1 max. 16 bar) | | 1 | -E3 | |
| | 24 V DC, terminals (P1 max. 16 bar) | | 1 | -E4 | | | |

1 ¾, 1, G, D8, E2, E3, E4, AD7, AD8, AD9, AD10, E11, WPM
Not with EU certification EX4

Transfer order code

| | | | | | | | | | | | | | |
|--------|----|---|-------|---|--|---|--|---|-----|---|---|---|--|
| 562531 | MS | 9 | - LFR | - | | - | | - | LFR | - | U | - | |
|--------|----|---|-------|---|--|---|--|---|-----|---|---|---|--|

Filter regulators MS9-LFR, MS series

Ordering data – Modular products

| | | | | | | | | |
|-----------------------|---|---|--------------------------|-----------------|-------------------------|-------------------------|-------------------------|-----------------------|
| → [0] | [M] | [0] Options | | | | | | |
| Regulator type | Pressure gauge/pressure gauge alternatives | Alternative pressure gauge scale | Secondary venting | Security | Type of mounting | EU certification | UL certification | Flow direction |
| DI | AG, VS, A4, RG, AD7 ... AD10 | PSI, MPA, BAR | OS | AS, E11 | WP, WPM, WPB | EX4 | UL1 | Z |
| - DI | - AG | - BAR | - OS | - AS | - | - | - | - |

| Ordering table | | Grid dimension [mm] | 90 | Condi-tions | Code | Enter code |
|----------------|--|--|----|-----------------------|--------------|------------|
| [0] | Regulator type | Directly actuated | | [2] | -DI | |
| [M] | Pressure gauge/pressure gauge alternatives | MS pressure gauge | | | -AG | |
| | | Cover plate | | | -VS | |
| | | Adapter plate for EN pressure gauge 1/4, without pressure gauge | | | -A4 | |
| | | Integrated pressure gauge, red/green scale | | [3] | -RG | |
| | | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact | | [1] [4] | -AD7 | |
| | | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact | | [1] [4] | -AD8 | |
| | | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact | | [1] [4] | -AD9 | |
| | | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact | | [1] [4] | -AD10 | |
| [0] | Alternative pressure gauge scale | psi | | [5] | -PSI | |
| | | MPa | | [5] | -MPA | |
| | | bar | | [5] | -BAR | |
| | Secondary venting | Without secondary venting | | [6] | -OS | |
| | Security | Lockable via accessories | | | -AS | |
| | | With integrated lock | | [1] | -E11 | |
| | Type of mounting | Mounting bracket standard design | | [7] | -WP | |
| | | Mounting bracket for attaching the service units | | [1] [7] | -WPM | |
| | | Mounting bracket for large wall gap | | [7] | -WPB | |
| | EU certification | II 2GD to EU Directive 94/9/EG | | | -EX4 | |
| | UL certification | cULus, ordinary location for Canada and USA | | | -UL1 | |
| | Flow direction | Flow direction from right to left | | | -Z | |

[1] 3/4, 1, G, D8, E2, E3, E4, AD7, AD8, AD9, AD10, E11, WPM

Not with EU certification EX4

[6] OS

Only with regulator type DI

[7] WP, WPM, WPB

Not with pneumatic connection G

[2] DI

Not with pressure regulation range D7, D8

[3] RG

Not with alternative pressure gauge scale PSI
PSI scale serves only as an auxiliary scale

