



- Electrically or pneumatically actuated valves
- With internal or external pilot air
- Pneumatic or mechanical reset

Specified types in accordance with ATEX directive for potentially explosive atmospheres

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# Solenoid valves, ISO 5599-1

Product range overview

**FESTO**

| Function                                                                            | Version                                                                             | Type         | ISO size | Nominal flow rate<br>[l/min] | Pneumatic working port on sub-base | Operating voltage |                           |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------|----------|------------------------------|------------------------------------|-------------------|---------------------------|
|                                                                                     |                                                                                     |              |          |                              |                                    | [V DC]            | [V AC]                    |
| 5/2-way valves, single solenoid                                                     | Solenoid valve                                                                      |              |          |                              |                                    |                   |                           |
|                                                                                     |    | MN1H         | 1        | 1,200                        | G¼                                 | 24                | 110, 230                  |
|                                                                                     |                                                                                     |              | 2        | 2,300                        | G⅜                                 |                   |                           |
|                                                                                     |                                                                                     |              | 3        | 4,500                        | G½                                 |                   |                           |
|                                                                                     |    | MFH          | 1        | 1,200                        | G¼                                 | 12, 24, 42        | 24, 42, 48, 110, 230, 240 |
|                                                                                     |                                                                                     |              | 2        | 2,300                        | G⅜                                 |                   |                           |
|                                                                                     |                                                                                     |              | 3        | 4,500                        | G½                                 |                   |                           |
|                                                                                     |    | MDH          | 4        | 6,000                        | G¾                                 | 24                | 42, 110, 230              |
|                                                                                     | Solenoid valve with central plug M12x1                                              |              |          |                              |                                    |                   |                           |
|                                                                                     |    | MEBH-...-ZSR | 1        | 1,200                        | G¼                                 | 24                | –                         |
|                                                                                     |                                                                                     |              | 2        | 2,300                        | G⅜                                 |                   |                           |
|                                                                                     |                                                                                     |              | 3        | 4,500                        | G½                                 |                   |                           |
|                                                                                     | Solenoid valve with single plug M12x1, connector pin allocation to VDMA or Desina   |              |          |                              |                                    |                   |                           |
|                                                                                     |   | MDH          | 1        | 1,200                        | G¼                                 | 24                | –                         |
|                                                                                     |                                                                                     |              | 2        | 2,300                        | G⅜                                 |                   |                           |
|                                                                                     |                                                                                     |              | 3        | 4,500                        | G½                                 |                   |                           |
| 5/2-way valves, double solenoid                                                     | Double solenoid valve                                                               |              |          |                              |                                    |                   |                           |
|                                                                                     |  | JMN1H        | 1        | 1,200                        | G¼                                 | 24                | 110, 230                  |
|                                                                                     |                                                                                     |              | 2        | 2,300                        | G⅜                                 |                   |                           |
|                                                                                     |                                                                                     |              | 3        | 4,500                        | G½                                 |                   |                           |
|                                                                                     | Double solenoid valve with dominant signal at 14                                    |              |          |                              |                                    |                   |                           |
|                                                                                     |  | JMN1DH       | 1        | 1,200                        | G¼                                 | 24                | 110, 230                  |
|                                                                                     |                                                                                     |              | 2        | 2,300                        | G⅜                                 |                   |                           |
|                                                                                     |                                                                                     |              | 3        | 4,500                        | G½                                 |                   |                           |
|                                                                                     | Double solenoid valve                                                               |              |          |                              |                                    |                   |                           |
|                                                                                     |  | JMFH         | 1        | 1,200                        | G¼                                 | 12, 24, 42        | 24, 42, 48, 110, 230, 240 |
|                                                                                     |                                                                                     |              | 2        | 2,300                        | G⅜                                 |                   |                           |
|                                                                                     |                                                                                     |              | 3        | 4,500                        | G½                                 |                   |                           |
|                                                                                     | Double solenoid valve with dominant signal                                          |              |          |                              |                                    |                   |                           |
|                                                                                     |  | JMFDH        | 1        | 1,200                        | G¼                                 | 12, 24, 42        | 24, 42, 48, 110, 230, 240 |
|                                                                                     |                                                                                     |              | 2        | 2,300                        | G⅜                                 |                   |                           |
|                                                                                     |                                                                                     |              | 3        | 4,500                        | G½                                 |                   |                           |
| Double solenoid valve                                                               |                                                                                     |              |          |                              |                                    |                   |                           |
|  | JMDH                                                                                | 4            | 6,000    | G¾                           | 24                                 | 42, 110, 230      |                           |

# Solenoid valves, ISO 5599-1

Product range overview

**FESTO**

| Type                                                                              | Pilot air supply |          | Type of reset    |                   | → Page/Internet |
|-----------------------------------------------------------------------------------|------------------|----------|------------------|-------------------|-----------------|
|                                                                                   | internal         | external | pneumatic spring | mechanical spring |                 |
| Solenoid valve                                                                    |                  |          |                  |                   |                 |
| MN1H                                                                              | ■                | ■        | ■                | ■                 | 18              |
|                                                                                   | ■                | ■        | ■                | ■                 |                 |
|                                                                                   | ■                | ■        | ■                | ■                 |                 |
| MFH                                                                               | ■                | ■        | ■                | ■                 | 30              |
|                                                                                   | ■                | ■        | ■                | ■                 |                 |
|                                                                                   | ■                | ■        | ■                | ■                 |                 |
| MDH                                                                               | ■                | –        | ■                | –                 | 65              |
|                                                                                   |                  |          |                  |                   |                 |
| Solenoid valve with central plug M12x1                                            |                  |          |                  |                   |                 |
| MEBH-...-ZSR                                                                      | ■                | –        | ■                | ■                 | 41              |
|                                                                                   | ■                | –        | ■                | ■                 |                 |
|                                                                                   | ■                | –        | ■                | ■                 |                 |
|                                                                                   |                  |          |                  |                   |                 |
| Solenoid valve with single plug M12x1, connector pin allocation to VDMA or Desina |                  |          |                  |                   |                 |
| MDH                                                                               | ■                | ■        | ■                | ■                 | 30              |
|                                                                                   | ■                | –        | ■                | ■                 |                 |
|                                                                                   | ■                | –        | ■                | ■                 |                 |
|                                                                                   |                  |          |                  |                   |                 |
| Double solenoid valve                                                             |                  |          |                  |                   |                 |
| JMN1H                                                                             | ■                | ■        | –                | –                 | 22              |
|                                                                                   | ■                | ■        | –                | –                 |                 |
|                                                                                   | ■                | ■        | –                | –                 |                 |
|                                                                                   |                  |          |                  |                   |                 |
| Double solenoid valve with dominant signal at 14                                  |                  |          |                  |                   |                 |
| JMN1DH                                                                            | ■                | ■        | –                | –                 | 22              |
|                                                                                   | ■                | ■        | –                | –                 |                 |
|                                                                                   | ■                | ■        | –                | –                 |                 |
|                                                                                   |                  |          |                  |                   |                 |
| Double solenoid valve                                                             |                  |          |                  |                   |                 |
| JMFH                                                                              | ■                | ■        | –                | –                 | 34              |
|                                                                                   | ■                | ■        | –                | –                 |                 |
|                                                                                   | ■                | ■        | –                | –                 |                 |
|                                                                                   |                  |          |                  |                   |                 |
| Double solenoid valve with dominant signal at 14                                  |                  |          |                  |                   |                 |
| JMFDH                                                                             | ■                | –        | –                | –                 | 34              |
|                                                                                   | ■                | –        | –                | –                 |                 |
|                                                                                   | ■                | –        | –                | –                 |                 |
|                                                                                   |                  |          |                  |                   |                 |
| Double solenoid valve                                                             |                  |          |                  |                   |                 |
| JMDH                                                                              | ■                | –        | –                | –                 | 68              |
|                                                                                   | ■                | –        | –                | –                 |                 |
|                                                                                   | ■                | –        | –                | –                 |                 |

# Solenoid valves, ISO 5599-1

Product range overview

**FESTO**

| Function                        | Version                                                                                                         | Type   | ISO size | Nominal flow rate<br>[l/min] | Pneumatic working port on sub-base | Operating voltage |        |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------|--------|----------|------------------------------|------------------------------------|-------------------|--------|
|                                 |                                                                                                                 |        |          |                              |                                    | [V DC]            | [V AC] |
| 5/2-way valves, double solenoid | Double solenoid valve with central plug M12x1                                                                   |        |          |                              |                                    |                   |        |
|                                 |                                | JMEBH  | 1        | 1,200                        | G¼                                 | 24 V DC           | –      |
|                                 |                                                                                                                 |        | 2        | 2,300                        | G⅜                                 |                   |        |
|                                 |                                                                                                                 |        | 3        | 4,500                        | G½                                 |                   |        |
|                                 | Double solenoid valve with central plug M12x1, dominant signal at 14                                            |        |          |                              |                                    |                   |        |
|                                 |                                | JMEBDH | 1        | 1,200                        | G¼                                 | 24 V DC           | –      |
|                                 |                                                                                                                 |        | 2        | 2,300                        | G⅜                                 |                   |        |
|                                 |                                                                                                                 |        | 3        | 4,500                        | G½                                 |                   |        |
|                                 | Double solenoid valve with single plug M12x1, connector pin allocation to VDMA or Desina                        |        |          |                              |                                    |                   |        |
|                                 |                                | JMDH   | 1        | 1,200                        | G¼                                 | 24 V DC           | –      |
|                                 |                                                                                                                 |        | 2        | 2,300                        | G⅜                                 |                   |        |
|                                 |                                                                                                                 |        | 3        | 4,500                        | G½                                 |                   |        |
|                                 | Double solenoid valve with single plug M12x1, connector pin allocation to VDMA or Desina, dominant signal at 14 |        |          |                              |                                    |                   |        |
|                                 |                               | JMDDH  | 1        | 1,200                        | G¼                                 | 24 V DC           | –      |
|                                 |                                                                                                                 |        | 2        | 2,300                        | G⅜                                 |                   |        |
|                                 |                                                                                                                 |        | 3        | 4,000                        | G½                                 |                   |        |

| Function       | Version                                                                             | Type             | ISO size       | Nominal flow rate<br>[l/min] | Pneumatic working port on sub-base | Operating voltage |                           |  |  |
|----------------|-------------------------------------------------------------------------------------|------------------|----------------|------------------------------|------------------------------------|-------------------|---------------------------|--|--|
|                |                                                                                     |                  |                |                              |                                    | [V DC]            | [V AC]                    |  |  |
| 5/3-way valves | Solenoid valve                                                                      |                  |                |                              |                                    |                   |                           |  |  |
|                |  | MN1H-5/3...      | 1              | 1,200                        | G¼                                 | 24                | 110, 230                  |  |  |
|                |                                                                                     |                  | 2              | 2,300                        | G⅜                                 |                   |                           |  |  |
|                |                                                                                     |                  | 3              | 4,100                        | G½                                 |                   |                           |  |  |
|                |                                                                                     |                  |                |                              |                                    |                   |                           |  |  |
|                |  | MFH-5/3...       | 1              | 1,200                        | G¼                                 | 12, 24, 42        | 24, 42, 48, 110, 230, 240 |  |  |
|                |                                                                                     |                  | 2              | 2,300                        | G⅜                                 |                   |                           |  |  |
|                |                                                                                     |                  | 3              | 4,100                        | G½                                 |                   |                           |  |  |
|                |                                                                                     |                  |                |                              |                                    |                   |                           |  |  |
|                |  | MDH-5/3...       | 4              | 6,000                        | G¾                                 | 24                | 110, 230                  |  |  |
|                |                                                                                     |                  |                |                              |                                    |                   |                           |  |  |
|                |                                                                                     |                  |                |                              |                                    |                   |                           |  |  |
|                | Solenoid valve with central plug M12x1                                              |                  |                |                              |                                    |                   |                           |  |  |
|                |  | MEBH-5/3-...-ZSR | 1              | 1,200                        | G¼                                 | 24                | –                         |  |  |
|                |                                                                                     |                  | 2              | 2,300                        | G⅜                                 |                   |                           |  |  |
|                |                                                                                     |                  | 3              | 4,100                        | G½                                 |                   |                           |  |  |
|                |                                                                                     |                  |                |                              |                                    |                   |                           |  |  |
|                | Solenoid valve with single plug M12x1, connector pin allocation to VDMA or Desina   |                  |                |                              |                                    |                   |                           |  |  |
|                |  | MDH-5/3...       | 1              | 1,200                        | G¼                                 | 24                | –                         |  |  |
|                |                                                                                     |                  | 2              | 2,300                        | G⅜                                 |                   |                           |  |  |
| 3              |                                                                                     |                  | 4,000 ...4,600 | G½                           |                                    |                   |                           |  |  |
|                |                                                                                     |                  |                |                              |                                    |                   |                           |  |  |

# Solenoid valves, ISO 5599-1

Product range overview

**FESTO**

| Type                                                                                                            | Pilot air supply |          | Type of reset    |                   | → Page/Internet |
|-----------------------------------------------------------------------------------------------------------------|------------------|----------|------------------|-------------------|-----------------|
|                                                                                                                 | internal         | external | pneumatic spring | mechanical spring |                 |
| Double solenoid valve with central plug M12x1                                                                   |                  |          |                  |                   |                 |
| JMEBH                                                                                                           | ■                | –        | –                | –                 | 45              |
|                                                                                                                 | ■                | –        | –                | –                 |                 |
|                                                                                                                 | ■                | –        | –                | –                 |                 |
| Double solenoid valve with central plug M12x1, with dominant signal                                             |                  |          |                  |                   |                 |
| JMEBDH                                                                                                          | ■                | –        | –                | –                 | 45              |
|                                                                                                                 | ■                | –        | –                | –                 |                 |
|                                                                                                                 | ■                | –        | –                | –                 |                 |
| Double solenoid valve with single plug M12x1, connector pin allocation to VDMA or Desina                        |                  |          |                  |                   |                 |
| JMDH                                                                                                            | ■                | –        | –                | –                 | 34              |
|                                                                                                                 | ■                | –        | –                | –                 |                 |
|                                                                                                                 | ■                | –        | –                | –                 |                 |
| Double solenoid valve with single plug M12x1, connector pin allocation to VDMA or Desina, dominant signal at 14 |                  |          |                  |                   |                 |
| JMDDH                                                                                                           | ■                | –        | –                | –                 | 34              |
|                                                                                                                 | ■                | –        | –                | –                 |                 |
|                                                                                                                 | ■                | –        | –                | –                 |                 |

| Type                                                                              | Pilot air supply |          | Mid position |            |             | → Page/Internet |
|-----------------------------------------------------------------------------------|------------------|----------|--------------|------------|-------------|-----------------|
|                                                                                   | internal         | external | closed       | exhausting | pressurised |                 |
| Solenoid valve                                                                    |                  |          |              |            |             |                 |
| MN1H-5/3...                                                                       | ■                | ■        | ■            | ■          | ■           | 26              |
|                                                                                   | ■                | ■        | ■            | ■          | ■           |                 |
|                                                                                   | ■                | ■        | ■            | ■          | ■           |                 |
| MFH-5/3...                                                                        | ■                | ■        | ■            | ■          | ■           | 37              |
|                                                                                   | ■                | ■        | ■            | ■          | ■           |                 |
|                                                                                   | ■                | ■        | ■            | ■          | ■           |                 |
|                                                                                   |                  |          |              |            |             |                 |
| MDH-5/3...                                                                        | ■                | –        | ■            | ■          | –           | 71              |
|                                                                                   |                  |          |              |            |             |                 |
| Solenoid valve with central plug M12x1                                            |                  |          |              |            |             |                 |
| MEBH-5/3-...-ZSR                                                                  | ■                | –        | ■            | ■          | ■           | 49              |
|                                                                                   | ■                | –        | ■            | ■          | ■           |                 |
|                                                                                   | ■                | –        | ■            | ■          | ■           |                 |
|                                                                                   |                  |          |              |            |             |                 |
| Solenoid valve with single plug M12x1, connector pin allocation to VDMA or Desina |                  |          |              |            |             |                 |
| MDH-5/3...                                                                        | ■                | –        | ■            | ■          | ■           | 37              |
|                                                                                   | ■                | –        | ■            | ■          | ■           |                 |
|                                                                                   | ■                | –        | ■            | ■          | ■           |                 |
|                                                                                   |                  |          |              |            |             |                 |

# Pneumatic valves, ISO 5599-1

Product range overview

**FESTO**

| Function       | Version                                                                           | Type | ISO size | Nominal flow rate<br>[l/min] | Pneumatic working port on sub-base | Type of reset    |                   | → Page/Internet |
|----------------|-----------------------------------------------------------------------------------|------|----------|------------------------------|------------------------------------|------------------|-------------------|-----------------|
|                |                                                                                   |      |          |                              |                                    | pneumatic spring | mechanical spring |                 |
| 5/2-way valves | Pneumatic valve, single pilot                                                     |      |          |                              |                                    |                  |                   |                 |
|                |  | VL   | 1        | 1,200                        | G¼                                 | ■                | ■                 | 78              |
|                |                                                                                   |      | 2        | 2,300                        | G⅜                                 | ■                | ■                 |                 |
|                |                                                                                   |      | 3        | 4,500                        | G½                                 | ■                | ■                 |                 |
|                |                                                                                   |      | 4        | 6,000                        | G¾                                 | ■                | ■                 |                 |
|                |                                                                                   |      |          |                              |                                    |                  |                   |                 |
|                | Pneumatic double pilot valve                                                      |      |          |                              |                                    |                  |                   |                 |
|                |  | J    | 1        | 1,200                        | G¼                                 | –                | –                 | 82              |
|                |                                                                                   |      | 2        | 2,300                        | G⅜                                 | –                | –                 |                 |
|                |                                                                                   |      | 3        | 4,500                        | G½                                 | –                | –                 |                 |
|                |                                                                                   |      | 4        | 6,000                        | G¾                                 | –                | –                 |                 |
|                |                                                                                   |      |          |                              |                                    |                  |                   |                 |
|                | Pneumatic double pilot valve with dominant signal at 14                           |      |          |                              |                                    |                  |                   |                 |
|                |  | JD   | 1        | 1,200                        | G¼                                 | –                | –                 | 82              |
| 2              |                                                                                   |      | 2,300    | G⅜                           | –                                  | –                |                   |                 |
| 3              |                                                                                   |      | 4,500    | G½                           | –                                  | –                |                   |                 |
|                |                                                                                   |      |          |                              |                                    |                  |                   |                 |

| Function       | Version                                                                             | Type     | ISO size | Nominal flow rate<br>[l/min] | Pneumatic working port on sub-base | Mid position |           |             | → Page/Internet |
|----------------|-------------------------------------------------------------------------------------|----------|----------|------------------------------|------------------------------------|--------------|-----------|-------------|-----------------|
|                |                                                                                     |          |          |                              |                                    | closed       | exhausted | pressurised |                 |
| 5/3-way valves | Pneumatic valve                                                                     |          |          |                              |                                    |              |           |             |                 |
|                |  | VL5/3... | 1        | 1,200                        | G¼                                 | ■            | ■         | ■           | 85              |
|                |                                                                                     |          | 2        | 2,300                        | G⅜                                 | ■            | ■         | ■           |                 |
|                |                                                                                     |          | 3        | 4,100                        | G½                                 | ■            | ■         | ■           |                 |
|                |                                                                                     |          | 4        | 4,800                        | G¾                                 | ■            | ■         | ■           |                 |

# Solenoid valves, ISO 5599-1

FESTO

Type codes for valves with square plug

|                                                  |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
|--------------------------------------------------|-------------------------------------------------------------------|------|---|-----|---|---|-----|---|--|---|--|---|--|---|---|---|--|
|                                                  |                                                                   | MN1H | - | 5/3 | G | - | D-1 | - |  | - |  | - |  | - | C | - |  |
| <b>Type</b>                                      |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| MN1H                                             | Single pilot, for N1 solenoid coil                                |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| MFH                                              | Single solenoid, for F solenoid coil                              |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| MDH                                              | Single solenoid, with D solenoid coil                             |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| MEBH                                             | Single solenoid, with EB solenoid coil                            |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| JMN1H                                            | Double solenoid, for N1 solenoid coil                             |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| JMN1DH                                           | Double solenoid, for N1 solenoid coil, with dominant signal at 14 |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| JMFH                                             | Double solenoid, for F solenoid coil                              |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| JMFDH                                            | Double solenoid, for F solenoid coil, with dominant signal at 14  |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| JMDH                                             | Double solenoid, with D solenoid coil                             |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| <b>Valve function</b>                            |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| 5/2                                              | 5/2-way valve                                                     |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| 5/3                                              | 5/3-way valve                                                     |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| <b>Mid position</b>                              |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| G                                                | closed                                                            |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| E                                                | exhausted                                                         |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| B                                                | pressurised                                                       |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| <b>Size</b>                                      |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| D-1                                              | ISO size 1                                                        |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| D-2                                              | ISO size 2                                                        |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| D-3                                              | ISO size 3                                                        |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| ¾-D-4                                            | ISO size 4                                                        |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| <b>Electrical connection, operating voltage</b>  |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| Plug, square design to DIN EN 175301-803, type A |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| 24DC                                             | 24 V DC                                                           |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| <b>Pilot air supply</b>                          |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
|                                                  | internal                                                          |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| S                                                | external                                                          |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| <b>Type of reset</b>                             |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| FR                                               | Mechanical spring                                                 |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
|                                                  | Pneumatic spring                                                  |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| <b>Generation</b>                                |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| C                                                | Series C                                                          |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
|                                                  |                                                                   |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
| CT                                               | Free of copper and PTFE                                           |      |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |

