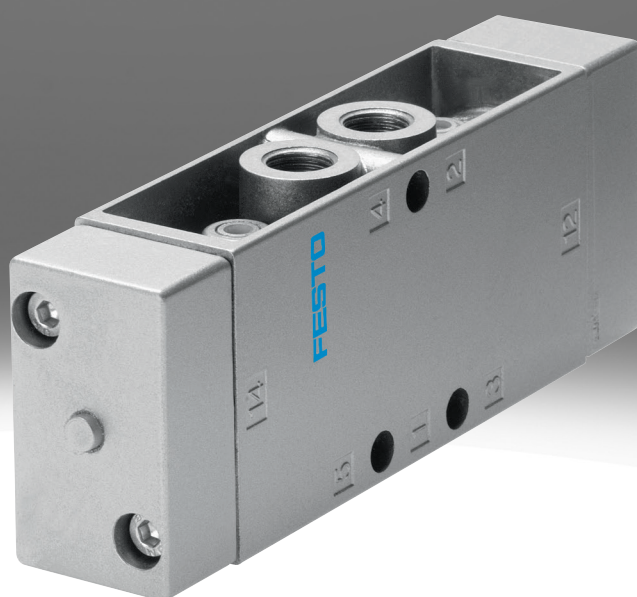


## Tiger Classic valve

**FESTO**



### Characteristics

#### At a glance

General information:

- Particularly sturdy poppet valve principle for all 3/2- and 5/2-way valves
- Pneumatically actuated or electrically with F solenoid coil
- With flow rate performance of up to 7500 l/min
- With internal or external pilot air
- Pipe connection thread in sizes G1/8, G1/4, G1/2 and G3/4
- Proven mounting using hollow bolt on PAL or PRS rail (without ATEX category)
- Optimised switching times thanks to patented U-ring and servo control
- Note: Valves for potentially explosive atmospheres (ATEX category) are not suitable for mounting on PAL manifold rails or PRS manifold blocks.

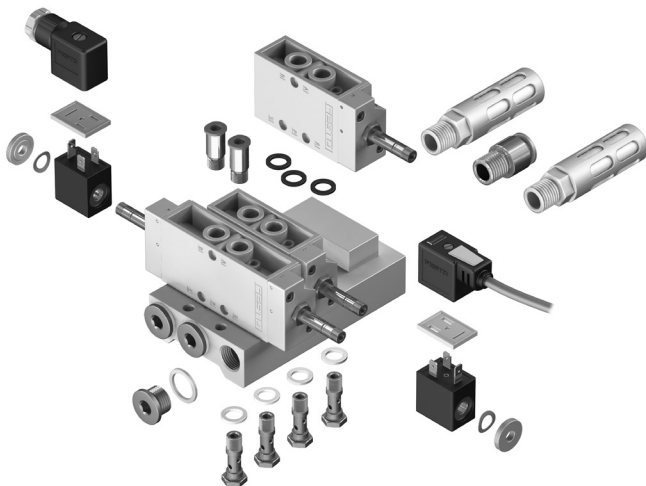
F solenoid coils:

- Voltage 12 to 230 V DC; 12 to 240 V AC (50 to 60 Hz)
- Power consumption 4.1 to 5.5 W DC; 3.85 to 9 VA AC
- Selected types in accordance with the ATEX directive for potentially explosive atmospheres
- Solenoid coil can be easily replaced at a later date
- Solenoid coil not included in the scope of delivery

Variants:

- VL/O-3-...: normally closed or normally open, depending on the choice of connections
- MFH-3-..., MOFH-3-...MFH-3-...Normally closed, MOFH-3-...Normally open; by turning the seal under the cover, these valves can be converted to the other valve versions.
- MFH-3-...S: This valve type can be used within a range of 0 to 0.8 MPa and also as MOFH (through flow when not actuated) with a separate pilot line.
- MFH-5-...S: The external pilot air connection means that these valves can also be used with low operating pressures.

#### Mounting method



The valves Tiger Classic can be mounted on manifold rails PAL with common supply port or on PRS manifold blocks with common supply port and common exhausts. The valves are attached to the rails and blocks using hollow bolts. The manifold rail and manifold block have 2 to 6 valve positions. Vacant positions on the PAL manifold rails can be sealed with cap nuts, and on the PRS blocks cover plates can be used. The individual valves can be supplied with separate pressure levels via hollow bolts with threaded connections.

## Type code

| 001          | Series                                                                                 |  |
|--------------|----------------------------------------------------------------------------------------|--|
| <b>MCH</b>   | Solenoid valve, with armature tube for C-solenoid coil, monostable, normally closed    |  |
| <b>MFH</b>   | Solenoid valve, with armature tube for F-solenoid coil, monostable, normally closed    |  |
| <b>MOCH</b>  | Solenoid valve, with armature tube for C-solenoid coil, monostable, normally open      |  |
| <b>JMFH</b>  | Solenoid valve, with armature tube for F-solenoid coil, bistable                       |  |
| <b>MOFH</b>  | Solenoid valve, with armature tube for F-solenoid coil, monostable, normally open      |  |
| <b>JMFDH</b> | Solenoid valve, with armature tube for F-solenoid coil, with dominant signal, bistable |  |
| <b>JH</b>    | Bistable valve, pneumatic                                                              |  |
| <b>JDH</b>   | Bistable valve, pneumatic, with dominant signal                                        |  |
| <b>VL/O</b>  | Pneumatic valve, monostable, normally open or closed                                   |  |
| <b>VL</b>    | Pneumatic valve, monostable                                                            |  |

| 002      | Valve function |  |
|----------|----------------|--|
| <b>3</b> | 3/2-way valve  |  |
| <b>5</b> | 5/2-way valve  |  |

| 003        | Pneumatic connection |  |
|------------|----------------------|--|
| <b>G18</b> | G1/8                 |  |
| <b>G14</b> | G1/4                 |  |
| <b>G12</b> | G1/2                 |  |
| <b>G34</b> | G3/4                 |  |

| 004        | EU certification |  |
|------------|------------------|--|
|            | None             |  |
| <b>EX4</b> | II 2GD           |  |

| 005      | Pilot air |  |
|----------|-----------|--|
|          | Internal  |  |
| <b>S</b> | External  |  |

## Datasheet

## General technical data

|                                                       |                                                        |           |             |                    |
|-------------------------------------------------------|--------------------------------------------------------|-----------|-------------|--------------------|
| Pneumatic connection, port 1                          | G1/8                                                   | G1/4      | G1/2        | G3/4               |
| Valve function                                        | 3/2-way, closed, monostable, 3/2 open, single solenoid |           |             |                    |
| Design                                                | Poppet seat                                            |           |             |                    |
| lap                                                   | Underlap                                               |           |             |                    |
| Sealing principle                                     | Soft                                                   |           |             |                    |
| Type of actuation                                     | Electric                                               |           |             |                    |
| Type of reset                                         | Mechanical spring                                      |           |             |                    |
| Type of piloting                                      | Pilot actuated                                         |           |             |                    |
| Pilot air supply                                      | External                                               |           |             | External, Internal |
| Flow direction                                        | Non-reversible, Reversible                             |           |             |                    |
| Exhaust-air function                                  | With flow control option                               |           |             |                    |
| Manual override                                       | Detenting                                              |           |             |                    |
| Type of mounting                                      | Either, On manifold rail, With through-hole            |           |             |                    |
| Mounting position                                     | optional                                               |           |             |                    |
| Electrical connection                                 | Via F coil, to be ordered separately                   |           |             |                    |
| Breather connection                                   | M5                                                     |           |             |                    |
| Pilot air port 12                                     | M5                                                     |           | G1/8        |                    |
| b value                                               | –                                                      |           | 0.3         | –                  |
| Nominal size                                          | 5 mm                                                   | 7 mm      | 14 mm       | 19 mm              |
| Standard nominal flow rate (standardised to DIN 1343) | 500 l/min                                              | 800 l/min | 3,700 l/min | 7,500 l/min        |
| Product weight                                        | 240 g                                                  | 320 g     | 1,100 g     | 1,260 g            |

## Solenoid valves, 3/2-way valves, safety characteristics

|                                                      |          |
|------------------------------------------------------|----------|
| Max. positive test pulse with 0 signal               | 2,200 µs |
| Max. negative test pulse with 1 signal <sup>1)</sup> | 3,700 µs |

1) not valid for types MFH-3-3/4- and MOFH-3-3/4-

## Solenoid valves, 3/2-way valves, ATEX

|                                                   |                                             |
|---------------------------------------------------|---------------------------------------------|
| ATEX category gas                                 | II 2G                                       |
| Explosion ignition protection type for gas        | Ex h IIC T4 Gb                              |
| ATEX category dust                                | II 2D                                       |
| Explosion ignition protection type for dust       | Ex h IIIC T130°C Db                         |
| Explosion ambient temperature                     | -5°C ≤ Ta ≤ +40°C                           |
| CE mark (see declaration of conformity)           | To EU Explosion Protection Directive (ATEX) |
| UKCA marking (see declaration of conformity)      | To UK EX instructions                       |
| Explosion protection certification outside the EU | EPL Db (GB)<br>EPL Gb (GB)                  |
| Degree of protection                              | IP65                                        |

## Datasheet

### Operating and environmental conditions

|                                    |                                                                                            |      |      |      |
|------------------------------------|--------------------------------------------------------------------------------------------|------|------|------|
| Pneumatic connection, port 1       | G1/8                                                                                       | G1/4 | G1/2 | G3/4 |
| Operating medium                   | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |      |      |      |
| Pilot medium                       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |      |      |      |
| Note on operating and pilot medium | Lubricated operation possible (in which case lubricated operation will always be required) |      |      |      |
| Operating pressure                 | -0.095 ... 1 MPa                                                                           |      |      |      |
| Operating pressure                 | -0.95 ... 10 bar                                                                           |      |      |      |
| Pilot pressure                     | 1 ... 8 bar                                                                                |      |      |      |
| Pilot pressure                     | 0.1 ... 0.8 MPa                                                                            |      |      |      |
| Ambient temperature                | -5 ... 40°C                                                                                |      |      |      |
| Media temperature                  | -10 ... 60°C                                                                               |      |      |      |
| Storage temperature                | -20 ... 60°C                                                                               |      |      |      |
| Approval                           | c UL us - Recognized (OL)                                                                  |      |      |      |
| Corrosion resistance class CRC     | 1 - Low corrosion stress                                                                   |      |      |      |
| LABS (PWIS) conformity             | VDMA24364-B1/B2-L                                                                          |      |      |      |

### Electrical data

|                          |                                             |
|--------------------------|---------------------------------------------|
| Electrical connection    | Via F coil, to be ordered separately        |
| Characteristic coil data | See solenoid coil, to be ordered separately |
| Degree of protection     | IP65                                        |

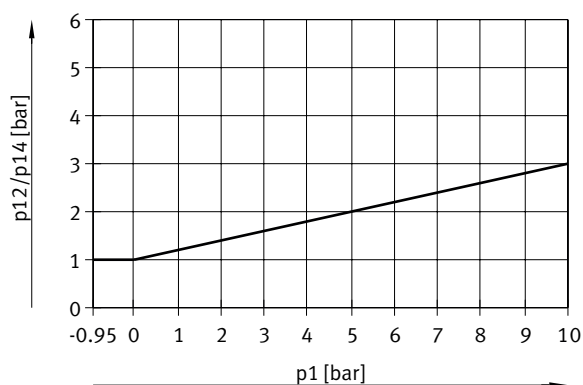
### Weight

|                              |                             |       |       |          |                           |
|------------------------------|-----------------------------|-------|-------|----------|---------------------------|
| Pneumatic connection, port 1 | G1/8                        | G1/4  | G1/2  | G3/4     |                           |
| Valve function               | 3/2-way, closed, monostable |       |       |          | 3/2 open, single solenoid |
| Pilot air supply             | External                    |       |       | Internal |                           |
| Switching time on            | 9 ms                        | 10 ms | 18 ms | 36 ms    | 40 ms                     |
| Switching time off           | 33 ms                       | 29 ms | 90 ms | 32 ms    | 29 ms                     |

### Materials

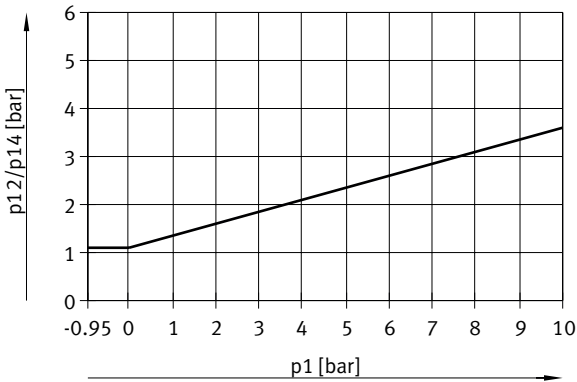
|                   |                    |
|-------------------|--------------------|
| Material housing  | Die-cast aluminium |
| Material seals    | NBR                |
| Note on materials | RoHS-compliant     |

### Solenoid valves, 3/2-way valves, minimum pilot pressure $p_{12}/p_{14}$ as a function of operating pressure $p_1$ (external pilot air supply), MFH-3-1/8-S

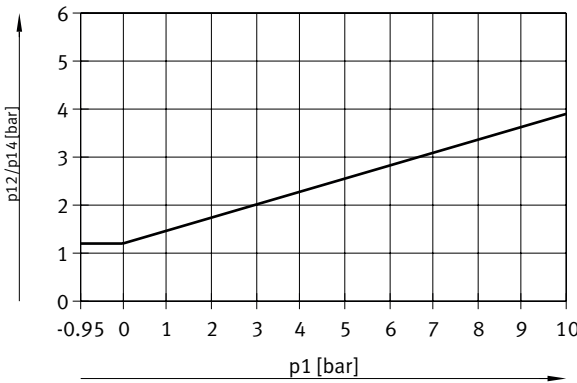


Datasheet

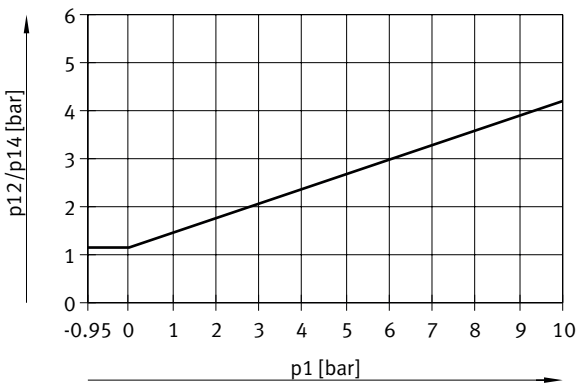
Solenoid valves, 3/2-way valves, minimum pilot pressure p12/p14 as a function of operating pressure p1 (external pilot air supply), MFH-3-1/4-S



Solenoid valves, 3/2-way valves, minimum pilot pressure p12/p14 as a function of operating pressure p1 (external pilot air supply), MFH-3-1/2-S



Solenoid valves, 3/2-way valves, minimum pilot pressure p12/p14 as a function of operating pressure p1 (external pilot air supply), MFH-3-3/4-S



## Datasheet

### Solenoid valves, 5/2-way valves, general technical data

| Pneumatic connection, port 1                          | G1/8                                         | G1/4        | G1/2        |
|-------------------------------------------------------|----------------------------------------------|-------------|-------------|
| Valve function                                        | 5/2-way, monostable                          |             |             |
| Design                                                | Poppet seat                                  |             |             |
| lap                                                   | Underlap                                     |             |             |
| Sealing principle                                     | Soft                                         |             |             |
| Type of actuation                                     | Electric                                     |             |             |
| Type of reset                                         | Mechanical spring                            |             |             |
| Type of piloting                                      | Pilot actuated                               |             |             |
| Pilot air supply                                      | External                                     |             |             |
| Flow direction                                        | Non-reversible                               |             |             |
| Exhaust-air function                                  | With flow control option                     |             |             |
| Manual override                                       | Detenting                                    |             |             |
| Type of mounting                                      | Either:, On manifold rail, With through-hole |             |             |
| Mounting position                                     | optional                                     |             |             |
| Electrical connection                                 | Via F coil, to be ordered separately         |             |             |
| Breather connection                                   | M5                                           |             |             |
| b value                                               | –                                            | 0.19        | 0.32        |
| Nominal size                                          | 5 mm                                         | 7 mm        | 14 mm       |
| Standard nominal flow rate (standardised to DIN 1343) | 500 l/min                                    | 1,000 l/min | 3,700 l/min |
| Product weight                                        | 270 g                                        | 290 g       | 1,135 g     |
| C value                                               | –                                            | 4.49        | –           |

### Solenoid valves, 5/2-way valves, safety characteristics

|                                        |          |
|----------------------------------------|----------|
| Max. positive test pulse with 0 signal | 2,200 µs |
| Max. negative test pulse with 1 signal | 3,700 µs |

### Solenoid valves, 5/2-way valves, operating and environmental conditions

| Pneumatic connection, port 1                 | G1/8                                                                                       | G1/4             | G1/2            |
|----------------------------------------------|--------------------------------------------------------------------------------------------|------------------|-----------------|
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |                  |                 |
| Note on operating and pilot medium           | Lubricated operation possible (in which case lubricated operation will always be required) |                  |                 |
| Operating pressure                           | 0 ... 1 MPa                                                                                | 0 ... 0.8 MPa    | 0 ... 1 MPa     |
| Operating pressure                           | 0 ... 10 bar                                                                               | 0 ... 8 bar      | 0 ... 10 bar    |
| Pilot pressure                               | 1.2 ... 8 bar                                                                              | 1.5 ... 8 bar    | 1 ... 8 bar     |
| Pilot pressure                               | 0.12 ... 0.8 MPa                                                                           | 0.15 ... 0.8 MPa | 0.1 ... 0.8 MPa |
| Ambient temperature                          | -5 ... 40°C                                                                                |                  |                 |
| Media temperature                            | -10 ... 60°C                                                                               |                  |                 |
| Storage temperature                          | -20 ... 60°C                                                                               |                  |                 |
| Approval                                     | c UL us - Recognized (OL)                                                                  |                  |                 |
| Corrosion resistance class CRC <sup>1)</sup> | 1 - Low corrosion stress                                                                   |                  |                 |
| LABS (PWIS) conformity                       | VDMA24364-B1/B2-L                                                                          |                  |                 |

<sup>1)</sup> More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Solenoid valves, 5/2-way valves, electrical data

|                          |                                             |
|--------------------------|---------------------------------------------|
| Electrical connection    | Via F coil, to be ordered separately        |
| Characteristic coil data | See solenoid coil, to be ordered separately |
| Degree of protection     | IP65                                        |

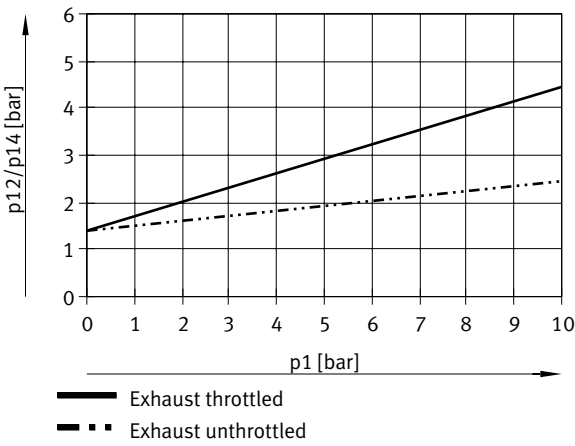
### Solenoid valves, 5/2-way valves, valve switching times

| Pneumatic connection, port 1 | G1/8  | G1/4  | G1/2   |
|------------------------------|-------|-------|--------|
| Switching time on            | 8 ms  | 9 ms  | 21 ms  |
| Switching time off           | 36 ms | 29 ms | 150 ms |

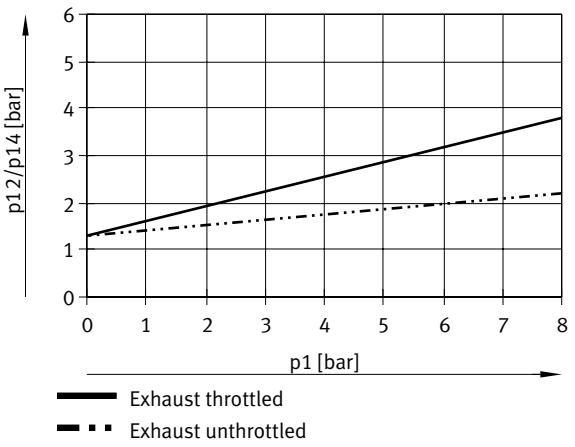
Datasheet

| Solenoid valves, 5/2-way valves, materials |                    |
|--------------------------------------------|--------------------|
| Material housing                           | Die-cast aluminium |
| Material seals                             | NBR, TPE-U(PU)     |
| Note on materials                          | RoHS-compliant     |

