

## Micro filter MS9N-LFM-A

**FESTO**



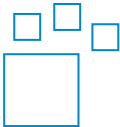
Characteristics

At a glance

- High-efficiency filter for exceptionally clean compressed air.
- With NPT connecting thread
  - Removing oil aerosols from compressed air
  - Air quality to ISO 8573-1:2010
  - Available with differential pressure gauge to indicate contamination
  - Available with electronic filter contamination indicator

Ordering data - modular system

Link [ms9-lfm-a](#)



Configurable product  
This product and all its product options can be ordered online via the configurator.

Size

- Grid dimension: 90 mm  
Standard nominal flow rate:
- 325 ... 7800 l/min

Pneumatic connection

- Depending on the size, different connection types can be selected:
- For individual fittings that are fastened via a female thread.
  - Connecting plates with female thread

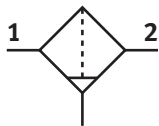
Bowl type

Bowl guard tanks to integrated metal bowl.

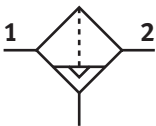
Condensate drain

- The following functions can be selected:
- Manual
  - Semi-automatic
  - Fully automatic
  - Fully automatic, normally closed

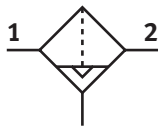
[M] Manually



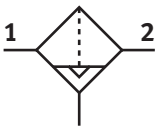
[H] Semi-automatic



[V] Automatic



[VC] Fully automatic, normally closed

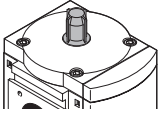


## Characteristics

### Filter change sensing

Optionally with differential pressure display for indicating filter contamination.

[DA] Differential pressure display, visual



### Type of mounting

[WP] Mounting bracket basic design



- Mounting attachment and connector for service unit combination or for individual device with connecting plates
- In conjunction with connection plate MS9-AQ... for wall mounting of a single device

[WPB] Mounting bracket for large wall gap



- For connecting the modules for wall mounting
- In conjunction with connection plate MS9-AQ... for wall mounting of a single device

[WPM] Mounting bracket for hooking in service unit components



- Mounting attachment and connector for service unit combination
- Mount and dismount the service unit combination quickly
- Spacer for maintaining the mounting gap
- Same wall gap for combination with MS6 series using the mounting bracket MS6-WPB

### EU certification

Optional device variant EX4 for use in potentially explosive areas of zones 1, 2, 21 and 22

### UL certification

Optional device variant UL1, which meets the safety requirements for the Canadian and US markets.

### Flow direction

Available with flow in the opposite direction.

## Type code

|      |                                                    |  |
|------|----------------------------------------------------|--|
| 001  | Series                                             |  |
| MS   | MS series                                          |  |
| 002  | Size                                               |  |
| 9    | Grid dimension 90 mm                               |  |
| 003  | Function                                           |  |
| LFM  | Fine and micro filters                             |  |
| 004  | Pneumatic connection                               |  |
| 3/4  | Female thread G3/4                                 |  |
| 1    | Female thread G1                                   |  |
| AGD  | Sub-base G1/2                                      |  |
| AGE  | Sub-base G3/4                                      |  |
| AGF  | Sub-base G1                                        |  |
| AGG  | Connecting plate G1 1/4                            |  |
| AGH  | Connecting plate G1 1/2                            |  |
| AQR  | Sub-base 1/2 NPT                                   |  |
| AQS  | Sub-base 3/4 NPT                                   |  |
| AQT  | Sub-base 1 NPT                                     |  |
| AQU  | Sub-base 1 1/4 NPT                                 |  |
| AQV  | Sub-base 1 1/2 NPT                                 |  |
| G    | Module without connecting thread, without sub-base |  |
| N3/4 | Female thread 3/4 NPT                              |  |
| N1   | Female thread 1 NPT                                |  |
| 005  | Filter design                                      |  |
| A    | 0.01 µm                                            |  |
| B    | 1 µm                                               |  |
| 006  | Bowl type                                          |  |
| U    | Aluminium                                          |  |

|     |                                                                                 |  |
|-----|---------------------------------------------------------------------------------|--|
| 007 | Condensate drain                                                                |  |
| E2  | External fully automatic condensate drain, electric, 110 V AC, terminals        |  |
| E3  | External fully automatic condensate drain, electric, 230 V AC, terminals        |  |
| E4  | External fully automatic condensate drain, electric, 24 V DC, terminals         |  |
| H   | Semi-automatic                                                                  |  |
| M   | Manually                                                                        |  |
| V   | Automatic                                                                       |  |
| VC  | Fully automatic, normally closed                                                |  |
| 008 | Flow rate                                                                       |  |
|     | Standard                                                                        |  |
| HF  | High flow rate                                                                  |  |
| 009 | Filter change sensing                                                           |  |
|     | None                                                                            |  |
| DA  | Differential pressure display, visual                                           |  |
| DN  | Filter contamination indicator, M8 plug, NPN, 3-pin                             |  |
| DNI | Filter contamination indicator, M12 plug, NPN, 4-pin, analogue output 4...20 mA |  |
| DP  | Filter contamination indicator, M8 plug, PNP, 3-pin                             |  |
| DPI | Filter contamination indicator, M12 plug, PNP, 4-pin, analogue output 4...20 mA |  |
| 010 | Type of mounting                                                                |  |
|     | Without mounting bracket                                                        |  |
| WP  | Mounting bracket basic design                                                   |  |
| WPB | Mounting bracket for large wall gap                                             |  |
| WPM | Mounting bracket for hooking in service unit components                         |  |
| 011 | EU certification                                                                |  |
|     | None                                                                            |  |
| EX4 | II 2GD                                                                          |  |
| 012 | UL certification                                                                |  |
|     | None                                                                            |  |
| UL1 | cULus ordinary location for Canada and USA                                      |  |
| 013 | Flow direction                                                                  |  |
|     | Flow direction from left to right                                               |  |
| Z   | Flow direction from right to left                                               |  |

