

## Solenoid/pneumatic valves, Tiger 2000

**FESTO**



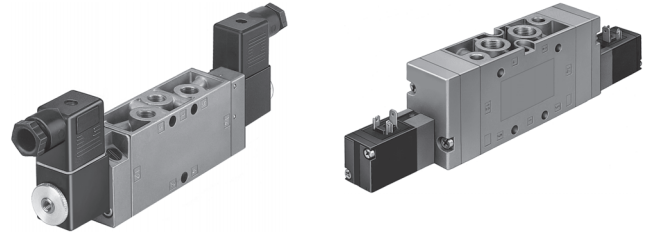
# Solenoid/pneumatic valves, Tiger 2000

Key features

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## General information

- A complete and comprehensive range with 5/2-way and 5/3-way valves
- Poppet valve for monostable functions or piston spool for more complex versions with air spring and 5/3-way valves
- With flow-optimised internal functions for higher flow rates with the same width
- Pneumatic connections G1/8, G1/4, G3/8
- Diverse and flexible, side and front mounting
- Pneumatic or electrical actuation
- Versatile connection technology with F or V solenoid coil with low power consumption, even for mounting on valve terminals
- Functional and timeless design, enclosed front housing



## Solenoid coils

### 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

- For all MFH valves
  - Selected types in accordance with ATEX directive for potentially explosive atmospheres
- [www.festo.com/en/ex](http://www.festo.com/en/ex)

- Solenoid coil can be easily exchanged later
- Solenoid coil not included in scope of delivery

### V solenoid coils

Voltage:

- 24 V DC

Power consumption:

- 2.5 W

- For all MVH valves
- Low heating

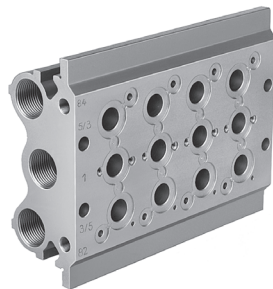
- Solenoid coil included in scope of delivery

## Manifold assembly

### With PAL manifold rail



### With PRS manifold block



The Tiger 2000 valves (without an ATEX category) can be mounted on PAL manifold rails with a common supply port or on PRS manifold blocks with a common supply port and exhaust. The manifold rail and manifold block have 2 to 10 valve positions.



Note

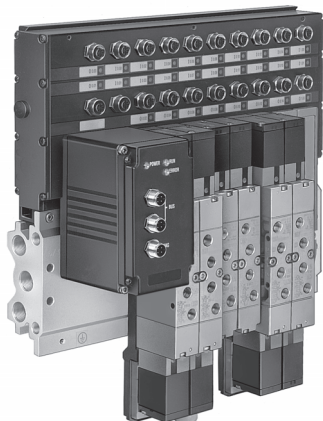
Valves for explosive atmospheres (ATEX category) are not suitable for mounting on PAL manifold rails or PRS manifold blocks.

# Solenoid/pneumatic valves, Tiger 2000

Key features

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## Valve terminals



Completely assembled valve terminal type 02, ready to be connected, available with Tiger 2000 valves (V solenoid coil).

Choice of connections:

- Main multipin plug
- Fieldbus connection for all common fieldbus protocols
- Autonomous with integrated control (PLC)
- For G1/8 and G1/4

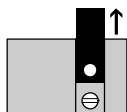
## Manual override for valves with V solenoid coil

Non-detenting (standard)

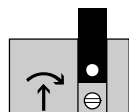


Press on the aluminium plate

## Conversion to detenting actuation

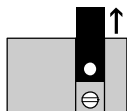


1 Remove the aluminium plate

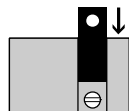


2 Using a screwdriver, simultaneously push and turn the exposed manual override

## Blocking the manual override



1 Remove the aluminium plate

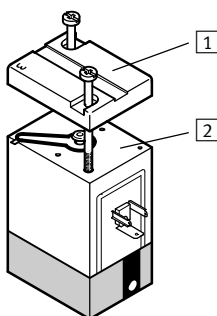


2 Turn the aluminium plate by 180° and reinsert it



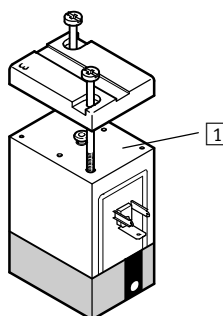
3 The manual override is now blocked

## Pilot exhaust air for valves with V solenoid coil



- 1 The coil end cap must not be turned when removing the seal
- 2 Seal inserted

Free pilot exhaust air  
Unducted once the seal in the coil end cap is removed, with code 3 on the end cap always corresponding to ports 84 and/or 82 of the valve.

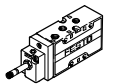
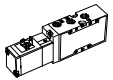
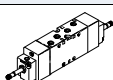
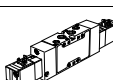


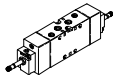
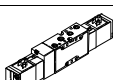
- 1 Seal removed

# Solenoid valves, Tiger 2000

Product range overview

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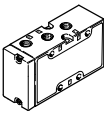
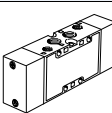
| Function       | Version                                                                           | Type | Pneumatic connection | Operating voltage |             | Pilot air supply |          | Type of reset    |                   | → Page/<br>Internet |
|----------------|-----------------------------------------------------------------------------------|------|----------------------|-------------------|-------------|------------------|----------|------------------|-------------------|---------------------|
|                |                                                                                   |      |                      | [V DC]            | [V AC]      | Internal         | External | Pneumatic spring | Mechanical spring |                     |
| 5/2-way valves | Solenoid valve                                                                    |      |                      |                   |             |                  |          |                  |                   |                     |
|                |  | MFH  | G1/8                 | 12, 24, 42,       | 12, 24, 42, | ■                | ■        | ■                | ■                 | 11                  |
|                |                                                                                   |      | G1/4                 | 48                | 48, 110,    | ■                | ■        | ■                | ■                 |                     |
|                |                                                                                   |      | G3/8                 |                   | 230, 240    | ■                | ■        | ■                | ■                 |                     |
|                |  | MVH  | G1/8                 | 24                | –           | ■                | ■        | ■                | ■                 | 32                  |
|                |                                                                                   |      | G1/4                 |                   |             | ■                | ■        | ■                | ■                 |                     |
|                |                                                                                   |      | G3/8                 |                   |             | ■                | ■        | ■                | ■                 |                     |
|                | Double solenoid valve                                                             |      |                      |                   |             |                  |          |                  |                   |                     |
|                |  | JMFH | G1/8                 | 12, 24, 42,       | 12, 24, 42, | ■                | ■        | –                | –                 | 19                  |
|                |                                                                                   |      | G1/4                 | 48                | 48, 110,    | ■                | ■        | –                | –                 |                     |
|                |                                                                                   |      | G3/8                 |                   | 230, 240    | ■                | ■        | –                | –                 |                     |
|                |  | JMVH | G1/8                 | 24                | –           | ■                | ■        | –                | –                 | 38                  |
|                |                                                                                   |      | G1/4                 |                   |             | ■                | ■        | –                | –                 |                     |
|                |                                                                                   |      | G3/8                 |                   |             | ■                | ■        | –                | –                 |                     |

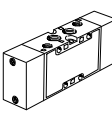
| Function       | Version                                                                             | Type    | Pneumatic connection | Operating voltage |                                        | Pilot air supply |          | Normal position |           |             | ➔ Page/<br>Internet |
|----------------|-------------------------------------------------------------------------------------|---------|----------------------|-------------------|----------------------------------------|------------------|----------|-----------------|-----------|-------------|---------------------|
|                |                                                                                     |         |                      | [V DC]            | [V AC]                                 | Internal         | External | Closed          | Exhausted | Pressurised |                     |
| 5/3-way valves | Solenoid valve                                                                      |         |                      |                   |                                        |                  |          |                 |           |             |                     |
|                |  | MFH-5/3 | G1/8                 | 12, 24,<br>42, 48 | 12, 24,<br>42, 48,<br>110, 230,<br>240 | ■                | ■        | ■               | ■         | ■           | 24                  |
|                |                                                                                     |         | G1/4                 |                   |                                        | ■                | ■        | ■               | ■         | ■           |                     |
|                |                                                                                     |         | G3/8                 |                   |                                        | ■                | ■        | ■               | ■         | ■           |                     |
|                |  | MVH-5/3 | G1/8                 | 24                | —                                      | ■                | ■        | ■               | ■         | ■           | 44                  |
|                |                                                                                     |         | G1/4                 |                   |                                        | ■                | ■        | ■               | ■         | ■           |                     |
|                |                                                                                     |         | G3/8                 |                   |                                        | ■                | ■        | ■               | ■         | ■           |                     |

# Pneumatic valves, Tiger 2000

Product range overview

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| Function       | Version                                                                           | Type | Pneumatic connection | Type of reset    |                   | → Page/Internet |
|----------------|-----------------------------------------------------------------------------------|------|----------------------|------------------|-------------------|-----------------|
|                |                                                                                   |      |                      | Pneumatic spring | Mechanical spring |                 |
| 5/2-way valves | Pneumatic valve                                                                   |      |                      |                  |                   |                 |
|                |  | VL   | G1/8                 | –                | ■                 | 55              |
|                |                                                                                   |      | G1/4                 | –                | ■                 |                 |
|                |                                                                                   |      | G3/8                 | –                | ■                 |                 |
|                |                                                                                   |      |                      |                  |                   |                 |
|                | Pneumatic bistable valve                                                          |      |                      |                  |                   |                 |
|                |  | J    | G1/8                 | –                | –                 | 56              |
|                |                                                                                   |      | G1/4                 | –                | –                 |                 |
|                |                                                                                   |      | G3/8                 | –                | –                 |                 |
|                |                                                                                   |      |                      |                  |                   |                 |

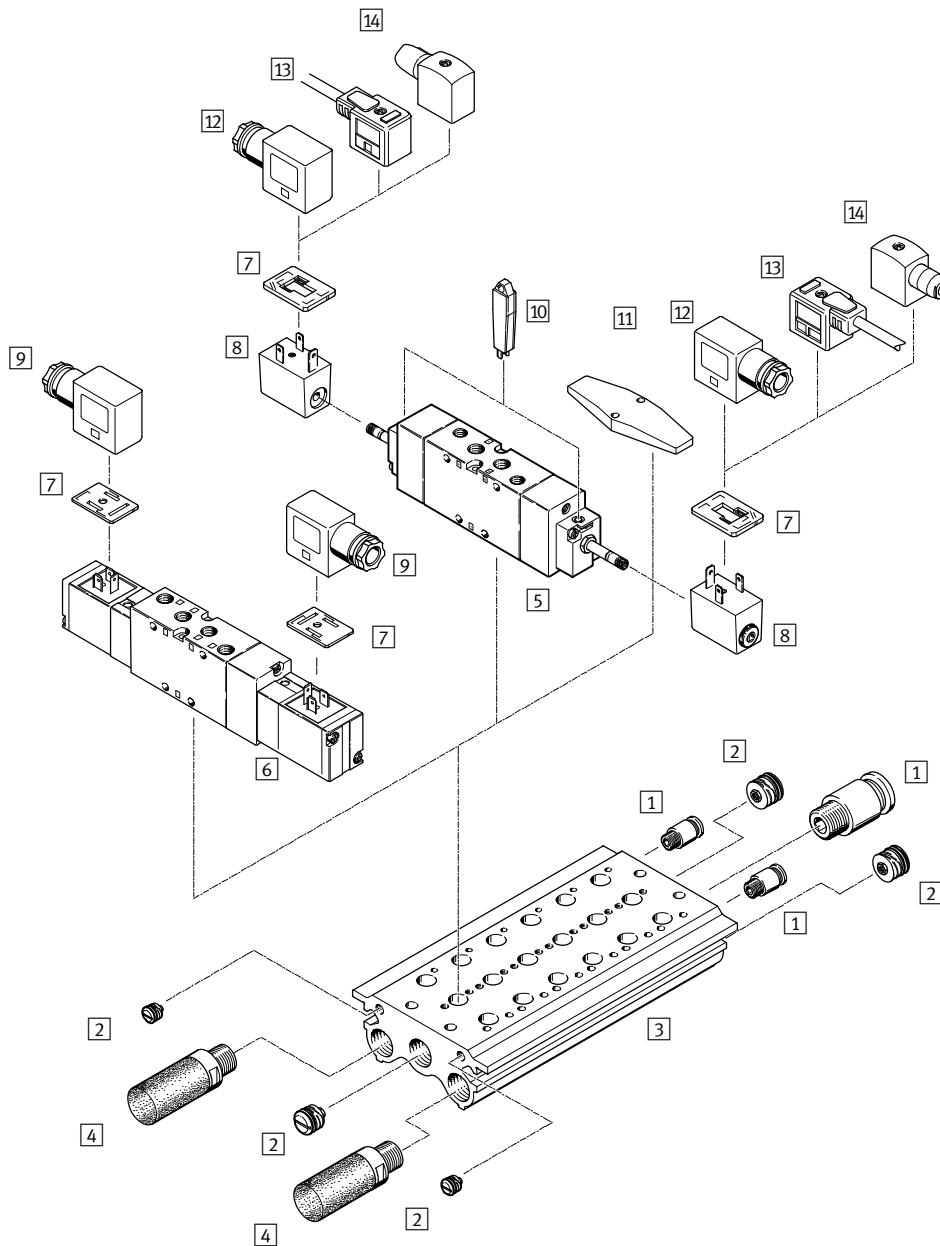
| Function       | Version                                                                            | Type | Pneumatic connection | Normal position |           |             | → Page/Internet |
|----------------|------------------------------------------------------------------------------------|------|----------------------|-----------------|-----------|-------------|-----------------|
|                |                                                                                    |      |                      | Closed          | Exhausted | Pressurised |                 |
| 5/3-way valves | Pneumatic valve                                                                    |      |                      |                 |           |             |                 |
|                |  | VL   | G1/8                 | ■               | ■         | ■           | 60              |
|                |                                                                                    |      | G1/4                 | ■               | ■         | ■           |                 |
|                |                                                                                    |      | G3/8                 | ■               | ■         | ■           |                 |
|                |                                                                                    |      |                      |                 |           |             |                 |

# Solenoid valves, Tiger 2000

Peripherals overview

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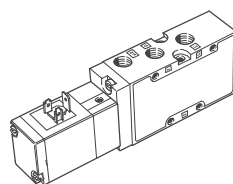
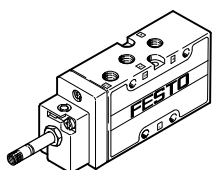
## Mounting on manifold block



### Variants

MFH-5-...-B

MVH-5-...-B



# Solenoid valves, Tiger 2000

Peripherals overview

**FESTO**

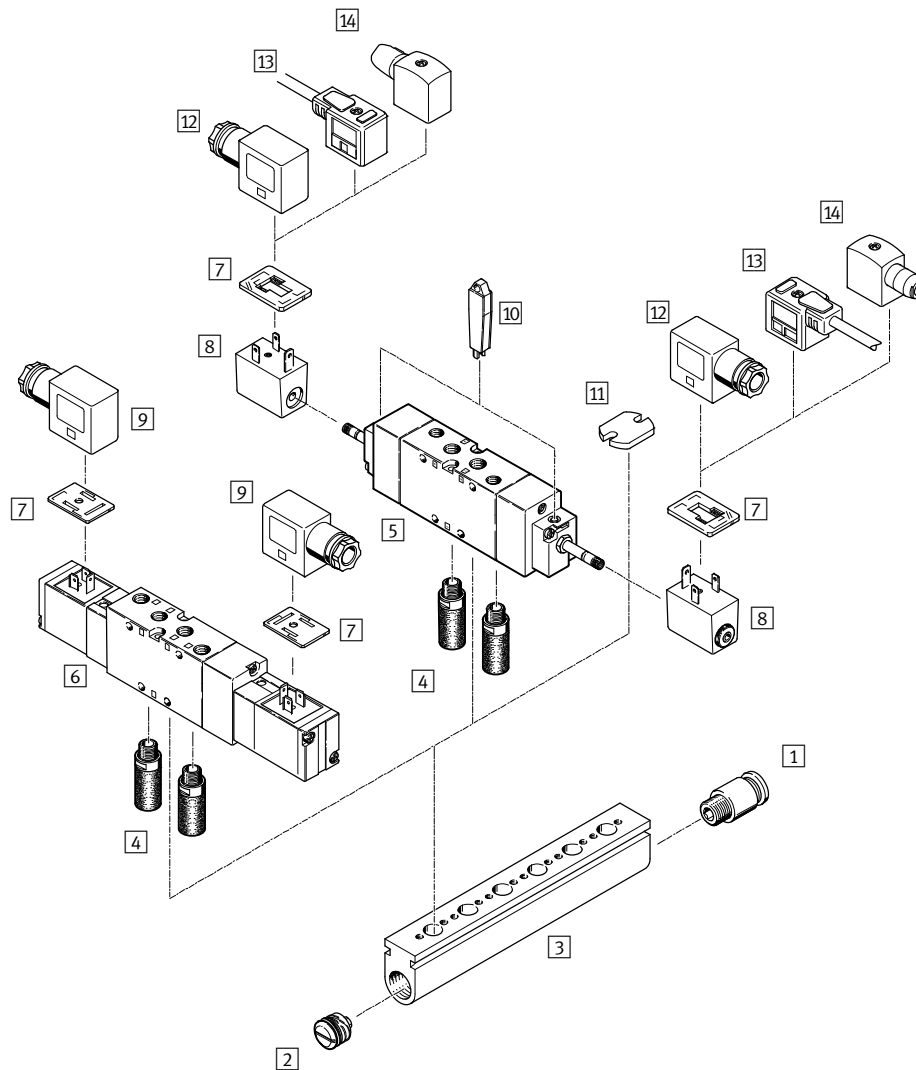
| Accessories                     |                                                                                     |                 |
|---------------------------------|-------------------------------------------------------------------------------------|-----------------|
|                                 | Brief description                                                                   | → Page/Internet |
| 1 Push-in fitting<br>QS         | For connecting compressed air tubing with standard O.D.                             | qs              |
| 2 Blanking plug<br>PRSV         | –                                                                                   | 68              |
| 3 Manifold block<br>PRS         | –                                                                                   | 66              |
| 4 Silencer                      | For mounting in exhaust ports                                                       | qs              |
| 5 Solenoid valve<br>MFH         | Basic valve for F solenoid coil                                                     | 4               |
| 6 Solenoid valve<br>MVH         | With V solenoid coil                                                                | 4               |
| 7 Illuminating seal<br>M...-LD  | For indicating the switching status                                                 | 70              |
| 8 F solenoid coil<br>MSFG, MSFW | F solenoid coil for basic valves MFH, JMFH                                          | 69              |
| 9 Plug socket<br>MSSD-V         | For solenoid valves MVH, JMVH                                                       | 70              |
| 10 Manual override<br>AHB       | By inserting and turning the manual override AHB (by 90°), the valve can be engaged | 69              |
| 11 Cover plate<br>PRSB          | For covering vacant positions                                                       | 68              |
| 12 Plug socket<br>MSSD-F        | For solenoid valves MFH, JMFH                                                       | 70              |
| 13 Connecting cable<br>KMF      | For solenoid valves MFH, JMFH                                                       | 70              |
| 14 Plug socket<br>MSSD-F-S      | For solenoid valves MFH, JMFH                                                       | 70              |

# Solenoid valves, Tiger 2000

Peripherals overview

FESTO

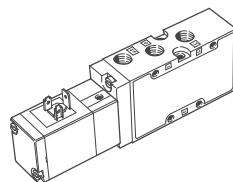
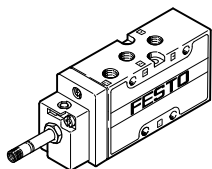
## Mounting on manifold rail



### Variants

MFH-5-...-B

MVH-5-...-B



# Solenoid valves, Tiger 2000

Peripherals overview

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| Accessories                     |                                                                                     |                 |
|---------------------------------|-------------------------------------------------------------------------------------|-----------------|
|                                 | Brief description                                                                   | → Page/Internet |
| 1 Push-in fitting<br>QS         | For connecting compressed air tubing with standard O.D.                             | qs              |
| 2 Blanking plug<br>PRSV         | –                                                                                   | 68              |
| 3 Manifold rail<br>PAL          | –                                                                                   | 64              |
| 4 Silencer                      | For mounting in exhaust ports                                                       | u               |
| 5 Solenoid valve<br>MFH         | Basic valve for F solenoid coil                                                     | 4               |
| 6 Solenoid valve<br>MVH         | With V solenoid coil                                                                | 4               |
| 7 Illuminating seal<br>M...-LD  | For indicating the switching status                                                 | 70              |
| 8 F solenoid coil<br>MSFG, MSFW | F solenoid coil for basic valves MFH, JMFH                                          | 69              |
| 9 Plug socket<br>MSSD-V         | For solenoid valves MVH, JMVH                                                       | 70              |
| 10 Manual override<br>AHB       | By inserting and turning the manual override AHB (by 90°), the valve can be engaged | 69              |
| 11 Cover plate<br>PALB          | For covering vacant positions                                                       | 68              |
| 12 Plug socket<br>MSSD-F        | For solenoid valves MFH, JMFH                                                       | 70              |
| 13 Connecting cable<br>KMF      | For solenoid valves MFH, JMFH                                                       | 70              |
| 14 Plug socket<br>MSSD-F-S      | For solenoid valves MFH, JMFH                                                       | 70              |

# Solenoid valves, Tiger 2000

Type codes

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|  |  |     |   |     |   |   |     |   |  |   |  |   |   |   |    |   |    |   |   |
|--|--|-----|---|-----|---|---|-----|---|--|---|--|---|---|---|----|---|----|---|---|
|  |  | MFH | – | 5/3 | G | – | 1/8 | – |  | – |  | – | B | – | EX | – | VI | – | X |
|--|--|-----|---|-----|---|---|-----|---|--|---|--|---|---|---|----|---|----|---|---|

| Type |                                       |
|------|---------------------------------------|
| MFH  | Single solenoid, for F solenoid coil  |
| MVH  | Single solenoid, with V solenoid coil |
| JMFH | Double solenoid, for F solenoid coil  |
| JMVH | Double solenoid, with V solenoid coil |

| Valve function |               |
|----------------|---------------|
| 5              | 5/2-way valve |
| 5/3            | 5/3-way valve |

| Normal position |             |
|-----------------|-------------|
| G               | Closed      |
| E               | Exhausted   |
| B               | Pressurised |

| Pneumatic connection |      |
|----------------------|------|
| 1/8                  | G1/8 |
| 1/4                  | G1/4 |
| 3/8                  | G3/8 |

| Type of reset |                   |
|---------------|-------------------|
| –             | Mechanical spring |
| L             | Pneumatic spring  |

| Pilot air supply |          |
|------------------|----------|
| –                | Internal |
| S                | External |

| Generation |          |
|------------|----------|
| B          | B series |

| CE marking |                                |
|------------|--------------------------------|
| –          | None                           |
| EX         | ATEX category → technical data |

| Additional usage |                |
|------------------|----------------|
| VI               | Valve terminal |

| Additional usage |                 |
|------------------|-----------------|
| X                | Via accessories |

# Solenoid valves MFH-B, Tiger 2000

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Technical data – 5/2-way valves

-  Flow rate  
750 ... 2000 l/min
-  Voltage  
12, 24, 42, 48 V DC  
24, 42, 48, 110, 230,  
240 V AC  
Wearing parts kits  
→ 16



| General technical data              |                                                     |                        |                        |              |            |           |
|-------------------------------------|-----------------------------------------------------|------------------------|------------------------|--------------|------------|-----------|
| Pneumatic connection                | G1/8                                                |                        | G1/4                   |              | G3/8       |           |
| Reset method                        | Mechanical                                          | Pneumatic              | Mechanical             | Pneumatic    | Mechanical | Pneumatic |
| Valve function                      | 5/2-way, single solenoid                            |                        |                        |              |            |           |
| Design                              | Poppet seat                                         | Piston spool           | Poppet seat            | Piston spool |            |           |
| Lap                                 | Underlap                                            | Overlap                | Underlap               | Overlap      |            |           |
| Sealing principle                   | Soft                                                |                        |                        |              |            |           |
| Actuation type                      | Electrical                                          |                        |                        |              |            |           |
| Control type                        | Pilot-actuated                                      |                        |                        |              |            |           |
| Pilot air supply                    | Internal or external                                |                        |                        |              |            |           |
| Flow direction                      | Reversible or not reversible (see switching symbol) |                        |                        |              |            |           |
| Exhaust air function                | With flow control                                   |                        |                        |              |            |           |
| Manual override                     | Non-detenting                                       |                        |                        |              |            |           |
| Type of mounting                    | With through-hole                                   |                        |                        |              |            |           |
| Mounting position                   | Any                                                 |                        |                        |              |            |           |
| Electrical connection               | Via F solenoid coil, to be ordered separately       |                        |                        |              |            |           |
| b value                             | 0.34                                                | –                      | 0.29                   | 0.38         | –          | –         |
| c value [l/s bar]                   | 3                                                   | –                      | 5.5                    | 6.35         | –          | –         |
| Nominal width                       | 5                                                   | 8                      | 7                      | 10           | 12         | 12        |
| Standard nominal flow rate [l/min.] | 750                                                 | 1000                   | 1300                   | 1600         | 2000       | 2000      |
| Grid dimension [mm]                 | 27                                                  |                        | 33                     |              | 41         |           |
| Valve width [mm]                    | 26                                                  |                        | 32                     |              | 40         |           |
| Product weight [g]                  | 220, 250 <sup>1)</sup>                              | 280, 300 <sup>1)</sup> | 300, 360 <sup>1)</sup> | 380          | 630        | 630       |

1) ATEX valve

| Safety data                                 |  |      |
|---------------------------------------------|--|------|
| Max. switching frequency [Hz]               |  | 3    |
| Max. positive test pulse with 0 signal [μs] |  | 2200 |
| Max. negative test pulse with 1 signal [μs] |  | 3700 |

| ATEX                                       |                                             |
|--------------------------------------------|---------------------------------------------|
| Type                                       | MFH- ... -EX, JMFH- ... -EX                 |
| ATEX category gas                          | II 2G                                       |
| Type of (ignition) protection for gas      | Ex h IIC T4 Gb                              |
| ATEX category for dust                     | II 2D                                       |
| Type of (ignition) protection for dust     | Ex h IIIC T130°C Db                         |
| Explosion-proof ambient temperature [°C]   | –5 ≤ Ta ≤ +40                               |
| CE marking (see declaration of conformity) | To EU Explosion Protection Directive (ATEX) |
| Degree of protection                       | IP65 (in assembled state)                   |

# Solenoid valves MFH-B, Tiger 2000



Technical data – 5/2-way valves

| Operating and environmental conditions        |                           |       |                                                                                                        |              |                                      |              |              |              |
|-----------------------------------------------|---------------------------|-------|--------------------------------------------------------------------------------------------------------|--------------|--------------------------------------|--------------|--------------|--------------|
| Pneumatic connection                          |                           |       | G1/8                                                                                                   |              | G1/4                                 |              | G3/8         |              |
| Reset method                                  |                           |       | Mechanical                                                                                             | Pneumatic    | Mechanical                           | Pneumatic    | Mechanical   | Pneumatic    |
| Operating medium                              |                           |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |              |                                      |              |              |              |
| Pilot medium (with external pilot air supply) |                           |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |              |                                      |              |              |              |
| Note on operating/pilot medium                |                           |       | Operation with lubricated medium possible (in which case lubricated operation will always be required) |              |                                      |              |              |              |
| Operating pressure                            | Internal pilot air supply | [bar] | 2 ... 10                                                                                               | 3 ... 10     | 2 ... 10                             | 3 ... 10     | 2.5 ... 10   | 2 ... 10     |
|                                               | External pilot air supply | [bar] | −0.9 ... +10, 0 ... 10 <sup>1)</sup>                                                                   | −0.9 ... +10 | −0.9 ... +10, 0 ... 10 <sup>1)</sup> | −0.9 ... +10 | −0.9 ... +10 | −0.9 ... +10 |
| Pilot pressure                                |                           | [bar] | 2 ... 10                                                                                               | 3 ... 10     | 2 ... 10                             | 3 ... 10     | 2.5 ... 10   | 2 ... 10     |
| Storage temperature                           |                           | [°C]  | −40 ... +60                                                                                            |              |                                      |              |              |              |
| Ambient temperature                           |                           | [°C]  | −5 ... +40                                                                                             |              |                                      |              |              |              |
| Temperature of medium                         |                           | [°C]  | −10 ... +60                                                                                            |              |                                      |              |              |              |
|                                               |                           | [°C]  | −5 ... +40 (MFH- ... -EX)                                                                              |              |                                      |              |              |              |
| Corrosion resistance class CRC <sup>2)</sup>  |                           |       | 1                                                                                                      |              |                                      |              |              |              |

1) For non-reversible valves

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

| Electrical data                            |            |                                         |                                          |
|--------------------------------------------|------------|-----------------------------------------|------------------------------------------|
| F solenoid coil                            |            |                                         |                                          |
| Electrical connection of the solenoid coil |            | Plug vanes for plug sockets MSSD-F, KMF |                                          |
| Operating voltage                          | DC voltage | [V DC]                                  | 12, 24, 42, 48                           |
|                                            | AC voltage | [V AC]                                  | 24, 42, 48, 110, 230, 240 (50 ... 60 Hz) |
| Coil characteristics                       | DC voltage | [W]                                     | 4.5                                      |
|                                            | AC voltage | [VA]                                    | Pull: 7.5<br>Hold: 6                     |
| Degree of protection to EN 60529           |            | IP65 (in combination with plug socket)  |                                          |

| Valve switching times [ms] |  |  |            |           |            |                      |
|----------------------------|--|--|------------|-----------|------------|----------------------|
| Pneumatic connection       |  |  | G1/8       |           | G1/4       |                      |
| Reset method               |  |  | Mechanical | Pneumatic | Mechanical | Pneumatic            |
| On                         |  |  | 10         | 27        | 12         | 23                   |
| Off                        |  |  | 30         | 22        | 36         | 42                   |
|                            |  |  |            |           | 20         | 25, 27 <sup>1)</sup> |
|                            |  |  |            |           | 56         | 50, 65 <sup>1)</sup> |