# Solenoid valves, ISO 5599-1

Type codes for valves with round plug

FESTO

|  |  |     |   |     |   |   |     |   |  |   |  |   |  |   |   |   |  |
|--|--|-----|---|-----|---|---|-----|---|--|---|--|---|--|---|---|---|--|
|  |  | MDH | - | 5/3 | G | - | D-1 | - |  | - |  | - |  | - | C | - |  |
|--|--|-----|---|-----|---|---|-----|---|--|---|--|---|--|---|---|---|--|

| Type   |                                                                    |
|--------|--------------------------------------------------------------------|
| MDH    | Single solenoid, with D solenoid coil                              |
| MEBH   | Single solenoid, with EB solenoid coil                             |
| JMDH   | Double solenoid, for D solenoid coil                               |
| JMDDH  | Double solenoid, for D solenoid coil, with dominant signal at 14   |
| JMEBH  | Double solenoid, with EB solenoid coil                             |
| JMEBDH | Double solenoid, with EB solenoid coil, with dominant signal at 14 |

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

| Mid position |             |
|--------------|-------------|
| G            | closed      |
| E            | exhausted   |
| B            | pressurised |

| Size |            |
|------|------------|
| D-1  | ISO size 1 |
| D-2  | ISO size 2 |
| D-3  | ISO size 3 |

| Electrical connection, operating voltage |         |
|------------------------------------------|---------|
| Central plug, round design, M12x1        |         |
| ZSR                                      | 24 V DC |
| Individual plug, round design, M12x1     |         |
| M12                                      | 24 V DC |

| Pin allocation |                 |
|----------------|-----------------|
|                | 2-pin to VDMA   |
| D              | 4-pin to Desina |

| Pilot air supply |          |
|------------------|----------|
|                  | internal |
| S                | external |

| Type of reset |                                       |
|---------------|---------------------------------------|
| FR            | Mechanical spring<br>Pneumatic spring |

| Generation |          |
|------------|----------|
| C          | Series C |

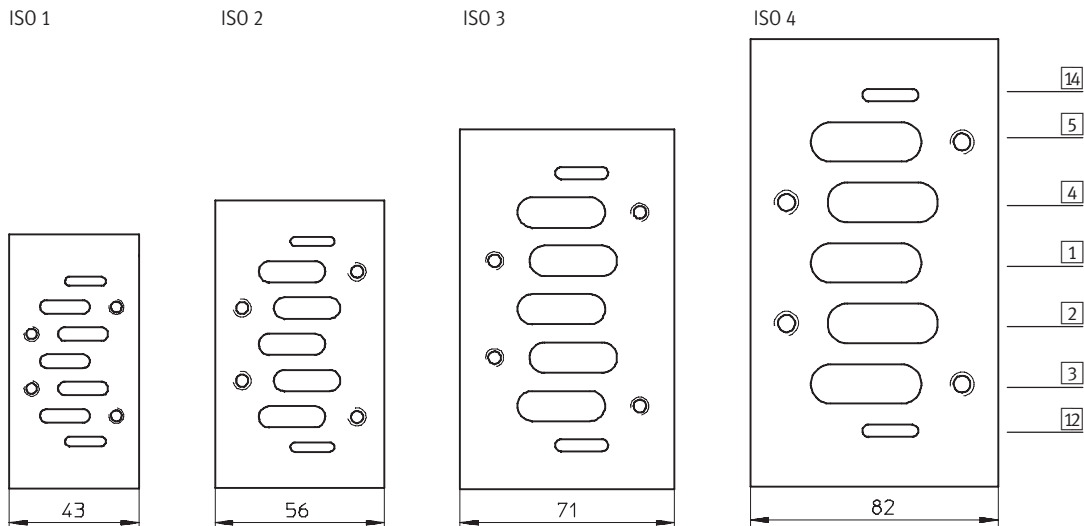
# Solenoid valves, ISO 5599-1

Peripherals overview

FESTO

## Port pattern on sub-base to ISO 5599-1

Defined interfaces between valve and sub-base



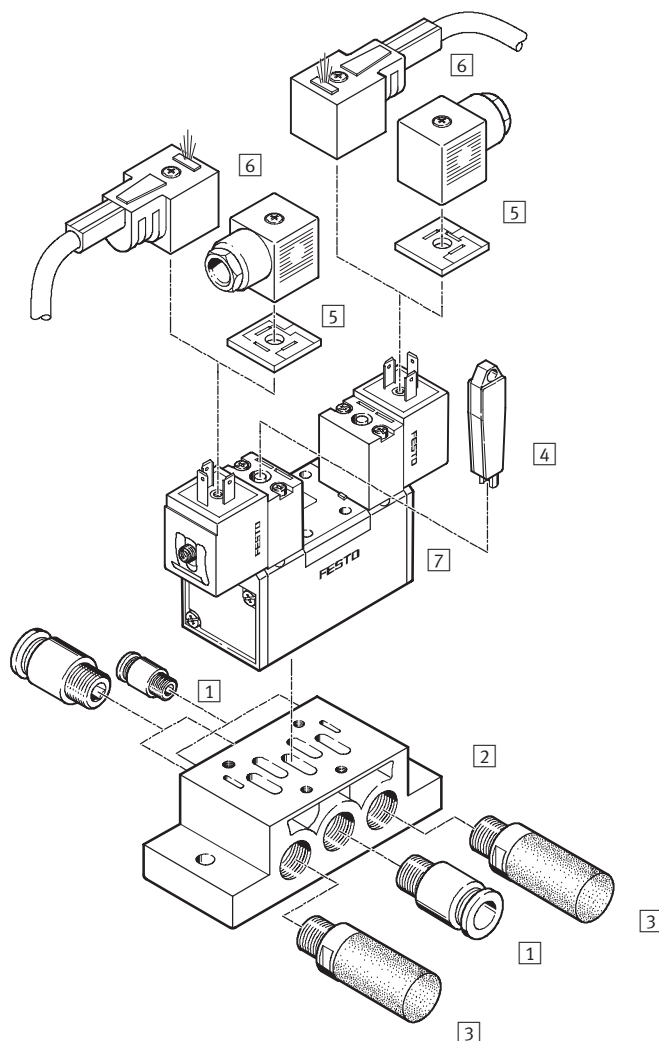
| Sub-base port designations |                                                                    |                  |
|----------------------------|--------------------------------------------------------------------|------------------|
|                            | Solenoid valves                                                    | Pneumatic valves |
| 14 Control section         | External pilot air supply for pilot valve 14                       | Signal input 14  |
| 5 Power section            | Valve exhaust port 5                                               |                  |
| 4 Power section            | Working port 4<br><a href="http://www.festo.com">www.festo.com</a> |                  |
| 1 Power section            | Working air supply port 1                                          |                  |
| 2 Power section            | Working port 2                                                     |                  |
| 3 Power section            | Valve exhaust port 3                                               |                  |
| 12 Control section         | External pilot air supply for pilot valve 12                       | Signal input 12  |

# Solenoid valves, ISO 5599-1

Peripherals overview

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## Individual mounting with square plug

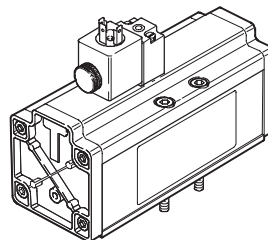
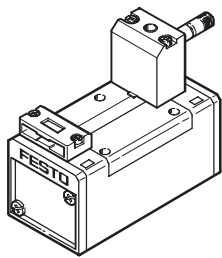
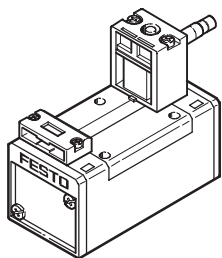


### Variants

MN1H-5/2

MFH-5/2

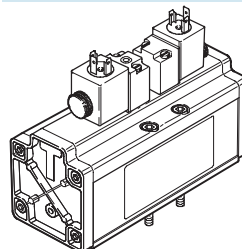
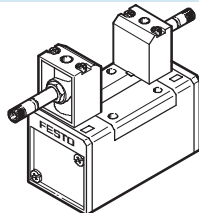
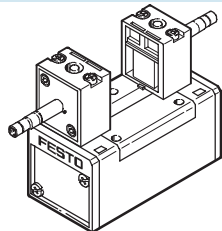
MDH-5/2-D-4



JMN1H-5/2, MN1H-5/3

JMFH-5/2, MFH-5/3

JMDH-5/2-D-4, MDH-5/3-D-4



## Solenoid valves, ISO 5599-1

Peripherals overview

**FESTO**

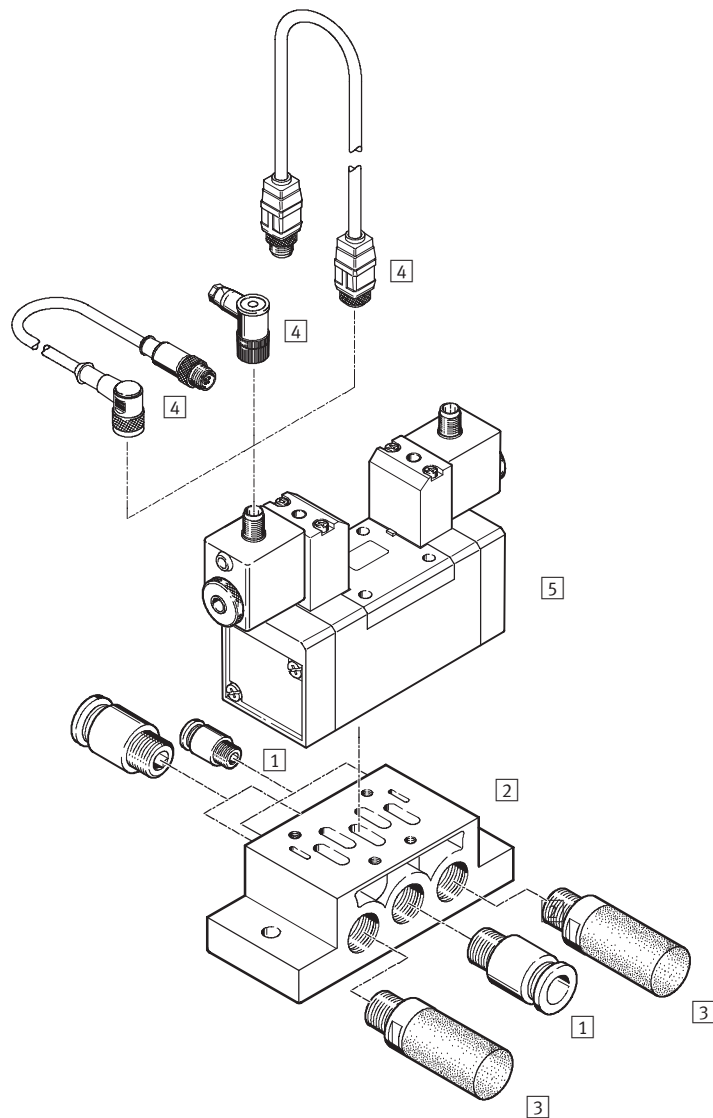
| Accessories                                          |                                                                |                 |
|------------------------------------------------------|----------------------------------------------------------------|-----------------|
|                                                      | Brief description                                              | → Page/Internet |
| 1 Push-in fitting<br>QS                              | For connecting compressed air tubing with standard O.D.        | quick star      |
| 2 Individual sub-base<br>NAS                         | With lateral ports                                             | 88              |
| 3 Silencers                                          | For fitting in exhaust ports                                   | u               |
| 4 Manual override tool<br>AHB                        |                                                                | 99              |
| 5 Illuminating seal<br>M...-LD                       | For indicating the switching status                            | 102             |
| 6 Plug sockets with/without cables<br>MSSD, KMF, KMC |                                                                | 101             |
| 7 Solenoid valve                                     | Port pattern to ISO 5599-1, corresponding solenoid coils → 100 | 2               |

# Solenoid valves, ISO 5599-1

Peripherals overview

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## Individual mounting with round plug



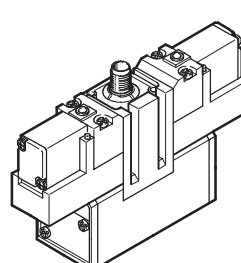
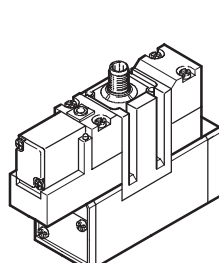
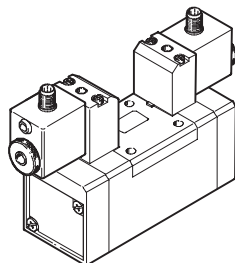
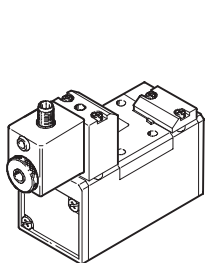
### Variants

MDH-5/2

JMDH-5/2, MDH-5/3

MEBH-5/2

JMEBH-5/2, MEBH-5/3



## Solenoid valves, ISO 5599-1

Peripherals overview

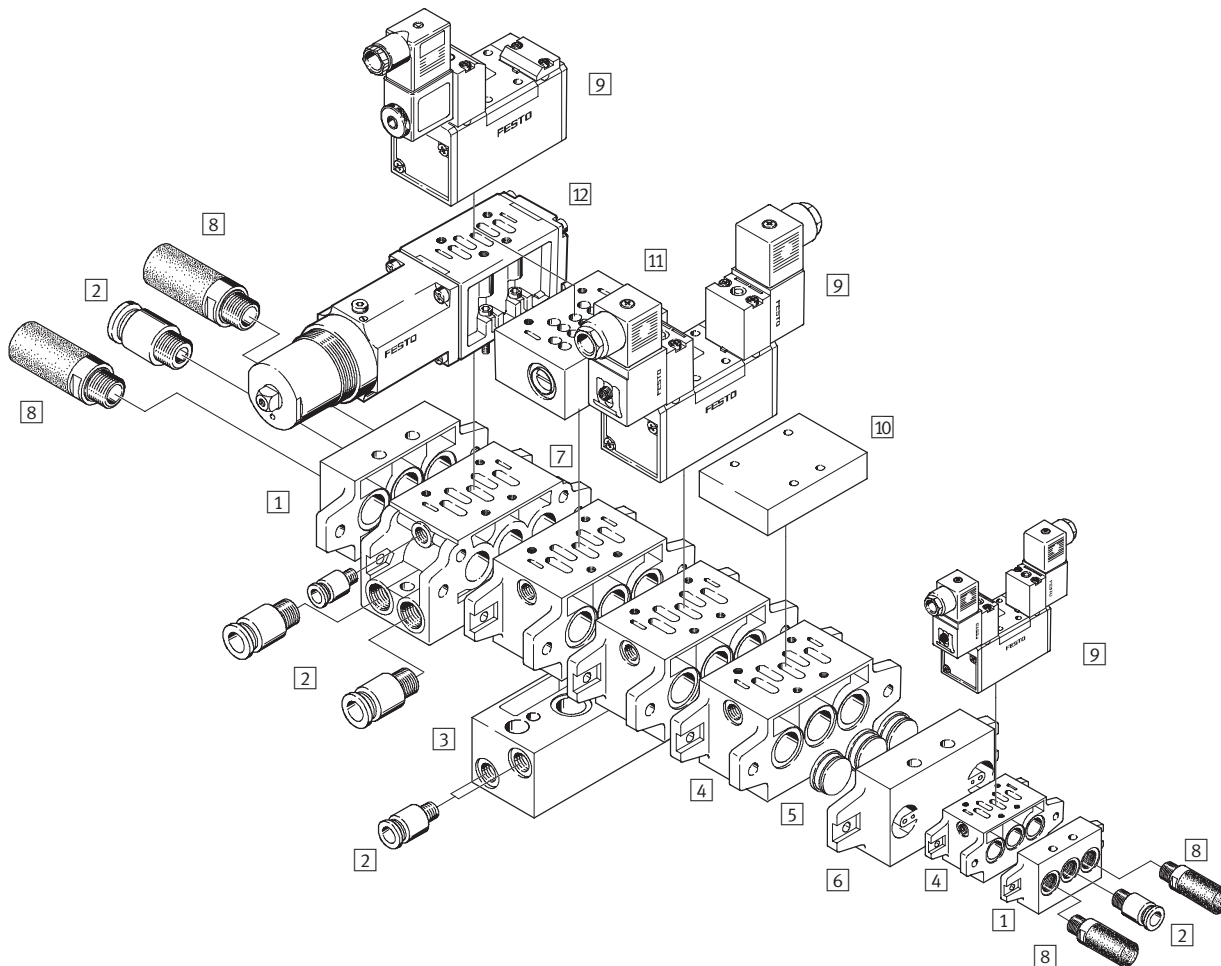
**FESTO**

| Accessories                                   |                                                         |                 |
|-----------------------------------------------|---------------------------------------------------------|-----------------|
|                                               | Brief description                                       | → Page/Internet |
| 1 Push-in fitting<br>QS                       | For connecting compressed air tubing with standard O.D. | quick star      |
| 2 Individual sub-base<br>NAS                  | With lateral ports                                      | 88              |
| 3 Silencers                                   | For fitting in exhaust ports                            | u               |
| 4 Plug sockets with/without cables<br>SAE, KM |                                                         | 102             |
| 5 Solenoid valve                              | Port pattern to ISO 5599-1                              | 41              |

## Peripherals overview

**FESTO**

### Manifold mounting with square plug

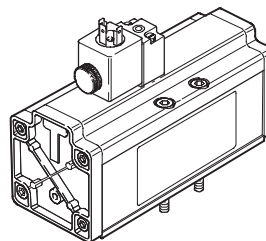
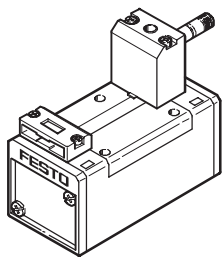
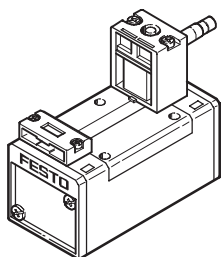


## Variants

MN1H-5/2

MFH-5/2

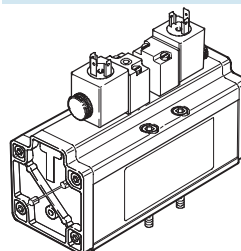
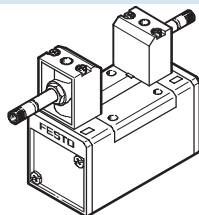
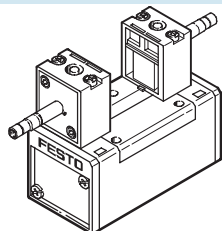
MDH-5/2-D-4