[4] AD7 ... AD10

Measuring range max. 10 bar

[5] PSI, MPA, BAR

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

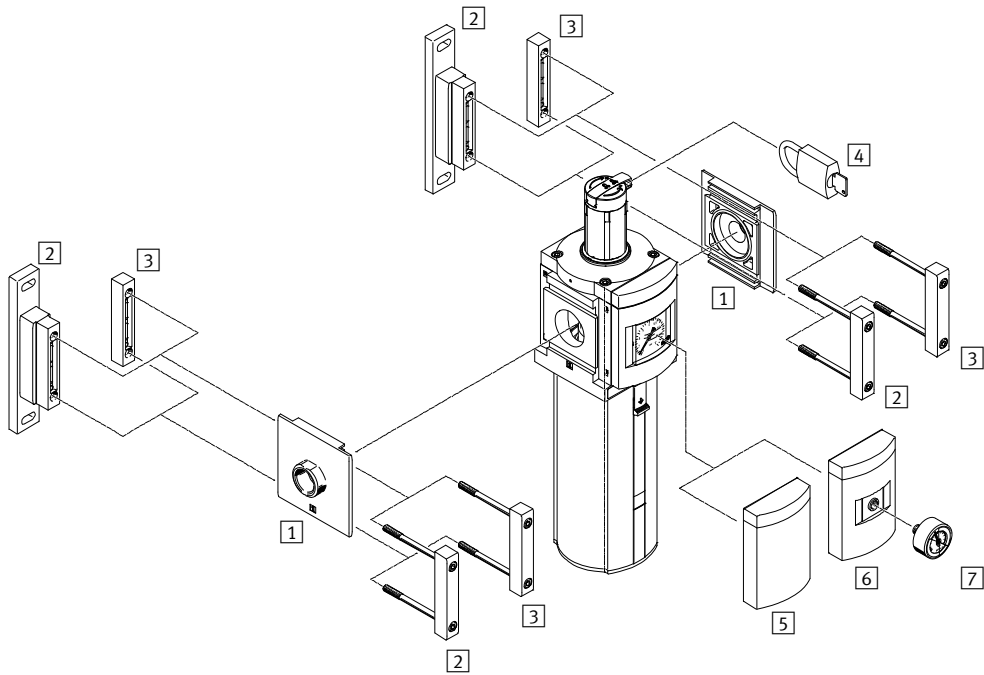
Transfer order code


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

Filter regulators MS12-LFR, MS series

Peripherals overview

Filter regulators MS12-LFR



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

Mounting attachments and accessories

| | | → Page/Internet |
|---|---|-----------------|
| 1 | Connecting plate-SET MS12-AG... | ms12-ag |
| 2 | Mounting bracket MS12-WP | ms12-wp |
| 3 | Module connector MS12-MV | ms12-mv |
| 4 | Padlock LRVS-D | 47 |
| 5 | Cover plate VS | 44 |
| 6 | Adapter for EN pressure gauge 1/4 A4 | 44 |
| 7 | Pressure gauge MA | 47 |

Filter regulators MS12-LFR, MS series

Type codes

MS 12 - LFR - G - D7 - C U V - LD - AS

| Series | |
|---------------------------|---|
| MS | Standard service unit |
| Size | |
| 12 | Grid dimension 124 mm |
| Service function | |
| LFR | Filter regulator |
| Connection size | |
| G | Module without connecting thread, without connecting plate Connecting plates → Accessories |
| Pressure regulation range | |
| D7 | Pressure regulation range 0.5 ... 12 bar |
| Grade of filtration | |
| C | 5 µm |
| E | 40 µm |
| Bowl guard | |
| U | Integrated as metal bowl |
| Condensate drain | |
| V | Fully automatic |
| Rotary knob | |
| LD | Long rotary knob |
| Security | |
| AS | Rotary knob with detent, lockable via accessories |

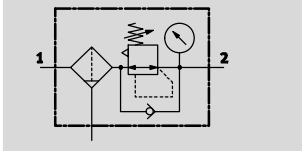
Further variants can be ordered using the modular system → 44

- Connecting plates
- Pressure regulation range
- Condensate drain
- Pressure gauge alternatives
- Alternative pressure gauge scale
- Security
- Type of mounting
- Flow direction

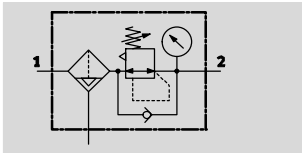
Filter regulators MS12-LFR, MS series

Technical data

Function
Condensate drain
manual rotary
with pressure gauge



Condensate drain
fully automatic
with pressure gauge



- - Flow rate
11,000 ... 17,000 l/min
- - Temperature range
-10 ... +60 °C
- - Operating pressure
0.8 ... 20 bar
- - www.festo.com

Wearing parts kits
→ 43



With this device, the filter and pressure regulator are combined into a single unit. The sintered filter with water separator removes contamination, pipe sinter, rust and condensate from the compressed air.

- Good control characteristics with low hysteresis and primary pressure compensation
- Good particle and condensate separation
- High flow rates
- Pilot actuated diaphragm regulator without intrinsic air consumption
- Three pressure regulation ranges: 0.3 ... 7 bar, 0.5 ... 12 bar and 0.5 ... 16 bar
- Pressure gauge connection for different fitting options
- Available with manual, fully automatic or fully automatic, electrically actuated condensate drain
- Regulator lock for protecting the values against adjustment
- Choice of filter cartridges: 5 µm or 40 µm
- New filter cartridges → 46