1) For reversible valves

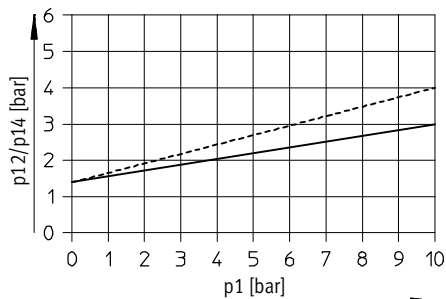
# Solenoid valves MFH-B, Tiger 2000

FESTO

Technical data – 5/2-way valves

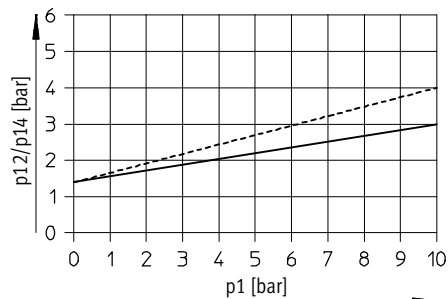
## Minimum pilot pressure $p_{12}$ , $p_{14}$ as a function of operating pressure $p_1$ (external pilot air supply)

MFH-5-1/8-S-B



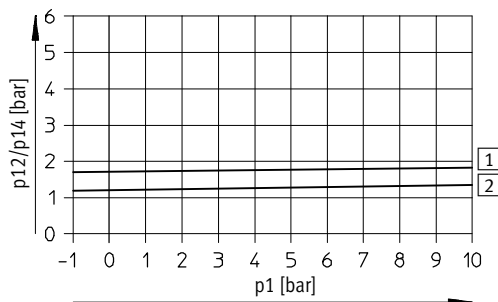
----- Exhausting, throttled  
 ——— Exhausting, unthrottled

MFH-5-1/4-S-B



----- Exhausting, throttled  
 ——— Exhausting, unthrottled

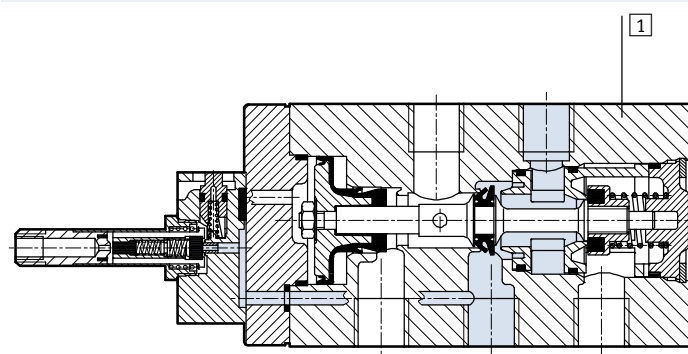
MFH-5-3/8-S-B



1 On  
 2 Off

## Materials

Sectional view



|   |                   |                    |
|---|-------------------|--------------------|
| 1 | Housing           | Die-cast aluminium |
| – | Seals             | NBR, TPE-U(PU)     |
| – | Note on materials | RoHS compliant     |

# Solenoid valves MFH-B, Tiger 2000

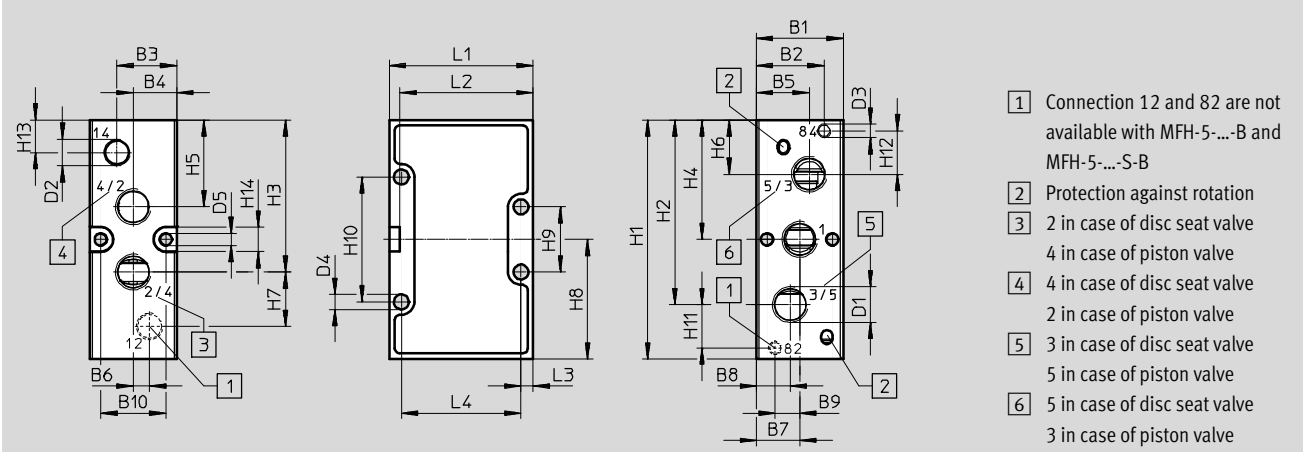
Technical data – 5/2-way valves

**FESTO**

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



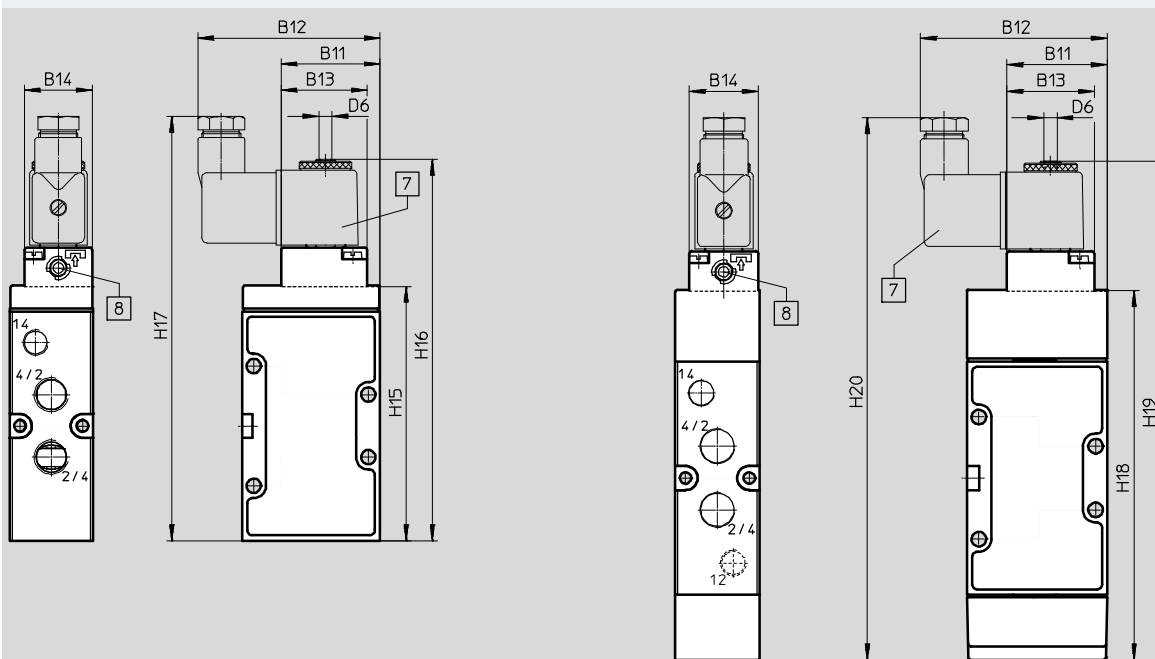
| Pneumatic connection | B1 | B2   | B3 | B4 | B5   | B6 | B7 | B8   | B9 | B10  | D1   | D2   | D3 | D4  | D5  | H1 | H2   |
|----------------------|----|------|----|----|------|----|----|------|----|------|------|------|----|-----|-----|----|------|
| G1/8                 | 26 | 16.5 | 18 | 13 | 16.5 | 5  | 13 | 9.5  | 8  | 19.5 | G1/8 | G1/8 | M5 | 4.5 | 4.3 | 77 | 59.5 |
| G1/4                 | 32 | 19.5 | 22 | 16 | 19.5 | 6  | 16 | 12.5 | 9  | 24   | G1/4 |      |    | 5.5 | 4.3 | 88 | 68   |

| Pneumatic connection | H3   | H4   | H5   | H6   | H7 | H8   | H9 | H10 | H11 | H12 | H13 | H14 | L1 | L2 | L3  | L4 |
|----------------------|------|------|------|------|----|------|----|-----|-----|-----|-----|-----|----|----|-----|----|
| G1/8                 | 49.5 | 38.5 | 27.5 | 17.5 | 19 | 38.5 | 21 | 41  | 12  | 12  | 8.5 | 9   | 47 | 43 | 3.5 | 40 |
| G1/4                 | 56   | 44   | 32   | 20   | 20 | 44   | 22 | 48  | 16  | 16  | 12  |     | 53 | 49 | 4.5 | 44 |

## Installation dimensions with F solenoid coil

Mechanical reset method

Pneumatic reset method



| Type       | B11  | B12 | B13 | B14 | D6 | H18   | H19   | H20   |
|------------|------|-----|-----|-----|----|-------|-------|-------|
| MFH-5-1/8- | 36.8 | 67  | 33  | 26  | M5 | 126.2 | 175   | 191.5 |
| MFH-5-1/4- | 38   | 70  |     |     |    | 139   | 187.8 | 204.3 |

# Solenoid valves MFH-B, Tiger 2000

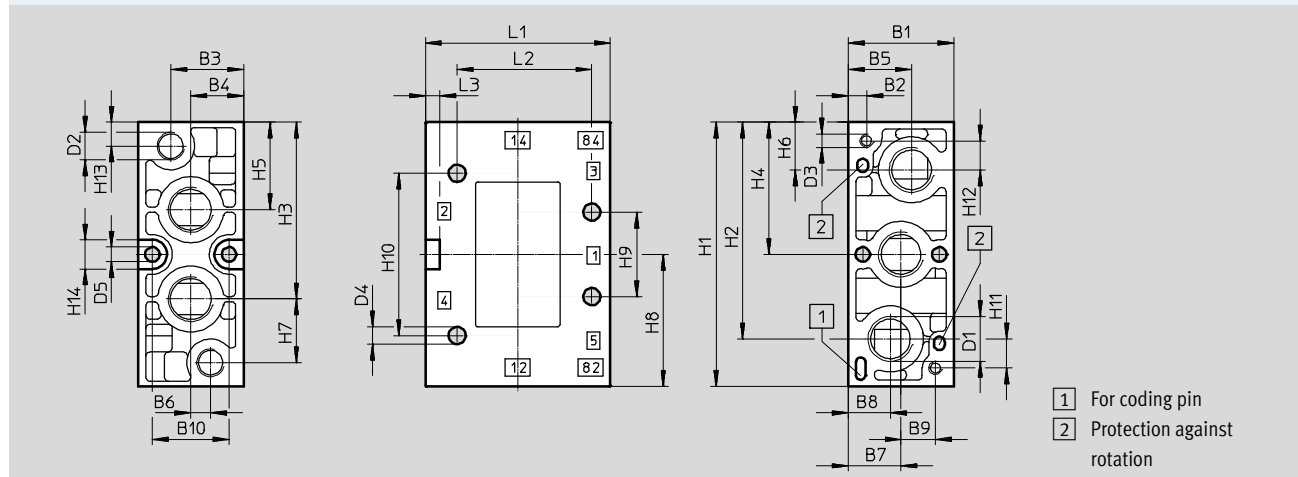
Technical data – 5/2-way valves

**FESTO**

## Dimensions – Pneumatic connection G3/8

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

Basic valve

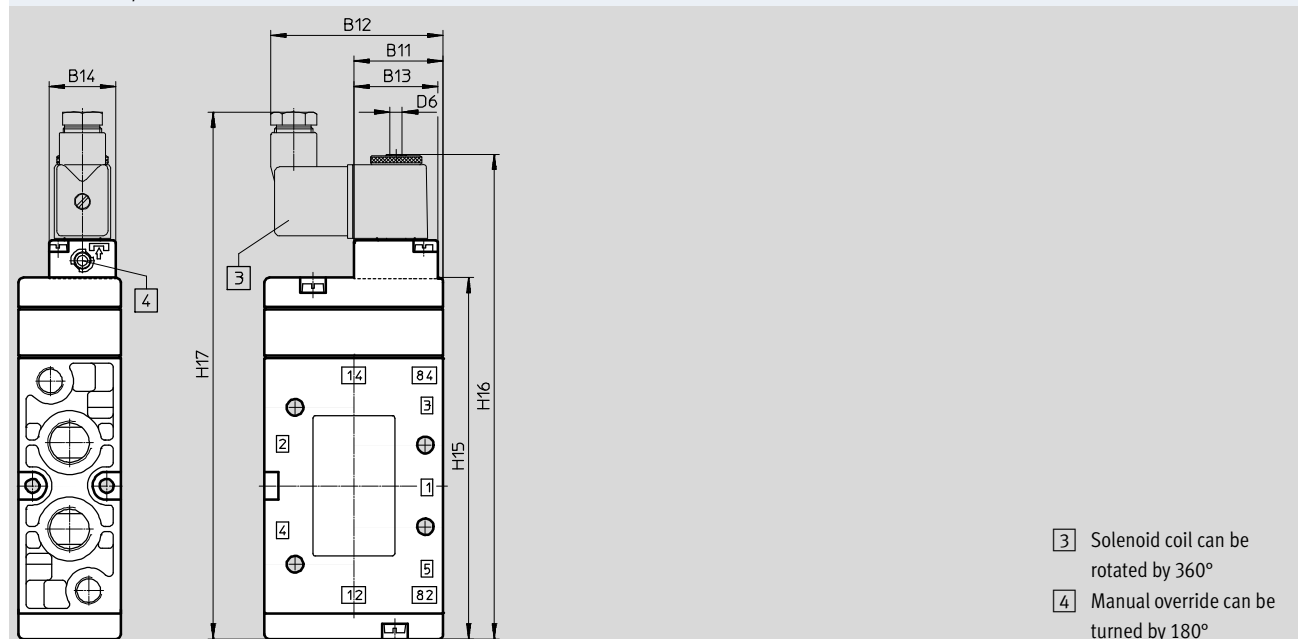


| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1<br>Ø | D2<br>Ø | D3 | D4<br>Ø | D5  |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|---------|---------|----|---------|-----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8    | G1/8    | M5 | 6.5     | 5.5 |

| Pneumatic connection | H1<br>±0.1 | H2 | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  |
|----------------------|------------|----|------|----|------|----|------|----|----|------|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 100        | 82 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 70         | 51 | 5.5 |

## Installation dimensions with F solenoid coil

Mechanical or pneumatic reset method



| Type       | B11 | B12  | B13 | B14 | D6 | H15   | H16 | H17 |
|------------|-----|------|-----|-----|----|-------|-----|-----|
| MFH-5-3/8- | 35  | 67.5 | 33  | 26  | M5 | 141.5 | 190 | 206 |

# Solenoid valves MFH-B, Tiger 2000

FESTO

Technical data – 5/2-way valves

| Ordering data  |                                                                                       |                      |                       |          |                    |
|----------------|---------------------------------------------------------------------------------------|----------------------|-----------------------|----------|--------------------|
| Circuit symbol | Description of valve (without F solenoid coil <sup>1)</sup> )                         | Pneumatic connection | ATEX category         | Part No. | Type               |
|                | Pneumatic reset method<br>Non-reversible flow direction<br>Internal pilot air supply  | G1/8                 | –                     | 30991    | MFH-5-1/8-L-B      |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535921   | MFH-5-1/8-L-B-EX   |
|                |                                                                                       | G1/4                 | –                     | 31010    | MFH-5-1/4-L-B      |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535922   | MFH-5-1/4-L-B-EX   |
|                |                                                                                       | G3/8                 | –                     | 14946    | MFH-5-3/8-L-B      |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535923   | MFH-5-3/8-L-B-EX   |
|                | Pneumatic reset method<br>Reversible flow direction<br>External pilot air supply      | G1/8                 | –                     | 30992    | MFH-5-1/8-L-S-B    |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535927   | MFH-5-1/8-L-S-B-EX |
|                |                                                                                       | G1/4                 | –                     | 33185    | MFH-5-1/4-L-S-B    |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535928   | MFH-5-1/4-L-S-B-EX |
|                |                                                                                       | G3/8                 | –                     | 33181    | MFH-5-3/8-L-S-B    |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535929   | MFH-5-3/8-L-S-B-EX |
|                | Mechanical reset method<br>Non-reversible flow direction<br>Internal pilot air supply | G1/8                 | –                     | 19758    | MFH-5-1/8-B        |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535918   | MFH-5-1/8-B-EX     |
|                |                                                                                       | G1/4                 | –                     | 15901    | MFH-5-1/4-B        |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535919   | MFH-5-1/4-B-EX     |
|                |                                                                                       | G3/8                 | –                     | 19705    | MFH-5-3/8-B        |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535920   | MFH-5-3/8-B-EX     |
|                | Mechanical reset method<br>Non-reversible flow direction<br>External pilot air supply | G1/8                 | –                     | 19759    | MFH-5-1/8-S-B      |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535924   | MFH-5-1/8-S-B-EX   |
|                |                                                                                       | G1/4                 | –                     | 15902    | MFH-5-1/4-S-B      |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535925   | MFH-5-1/4-S-B-EX   |
|                | Mechanical reset method<br>Reversible flow direction<br>External pilot air supply     | G3/8                 | –                     | 19706    | MFH-5-3/8-S-B      |
|                |                                                                                       |                      | ATEX category<br>→ 11 | 535926   | MFH-5-3/8-S-B-EX   |

1) F solenoid coils → 69

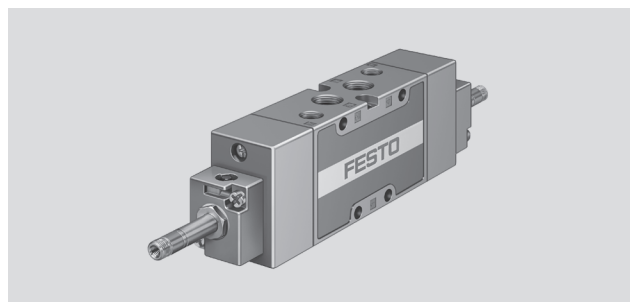
| Ordering data – Wearing parts kits |          |             |
|------------------------------------|----------|-------------|
| Pneumatic connection               | Part No. | Type        |
| G1/8                               | 125710   | MFH-5-1/8-B |
| G1/4                               | 115580   | MFH-5-1/4-B |
| G3/8                               | 115074   | MFH-5-3/8-B |

## Solenoid valves JMFH-B, Tiger 2000

FESTO

Technical data – 5/2-way valves, double solenoid valves

-  - Flow rate  
1000 ... 2000 l/min
-  - Voltage  
12, 24, 42, 48 V DC  
24, 42, 48, 110, 230,  
240 V AC



| General technical data     |           |                                                     |      |      |
|----------------------------|-----------|-----------------------------------------------------|------|------|
| Pneumatic connection       |           | G1/8                                                | G1/4 | G3/8 |
| Valve function             |           | 5/2-way, double solenoid                            |      |      |
| Design                     |           | Piston spool                                        |      |      |
| Lap                        |           | Overlap                                             |      |      |
| Sealing principle          |           | Soft                                                |      |      |
| Actuation type             |           | Electrical                                          |      |      |
| Control type               |           | Pilot-actuated                                      |      |      |
| Pilot air supply port      |           | Internal or external                                |      |      |
| Flow direction             |           | Reversible or not reversible (see switching symbol) |      |      |
| Exhaust air function       |           | With flow control                                   |      |      |
| Manual override            |           | Non-detenting                                       |      |      |
| Type of mounting           |           | With through-hole                                   |      |      |
| Mounting position          |           | Any                                                 |      |      |
| Electrical connection      |           | Via F solenoid coil, to be ordered separately       |      |      |
| b value                    |           | –                                                   | 0.38 | –    |
| c value                    | [l/s bar] | –                                                   | 6.35 | –    |
| Nominal width              | [mm]      | 8                                                   | 10   | 12   |
| Standard nominal flow rate | [l/min.]  | 1000                                                | 1600 | 2000 |
| Grid dimension             | [mm]      | 27                                                  | 33   | 41   |
| Valve width                | [mm]      | 26                                                  | 32   | 40   |
| Product weight             | [g]       | 400, 440 <sup>1)</sup>                              | 460  | 650  |

1) ATEX valve

| Safety data                            |      |      |
|----------------------------------------|------|------|
| Max. switching frequency               | [Hz] | 3    |
| Max. positive test pulse with 0 signal | [μs] | 2200 |
| Max. negative test pulse with 1 signal | [μs] | 3700 |

# Solenoid valves JMFH-B, Tiger 2000



Technical data – 5/2-way valves, double solenoid valves

| Operating and environmental conditions        |                           |       |                                                                                                        |      |      |
|-----------------------------------------------|---------------------------|-------|--------------------------------------------------------------------------------------------------------|------|------|
| Pneumatic connection                          |                           |       | G1/8                                                                                                   | G1/4 | G3/8 |
| Operating medium                              |                           |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |      |      |
| Pilot medium (with external pilot air supply) |                           |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |      |      |
| Note on operating/pilot medium                |                           |       | Operation with lubricated medium possible (in which case lubricated operation will always be required) |      |      |
| Operating pressure                            | Internal pilot air supply | [bar] | 2 ... 10                                                                                               |      |      |
|                                               | External pilot air supply | [bar] | −0.9 ... +10                                                                                           |      |      |
| Pilot pressure                                |                           | [bar] | 2 ... 10                                                                                               |      |      |
| Storage temperature                           |                           | [°C]  | −40 ... +60                                                                                            |      |      |
| Ambient temperature                           |                           | [°C]  | −5 ... +40                                                                                             |      |      |
| Temperature of medium                         |                           | [°C]  | −10 ... +60                                                                                            |      |      |
|                                               |                           | [°C]  | −5 ... +40 (JMFH- ... -EX)                                                                             |      |      |
| Corrosion resistance class CRC <sup>1)</sup>  |                           |       | 1                                                                                                      |      |      |

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

| Electrical data                            |            |        |                                          |  |
|--------------------------------------------|------------|--------|------------------------------------------|--|
| F solenoid coil                            |            |        |                                          |  |
| Electrical connection of the solenoid coil |            |        | Plug vanes for plug sockets MSSD-F, KMF  |  |
| Operating voltage                          | DC voltage | [V DC] | 12, 24, 42, 48                           |  |
|                                            | AC voltage | [V AC] | 24, 42, 48, 110, 230, 240 (50 ... 60 Hz) |  |
| Coil characteristics                       | DC voltage | [W]    | 4.5                                      |  |
|                                            | AC voltage | [VA]   | Pull: 7.5<br>Hold: 6                     |  |
| Degree of protection to EN 60529           |            |        | IP65 (in combination with plug socket)   |  |

| Valve switching times [ms] |  |      |      |                      |
|----------------------------|--|------|------|----------------------|
| Pneumatic connection       |  | G1/8 | G1/4 | G3/8                 |
| Changeover                 |  | 12   | 14   | 12, 14 <sup>1)</sup> |

1) For reversible valves

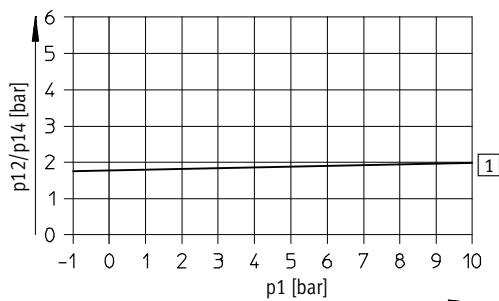
# Solenoid valves JMFH-B, Tiger 2000

FESTO

Technical data – 5/2-way valves, double solenoid valves

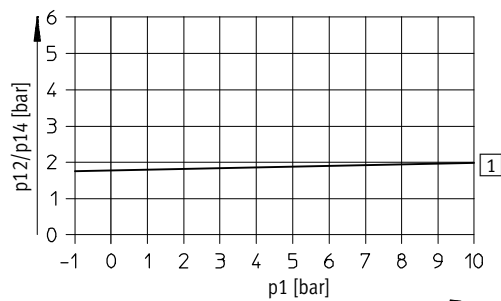
## Minimal pilot pressure $p_{12}/p_{14}$ as a function of operating pressure $p_1$ (external pilot air supply)

JMFH-5-1/8-S-B



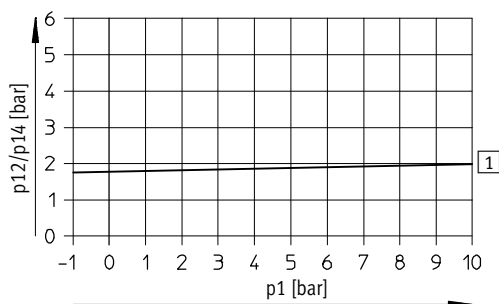
1 On

JMFH-5-1/4-S-B



1 On

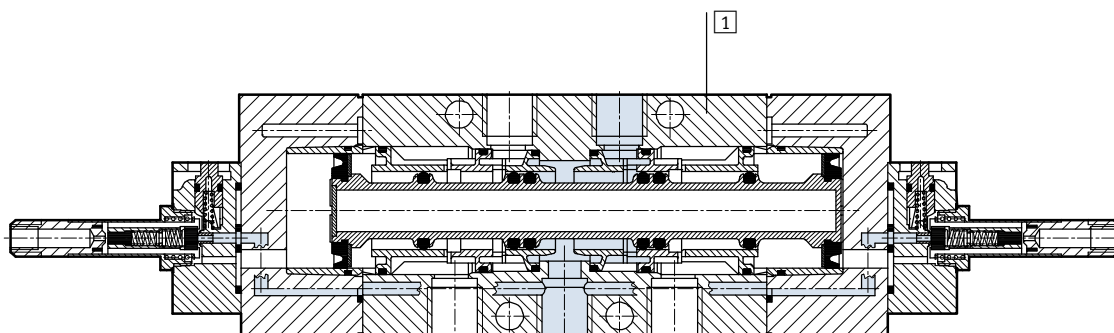
JMFH-5-3/8-S-B



1 On

## Materials

Sectional view



|   |                   |                    |
|---|-------------------|--------------------|
| 1 | Housing           | Die-cast aluminium |
| – | Seals             | NBR                |
|   | Note on materials | RoHS compliant     |

# Solenoid valves JMFH-B, Tiger 2000

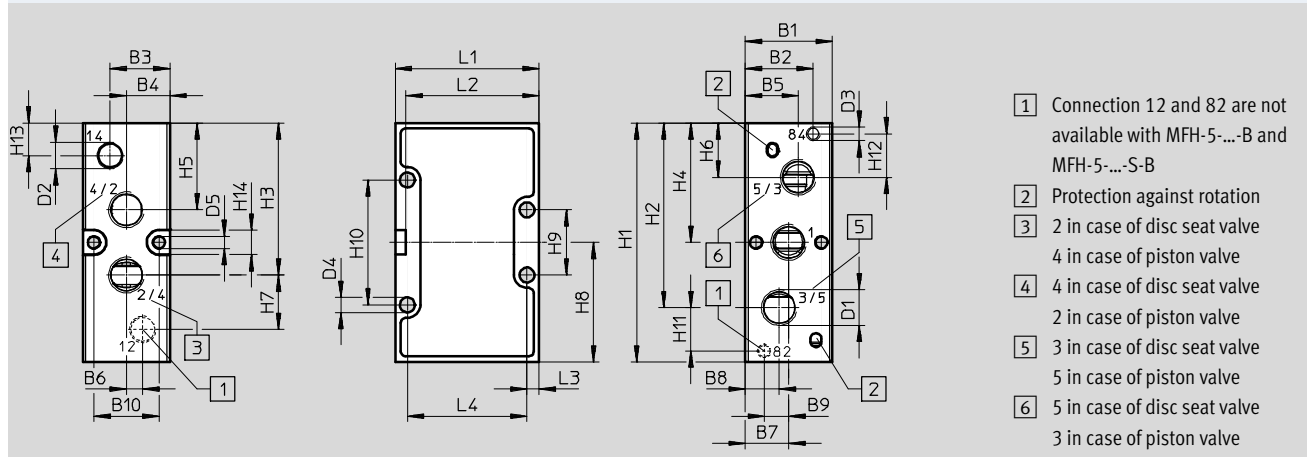
FESTO

Technical data – 5/2-way valves, double solenoid valves

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



| Pneumatic connection | B1 | B2   | B3 | B4 | B5   | B6 | B7 | B8   | B9 | B10  | D1<br>Ø | D2<br>Ø | D3 | D4<br>Ø | D5  | H1<br>±0.2 | H2   |
|----------------------|----|------|----|----|------|----|----|------|----|------|---------|---------|----|---------|-----|------------|------|
| G1/8                 | 26 | 16.5 | 18 | 13 | 16.5 | 5  | 13 | 9.5  | 8  | 19.5 | G1/8    | G1/8    | M5 | 4.5     | 4.3 | 77         | 59.5 |
| G1/4                 | 32 | 19.5 | 22 | 16 | 19.5 | 6  | 16 | 12.5 | 9  | 24   | G1/4    | G1/4    |    | 5.5     | 4.3 | 88         | 68   |

| Pneumatic connection | H3   | H4   | H5   | H6   | H7 | H8<br>±0.2 | H9 | H10 | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  | L4 |
|----------------------|------|------|------|------|----|------------|----|-----|-----|-----|-----|-----|------------|----|-----|----|
| G1/8                 | 49.5 | 38.5 | 27.5 | 17.5 | 19 | 38.5       | 21 | 41  | 12  | 12  | 8.5 | 9   | 47         | 43 | 3.5 | 40 |
| G1/4                 | 56   | 44   | 32   | 20   | 20 | 44         | 22 | 48  | 16  | 16  | 12  |     | 53         | 49 | 4.5 | 44 |