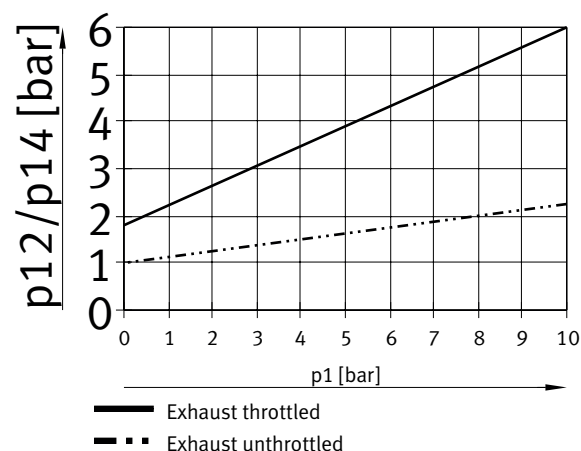
Solenoid valves, 5/2-way valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$  (external pilot air supply), MFH-5-1/8-S



Solenoid valves, 5/2-way valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$  (external pilot air supply), MFH-5-1/4-S



## Datasheet

Solenoid valves, 5/2-way valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$  (external pilot air supply), MFH-5-1/2-S

## Solenoid valves, 5/2-way valves, double solenoid valves, general technical data

|                                                       |                                                          |      |                                              |                                                  |                     |
|-------------------------------------------------------|----------------------------------------------------------|------|----------------------------------------------|--------------------------------------------------|---------------------|
| Pneumatic connection, port 1                          |                                                          | G1/8 |                                              | G1/4                                             | G1/2                |
| Type of actuation                                     | Electric                                                 |      | Pneumatic                                    | Electric                                         |                     |
| Valve function                                        | 5/2 double solenoid, 5/2-way, bistable, dominant         |      | 5/2 double solenoid                          | 5/2 double solenoid, 5/2-way, bistable, dominant | 5/2 double solenoid |
| Design                                                | Poppet seat                                              |      |                                              |                                                  |                     |
| lap                                                   | Underlap                                                 |      |                                              |                                                  |                     |
| Sealing principle                                     | Soft                                                     |      |                                              |                                                  |                     |
| Type of piloting                                      | Pilot actuated                                           |      |                                              |                                                  |                     |
| Pilot air supply                                      | External                                                 |      |                                              |                                                  |                     |
| Flow direction                                        | Non-reversible                                           |      |                                              |                                                  |                     |
| Exhaust-air function                                  | With flow control option                                 |      |                                              |                                                  |                     |
| Manual override                                       | Detenting                                                |      |                                              |                                                  |                     |
| Type of mounting                                      | Either:, On manifold rail, On PR rail, With through-hole |      | Either:, On manifold rail, With through-hole |                                                  |                     |
| Mounting position                                     | optional                                                 |      |                                              |                                                  |                     |
| Electrical connection                                 | Via F coil, to be ordered separately                     |      |                                              |                                                  |                     |
| Breather connection                                   | M5                                                       | –    | M5                                           |                                                  |                     |
| Pilot air port 12                                     | M5                                                       |      |                                              |                                                  | G1/8                |
| b value                                               | –                                                        |      |                                              |                                                  | 0.3                 |
| Nominal size                                          | 5 mm                                                     |      | 7 mm                                         | 14 mm                                            |                     |
| Standard nominal flow rate (standardised to DIN 1343) | 600 l/min, 601 l/min                                     |      | 600 l/min                                    | 1,100 l/min                                      | 4,500 l/min         |
| Product weight                                        | 260 g                                                    |      | 344 g, 530 g                                 |                                                  | 1,210 g             |

## Solenoid valves, 5/2-way valves, double solenoid valves, safety characteristics

|                                        |          |       |       |       |      |
|----------------------------------------|----------|-------|-------|-------|------|
| Pneumatic connection, port 1           | G1/8     |       | G1/4  |       | G1/2 |
| Max. switching frequency               | 16 Hz    | 25 Hz | 16 Hz | 25 Hz |      |
| Max. positive test pulse with 0 signal | 2,200 µs |       |       |       |      |
| Max. negative test pulse with 1 signal | 3,700 µs |       |       |       |      |

## Datasheet

## Solenoid valves, 5/2-way valves, double solenoid valves, operating and environmental conditions

|                                              |                                                                                            |      |                                                                                      |
|----------------------------------------------|--------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------|
| Pneumatic connection, port 1                 | G1/8                                                                                       | G1/4 | G1/2                                                                                 |
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |      |                                                                                      |
| Pilot medium                                 | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |      | Compressed air to ISO 8573-1:2010 [7:4:4], Compressed air to ISO 8573-1:2010 [7:-:-] |
| Note on operating and pilot medium           | Lubricated operation possible (in which case lubricated operation will always be required) |      |                                                                                      |
| Operating pressure                           | 0 ... 1 MPa                                                                                |      | 0 ... 0.8 MPa                                                                        |
| Operating pressure                           | 0 ... 10 bar                                                                               |      | 0 ... 8 bar                                                                          |
| Pilot pressure                               | 0.12 ... 0.8 MPa                                                                           |      | 0.05 ... 0.8 MPa                                                                     |
| Pilot pressure                               | 1.2 ... 8 bar                                                                              |      | 0.5 ... 8 bar                                                                        |
| Ambient temperature                          | -5 ... 40°C                                                                                |      |                                                                                      |
| Media temperature                            | -10 ... 60°C                                                                               |      |                                                                                      |
| Storage temperature                          | -20 ... 60°C                                                                               |      |                                                                                      |
| Approval                                     | c UL us - Recognized (OL)                                                                  |      |                                                                                      |
| Corrosion resistance class CRC <sup>1)</sup> | 1 - Low corrosion stress                                                                   |      |                                                                                      |
| LABS (PWIS) conformity                       | VDMA24364-B1/B2-L                                                                          |      |                                                                                      |

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

## Solenoid valves, 5/2-way valves, double solenoid valves, electrical data

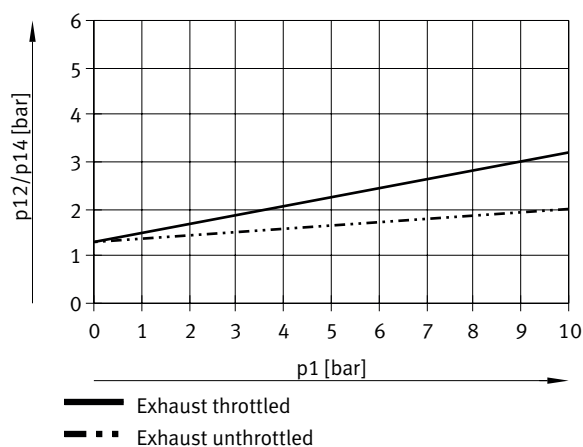
|                          |                                             |
|--------------------------|---------------------------------------------|
| Electrical connection    | Via F coil, to be ordered separately        |
| Characteristic coil data | See solenoid coil, to be ordered separately |
| Degree of protection     | IP65                                        |

## Solenoid valves, 5/2-way valves, double solenoid valves, valve switching times

|                              |  |                     |  |                             |  |                     |      |                             |      |                     |  |
|------------------------------|--|---------------------|--|-----------------------------|--|---------------------|------|-----------------------------|------|---------------------|--|
| Pneumatic connection, port 1 |  |                     |  |                             |  | G1/8                | G1/4 |                             | G1/2 |                     |  |
| Valve function               |  | 5/2 double solenoid |  | 5/2-way, bistable, dominant |  | 5/2 double solenoid |      | 5/2-way, bistable, dominant |      | 5/2 double solenoid |  |
| Switching time reversal      |  | 10 ms               |  | 16 ms                       |  | 11 ms               |      | 16 ms                       |      | 20 ms               |  |

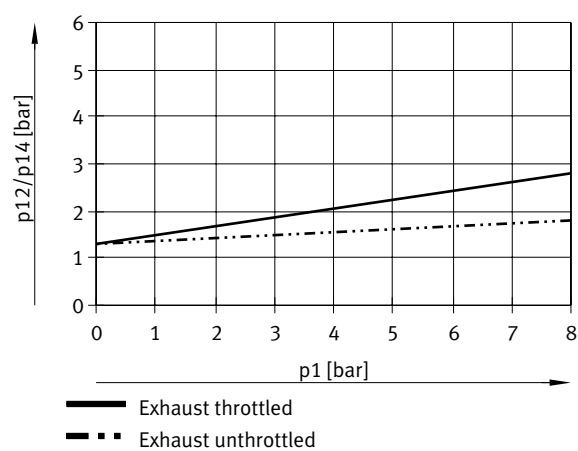
## Solenoid valves, 5/2-way valves, double solenoid valves, materials

|                   |                    |
|-------------------|--------------------|
| Material housing  | Die-cast aluminium |
| Material seals    | NBR, TPE-U(PU)     |
| Note on materials | RoHS-compliant     |

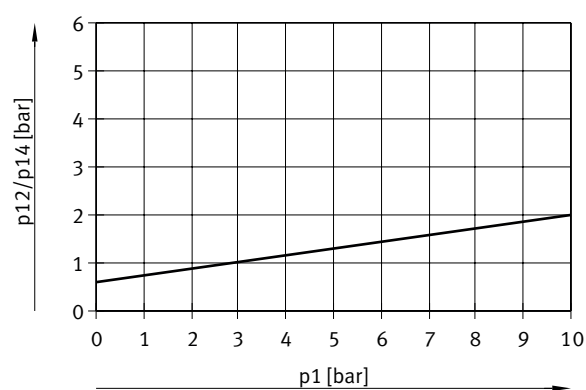
Solenoid valves, 5/2-way valves, double solenoid valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$  (external pilot air supply), JMFH-5-1/8-S

## Datasheet

Solenoid valves, 5/2-way valves, double solenoid valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$  (external pilot air supply), JMFH-5-1/4-S



Solenoid valves, 5/2-way valves, double solenoid valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$  (external pilot air supply), JMFH-5-1/2-S



## Datasheet

| Pneumatic valves, 3/2-way valves, general technical data |                                                          |                                              |             |                                      |
|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------|-------------|--------------------------------------|
| Pneumatic connection, port 1                             | G1/8                                                     | G1/4                                         | G1/2        | G3/4                                 |
| Valve function                                           | 3/2-way, monostable, open/closed                         |                                              |             |                                      |
| Design                                                   | Poppet seat                                              |                                              |             |                                      |
| lap                                                      | Underlap                                                 |                                              |             |                                      |
| Sealing principle                                        | Soft                                                     |                                              |             |                                      |
| Type of actuation                                        | Pneumatic                                                |                                              |             |                                      |
| Type of reset                                            | Mechanical spring                                        |                                              |             |                                      |
| Type of piloting                                         | Direct                                                   |                                              |             |                                      |
| Pilot air supply                                         | External                                                 |                                              |             |                                      |
| Flow direction                                           | Reversible                                               |                                              |             |                                      |
| Exhaust-air function                                     | With flow control option                                 |                                              |             |                                      |
| Manual override                                          | –                                                        |                                              | None        | –                                    |
| Type of mounting                                         | Either:, On manifold rail, On PR rail, With through-hole | Either:, On manifold rail, With through-hole |             |                                      |
| Mounting position                                        | optional                                                 |                                              |             |                                      |
| Electrical connection                                    | –                                                        |                                              |             | Via F coil, to be ordered separately |
| Breather connection                                      | M5                                                       | –                                            | M5          |                                      |
| Pilot air port 12                                        | G1/8                                                     | G1/4                                         |             |                                      |
| b value                                                  | –                                                        |                                              | 0.3         | –                                    |
| Nominal size                                             | 5 mm                                                     | 7 mm                                         | 14 mm       | 19 mm                                |
| Standard nominal flow rate (standardised to DIN 1343)    | 500 l/min                                                | 800 l/min                                    | 3,700 l/min | 7,500 l/min                          |
| Product weight                                           | 150 g                                                    | 230 g                                        | 860 g       | 1,200 g                              |

| Pneumatic valves, 3/2-way valves, safety characteristics |          |      |      |      |
|----------------------------------------------------------|----------|------|------|------|
| Pneumatic connection, port 1                             | G1/8     | G1/4 | G1/2 | G3/4 |
| Max. switching frequency                                 | 12 Hz    | –    |      |      |
| Max. positive test pulse with 0 signal                   | 2,200 µs | –    |      |      |
| Max. negative test pulse with 1 signal                   | 3,700 µs | –    |      |      |

| Pneumatic valves, 3/2-way valves, ATEX                     |                                             |
|------------------------------------------------------------|---------------------------------------------|
| ATEX category gas                                          | II 2G                                       |
| Explosion ignition protection type for gas                 | Ex h IIC T4 Gb                              |
| ATEX category dust                                         | II 2D                                       |
| Explosion ignition protection type for dust                | Ex h IIIC T130°C Db                         |
| Explosion ambient temperature                              | -10°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                       |
| Explosion protection certification outside the EU          | EPL Db (GB)<br>EPL Gb (GB)                  |
| Degree of protection                                       | IP65                                        |

1) More information [www.festo.com/catalogue/...d/Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).2) More information [www.festo.com/catalogue/...d/Support/Downloads](http://www.festo.com/catalogue/...d/Support/Downloads).

## Datasheet

## Pneumatic valves, 3/2-way valves, operating and environmental conditions

| Pneumatic connection, port 1                 | G1/8                                                                                       | G1/4 | G1/2 | G3/4 |
|----------------------------------------------|--------------------------------------------------------------------------------------------|------|------|------|
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |      |      |      |
| Pilot medium                                 | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |      |      |      |
| Note on operating and pilot medium           | Lubricated operation possible (in which case lubricated operation will always be required) |      |      |      |
| Operating pressure                           | -0.095 ... 1 MPa                                                                           |      |      |      |
| Operating pressure                           | -0.95 ... 10 bar                                                                           |      |      |      |
| Pilot pressure                               | 0.1 ... 1 MPa                                                                              |      |      |      |
| Pilot pressure                               | 1 ... 10 bar                                                                               |      |      |      |
| Ambient temperature                          | -10 ... 60°C                                                                               |      |      |      |
| Media temperature                            | -10 ... 60°C                                                                               |      |      |      |
| Storage temperature                          | -20 ... 60°C                                                                               |      |      |      |
| Corrosion resistance class CRC <sup>1)</sup> | 1 - Low corrosion stress                                                                   |      |      |      |
| LABS (PWIS) conformity                       | VDMA24364-B1/B2-L                                                                          |      |      |      |

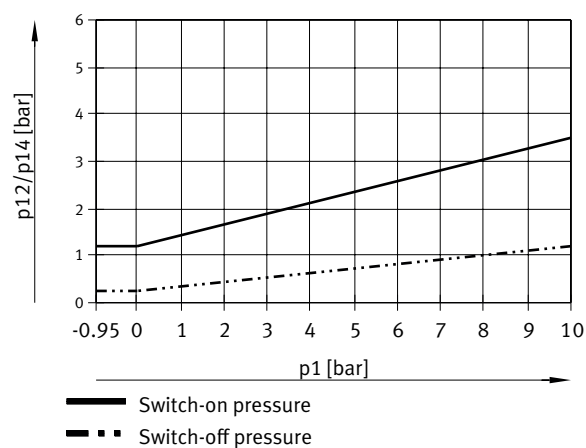
1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Pneumatic valves, 3/2-way valves, valve switching times

| Pneumatic connection, port 1 | G1/8  | G1/4  | G1/2  | G3/4  |
|------------------------------|-------|-------|-------|-------|
| Switching time on            | 4 ms  | 7 ms  | 17 ms | 12 ms |
| Switching time off           | 10 ms | 26 ms | 30 ms | 35 ms |

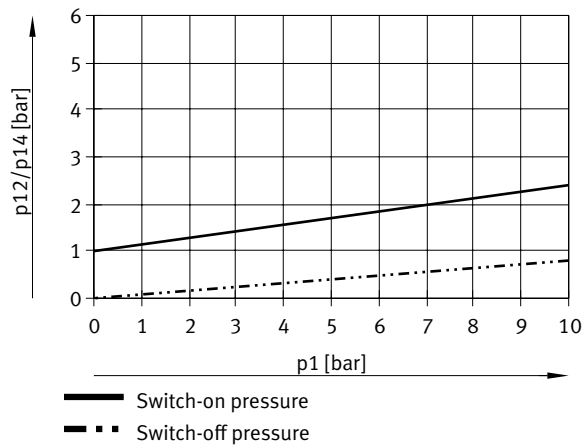
## Pneumatic valves, 3/2-way valves, materials

|                   |                    |
|-------------------|--------------------|
| Material housing  | Die-cast aluminium |
| Material seals    | NBR                |
| Note on materials | RoHS-compliant     |

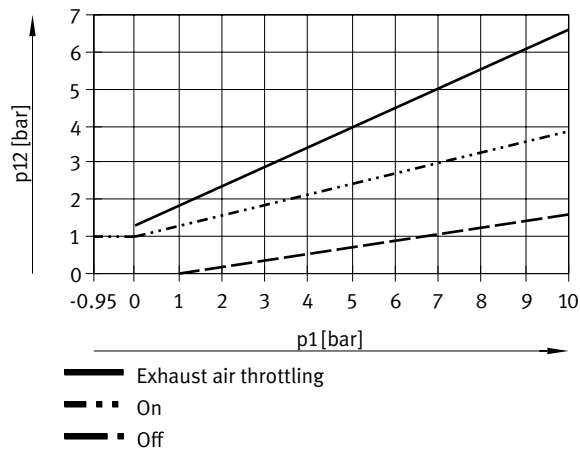
Pneumatic valves, 3/2-way valves, minimum pilot pressure  $p_{12}/p_{14}/p_{110}$  as a function of operating pressure  $p_1/p_{11}$ , VL/0-3-1/4 - normally closed

## Datasheet

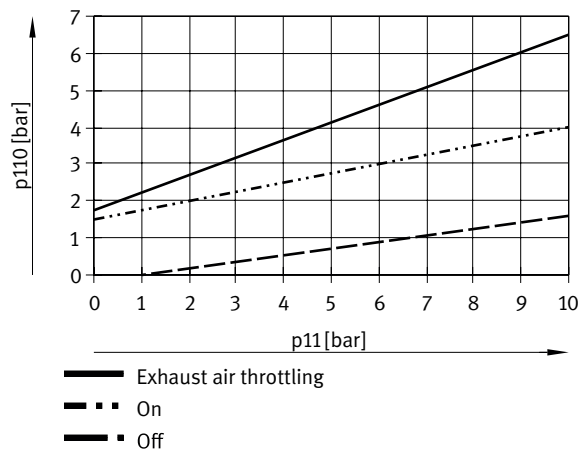
Pneumatic valves, 3/2-way valves, minimum pilot pressure  $p_{12}/p_{14}/p_{110}$  as a function of operating pressure  $p_1/p_{11}$ , VL/0-3-1/4 - normally open



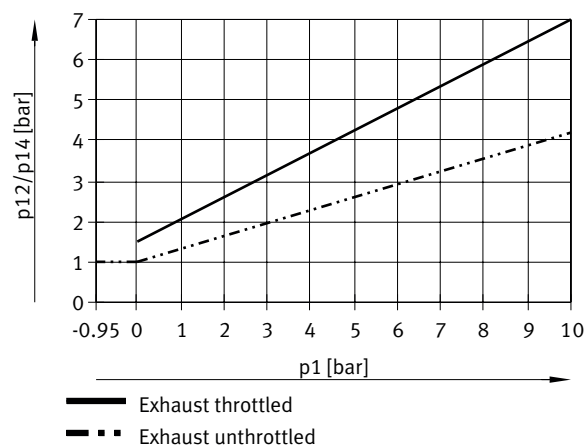
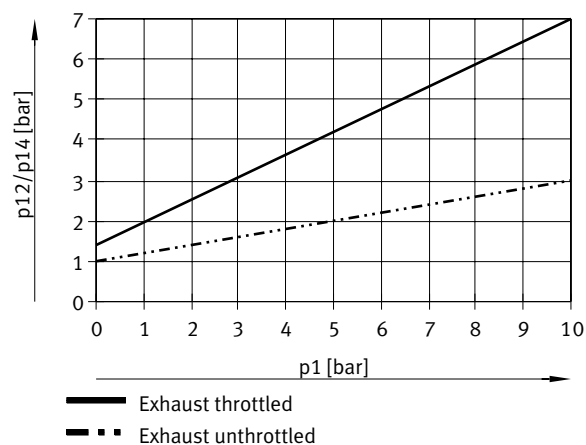
Pneumatic valves, 3/2-way valves, minimum pilot pressure  $p_{12}/p_{14}/p_{110}$  as a function of operating pressure  $p_1/p_{11}$ , VL/0-3-1/2 - normally closed