| General technical data | | |
|--|----------|---|
| Pneumatic connection 1, 2 | | |
| Connecting plate AG... | | G1, G1¼, G1½ or G2 |
| Module without connecting thread/plate G | | – |
| Design | | Filter regulator with/without pressure gauge Sintered filter with centrifugal separation Pilot actuated diaphragm regulator |
| Regulating function | | Output pressure constant, with primary pressure compensation, with secondary venting |
| Type of mounting | | Via accessories In-line installation |
| Assembly position | | Vertical ±5° |
| Grade of filtration | [µm] | 5 40 |
| Air purity class at the output | | Compressed air in accordance with ISO 8573-1:2010 [6:4:4] (Grade of filtration 5 µm) Compressed air in accordance with ISO 8573-1:2010 [7:4:4] (Grade of filtration 40 µm) |
| Bowl guard | | Integrated as metal bowl |
| Condensate drain | | Manual rotary Fully automatic Fully automatic, electrical actuated |
| Regulator lock | | Rotary knob with detent Rotary knob with detent, lockable via accessories Rotary knob with integrated lock |
| Pressure regulation range | D6 [bar] | 0.3 ... 7 |
| | D7 [bar] | 0.5 ... 12 |
| | D8 [bar] | 0.5 ... 16 |
| Max. hysteresis | [bar] | 0.4 |
| Pressure indicator | | With pressure gauge |
| Max. condensate volume | [cm³] | 400 |

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

Filter regulators MS12-LFR, MS series

Technical data

| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] | | | | | |
|--|-------|--------|--------|--------|--------|
| Pneumatic connection | G1 | G1¼ | G1½ | G2 | |
| Grade of filtration | 5 µm | 11,000 | 11,500 | 12,000 | 14,000 |
| | 40 µm | 12,000 | 12,500 | 13,000 | 17,000 |

1) Dependent on connecting plate selected, must be ordered separately as an accessory → Internet: ms12-ag
measured at $p_1 = 10$ bar and $p_2 = 6$ bar, $\Delta p = 0.5$ bar

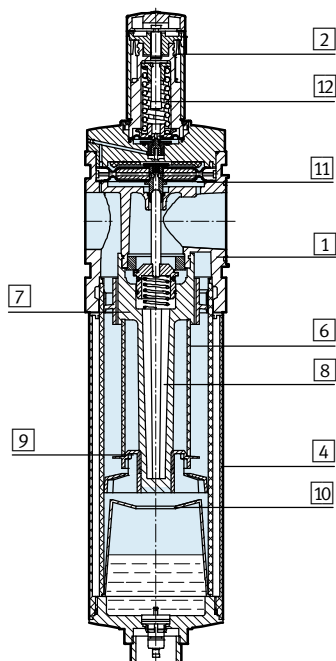
| Operating and environmental conditions | | | |
|--|--|--|--|
| Condensate drain | Manual rotary M | Fully automatic V | Fully automatic, electrically actuated E2/E3/E4 |
| Operating pressure [bar] | 0.8 ... 20 | 2 ... 12 | 0.8 ... 16 |
| Operating medium | Compressed air in accordance with ISO 8573-1:2010 [-:4:-] | Compressed air in accordance with ISO 8573-1:2010 [7:4:-] | Compressed air in accordance with ISO 8573-1:2010 [-:4:-] |
| | Inert gases | | |
| Ambient temperature [°C] | -10 ... +60 | +5 ... +60 | +1 ... +60 |
| Temperature of medium [°C] | -10 ... +60 | +5 ... +60 | +1 ... +60 |
| Storage temperature [°C] | -10 ... +60 | -10 ... +60 | +1 ... +60 |
| Corrosion resistance class CRC ¹⁾ | 2 | | |

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

| Weights [g] | | |
|---|-----------------------------|--------------------------|
| Rotary knob | Without integrated lock E11 | With integrated lock E11 |
| Filter regulator with metal bowl U | 7,000 | 7,300 |
| Filter regulator with metal bowl U and fully automatic, electrically actuated condensate drain E2/E3/E4 | 7,700 | 8,000 |

Materials

Sectional view



| Filter regulator | | |
|------------------|--------------------------------------|-------------------------|
| 1 | Body | Die-cast aluminium |
| 2 | Rotary knob | PA |
| | Rotary knob with integrated lock E11 | Aluminium |
| 4 | Metal bowl | Wrought aluminium alloy |
| 6 | Filter element | Sintered bronze |
| 7 | Spin disc | POM |
| 8 | Filter holder | POM |
| 9 | Separating plate | POM |
| 10 | Stabilising disc | POM |
| 11 | Diaphragm | NBR |
| 12 | Spring | Steel |
| - | Seals | NBR |