# Solenoid valves JMFH-B, Tiger 2000

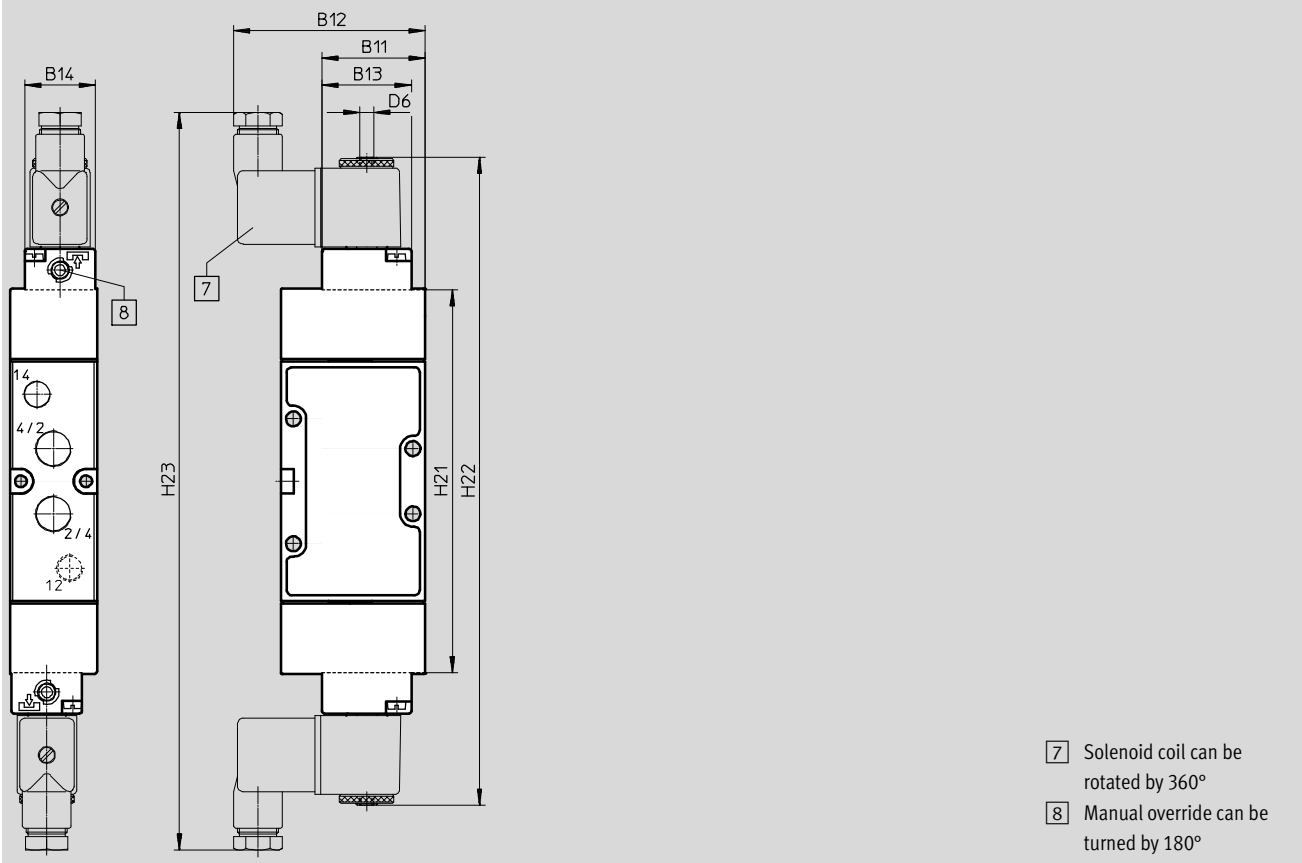
Technical data – 5/2-way valves, double solenoid valves

**FESTO**

## Dimensions – Pneumatic connection G1/8, G1/4

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

Installation dimensions with F solenoid coil, mechanical or pneumatic reset



| Type        | B11  | B12 | B13 | B14 | D6 | H21   | H22   | H23   |
|-------------|------|-----|-----|-----|----|-------|-------|-------|
| JMFH-5-1/8- | 36.8 | 67  | 33  | 26  | M5 | 129   | 226.6 | 259.6 |
| JMFH-5-1/4- | 38   | 70  |     |     |    | 141.5 | 239.1 | 272.1 |

# Solenoid valves JMFH-B, Tiger 2000

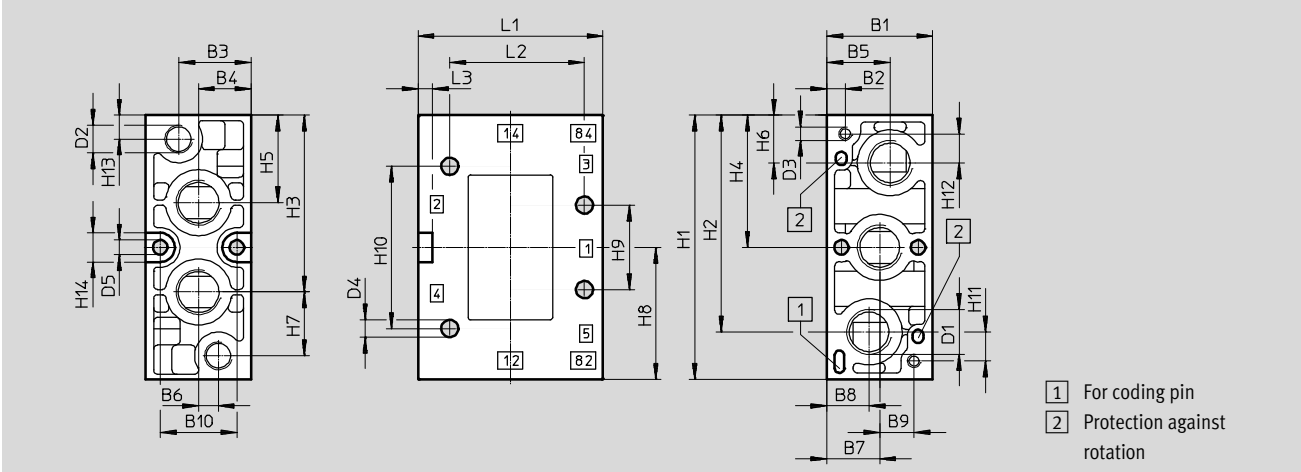
Technical data – 5/2-way valves, double solenoid valves

**FESTO**

## Dimensions – Pneumatic connection G3/8

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

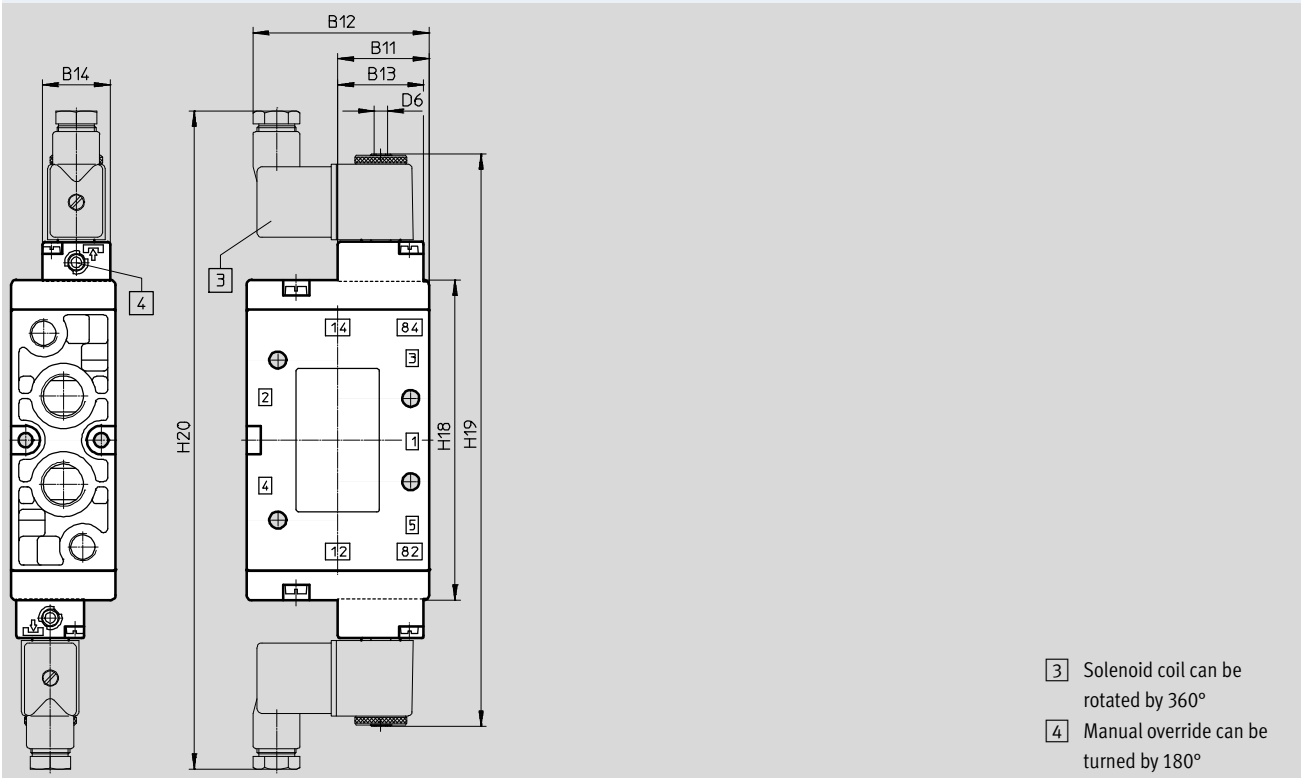
Basic valve



| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1<br>Ø | D2<br>Ø | D3 | D4<br>Ø | D5  |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|---------|---------|----|---------|-----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8    | G1/8    | M5 | 6.5     | 5.5 |

| Pneumatic connection | H1<br>±0.1 | H2 | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  |
|----------------------|------------|----|------|----|------|----|------|----|----|------|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 100        | 82 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 70         | 51 | 5.5 |

## Installation dimensions with F solenoid coil, mechanical or pneumatic reset

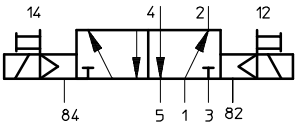
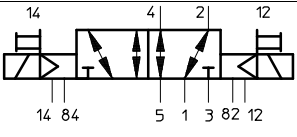


| Type        | B11 | B12  | B13 | B14 | D6 | H18 | H19 | H20 |
|-------------|-----|------|-----|-----|----|-----|-----|-----|
| JMFH-5-3/8- | 35  | 67.5 | 33  | 26  | M5 | 123 | 220 | 253 |

# Solenoid valves JMFH-B, Tiger 2000

FESTO

Technical data – 5/2-way valves, double solenoid valves

| Ordering data                                                                     |                                                               |                      |                      |          |                   |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------|----------------------|----------|-------------------|
| Circuit symbol                                                                    | Description of valve (without F solenoid coil <sup>1)</sup> ) | Pneumatic connection | ATEX category        | Part No. | Type              |
|  | Non-reversible flow direction<br>Internal pilot air supply    | G1/8                 | –                    | 30486    | JMFH-5-1/8-B      |
|                                                                                   |                                                               |                      | ATEX category<br>→11 | 535930   | JMFH-5-1/8-B-EX   |
|                                                                                   |                                                               | G1/4                 | –                    | 19789    | JMFH-5-1/4-B      |
|                                                                                   |                                                               |                      | ATEX category<br>→11 | 535931   | JMFH-5-1/4-B-EX   |
|                                                                                   |                                                               | G3/8                 | –                    | 19700    | JMFH-5-3/8-B      |
|                                                                                   |                                                               |                      | ATEX category<br>→11 | 535932   | JMFH-5-3/8-B-EX   |
|  | Reversible flow direction<br>External pilot air supply        | G1/8                 | –                    | 30487    | JMFH-5-1/8-S-B    |
|                                                                                   |                                                               |                      | ATEX category<br>→11 | 535933   | JMFH-5-1/8-S-B-EX |
|                                                                                   |                                                               | G1/4                 | –                    | 19790    | JMFH-5-1/4-S-B    |
|                                                                                   |                                                               |                      | ATEX category<br>→11 | 535934   | JMFH-5-1/4-S-B-EX |
|                                                                                   |                                                               | G3/8                 | –                    | 19702    | JMFH-5-3/8-S-B    |
|                                                                                   |                                                               |                      | ATEX category<br>→11 | 535935   | JMFH-5-3/8-S-B-EX |

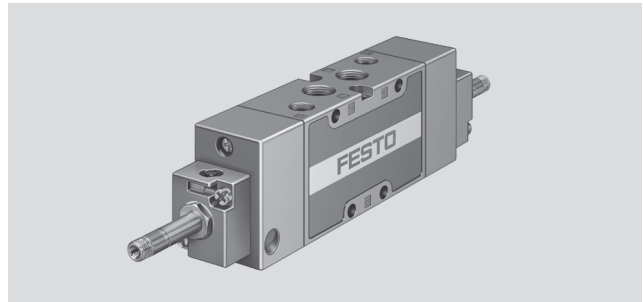
1) F solenoid coils → 69

# Solenoid valves MFH-B, Tiger 2000

Technical data – 5/3-way valves

FESTO

-  Flow rate  
1000 ... 2600 l/min
-  Voltage  
12, 24, 42, 48 V DC  
24, 42, 48, 110, 230,  
240 V AC



| General technical data |             |                                                     |                        |                         |
|------------------------|-------------|-----------------------------------------------------|------------------------|-------------------------|
| Pneumatic connection   |             | G1/8                                                | G1/4                   | G3/8                    |
| Valve function         |             | 5/3-way, single solenoid                            |                        |                         |
| Design                 |             | Piston spool                                        |                        |                         |
| Lap                    |             | Overlap                                             |                        |                         |
| Sealing principle      |             | Soft                                                |                        |                         |
| Actuation type         |             | Electrical                                          |                        |                         |
| Reset method           |             | Mechanical spring                                   |                        |                         |
| Control type           |             | Pilot-actuated                                      |                        |                         |
| Pilot air supply       |             | Internal or external                                |                        |                         |
| Flow direction         |             | Reversible or not reversible (see switching symbol) |                        |                         |
| Exhaust function       |             | No flow control                                     | With flow control      | With flow control       |
| Manual override        |             | Non-detenting                                       |                        |                         |
| Type of mounting       |             | With through-hole                                   |                        |                         |
| Mounting position      |             | Any                                                 |                        |                         |
| Electrical connection  |             | Via F solenoid coil, to be ordered separately       |                        |                         |
| b value                |             | –                                                   | 0.38                   | –                       |
| c value                |             | –                                                   | 6.35                   | –                       |
| Nominal width          |             | [mm]                                                | 8                      | 10                      |
| Nominal flow rate      | Closed      | [l/min.]                                            | 1000                   | 1600                    |
|                        | Exhausted   | [l/min.]                                            |                        | 2200                    |
|                        | Pressurised | [l/min.]                                            |                        | 2600                    |
| Grid dimension         |             | [mm]                                                | 27                     | 33                      |
| Valve width            |             | [mm]                                                | 26                     | 32                      |
| Product weight         |             | [g]                                                 | 400, 440 <sup>1)</sup> | 500                     |
|                        |             |                                                     |                        | 780, 1000 <sup>1)</sup> |

1) ATEX valve

| Safety data                            |      |      |
|----------------------------------------|------|------|
| Max. switching frequency               | [Hz] | 3    |
| Max. positive test pulse with 0 signal | [µs] | 2200 |
| Max. negative test pulse with 1 signal | [µs] | 3700 |

| ATEX                                       |                                             |
|--------------------------------------------|---------------------------------------------|
| Type                                       | MFH- ... -EX, JMFH- ... -EX                 |
| ATEX category gas                          | II 2G                                       |
| Type of (ignition) protection for gas      | Ex h IIC T4 Gb                              |
| ATEX category for dust                     | II 2D                                       |
| Type of (ignition) protection for dust     | Ex h IIIC T130°C Db                         |
| Explosion-proof ambient temperature        | [°C]                                        |
|                                            | –5 ≤ Ta ≤ +40                               |
| CE marking (see declaration of conformity) | To EU Explosion Protection Directive (ATEX) |
| Degree of protection                       | IP65 (in assembled state)                   |

# Solenoid valves MFH-B, Tiger 2000



Technical data – 5/3-way valves

| Operating and environmental conditions        |                           |       |                                                                                                        |              |              |
|-----------------------------------------------|---------------------------|-------|--------------------------------------------------------------------------------------------------------|--------------|--------------|
| Pneumatic connection                          |                           |       | G1/8                                                                                                   | G1/4         | G3/8         |
| Operating medium                              |                           |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |              |              |
| Pilot medium (with external pilot air supply) |                           |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |              |              |
| Note on operating/pilot medium                |                           |       | Operation with lubricated medium possible (in which case lubricated operation will always be required) |              |              |
| Operating pressure                            | Internal pilot air supply | [bar] | 3 ... 10                                                                                               | 3 ... 10     | 3 ... 10     |
|                                               | External pilot air supply | [bar] | −0.9 ... +10                                                                                           | −0.9 ... +10 | −0.9 ... +10 |
| Pilot pressure                                |                           | [bar] | 3 ... 10                                                                                               | 3 ... 10     | 3 ... 10     |
| Storage temperature                           |                           | [°C]  | −40 ... +60                                                                                            |              |              |
| Ambient temperature                           |                           | [°C]  | −5 ... +40                                                                                             |              |              |
| Temperature of medium                         |                           | [°C]  | −10 ... +60                                                                                            |              |              |
|                                               |                           | [°C]  | −5 ... +40 (MFH- ... -EX)                                                                              |              |              |
| Corrosion resistance class CRC <sup>1)</sup>  |                           |       | 1                                                                                                      |              |              |

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

| Electrical data                            |            |        |                                          |
|--------------------------------------------|------------|--------|------------------------------------------|
| F solenoid coil                            |            |        |                                          |
| Electrical connection of the solenoid coil |            |        | Plug vanes for plug sockets MSSD-F, KMF  |
| Operating voltage                          | DC voltage | [V DC] | 12, 24, 42, 48                           |
|                                            | AC voltage | [V AC] | 24, 42, 48, 110, 230, 240 (50 ... 60 Hz) |
| Coil characteristics                       | DC voltage | [W]    | 4.5                                      |
|                                            | AC voltage | [VA]   | Pull: 7.5<br>Hold: 6                     |
| Protection class to EN 60529               |            |        | IP65 (in combination with plug socket)   |

| Valve switching times [ms] |                       |                       |            |      |                   |            |                       |                      |                  |
|----------------------------|-----------------------|-----------------------|------------|------|-------------------|------------|-----------------------|----------------------|------------------|
| Pneumatic connection       | G1/8                  |                       |            | G1/4 |                   |            | G3/8                  |                      |                  |
|                            | On                    | Off <sup>2)</sup>     | Changeover | On   | Off <sup>3)</sup> | Changeover | On                    | Off <sup>4)</sup>    | Changeover       |
| Closed                     | 20 <sup>1)</sup> , 23 | 23 <sup>1)</sup> , 30 | 23         | 18   | 30                | 30         | 20 <sup>1)</sup> , 24 | 80, 96 <sup>1)</sup> | 54 <sup>1)</sup> |
| Exhausted                  | 21                    | 20                    | 24         | 23   | 32                | 37         | 26                    | 114                  | 83               |
| Pressurised                | 23                    | 21                    | 16         | 22   | 23                | 35         | 25                    | 118                  | 78               |

1) With external pilot air supply and/or ATEX valves

2) After long electrical actuation (> 16 h), the switch-off time of 5/3-way valves can increase to max. 50 ms.

3) After long electrical actuation (> 16 h), the switch-off time of 5/3-way valves can increase to max. 100 ms.

4) After long electrical actuation (> 16 h), the switch-off time of 5/3-way valves can increase to max. 150 ms.

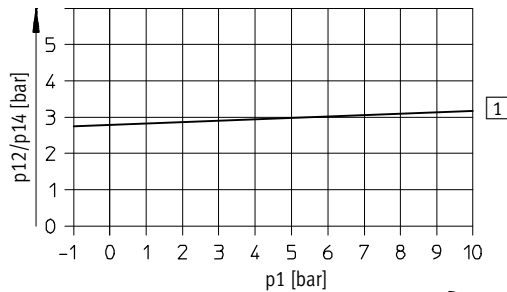
# Solenoid valves MFH-B, Tiger 2000

FESTO

Technical data – 5/3-way valves

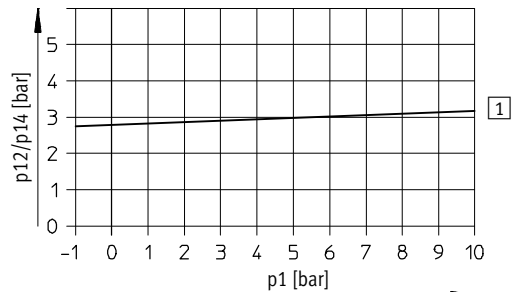
## Minimal pilot pressure $p_{12}/p_{14}$ as a function of operating pressure $p_1$ (external pilot air supply)

MFH-5/3...-1/8-S-B



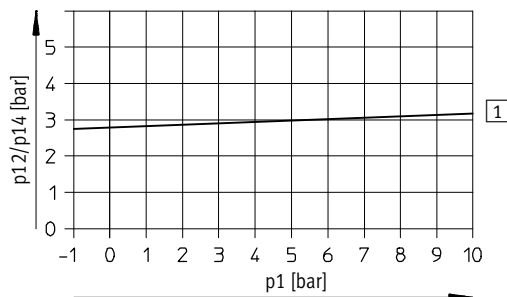
1 On

MFH-5/3...-1/4-S-B



1 On

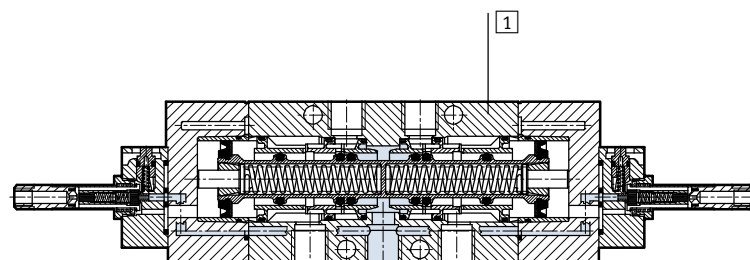
MFH-5/3...-3/8-S-B



1 On

## Materials

Sectional view



|   |                   |                    |
|---|-------------------|--------------------|
| 1 | Housing           | Die-cast aluminium |
| – | Seals             | NBR                |
| – | Note on materials | RoHS compliant     |

# Solenoid valves MFH-B, Tiger 2000

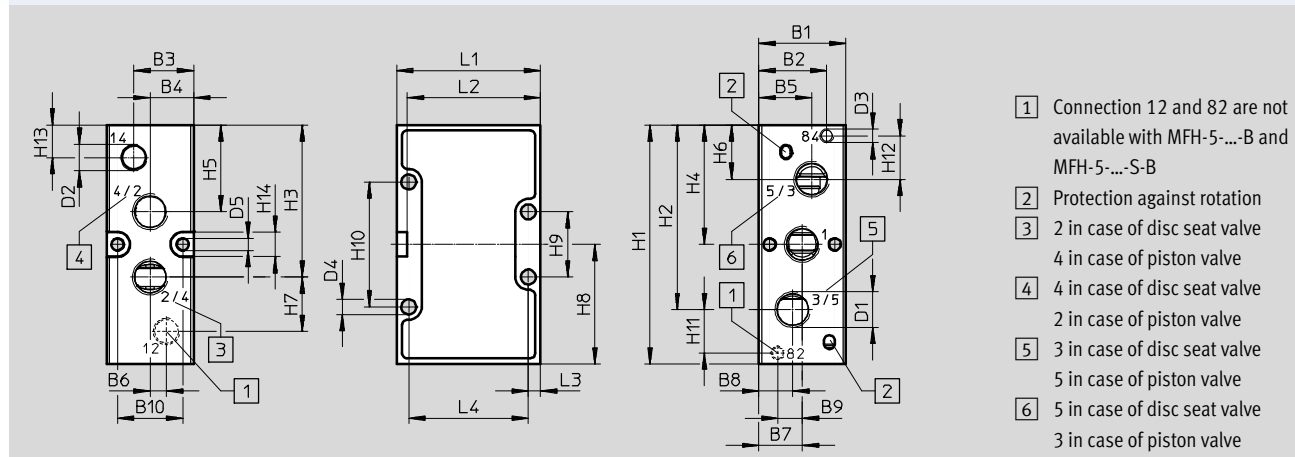
Technical data – 5/3-way valves

**FESTO**

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



| Pneumatic connection | B1 | B2   | B3 | B4 | B5   | B6 | B7 | B8   | B9 | B10  | D1<br>Ø | D2<br>Ø | D3 | D4<br>Ø | D5  | H1<br>±0.2 | H2   |
|----------------------|----|------|----|----|------|----|----|------|----|------|---------|---------|----|---------|-----|------------|------|
| G1/8                 | 26 | 16.5 | 18 | 13 | 16.5 | 5  | 13 | 9.5  | 8  | 19.5 | G1/8    | G1/8    | M5 | 4.5     | 4.3 | 77         | 59.5 |
| G1/4                 | 32 | 19.5 | 22 | 16 | 19.5 | 6  | 16 | 12.5 | 9  | 24   | G1/4    | G1/4    |    | 5.5     | 4.3 | 88         | 68   |

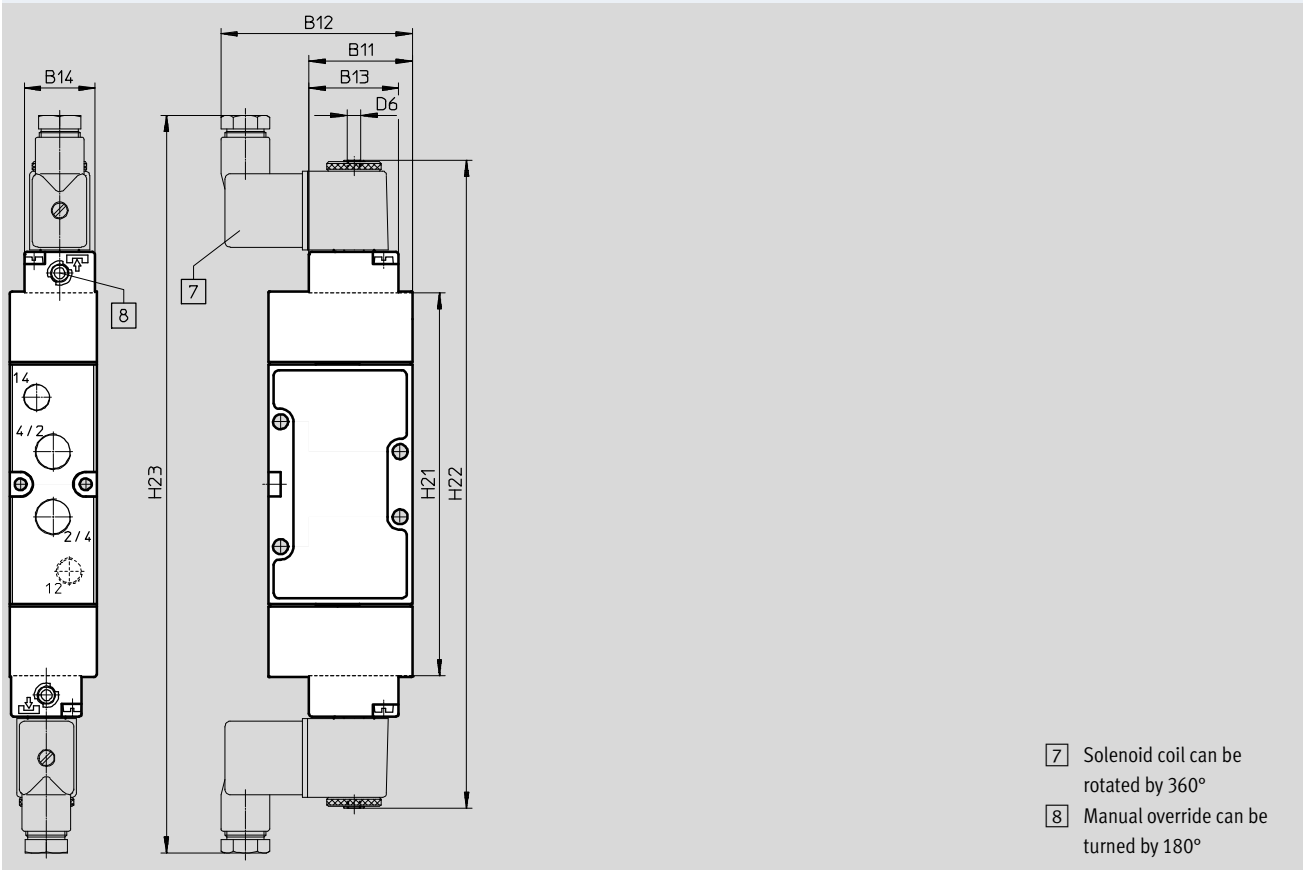
| Pneumatic connection | H3   | H4   | H5   | H6   | H7 | H8<br>±0.2 | H9 | H10 | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  | L4 |
|----------------------|------|------|------|------|----|------------|----|-----|-----|-----|-----|-----|------------|----|-----|----|
| G1/8                 | 49.5 | 38.5 | 27.5 | 17.5 | 19 | 38.5       | 21 | 41  | 12  | 12  | 8.5 | 9   | 47         | 43 | 3.5 | 40 |
| G1/4                 | 56   | 44   | 32   | 20   | 20 | 44         | 22 | 48  | 16  | 16  | 12  |     | 53         | 49 | 4.5 | 44 |

# Solenoid valves MFH-B, Tiger 2000



Technical data – 5/3-way valves

Dimensions – Pneumatic connection G1/8, G1/4 Download CAD data → [www.festo.com](http://www.festo.com)  
 Installation dimensions with F solenoid coil, mechanical or pneumatic reset



| Type       | B11  | B12 | B13 | B14 | D6 | H21   | H22   | H23   |
|------------|------|-----|-----|-----|----|-------|-------|-------|
| MFH-5-1/8- | 36.8 | 67  | 33  | 26  | M5 | 129   | 226.6 | 259.6 |
| MFH-5-1/4- | 38   | 70  |     |     |    | 141.5 | 239.1 | 272.1 |