## Datasheet

| General technical data            |                                                           |       |                     |       |
|-----------------------------------|-----------------------------------------------------------|-------|---------------------|-------|
| Flow rate                         | Standard [L]                                              |       | High flow rate [HF] |       |
| Pneumatic connection, port 1      | 3/4 NPT                                                   | 1 NPT | 3/4 NPT             | 1 NPT |
| Pneumatic connection, port 2      | 3/4 NPT                                                   | 1 NPT | 3/4 NPT             | 1 NPT |
| Size                              | 9                                                         |       |                     |       |
| Design                            | Fibre filter                                              |       |                     |       |
| Grade of filtration               | 0.01 µm                                                   |       |                     |       |
| Type of mounting                  | Either:<br>In-line installation<br>With accessories       |       |                     |       |
| Mounting position                 | Vertical +/-5°                                            |       |                     |       |
| Air purity class at output        | Compressed air to ISO 8573-1:2010 [3:-:2]                 |       |                     |       |
| Filter efficiency                 | 99.9999%                                                  |       |                     |       |
| Condensate drain                  | Fully automatic, Manual, non-detenting, Manually rotating |       |                     |       |
| Max. condensate volume            | 225 ml                                                    |       |                     |       |
| Filter efficiency, fine particles | 99.995%                                                   |       |                     |       |
| Filter efficiency, oil aerosol    | 99%                                                       |       |                     |       |
| MPPS                              | 0.08 µm                                                   |       | 0.1 µm              |       |
| Filter efficiency MPPS            | 99.981%                                                   |       | 99.968%             |       |

| Standard nominal flow rate qnN              |              |                     |
|---------------------------------------------|--------------|---------------------|
| Flow rate                                   | Standard [L] | High flow rate [HF] |
| Min. standard flow rate for clean air class | 325 l/min    | 390 l/min           |
| Max. standard flow rate for clean air class | 6,500 l/min  | 7,800 l/min         |

| Operating and environmental conditions       |                                           |                   |
|----------------------------------------------|-------------------------------------------|-------------------|
| Condensate drain                             | Fully automatic, Manual, non-detenting    | Manually rotating |
| Operating pressure                           | 0.2 ... 1.2 MPa                           | 0 ... 2 MPa       |
| Operating pressure                           | 2 ... 12 bar                              | 0 ... 20 bar      |
| Operating pressure                           | 29 ... 174 psi                            | 0 ... 290 psi     |
| Operating medium <sup>1)</sup>               | Compressed air to ISO 8573-1:2010 [6:-:4] |                   |
| Ambient temperature                          | 5 ... 60°C                                | -10 ... 60°C      |
| Media temperature                            | 5 ... 60°C                                | -10 ... 60°C      |
| Storage temperature                          | -10 ... 60°C                              |                   |
| Corrosion resistance class CRC <sup>2)</sup> | 2 - Moderate corrosion stress             |                   |

1) It is recommended to prefilter the compressed air for the micro filter MS-LFM-A using a fine filter MS-LFM-B (grade of filtration 1 µm).

2) More information at [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

| ATEX                                                       |                                             |
|------------------------------------------------------------|---------------------------------------------|
| ATEX category gas                                          | II 2G                                       |
| Explosion ignition protection type for gas                 | Ex h IIC T6 Gb X                            |
| ATEX category dust                                         | II 2D                                       |
| Explosion ignition protection type for dust                | Ex h IIIC T60°C Db X                        |
| Explosion ambient temperature                              | +5°C ≤ Ta ≤ +60°C                           |
| CE mark (see declaration of conformity) <sup>1)</sup>      | To EU Explosion Protection Directive (ATEX) |
| UKCA marking (see declaration of conformity) <sup>2)</sup> | To UK EX instructions                       |

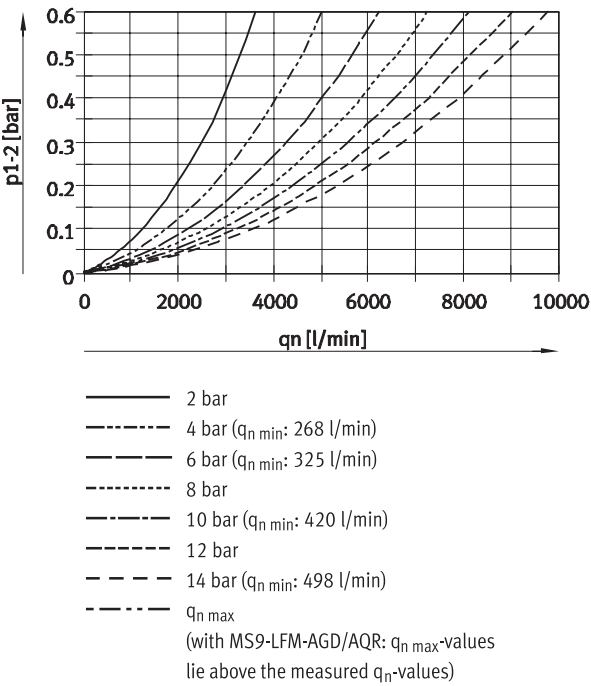
1) More information [www.festo.com/catalogue/ms-lfm](http://www.festo.com/catalogue/ms-lfm) → Support/Downloads.

2) More information [www.festo.com/catalogue/ms-lfm](http://www.festo.com/catalogue/ms-lfm) → Support/Downloads.

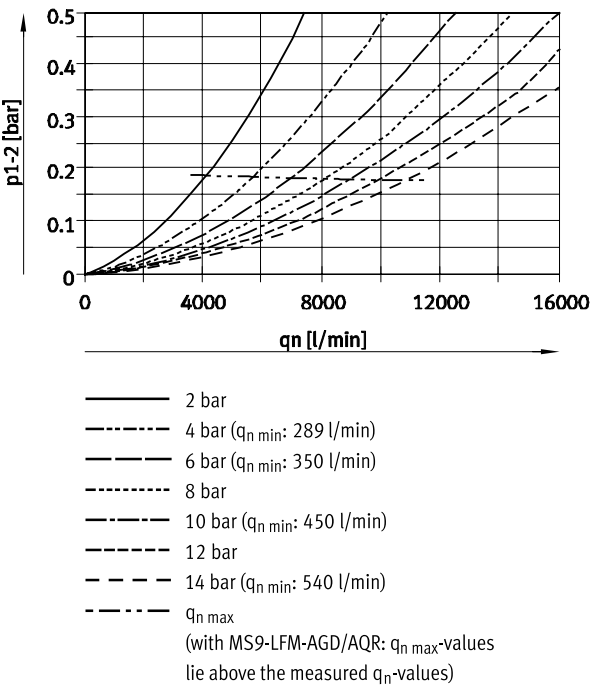
Datasheet

| Materials              |                         |
|------------------------|-------------------------|
| Material housing       | Die-cast aluminium      |
| Material bowl          | Wrought aluminium alloy |
| Material screen        | PA                      |
| Material filter        | Borosilicate fibre      |
| Material seals         | NBR                     |
| LABS (PWIS) conformity | VDMA24364-B1/B2-L       |