JMN1H-5/2, MN1H-5/3

JMFH-5/2, MFH-5/3

JMDH-5/2-D-4, MDH-5/3-D-4



## Solenoid valves, ISO 5599-1

Peripherals overview

**FESTO**

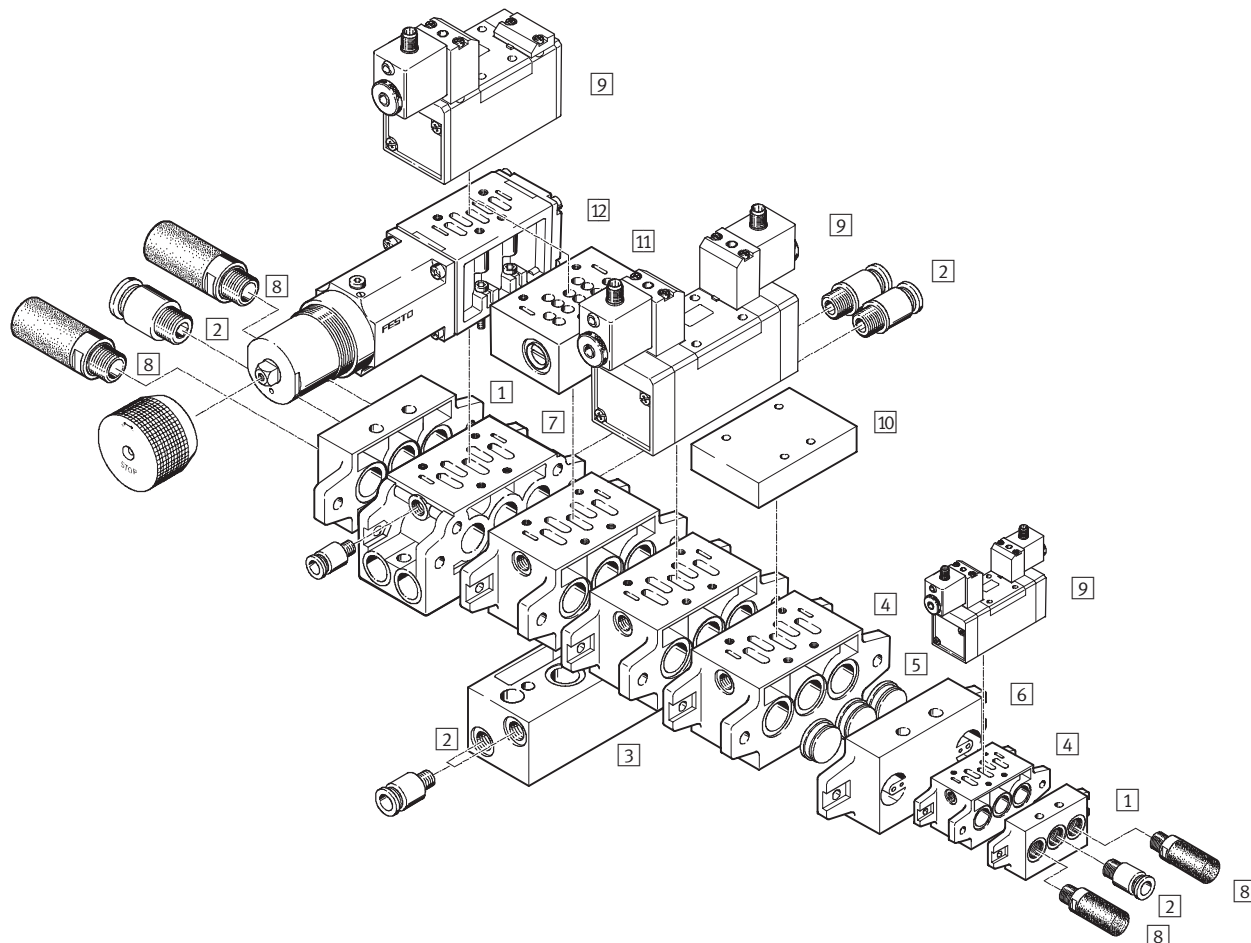
| Accessories                                       |                                                                                                                                                                                                                             |                 |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                                   | Remarks                                                                                                                                                                                                                     | → Page/Internet |
| 1 End plate kit<br>NEV                            | For sealing the manifold sub-bases                                                                                                                                                                                          | 91              |
| 2 Push-in fitting<br>QS                           | For connecting compressed air tubing with standard O.D.                                                                                                                                                                     | quick star      |
| 3 Angle connection block<br>NAW                   | For routing ports 2 and 4 to the front                                                                                                                                                                                      | 90              |
| 4 Manifold sub-base<br>NAV                        | With ports 2 and 4 underneath                                                                                                                                                                                               | 90              |
| 5 Isolating disc<br>NSC                           | For sealing the common lines 1, 3, 5 between end plates and manifold sub-bases or between 2 manifold sub-bases, e.g. for different working pressures                                                                        | 92              |
| 6 Intermediate plate<br>NZV                       | For connecting manifold sub-bases of different sizes                                                                                                                                                                        | 94              |
| 7 Manifold sub-base for angle connection<br>NAVW  | With ports 2 and 4 either underneath or to the front                                                                                                                                                                        | 91              |
| 8 Silencers                                       | For fitting in exhaust ports                                                                                                                                                                                                | u               |
| 9 Solenoid valve                                  | Port pattern to ISO 5599-1, corresponding solenoid coils → 100                                                                                                                                                              | 2               |
| 10 Blanking plate<br>NDV                          | For sealing unused manifold sub-bases                                                                                                                                                                                       | 92              |
| 11 Throttle plate<br>GRO                          | For ISO size 1, 2 and 3 with integrated exhaust air restrictors at ports 3 and 5.<br>The throttle plate is mounted between the valve and the individual sub-base/manifold sub-base                                          | 95              |
| 12 Intermediate pressure regulator plate<br>LR-ZP | For ISO size 1, 2 and 3 for regulating the pressure from 0 to 10 bar according to the supply pressure. The intermediate pressure regulator plate is mounted between the valve and the individual sub-base/manifold sub-base | 96              |

# Solenoid valves, ISO 5599-1

Peripherals overview

FESTO

## Manifold mounting with round plugs



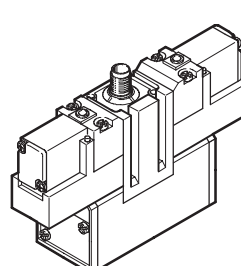
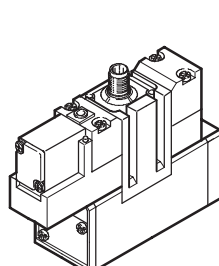
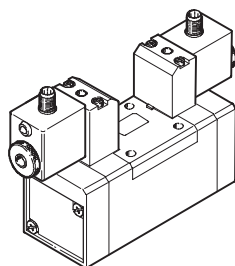
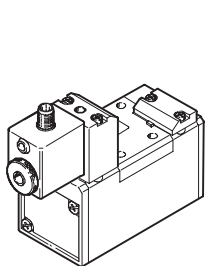
### Variants

MDH-5/2

JMDH-5/2, MDH-5/3

MEBH-5/2

JMEBH-5/2, MEBH-5/3



## Solenoid valves, ISO 5599-1

Peripherals overview

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| Accessories                                       |                                                                                                                                                                                                                             |                 |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                                   | Remarks                                                                                                                                                                                                                     | → Page/Internet |
| 1 End plate kit<br>NEV                            | For sealing the manifold sub-bases                                                                                                                                                                                          | nev             |
| 2 Push-in fitting<br>QS                           | For connecting compressed air tubing with standard O.D.                                                                                                                                                                     | quick star      |
| 3 Angle connection block<br>NAW                   | For routing ports 2 and 4 to the front                                                                                                                                                                                      | 90              |
| 4 Manifold sub-base<br>NAV                        | With ports 2 and 4 underneath                                                                                                                                                                                               | 90              |
| 5 Isolating disc<br>NSC                           | For sealing the common lines 1, 3, 5 between end plates and manifold sub-bases or between 2 manifold sub-bases, e.g. for different working pressures                                                                        | 92              |
| 6 Intermediate plate<br>NZV                       | For connecting manifold sub-bases of different sizes                                                                                                                                                                        | 94              |
| 7 Manifold sub-base for angle connection<br>NAVW  | With ports 2 and 4 either underneath or to the front                                                                                                                                                                        | 91              |
| 8 Silencers                                       | For fitting in exhaust ports                                                                                                                                                                                                | u               |
| 9 Solenoid valve                                  | Port pattern to ISO 5599-1                                                                                                                                                                                                  | 2               |
| 10 Blanking plate<br>NDV                          | For sealing unused manifold sub-bases                                                                                                                                                                                       | 92              |
| 11 Throttle plate<br>GRO                          | For ISO size 1, 2 and 3 with integrated exhaust air restrictors at ports 3 and 5.<br>The throttle plate is mounted between the valve and the individual sub-base/manifold sub-base                                          | 95              |
| 12 Intermediate pressure regulator plate<br>LR-ZP | For ISO size 1, 2 and 3 for regulating the pressure from 0 to 10 bar according to the supply pressure. The intermediate pressure regulator plate is mounted between the valve and the individual sub-base/manifold sub-base | 96              |

# Solenoid valves MN1H, ISO 5599-1

Technical data – 5/2-way valves

**FESTO**

Flow rate

1200 ... 4500 l/min

Voltage

24 V DC

110, 230 V AC



| General technical data             |                                |                 |                 |
|------------------------------------|--------------------------------|-----------------|-----------------|
| ISO size                           | 1                              | 2               | 3               |
| Valve function                     | 5/2-way, single solenoid       |                 |                 |
| Constructional design              | Piston spool                   |                 |                 |
| Sealing principle                  | Soft                           |                 |                 |
| Actuation type                     | Electrical                     |                 |                 |
| Type of reset                      | Mechanical or pneumatic spring |                 |                 |
| Type of pilot control              | Piloted                        |                 |                 |
| Pilot air supply                   | Internal or external           |                 |                 |
| Direction of flow                  | Non-reversible                 |                 |                 |
| Exhaust function                   | With flow control              |                 |                 |
| Manual override                    | Via accessory, detenting       |                 |                 |
| Type of mounting                   | Via through-holes              |                 |                 |
| Mounting position                  | Any                            |                 |                 |
| Nominal size [mm]                  | 8                              | 11              | 14.5            |
| Standard nominal flow rate [l/min] | 1200                           | 2300            | 4500            |
| Grid dimension [mm]                | 43                             | 56              | 71              |
| Pneumatic connection on sub-base   | G $\frac{1}{4}$                | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Product weight [g]                 | 450                            | 710             | 1000            |
| Noise level [dB (A)]               | 85                             |                 |                 |
| Certification                      | Germanischer Lloyd             |                 |                 |

| Operating and environmental conditions |                                 |                                                               |              |
|----------------------------------------|---------------------------------|---------------------------------------------------------------|--------------|
| Type of reset                          |                                 | Pneumatic                                                     | Mechanical   |
| Operating medium                       |                                 | Filtered compressed air, lubricated or unlubricated<br>Vacuum |              |
| Operating pressure                     | Internal pilot air supply [bar] | 2 ... 10                                                      | 3 ... 10     |
|                                        | External pilot air supply [bar] | –0.9 ... +16                                                  | –0.9 ... +16 |
| Pilot pressure [bar]                   |                                 | 2 ... 10                                                      | 3 ... 10     |
| Ambient temperature [°C]               |                                 | –10 ... +50                                                   |              |
| Temperature of medium [°C]             |                                 | –10 ... +50                                                   |              |

| Valve response times [ms] |           |            |           |            |           |            |
|---------------------------|-----------|------------|-----------|------------|-----------|------------|
| ISO size                  | 1         |            | 2         |            | 3         |            |
| Type of reset             | Pneumatic | Mechanical | Pneumatic | Mechanical | Pneumatic | Mechanical |
| On                        | 23        | 17         | 46        | 24         | 49        | 33         |
| Off                       | 32        | 39         | 69        | 62         | 71        | 74         |

# Solenoid valves MN1H, ISO 5599-1

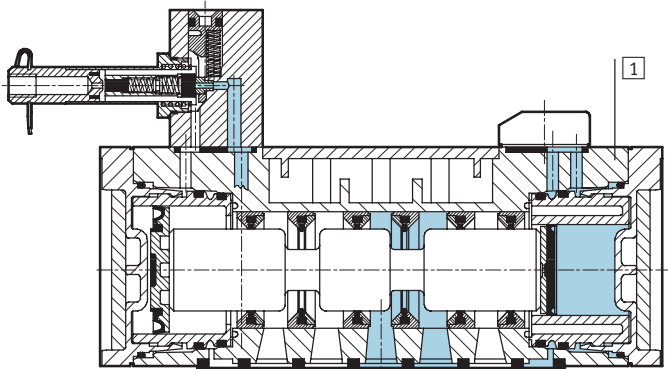
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Technical data – 5/2-way valves

| Electrical data               |              |                                              |                        |
|-------------------------------|--------------|----------------------------------------------|------------------------|
| N1 solenoid coil              |              |                                              |                        |
| Electrical connection         |              | Plug, square design to EN 175301-803, type A |                        |
| Operating voltage             | D.C. voltage | [V DC]                                       | 24                     |
|                               | A.C. voltage | [V AC]                                       | 110/230 (50 ... 60 Hz) |
| Coil characteristics          | D.C. voltage | [W]                                          | 2.5                    |
|                               | A.C. voltage | [VA]                                         | Pull: 7.5<br>Hold: 5   |
| Protection class to EN 60 529 |              | IP65                                         |                        |

## Materials

Sectional view



|                  |         |                                                            |
|------------------|---------|------------------------------------------------------------|
| 1                | Housing | Die-cast aluminium, polyacetate                            |
| –                | Seals   | Nitrile rubber                                             |
| Note on material |         | Versions free of copper, PTFE and silicone → Ordering data |

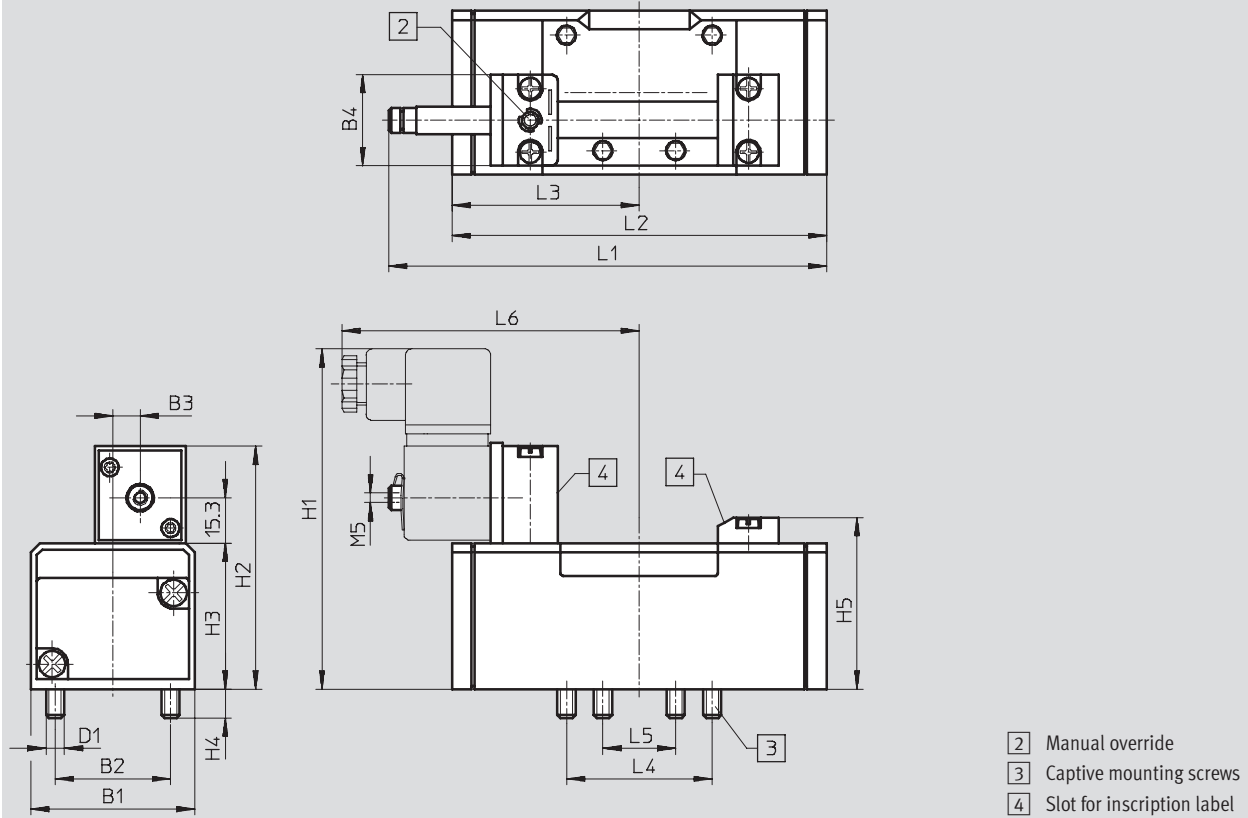
# Solenoid valves MN1H, ISO 5599-1

Technical data – 5/2-way valves

**FESTO**

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

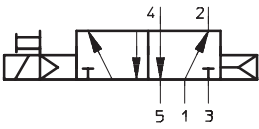
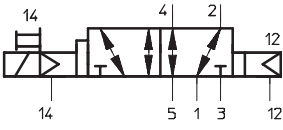
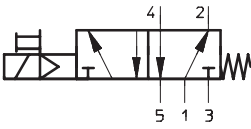
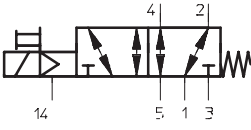


| Type            | B1 | B2 | B3 | B4 | D1 | H1  | H2 | H3 | H4  | H5   | L1    | L2    | L3   | L4 | L5 | L6  |
|-----------------|----|----|----|----|----|-----|----|----|-----|------|-------|-------|------|----|----|-----|
| ISO size 1      |    |    |    |    |    |     |    |    |     |      |       |       |      |    |    |     |
| MN1H-5/2-...    | 42 | 28 | 6  | 30 | M5 | 106 | 74 | 38 | 9   | 46.5 | 117.5 | 87.6  | 43.8 | 36 | 18 | 89  |
| MN1H-5/2-...-FR |    |    |    |    |    |     |    |    |     |      | 128   | 98    |      |    |    |     |
|                 |    |    |    |    |    |     |    |    |     |      |       |       |      |    |    |     |
| ISO size 2      |    |    |    |    |    |     |    |    |     |      |       |       |      |    |    |     |
| MN1H-5/2-...    | 54 | 38 | 9  | 30 | M6 | 116 | 84 | 48 | 9.5 | 56.5 | 147.6 | 123.4 | 61.7 | 48 | 24 | 98  |
| MN1H-5/2-...-FR |    |    |    |    |    |     |    |    |     |      | 161.5 | 140.7 |      |    |    |     |
|                 |    |    |    |    |    |     |    |    |     |      |       |       |      |    |    |     |
| ISO size 3      |    |    |    |    |    |     |    |    |     |      |       |       |      |    |    |     |
| MN1H-5/2-...    | 65 | 48 | 12 | 30 | M8 | 123 | 91 | 55 | 12  | 63.5 | 169   | 145.4 | 72.7 | 64 | 32 | 109 |
| MN1H-5/2-...-FR |    |    |    |    |    |     |    |    |     |      | 184.8 | 164.7 |      |    |    |     |

# Solenoid valves MN1H, ISO 5599-1

**FESTO**

Technical data – 5/2-way valves

| Ordering data                                                                       |                                                                                            |          |          |                                    |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------|----------|------------------------------------|
| Circuit symbol                                                                      | Description                                                                                | ISO size | Part No. | Type                               |
|    | Without N1 solenoid coil <sup>1)</sup> ,<br>internal pilot air supply,<br>pneumatic reset  | 1        | 159 688  | MN1H-5/2-D-1-C                     |
|                                                                                     |                                                                                            |          | 184 637  | MN1H-5/2-D-1-C-CT <sup>2)</sup>    |
|                                                                                     |                                                                                            | 2        | 159 700  | MN1H-5/2-D-2-C                     |
|                                                                                     |                                                                                            |          | 184 640  | MN1H-5/2-D-2-C-CT <sup>2)</sup>    |
|                                                                                     |                                                                                            | 3        | 159 712  | MN1H-5/2-D-3-C                     |
|                                                                                     |                                                                                            |          | 184 643  | MN1H-5/2-D-3-C-CT <sup>2)</sup>    |
|    | Without N1 solenoid coil <sup>1)</sup> ,<br>external pilot air supply,<br>pneumatic reset  | 1        | 159 686  | MN1H-5/2-D-1-S-C                   |
|                                                                                     |                                                                                            | 2        | 159 698  | MN1H-5/2-D-2-S-C                   |
|                                                                                     |                                                                                            | 3        | 159 710  | MN1H-5/2-D-3-S-C                   |
|    | Without N1 solenoid coil <sup>1)</sup> ,<br>internal pilot air supply,<br>mechanical reset | 1        | 159 687  | MN1H-5/2-D-1-FR-C                  |
|                                                                                     |                                                                                            |          | 184 638  | MN1H-5/2-D-1-FR-C-CT <sup>2)</sup> |
|                                                                                     |                                                                                            | 2        | 159 699  | MN1H-5/2-D-2-FR-C                  |
|                                                                                     |                                                                                            |          | 184 641  | MN1H-5/2-D-2-FR-C-CT <sup>2)</sup> |
|                                                                                     |                                                                                            | 3        | 159 711  | MN1H-5/2-D-3-FR-C                  |
|                                                                                     |                                                                                            |          | 184 644  | MN1H-5/2-D-3-FR-C-CT <sup>2)</sup> |
|  | Without N1 solenoid coil <sup>1)</sup> ,<br>external pilot air supply,<br>mechanical reset | 1        | 159 716  | MN1H-5/2-D-1-FR-S-C                |
|                                                                                     |                                                                                            | 2        | 159 718  | MN1H-5/2-D-2-FR-S-C                |
|                                                                                     |                                                                                            | 3        | 160 896  | MN1H-5/2-D-3-FR-S-C                |

1) N1 solenoid coils → 100

2) Free of copper, PTFE and silicone

# Solenoid valves JMN1H, ISO 5599-1

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

FESTO

Flow rate

1200 ... 4500 l/min

Voltage

24 V DC

110, 230, 240 V AC



| General technical data             |                          |                 |                 |
|------------------------------------|--------------------------|-----------------|-----------------|
| ISO size                           | 1                        | 2               | 3               |
| Valve function                     | 5/2-way, double solenoid |                 |                 |
| Constructional design              | Piston spool             |                 |                 |
| Sealing principle                  | Soft                     |                 |                 |
| Actuation type                     | Electrical               |                 |                 |
| Type of reset                      | Mechanical spring        |                 |                 |
| Type of pilot control              | Piloted                  |                 |                 |
| Pilot air supply                   | Internal or external     |                 |                 |
| Direction of flow                  | Non-reversible           |                 |                 |
| Exhaust function                   | With flow control        |                 |                 |
| Manual override                    | Via accessory, detenting |                 |                 |
| Type of mounting                   | Via through-holes        |                 |                 |
| Mounting position                  | Any                      |                 |                 |
| Nominal size [mm]                  | 8                        | 11              | 14.5            |
| Standard nominal flow rate [l/min] | 1200                     | 2300            | 4500            |
| Grid dimension [mm]                | 43                       | 56              | 71              |
| Pneumatic connection on sub-base   | G $\frac{1}{4}$          | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Product weight [g]                 | 610                      | 880             | 1090            |
| Noise level [dB (A)]               | 85                       |                 |                 |
| Certification                      | Germanischer Lloyd       |                 |                 |

| Operating and environmental conditions |                           |       |                                                               |
|----------------------------------------|---------------------------|-------|---------------------------------------------------------------|
| Operating medium                       |                           |       | Filtered compressed air, lubricated or unlubricated<br>Vacuum |
| Operating pressure                     | Internal pilot air supply | [bar] | 2 ... 10                                                      |
|                                        | External pilot air supply | [bar] | −0.9 ... +16                                                  |
| Pilot pressure                         |                           | [bar] | 2 ... 10                                                      |
| Ambient temperature                    |                           | [°C]  | −10 ... +50                                                   |
| Temperature of medium                  |                           | [°C]  | −10 ... +50                                                   |

| Valve response times |    |                         |    |                         |    |                         |
|----------------------|----|-------------------------|----|-------------------------|----|-------------------------|
| ISO size             | 1  |                         | 2  |                         | 3  |                         |
|                      |    | Dominant signal at 14   |    | Dominant signal at 14   |    | Dominant signal at 14   |
|                      | 18 | 12: 18 ms;<br>14: 15 ms | 21 | 12: 24 ms;<br>14: 21 ms | 21 | 12: 24 ms;<br>14: 21 ms |