Filter regulators MS12-LFR, MS series

Technical data



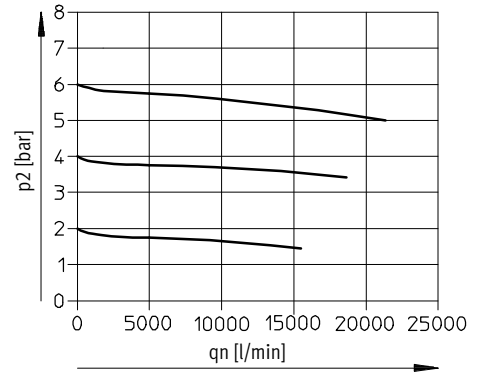
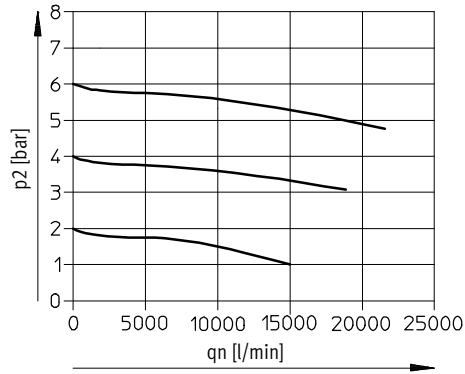
Standard flow rate q_n as a function of output pressure p_2

Grade of filtration 40 μm

With connecting plate MS12-AGF
Pneumatic connection G1

With connecting plate MS12-AGG
Pneumatic connection G1¼

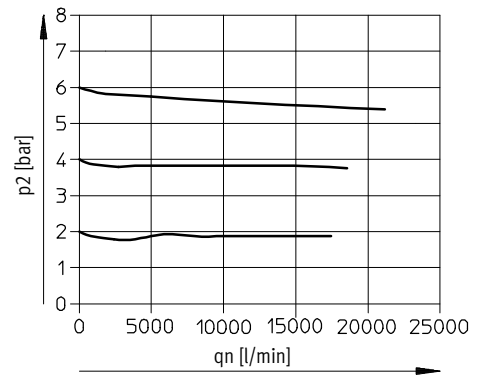
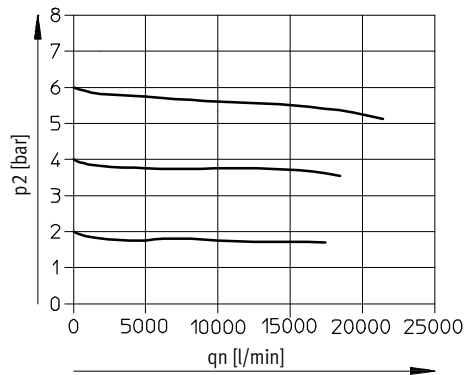
Input pressure $p_1 = 10$ bar