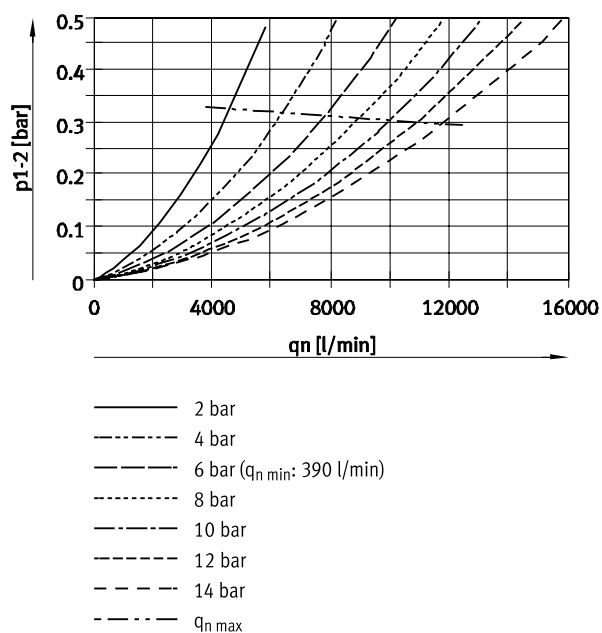
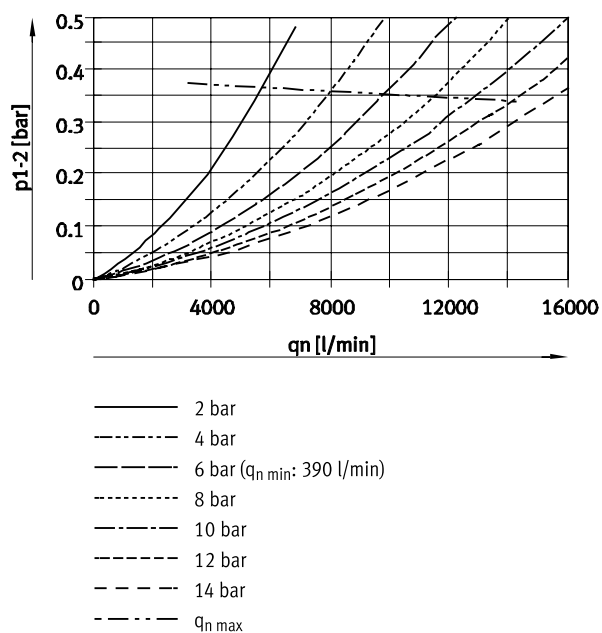
Standard flow rate  $q_n$  as a function of differential pressure  $\Delta p_{1-2}$  (pneumatic connection 1/2NPT)



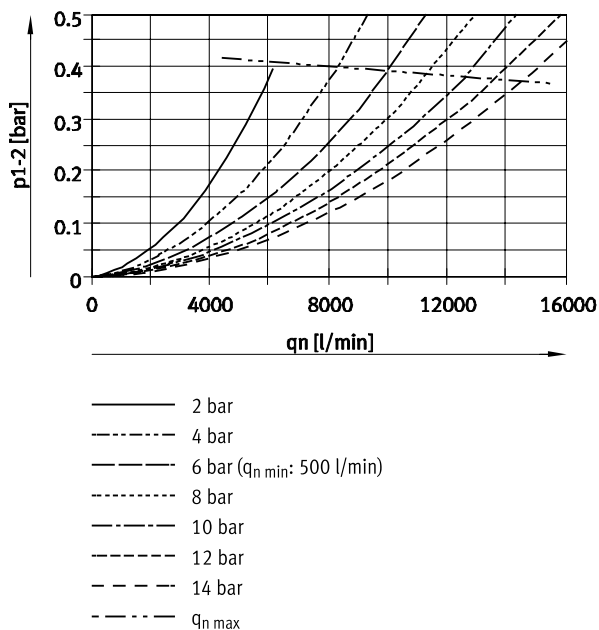
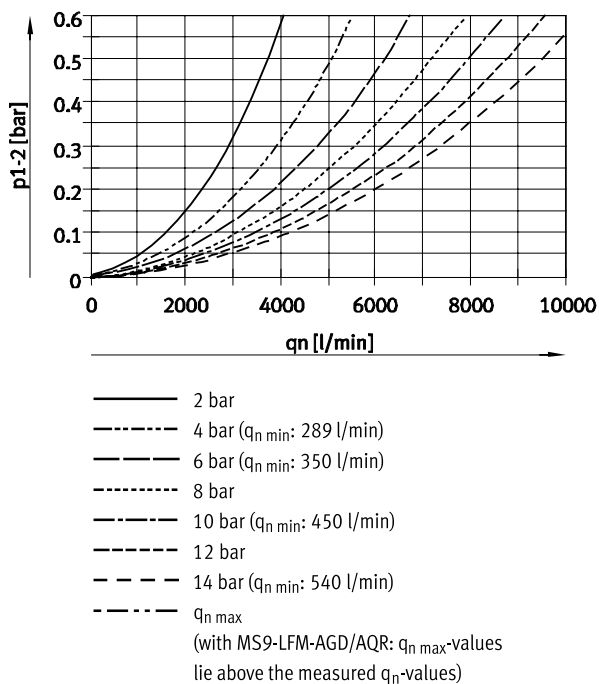
Standard flow rate  $q_n$  as a function of differential pressure  $\Delta p_{1-2}$  (pneumatic connection 3/4NPT)



## Datasheet

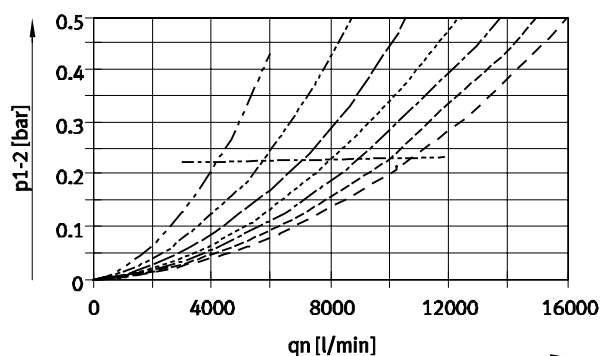
Standard flow rate  $q_n$  as a function of differential pressure  $\Delta p_{1-2}$  (pneumatic connection 1NPT)Standard flow rate  $q_n$  as a function of differential pressure  $\Delta p_{1-2}$  (pneumatic connection 11/4NPT)