## Solenoid valves JMN1H, ISO 5599-1

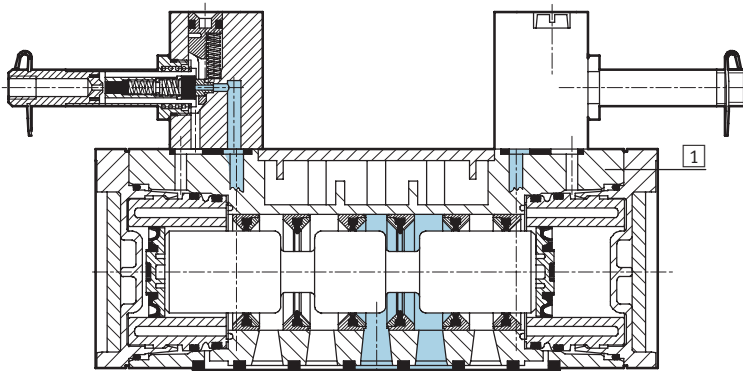
**FESTO**

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

| Electrical data               |              |                                              |                        |
|-------------------------------|--------------|----------------------------------------------|------------------------|
| N1 solenoid coil              |              |                                              |                        |
| Electrical connection         |              | Plug, square design to EN 175301-803, type A |                        |
| Operating voltage             | D.C. voltage | [V DC]                                       | 24                     |
|                               | A.C. voltage | [V AC]                                       | 110/230 (50 ... 60 Hz) |
| Coil characteristics          | D.C. voltage | [W]                                          | 2.5                    |
|                               | A.C. voltage | [VA]                                         | Pull: 7.5<br>Hold: 5   |
| Protection class to EN 60 529 |              | IP65                                         |                        |

### Materials

Sectional view



|   |         |                                 |
|---|---------|---------------------------------|
| 1 | Housing | Die-cast aluminium, polyacetate |
| – | Seals   | Nitrile rubber                  |

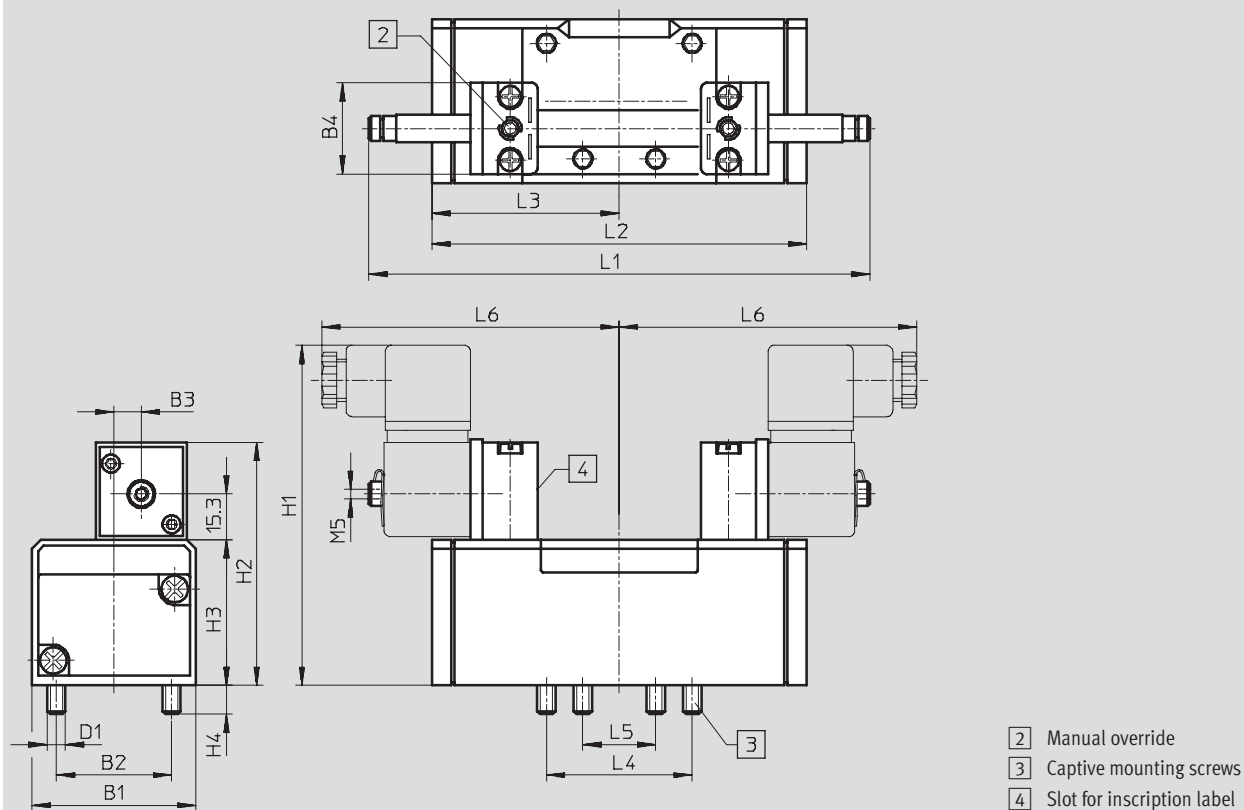
# Solenoid valves JMN1H, ISO 5599-1

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

**FESTO**

## Dimensions

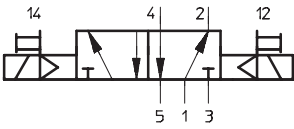
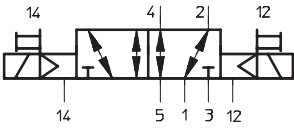
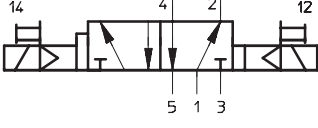
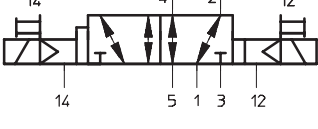
Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



| ISO size | B1 | B2 | B3 | B4 | D1 | H1  | H2 | H3 | H4  | L1    | L2    | L3   | L4 | L5 | L6  |
|----------|----|----|----|----|----|-----|----|----|-----|-------|-------|------|----|----|-----|
| 1        | 42 | 28 | 6  | 30 | M5 | 106 | 74 | 38 | 9   | 147.3 | 87.6  | 43.8 | 36 | 18 | 89  |
| 2        | 54 | 38 | 9  | 30 | M6 | 116 | 84 | 48 | 9.5 | 165   | 123.4 | 61.7 | 48 | 24 | 98  |
| 3        | 65 | 48 | 12 | 30 | M8 | 123 | 91 | 55 | 12  | 185.7 | 145.4 | 72.7 | 64 | 32 | 109 |

# Solenoid valves JMN1H, ISO 5599-1

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

| Ordering data – Double solenoid valve                                              |                                                                                                      |          |          |                    |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------|----------|--------------------|
| Circuit symbol                                                                     | Description                                                                                          | ISO size | Part No. | Type               |
|   | Without N1 solenoid coil <sup>1)</sup> ,<br>internal pilot air supply                                | 1        | 159 690  | JMN1H-5/2-D-1-C    |
|                                                                                    |                                                                                                      | 2        | 159 702  | JMN1H-5/2-D-2-C    |
|                                                                                    |                                                                                                      | 3        | 159 714  | JMN1H-5/2-D-3-C    |
|   | Without N1 solenoid coil <sup>1)</sup> ,<br>external pilot air supply                                | 1        | 159 689  | JMN1H-5/2-D-1-S-C  |
|                                                                                    |                                                                                                      | 2        | 159 701  | JMN1H-5/2-D-2-S-C  |
|                                                                                    |                                                                                                      | 3        | 159 713  | JMN1H-5/2-D-3-S-C  |
|   | Without N1 solenoid coil <sup>1)</sup> ,<br>internal pilot air supply,<br>with dominant signal at 14 | 1        | 159 691  | JMN1DH-5/2-D-1-C   |
|                                                                                    |                                                                                                      | 2        | 159 703  | JMN1DH-5/2-D-2-C   |
|                                                                                    |                                                                                                      | 3        | 159 715  | JMN1DH-5/2-D-3-C   |
|  | Without N1 solenoid coil <sup>1)</sup> ,<br>external pilot air supply,<br>with dominant signal at 14 | 1        | 159 717  | JMN1DH-5/2-D-1-S-C |
|                                                                                    |                                                                                                      | 2        | 159 719  | JMN1DH-5/2-D-2-S-C |
|                                                                                    |                                                                                                      | 3        | 160 897  | JMN1DH-5/2-D-3-S-C |

1) N1 solenoid coils → 100

# Solenoid valves MN1H, ISO 5599-1

Technical data – 5/3-way valves

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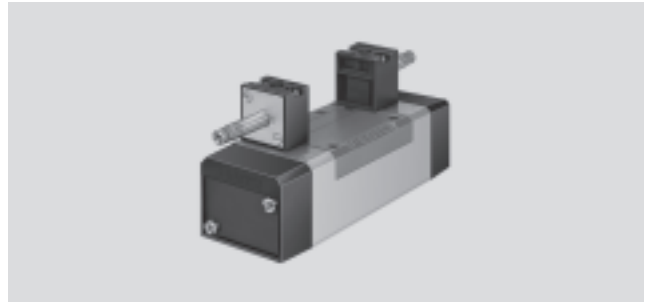
Flow rate

1200 ... 4600 l/min

Voltage

24 V DC

110, 230 V AC



| General technical data           |             |                          |      |      |      |
|----------------------------------|-------------|--------------------------|------|------|------|
| ISO size                         |             | 1                        | 2    | 3    |      |
| Valve function                   |             | 5/3-way, single solenoid |      |      |      |
| Constructional design            |             | Piston spool             |      |      |      |
| Sealing principle                |             | Soft                     |      |      |      |
| Actuation type                   |             | Electrical               |      |      |      |
| Type of reset                    |             | Mechanical spring        |      |      |      |
| Type of pilot control            |             | Piloted                  |      |      |      |
| Pilot air supply                 |             | Internal                 |      |      |      |
| Direction of flow                |             | Non-reversible           |      |      |      |
| Exhaust function                 |             | With flow control        |      |      |      |
| Manual override                  |             | Via accessory, detenting |      |      |      |
| Type of mounting                 |             | Via through-holes        |      |      |      |
| Mounting position                |             | Any                      |      |      |      |
| Nominal size                     |             | [mm]                     | 8    | 11   | 14.5 |
| Standard nominal flow rate       | Closed      | [l/min]                  | 1200 | 2300 | 4100 |
|                                  | Exhausted   | [l/min]                  |      |      | 4600 |
|                                  | Pressurised | [l/min]                  |      |      | 4000 |
| Grid dimension                   |             | [mm]                     | 43   | 56   | 71   |
| Pneumatic connection on sub-base |             |                          | G1/4 | G3/8 | G1/2 |
| Product weight                   |             | [g]                      | 650  | 940  | 1170 |
| Noise level                      |             | [dB (A)]                 | 85   |      |      |
| Certification                    |             | Germanischer Lloyd       |      |      |      |

| Operating and environmental conditions |                           |                                                               |              |  |
|----------------------------------------|---------------------------|---------------------------------------------------------------|--------------|--|
| Operating medium                       |                           | Filtered compressed air, lubricated or unlubricated<br>Vacuum |              |  |
| Operating pressure                     | Internal pilot air supply | [bar]                                                         | 3 ... 10     |  |
|                                        | External pilot air supply | [bar]                                                         | −0.9 ... +16 |  |
| Pilot pressure                         |                           | [bar]                                                         | 3 ... 10     |  |
| Ambient temperature                    |                           | [°C]                                                          | −10 ... +50  |  |
| Temperature of medium                  |                           | [°C]                                                          | −10 ... +50  |  |

| Valve response times [ms] |    |     |    |     |    |     |
|---------------------------|----|-----|----|-----|----|-----|
| ISO size                  | 1  |     | 2  |     | 3  |     |
|                           | On | Off | On | Off | On | Off |
| With N1 solenoid coil     |    |     |    |     |    |     |
| Closed                    | 20 | 44  | 33 | 82  | 33 | 82  |
| Exhausted                 | 20 | 46  | 36 | 84  | 36 | 84  |
| Pressurised               | 20 | 46  | 35 | 78  | 35 | 78  |

# Solenoid valves MN1H, ISO 5599-1

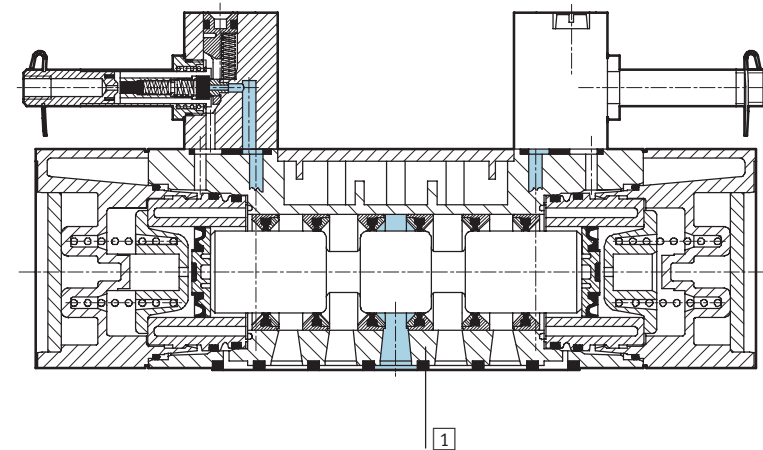
FESTO

Technical data – 5/3-way valves

| Electrical data               |              |                                              |                        |
|-------------------------------|--------------|----------------------------------------------|------------------------|
| N1 solenoid coil              |              |                                              |                        |
| Electrical connection         |              | Plug, square design to EN 175301-803, type A |                        |
| Operating voltage             | D.C. voltage | [V DC]                                       | 24                     |
|                               | A.C. voltage | [V AC]                                       | 110/230 (50 ... 60 Hz) |
| Coil characteristics          | D.C. voltage | [W]                                          | 2.5                    |
|                               | A.C. voltage | [VA]                                         | Pull: 7.5<br>Hold: 5   |
| Protection class to EN 60 529 |              | IP65                                         |                        |

## Materials

Sectional view



|                  |         |                                                            |
|------------------|---------|------------------------------------------------------------|
| 1                | Housing | Die-cast aluminium, polyacetate                            |
| –                | Seals   | Nitrile rubber                                             |
| Note on material |         | Versions free of copper, PTFE and silicone → Ordering data |

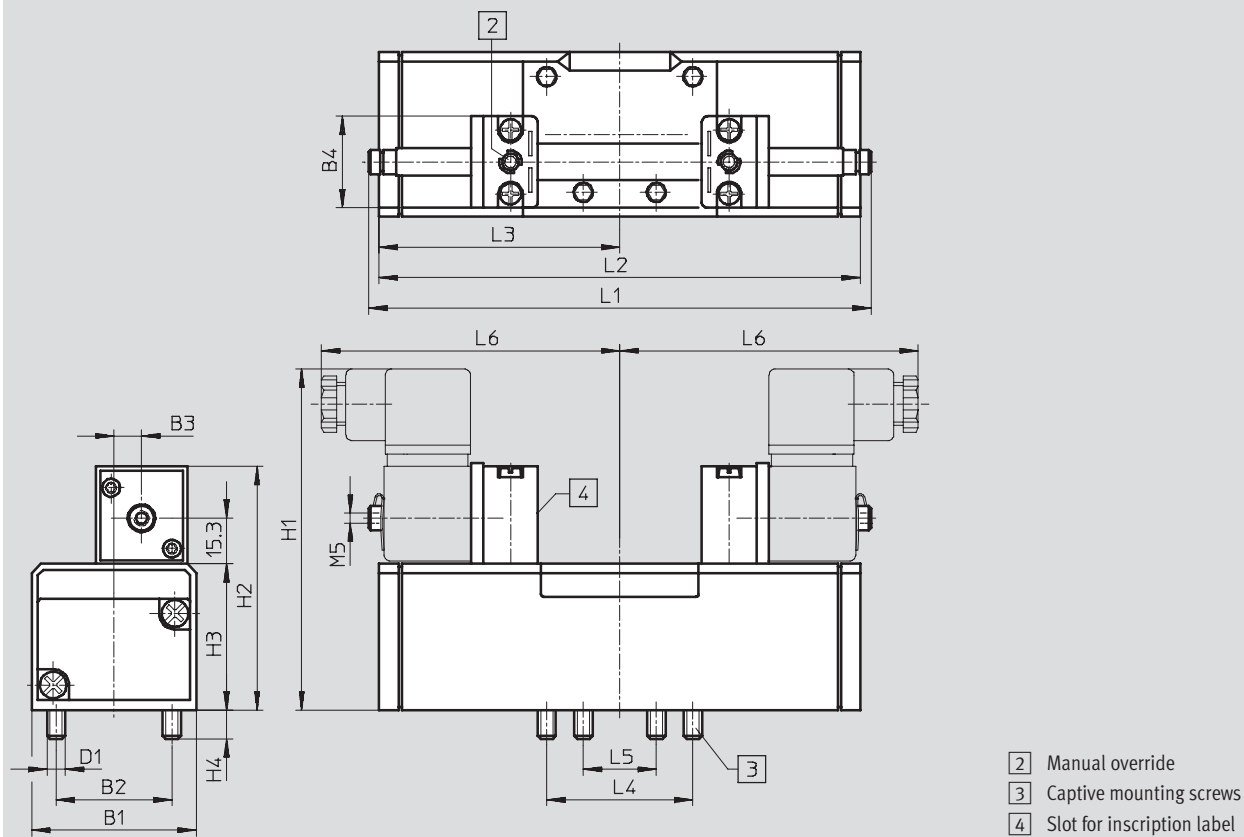
# Solenoid valves MN1H, ISO 5599-1

Technical data – 5/3-way valves

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## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



| ISO size | B1 | B2 | B3 | B4 | D1 | H1  | H2 | H3 | H4  | L1    | L2    | L3   | L4 | L5 | L6  |
|----------|----|----|----|----|----|-----|----|----|-----|-------|-------|------|----|----|-----|
| 1        | 42 | 28 | 6  | 30 | M5 | 106 | 74 | 38 | 9   | 147.3 | 108.4 | 54.2 | 36 | 18 | 89  |
| 2        | 54 | 38 | 9  | 30 | M6 | 116 | 84 | 48 | 9.5 | 165   | 158   | 79   | 48 | 24 | 98  |
| 3        | 65 | 48 | 12 | 30 | M8 | 123 | 91 | 55 | 12  | 185.7 | 184   | 92   | 64 | 32 | 109 |

# Solenoid valves MN1H, ISO 5599-1

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Technical data – 5/3-way valves

| Ordering data  |                                                                                                |          |          |                                  |
|----------------|------------------------------------------------------------------------------------------------|----------|----------|----------------------------------|
| Circuit symbol | Description                                                                                    | ISO size | Part No. | Type                             |
|                | Without N1 solenoid coil <sup>1)</sup> ,<br>normally closed,<br>internal pilot air supply      | 1        | 159 681  | MN1H-5/3G-D-1-C                  |
|                |                                                                                                |          | 184 658  | MN1H-5/3G-D-1-C-CT <sup>2)</sup> |
|                |                                                                                                | 2        | 159 693  | MN1H-5/3G-D-2-C                  |
|                |                                                                                                |          | 184 660  | MN1H-5/3G-D-2-C-CT <sup>2)</sup> |
|                |                                                                                                | 3        | 159 705  | MN1H-5/3G-D-3-C                  |
|                |                                                                                                |          | 184 662  | MN1H-5/3G-D-3-C-CT <sup>2)</sup> |
|                | Without N1 solenoid coil <sup>1)</sup> ,<br>normally closed,<br>external pilot air supply      | 1        | 159 680  | MN1H-5/3G-D-1-S-C                |
|                |                                                                                                | 2        | 159 692  | MN1H-5/3G-D-2-S-C                |
|                |                                                                                                | 3        | 159 704  | MN1H-5/3G-D-3-S-C                |
|                | Without N1 solenoid coil <sup>1)</sup> ,<br>normally exhausted,<br>internal pilot air supply   | 1        | 159 683  | MN1H-5/3E-D-1-C                  |
|                |                                                                                                |          | 184 652  | MN1H-5/3E-D-1-C-CT <sup>2)</sup> |
|                |                                                                                                | 2        | 159 695  | MN1H-5/3E-D-2-C                  |
|                |                                                                                                |          | 184 654  | MN1H-5/3E-D-2-C-CT <sup>2)</sup> |
|                |                                                                                                | 3        | 159 707  | MN1H-5/3E-D-3-C                  |
|                |                                                                                                |          | 184 656  | MN1H-5/3E-D-3-C-CT <sup>2)</sup> |
|                | Without N1 solenoid coil <sup>1)</sup> ,<br>normally exhausted,<br>external pilot air supply   | 1        | 159 682  | MN1H-5/3E-D-1-S-C                |
|                |                                                                                                | 2        | 159 694  | MN1H-5/3E-D-2-S-C                |
|                |                                                                                                | 3        | 159 706  | MN1H-5/3E-D-3-S-C                |
|                | Without N1 solenoid coil <sup>1)</sup> ,<br>normally pressurised,<br>internal pilot air supply | 1        | 159 685  | MN1H-5/3B-D-1-C                  |
|                |                                                                                                |          | 184 646  | MN1H-5/3B-D-1-C-CT <sup>2)</sup> |
|                |                                                                                                | 2        | 159 697  | MN1H-5/3B-D-2-C                  |
|                |                                                                                                |          | 184 648  | MN1H-5/3B-D-2-C-CT <sup>2)</sup> |
|                |                                                                                                | 3        | 159 709  | MN1H-5/3B-D-3-C                  |
|                |                                                                                                |          | 184 650  | MN1H-5/3B-D-3-C-CT <sup>2)</sup> |
|                | Without N1 solenoid coil <sup>1)</sup> ,<br>normally pressurised,<br>external pilot air supply | 1        | 159 684  | MN1H-5/3B-D-1-S-C                |
|                |                                                                                                | 2        | 159 696  | MN1H-5/3B-D-2-S-C                |
|                |                                                                                                | 3        | 159 708  | MN1H-5/3B-D-3-S-C                |