# Solenoid valves MFH-B, Tiger 2000

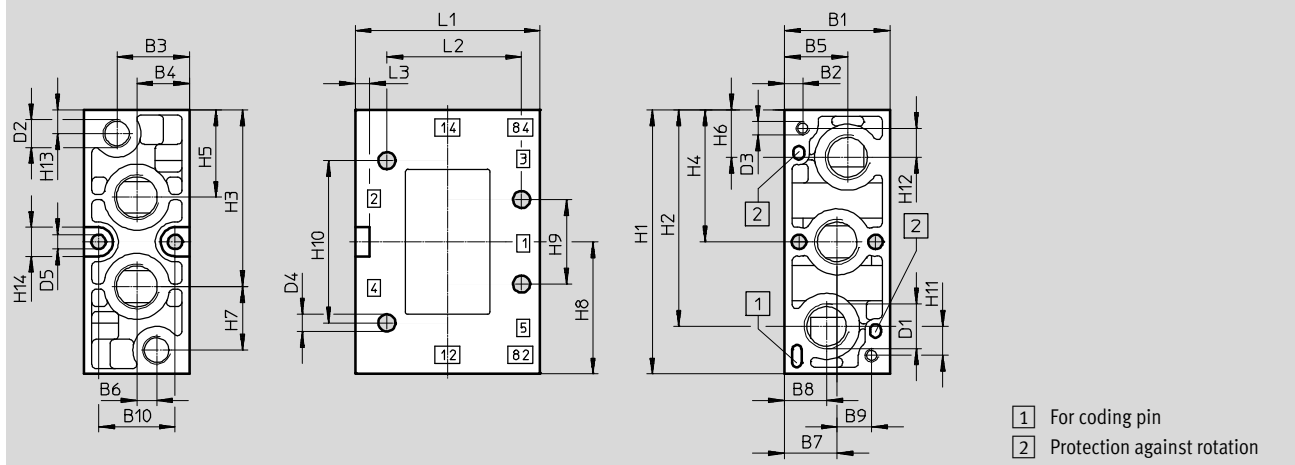
Technical data – 5/3-way valves

**FESTO**

## Dimensions – Pneumatic connection G3/8

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

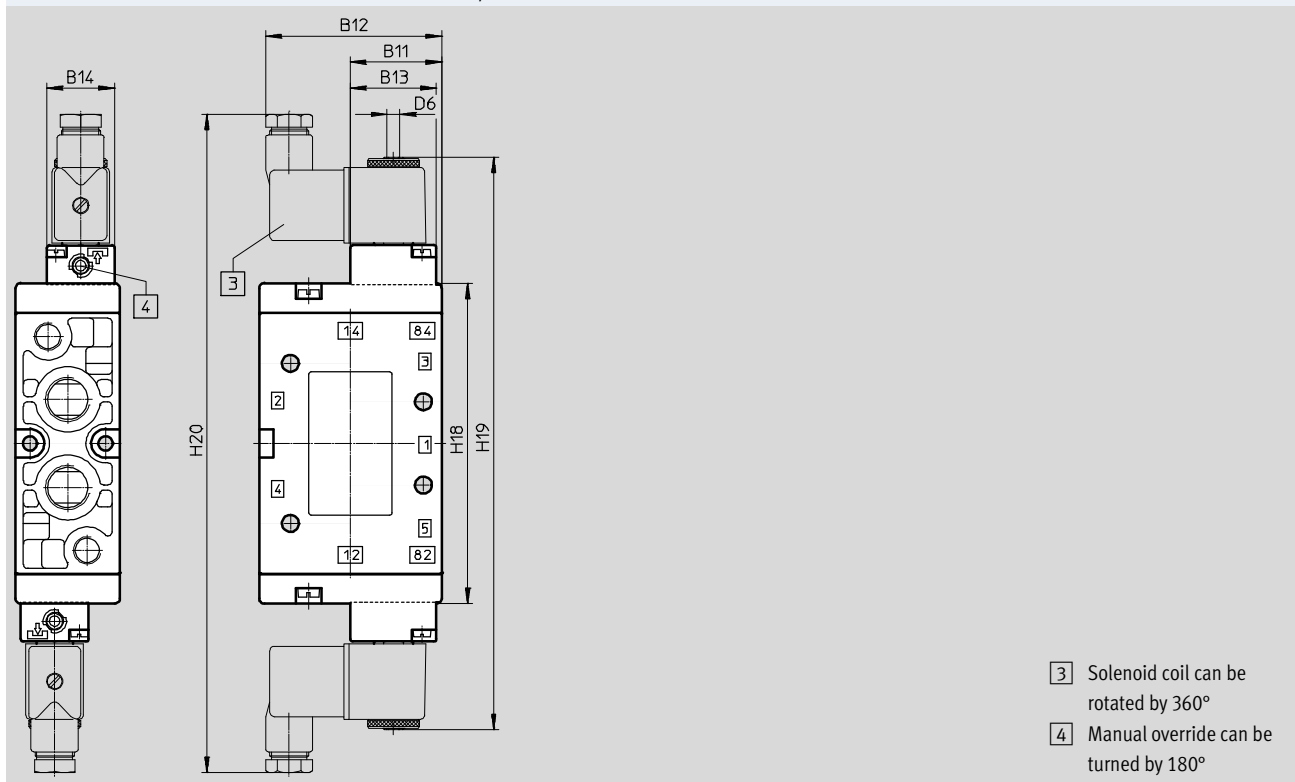
Basic valve



| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1<br>Ø | D2<br>Ø | D3<br>Ø | D4<br>Ø | D5  |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|---------|---------|---------|---------|-----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8    | G1/8    | M5      | 6.5     | 5.5 |

| Pneumatic connection | H1<br>±0.1 | H2 | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  |
|----------------------|------------|----|------|----|------|----|------|----|----|------|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 100        | 82 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 70         | 51 | 5.5 |

## Installation dimensions with F solenoid coil, mechanical or pneumatic reset



| Type        | B11 | B12  | B13 | B14 | D6 | H18 | H19 | H20 |
|-------------|-----|------|-----|-----|----|-----|-----|-----|
| JMFH-5-3/8- | 35  | 67.5 | 33  | 26  | M5 | 123 | 220 | 253 |

# Solenoid valves MFH-B, Tiger 2000



Technical data – 5/3-way valves

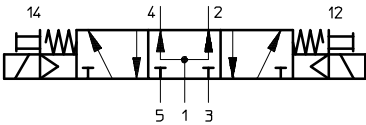
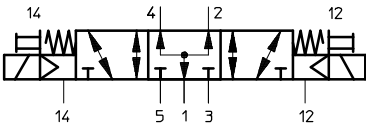
| Ordering data  |                                                               |                      |                       |          |                     |
|----------------|---------------------------------------------------------------|----------------------|-----------------------|----------|---------------------|
| Circuit symbol | Description of valve (without F solenoid coil <sup>1)</sup> ) | Pneumatic connection | ATEX category         | Part No. | Type                |
|                | Normally closed<br>Internal pilot air supply                  | G1/8                 | –                     | 30484    | MFH-5/3G-1/8-B      |
|                |                                                               |                      | ATEX category<br>→ 24 | 535936   | MFH-5/3G-1/8-B-EX   |
|                |                                                               | G1/4                 | –                     | 19787    | MFH-5/3G-1/4-B      |
|                |                                                               |                      | ATEX category<br>→ 24 | 535937   | MFH-5/3G-1/4-B-EX   |
|                |                                                               | G3/8                 | –                     | 19707    | MFH-5/3G-3/8-B      |
|                |                                                               |                      | ATEX category<br>→ 24 | 535938   | MFH-5/3G-3/8-B-EX   |
|                | Normally closed<br>External pilot air supply                  | G1/8                 | –                     | 30993    | MFH-5/3G-1/8-S-B    |
|                |                                                               |                      | ATEX category<br>→ 24 | 535939   | MFH-5/3G-1/8-S-B-EX |
|                |                                                               | G1/4                 | –                     | 31001    | MFH-5/3G-1/4-S-B    |
|                |                                                               |                      | ATEX category<br>→ 24 | 535940   | MFH-5/3G-1/4-S-B-EX |
|                |                                                               | G3/8                 | –                     | 31317    | MFH-5/3G-3/8-S-B    |
|                |                                                               |                      | ATEX category<br>→ 24 | 535941   | MFH-5/3G-3/8-S-B-EX |
|                | Normally exhausted<br>Internal pilot air supply               | G1/8                 | –                     | 30483    | MFH-5/3E-1/8-B      |
|                |                                                               |                      | ATEX category<br>→ 24 | 535942   | MFH-5/3E-1/8-B-EX   |
|                |                                                               | G1/4                 | –                     | 19786    | MFH-5/3E-1/4-B      |
|                |                                                               |                      | ATEX category<br>→ 24 | 535943   | MFH-5/3E-1/4-B-EX   |
|                |                                                               | G3/8                 | –                     | 19708    | MFH-5/3E-3/8-B      |
|                |                                                               |                      | ATEX category<br>→ 24 | 535944   | MFH-5/3E-3/8-B-EX   |
|                | Normally exhausted<br>External pilot air supply               | G1/8                 | –                     | 30994    | MFH-5/3E-1/8-S-B    |
|                |                                                               |                      | ATEX category<br>→ 24 | 535945   | MFH-5/3E-1/8-S-B-EX |
|                |                                                               | G1/4                 | –                     | 31002    | MFH-5/3E-1/4-S-B    |
|                |                                                               |                      | ATEX category<br>→ 24 | 535946   | MFH-5/3E-1/4-S-B-EX |
|                |                                                               | G3/8                 | –                     | 31318    | MFH-5/3E-3/8-S-B    |
|                |                                                               |                      | ATEX category<br>→ 24 | 535947   | MFH-5/3E-3/8-S-B-EX |

1) F solenoid coils → 69

# Solenoid valves MFH-B, Tiger 2000

FESTO

Technical data – 5/3-way valves

| Ordering data                                                                     |                                                               |                      |                       |               |                            |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------|-----------------------|---------------|----------------------------|
| Circuit symbol                                                                    | Description of valve (without F solenoid coil <sup>1)</sup> ) | Pneumatic connection | ATEX category         | Part No.      | Type                       |
|  | Normally pressurised<br>Internal pilot air supply             | G1/8                 | –                     | <b>30485</b>  | <b>MFH-5/3B-1/8-B</b>      |
|                                                                                   |                                                               |                      | ATEX category<br>→ 24 | <b>535948</b> | <b>MFH-5/3B-1/8-B-EX</b>   |
|                                                                                   |                                                               | G1/4                 | –                     | <b>19788</b>  | <b>MFH-5/3B-1/4-B</b>      |
|                                                                                   |                                                               |                      | ATEX category<br>→ 24 | <b>535949</b> | <b>MFH-5/3B-1/4-B-EX</b>   |
|                                                                                   |                                                               | G3/8                 | –                     | <b>19709</b>  | <b>MFH-5/3B-3/8-B</b>      |
|                                                                                   |                                                               |                      | ATEX category<br>→ 24 | <b>535950</b> | <b>MFH-5/3B-3/8-B-EX</b>   |
|  | Normally pressurised<br>External pilot air supply             | G1/8                 | –                     | <b>30995</b>  | <b>MFH-5/3B-1/8-S-B</b>    |
|                                                                                   |                                                               |                      | ATEX category<br>→ 24 | <b>535951</b> | <b>MFH-5/3B-1/8-S-B-EX</b> |
|                                                                                   |                                                               | G1/4                 | –                     | <b>31003</b>  | <b>MFH-5/3B-1/4-S-B</b>    |
|                                                                                   |                                                               |                      | ATEX category<br>→ 24 | <b>535952</b> | <b>MFH-5/3B-1/4-S-B-EX</b> |
|                                                                                   |                                                               | G3/8                 | –                     | <b>31319</b>  | <b>MFH-5/3B-3/8-S-B</b>    |
|                                                                                   |                                                               |                      | ATEX category<br>→ 24 | <b>535953</b> | <b>MFH-5/3B-3/8-S-B-EX</b> |

1) F solenoid coils → 69

# Solenoid valves MVH-B, Tiger 2000

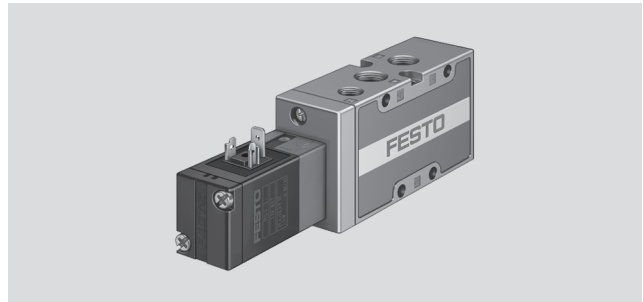
FESTO

Technical data – 5/2-way valves

-  - Flow rate  
750 ... 2000 l/min

-  - Voltage  
24 V DC

Wearing parts kits  
→ 38



| General technical data |                                                     |              |             |              |              |           |
|------------------------|-----------------------------------------------------|--------------|-------------|--------------|--------------|-----------|
| Pneumatic connection   | G1/8                                                |              | G1/4        |              | G3/8         |           |
| Reset method           | Mechanical                                          | Pneumatic    | Mechanical  | Pneumatic    | Mechanical   | Pneumatic |
| Valve function         | 5/2-way, single solenoid                            |              |             |              |              |           |
| Design                 | Poppet seat                                         | Piston spool | Poppet seat | Piston spool | Piston spool |           |
| Lap                    | Underlap                                            | Overlap      | Underlap    | Overlap      | Overlap      |           |
| Sealing principle      | Soft                                                |              |             |              |              |           |
| Actuation type         | Electrical                                          |              |             |              |              |           |
| Control type           | Pilot-actuated                                      |              |             |              |              |           |
| Pilot air supply       | Internal or external                                |              |             |              |              |           |
| Flow direction         | Reversible or non-reversible (see switching symbol) |              |             |              |              |           |
| Exhaust air function   | With flow control                                   |              |             |              |              |           |
| Manual override        | Non-detenting                                       |              |             |              |              |           |
| Mounting type          | With through-hole                                   |              |             |              |              |           |
| Mounting position      | Any                                                 |              |             |              |              |           |
| b value                | 0.34                                                | –            | 0.29        | 0.38         | –            | –         |
| c value                | [l/s bar]                                           | 3            | –           | 5.5          | 6.35         | –         |
| Nominal width          | [mm]                                                | 5            | 8           | 7            | 10           | 12        |
| Standard flow rate     | [l/min.]                                            | 750          | 1000        | 1300         | 1600         | 2000      |
| Grid dimension         | [mm]                                                | 27           |             | 33           |              | 41        |
| Valve width            | [mm]                                                | 26           |             | 32           |              | 40        |
| Product weight         | [g]                                                 | 230          | 290         | 360          | 440          | 750       |

| Safety data                            |      |      |
|----------------------------------------|------|------|
| Max. switching frequency               | [Hz] | 3    |
| Max. positive test pulse with 0 signal | [µs] | 2200 |
| Max. negative test pulse with 1 signal | [µs] | 3700 |

# Solenoid valves MVH-B, Tiger 2000

FESTO

Technical data – 5/2-way valves

| Operating and environmental conditions        |                           |                                                                                                        |             |              |            |              |              |
|-----------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------|-------------|--------------|------------|--------------|--------------|
| Pneumatic connection                          |                           | G1/8                                                                                                   |             | G1/4         |            | G3/8         |              |
| Reset method                                  |                           | Mechanical                                                                                             | Pneumatic   | Mechanical   | Pneumatic  | Mechanical   | Pneumatic    |
| Operating medium                              |                           | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |             |              |            |              |              |
| Pilot medium (with external pilot air supply) |                           | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |             |              |            |              |              |
| Note on operating/pilot medium                |                           | Operation with lubricated medium possible (in which case lubricated operation will always be required) |             |              |            |              |              |
| Operating pressure                            | Internal pilot air supply | [bar]                                                                                                  | 2 ... 10    | 3 ... 10     | 2 ... 10   | 3 ... 10     | 2.5 ... 10   |
|                                               | External pilot air supply | [bar]                                                                                                  | 0 ... 10    | –0.9 ... +10 | 0 ... 10   | –0.9 ... +10 | –0.9 ... +10 |
| Pilot pressure                                |                           | [bar]                                                                                                  | 2 ... 10    | 3 ... 10     | 1.5 ... 10 | 3 ... 10     | 2.5 ... 10   |
| Storage temperature                           |                           | [°C]                                                                                                   | –40 ... +60 |              |            |              |              |
| Ambient temperature                           |                           | [°C]                                                                                                   | –5 ... +50  |              |            |              |              |
| Temperature of medium                         |                           | [°C]                                                                                                   | –5 ... +50  |              |            |              |              |
| Corrosion resistance class CRC <sup>1)</sup>  |                           |                                                                                                        | 1           |              |            |              |              |

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

| Electrical                       |            |                                        |      |
|----------------------------------|------------|----------------------------------------|------|
| V solenoid coil                  |            |                                        |      |
| Electrical connection            |            | To EN 175301-803, type B               |      |
| Permissible voltage fluctuations |            | [%]                                    | ± 10 |
| Operating voltage                | DC voltage | [V DC]                                 | 24   |
| Characteristic coil data         | DC voltage | [W]                                    | 2.5  |
| Degree of protection to EN 60529 |            | IP65 (in combination with plug socket) |      |

| Valve switching times [ms] |                                                  |                                  |                              |                                  |                              |                                  |
|----------------------------|--------------------------------------------------|----------------------------------|------------------------------|----------------------------------|------------------------------|----------------------------------|
| Type                       | MVH-5-1/8-B<br>MVH-5-1/8-S-B<br>MVH-5-1/8-B-VI-X | MVH-5-1/8-L-B<br>MVH-5-1/8-L-S-B | MVH-5-1/4-B<br>MVH-5-1/4-S-B | MVH-5-1/4-L-B<br>MVH-5-1/4-L-S-B | MVH-5-3/8-B<br>MVH-5-3/8-S-B | MVH-5-3/8-L-B<br>MVH-5-3/8-L-S-B |
| Reset method               | Mechanical                                       | Pneumatic                        | Mechanical                   | Pneumatic                        | Mechanical                   | Pneumatic                        |
| On                         | 20                                               | 30                               | 15, 19 <sup>1)</sup>         | 28                               | 22                           | 22                               |
| Off                        | 36                                               | 25                               | 36, 41 <sup>1)</sup>         | 37                               | 60                           | 60                               |

1) Values for MVH-5-1/4-B-VI-X

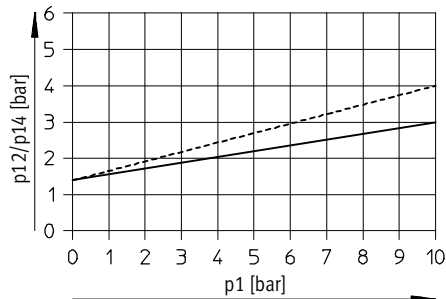
# Solenoid valves MVH-B, Tiger 2000

Technical data – 5/2-way valves

FESTO

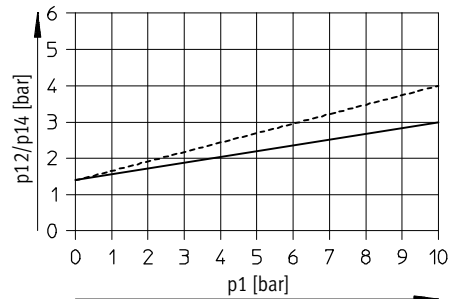
## Minimal pilot pressure $p_{12}/p_{14}$ as a function of operating pressure $p_1$ (external pilot air supply)

MVH-5-1/8-S-B



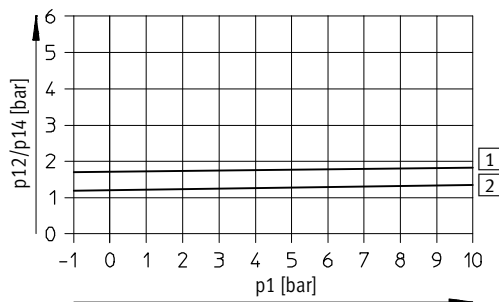
----- Exhausting, throttled  
 ———— Exhausting, unthrottled

MVH-5-1/4-S-B



----- Exhausting, throttled  
 ———— Exhausting, unthrottled

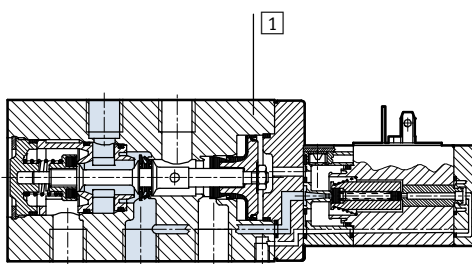
MVH-5-3/8-S-B



1 On  
 2 Off

## Materials

Sectional view



|   |                   |                    |
|---|-------------------|--------------------|
| 1 | Housing           | Die-cast aluminium |
| – | Seals             | NBR, PU, TPE-U(PU) |
| – | Note on materials | RoHS compliant     |

# Solenoid valves MVH-B, Tiger 2000

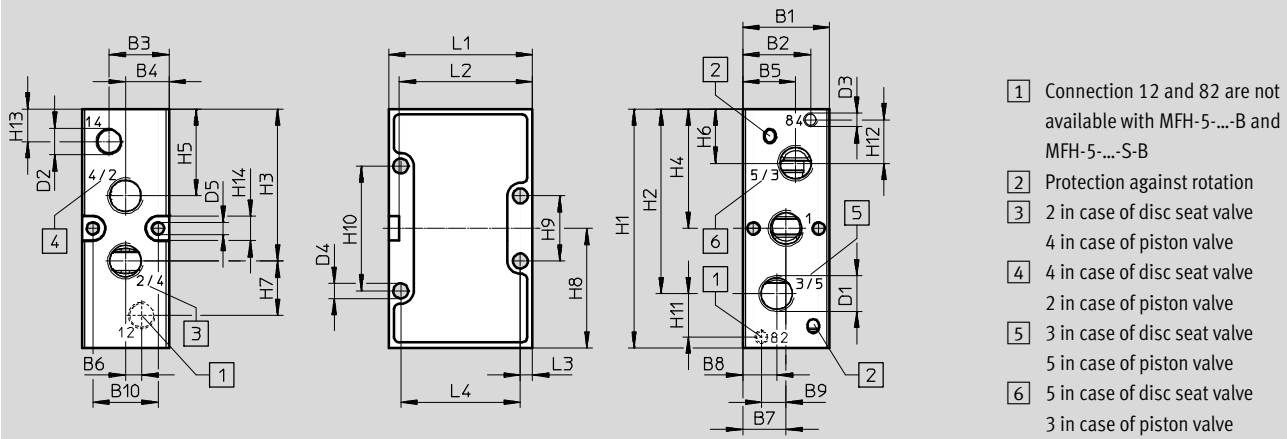
Technical data – 5/2-way valves

**FESTO**

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



| Pneumatic connection | B1 | B2   | B3 | B4 | B5   | B6 | B7 | B8   | B9 | B10  | D1<br>Ø | D2<br>Ø | D3 | D4<br>Ø | D5  | H1<br>±0.2 | H2   |
|----------------------|----|------|----|----|------|----|----|------|----|------|---------|---------|----|---------|-----|------------|------|
| G1/8                 | 26 | 16.5 | 18 | 13 | 16.5 | 5  | 13 | 9.5  | 8  | 19.5 | G1/8    | G1/8    | M5 | 4.5     | 4.3 | 77         | 59.5 |
| G1/4                 | 32 | 19.5 | 22 | 16 | 19.5 | 6  | 16 | 12.5 | 9  | 24   | G1/4    | G1/4    |    | 5.5     | 4.3 | 88         | 68   |

| Pneumatic connection | H3   | H4   | H5   | H6   | H7 | H8<br>±0.2 | H9 | H10 | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  | L4 |
|----------------------|------|------|------|------|----|------------|----|-----|-----|-----|-----|-----|------------|----|-----|----|
| G1/8                 | 49.5 | 38.5 | 27.5 | 17.5 | 19 | 38.5       | 21 | 41  | 12  | 12  | 8.5 | 9   | 47         | 43 | 3.5 | 40 |
| G1/4                 | 56   | 44   | 32   | 20   | 20 | 44         | 22 | 48  | 16  | 16  | 12  |     | 53         | 49 | 4.5 | 44 |

# Solenoid valves MVH-B, Tiger 2000

Technical data – 5/2-way valves

**FESTO**

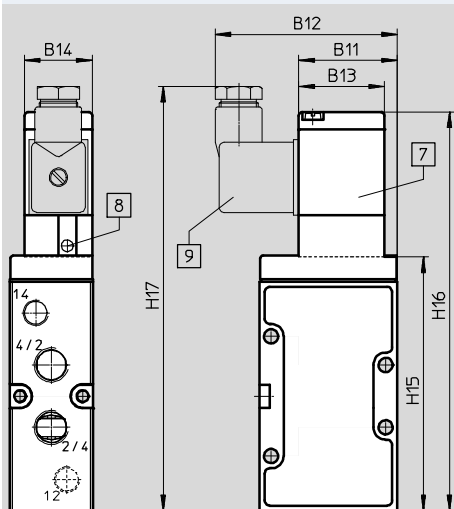
## Dimensions – Pneumatic connection G1/8, G1/4

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

Installation dimensions with V solenoid coil

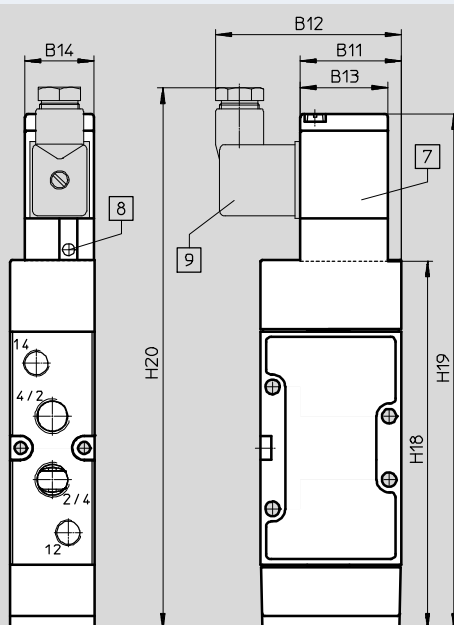
Mechanical reset method

Pneumatic reset method



7 Solenoid coil can be rotated by 180°

8 Manual override can be turned by 180°



9 Connection for device plug to EN 175301-803, type B

| Type       | B11  | B12 | B13 | B14 | H15  | H16   | H17   |
|------------|------|-----|-----|-----|------|-------|-------|
| MVH-5-1/8- | 36.8 | 67  | 33  | 26  | 86.5 | 142.6 | 152.6 |
| MVH-5-1/4- | 38   | 70  |     |     | 97.5 | 153.1 | 163.1 |

# Solenoid valves MVH-B, Tiger 2000

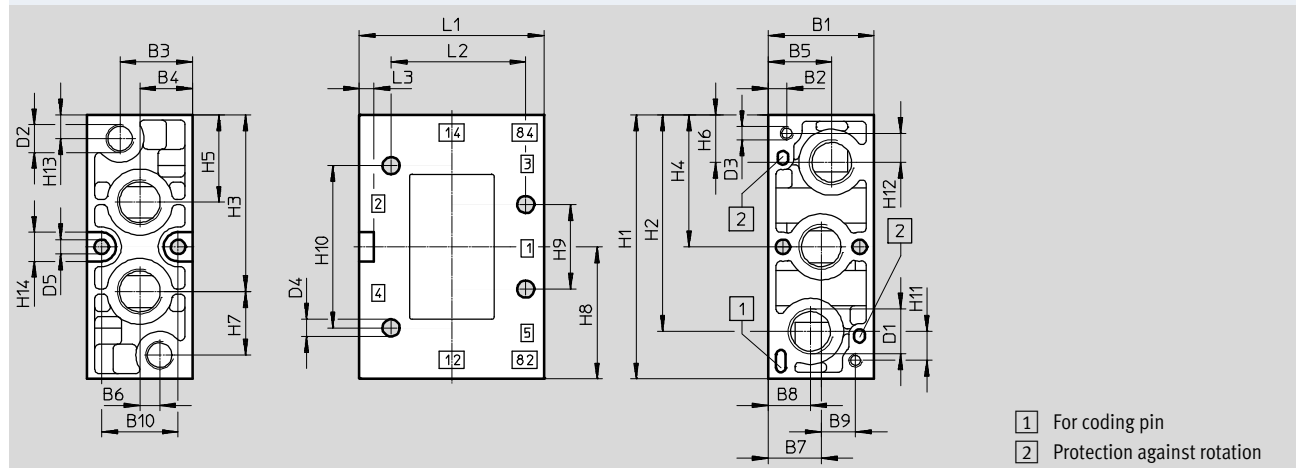
FESTO

Technical data – 5/2-way valves

## Dimensions – Pneumatic connection G3/8

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

Basic valve

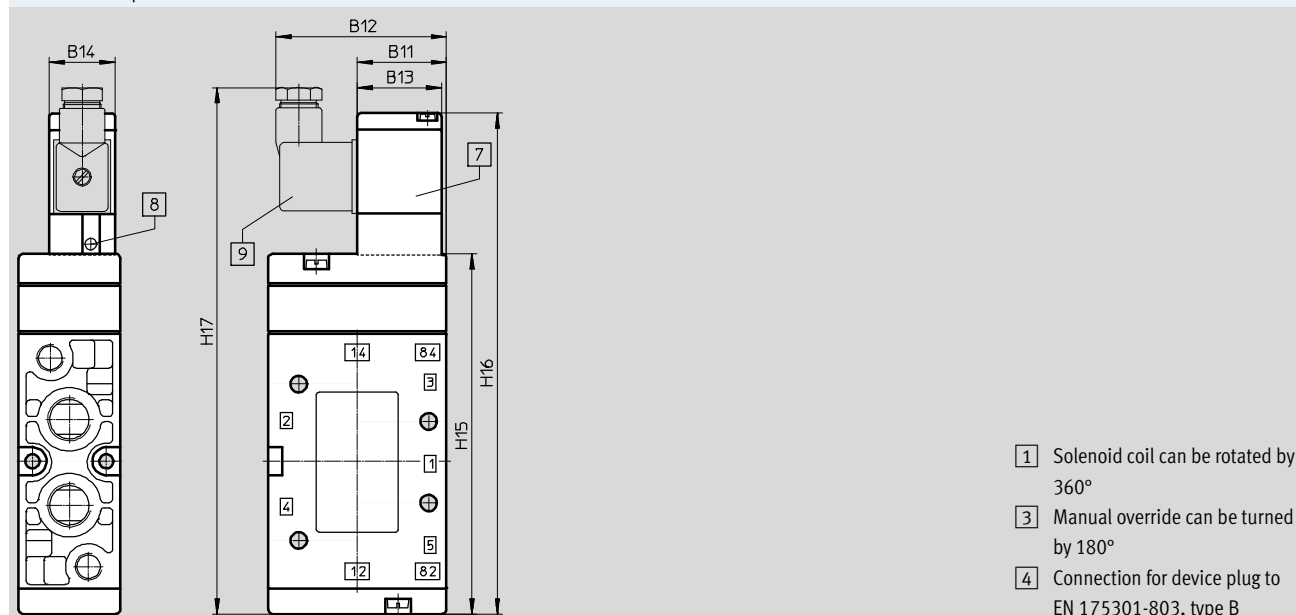


| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1<br>Ø | D2<br>Ø | D3<br>Ø | D4<br>Ø | D5  |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|---------|---------|---------|---------|-----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8    | G1/8    | M5      | 6.5     | 5.5 |

| Pneumatic connection | H1<br>±0.1 | H2 | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  |
|----------------------|------------|----|------|----|------|----|------|----|----|------|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 100        | 82 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 70         | 51 | 5.5 |