## Datasheet

Standard flow rate  $q_n$  as a function of differential pressure  $\Delta p_{1-2}$  (pneumatic connection 11/2NPT)Standard flow rate  $q_n$  as a function of differential pressure  $\Delta p_{1-2}$  (pneumatic connection 3/4 NPT – high flow rate HF)

## Datasheet

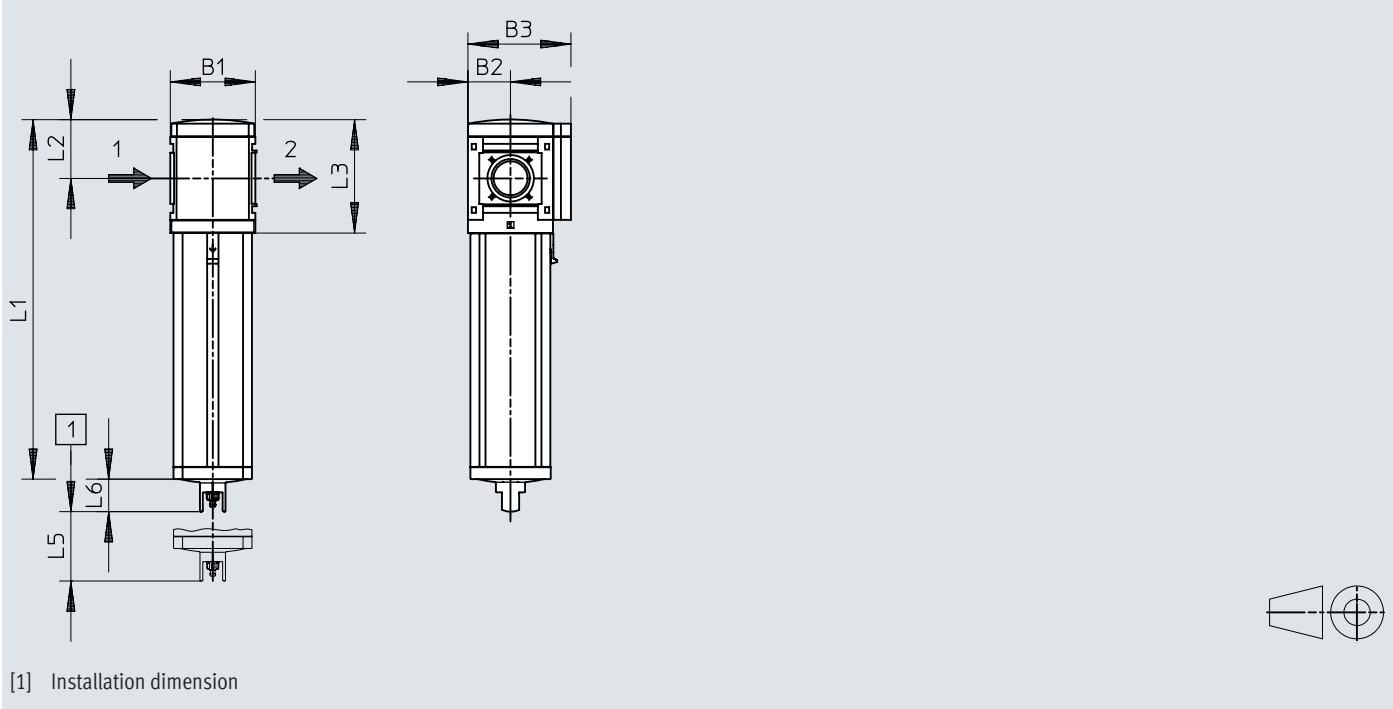
Standard flow rate  $q_n$  as a function of differential pressure  $\Delta p_{1-2}$  (pneumatic connection 1 NPT – high flow rate HF)



- 2 bar
- - - 4 bar ( $q_{n \min}$ : 289 l/min)
- - - 6 bar ( $q_{n \min}$ : 350 l/min)
- - - 8 bar
- - - 10 bar ( $q_{n \min}$ : 450 l/min)
- - - 12 bar
- - - 14 bar ( $q_{n \min}$ : 540 l/min)
- - -  $q_n \max$   
(with MS9-LFM-AGD/AQR:  $q_n \max$ -values  
lie above the measured  $q_n$ -values)

Dimensions

Dimensions – Module without connecting thread, without connecting plate G Download CAD data [www.festo.com](http://www.festo.com)



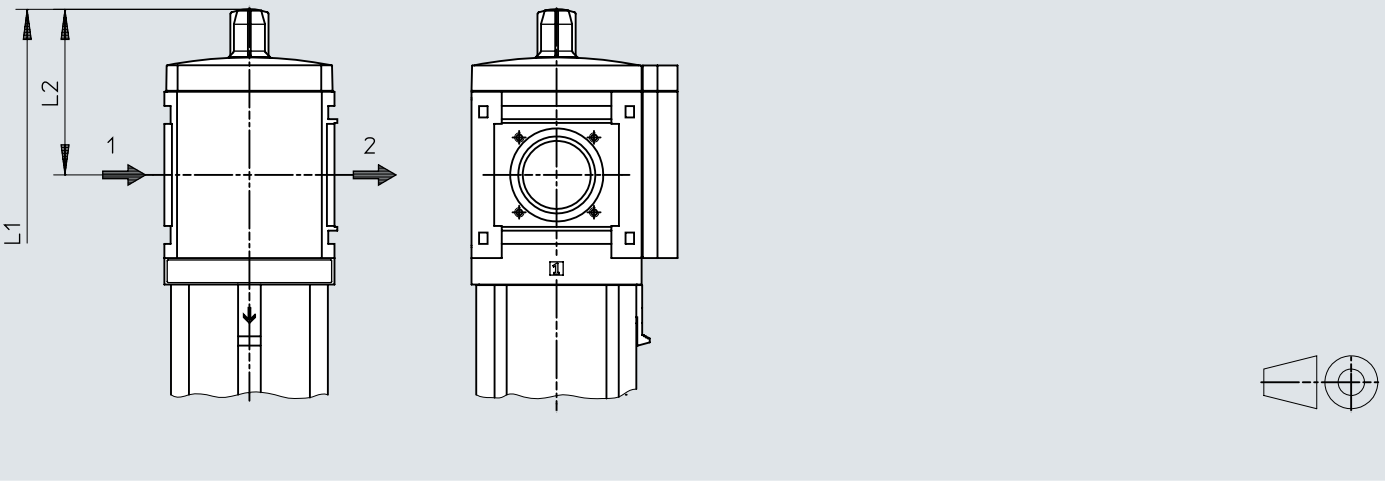
|           | B1 | B2 | B3  | L1    |       | L2 | L3  | L5 | L6   |
|-----------|----|----|-----|-------|-------|----|-----|----|------|
|           |    |    |     | 1)    | 2)    |    |     |    |      |
| MS9-LFM-G | 90 | 45 | 109 | 380,5 | 480,5 | 62 | 120 | 50 | 34,5 |