Pneumatic valves, 3/2-way valves, minimum pilot pressure  $p_{12}/p_{14}/p_{110}$  as a function of operating pressure  $p_1/p_{11}$ , VL/0-3-1/2 - normally open



## Datasheet

Pneumatic valves, 3/2-way valves, minimum pilot pressure  $p_{12}/p_{14}/p_{110}$  as a function of operating pressure  $p_1/p_{11}$ , VL/0-3-3/4 - normally closedPneumatic valves, 3/2-way valves, minimum pilot pressure  $p_{12}/p_{14}/p_{110}$  as a function of operating pressure  $p_1/p_{11}$ , VL/0-3-3/4 - normally open

## Pneumatic valves, 5/2-way valves, general technical data

| Pneumatic connection, port 1                          | G1/8                                                     | G1/4      | G1/2                                         |
|-------------------------------------------------------|----------------------------------------------------------|-----------|----------------------------------------------|
| Valve function                                        | 5/2-way, monostable                                      |           |                                              |
| Design                                                | Poppet seat                                              |           |                                              |
| lap                                                   | Underlap                                                 |           |                                              |
| Sealing principle                                     | Soft                                                     |           |                                              |
| Type of actuation                                     | Pneumatic                                                |           |                                              |
| Type of reset                                         | Mechanical spring                                        |           |                                              |
| Type of piloting                                      | Direct                                                   |           |                                              |
| Pilot air supply                                      | External                                                 |           |                                              |
| Flow direction                                        | Non-reversible                                           |           |                                              |
| Exhaust-air function                                  | With flow control option                                 |           |                                              |
| Manual override                                       | —                                                        |           | None                                         |
| Type of mounting                                      | Either:, On manifold rail, On PR rail, With through-hole |           | Either:, On manifold rail, With through-hole |
| Mounting position                                     | optional                                                 |           |                                              |
| Breather connection                                   | M5                                                       |           | M3                                           |
| Pilot air port 12                                     | G1/8                                                     | —         |                                              |
| b value                                               | —                                                        |           | 0.32                                         |
| C value                                               | —                                                        |           | 17.65 l/sbar                                 |
| Nominal size                                          | 5 mm                                                     | 7 mm      | 14 mm                                        |
| Standard nominal flow rate (standardised to DIN 1343) | 500 l/min                                                | 800 l/min | 3,700 l/min                                  |
| Product weight                                        | 220 g                                                    |           | 1,070 g                                      |

## Datasheet

## Pneumatic valves, 5/2-way valves, safety characteristics

| Pneumatic connection, port 1           | G1/8  | G1/4 | G1/2 |
|----------------------------------------|-------|------|------|
| Max. switching frequency               | 12    | –    | –    |
| Max. positive test pulse with 0 signal | 2,200 | –    | –    |
| Max. negative test pulse with 1 signal | 3,700 | –    | –    |

## Pneumatic valves, 5/2-way valves, operating and environmental conditions

| Pneumatic connection, port 1                 | G1/8                                                                                       | G1/4          | G1/2         |
|----------------------------------------------|--------------------------------------------------------------------------------------------|---------------|--------------|
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |               |              |
| Pilot medium                                 | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |               |              |
| Note on operating and pilot medium           | Lubricated operation possible (in which case lubricated operation will always be required) |               |              |
| Operating pressure                           | 0 ... 1 MPa                                                                                | 0 ... 0.8 MPa | 0 ... 1 MPa  |
| Operating pressure                           | 0 ... 10 bar                                                                               | 0 ... 8 bar   | 0 ... 10 bar |
| Pilot pressure                               | 0.12 ... 1 MPa                                                                             |               |              |
| Pilot pressure                               | 1.2 ... 10 bar                                                                             |               |              |
| Ambient temperature                          | -10 ... 60°C                                                                               |               |              |
| Media temperature                            | -10 ... 60°C                                                                               |               |              |
| Storage temperature                          | -20 ... 60°C                                                                               |               |              |
| Corrosion resistance class CRC <sup>1)</sup> | 1 - Low corrosion stress                                                                   |               |              |
| LABS (PWIS) conformity                       | VDMA24364-B1/B2-L                                                                          |               |              |

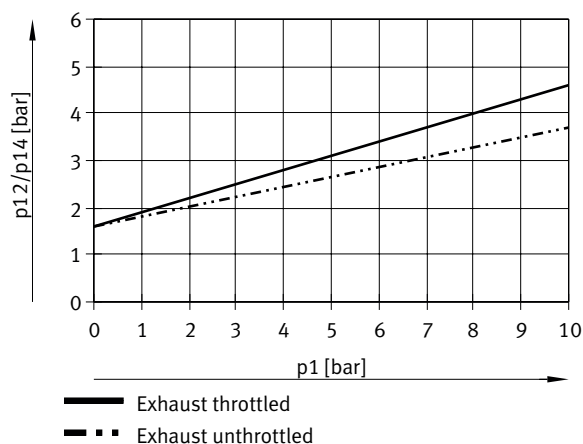
1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Pneumatic valves, 5/2-way valves, valve switching times

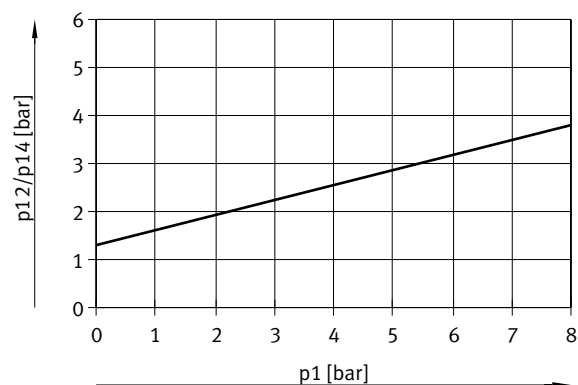
| Pneumatic connection, port 1 | G1/8  | G1/4  | G1/2  |
|------------------------------|-------|-------|-------|
| Switching time on            | 5 ms  | 7 ms  | 3 ms  |
| Switching time off           | 16 ms | 11 ms | 27 ms |

## Pneumatic valves, 5/2-way valves, materials

|                   |                    |
|-------------------|--------------------|
| Material housing  | Die-cast aluminium |
| Material seals    | NBR, TPE-U(PU)     |
| Note on materials | RoHS-compliant     |

Pneumatic valves, 5/2-way valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$ , VL-5-1/8

## Datasheet

Pneumatic valves, 5/2-way valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$ , VL-5-1/4Pneumatic valves, 5/2-way valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$ , VL-5-1/2

## Pneumatic valves, 5/2-way valves, impulse valves, general technical data

| Pneumatic connection, port 1                             | G1/8                                             | G1/4        | G1/2                |
|----------------------------------------------------------|--------------------------------------------------|-------------|---------------------|
| Valve function                                           | 5/2 double solenoid, 5/2-way, bistable, dominant |             | 5/2 double solenoid |
| Design                                                   | Poppet seat                                      |             |                     |
| lap                                                      | Underlap                                         |             |                     |
| Sealing principle                                        | Soft                                             |             |                     |
| Type of actuation                                        | Pneumatic                                        |             |                     |
| Type of piloting                                         | Direct                                           |             |                     |
| Pilot air supply                                         | External                                         |             |                     |
| Flow direction                                           | Non-reversible                                   |             |                     |
| Exhaust-air function                                     | With flow control option                         |             |                     |
| Manual override                                          | —                                                |             | Detenting           |
| Type of mounting                                         | Either:, On manifold rail, With through-hole     |             |                     |
| Mounting position                                        | optional                                         |             |                     |
| Breather connection                                      | M5                                               |             |                     |
| b value                                                  | —                                                |             | 0.3                 |
| Nominal size                                             | 5 mm                                             | 7 mm        | 14 mm               |
| Standard nominal flow rate<br>(standardised to DIN 1343) | 600 l/min                                        | 1,100 l/min | 4,500 l/min         |
| Product weight                                           | 330 g                                            |             | 1,130 g             |

## Datasheet

## Pneumatic valves, 5/2-way valves, double pilot valves, safety characteristics

| Pneumatic connection, port 1           | G1/8  | G1/4 | G1/2 |
|----------------------------------------|-------|------|------|
| Max. switching frequency               | 12 Hz |      |      |
| Max. positive test pulse with 0 signal | 2,200 | –    |      |
| Max. negative test pulse with 1 signal | 3,700 | –    |      |

## Pneumatic valves, 5/2-way valves, double pilot valves, operating and environmental conditions

| Pneumatic connection, port 1                 | G1/8                                                                                       | G1/4                                      | G1/2         |
|----------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------|--------------|
| Operating medium                             | Compressed air to ISO 8573-1:2010 [7:4:4]                                                  |                                           |              |
| Pilot medium                                 | –                                                                                          | Compressed air to ISO 8573-1:2010 [7:4:4] |              |
| Note on operating and pilot medium           | Lubricated operation possible (in which case lubricated operation will always be required) |                                           |              |
| Operating pressure                           | 0 ... 1 MPa                                                                                | 0 ... 0.8 MPa                             | 0 ... 1 MPa  |
| Operating pressure                           | 0 ... 10 bar                                                                               | 0 ... 8 bar                               | 0 ... 10 bar |
| Pilot pressure                               | 0.12 ... 1 MPa                                                                             |                                           |              |
| Pilot pressure                               | 1.2 ... 10 bar                                                                             |                                           |              |
| Ambient temperature                          | -10 ... 60°C                                                                               |                                           |              |
| Media temperature                            | -10 ... 60°C                                                                               |                                           |              |
| Storage temperature                          | -20 ... 60°C                                                                               |                                           |              |
| Corrosion resistance class CRC <sup>1)</sup> | 1 - Low corrosion stress                                                                   |                                           |              |
| LABS (PWIS) conformity                       | VDMA24364-B1/B2-L                                                                          |                                           |              |

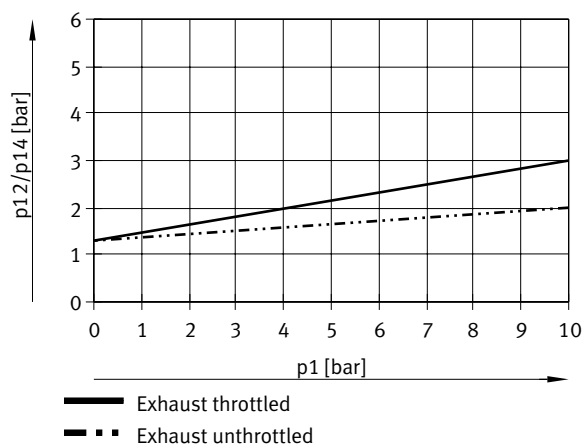
1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

## Pneumatic valves, 5/2-way valves, double pilot valves, valve switching times

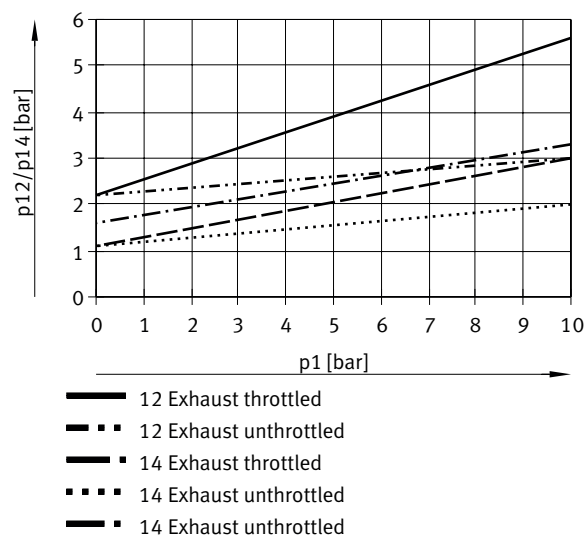
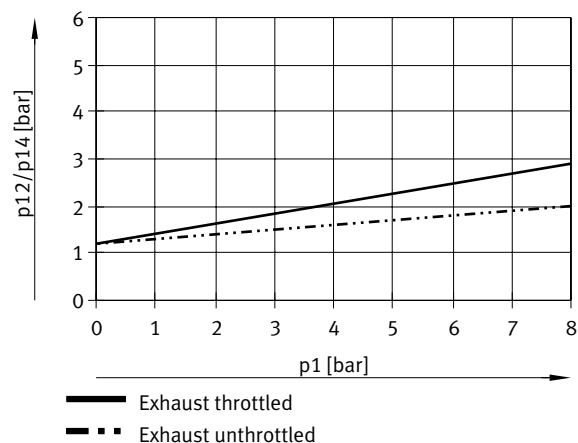
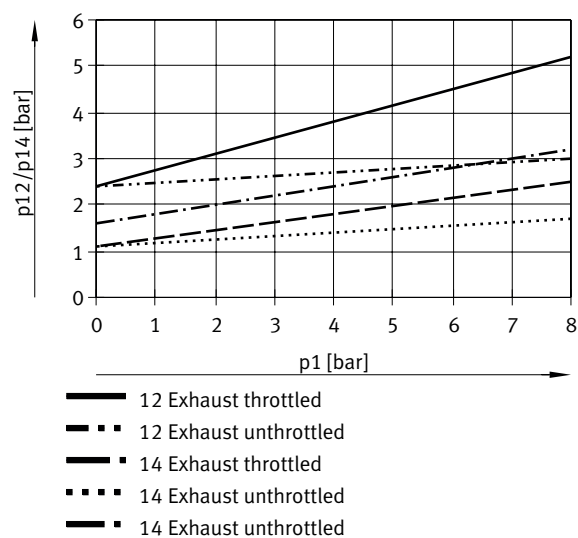
| Pneumatic connection, port 1 | G1/8                | G1/4                        | G1/2                |
|------------------------------|---------------------|-----------------------------|---------------------|
| Valve function               | 5/2 double solenoid | 5/2-way, bistable, dominant | 5/2 double solenoid |
| Switching time reversal      | 7 ms                | 12 ms                       | 3 ms                |

## Pneumatic valves, 5/2-way valves, double pilot valves, materials

|                   |                    |
|-------------------|--------------------|
| Material housing  | Die-cast aluminium |
| Material seals    | NBR, TPE-U(PU)     |
| Note on materials | RoHS-compliant     |

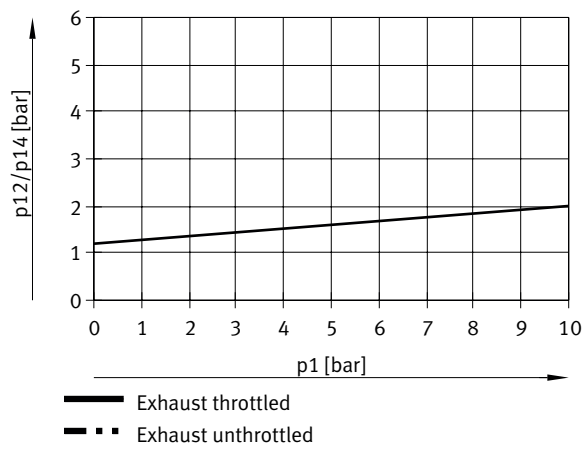
Pneumatic valves, 5/2-way valves, double pilot valves, minimum pilot pressure p<sub>12</sub>/p<sub>14</sub> as a function of operating pressure p<sub>1</sub>, JH-5-1/8

## Datasheet

Pneumatic valves, 5/2-way valves, double pilot valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$ , JDH-5-1/8Pneumatic valves, 5/2-way valves, double pilot valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$ , JH-5-1/4Pneumatic valves, 5/2-way valves, double pilot valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$ , JDH-5-1/4

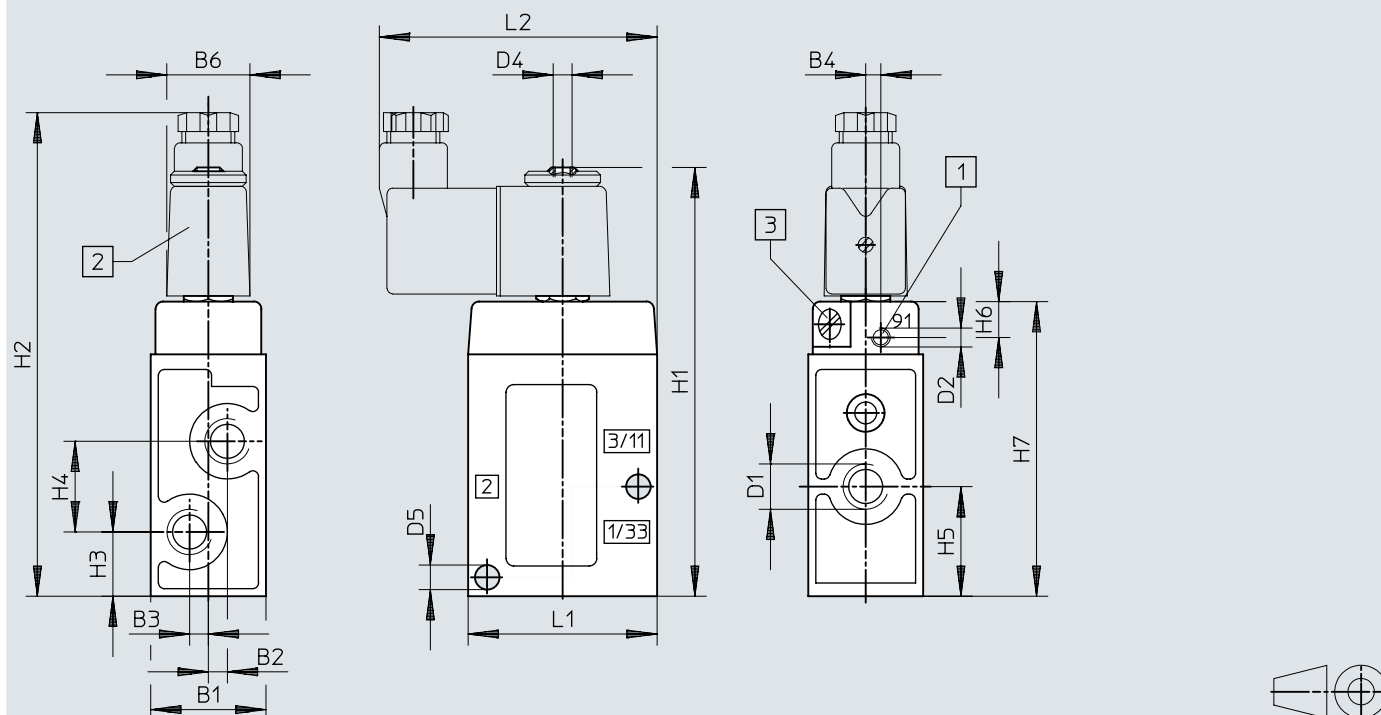
## Datasheet

Pneumatic valves, 5/2-way valves, double pilot valves, minimum pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$ , JH-5-1/2



## Dimensions

## Dimensions – Solenoid valves, 3/2-way valves, MFH, MOFH

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

[1] Additional connection for external pilot air for MFH-3-... /MOFH-3-...

