

## On-off/soft-start valves MS-EM/EE/DL/DE, MS series

# FESTO



Festo core product range  
Covers 80% of your automation tasks

Worldwide:

Always in stock

Superb:

Festo quality at an attractive price

Easy:

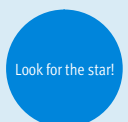
Reduces procurement and storing complexity



Generally ready for shipping ex works in 24 hours  
Held in stock in 13 service centres worldwide  
More than 2200 product



Generally ready for shipping ex works in 5 days  
Assembled for you in 4 service centres worldwide  
Up to  $6 \times 10^{12}$  variants per product series



# MS series service unit components

Key features



## MS series service unit components

Solutions for every application

With its large product range, highly functional components and a wide choice of services, the MS series from Festo offers a complete concept for compressed air preparation. Suitable for simple standard applications as well as application-specific solutions to the highest quality standards.

Available as individual components, pre-assembled combinations ex-stock, application-specific combinations or complete turnkey solutions. The five sizes in the MS series achieve maximum flow rates with minimum space requirements.

### Freely combinable function modules

Pressure regulators, on/off and soft-start valves with safety function, filter, pressure and flow sensors, dryers, sensors and lubricators. All these allow a suitable solution to be assembled for every task. Their modular structure means that the components

are freely combinable. A simple connection system saves time when replacing individual modules without dismantling the entire combination. What's more, many of the components are certified to UL and ATEX.

## CAD models and configurator

Convenient aids for planning and selecting application-specific individual devices and combinations. The product configurator lets you configure customised solutions quickly and transfer the order data with no hassle.

### Engineering tools

Selection tool for choosing the right service unit without oversizing, and with the right air quality class: [www.festo.com/engineering/wartungseinheit](http://www.festo.com/engineering/wartungseinheit)



## Integrated sensors

Pressure and flow sensors

## Safety functions

Soft-start/quick exhaust valves  
MS6-SV/MS9-SV

## Energy savings

Service units MSE6

Intelligent mix of sizes



- Maximum machine availability through controlled processes
- Reliable compressed air preparation and supply for systems
- Integrable or stand-alone
- Easy to connect with M8/M12 plug

- Fast and reliable exhausting of systems up to Performance Level e, certified to EN ISO 13849-1
- Integrated soft-start function

- Fully automatic monitoring and regulation of compressed air supply
- Automatic shut-off of the compressed air in stand-by mode
- Detection and notification of leakages
- Condition monitoring of relevant process data

- Optimum flow rate with up to 18% smaller size
- Excellent energy efficiency
- Cost-optimised combinations – save up to 30%!

| Size differences                                     |          |                  |                        |                                |                        |
|--|----------|------------------|------------------------|--------------------------------|------------------------|
| Size   | MS2      | MS4              | MS6                    | MS9                            | MS12                   |
| Grid dimension [mm]                                  | 25       | 40               | 62                     | 90                             | 124                    |
| Port sizes   | M5, QS-6 | G1/8, G1/4, G3/8 | G1/4, G3/8, G1/2, G3/4 | G1/2, G3/4, G1, G1 1/4, G1 1/2 | G1, G1 1/4, G1 1/2, G2 |
| Standard nominal flow rate qnN <sup>1)</sup> [l/min] | 350      | 1800             | 6500                   | 20000                          | 22000                  |

1) Using pressure regulator MS-LR as an example

# MS series service unit components

Key features

**Note**  
Information

The next few pages provide a brief overview of the complete product range for the MS series service unit components.

You can find detailed information and all of the technical data in the documentation for the corresponding service unit component.

Accessories such as connection plates or mounting brackets can be ordered either via the configurator or separately.





**Structure of a service unit**

The order of the individual components within a service unit is relevant for safety and functionality. It is not possible to assemble the service unit components in any order in the flow direction. There are restrictions and rules.

The configurator for service unit MSB is a reliable and convenient way of arranging individual service unit components. This ensures that the applicable rules are complied with. As a result, you get a completely assembled combination with UL or ATEX certification if you need it. When arranging a combination of individually configured and ordered service unit components, the points on the right must be adhered to under all circumstances.

- Regulators MS-LFR/LR/LRP/LRE are only permissible in the flow direction with the same or decreasing pressure regulation range
- Filters MS-LFR/LF/LFM/LFX are only permissible in the flow direction with an increasing grade of filtration
- Lubricators MS-LOE are not permitted in the flow direction upstream of a filter MS-LFR/LFM/LF/LFX, water separator MS-LWS or membrane air dryer MS-LDM1
- A micro filter MS-LFM must be installed upstream of an activated carbon filter MS-LFX or membrane air dryer MS-LDM1 in the flow direction
- A flow sensor SFAM cannot be installed directly downstream of a regulator MS-LFR/LR; a branching module MS-FRM must be positioned between them
- A soft-start/quick exhaust valve MS-SV must be the last service unit component in the flow direction






**Total product range for MS series service unit components**

| Type   | Description   | Size | Pneumatic connection |               |               |        |                              |                           |
|--|---|------|----------------------|---------------|---------------|--------|------------------------------|---------------------------|
|  |   |      | Push-in connector    | Female thread |               |        | Connection plate with thread |                           |
|  |   |      |                      | M             | G             | NPT    | G                            | NPT                       |
| <b>Combinations</b>  |   |      |                      |               |               |        |                              |                           |
| <b>Service units MSB-FRC</b> <span style="float: right;">Technical data → Internet: msb</span> |   |      |                      |               |               |        |                              |                           |
|             | Combinations of filter regulator and lubricator   | 4    | -                    | -             | 1/8, 1/4      | -      | -                            | -                         |
|  |   | 6    | -                    | -             | 1/4, 3/8, 1/2 | -      | -                            | -                         |
| <b>Service units MSB</b> <span style="float: right;">Technical data → Internet: msb</span>     |   |      |                      |               |               |        |                              |                           |
|             | 7 combinations, predefined  | 4    | -                    | -             | 1/4           | -      | -                            | -                         |
|  |   | 6    | -                    | -             | 1/2           | -      | -                            | -                         |
|             | Combinations freely configurable  | 4    | -                    | -             | 1/8, 1/4      | -      | 1/8, 1/4, 3/8                | 1/8, 1/4, 3/8             |
|  |   | 6    | -                    | -             | 1/4, 3/8, 1/2 | -      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|  |   | 9    | -                    | -             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2    | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
| <b>Service units MSE6</b> <span style="float: right;">Technical data → Internet: mse6</span>   |   |      |                      |               |               |        |                              |                           |
|             | Combinations with fieldbus connection for measuring pressure, flow rate and consumption | 6    | -                    | -             | -             | -      | 1/2                          | -                         |

# MS series service unit components

Key features



| Total product range for MS series service unit components                           |  |      |                      |               |               |        |                                   |                           |
|---|--|------|----------------------|---------------|---------------|--------|-----------------------------------|---------------------------|
| Type  | Description  | Size | Pneumatic connection |               |               |        |                                   |                           |
|   |  |      | Push-in connector    | Female thread |               |        | Connection plate with thread      |                           |
|   |  |      |                      | M             | G             | NPT    | G                                 | NPT                       |
| <b>Individual devices</b>   |  |      |                      |               |               |        |                                   |                           |
| <b>Filter regulators MS-LFR</b>   |  |      |                      |               |               |        | Technical data → Internet: ms-lfr |                           |
|    | Filter and pressure regulator in a single device, grade of filtration 5 or 40 µm | 2    | QS-6                 | M5            | –             | –      | –                                 | –                         |
|   |  | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                     | 1/8, 1/4, 3/8             |
|   |  | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4                | 1/4, 3/8, 1/2, 3/4        |
|   |  | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2         | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|   |  | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2                | –                         |
| <b>Filters MS-LF</b>  |  |      |                      |               |               |        | Technical data → Internet: ms-lf  |                           |
|    | Grade of filtration 5 or 40 µm   | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                     | 1/8, 1/4, 3/8             |
|   |  | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4                | 1/4, 3/8, 1/2, 3/4        |
|   |  | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2         | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|   |  | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2                | –                         |
| <b>Fine and micro filters MS-LFM</b>  |  |      |                      |               |               |        | Technical data → Internet: ms-lfm |                           |
|   | Grade of filtration 0.01 or 1 µm   | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                     | 1/8, 1/4, 3/8             |
|   |  | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4                | 1/4, 3/8, 1/2, 3/4        |
|   |  | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2         | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|   |  | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2                | –                         |
| <b>Activated carbon filters MS-LFX</b>  |  |      |                      |               |               |        | Technical data → Internet: ms-lfx |                           |
|  | For removing liquid and gaseous oil particles                                    | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                     | 1/8, 1/4, 3/8             |
|   |  | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4                | 1/4, 3/8, 1/2, 3/4        |
|   |  | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2         | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|   |  | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2                | –                         |
| <b>Water separators MS-LWS</b>  |  |      |                      |               |               |        | Technical data → Internet: ms-lws |                           |
|  | Remove condensed water from compressed air, maintenance-free                     | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4                | 1/4, 3/8, 1/2, 3/4        |
|   |  | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2         | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|   |  | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2                | –                         |

# MS series service unit components








Key features

| Total product range for MS series service unit components  |   |      |                      |               |               |        |                              |                           |
|--|---|------|----------------------|---------------|---------------|--------|------------------------------|---------------------------|
| Type   | Description   | Size | Pneumatic connection |               |               |        |                              |                           |
|  |   |      | Push-in connector    | Female thread |               |        | Connection plate with thread |                           |
|  |   |      |                      | M             | G             | NPT    | G                            | NPT                       |
| <b>Individual devices</b>  |   |      |                      |               |               |        |                              |                           |
| <b>Pressure regulators MS-LR</b> <span style="float: right;">Technical data → Internet: ms-lr</span>               |   |      |                      |               |               |        |                              |                           |
|  | For setting the required operating pressure, 4 pressure regulation ranges   | 2    | QS-6                 | M5            | –             | –      | –                            | –                         |
|  |   | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                | 1/8, 1/4, 3/8             |
|  |   | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|  |   | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2    | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|  |   | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2           | –                         |
| <b>Pressure regulators MS-LRB</b> <span style="float: right;">Technical data → Internet: ms-lrb</span>             |   |      |                      |               |               |        |                              |                           |
|  | For creating a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.                 | 4    | –                    | –             | 1/4           | –      | 1/8, 1/4, 3/8                | –                         |
|  |   | 6    | –                    | –             | 1/2           | –      | 1/4, 3/8, 1/2, 3/4           | –                         |
| <b>Precision pressure regulators MS-LRP</b> <span style="float: right;">Technical data → Internet: ms-lrp</span>   |   |      |                      |               |               |        |                              |                           |
|  | For precise setting of the required operating pressure, 4 pressure regulation ranges, pressure hysteresis 0.02 bar                      | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
| <b>Precision pressure regulators MS-LRPB</b> <span style="float: right;">Technical data → Internet: ms-lrpb</span> |   |      |                      |               |               |        |                              |                           |
|  | For configuring a regulator manifold with independent pressure regulation ranges. Pressure output is to the front or rear.              | 6    | –                    | –             | 1/2           | –      | 1/4, 3/8, 1/2, 3/4           | –                         |
| <b>Electrical pressure regulators MS-LRE</b> <span style="float: right;">Technical data → Internet: ms-lre</span>  |   |      |                      |               |               |        |                              |                           |
|  | Electrically adjustable pressure regulator, 4 pressure regulation ranges  | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
| <b>Lubricators MS-LOE</b> <span style="float: right;">Technical data → Internet: ms-loe</span>                     |   |      |                      |               |               |        |                              |                           |
|  | Add a precisely adjustable amount of oil to the compressed air. The oil mist component is proportional to the compressed air flow rate. | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                | 1/8, 1/4, 3/8             |
|  |   | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|  |   | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2    | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|  |   | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2           | –                         |

# MS series service unit components





Key features



| Total product range for MS series service unit components  |   |      |                      |               |               |        |                              |                           |
|--|---|------|----------------------|---------------|---------------|--------|------------------------------|---------------------------|
| Type   | Description   | Size | Pneumatic connection |               |               |        |                              |                           |
|  |   |      | Push-in connector    | Female thread |               |        | Connection plate with thread |                           |
|  |   |      |                      | M             | G             | NPT    | G                            | NPT                       |
| <b>Individual devices</b>  |   |      |                      |               |               |        |                              |                           |
| <b>On/off valves MS-EM</b> <span style="float: right;">Technical data → Internet: ms-em</span>                   |   |      |                      |               |               |        |                              |                           |
|                                 | Manually operated on/off valve for pressurising and exhausting pneumatic installations.   | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                | 1/8, 1/4, 3/8             |
|  |   | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|  |   | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2    | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|  |   | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2           | –                         |
| <b>On/off valves MS-EE</b> <span style="float: right;">Technical data → Internet: ms-ee</span>                   |   |      |                      |               |               |        |                              |                           |
|                                 | Solenoid actuated on/off valve for pressurising and exhausting pneumatic installations.   | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                | 1/8, 1/4, 3/8             |
|  |   | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|  |   | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2    | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|  |   | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2           | –                         |
| <b>Soft-start valves MS-DL</b> <span style="float: right;">Technical data → Internet: ms-dl</span>               |   |      |                      |               |               |        |                              |                           |
|                                | Pneumatically actuated soft-start valve for slowly pressurising and exhausting pneumatic installations.                             | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                | 1/8, 1/4, 3/8             |
|  |   | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|  |   | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2           | –                         |
| <b>Soft-start valves MS-DE</b> <span style="float: right;">Technical data → Internet: ms-de</span>               |   |      |                      |               |               |        |                              |                           |
|                               | Solenoid actuated soft-start valve for slowly pressurising and exhausting pneumatic installations.                                  | 4    | –                    | –             | 1/8, 1/4      | –      | 1/8, 1/4, 3/8                | 1/8, 1/4, 3/8             |
|  |   | 6    | –                    | –             | 1/4, 3/8, 1/2 | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|  |   | 12   | –                    | –             | –             | –      | 1, 1 1/4, 1 1/2, 2           | –                         |
| <b>Soft-start/quick exhaust valves MS-SV</b> <span style="float: right;">Technical data → Internet: ms-sv</span> |   |      |                      |               |               |        |                              |                           |
|                               | For building up pressure gradually and reducing pressure quickly and safely in pneumatic piping systems.<br>Up to category 1, PL c. | 6    | –                    | –             | 1/2           | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|  |   | 9    | –                    | –             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2    | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|                               | Up to category 3, PL d.<br>Up to category 4, PL e in the case of optional extension.  | 6    | –                    | –             | 1/2           | –      | 1/4, 3/8, 1/2, 3/4           | 1/4, 3/8, 1/2, 3/4        |
|                               | Up to category 4, PL e.   | 6    | –                    | –             | 1/2           | –      | 1/4, 3/8, 1/2, 3/4           | –                         |

# MS series service unit components

Key features

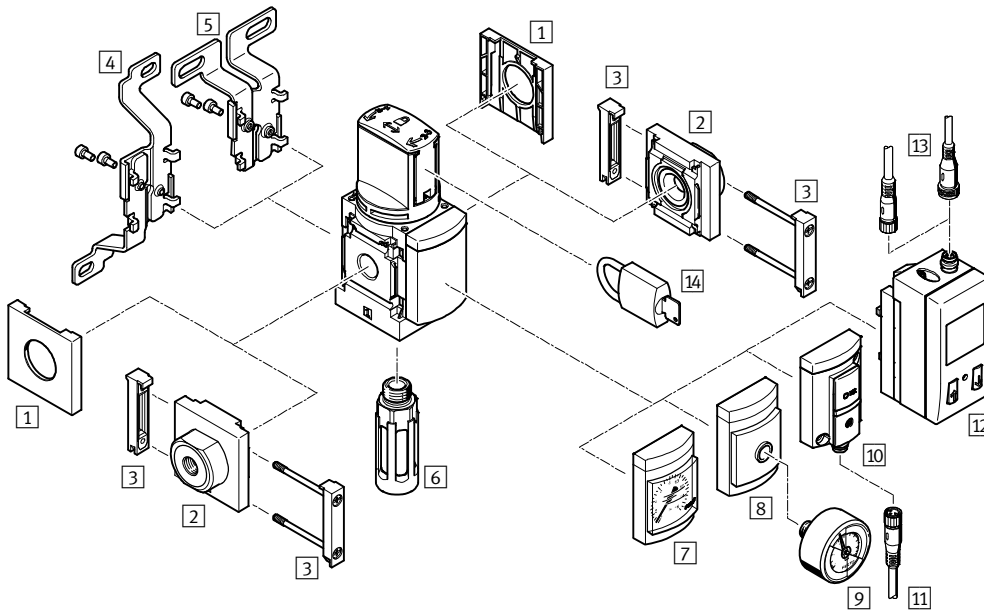
| Total product range for MS series service unit components                           |   |      |                      |               |               |        |                                       |                           |
|---|---|------|----------------------|---------------|---------------|--------|---------------------------------------|---------------------------|
| Type  | Description   | Size | Pneumatic connection |               |               |        |                                       |                           |
|   |   |      | Push-in connector    | Female thread |               |        | Connection plate with thread          |                           |
|   |   |      |                      | M             | G             | NPT    | G                                     | NPT                       |
| <b>Individual devices</b>   |   |      |                      |               |               |        |                                       |                           |
| <b>Membrane air dryers MS-LDM1</b>  |   |      |                      |               |               |        | Technical data → Internet: ms-ldm     |                           |
|    | Wear-free membrane dryer with internal air consumption                          | 4    | -                    | -             | 1/8, 1/4      | -      | 1/8, 1/4, 3/8                         | 1/8, 1/4, 3/8             |
|   |   | 6    | -                    | -             | 1/4, 3/8, 1/2 | -      | 1/4, 3/8, 1/2, 3/4                    | 1/4, 3/8, 1/2, 3/4        |
| <b>Branching modules MS-FRM</b>   |   |      |                      |               |               |        |                                       |                           |
|   |   |      |                      |               |               |        | Technical data → Internet: ms-frm     |                           |
|    | Compressed air distributor with 4 connections                                   | 4    | -                    | -             | 1/8, 1/4      | -      | 1/8, 1/4, 3/8                         | -                         |
|   |   | 6    | -                    | -             | 1/4, 3/8, 1/2 | -      | 1/4, 3/8, 1/2, 3/4                    | -                         |
|   |   | 9    | -                    | -             | 3/4, 1        | 3/4, 1 | 1/2, 3/4, 1, 1 1/4, 1 1/2             | 1/2, 3/4, 1, 1 1/4, 1 1/2 |
|   |   | 12   | -                    | -             | -             | -      | 1, 1 1/4, 1 1/2, 2                    | -                         |
| <b>Distributor blocks MS-FRM-FRZ</b>  |   |      |                      |               |               |        |                                       |                           |
|   |   |      |                      |               |               |        | Technical data → Internet: ms-frm-frz |                           |
|   | Compressed air distributor with 4 connections and half the grid dimension width | 4    | -                    | -             | -             | -      | -                                     | -                         |
|   |   | 6    | -                    | -             | -             | -      | -                                     | -                         |
| <b>Flow sensors SFAM</b>  |   |      |                      |               |               |        |                                       |                           |
|   |   |      |                      |               |               |        | Technical data → Internet: sfam       |                           |
|  | For absolute flow rate information and accumulated air consumption measurement  | 6    | -                    | -             | -             | -      | 1/2                                   | 1/2                       |
|   |   | 9    | -                    | -             | -             | -      | 1, 1 1/2                              | 1, 1 1/2                  |

# On-off valves MS4/MS6-EM1, MS series

Peripherals overview



## On-off valve MS4/MS6-EM1



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

### Mounting attachments and accessories

|   | Individual device        |                       | Combination              |                       | → Page/Internet     |
|---|--------------------------|-----------------------|--------------------------|-----------------------|---------------------|
|   | Without connecting plate | With connecting plate | Without connecting plate | With connecting plate |                     |
| <b>1</b> Cover cap<br>MS4/6-END                               | ■                        | -                     | ■                        | -                     | ms4-end,<br>ms6-end |
| <b>2</b> Connecting plate-SET<br>MS4/6-AG...                  | -                        | ■                     | -                        | ■                     | ms4-ag,<br>ms6-ag   |
| Connecting plate-SET<br>MS4/6-AQ...                           | -                        | ■                     | -                        | ■                     | ms4-aq,<br>ms6-aq   |
| <b>3</b> Module connector<br>MS4/6-MV                         | -                        | ■                     | ■                        | ■                     | ms4-mv,<br>ms6-mv   |
| <b>4</b> Mounting bracket<br>MS4/6-WB                         | ■                        | ■                     | -                        | -                     | ms4-wb,<br>ms6-wb   |
| <b>5</b> Mounting bracket<br>MS4-WBM                          | ■                        | ■                     | -                        | -                     | ms4-wbm             |
| <b>6</b> Silencer<br>U  | ■                        | ■                     | ■                        | ■                     | 95                  |
| <b>7</b> MS pressure gauge<br>AG/RG                           | ■                        | ■                     | ■                        | ■                     | 16                  |
| <b>8</b> Adapter plate for EN pressure gauge 1/8/1/4<br>A8/A4 | ■                        | ■                     | ■                        | ■                     | 16                  |
| <b>9</b> Pressure gauge<br>MA                                 | ■                        | ■                     | ■                        | ■                     | 95                  |
| <b>10</b> Pressure sensor without display<br>AD7 ... AD10     | ■                        | ■                     | ■                        | ■                     | 16                  |
| <b>11</b> Connecting cable<br>NEBU-M8...-LE3                  | ■                        | ■                     | ■                        | ■                     | 95                  |
| <b>12</b> Pressure sensor with display<br>AD1 ... AD4         | ■                        | ■                     | ■                        | ■                     | 16                  |
| <b>13</b> Connecting cable<br>NEBU-M8...-LE3/NEBU-M12...-LE4  | ■                        | ■                     | ■                        | ■                     | 95                  |
| <b>14</b> Padlock<br>LRVS-D                                   | ■                        | ■                     | ■                        | ■                     | 95                  |
| - Mounting bracket<br>MS4/6-WP/WPB/WPE/WPM                    | -                        | ■                     | ■                        | ■                     | ms4-wp,<br>ms6-wp   |



# On-off valves MS4/MS6-EM1, MS series

Type codes

MS 6 - EM1 - 1/2 - S

**Series**

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

**Size**

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

**Service function**

|     |                                |
|-----|--------------------------------|
| EM1 | Manually operated on-off valve |
|-----|--------------------------------|

**Pneumatic connection**

|            |                    |
|------------|--------------------|
| <b>MS4</b> |                    |
| 1/8        | Female thread G1/8 |
| 1/4        | Female thread G1/4 |
| <b>MS6</b> |                    |
| 1/4        | Female thread G1/4 |
| 3/8        | Female thread G3/8 |
| 1/2        | Female thread G1/2 |

**Silencer**

|   |                  |
|---|------------------|
|   | Without silencer |
| S | Silencer         |

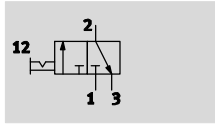
**Additional variants can be ordered using the modular system → 16**

- Connecting plates
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU certification
- UL certification
- Flow direction

# On-off valves MS4/MS6-EM1, MS series

## Technical data

### Function



- - Flow rate  
1,200 ... 8,700 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
0 ... 18 bar
- - [www.festo.com](http://www.festo.com)



- Manually operated on-off valve for pressurising and venting pneumatic installations
- The valve is activated by turning the rotary knob
- At connection 3 there is the facility to attach a silencer and/or to duct the exhaust air
- When the valve is closed, the rotary knob can be secured with a padlock
- Optional pressure gauge
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

| General technical data     |  |  |
|----------------------------|--|--|
| Size                       | MS4  | MS6  |
| Pneumatic connection 1, 2  |  |  |
| Female thread              | G $\frac{1}{8}$ or G $\frac{1}{4}$   | G $\frac{1}{4}$ , G $\frac{3}{8}$ or G $\frac{1}{2}$                           |
| Connecting plate AG...     | G $\frac{1}{8}$ , G $\frac{1}{4}$ or G $\frac{3}{8}$   | G $\frac{1}{4}$ , G $\frac{3}{8}$ , G $\frac{1}{2}$ or G $\frac{3}{4}$         |
| Connecting plate AQ...     | NPT $\frac{1}{8}$ , NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$   | NPT $\frac{1}{4}$ , NPT $\frac{3}{8}$ , NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$ |
| Pneumatic connection 3     | G $\frac{1}{4}$  | G $\frac{1}{2}$  |
| Design                     | Rotary slide valve   |  |
| Type of mounting           | Via accessories<br>In-line installation  |  |
| Assembly position          | Any  |  |
| Pressure indicator         | Via pressure sensor for displaying output pressure via LCD display and electrical output<br>Via pressure sensor for displaying output pressure via operational status indicator and electrical output<br>Via pressure gauge for displaying output pressure<br>Via pressure gauge with red/green scale for displaying output pressure<br>G $\frac{1}{4}$ prepared<br>G $\frac{1}{8}$ prepared |  |
| Valve function             | 3/2-way valve, bistable  |  |
| Exhaust function           | No flow control  |  |
| Switching position display | Knob actuator direction = flow direction   |  |
| Pilot control mode         | Direct   |  |
| Direction of flow          | Non-reversible   |  |

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

| Flow rate characteristic values                  |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Size   | MS4             |                 | MS6             |                 |                 |
| Pneumatic connection                             | G $\frac{1}{8}$ | G $\frac{1}{4}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 1,200           | 2,200           | 3,000           | 5,500           | 8,700           |
| In relief direction 2 $\rightarrow$ 3            | 1,900           | 1,700           | 6,800           | 6,600           | 6,200           |
| C value [l/s*min]                                |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 4.6             | 9.0             | 10.7            | 21.2            | 30.8            |
| b value  |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 0.51            | 0.39            | 0.56            | 0.49            | 0.57            |

1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar

# On-off valves MS4/MS6-EM1, MS series

Technical data

| Operating and environmental conditions       |  |                                   |
|--|--|-----------------------------------|
| Size   | MS4  | MS6                               |
| Operating pressure [bar]                     | 0 ... 14 (0 ... 10) <sup>1)</sup>  | 0 ... 18 (0 ... 10) <sup>1)</sup> |
| Operating medium                             | Compressed air in accordance with ISO 8573-1:2010 [7:4:4]<br>Inert gases                               |                                   |
| Note on operating/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |                                   |
| Ambient temperature [°C]                     | -10 ... +60 (0 ... +50) <sup>2)</sup>  |                                   |
| Temperature of medium [°C]                   | -10 ... +60 (0 ... +50) <sup>2)</sup>  |                                   |
| Corrosion resistance class CRC <sup>3)</sup> | 2  |                                   |
| Food-safe <sup>4)</sup>                      | See supplementary material information   |                                   |
| UL certification <sup>4)</sup>               | cULus recognized (OL)  |                                   |

1) Value in brackets applies to MS4/MS6-EM1 with pressure sensor AD... or with UL certification.

2) Value in brackets applies to MS4/MS6-EM1 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.

4) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

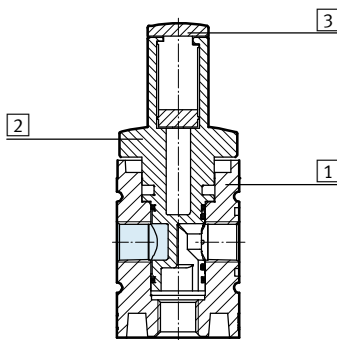
| ATEX  |   |
|---|---|
| EU certification                                      | EX4   |
| ATEX category gas                                     | II 2G                                       |
| Ex-ignition protection type gas                       | Ex h IIC T6 Gb X                            |
| ATEX category dust                                    | II 2D                                       |
| EX-ignition protection type dust                      | Ex h IIIC T60°C Db X                        |
| ATEX ambient temperature                              | -10 °C ≤ Ta ≤ +60 °C                        |
| CE mark (see declaration of conformity) <sup>1)</sup> | To EU Explosion Protection Directive (ATEX) |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

| Weights [g]                  |     |     |
|------------------------------|-----|-----|
| Size                         | MS4 | MS6 |
| On-off valve                 | 190 | 580 |
| On-off valve with silencer S | 210 | 655 |

## Materials

Sectional view



| On-off valve      |              |   |
|-------------------|--------------|---|
| 1                 | Body         | Die-cast aluminium                                      |
| 2                 | Rotary valve | PA reinforced   |
| 3                 | Lock slide   | PA reinforced   |
| -                 | Seals        | NBR, TPE-U(PU)  |
| Note on materials |              | RoHS-compliant  |
|                   |              | Free of copper and PTFE (not with variants AG or AD...) |

# On-off valves MS4/MS6-EM1, MS series

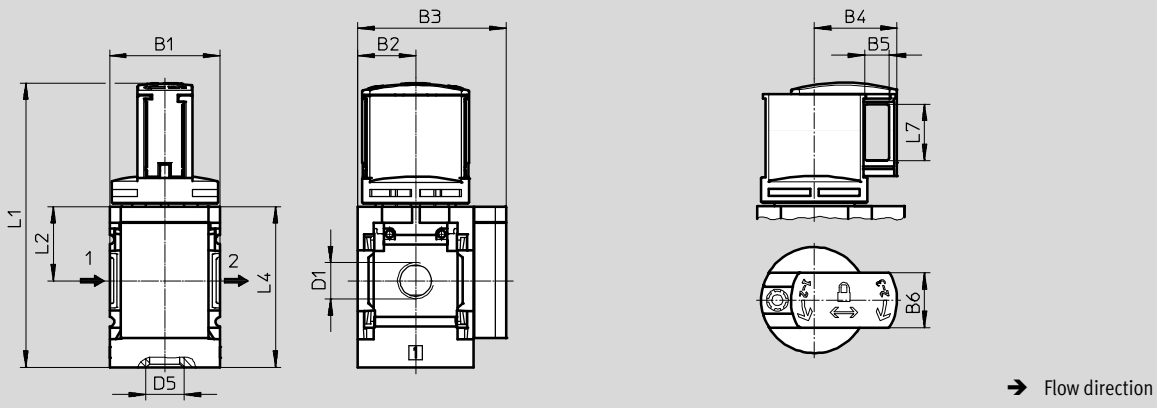
Technical data

## Dimensions – Basic version

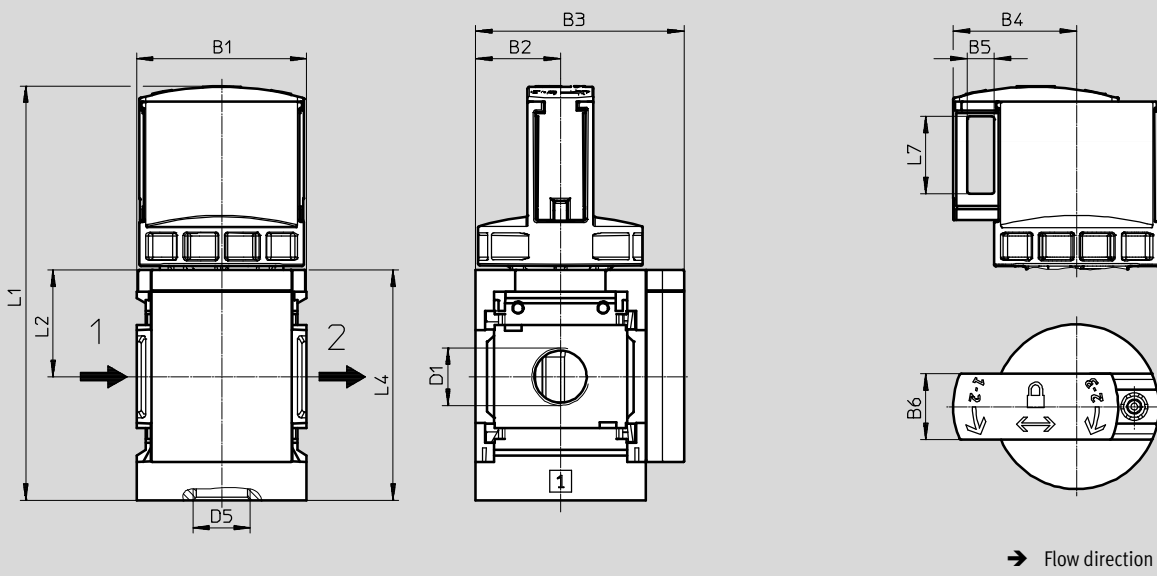
Download CAD data → [www.festo.com](http://www.festo.com)

With female thread, with cover plate

MS4



MS6



| Type        | B1 | B2 | B3 | B4 | B5 | B6 | D1   | D5   | L1    | L2 | L4   | L7   |
|-------------|----|----|----|----|----|----|------|------|-------|----|------|------|
| MS4-EM1-1/8 | 40 | 21 | 54 | 30 | 9  | 20 | G1/8 | G1/4 | 104   | 27 | 59   | 21   |
| MS4-EM1-1/4 |    |    |    |    |    |    | G1/4 |      |       |    |      |      |
| MS6-EM1-1/4 | 62 | 31 | 76 | 45 | 10 | 24 | G1/4 | G1/2 | 150.7 | 39 | 84.5 | 28.2 |
| MS6-EM1-3/8 |    |    |    |    |    |    | G3/8 |      |       |    |      |      |
| MS6-EM1-1/2 |    |    |    |    |    |    | G1/2 |      |       |    |      |      |