With connecting plate MS12-AGH
Pneumatic connection G1½

With connecting plate MS12-AGI
Pneumatic connection G2

Input pressure $p_1 = 10$ bar



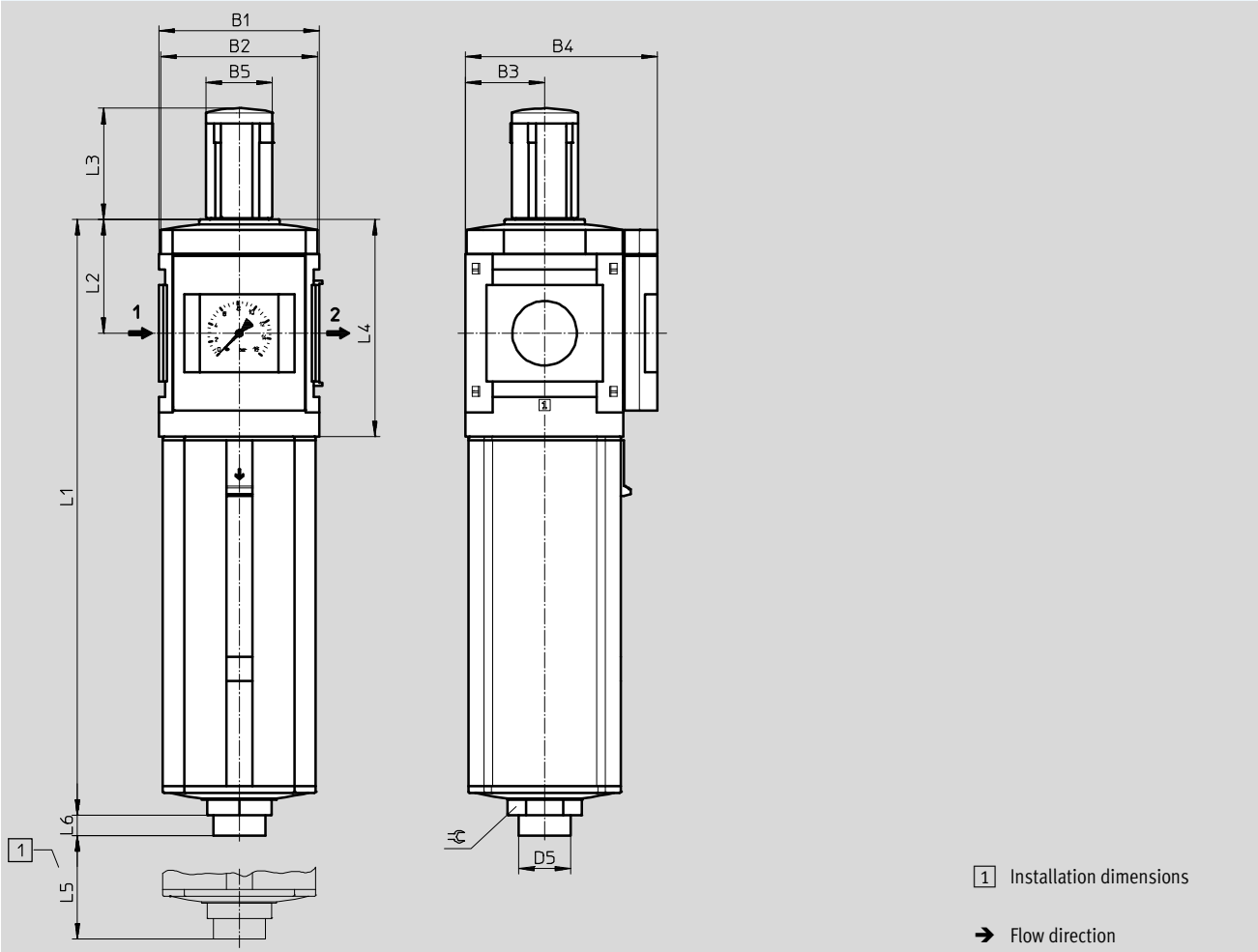
Filter regulators MS12-LFR, MS series

Technical data

Dimensions

Download CAD data → www.festo.com

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



| Type | B1 | B2 | B3 | B4 | B5 | D5 Ø | L1 | L2 | L3 | L4 | L5 | L6 |
|-----------------|-----|-----|----|-----|----|---------|-----|----|----|-----|-----|----|
| MS12-LFR-...-LD | 124 | 122 | 61 | 148 | 52 | 40 | 460 | 88 | 86 | 168 | 250 | 16 |