- 1) Standard
- 2) High flow rate HF

Dimensions

Dimensions – Module without connecting thread, without connecting plate  
G, with differential pressure display DA

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



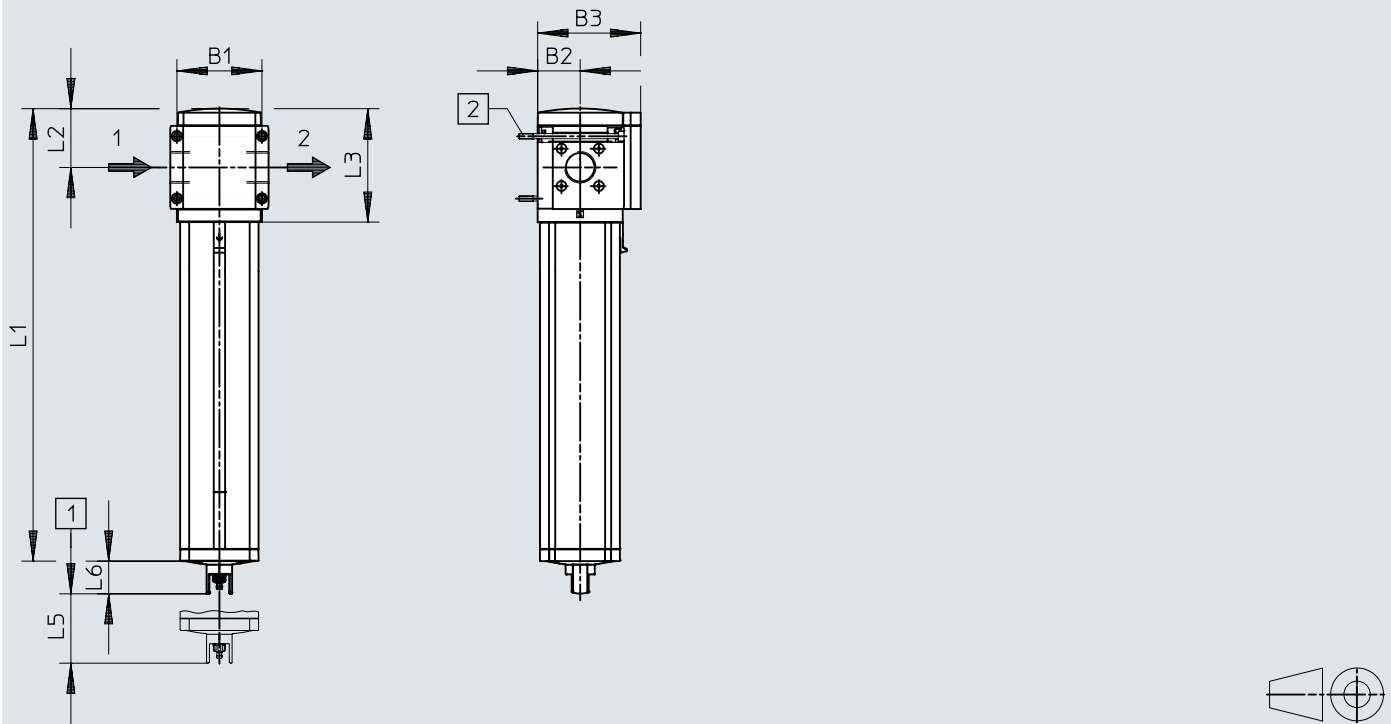
|                  | B1 | B2 | B3  | L1    |       | L2 | L3  | L5 | L6   |
|------------------|----|----|-----|-------|-------|----|-----|----|------|
|                  |    |    |     | 1)    | 2)    |    |     |    |      |
| MS9-LFM-G-...-DA | 90 | 45 | 109 | 405,5 | 505,5 | 88 | 120 | 50 | 34,5 |

- 1) Standard
- 2) High flow rate HF

Dimensions

Dimensions – Connecting thread/connecting plate with female thread 3/4, 1, N3/4, N1

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



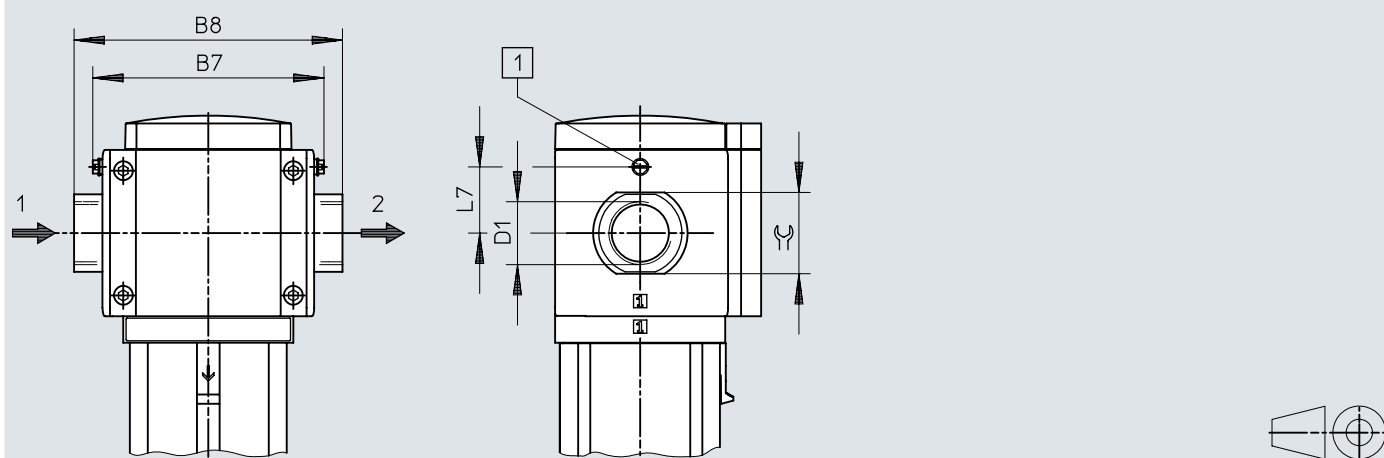
- [1] Installation dimension
- [2] Retaining screw M6xmin.90 according to DIN 912 (not included in the scope of delivery) for wall mounting without mounting bracket