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

# On-off valves MS4/MS6-EM1, MS series

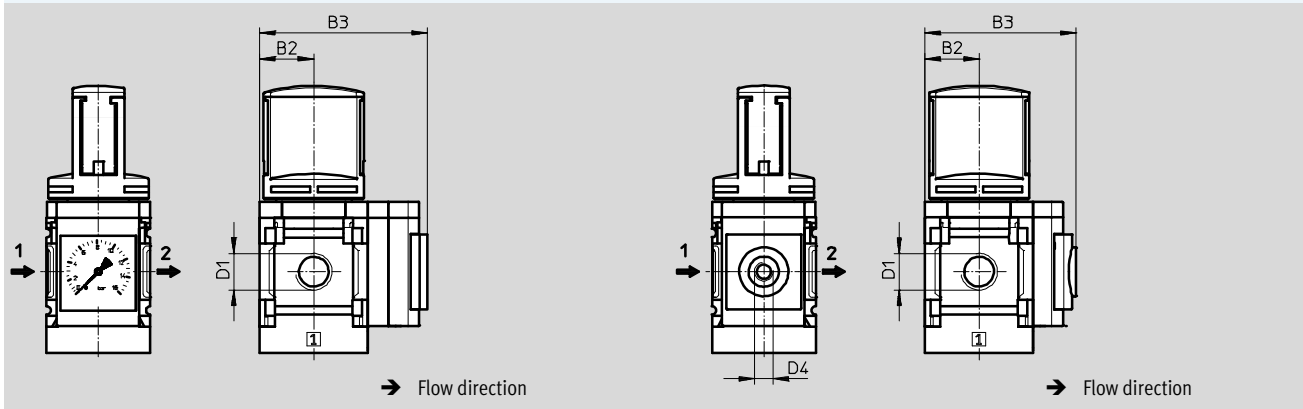
Technical data

**Dimensions – Pressure gauge/pressure gauge alternatives**

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

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

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



| Type               | B2 | B3   | D1   | D4   |
|--------------------|----|------|------|------|
| MS4-EM1-1/8-...-AG | 21 | 57   | G1/8 | -    |
| MS4-EM1-1/4-...-AG |    |      | G1/4 |      |
| MS4-EM1-1/8-...-RG | 21 | 58.5 | G1/8 | -    |
| MS4-EM1-1/4-...-RG |    |      | G1/4 |      |
| MS4-EM1-1/8-...-A8 | 21 | 58.5 | G1/8 | G1/8 |
| MS4-EM1-1/4-...-A8 |    |      | G1/4 |      |
| MS4-EM1-1/8-...-A4 | 21 | 58.5 | G1/8 | G1/4 |
| MS4-EM1-1/4-...-A4 |    |      | G1/4 |      |
| MS6-EM1-1/4-...-AG | 31 | 77   | G1/4 | -    |
| MS6-EM1-3/8-...-AG |    |      | G3/8 |      |
| MS6-EM1-1/2-...-AG |    |      | G1/2 |      |
| MS6-EM1-1/4-...-RG | 31 | 78.5 | G1/4 | -    |
| MS6-EM1-3/8-...-RG |    |      | G3/8 |      |
| MS6-EM1-1/2-...-RG |    |      | G1/2 |      |
| MS6-EM1-1/4-...-A4 | 31 | 78.5 | G1/4 | G1/4 |
| MS6-EM1-3/8-...-A4 |    |      | G3/8 |      |
| MS6-EM1-1/2-...-A4 |    |      | G1/2 |      |

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

# On-off valves MS4/MS6-EM1, MS series

Technical data



**Dimensions – Pressure gauge/pressure gauge alternatives** Download CAD data → [www.festo.com](http://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

→ Flow direction

**Pressure sensor with operational status indicator 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

→ Flow direction

| Type                             | B2 | B3   | D1   | D6    | L5   | L6   |
|----------------------------------|----|------|------|-------|------|------|
| MS4-EM1-1/8-...-AD1/AD2          | 21 | 82.6 | G1/8 | M8x1  | 35.1 | 46.7 |
| MS4-EM1-1/4-...-AD1/AD2          |    |      | G1/4 |       |      |      |
| MS4-EM1-1/8-...-AD3/AD4          | 21 | 82.6 | G1/8 | M12x1 | 35.1 | 55.8 |
| MS4-EM1-1/4-...-AD3/AD4          |    |      | G1/4 |       |      |      |
| MS4-EM1-1/8-...-AD7/AD8/AD9/AD10 | 21 | 59.1 | G1/8 | M8x1  | -    | -    |
| MS4-EM1-1/4-...-AD7/AD8/AD9/AD10 |    |      | G1/4 |       |      |      |
| MS6-EM1-1/4-...-AD1/AD2          | 31 | 103  | G1/4 | M8x1  | 35.1 | 46.7 |
| MS6-EM1-3/8-...-AD1/AD2          |    |      | G3/8 |       |      |      |
| MS6-EM1-1/2-...-AD1/AD2          |    |      | G1/2 |       |      |      |
| MS6-EM1-1/4-...-AD3/AD4          | 31 | 103  | G1/4 | M12x1 | 35.1 | 55.8 |
| MS6-EM1-3/8-...-AD3/AD4          |    |      | G3/8 |       |      |      |
| MS6-EM1-1/2-...-AD3/AD4          |    |      | G1/2 |       |      |      |
| MS6-EM1-1/4-...-AD7/AD8/AD9/AD10 | 31 | 79   | G1/4 | M8x1  | -    | -    |
| MS6-EM1-3/8-...-AD7/AD8/AD9/AD10 |    |      | G3/8 |       |      |      |
| MS6-EM1-1/2-...-AD7/AD8/AD9/AD10 |    |      | G1/2 |       |      |      |

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

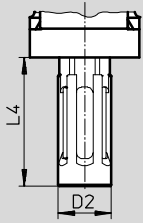
# On-off valves MS4/MS6-EM1, MS series

Technical data

FESTO

## Dimensions – Silencer

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



| Type          | D2 | L4  |
|---------------|----|-----|
| MS4-EM1-...-S | 20 | 49  |
| MS6-EM1-...-S | 28 | 109 |

## ★ Core product range

| Ordering data |            |          |             |               |               |
|---------------|------------|----------|-------------|---------------|---------------|
| Size          | Connection | Standard |             | With silencer |               |
|               |            | Part No. | Type        | Part No.      | Type          |
| MS4           | G1/4       | ★ 541258 | MS4-EM1-1/4 | ★ 541259      | MS4-EM1-1/4-S |
| MS6           | G1/2       | ★ 541267 | MS6-EM1-1/2 | ★ 541268      | MS6-EM1-1/2-S |

| Ordering data |            |          |             |               |               |
|---------------|------------|----------|-------------|---------------|---------------|
| Size          | Connection | Standard |             | With silencer |               |
|               |            | Part No. | Type        | Part No.      | Type          |
| MS4           | G1/8       | 541262   | MS4-EM1-1/8 | 541263        | MS4-EM1-1/8-S |
| MS6           | G1/4       | 541271   | MS6-EM1-1/4 | 541272        | MS6-EM1-1/4-S |
|               | G3/8       | 541275   | MS6-EM1-3/8 | 541276        | MS6-EM1-3/8-S |

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

# On-off valves MS4/MS6-EM1, MS series

Ordering data – Modular products

| Ordering table |                      |                                    |                                    |                 |                 |               |  |
|----------------|----------------------|------------------------------------|------------------------------------|-----------------|-----------------|---------------|--|
| Grid dimension | [mm]                 | 40                                 | 62                                 | Condi-<br>tions | Code            | Enter<br>code |  |
| <b>M</b>       | Module No.           | <b>541266</b>                      | <b>541279</b>                      |                 |                 |               |  |
|                | Series               | Standard                           |                                    |                 | <b>MS</b>       | MS            |  |
|                | Size                 | 4                                  | 6                                  |                 | ...             |               |  |
|                | Function             | On-off valve, manual               |                                    |                 | <b>-EM1</b>     | -EM1          |  |
|                | Pneumatic connection | Female thread G $\frac{1}{8}$      | –                                  | <b>1</b>        | - $\frac{1}{8}$ |               |  |
|                |                      | Female thread G $\frac{1}{4}$      | Female thread G $\frac{1}{4}$      | <b>1</b>        | - $\frac{1}{4}$ |               |  |
|                |                      | –                                  | Female thread G $\frac{3}{8}$      | <b>1</b>        | - $\frac{3}{8}$ |               |  |
|                |                      | –                                  | Female thread G $\frac{1}{2}$      | <b>1</b>        | - $\frac{1}{2}$ |               |  |
|                |                      | Connecting plate G $\frac{1}{8}$   | –                                  |                 |                 | <b>-AGA</b>   |  |
|                |                      | Connecting plate G $\frac{1}{4}$   | Connecting plate G $\frac{1}{4}$   |                 |                 | <b>-AGB</b>   |  |
|                |                      | Connecting plate G $\frac{3}{8}$   | Connecting plate G $\frac{3}{8}$   |                 |                 | <b>-AGC</b>   |  |
|                |                      | –                                  | Connecting plate G $\frac{1}{2}$   |                 |                 | <b>-AGD</b>   |  |
|                |                      | –                                  | Connecting plate G $\frac{3}{4}$   |                 |                 | <b>-AGE</b>   |  |
|                |                      | Connecting plate NPT $\frac{1}{8}$ | –                                  | <b>1</b>        |                 | <b>-AQK</b>   |  |
|                |                      | Connecting plate NPT $\frac{1}{4}$ | Connecting plate NPT $\frac{1}{4}$ | <b>1</b>        |                 | <b>-AQN</b>   |  |
|                |                      | Connecting plate NPT $\frac{3}{8}$ | Connecting plate NPT $\frac{3}{8}$ | <b>1</b>        |                 | <b>-AQP</b>   |  |
|                |                      | –                                  | Connecting plate NPT $\frac{1}{2}$ | <b>1</b>        |                 | <b>-AQR</b>   |  |
|                |                      | –                                  | Connecting plate NPT $\frac{3}{4}$ | <b>1</b>        |                 | <b>-AQS</b>   |  |

**1**  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ , **AQK, AQN, AQP, AQR, AQS, AD1 ... AD4, AD7 ... AD10, WPM**  
Not with EU certification EX4

- M** Mandatory data
- O** Options

Transfer order code

**MS**  - **EM1** -



# On-off valves MS4/MS6-EM1, MS series

Ordering data – Modular products

| Ordering table |  |  |     |                 |       |               |  |
|----------------|--|--|-----|-----------------|-------|---------------|--|
| Grid dimension | [mm]                                       | 40   | 62  | Condi-<br>tions | Code  | Enter<br>code |  |
| <b>O</b>       | Silencer                                   | Silencer   |     |                 | -S    |               |  |
|                | Pressure gauge/pressure gauge alternatives | MS pressure gauge, bar   |     |                 | -AG   |               |  |
|                |  | 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   |     |                 | -RG   |               |  |
|                |  | Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin                                 |     | 1 2             | -AD1  |               |  |
|                |  | Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin                                 |     | 1 2             | -AD2  |               |  |
|                |  | Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA   |     | 1 2             | -AD3  |               |  |
|                |  | Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA   |     | 1 2             | -AD4  |               |  |
|                |  | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact |     | 1 2             | -AD7  |               |  |
|                |  | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact |     | 1 2             | -AD8  |               |  |
|                |  | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact          |     | 1 2             | -AD9  |               |  |
|                |  | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact          |     | 1 2             | -AD10 |               |  |
|                |  | Alternative pressure gauge scale   | psi |                 | 3     | -PSI          |  |
|                |  |  | MPa |                 | 4     | -MPA          |  |
|                | Type of mounting                           | Mounting bracket standard design   |     | 5               | -WP   |               |  |
|                |  | Mounting bracket for attaching the service units   |     | 1 5             | -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 Explosion Protection Directive (ATEX)   |     |                 | -EX4  |               |  |
|                | UL certification                           | cULus, ordinary location for Canada and USA  |     |                 | -UL1  |               |  |
|                | Flow direction                             | Flow direction from right to left  |     |                 | -Z    |               |  |

**2** AD1 ... AD4, AD7 ... AD10

Measuring range max. 10 bar

**5** WP, WPM

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

**3** PSI

Only with pressure gauge AG

**4** MPA

Only with pressure gauge AG or RG

**M** Mandatory data

**O** Options

Transfer order code

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

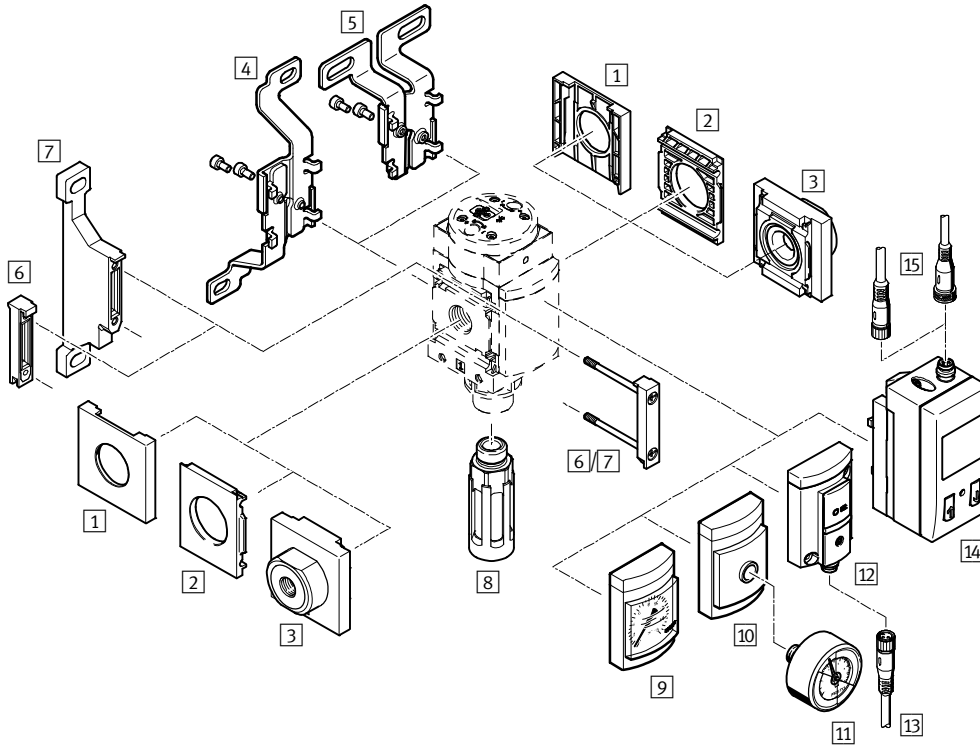
**New**  
**MS...-10V24C/10V24D/10V24F**

**On-off valves MS4/MS6-EE, MS series**

Peripherals overview



**On-off valve MS4/MS6-EE**



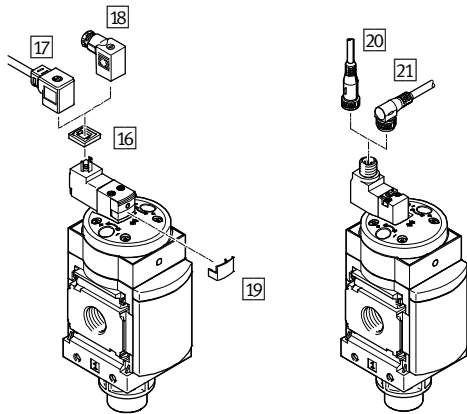
**Note**

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

Supply voltage  
 V24/V24P/10V24/10V24C/  
 V110/V230

Supply voltage  
 10V24D/10V24F/10V24P





New

MS...-10V24C/10V24D/10V24F

FESTO


## On-off valves MS4/MS6-EE, 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<br>MS4/6-END                                  | ■                        | -                     | ■                        | -                     | ms4-end,<br>ms6-end   |
| 2                                    | Mounting plate<br>MS4/6-AEND                            | ■ <sup>1)</sup>          | -                     | ■ <sup>1)</sup>          | -                     | ms4-aend,<br>ms6-aend |
| 3                                    | Connecting plate-SET<br>MS4/6-AG...                     | -                        | ■ <sup>1)</sup>       | -                        | ■ <sup>1)</sup>       | ms4-ag,<br>ms6-ag     |
|                                      | Connecting plate-SET<br>MS4/6-AQ...                     | -                        | ■ <sup>1)</sup>       | -                        | ■ <sup>1)</sup>       | ms4-aq,<br>ms6-aq     |
| 4                                    | Mounting bracket<br>MS4/6-WB                            | ■                        | ■                     | -                        | -                     | ms4-wb,<br>ms6-wb     |
| 5                                    | Mounting bracket<br>MS4-WBM                             | ■                        | ■                     | -                        | -                     | ms4-wbm               |
| 6                                    | Module connector<br>MS4/6-MV                            | -                        | ■                     | ■                        | ■                     | ms4-mv,<br>ms6-mv     |
| 7                                    | Mounting bracket<br>MS4/6-WP                            | ■                        | ■                     | ■                        | ■                     | ms4-wp,<br>ms6-wp     |
|                                      | Mounting bracket (not illustrated)<br>MS4/6-WPB/WPE/WPM | ■                        | ■                     | ■                        | ■                     | ms4-wp,<br>ms6-wp     |
| 8                                    | Silencer<br>U   | ■                        | ■                     | ■                        | ■                     | 95                    |
| 9                                    | MS pressure gauge<br>AG/RG                              | ■                        | ■                     | ■                        | ■                     | 28                    |
| 10                                   | Adapter plate for EN pressure gauge 1/8/1/4<br>A8/A4    | ■                        | ■                     | ■                        | ■                     | 28                    |
| 11                                   | Pressure gauge<br>MA                                    | ■                        | ■                     | ■                        | ■                     | 95                    |
| 12                                   | Pressure sensor without display<br>AD7 ... AD10         | ■                        | ■                     | ■                        | ■                     | 28                    |
| 13                                   | Connecting cable<br>NEBU-M8...-LE3                      | ■                        | ■                     | ■                        | ■                     | 95                    |
| 14                                   | Pressure sensor with display<br>AD1 ... AD4             | ■                        | ■                     | ■                        | ■                     | 28                    |
| 15                                   | Connecting cable<br>NEBU-M8...-LE3/NEBU-M12...-LE4      | ■                        | ■                     | ■                        | ■                     | 95                    |
| 16                                   | Illuminating seal<br>MEB-LD                             | ■                        | ■                     | ■                        | ■                     | 94                    |
| 17                                   | Plug socket with cable<br>KMEB                          | ■                        | ■                     | ■                        | ■                     | 94                    |
| 18                                   | Plug socket<br>MSSD-EB <sup>2)</sup>                    | ■                        | ■                     | ■                        | ■                     | 94                    |
| 19                                   | Locking clip<br>CPV18-HV                                | ■                        | ■                     | ■                        | ■                     | 94                    |
| 20                                   | Connecting cable<br>NEBU-M12G5                          | ■                        | ■                     | ■                        | ■                     | 95                    |
| 21                                   | Connecting cable<br>NEBU-M12W5                          | ■                        | ■                     | ■                        | ■                     | 95                    |

1) Module connector MS4/6-MV [6] or mounting bracket MS4/6-WP/WPB/WPE/WPM [7] is required for mounting.

2) For the on-off valve MS...V24P and MS...V24...EX2 the plug socket is included in scope of delivery.

 **New**

## MS...-10V24C/10V24D/10V24F

**FESTO**

### On-off valves MS4/MS6-EE, MS series

Type codes

|                             |                                |    |   |   |    |   |     |   |      |   |  |
|-----------------------------|--------------------------------|----|---|---|----|---|-----|---|------|---|--|
|                             |                                | MS | 6 | - | EE | - | 1/2 | - | V110 | - |  |
| <b>Series</b>               |                                |    |   |   |    |   |     |   |      |   |  |
| MS                          | Standard service unit          |    |   |   |    |   |     |   |      |   |  |
| <b>Size</b>                 |                                |    |   |   |    |   |     |   |      |   |  |
| 4                           | Grid dimension 40 mm           |    |   |   |    |   |     |   |      |   |  |
| 6                           | Grid dimension 62 mm           |    |   |   |    |   |     |   |      |   |  |
| <b>Service function</b>     |                                |    |   |   |    |   |     |   |      |   |  |
| EE                          | Solenoid actuated on-off valve |    |   |   |    |   |     |   |      |   |  |
| <b>Pneumatic connection</b> |                                |    |   |   |    |   |     |   |      |   |  |
| MS4                         |                                |    |   |   |    |   |     |   |      |   |  |
| 1/8                         | Female thread G1/8             |    |   |   |    |   |     |   |      |   |  |
| 1/4                         | Female thread G1/4             |    |   |   |    |   |     |   |      |   |  |
| MS6                         |                                |    |   |   |    |   |     |   |      |   |  |
| 1/4                         | Female thread G1/4             |    |   |   |    |   |     |   |      |   |  |
| 3/8                         | Female thread G3/8             |    |   |   |    |   |     |   |      |   |  |
| 1/2                         | Female thread G1/2             |    |   |   |    |   |     |   |      |   |  |
| <b>Supply voltage</b>       |                                |    |   |   |    |   |     |   |      |   |  |
| 10V24                       | Supply voltage 24 V DC         |    |   |   |    |   |     |   |      |   |  |
| V110                        | Supply voltage 110 V AC        |    |   |   |    |   |     |   |      |   |  |
| V230                        | Supply voltage 230 V AC        |    |   |   |    |   |     |   |      |   |  |
| <b>Silencer</b>             |                                |    |   |   |    |   |     |   |      |   |  |
|                             | Without silencer               |    |   |   |    |   |     |   |      |   |  |
| S                           | Silencer                       |    |   |   |    |   |     |   |      |   |  |

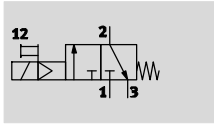
#### Additional variants can be ordered using the modular system → 28





- Connecting plates
- Supply voltage
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU certification
- UL certification
- Flow direction

## On-off valves MS4/MS6-EE, MS series

Technical data

Function




-  - Flow rate  
1,000 ... 7,000 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Operating pressure  
4 ... 18 bar
-  - [www.festo.com](http://www.festo.com)



- Solenoid actuated on-off valve for pressurising and venting pneumatic installations
- With solenoid coil without plug socket
- Three voltage ranges can be selected
- Ducted exhaust possible via a threaded connection with silencer
- Non-detenting and detenting manual override (variant 10V24/10V24F: only non-detenting)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22

| General technical data     |  |  |
|----------------------------|--|--|
| Size                       | MS4  | MS6  |
| Pneumatic connection 1, 2  |  |  |
| Female thread              | G $\frac{1}{8}$ or G $\frac{1}{4}$   | G $\frac{1}{4}$ , G $\frac{3}{8}$ or G $\frac{1}{2}$                           |
| Connecting plate AG...     | G $\frac{1}{8}$ , G $\frac{1}{4}$ or G $\frac{3}{8}$   | G $\frac{1}{4}$ , G $\frac{3}{8}$ , G $\frac{1}{2}$ or G $\frac{3}{4}$         |
| Connecting plate AQ...     | NPT $\frac{1}{8}$ , NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$   | NPT $\frac{1}{4}$ , NPT $\frac{3}{8}$ , NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$ |
| Pneumatic connection 3     | G $\frac{1}{4}$  | G $\frac{1}{2}$  |
| Design                     | Piston spool valve   |  |
| Type of mounting           | Via accessories<br>In-line installation  |  |
| Assembly position          | Any  |  |
| Pressure indicator         | Via pressure sensor for displaying output pressure via LCD display and electrical output<br>Via pressure sensor for displaying output pressure via operational status indicator and electrical output<br>Via pressure gauge for displaying output pressure<br>Via pressure gauge with red/green scale for displaying output pressure<br>G $\frac{1}{4}$ prepared<br>G $\frac{1}{8}$ prepared |  |
| Valve function             | 3/2-way valve, single solenoid, closed   |  |
| Exhaust function           | Without flow control   |  |
| Manual override            | 10V24/10V24F   | Non-detenting  |
|                            | V24/V24P/10V24P/<br>V110/V230  | Non-detenting and detenting  |
|                            | 10V24C/10V24D  | None   |
| Type of reset              | Mechanical spring  |  |
| Switching position display | Via accessories  |  |
| Pilot control mode         | Piloted  |  |
| Pilot air supply           | Internal   |  |
| Direction of flow          | Non-reversible   |  |

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

**On-off valves MS4/MS6-EE, MS series**

Technical data

| Electrical data                    |   |  |
|------------------------------------|---|--|
| Coil                               | V24/V24P                                  | 24 V DC: 1.5 W; perm. voltage fluctuations -25%/+10%   |
| characteristics                    | 10V24/10V24C/<br>10V24D/10V24F/<br>10V24P | 24 V DC: 1.8 W; perm. voltage fluctuations -15%/+10%   |
|                                    | V110                                      | 110 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; perm. voltage fluctuations ±10%      |
|                                    | V230                                      | 230 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; perm. voltage fluctuations -14%/+10% |
|                                    | Electrical connection                     | V24/10V24/<br>10V24C/V110/<br>V230   |
|                                    | V24P/10V24D/<br>10V24F/10V24P             | M12x1 to ISO 20401 suitable to EN 61076-2-101  |
| Protection class for solenoid coil |   | IP65   |
| Duty cycle                         | [%]                                       | 100  |

| Flow rate characteristic values                  |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Size   | MS4             |                 |                 | MS6             |                 |
| Pneumatic connection                             | G $\frac{1}{8}$ | G $\frac{1}{4}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 1,000           | 2,000           | 2,600           | 5,500           | 7,000           |
| In relief direction 2 $\rightarrow$ 3            | 1,600           | 1,600           | 7,000           | 6,200           | 5,500           |
| C value [l/s*min]                                |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 4.5             | 9.5             | 11.0            | 22.0            | 29.0            |
| b value  |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 0.5             | 0.44            | 0.5             | 0.5             | 0.4             |

1) Measured at p1 = 6 bar and p2 = 5 bar,  $\Delta p = 1$  bar

| Operating and environmental conditions       |  |                                       |                                       |                                       |
|--|--|---------------------------------------|---------------------------------------|---------------------------------------|
| Size   | MS4  |                                       | MS6                                   |                                       |
| Supply voltage                               | V24/V24P/V110/V230   | 10V24/10V24C/10V24D/<br>10V24F/10V24P | V24/V24P/V110/V230                    | 10V24/10V24C/10V24D/<br>10V24F/10V24P |
| Operating pressure [bar]                     | 4 ... 14 (4 ... 10) <sup>1)</sup>  | 4 ... 10                              | 4 ... 18 (4 ... 10) <sup>1)</sup>     | 4 ... 10                              |
| Operating medium                             | Compressed air in accordance with ISO 8573-1:2010 [7:4:4]<br>Inert gases                               |                                       |                                       |                                       |
| Note on operating/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |                                       |                                       |                                       |
| Ambient temperature [°C]                     | -10 ... +60 (0 ... +50) <sup>2)</sup>  | -10 ... +50 (0 ... +50) <sup>2)</sup> | -10 ... +60 (0 ... +50) <sup>2)</sup> | -10 ... +50 (0 ... +50) <sup>2)</sup> |
| Temperature of medium [°C]                   | -10 ... +60 (0 ... +50) <sup>2)</sup>  | -10 ... +50 (0 ... +50) <sup>2)</sup> | -10 ... +60 (0 ... +50) <sup>2)</sup> | -10 ... +50 (0 ... +50) <sup>2)</sup> |
| Corrosion resistance class CRC <sup>3)</sup> | 2  |                                       |                                       |                                       |
| Food-safe <sup>4)</sup>                      | See supplementary material information (except solenoid valve)   |                                       |                                       |                                       |
| UL certification <sup>4)</sup>               | cULus recognized (OL)  |                                       |                                       |                                       |
| KC marking                                   | KC EMC <sup>2)</sup>   |                                       |                                       |                                       |

1) Value in brackets applies to MS4/MS6-EE with pressure sensor AD... with UL certification or with silencer S in combination with EU certification EX2.

2) Value in brackets applies to MS4/MS6-EE 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.

4) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

## On-off valves MS4/MS6-EE, MS series

Technical data

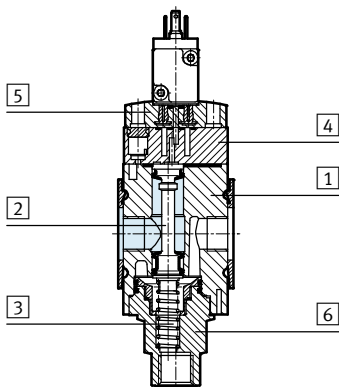
| ATEX  |   |
|---|---|
| EU certification                                      | EX2   |
| ATEX category gas                                     | II 3G                                       |
| Ex-ignition protection type gas                       | Ex nA IIC T4 X Gc                           |
| ATEX category dust                                    | II 3D                                       |
| EX-ignition protection type dust                      | Ex tc IIIC T105°C X Dc IP65                 |
| ATEX ambient temperature                              | -10 °C ≤ Ta ≤ +60 °C                        |
| CE mark (see declaration of conformity) <sup>1)</sup> | To EU Explosion Protection Directive (ATEX) |
|   | To EU EMC Directive                         |
|   | To EU Low Voltage Directive                 |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

| Weights [g]                  |     |     |
|------------------------------|-----|-----|
| Size                         | MS4 | MS6 |
| On-off valve                 | 273 | 740 |
| On-off valve with silencer S | 289 | 816 |

### Materials

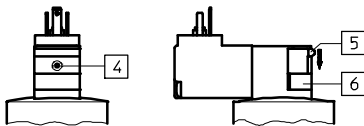
Sectional view




| On-off valve      |                       |  |
|-------------------|-----------------------|--|
| 1                 | Body                  | Die-cast aluminium   |
| 2                 | Piston spool          | NBR/aluminium  |
| 3                 | Springs               | High-alloy stainless steel   |
| 4                 | End cap               | PA   |
| 5                 | Top plate             | PA   |
| 6                 | Socket end connection | PA   |
| -                 | Seals                 | NBR  |
| Note on materials |                       | RoHS-compliant   |
|                   |                       | Free of copper and PTFE (not with variants AG, V24P, 10V24, 10V24C, 10V24D, 10V24F, 10V24P or AD...) |

### Manual override

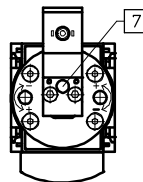
Supply voltage  
V24/V24P/V110/V230



 Note

For detenting manual override remove the grey cover plate [6] and press the slide [5] downwards.

Supply voltage  
10V24/10V24F/10V24P



- [4] Manual override, non-detenting (delivery status)
- [5] Slide
- [6] Cover plate
- [7] Non-detenting and detenting manual override (variant 10V24/10V24F: only non-detenting)

On-off valves MS4/MS6-EE, MS series

Technical data

Dimensions – Basic version

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

With female thread, with cover plate

Supply voltage  
V24/10V24/10V24C/V110/V230

Supply voltage  
10V24D/10V24F/10V24P

Supply voltage  
V24P

- 1 = Unused
- 2 = Unused
- 3 = com (-)
- 4 = Signal (+) solenoid 14

- 1** Plug connection to EN 175301-803
- 2** Solenoid actuator can be repositioned by 180°, i.e. solenoid points to the front
- 3** PIN only with solenoid actuators 110 V and 230 V
- 4** Electrical connection M12x1 to ISO 20401 suitable to EN 61076-2-101, version 4 pin for connecting cable NEBU-M12

→ Flow direction

| Type       | B1 | B2                             |   | B3                             |   | B4 | B5 | B6 | B7 | D1   | D5   | D7    |
|------------|----|--------------------------------|---|--------------------------------|---|----|----|----|----|------|------|-------|
|            |    | V24/<br>V24P/<br>V110/<br>V230 | 10V24/<br>10V24C/<br>10V24D/<br>10V24F/<br>10V24P | V24/<br>V24P/<br>V110/<br>V230 | 10V24/<br>10V24C/<br>10V24D/<br>10V24F/<br>10V24P |    |    |    |    |      |      |       |
| MS4-EE-1/8 | 40 | 42                             | 35  | 75                             | 68  | 21 | 54 | 31 | 11 | G1/8 | G1/4 | M12x1 |
| MS4-EE-1/4 |    |                                |   |                                |   |    |    |    |    | G1/4 |      |       |
| MS6-EE-1/4 | 62 | 52                             | 45  | 97                             | 90  | 31 | 76 | 31 | 11 | G1/4 | G1/2 | M12x1 |
| MS6-EE-3/8 |    |                                |   |                                |   |    |    |    |    | G3/8 |      |       |
| MS6-EE-1/2 |    |                                |   |                                |   |    |    |    |    | G1/2 |      |       |

| Type       | L1                    |                   |                   |                  |                              | L2 | L3  | L7   |                  | L8               | L9 |      |
|------------|-----------------------|-------------------|-------------------|------------------|------------------------------|----|-----|------|------------------|------------------|----|------|
|            | V24/<br>V110/<br>V230 | V24P              | V24-EX2           | 10V24/<br>10V24C | 10V24D/<br>10V24F/<br>10V24P |    |     | V24P | V24-EX2          |                  |    |      |
| MS4-EE-1/8 | 142.8                 | 156 <sup>1)</sup> | 160 <sup>1)</sup> | 140              | 145                          | 59 | 100 | 8.6  | 22 <sup>1)</sup> | 26 <sup>1)</sup> | 37 | 26   |
| MS4-EE-1/4 |                       |                   |                   |                  |                              |    |     |      |                  |                  |    |      |
| MS6-EE-1/4 | 186                   | 199 <sup>1)</sup> | 203 <sup>1)</sup> | 183              | 188                          | 84 | 143 | 8.6  | 22 <sup>1)</sup> | 26 <sup>1)</sup> | 37 | 27.5 |
| MS6-EE-3/8 |                       |                   |                   |                  |                              |    |     |      |                  |                  |    |      |
| MS6-EE-1/2 |                       |                   |                   |                  |                              |    |     |      |                  |                  |    |      |

1) Measured with plug socket MSSD-EB (included in scope of delivery).