1) N1 solenoid coils → 100

2) Free of copper, PTFE and silicone

# Solenoid valves MFH, ISO 5599-1

Technical data – 5/2-way valves

**FESTO**

Flow rate

1200 ... 4500 l/min

Voltage

12, 24, 42, 48 V DC  
24, 42, 48, 110, 230,  
240 V AC



| General technical data           |          |                                |                 |                 |
|----------------------------------|----------|--------------------------------|-----------------|-----------------|
| ISO size                         |          | 1                              | 2               | 3               |
| Valve function                   |          | 5/2-way, single solenoid       |                 |                 |
| Constructional design            |          | Piston spool                   |                 |                 |
| Sealing principle                |          | Soft                           |                 |                 |
| Actuation type                   |          | Electrical                     |                 |                 |
| Type of reset                    |          | Mechanical or pneumatic spring |                 |                 |
| Type of pilot control            |          | Piloted                        |                 |                 |
| Pilot air supply                 |          | Internal                       |                 |                 |
| Direction of flow                |          | Non-reversible                 |                 |                 |
| Exhaust function                 |          | With flow control              |                 |                 |
| Manual override                  |          | Via accessory, detenting       |                 |                 |
| Type of mounting                 |          | Via through-holes              |                 |                 |
| Mounting position                |          | Any                            |                 |                 |
| Nominal size                     | [mm]     | 8                              | 11              | 14.5            |
| Standard nominal flow rate       | [l/min]  | 1200                           | 2300            | 4500            |
| Grid dimension                   | [mm]     | 43                             | 56              | 71              |
| Pneumatic connection on sub-base |          | G $\frac{1}{4}$                | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Product weight                   | [g]      | 390                            | 650             | 960             |
| Noise level                      | [dB (A)] | 85                             |                 |                 |
| Certification                    |          | Germanischer Lloyd             |                 |                 |

| Operating and environmental conditions |                           |                                                               |              |              |
|----------------------------------------|---------------------------|---------------------------------------------------------------|--------------|--------------|
| Type of reset                          |                           | Pneumatic                                                     |              | Mechanical   |
| Operating medium                       |                           | Filtered compressed air, lubricated or unlubricated<br>Vacuum |              |              |
| Operating pressure                     | Internal pilot air supply | [bar]                                                         | 2 ... 10     | 3 ... 10     |
|                                        | External pilot air supply | [bar]                                                         | −0.9 ... +16 | −0.9 ... +16 |
| Pilot pressure                         |                           | [bar]                                                         | 2 ... 10     | 3 ... 10     |
| Ambient temperature                    |                           | [°C]                                                          | −5 ... +40   |              |
| Temperature of medium                  |                           | [°C]                                                          | −10 ... +60  |              |

| Valve response times [ms] |           |            |           |            |           |            |
|---------------------------|-----------|------------|-----------|------------|-----------|------------|
| ISO size                  | 1         |            | 2         |            | 3         |            |
| Type of reset             | Pneumatic | Mechanical | Pneumatic | Mechanical | Pneumatic | Mechanical |
| With F solenoid coil      |           |            |           |            |           |            |
| On                        | 23        | 16         | 48        | 27         | 60        | 30         |
| Off                       | 35        | 45         | 71        | 73         | 66        | 82         |

# Solenoid valves MFH, ISO 5599-1

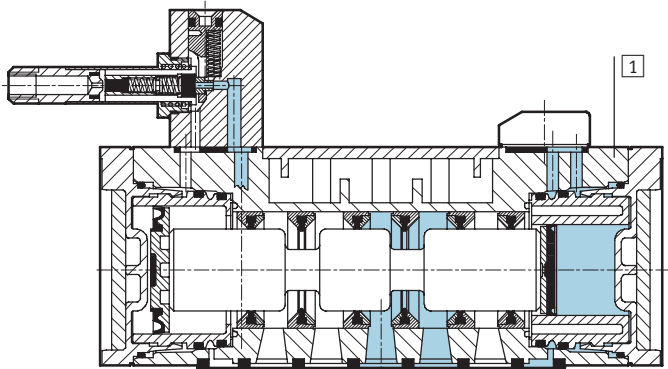
FESTO

Technical data – 5/2-way valves

| Electrical data               |              |                                         |                                          |
|-------------------------------|--------------|-----------------------------------------|------------------------------------------|
| F solenoid coil               |              |                                         |                                          |
| Electrical connection         | Design       | Plug vanes for plug sockets MSSD-F, KMF |                                          |
| Operating voltage             | D.C. voltage | [V DC]                                  | 12, 24, 42, 48                           |
|                               | A.C. voltage | [V AC]                                  | 24, 42, 48, 110, 230, 240 (50 ... 60 Hz) |
| Coil characteristics          | D.C. voltage | [W]                                     | 4.5                                      |
|                               | A.C. voltage | [VA]                                    | Pull: 7.5<br>Hold: 6                     |
| Protection class to EN 60 529 |              |                                         | IP65                                     |

## Materials

Sectional view



|   |         |                                 |
|---|---------|---------------------------------|
| 1 | Housing | Die-cast aluminium, polyacetate |
| – | Seals   | Nitrile rubber                  |

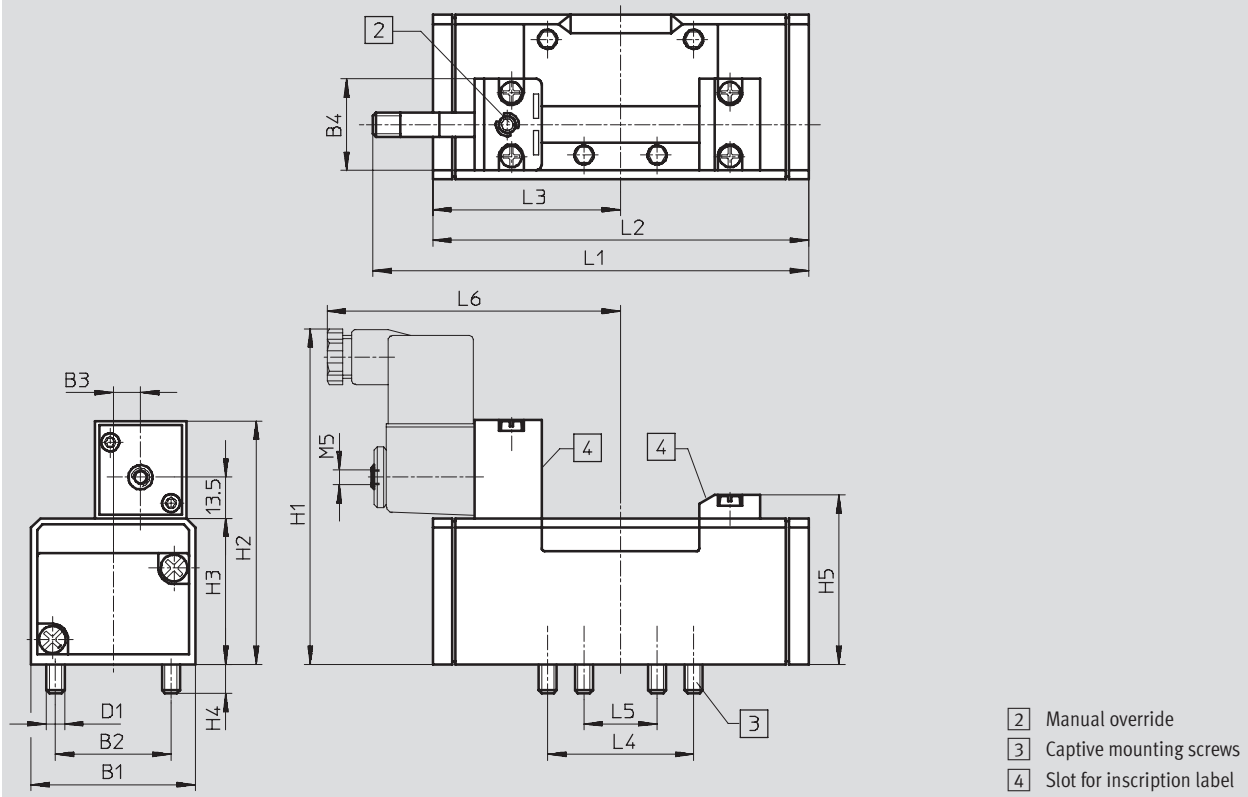
# Solenoid valves MFH, ISO 5599-1

Technical data – 5/2-way valves

**FESTO**

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

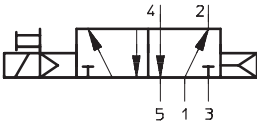
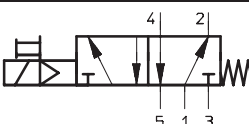


| Type           | B1 | B2 | B3 | B4 | D1 | H1  | H2   | H3 | H4  | H5   | L1    | L2    | L3   | L4 | L5 | L6  |
|----------------|----|----|----|----|----|-----|------|----|-----|------|-------|-------|------|----|----|-----|
| ISO size 1     |    |    |    |    |    |     |      |    |     |      |       |       |      |    |    |     |
| MFH-5/2-...    | 42 | 28 | 6  | 30 | M5 | 100 | 70.3 | 38 | 9   | 46.5 | 115   | 87.6  | 43.8 | 36 | 18 | 89  |
| MFH-5/2-...-FR |    |    |    |    |    |     |      |    |     |      | 125.6 | 98    |      |    |    |     |
| ISO size 2     |    |    |    |    |    |     |      |    |     |      |       |       |      |    |    |     |
| MFH-5/2-...    | 54 | 38 | 9  | 30 | M6 | 110 | 80.3 | 48 | 9.5 | 56.5 | 142   | 123.4 | 61.7 | 48 | 24 | 98  |
| MFH-5/2-...-FR |    |    |    |    |    |     |      |    |     |      | 159.4 | 140.7 |      |    |    |     |
| ISO size 3     |    |    |    |    |    |     |      |    |     |      |       |       |      |    |    |     |
| MFH-5/2-...    | 65 | 48 | 12 | 30 | M8 | 117 | 87.3 | 55 | 12  | 63.5 | 163   | 145.4 | 72.7 | 64 | 32 | 109 |
| MFH-5/2-...-FR |    |    |    |    |    |     |      |    |     |      | 182   | 164.7 |      |    |    |     |

# Solenoid valves MFH, ISO 5599-1

FESTO

Technical data – 5/2-way valves

| Ordering data                                                                     |                                                                                           |          |                |                         |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------|----------------|-------------------------|
| Circuit symbol                                                                    | Description                                                                               | ISO size | Part No.       | Type                    |
|  | Without F solenoid coil <sup>1)</sup> ,<br>pneumatic reset,<br>internal pilot air supply  | 1        | <b>150 981</b> | <b>MFH-5/2-D-1-C</b>    |
|                                                                                   |                                                                                           | 2        | <b>151 851</b> | <b>MFH-5/2-D-2-C</b>    |
|                                                                                   |                                                                                           | 3        | <b>151 870</b> | <b>MFH-5/2-D-3-C</b>    |
|                                                                                   |                                                                                           |          |                |                         |
|  | Without F solenoid coil <sup>1)</sup> ,<br>pneumatic reset,<br>external pilot air supply  | 1        | <b>152 562</b> | <b>MFH-5/2-D-1-S-C</b>  |
|                                                                                   |                                                                                           | 2        | <b>151 022</b> | <b>MFH-5/2-D-2-S-C</b>  |
|                                                                                   |                                                                                           | 3        | <b>151 032</b> | <b>MFH-5/2-D-3-S-C</b>  |
|                                                                                   |                                                                                           |          |                |                         |
|  | Without F solenoid coil <sup>1)</sup> ,<br>mechanical reset,<br>internal pilot air supply | 1        | <b>151 016</b> | <b>MFH-5/2-D-1-FR-C</b> |
|                                                                                   |                                                                                           | 2        | <b>151 709</b> | <b>MFH-5/2-D-2-FR-C</b> |
|                                                                                   |                                                                                           | 3        | <b>151 711</b> | <b>MFH-5/2-D-3-FR-C</b> |
|                                                                                   |                                                                                           |          |                |                         |

1) F solenoid coils → 100

# Solenoid valves JMFH, ISO 5599-1

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

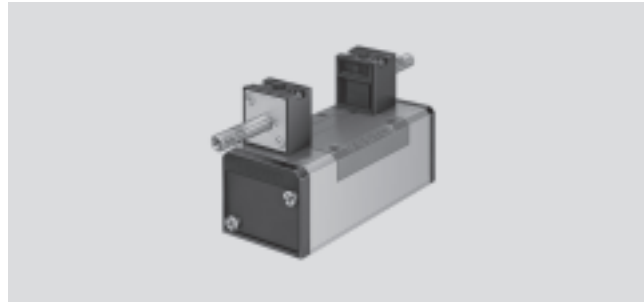
**FESTO**

Flow rate

1200 ... 4500 l/min

Voltage

12, 24, 42, 48 V DC  
24, 42, 48, 110, 230,  
240 V AC



| General technical data             |                          |                 |                 |
|------------------------------------|--------------------------|-----------------|-----------------|
| ISO size                           | 1                        | 2               | 3               |
| Valve function                     | 5/2-way, double solenoid |                 |                 |
| Constructional design              | Piston spool             |                 |                 |
| Sealing principle                  | Soft                     |                 |                 |
| Actuation type                     | Electrical               |                 |                 |
| Type of pilot control              | Piloted                  |                 |                 |
| Pilot air supply                   | Internal or external     |                 |                 |
| Direction of flow                  | Non-reversible           |                 |                 |
| Exhaust function                   | With flow control        |                 |                 |
| Manual override                    | Via accessory, detenting |                 |                 |
| Type of mounting                   | Via through-holes        |                 |                 |
| Mounting position                  | Any                      |                 |                 |
| Nominal size [mm]                  | 8                        | 11              | 14.5            |
| Standard nominal flow rate [l/min] | 1200                     | 2300            | 4500            |
| Grid dimension [mm]                | 43                       | 56              | 71              |
| Pneumatic connection on sub-base   | G $\frac{1}{4}$          | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Product weight [g]                 | 490                      | 750             | 1060            |
| Noise level [dB (A)]               | 85                       |                 |                 |
| Certification                      | Germanischer Lloyd       |                 |                 |

| Operating and environmental conditions |                           |       |                                                               |
|----------------------------------------|---------------------------|-------|---------------------------------------------------------------|
| Operating medium                       |                           |       | Filtered compressed air, lubricated or unlubricated<br>Vacuum |
| Operating pressure                     | Internal pilot air supply | [bar] | 2 ... 10                                                      |
|                                        | External pilot air supply | [bar] | −0.9 ... +16                                                  |
| Pilot pressure                         |                           | [bar] | 2 ... 10                                                      |
| Ambient temperature                    |                           | [°C]  | −5 ... +40                                                    |
| Temperature of medium                  |                           | [°C]  | −10 ... +60                                                   |

| Valve response times [ms] |    |                       |    |                       |    |                       |
|---------------------------|----|-----------------------|----|-----------------------|----|-----------------------|
| ISO size                  | 1  | 2                     | 3  |                       |    |                       |
|                           |    | Dominant signal at 14 |    | Dominant signal at 14 |    | Dominant signal at 14 |
| With F solenoid coil      |    |                       |    |                       |    |                       |
|                           | 16 | 16                    | 18 | 18                    | 18 | 18                    |

## Solenoid valves JMFH, ISO 5599-1

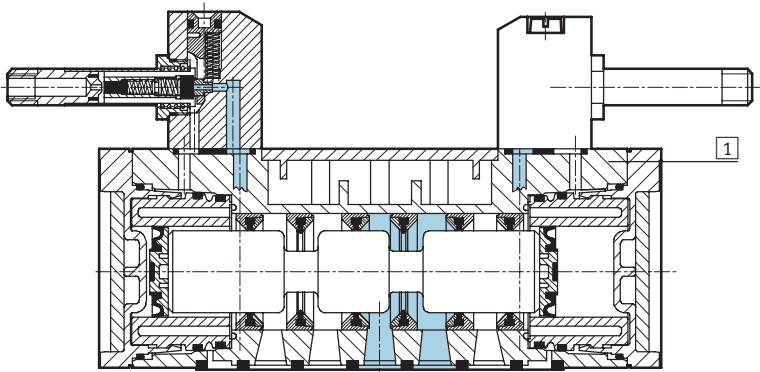
FESTO

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

| Electrical data               |              |         |                                          |
|-------------------------------|--------------|---------|------------------------------------------|
| ISO size                      |              | 1, 2, 3 |                                          |
| F solenoid coil               |              |         |                                          |
| Electrical connection         | Design       |         | Plug vanes for plug sockets MSSD-F, KMF  |
| Operating voltage             | D.C. voltage | [V DC]  | 12, 24, 42, 48                           |
|                               | A.C. voltage | [V AC]  | 24, 42, 48, 110, 230, 240 (50 ... 60 Hz) |
| Coil characteristics          | D.C. voltage | [W]     | 4.5                                      |
|                               | A.C. voltage | [VA]    | Pull: 7.5<br>Hold: 6                     |
| Protection class to EN 60 529 |              |         | IP65                                     |

### Materials

Sectional view



|   |         |                                 |
|---|---------|---------------------------------|
| 1 | Housing | Die-cast aluminium, polyacetate |
| – | Seals   | Nitrile rubber                  |

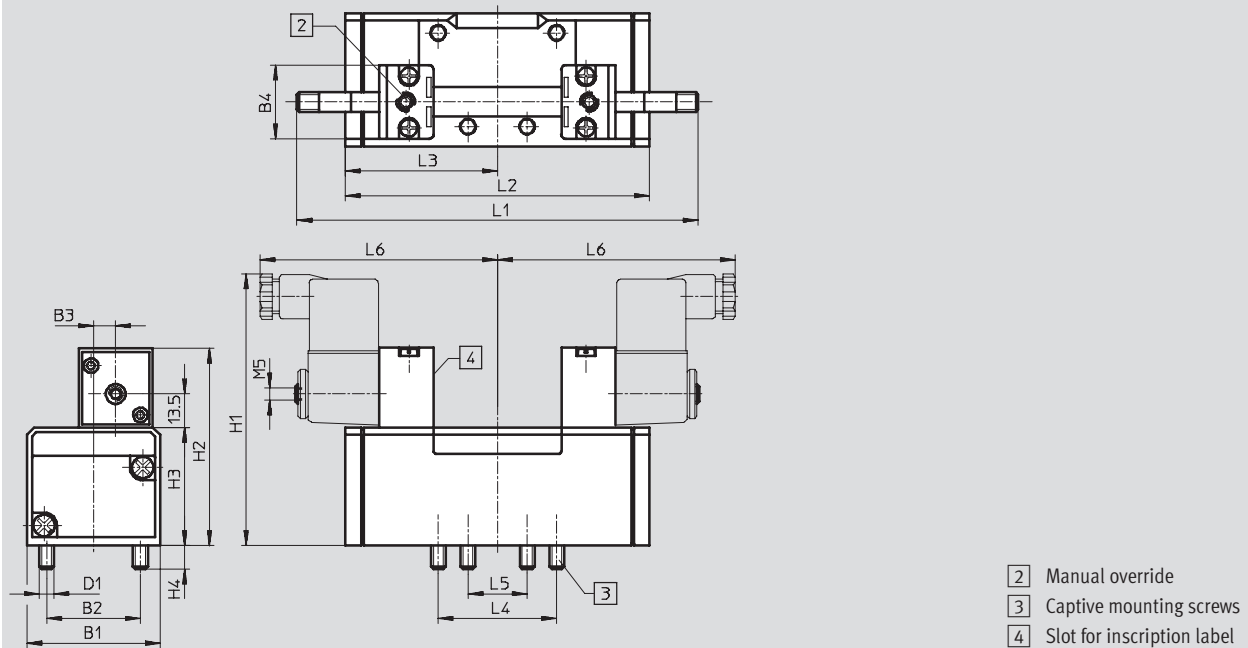
# Solenoid valves JMFH, ISO 5599-1

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

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## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



| ISO size | B1 | B2 | B3 | B4 | D1 | H1  | H2   | H3 | H4  | L1    | L2    | L3   | L4 | L5 | L6  |
|----------|----|----|----|----|----|-----|------|----|-----|-------|-------|------|----|----|-----|
| 1        | 42 | 28 | 6  | 30 | M5 | 100 | 70.3 | 38 | 9   | 142.6 | 87.6  | 43.8 | 36 | 18 | 88  |
| 2        | 54 | 38 | 9  | 30 | M6 | 110 | 80.3 | 48 | 9.5 | 160.4 | 123.4 | 61.7 | 48 | 24 | 97  |
| 3        | 65 | 48 | 12 | 30 | M8 | 117 | 87.3 | 55 | 12  | 181   | 145.4 | 72.7 | 64 | 32 | 109 |

| Ordering data  |                                                                                                     |          |          |                  |
|----------------|-----------------------------------------------------------------------------------------------------|----------|----------|------------------|
| Circuit symbol | Description                                                                                         | ISO size | Part No. | Type             |
|                | Without F solenoid coil <sup>1)</sup> ,<br>internal pilot air supply                                | 1        | 150 980  | JMFH-5/2-D-1-C   |
|                |                                                                                                     | 2        | 151 852  | JMFH-5/2-D-2-C   |
|                |                                                                                                     | 3        | 151 871  | JMFH-5/2-D-3-C   |
|                | Without F solenoid coil <sup>1)</sup> ,<br>external pilot air supply                                | 1        | 152 563  | JMFH-5/2-D-1-S-C |
|                |                                                                                                     | 2        | 151 023  | JMFH-5/2-D-2-S-C |
|                |                                                                                                     | 3        | 151 033  | JMFH-5/2-D-3-S-C |
|                | Without F solenoid coil <sup>1)</sup> ,<br>internal pilot air supply,<br>with dominant signal at 14 | 1        | 151 019  | JMFDH-5/2-D-1-C  |
|                |                                                                                                     | 2        | 151 853  | JMFDH-5/2-D-2-C  |
|                |                                                                                                     | 3        | 151 872  | JMFDH-5/2-D-3-C  |