|              | B4 | B5  | B6   | D1      | L4 |
|--------------|----|-----|------|---------|----|
| MS9-LFM-3/4  | 90 | 104 | 91,5 | G3/4    | 66 |
| MS9-LFM-1    |    |     |      | G1      |    |
| MS9-LFM-N3/4 | 90 | 104 | 91,5 | 3/4 NPT | 66 |
| MS9-LFM-N1   |    |     |      | 1 NPT   |    |

## Dimensions

Dimensions – Connecting thread/connecting plate with connecting plate  
AG.../AQ...

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

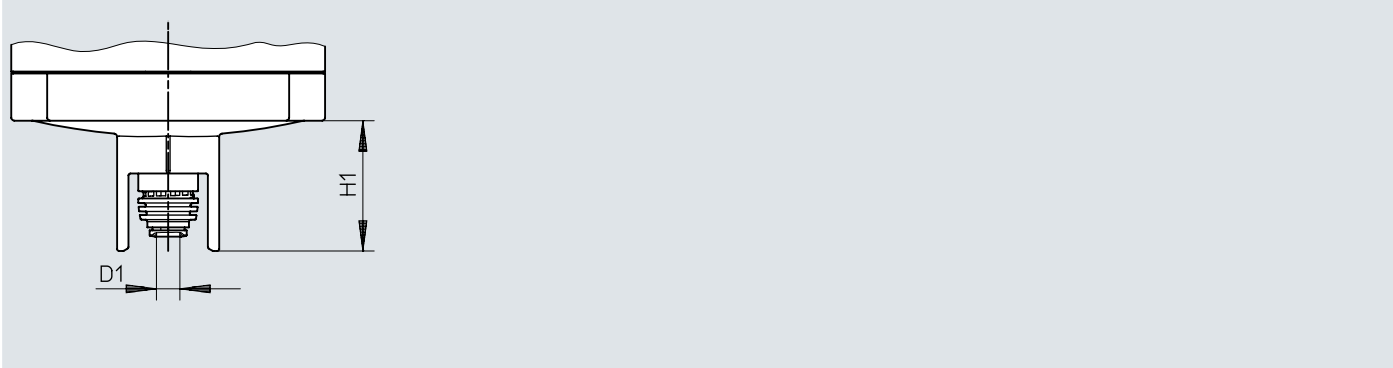


[1] Earthing screw M4x8 (only for MS9-...-EX4)

|             | B7  |     | B8  | D1        | L7  | ≅  |
|-------------|-----|-----|-----|-----------|-----|----|
|             |     | EX4 |     |           | EX4 |    |
| MS9-LFM-AGD | 112 | 122 | 132 | G1/2      | 35  | 30 |
| MS9-LFM-AGE |     |     | 132 | G3/4      |     | 36 |
| MS9-LFM-AGF |     |     | 142 | G1        |     | 41 |
| MS9-LFM-AGG |     |     | 162 | G1 1/4    |     | 50 |
| MS9-LFM-AGH |     |     | 176 | G1 1/2    |     | 55 |
| MS9-LFM-AQR | 112 | 122 | 132 | 1/2 NPT   | 35  | 30 |
| MS9-LFM-AQS |     |     | 132 | 3/4 NPT   |     | 36 |
| MS9-LFM-AQT |     |     | 142 | 1 NPT     |     | 41 |
| MS9-LFM-AQU |     |     | 162 | 1 1/4 NPT |     | 50 |
| MS9-LFM-AQV |     |     | 176 | 1 1/2 NPT |     | 55 |

Dimensions

Dimensions – Condensate drain, manual, rotary, fully automatic [Download CAD data](http://www.festo.com)