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



## On-off valves MS4/MS6-EE, MS series

Technical data

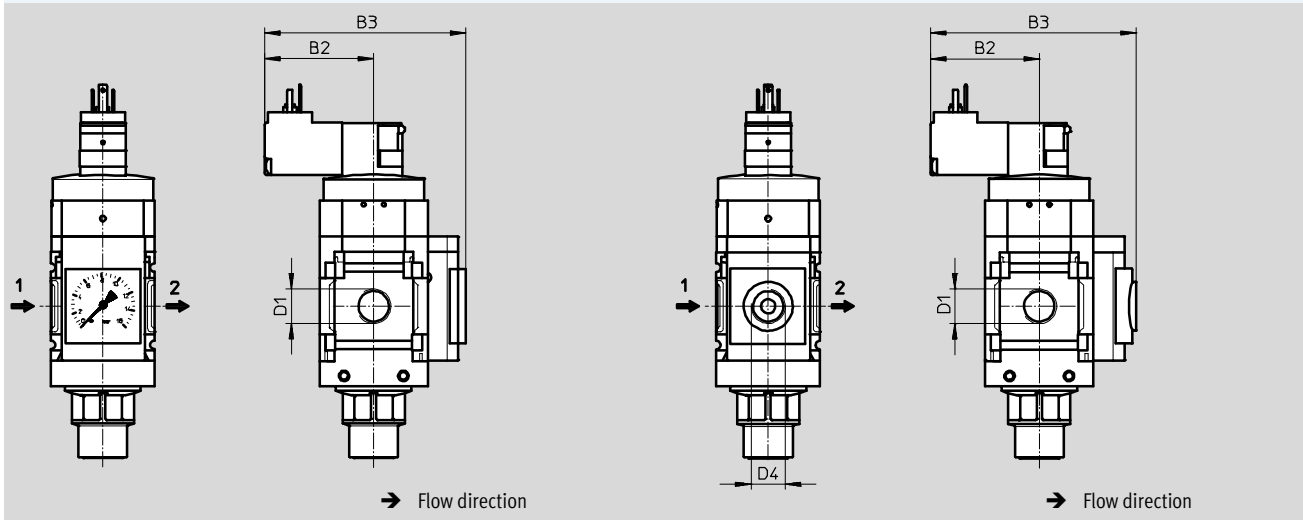
**FESTO**

### Dimensions – Pressure gauge/pressure gauge alternatives

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

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

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



| Type              | B2                     | B2  | B3                     | B3  | D1   | D4   |
|-------------------|------------------------|---|------------------------|---|------|------|
|                   | V24/V24P/<br>V110/V230 | 10V24/10V24C/<br>10V24D/10V24F/<br>10V24P | V24/V24P/<br>V110/V230 | 10V24/10V24C/<br>10V24D/10V24F/<br>10V24P |      |      |
| MS4-EE-1/8-...-AG | 42                     | 35  | 86                     | 79  | G1/8 | -    |
| MS4-EE-1/4-...-AG |                        |   |                        |   | G1/4 |      |
| MS4-EE-1/8-...-RG | 42                     | 35  | 87.5                   | 80.5                                      | G1/8 | -    |
| MS4-EE-1/4-...-RG |                        |   |                        |   | G1/4 |      |
| MS4-EE-1/8-...-A8 | 42                     | 35  | 79.5                   | 72.5                                      | G1/8 | G1/8 |
| MS4-EE-1/4-...-A8 |                        |   |                        |   | G1/4 |      |
| MS4-EE-1/8-...-A4 | 42                     | 35  | 79.5                   | 72.5                                      | G1/8 | G1/4 |
| MS4-EE-1/4-...-A4 |                        |   |                        |   | G1/4 |      |
| MS6-EE-1/4-...-AG | 52                     | 45  | 98                     | 91  | G1/4 | -    |
| MS6-EE-3/8-...-AG |                        |   |                        |   | G3/8 |      |
| MS6-EE-1/2-...-AG |                        |   |                        |   | G1/2 |      |
| MS6-EE-1/4-...-RG | 52                     | 45  | 99.5                   | 92.5                                      | G1/4 | -    |
| MS6-EE-3/8-...-RG |                        |   |                        |   | G3/8 |      |
| MS6-EE-1/2-...-RG |                        |   |                        |   | G1/2 |      |
| MS6-EE-1/4-...-A4 | 52                     | 45  | 99.5                   | 92.5                                      | G1/4 | G1/4 |
| MS6-EE-3/8-...-A4 |                        |   |                        |   | G3/8 |      |
| MS6-EE-1/2-...-A4 |                        |   |                        |   | G1/2 |      |

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

**On-off valves MS4/MS6-EE, MS series**

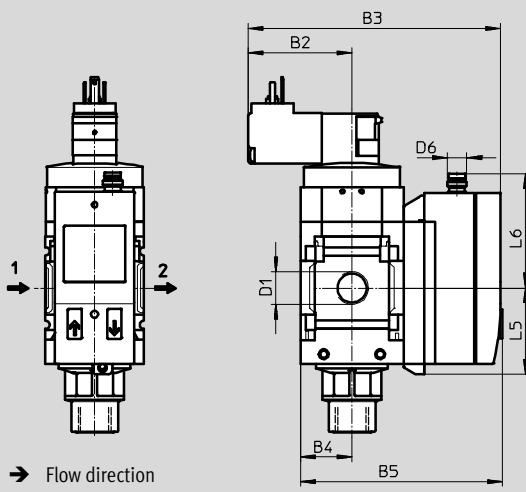
Technical data

**Dimensions – Pressure gauge/pressure gauge alternatives**

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

Pressure sensor with LCD display AD1 ... AD4

Technical data → Internet: [sde1](http://sde1)



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

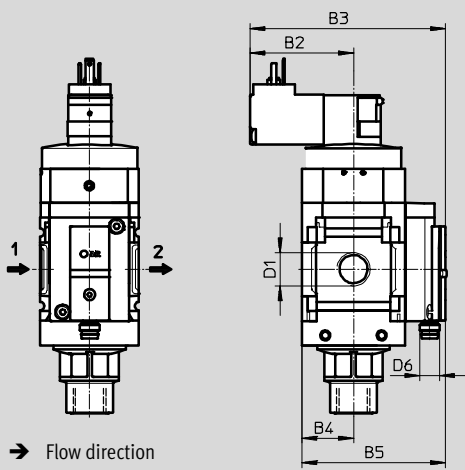
**Variant AD3:**  
SDE1-D10-G2-MS-L-PI-M12 with 4-pin plug M12x1, 1 switching output PNP and 4 ... 20 mA analogue

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

**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 with operational status indicator AD7 ... AD10**

Technical data → Internet: [sde5](http://sde5)



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

**Variant AD9:**  
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window 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 AD10:**  
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

| Type                            | B2                             |   | B3                             |   | B4 | B5   | D1   | D6    | L5   | L6   |
|---------------------------------|--------------------------------|---|--------------------------------|---|----|------|------|-------|------|------|
|                                 | V24/<br>V24P/<br>V110/<br>V230 | 10V24/10V24C/<br>10V24D/10V24F/<br>10V24P | V24/<br>V24P/<br>V110/<br>V230 | 10V24/10V24C/<br>10V24D/10V24F/<br>10V24P |    |      |      |       |      |      |
| MS4-EE-1/8-...-AD1/AD2          | 42                             | 35  | 103.6                          | 96.6                                      | 21 | 82.6 | G1/8 | M8x1  | 35.1 | 46.7 |
| MS4-EE-1/4-...-AD1/AD2          |                                |   |                                |   |    |      | G1/4 |       |      |      |
| MS4-EE-1/8-...-AD3/AD4          | 42                             | 35  | 103.6                          | 96.6                                      | 21 | 82.6 | G1/8 | M12x1 | 35.1 | 55.8 |
| MS4-EE-1/4-...-AD3/AD4          |                                |   |                                |   |    |      | G1/4 |       |      |      |
| MS4-EE-1/8-...-AD7/AD8/AD9/AD10 | 42                             | 35  | 80.1                           | 73.1                                      | 21 | 59.1 | G1/8 | M8x1  | -    | -    |
| MS4-EE-1/4-...-AD7/AD8/AD9/AD10 |                                |   |                                |   |    |      | G1/4 |       |      |      |
| MS6-EE-1/4-...-AD1/AD2          | 52                             | 45  | 124                            | 117                                       | 31 | 103  | G1/4 | M8x1  | 35.1 | 46.7 |
| MS6-EE-3/8-...-AD1/AD2          |                                |   |                                |   |    |      | G3/8 |       |      |      |
| MS6-EE-1/2-...-AD1/AD2          |                                |   |                                |   |    |      | G1/2 |       |      |      |
| MS6-EE-1/4-...-AD3/AD4          |                                |   |                                |   |    |      | G1/4 |       |      |      |
| MS6-EE-3/8-...-AD3/AD4          | 52                             | 45  | 124                            | 117                                       | 31 | 103  | G3/8 | M12x1 | 35.1 | 55.8 |
| MS6-EE-1/2-...-AD3/AD4          |                                |   |                                |   |    |      | G1/2 |       |      |      |
| MS6-EE-1/4-...-AD7/AD8/AD9/AD10 | 52                             | 45  | 100                            | 93  | 31 | 79   | G1/4 | M8x1  | -    | -    |
| MS6-EE-3/8-...-AD7/AD8/AD9/AD10 |                                |   |                                |   |    |      | G3/8 |       |      |      |
| MS6-EE-1/2-...-AD7/AD8/AD9/AD10 |                                |   |                                |   |    |      | G1/2 |       |      |      |

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

## On-off valves MS4/MS6-EE, MS series

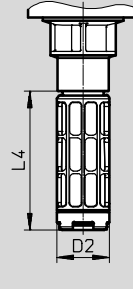
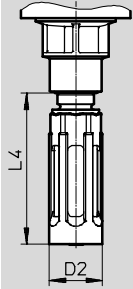
Technical data

### Dimensions – Silencer

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

Silencer S

Silencer S with EU certification EX2



| Type                 | D2 | L4   |
|----------------------|----|------|
| MS4-EE-...-S         | 20 | 55   |
| MS4-EE-...-S-...-EX2 | 19 | 50.7 |
| MS6-EE-...-S         | 28 | 108  |
| MS6-EE-...-S-...-EX2 | 43 | 80   |

### ★ Core product range

| Ordering data          |            |                  |                  |               |                    |
|------------------------|------------|------------------|------------------|---------------|--------------------|
| Size                   | Connection | Without silencer |                  | With silencer |                    |
|                        |            | Part No.         | Type             | Part No.      | Type               |
| Supply voltage 24 V DC |            |                  |                  |               |                    |
| MS4                    | G1/4       | ★ 542578         | MS4-EE-1/4-10V24 | ★ 542598      | MS4-EE-1/4-10V24-S |
| MS6                    | G1/2       | ★ 542582         | MS6-EE-1/2-10V24 | ★ 542602      | MS6-EE-1/2-10V24-S |

| Ordering data           |            |                  |                  |               |                    |
|-------------------------|------------|------------------|------------------|---------------|--------------------|
| Size                    | Connection | Without silencer |                  | With silencer |                    |
|                         |            | Part No.         | Type             | Part No.      | Type               |
| Supply voltage 24 V DC  |            |                  |                  |               |                    |
| MS4                     | G1/8       | 542580           | MS4-EE-1/8-10V24 | 542600        | MS4-EE-1/8-10V24-S |
| MS6                     | G1/4       | 542584           | MS6-EE-1/4-10V24 | 542604        | MS6-EE-1/4-10V24-S |
|                         | G3/8       | 542586           | MS6-EE-3/8-10V24 | 542606        | MS6-EE-3/8-10V24-S |
| Supply voltage 110 V AC |            |                  |                  |               |                    |
| MS4                     | G1/4       | 529535           | MS4-EE-1/4-V110  | 538719        | MS4-EE-1/4-V110-S  |
| MS6                     | G1/2       | 529823           | MS6-EE-1/2-V110  | 538731        | MS6-EE-1/2-V110-S  |
| Supply voltage 230 V AC |            |                  |                  |               |                    |
| MS4                     | G1/4       | 529537           | MS4-EE-1/4-V230  | -             | -                  |
| MS6                     | G1/2       | 529825           | MS6-EE-1/2-V230  | -             | -                  |

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

**On-off valves MS4/MS6-EE, MS series**

Ordering data – Modular products

| Ordering table |                      |   |                                    |                 |                                  |                |  |
|----------------|----------------------|---|------------------------------------|-----------------|----------------------------------|----------------|--|
| Grid dimension | [mm]                 | 40  | 62                                 | Condi-<br>tions | Code                             | Enter<br>code  |  |
| <b>M</b>       | Module No.           | <b>527709</b>   |                                    | <b>527682</b>   |                                  |                |  |
|                | Series               | Standard  |                                    |                 | <b>MS</b>                        | MS             |  |
|                | Size                 | 4   | 6                                  |                 | ...                              |                |  |
|                | Function             | On-off valve, electrical  |                                    |                 | <b>-EE</b>                       | -EE            |  |
|                | Pneumatic connection | Female thread G $\frac{1}{8}$   | –                                  | <b>1</b>        | <b>-<math>\frac{1}{8}</math></b> |                |  |
|                |                      | Female thread G $\frac{1}{4}$   | Female thread G $\frac{1}{4}$      | <b>1</b>        | <b>-<math>\frac{1}{4}</math></b> |                |  |
|                |                      | –   | Female thread G $\frac{3}{8}$      | <b>1</b>        | <b>-<math>\frac{3}{8}</math></b> |                |  |
|                |                      | –   | Female thread G $\frac{1}{2}$      | <b>1</b>        | <b>-<math>\frac{1}{2}</math></b> |                |  |
|                |                      | Connecting plate G $\frac{1}{8}$  | –                                  |                 |                                  | <b>-AGA</b>    |  |
|                |                      | Connecting plate G $\frac{1}{4}$  | Connecting plate G $\frac{1}{4}$   |                 |                                  | <b>-AGB</b>    |  |
|                |                      | Connecting plate G $\frac{3}{8}$  | Connecting plate G $\frac{3}{8}$   |                 |                                  | <b>-AGC</b>    |  |
|                |                      | –   | Connecting plate G $\frac{1}{2}$   |                 |                                  | <b>-AGD</b>    |  |
|                |                      | –   | Connecting plate G $\frac{3}{4}$   |                 |                                  | <b>-AGE</b>    |  |
|                |                      | Connecting plate NPT $\frac{1}{8}$  | –                                  | <b>1</b>        |                                  | <b>-AQK</b>    |  |
|                |                      | Connecting plate NPT $\frac{1}{4}$  | Connecting plate NPT $\frac{1}{4}$ | <b>1</b>        |                                  | <b>-AQN</b>    |  |
|                |                      | Connecting plate NPT $\frac{3}{8}$  | Connecting plate NPT $\frac{3}{8}$ | <b>1</b>        |                                  | <b>-AQP</b>    |  |
|                |                      | –   | Connecting plate NPT $\frac{1}{2}$ | <b>1</b>        |                                  | <b>-AQR</b>    |  |
|                |                      | –   | Connecting plate NPT $\frac{3}{4}$ | <b>1</b>        |                                  | <b>-AQS</b>    |  |
|                | Supply voltage       | 24 V DC (pin allocation to EN 175301)<br>4 ... 14 bar   |                                    | 4 ... 18 bar    |                                  | <b>-V24</b>    |  |
|                |                      | 24 V DC, M12x1 to ISO 20401 suitable to EN 61076-2-101<br>4 ... 14 bar  |                                    | 4 ... 18 bar    | <b>1</b>                         | <b>-V24P</b>   |  |
|                |                      | 24 V DC (pin allocation to EN 175301), 4 ... 10 bar, non-detenting manual override                                |                                    |                 | <b>1 2</b>                       | <b>-10V24</b>  |  |
|                |                      | 24 V DC (pin allocation to EN 175301), 4 ... 10 bar, none manual override   |                                    |                 | <b>1 2</b>                       | <b>-10V24C</b> |  |
|                |                      | 24 V DC, M12x1 to ISO 20401 suitable to EN 61076-2-101, 4 ... 10 bar, none manual override                        |                                    |                 | <b>1 2</b>                       | <b>-10V24D</b> |  |
|                |                      | 24 V DC, M12x1 to ISO 20401 suitable to EN 61076-2-101, 4 ... 10 bar, non-detenting manual override               |                                    |                 | <b>1 2</b>                       | <b>-10V24F</b> |  |
|                |                      | 24 V DC, M12x1 to ISO 20401 suitable to EN 61076-2-101, 4 ... 10 bar, non-detenting and detenting manual override |                                    |                 | <b>1 2</b>                       | <b>-10V24P</b> |  |
|                |                      | 110 V AC (pin allocation to EN 175301)<br>4 ... 14 bar  |                                    | 4 ... 18 bar    | <b>1</b>                         | <b>-V110</b>   |  |
|                |                      | 230 V AC (pin allocation to EN 175301)<br>4 ... 14 bar  |                                    | 4 ... 18 bar    | <b>1</b>                         | <b>-V230</b>   |  |
| <b>↓</b>       |                      |   |                                    |                 |                                  |                |  |

- 1**  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ , **AQK, AQN, AQP, AQR, AQS, V24P, 10V24, 10V24C, 10V24D, 10V24F, 10V24P, V110, V230, AD1 ... AD4, AD7 ... AD10, WPM**  
Not with EU certification EX2
- 2** **10V24, 10V24C, 10V24D, 10V24F, 10V24P**  
Max. operating pressure 10 bar

**M** Mandatory data  
**O** Options

Transfer order code

**MS**  - **EE**  -



New

MS...-10V24C/10V24D/10V24F

FESTO

# On-off valves MS4/MS6-EE, MS series

Ordering data – Modular products

| Ordering table |  |  |     |                 |              |               |  |
|----------------|--|--|-----|-----------------|--------------|---------------|--|
| Grid dimension | [mm]                                       | 40   | 62  | Condi-<br>tions | Code         | Enter<br>code |  |
| <b>0</b>       | Silencer                                   | Silencer   |     | <b>3</b>        | <b>-S</b>    |               |  |
|                | Pressure gauge/pressure gauge alternatives | MS pressure gauge, bar   |     |                 | <b>-AG</b>   |               |  |
|                |  | Adapter plate for EN pressure gauge 1/8, without pressure gauge  |     |                 | <b>-A8</b>   |               |  |
|                |  | Adapter plate for EN pressure gauge 1/4, without pressure gauge  |     |                 | <b>-A4</b>   |               |  |
|                |  | Integrated pressure gauge, red-green scale   |     |                 | <b>-RG</b>   |               |  |
|                |  | Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin                                 |     | <b>1 4</b>      | <b>-AD1</b>  |               |  |
|                |  | Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin                                 |     | <b>1 4</b>      | <b>-AD2</b>  |               |  |
|                |  | Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA   |     | <b>1 4</b>      | <b>-AD3</b>  |               |  |
|                |  | Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA   |     | <b>1 4</b>      | <b>-AD4</b>  |               |  |
|                |  | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact |     | <b>1 4</b>      | <b>-AD7</b>  |               |  |
|                |  | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact |     | <b>1 4</b>      | <b>-AD8</b>  |               |  |
|                |  | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact          |     | <b>1 4</b>      | <b>-AD9</b>  |               |  |
|                |  | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact          |     | <b>1 4</b>      | <b>-AD10</b> |               |  |
|                |  | Alternative pressure gauge scale   | psi |                 | <b>5</b>     | <b>-PSI</b>   |  |
|                |  |  | MPa |                 | <b>6</b>     | <b>-MPA</b>   |  |
|                | Type of mounting                           | Mounting bracket standard design   |     | <b>7</b>        | <b>-WP</b>   |               |  |
|                |  | Mounting bracket for attaching the service units   |     | <b>1 7</b>      | <b>-WPM</b>  |               |  |
|                |  | Mounting bracket centrally at rear (wall mounting top and bottom), connecting plates not required        |     |                 | <b>-WB</b>   |               |  |
|                |  | Mounting bracket centrally at rear (wall mounting top), connecting plates not required                   |     |                 | <b>-WBM</b>  |               |  |
|                | EU certification                           | II 3GD to EU Explosion Protection Directive (ATEX)   |     |                 | <b>-EX2</b>  |               |  |
|                | UL certification                           | cULus, ordinary location for Canada and USA  |     | <b>8</b>        | <b>-UL1</b>  |               |  |
|                | Flow direction                             | Flow direction from right to left  |     |                 | <b>-Z</b>    |               |  |

**3 S** Max. operating pressure 10 bar in combination with EU certification EX2  
**4 AD1 ... AD4, AD7 ... AD10** Measuring range max. 10 bar

**5 PSI** Only in combination with pressure gauge AG  
**6 MPA** Only in combination with pressure gauge AG or RG  
**7 WP, WPM** Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS  
**8 UL1** Not with supply voltage V110, V230

**M** Mandatory data

**0** Options

Transfer order code

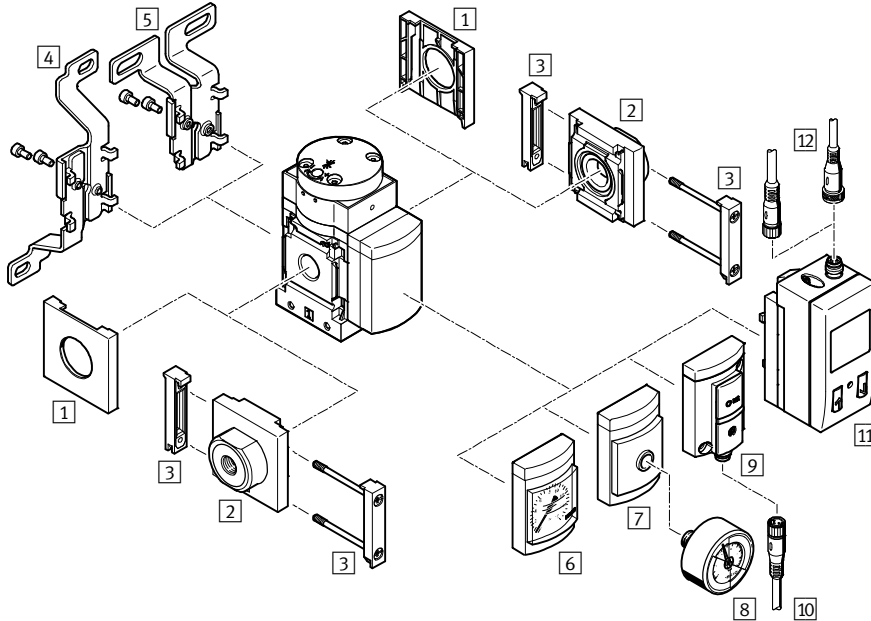
- [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

# Soft-start valves MS4/MS6-DL, MS series

Peripherals overview



## Soft-start valve MS4/MS6-DL



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

| Mounting attachments and accessories |  |                          |                       |                 |                          |                       |
|--------------------------------------|--|--------------------------|-----------------------|-----------------|--------------------------|-----------------------|
|                                      | Individual device                                    | Combination              |                       | → Page/Internet |                          |                       |
|                                      |  | Without connecting plate | With connecting plate |                 | Without connecting plate | With connecting plate |
| 1                                    | Cover cap<br>MS4/6-END                               | ■                        | -                     | ■               | -                        | ms4-end,<br>ms6-end   |
| 2                                    | Connecting plate-SET<br>MS4/6-AG...                  | -                        | ■                     | -               | ■                        | ms4-ag,<br>ms6-ag     |
|                                      | Connecting plate-SET<br>MS4/6-AQ...                  | -                        | ■                     | -               | ■                        | ms4-aq,<br>ms6-aq     |
| 3                                    | Module connector<br>MS4/6-MV                         | -                        | ■                     | ■               | ■                        | ms4-mv,<br>ms6-mv     |
| 4                                    | Mounting bracket<br>MS4/6-WB                         | ■                        | ■                     | -               | -                        | ms4-wb,<br>ms6-wb     |
| 5                                    | Mounting bracket<br>MS4-WBM                          | ■                        | ■                     | -               | -                        | ms4-wbm               |
| 6                                    | MS pressure gauge<br>AG/RG                           | ■                        | ■                     | ■               | ■                        | 38                    |
| 7                                    | Adapter plate for EN pressure gauge 1/8/1/4<br>A8/A4 | ■                        | ■                     | ■               | ■                        | 38                    |
| 8                                    | Pressure gauge<br>MA                                 | ■                        | ■                     | ■               | ■                        | 95                    |
| 9                                    | Pressure sensor without display<br>AD7 ... AD10      | ■                        | ■                     | ■               | ■                        | 38                    |
| 10                                   | Connecting cable<br>NEBU-M8...-LE3                   | ■                        | ■                     | ■               | ■                        | 95                    |
| 11                                   | Pressure sensor with display<br>AD1 ... AD4          | ■                        | ■                     | ■               | ■                        | 38                    |
| 12                                   | Connecting cable<br>NEBU-M8...-LE3/NEBU-M12...-LE4   | ■                        | ■                     | ■               | ■                        | 95                    |
| -                                    | Mounting bracket<br>MS4/6-WP/WPB/WPE/WPM             | -                        | ■                     | ■               | ■                        | ms4-wp,<br>ms6-wp     |

## Soft-start valves MS4/MS6-DL, MS series

Type codes

|    |   |   |    |   |     |
|----|---|---|----|---|-----|
| MS | 6 | - | DL | - | 1/2 |
|----|---|---|----|---|-----|

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

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

| Service function |   |
|------------------|---|
| DL               | Pneumatically actuated soft-start valve |

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

**Additional variants can be ordered using the modular system → 38**

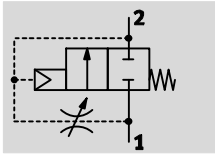
- Connecting plates
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU certification
- UL certification
- Flow direction




# Soft-start valves MS4/MS6-DL, MS series

Technical data

FESTO

Function



-  - Flow rate  
1,000 ... 6,450 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Operating pressure  
4 ... 18 bar



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap. The output pressure p2 rises slowly in accordance with the restrictor setting. The main seat opens when the switch-through pressure is reached.

- Pneumatically actuated soft-start valve for slowly pressurising and venting pneumatic installations (for use with on-off valves EM1 and EE)
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- Pressure switching approx. 50% of operating pressure
- Adjustable switching time delay
- Optional pressure sensor
- Optional device variant EX4 for use in potentially explosive areas in zones 1, 2, 21 and 22

| General technical data    |  |  |
|---------------------------|--|--|
| Size                      | MS4  | MS6  |
| Pneumatic connection 1, 2 |  |  |
| Female thread             | G $\frac{1}{8}$ or G $\frac{1}{4}$   | G $\frac{1}{4}$ , G $\frac{3}{8}$ or G $\frac{1}{2}$                           |
| Connecting plate AG...    | G $\frac{1}{8}$ , G $\frac{1}{4}$ or G $\frac{3}{8}$   | G $\frac{1}{4}$ , G $\frac{3}{8}$ , G $\frac{1}{2}$ or G $\frac{3}{4}$         |
| Connecting plate AQ...    | NPT $\frac{1}{8}$ , NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$   | NPT $\frac{1}{4}$ , NPT $\frac{3}{8}$ , NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$ |
| Design                    | Piston poppet valve  |  |
| Type of mounting          | Via accessories<br>In-line installation  |  |
| Assembly position         | Any  |  |
| Pressure indicator        | Via pressure sensor for displaying output pressure via LCD display and electrical output<br>Via pressure sensor for displaying output pressure via operational status indicator and electrical output<br>Via pressure gauge for displaying output pressure<br>Via pressure gauge with red/green scale for displaying output pressure<br>G $\frac{1}{4}$ prepared<br>G $\frac{1}{8}$ prepared |  |
| Valve function            | 2/2-way valve  |  |
| Exhaust function          | Flow control   |  |
| Type of reset             | Mechanical spring  |  |
| Pilot control mode        | Direct   |  |
| Pilot air supply          | External   |  |
| Direction of flow         | Non-reversible   |  |

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



# Soft-start valves MS4/MS6-DL, MS series

Technical data

| Flow rate characteristic values                  |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Size   | MS4             |                 | MS6             |                 |                 |
| Pneumatic connection                             | G $\frac{1}{8}$ | G $\frac{1}{4}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 1,000           | 2,000           | 2,800           | 5,050           | 6,450           |
| In relief direction 2 $\rightarrow$ 1            | 1,000           | 2,000           | 2,800           | 5,050           | 6,400           |
| C value [l/s*min]                                |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 4.6             | 9.6             | 11.22           | 21.05           | 28.97           |
| b value  |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2         | 0.5             | 0.45            | 0.54            | 0.48            | 0.39            |

1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar

| Operating and environmental conditions       |  |
|--|--|
| Size   | MS4  |
| Operating pressure [bar]                     | 4 ... 14 (4 ... 10) <sup>1)</sup>  |
| Operating medium                             | Compressed air in accordance with ISO 8573-1:2010 [7:4:4]<br>Inert gases                               |
| Note on operating/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |
| Ambient temperature [°C]                     | -10 ... +60 (0 ... +50) <sup>2)</sup>  |
| Temperature of medium [°C]                   | -10 ... +60 (0 ... +50) <sup>2)</sup>  |
| Corrosion resistance class CRC <sup>3)</sup> | 2  |
| Food-safe <sup>4)</sup>                      | See supplementary material information   |
| UL certification <sup>4)</sup>               | cULus recognized (OL)  |

1) Value in brackets applies to MS4/MS6-DL with pressure sensor AD... or with UL certification.

2) Value in brackets applies to MS4/MS6-DL 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.

4) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

| ATEX  |   |
|---|---|
| EU certification                                      | EX4   |
| ATEX category gas                                     | II 2G                                       |
| Ex-ignition protection type gas                       | Ex h IIC T6 Gb X                            |
| ATEX category dust                                    | II 2D                                       |
| EX-ignition protection type dust                      | Ex h IIIC T60°C Db X                        |
| ATEX ambient temperature                              | -10 °C ≤ Ta ≤ +60 °C                        |
| CE mark (see declaration of conformity) <sup>1)</sup> | To EU Explosion Protection Directive (ATEX) |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

# Soft-start valves MS4/MS6-DL, MS series

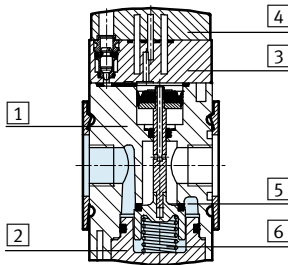
Technical data



| Weights [g]      |     |     |
|------------------|-----|-----|
| Size             | MS4 | MS6 |
| Soft-start valve | 213 | 650 |

## Materials

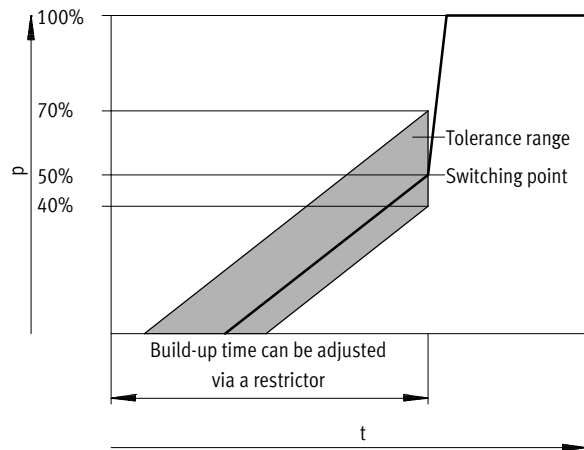
Sectional view



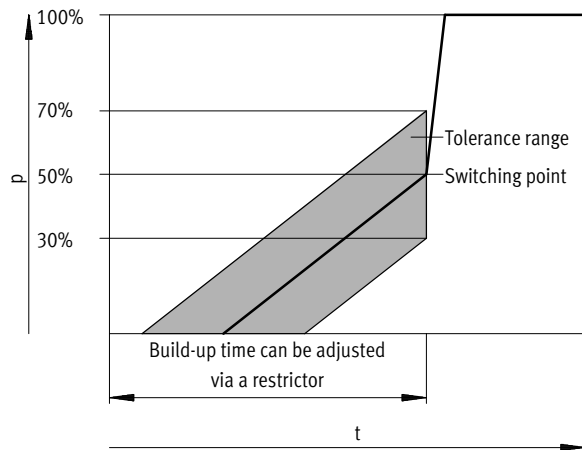
| Soft-start valve  |           |   |
|-------------------|-----------|---|
| 1                 | Body      | Die-cast aluminium  |
| 2                 | Base      | PET   |
| 3                 | End cap   | PA  |
| 4                 | Top plate | PA  |
| 5                 | Seat      | Aluminium   |
| 6                 | Springs   | Spring steel  |
| -                 | Seals     | NBR   |
| Note on materials |           | RoHS-compliant<br>Free of copper and PTFE (not with variants AG or AD...) |

## Switching point – Pressure p as a function of time t

MS4



MS6



- - Note  
The tolerance specification +20%/-10% of the switching point refers to the operating pressure p1.  
Example: at an operating pressure of 4 bar a switching point of 1.6 bar to 2.8 bar is permitted.

- - Note  
The tolerance specification +20%/-20% of the switching point refers to the operating pressure p1.  
Example: at an operating pressure of 4 bar a switching point of 1.2 bar to 2.8 bar is permitted.