[2] Solenoid coil can be rotated 360°

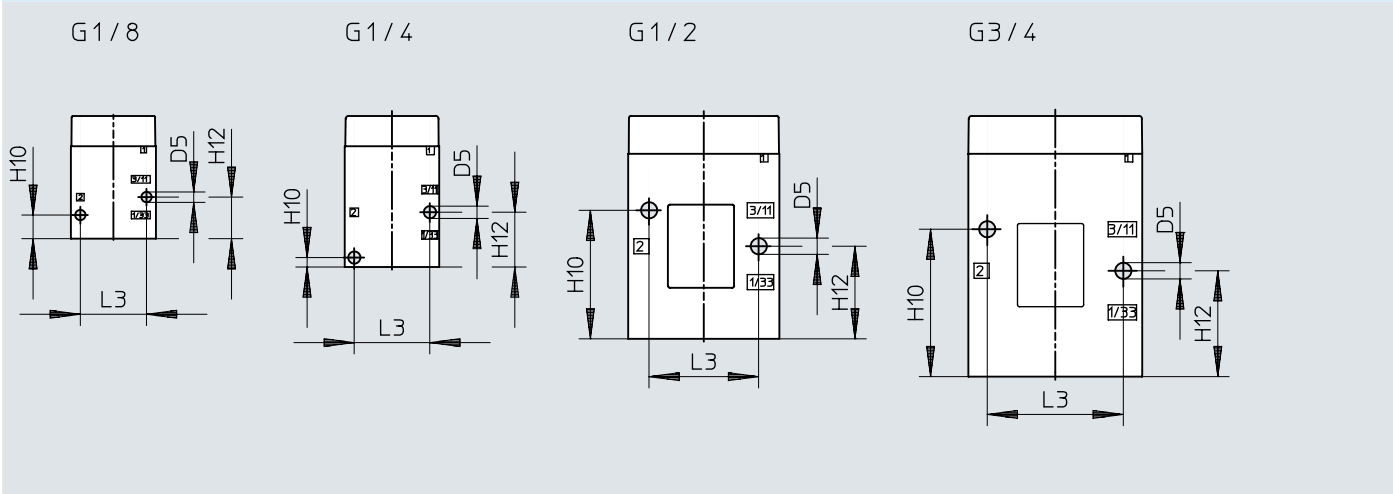
[3] Manual override can be turned 180°

|             | B1         | B2  | B3  | B4  | B6   | D1   | D2   | D4   | D5<br>Ø |     |
|-------------|------------|-----|-----|-----|------|------|------|------|---------|-----|
| MFH-3-1/8   | 26 ±0,2    | 3,5 | 3,5 | –   | 22   | G1/8 | –    | M5   | 5,5     |     |
| MOFH-3-1/8  |            |     |     | 2,7 |      |      | M5   |      |         |     |
| MFH-3-1/8-S |            |     |     |     |      |      |      |      |         |     |
| MFH-3-1/4   | 30,4 ±0,15 | 5   | 5   | –   |      | G1/4 | –    | M5   | 6,5     |     |
| MOFH-3-1/4  |            |     |     | 4   |      |      | M5   |      |         |     |
| MFH-3-1/4-S | 30,4       |     |     |     |      |      |      |      |         |     |
| MFH-3-1/2   | 52 ±0,15   | 8   | 8   | –   |      | 22   | G1/2 | –    | M5      | 8,6 |
| MOFH-3-1/2  |            |     |     |     |      |      |      | G1/8 |         |     |
| MFH-3-1/2-S | 52         |     |     |     |      |      |      |      |         |     |
| MFH-3-3/4   | 68 ±0,15   | 8   | 8   | –   |      | 22   | G3/4 | –    | M5      | 8,6 |
| MOFH-3-3/4  |            |     |     |     | G1/8 |      |      |      |         |     |
| MFH-3-3/4-S | 68         |     |     |     |      |      |      |      |         |     |

|             | H1  | H2  | H3       | H4       | H5       | H6   | H7  | L1       | L2   |
|-------------|-----|-----|----------|----------|----------|------|-----|----------|------|
| MFH-3-1/8   | 97  | 111 | 12,5     | 19 ±0,15 | 22       | –    | 63  | 45 ±0,15 | 71   |
| MOFH-3-1/8  |     |     |          |          |          | 9,5  |     |          |      |
| MFH-3-1/8-S |     |     |          |          |          | –    |     |          |      |
| MFH-3-1/4   | 112 | 126 | 17       | 24 ±0,15 | 29       | –    | 78  | 50 ±0,15 | 73,5 |
| MOFH-3-1/4  |     |     |          | 24       |          | 9,5  |     | 50       |      |
| MFH-3-1/4-S |     |     |          | –        |          | –    |     | –        |      |
| MFH-3-1/2   | 151 | 165 | 30 ±0,15 | 38 ±0,15 | 49 ±0,15 | –    | 117 | 80 ±0,2  | 88,5 |
| MOFH-3-1/2  |     |     | 30       | 38       | 49       | 10,5 |     | 80       |      |
| MFH-3-1/2-S |     |     | –        | –        | –        | –    |     | –        |      |
| MFH-3-3/4   | 171 | 187 | 34       | 44 ±0,15 | 56       | –    | 137 | 92 ±0,2  | 94,5 |
| MOFH-3-3/4  |     |     |          | 44       |          | 11   |     | 92       |      |
| MFH-3-3/4-S |     |     |          | –        |          | –    |     | –        |      |

Dimensions

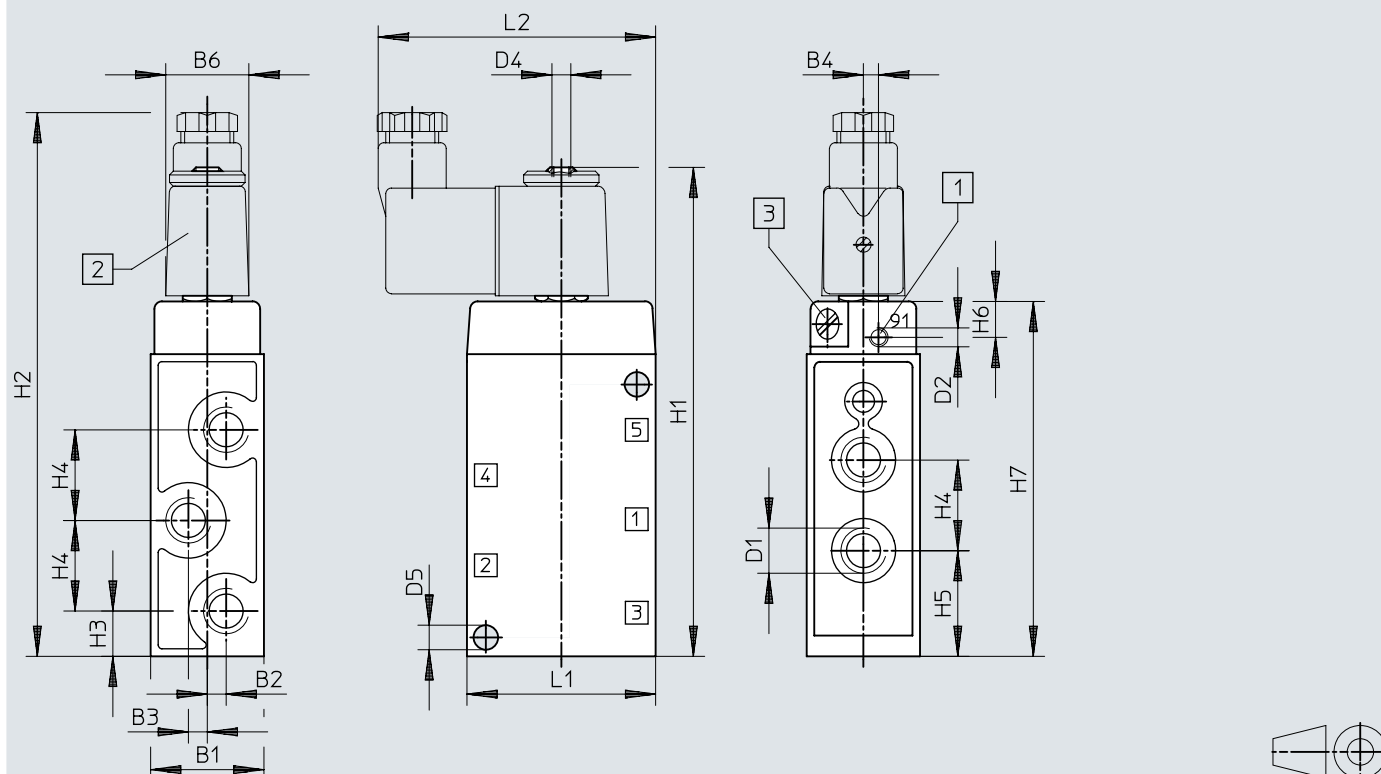
Dimensions – Solenoid valves, 3/2-way valves, mounting pattern [Download CAD data](http://www.festo.com) [www.festo.com](http://www.festo.com)



|             | D5<br>ø | H10  | H12 | L3       |
|-------------|---------|------|-----|----------|
| MFH-3-1/8   | 5,5     | 12,5 | 22  | 35 ±0,15 |
| MOFH-3-1/8  |         |      |     |          |
| MFH-3-1/8-S |         |      |     |          |
| MFH-3-1/4   | 6,5     | 5    | 29  | 40 ±0,15 |
| MOFH-3-1/4  |         |      |     |          |
| MFH-3-1/4-S |         |      |     |          |
| MFH-3-1/2   | 8,6     | 68   | 49  | 58 ±0,2  |
| MOFH-3-1/2  |         |      |     |          |
| MFH-3-1/2-S |         |      |     |          |
| MFH-3-3/4   | 8,6     | 78   | 56  | 72 ±0,2  |
| MOFH-3-3/4  |         |      |     |          |
| MFH-3-3/4-S |         |      |     |          |

## Dimensions

### Dimensions – Solenoid valves, 5/2-way valves, MFH

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


[1] Additional connection for external pilot air with MFH-5-...-S

[2] Solenoid coil can be rotated 360°

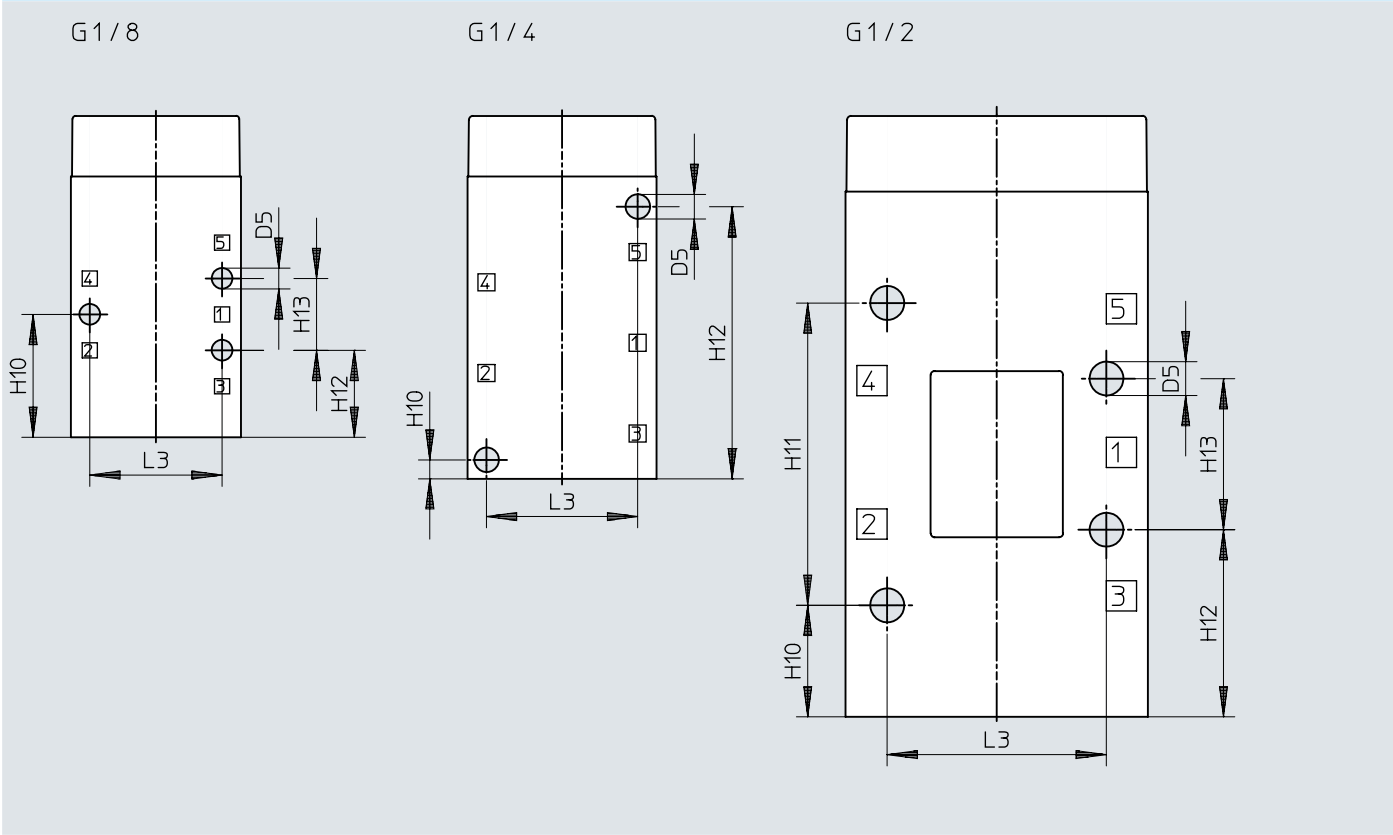
[3] Manual override can be turned 180°

|             | B1        | B2        | B3        | B4  | B6 | D1   | D2   | D4 | D5<br>Ø   |
|-------------|-----------|-----------|-----------|-----|----|------|------|----|-----------|
| MFH-5-1/8   | 26 ±0,2   | 3,5 ±0,15 | 3,5 ±0,15 | –   | 22 | G1/8 | M5   | M5 | 5,5       |
| MFH-5-1/8-S |           | 3,5       | 3,5       | 2,7 |    |      |      |    | 5,5 – 6,2 |
| MFH-5-1/4   | 30,4 ±0,1 | –         | 5 ±0,15   | –   |    | G1/4 | M5   |    | 6,5 ±0,14 |
| MFH-5-1/4-S |           |           |           | 4   |    |      |      |    | min. 6,5  |
| MFH-5-1/2   | 52 ±0,15  | –         | 8         | –   |    | G1/2 | G1/8 |    | 8,5       |
| MFH-5-1/2-S |           |           |           |     |    |      |      |    |           |

|             | H1  | H2    | H3       | H4       | H5           | H6   | H7  | L1           | L2   |
|-------------|-----|-------|----------|----------|--------------|------|-----|--------------|------|
| MFH-5-1/8   | 117 | 131   | 13,5     | 19       | 23           | –    | 83  | 45 ±0,15     | 71   |
| MFH-5-1/8-S |     | 134   |          | 19 ±0,15 |              | 9,5  |     |              | 71,5 |
| MFH-5-1/4   | 128 | 143   | 12       | 24 ±0,15 | 28 +0,1/-0,2 | –    | 94  | 50 +0,4/-0,2 | 73,5 |
| MFH-5-1/4-S |     |       |          |          |              | 9,5  |     |              |      |
| MFH-5-1/2   | 192 | 208,5 | 32 ±0,15 | 38 ±0,15 | 51 ±0,15     | –    | 158 | 80 +0,4/-0,2 | 87,5 |
| MFH-5-1/2-S |     |       |          |          |              | 10,5 |     |              |      |

Dimensions

Dimensions – Solenoid valves, 5/2-way valves, mounting pattern Download CAD data [www.festo.com](http://www.festo.com)

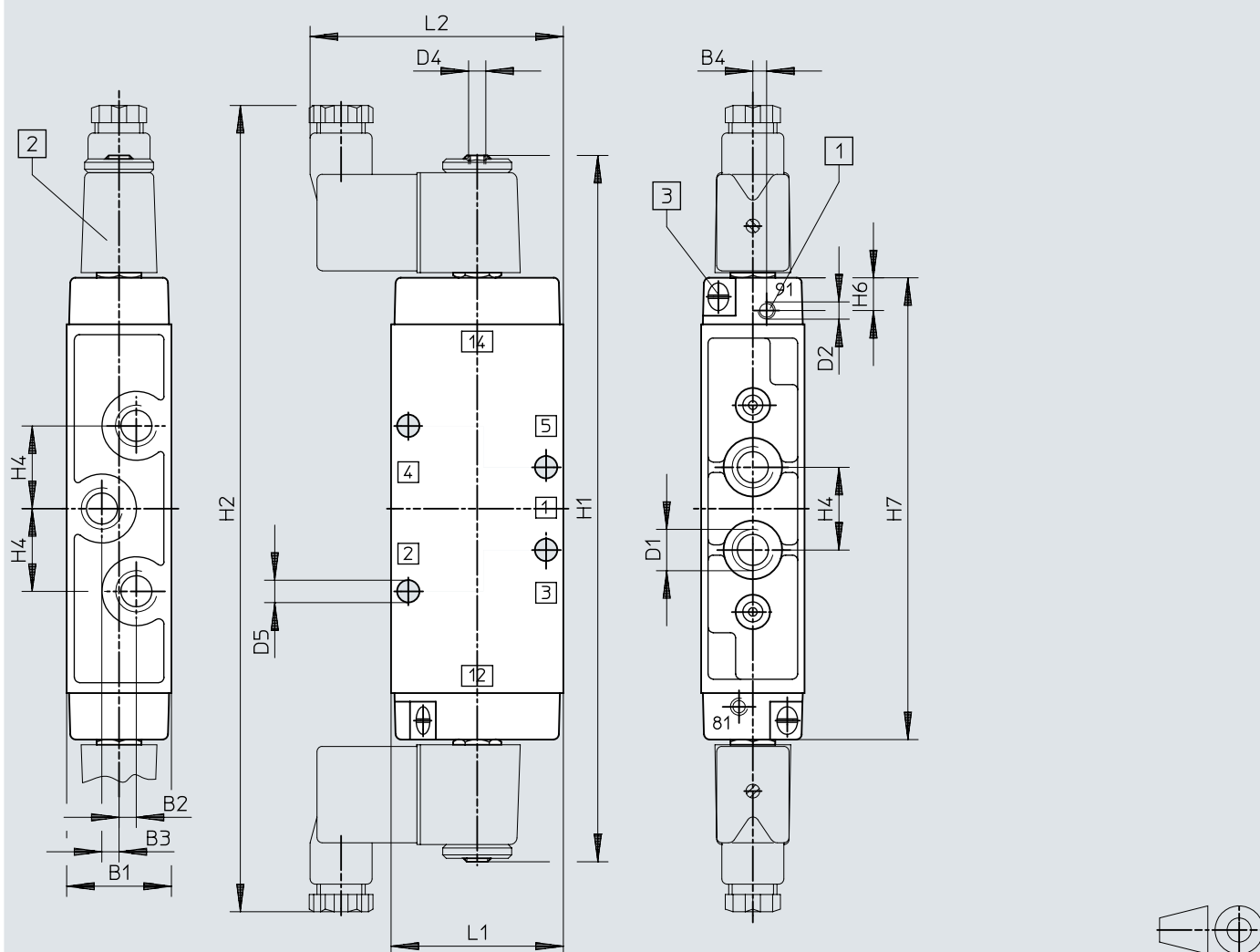


|             | D5<br>ø   | H10  | H11      | H12  | H13      | L3       |
|-------------|-----------|------|----------|------|----------|----------|
| MFH-5-1/8   | 5,5       | 32,5 | –        | 23   | 19 ±0,15 | 35 ±0,15 |
| MFH-5-1/8-S | 5,5 – 6,2 |      |          |      |          |          |
| MFH-5-1/4   | 6,5 ±0,14 | 5    | –        | 72   | –        | 40 ±0,15 |
| MFH-5-1/4-S | min. 6,5  |      |          |      |          |          |
| MFH-5-1/2   | 8,5       | 29,5 | 80 ±0,15 | 49,5 | 40 ±0,1  | 58 ±0,15 |
| MFH-5-1/2-S |           |      |          |      |          |          |

## Dimensions

Dimensions – Solenoid valves, 5/2-way valves, solenoid double pilot valves, JMFH, JMFDH

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



- [1] Additional connection for external pilot air with JMF...H-5-...-S
- [2] Solenoid coil can be rotated 360°
- [3] Manual override can be turned 180°