## Installation dimensions with V solenoid coil

Mechanical or pneumatic reset



| Type       | B11 | B12  | B13 | B14 | H15   | H16 | H17 |
|------------|-----|------|-----|-----|-------|-----|-----|
| MVH-5-3/8- | 35  | 67.5 | 33  | 26  | 141.5 | 197 | 207 |

# Solenoid valves MVH-B, Tiger 2000

FESTO

Technical data – 5/2-way valves

| Ordering data  |                                                      |         |                      |          |                  |
|----------------|------------------------------------------------------|---------|----------------------|----------|------------------|
| Circuit symbol | Description of valves with V solenoid coil           | Voltage | Pneumatic connection | Part No. | Type             |
|                | Pneumatic reset method<br>Internal pilot air supply  | 24 V DC | G1/8                 | 19749    | MVH-5-1/8-L-B    |
|                |                                                      |         | G1/4                 | 31009    | MVH-5-1/4-L-B    |
|                |                                                      |         | G3/8                 | 14947    | MVH-5-3/8-L-B    |
|                | Pneumatic reset method<br>External pilot air supply  | 24 V DC | G1/8                 | 19750    | MVH-5-1/8-L-S-B  |
|                |                                                      |         | G1/4                 | 33184    | MVH-5-1/4-L-S-B  |
|                |                                                      |         | G3/8                 | 33180    | MVH-5-3/8-L-S-B  |
|                | Mechanical reset method<br>Internal pilot air supply | 24 V DC | G1/8                 | 19779    | MVH-5-1/8-B      |
|                |                                                      |         |                      | 164564   | MVH-5-1/8-B-VI-X |
|                |                                                      |         | G1/4                 | 19701    | MVH-5-1/4-B      |
|                |                                                      |         |                      | 164566   | MVH-5-1/4-B-VI-X |
|                | Mechanical reset method<br>External pilot air supply | 24 V DC | G1/8                 | 14945    | MVH-5-3/8-B      |
|                |                                                      |         |                      | 30996    | MVH-5-1/8-S-B    |
|                |                                                      |         | G1/4                 | 15903    | MVH-5-1/4-S-B    |
|                |                                                      |         |                      |          |                  |
|                | Mechanical reset method<br>External pilot air supply | 24 V DC | G3/8                 | 15342    | MVH-5-3/8-S-B    |

| Ordering data – Wearing parts kits |          |             |
|------------------------------------|----------|-------------|
| Pneumatic connection               | Part No. | Type        |
| G1/8                               | 125071   | MVH-5-1/8-B |
| G1/4                               | 115588   | MVH-5-1/4-B |
| G3/8                               | 115074   | MVH-5-3/8-B |

# Solenoid valves JMVH-B, Tiger 2000

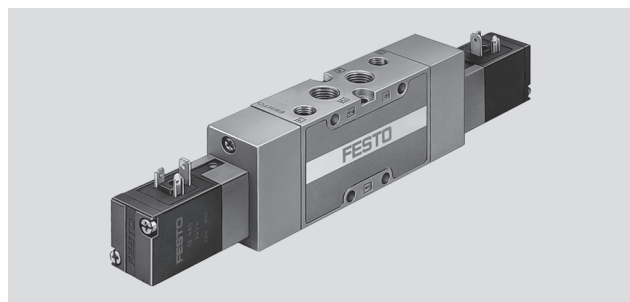
FESTO

Technical data – 5/2-way valves, double solenoid valves

-  - Flow rate  
1000 ... 2000 l/min

-  - Voltage  
24 V DC

Wearing parts kits  
→ 44



| General technical data      |                                                     |      |      |
|-----------------------------|-----------------------------------------------------|------|------|
| Pneumatic connection        | G1/8                                                | G1/4 | G3/8 |
| Valve function              | 5/2-way, double solenoid                            |      |      |
| Design                      | Piston spool                                        |      |      |
| Lap                         | Yes                                                 |      |      |
| Sealing principle           | Overlap                                             |      |      |
| Actuation type              | Electrical                                          |      |      |
| Control type                | Pilot-actuated                                      |      |      |
| Pilot air supply            | Internal or external                                |      |      |
| Flow direction              | Reversible or non-reversible (see switching symbol) |      |      |
| Exhaust air function        | With flow control                                   |      |      |
| Manual override             | Non-detenting                                       |      |      |
| Mounting type               | With through-hole                                   |      |      |
| Mounting position           | Any                                                 |      |      |
| b value                     | –                                                   | Q38  | –    |
| c value [l/s bar]           | –                                                   | 6.35 | –    |
| Nominal width [mm]          | 8                                                   | 10   | 12   |
| Standard flow rate [l/min.] | 1000                                                | 1600 | 2000 |
| Grid dimension [mm]         | 27                                                  | 33   | 41   |
| Valve width [mm]            | 26                                                  | 32   | 40   |
| Product weight [g]          | 560                                                 | 615  | 900  |

| Safety data                                 |      |  |
|---------------------------------------------|------|--|
| Max. switching frequency [Hz]               | 3    |  |
| Max. positive test pulse with 0 signal [μs] | 2200 |  |
| Max. negative test pulse with 1 signal [μs] | 3700 |  |

| Operating and environmental conditions             |                                                                                                        |              |              |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------|--------------|
| Pneumatic connection                               | G1/8                                                                                                   | G1/4         | G3/8         |
| Operating medium                                   | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |              |              |
| Pilot medium (with external pilot air supply)      | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |              |              |
| Note on operating/pilot medium                     | Operation with lubricated medium possible (in which case lubricated operation will always be required) |              |              |
| Operating pressure Internal pilot air supply [bar] | 2 ... 10                                                                                               | 2 ... 10     | 2 ... 10     |
| External pilot air supply [bar]                    | –0.9 ... +10                                                                                           | –0.9 ... +10 | –0.9 ... +10 |
| Pilot pressure [bar]                               | 2 ... 10                                                                                               | 2 ... 10     | 2 ... 10     |
| Storage temperature [°C]                           | –40 ... +60                                                                                            |              |              |
| Ambient temperature [°C]                           | –5 ... +50                                                                                             |              |              |
| Temperature of medium [°C]                         | –5 ... +50                                                                                             |              |              |
| Corrosion resistance class CRC <sup>1)</sup>       | 1                                                                                                      |              |              |

1) Corrosion resistance class CRC 1 to Festo standard FN 940070  
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

# Solenoid valves JMVH-B, Tiger 2000



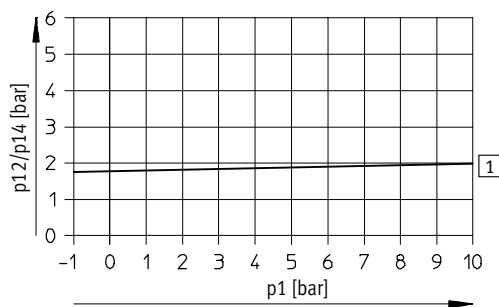
Technical data – 5/2-way valves, double solenoid valves

| Electrical                       |            |        |                                        |  |
|----------------------------------|------------|--------|----------------------------------------|--|
| V solenoid coil                  |            |        |                                        |  |
| Electrical connection            |            |        | To EN 175301-803, type B               |  |
| Permissible voltage fluctuations |            | [%]    | ± 10                                   |  |
| Operating voltage                | DC voltage | [V DC] | 24                                     |  |
| Characteristic coil data         | DC voltage | [W]    | 2.5                                    |  |
| Degree of protection to EN 60529 |            |        | IP65 (in combination with plug socket) |  |

| Valve switching times [ms] |                                |                   |                          |            |                                |
|----------------------------|--------------------------------|-------------------|--------------------------|------------|--------------------------------|
| Type                       | JMVH-5-1/8-B<br>JMVH-5-1/8-S-B | JMVH-5-1/8-B-VI-X | JMVH-5-1/4<br>JMVH-5-1/4 | JMVH-5-1/4 | JMVH-5-3/8-B<br>JMVH-5-3/8-S-B |
| Changeover                 | 18                             | 22                | 16                       | 18         | 17                             |

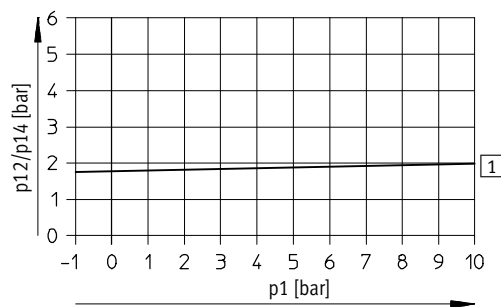
## Minimal pilot pressure p12/p14 as a function of operating pressure p1 (external pilot air supply)

JMVH-5-1/8-S-B



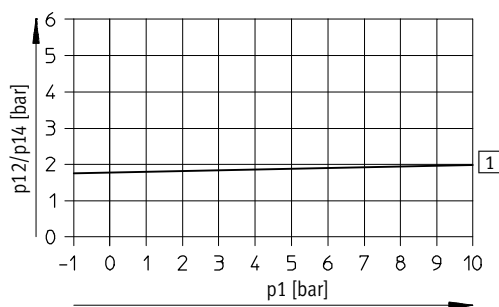
1 On

JMVH-5-1/4-S-B



1 On

JMVH-5-3/8-S-B



1 On

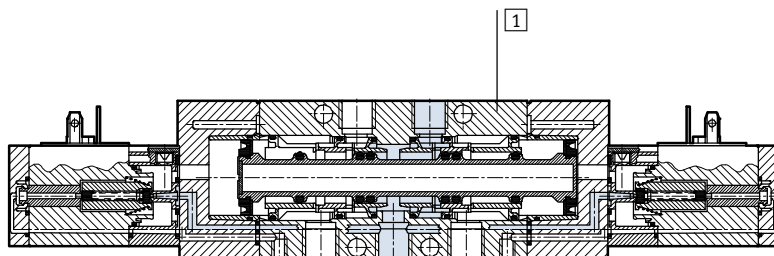
# Solenoid valves JMVH-B, Tiger 2000

FESTO

Technical data – 5/2-way valves, double solenoid valves

## Materials

Sectional view

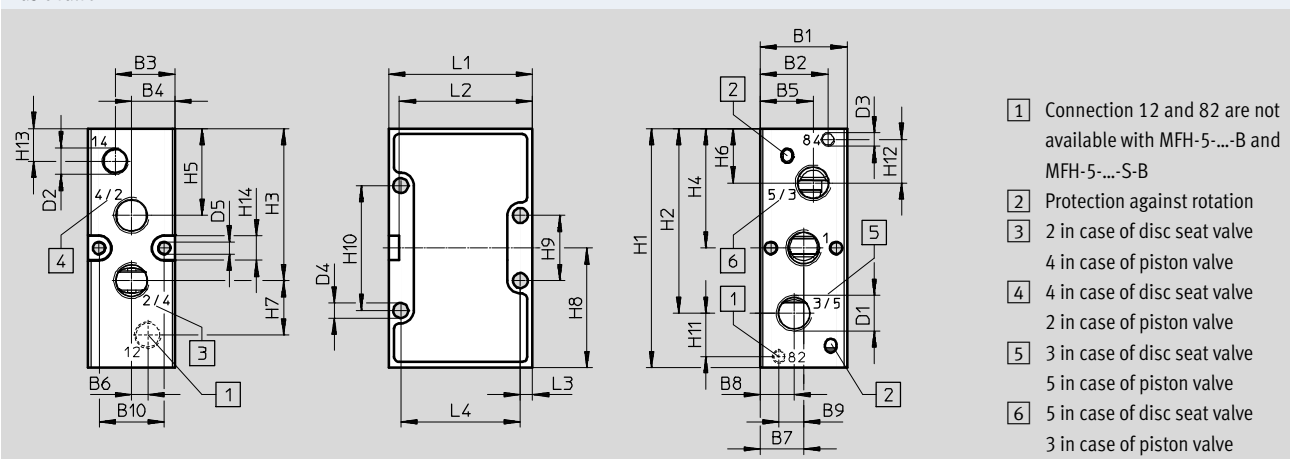


|   |                   |                    |
|---|-------------------|--------------------|
| 1 | Housing           | Die-cast aluminium |
| - | Seals             | NBR                |
| - | Note on materials | RoHS compliant     |

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



| Pneumatic connection | B1 | B2   | B3 | B4 | B5   | B6 | B7 | B8   | B9 | B10  | D1<br>Ø | D2<br>Ø | D3 | D4<br>Ø | D5  | H1<br>±0.2 | H2   |
|----------------------|----|------|----|----|------|----|----|------|----|------|---------|---------|----|---------|-----|------------|------|
| G1/8                 | 26 | 16.5 | 18 | 13 | 16.5 | 5  | 13 | 9.5  | 8  | 19.5 | G1/8    | G1/8    | M5 | 4.5     | 4.3 | 77         | 59.5 |
| G1/4                 | 32 | 19.5 | 22 | 16 | 19.5 | 6  | 16 | 12.5 | 9  | 24   | G1/4    |         |    | 5.5     | 4.3 | 88         | 68   |

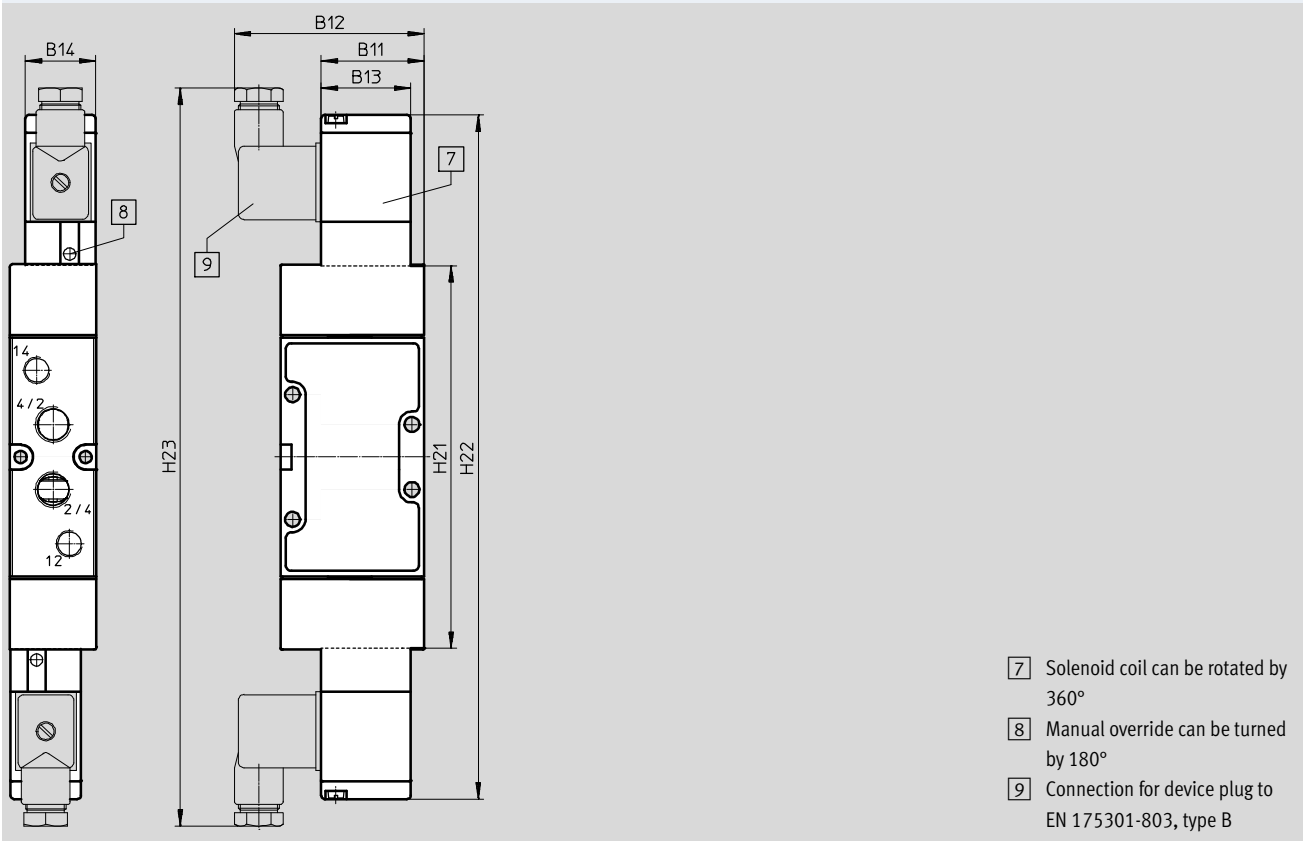
| Pneumatic connection | H3   | H4   | H5   | H6   | H7 | H8<br>±0.2 | H9 | H10 | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  | L4 |
|----------------------|------|------|------|------|----|------------|----|-----|-----|-----|-----|-----|------------|----|-----|----|
| G1/8                 | 49.5 | 38.5 | 27.5 | 17.5 | 19 | 38.5       | 21 | 41  | 12  | 12  | 8.5 | 9   | 47         | 43 | 3.5 | 40 |
| G1/4                 | 56   | 44   | 32   | 20   | 20 | 44         | 22 | 48  | 16  | 16  | 12  |     | 53         | 49 | 4.5 | 44 |

# Solenoid valves JMVH-B, Tiger 2000

Technical data – 5/2-way valves, double solenoid valves



Dimensions – Pneumatic connection G1/8, G1/4  
 Installation dimensions with V solenoid coil  
 Download CAD data → [www.festo.com](http://www.festo.com)



| Type        | B11  | B12 | B13 | B14 | H21 | H22   | H23   |
|-------------|------|-----|-----|-----|-----|-------|-------|
| JMVH-5-1/8- | 36.8 | 67  | 33  | 26  | 129 | 241.2 | 261.2 |
| JMVH-5-1/4- | 38   | 70  |     |     | 141 | 254.2 | 274.5 |

# Solenoid valves JMVH-B, Tiger 2000

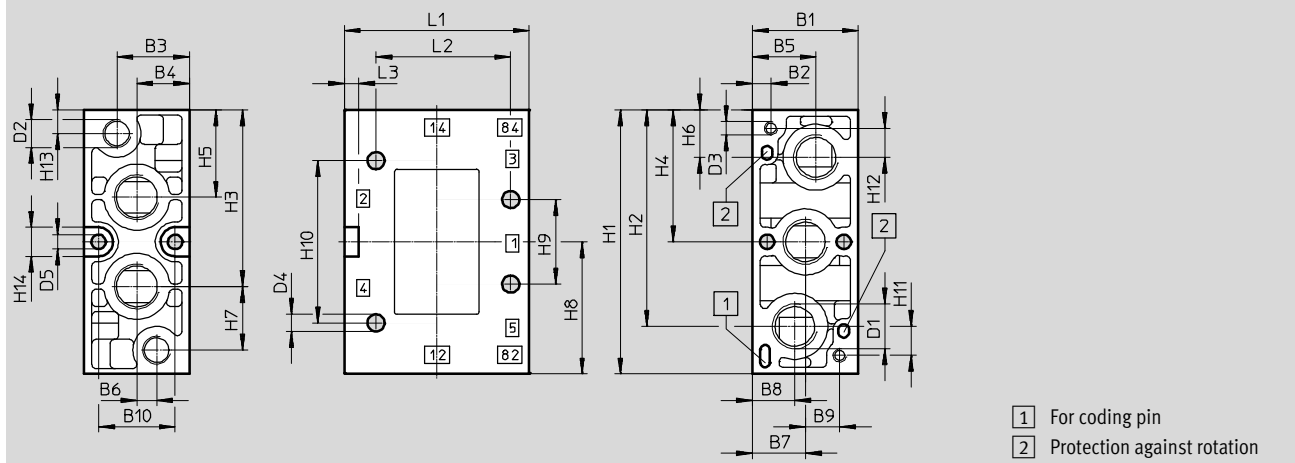
Technical data – 5/2-way valves, double solenoid valves

**FESTO**

## Dimensions – Pneumatic connection G3/8

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

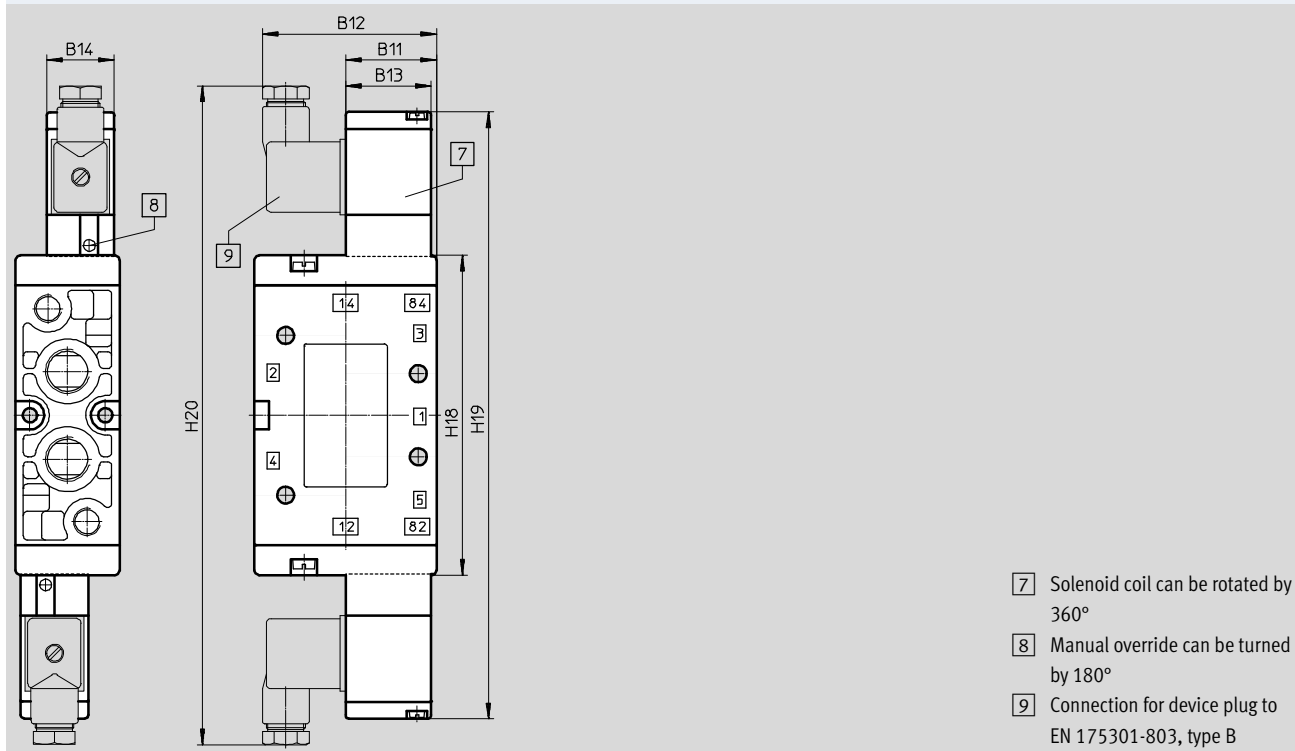
Basic valve



| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1<br>Ø | D2<br>Ø | D3<br>M5 | D4<br>Ø | D5  |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|---------|---------|----------|---------|-----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8    | G1/8    | M5       | 6.5     | 5.5 |

| Pneumatic connection | H1<br>±0.1 | H2 | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  |
|----------------------|------------|----|------|----|------|----|------|----|----|------|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 100        | 82 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 70         | 51 | 5.5 |

## Installation dimensions with V solenoid coil

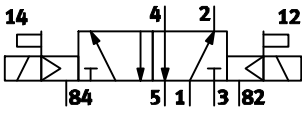
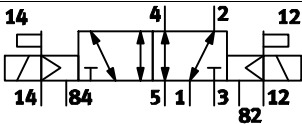


| Type        | B11 | B12  | B13 | B14 | H18 | H19 | H20 |
|-------------|-----|------|-----|-----|-----|-----|-----|
| JMVH-5-3/8- | 35  | 67.5 | 33  | 26  | 123 | 234 | 254 |

## Solenoid valves JMVH-B, Tiger 2000

**FESTO**

Technical data – 5/2-way valves, double solenoid valves

| Ordering data                                                                     |                                            |         |                      |          |                   |
|-----------------------------------------------------------------------------------|--------------------------------------------|---------|----------------------|----------|-------------------|
| Circuit symbol                                                                    | Description of valves with V solenoid coil | Voltage | Pneumatic connection | Part No. | Type              |
|  | Internal pilot air supply                  | 24 V DC | G1/8                 | 30475    | JMVH-5-1/8-B      |
|                                                                                   |                                            |         |                      | 164565   | JMVH-5-1/8-B-VI-X |
|                                                                                   |                                            |         | G1/4                 | 19136    | JMVH-5-1/4-B      |
|                                                                                   |                                            |         |                      | 164567   | JMVH-5-1/4-B-VI-X |
|  | External pilot air supply                  | 24 V DC | G3/8                 | 14948    | JMVH-5-3/8-B      |
|                                                                                   |                                            |         | G1/8                 | 30476    | JMVH-5-1/8-S-B    |
|                                                                                   |                                            |         | G1/4                 | 19137    | JMVH-5-1/4-S-B    |
|                                                                                   |                                            |         | G3/8                 | 15343    | JMVH-5-3/8-S-B    |

| Ordering data – Wearing parts kits |          |                   |
|------------------------------------|----------|-------------------|
| Pneumatic connection               | Part No. | Type              |
| G1/8                               | 115590   | JMVH-5-1/8-B-(SB) |
| G1/4                               | 115589   | JMVH-5-1/4-B-(SB) |

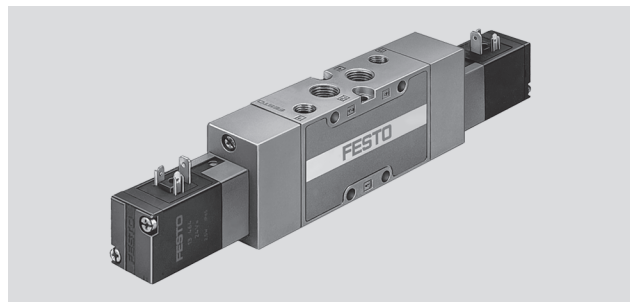
# Solenoid valves MVH-B, Tiger 2000

FESTO

Technical data – 5/3-way valves

-  - Flow rate  
1000 ... 2600 l/min

-  - Voltage  
24 V DC



| General technical data |             |           |                                                     |      |                         |
|------------------------|-------------|-----------|-----------------------------------------------------|------|-------------------------|
| Pneumatic connection   |             |           | G1/8                                                | G1/4 | G3/8                    |
| Valve function         |             |           | 5/3-way, single solenoid                            |      |                         |
| Design                 |             |           | Piston spool                                        |      |                         |
| Lap                    |             |           | Overlap                                             |      |                         |
| Sealing principle      |             |           | Soft                                                |      |                         |
| Actuation type         |             |           | Electrical                                          |      |                         |
| Reset method           |             |           | Mechanical spring                                   |      |                         |
| Control type           |             |           | Pilot-actuated                                      |      |                         |
| Pilot air supply       |             |           | Internal or external                                |      |                         |
| Flow direction         |             |           | Reversible or not reversible (see switching symbol) |      |                         |
| Exhaust air function   |             |           | With flow control                                   |      |                         |
| Manual override        |             |           | Non-detenting                                       |      |                         |
| Type of mounting       |             |           | With through-hole                                   |      |                         |
| Mounting position      |             |           | Any                                                 |      |                         |
| b value                |             |           | –                                                   | 0.38 | –                       |
| c value                |             | [l/s bar] | –                                                   | 6.35 | –                       |
| Nominal width          |             | [mm]      | 8                                                   | 10   | 12                      |
| Nominal flow rate      | Closed      | [l/min.]  | 1000                                                | 1600 | 2200                    |
|                        | Exhausted   | [l/min.]  |                                                     |      | 2200                    |
|                        | Pressurised | [l/min.]  |                                                     |      | 2600                    |
| Grid dimension         |             | [mm]      | 27                                                  | 33   | 41                      |
| Valve width            |             | [mm]      | 26                                                  | 32   | 40                      |
| Product weight         |             | [g]       | 575                                                 | 660  | 1000, 780 <sup>1)</sup> |

1) Solenoid valve MVH-5/3G-3/8-B

| Safety data                            |      |      |
|----------------------------------------|------|------|
| Max. switching frequency               | [Hz] | 3    |
| Max. positive test pulse with 0 signal | [µs] | 2200 |
| Max. negative test pulse with 1 signal | [µs] | 3700 |

# Solenoid valves MVH-B, Tiger 2000

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Technical data – 5/3-way valves

| Operating and environmental conditions        |                           |       |                                                                                                        |              |              |  |
|-----------------------------------------------|---------------------------|-------|--------------------------------------------------------------------------------------------------------|--------------|--------------|--|
| Pneumatic connection                          |                           |       | G1/8                                                                                                   | G1/4         | G3/8         |  |
| Operating medium                              |                           |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |              |              |  |
| Pilot medium (with external pilot air supply) |                           |       | Compressed air to ISO 8573-1:2010 [7:4:4]                                                              |              |              |  |
| Note on operating/pilot medium                |                           |       | Operation with lubricated medium possible (in which case lubricated operation will always be required) |              |              |  |
| Operating pressure                            | Internal pilot air supply | [bar] | 3 ... 10                                                                                               | 3 ... 10     | 3 ... 10     |  |
|                                               | External pilot air supply | [bar] | –0.9 ... +10                                                                                           | –0.9 ... +10 | –0.9 ... +10 |  |
| Pilot pressure                                |                           | [bar] | 3 ... 10                                                                                               | 3 ... 10     | 3 ... 10     |  |
| Storage temperature                           |                           | [°C]  | –40 ... +60                                                                                            |              |              |  |
| Ambient temperature                           |                           | [°C]  | –5 ... +50                                                                                             |              |              |  |
| Temperature of medium                         |                           | [°C]  | –5 ... +50                                                                                             |              |              |  |
| Corrosion resistance class CRC <sup>1)</sup>  |                           |       | 1                                                                                                      |              |              |  |

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

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

| Electrical data                  |            |                                        |      |
|----------------------------------|------------|----------------------------------------|------|
| V solenoid coil                  |            |                                        |      |
| Electrical connection            |            | To EN 175301-803, type B               |      |
| Permissible voltage fluctuations |            | [%]                                    | ± 10 |
| Operating voltage                | DC voltage | [V DC]                                 | 24   |
| Characteristic coil data         | DC voltage | [W]                                    | 2.5  |
| Protection class to EN 60 529    |            | IP65 (in combination with plug socket) |      |

| Valve switching times [ms] |                        |                   |                       |                       |                   |             |                        |                        |                        |                       |                   |             |                |                   |             |
|----------------------------|------------------------|-------------------|-----------------------|-----------------------|-------------------|-------------|------------------------|------------------------|------------------------|-----------------------|-------------------|-------------|----------------|-------------------|-------------|
| Pneumatic connection       | G1/8                   |                   |                       |                       |                   |             | G1/4                   |                        |                        |                       |                   |             | G3/8           |                   |             |
|                            | MVH-5/3...-1/8         |                   |                       | MVH-5/3...-1/8-B-VI-X |                   |             | MVH-5/3...-1/4         |                        |                        | MVH-5/3...-1/4-B-VI-X |                   |             | MVH-5/3...-3/8 |                   |             |
|                            | On                     | Off <sup>2)</sup> | Change-over           | On                    | Off <sup>2)</sup> | Change-over | On                     | Off <sup>3)</sup>      | Change-over            | On                    | Off <sup>3)</sup> | Change-over | On             | Off <sup>4)</sup> | Change-over |
| Closed                     | 28                     | 32                | 32                    | 30                    | 30                | –           | 18<br>27 <sup>1)</sup> | 30<br>37 <sup>1)</sup> | 30<br>39 <sup>1)</sup> | 27                    | 36                | –           | 27             | 89                | 57          |
| Exhausted                  | 30<br>34 <sup>1)</sup> | 29                | 34<br>– <sup>1)</sup> | 40                    | 50                | –           | 36                     | 38                     | 46                     | 33                    | 45                | –           | 35             | 87                | 75          |
| Pressurised                | 31                     | 26                | 20                    | 40                    | 50                | –           | 32                     | 41                     | 46                     | 32                    | 38                | –           | 35             | 92                | 73          |

1) With external pilot air supply

2) After long electrical actuation (> 16 h), the switch-off time of 5/3-way valves can increase to max. 50 ms.