1) F solenoid coils → 100

# Solenoid valves MFH, ISO 5599-1

Technical data – 5/3-way valves

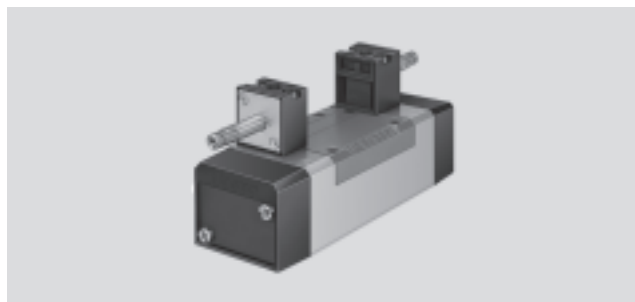
**FESTO**

Flow rate

1200 ... 4600 l/min

Voltage

12, 24, 42, 48 V DC  
24, 42, 48, 110, 230,  
240 V AC



| General technical data           |             |          |                          |      |      |
|----------------------------------|-------------|----------|--------------------------|------|------|
| ISO size                         |             |          | 1                        | 2    | 3    |
| Valve function                   |             |          | 5/3-way, single solenoid |      |      |
| Constructional design            |             |          | Piston spool             |      |      |
| Sealing principle                |             |          | Soft                     |      |      |
| Actuation type                   |             |          | Electrical               |      |      |
| Type of reset                    |             |          | Mechanical spring        |      |      |
| Type of pilot control            |             |          | Piloted                  |      |      |
| Pilot air supply                 |             |          | Internal or external     |      |      |
| Direction of flow                |             |          | Non-reversible           |      |      |
| Exhaust function                 |             |          | With flow control        |      |      |
| Manual override                  |             |          | Via accessory, detenting |      |      |
| Type of mounting                 |             |          | Via through-holes        |      |      |
| Mounting position                |             |          | Any                      |      |      |
| Nominal size                     |             | [mm]     | 8                        | 11   | 14.5 |
| Standard nominal flow rate       | Closed      | [l/min]  | 1200                     | 2300 | 4100 |
|                                  | Exhausted   | [l/min]  |                          |      | 4600 |
|                                  | Pressurised | [l/min]  |                          |      | 4000 |
| Grid dimension                   |             | [mm]     | 43                       | 56   | 71   |
| Pneumatic connection on sub-base |             |          | G¼                       | G⅜   | G½   |
| Product weight                   |             | [g]      | 520                      | 820  | 1040 |
| Noise level                      |             | [dB (A)] | 85                       |      |      |
| Certification                    |             |          | Germanischer Lloyd       |      |      |

| Operating and environmental conditions |                           |                                                               |              |  |
|----------------------------------------|---------------------------|---------------------------------------------------------------|--------------|--|
| Operating medium                       |                           | Filtered compressed air, lubricated or unlubricated<br>Vacuum |              |  |
| Operating pressure                     | Internal pilot air supply | [bar]                                                         | 3 ... 10     |  |
|                                        | External pilot air supply | [bar]                                                         | -0.9 ... +16 |  |
| Pilot pressure                         |                           | [bar]                                                         | 3 ... 10     |  |
| Ambient temperature                    |                           | [°C]                                                          | -5 ... +40   |  |
| Temperature of medium                  |                           | [°C]                                                          | -10 ... +60  |  |

| Valve response times [ms] |    |     |    |     |    |     |
|---------------------------|----|-----|----|-----|----|-----|
| ISO size                  | 1  |     | 2  |     | 3  |     |
|                           | On | Off | On | Off | On | Off |
| With F solenoid coil      |    |     |    |     |    |     |
| Closed                    | 18 | 36  | 33 | 63  | 36 | 77  |
| Exhausted                 | 18 | 36  | 35 | 67  | 37 | 78  |
| Pressurised               | 18 | 36  | 35 | 69  | 36 | 75  |

# Solenoid valves MFH, ISO 5599-1

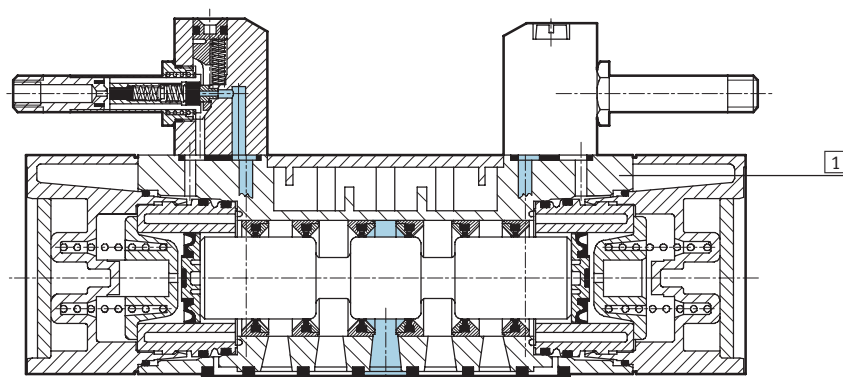
Technical data – 5/3-way valves

**FESTO**

| Electrical data               |              |                                         |                                          |
|-------------------------------|--------------|-----------------------------------------|------------------------------------------|
| F solenoid coil               |              |                                         |                                          |
| Electrical connection         | Design       | Plug vanes for plug sockets MSSD-F, KMF |                                          |
| Operating voltage             | D.C. voltage | [V DC]                                  | 12, 24, 42, 48                           |
|                               | A.C. voltage | [V AC]                                  | 24, 42, 48, 110, 230, 240 (50 ... 60 Hz) |
| Coil characteristics          | D.C. voltage | [W]                                     | 4.5                                      |
|                               | A.C. voltage | [VA]                                    | Pull: 7.5<br>Hold: 6                     |
| Protection class to EN 60 529 |              |                                         | IP65                                     |

## Materials

Sectional view



|   |         |                                 |
|---|---------|---------------------------------|
|   |         |                                 |
| 1 | Housing | Die-cast aluminium, polyacetate |
| – | Seals   | Nitrile rubber                  |

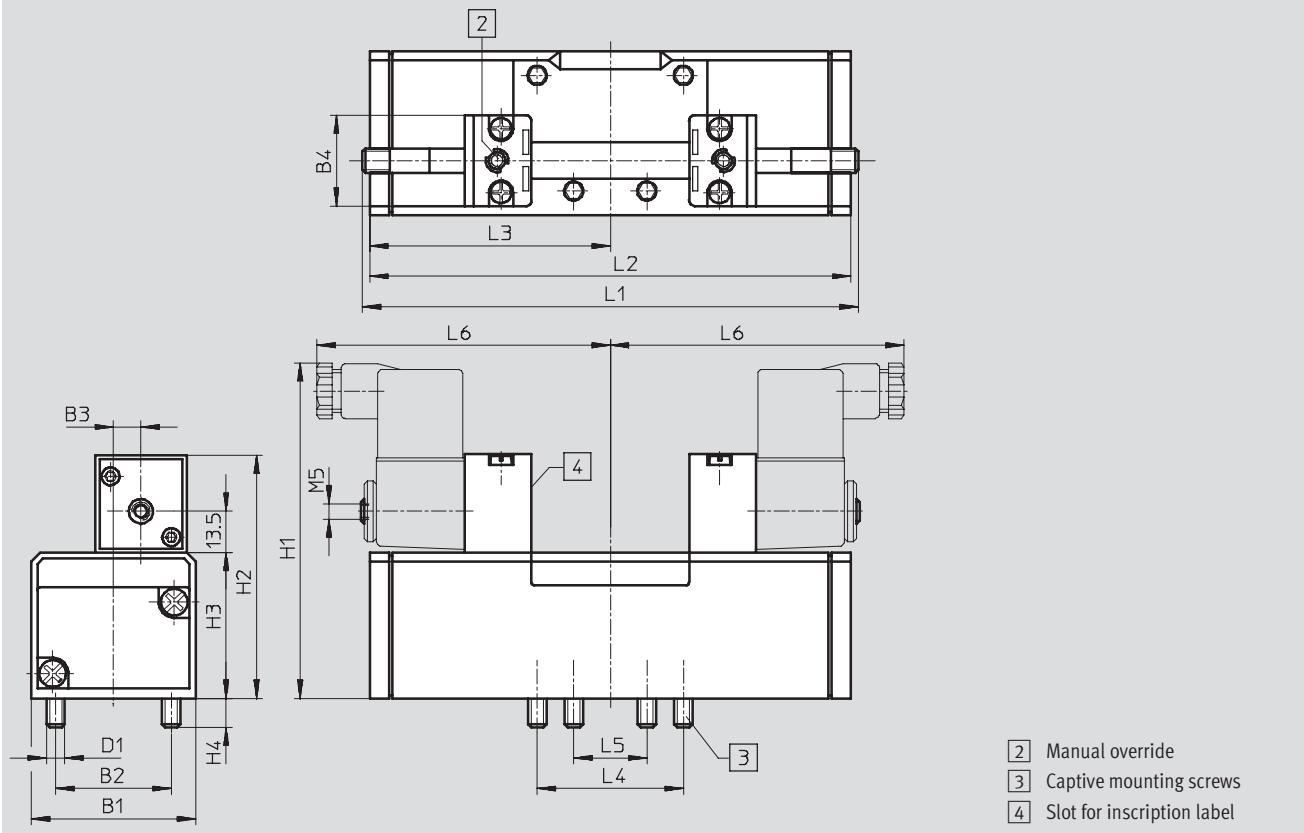
# Solenoid valves MFH, ISO 5599-1

Technical data – 5/3-way valves

**FESTO**

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



| ISO size | B1 | B2 | B3 | B4 | D1 | H1  | H2   | H3 | H4  | L1    | L2    | L3   | L4 | L5 | L6  |
|----------|----|----|----|----|----|-----|------|----|-----|-------|-------|------|----|----|-----|
| 1        | 42 | 28 | 6  | 30 | M5 | 100 | 70.3 | 38 | 9   | 142.6 | 108.4 | 54.2 | 36 | 18 | 89  |
| 2        | 54 | 38 | 9  | 30 | M6 | 110 | 80.3 | 48 | 9.5 | 160   | 158   | 79   | 48 | 24 | 98  |
| 3        | 65 | 48 | 12 | 30 | M8 | 117 | 87.3 | 55 | 12  | 181   | 184   | 92   | 64 | 32 | 109 |

# Solenoid valves MFH, ISO 5599-1

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Technical data – 5/3-way valves

| Ordering data  |                                                                                               |          |          |                  |
|----------------|-----------------------------------------------------------------------------------------------|----------|----------|------------------|
| Circuit symbol | Description                                                                                   | ISO size | Part No. | Type             |
|                | Without F solenoid coil <sup>1)</sup> ,<br>normally closed,<br>internal pilot air supply      | 1        | 150 982  | MFH-5/3G-D-1-C   |
|                |                                                                                               | 2        | 151 854  | MFH-5/3G-D-2-C   |
|                |                                                                                               | 3        | 151 873  | MFH-5/3G-D-3-C   |
|                | Without F solenoid coil <sup>1)</sup> ,<br>normally closed,<br>external pilot air supply      | 1        | 152 564  | MFH-5/3G-D-1-S-C |
|                |                                                                                               | 2        | 151 024  | MFH-5/3G-D-2-S-C |
|                |                                                                                               | 3        | 151 034  | MFH-5/3G-D-3-S-C |
|                | Without F solenoid coil <sup>1)</sup> ,<br>normally exhausted,<br>internal pilot air supply   | 1        | 150 983  | MFH-5/3E-D-1-C   |
|                |                                                                                               | 2        | 151 855  | MFH-5/3E-D-2-C   |
|                |                                                                                               | 3        | 151 874  | MFH-5/3E-D-3-C   |
|                | Without F solenoid coil <sup>1)</sup> ,<br>normally exhausted,<br>external pilot air supply   | 1        | 152 565  | MFH-5/3E-D-1-S-C |
|                |                                                                                               | 2        | 151 025  | MFH-5/3E-D-2-S-C |
|                |                                                                                               | 3        | 151 035  | MFH-5/3E-D-3-S-C |
|                | Without F solenoid coil <sup>1)</sup> ,<br>normally pressurised,<br>internal pilot air supply | 1        | 150 984  | MFH-5/3B-D-1-C   |
|                |                                                                                               | 2        | 151 856  | MFH-5/3B-D-2-C   |
|                |                                                                                               | 3        | 151 875  | MFH-5/3B-D-3-C   |
|                | Without F solenoid coil <sup>1)</sup> ,<br>normally pressurised,<br>external pilot air supply | 1        | 152 566  | MFH-5/3B-D-1-S-C |
|                |                                                                                               | 2        | 151 026  | MFH-5/3B-D-2-S-C |
|                |                                                                                               | 3        | 151 036  | MFH-5/3B-D-3-S-C |

1) F solenoid coils → 100

# Solenoid valves MEBH, ISO 5599-1

FESTO

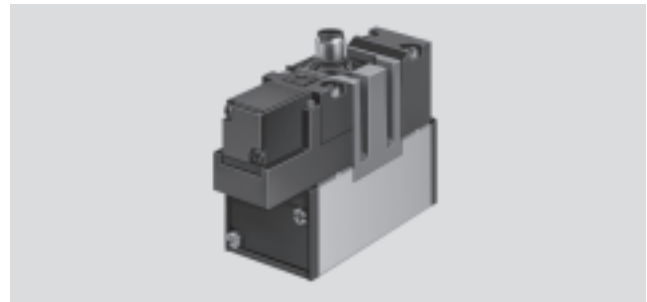
Technical data – 5/2-way valves

Flow rate

1200 ... 4500 l/min

Voltage

24 V DC



| General technical data           |          |                                |                 |                 |
|----------------------------------|----------|--------------------------------|-----------------|-----------------|
| ISO size                         |          | 1                              | 2               | 3               |
| Valve function                   |          | 5/2-way, single solenoid       |                 |                 |
| Constructional design            |          | Piston spool                   |                 |                 |
| Sealing principle                |          | Soft                           |                 |                 |
| Actuation type                   |          | Electrical                     |                 |                 |
| Type of reset                    |          | Mechanical or pneumatic spring |                 |                 |
| Type of pilot control            |          | Piloted                        |                 |                 |
| Pilot air supply                 |          | Internal                       |                 |                 |
| Direction of flow                |          | Non-reversible                 |                 |                 |
| Exhaust function                 |          | With flow control              |                 |                 |
| Manual override                  |          | Via accessory, detenting       |                 |                 |
| Type of mounting                 |          | Via through-holes              |                 |                 |
| Mounting position                |          | Any                            |                 |                 |
| Nominal size                     | [mm]     | 8                              | 11              | 14.5            |
| Standard nominal flow rate       | [l/min]  | 1200                           | 2300            | 4500            |
| Grid dimension                   | [mm]     | 43                             | 56              | 71              |
| Pneumatic connection on sub-base |          | G $\frac{1}{4}$                | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Product weight                   | [g]      | 550                            | 700             | 1000            |
| Noise level                      | [dB (A)] | 85                             |                 |                 |

| Operating and environmental conditions |                           |                                                               |              |              |
|----------------------------------------|---------------------------|---------------------------------------------------------------|--------------|--------------|
| Type of reset                          |                           | Pneumatic                                                     |              | Mechanical   |
| Operating medium                       |                           | Filtered compressed air, lubricated or unlubricated<br>Vacuum |              |              |
| Operating pressure                     | Internal pilot air supply | [bar]                                                         | 2 ... 10     | 3 ... 10     |
|                                        | External pilot air supply | [bar]                                                         | –0.9 ... +16 | –0.9 ... +16 |
| Pilot pressure                         |                           | [bar]                                                         | 2 ... 10     | 3 ... 10     |
| Ambient temperature                    |                           | [°C]                                                          | –5 ... +50   |              |
| Temperature of medium                  |                           | [°C]                                                          | –5 ... +50   |              |

| Valve response times [ms] |           |            |           |            |           |            |
|---------------------------|-----------|------------|-----------|------------|-----------|------------|
| ISO size                  | 1         |            | 2         |            | 3         |            |
| Type of reset             | Pneumatic | Mechanical | Pneumatic | Mechanical | Pneumatic | Mechanical |
| With EB solenoid coil     |           |            |           |            |           |            |
| On                        | 20        | 15         | 50        | 33         | 59        | 28         |
| Off                       | 33        | 50         | 85        | 103        | 87        | 109        |

## Solenoid valves MEBH, ISO 5599-1

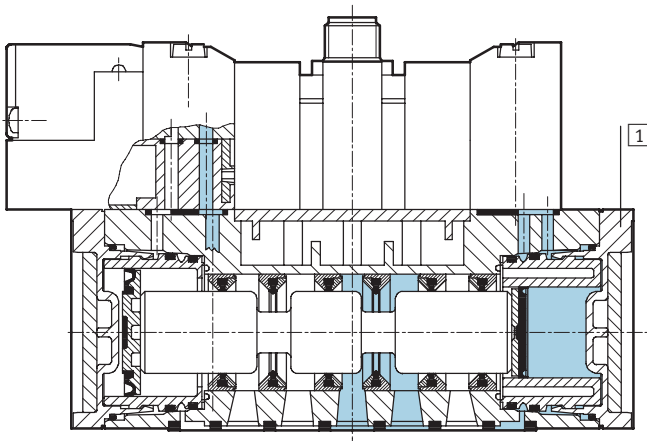
**FESTO**

Technical data – 5/2-way valves

| Electrical data               |              |        |                                   |
|-------------------------------|--------------|--------|-----------------------------------|
| EB solenoid coil              |              |        |                                   |
| Electrical connection         |              |        | Central plug, round design, M12x1 |
| Operating voltage             | D.C. voltage | [V DC] | 24                                |
| Coil characteristics          | D.C. voltage | [W]    | 2.5                               |
| Protection class to EN 60 529 |              |        | IP65                              |

### Materials

Sectional view



|   |         |                                 |
|---|---------|---------------------------------|
| 1 | Housing | Die-cast aluminium, polyacetate |
| - | Seals   | Nitrile rubber                  |