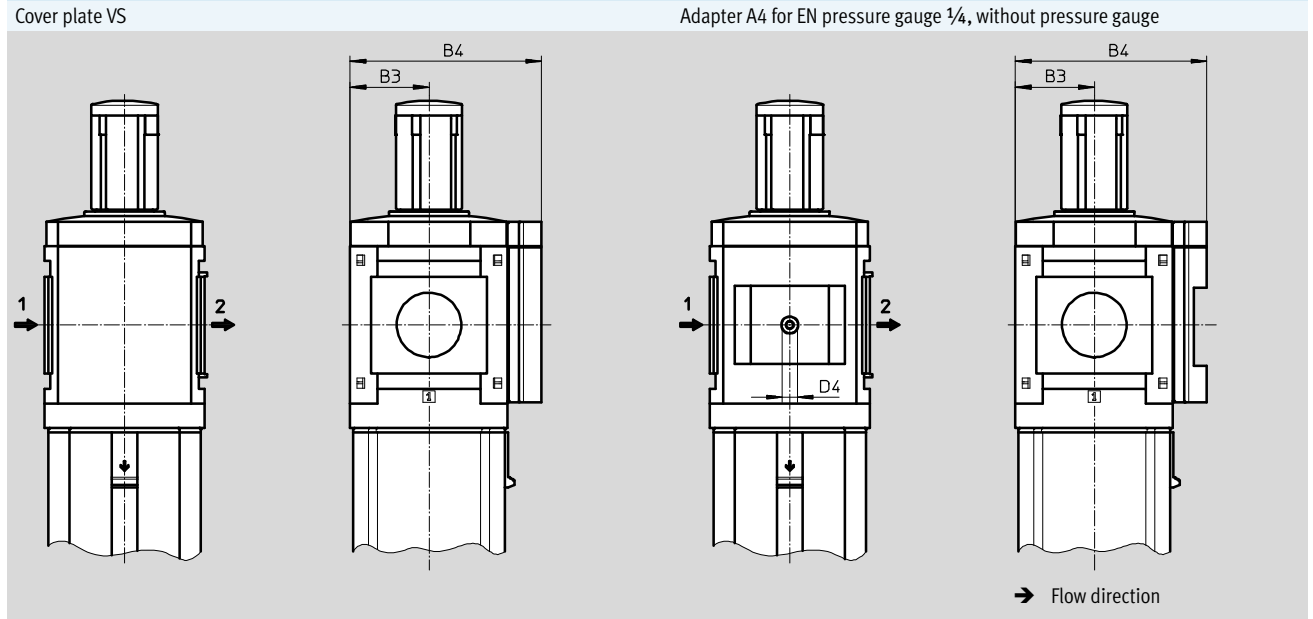
Filter regulators MS12-LFR, MS series

Technical data

FESTO

Dimensions – Pressure gauge alternatives

Download CAD data → www.festo.com

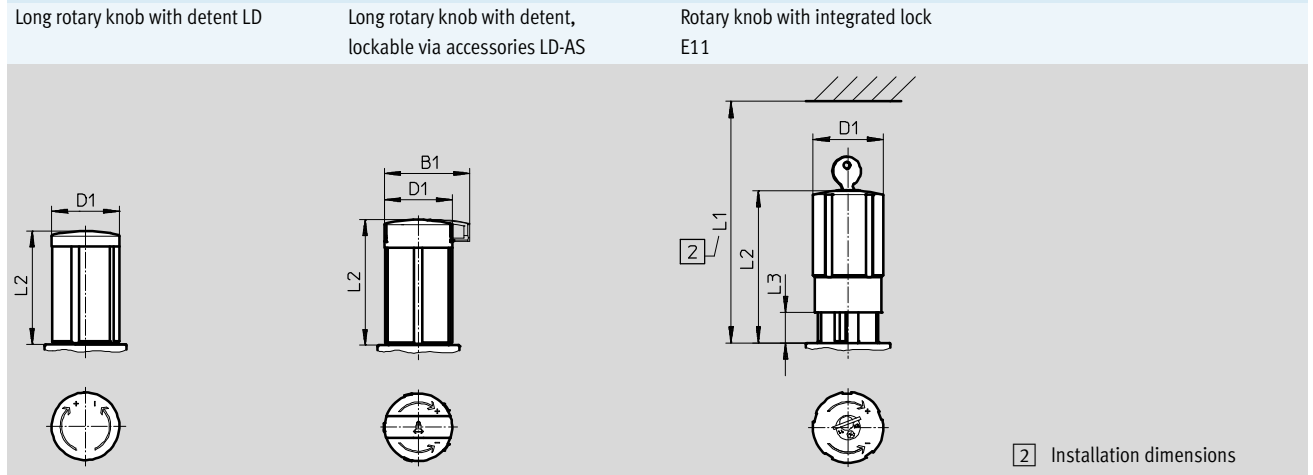


| Type | B3 | B4 | D4 |
|-----------------|----|-----|------|
| MS12-LFR-...-VS | 61 | 148 | - |
| MS12-LFR-...-A4 | 61 | 148 | G1/4 |

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

Dimensions – Rotary knob

Download CAD data → www.festo.com



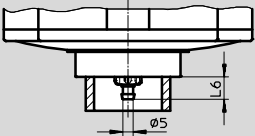
| Type | B1 | D1 | L1 | L2 | L3 |
|--------------------|----|----|-----|-----|----|
| MS12-LFR-...-LD | - | 52 | - | 86 | - |
| MS12-LFR-...-LD-AS | 65 | 52 | - | 96 | - |
| MS12-LFR-...-E11 | - | 52 | 174 | 114 | 25 |

Filter regulators MS12-LFR, MS series

Technical data

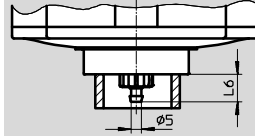
Dimensions – Condensate drain Download CAD data → www.festo.com