## Dimensions

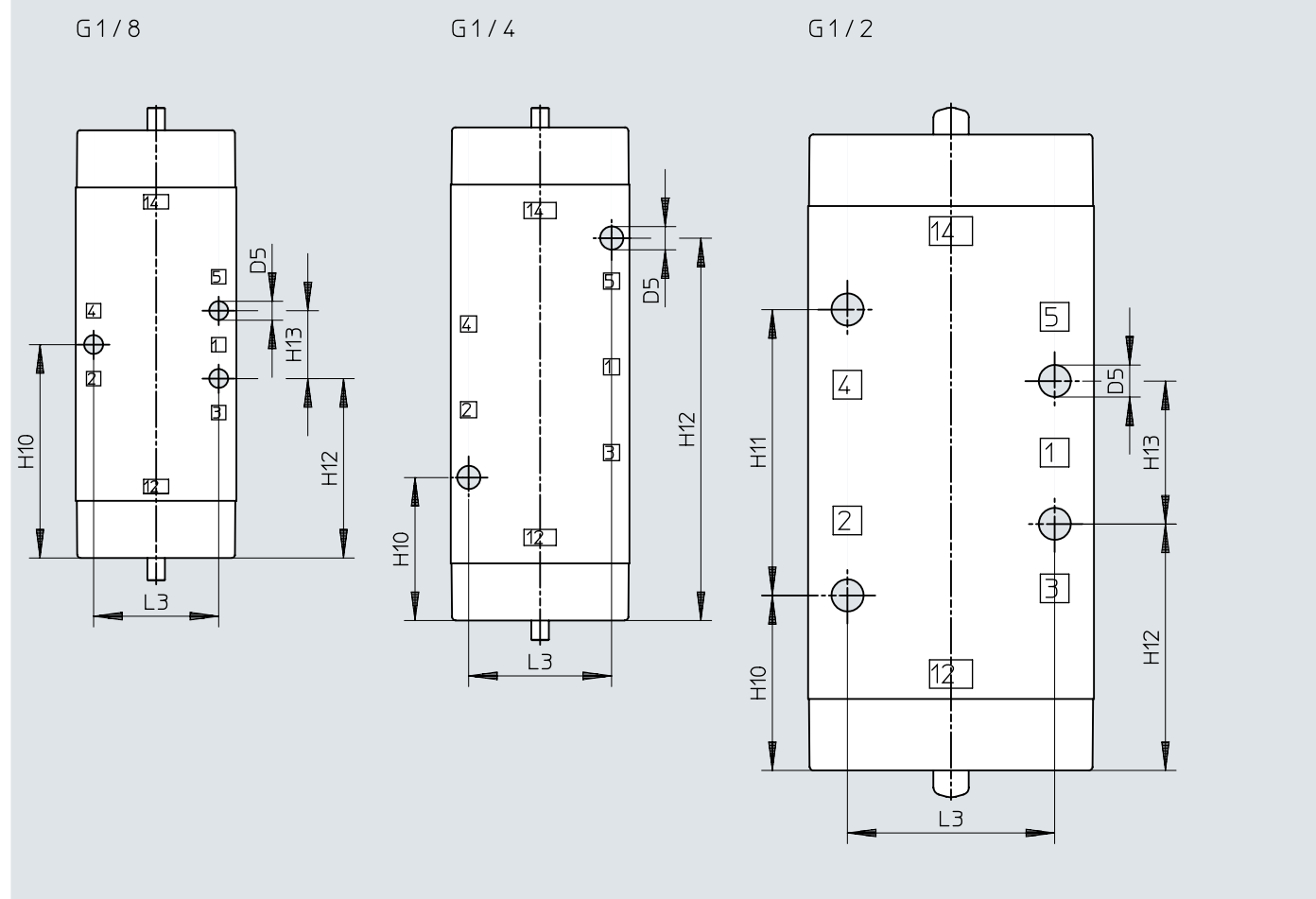
|              | B1        | B2        | B3        | B4  | D1   | D2   | D4 | D5<br>ø  |
|--------------|-----------|-----------|-----------|-----|------|------|----|----------|
| JMFH-5-1/8   | 26 +0,2   | 3,5 +0,15 | 3,5 +0,15 | –   | G1/8 | –    | M5 | 5,5      |
| JMFDH-5-1/8  |           |           |           | 2,7 |      | M5   |    |          |
| JMFH-5-1/8-S |           |           |           |     |      |      |    |          |
| JMFH-5-1/4   | 30,4 ±0,1 | –         | 5         | –   | G1/4 | –    | M5 | min. 6,5 |
| JMFDH-5-1/4  |           |           |           | 4   |      | M5   |    |          |
| JMFH-5-1/4-S |           |           |           |     |      |      |    |          |
| JMFH-5-1/2   | 52        | –         | 8         | –   | G1/2 | –    | M5 | 9,6 +0,2 |
| JMFH-5-1/2-S | 52 ±0,15  |           |           |     |      | G1/8 |    | 8,5      |

|              | H1  | H2  | H4       | H6   | H7    | L1           | L2   |
|--------------|-----|-----|----------|------|-------|--------------|------|
| JMFH-5-1/8   | 184 | 217 | 19 ±0,15 | –    | 116,5 | 45 ±0,15     | 71,5 |
| JMFDH-5-1/8  |     |     |          | 9,5  |       |              |      |
| JMFH-5-1/8-S |     |     |          |      |       |              |      |
| JMFH-5-1/4   | 202 | 235 | 24 -0,3  | –    | 134   | 50 +0,4/-0,2 | 74   |
| JMFDH-5-1/4  |     |     |          | 9,5  |       |              |      |
| JMFH-5-1/4-S |     |     |          |      |       |              |      |
| JMFH-5-1/2   | 244 | 272 | 38       | –    | 176   | 80           | 88,5 |
| JMFH-5-1/2-S |     | 277 | 38 ±0,1  | 10,5 |       | 80 +0,4/-0,2 | 87,5 |

## Dimensions

Dimensions – Solenoid valves, 5/2-way valves, solenoid double pilot valves,  
mounting pattern

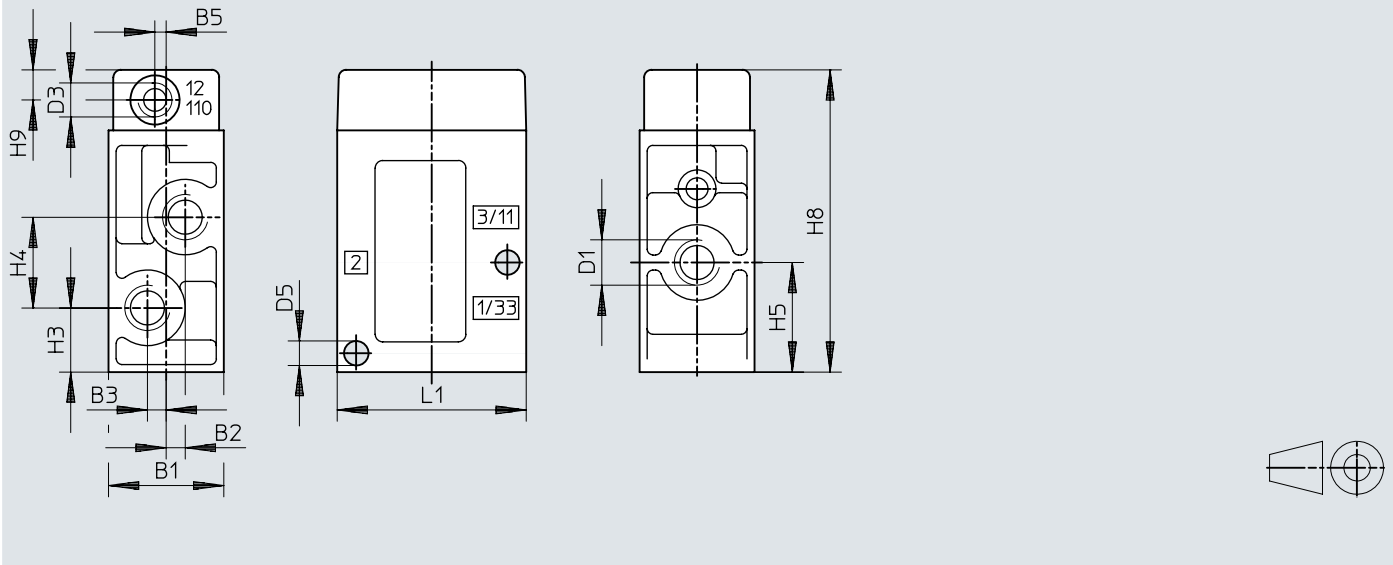
Download CAD data [www.festo.com](http://www.festo.com)



|              | D5<br>ø  | H10 | H12  | H13 | L3 |
|--------------|----------|-----|------|-----|----|
| JMFH-5-1/8   | 5,5      | 19  | 58,3 | –   | 35 |
| JMFDH-5-1/8  |          |     |      |     |    |
| JMFH-5-1/8-S |          |     |      |     |    |
| JMFH-5-1/4   | min. 6,5 | 67  | 67   | –   | 40 |
| JMFDH-5-1/4  |          |     |      |     |    |
| JMFH-5-1/4-S |          |     |      |     |    |
| JMFH-5-1/2   | 9,6 +0,2 | 40  | 88   | 80  | 58 |
| JMFH-5-1/2-S | 8,5      |     |      |     |    |

Dimensions

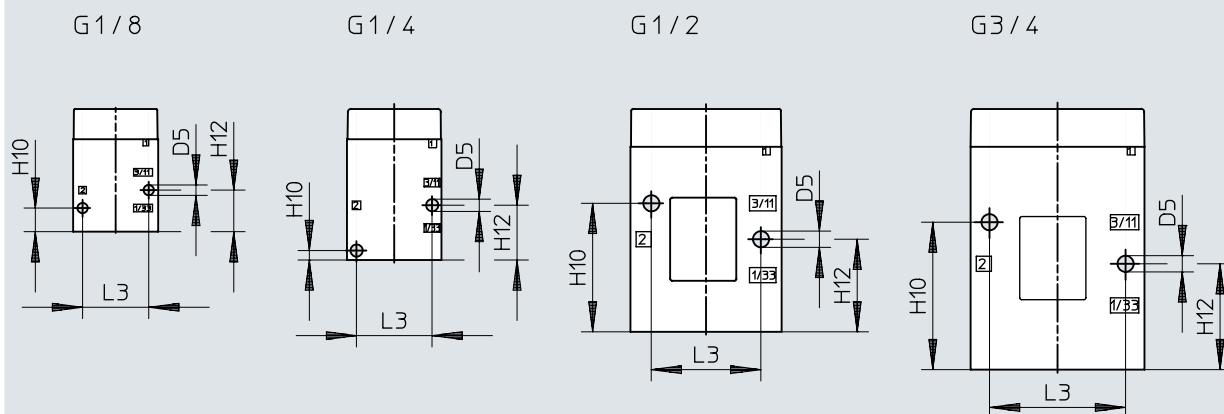
Dimensions – Pneumatic valves, 3/2-way valves, VL/O Download CAD data [www.festo.com](http://www.festo.com)



|            | B1   | B2  | B3  | B5 | D1   | D3   | D5<br>ø | H3   | H4 | H5 | H8  | H9 | L1 |
|------------|------|-----|-----|----|------|------|---------|------|----|----|-----|----|----|
| VL/O-3-1/8 | 26   | 3,5 | 3,5 | 3  | G1/8 | G1/8 | 5,5     | 12,5 | 19 | 22 | 65  | 8  | 45 |
| VL/O-3-1/4 | 30,4 | 5   | 5   | –  | G1/4 | G1/8 | 6,5     | 17   | 24 | 29 | 80  | 8  | 50 |
| VL/O-3-1/2 | 52   | 8   | 8   | –  | G1/2 | G1/4 | 8,6     | 30   | 38 | 49 | 118 | 10 | 80 |
| VL/O-3-3/4 | 68   | 8   | 8   | –  | G3/4 | G1/4 | 8,6     | 34   | 44 | 56 | 138 | 10 | 92 |

## Dimensions

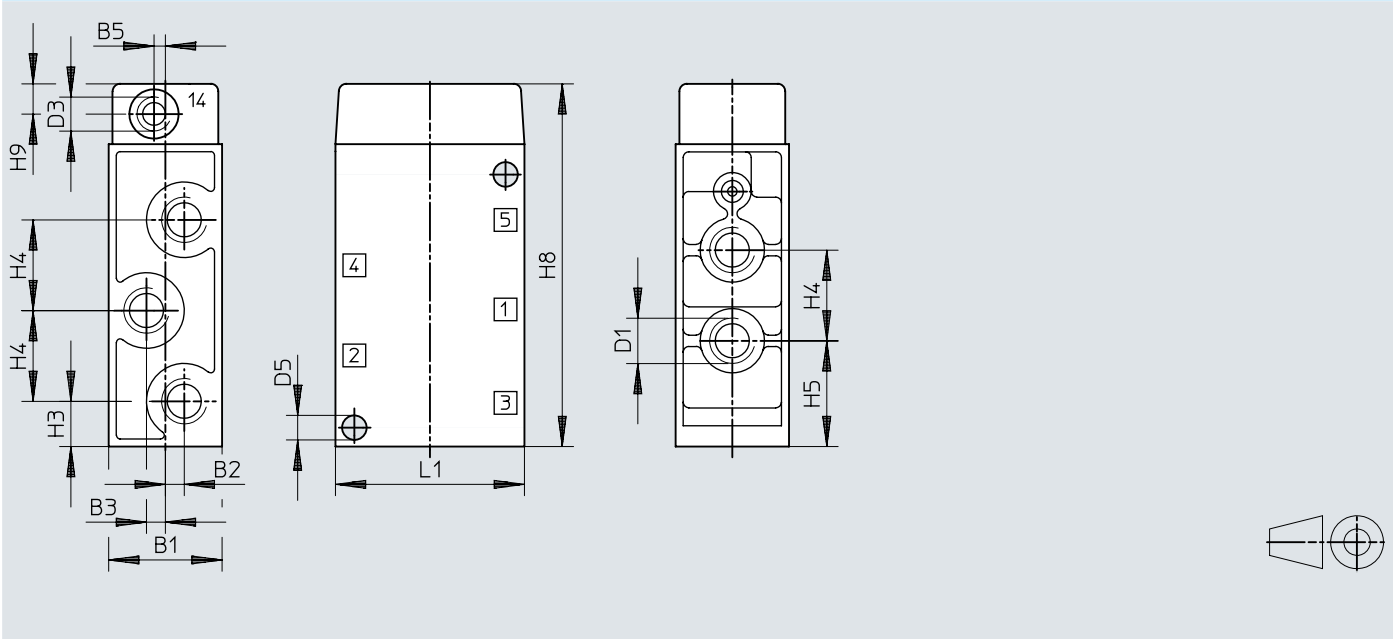
### Dimensions – Pneumatic valves, 3/2-way valves, mounting pattern

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


|            | D5<br>Ø | H10  | H12 | L3       |
|------------|---------|------|-----|----------|
| VL/O-3-1/8 | 5,5     | 12,5 | 22  | 35 ±0,15 |
| VL/O-3-1/4 | 6,5     | 5    | 29  | 40 ±0,15 |
| VL/O-3-1/2 | 8,6     | 68   | 49  | 58 ±0,2  |
| VL/O-3-3/4 | 8,6     | 78   | 56  | 72 ±0,2  |

Dimensions

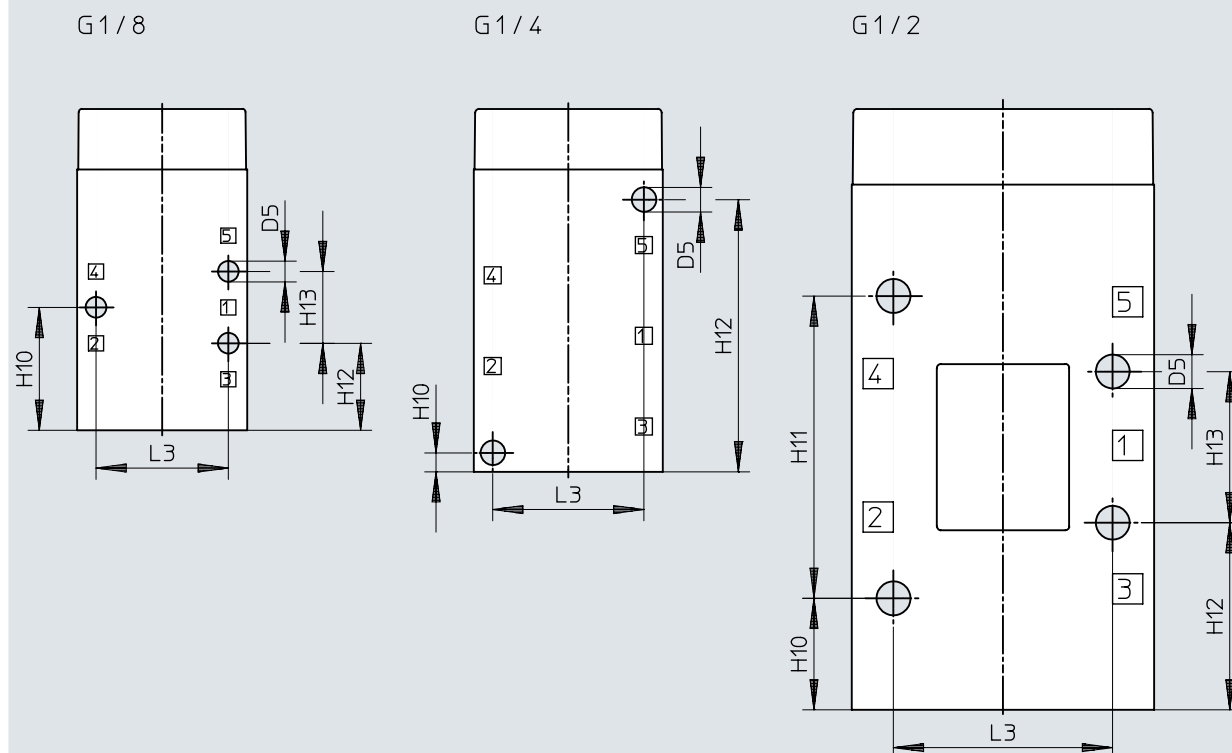
Dimensions – Pneumatic valves, 5/2-way valves, VL Download CAD data [www.festo.com](http://www.festo.com)



|          | B1        | B2  | B3  | B5 | D1   | D3   | D5<br>ø | H3   | H4 | H5 | H8  | H9 | L1 |
|----------|-----------|-----|-----|----|------|------|---------|------|----|----|-----|----|----|
| VL-5-1/8 | 26        | 3,5 | 3,5 | 3  | G1/8 | G1/8 | 5,5     | 13,5 | 19 | 23 | 85  | 8  | 45 |
| VL-5-1/4 | 30,4 ±0,1 | –   | 5,2 | –  | G1/4 | G1/8 | 6,5     | 12   | 24 | 28 | 96  | 8  | 50 |
| VL-5-1/2 | 52        | –   | 8   | –  | G1/2 | G1/4 | 9       | 32   | 38 | 51 | 159 | 10 | 80 |

## Dimensions

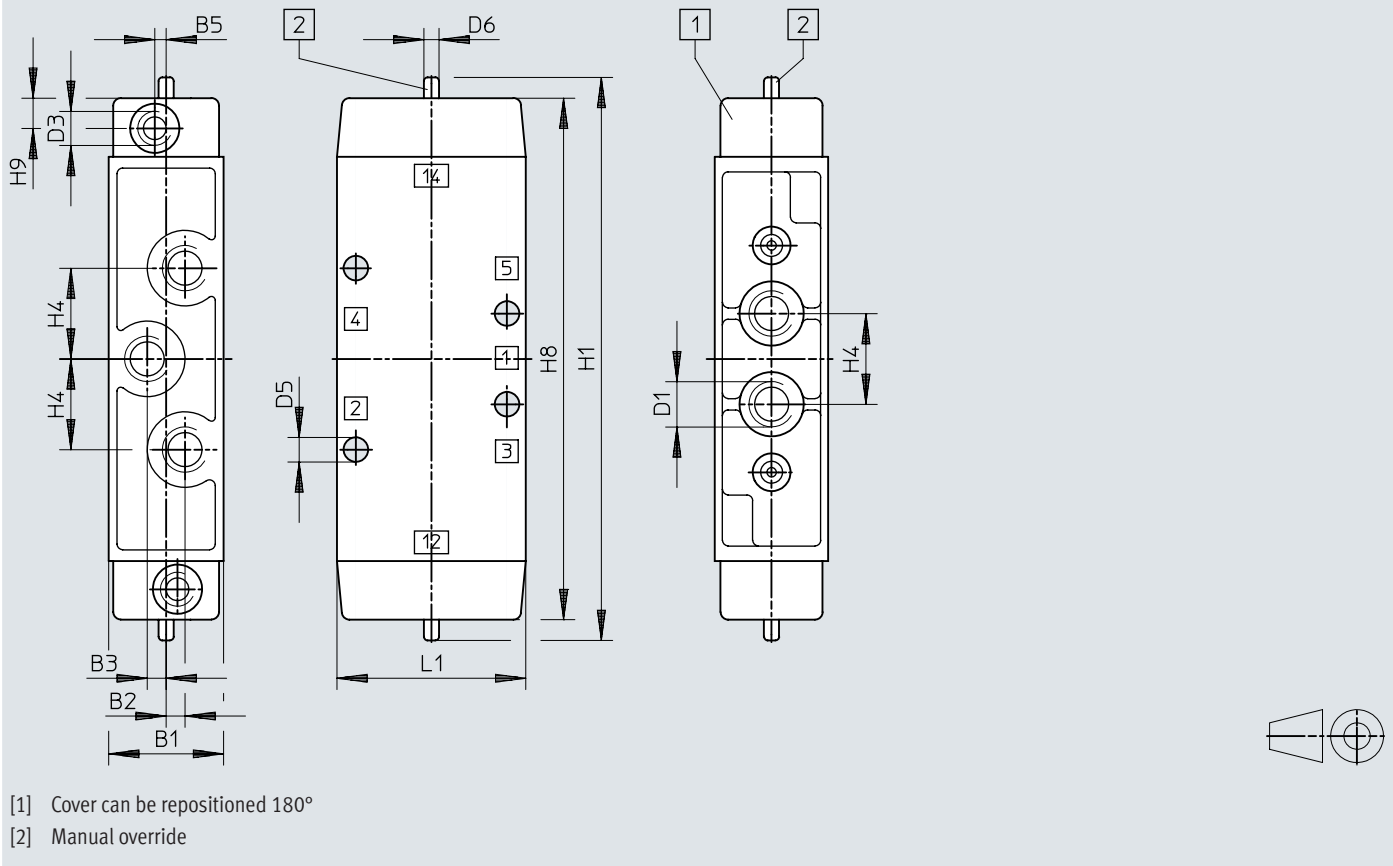
### Dimensions – Pneumatic valves, 5/2-way valves, mounting pattern