3) After long electrical actuation (> 16 h), the switch-off time of 5/3-way valves can increase to max. 100 ms.

4) After long electrical actuation (> 16 h), the switch-off time of 5/3-way valves can increase to max. 150 ms.

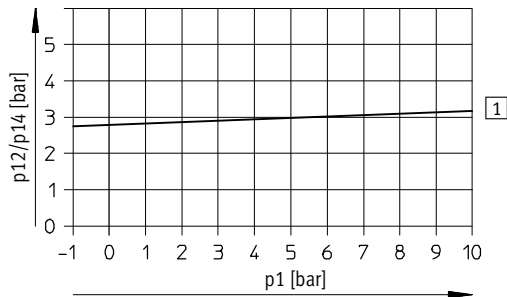
# Solenoid valves MVH-B, Tiger 2000

Technical data – 5/3-way valves



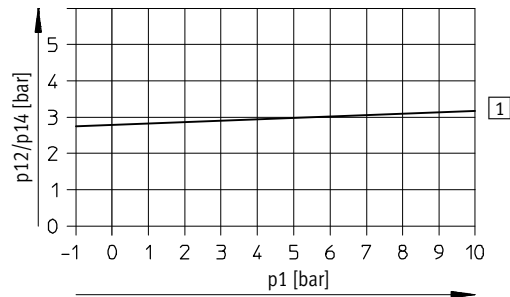
Minimal pilot pressure  $p_{12}/p_{14}$  as a function of operating pressure  $p_1$  (external pilot air supply)

MVH-5/3...-1/8-S-B



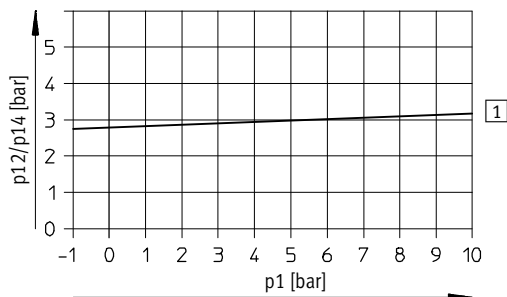
1 On

MVH-5/3...-1/4-S-B



1 On

MVH-5/3...-3/8-S-B



1 On

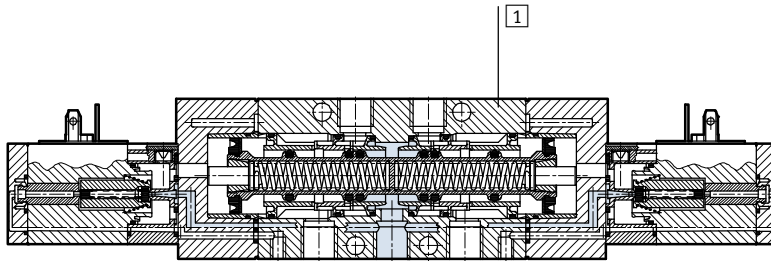
# Solenoid valves MVH-B, Tiger 2000

Technical data – 5/3-way valves

**FESTO**

## Materials

Sectional view

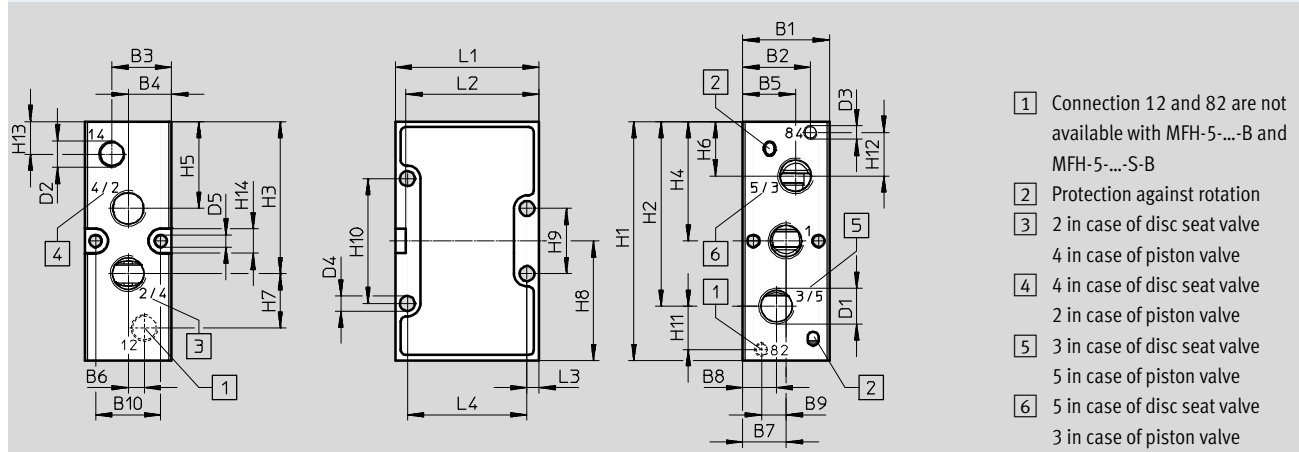


|   |                   |                    |
|---|-------------------|--------------------|
| 1 | Housing           | Die-cast aluminium |
| - | Seals             | NBR                |
| - | Note on materials | RoHS compliant     |

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve



| Pneumatic connection | B1 | B2   | B3 | B4 | B5   | B6 | B7 | B8   | B9 | B10  | D1<br>Ø | D2<br>Ø | D3 | D4<br>Ø | D5  | H1<br>±0.2 | H2   |
|----------------------|----|------|----|----|------|----|----|------|----|------|---------|---------|----|---------|-----|------------|------|
| G1/8                 | 26 | 16.5 | 18 | 13 | 16.5 | 5  | 13 | 9.5  | 8  | 19.5 | G1/8    | G1/8    | M5 | 4.5     | 4.3 | 77         | 59.5 |
| G1/4                 | 32 | 19.5 | 22 | 16 | 19.5 | 6  | 16 | 12.5 | 9  | 24   | G1/4    |         |    | 5.5     | 4.3 | 88         | 68   |

| Pneumatic connection | H3   | H4   | H5   | H6   | H7 | H8<br>±0.2 | H9 | H10 | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  | L4 |
|----------------------|------|------|------|------|----|------------|----|-----|-----|-----|-----|-----|------------|----|-----|----|
| G1/8                 | 49.5 | 38.5 | 27.5 | 17.5 | 19 | 38.5       | 21 | 41  | 12  | 12  | 8.5 | 9   | 47         | 43 | 3.5 | 40 |
| G1/4                 | 56   | 44   | 32   | 20   | 20 | 44         | 22 | 48  | 16  | 16  | 12  |     | 53         | 49 | 4.5 | 44 |

# Solenoid valves MVH-B, Tiger 2000

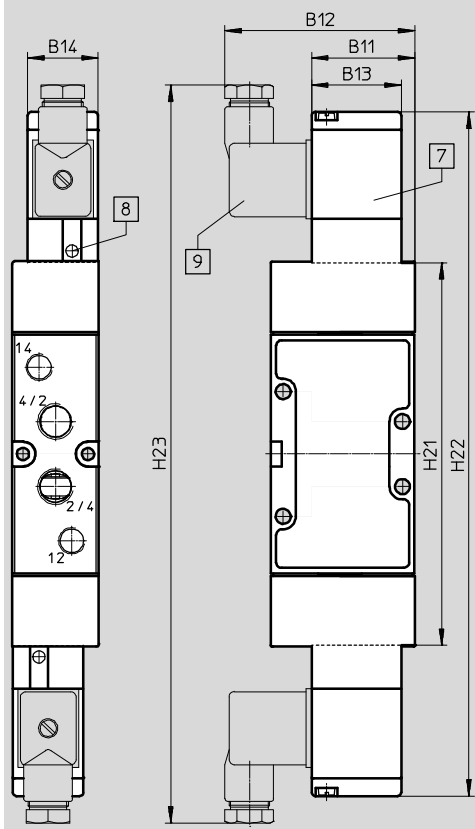
Technical data – 5/3-way valves

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## Dimensions

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

Installation dimensions with V solenoid coil, mechanical or pneumatic reset



- 7 Solenoid coil can be rotated by 360°
- 8 Manual override can be turned by 180°
- 9 Connection for device plug to EN 175301-803, type B

| Type       | B11  | B12 | B13 | B14 | H21 | H22   | H23   |
|------------|------|-----|-----|-----|-----|-------|-------|
| MVH-5-1/8- | 36.8 | 67  | 33  | 26  | 129 | 241.2 | 261.2 |
| MVH-5-1/4- | 38   | 70  |     |     | 141 | 254.2 | 274.5 |

# Solenoid valves MVH-B, Tiger 2000

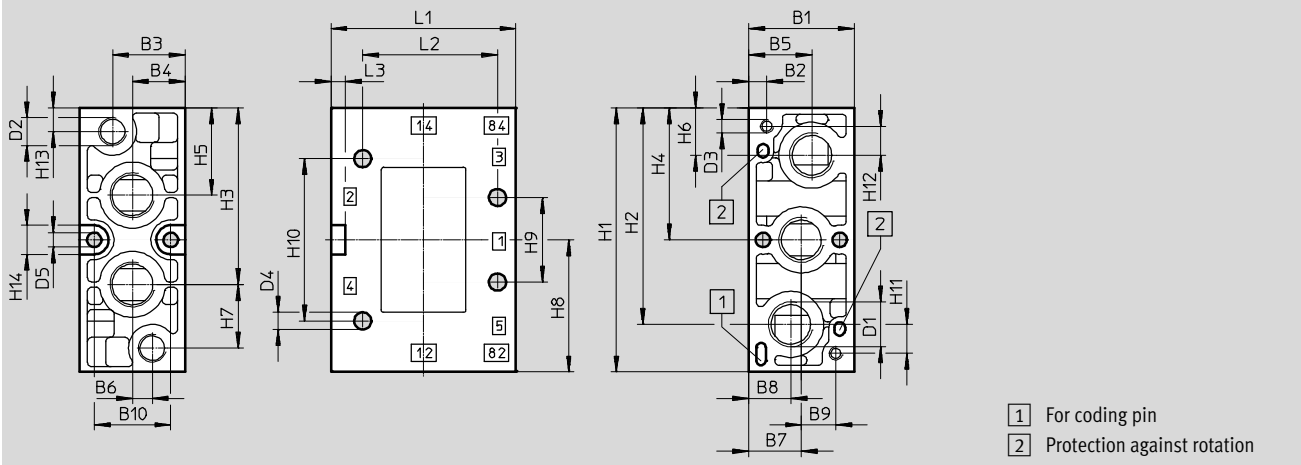
Technical data – 5/3-way valves

**FESTO**

## Dimensions – Pneumatic connection G3/8

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

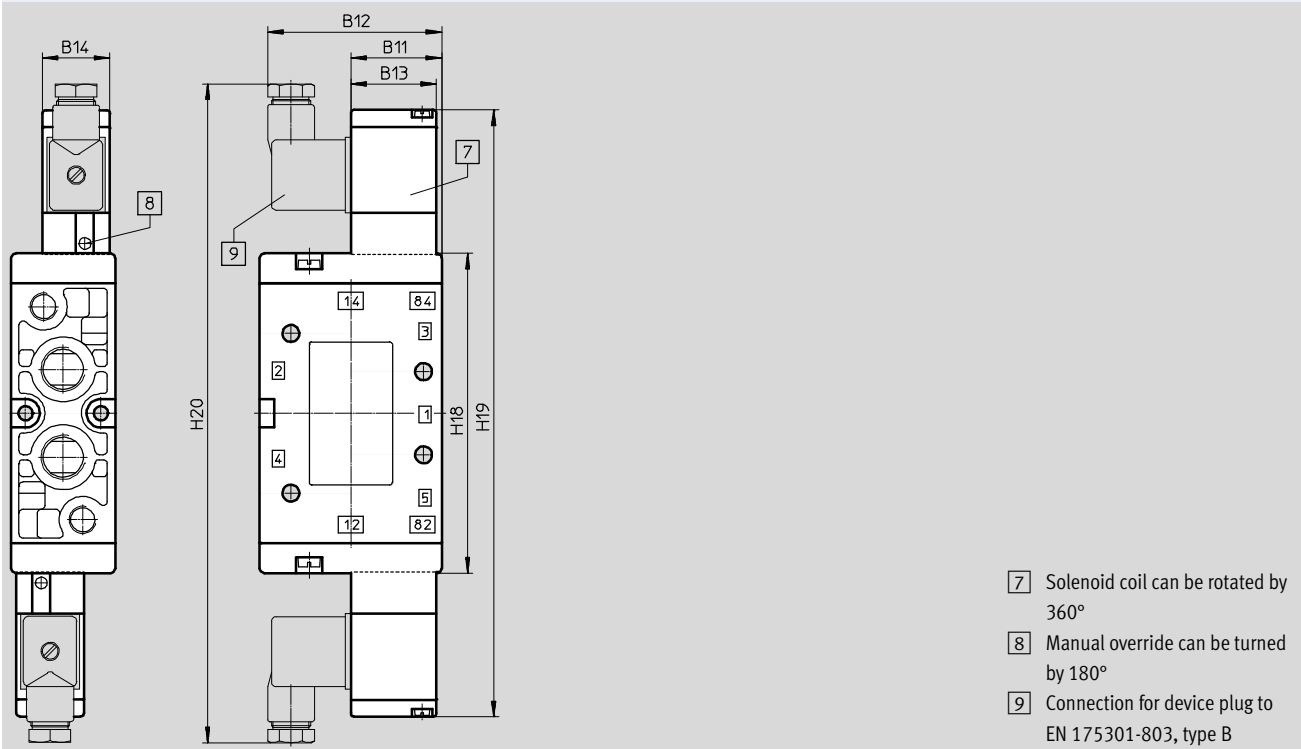
Basic valve



| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1<br>Ø | D2<br>Ø | D3 | D4<br>Ø | D5  |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|---------|---------|----|---------|-----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8    | G1/8    | M5 | 6.5     | 5.5 |

| Pneumatic connection | H1<br>±0.1 | H2 | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | L1<br>±0.2 | L2 | L3  |
|----------------------|------------|----|------|----|------|----|------|----|----|------|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 100        | 82 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 70         | 51 | 5.5 |

## Installation dimensions with V solenoid coil, mechanical or pneumatic reset



| Type       | B11 | B12  | B13 | B14 | H18 | H19 | H20 |
|------------|-----|------|-----|-----|-----|-----|-----|
| MVH-5-3/8- | 35  | 67.5 | 33  | 26  | 123 | 234 | 254 |

# Solenoid valves MVH-B, Tiger 2000

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Technical data – 5/3-way valves

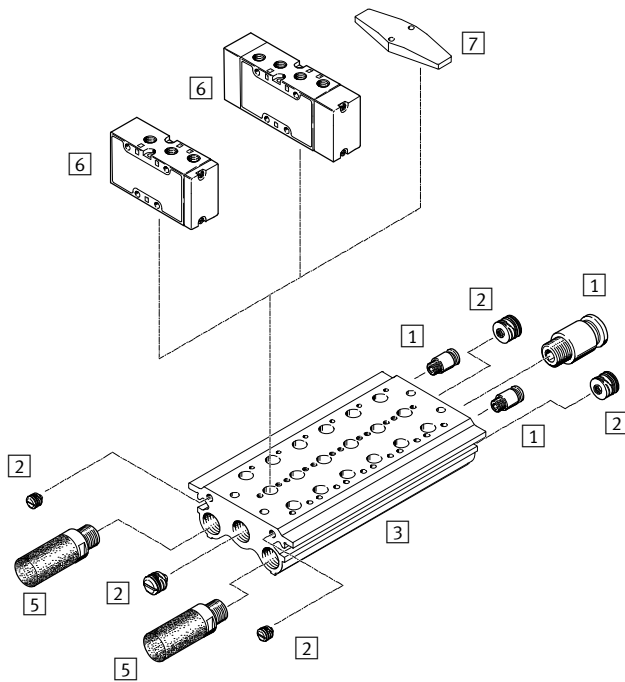
| Ordering data  |                                                   |         |                      |          |                     |
|----------------|---------------------------------------------------|---------|----------------------|----------|---------------------|
| Circuit symbol | Description of valves with V solenoid coil        | Voltage | Pneumatic connection | Part No. | Type                |
|                | Normally closed<br>Internal pilot air supply      | 24 V DC | G1/8                 | 30477    | MVH-5/3G-1/8-B      |
|                |                                                   |         | G1/4                 | 164568   | MVH-5/3G-1/8-B-VI-X |
|                |                                                   |         |                      | 19138    | MVH-5/3G-1/4-B      |
|                |                                                   |         |                      | 164571   | MVH-5/3G-1/4-B-VI-X |
|                | Normally closed<br>External pilot air supply      | 24 V DC | G1/8                 | 30997    | MVH-5/3G-1/8-S-B    |
|                |                                                   |         | G1/4                 | 31004    | MVH-5/3G-1/4-S-B    |
|                |                                                   |         | G3/8                 | 15346    | MVH-5/3G-3/8-S-B    |
|                | Normally exhausted<br>Internal pilot air supply   | 24 V DC | G1/8                 | 30478    | MVH-5/3E-1/8-B      |
|                |                                                   |         | G1/4                 | 164570   | MVH-5/3E-1/8-B-VI-X |
|                |                                                   |         |                      | 19139    | MVH-5/3E-1/4-B      |
|                |                                                   |         |                      | 164573   | MVH-5/3E-1/4-B-VI-X |
|                | Normally exhausted<br>External pilot air supply   | 24 V DC | G1/8                 | 30998    | MVH-5/3E-1/8-S-B    |
|                |                                                   |         | G1/4                 | 31005    | MVH-5/3E-1/4-S-B    |
|                |                                                   |         | G3/8                 | 15344    | MVH-5/3E-3/8-S-B    |
|                | Normally pressurised<br>Internal pilot air supply | 24 V DC | G1/8                 | 30480    | MVH-5/3B-1/8-B      |
|                |                                                   |         | G1/4                 | 164569   | MVH-5/3B-1/8-B-VI-X |
|                |                                                   |         |                      | 19140    | MVH-5/3B-1/4-B      |
|                |                                                   |         |                      | 164572   | MVH-5/3B-1/4-B-VI-X |
|                | Normally pressurised<br>External pilot air supply | 24 V DC | G1/8                 | 19699    | MVH-5/3B-3/8-B      |
|                |                                                   |         | G1/4                 | 30999    | MVH-5/3B-3/8-S-B    |
|                |                                                   |         | G3/8                 | 31006    | MVH-5/3B-1/4-S-B    |
|                |                                                   |         | G3/8                 | 15345    | MVH-5/3B-3/8-S-B    |

# Pneumatic valves, Tiger 2000

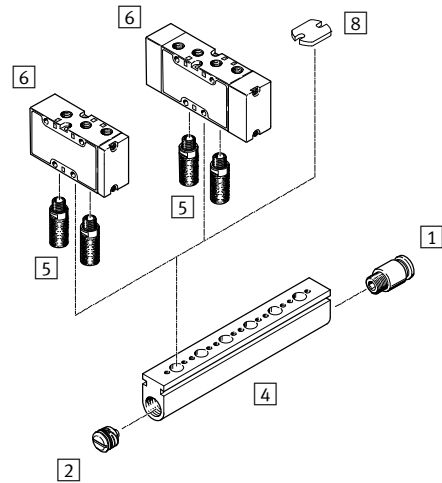
Peripherals overview

FESTO

## Mounting on manifold block



## Mounting on manifold rail



| Accessories |                          |                                                                                    |
|-------------|--------------------------|------------------------------------------------------------------------------------|
|             | Brief description        | → Page/Internet                                                                    |
| 1           | Push-in fitting<br>QS    | For connecting compressed air tubing with standard outside diameters<br>quick star |
| 2           | Blanking plug<br>PRSV    | —<br>70                                                                            |
| 3           | Manifold block<br>PRS    | —<br>68                                                                            |
| 4           | Manifold rail<br>PAL     | —<br>66                                                                            |
| 5           | Silencer                 | For mounting in exhaust ports<br>u                                                 |
| 6           | Pneumatic valve<br>VL, J | —<br>5                                                                             |
| 7           | Cover plate<br>PRSB      | For covering vacant positions<br>70                                                |
| 8           | Cover plate<br>PALB      | For covering vacant positions<br>70                                                |

# Pneumatic valves, Tiger 2000

Type codes

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|                             |                                |    |   |     |   |   |     |   |   |   |    |
|-----------------------------|--------------------------------|----|---|-----|---|---|-----|---|---|---|----|
|                             |                                | VL | – | 5/3 | G | – | 1/8 | – | B | – | EX |
| <b>Type</b>                 |                                |    |   |     |   |   |     |   |   |   |    |
| VL                          | Monostable                     |    |   |     |   |   |     |   |   |   |    |
| J                           | Bistable                       |    |   |     |   |   |     |   |   |   |    |
| <b>Valve function</b>       |                                |    |   |     |   |   |     |   |   |   |    |
| 5                           | 5/2-way valve                  |    |   |     |   |   |     |   |   |   |    |
| 5/3                         | 5/3-way valve                  |    |   |     |   |   |     |   |   |   |    |
| <b>Initial position</b>     |                                |    |   |     |   |   |     |   |   |   |    |
| G                           | Closed                         |    |   |     |   |   |     |   |   |   |    |
| E                           | Exhausted                      |    |   |     |   |   |     |   |   |   |    |
| B                           | Pressurised                    |    |   |     |   |   |     |   |   |   |    |
| <b>Pneumatic connection</b> |                                |    |   |     |   |   |     |   |   |   |    |
| 1/8                         | G1/8                           |    |   |     |   |   |     |   |   |   |    |
| 1/4                         | G1/4                           |    |   |     |   |   |     |   |   |   |    |
| 3/8                         | G3/8                           |    |   |     |   |   |     |   |   |   |    |
| <b>Generation</b>           |                                |    |   |     |   |   |     |   |   |   |    |
| B                           | B series                       |    |   |     |   |   |     |   |   |   |    |
| <b>CE marking</b>           |                                |    |   |     |   |   |     |   |   |   |    |
| –                           | None                           |    |   |     |   |   |     |   |   |   |    |
| EX                          | ATEX category → technical data |    |   |     |   |   |     |   |   |   |    |

# Pneumatic valves VL, Tiger 2000

Technical data – 5/2-way valves

**FESTO**

-  - Flow rate  
750 ... 2000 l/min

Wearing parts kits  
→ 57



| General technical data     |  |                     |      |              |
|----------------------------|--|---------------------|------|--------------|
| Pneumatic connection       |  | G1/8                | G1/4 | G3/8         |
| Valve function             |  | 5/2-way, monostable |      |              |
| Design                     |  | Poppet seat         |      | Piston spool |
| Lap                        |  | Underlap            |      | Overlap      |
| Sealing principle          |  | Soft                |      |              |
| Actuation type             |  | Pneumatic           |      |              |
| Reset method               |  | Mechanical spring   |      |              |
| Control type               |  | Direct              |      |              |
| Flow direction             |  | Non-reversible      |      | Reversible   |
| Exhaust function           |  | With flow control   |      |              |
| Manual override            |  | None                |      |              |
| Type of mounting           |  | With through-hole   |      |              |
| Mounting position          |  | Any                 |      |              |
| b value                    |  | –                   | 0.29 | –            |
| c value                    |  | [l/s bar]           | –    | 5.5          |
| Nominal width              |  | [mm]                | 5    | 7            |
| Standard nominal flow rate |  | [l/min.]            | 750  | 1300         |
| Grid dimension             |  | [mm]                | 27   | 33           |
| Valve width                |  | [mm]                | 26   | 32           |
| Product weight             |  | [g]                 | 170  | 240          |
|                            |  |                     |      | 570          |

| Safety data                            |      |      |
|----------------------------------------|------|------|
| Max. switching frequency               | [Hz] | 3    |
| Max. positive test pulse with 0 signal | [µs] | 2200 |
| Max. negative test pulse with 1 signal | [µs] | 3700 |

| ATEX                                       |                                             |
|--------------------------------------------|---------------------------------------------|
| Type                                       | VL- ... -EX, J- ... -EX                     |
| ATEX category gas                          | II 2G                                       |
| Type of (ignition) protection for gas      | Ex h IIC T4 Gb                              |
| ATEX category for dust                     | II 2D                                       |
| Type of (ignition) protection for dust     | Ex h IIIC T130°C Db                         |
| Explosion-proof ambient temperature        | [°C] –10 °C ≤ Ta ≤ +60 °C                   |
| CE marking (see declaration of conformity) | To EU Explosion Protection Directive (ATEX) |

# Pneumatic valves VL, Tiger 2000

FESTO

Technical data – 5/2-way valves

| Operating and environmental conditions       |                                                                                                        |            |              |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------|------------|--------------|
| Pneumatic connection                         | G1/8                                                                                                   | G1/4       | G3/8         |
| 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/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |            |              |
| Operating pressure [bar]                     | 0 ... 10                                                                                               | 0 ... 10   | –0.9 ... +10 |
| Pilot pressure [bar]                         | 1.5 ... 10                                                                                             | 1.5 ... 10 | 2.5 ... 10   |
| Storage temperature [°C]                     | –40 ... +60                                                                                            |            |              |
| Ambient temperature [°C]                     | –10 ... +60                                                                                            |            |              |
| Temperature of medium [°C]                   | –10 ... +60                                                                                            |            |              |
| Corrosion resistance class CRC <sup>1)</sup> | 1                                                                                                      |            |              |

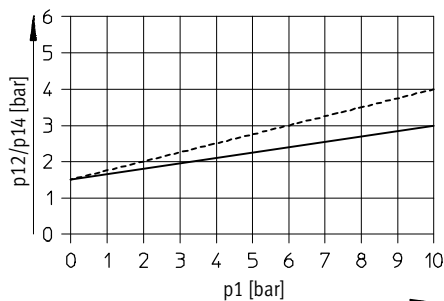
1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

| Valve switching times [ms] |      |      |      |
|----------------------------|------|------|------|
| Pneumatic connection       | G1/8 | G1/4 | G3/8 |
| On                         | 2    | 2    | 4    |
| Off                        | 10   | 12   | 16   |

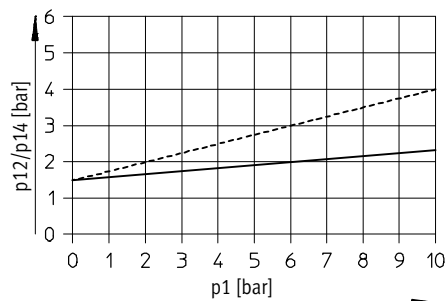
## Minimum pilot pressure p12, p14 as a function of the operating pressure p1

VL-5-1/8-B



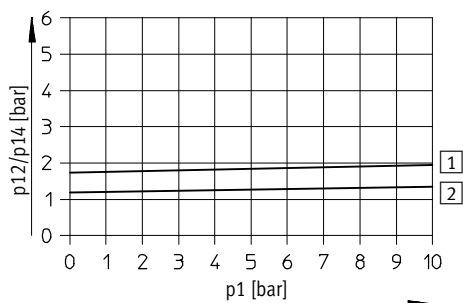
----- Exhausting, throttled  
 ————— Exhausting, unthrottled

VL-5-1/4-B



----- Exhausting, throttled  
 ————— Exhausting, unthrottled

VL-5-3/8-B



1 On  
 2 Off

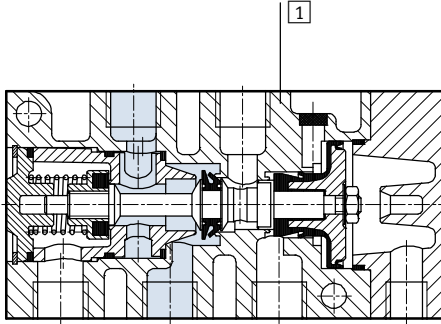
# Pneumatic valves VL, Tiger 2000

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Technical data – 5/2-way valves