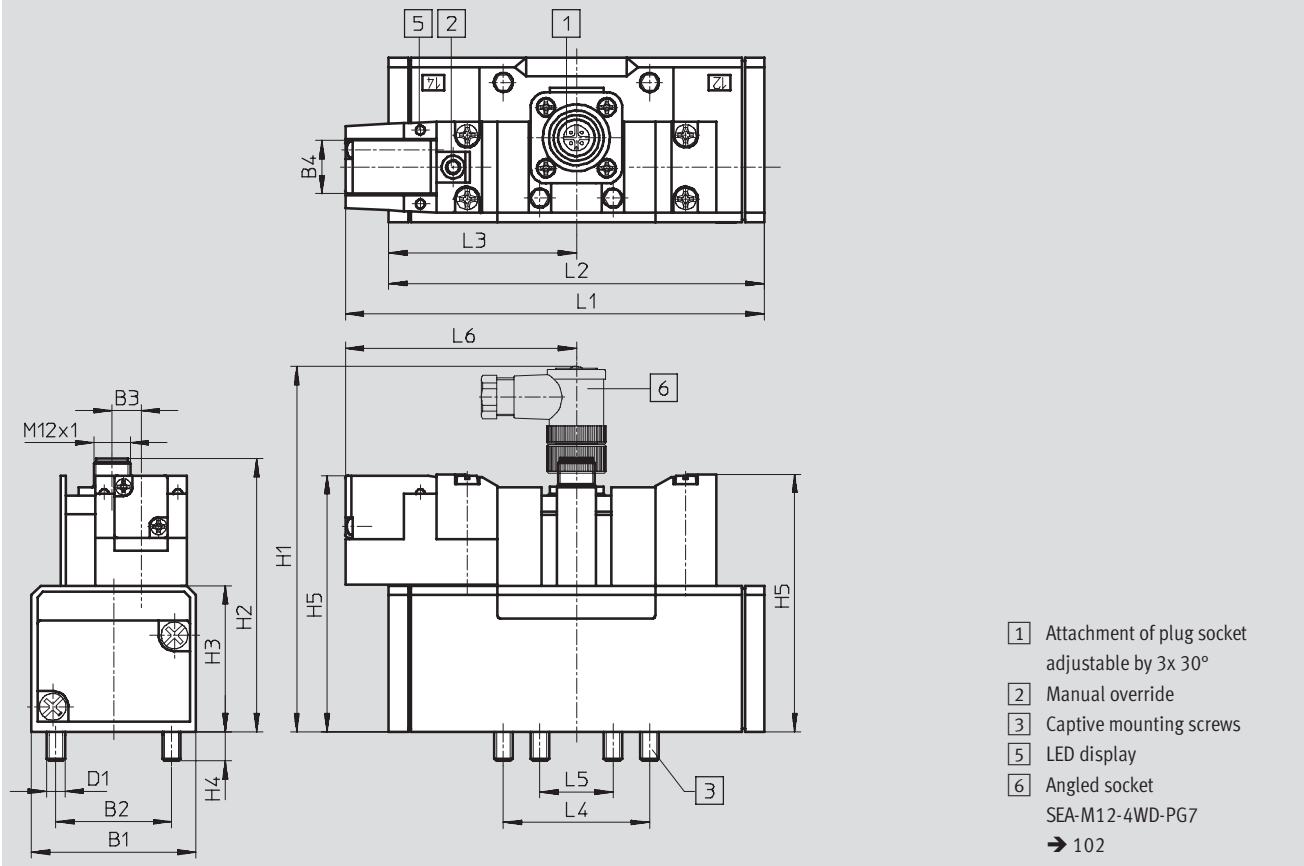
# Solenoid valves MEBH, ISO 5599-1

Technical data – 5/2-way valves

**FESTO**

## Dimensions

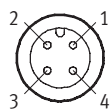
Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



| Type              | B1 | B2 | B3 | B4   | D1 | H1  | H2   | H3 | H4  | H5   | L1    | L2    | L3   | L4 | L5 | L6   |
|-------------------|----|----|----|------|----|-----|------|----|-----|------|-------|-------|------|----|----|------|
| <b>ISO size 1</b> |    |    |    |      |    |     |      |    |     |      |       |       |      |    |    |      |
| MEBH-5/2-...      | 42 | 28 | 6  | 17.5 | M5 | 110 | 80.3 | 38 | 9   | 74.7 | 110.8 | 87.6  | 43.8 | 36 | 18 | 67   |
| MEBH-5/2-...-FR   |    |    |    |      |    |     |      |    |     |      | 121.3 | 98    |      |    |    |      |
| <b>ISO size 2</b> |    |    |    |      |    |     |      |    |     |      |       |       |      |    |    |      |
| MEBH-5/2-...      | 54 | 38 | 9  | 17.5 | M6 | 120 | 90.1 | 48 | 9.5 | 84.2 | 137.6 | 123.4 | 61.7 | 48 | 24 | 75.9 |
| MEBH-5/2-...-FR   |    |    |    |      |    |     |      |    |     |      | 154.9 | 140.7 |      |    |    |      |
| <b>ISO size 3</b> |    |    |    |      |    |     |      |    |     |      |       |       |      |    |    |      |
| MEBH-5/2-...      | 65 | 48 | 12 | 17.5 | M8 | 130 | 97.8 | 55 | 12  | 93.1 | 158.7 | 145.4 | 72.7 | 64 | 32 | 86   |
| MEBH-5/2-...-FR   |    |    |    |      |    |     |      |    |     |      | 178   | 164.7 |      |    |    |      |

## M12 central plug – Terminal allocation

Mono connection

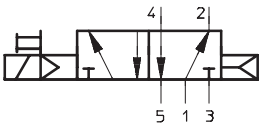
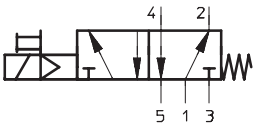


- 1 Unused
- 2 Unused
- 3 com (-)
- 4 Signal (+) Solenoid 14

# Solenoid valves MEBH, ISO 5599-1

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Technical data – 5/2-way valves

| Ordering data                                                                     |                                                                                                |         |          |          |                       |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------|----------|----------|-----------------------|
| Circuit symbol                                                                    | Description                                                                                    | Voltage | ISO size | Part No. | Type                  |
|  | With EB solenoid coil,<br>with central plug,<br>pneumatic reset,<br>internal pilot air supply  | 24 V DC | 1        | 184 493  | MEBH-5/2-D-1-ZSR-C    |
|                                                                                   |                                                                                                |         | 2        | 184 500  | MEBH-5/2-D-2-ZSR-C    |
|                                                                                   |                                                                                                |         | 3        | 184 507  | MEBH-5/2-D-3-ZSR-C    |
|  | With EB solenoid coil,<br>with central plug,<br>mechanical reset,<br>internal pilot air supply | 24 V DC | 1        | 184 494  | MEBH-5/2-D-1-ZSR-FR-C |
|                                                                                   |                                                                                                |         | 2        | 184 501  | MEBH-5/2-D-2-ZSR-FR-C |
|                                                                                   |                                                                                                |         | 3        | 184 508  | MEBH-5/2-D-3-ZSR-FR-C |

# Solenoid valves JMEBH, ISO 5599-1

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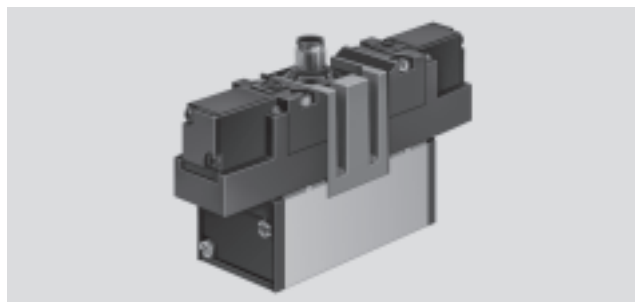
Technical data – 5/2-way valves, double solenoid

Flow rate

1200 ... 4500 l/min

Voltage

24 V DC



| General technical data           |          |                          |                 |                 |
|----------------------------------|----------|--------------------------|-----------------|-----------------|
| ISO size                         |          | 1                        | 2               | 3               |
| Valve function                   |          | 5/2-way, double solenoid |                 |                 |
| Constructional design            |          | Piston spool             |                 |                 |
| Sealing principle                |          | Soft                     |                 |                 |
| Actuation type                   |          | Electrical               |                 |                 |
| Type of pilot control            |          | Piloted                  |                 |                 |
| Pilot air supply                 |          | Internal or external     |                 |                 |
| Direction of flow                |          | Non-reversible           |                 |                 |
| Exhaust function                 |          | With flow control        |                 |                 |
| Manual override                  |          | Via accessory, detenting |                 |                 |
| Type of mounting                 |          | Via through-holes        |                 |                 |
| Mounting position                |          | Any                      |                 |                 |
| Nominal size                     | [mm]     | 8                        | 11              | 14.5            |
| Standard nominal flow rate       | [l/min]  | 1200                     | 2300            | 4500            |
| Grid dimension                   | [mm]     | 43                       | 56              | 71              |
| Pneumatic connection on sub-base |          | G $\frac{1}{4}$          | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Product weight                   | [g]      | 600                      | 770             | 1080            |
| Noise level                      | [dB (A)] | 85                       |                 |                 |

| Operating and environmental conditions |                           |                                                               |              |  |
|----------------------------------------|---------------------------|---------------------------------------------------------------|--------------|--|
| Operating medium                       |                           | Filtered compressed air, lubricated or unlubricated<br>Vacuum |              |  |
| Operating pressure                     | Internal pilot air supply | [bar]                                                         | 2 ... 10     |  |
|                                        | External pilot air supply | [bar]                                                         | -0.9 ... +16 |  |
| Pilot pressure                         |                           | [bar]                                                         | 2 ... 10     |  |
| Ambient temperature                    |                           | [°C]                                                          | -5 ... +50   |  |
| Temperature of medium                  |                           | [°C]                                                          | -5 ... +50   |  |

| Valve response times [ms] |    |                       |    |                       |    |                       |
|---------------------------|----|-----------------------|----|-----------------------|----|-----------------------|
| ISO size                  | 1  |                       | 2  |                       | 3  |                       |
|                           |    | Dominant signal at 14 |    | Dominant signal at 14 |    | Dominant signal at 14 |
| With EB solenoid coil     |    |                       |    |                       |    |                       |
| Changeover                | 12 | 13                    | 15 | 23                    | 16 | 20                    |

# Solenoid valves JMEBH, ISO 5599-1

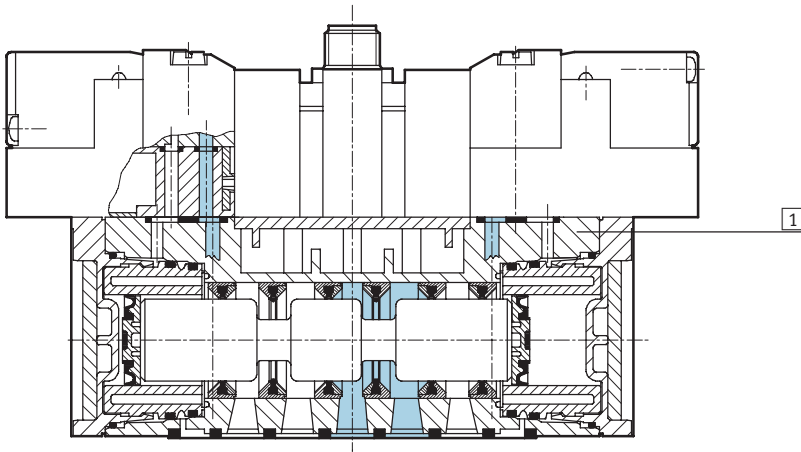
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Technical data – 5/2-way valves, double solenoid

| Electrical data               |              |                                   |      |
|-------------------------------|--------------|-----------------------------------|------|
| EB solenoid coil              |              |                                   |      |
| Electrical connection         | Design       | Central plug, round design, M12x1 |      |
| Operating voltage             | D.C. voltage | [V DC]                            | 24   |
| Coil characteristics          | D.C. voltage | [W]                               | 2.5  |
| Protection class to EN 60 529 |              |                                   | IP65 |

## Materials

Sectional view



|   |         |                                 |
|---|---------|---------------------------------|
| 1 | Housing | Die-cast aluminium, polyacetate |
| – | Seals   | Nitrile rubber                  |

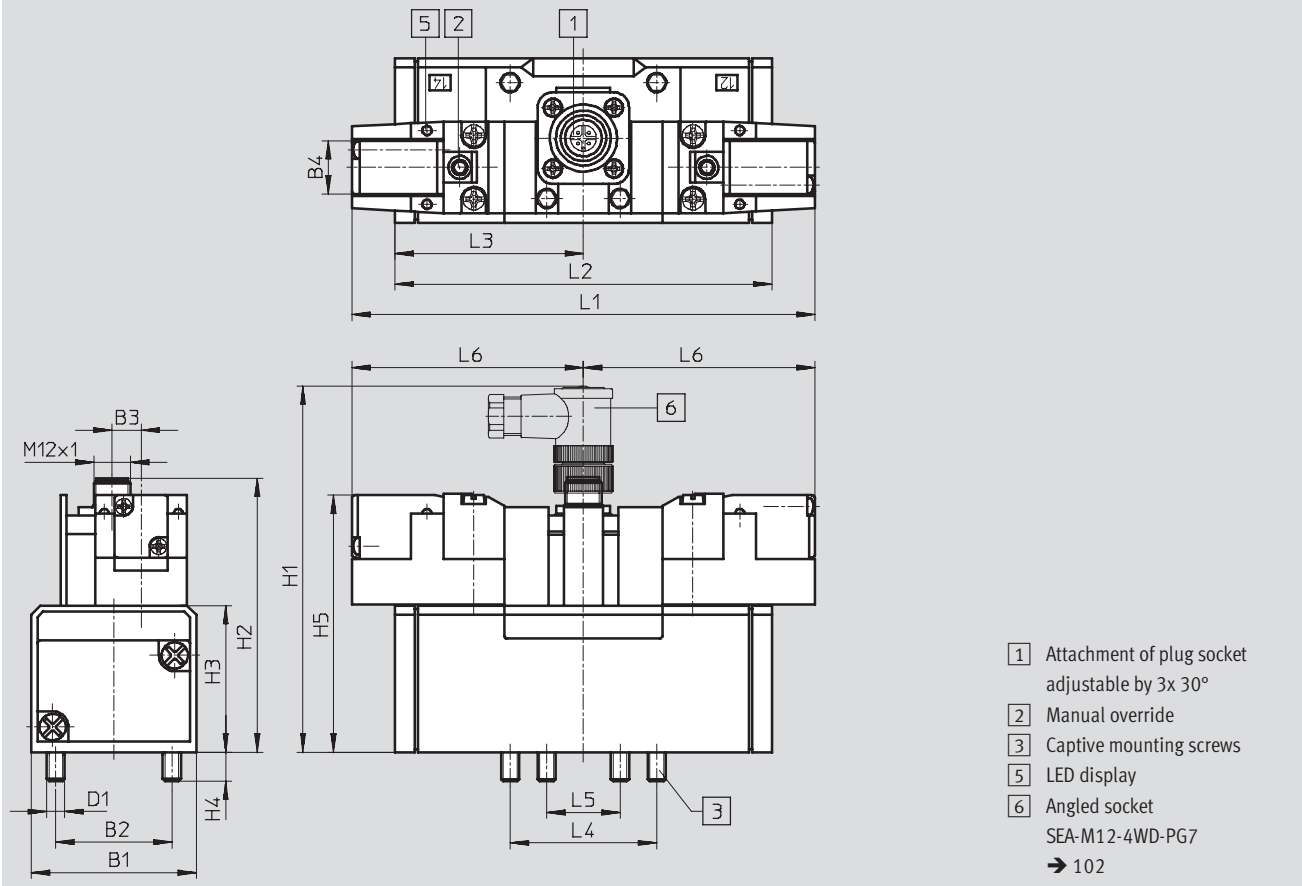
# Solenoid valves JMEBH, ISO 5599-1

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

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## Dimensions

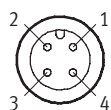
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| ISO size | B1 | B2 | B3 | B4   | D1 | H1  | H2   | H3 | H4  | H5   | L1    | L2    | L3   | L4 | L5 | L6   |
|----------|----|----|----|------|----|-----|------|----|-----|------|-------|-------|------|----|----|------|
| 1        | 42 | 28 | 6  | 17.5 | M5 | 110 | 80.3 | 38 | 9   | 74.7 | 134   | 87.6  | 43.8 | 36 | 18 | 67   |
| 2        | 54 | 38 | 9  | 17.5 | M6 | 120 | 90.1 | 48 | 9.5 | 84.2 | 151.8 | 123.4 | 61.7 | 48 | 24 | 75.9 |
| 3        | 65 | 48 | 12 | 17.5 | M8 | 130 | 97.8 | 55 | 12  | 93.1 | 171.9 | 145.4 | 72.7 | 64 | 32 | 86   |

## M12 central plug – Terminal allocation

Duo connection

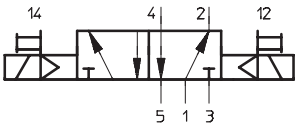
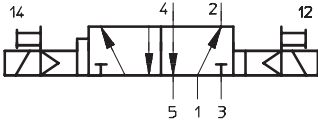


- 1 Unused
- 2 Signal (+) Solenoid 12
- 3 com (-)
- 4 Signal (+) Solenoid 14

# Solenoid valves JMEBH, ISO 5599-1

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

| Ordering data                                                                     |                                                                                                          |         |          |          |                      |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------|----------|----------|----------------------|
| Circuit symbol                                                                    | Solenoid coil                                                                                            | Voltage | ISO size | Part No. | Type                 |
|  | With EB solenoid coil,<br>with central plug,<br>internal pilot air supply                                | 24 V DC | 1        | 184 495  | JMEBH-5/2-D-1-ZSR-C  |
|                                                                                   |                                                                                                          |         | 2        | 184 502  | JMEBH-5/2-D-2-ZSR-C  |
|                                                                                   |                                                                                                          |         | 3        | 184 509  | JMEBH-5/2-D-3-ZSR-C  |
|  | With EB solenoid coil,<br>with central plug,<br>internal pilot air supply,<br>with dominant signal at 14 | 24 V DC | 1        | 184 496  | JMEBDH-5/2-D-1-ZSR-C |
|                                                                                   |                                                                                                          |         | 2        | 184 503  | JMEBDH-5/2-D-2-ZSR-C |
|                                                                                   |                                                                                                          |         | 3        | 184 510  | JMEBDH-5/2-D-3-ZSR-C |

# Solenoid valves MEBH, ISO 5599-1

Technical data – 5/3-way valves

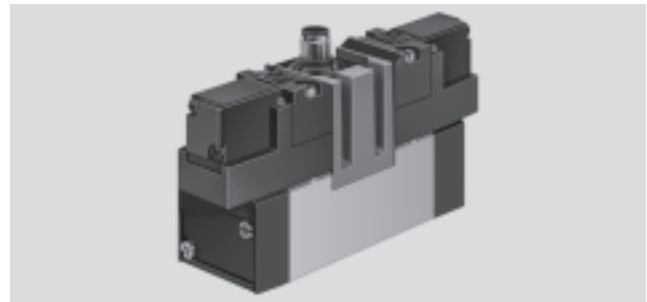
**FESTO**

Flow rate

1200 ... 4600 l/min

Voltage

24 V DC



| General technical data           |             |         |                          |      |      |      |
|----------------------------------|-------------|---------|--------------------------|------|------|------|
| ISO size                         |             |         | 1                        | 2    | 3    |      |
| Valve function                   |             |         | 5/3-way, single solenoid |      |      |      |
| Constructional design            |             |         | Piston spool             |      |      |      |
| Sealing principle                |             |         | Soft                     |      |      |      |
| Actuation type                   |             |         | Electrical               |      |      |      |
| Type of reset                    |             |         | Mechanical spring        |      |      |      |
| Type of pilot control            |             |         | Piloted                  |      |      |      |
| Pilot air supply                 |             |         | Internal                 |      |      |      |
| Direction of flow                |             |         | Non-reversible           |      |      |      |
| Exhaust function                 |             |         | With flow control        |      |      |      |
| Manual override                  |             |         | Via accessory, detenting |      |      |      |
| Type of mounting                 |             |         | Via through-holes        |      |      |      |
| Mounting position                |             |         | Any                      |      |      |      |
| Nominal size                     |             |         | [mm]                     | 8    | 11   | 14.5 |
| Standard nominal flow rate       | Closed      | [l/min] | 1200                     | 2300 | 4100 |      |
|                                  | Exhausted   | [l/min] |                          |      | 4600 |      |
|                                  | Pressurised | [l/min] |                          |      | 4000 |      |
| Grid dimension                   |             |         | [mm]                     | 43   | 56   | 71   |
| Pneumatic connection on sub-base |             |         |                          | G¼   | G⅜   | G½   |
| Product weight                   |             |         | [g]                      | 630  | 800  | 1120 |
| Noise level                      |             |         | [dB (A)]                 | 85   |      |      |

| Operating and environmental conditions |                           |                                                               |              |  |
|----------------------------------------|---------------------------|---------------------------------------------------------------|--------------|--|
| Operating medium                       |                           | Filtered compressed air, lubricated or unlubricated<br>Vacuum |              |  |
| Operating pressure                     | Internal pilot air supply | [bar]                                                         | 3 ... 10     |  |
|                                        | External pilot air supply | [bar]                                                         | -0.9 ... +16 |  |
| Pilot pressure                         |                           | [bar]                                                         | 3 ... 10     |  |
| Ambient temperature                    |                           | [°C]                                                          | -5 ... +50   |  |
| Temperature of medium                  |                           | [°C]                                                          | -5 ... +50   |  |

| Valve response times [ms] |    |     |    |     |    |     |
|---------------------------|----|-----|----|-----|----|-----|
| ISO size                  | 1  |     | 2  |     | 3  |     |
|                           | On | Off | On | Off | On | Off |
| With EB solenoid coil     |    |     |    |     |    |     |
|                           | 19 | 68  | 30 | 106 | 38 | 130 |

# Solenoid valves MEBH, ISO 5599-1

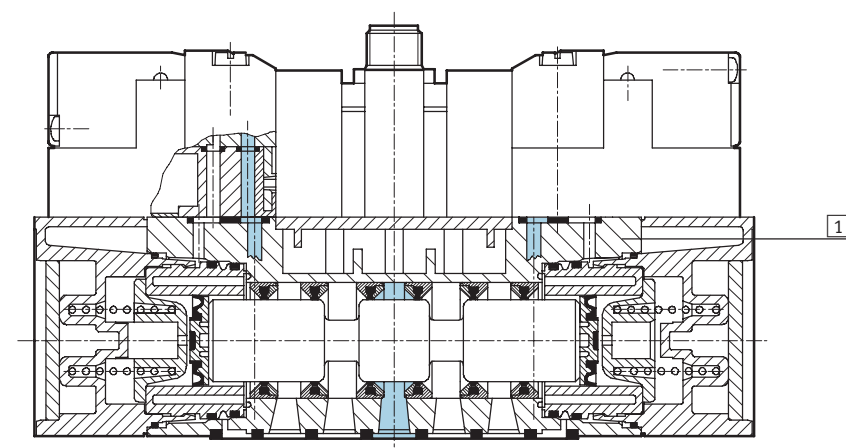
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Technical data – 5/3-way valves

| Electrical data               |              |                                   |     |
|-------------------------------|--------------|-----------------------------------|-----|
| EB solenoid coil              |              |                                   |     |
| Electrical connection         |              | Central plug, round design, M12x1 |     |
| Operating voltage             | D.C. voltage | [V DC]                            | 24  |
| Coil characteristics          | D.C. voltage | [W]                               | 2.5 |
| Protection class to EN 60 529 |              | IP65                              |     |