# Soft-start valves MS4/MS6-DL, MS series

Technical data

## Dimensions – Basic version

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

With female thread, with cover plate



| Type       | B1 | B2 | B3 | D1   | L1   | L2   |
|------------|----|----|----|------|------|------|
| MS4-DL-1/8 | 40 | 21 | 54 | G1/8 | 83.2 | 31.5 |
| MS4-DL-1/4 |    |    |    | G1/4 |      |      |
| MS6-DL-1/4 | 62 | 31 | 76 | G1/4 | 108  | 46   |
| MS6-DL-3/8 |    |    |    | G3/8 |      |      |
| MS6-DL-1/2 |    |    |    | G1/2 |      |      |

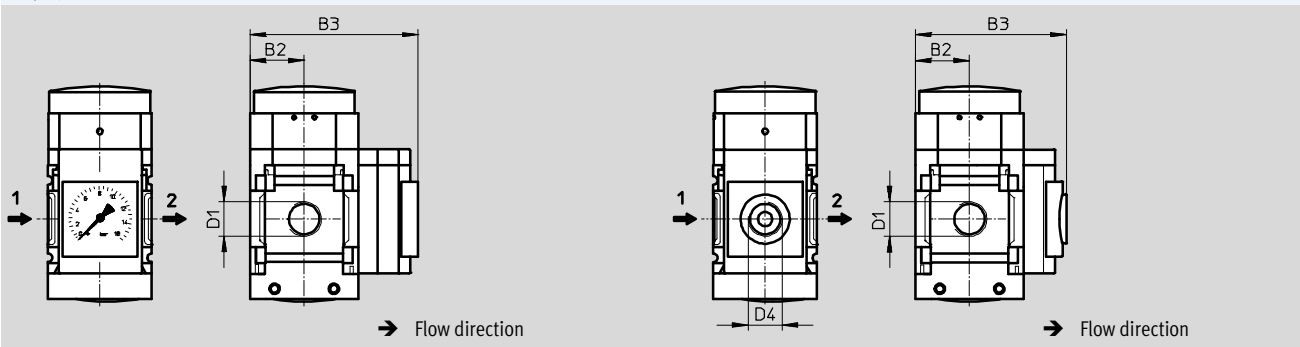
Note: This product conforms to ISO 1179-1 and to ISO 228-1

## Dimensions – Pressure gauge/pressure gauge alternatives

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

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

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



| Type              | B2 | B3   | D1   | D4   |
|-------------------|----|------|------|------|
| MS4-DL-1/8-...-AG | 21 | 57   | G1/8 | -    |
| MS4-DL-1/4-...-AG |    |      | G1/4 |      |
| MS4-DL-1/8-...-RG | 21 | 58.5 | G1/8 | -    |
| MS4-DL-1/4-...-RG |    |      | G1/4 |      |
| MS4-DL-1/8-...-A8 | 21 | 58.5 | G1/8 | G1/8 |
| MS4-DL-1/4-...-A8 |    |      | G1/4 |      |
| MS4-DL-1/8-...-A4 | 21 | 58.5 | G1/8 | G1/4 |
| MS4-DL-1/4-...-A4 |    |      | G1/4 |      |
| MS6-DL-1/4-...-AG | 31 | 77   | G1/4 | -    |
| MS6-DL-3/8-...-AG |    |      | G3/8 |      |
| MS6-DL-1/2-...-AG |    |      | G1/2 |      |
| MS6-DL-1/4-...-RG | 31 | 78.5 | G1/4 | -    |
| MS6-DL-3/8-...-RG |    |      | G3/8 |      |
| MS6-DL-1/2-...-RG |    |      | G1/2 |      |
| MS6-DL-1/4-...-A4 | 31 | 78.5 | G1/4 | G1/4 |
| MS6-DL-3/8-...-A4 |    |      | G3/8 |      |
| MS6-DL-1/2-...-A4 |    |      | G1/2 |      |

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

# Soft-start valves MS4/MS6-DL, MS series

Technical data



**Dimensions – Pressure gauge/pressure gauge alternatives** Download CAD data → [www.festo.com](http://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

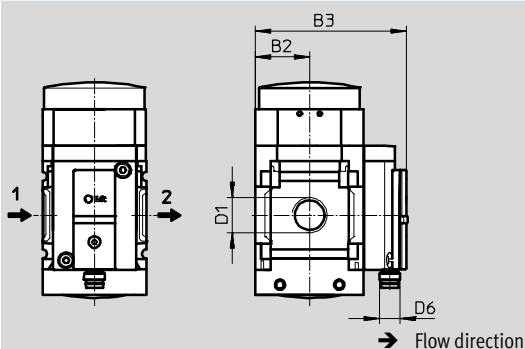
| Type                   | B2 | B3   | D1   | D6    | L5   | L6   |
|------------------------|----|------|------|-------|------|------|
| MS4-DL-1/8-...-AD1/AD2 | 21 | 82.6 | G1/8 | M8x1  | 35.1 | 46.7 |
| MS4-DL-1/4-...-AD1/AD2 |    |      | G1/4 |       |      |      |
| MS4-DL-1/8-...-AD3/AD4 | 21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

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

# Soft-start valves MS4/MS6-DL, MS series

Technical data

**Dimensions – Pressure gauge/pressure gauge alternatives** Download CAD data → [www.festo.com](http://www.festo.com)  
 Pressure sensor with operational status indicator 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   |
|---------------------------------|----|------|------|------|
| MS4-DL-1/8-...-AD7/AD8/AD9/AD10 | 21 | 59.1 | G1/8 | M8x1 |
| MS4-DL-1/4-...-AD7/AD8/AD9/AD10 |    |      | G1/4 |      |
| MS6-DL-1/4-...-AD7/AD8/AD9/AD10 | 31 | 79   | G1/4 | M8x1 |
| MS6-DL-3/8-...-AD7/AD8/AD9/AD10 |    |      | G3/8 |      |
| MS6-DL-1/2-...-AD7/AD8/AD9/AD10 |    |      | G1/2 |      |

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

## ★ Core product range

| Ordering data |            |          |            |
|---------------|------------|----------|------------|
| Size          | Connection | Part No. | Type       |
| MS4           | G1/4       | ★ 529531 | MS4-DL-1/4 |
| MS6           | G1/2       | ★ 529817 | MS6-DL-1/2 |

| Ordering data |            |          |            |
|---------------|------------|----------|------------|
| Size          | Connection | Part No. | Type       |
| MS4           | G1/8       | 529533   | MS4-DL-1/8 |
| MS6           | G1/4       | 529819   | MS6-DL-1/4 |
|               | G3/8       | 529821   | MS6-DL-3/8 |

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

# Soft-start valves MS4/MS6-DL, MS series

Ordering data – Modular products

| Ordering table |                      |                                    |                                    |                 |                                  |               |  |
|----------------|----------------------|------------------------------------|------------------------------------|-----------------|----------------------------------|---------------|--|
| Grid dimension | [mm]                 | 40                                 | 62                                 | Condi-<br>tions | Code                             | Enter<br>code |  |
| <b>M</b>       | Module No.           | <b>527711</b>                      | <b>527684</b>                      |                 |                                  |               |  |
|                | Series               | Standard                           |                                    |                 | <b>MS</b>                        | MS            |  |
|                | Size                 | 4                                  | 6                                  |                 | ...                              |               |  |
|                | Function             | Soft-start valve, pneumatic        |                                    |                 |                                  | <b>-DL</b>    |  |
|                | Pneumatic connection | Female thread G $\frac{1}{8}$      | –                                  | <b>1</b>        | <b>-<math>\frac{1}{8}</math></b> | -DL           |  |
|                |                      | Female thread G $\frac{1}{4}$      | Female thread G $\frac{1}{4}$      | <b>1</b>        | <b>-<math>\frac{1}{4}</math></b> |               |  |
|                |                      | –                                  | Female thread G $\frac{3}{8}$      | <b>1</b>        | <b>-<math>\frac{3}{8}</math></b> |               |  |
|                |                      | –                                  | Female thread G $\frac{1}{2}$      | <b>1</b>        | <b>-<math>\frac{1}{2}</math></b> |               |  |
|                |                      | Connecting plate G $\frac{1}{8}$   | –                                  |                 |                                  | <b>-AGA</b>   |  |
|                |                      | Connecting plate G $\frac{1}{4}$   | Connecting plate G $\frac{1}{4}$   |                 |                                  | <b>-AGB</b>   |  |
|                |                      | Connecting plate G $\frac{3}{8}$   | Connecting plate G $\frac{3}{8}$   |                 |                                  | <b>-AGC</b>   |  |
|                |                      | –                                  | Connecting plate G $\frac{1}{2}$   |                 |                                  | <b>-AGD</b>   |  |
|                |                      | –                                  | Connecting plate G $\frac{3}{4}$   |                 |                                  | <b>-AGE</b>   |  |
|                |                      | Connecting plate NPT $\frac{1}{8}$ | –                                  | <b>1</b>        |                                  | <b>-AQK</b>   |  |
|                |                      | Connecting plate NPT $\frac{1}{4}$ | Connecting plate NPT $\frac{1}{4}$ | <b>1</b>        |                                  | <b>-AQN</b>   |  |
|                |                      | Connecting plate NPT $\frac{3}{8}$ | Connecting plate NPT $\frac{3}{8}$ | <b>1</b>        |                                  | <b>-AQP</b>   |  |
|                |                      | –                                  | Connecting plate NPT $\frac{1}{2}$ | <b>1</b>        |                                  | <b>-AQR</b>   |  |
|                |                      | –                                  | Connecting plate NPT $\frac{3}{4}$ | <b>1</b>        |                                  | <b>-AQS</b>   |  |

**1**  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ , **AQK, AQN, AQP, AQR, AQS, AD1 ... AD4, AD7 ... AD10, WPM**  
Not with EU certification EX4

- M** Mandatory data
- O** Options

Transfer order code

**MS**  - **DL**

# Soft-start valves MS4/MS6-DL, MS series

Ordering data – Modular products

| Ordering table   |   |  |     |                 |      |               |       |  |
|------------------|---|--|-----|-----------------|------|---------------|-------|--|
| Grid dimension   | [mm]  | 40   | 62  | Condi-<br>tions | Code | Enter<br>code |       |  |
| 0                | Pressure gauge/pressure gauge alternatives  | MS pressure gauge, bar   |     |                 | -AG  |               |       |  |
|                  |   | 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   |     |                 |      | -RG           |       |  |
|                  |   | Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin                                 |     |                 |      | 1 2           | -AD1  |  |
|                  |   | Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin                                 |     |                 |      | 1 2           | -AD2  |  |
|                  |   | Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA   |     |                 |      | 1 2           | -AD3  |  |
|                  |   | Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA   |     |                 |      | 1 2           | -AD4  |  |
|                  |   | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact |     |                 |      | 1 2           | -AD7  |  |
|                  |   | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact |     |                 |      | 1 2           | -AD8  |  |
|                  |   | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact          |     |                 |      | 1 2           | -AD9  |  |
|                  |   | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact          |     |                 |      | 1 2           | -AD10 |  |
|                  |   | Alternative pressure gauge scale   | psi |                 |      | 3             | -PSI  |  |
|                  |   |  | MPa |                 |      | 4             | -MPA  |  |
| Type of mounting | Mounting bracket standard design  |  |     |                 | 5    | -WP           |       |  |
|                  | Mounting bracket for attaching the service units  |  |     |                 | 1 5  | -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 Explosion Protection Directive (ATEX)  |  |     |                 | -EX4 |               |       |  |
| UL certification | cULus, ordinary location for Canada and USA   |  |     |                 | -UL1 |               |       |  |
| Flow direction   | Flow direction from right to left   |  |     |                 | -Z   |               |       |  |

2 AD1 ... AD4, AD7 ... AD10

Measuring range max. 10 bar

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

3 PSI Only with pressure gauge AG

4 MPA Only with pressure gauge AG or RG

M Mandatory data

0 Options

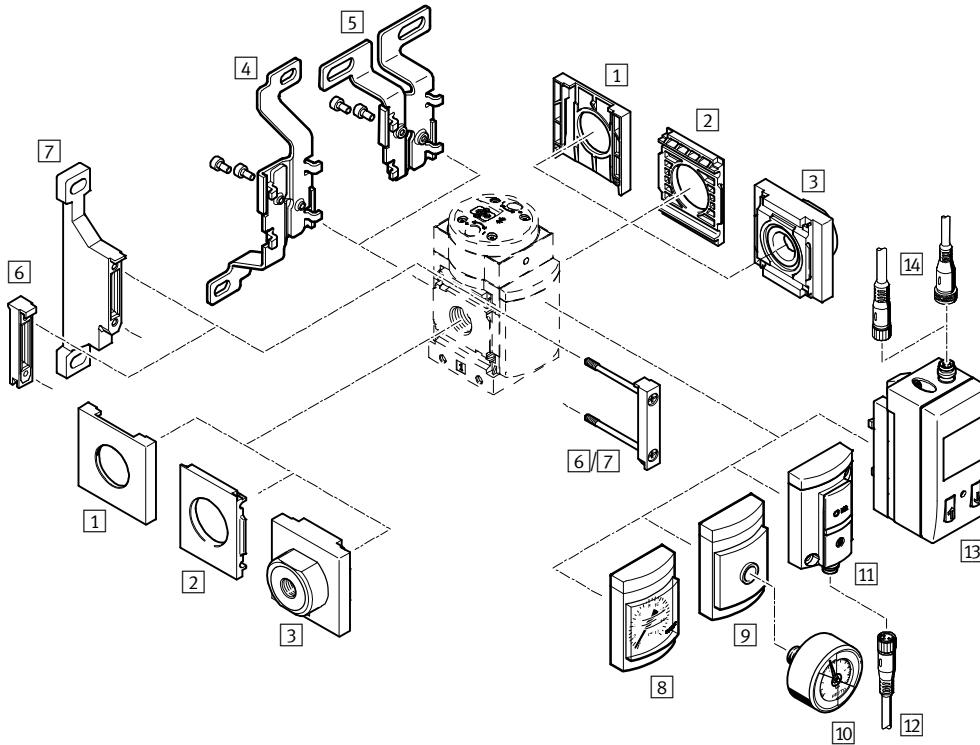
Transfer order code

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

# Soft-start valves MS4/MS6-DE, MS series

Peripherals overview

## Soft-start valve MS4/MS6-DE



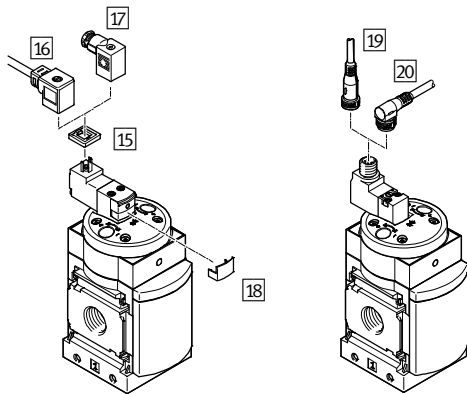
Note

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

Supply voltage  
V24/10V24/V110/V230

Supply voltage  
10V24P





# Soft-start valves MS4/MS6-DE, 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<br>MS4/6-END                                  | ■                        | –                     | ■                        | –                     | ms4-end,<br>ms6-end   |
| 2                                    | Mounting plate<br>MS4/6-AEND                            | ■ <sup>1)</sup>          | –                     | ■ <sup>1)</sup>          | –                     | ms4-aend,<br>ms6-aend |
| 3                                    | Connecting plate-SET<br>MS4/6-AG...                     | –                        | ■ <sup>1)</sup>       | –                        | ■ <sup>1)</sup>       | ms4-ag,<br>ms6-ag     |
|                                      | Connecting plate-SET<br>MS4/6-AQ...                     | –                        | ■ <sup>1)</sup>       | –                        | ■ <sup>1)</sup>       | ms4-aq,<br>ms6-aq     |
| 4                                    | Mounting bracket<br>MS4/6-WB                            | ■                        | ■                     | –                        | –                     | ms4-wb,<br>ms6-wb     |
| 5                                    | Mounting bracket<br>MS4-WBM                             | ■                        | ■                     | –                        | –                     | ms4-wbm               |
| 6                                    | Module connector<br>MS4/6-MV                            | –                        | ■                     | ■                        | ■                     | ms4-mv,<br>ms6-mv     |
| 7                                    | Mounting bracket<br>MS4/6-WP                            | ■                        | ■                     | ■                        | ■                     | ms4-wp,<br>ms6-wp     |
|                                      | Mounting bracket (not illustrated)<br>MS4/6-WPB/WPE/WPM | ■                        | ■                     | ■                        | ■                     | ms4-wp,<br>ms6-wp     |
| 8                                    | MS pressure gauge<br>AG/RG                              | ■                        | ■                     | ■                        | ■                     | 50                    |
| 9                                    | Adapter plate for EN pressure gauge 1/8/1/4<br>A8/A4    | ■                        | ■                     | ■                        | ■                     | 50                    |
| 10                                   | Pressure gauge<br>MA                                    | ■                        | ■                     | ■                        | ■                     | 95                    |
| 11                                   | Pressure sensor without display<br>AD7 ... AD10         | ■                        | ■                     | ■                        | ■                     | 50                    |
| 12                                   | Connecting cable<br>NEBU-M8...-LE3                      | ■                        | ■                     | ■                        | ■                     | 95                    |
| 13                                   | Pressure sensor with display<br>AD1 ... AD4             | ■                        | ■                     | ■                        | ■                     | 50                    |
| 14                                   | Connecting cable<br>NEBU-M8...-LE3/NEBU-M12...-LE4      | ■                        | ■                     | ■                        | ■                     | 95                    |
| 15                                   | Illuminating seal<br>MEB-LD                             | ■                        | ■                     | ■                        | ■                     | 94                    |
| 16                                   | Plug socket with cable<br>KMEB                          | ■                        | ■                     | ■                        | ■                     | 94                    |
| 17                                   | Plug socket<br>MSSD-EB                                  | ■                        | ■                     | ■                        | ■                     | 94                    |
| 18                                   | Locking clip<br>CPV18-HV                                | ■                        | ■                     | ■                        | ■                     | 94                    |
| 19                                   | Connecting cable<br>NEBU-M12G5                          | ■                        | ■                     | ■                        | ■                     | 95                    |
| 20                                   | Connecting cable<br>NEBU-M12W5                          | ■                        | ■                     | ■                        | ■                     | 95                    |

1) Module connector MS4/6-MV [6] or mounting bracket MS4/6-WP/WPB/WPE/WPM [7] is required for mounting.

## Soft-start valves MS4/MS6-DE, MS series

Type codes

FESTO

|                             |                                    |    |   |   |    |   |     |   |      |
|-----------------------------|------------------------------------|----|---|---|----|---|-----|---|------|
|                             |                                    | MS | 6 | - | DE | - | 1/2 | - | V110 |
| <b>Series</b>               |                                    |    |   |   |    |   |     |   |      |
| MS                          | Standard service unit              |    |   |   |    |   |     |   |      |
| <b>Size</b>                 |                                    |    |   |   |    |   |     |   |      |
| 4                           | Grid dimension 40 mm               |    |   |   |    |   |     |   |      |
| 6                           | Grid dimension 62 mm               |    |   |   |    |   |     |   |      |
| <b>Service function</b>     |                                    |    |   |   |    |   |     |   |      |
| DE                          | Solenoid actuated soft-start valve |    |   |   |    |   |     |   |      |
| <b>Pneumatic connection</b> |                                    |    |   |   |    |   |     |   |      |
| MS4                         |                                    |    |   |   |    |   |     |   |      |
| 1/4                         | Female thread G1/4                 |    |   |   |    |   |     |   |      |
| MS6                         |                                    |    |   |   |    |   |     |   |      |
| 1/4                         | Female thread G1/4                 |    |   |   |    |   |     |   |      |
| 3/8                         | Female thread G3/8                 |    |   |   |    |   |     |   |      |
| 1/2                         | Female thread G1/2                 |    |   |   |    |   |     |   |      |
| <b>Supply voltage</b>       |                                    |    |   |   |    |   |     |   |      |
| 10V24                       | Supply voltage 24 V DC             |    |   |   |    |   |     |   |      |
| V110                        | Supply voltage 110 V AC            |    |   |   |    |   |     |   |      |
| V230                        | Supply voltage 230 V AC            |    |   |   |    |   |     |   |      |

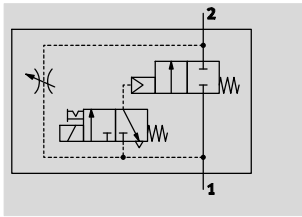
### Additional variants can be ordered using the modular system → 50

- Female thread
- Connecting plates
- Supply voltage
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- EU certification
- UL certification
- Flow direction

# Soft-start valves MS4/MS6-DE, MS series

Technical data

Function



- - Flow rate  
1,000 ... 6,450 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
4 ... 18 bar
- - [www.festo.com](http://www.festo.com)



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap. The output pressure p2 rises slowly in accordance with the restrictor setting. Only the air flow from the restrictor is available when the solenoid valve is not actuated. The main seat is only opened by energising the solenoid valve.

When the solenoid valve is switched off, the main seat is closed and only the air flow from the flow control valve is available. The solenoid valve should remain switched on in order to vent a system as this increases the flow rate from 2 and 1 and reduces the exhaust time.

- Solenoid actuated soft-start valve for slowly pressurising and venting pneumatic installations
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- With solenoid coil without plug socket
- Switch-through pressure can be precisely controlled using a solenoid valve
- Adjustable switching time delay
- Three voltage ranges can be selected
- Non-detenting and detenting manual override (variant 10V24: only non-detenting)
- Solenoid actuator can be repositioned by 180°
- Optional pressure sensor
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22

| General technical data    |  |  |
|---------------------------|--|--|
| Size                      | MS4  | MS6  |
| Pneumatic connection 1, 2 |  |  |
| Female thread             | G $\frac{1}{8}$ or G $\frac{1}{4}$   | G $\frac{1}{4}$ , G $\frac{3}{8}$ or G $\frac{1}{2}$                           |
| Connecting plate AG...    | G $\frac{1}{8}$ , G $\frac{1}{4}$ or G $\frac{3}{8}$   | G $\frac{1}{4}$ , G $\frac{3}{8}$ , G $\frac{1}{2}$ or G $\frac{3}{4}$         |
| Connecting plate AQ...    | NPT $\frac{1}{8}$ , NPT $\frac{1}{4}$ or NPT $\frac{3}{8}$   | NPT $\frac{1}{4}$ , NPT $\frac{3}{8}$ , NPT $\frac{1}{2}$ or NPT $\frac{3}{4}$ |
| Design                    | Piston poppet valve  |  |
| Type of mounting          | Via accessories<br>In-line installation  |  |
| Assembly position         | Any  |  |
| Pressure indicator        | Via pressure sensor for displaying output pressure via LCD display and electrical output<br>Via pressure sensor for displaying output pressure via operational status indicator and electrical output<br>Via pressure gauge for displaying output pressure<br>Via pressure gauge with red/green scale for displaying output pressure<br>G $\frac{1}{4}$ prepared<br>G $\frac{1}{8}$ prepared |  |
| Valve function            | 2/2-way valve  |  |
| Manual override           | 10V24 Non-detenting<br>V24/10V24P/V110/V230 Non-detenting and detenting  |  |
| Signal status display     | Via accessories  |  |
| Type of reset             | Mechanical spring  |  |
| Pilot control mode        | Piloted  |  |
| Pilot air supply          | Internal   |  |
| Direction of flow         | Non-reversible   |  |

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

# Soft-start valves MS4/MS6-DE, MS series

FESTO

Technical data

| Electrical data                |                        |  |
|--------------------------------|------------------------|--|
| Coil characteristics           | V24                    | 24 V DC: 1.5 W; perm. voltage fluctuations -25%/+10%   |
|                                | 10V24, 10V24P          | 24 V DC: 1.8 W; perm. voltage fluctuations -15%/+10%   |
|                                | V110                   | 110 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; perm. voltage fluctuations ±10%      |
|                                | V230                   | 230 V AC: 50/60 Hz; pick-up power 3.0 VA; holding power 2.4 VA; perm. voltage fluctuations -14%/+10% |
| Electrical connection          | V24, 10V24, V110, V230 | Plug, square design to EN 175301-803, type C   |
|                                | 10V24P                 | M12x1 to IEC 61076-2-101   |
| Protection class solenoid coil |                        | IP65   |
| Duty cycle                     | [%]                    | 100  |

| Flow rate characteristic values                     |                 |                 |                 |                 |                 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| Size  | MS4             |                 | MS6             |                 |                 |
| Pneumatic connection                                | G $\frac{3}{8}$ | G $\frac{1}{4}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Standard nominal flow rate $q_{nN}^{1)}$ [l/min]    |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2            | 1,000           | 2,000           | 2,700           | 5,050           | 6,450           |
| In relief direction 2 $\rightarrow$ 1 <sup>2)</sup> | 1,000           | 2,000           | 2,600           | 5,050           | 6,400           |
| C value [l/s*min]                                   |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2            | 4.6             | 9.6             | 11.22           | 21.05           | 28.97           |
| b value   |                 |                 |                 |                 |                 |
| In main flow direction 1 $\rightarrow$ 2            | 0.5             | 0.45            | 0.54            | 0.48            | 0.39            |

- 1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar  
 2) For energised solenoid valve.

| Operating and environmental conditions       |  |                                       |                                       |                                       |
|--|--|---------------------------------------|---------------------------------------|---------------------------------------|
| Size   | MS4  |                                       | MS6                                   |                                       |
| Supply voltage                               | V24/V110/V230  | 10V24/10V24P                          | V24/V110/V230                         | 10V24/10V24P                          |
| Operating pressure [bar]                     | 4 ... 14 (4 ... 10) <sup>1)</sup>  | 4 ... 10                              | 4 ... 18 (4 ... 10) <sup>1)</sup>     | 4 ... 10                              |
| Operating medium                             | Compressed air in accordance with ISO 8573-1:2010 [7:4:4]<br>Inert gases                               |                                       |                                       |                                       |
| Note on operating/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |                                       |                                       |                                       |
| Ambient temperature [°C]                     | -10 ... +60 (0 ... +50) <sup>2)</sup>  | -10 ... +50 (0 ... +50) <sup>2)</sup> | -10 ... +60 (0 ... +50) <sup>2)</sup> | -10 ... +50 (0 ... +50) <sup>2)</sup> |
| Temperature of medium [°C]                   | -10 ... +60 (0 ... +50) <sup>2)</sup>  | -10 ... +50 (0 ... +50) <sup>2)</sup> | -10 ... +60 (0 ... +50) <sup>2)</sup> | -10 ... +50 (0 ... +50) <sup>2)</sup> |
| Corrosion resistance class CRC <sup>3)</sup> | 2  |                                       |                                       |                                       |
| Food-safe <sup>4)</sup>                      | See supplementary material information (except solenoid valve)   |                                       |                                       |                                       |
| UL certification <sup>4)</sup>               | cULus recognized (OL)  |                                       |                                       |                                       |
| KC marking                                   | KC EMC <sup>2)</sup>   |                                       |                                       |                                       |

- 1) Value in brackets applies to MS4/MS6-DE with pressure sensor AD... or with UL certification.  
 2) Value in brackets applies to MS4/MS6-DE 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.  
 4) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

# Soft-start valves MS4/MS6-DE, MS series

Technical data

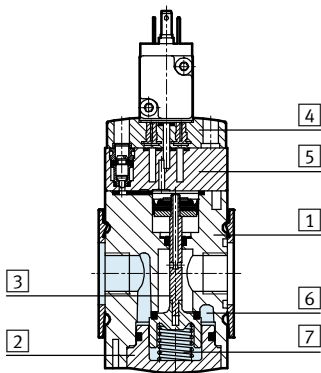
| ATEX  |   |
|---|---|
| EU certification                                      | EX2   |
| ATEX category gas                                     | II 3G                                       |
| Ex-ignition protection type gas                       | Ex nA IIC T4 X Gc                           |
| ATEX category dust                                    | II 3D                                       |
| EX-ignition protection type dust                      | Ex tc IIIC T105°C X Dc IP65                 |
| ATEX ambient temperature                              | -10 °C ≤ Ta ≤ +60 °C                        |
| CE mark (see declaration of conformity) <sup>1)</sup> | To EU Explosion Protection Directive (ATEX) |
|   | To EU EMC Directive                         |
|   | To EU Low Voltage Directive                 |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

| Weights [g]      |     |     |
|------------------|-----|-----|
| Size             | MS4 | MS6 |
| Soft-start valve | 263 | 680 |

## Materials

Sectional view



| Soft-start valve  |            |  |
|-------------------|------------|--|
| 1                 | Body       | Die-cast aluminium   |
| 2                 | Base       | PET  |
| 3                 | Valve stem | Aluminium  |
| 4                 | End cap    | PA   |
| 5                 | Top plate  | PA   |
| 6                 | Seat       | Aluminium  |
| 7                 | Springs    | Spring steel   |
| -                 | Seals      | NBR  |
| Note on materials |            | RoHS-compliant   |
|                   |            | Free of copper and PTFE (not with variants AG, 10V24, 10V24P or AD...) |

# Soft-start valves MS4/MS6-DE, MS series

Technical data

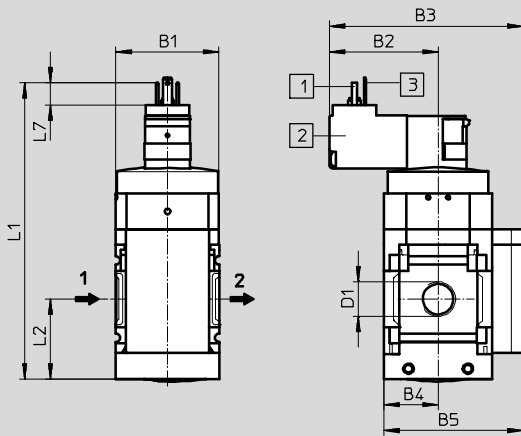


## Dimensions – Basic version

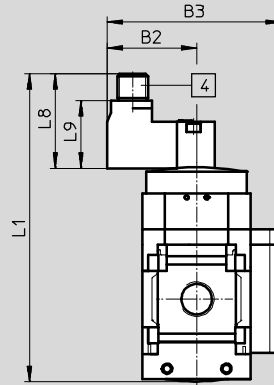
Download CAD data → [www.festo.com](http://www.festo.com)

With female thread, with cover plate

Supply voltage V24/10V24/V110/V230



Supply voltage 10V24P

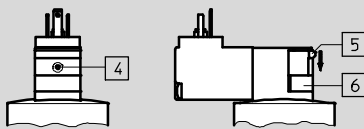


- 1 = Unused
- 2 = Unused
- 3 = com (-)
- 4 = Signal (+) solenoid 14

- 1 Plug connection to EN 175301-803
- 2 Solenoid actuator can be repositioned by 180°, i.e. solenoid points to the front
- 3 PIN only with solenoid actuators 110 V and 230 V
- 4 Electrical connection to IEC 61076-2-101, plug M12x1, 2 pin for connecting cable NEBU-M12

→ Flow direction

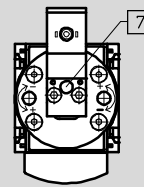
Supply voltage V24/V110/V230



- Note

For detenting manual override remove the grey cover plate [6] and press the slide [5] downwards.

Supply voltage 10V24/10V24P



- 4 Manual override, non-detenting (delivery status)
- 5 Slide
- 6 Cover plate
- 7 Non-detenting and detenting manual override (variant 10V24: only non-detenting)

| Type       | B1 | B2                    |                  | B3                    |                  | B4 | B5 | D1   |
|------------|----|-----------------------|------------------|-----------------------|------------------|----|----|------|
|            |    | V24/<br>V110/<br>V230 | 10V24/<br>10V24P | V24/<br>V110/<br>V230 | 10V24/<br>10V24P |    |    |      |
| MS4-DE-1/8 | 40 | 42.2                  | 34.9             | 75.2                  | 67.9             | 21 | 54 | G1/8 |
| MS4-DE-1/4 |    |                       |                  |                       |                  |    |    | G1/4 |
| MS6-DE-1/4 | 62 | 52                    | 44               | 97                    | 89               | 31 | 76 | G1/4 |
| MS6-DE-3/8 |    |                       |                  |                       |                  |    |    | G3/8 |
| MS6-DE-1/2 |    |                       |                  |                       |                  |    |    | G1/2 |

| Type       | L1                    |       |        | L2   | L7  | L8   | L9   |
|------------|-----------------------|-------|--------|------|-----|------|------|
|            | V24/<br>V110/<br>V230 | 10V24 | 10V24P |      |     |      |      |
| MS4-DE-1/8 | 115.4                 | 112.9 | 117.8  | 31.5 | 8.6 | 36.7 | 26.1 |
| MS4-DE-1/4 |                       |       |        |      |     |      |      |
| MS6-DE-1/4 | 149                   | 147   | 152    | 46   | 8.6 | 37   | 26   |
| MS6-DE-3/8 |                       |       |        |      |     |      |      |
| MS6-DE-1/2 |                       |       |        |      |     |      |      |

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

# Soft-start valves MS4/MS6-DE, MS series

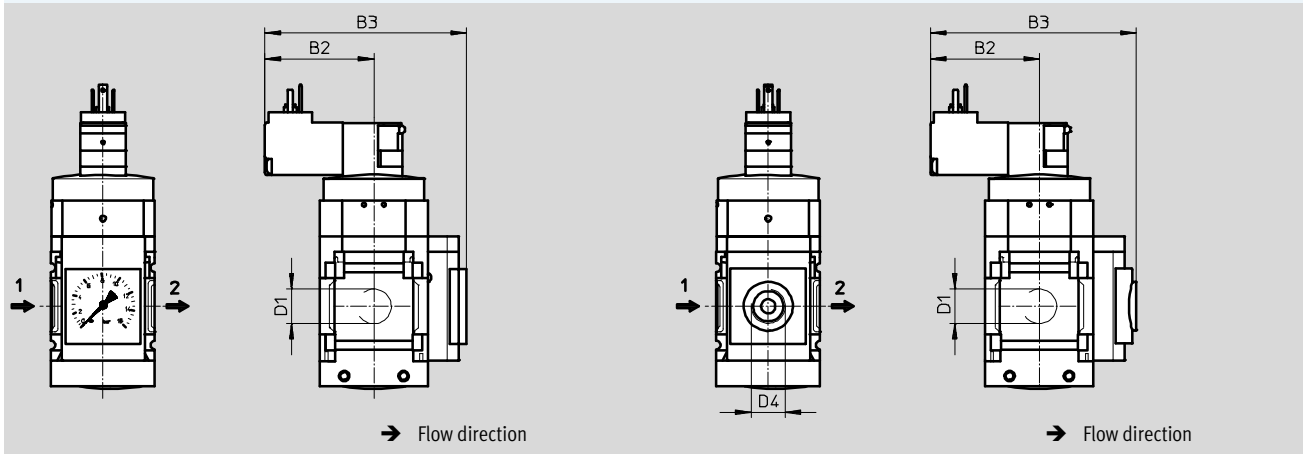
Technical data

**Dimensions – Pressure gauge/pressure gauge alternatives**

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

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

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



| Type              | B2            |              | B3            |              | D1   | D4   |
|-------------------|---------------|--------------|---------------|--------------|------|------|
|                   | V24/V110/V230 | 10V24/10V24P | V24/V110/V230 | 10V24/10V24P |      |      |
| MS4-DE-1/8-...-AG | 42.2          | 34.9         | 78.2          | 70.9         | G1/8 | -    |
| MS4-DE-1/4-...-AG |               |              |               |              | G1/4 |      |
| MS4-DE-1/8-...-RG | 42.2          | 34.9         | 79.7          | 72.4         | G1/8 | -    |
| MS4-DE-1/4-...-RG |               |              |               |              | G1/4 |      |
| MS4-DE-1/8-...-A8 | 42.2          | 34.9         | 79.7          | 72.4         | G1/8 | G1/8 |
| MS4-DE-1/4-...-A8 |               |              |               |              | G1/4 |      |
| MS4-DE-1/8-...-A4 | 42.2          | 34.9         | 79.7          | 72.4         | G1/8 | G1/4 |
| MS4-DE-1/4-...-A4 |               |              |               |              | G1/4 |      |
| MS6-DE-1/4-...-AG | 52            | 44           | 98            | 90           | G1/4 | -    |
| MS6-DE-3/8-...-AG |               |              |               |              | G3/8 |      |
| MS6-DE-1/2-...-AG |               |              |               |              | G1/2 |      |
| MS6-DE-1/4-...-RG | 52            | 44           | 99.5          | 91.5         | G1/4 | -    |
| MS6-DE-3/8-...-RG |               |              |               |              | G3/8 |      |
| MS6-DE-1/2-...-RG |               |              |               |              | G1/2 |      |
| MS6-DE-1/4-...-A4 | 52            | 44           | 99.5          | 91.5         | G1/4 | G1/4 |
| MS6-DE-3/8-...-A4 |               |              |               |              | G3/8 |      |
| MS6-DE-1/2-...-A4 |               |              |               |              | G1/2 |      |