## Materials

Sectional view



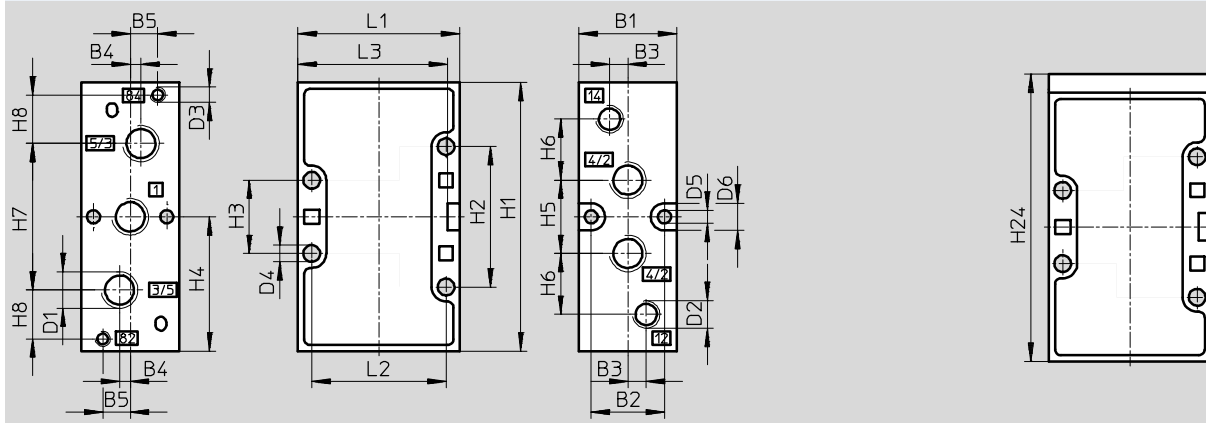
| Pneumatic connection | G1/8               | G1/4 | G3/8    |
|----------------------|--------------------|------|---------|
| 1 Housing            | Die-cast aluminium |      |         |
| – Seals              | NBR, TPE-U(PU)     |      | NBR, PU |
| – Note on materials  | RoHS compliant     |      |         |

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve

VL-5-...-B



| Pneumatic connection | B1 | B2   | B3 | B4  | B5 | D1   | D2   | D3 | D4<br>Ø | D5<br>Ø | D6 | H1 |
|----------------------|----|------|----|-----|----|------|------|----|---------|---------|----|----|
| G1/8                 | 26 | 19.5 | 5  | 3.5 | 8  | G1/8 | G1/8 | M5 | 4.5     | 4.3     | 9  | 77 |
| G1/4                 | 32 | 24   | 6  | 3.5 | 9  | G1/4 | G1/8 | M5 | 5.5     | 4.3     | 9  | 88 |

| Pneumatic connection | H2 | H3 | H4   | H5 | H6 | H7 | H8 | H24 | L1 | L2 | L3 |
|----------------------|----|----|------|----|----|----|----|-----|----|----|----|
| G1/8                 | 41 | 21 | 38.5 | 22 | 19 | 42 | 12 | 83  | 47 | 40 | 43 |
| G1/4                 | 46 | 24 | 44   | 24 | 20 | 48 | 16 | 94  | 53 | 44 | 49 |

# Pneumatic valves VL, Tiger 2000

FESTO

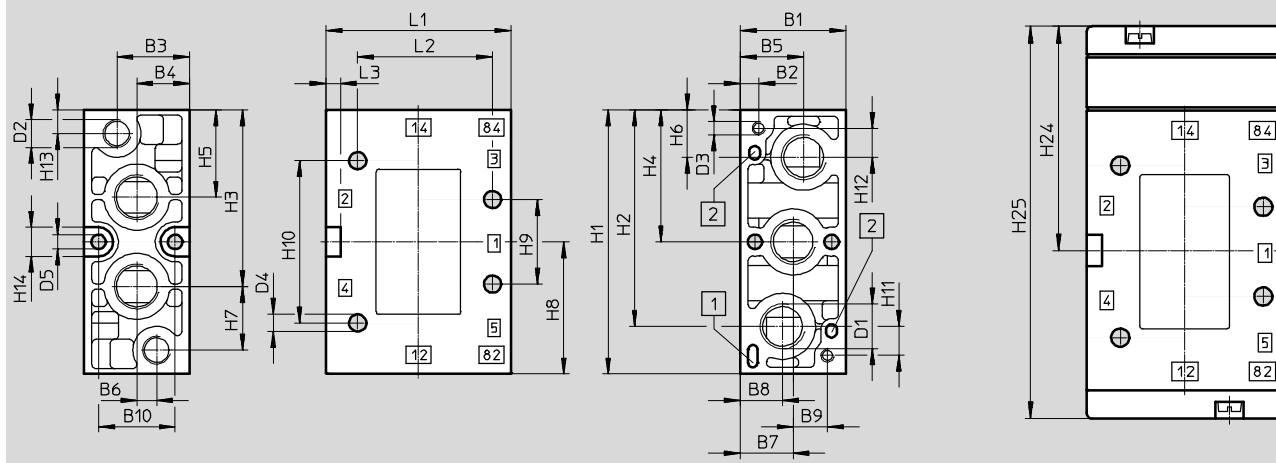
Technical data – 5/2-way valves

## Dimensions – Pneumatic connection G3/8

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

Basic valve

VL-5-3/8-B



| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1   | D2   | D3 | D4<br>Ø | D5<br>Ø | H1<br>±0.1 | H2 |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|------|------|----|---------|---------|------------|----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8 | G1/8 | M5 | 6.5     | 5.5     | 100        | 82 |

| Pneumatic connection | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | H24 | H25 | L1<br>±0.2 | L2 | L3  |
|----------------------|------|----|------|----|------|----|----|------|-----|-----|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 11  | 11  | 70         | 51 | 5.5 |

## Ordering data

| Circuit symbol | Description             | Pneumatic connection | ATEX category         | Part No. | Type          |
|----------------|-------------------------|----------------------|-----------------------|----------|---------------|
|                | Mechanical reset method | G1/8                 | –                     | 31000    | VL-5-1/8-B    |
|                |                         |                      | ATEX category<br>→ 54 | 536040   | VL-5-1/8-B-EX |
|                |                         | G1/4                 | –                     | 14294    | VL-5-1/4-B    |
|                |                         |                      | ATEX category<br>→ 54 | 536041   | VL-5-1/4-B-EX |
|                | Mechanical reset method | G3/8                 | –                     | 14952    | VL-5-3/8-B    |
|                |                         |                      | ATEX category<br>→ 54 | 536042   | VL-5-3/8-B-EX |

## Ordering data – Wearing parts kits

| Pneumatic connection | Part No. | Type       |
|----------------------|----------|------------|
| G1/8                 | 125710   | VL-5-1/8-B |
| G1/4                 | 115580   | VL-5-1/4-B |

# Pneumatic valves J, Tiger 2000

Technical data – 5/2-way valves, double pilot

**FESTO**

-  - Flow rate  
1000 ... 2000 l/min



| General technical data     |           |                   |      |      |
|----------------------------|-----------|-------------------|------|------|
| Pneumatic connection       |           | G1/8              | G1/4 | G3/8 |
| Valve function             |           | 5/2-way, bistable |      |      |
| Design                     |           | Piston spool      |      |      |
| Lap                        |           | Overlap           |      |      |
| Sealing principle          |           | Soft              |      |      |
| Actuation type             |           | Pneumatic         |      |      |
| Control type               |           | Direct            |      |      |
| Flow direction             |           | Reversible        |      |      |
| Exhaust function           |           | With flow control |      |      |
| Manual override            |           | None              |      |      |
| Type of mounting           |           | With through-hole |      |      |
| Mounting position          |           | Any               |      |      |
| b value                    |           | –                 | 0.38 | –    |
| c value                    | [l/s bar] | –                 | 6.35 | –    |
| Nominal width              | [mm]      | 8                 | 10   | 12   |
| Standard nominal flow rate | [l/min.]  | 1000              | 1600 | 2000 |
| Grid dimension             | [mm]      | 27                | 33   | 41   |
| Valve width                | [mm]      | 26                | 32   | 40   |
| Product weight             | [g]       | 320               | 375  | 550  |

| Safety data                            |      |      |
|----------------------------------------|------|------|
| Max. switching frequency               | [Hz] | 3    |
| Max. positive test pulse with 0 signal | [µs] | 2200 |
| Max. negative test pulse with 1 signal | [µs] | 3700 |

| Operating and environmental conditions       |       |                                                                                                        |              |              |
|----------------------------------------------|-------|--------------------------------------------------------------------------------------------------------|--------------|--------------|
| Pneumatic connection                         |       | G1/8                                                                                                   | G1/4         | G3/8         |
| 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/pilot medium               |       | Operation with lubricated medium possible (in which case lubricated operation will always be required) |              |              |
| Operating pressure                           | [bar] | –0.9 ... +10                                                                                           | –0.9 ... +10 | –0.9 ... +10 |
| Pilot pressure                               | [bar] | 2 ... 10                                                                                               | 2 ... 10     | 2 ... 10     |
| Storage temperature                          | [°C]  | –40 ... +60                                                                                            |              |              |
| Ambient temperature                          | [°C]  | –10 ... +60                                                                                            |              |              |
| Temperature of medium                        | [°C]  | –10 ... +60                                                                                            |              |              |
| Corrosion resistance class CRC <sup>1)</sup> |       | 1                                                                                                      |              |              |

1) Corrosion resistance class CRC 1 to Festo standard FN 940070  
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

# Pneumatic valves J, Tiger 2000

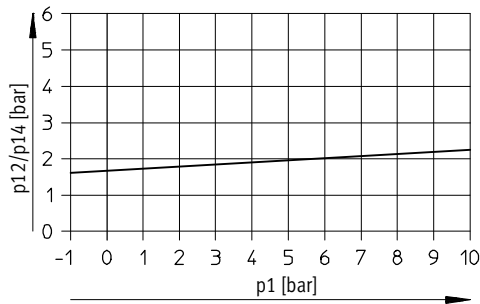
FESTO

Technical data – 5/2-way valves, double pilot

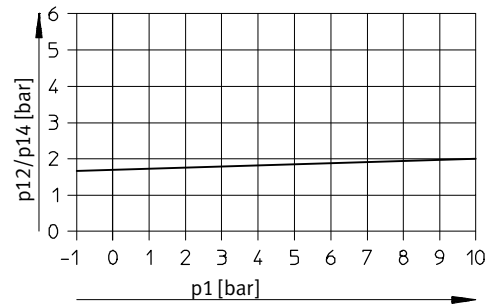
| Valve switching times [ms] |      |      |      |
|----------------------------|------|------|------|
| Pneumatic connection       | G1/8 | G1/4 | G3/8 |
| Changeover                 | 3    | 3    | 3    |

## Minimal pilot pressure $p_{12}/p_{14}$ as a function of operating pressure $p_1$

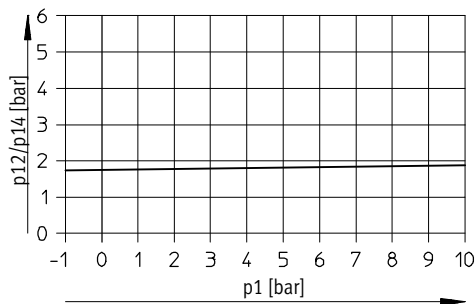
J-5-1/8-B



J-5-1/4-B

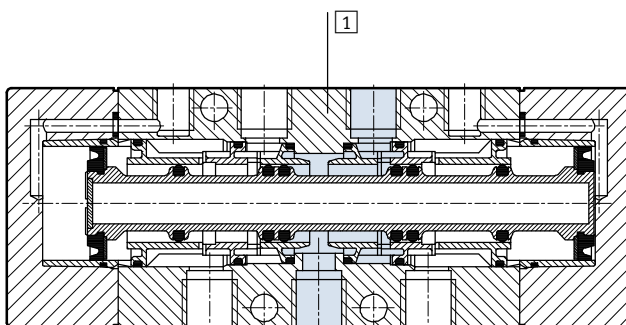


J-5-3/8-B



## Materials

Sectional view



|   |                   |                    |
|---|-------------------|--------------------|
| 1 | Housing           | Die-cast aluminium |
| – | Seals             | NBR                |
| – | Note on materials | RoHS compliant     |

# Pneumatic valves J, Tiger 2000

Technical data – 5/2-way valves, double pilot

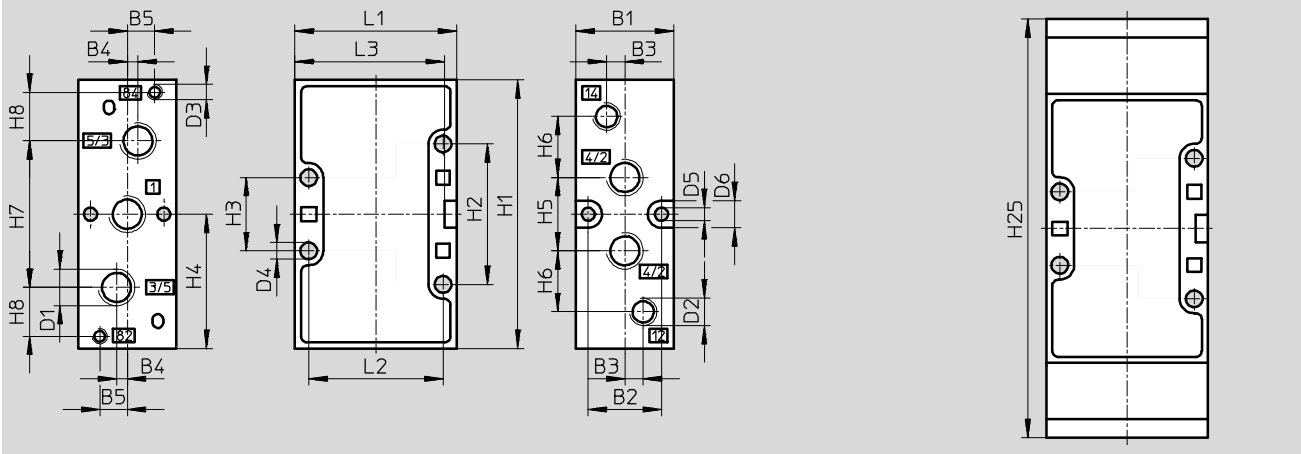
**FESTO**

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve

J-5-...-B



| Pneumatic connection | B1 | B2   | B3 | B4  | B5 | D1   | D2   | D3 | D4<br>Ø | D5<br>Ø | D6 | H1 |
|----------------------|----|------|----|-----|----|------|------|----|---------|---------|----|----|
| G1/8                 | 26 | 19.5 | 5  | 3.5 | 8  | G1/8 | G1/8 | M5 | 4.5     | 4.3     | 9  | 77 |
| G1/4                 | 32 | 24   | 6  | 3.5 | 9  | G1/4 | G1/8 | M5 | 5.5     | 4.3     | 9  | 88 |

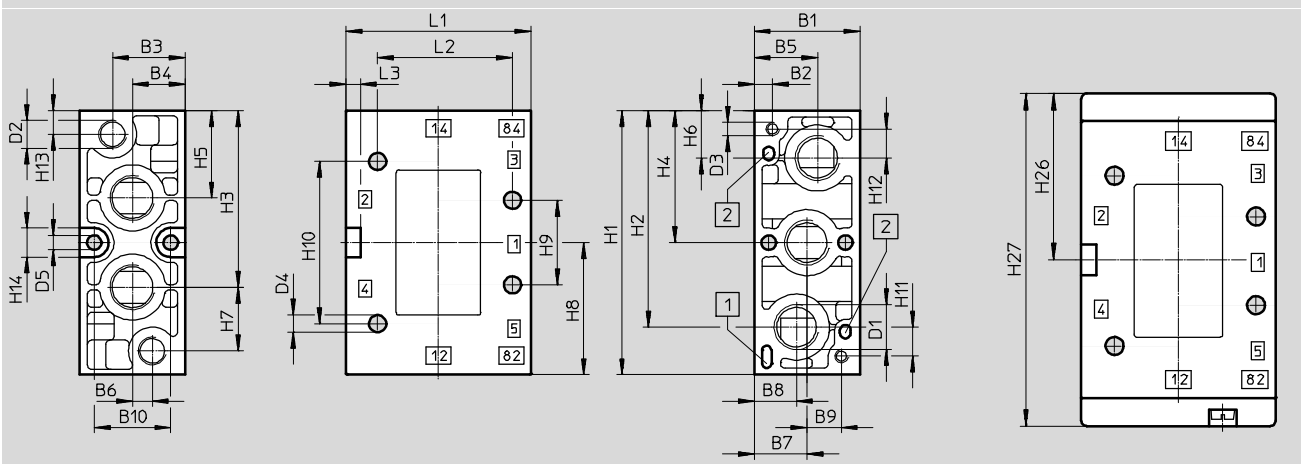
| Pneumatic connection | H2 | H3 | H4   | H5 | H6 | H7 | H8 | H25 | L1 | L2 | L3 |
|----------------------|----|----|------|----|----|----|----|-----|----|----|----|
| G1/8                 | 41 | 21 | 38.5 | 22 | 19 | 42 | 12 | 124 | 47 | 40 | 43 |
| G1/4                 | 46 | 24 | 44   | 24 | 20 | 48 | 16 | 137 | 53 | 44 | 49 |

## Dimensions – Pneumatic connection G3/8

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

Basic valve

J-5-3/8-B



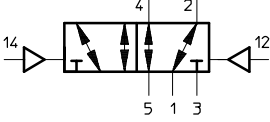
| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1   | D2   | D3 | D4<br>Ø | D5<br>Ø | H1<br>±0.1 | H2 |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|------|------|----|---------|---------|------------|----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8 | G1/8 | M5 | 6.5     | 5.5     | 100        | 82 |

| Pneumatic connection | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | H26 | H27 | L1<br>±0.2 | L2 | L3  |
|----------------------|------|----|------|----|------|----|----|------|-----|-----|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 60  | 120 | 70         | 51 | 5.5 |

## Pneumatic valves J, Tiger 2000

Technical data – 5/2-way valves, double pilot

**FESTO**

| Ordering data                                                                     |                |                      |                       |               |                     |
|-----------------------------------------------------------------------------------|----------------|----------------------|-----------------------|---------------|---------------------|
| Circuit symbol                                                                    | Description    | Pneumatic connection | ATEX category         | Part No.      | Type                |
|  | Bistable valve | G1/8                 | –                     | <b>30988</b>  | <b>J-5-1/8-B</b>    |
|                                                                                   |                |                      | ATEX category<br>→ 54 | <b>536043</b> | <b>J-5-1/8-B-EX</b> |
|                                                                                   |                | G1/4                 | –                     | <b>14295</b>  | <b>J-5-1/4-B</b>    |
|                                                                                   |                |                      | ATEX category<br>→ 54 | <b>536044</b> | <b>J-5-1/4-B-EX</b> |
|                                                                                   |                | G3/8                 | –                     | <b>14953</b>  | <b>J-5-3/8-B</b>    |
|                                                                                   |                |                      | ATEX category<br>→ 54 | <b>536045</b> | <b>J-5-3/8-B-EX</b> |

# Pneumatic valves VL, Tiger 2000

Technical data – 5/3-way valves

**FESTO**

-  - Flow rate  
1000 ... 2000 l/min



| General technical data     |             |           |                     |      |      |
|----------------------------|-------------|-----------|---------------------|------|------|
| Pneumatic connection       |             |           | G1/8                | G1/4 | G3/8 |
| Valve function             |             |           | 5/3-way, monostable |      |      |
| Design                     |             |           | Piston spool        |      |      |
| Lap                        |             |           | Overlap             |      |      |
| Sealing principle          |             |           | Soft                |      |      |
| Actuation type             |             |           | Pneumatic           |      |      |
| Reset method               |             |           | Mechanical spring   |      |      |
| Control type               |             |           | Direct              |      |      |
| Flow direction             |             |           | Reversible          |      |      |
| Exhaust function           |             |           | With flow control   |      |      |
| Manual override            |             |           | None                |      |      |
| Type of mounting           |             |           | With through-hole   |      |      |
| Mounting position          |             |           | Any                 |      |      |
| b value                    |             |           | –                   | 0.38 | –    |
| c value                    |             | [l/s bar] | –                   | 6.35 | –    |
| Nominal width              |             | [mm]      | 8                   | 10   | 12   |
| Standard nominal flow rate | Closed      | [l/min.]  | 1000                | 1600 | 2000 |
|                            | Exhausted   | [l/min.]  |                     |      | 2200 |
|                            | Pressurised | [l/min.]  |                     |      | 2600 |
| Grid dimension             |             | [mm]      | 27                  | 33   | 41   |
| Valve width                |             | [mm]      | 26                  | 32   | 40   |
| Product weight             |             | [g]       | 320                 | 375  | 680  |

| Safety data                            |      |      |
|----------------------------------------|------|------|
| Max. switching frequency               | [Hz] | 3    |
| Max. positive test pulse with 0 signal | [µs] | 2200 |
| Max. negative test pulse with 1 signal | [µs] | 3700 |

| Operating and environmental conditions       |                                                                                                        |              |              |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------|--------------|
| Pneumatic connection                         | G1/8                                                                                                   | G1/4         | G3/8         |
| 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/pilot medium               | Operation with lubricated medium possible (in which case lubricated operation will always be required) |              |              |
| Operating pressure                           | [bar]                                                                                                  | –0.9 ... +10 | –0.9 ... +10 |
| Pilot pressure                               | [bar]                                                                                                  | 3 ... 10     | 3 ... 10     |
| Storage temperature                          | [°C]                                                                                                   | –40 ... +60  |              |
| Ambient temperature                          | [°C]                                                                                                   | –10 ... +60  |              |
| Temperature of medium                        | [°C]                                                                                                   | –10 ... +60  |              |
| Corrosion resistance class CRC <sup>1)</sup> | 1                                                                                                      |              |              |

1) Corrosion resistance class CRC 1 to Festo standard FN 940070  
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

# Pneumatic valves VL, Tiger 2000

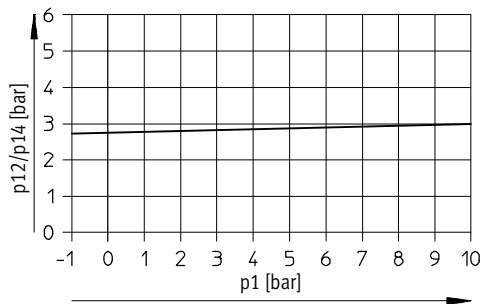
FESTO

Technical data – 5/3-way valves

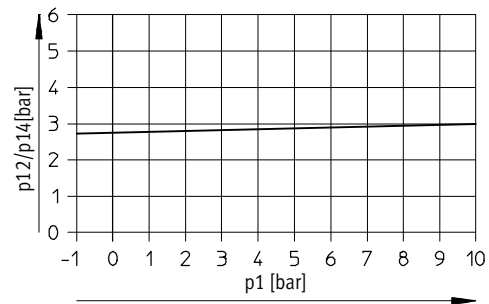
| Valve switching times [ms] |      |      |      |
|----------------------------|------|------|------|
| Pneumatic connection       | G1/8 | G1/4 | G3/8 |
| On                         | 5    | 6    | 7    |
| Off                        | 14   | 26   | 28   |

## Minimal pilot pressure $p_{12}/p_{14}$ as a function of operating pressure $p_1$

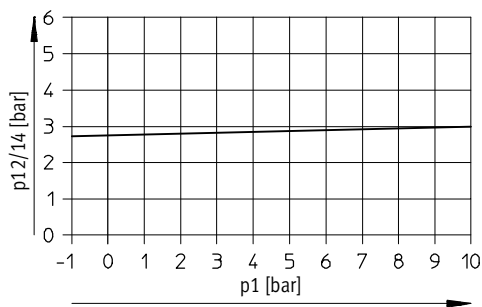
VL-5/3...-1/8-B



VL-5/3...-1/4-B

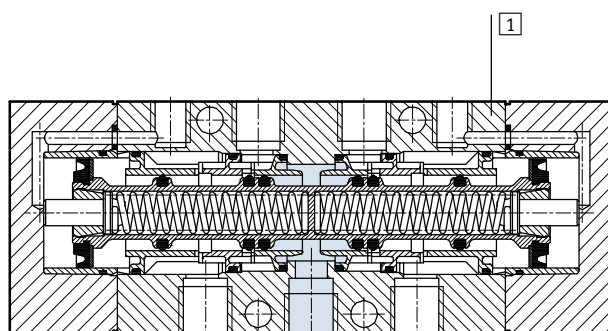


VL-5/3...-3/8-B



## Materials

Sectional view



|   |                   |                    |
|---|-------------------|--------------------|
| 1 | Housing           | Die-cast aluminium |
| – | Seals             | NBR                |
| – | Note on materials | RoHS compliant     |

# Pneumatic valves VL, Tiger 2000

Technical data – 5/3-way valves

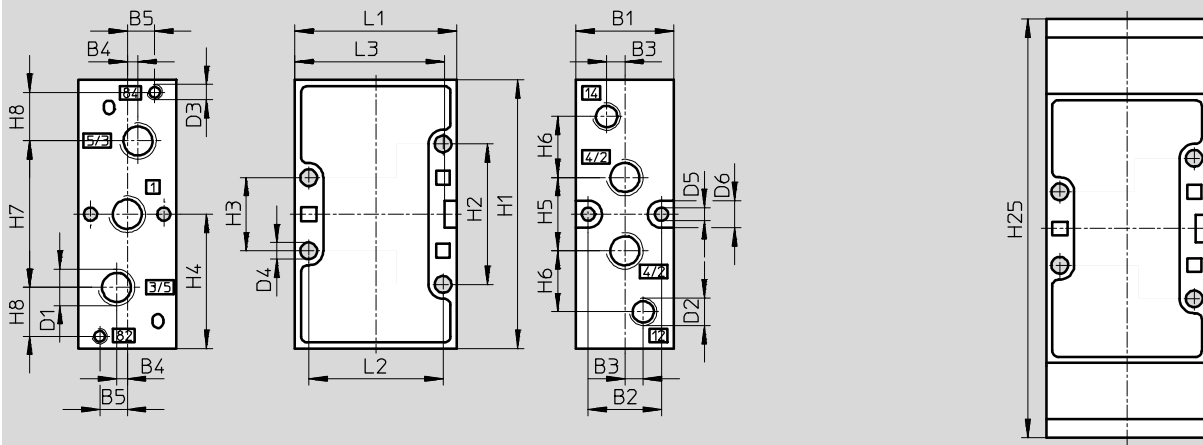
**FESTO**

## Dimensions – Pneumatic connection G1/8, G1/4

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

Basic valve

VL-5/3...-B



| Pneumatic connection | B1 | B2   | B3 | B4  | B5 | D1   | D2   | D3 | D4<br>Ø | D5<br>Ø | D6 | H1 |
|----------------------|----|------|----|-----|----|------|------|----|---------|---------|----|----|
| G1/8                 | 26 | 19.5 | 5  | 3.5 | 8  | G1/8 | G1/8 | M5 | 4.5     | 4.3     | 9  | 77 |
| G1/4                 | 32 | 24   | 6  | 3.5 | 9  | G1/4 | G1/8 | M5 | 5.5     | 4.3     | 9  | 88 |

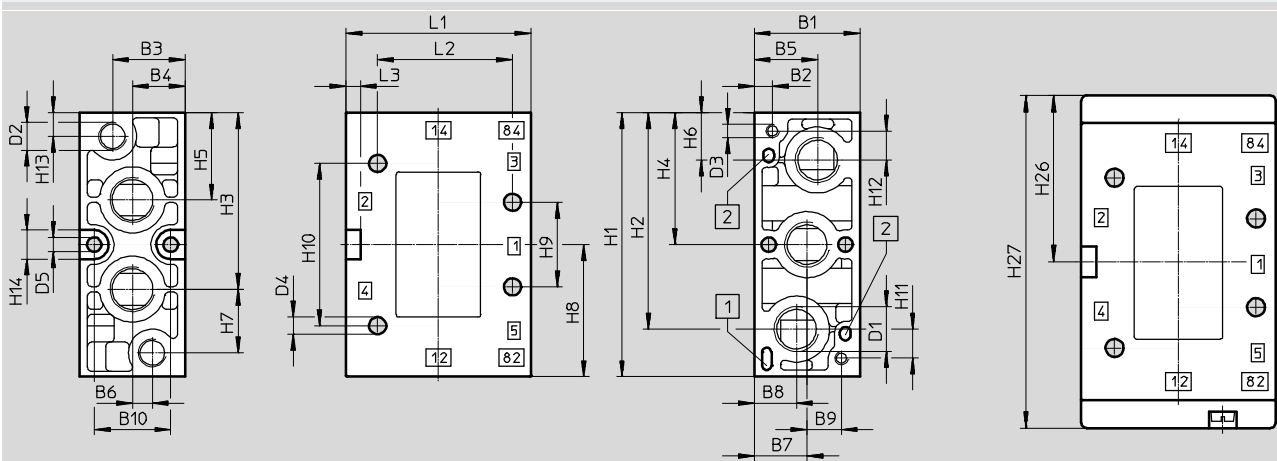
| Pneumatic connection | H2 | H3 | H4   | H5 | H6 | H7 | H8 | H25 | L1 | L2 | L3 |
|----------------------|----|----|------|----|----|----|----|-----|----|----|----|
| G1/8                 | 41 | 21 | 38.5 | 22 | 19 | 42 | 12 | 124 | 47 | 40 | 43 |
| G1/4                 | 46 | 24 | 44   | 24 | 20 | 48 | 16 | 137 | 53 | 44 | 49 |