Manual rotary M



Barbed fitting for plastic tubing PCN-4

Fully automatic V

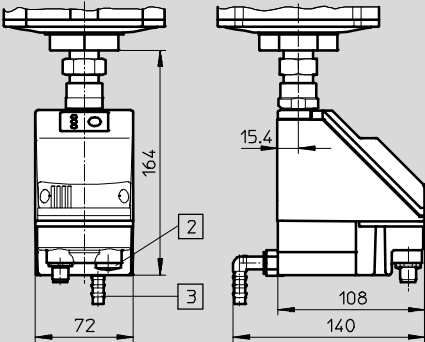


Barbed fitting for plastic tubing PCN-4

| | |
|----------------|----|
| Type | L6 |
| MS12-LFR-...-M | 11 |

| | |
|----------------|----|
| Type | L6 |
| MS12-LFR-...-V | 13 |

Fully automatic, electrically actuated E2/E3/E4 Technical data → Internet: [pwea](http://pwea.com)



Condensate drain PWEA:

- 2 Electrical connection: Screw terminal PG9
- 3 Connection 360° rotatable for plastic tubing PUN-H-12x2

Ordering data

Pressure regulation range 0.5 ... 12 bar, metal bowl, integrated pressure gauge, display unit [bar], long rotary knob with detent, lockable via accessories

| Size | Condensate drain | Connection | Grade of filtration 5 µm | | Grade of filtration 40 µm | |
|------|------------------|-------------------------|--------------------------|-------------------------|---------------------------|-------------------------|
| | | | Part No. | Type | Part No. | Type |
| MS12 | fully automatic | G1 ... G2 ¹⁾ | 537150 | MS12-LFR-G-D7-CUV-LD-AS | 537149 | MS12-LFR-G-D7-EUV-LD-AS |

1) Connecting plate must be ordered separately as an accessory → Internet: [ms12-ag](http://ms12-ag.com)
 - † - Note: This product conforms to ISO 1179-1 and to ISO 228-1

Ordering data – Wearing parts kits

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

Filter regulators MS12-LFR, MS series

Ordering data – Modular products

M Mandatory data →

| Module No. | Series | Size | Function | Pneumatic connection | Pressure regulation range | Grade of filtration | Bowl |
|----------------------|-----------|-----------|--------------|----------------------|---------------------------|---------------------|------------|
| 535022 | MS | 12 | LFR | AG..., G | D6, D7, D8 | E, C | U |
| Order example | | | | | | | |
| 535022 | MS | 12 | - LFR | - AGF | - D6 | - C | - U |

Ordering table

| Grid dimension | [mm] | 124 | Condi- tions | Code | Enter code |
|---------------------------|------|--|-----------------|-------------|---------------|
| M Module No. | | 535022 | | | |
| Series | | Standard | | MS | MS |
| Size | | 12 | | 12 | 12 |
| Function | | Filter regulator | | -LFR | -LFR |
| Pneumatic connection | | Connecting plate G1 | | -AGF | |
| | | Connecting plate G1¼ | | -AGG | |
| | | Connecting plate G1½ | | -AGH | |
| | | Connecting plate G2 | | -AGI | |
| | | Module without connecting thread, without connecting plate | | -G | |
| Pressure regulation range | | 0.3 ... 7 bar | | -D6 | |
| | | 0.5 ... 12 bar | | -D7 | |
| | | 0.5 ... 16 bar | | -D8 | |
| Grade of filtration | | 40 µm | | -E | |
| | | 5 µm | | -C | |
| ↓ Bowl | | Metal bowl | | -U | -U |

Transfer order code

| | | | | | | | |
|---------------|-----------|-----------|--------------|----------|----------|----------|------------|
| 535022 | MS | 12 | - LFR | - | - | - | - U |
|---------------|-----------|-----------|--------------|----------|----------|----------|------------|

Filter regulators MS12-LFR, MS series

Ordering data – Modular products

| | | | | | | |
|-------------------------|------------------------------------|---|--------------------|-----------------|-------------------------|-----------------------|
| → M | | O Options | | | | |
| Condensate drain | Pressure gauge alternatives | Alternative pressure gauge scale | Rotary knob | Security | Type of mounting | Flow direction |
| M, V, E2, E3, E4 | VS, A4 | PSI, MPA | LD | AS, E11 | WP | Z |
| - E2 | - | - | - LD | - AS | - WP | - Z |