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

# Soft-start valves MS4/MS6-DE, MS series

Technical data

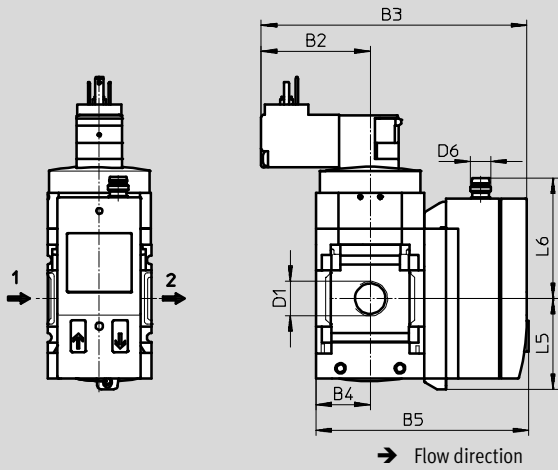


## Dimensions – Pressure gauge/pressure gauge alternatives

Download CAD data → [www.festo.com](http://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 out-  
put PNP

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

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

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

| Type                   | B2                    |                  | B3                    |                  | B4 | B5   | D1   | D6    | L5   | L6   |
|------------------------|-----------------------|------------------|-----------------------|------------------|----|------|------|-------|------|------|
|                        | V24/<br>V110/<br>V230 | 10V24/<br>10V24P | V24/<br>V110/<br>V230 | 10V24/<br>10V24P |    |      |      |       |      |      |
| MS4-DE-1/8-...-AD1/AD2 | 42.2                  | 34.9             | 103.8                 | 96.5             | 21 | 82.6 | G1/8 | M8x1  | 35.1 | 46.7 |
| MS4-DE-1/4-...-AD1/AD2 |                       |                  |                       |                  |    |      | G1/4 |       |      |      |
| MS4-DE-1/8-...-AD3/AD4 | 42.2                  | 34.9             | 103.8                 | 96.5             | 21 | 82.6 | G1/8 | M12x1 | 35.1 | 55.8 |
| MS4-DE-1/4-...-AD3/AD4 |                       |                  |                       |                  |    |      | G1/4 |       |      |      |
| MS6-DE-1/4-...-AD1/AD2 | 52                    | 44               | 124                   | 116              | 31 | 103  | G1/4 | M8x1  | 35.1 | 46.7 |
| MS6-DE-3/8-...-AD1/AD2 |                       |                  |                       |                  |    |      | G3/8 |       |      |      |
| MS6-DE-1/2-...-AD1/AD2 |                       |                  |                       |                  |    |      | G1/2 |       |      |      |
| MS6-DE-1/4-...-AD3/AD4 | 52                    | 44               | 124                   | 116              | 31 | 103  | G1/4 | M12x1 | 35.1 | 55.8 |
| MS6-DE-3/8-...-AD3/AD4 |                       |                  |                       |                  |    |      | G3/8 |       |      |      |
| MS6-DE-1/2-...-AD3/AD4 |                       |                  |                       |                  |    |      | G1/2 |       |      |      |

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



# Soft-start valves MS4/MS6-DE, MS series

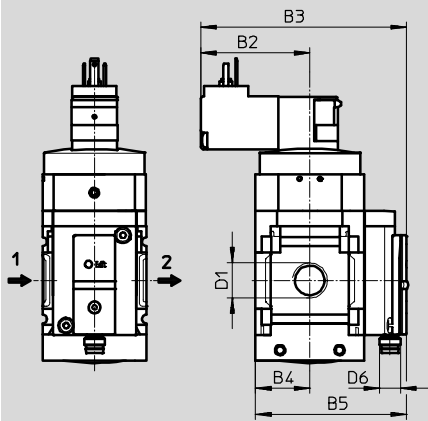
Technical data

## Dimensions – Pressure gauge/pressure gauge alternatives

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

Pressure sensor with operational status indicator AD7 ... AD10

Technical data → Internet: sde5



→ Flow direction

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

Variant AD9:  
SDE5-D10-O3-...-P-M8 with 3-pin plug M8x1, window 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 AD10:  
SDE5-D10-C3-...-P-M8 with 3-pin plug M8x1, window comparator, 1 switching output PNP, N/C contact

| Type                            | B2                    |                  | B3                    |                  | B4 | B5   | D1   | D6   |
|---------------------------------|-----------------------|------------------|-----------------------|------------------|----|------|------|------|
|                                 | V24/<br>V110/<br>V230 | 10V24/<br>10V24P | V24/<br>V110/<br>V230 | 10V24/<br>10V24P |    |      |      |      |
| MS4-DE-1/8-...-AD7/AD8/AD9/AD10 | 42.2                  | 34.9             | 80.3                  | 73               | 21 | 59.1 | G1/8 | M8x1 |
| MS4-DE-1/4-...-AD7/AD8/AD9/AD10 |                       |                  |                       |                  |    |      | G1/4 |      |
| MS6-DE-1/4-...-AD7/AD8/AD9/AD10 | 52                    | 44               | 100                   | 92               | 31 | 79   | G1/4 | M8x1 |
| MS6-DE-3/8-...-AD7/AD8/AD9/AD10 |                       |                  |                       |                  |    |      | G3/8 |      |
| MS6-DE-1/2-...-AD7/AD8/AD9/AD10 |                       |                  |                       |                  |    |      | G1/2 |      |

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

## Ordering data

| Size | Connection | Supply voltage 24 V DC |                  | Supply voltage 110 V AC |                 | Supply voltage 230 V AC |                 |
|------|------------|------------------------|------------------|-------------------------|-----------------|-------------------------|-----------------|
|      |            | Part No.               | Type             | Part No.                | Type            | Part No.                | Type            |
| MS4  | G1/4       | 542558                 | MS4-DE-1/4-10V24 | 529519                  | MS4-DE-1/4-V110 | 529521                  | MS4-DE-1/4-V230 |
| MS6  | G1/4       | 542564                 | MS6-DE-1/4-10V24 | -                       | -               | -                       | -               |
|      | G3/8       | 542566                 | MS6-DE-3/8-10V24 | -                       | -               | -                       | -               |
|      | G1/2       | 542562                 | MS6-DE-1/2-10V24 | 529799                  | MS6-DE-1/2-V110 | 529801                  | MS6-DE-1/2-V230 |

# Soft-start valves MS4/MS6-DE, MS series

Ordering data – Modular products

| Ordering table |                      |  |                                    |                 |                                  |                |  |
|----------------|----------------------|--|------------------------------------|-----------------|----------------------------------|----------------|--|
| Grid dimension | [mm]                 | 40   | 62                                 | Condi-<br>tions | Code                             | Enter<br>code  |  |
| <b>M</b>       | Module No.           | <b>527713</b>  |                                    | <b>527686</b>   |                                  |                |  |
|                | Series               | Standard   |                                    |                 | <b>MS</b>                        | MS             |  |
|                | Size                 | 4  | 6                                  |                 | ...                              |                |  |
|                | Function             | Soft-start valve, electrical                           |                                    |                 | <b>-DE</b>                       | -DE            |  |
|                | Pneumatic connection | Female thread G $\frac{1}{8}$                          | –                                  | <b>1</b>        | <b>-<math>\frac{1}{8}</math></b> |                |  |
|                |                      | Female thread G $\frac{1}{4}$                          | Female thread G $\frac{1}{4}$      | <b>1</b>        | <b>-<math>\frac{1}{4}</math></b> |                |  |
|                |                      | –  | Female thread G $\frac{3}{8}$      | <b>1</b>        | <b>-<math>\frac{3}{8}</math></b> |                |  |
|                |                      | –  | Female thread G $\frac{1}{2}$      | <b>1</b>        | <b>-<math>\frac{1}{2}</math></b> |                |  |
|                |                      | Connecting plate G $\frac{1}{8}$                       | –                                  |                 |                                  | <b>-AGA</b>    |  |
|                |                      | Connecting plate G $\frac{1}{4}$                       | Connecting plate G $\frac{1}{4}$   |                 |                                  | <b>-AGB</b>    |  |
|                |                      | Connecting plate G $\frac{3}{8}$                       | Connecting plate G $\frac{3}{8}$   |                 |                                  | <b>-AGC</b>    |  |
|                |                      | –  | Connecting plate G $\frac{1}{2}$   |                 |                                  | <b>-AGD</b>    |  |
|                |                      | –  | Connecting plate G $\frac{3}{4}$   |                 |                                  | <b>-AGE</b>    |  |
|                |                      | Connecting plate NPT $\frac{1}{8}$                     | –                                  | <b>1</b>        |                                  | <b>-AQK</b>    |  |
|                |                      | Connecting plate NPT $\frac{1}{4}$                     | Connecting plate NPT $\frac{1}{4}$ | <b>1</b>        |                                  | <b>-AQN</b>    |  |
|                |                      | Connecting plate NPT $\frac{3}{8}$                     | Connecting plate NPT $\frac{3}{8}$ | <b>1</b>        |                                  | <b>-AQP</b>    |  |
|                |                      | –  | Connecting plate NPT $\frac{1}{2}$ | <b>1</b>        |                                  | <b>-AQR</b>    |  |
|                |                      | –  | Connecting plate NPT $\frac{3}{4}$ | <b>1</b>        |                                  | <b>-AQS</b>    |  |
|                | Supply voltage       | 24 V DC (pin allocation to EN 175301)<br>4 ... 14 bar  |                                    | 4 ... 18 bar    |                                  | <b>-V24</b>    |  |
|                |                      | 24 V DC (pin allocation to EN 175301)<br>4 ... 10 bar  |                                    | 4 ... 10 bar    | <b>1 2</b>                       | <b>-10V24</b>  |  |
|                |                      | 24 V DC, M12 to IEC 61076-2-101<br>4 ... 10 bar        |                                    | 4 ... 10 bar    | <b>1 2</b>                       | <b>-10V24P</b> |  |
|                |                      | 110 V AC (pin allocation to EN 175301)<br>4 ... 14 bar |                                    | 4 ... 18 bar    | <b>1</b>                         | <b>-V110</b>   |  |
|                |                      | 230 V AC (pin allocation to EN 175301)<br>4 ... 14 bar |                                    | 4 ... 18 bar    | <b>1</b>                         | <b>-V230</b>   |  |
|                |                      | 4 ... 14 bar   |                                    | 4 ... 18 bar    |                                  |                |  |

**1**  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ , **AQK, AQN, AQP, AQR, AQS, 10V24, 10V24P, V110, V230, AD1 ... AD4, AD7 ... AD10, WPM**  
Not with EU certification EX2

**2** **10V24, 10V24P**  
Max. operating pressure 10 bar

**M** Mandatory data

**O** Options

Transfer order code

**MS**  - **DE** -  -

# Soft-start valves MS4/MS6-DE, MS series

Ordering data – Modular products

| Ordering table   |   |  |     |                 |      |               |       |  |
|------------------|---|--|-----|-----------------|------|---------------|-------|--|
| Grid dimension   | [mm]  | 40   | 62  | Condi-<br>tions | Code | Enter<br>code |       |  |
| 0                | Pressure gauge/pressure gauge alternatives  | MS pressure gauge, bar   |     |                 | -AG  |               |       |  |
|                  |   | 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   |     |                 |      |               | -RG   |  |
|                  |   | Pressure sensor with LCD display, plug M8, 1 switching output PNP, 3-pin                                 |     |                 |      | 1 3           | -AD1  |  |
|                  |   | Pressure sensor with LCD display, plug M8, 1 switching output NPN, 3-pin                                 |     |                 |      | 1 3           | -AD2  |  |
|                  |   | Pressure sensor with LCD display, plug M12, 1 switching output PNP, 4-pin, analogue output 4 ... 20 mA   |     |                 |      | 1 3           | -AD3  |  |
|                  |   | Pressure sensor with LCD display, plug M12, 1 switching output NPN, 4-pin, analogue output 4 ... 20 mA   |     |                 |      | 1 3           | -AD4  |  |
|                  |   | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact |     |                 |      | 1 3           | -AD7  |  |
|                  |   | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/C contact |     |                 |      | 1 3           | -AD8  |  |
|                  |   | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/O contact          |     |                 |      | 1 3           | -AD9  |  |
|                  |   | Pressure sensor with operational status indicator, plug M8, window comparator, PNP, N/C contact          |     |                 |      | 1 3           | -AD10 |  |
|                  |   | Alternative pressure gauge scale   | psi |                 |      | 4             | -PSI  |  |
|                  |   |  | MPa |                 |      | 5             | -MPA  |  |
| Type of mounting | Mounting bracket standard design  |  |     |                 | 6    | -WP           |       |  |
|                  | Mounting bracket for attaching the service units  |  |     |                 | 1 6  | -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 3GD to EU Explosion Protection Directive (ATEX)  |  |     |                 |      | -EX2          |       |  |
| UL certification | cULus, ordinary location for Canada and USA   |  |     |                 | 7    | -UL1          |       |  |
| Flow direction   | Flow direction from right to left   |  |     |                 |      | -Z            |       |  |

3 AD1 ... AD4, AD7 ... AD10  
Measuring range max. 10 bar

4 PSI Only in combination with pressure gauge AG  
 5 MPA Only in combination with pressure gauge AG or RG  
 6 WP, WPM Only with connecting plate AGA, AGB, AGC, AGD, AGE, AQK, AQN, AQP, AQR or AQS  
 7 UL1 Not with supply voltage V110, V230

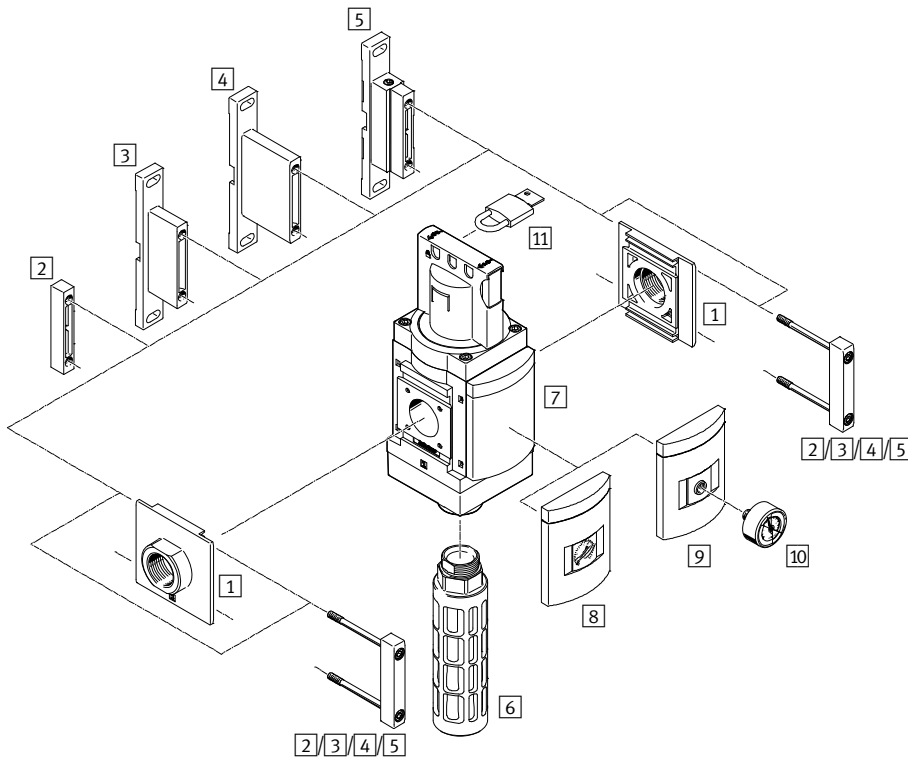
M Mandatory data  
 0 Options

Transfer order code

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

# On-off valves MS9-EM, MS series

Peripherals overview



- - Note

Additional accessories:

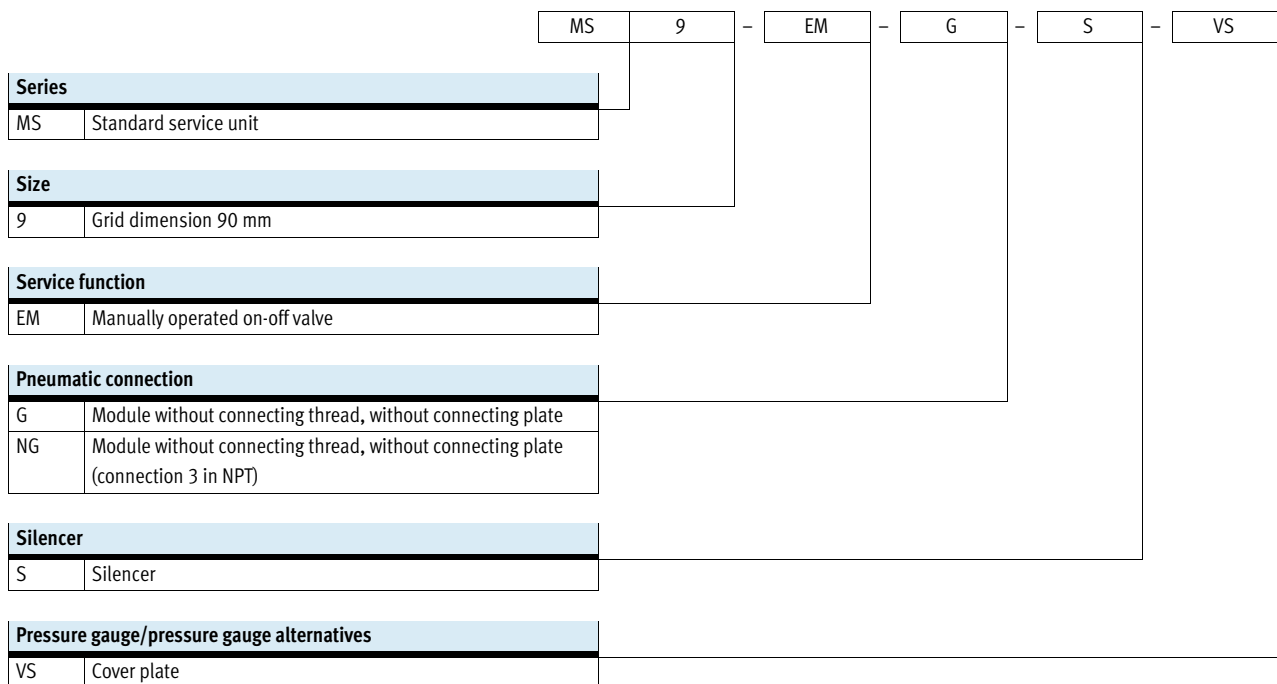
- Module connector for combinations with size MS6, MS9 or size MS12
- ➔ Internet: rmv, armv

| Mounting attachments and accessories |   |                                     |  |                              |                     |   |
|--------------------------------------|---|-------------------------------------|--|------------------------------|---------------------|---|
|                                      | Individual component                          | Combination                         |  |                              | ➔ Page/<br>Internet |   |
|                                      |   | With female thread<br>3/4/1/N3/4/N1 | With connecting plate AG.../AQ...<br>Without EU<br>certification EX4 | With EU<br>certification EX4 |                     | Module without connect-<br>ing thread, without<br>connecting plate G/NG |
| 1                                    | Connecting plate-SET<br>MS9-AG...             | -                                   | ■  | ■                            | ■                   | ms9-ag  |
|                                      | Connecting plate-SET<br>MS9-AQ...             | -                                   | ■  | -                            | ■                   | ms9-aq  |
| 2                                    | Module connector<br>MS9-MV                    | -                                   | -  | -                            | ■                   | ms9-mv  |
| 3                                    | Mounting bracket<br>MS9-WP                    | ■                                   | ■  | ■                            | ■ <sup>1)</sup>     | ms9-wp  |
| 4                                    | Mounting bracket<br>MS9-WPB                   | ■                                   | ■  | ■                            | ■ <sup>1)</sup>     | ms9-wp  |
| 5                                    | Mounting bracket<br>MS9-WPM                   | ■                                   | ■  | -                            | ■                   | ms9-wp  |
| 6                                    | Silencer<br>U                                 | ■                                   | ■  | ■                            | ■                   | 95  |
| 7                                    | Cover plate<br>VS                             | ■                                   | ■  | ■                            | ■                   | 59  |
| 8                                    | MS pressure gauge<br>AG/RG                    | ■                                   | ■  | ■                            | ■                   | 59  |
| 9                                    | Adapter plate for EN pressure gauge 1/4<br>A4 | ■                                   | ■  | ■                            | ■                   | 59  |
| 10                                   | Pressure gauge<br>MA                          | ■                                   | ■  | ■                            | ■                   | 95  |
| 11                                   | Padlock<br>LRVS-D                             | ■                                   | ■  | ■                            | ■                   | 95  |

1) The screws for the wall bracket on the reverse side are partially covered by the housing of this service unit. Depending on the configuration of the service unit combination, the screws will no longer be accessible. The mounting bracket MS9-WPM is therefore recommended for wall mounting. It can be used to attach a fully assembled combination to the pre-mounted wall bracket.

# On-off valves MS9-EM, MS series

Type codes



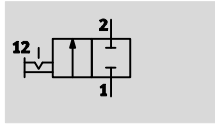
**Additional variants can be ordered using the modular system → 59**

- Pneumatic connection
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Valve function
- Type of mounting
- EU certification
- UL certification
- Flow direction

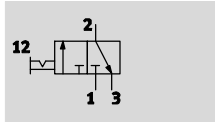
# On-off valves MS9-EM, MS series





Technical data

2/2-way valve, bistable



3/2-way valve, bistable



-  - Flow rate  
8,000 ... 18,000 l/min
-  - Temperature range  
-10 ... +60 °C
-  - Operating pressure  
0 ... 20 bar
-  - [www.festo.com](http://www.festo.com)



- Manually operated on-off valve for pressurising and venting pneumatic installations
- Ducted exhaust possible via a threaded connection with silencer
- The switching position is immediately recognisable
- Actuator secured by locking the rotary knob
- Commercially available padlock can be used for security
- Optional pressure gauge
- 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 $\frac{3}{4}$ , G1, NPT $\frac{3}{4}$ or NPT1   |
| Connecting plate AG...                      | G $\frac{1}{2}$ , G $\frac{3}{4}$ , G1, G1 $\frac{1}{4}$ or G1 $\frac{1}{2}$  |
| Connecting plate AQ...                      | NPT $\frac{1}{2}$ , NPT $\frac{3}{4}$ , NPT1, NPT1 $\frac{1}{4}$ or NPT1 $\frac{1}{2}$  |
| Module without connecting thread/plate G/NG | -   |
| Pneumatic connection 3                      |   |
|   | G1 (pneumatic connection 1, 2: $\frac{3}{4}$ /1/AG.../G)  |
|   | G1 (pneumatic connection 1, 2: N $\frac{3}{4}$ /N1/AQ.../NG with silencer S)  |
|   | NPT1-11 $\frac{1}{2}$ (pneumatic connection 1, 2: N $\frac{3}{4}$ /N1/AQ... without silencer S)   |
| Design                                      | Piston spool valve  |
| Type of mounting                            | Via accessories<br>In-line installation   |
| Mounting position                           | Any   |
| Regulator lock                              | Rotary knob with detent   |
| Pressure display                            | Via pressure gauge for displaying output pressure<br>Via pressure gauge with red/green scale for displaying output pressure<br>G $\frac{1}{4}$ prepared |
| Valve function                              | 2/2-way valve, bistable<br>3/2-way valve, bistable  |
| Exhaust air function                        | No flow control   |
| Reset method                                | Forced  |
| Type of control                             | Direct  |
| Sealing principle                           | Soft  |

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

# On-off valves MS9-EM, MS series

Technical data

| Flow rate characteristic values                  |               |         |                  |         |         |         |         |        |
|--|---------------|---------|------------------|---------|---------|---------|---------|--------|
| Pneumatic connection                             | Female thread |         | Connecting plate |         |         |         |         | None   |
|  | G3/4/NPT3/4   | G1/NPT1 | AGD/AQR          | AGE/AQS | AGF/AQT | AGG/AQU | AGH/AQV | G/NG   |
| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] |               |         |                  |         |         |         |         |        |
| In main flow direction 1 $\rightarrow$ 2         | 14,500        | 18,000  | 8,000            | 14,000  | 18,000  | 18,000  | 18,000  | 18,000 |
| In relief direction 2 $\rightarrow$ 3            | 14,900        | 14,100  | 16,500           | 14,400  | 13,800  | 13,200  | 13,200  | 14,100 |
| C value [l/s*min]                                |               |         |                  |         |         |         |         |        |
| In main flow direction 1 $\rightarrow$ 2         | 59.59         | 76.90   | 32.75            | 57.50   | 75.65   | 75.51   | 75.17   | -      |
| In relief direction 2 $\rightarrow$ 3            | 55.11         | 53.54   | 56.22            | 54.07   | 52.73   | 51.06   | 51.36   | -      |
| b value  |               |         |                  |         |         |         |         |        |
| In main flow direction 1 $\rightarrow$ 2         | 0.41          | 0.37    | 0.45             | 0.39    | 0.38    | 0.39    | 0.38    | -      |
| In relief direction 2 $\rightarrow$ 3            | 0.50          | 0.48    | 0.60             | 0.49    | 0.47    | 0.45    | 0.44    | -      |

1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar

| Operating and environmental conditions       |  |
|--|--|
| Operating pressure [bar]                     | 0 ... 20   |
| Operating medium                             | Compressed air in accordance with ISO 8573-1:2010 [7:4:4]  |
| Note on operating/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |
| Ambient temperature [°C]                     | -10 ... +60  |
| Temperature of medium [°C]                   | -10 ... +60  |
| Corrosion resistance class CRC <sup>1)</sup> | 2  |
| Noise level [dB (A)]                         | 93 <sup>2)</sup> with silencer   |
| UL certification <sup>3)</sup>               | 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.

2) Venting at 10 bar at a distance of 1 m.

3) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

| ATEX  |   |
|---|---|
| EU certification                                      | EX4   |
| ATEX category gas                                     | II 2G                                       |
| Ex-ignition protection type gas                       | Ex h IIC T6 Gb X                            |
| ATEX category dust                                    | II 2D                                       |
| EX-ignition protection type dust                      | Ex h IIIC T60°C Db X                        |
| ATEX ambient temperature                              | -10 °C ≤ Ta ≤ +60 °C                        |
| CE mark (see declaration of conformity) <sup>1)</sup> | To EU Explosion Protection Directive (ATEX) |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

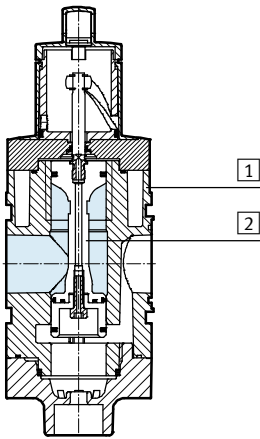
| Weight [g]                   |       |
|------------------------------|-------|
| On-off valve                 | 2,200 |
| On-off valve with silencer S | 2,400 |

# On-off valves MS9-EM, MS series

Technical data

## Materials

Sectional view

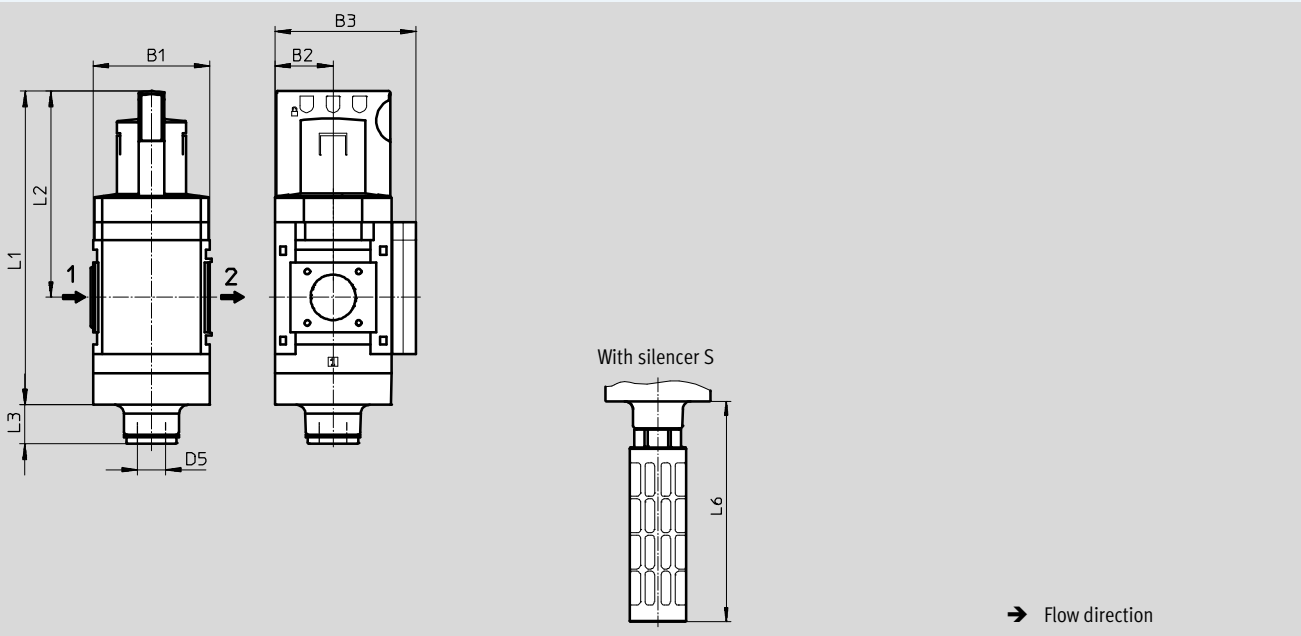


| On-off valve      |              |                    |
|-------------------|--------------|--------------------|
| 1                 | Housing      | Die-cast aluminium |
| 2                 | Piston spool | POM                |
| -                 | Seals        | NBR                |
| Note on materials |              | RoHS-compliant     |

## Dimensions – Basic version

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

Module without connecting thread, without connecting plate G/NG, cover plate VS



| Type        | B1 | B2 | B3  | D5 | L1  | L2  | L3            |               | L6  |
|-------------|----|----|-----|----|-----|-----|---------------|---------------|-----|
|             |    |    |     |    |     |     | 2/2-way valve | 3/2-way valve |     |
| MS9-EM-G/NG | 90 | 45 | 109 | G1 | 242 | 159 | 30            | 23            | 189 |



# On-off valves MS9-EM, MS series

Technical data

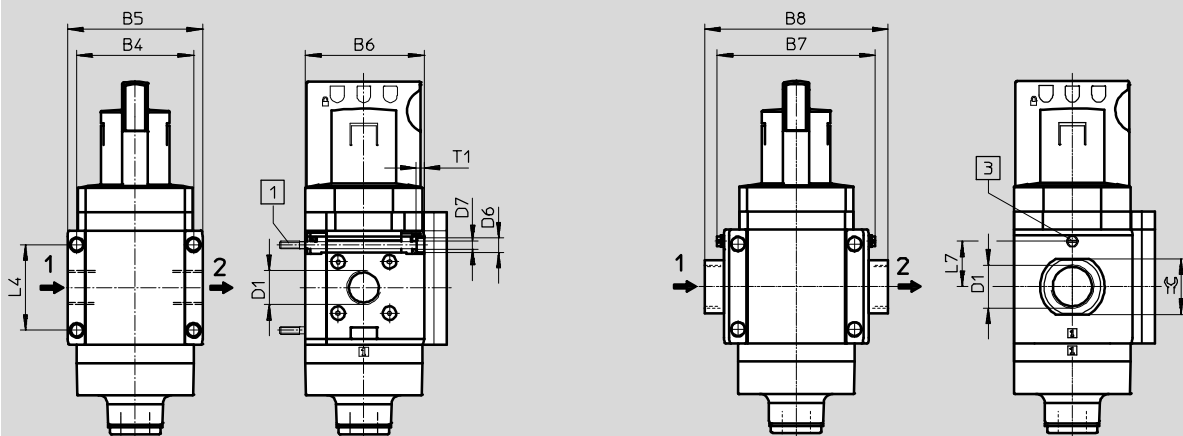
FESTO

## Dimensions – Connecting thread/connecting plate

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

With female thread 3/4/1/N3/4/N1

With connecting plate AG.../AQ...