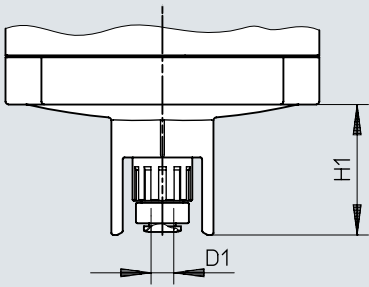


|                | D1  | H1   |
|----------------|-----|------|
| MS9-LF-...-M/V | 5,6 | 34,5 |

Dimensions

Dimensions – Condensate drain, semi-automatic

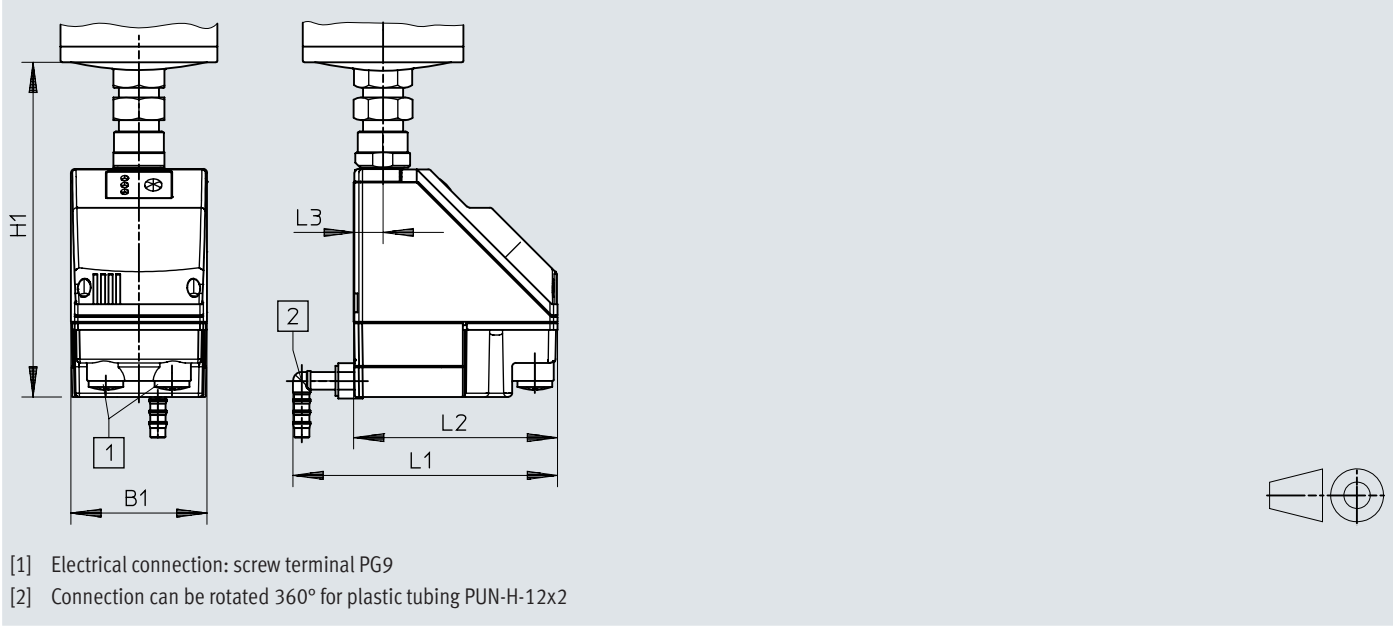
Download CAD data [www.festo.com](http://www.festo.com)



|              | D1  | H1   |
|--------------|-----|------|
| MS9-LF-...-H | 6,2 | 34,5 |

Dimensions

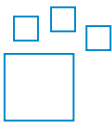
Dimensions – Condensate drain fully automatic, electrically controlled Download CAD data [www.festo.com](http://www.festo.com)



|                       | B1 | H1  | L1  | L2  | L3 |
|-----------------------|----|-----|-----|-----|----|
| MS9-LF-...-E2, E3, E4 | 72 | 178 | 140 | 108 | 15 |