| Ordering table | | Grid dimension [mm] | 124 | Condi- tions | Code | Enter code | |
|----------------|----------------------------------|---|-----|-----------------|------|---------------|--|
| ↓ M | Condensate drain | Manual | | | -M | | |
| | | Fully automatic (P1 max. 12 bar) | | 1 | -V | | |
| | | External fully automatic condensate drain, electrical, 110 V AC, terminal strip | | | | -E2 | |
| | | External fully automatic condensate drain, electrical, 230 V AC, terminal strip | | | | -E3 | |
| | | External fully automatic condensate drain, electrical, 24 V DC, terminal strip | | | | -E4 | |
| O | Pressure gauge alternatives | Cover plate | | | -VS | | |
| | | Adapter plate for EN pressure gauge 1/4, without pressure gauge | | | -A4 | | |
| | Alternative pressure gauge scale | psi | | 2 | -PSI | | |
| | | MPa | | 2 | -MPA | | |
| | Rotary knob | Long rotary knob | | 3 4 | -LD | | |
| | Security | Lockable via accessories | | | -AS | | |
| | | With integrated lock | | 3 | -E11 | | |
| | Type of mounting | Mounting bracket standard design | | 5 | -WP | | |
| | Flow direction | Flow direction from right to left | | | -Z | | |

- 1 **V** Not with pressure regulation range D8
- 2 **PSI, MPA** Not with pressure gauge alternatives VS, A4
- 3 **LD, E11** Either rotary knob LD or security E11 must be selected
- 4 **LD** Not with security E11
- 5 **WP** Only with connecting plate AGF, AGG, AGH or AGI

Transfer order code

- - - - - - -

Filter regulators MS-LFR, MS series

Accessories

FESTO

Filter cartridges

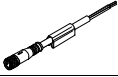




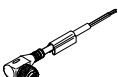
| Ordering data | | | |
|---------------|-----------------------------|----------|------------|
| Size | Grade of filtration [µm] | Part No. | Type |
| MS4 | 5 (colour: blue) | 534501 | MS4-LFP-C |
| | 40 (colour: white) | 534502 | MS4-LFP-E |
| MS6 | 5 (colour: blue) | 534499 | MS6-LFP-C |
| | 40 (colour: white) | 534500 | MS6-LFP-E |
| MS9 | 5 | 570309 | MS9-LFP-C |
| | 40 | 570310 | MS9-LFP-E |
| MS12 | 5 | 537143 | MS12-LFP-C |
| | 40 | 537144 | MS12-LFP-E |


Filter regulators MS-LFR, MS series


Accessories

FESTO

| Ordering data – Connecting cable NEBU-M8 | | | | Technical data → Internet: nebu | |
|---|-----------------------|-----------------|------------------|---------------------------------|---------------------|
| | Electrical connection | Number of wires | Cable length [m] | Part No. | Type |
|  | M8x1, straight socket | 3 | 2.5 | 541333 | NEBU-M8G3-K-2.5-LE3 |
| | | | 5 | 541334 | NEBU-M8G3-K-5-LE3 |
|  | M8x1, angled socket | 3 | 2.5 | 541338 | NEBU-M8W3-K-2.5-LE3 |
| | | | 5 | 541341 | NEBU-M8W3-K-5-LE3 |

| Ordering data – Connecting cable NEBU-M12 | | | | Technical data → Internet: nebu | |
|---|------------------------|-----------------|------------------|---------------------------------|----------------------|
| | Electrical connection | Number of wires | Cable length [m] | Part No. | Type |
|  | M12x1, straight socket | 4 | 2.5 | 550326 | NEBU-M12G5-K-2.5-LE4 |
| | | | 5 | 541328 | NEBU-M12G5-K-5-LE4 |
|  | M12x1, angled socket | 4 | 2.5 | 550325 | NEBU-M12W5-K-2.5-LE4 |
| | | | 5 | 541329 | NEBU-M12W5-K-5-LE4 |

| Ordering data – Pressure gauge MA | | | | | | |
|---|---|----------------------|------------------|-----------|--------------------------------|------------------------------|
| | Nominal size | Pneumatic connection | Indicating range | | Part No. | Type |
| | | | [bar] | [psi] | | |
|  | Pressure gauge MA, DIN EN 837-1 | | | | Technical data → Internet: ma | |
| | 40 | R $\frac{1}{4}$ | 0 ... 16 | 0 ... 232 | 187080 | MA-40-16-R $\frac{1}{4}$ -EN |
| | | G $\frac{1}{4}$ | 0 ... 16 | 0 ... 232 | 183901 | MA-40-16-G $\frac{1}{4}$ -EN |
| | Pressure gauge MA, DIN EN 837-1, with red-green range | | | | Technical data → Internet: ma | |
| 40 | R $\frac{1}{8}$ | 0 ... 16 | – | 525726 | MA-40-16-R $\frac{1}{8}$ -E-RG | |
| 50 | R $\frac{1}{4}$ | 0 ... 16 | – | 525729 | MA-50-16-R $\frac{1}{4}$ -E-RG | |

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