1 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

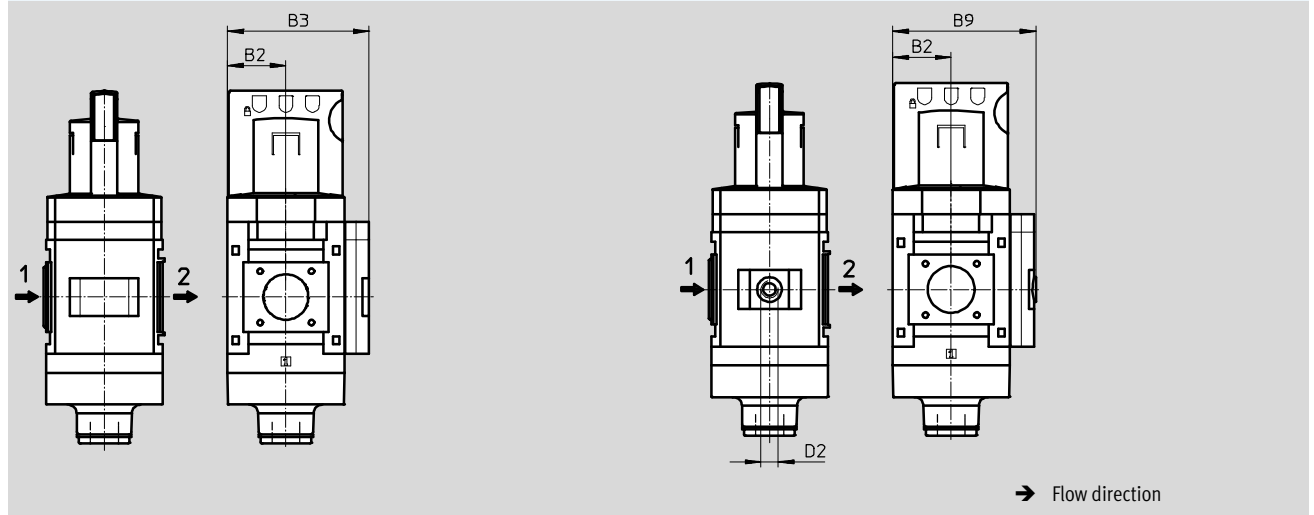
| Type        | B4          | B5  | B6   | B7  |     | B8  | D1              | D6 | D7  | L4 | L7 |     | T1 | ≅   |                 |   |   |   |           |    |     |    |   |   |   |    |
|-------------|-------------|-----|------|-----|-----|-----|-----------------|----|-----|----|----|-----|----|-----|-----------------|---|---|---|-----------|----|-----|----|---|---|---|----|
|             |             |     |      |     | EX4 |     |                 |    |     |    |    | EX4 |    |     |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-3/4  | 90          | 104 | 91.5 | -   | -   | -   | G3/4            | 11 | 6.5 | 66 | -  | 6   | -  | -   |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-1    |             |     |      |     |     |     | G1              |    |     |    |    |     |    |     |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AGD  | -           | -   | -    | 112 | 122 | 132 | G1/2            | -  | -   | -  | 35 | -   | -  | 30  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AGE  |             |     |      |     |     |     | G3/4            |    |     |    |    |     |    | 36  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AGF  |             |     |      |     |     |     | G1              |    |     |    |    |     |    | 41  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AGG  |             |     |      |     |     |     | G1 1/4          |    |     |    |    |     |    | 50  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AGH  |             |     |      |     |     |     | G1 1/2          |    |     |    |    |     |    | 55  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-N3/4 |             |     |      |     |     |     | 90              |    |     |    |    |     |    | 104 | 91.5            | - | - | - | NPT3/4-14 | 11 | 6.5 | 66 | - | 6 | - | -  |
| MS9-EM-N1   | NPT1-11 1/2 |     |      |     |     |     |                 |    |     |    |    |     |    |     |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AQR  | -           | -   | -    | 112 | -   | 132 | NPT1/2-14       | -  | -   | -  | -  | -   | -  | 30  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AQS  |             |     |      |     |     |     | NPT3/4-14       |    |     |    |    |     |    | 36  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AQT  |             |     |      |     |     |     | NPT1-11 1/2     |    |     |    |    |     |    | 41  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AQU  |             |     |      |     |     |     | NPT1 1/4-11 1/2 |    |     |    |    |     |    | 50  |                 |   |   |   |           |    |     |    |   |   |   |    |
| MS9-EM-AQV  |             |     |      |     |     |     | 162             |    |     |    |    |     |    | 176 | NPT1 1/2-11 1/2 | - | - | - | -         | -  | -   | -  | - | - | - | 55 |
|             |             |     |      |     |     |     |                 |    |     |    |    |     |    |     |                 |   |   |   |           |    |     |    |   |   |   | 55 |

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

# On-off valves MS9-EM, MS series

Technical data

Dimensions – Pressure gauge/pressure gauge alternatives Download CAD data → [www.festo.com](http://www.festo.com)  
 Integrated MS pressure gauge with standard scale AG or red/green scale RG Adapter plate A4 for EN pressure gauge 1/4, without pressure gauge



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

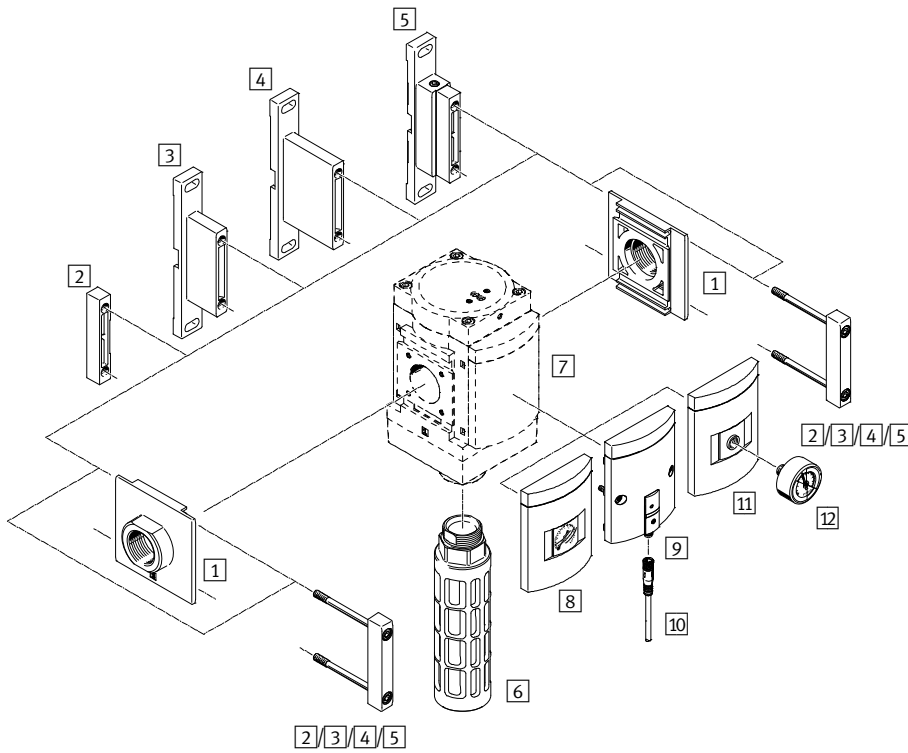
• | • Note: This product conforms to ISO 1179-1 and to ISO 228-1


| Ordering data                              |          |                |
|--|----------|----------------|
| 3/2-way valve, with silencer               |          |                |
| Size                                       | Part No. | Type           |
| Cover plate                                |          |                |
| MS9  | 562952   | MS9-EM-G-S-VS  |
| Pneumatic connection 3 in NPT, cover plate |          |                |
| MS9  | 562954   | MS9-EM-NG-S-VS |



# On-off valves MS9-EE, MS series

Peripherals overview



-  - Note

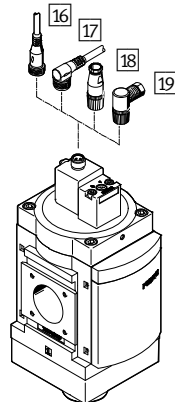
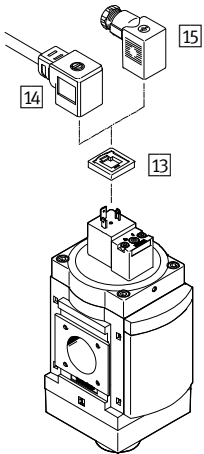
Additional accessories:

- Module connector for combinations with size MS6, MS9 or size MS12

➔ Internet: rmv, armv

Supply voltage  
V24/V110/V230

Supply voltage  
V24P



# On-off valves MS9-EE, MS series

Peripherals overview

FESTO

| Mounting attachments and accessories |   |                                     |  |  |                     |
|--------------------------------------|---|-------------------------------------|--|--|---------------------|
|                                      |   | Individual component                |  | Combination<br>Module without connect-<br>ing thread, without<br>connecting plate G/NG | → Page/<br>Internet |
|                                      |   | With female thread<br>3/4/1/N3/4/N1 | With connecting plate AG.../AQ...<br>Without EU<br>certification EX2 |  |                     |
| 1                                    | Connecting plate-SET<br>MS9-AG...             | -                                   | ■  | ■  | ms9-ag              |
|                                      | Connecting plate-SET<br>MS9-AQ...             | -                                   | ■  | -  | ms9-aq              |
| 2                                    | Module connector<br>MS9-MV                    | -                                   | -  | -  | ms9-mv              |
| 3                                    | Mounting bracket<br>MS9-WP                    | ■                                   | ■  | ■ <sup>1)</sup>  | ms9-wp              |
| 4                                    | Mounting bracket<br>MS9-WPB                   | ■                                   | ■  | ■ <sup>1)</sup>  | ms9-wp              |
| 5                                    | Mounting bracket<br>MS9-WPM                   | ■                                   | ■  | -  | ms9-wp              |
| 6                                    | Silencer<br>U                                 | ■                                   | ■  | ■  | 95                  |
| 7                                    | Cover plate<br>VS                             | ■                                   | ■  | ■  | 68                  |
| 8                                    | MS pressure gauge<br>AG/RG                    | ■                                   | ■  | ■  | 68                  |
| 9                                    | Pressure sensor without display<br>AD7        | ■                                   | ■  | ■  | 68                  |
| 10                                   | Connecting cable<br>NEBU-M8...-LE3            | ■                                   | ■  | ■  | 95                  |
| 11                                   | Adapter plate for EN pressure gauge 1/4<br>A4 | ■                                   | ■  | ■  | 68                  |
| 12                                   | Pressure gauge<br>MA                          | ■                                   | ■  | ■  | 95                  |
| 13                                   | Illuminating seal<br>MC-LD                    | ■                                   | ■  | -  | 94                  |
| 14                                   | Connecting cable<br>KMC                       | ■                                   | ■  | -  | 94                  |
| 15                                   | Plug socket<br>MSSD-C                         | ■                                   | ■  | ■<br>Included in scope<br>of delivery  | 94                  |
| 16                                   | Connecting cable<br>NEBU-M12G5                | ■                                   | ■  | -  | 95                  |
| 17                                   | Connecting cable<br>NEBU-M12W5                | ■                                   | ■  | -  | 95                  |
| 18                                   | Sensor socket<br>SIE-GD                       | ■                                   | ■  | -  | 95                  |
| 19                                   | Angled plug socket<br>SIE-WD                  | ■                                   | ■  | -  | 95                  |

1) The screws for the wall bracket on the reverse side are partially covered by the housing of this service unit. Depending on the configuration of the service unit combination, the screws will no longer be accessible. The mounting bracket MS9-WPM is therefore recommended for wall mounting. It can be used to attach a fully assembled combination to the pre-mounted wall bracket.

# On-off valves MS9-EE, MS series

Type codes

MS 9 - EE - G - V24 - S - VS

| Series                                     |  |
|--|--|
| MS   | Standard service unit  |
| Size                                       |  |
| 9  | Grid dimension 90 mm   |
| Service function                           |  |
| EE   | Solenoid actuated on-off valve   |
| Pneumatic connection                       |  |
| G  | Module without connecting thread, without connecting plate                       |
| NG   | Module without connecting thread, without connecting plate (connection 3 in NPT) |
| Supply voltage                             |  |
| V24  | Supply voltage 24 V DC   |
| Silencer                                   |  |
| S  | Silencer   |
| Pressure gauge/pressure gauge alternatives |  |
| VS   | Cover plate  |

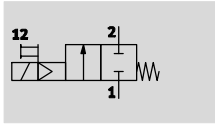
**Additional variants can be ordered using the modular system → 68**

- Pneumatic connection
- Supply voltage
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Valve function
- Type of mounting
- EU certification
- UL certification
- Flow direction

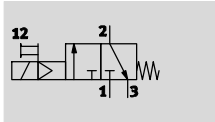
# On-off valves MS9-EE, MS series

Technical data

2/2-way valve, single solenoid, closed



3/2-way valve, single solenoid, closed



- - Flow rate  
8,000 ... 18,000 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
3.5 ... 16 bar
- - [www.festo.com](http://www.festo.com)



- Solenoid actuated on-off valve for pressurising and venting pneumatic installations
- Ducted exhaust possible via a threaded connection with silencer
- With solenoid coil without plug socket
- 3 voltage ranges can be selected
- Non-detenting or detenting manual override
- Optional pressure gauge
- Optional device variant EX2 for use in potentially explosive areas in zones 2 and 22 (plug socket MSSD-C-24V-EX is included in the scope of delivery)

| General technical data                      |  |
|---|--|
| Pneumatic connection 1, 2                   |  |
| Female thread                               | G $\frac{3}{4}$ , G1, NPT $\frac{3}{4}$ or NPT1  |
| Connecting plate AG...                      | G $\frac{1}{2}$ , G $\frac{3}{4}$ , G1, G1 $\frac{1}{4}$ or G1 $\frac{1}{2}$   |
| Connecting plate AQ...                      | NPT $\frac{1}{2}$ , NPT $\frac{3}{4}$ , NPT1, NPT1 $\frac{1}{4}$ or NPT1 $\frac{1}{2}$   |
| Module without connecting thread/plate G/NG | –  |
| Pneumatic connection 3                      | G1 (pneumatic connection 1, 2: $\frac{3}{4}$ /1/AG.../G)<br>G1 (pneumatic connection 1, 2: N $\frac{3}{4}$ /N1/AQ.../NG with silencer S)<br>NPT1-1 $\frac{1}{2}$ (pneumatic connection 1, 2: N $\frac{3}{4}$ /N1/AQ... without silencer S)                           |
| Design                                      | Piston spool valve   |
| Type of mounting                            | Via accessories<br>In-line installation  |
| Mounting position                           | Any  |
| Pressure display                            | Via pressure sensor for displaying output pressure via operational status indicator and electrical output<br>Via pressure gauge for displaying output pressure<br>Via pressure gauge with red/green scale for displaying output pressure<br>G $\frac{1}{4}$ prepared |
| Valve function                              | 2/2-way valve, single solenoid, closed<br>3/2-way valve, single solenoid, closed   |
| Exhaust air function                        | No flow control  |
| Manual override                             | Non-detenting and detenting  |
| Reset method                                | Mechanical spring  |
| Type of control                             | Piloted  |
| Pilot air supply                            | Internal   |
| Sealing principle                           | Soft   |

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

# On-off valves MS9-EE, MS series

Technical data

| Electrical data                    |               |   |
|------------------------------------|---------------|---|
| Coil characteristics               | V24/V24P      | 24 V DC: 4.5 W; perm. voltage fluctuations $\pm 10\%$   |
|                                    | V110          | 110 V AC: 50 Hz; pick-up power 11.5 W; holding power 8.9 W; perm. voltage fluctuations $\pm 10\%$<br>110 V AC: 60 Hz; pick-up power 9.5 W; holding power 6.2 W; perm. voltage fluctuations $\pm 10\%$ |
|                                    | V230          | 230 V AC: 50 Hz; pick-up power 11.5 W; holding power 9.1 W; perm. voltage fluctuations $\pm 10\%$<br>230 V AC: 60 Hz; pick-up power 9.5 W; holding power 6.4 W; perm. voltage fluctuations $\pm 10\%$ |
| Electrical connection              | V24/V110/V230 | Plug socket, square design to EN 175301-803, type A   |
|                                    | V24P          | Plug M12, 4-pin to DESINA   |
| Protection class for solenoid coil | IP65          |   |
| Duty cycle                         | [%]           | 100   |

| Flow rate characteristic values                  |                                    |         |                  |         |         |         |         |        |
|--|------------------------------------|---------|------------------|---------|---------|---------|---------|--------|
| Pneumatic connection                             | Female thread                      |         | Connecting plate |         |         |         |         | None   |
|  | G $\frac{3}{4}$ /NPT $\frac{3}{4}$ | G1/NPT1 | AGD/AQR          | AGE/AQS | AGF/AQT | AGG/AQU | AGH/AQV | G/NG   |
| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] |                                    |         |                  |         |         |         |         |        |
| In main flow direction 1 $\rightarrow$ 2         | 14,500                             | 18,000  | 8,000            | 14,000  | 18,000  | 18,000  | 18,000  | 18,000 |
| In relief direction 2 $\rightarrow$ 3            | 14,900                             | 14,100  | 16,500           | 14,400  | 13,800  | 13,200  | 13,200  | 14,100 |
| C value [l/s*min]                                |                                    |         |                  |         |         |         |         |        |
| In main flow direction 1 $\rightarrow$ 2         | 59.59                              | 76.90   | 32.75            | 57.50   | 75.65   | 75.51   | 75.17   | -      |
| In relief direction 2 $\rightarrow$ 3            | 55.11                              | 53.54   | 56.22            | 54.07   | 52.73   | 51.06   | 51.36   | -      |
| b value  |                                    |         |                  |         |         |         |         |        |
| In main flow direction 1 $\rightarrow$ 2         | 0.41                               | 0.37    | 0.45             | 0.39    | 0.38    | 0.39    | 0.38    | -      |
| In relief direction 2 $\rightarrow$ 3            | 0.50                               | 0.48    | 0.60             | 0.49    | 0.47    | 0.45    | 0.44    | -      |

1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar

| Operating and environmental conditions       |  |
|--|--|
| Operating pressure [bar]                     | 3.5 ... 16   |
| Operating medium                             | Compressed air in accordance with ISO 8573-1:2010 [7:4:4]  |
| Note on operating/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |
| Ambient temperature [°C]                     | -10 ... +60  |
| Temperature of medium [°C]                   | -10 ... +60  |
| Corrosion resistance class CRC <sup>1)</sup> | 2  |
| Noise level [dB (A)]                         | 93 <sup>2)</sup> with silencer   |
| UL certification <sup>3)</sup>               | 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.

2) Venting at 10 bar at a distance of 1 m.

3) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

| ATEX   |   |
|--|---|
| EU certification                                       | EX2   |
| ATEX category gas                                      | II 3G                                       |
| Ex-ignition protection type gas                        | Ex nA IIC T5 X Gc                           |
| ATEX category dust                                     | II 3D                                       |
| EX-ignition protection type dust                       | Ex tc IIIC T85°C X Dc IP65                  |
| ATEX ambient temperature                               | -10 °C $\leq$ Ta $\leq$ +50 °C              |
| CE mark (see declaration of conformity <sup>1)</sup> ) | To EU Explosion Protection Directive (ATEX) |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.



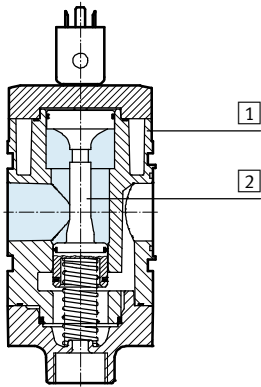
# On-off valves MS9-EE, MS series

Technical data

| Weight [g]                   |       |
|------------------------------|-------|
| On-off valve                 | 2,100 |
| On-off valve with silencer S | 2,300 |

## Materials

Sectional view



| On-off valve      |              |                    |
|-------------------|--------------|--------------------|
| 1                 | Housing      | Die-cast aluminium |
| 2                 | Piston spool | POM                |
| -                 | Seals        | NBR                |
| Note on materials |              | RoHS-compliant     |

## Dimensions – Basic version

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

Module without connecting thread, without connecting plate G/NG, cover plate VS

Supply voltage V24/V110/V230 Supply voltage V24P

1 = Connected to 2  
 2 = Connected to 1  
 3 = com (-)  
 4 = Signal (+)

With silencer S

- 1 Plug connection to EN 175301-803
- 2 Plug connection M12, 4-pin to DESINA for connecting cable NEBU-M12
- 3 Manual override

→ Flow direction

| Type                      | B1 | B2 | B3  | D2    | D5 | L1  | L2 | L3            |               | L4 | L5 | L6  |
|---------------------------|----|----|-----|-------|----|-----|----|---------------|---------------|----|----|-----|
|                           |    |    |     |       |    |     |    | 2/2-way valve | 3/2-way valve |    |    |     |
| MS9-EE-G/NG-V24/V110/V230 | 90 | 45 | 109 | -     | G1 | 161 | 83 | 30            | 23            | 36 | 12 | 189 |
| MS9-EE-G/NG-V24P          |    |    |     | M12x1 |    |     |    |               |               | 39 | 10 |     |

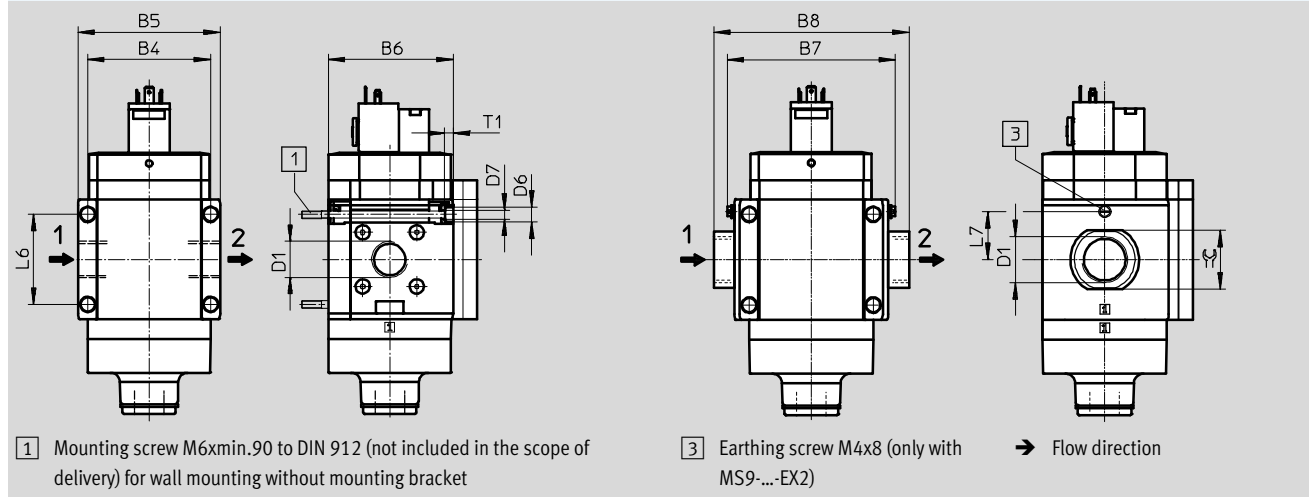
# On-off valves MS9-EE, MS series

Technical data

**Dimensions – Connecting thread/connecting plate** Download CAD data → [www.festo.com](http://www.festo.com)

With female thread 3/4/1/N3/4/N1

With connecting plate AG.../AQ...



| Type        | B4 | B5  | B6   | B7  |     | B8 | D1              | D6 | D7  | L6 | L7 |     | T1 | ≙   |
|-------------|----|-----|------|-----|-----|----|-----------------|----|-----|----|----|-----|----|-----|
|             |    |     |      |     | EX2 |    |                 |    |     |    |    | EX2 |    |     |
| MS9-EE-3/4  | 90 | 104 | 91.5 | -   | -   | -  | G3/4            | 11 | 6.5 | 66 | -  | 6   | -  |     |
| MS9-EE-1    |    |     |      |     |     |    | G1              |    |     |    |    |     |    |     |
| MS9-EE-AGD  | -  | -   | -    | 112 | 122 | -  | 132             | -  | -   | -  | 35 | -   | -  |     |
| MS9-EE-AGE  |    |     |      |     |     |    | G3/4            |    |     |    |    |     |    | 30  |
| MS9-EE-AGF  |    |     |      |     |     |    | G1              |    |     |    |    |     |    | 36  |
| MS9-EE-AGG  |    |     |      |     |     |    | G1 1/4          |    |     |    |    |     |    | 41  |
| MS9-EE-AGH  |    |     |      |     |     |    | G1 1/2          |    |     |    |    |     |    | 50  |
| MS9-EE-N3/4 |    |     |      |     |     |    | 90              |    |     |    |    |     |    | 104 |
| MS9-EE-N1   |    |     |      |     |     |    | NPT1-11 1/2     |    |     |    |    |     |    |     |
| MS9-EE-AQR  | -  | -   | -    | 112 | -   | -  | 132             | -  | -   | -  | -  | -   | -  |     |
| MS9-EE-AQS  |    |     |      |     |     |    | NPT1/2-14       |    |     |    |    |     |    | 30  |
| MS9-EE-AQT  |    |     |      |     |     |    | NPT3/4-14       |    |     |    |    |     |    | 36  |
| MS9-EE-AQU  |    |     |      |     |     |    | NPT1-11 1/2     |    |     |    |    |     |    | 41  |
| MS9-EE-AQU  |    |     |      |     |     |    | NPT1 1/4-11 1/2 |    |     |    |    |     |    | 50  |
| MS9-EE-AQV  |    |     |      |     |     |    | NPT1 1/2-11 1/2 |    |     |    |    |     |    | 55  |

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

# On-off valves MS9-EE, MS series

Technical data

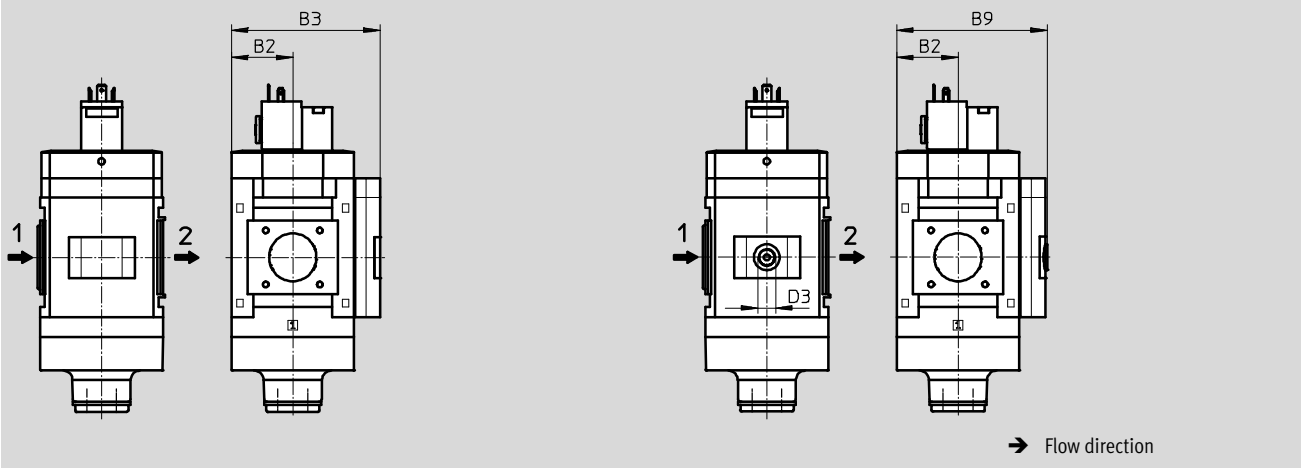
FESTO

## Dimensions – Pressure gauge/pressure gauge alternatives

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

Integrated MS pressure gauge with standard scale AG or red/green scale RG

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



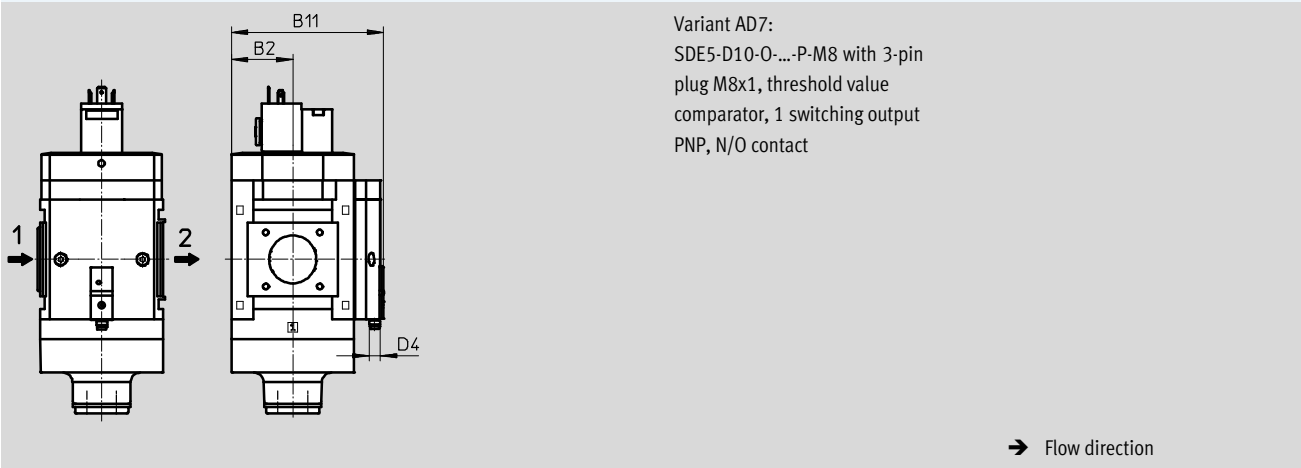
| Type             | B2 | B3  | B9  | D3   |
|------------------|----|-----|-----|------|
| MS9-EE-...-AG/RG | 45 | 109 | -   | -    |
| MS9-EE-...-A4    |    | -   | 110 | G1/4 |

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

## Dimensions – Pressure gauge/pressure gauge alternatives

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

Pressure sensor with operational status indicator AD7



| Type           | B2 | B11 | D4   |
|----------------|----|-----|------|
| MS9-EE-...-AD7 | 45 | 112 | M8x1 |

## Ordering data

3/2-way valve, with silencer, supply voltage 24 V DC

| Size                                       | Part No. | Type               |
|--|----------|--------------------|
| Cover plate                                |          |                    |
| MS9  | 562940   | MS9-EE-G-V24-S-VS  |
| Pneumatic connection 3 in NPT, cover plate |          |                    |
| MS9  | 562946   | MS9-EE-NG-V24-S-VS |

# On-off valves MS9-EE, MS series

Ordering data – Modular products

| Ordering table |  |  |   |                                   |               |  |
|----------------|--|--|---|-----------------------------------|---------------|--|
| Grid dimension | [mm]   | 90   | Condi-<br>tions   | Code                              | Enter<br>code |  |
| <b>M</b>       | Module No.                                     | <b>562177</b>  |   |                                   |               |  |
|                | Series   | Standard   |   | <b>MS</b>                         | MS            |  |
|                | Size   | 9  |   | <b>9</b>                          | 9             |  |
|                | Function                                       | Electrical on-off valve  |   | <b>-EE</b>                        | -EE           |  |
|                | Pneumatic connection                           | Female thread G $\frac{3}{4}$  | <b>1</b>  | <b>-<math>\frac{3}{4}</math></b>  |               |  |
|                |  | Female thread G1   | <b>1</b>  | <b>-1</b>                         |               |  |
|                |  | Connecting plate G $\frac{1}{2}$   |   | <b>-AGD</b>                       |               |  |
|                |  | Connecting plate G $\frac{3}{4}$   |   | <b>-AGE</b>                       |               |  |
|                |  | Connecting plate G1  |   | <b>-AGF</b>                       |               |  |
|                |  | Connecting plate G1 $\frac{1}{4}$  |   | <b>-AGG</b>                       |               |  |
|                |  | Connecting plate G1 $\frac{1}{2}$  |   | <b>-AGH</b>                       |               |  |
|                |  | Female thread NPT $\frac{3}{4}$  | <b>1</b>  | <b>-N<math>\frac{3}{4}</math></b> |               |  |
|                |  | Female thread NPT1   | <b>1</b>  | <b>-N1</b>                        |               |  |
|                |  | Connecting plate NPT $\frac{1}{2}$   | <b>1</b>  | <b>-AQR</b>                       |               |  |
|                |  | Connecting plate NPT $\frac{3}{4}$   | <b>1</b>  | <b>-AQS</b>                       |               |  |
|                |  | Connecting plate NPT1  | <b>1</b>  | <b>-AQT</b>                       |               |  |
|                |  | Connecting plate NPT1 $\frac{1}{4}$  | <b>1</b>  | <b>-AQU</b>                       |               |  |
|                |  | Connecting plate NPT1 $\frac{1}{2}$  | <b>1</b>  | <b>-AQV</b>                       |               |  |
|                |  | Module without connecting thread, without connecting plate                       | <b>1</b>  | <b>-G</b>                         |               |  |
|                |  | Module without connecting thread, without connecting plate (connection 3 in NPT) | <b>1</b>  | <b>-NG</b>                        |               |  |
|                |  | Supply voltage   | 24 V DC (pin allocation to EN 175301), 16 bar           |                                   | <b>-V24</b>   |  |
|                |  |  | 24 V DC plug (connection pattern M12 to DESINA), 16 bar | <b>1</b>                          | <b>-V24P</b>  |  |
|                | 110 V AC (pin allocation to EN 175301), 16 bar |  | <b>1</b>  | <b>-V110</b>                      |               |  |
|                | 230 V AC (pin allocation to EN 175301), 16 bar |  | <b>1</b>  | <b>-V230</b>                      |               |  |

**1**  $\frac{3}{4}$ , 1, N $\frac{3}{4}$ , N1, AQR, AQS, AQT, AQU, AQV, G, NG, V24P, V110, V230, AD7, WPM  
Not with EU certification EX2

- M** Mandatory data
- O** Options

Transfer order code

562177 MS 9 - EE - [ ] - [ ]

# On-off valves MS9-EE, MS series

Ordering data – Modular products

| Ordering table   |  |  |                 |      |               |
|------------------|--|--|-----------------|------|---------------|
| Grid dimension   | [mm]   | 90   | Condi-<br>tions | Code | Enter<br>code |
| <b>O</b>         | Silencer   | Silencer   |                 | -S   |               |
| <b>M</b>         | 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   | 2               | -RG  |               |
|                  |  | Pressure sensor with operational status indicator, plug M8, threshold value comparator, PNP, N/O contact | 1 3             | -AD7 |               |
| <b>O</b>         | Alternative pressure gauge scale                   | psi  | 4               | -PSI |               |
|                  |  | MPa  | 4               | -MPA |               |
|                  |  | bar  | 4               | -BAR |               |
| Valve function   | Standard (3/2-way valve)                           |  |                 | -    |               |
|                  | 2/2-way valve                                      | 5  |                 | -2   |               |
| Type of mounting | Mounting bracket standard design                   | 6  |                 | -WP  |               |
|                  | Mounting bracket for attaching the service units   | 1 6  |                 | -WPM |               |
|                  | Mounting bracket for large wall gap                | 6  |                 | -WPB |               |
| EU certification | II 3GD to EU Explosion Protection Directive (ATEX) |  |                 | -EX2 |               |
| UL certification | cULus, ordinary location for Canada and USA        | 7  |                 | -UL1 |               |
| Flow direction   | Flow direction from right to left                  |  |                 | -Z   |               |

- 1** 3/4, 1, N3/4, N1, AQR, AQS, AQT, AQU, AQV, G, NG, V24P, V110, V230, AD7, WPM  
Not with EU certification EX2
- 2** RG  
Not with alternative pressure gauge scale PSI  
PSI scale serves only as an auxiliary scale
- 3** AD7  
Measuring range max. 10 bar
- 4** PSI, MPA, BAR  
Not with pressure gauge/pressure gauge alternatives VS, A4, AD7

- 5** 2  
Not with silencer S
- 6** WP, WPM, WPB  
Not with pneumatic connection G, NG
- 7** UL1  
Not with supply voltage V110, V230