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


|          | D5<br>ø | H10  | H11      | H12  | H13      | L3       |
|----------|---------|------|----------|------|----------|----------|
| VL-5-1/8 | 5,5     | 32,5 | –        | 23   | 19 ±0,15 | 35 ±0,15 |
| VL-5-1/4 | 6,5     | 5    | –        | 72   | –        | 40 ±0,15 |
| VL-5-1/2 | 9       | 29,5 | 80 ±0,15 | 49,5 | 40 ±0,1  | 58 ±0,15 |

Dimensions

Dimensions – Pneumatic valves, 5/2-way valves, double pilot valves, JH, JDH Download CAD data [www.festo.com](http://www.festo.com)

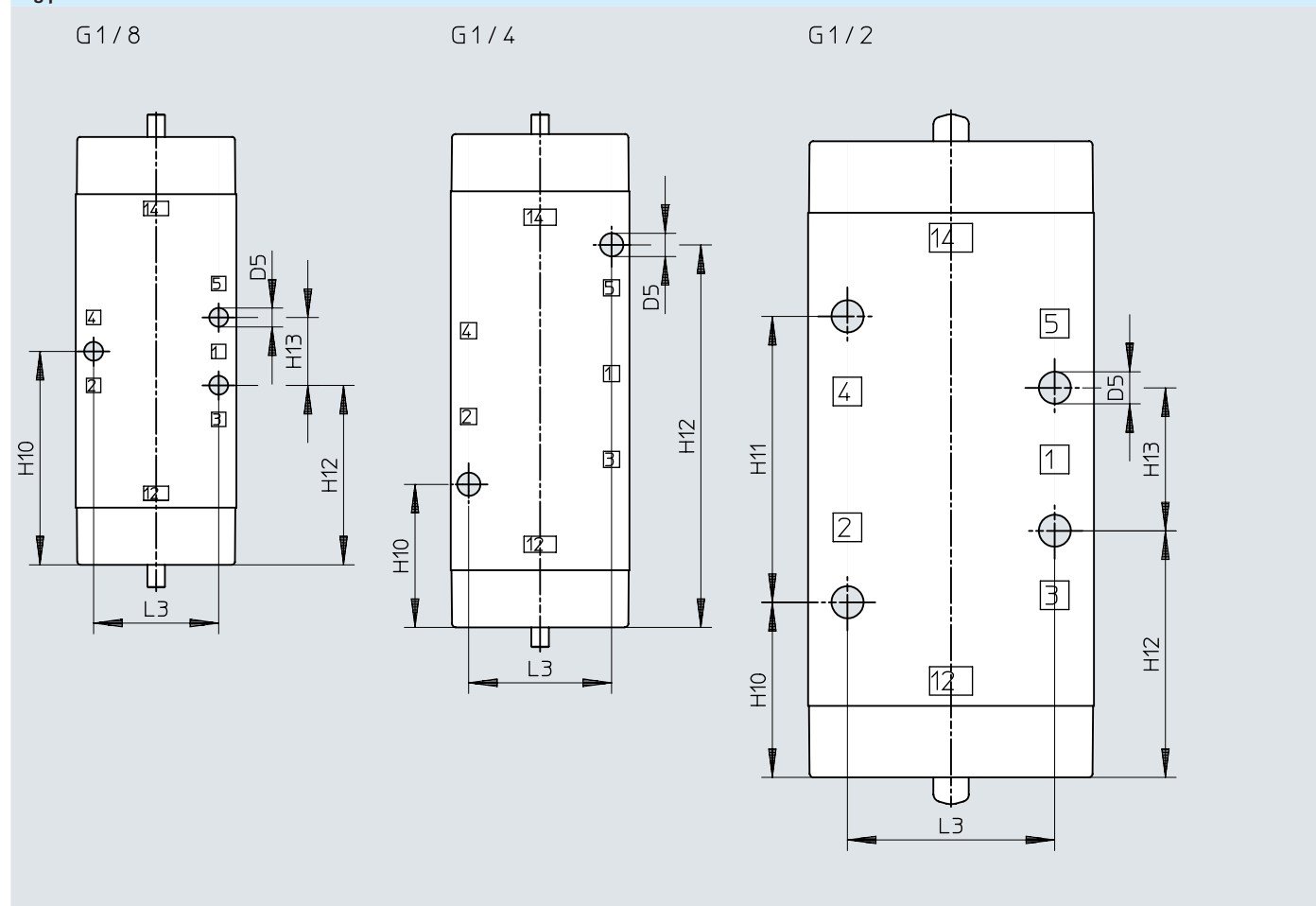


|           | B1   | B2  | B3  | B5 | D1   | D3   | D5<br>Ø  | D6<br>Ø | H1  | H4 | H8  | H9 | L1 |
|-----------|------|-----|-----|----|------|------|----------|---------|-----|----|-----|----|----|
| JH-5-1/8  | 26   | 3,5 | 3,5 | 3  | G1/8 | G1/8 | 5,3      | 5       | 132 | 19 | 120 | 8  | 45 |
| JDH-5-1/8 |      |     |     |    |      |      |          |         |     |    |     |    |    |
| JH-5-1/4  | 30,4 | –   | 5   | –  | G1/4 | G1/8 | 6,5      | 5       | 149 | 24 | 138 | 8  | 50 |
| JDH-5-1/4 |      |     |     |    |      |      |          |         |     |    |     |    |    |
| JH-5-1/2  | 52   | –   | 8   | –  | G1/2 | G1/4 | 9,6 +0,2 | 9,9     | 193 | 38 | 178 | 10 | 80 |

## Dimensions

Dimensions – Pneumatic valves, 5/2-way valves, double pilot valves, mounting pattern

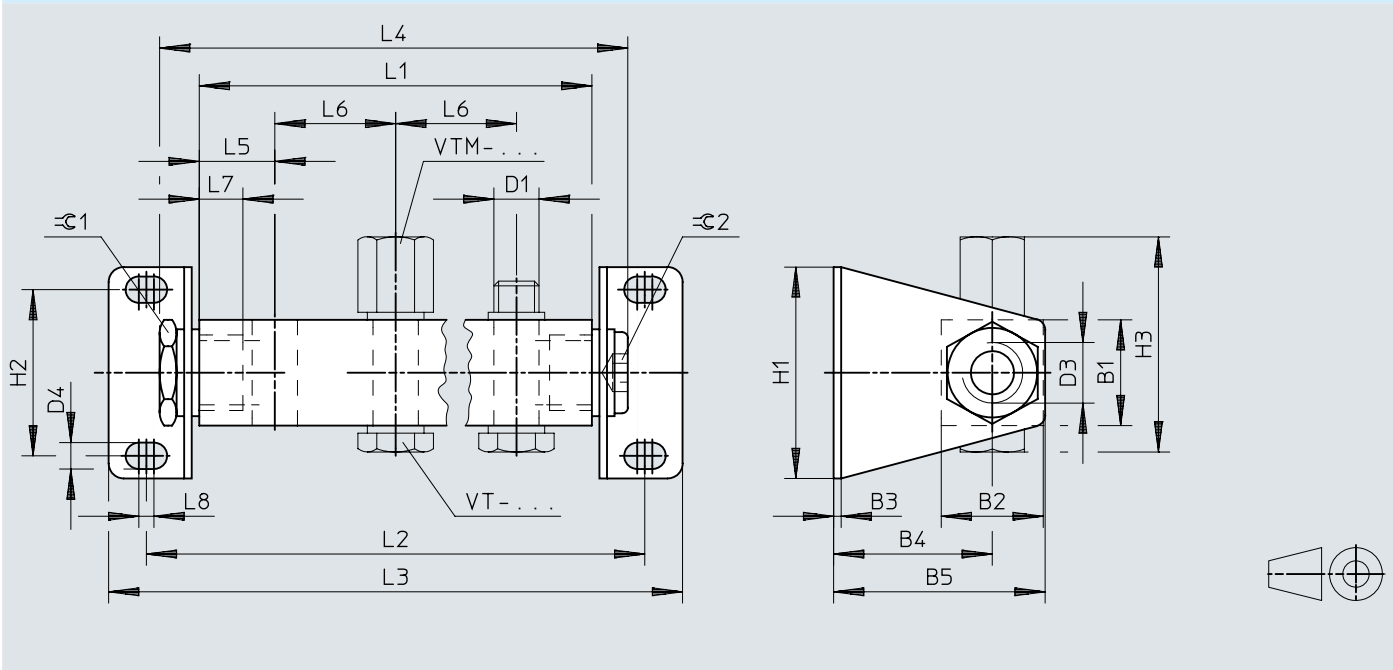
Download CAD data [www.festo.com](http://www.festo.com)



|           | D5<br>ø  | H10 | H11      | H12  | H13     | L3       |
|-----------|----------|-----|----------|------|---------|----------|
| JH-5-1/8  | 5,3      | 60  | –        | 50,5 | 19      | 35       |
| JDH-5-1/8 |          |     |          |      |         |          |
| JH-5-1/4  | 6,5      | 40  | –        | 107  | –       | 40 ±0,2  |
| JDH-5-1/4 |          |     |          |      |         |          |
| JH-5-1/2  | 9,6 +0,2 | 49  | 80 ±0,15 | 69   | 40 ±0,1 | 58 ±0,15 |

Dimensions

Dimensions – Manifold rail PAL Download CAD data [www.festo.com](http://www.festo.com)

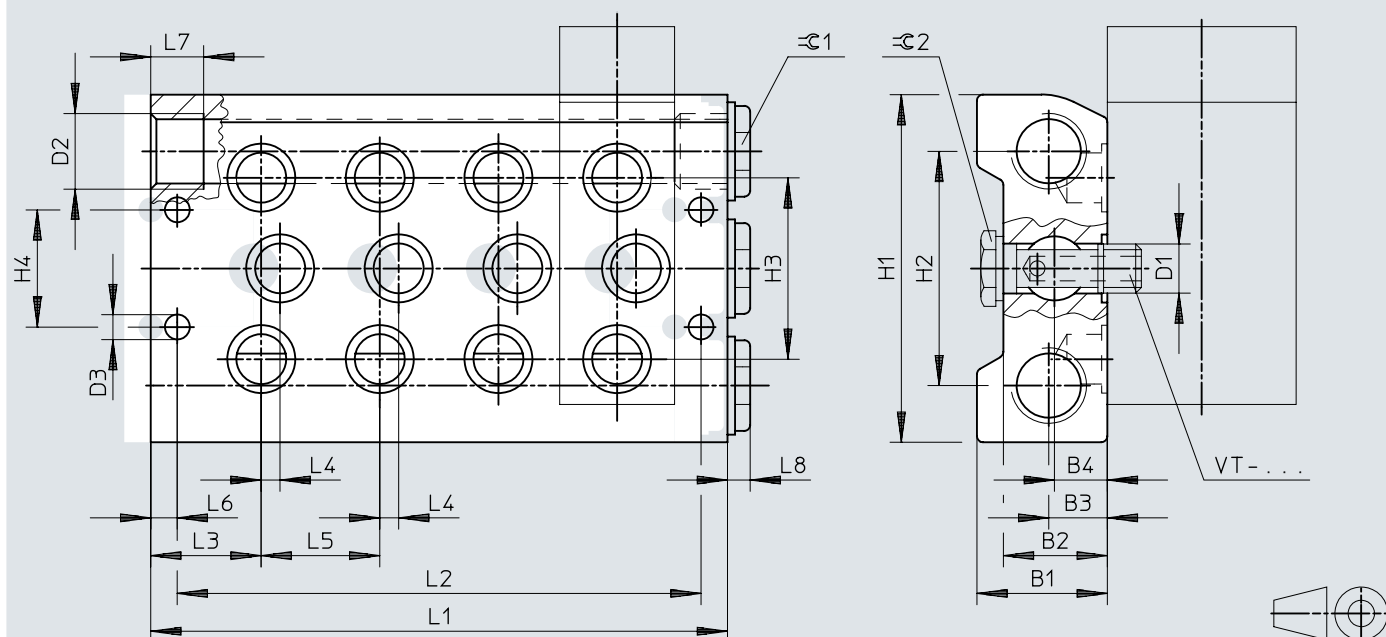


|         | B1 | B2 | B3 | B4   | B5   | D1   | D3   | D4  | H1 | H2 | H3 | L5 | L6 | L7 | L8 | ⌀ 1 | ⌀ 2 |
|---------|----|----|----|------|------|------|------|-----|----|----|----|----|----|----|----|-----|-----|
| PAL-1/8 | 20 | 21 | 2  | 33,5 | 44,5 | G1/8 | G1/4 | 5,2 | 44 | 32 | 43 | 18 | 34 | 12 | 4  | 19  | 8   |
| PAL-1/4 | 28 | 27 | 2  | 42   | 56   | G1/4 | G3/8 | 7   | 56 | 44 | 56 | 20 | 32 | 14 | 4  | 24  | 10  |
| PAL-1/2 | 40 | 40 | 3  | 73   | 93   | G1/2 | G3/4 | 11  | 80 | 60 | 75 | 35 | 69 | 16 | 5  | 36  | 17  |

## Dimensions

### Dimensions – Manifold block PRS

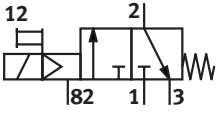
Download CAD data [www.festo.com](http://www.festo.com)



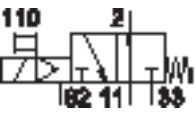
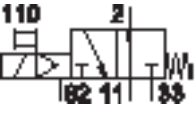
|         | B1   | B2   | B3   | B4   | D1   | D2   | D3  | H1 | H2 | H3 | H4 | L3   | L4 | L5   | L6 | L7 | L8 | ≙ 1 | ≙ 2 |
|---------|------|------|------|------|------|------|-----|----|----|----|----|------|----|------|----|----|----|-----|-----|
| PRS-1/8 | 28,5 | 22   | 12,5 | 10,8 | G1/8 | G3/8 | 6,6 | 80 | 56 | 38 | 28 | 23,5 | 7  | 27   | 7  | 12 | 5  | 8   | 14  |
| PRS-1/4 | 34,5 | 27,5 | 14   | 14   | G1/4 | G1/2 | 6,6 | 92 | 62 | 48 | 31 | 29,2 | 5  | 31,4 | 7  | 14 | 6  | 10  | 17  |

## Ordering data

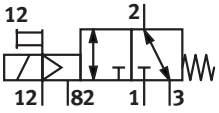
## Solenoid valves, 3/2-way valves, MFH-..., without F solenoid coil, internal pilot air supply

|                                                                                  | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no.      | Type                |
|----------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|-------------------|--------------------|---------------|---------------------|
|  | G1/8                         | G1/8                         | G1/8                         |                   |                    | <b>7802</b>   | <b>MFH-3-1/8</b>    |
|                                                                                  |                              |                              |                              | II 2G             | II 2D              | <b>535897</b> | <b>MFH-3-1/8-EX</b> |
|                                                                                  | G1/4                         | G1/4                         | G1/4                         |                   |                    | <b>9964</b>   | <b>MFH-3-1/4</b>    |
|                                                                                  |                              |                              |                              | II 2G             | II 2D              | <b>535898</b> | <b>MFH-3-1/4-EX</b> |
|                                                                                  | G1/2                         | G1/2                         | G1/2                         |                   |                    | <b>9857</b>   | <b>MFH-3-1/2</b>    |
|                                                                                  |                              |                              |                              | II 2G             | II 2D              | <b>535899</b> | <b>MFH-3-1/2-EX</b> |
|                                                                                  | G3/4                         | G3/4                         | G3/4                         |                   |                    | <b>11967</b>  | <b>MFH-3-3/4</b>    |
|                                                                                  |                              |                              |                              | II 2G             | II 2D              | <b>536190</b> | <b>MFH-3-3/4-EX</b> |

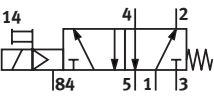
## Solenoid valves, 3/2-way valves, MOFH-..., without F solenoid coil, internal pilot air supply

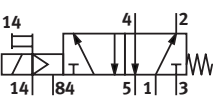
|                                                                                    | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no.      | Type                 |
|------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|-------------------|--------------------|---------------|----------------------|
|    | G1/8                         | G1/8                         | G1/8                         |                   |                    | <b>7877</b>   | <b>MOFH-3-1/8</b>    |
|                                                                                    |                              |                              |                              | II 2G             | II 2D              | <b>535903</b> | <b>MOFH-3-1/8-EX</b> |
|  | G1/4                         | G1/4                         | G1/4                         |                   |                    | <b>7876</b>   | <b>MOFH-3-1/4</b>    |
|                                                                                    |                              |                              |                              | II 2G             | II 2D              | <b>535904</b> | <b>MOFH-3-1/4-EX</b> |
|                                                                                    | G1/2                         | G1/2                         | G1/2                         |                   |                    | <b>7884</b>   | <b>MOFH-3-1/2</b>    |
|                                                                                    |                              |                              |                              | II 2G             | II 2D              | <b>535905</b> | <b>MOFH-3-1/2-EX</b> |
|                                                                                    | G3/4                         | G3/4                         | G3/4                         |                   |                    | <b>11969</b>  | <b>MOFH-3-3/4</b>    |
|                                                                                    |                              |                              |                              | II 2G             | II 2D              | <b>536192</b> | <b>MOFH-3-3/4-EX</b> |

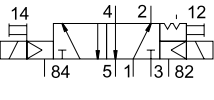
## Solenoid valves, 3/2-way valves, MFH-..., without F solenoid coil, external pilot air supply, reversible (vacuum at port 1 without restrictions, vacuum at port 3 with restrictions)

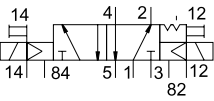
|                                                                                    | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no.      | Type                  |
|------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|-------------------|--------------------|---------------|-----------------------|
|  | G1/8                         | G1/8                         | G1/8                         |                   |                    | <b>7958</b>   | <b>MFH-3-1/8-S</b>    |
|                                                                                    |                              |                              |                              | II 2G             | II 2D              | <b>535900</b> | <b>MFH-3-1/8-S-EX</b> |
|                                                                                    | G1/4                         | G1/4                         | G1/4                         |                   |                    | <b>7959</b>   | <b>MFH-3-1/4-S</b>    |
|                                                                                    |                              |                              |                              | II 2G             | II 2D              | <b>535901</b> | <b>MFH-3-1/4-S-EX</b> |
|                                                                                    | G1/2                         | G1/2                         | G1/2                         |                   |                    | <b>7960</b>   | <b>MFH-3-1/2-S</b>    |
|                                                                                    |                              |                              |                              | II 2G             | II 2D              | <b>535902</b> | <b>MFH-3-1/2-S-EX</b> |
|                                                                                    | G3/4                         | G3/4                         | G3/4                         |                   |                    | <b>11968</b>  | <b>MFH-3-3/4-S</b>    |
|                                                                                    |                              |                              |                              | II 2G             | II 2D              | <b>536191</b> | <b>MFH-3-3/4-S-EX</b> |