## Dimensions – Pneumatic connection G3/8

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

Basic valve

VL-5/3...-3/8-B



| Pneumatic connection | B1<br>±0.1 | B2 | B3   | B4 | B5 | B6  | B7 | B8 | B9 | B10 | D1   | D2   | D3 | D4<br>Ø | D5<br>Ø | H1<br>±0.1 | H2 |
|----------------------|------------|----|------|----|----|-----|----|----|----|-----|------|------|----|---------|---------|------------|----|
| G3/8                 | 40         | 13 | 27.5 | 20 | 24 | 7.6 | 20 | 16 | 13 | 29  | G3/8 | G1/8 | M5 | 6.5     | 5.5     | 100        | 82 |

| Pneumatic connection | H3   | H4 | H5   | H6 | H7   | H8 | H9 | H10  | H11 | H12 | H13 | H14 | H28 | H29 | L1<br>±0.2 | L2 | L3  |
|----------------------|------|----|------|----|------|----|----|------|-----|-----|-----|-----|-----|-----|------------|----|-----|
| G3/8                 | 66.9 | 50 | 33.1 | 18 | 24.1 | 50 | 32 | 61.4 | 11  | 11  | 9   | 11  | 80  | 160 | 70         | 51 | 5.5 |

# Pneumatic valves VL, Tiger 2000

Technical data – 5/3-way valves

| Ordering data  |                      |                      |                       |          |                  |
|----------------|----------------------|----------------------|-----------------------|----------|------------------|
| Circuit symbol | Description          | Pneumatic connection | ATEX category         | Part No. | Type             |
|                | Normally closed      | G1/8                 | –                     | 30990    | VL-5/3G-1/8-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536046   | VL-5/3G-1/8-B-EX |
|                |                      | G1/4                 | –                     | 14298    | VL-5/3G-1/4-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536047   | VL-5/3G-1/4-B-EX |
|                |                      | G3/8                 | –                     | 14950    | VL-5/3G-3/8-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536048   | VL-5/3G-3/8-B-EX |
|                | Normally exhausted   | G1/8                 | –                     | 31309    | VL-5/3E-1/8-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536049   | VL-5/3E-1/8-B-EX |
|                |                      | G1/4                 | –                     | 14297    | VL-5/3E-1/4-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536050   | VL-5/3E-1/4-B-EX |
|                |                      | G3/8                 | –                     | 14949    | VL-5/3E-3/8-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536051   | VL-5/3E-3/8-B-EX |
|                | Normally pressurised | G1/8                 | –                     | 31310    | VL-5/3B-1/8-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536052   | VL-5/3B-1/8-B-EX |
|                |                      | G1/4                 | –                     | 14299    | VL-5/3B-1/4-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536053   | VL-5/3B-1/4-B-EX |
|                |                      | G3/8                 | –                     | 14951    | VL-5/3B-3/8-B    |
|                |                      |                      | ATEX category<br>→ 54 | 536054   | VL-5/3B-3/8-B-EX |

# Solenoid/pneumatic valves, Tiger 2000

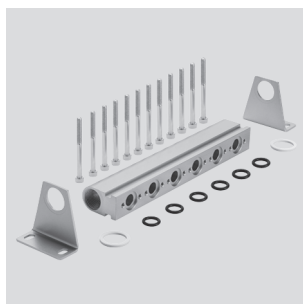
Accessories

FESTO

## Manifold rail PAL-...-B

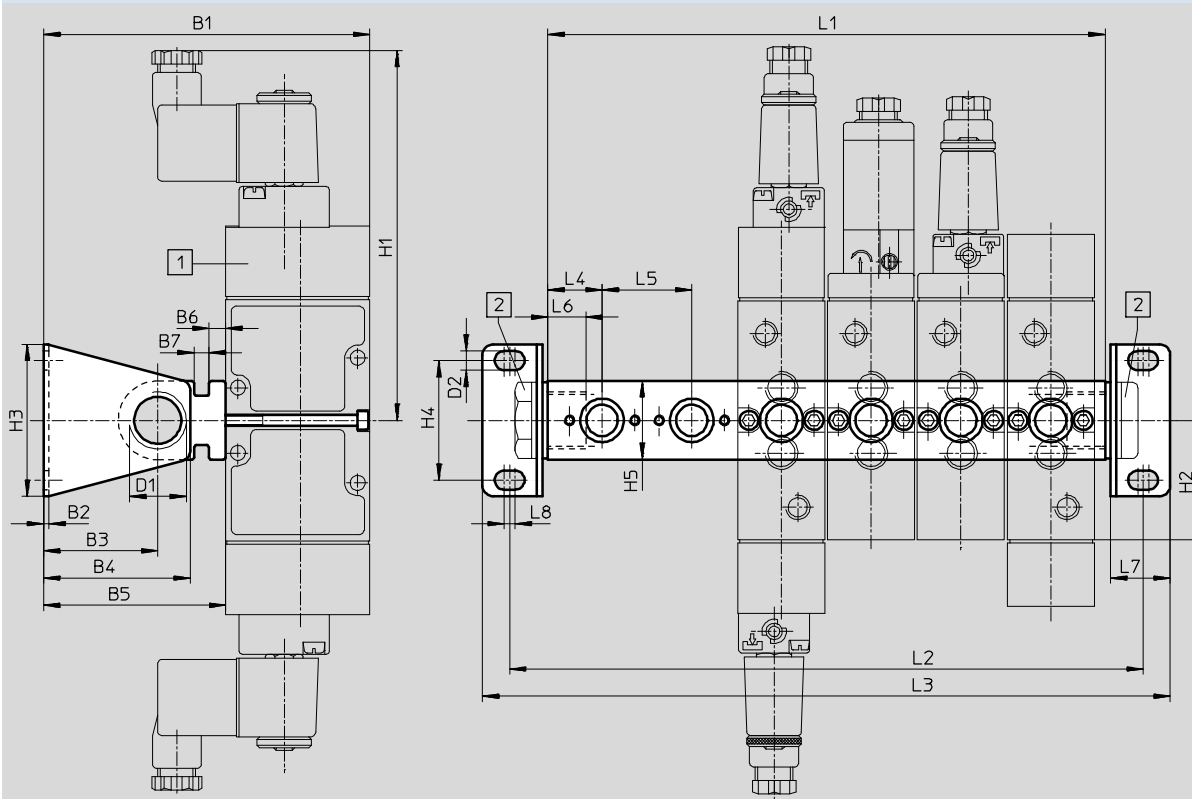
Materials:

Anodised aluminium



### Dimensions

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



1 The end cap of all valves can be turned by 180°

2 Blanking plugs and reducing nipples are not included in the scope of delivery  
→ Internet: Components for cable connections

| Type        | B1  | B2 | B3   | B4   | B5  | B6  | B7  | D1   | D2  | H1  | H2   | H3 | H4 | L4 | L5 | L6 | L7 | L8 |
|-------------|-----|----|------|------|-----|-----|-----|------|-----|-----|------|----|----|----|----|----|----|----|
| PAL-1/8-... | 104 | 2  | 33.5 | 44.5 | 57  | 5   | 5.5 | G3/8 | 5.2 | 130 | 38.5 | 44 | 32 | 18 | 27 | 12 | 20 | 4  |
| PAL-1/4-... | 120 | 2  | 42   | 54   | 67  | 6.1 | 5.5 | G1/2 | 7   | 136 | 44   | 56 | 44 | 20 | 33 | 14 | 22 | 4  |
| PAL-3/8-... | 176 | 3  | 75   | 93   | 106 | 4   | 14  | G3/4 | 9   | 147 | 50   | 80 | 60 | 25 | 41 | 17 | 30 | 5  |

# Solenoid/pneumatic valves, Tiger 2000

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Accessories

| Dimensions and ordering data |     |     |     |        |          |              |
|------------------------------|-----|-----|-----|--------|----------|--------------|
| Quantity                     | L1  | L2  | L3  | Weight | Part No. | Type         |
| Valve ports                  |     |     |     | [g]    |          |              |
| Pneumatic connection G1/8    |     |     |     |        |          |              |
| 2                            | 63  | 89  | 107 | 150    | 30552    | PAL-1/8-2-B  |
| 3                            | 90  | 116 | 134 | 190    | 30553    | PAL-1/8-3-B  |
| 4                            | 117 | 143 | 161 | 230    | 30554    | PAL-1/8-4-B  |
| 5                            | 144 | 170 | 188 | 260    | 30555    | PAL-1/8-5-B  |
| 6                            | 171 | 197 | 215 | 290    | 30556    | PAL-1/8-6-B  |
| 7                            | 198 | 224 | 242 | 340    | 30557    | PAL-1/8-7-B  |
| 8                            | 225 | 251 | 269 | 370    | 30558    | PAL-1/8-8-B  |
| 9                            | 252 | 278 | 296 | 410    | 30559    | PAL-1/8-9-B  |
| 10                           | 279 | 305 | 323 | 450    | 30560    | PAL-1/8-10-B |
| Pneumatic connection G1/4    |     |     |     |        |          |              |
| 2                            | 73  | 101 | 121 | 230    | 30280    | PAL-1/4-2-B  |
| 3                            | 106 | 134 | 154 | 290    | 30281    | PAL-1/4-3-B  |
| 4                            | 139 | 167 | 187 | 350    | 30282    | PAL-1/4-4-B  |
| 5                            | 172 | 200 | 220 | 420    | 30283    | PAL-1/4-5-B  |
| 6                            | 205 | 233 | 253 | 480    | 30284    | PAL-1/4-6-B  |
| 7                            | 238 | 266 | 286 | 540    | 30285    | PAL-1/4-7-B  |
| 8                            | 271 | 299 | 319 | 600    | 30286    | PAL-1/4-8-B  |
| 9                            | 304 | 322 | 352 | 660    | 30 87    | PAL-1/4-9-B  |
| 10                           | 337 | 365 | 385 | 730    | 30288    | PAL-1/4-10-B |
| Pneumatic connection G3/8    |     |     |     |        |          |              |
| 2                            | 91  | 127 | 155 | 510    | 30692    | PAL-3/8-2-B  |
| 3                            | 132 | 168 | 196 | 610    | 30693    | PAL-3/8-3-B  |
| 4                            | 173 | 209 | 237 | 720    | 30694    | PAL-3/8-4-B  |
| 5                            | 214 | 250 | 278 | 830    | 30695    | PAL-3/8-5-B  |
| 6                            | 255 | 291 | 319 | 960    | 30696    | PAL-3/8-6-B  |
| 7                            | 296 | 332 | 360 | 1060   | 30697    | PAL-3/8-7-B  |
| 8                            | 337 | 373 | 401 | 1160   | 30698    | PAL-3/8-8-B  |
| 9                            | 378 | 414 | 442 | 1260   | 30699    | PAL-3/8-9-B  |
| 10                           | 419 | 455 | 483 | 1360   | 30680    | PAL-3/8-10-B |

# Solenoid/pneumatic valves, Tiger 2000

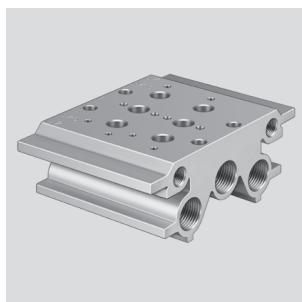
Accessories

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## Manifold block PRS

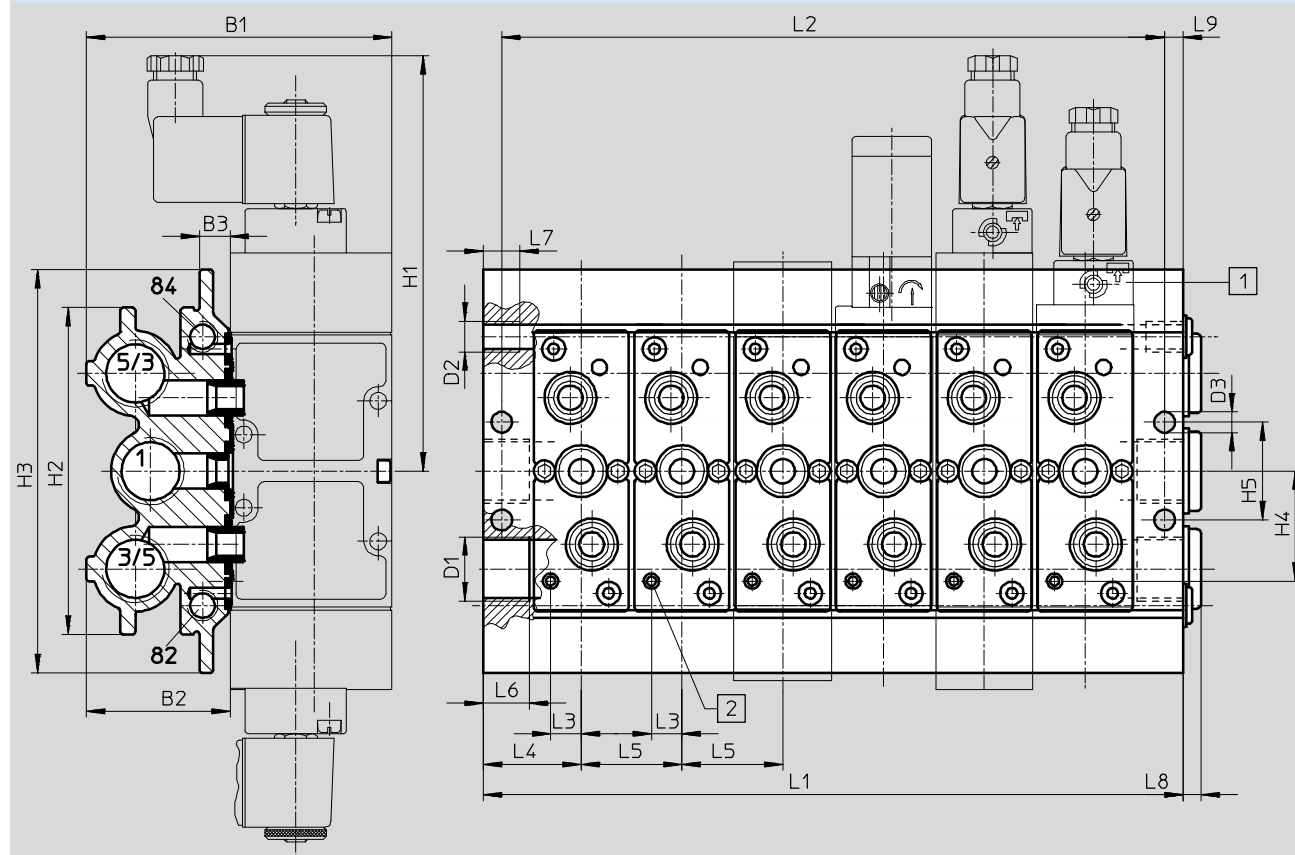
Materials:

Anodised aluminium



## Dimensions

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



1 The end cap of all valves can be turned by 180°

2 Hole for dowel pin DIN 7346  
Ø 3 mm

| Type        | B1  | B2   | B3   | D1   | D2   | D3  | H1  | H2  | H3  | H4 | H5   | L3   | L4   | L5 | L6 | L7 | L8 | L9  |
|-------------|-----|------|------|------|------|-----|-----|-----|-----|----|------|------|------|----|----|----|----|-----|
| PRS-1/8-... | 93  | 45.5 | 11.2 | G3/8 | G1/8 | 6.8 | 130 | 95  | 120 | 27 | 27.5 | 9.4  | 25.5 | 27 | 14 | 8  | 5  | 6   |
| PRS-1/4-... | 100 | 47   | 10   | G1/2 | G1/8 | 6.8 | 136 | 107 | 132 | 36 | 32   | 10   | 32   | 33 | 15 | 12 | 6  | 9   |
| PRS-3/8-... | 131 | 60.5 | 12.5 | G3/4 | G1/8 | 9   | 147 | 128 | 153 | 44 | 44   | 15.2 | 36.5 | 41 | 16 | 12 | 6  | 7.5 |

# Solenoid/pneumatic valves, Tiger 2000

Accessories

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| Dimensions and ordering data |     |     |        |          |               |
|------------------------------|-----|-----|--------|----------|---------------|
| Quantity                     | L1  | L2  | Weight | Part No. | Type          |
| Valve ports                  |     |     | [g]    |          |               |
| Pneumatic connection G1/8    |     |     |        |          |               |
| 2                            | 78  | 66  | 700    | 30542    | PRS-1/8-2-BB  |
| 3                            | 105 | 93  | 920    | 30543    | PRS-1/8-3-BB  |
| 4                            | 132 | 120 | 1150   | 30544    | PRS-1/8-4-BB  |
| 5                            | 159 | 147 | 1320   | 30545    | PRS-1/8-5-BB  |
| 6                            | 186 | 174 | 1520   | 30546    | PRS-1/8-6-BB  |
| 7                            | 213 | 201 | 1750   | 30547    | PRS-1/8-7-BB  |
| 8                            | 240 | 228 | 2010   | 30548    | PRS-1/8-8-BB  |
| 9                            | 267 | 255 | 2200   | 30549    | PRS-1/8-9-BB  |
| 10                           | 294 | 282 | 2400   | 30550    | PRS-1/8-10-BB |
| Pneumatic connection G1/4    |     |     |        |          |               |
| 2                            | 97  | 85  | 1050   | 15861    | PRS-1/4-2-B   |
| 3                            | 130 | 118 | 1310   | 15862    | PRS-1/4-3-B   |
| 4                            | 163 | 151 | 1610   | 15863    | PRS-1/4-4-B   |
| 5                            | 196 | 184 | 1900   | 15864    | PRS-1/4-5-B   |
| 6                            | 229 | 217 | 2200   | 15865    | PRS-1/4-6-B   |
| 7                            | 262 | 250 | 2500   | 15866    | PRS-1/4-7-B   |
| 8                            | 259 | 283 | 2800   | 15867    | PRS-1/4-8-B   |
| 9                            | 328 | 316 | 3100   | 15868    | PRS-1/4-9-B   |
| 10                           | 361 | 349 | 3360   | 15869    | PRS-1/4-10-B  |
| Pneumatic connection G3/8    |     |     |        |          |               |
| 2                            | 114 | 99  | 1600   | 30682    | PRS-3/8-2-B   |
| 3                            | 155 | 140 | 2100   | 30683    | PRS-3/8-3-B   |
| 4                            | 196 | 181 | 2630   | 30684    | PRS-3/8-4-B   |
| 5                            | 237 | 222 | 3100   | 30685    | PRS-3/8-5-B   |
| 6                            | 278 | 263 | 3500   | 30686    | PRS-3/8-6-B   |
| 8                            | 360 | 345 | 4620   | 30688    | PRS-3/8-8-B   |
| 10                           | 442 | 427 | 5600   | 30690    | PRS-3/8-10-B  |

## Solenoid/pneumatic valves, Tiger 2000

Accessories

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### Blanking plate for vacant positions PRSB

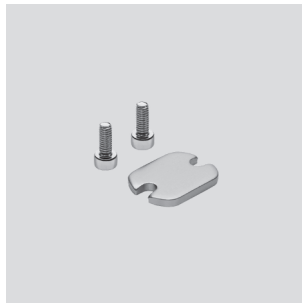
Materials:  
Die-cast aluminium



| Ordering data        |               |          |            |
|----------------------|---------------|----------|------------|
| Pneumatic connection | Weight<br>[g] | Part No. | Type       |
| G1/8                 | 33            | 15909    | PRBS-1/8-B |
| G1/4                 | 40            | 30666    | PRSB-1/4-B |
| G3/8                 | 72            | 30681    | PRSB-3/8-B |

### Blanking plate for vacant positions PALB

Materials:  
Steel



| Ordering data        |               |          |            |
|----------------------|---------------|----------|------------|
| Pneumatic connection | Weight<br>[g] | Part No. | Type       |
| G1/8                 | 14            | 30903    | PALB-1/8-B |
| G1/4                 | 22            | 30904    | PALB-1/4-B |
| G3/8                 | 32            | 30905    | PALB-3/8-B |

### Blanking plug PRSV for creating pressure zones

Materials:  
Steel



| Ordering data        |               |          |          |
|----------------------|---------------|----------|----------|
| Pneumatic connection | Weight<br>[g] | Part No. | Type     |
| G1/8                 | 18            | 160997   | PRSV-1/8 |
| G1/4                 | 27            | 160996   | PRSV-1/4 |

# Solenoid/pneumatic valves, Tiger 2000

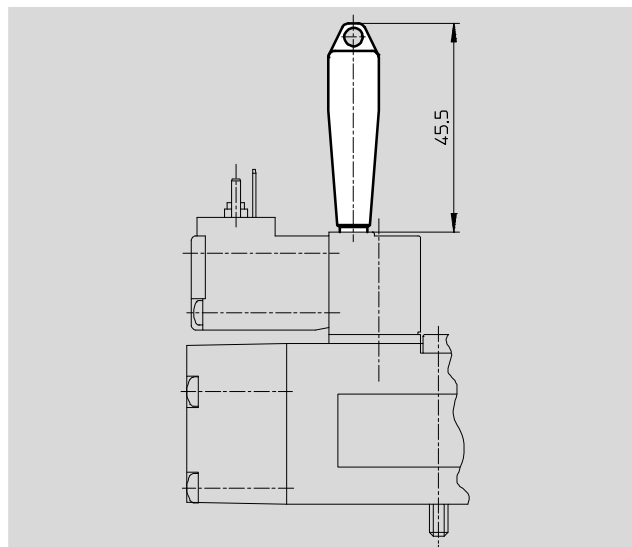
FESTO

Accessories

## Manual override AHB

Materials:

Polymer



| Ordering data |            |                   |          |              |
|---------------|------------|-------------------|----------|--------------|
| For valve     | Weight [g] | CRC <sup>1)</sup> | Part No. | Type         |
| MFH/JMFH      | 10         | 2                 | 157651   | AHB-MD/MF/MV |

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

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

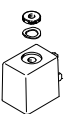
## Inscription label KMC/F/V-BZ-35X

Materials:

Polymer



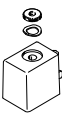
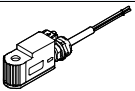
| Ordering data                                                                 |            |          |                |
|-------------------------------------------------------------------------------|------------|----------|----------------|
|                                                                               | Weight [g] | Part No. | Type           |
| Inscription label for valves (35 in frames included in the scope of delivery) | 20         | 33362    | KMC/F/V-BZ-35X |

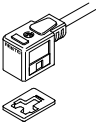
| Ordering data – Solenoid coils                                                      |                                            |                  | Technical data → Internet: msf |                     |
|-------------------------------------------------------------------------------------|--------------------------------------------|------------------|--------------------------------|---------------------|
|                                                                                     | Voltage                                    | Cable length [m] | Part No.                       | Type                |
| F solenoid coils for valves MFH, JMFH                                               |                                            |                  |                                |                     |
|  | 12 V DC                                    | –                | 34410                          | MSFG-12DC-OD        |
|                                                                                     | 24 V DC and 42 V AC, 50 ... 60 Hz          | –                | 34411                          | MSFG-24/42-50/60-OD |
|                                                                                     | 42 V DC                                    | –                | 34413                          | MSFG-42DC-OD        |
|                                                                                     | 24 V AC                                    | –                | 34415                          | MSFG-24AC-OD        |
|                                                                                     | 48 V AC, 50 ... 60 Hz                      | –                | 34418                          | MSFW-48AC-OD        |
|                                                                                     | 110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz | –                | 34420                          | MSFW-110AC-OD       |
|                                                                                     | 230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz | –                | 34422                          | MSFW-230AC-OD       |
|                                                                                     | 240 V AC, 50 ... 60 Hz                     | –                | 34424                          | MSFW-240AC-OD       |

# Solenoid/pneumatic valves, Tiger 2000

Accessories

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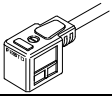
| Ordering data – Solenoid coils                                                     |                 |                                            |                  | Technical data → Internet: msf |                       |
|------------------------------------------------------------------------------------|-----------------|--------------------------------------------|------------------|--------------------------------|-----------------------|
|                                                                                    | Description     | Voltage                                    | Cable length [m] | Part No.                       | Type                  |
| F solenoid coils, without plug socket                                              |                 |                                            |                  |                                |                       |
|   | –               | 12 V DC                                    | –                | 34410                          | MSFG-12-OD            |
|                                                                                    |                 | 24 V DC and 42 V AC, 50 ... 60 Hz          | –                | 34411                          | MSFG-24/42-50/60-OD   |
|                                                                                    |                 | 42 V DC                                    | –                | 34413                          | MSFG-42-OD            |
|                                                                                    |                 | 24 V AC                                    | –                | 34415                          | MSFW-24-50/60-OD      |
|                                                                                    |                 | 48 V AC, 50 ... 60 Hz                      | –                | 34418                          | MSFW-48-50/60-OD      |
|                                                                                    |                 | 110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz | –                | 34420                          | MSFW-110-50/60-OD     |
|                                                                                    |                 | 230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz | –                | 34422                          | MSFW-230-50/60-OD     |
|                                                                                    |                 | 240 V AC, 50 ... 60 Hz                     | –                | 34424                          | MSFW-240-50/60-OD     |
|                                                                                    | Explosion-proof | 24 V DC                                    | –                | 536931                         | MSFG-24-EX            |
|                                                                                    |                 | 24 V AC                                    | –                | 536932                         | MSFW-24-50/60-EX      |
|                                                                                    |                 | 110 V AC                                   | –                | 536933                         | MSFW-110-50/60-EX     |
|                                                                                    |                 | 230 V AC                                   | –                | 536934                         | MSFW-230-50/60-EX     |
| F solenoid coils, cable with open end, 3-wire                                      |                 |                                            |                  |                                |                       |
|  | Explosion-proof | 24 V DC                                    | 1                | 8059804                        | VACF-B-K1-1-1-EX4-M   |
|                                                                                    |                 |                                            | 5                | 8059805                        | VACF-B-K1-1-5-EX4-M   |
|                                                                                    |                 |                                            | 10               | 8059806                        | VACF-B-K1-1-10-EX4-M  |
|                                                                                    |                 |                                            | 20               | 8059807                        | VACF-B-K1-1-20-EX4-M  |
|                                                                                    | 24 V AC         | 1                                          | 8059808          | VACF-B-K1-1A-1-EX4-M           |                       |
|                                                                                    |                 | 110 V AC                                   | 1                | 8059811                        | VACF-B-K1-16B-1-EX4-M |
|                                                                                    | 5               |                                            | 8059812          | VACF-B-K1-16B-5-EX4-M          |                       |
|                                                                                    | 230 V AC        | 1                                          | 8059809          | VACF-B-K1-3A-1-EX4-M           |                       |
|                                                                                    |                 | 5                                          | 8059810          | VACF-B-K1-3A-5-EX4-M           |                       |

| Ordering data – Plug sockets/connecting cables for F solenoid coils                 |                                                          |             |                  | Technical data → Internet: mssd |                    |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|-------------|------------------|---------------------------------|--------------------|
|                                                                                     | Description                                              | Voltage     | Cable length [m] | Part No.                        | Type               |
| Plug socket without cable, cable connection with                                    |                                                          |             |                  |                                 |                    |
|  | Locking screws (cable connector Pg9)                     | –           | –                | 34431                           | MSSD-F             |
|                                                                                     | Locking screws (cable connector M16)                     | –           | –                | 539710                          | MSSD-F-M16         |
|  | Insulation displacement technology (cable connector M16) | –           | –                | 192746                          | MSSD-F-S-M16       |
| Connecting cable                                                                    |                                                          |             |                  |                                 |                    |
|  | Signal status display with LED                           | 24 V DC     | 2.5              | 30935                           | KMF-1-24DC-2,5-LED |
|                                                                                     |                                                          |             | 5                | 30937                           | KMF-1-24DC-5-LED   |
|                                                                                     |                                                          |             | 10               | 193458                          | KMF-1-24DC-10-LED  |
|                                                                                     | Without signal status display                            | Up to 240 V | 2.5              | 30936                           | KMF-1-230AC-2,5    |
|                                                                                     |                                                          |             | 5                | 30938                           | KMF-1-230AC-5      |

# Solenoid/pneumatic valves, Tiger 2000

Accessories

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| Ordering data – Plug sockets/connecting cables for V solenoid coils                                                 |                                      |         |                  |               |                           |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------|------------------|---------------|---------------------------|
|                                                                                                                     | Description                          | Voltage | Cable length [m] | Part No.      | Type                      |
| Plug socket without cable, cable connection with <span style="float: right;">Technical data → Internet: mssd</span> |                                      |         |                  |               |                           |
|                                    | Locking screws (cable connector Pg9) | –       | –                | <b>33295</b>  | <b>MSSD-V</b>             |
|                                                                                                                     | Locking screws (cable connector M16) | –       | –                | <b>539713</b> | <b>MSSD-V-M16</b>         |
| Connecting cable <span style="float: right;">Technical data → Internet: kmv</span>                                  |                                      |         |                  |               |                           |
|                                    | Signal status display with LED       | 24 V DC | 2.5              | <b>30939</b>  | <b>KMV-1-24DC-2,5-LED</b> |
|                                                                                                                     |                                      |         | 5                | <b>30941</b>  | <b>KMV-1-24DC-5-LED</b>   |
|                                                                                                                     |                                      |         | 10               | <b>193456</b> | <b>KMV-1-24-10-LED</b>    |

| Ordering data – Illuminating seals                                                 |                      |                |              | Technical data → Internet: illuminated seal |  |
|------------------------------------------------------------------------------------|----------------------|----------------|--------------|---------------------------------------------|--|
|                                                                                    | Description          | Voltage        | Part No.     | Type                                        |  |
|   | For F solenoid coils | 12 ... 24 V DC | <b>19143</b> | <b>MF-LD-12-24DC</b>                        |  |
|                                                                                    |                      | 230 V DC/V AC  | <b>19144</b> | <b>MF-LD-230AC</b>                          |  |
|  | For V solenoid coils | 12 ... 24 V DC | <b>35558</b> | <b>MV-LD-12-24DC</b>                        |  |

## Festo - Your Partner in Automation



**1 Festo Inc.**  
5300 Explorer Drive  
Mississauga, ON L4W 5G4  
Canada

**Festo Customer Interaction Center**

Tel: 1 877 463 3786  
Fax: 1 877 393 3786  
Email: [customer.service.ca@festo.com](mailto:customer.service.ca@festo.com)



**2 Festo Pneumatic**  
Av. Ceylán 3,  
Col. Tequesquináhuac  
54020 Tlalneantla,  
Estado de México

**Multinational Contact Center**

01 800 337 8669  
[ventas.mexico@festo.com](mailto:ventas.mexico@festo.com)



**3 Festo Corporation**  
1377 Motor Parkway  
Suite 310  
Islandia, NY 11749

**Festo Customer Interaction Center**

1 800 993 3786  
1 800 963 3786  
[customer.service.us@festo.com](mailto:customer.service.us@festo.com)



**4 Regional Service Center**  
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