- M** Mandatory data
- O** Options

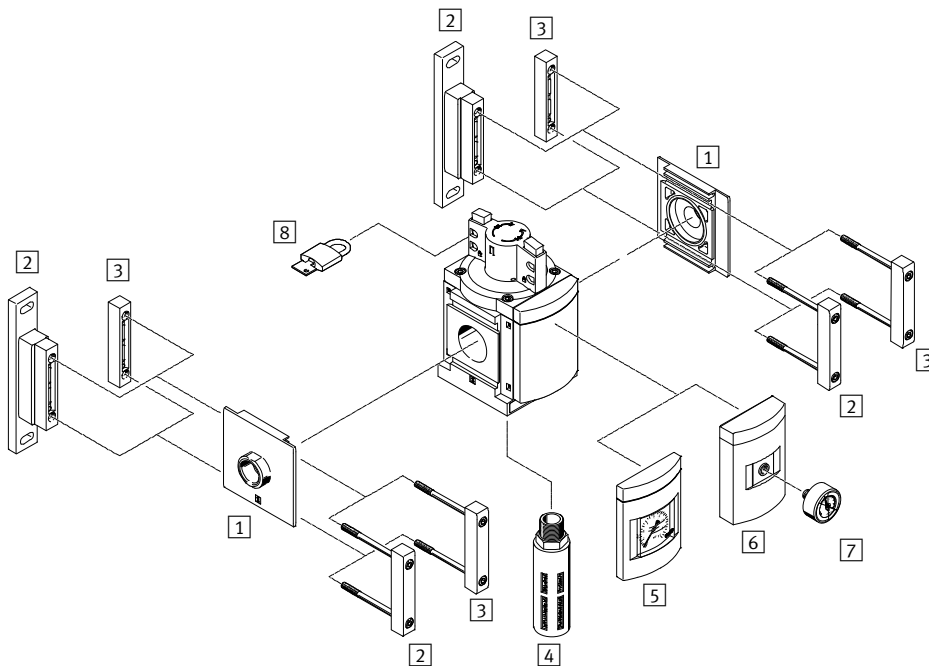
Transfer order code

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

# On-off valves MS12-EM, MS series

Peripherals overview

## On-off valves MS12-EM



-  - Note

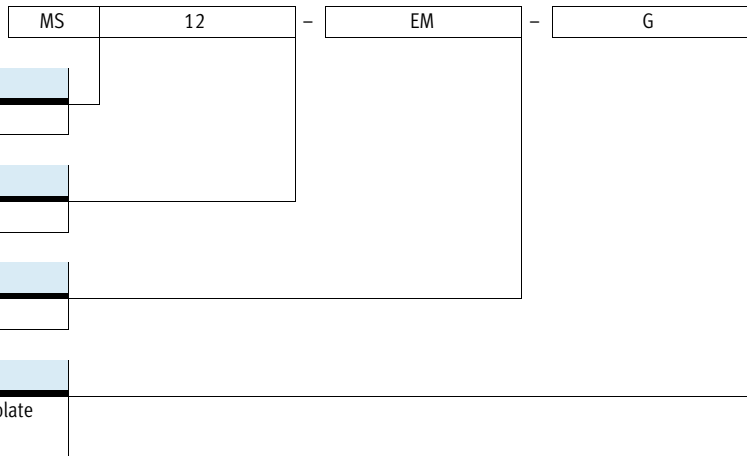
Additional accessories:

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

| Mounting attachments and accessories |   | → Page/Internet |
|--------------------------------------|---|-----------------|
| 1                                    | Connecting plate-SET<br>MS12-AG...      | ms12-ag         |
| 2                                    | Mounting bracket<br>MS12-WP             | ms12-wp         |
| 3                                    | Module connector<br>MS12-MV             | ms12-mv         |
| 4                                    | Silencer<br>U                           | 95              |
| 5                                    | MS pressure gauge<br>AG                 | 75              |
| 6                                    | Adapter for EN pressure gauge 1/4<br>A4 | 75              |
| 7                                    | Pressure gauge<br>MA                    | 95              |
| 8                                    | Padlock<br>LRVS-D                       | 95              |

# On-off valves MS12-EM, MS series

Type codes



**Further variants can be ordered using the modular system → 75**

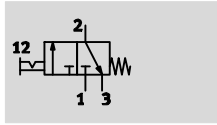
- Pneumatic connection
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Flow direction

# On-off valves MS12-EM, MS series

Technical data

FESTO

Function



- - Flow rate  
25,000 ... 32,000 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
0 ... 20 bar
- - [www.festo.com](http://www.festo.com)



- Manually operated on-off valve for pressurising and venting pneumatic installations
- Ducted exhaust possible via a threaded connection with silencer
- The switching position is immediately recognisable
- Actuator secured by locking the rotary knob
- Commercially available padlock can be used for security

| General technical data                   |  |
|--|--|
| Pneumatic connection 1, 2                |  |
| Connecting plate AG...                   | G1, G1¼, G1½ or G2                       |
| Module without connecting thread/plate G | -  |
| Pneumatic connection 3                   | G1                                       |
| Design                                   | Piston spool valve                       |
| Type of mounting                         | Via accessories<br>In-line installation  |
| Assembly position                        | Any                                      |
| Valve function                           | 3/2-way valve, bistable                  |
| Exhaust function                         | Without flow control                     |
| Switching position display               | Knob actuator direction = flow direction |
| Type of actuation                        | Direct                                   |
| Direction of flow                        | Non-reversible                           |

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

| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] |                   |
|--|-------------------|
| In main flow direction 1 $\rightarrow$ 2         | 25,000 ... 32,000 |
| In relief direction 2 $\rightarrow$ 3            | 13,000            |

1) Measured at  $p_1 = 6$  bar and  $\Delta p = 1$  bar

| Operating and environmental conditions |                   |   |
|--|-------------------|---|
| Operating pressure                     | [bar]             | 0 ... 20  |
| Operating medium                       |                   | Compressed air in accordance with ISO 8573-1:2010 [-:-:-] |
| Ambient temperature                    | [°C]              | -10 ... +60   |
| Temperature of medium                  | [°C]              | -10 ... +60   |
| Corrosion resistance                   | CRC <sup>1)</sup> | 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.



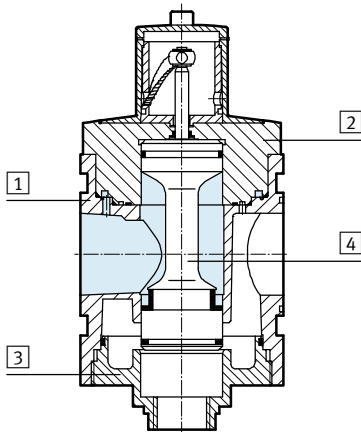
# On-off valves MS12-EM, MS series

Technical data

| Weights [g]                  |       |
|------------------------------|-------|
| On-off valve                 | 3,900 |
| On-off valve with silencer S | 4,000 |

## Materials

Sectional view

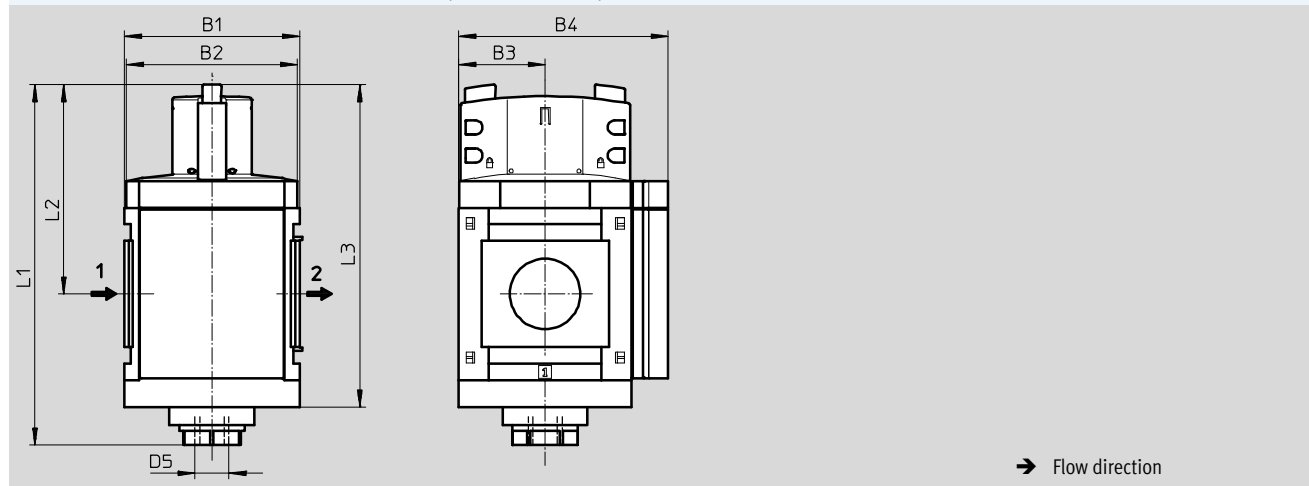


| On-off valve      |  |   |
|-------------------|--|---|
| 1                 | Body   | Die-cast aluminium                            |
| 2                 | Cap, top   | Aluminium                                     |
| 3                 | Cap, bottom  | Aluminium                                     |
| 4                 | Valve spool  | Stainless steel, POM, NBR                     |
| -                 | Springs  | Steel   |
| -                 | Covers/cover plates                                  | PA  |
| -                 | Seals  | NBR   |
| -                 | Connecting plate, module connector, mounting bracket | Die-cast aluminium                            |
| Note on materials |  | Free of copper and PTFE (not with variant AG) |

## Dimensions – Basic version

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

Module without connecting thread, without connecting plate G, with cover plate

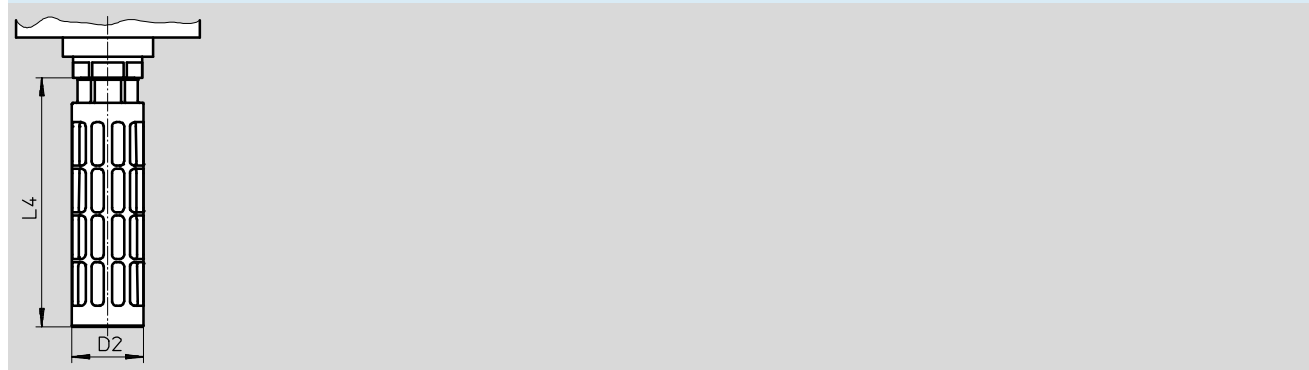


| Type      | B1  | B2  | B3 | B4  | L1  | L2  | L3  | D5 |
|-----------|-----|-----|----|-----|-----|-----|-----|----|
| MS12-EM-G | 124 | 122 | 61 | 148 | 255 | 148 | 228 | G1 |

# On-off valves MS12-EM, MS series

Technical data

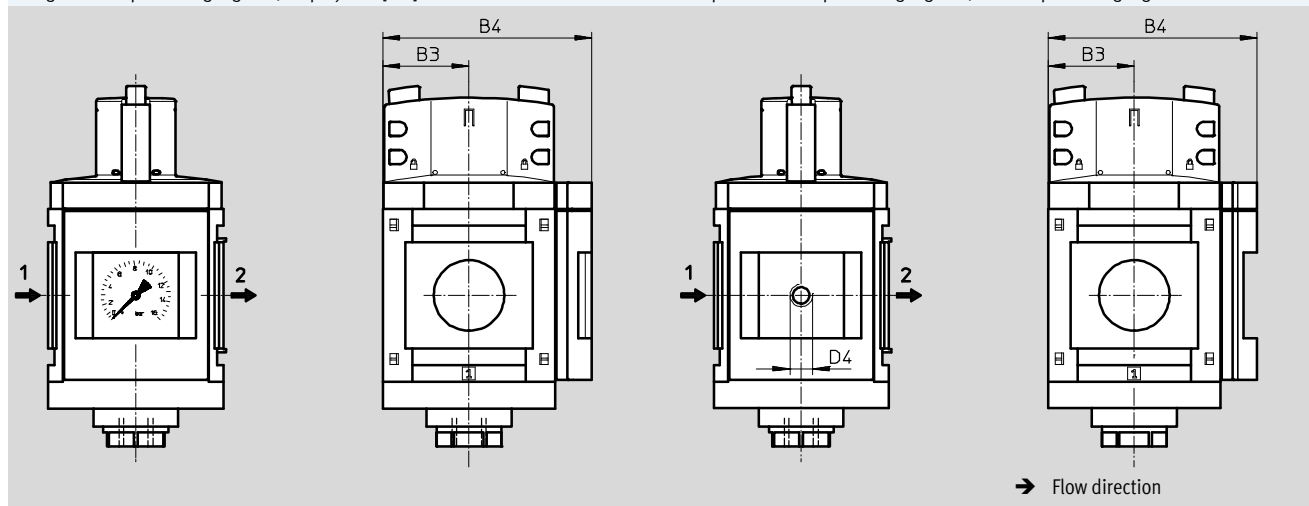
**Dimensions – Silencer** Download CAD data → [www.festo.com](http://www.festo.com)



|               |         |       |
|---------------|---------|-------|
| Type          | D2<br>Ø | L4    |
| MS12-EM-...-S | 47.8    | 165.5 |

**Dimensions – Pressure gauge/pressure gauge alternatives** Download CAD data → [www.festo.com](http://www.festo.com)

Integrated MS pressure gauge AG, display unit [bar] Adapter A4 for EN pressure gauge 1/4, without pressure gauge



|                |    |     |      |
|----------------|----|-----|------|
| Type           | B3 | B4  | D4   |
| MS12-EM-...-AG | 61 | 148 | –    |
| MS12-EM-...-A4 | 61 | 148 | G1/4 |

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

**Ordering data**

|      |          |           |
|------|----------|-----------|
| Size | Part No. | Type      |
| MS12 | 541495   | MS12-EM-G |

# On-off valves MS12-EM, MS series

Ordering data – Modular products

| Ordering table |  |   |                 |             |               |
|----------------|--|---|-----------------|-------------|---------------|
| Grid dimension | [mm]                                       | 124   | Condi-<br>tions | Code        | Enter<br>code |
| <b>M</b>       | Module No.                                 | <b>535031</b>   |                 |             |               |
|                | Series                                     | Standard  |                 | <b>MS</b>   | MS            |
|                | Size                                       | 12  |                 | <b>12</b>   | 12            |
|                | Function                                   | On-off valve, manual  |                 | <b>-EM</b>  | -EM           |
|                | Pneumatic connection                       | Connecting plate G1   |                 | <b>-AGF</b> |               |
|                |  | Connecting plate G1¼  |                 | <b>-AGG</b> |               |
|                |  | Connecting plate G1½  |                 | <b>-AGH</b> |               |
|                |  | Connecting plate G2   |                 | <b>-AGI</b> |               |
|                |  | Module without connecting thread, without connecting plate    |                 | <b>-G</b>   |               |
| <b>O</b>       | Silencer                                   | Silencer  |                 | <b>-S</b>   |               |
|                | Pressure gauge/pressure gauge alternatives | MS pressure gauge, bar  |                 | <b>-AG</b>  |               |
|                |  | Adapter plate for EN pressure gauge ¼, without pressure gauge |                 | <b>-A4</b>  |               |
|                | Alternative pressure gauge scale           | psi   | <b>1</b>        | <b>-PSI</b> |               |
|                |  | MPa   | <b>1</b>        | <b>-MPA</b> |               |
|                | Type of mounting                           | Mounting bracket standard design                              | <b>2</b>        | <b>-WP</b>  |               |
|                | Flow direction                             | Flow direction from right to left                             |                 | <b>-Z</b>   |               |

**1** **PSI, MPA** Only with pressure gauge AG.

**2** **WP** Only with connecting plate AGF, AGG, AGH or AGI.

**M** Mandatory data

**O** Options

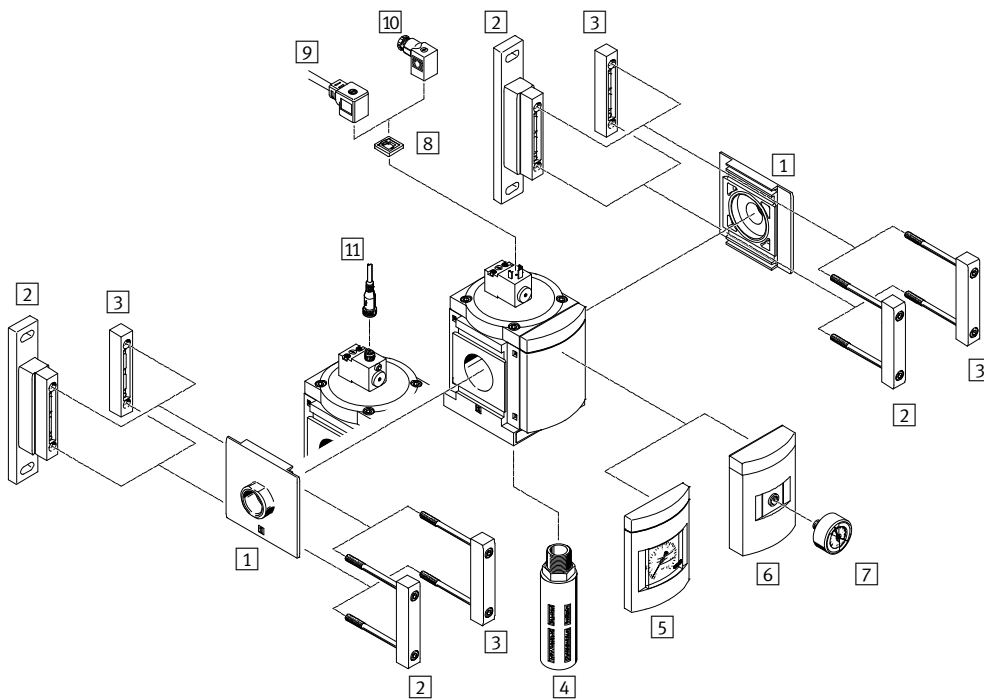
Transfer order code

535031 MS 12 - EM - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

# On-off valves MS12-EE, MS series

Peripherals overview

## On-off valves MS12-EE

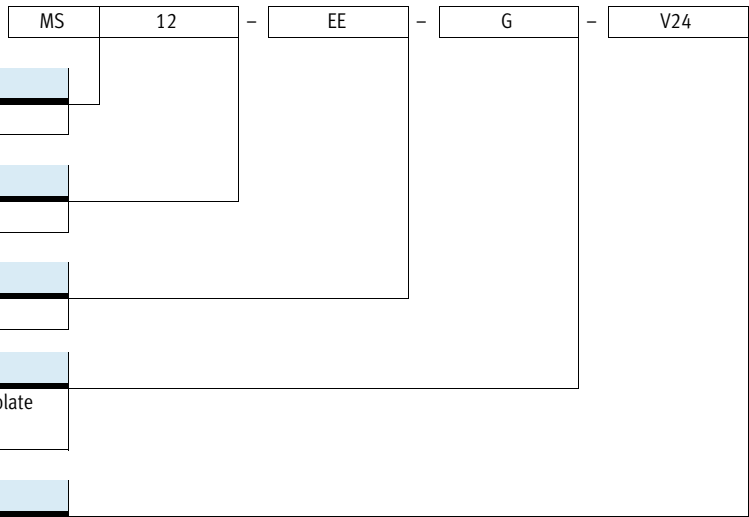


Note  
Additional accessories:  
– Module connector for combination with size MS9 → Internet: armv

| Mounting attachments and accessories |   | → Page/Internet |
|--------------------------------------|---|-----------------|
| 1                                    | Connecting plate-SET<br>MS12-AG...      | ms12-ag         |
| 2                                    | Mounting bracket<br>MS12-WP             | ms12-wp         |
| 3                                    | Module connector<br>MS12-MV             | ms12-mv         |
| 4                                    | Silencer<br>U                           | 95              |
| 5                                    | MS pressure gauge<br>AG                 | 81              |
| 6                                    | Adapter for EN pressure gauge 1/4<br>A4 | 81              |
| 7                                    | Pressure gauge<br>MA                    | 95              |
| 8                                    | Illuminating seal<br>MC-LD              | 94              |
| 9                                    | Connecting cable<br>KMC                 | 94              |
| 10                                   | Plug socket<br>MSSD-C                   | 94              |
| 11                                   | Connecting cable<br>NEBU-M12...-LE4     | 95              |

# On-off valves MS12-EE, MS series

Type codes



**Further variants can be ordered using the modular system → 81**

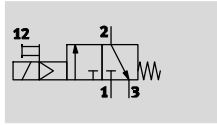
- Pneumatic connection
- Supply voltage
- Silencer
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Flow direction

# On-off valves MS12-EE, MS series

Technical data

FESTO

Function



- - Flow rate  
25,000 ... 32,000 l/min
- - Temperature range  
-10 ... +50 °C
- - Operating pressure  
3 ... 16 bar
- - [www.festo.com](http://www.festo.com)



- Solenoid actuated on-off valve for pressurising and venting pneumatic installations
- With solenoid coil without plug socket
- Three voltage ranges can be selected
- Ducted exhaust possible via a threaded connection with silencer
- Non-detenting and detenting manual override

| General technical data                   |  |
|--|--|
| Pneumatic connection 1, 2                |  |
| Connecting plate AG...                   | G1, G1¼, G1½ or G2                         |
| Module without connecting thread/plate G | –  |
| Pneumatic connection 3                   | G1   |
| Design                                   | Piston spool valve                         |
| Type of mounting                         | Via accessories<br>In-line installation    |
| Assembly position                        | Any  |
| Valve function                           | 3/2-way valve, single solenoid, closed     |
| Exhaust function                         | Without flow control                       |
| Type of reset                            | Mechanical spring                          |
| Switching position display               | Via accessories<br>LED (with variant V24P) |
| Type of actuation                        | Piloted                                    |
| Pilot air supply                         | Internal                                   |
| Direction of flow                        | Non-reversible                             |

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

| Electrical data                    |               |   |
|------------------------------------|---------------|---|
| Coil characteristics               | V24/V24P      | 24 V DC: 4.5 W; perm. voltage fluctuations ±10%   |
|                                    | V110          | 110 V AC: 50 Hz; pick-up power 11.5 W; holding power 8.9 W; perm. voltage fluctuations ±10%<br>110 V AC: 60 Hz; pick-up power 9.5 W; holding power 6.2 W; perm. voltage fluctuations ±10% |
|                                    | V230          | 230 V AC: 50 Hz; pick-up power 11.5 W; holding power 9.1 W; perm. voltage fluctuations ±10%<br>230 V AC: 60 Hz; pick-up power 9.5 W; holding power 6.4 W; perm. voltage fluctuations ±10% |
| Electrical connection              | V24/V110/V230 | Plug, square design to EN 175301-803, type A  |
|                                    | V24P          | Plug M12, 4-pin to DESINA   |
| Protection class for solenoid coil |               | IP65  |
| Duty cycle                         | [%]           | 100   |

| Standard nominal flow rate $q_{nN}^{1)}$ [l/min] |                   |
|--|-------------------|
| In main flow direction 1 → 2                     | 25,000 ... 32,000 |
| In relief direction 2 → 3                        | 8,900             |

1) Measured at  $p_1 = 6 \text{ bar}$  and  $\Delta p = 1 \text{ bar}$

# On-off valves MS12-EE, MS series

Technical data

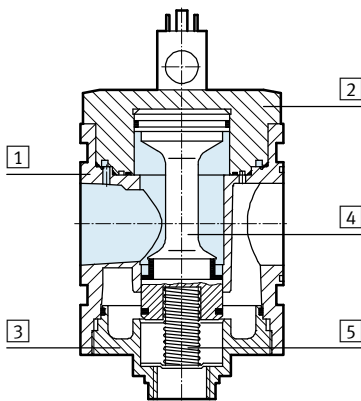
| Operating and environmental conditions |  |
|--|--|
| Operating pressure [bar]               | 3 ... 16   |
| Operating medium                       | Compressed air in accordance with ISO 8573-1:2010 [7:4:4]  |
|  | Inert gases  |
| Note on operating/pilot medium         | Operation with lubricated medium possible (in which case lubricated operation will always be required) |
| Ambient temperature [°C]               | -10 ... +50  |
| Temperature of medium [°C]             | -10 ... +50  |
| Corrosion resistance CRC <sup>1)</sup> | 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]                  |       |
|------------------------------|-------|
| On-off valve                 | 3,800 |
| On-off valve with silencer S | 3,900 |

## Materials

Sectional view



| On-off valve   |   |
|--|---|
| 1 Body   | Die-cast aluminium                            |
| 2 Cap, top   | Aluminium                                     |
| 3 Cap, bottom  | Aluminium                                     |
| 4 Valve spool  | Stainless steel, POM, NBR                     |
| 5 Springs  | Steel   |
| - Covers/cover plates                                  | PA  |
| - Seals  | NBR   |
| - Connecting plate, module connector, mounting bracket | Die-cast aluminium                            |
| Note on materials                                      | Free of copper and PTFE (not with variant AG) |

## Dimensions – Basic version

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

Module without connecting thread, without connecting plate G, with cover plate

MS12-EE-G-V24/V110/V230

MS12-EE-G-V24P

1 = Connected to 2  
 2 = Connected to 1  
 3 = com (-)  
 4 = Signal (+)

1 Plug connection to EN 175301-803  
 3 Plug connection M12, 4-pin to DESINA for connecting cable NEBU-M12

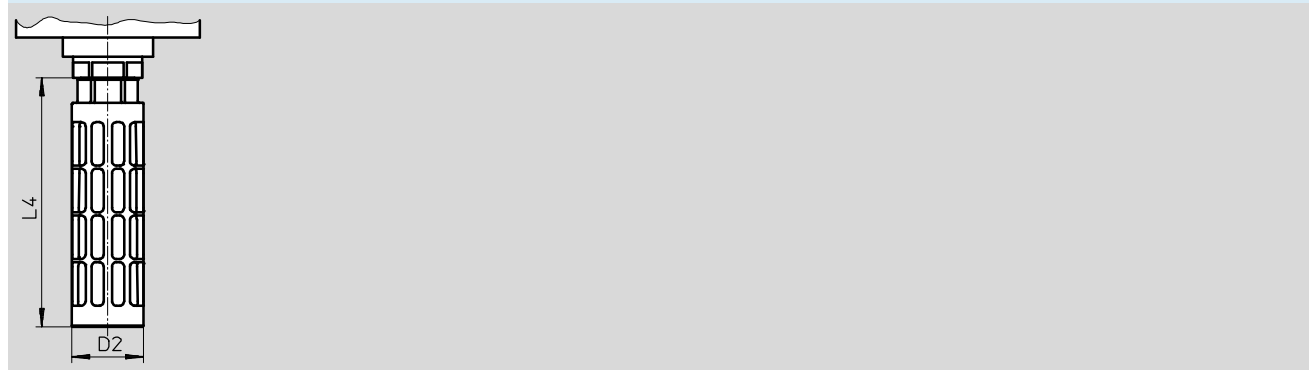
→ Flow direction

| Type                    | B1  | B2  | B3 | B4  | L1  | L2  | L3  | L4   | L5   | D5 |
|-------------------------|-----|-----|----|-----|-----|-----|-----|------|------|----|
| MS12-EE-G-V24/V110/V230 | 124 | 122 | 61 | 148 | 237 | 130 | 162 | 35.7 | 12.3 | G1 |
| MS12-EE-G-V24P          |     |     |    |     |     |     |     | 36   | 10   |    |

# On-off valves MS12-EE, MS series

Technical data

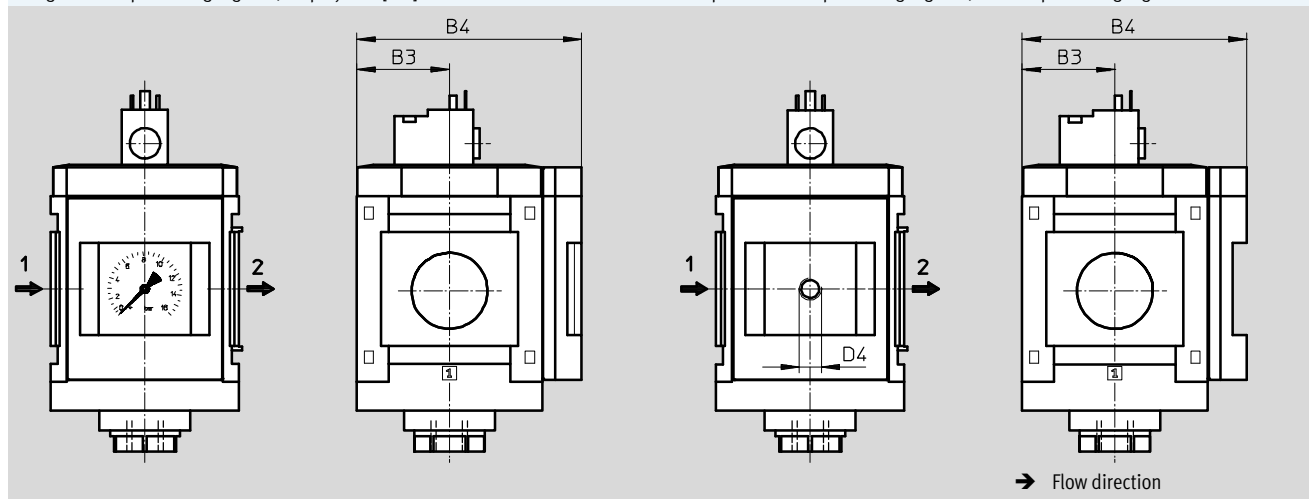
**Dimensions – Silencer** Download CAD data → [www.festo.com](http://www.festo.com)



|               |         |       |
|---------------|---------|-------|
| Type          | D2<br>Ø | L4    |
| MS12-EE-...-S | 47.8    | 165.5 |

**Dimensions – Pressure gauge/pressure gauge alternatives** Download CAD data → [www.festo.com](http://www.festo.com)

Integrated MS pressure gauge AG, display unit [bar] Adapter A4 for EN pressure gauge 1/4, without pressure gauge



|                |    |     |      |
|----------------|----|-----|------|
| Type           | B3 | B4  | D4   |
| MS12-EE-...-AG | 61 | 148 | -    |
| MS12-EE-...-A4 | 61 | 148 | G1/4 |

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

**Ordering data**

|      |                        |               |
|------|------------------------|---------------|
| Size | Supply voltage 24 V DC |               |
|      | Part No.               | Type          |
| MS12 | 541496                 | MS12-EE-G-V24 |

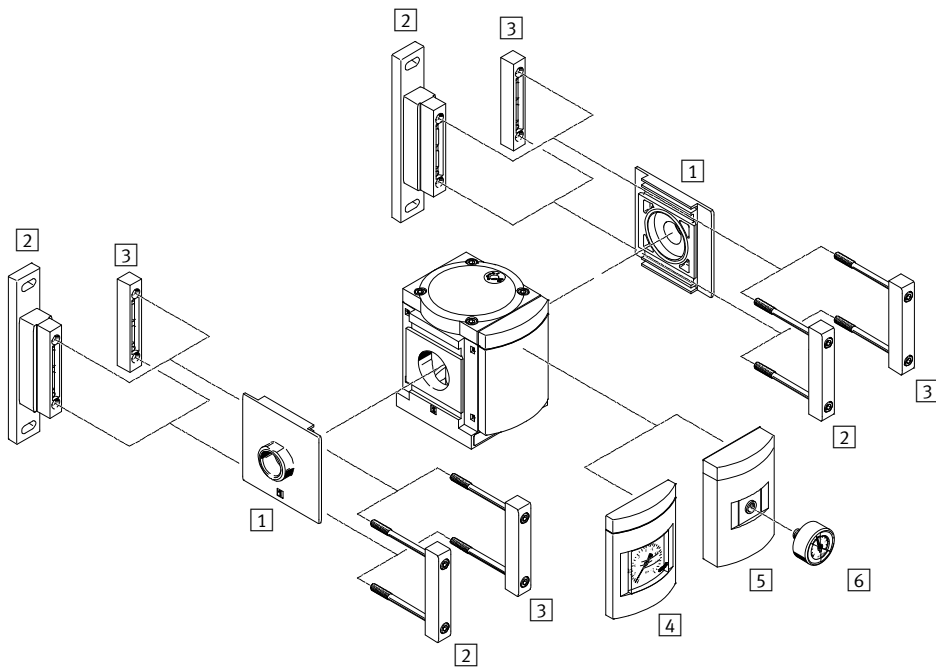





# Soft-start valves MS12-DL, MS series

Peripherals overview

## Soft-start valves MS12-DL



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

| Mounting attachments and accessories |   | → Page/Internet |
|--------------------------------------|---|-----------------|
| 1                                    | Connecting plate-SET<br>MS12-AG...      | ms12-ag         |
| 2                                    | Mounting bracket<br>MS12-WP             | ms12-wp         |
| 3                                    | Module connector<br>MS12-MV             | ms12-mv         |
| 4                                    | MS pressure gauge<br>AG                 | 87              |
| 5                                    | Adapter for EN pressure gauge 1/4<br>A4 | 87              |
| 6                                    | Pressure gauge<br>MA                    | 95              |

## Soft-start valves MS12-DL, MS series

Type codes

|                             |   |    |    |   |    |   |   |
|-----------------------------|---|----|----|---|----|---|---|
|                             |   | MS | 12 | - | DL | - | G |
| <b>Series</b>               |   |    |    |   |    |   |   |
| MS                          | Standard service unit   |    |    |   |    |   |   |
| <b>Size</b>                 |   |    |    |   |    |   |   |
| 12                          | Grid dimension 124 mm   |    |    |   |    |   |   |
| <b>Service function</b>     |   |    |    |   |    |   |   |
| DL                          | Soft-start valve, pneumatically actuated  |    |    |   |    |   |   |
| <b>Pneumatic connection</b> |   |    |    |   |    |   |   |
| G                           | Module without connecting thread, without connecting plate<br>Connecting plates → Accessories |    |    |   |    |   |   |

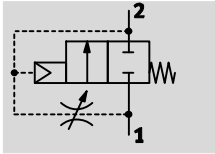
Further variants can be ordered using the modular system → 87

- Pneumatic connection
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Flow direction

# Soft-start valves MS12-DL, MS series

Technical data

Function



- - Flow rate  
25,000 ... 42,000 l/min
- - Temperature range  
-10 ... +60 °C
- - Operating pressure  
2 ... 20 bar
- - [www.festo.com](http://www.festo.com)



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap.