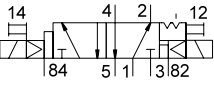
## Ordering data

| Solenoid valves, 5/2-way valves, MFH-..., without F solenoid coil, internal pilot air supply |                              |                              |                              |                   |                    |          |              |
|----------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|--------------|
|                                                                                              | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type         |
|             | G1/8                         | G1/8                         | G1/8                         |                   |                    | 9982     | MFH-5-1/8    |
|                                                                                              |                              |                              |                              | II 2G             | II 2D              | 535906   | MFH-5-1/8-EX |
|                                                                                              | G1/4                         | G1/4                         | G1/4                         |                   |                    | 6211     | MFH-5-1/4    |
|                                                                                              |                              |                              |                              | II 2G             | II 2D              | 535907   | MFH-5-1/4-EX |
|                                                                                              | G1/2                         | G1/2                         | G1/2                         |                   |                    | 6420     | MFH-5-1/2    |
|                                                                                              |                              |                              |                              | II 2G             | II 2D              | 535908   | MFH-5-1/2-EX |

| Solenoid valves, 5/2-way valves, MFH-..., without F solenoid coil, external pilot air supply |                              |                              |                              |                   |                    |          |                |
|----------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|----------------|
|                                                                                              | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type           |
|             | G1/8                         | G1/8                         | G1/8                         |                   |                    | 10348    | MFH-5-1/8-S    |
|                                                                                              |                              |                              |                              | II 2G             | II 2D              | 535909   | MFH-5-1/8-S-EX |
|                                                                                              | G1/4                         | G1/4                         | G1/4                         |                   |                    | 10349    | MFH-5-1/4-S    |
|                                                                                              |                              |                              |                              | II 2G             | II 2D              | 535910   | MFH-5-1/4-S-EX |
|                                                                                              | G1/2                         | G1/2                         | G1/2                         |                   |                    | 35547    | MFH-5-1/2-S    |
|                                                                                              |                              |                              |                              | II 2G             | II 2D              | 535911   | MFH-5-1/2-S-EX |

| Solenoid valves, 5/2-way valves, double solenoid valves, JMFH-..., without F solenoid coil, internal pilot air supply |                              |                              |                              |                   |                    |          |               |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|---------------|
|                                                                                                                       | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type          |
|                                    | G1/8                         | G1/8                         | G1/8                         |                   |                    | 8820     | JMFH-5-1/8    |
|                                                                                                                       |                              |                              |                              | II 2G             | II 2D              | 535912   | JMFH-5-1/8-EX |
|                                                                                                                       | G1/4                         | G1/4                         | G1/4                         |                   |                    | 10410    | JMFH-5-1/4    |
|                                                                                                                       |                              |                              |                              | II 2G             | II 2D              | 535913   | JMFH-5-1/4-EX |
|                                                                                                                       | G1/2                         | G1/2                         | G1/2                         |                   |                    | 10166    | JMFH-5-1/2    |
|                                                                                                                       |                              |                              |                              | II 2G             | II 2D              | 535914   | JMFH-5-1/2-EX |

| Solenoid valves, 5/2-way valves, double solenoid valves, JMFH-..., without F solenoid coil, external pilot air supply |                              |                              |                              |                   |                    |          |                 |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|-----------------|
|                                                                                                                       | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type            |
|                                    | G1/8                         | G1/8                         | G1/8                         |                   |                    | 14008    | JMFH-5-1/8-S    |
|                                                                                                                       |                              |                              |                              | II 2G             | II 2D              | 535915   | JMFH-5-1/8-S-EX |
|                                                                                                                       | G1/4                         | G1/4                         | G1/4                         |                   |                    | 14009    | JMFH-5-1/4-S    |
|                                                                                                                       |                              |                              |                              | II 2G             | II 2D              | 535916   | JMFH-5-1/4-S-EX |
|                                                                                                                       | G1/2                         | G1/2                         | G1/2                         |                   |                    | 35548    | JMFH-5-1/2-S    |
|                                                                                                                       |                              |                              |                              | II 2G             | II 2D              | 535917   | JMFH-5-1/2-S-EX |

| Solenoid valves, 5/2-way valves, double solenoid valves, JMFHD-..., without F solenoid coil, internal pilot air supply, with dominant signal at 14 |                              |                              |                              |                   |                    |          |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|----------------|
|                                                                                                                                                    | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type           |
|                                                                 | G1/8                         | G1/8                         | G1/8                         |                   |                    | 8821     | JMFHD-5-1/8    |
|                                                                                                                                                    |                              |                              |                              | II 2G             | II 2D              | 536193   | JMFHD-5-1/8-EX |
|                                                                                                                                                    | G1/4                         | G1/4                         | G1/4                         |                   |                    | 10411    | JMFHD-5-1/4    |
|                                                                                                                                                    |                              |                              |                              | II 2G             | II 2D              | 536194   | JMFHD-5-1/4-EX |

## Ordering data

Pneumatic valves, 3/2-way valves, mechanical reset, choice of normally open or closed, reversible (vacuum at port 1 without restrictions, vacuum at port 3 with restrictions), VL/O-...

|  | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type            |
|--|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|-----------------|
|  | G1/8                         | G1/8                         | G1/8                         |                   |                    | 7803     | VL/O-3-1/8-B    |
|  |                              |                              |                              | II 2G             | II 2D              | 536028   | VL/O-3-1/8-B-EX |
|  | G1/4                         | G1/4                         | G1/4                         |                   |                    | 9984     | VL/O-3-1/4      |
|  |                              |                              |                              | II 2G             | II 2D              | 536029   | VL/O-3-1/4-EX   |
|  | G1/2                         | G1/2                         | G1/2                         |                   |                    | 9983     | VL/O-3-1/2      |
|  |                              |                              |                              | II 2G             | II 2D              | 536030   | VL/O-3-1/2-EX   |
|  | G3/4                         | G3/4                         | G3/4                         |                   |                    | 10049    | VL/O-3-3/4      |
|  |                              |                              |                              | II 2G             | II 2D              | 536031   | VL/O-3-3/4-EX   |

Pneumatic valves, 5/2-way valves, mechanical reset, VL-...

|  | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type        |
|--|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|-------------|
|  | G1/8                         | G1/8                         | G1/8                         |                   |                    | 9764     | VL-5-1/8    |
|  |                              |                              |                              | II 2G             | II 2D              | 536032   | VL-5-1/8-EX |
|  | G1/4                         | G1/4                         | G1/4                         |                   |                    | 9199     | VL-5-1/4    |
|  |                              |                              |                              | II 2G             | II 2D              | 536033   | VL-5-1/4-EX |
|  | G1/2                         | G1/2                         | G1/2                         |                   |                    | 9445     | VL-5-1/2    |
|  |                              |                              |                              | II 2G             | II 2D              | 536034   | VL-5-1/2-EX |

Pneumatic valves, 5/2-way valves, pulse valves, JH-...

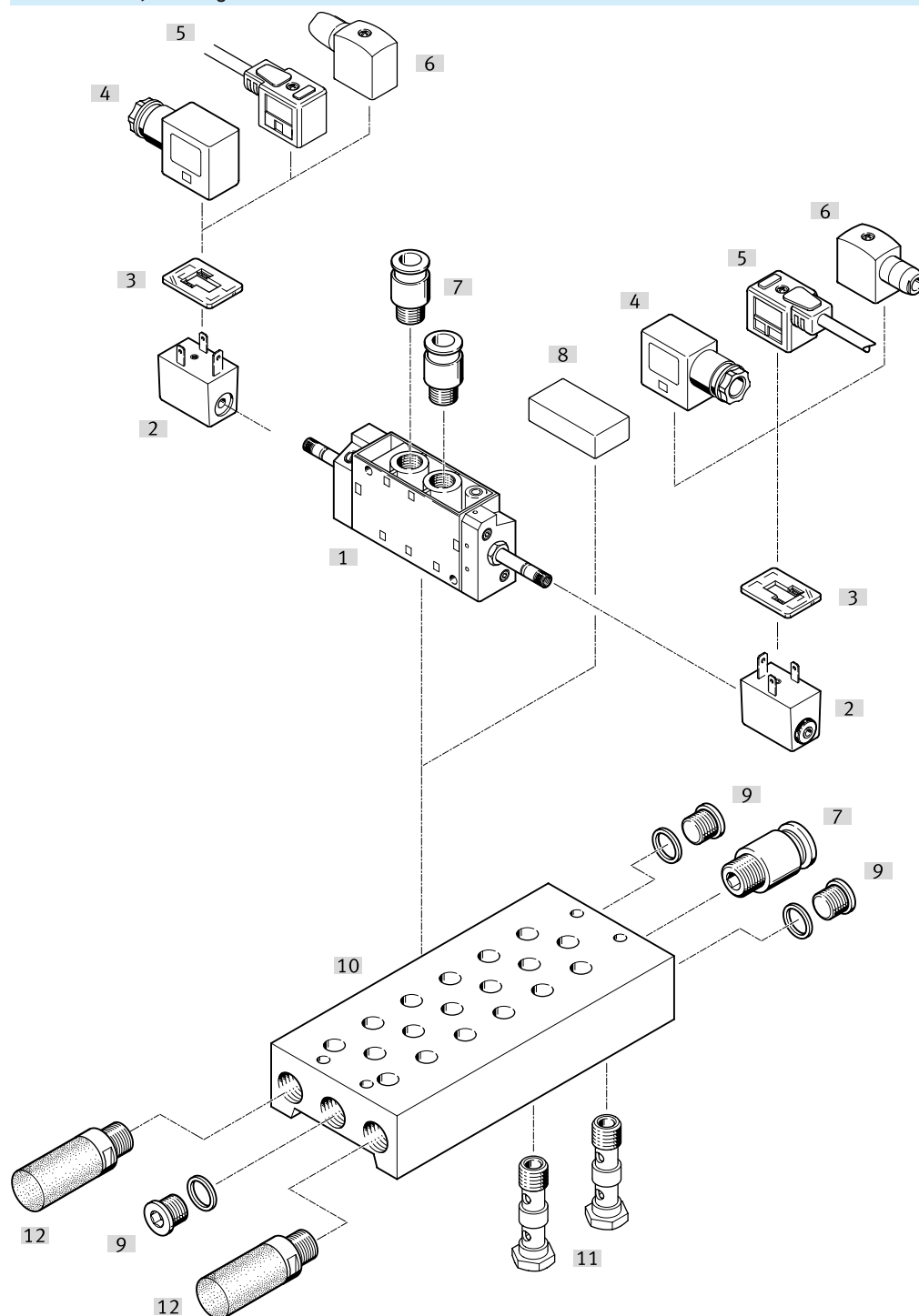
|  | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type        |
|--|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|-------------|
|  | G1/8                         | G1/8                         | G1/8                         |                   |                    | 8823     | JH-5-1/8    |
|  |                              |                              |                              | II 2G             | II 2D              | 536035   | JH-5-1/8-EX |
|  | G1/4                         | G1/4                         | G1/4                         |                   |                    | 10408    | JH-5-1/4    |
|  |                              |                              |                              | II 2G             | II 2D              | 536036   | JH-5-1/4-EX |
|  | G1/2                         | G1/2                         | G1/2                         |                   |                    | 10165    | JH-5-1/2    |
|  |                              |                              |                              | II 2G             | II 2D              | 536037   | JH-5-1/2-EX |

Pneumatic valves, 5/2-way valves, double pilot valves, with dominant signal at 14, JDH-...

|  | Pneumatic connection, port 1 | Pneumatic connection, port 2 | Pneumatic connection, port 3 | ATEX category gas | ATEX category dust | Part no. | Type         |
|--|------------------------------|------------------------------|------------------------------|-------------------|--------------------|----------|--------------|
|  | G1/8                         | G1/8                         | G1/8                         |                   |                    | 8824     | JDH-5-1/8    |
|  |                              |                              |                              | II 2G             | II 2D              | 536038   | JDH-5-1/8-EX |
|  | G1/4                         | G1/4                         | G1/4                         |                   |                    | 10409    | JDH-5-1/4    |
|  |                              |                              |                              | II 2G             | II 2D              | 536039   | JDH-5-1/4-EX |

## Peripherals

### Solenoid valves, mounting on manifold block



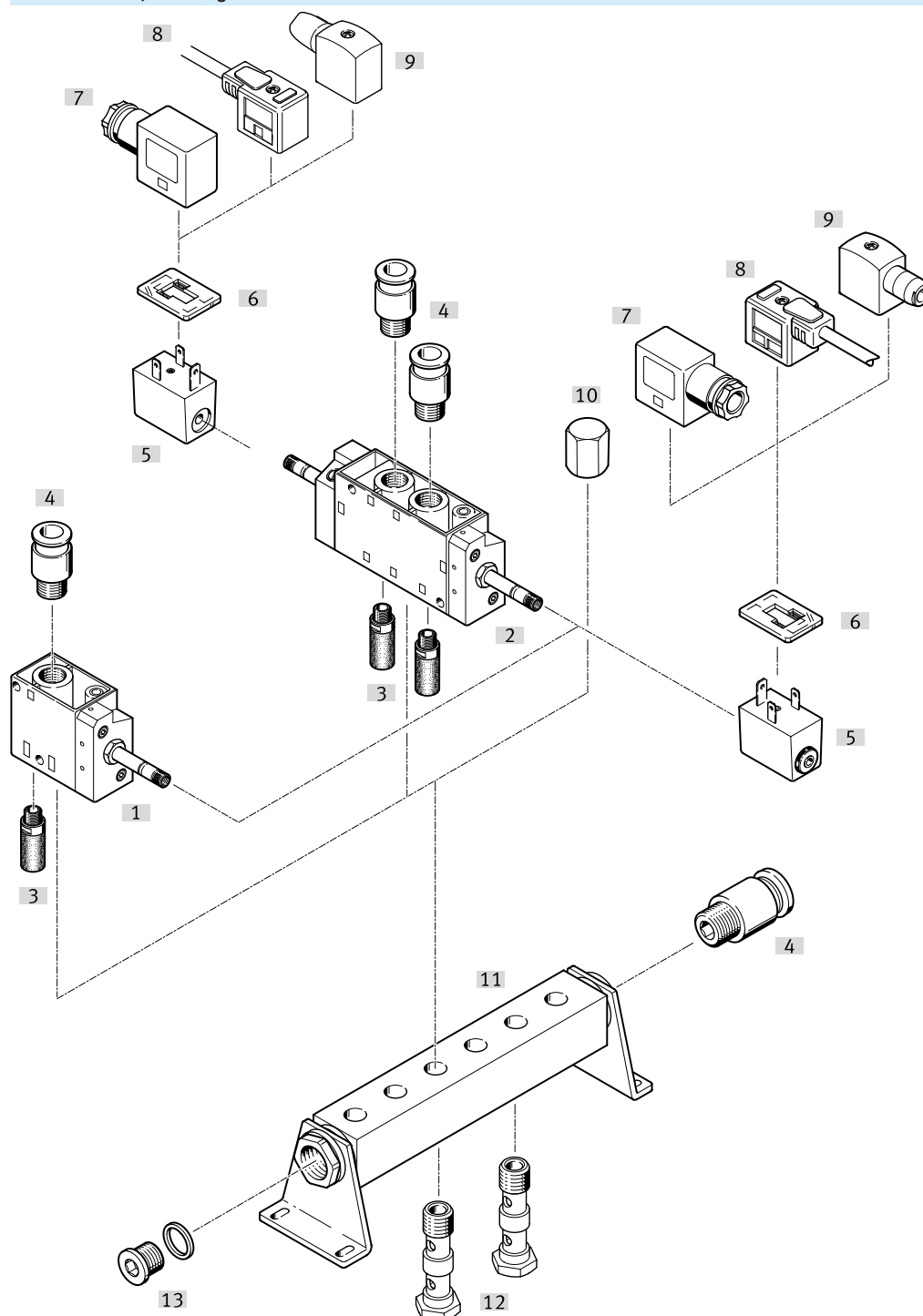
| Accessories                    |                                                                      |  | → Link                       |
|--------------------------------|----------------------------------------------------------------------|--|------------------------------|
| Type/order code                | Description                                                          |  |                              |
| [1] Solenoid valve JMFH        | For F solenoid coil                                                  |  | <a href="#">jmfh</a>         |
| [2] F solenoid coil MSFG, MSFW | –                                                                    |  | <a href="#">46</a>           |
| [3] Illuminating seal M...-LD  | For displaying the switching status                                  |  | <a href="#">48</a>           |
| [4] Plug socket MSSD-F         | For valves MFH, JMFH                                                 |  | <a href="#">47</a>           |
| [5] Connecting cable KMF       | For valves MFH, JMFH                                                 |  | <a href="#">48</a>           |
| [6] Plug socket MSSD-F-S       | For valves MFH, JMFH                                                 |  |                              |
| [7] Push-in fitting QS         | For connecting tubing with standard O.D                              |  | <a href="#">qs</a>           |
| [8] Cover plate PRSB           | For covering a vacant position                                       |  | <a href="#">46</a>           |
| [9] Blanking plug B            | 3 pieces included in the scope of delivery of the manifold block PRS |  | <a href="#">blindstopfen</a> |

Peripherals

| Accessories             |                                                                       | → Link             |
|-------------------------|-----------------------------------------------------------------------|--------------------|
| Type/order code         | Description                                                           |                    |
| [10] Manifold block PRS | –                                                                     | <a href="#">45</a> |
| [11] Hollow bolt VT     | For compressed air distribution or for separate compressed air supply | <a href="#">46</a> |
| [12] Silencer           | For fitting in exhaust ports                                          | <a href="#">u</a>  |

## Peripherals

### Solenoid valves, mounting on manifold rail



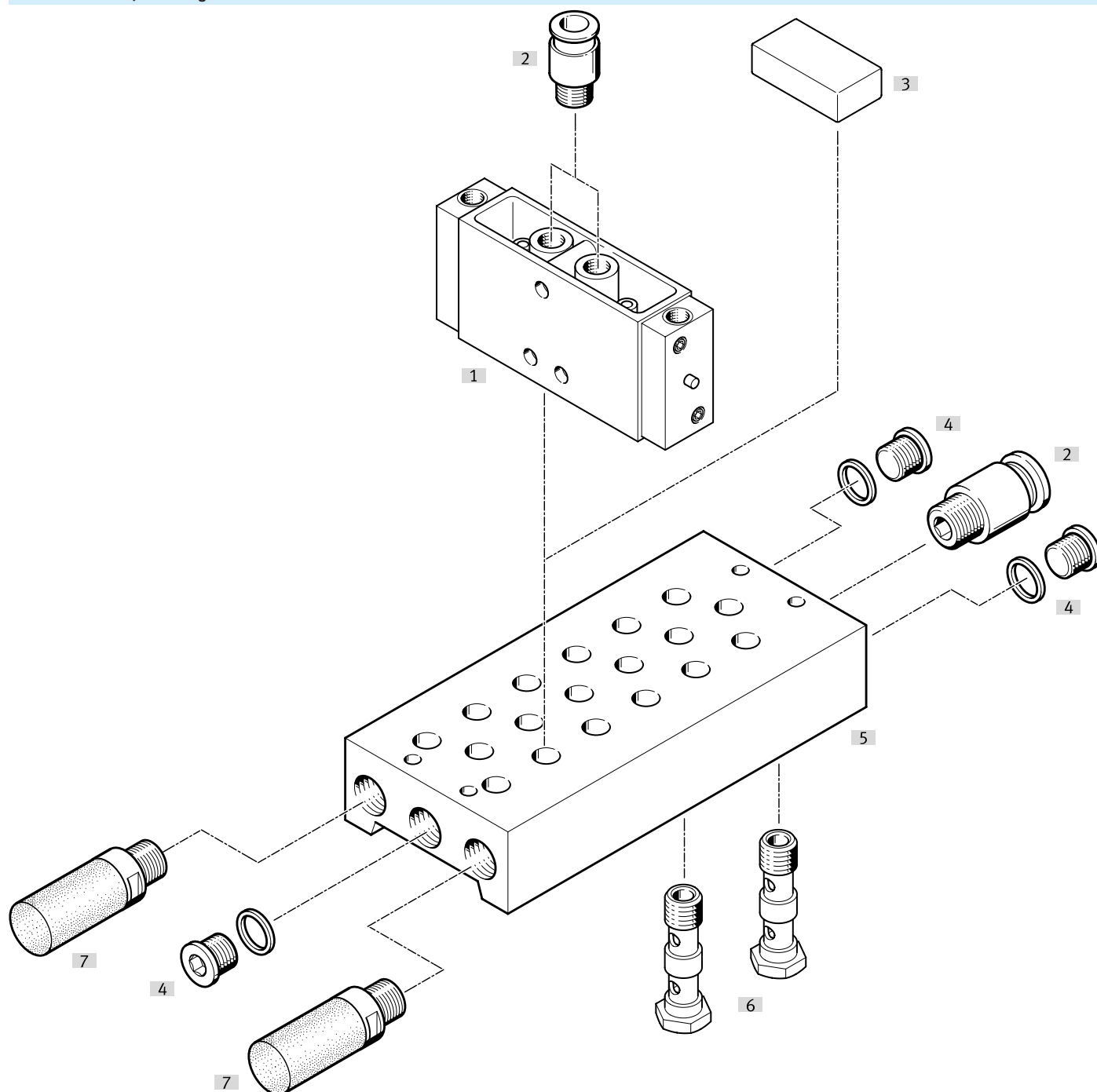
| Accessories                    |                                         |  | → Link               |
|--------------------------------|-----------------------------------------|--|----------------------|
| Type/order code                | Description                             |  |                      |
| [1] Solenoid valve MFH         | For F solenoid coil                     |  | <a href="#">mfh</a>  |
| [2] Solenoid valve JMFH        | For F solenoid coil                     |  | <a href="#">jmfh</a> |
| [3] Silencer                   | For fitting in exhaust ports            |  | <a href="#">u</a>    |
| [4] Push-in fitting QS         | For connecting tubing with standard O.D |  | <a href="#">qs</a>   |
| [5] F solenoid coil MSFG, MSFW | —                                       |  | 46                   |
| [6] Illuminating seal M...-LD  | For displaying the switching status     |  | 48                   |
| [7] Plug socket MSSD-F         |                                         |  | 47                   |
| [8] Connecting cable KMF       |                                         |  | 48                   |
| [9] Plug socket MSSD-FS        | For valves MFH, JMFH                    |  |                      |