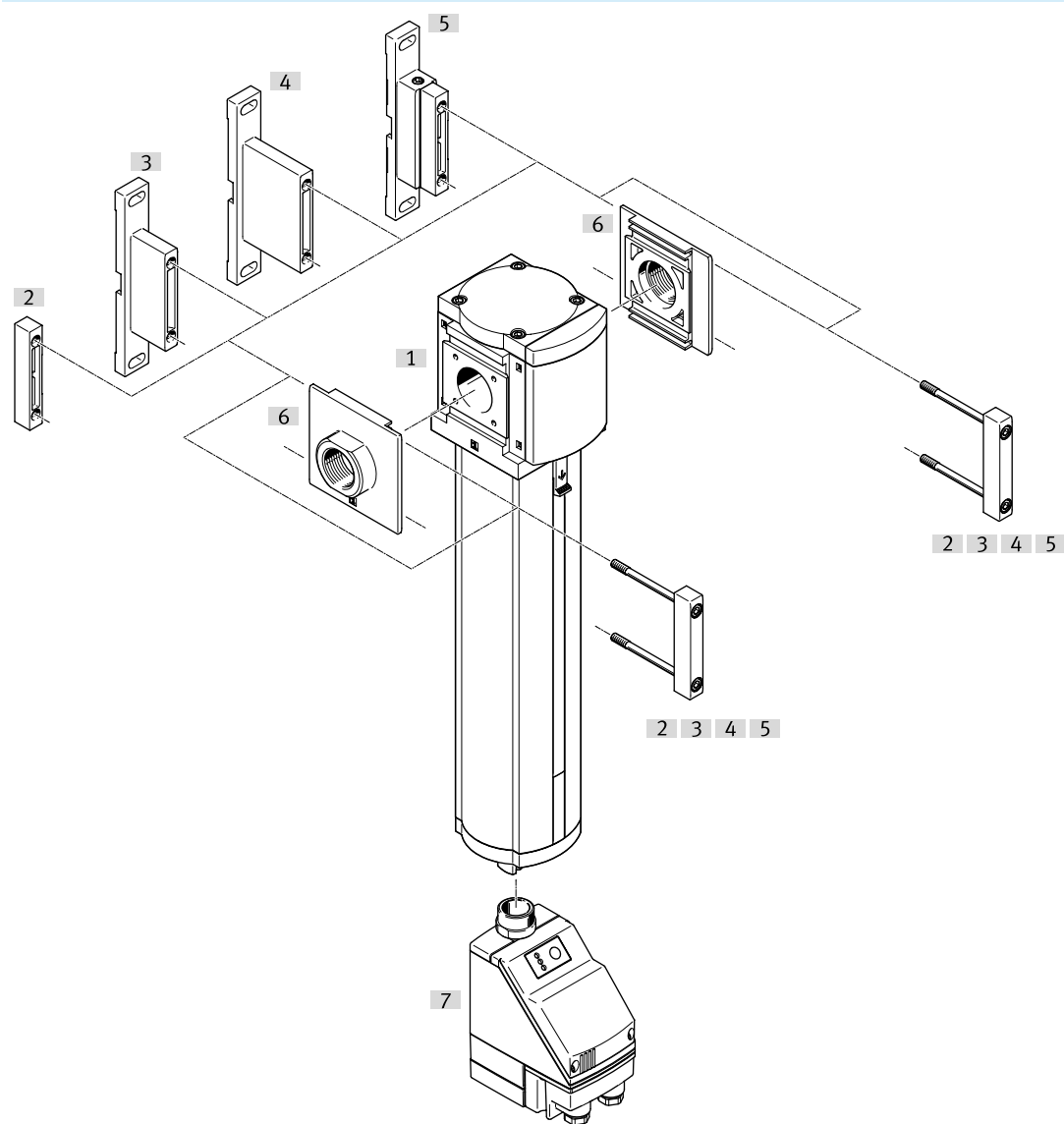
## Ordering data

| Ordering data                                                                     |                              |                     |                                         |                |          |                        |
|-----------------------------------------------------------------------------------|------------------------------|---------------------|-----------------------------------------|----------------|----------|------------------------|
|                                                                                   | Pneumatic connection, port 1 | Grade of filtration | Condensate drain                        | Product weight | Part no. | Type                   |
|  | 3/4 NPT                      | 0.01 µm             | Fully automatic, Manual, non-de-tenting | 2,000 g        | 553088   | MS9-LFM-N3/4-AUV       |
|                                                                                   |                              |                     |                                         |                | 553096   | MS9-LFM-N3/4-AUV-DA    |
|                                                                                   |                              |                     |                                         | 2,500 g        | 552982   | MS9-LFM-N3/4-AUV-HF    |
|                                                                                   |                              |                     |                                         |                | 552990   | MS9-LFM-N3/4-AUV-HF-DA |
|                                                                                   |                              |                     | Manually rotating                       | 2,000 g        | 553086   | MS9-LFM-N3/4-AUM       |
|                                                                                   |                              |                     |                                         |                | 553094   | MS9-LFM-N3/4-AUM-DA    |
|                                                                                   |                              |                     |                                         | 2,500 g        | 552980   | MS9-LFM-N3/4-AUM-HF    |
|                                                                                   |                              |                     |                                         |                | 552988   | MS9-LFM-N3/4-AUM-HF-DA |
|                                                                                   | 1 NPT                        |                     | Fully automatic, Manual, non-de-tenting | 2,000 g        | 553026   | MS9-LFM-N1-AUV-DA      |
|                                                                                   |                              |                     |                                         |                | 553018   | MS9-LFM-N1-AUV         |
|                                                                                   |                              |                     |                                         | 2,500 g        | 553056   | MS9-LFM-N1-AUV-HF      |
|                                                                                   |                              |                     |                                         |                | 553064   | MS9-LFM-N1-AUV-HF-DA   |
|                                                                                   |                              |                     | Manually rotating                       | 2,000 g        | 553024   | MS9-LFM-N1-AUM-DA      |
|                                                                                   |                              |                     |                                         |                | 553016   | MS9-LFM-N1-AUM         |
|                                                                                   |                              |                     |                                         | 2,500 g        | 553062   | MS9-LFM-N1-AUM-HF-DA   |
|                                                                                   |                              |                     |                                         |                | 553054   | MS9-LFM-N1-AUM-HF      |

| Ordering data – Modular product system                                             |                 |          |         |
|------------------------------------------------------------------------------------|-----------------|----------|---------|
|                                                                                    | Short type code | Part no. | Type    |
|  | MS9-LFM         | 552940   | MS9-LFM |

Peripherals

Peripherals overview



| Accessories                                                            |                                                                      | → Link                  |
|------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------|
| Type/order code                                                        | Description                                                          |                         |
| [1] Micro filter MS9N-LFM-A                                            |                                                                      | <a href="#">ms9-lfm</a> |
| [2] Connecting plate SET MS9-A...                                      | For device combinations                                              | <a href="#">19</a>      |
| [3] Module connector MS9-MV                                            | For device combinations and individual devices with connecting plate | <a href="#">19</a>      |
| [4] Mounting bracket MS9-WP                                            | For an individual device                                             | <a href="#">19</a>      |
| [5] Mounting bracket MS9-WPB                                           | For an individual device                                             | <a href="#">19</a>      |
| [6] Mounting bracket MS9-WPM                                           | For an individual device                                             | <a href="#">20</a>      |
| [7] Fully automatic condensate drain, electrically actuated E2, E3, E4 |                                                                      | <a href="#">pwea</a>    |
| [8] Micro-filter cartridge MS9-LFM-A                                   | Not shown                                                            | <a href="#">19</a>      |

## Accessories

| Micro-filter cartridge – MS9-LFM-A                                                |      |                     |                    |                                              |          |              |
|-----------------------------------------------------------------------------------|------|---------------------|--------------------|----------------------------------------------|----------|--------------|
|                                                                                   | Size | Grade of filtration | Material filter    | Corrosion resistance class CRC <sup>1)</sup> | Part no. | Type         |
|  | 9    | 0.01 µm             | Borosilicate fibre | 2 - Moderate corrosion stress                | 553036   | MS9-LFM-A    |
|                                                                                   |      |                     |                    |                                              | 552944   | MS9-LFM-A-HF |

1) More information [www.festo.com/x/topic/kbk](http://www.festo.com/x/topic/kbk)

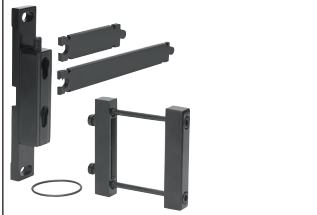
| Connecting plate SET MS9-A...                                                      |      |                              |                |          |         |
|------------------------------------------------------------------------------------|------|------------------------------|----------------|----------|---------|
|                                                                                    | Size | Pneumatic connection, port 1 | Product weight | Part no. | Type    |
|  | 9    | 1/2 NPT                      | 300 g          | 552959   | MS9-AQR |
|                                                                                    |      | 3/4 NPT                      |                | 552960   | MS9-AQS |
|                                                                                    |      | 1 NPT                        |                | 552961   | MS9-AQT |
|                                                                                    |      | 1 1/4 NPT                    | 400 g          | 552962   | MS9-AQU |
|                                                                                    |      | 1 1/2 NPT                    |                | 552963   | MS9-AQV |

| Module connector MS9-MV                                                             |      |                |          |        |
|-------------------------------------------------------------------------------------|------|----------------|----------|--------|
|                                                                                     | Size | Product weight | Part no. | Type   |
|  | 9    | 110 g          | 552950   | MS9-MV |

| Mounting bracket MS9-WP                                                             |      |                |          |        |
|-------------------------------------------------------------------------------------|------|----------------|----------|--------|
|                                                                                     | Size | Product weight | Part no. | Type   |
|  | 9    | 180 g          | 552947   | MS9-WP |

| Mounting bracket MS9-WPB                                                            |      |                |          |         |
|-------------------------------------------------------------------------------------|------|----------------|----------|---------|
|                                                                                     | Size | Product weight | Part no. | Type    |
|  | 9    | 210 g          | 552949   | MS9-WPB |

Accessories

| Mounting bracket MS9-WP                                                          |      |                |          |         |
|----------------------------------------------------------------------------------|------|----------------|----------|---------|
|                                                                                  | Size | Product weight | Part no. | Type    |
|  | 9    | 220 g          | 552948   | MS9-WPM |