The output pressure p2 rises slowly in accordance with the restrictor setting. The main seat opens when the switch-through pressure is reached.

- Pneumatically actuated soft-start valve for slowly pressurising and venting pneumatic installations (for use with on-off valves EM and EE)
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- Pressure switching approx. 50% of operating pressure
- Adjustable switching time delay

| General technical data                   |   |
|--|---|
| Pneumatic connection 1, 2                |   |
| Connecting plate AG...                   | G1, G1¼, G1½ or G2                      |
| Module without connecting thread/plate G | -                                       |
| Design                                   | Piston poppet valve                     |
| Type of mounting                         | Via accessories<br>In-line installation |
| Assembly position                        | Any                                     |
| Valve function                           | 2/2-way valve                           |
| Exhaust function                         | Flow control                            |
| Type of reset                            | Mechanical spring                       |
| Type of actuation                        | Direct                                  |
| Pilot air supply                         | Internal                                |
| Direction of flow                        | Non-reversible                          |

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

| Standard nominal flow rate qnN <sup>1)</sup> [l/min] |                   |
|--|-------------------|
| In main flow direction 1 → 2                         | 25,000 ... 42,000 |
| In relief direction 2 → 1                            | 25,000 ... 42,000 |

1) Measured at p1 = 6 bar and p2 = 5 bar, Δp = 1 bar

# Soft-start valves MS12-DL, MS series

Technical data

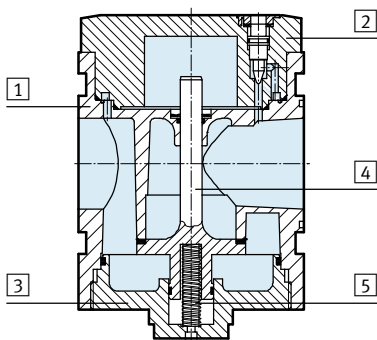
| Operating and environmental conditions |   |
|--|---|
| Operating pressure [bar]               | 2 ... 20  |
| Operating medium                       | Compressed air in accordance with ISO 8573-1:2010 [7:--:--] |
| Ambient temperature [°C]               | -10 ... +60   |
| Temperature of medium [°C]             | -10 ... +60   |
| Corrosion resistance CRC <sup>1)</sup> | 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]      |       |
|------------------|-------|
| Soft-start valve | 3,600 |

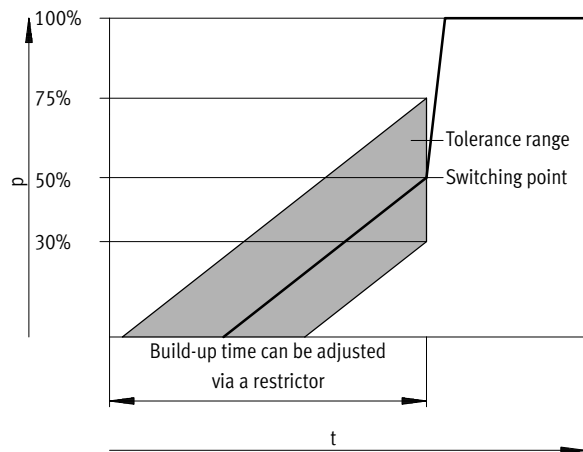
## Materials

Sectional view



| Soft-start valve  |  |   |
|-------------------|--|---|
| 1                 | Body   | Die-cast aluminium                            |
| 2                 | Cap, top   | Aluminium                                     |
| 3                 | Cap, bottom  | Aluminium                                     |
| 4                 | Valve stem   | Aluminium, NBR                                |
| 5                 | Springs  | Steel   |
| -                 | Covers/cover plates                                  | PA  |
| -                 | Seals  | NBR   |
| -                 | Connecting plate, module connector, mounting bracket | Die-cast aluminium                            |
| Note on materials |  | Free of copper and PTFE (not with variant AG) |

## Switching point – Pressure p as a function of time t



Note

The tolerance specification +25%/-20% of the switching point refers to the operating pressure p1.

Example: at an operating pressure of 4 bar a switching point of 1.2 bar to 3.0 bar is permitted.

# Soft-start valves MS12-DL, MS series

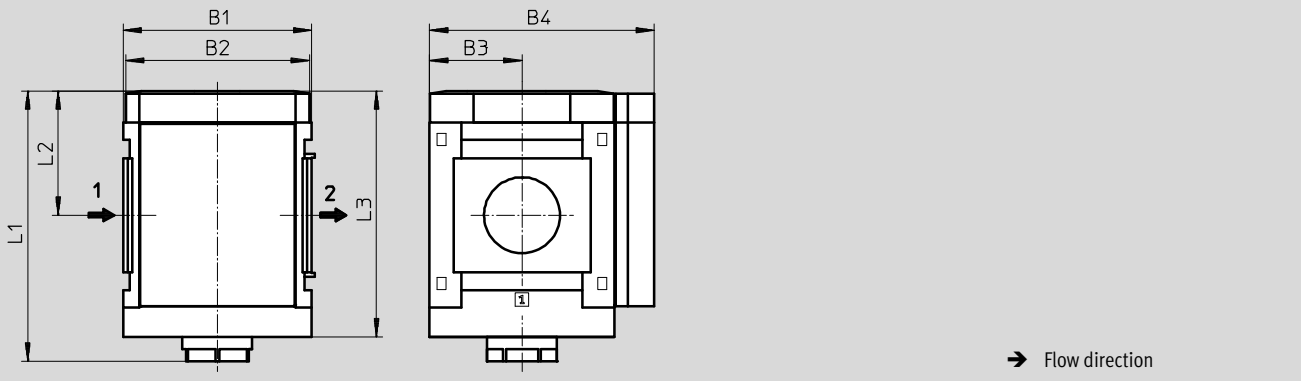
Technical data

**FESTO**

## Dimensions – Basic version

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

Module without connecting thread, without connecting plate G, with cover plate



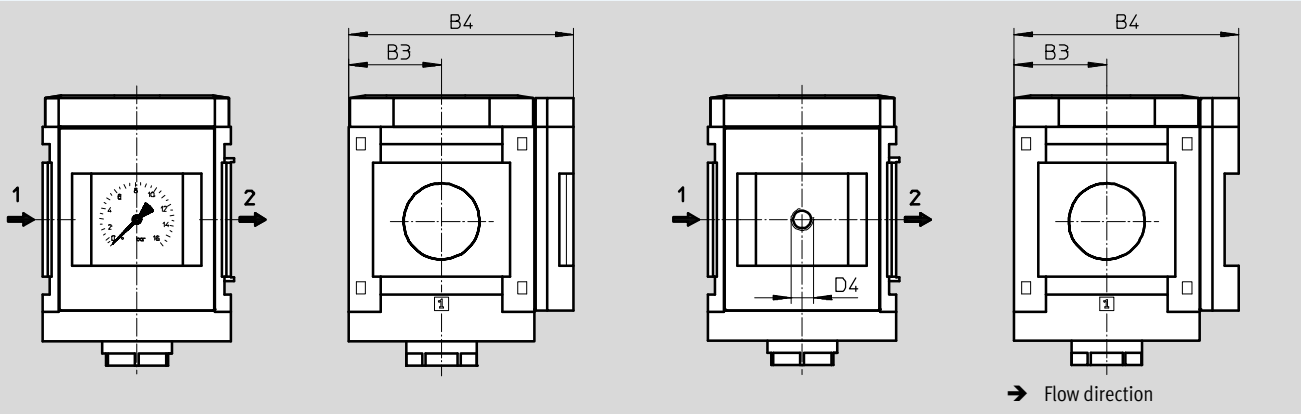
| Type      | B1  | B2  | B3 | B4  | L1  | L2 | L3  |
|-----------|-----|-----|----|-----|-----|----|-----|
| MS12-DL-G | 124 | 122 | 61 | 148 | 178 | 82 | 162 |

## Dimensions – Pressure gauge/pressure gauge alternatives

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

Integrated MS pressure gauge AG, display unit [bar]

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



| Type           | B3 | B4  | D4   |
|----------------|----|-----|------|
| MS12-DL-...-AG | 61 | 148 | –    |
| MS12-DL-...-A4 | 61 | 148 | G1/4 |

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

## Ordering data

| Size | Part No. | Type      |
|------|----------|-----------|
| MS12 | 541497   | MS12-DL-G |

# Soft-start valves MS12-DL, MS series

Ordering data – Modular products

| Ordering table |  |   |                 |             |               |
|----------------|--|---|-----------------|-------------|---------------|
| Grid dimension | [mm]                                       | 124   | Condi-<br>tions | Code        | Enter<br>code |
| <b>M</b>       | Module No.                                 | <b>535033</b>   |                 |             |               |
|                | Series                                     | Standard  |                 | <b>MS</b>   | MS            |
|                | Size                                       | 12  |                 | <b>12</b>   | 12            |
|                | Function                                   | Soft-start valve, pneumatic                                   |                 | <b>-DL</b>  | -DL           |
|                | Pneumatic connection                       | Connecting plate G1   |                 | <b>-AGF</b> |               |
|                |  | Connecting plate G1¼  |                 | <b>-AGG</b> |               |
|                |  | Connecting plate G1½  |                 | <b>-AGH</b> |               |
|                |  | Connecting plate G2   |                 | <b>-AGI</b> |               |
|                |  | Module without connecting thread, without connecting plate    |                 | <b>-G</b>   |               |
| <b>O</b>       | Pressure gauge/pressure gauge alternatives | MS pressure gauge, bar  |                 | <b>-AG</b>  |               |
|                |  | Adapter plate for EN pressure gauge ¼, without pressure gauge |                 | <b>-A4</b>  |               |
|                | Alternative pressure gauge scale           | psi   | <b>1</b>        | <b>-PSI</b> |               |
|                |  | MPa   | <b>1</b>        | <b>-MPA</b> |               |
|                | Type of mounting                           | Mounting bracket standard design                              | <b>2</b>        | <b>-WP</b>  |               |
|                | Flow direction                             | Flow direction from right to left                             |                 | <b>-Z</b>   |               |

**1** **PSI, MPA** Only with pressure gauge AG.

**2** **WP** Only with connecting plate AGF, AGG, AGH or AGI.

**M** Mandatory data

**O** Options

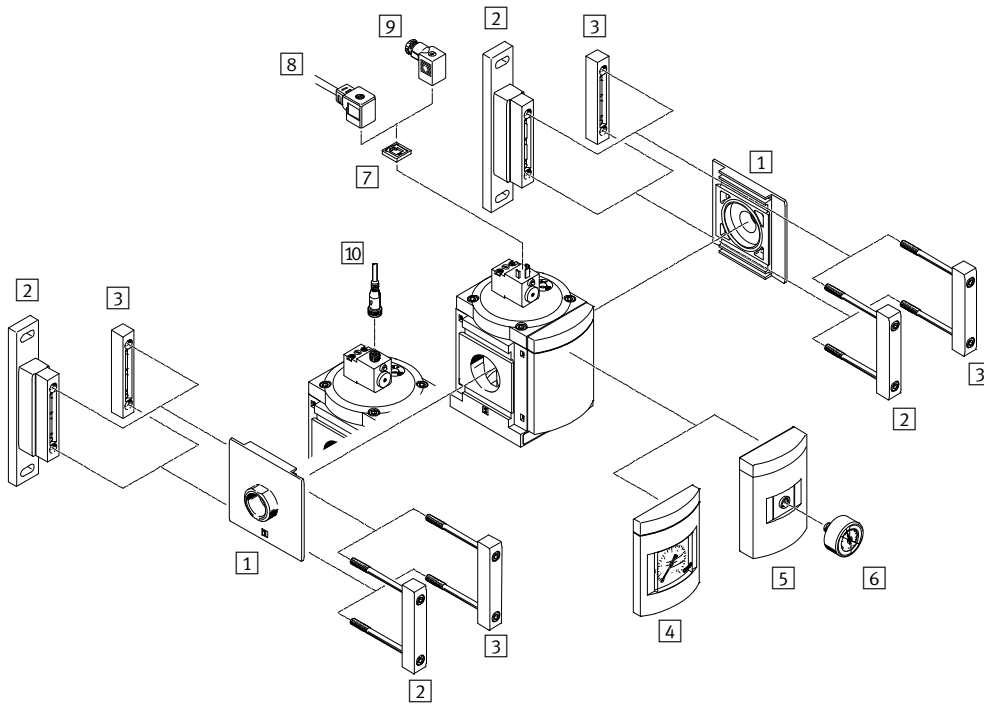
Transfer order code


535033 MS 12 - DL - [ ] - [ ] - [ ] - [ ] - [ ]

# Soft-start valves MS12-DE, MS series

Peripherals overview

## Soft-start valves MS12-DE



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

| Mounting attachments and accessories |   | → Page/Internet |
|--------------------------------------|---|-----------------|
| 1                                    | Connecting plate-SET<br>MS12-AG...      | ms12-ag         |
| 2                                    | Mounting bracket<br>MS12-WP             | ms12-wp         |
| 3                                    | Module connector<br>MS12-MV             | ms12-mv         |
| 4                                    | MS pressure gauge<br>AG                 | 93              |
| 5                                    | Adapter for EN pressure gauge 1/4<br>A4 | 93              |
| 6                                    | Pressure gauge<br>MA                    | 95              |
| 7                                    | Illuminating seal<br>MC-LD              | 94              |
| 8                                    | Connecting cable<br>KMC                 | 94              |
| 9                                    | Plug socket<br>MSSD-C                   | 94              |
| 10                                   | Connecting cable<br>NEBU-M12...-LE4     | 95              |



## Soft-start valves MS12-DE, MS series

FESTO

Type codes

|                             |   |    |    |   |    |   |   |   |     |
|-----------------------------|---|----|----|---|----|---|---|---|-----|
|                             |   | MS | 12 | - | DE | - | G | - | V24 |
| <b>Series</b>               |   |    |    |   |    |   |   |   |     |
| MS                          | Standard service unit   |    |    |   |    |   |   |   |     |
| <b>Size</b>                 |   |    |    |   |    |   |   |   |     |
| 12                          | Grid dimension 124 mm   |    |    |   |    |   |   |   |     |
| <b>Service function</b>     |   |    |    |   |    |   |   |   |     |
| DE                          | Soft-start valve, solenoid actuated   |    |    |   |    |   |   |   |     |
| <b>Pneumatic connection</b> |   |    |    |   |    |   |   |   |     |
| G                           | Module without connecting thread, without connecting plate<br>Connecting plates → Accessories |    |    |   |    |   |   |   |     |
| <b>Supply voltage</b>       |   |    |    |   |    |   |   |   |     |
| V24                         | Supply voltage 24 V DC  |    |    |   |    |   |   |   |     |

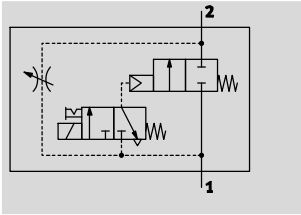
Further variants can be ordered using the modular system → 93





- Pneumatic connection
- Supply voltage
- Pressure gauge/pressure gauge alternatives
- Alternative pressure gauge scale
- Type of mounting
- Flow direction

# Soft-start valves MS12-DE, MS series

Technical data

## Function



-  Flow rate  
25,000 ... 42,000 l/min
-  Temperature range  
-10 ... +50 °C
-  Operating pressure  
3 ... 16 bar
-  [www.festo.com](http://www.festo.com)



The duration of the pressure build-up is adjusted using the restrictor attached to the valve cap. The output pressure p2 rises slowly in accordance with the restrictor setting. Only the air flow from the restrictor is available when the solenoid valve is not actuated. The main seat is only opened by energising the solenoid valve.

When the solenoid valve is switched off, the main seat is closed and only the air flow from the flow control valve is available. The solenoid valve should remain switched on in order to vent a system as this increases the flow rate from 2 and 1 and reduces the exhaust time.

- Solenoid actuated soft-start valve for slowly pressurising and venting pneumatic installations
- The drives advance slowly and reliably into the initial position
- Sudden and erratic movements are avoided
- With solenoid coil without plug socket
- Switch-through pressure can be exactly controlled using a solenoid valve
- Adjustable switching time delay
- Three voltage ranges can be selected
- Non-detenting and detenting manual override

| General technical data                   |  |
|--|--|
| Pneumatic connection 1, 2                |  |
| Connecting plate AG...                   | G1, G1¼, G1½ or G2                         |
| Module without connecting thread/plate G | –  |
| Design                                   | Piston poppet valve                        |
| Type of mounting                         | Via accessories<br>In-line installation    |
| Assembly position                        | Any  |
| Valve function                           | 2/2-way valve                              |
| Exhaust function                         | Flow control                               |
| Type of reset                            | Mechanical spring                          |
| Signal status display                    | Via accessories<br>LED (with variant V24P) |
| Type of actuation                        | Piloted                                    |
| Pilot air supply                         | Internal                                   |
| Direction of flow                        | Non-reversible                             |

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

| Electrical data                    |                       |   |
|------------------------------------|-----------------------|---|
| Coil characteristics               | V24                   | 24 V DC: 8.4 W<br>42 V AC: 50 Hz, pick-up power 14 VA, holding power 10 VA<br>42 V AC: 60 Hz, pick-up power 12 VA, holding power 7 VA |
|                                    | V24P                  | 24 V DC   |
|                                    | V110                  | 110 V AC  |
|                                    | V230                  | 230 V AC  |
|                                    | Electrical connection | V24/V110/V230<br>V24P   |
| Protection class for solenoid coil |                       | IP65  |
| Duty cycle                         | [%]                   | 100   |

# Soft-start valves MS12-DE, MS series

Technical data

| Standard nominal flow rate $q_{nN}^{1)}$ [l/min]    |                   |
|---|-------------------|
| In main flow direction 1 $\rightarrow$ 2            | 25,000 ... 42,000 |
| In relief direction 2 $\rightarrow$ 1 <sup>2)</sup> | 25,000 ... 42,000 |

- 1) Measured at  $p_1 = 6$  bar and  $p_2 = 5$  bar,  $\Delta p = 1$  bar  
 2) For energised solenoid valve

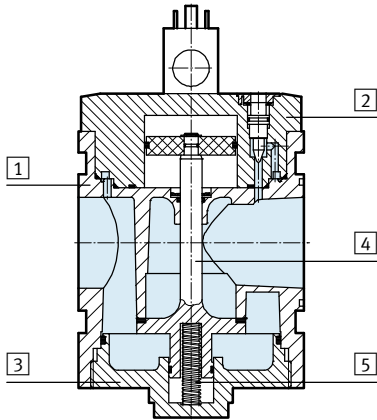
| Operating and environmental conditions |                   |  |
|--|-------------------|--|
| Operating pressure                     | [bar]             | 3 ... 16   |
| Operating medium                       |                   | Compressed air in accordance with ISO 8573-1:2010 [---:--] |
| Ambient temperature                    | [°C]              | -10 ... +50  |
| Temperature of medium                  | [°C]              | -10 ... +50  |
| Corrosion resistance                   | CRC <sup>1)</sup> | 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]      |       |
|------------------|-------|
| Soft-start valve | 3,800 |

## Materials

Sectional view



| Soft-start valve  |  |   |
|-------------------|--|---|
| 1                 | Body   | Die-cast aluminium                            |
| 2                 | Cap, top   | Aluminium                                     |
| 3                 | Cap, bottom  | Aluminium                                     |
| 4                 | Valve stem   | Aluminium, NBR                                |
| 5                 | Springs  | Steel   |
| -                 | Covers/cover plates                                  | PA  |
| -                 | Seals  | NBR   |
| -                 | Connecting plate, module connector, mounting bracket | Die-cast aluminium                            |
| Note on materials |  | Free of copper and PTFE (not with variant AG) |

# Soft-start valves MS12-DE, MS series

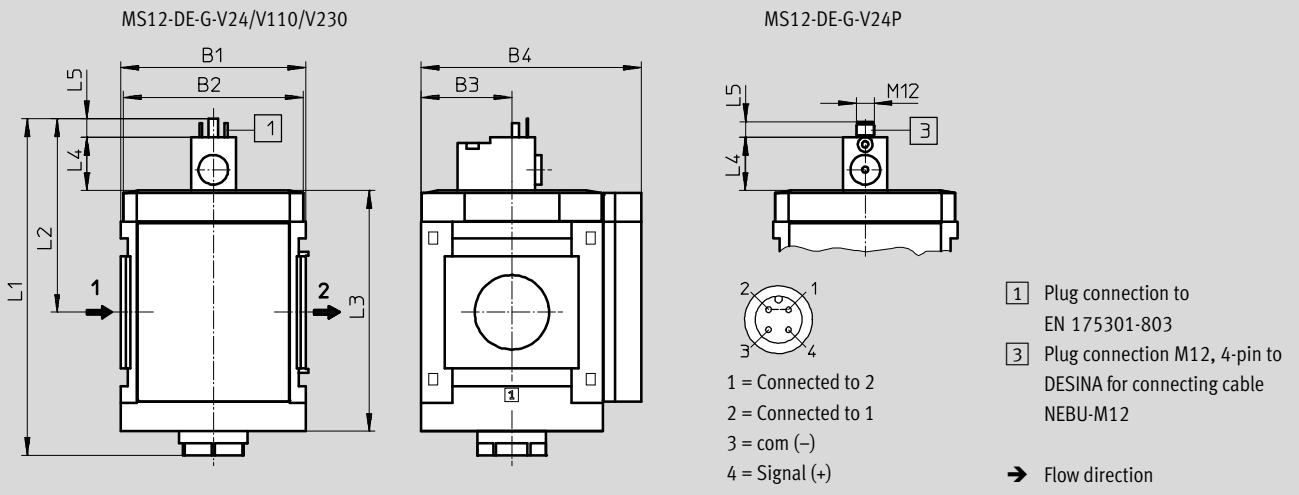
Technical data

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## Dimensions – Basic version

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

Module without connecting thread, without connecting plate G, with cover plate



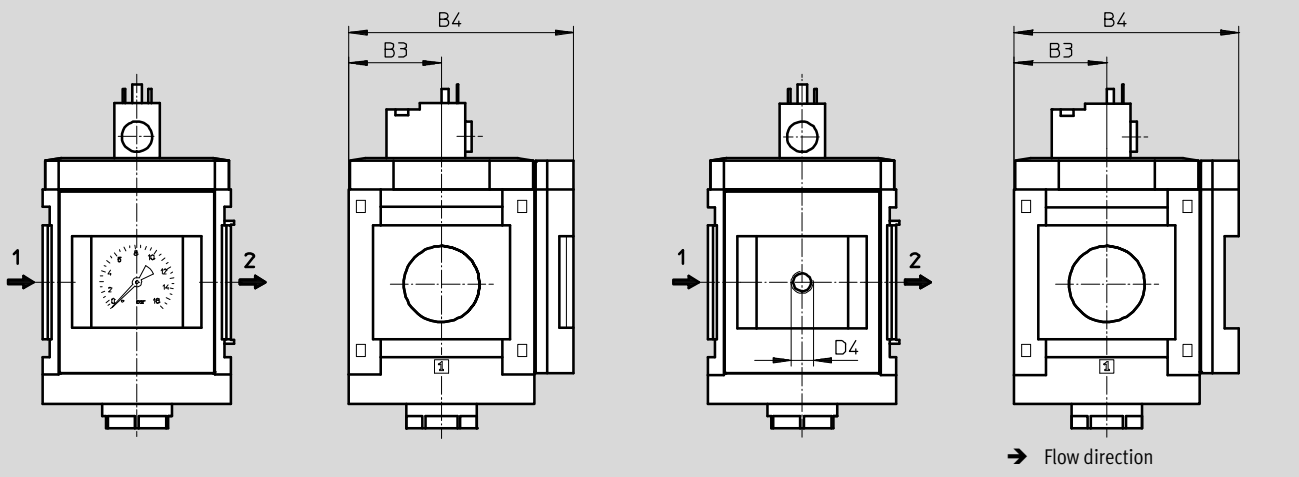
| Type                    | B1  | B2  | B3 | B4  | L1  | L2  | L3  | L4   | L5   |
|-------------------------|-----|-----|----|-----|-----|-----|-----|------|------|
| MS12-DE-G-V24/V110/V230 | 124 | 122 | 61 | 148 | 226 | 130 | 162 | 35.7 | 12.3 |
| MS12-DE-G-V24P          |     |     |    |     |     |     |     | 36   | 10   |

## Dimensions – Pressure gauge/pressure gauge alternatives

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

Integrated MS pressure gauge AG, display unit [bar]

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



| Type           | B3 | B4  | D4   |
|----------------|----|-----|------|
| MS12-DE-...-AG | 61 | 148 | -    |
| MS12-DE-...-A4 | 61 | 148 | G1/4 |

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

## Ordering data

| Size | Supply voltage 24 V DC |               |
|------|------------------------|---------------|
|      | Part No.               | Type          |
| MS12 | 541498                 | MS12-DE-G-V24 |

# Soft-start valves MS12-DE, MS series

Ordering data – Modular products

| Ordering table |  |   |                 |              |               |
|----------------|--|---|-----------------|--------------|---------------|
| Grid dimension | [mm]                                       | 124   | Condi-<br>tions | Code         | Enter<br>code |
| <b>M</b>       | Module No.                                 | <b>535034</b>   |                 |              |               |
|                | Series                                     | Standard  |                 | <b>MS</b>    | MS            |
|                | Size                                       | 12  |                 | <b>12</b>    | 12            |
|                | Function                                   | Soft-start valve, electrical                                  |                 | <b>-DE</b>   | -DE           |
|                | Pneumatic connection                       | Connecting plate G1   |                 | <b>-AGF</b>  |               |
|                |  | Connecting plate G1¼  |                 | <b>-AGG</b>  |               |
|                |  | Connecting plate G1½  |                 | <b>-AGH</b>  |               |
|                |  | Connecting plate G2   |                 | <b>-AGI</b>  |               |
|                |  | Module without connecting thread, without connecting plate    |                 | <b>-G</b>    |               |
|                | Supply voltage                             | 24 V DC (connection pattern to EN 175301), 16 bar             |                 | <b>-V24</b>  |               |
|                |  | 24 V DC plug (connection pattern M12 to DESINA), 16 bar       |                 | <b>-V24P</b> |               |
|                |  | 110 V AC (connection pattern to EN 175301), 16 bar            |                 | <b>-V110</b> |               |
|                |  | 230 V AC (connection pattern to EN 175301), 16 bar            |                 | <b>-V230</b> |               |
| <b>O</b>       | Pressure gauge/pressure gauge alternatives | MS pressure gauge, bar  |                 | <b>-AG</b>   |               |
|                |  | Adapter plate for EN pressure gauge ¼, without pressure gauge |                 | <b>-A4</b>   |               |
|                | Alternative pressure gauge scale           | psi   | <b>1</b>        | <b>-PSI</b>  |               |
|                |  | MPa   | <b>1</b>        | <b>-MPA</b>  |               |
|                | Type of mounting                           | Mounting bracket standard design                              | <b>2</b>        | <b>-WP</b>   |               |
|                | Flow direction                             | Flow direction from right to left                             |                 | <b>-Z</b>    |               |

**1** **PSI, MPA** Only with pressure gauge AG.

**2** **WP** Only with connecting plate AGF, AGG, AGH or AGI.

**M** Mandatory data

**O** Options


**Transfer order code**

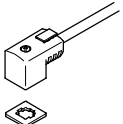
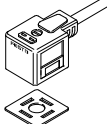
535034 MS 12 - DE - - - - -


# On-off/soft-start valves MS-EM/EE/DL/DE, MS series


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Accessories

| Ordering data – Plug socket MSSD  |                               |   |                       |                                   | Technical data → Internet: mssd |                         |
|---|-------------------------------|---|-----------------------|-----------------------------------|---------------------------------|-------------------------|
|   | Description                   |   | Electrical connection | Cable connection                  | Part No.                        | Type                    |
|  | for MS4/6-EE/DE               | – | 3-pin                 | Screw terminal                    | ★ 151687                        | MSSD-EB                 |
|   |                               |   | 4-pin                 | Insulation displacement connector | 192745                          | MSSD-EB-S-M14           |
|   | for MS9-EE,<br>for MS12-EE/DE | – | 3-pin                 | Screw terminal                    | 570367                          | MSSD-EB-M12-24VDC-SD-EX |
|   |                               |   | 4-pin                 | Insulation displacement connector | 34583                           | MSSD-C                  |
|   |                               |   |                       |                                   | 192748                          | MSSD-C-S-M16            |

| Ordering data – Plug socket with cable KMEB/connecting cable KMC                    |                               |                         |                       |                          |                  |                  | Technical data → Internet: kmeb, kmc |  |
|---|-------------------------------|-------------------------|-----------------------|--------------------------|------------------|------------------|--------------------------------------|--|
|   | Description                   | Operating voltage range | Electrical connection | Switching status display | Cable length [m] | Part No.         | Type                                 |  |
|    | for MS4/6-EE/DE               | 24 V DC                 | 2-pin                 | LED                      | 2.5              | 547268           | KMEB-3-24-2,5-LED                    |  |
|   |                               |                         |                       | –                        | 5                | 547269           | KMEB-3-24-5-LED                      |  |
|   |                               |                         | –                     | 2.5                      | 547270           | KMEB-3-24-2,5    |                                      |  |
|   |                               |                         |                       | 5                        | 547271           | KMEB-3-24-5      |                                      |  |
|   |                               | 230 V AC                | 3-pin                 | LED                      | 2.5              | ★ 151688         | KMEB-1-24-2,5-LED                    |  |
|   |                               |                         |                       | –                        | 5                | 151689           | KMEB-1-24-5-LED                      |  |
|   |                               |                         | –                     | 10                       | 193457           | KMEB-1-24-10-LED |                                      |  |
|   |                               |                         |                       | 2.5                      | 151690           | KMEB-1-230AC-2,5 |                                      |  |
|  | for MS9-EE,<br>for MS12-EE/DE | 24 V DC                 | 3-pin                 | LED                      | 2.5              | 30931            | KMC-1-24DC-2,5-LED                   |  |
|   |                               |                         |                       |                          | 5                | 30933            | KMC-1-24DC-5-LED                     |  |
|   |                               |                         |                       |                          | 10               | 193459           | KMC-1-24-10-LED                      |  |
|   |                               | 230 V AC                | 3-pin                 | –                        | 2.5              | 30932            | KMC-1-230AC-2,5                      |  |
|   |                               |                         |                       |                          | 5                | 30934            | KMC-1-230AC-5                        |  |

| Ordering data – Illuminating seal MEB-LD/MC-LD                                      |   |                         |  | Technical data → Internet: meb, mc |                |
|---|---|-------------------------|--|------------------------------------|----------------|
|   | Description   | Operating voltage range |  | Part No.                           | Type           |
|  | for plug socket with cable KMEB and plug socket MSSD-EB | 12 ... 24 V DC          |  | 151717                             | MEB-LD-12-24DC |
|   |   | 230 V DC/AC ±10%        |  | 151718                             | MEB-LD-230AC   |
|   | for connecting cable KMC and plug socket MSSD-C         | 12 ... 24 V DC          |  | 19145                              | MC-LD-12-24DC  |
|   |   | 230 V DC/AC ±10%        |  | 19146                              | MC-LD-230AC    |

| Ordering data – Locking clip CPV18-HV   |                         |  |  | Technical data → Internet: cpv18-hv |          |                  |
|---|-------------------------|--|--|-------------------------------------|----------|------------------|
|   | Description             |  |  | Part No.                            | Type     | PU <sup>1)</sup> |
|  | for MS4/6-EE/DE-...-V24 | Cover for manual override, the clip prevents actuation |  | 530056                              | CPV18-HV | 10               |

1) Packaging unit quantity

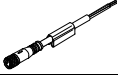

Festo core product range


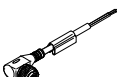
- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days

# On-off/soft-start valves MS-EM/EE/DL/DE, MS series


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Accessories


| 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 – Sensor socket SIE-GD  |                       | Technical data → Internet: sie-gd |        |
|---|-----------------------|-----------------------------------|--------|
|   | Electrical connection | Part No.                          | Type   |
|  | M12x1, 4-pin          | 18494                             | SIE-GD |

| Ordering data – Angled plug socket SIE-WD   |                       | Technical data → Internet: sie-wd |           |
|---|-----------------------|-----------------------------------|-----------|
|   | Electrical connection | Part No.                          | Type      |
|  | M12x1, 4-pin          | 12956                             | SIE-WD-TR |

| Ordering data – Silencer U  |                  |                      | Technical data → Internet: u |                     |
|---|------------------|----------------------|------------------------------|---------------------|
|   | Description      | Pneumatic connection | Part No.                     | Type                |
|  | for MS4-EM1/EE   | G $\frac{1}{4}$      | ★ 6842                       | U- $\frac{1}{4}$ -B |
|   | for MS6-EM1/EE   | G $\frac{1}{2}$      | ★ 6844                       | U- $\frac{1}{2}$ -B |
|   | for MS9/12-EM/EE | G1                   | 151990                       | U-1-B               |

| Ordering data – Pressure gauge MA   |   |                      |                  |           |                                |                               |  |
|---|---|----------------------|------------------|-----------|--------------------------------|-------------------------------|--|
|   | Nominal size                                      | Pneumatic connection | Indicating range |           | Part No.                       | Type                          |  |
|   |   |                      | [bar]            | [psi]     |                                |                               |  |
|  | Pressure gauge MA, 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, 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 LRV5-D  |            |               |
|---|------------|---------------|
|   | Weight [g] | Part No. Type |
|  | 120        | 193786 LRV5-D |

Festo core product range

- ★ Generally ready for shipping ex works in 24 hours
- ☆ Generally ready for shipping ex works in 5 days