## Peripherals

| Accessories            |                                                                       | → Link                       |
|------------------------|-----------------------------------------------------------------------|------------------------------|
| Type/order code        | Description                                                           |                              |
| [10] Cap nut VTM       | To seal a vacant position                                             | <a href="#">45</a>           |
| [11] Manifold rail PAL | –                                                                     | <a href="#">45</a>           |
| [12] Hollow bolt VT    | For compressed air distribution or for separate compressed air supply | <a href="#">46</a>           |
| [13] Blanking plug B   | 3 pieces included in the scope of delivery of the manifold block PRS  | <a href="#">blindstopfen</a> |

## Peripherals

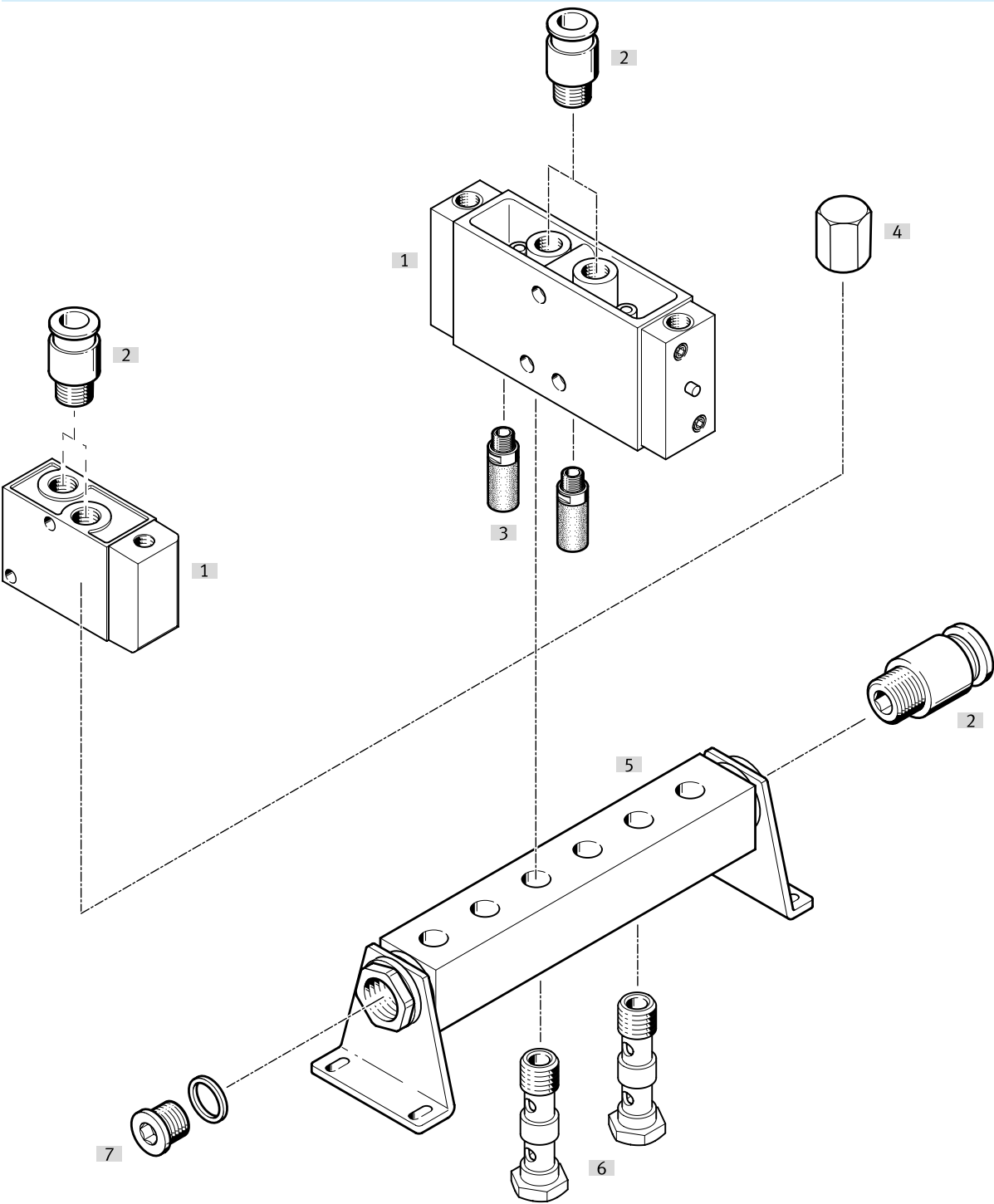
### Pneumatic valves, mounting on manifold block



| Accessories                |                                                                       |  | → Link                         |
|----------------------------|-----------------------------------------------------------------------|--|--------------------------------|
| Type/order code            | Description                                                           |  |                                |
| [1] Pneumatic valve VL, JH | –                                                                     |  | <a href="#">∅ vl, jh</a>       |
| [2] Push-in fitting QS     | For connecting tubing with standard O.D                               |  | <a href="#">∅ qs</a>           |
| [3] Cover plate PRSB       | For covering a vacant position                                        |  | <a href="#">46</a>             |
| [4] Blanking plug B        | 3 pieces included in the scope of delivery of the manifold block PRS  |  | <a href="#">∅ blindstopfen</a> |
| [5] Manifold block PRS     | –                                                                     |  | <a href="#">45</a>             |
| [6] Hollow bolt VT         | For compressed air distribution or for separate compressed air supply |  | <a href="#">46</a>             |
| [7] Silencer               | For fitting in exhaust ports                                          |  | <a href="#">∅ u</a>            |

Peripherals

Pneumatic valves, mounting on manifold rail



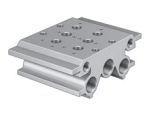
| Accessories                |                                                                       | → Link                         |
|----------------------------|-----------------------------------------------------------------------|--------------------------------|
| Type/order code            | Description                                                           |                                |
| [1] Pneumatic valve VL, JH | –                                                                     | <a href="#">↗ vl, jh</a>       |
| [2] Push-in fitting QS     | For connecting tubing with standard O.D                               | <a href="#">↗ qs</a>           |
| [3] Silencer               | For fitting in exhaust ports                                          | <a href="#">↗ u</a>            |
| [4] Cap nut VTM            | To seal a vacant position                                             | <a href="#">45</a>             |
| [5] Manifold rail PAL      | –                                                                     | <a href="#">45</a>             |
| [6] Hollow bolt VT         | For compressed air distribution or for separate compressed air supply | <a href="#">46</a>             |
| [7] Blanking plug B        | 3 pieces included in the scope of delivery of the manifold block PRS  | <a href="#">↗ blindstopfen</a> |

## Accessories

| Manifold rail PAL                                                                 |                              |                |                     |          |             |
|-----------------------------------------------------------------------------------|------------------------------|----------------|---------------------|----------|-------------|
|                                                                                   | Pneumatic connection, port 1 | Product weight | Material sub-base   | Part no. | Type        |
|  | G1/4                         | 145 g          | Aluminium, Anodised | 8601     | PAL-1/8-2   |
|                                                                                   |                              | 170 g          |                     | 8602     | PAL-1/8-3   |
|                                                                                   |                              | 190 g          |                     | 8603     | PAL-1/8-4   |
|                                                                                   |                              | 215 g          |                     | 8604     | PAL-1/8-5   |
|                                                                                   |                              | 240 g          |                     | 9767     | PAL-1/8-6   |
|                                                                                   | G3/8                         | 330 g          | Aluminium           | 9188     | PAL-5-1/4-2 |
|                                                                                   |                              | 405 g          |                     | 9189     | PAL-5-1/4-3 |
|                                                                                   |                              | 480 g          |                     | 9190     | PAL-5-1/4-4 |
|                                                                                   |                              | 555 g          |                     | 9191     | PAL-5-1/4-5 |
|                                                                                   |                              | 630 g          |                     | 9192     | PAL-5-1/4-6 |
|                                                                                   | G3/4                         | 770 g          | Aluminium, Anodised | 9492     | PAL-1/2-2   |
|                                                                                   |                              | 915 g          |                     | 9493     | PAL-1/2-3   |
|                                                                                   |                              | 1,060 g        |                     | 9494     | PAL-1/2-4   |
|                                                                                   |                              | 1,220 g        |                     | 9495     | PAL-1/2-5   |
|                                                                                   |                              | 1,370 g        |                     | 9496     | PAL-1/2-6   |

| Hollow bolt VT for manifold rail PAL                                               |                              |                                                                                                            |                      |          |          |
|------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------|----------------------|----------|----------|
|                                                                                    | Pneumatic connection, port 1 | Pneumatic connection, port 2                                                                               | Material hollow bolt | Part no. | Type     |
|  |                              |                                                                                                            | Anodised aluminium   | 5928     | VT-1/8-1 |
|                                                                                    |                              |                                                                                                            |                      | 9986     | VT-1/2   |
|                                                                                    |                              |                                                                                                            | Steel, chromed       | 8626     | VT-1/8   |
|                                                                                    | Male thread G1/4             | For barbed fitting inside diameter of 4 mm with nut<br>For barbed fitting inside diameter of 6 mm with nut |                      | 206147   | VT-1/4-2 |

| Cap nut VTM for closing off reserve positions                                       |                        |          |         |
|-------------------------------------------------------------------------------------|------------------------|----------|---------|
|                                                                                     | LABS (PWIS) conformity | Part no. | Type    |
|  | VDMA24364-B1/B2-L      | 9768     | VTM-1/8 |
|                                                                                     |                        | 9987     | VTM-1/2 |
|                                                                                     |                        | 3099     | VTM-1/4 |

| Manifold block PRS                                                                  |                              |                |                   |          |             |
|-------------------------------------------------------------------------------------|------------------------------|----------------|-------------------|----------|-------------|
|                                                                                     | Pneumatic connection, port 1 | Product weight | Material sub-base | Part no. | Type        |
|  | G3/8                         | 360 g          | Aluminium         | 11898    | PRS-1/8-2-B |
|                                                                                     |                              | 460 g          |                   | 11899    | PRS-1/8-3-B |
|                                                                                     |                              | 625 g          |                   | 11900    | PRS-1/8-4-B |
|                                                                                     |                              | 650 g          |                   | 11901    | PRS-1/8-5-B |
|                                                                                     |                              | 750 g          |                   | 11902    | PRS-1/8-6-B |
|                                                                                     | G1/2                         | 590 g          |                   | 10185    | PRS-1/4-2   |
|                                                                                     |                              | 750 g          |                   | 10186    | PRS-1/4-3   |
|                                                                                     |                              | 900 g          |                   | 10187    | PRS-1/4-4   |
|                                                                                     |                              | 1,070 g        |                   | 10188    | PRS-1/4-5   |
|                                                                                     |                              | 1,230 g        |                   | 10189    | PRS-1/4-6   |

| Hollow bolt VT for manifold block PRS                                               |                      |          |            |
|-------------------------------------------------------------------------------------|----------------------|----------|------------|
|                                                                                     | Material hollow bolt | Part no. | Type       |
|  | Steel, chromed       | 9499     | VT-1/4-PRS |

## Accessories

## Hollow bolt VT for manifold block PRS

|                                                                                  | Material hollow bolt | Part no. | Type        |
|----------------------------------------------------------------------------------|----------------------|----------|-------------|
|  | Steel, chromed       | 11539    | VT-1/8-PRSK |

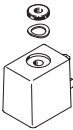
## Cover plate PRSB for closing off reserve spaces

|                                                                                  | Material sub-base | Product weight | Part no. | Type     |
|----------------------------------------------------------------------------------|-------------------|----------------|----------|----------|
|  | Aluminium         | 55 g           | 11687    | PRSB-1/8 |
|                                                                                  |                   | 80 g           | 11688    | PRSB-1/4 |

## Hollow bolt VT for separate compressed air supply at the valve

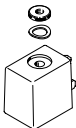
|                                                                                  | Material hollow bolt | Part no. | Type         |
|----------------------------------------------------------------------------------|----------------------|----------|--------------|
|  | Steel, chromed       | 12635    | VT-1/4-AJ-P  |
|                                                                                  |                      | 12910    | VT-1/8-AJS-P |
|                                                                                  |                      | 12634    | VT-1/8-AJK-P |

## F solenoid coils, without plug socket

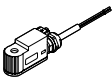
|                                                                                        | Characteris-<br>tic coil data                                           | Explosion ig-<br>nition protec-<br>tion type for<br>gas | Explosion ig-<br>nition protec-<br>tion type for<br>dust | ATEX category<br>gas | ATEX category<br>dust | Part no.            | Type              |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------|----------------------|-----------------------|---------------------|-------------------|
|      | 110 V AC:<br>50/60 Hz,<br>pick-up power 9.0 VA,<br>holding power 7.0 VA |                                                         |                                                          |                      |                       | 34420               | MSFW-110-50/60-OD |
|                                                                                        |                                                                         | Ex nA IIC T4 X Gc                                       | Ex tc IIIC T130°C X Dc IP65                              | II 3G                | II 3D                 | 536933              | MSFW-110-50/60-EX |
|                                                                                        | 12 V DC: 4.1 W                                                          |                                                         |                                                          |                      |                       | 34410               | MSFG-12-OD        |
|                                                                                        |                                                                         |                                                         |                                                          |                      |                       | 34422               | MSFW-230-50/60-OD |
|                                                                                        | 230 V AC:<br>50/60 Hz,<br>pick-up power 9.0 VA,<br>holding power 7.0 VA |                                                         |                                                          |                      |                       | 536934              | MSFW-230-50/60-EX |
|                                                                                        |                                                                         | Ex nA IIC T4 X Gc                                       | Ex tc IIIC T130°C X Dc IP65                              | II 3G                | II 3D                 |                     |                   |
|                                                                                        | 240 V AC:<br>50/60 Hz,<br>pick-up power 9.0 VA,<br>holding power 7.0 VA |                                                         |                                                          |                      |                       | 34424               | MSFW-240-50/60-OD |
|                                                                                        |                                                                         |                                                         |                                                          |                      |                       | 34415               | MSFW-24-50/60-OD  |
|                                                                                        | 24 V AC:<br>50/60 Hz,<br>pick-up power 9.0 VA,<br>holding power 7.0 VA  |                                                         |                                                          |                      |                       | 536932              | MSFW-24-50/60-EX  |
|                                                                                        |                                                                         | Ex nA IIC T4 X Gc                                       | Ex tc IIIC T130°C X Dc IP65                              | II 3G                | II 3D                 |                     |                   |
| 24 V DC: 4.5 W, 42 V AC:<br>50/60 Hz,<br>pick-up power 9.0 VA,<br>holding power 7.0 VA |                                                                         |                                                         |                                                          |                      | 34411                 | MSFG-24/42-50/60-OD |                   |

## Accessories

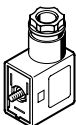
## F solenoid coils, without plug socket

|                                                                                   | Characteristic coil data                                      | Explosion ignition protection type for gas | Explosion ignition protection type for dust | ATEX category gas | ATEX category dust | Part no. | Type             |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------|---------------------------------------------|-------------------|--------------------|----------|------------------|
|  | 24 V DC: 4.5 W                                                | Ex nA IIC T4 X Gc                          | Ex tc IIIC T130°C X Dc IP65                 | II 3G             | II 3D              | 536931   | MSFG-24-EX       |
|                                                                                   | 42 V DC: 5.5 W                                                |                                            |                                             |                   |                    | 34413    | MSFG-42-OD       |
|                                                                                   | 48 V AC: 50/60 Hz, pick-up power 9.0 VA, holding power 7.0 VA |                                            |                                             |                   |                    | 34418    | MSFW-48-50/60-OD |

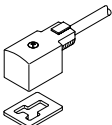
## F solenoid coils, cable with open end, 3-core

|                                                                                    | Characteristic coil data          | Explosion ignition protection type for gas | Explosion ignition protection type for dust | ATEX category gas | ATEX category dust | Cable length | Part no. | Type                  |
|------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------|---------------------------------------------|-------------------|--------------------|--------------|----------|-----------------------|
|  | 110 V AC: 50/60 Hz, power 4.18 VA | Ex mb IIC T5 Gb                            | Ex mb IIIC T95°C Db                         | II 2G             | II 2D              | 1 m          | 8059811  | VACF-B-K1-16B-1-EX4-M |
|                                                                                    |                                   |                                            |                                             |                   |                    | 5 m          | 8059812  | VACF-B-K1-16B-5-EX4-M |
|                                                                                    | 230 V AC: 50/60 Hz, power 5.0 VA  |                                            |                                             |                   |                    | 1 m          | 8059809  | VACF-B-K1-3A-1-EX4-M  |
|                                                                                    |                                   |                                            |                                             |                   |                    | 5 m          | 8059810  | VACF-B-K1-3A-5-EX4-M  |
|                                                                                    | 24 V AC: 50/60 Hz, power 3.85 VA  |                                            |                                             |                   |                    | 1 m          | 8059808  | VACF-B-K1-1A-1-EX4-M  |
|                                                                                    | 24 V DC: 4.36 W                   |                                            |                                             |                   |                    |              | 8059804  | VACF-B-K1-1-1-EX4-M   |
|                                                                                    |                                   |                                            |                                             |                   |                    | 5 m          | 8059805  | VACF-B-K1-1-5-EX4-M   |
|                                                                                    |                                   |                                            |                                             |                   |                    | 10 m         | 8059806  | VACF-B-K1-1-10-EX4-M  |
|                                                                                    |                                   |                                            |                                             |                   |                    | 20 m         | 8059807  | VACF-B-K1-1-20-EX4-M  |

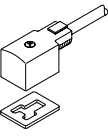
## Plug socket, without cable, cable connection with clamping screws

|                                                                                     | Electrical connection 2 | Cable fitting | Part no. | Type       |
|-------------------------------------------------------------------------------------|-------------------------|---------------|----------|------------|
|  |                         | M16x1.5       | 539710   | MSSD-F-M16 |
|                                                                                     | Screw terminal          | Pg 9          | ★ 34431  | MSSD-F     |

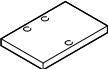
## Connecting cable

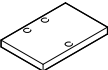
|                                                                                     | Switching position indicator | Nominal operating voltage DC | Cable length | Part no. | Type               |
|-------------------------------------------------------------------------------------|------------------------------|------------------------------|--------------|----------|--------------------|
|  |                              |                              | 2.5 m        | 30936    | KMF-1-230AC-2.5    |
|                                                                                     |                              |                              | 5 m          | 30938    | KMF-1-230AC-5      |
|                                                                                     | LED                          | 24 V                         | 2.5 m        | ★ 30935  | KMF-1-24DC-2.5-LED |
|                                                                                     |                              |                              | 5 m          | 30937    | KMF-1-24DC-5-LED   |
|                                                                                     |                              |                              | 10 m         | 193458   | KMF-1-24-10-LED    |
|                                                                                     |                              |                              |              |          |                    |

## Accessories

| Connecting cable                                                                 |                              |                              |              |          |                    |
|----------------------------------------------------------------------------------|------------------------------|------------------------------|--------------|----------|--------------------|
|                                                                                  | Switching position indicator | Nominal operating voltage DC | Cable length | Part no. | Type               |
|  |                              |                              | 2.5 m        | 30936    | KMF-1-230AC-2.5    |
|                                                                                  |                              |                              | 5 m          | 30938    | KMF-1-230AC-5      |
|                                                                                  | LED                          | 24 V                         | 2.5 m        | ★ 30935  | KMF-1-24DC-2.5-LED |
|                                                                                  |                              |                              | 5 m          | 30937    | KMF-1-24DC-5-LED   |
|                                                                                  |                              |                              | 10 m         | 193458   | KMF-1-24-10-LED    |

| Illuminating seal for F solenoid coils                                           |                              |          |               |
|----------------------------------------------------------------------------------|------------------------------|----------|---------------|
|                                                                                  | Operational voltage range DC | Part no. | Type          |
|  | 12 ... 24 V                  | 19143    | MF-LD-12-24DC |

| Plate for wide solenoid coils, as a spacer when using wider solenoid coils from other manufacturers (thickness 6.35 mm), for 3/2-way valves |                        |          |             |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|-------------|
|                                                                                                                                             | LABS (PWIS) conformity | Part no. | Type        |
|                                                             | VDMA24364-B2-L         | 541667   | MPL-TC-3-18 |
|                                                                                                                                             |                        | 541669   | MPL-TC-3-14 |

| Plate for wide solenoid coils, as a spacer when using wider solenoid coils from other manufacturers (thickness 6.35 mm), for 5/2-way valves |                        |          |             |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|-------------|
|                                                                                                                                             | LABS (PWIS) conformity | Part no. | Type        |
|                                                           | VDMA24364-B2-L         | 541670   | MPL-TC-5-14 |
|                                                                                                                                             |                        | 541668   | MPL-TC-5-18 |