## Materials

Sectional view



|   |         |                                 |
|---|---------|---------------------------------|
| 1 | Housing | Die-cast aluminium, polyacetate |
| – | Seals   | Nitrile rubber                  |

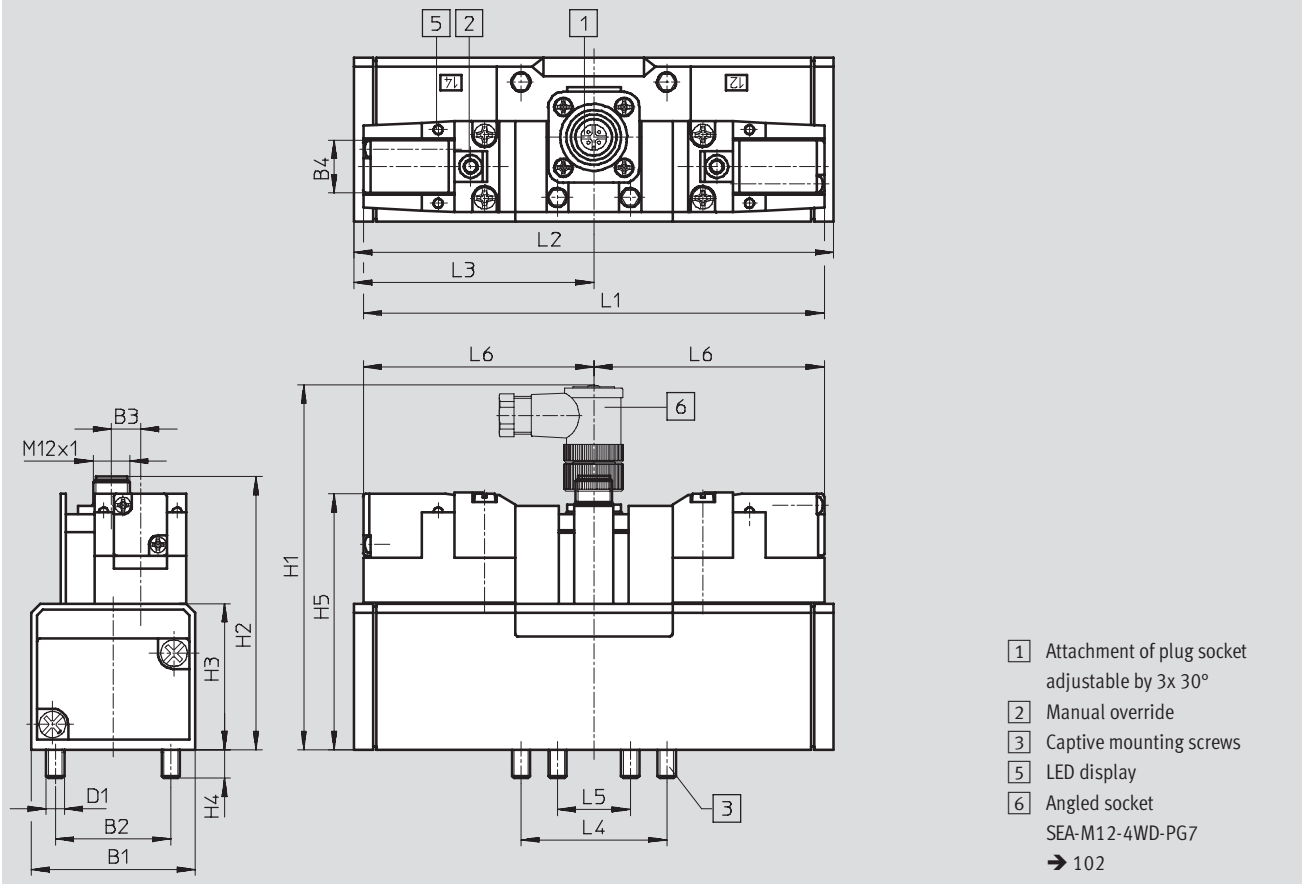
# Solenoid valves MEBH, ISO 5599-1

Technical data – 5/3-way valves

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## Dimensions

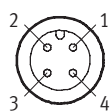
Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



| ISO size | B1 | B2 | B3 | B4   | D1 | H1  | H2   | H3 | H4  | H5   | L1    | L2    | L3   | L4 | L5 | L6   |
|----------|----|----|----|------|----|-----|------|----|-----|------|-------|-------|------|----|----|------|
| 1        | 42 | 28 | 6  | 17.5 | M5 | 110 | 80.3 | 38 | 9   | 74.7 | 134   | 108.4 | 54.2 | 36 | 18 | 67   |
| 2        | 54 | 38 | 9  | 17.5 | M6 | 120 | 90.1 | 48 | 9.5 | 84.2 | 151.8 | 158   | 79   | 48 | 24 | 75.9 |
| 3        | 65 | 48 | 12 | 17.5 | M8 | 130 | 97.8 | 55 | 12  | 93.1 | 171.9 | 184   | 92   | 64 | 32 | 86   |

## M12 central plug – Terminal allocation

Duo connection



- 1 Unused
- 2 Signal (+) Solenoid 12
- 3 com (-)
- 4 Signal (+) Solenoid 14

# Solenoid valves MEBH, ISO 5599-1

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Technical data – 5/3-way valves

| Ordering data  |                                                                                                    |         |          |          |                     |
|----------------|----------------------------------------------------------------------------------------------------|---------|----------|----------|---------------------|
| Circuit symbol | Description                                                                                        | Voltage | ISO size | Part No. | Type                |
|                | With EB solenoid coil,<br>with central plug,<br>normally closed,<br>internal pilot air supply      | 24 V DC | 1        | 184 498  | MEBH-5/3G-D-1-ZSR-C |
|                |                                                                                                    |         | 2        | 184 505  | MEBH-5/3G-D-2-ZSR-C |
|                |                                                                                                    |         | 3        | 184 512  | MEBH-5/3G-D-3-ZSR-C |
|                |                                                                                                    |         |          |          |                     |
|                | With EB solenoid coil,<br>with central plug,<br>normally exhausted,<br>internal pilot air supply   | 24 V DC | 1        | 184 497  | MEBH-5/3E-D-1-ZSR-C |
|                |                                                                                                    |         | 2        | 184 504  | MEBH-5/3E-D-2-ZSR-C |
|                |                                                                                                    |         | 3        | 184 511  | MEBH-5/3E-D-3-ZSR-C |
|                |                                                                                                    |         |          |          |                     |
|                | With EB solenoid coil,<br>with central plug,<br>normally pressurised,<br>internal pilot air supply | 24 V DC | 1        | 184 499  | MEBH-5/3B-D-1-ZSR-C |
|                |                                                                                                    |         | 2        | 184 506  | MEBH-5/3B-D-2-ZSR-C |
|                |                                                                                                    |         | 3        | 184 513  | MEBH-5/3B-D-3-ZSR-C |
|                |                                                                                                    |         |          |          |                     |

# Solenoid valves MDH-M12, ISO 5599-1

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Technical data – 5/2-way valves

Flow rate

1,200 ... 4,500 l/min

Voltage

24 V DC



| General technical data           |         |                                          |                 |                 |
|----------------------------------|---------|------------------------------------------|-----------------|-----------------|
| ISO size                         |         | 1                                        | 2               | 3               |
| Valve function                   |         | 5/2-way, monostable                      |                 |                 |
| Design                           |         | Piston slide                             |                 |                 |
| Sealing principle                |         | Soft                                     |                 |                 |
| Actuation type                   |         | Electrical                               |                 |                 |
| Type of reset                    |         | Mechanical or pneumatic spring           |                 |                 |
| Type of actuation                |         | Piloted                                  |                 |                 |
| Pilot air supply                 |         | Internal or external                     |                 |                 |
| Direction of flow                |         | Reversible for external pilot air supply |                 |                 |
| Exhaust function                 |         | Restrictable                             |                 |                 |
| Manual override                  |         | Via tool accessory, detenting            |                 |                 |
| Type of mounting                 |         | Via through-holes                        |                 |                 |
| Mounting position                |         | Any                                      |                 |                 |
| Nominal size                     | [mm]    | 8                                        | 11              | 14.5            |
| Standard nominal flow rate       | [l/min] | 1,200                                    | 2,300           | 4,500           |
| Grid dimension                   | [mm]    | 43                                       | 56              | 71              |
| Pneumatic connection on sub-base |         | G $\frac{1}{4}$                          | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Product weight                   | [g]     | 420                                      | 810             | 1,000           |

| Operating and environmental conditions |                           |                                                                                      |              |                   |
|----------------------------------------|---------------------------|--------------------------------------------------------------------------------------|--------------|-------------------|
| Type of reset                          |                           | pneumatic spring                                                                     |              | mechanical spring |
| Operating medium                       |                           | Dried compressed air, lubricated or unlubricated, grade of filtration 40µm<br>Vacuum |              |                   |
| Operating pressure                     | internal pilot air supply | [bar]                                                                                | 2 ... 10     | 3 ... 10          |
|                                        | external pilot air supply | [bar]                                                                                | -0.9 ... +16 |                   |
| Pilot pressure                         |                           | [bar]                                                                                | 2 ... 10     | 3 ... 10          |
| Ambient temperature                    |                           | [°C]                                                                                 | -10 ... +50  |                   |
| Temperature of medium                  |                           | [°C]                                                                                 | -10 ... +50  |                   |

| Valve response times            |      |           |            |           |            |           |            |
|---------------------------------|------|-----------|------------|-----------|------------|-----------|------------|
| ISO size                        |      | 1         |            | 2         |            | 3         |            |
| Type of reset                   |      | pneumatic | mechanical | pneumatic | mechanical | pneumatic | mechanical |
| D solenoid coil with M12x1 plug |      |           |            |           |            |           |            |
| On                              | [ms] | 25        | 20         | 45        | 25         | 55        | 30         |
| Off                             | [ms] | 36        | 42         | 60        | 60         | 60        | 70         |

## Solenoid valves MDH-M12, ISO 5599-1

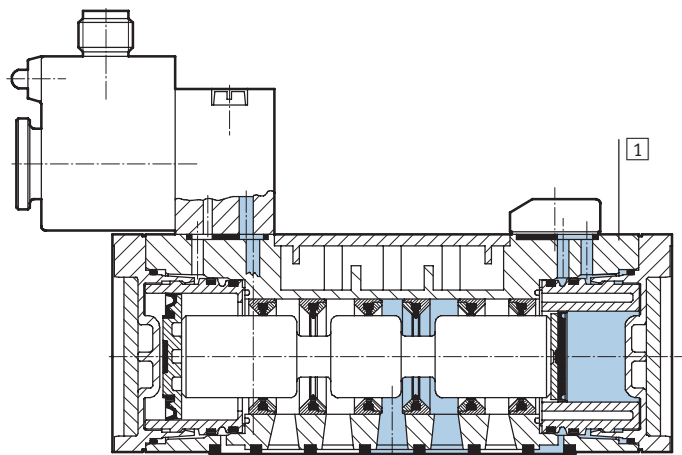
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Technical data – 5/2-way valves

| Electrical data                       |              |        |             |
|---------------------------------------|--------------|--------|-------------|
| D solenoid coil with round plug M12x1 |              |        |             |
| Electrical connection                 | Type         |        | M12X1       |
| Coil characteristics                  | D.C. voltage | [V DC] | 21.6...26.4 |
|                                       | Power        | [Watt] | 2.7         |
| Duty cycle                            |              | %      | 100         |
| Protection class to EN 60 529         |              |        | IP65        |

### Materials

Sectional view



|   |       |                                 |
|---|-------|---------------------------------|
| 1 | Body  | Die-cast aluminium, polyacetate |
| – | Seals | Nitrile rubber                  |

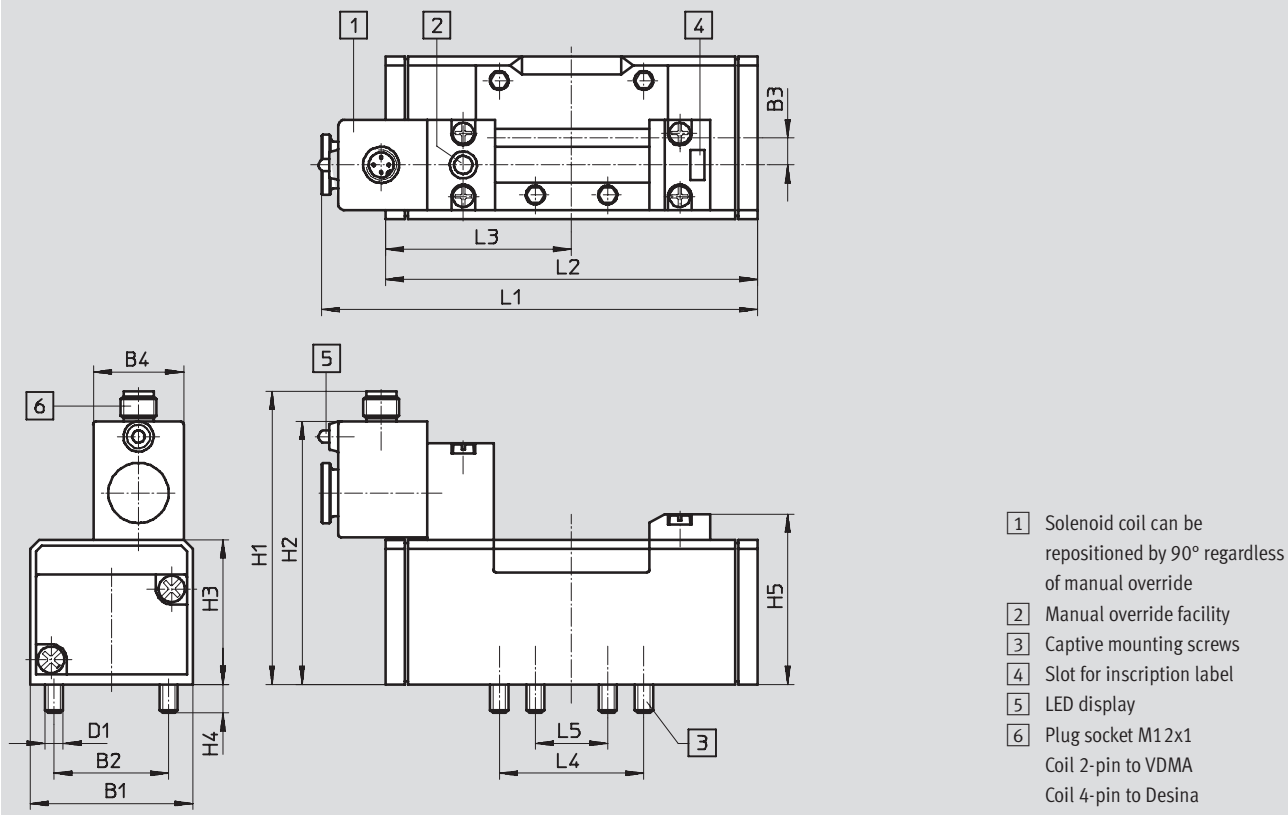
# Solenoid valves MDH-M12, ISO 5599-1

Technical data – 5/2-way valves

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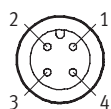
## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



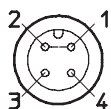
| Type              | B1 | B2 | B3 | B4 | D1 | H1    | H2   | H3 | H4  | H5   | L1    | L2    | L3   | L4 | L5 |
|-------------------|----|----|----|----|----|-------|------|----|-----|------|-------|-------|------|----|----|
| <b>ISO size 1</b> |    |    |    |    |    |       |      |    |     |      |       |       |      |    |    |
| MDH-5/2-...       | 42 | 28 | 6  | 30 | M5 | 87.2  | 77.3 | 38 | 9   | 46.5 | 121.8 | 87.6  | 43.8 | 36 | 18 |
| MDH-5/2-...-FR    |    |    |    |    |    |       |      |    |     |      | 132.2 | 98    |      |    |    |
| <b>ISO size 2</b> |    |    |    |    |    |       |      |    |     |      |       |       |      |    |    |
| MDH-5/2-...       | 54 | 38 | 9  | 30 | M6 | 97.2  | 87.2 | 48 | 9.5 | 56.5 | 144.6 | 123.4 | 61.7 | 48 | 24 |
| MDH-5/2-...-FR    |    |    |    |    |    |       |      |    |     |      | 161.9 | 140.6 |      |    |    |
| <b>ISO size 3</b> |    |    |    |    |    |       |      |    |     |      |       |       |      |    |    |
| MDH-5/2-...       | 65 | 48 | 12 | 30 | M8 | 104.2 | 94.2 | 55 | 12  | 62.7 | 165.9 | 145.4 | 72.7 | 64 | 32 |
| MDH-5/2-...-FR    |    |    |    |    |    |       |      |    |     |      | 185.2 | 164.7 |      |    |    |

## M12 plug – Pin allocation 2-pin to VDMA



- 1 Unused
- 2 Unused
- 3 com (-)
- 4 Signal (+)

## M12 plug – Pin allocation 4-pin to Desina

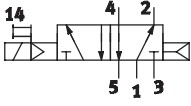
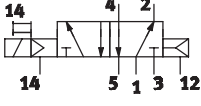
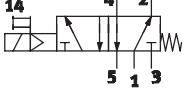


- 1 connected with 2
- 2 connected with 1
- 3 com (-)
- 4 Signal (+)

# Solenoid valves MDH-M12, ISO 5599-1

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Technical data – 5/2-way valves

| Ordering data                                                                     |                                                                   |          |                    |                       |                      |                        |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------|----------|--------------------|-----------------------|----------------------|------------------------|
| Circuit symbol                                                                    | Description                                                       | ISO size | Coil 2-pin to VDMA |                       | Coil 4-pin to Desina |                        |
|                                                                                   |                                                                   |          | Part No.           | Type                  | Part No.             | Type                   |
|  | Type of reset:<br>– pneumatic<br>Pilot air supply:<br>– internal  | 1        | 197 125            | MDH-5/2-D-1-M12-C     | 540 803              | MDH-5/2-D-1-M12D-C     |
|                                                                                   |                                                                   | 2        | 533 008            | MDH-5/2-D-2-M12-C     | 540 812              | MDH-5/2-D-2-M12D-C     |
|                                                                                   |                                                                   | 3        | 533 009            | MDH-5/2-D-3-M12-C     | 540 819              | MDH-5/2-D-3-M12D-C     |
|  | Type of reset:<br>– pneumatic<br>Pilot air supply:<br>– external  | 1        | 533 332            | MDH-5/2-D-1-S-M12-C   | 540 810              | MDH-5/2-D-1-S-M12D-C   |
|                                                                                   |                                                                   | 2        | 533 010            | MDH-5/2-D-1-FR-M12-C  | 540 804              | MDH-5/2-D-1-FR-M12D-C  |
|                                                                                   |                                                                   | 3        | 533 011            | MDH-5/2-D-2-FR-M12-C  | 540 813              | MDH-5/2-D-2-FR-M12D-C  |
|  | Type of reset:<br>– mechanical<br>Pilot air supply:<br>– internal | 2        | 533 012            | MDH-5/2-D-3-FR-M12-C  | 540 820              | MDH-5/2-D-3-FR-M12D-C  |
|                                                                                   |                                                                   | 1        | 533 761            | MDH-5/2-D-1S-FR-M12-C | 540 811              | MDH-5/2-D-1S-FR-M12D-C |
|                                                                                   |                                                                   | 3        |                    |                       |                      |                        |

## Solenoid valves JMDH-M12, ISO 5599-1

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

**FESTO**

Flow rate

1,200 ... 4,500 l/min

Voltage

24 V DC



| General technical data           |         |                               |                 |                 |
|----------------------------------|---------|-------------------------------|-----------------|-----------------|
| ISO size                         |         | 1                             | 2               | 3               |
| Valve function                   |         | 5/2-way, bistable             |                 |                 |
| Design                           |         | Piston spool                  |                 |                 |
| Sealing principle                |         | Soft                          |                 |                 |
| Actuation type                   |         | Electrical                    |                 |                 |
| Type of actuation                |         | Piloted                       |                 |                 |
| Pilot air supply                 |         | Internal                      |                 |                 |
| Direction of flow                |         | Non-reversible                |                 |                 |
| Exhaust function                 |         | Restrictable                  |                 |                 |
| Manual override                  |         | Via tool accessory, detenting |                 |                 |
| Type of mounting                 |         | Via through-holes             |                 |                 |
| Mounting position                |         | Any                           |                 |                 |
| Nominal size                     | [mm]    | 8                             | 11              | 14.5            |
| Standard nominal flow rate       | [l/min] | 1,200                         | 2,300           | 4,000           |
| Grid dimension                   | [mm]    | 43                            | 56              | 71              |
| Pneumatic connection on sub-base |         | G $\frac{1}{4}$               | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
| Product weight                   | [g]     | 550                           | 810             | 1,100           |

| Operating and environmental conditions |                                 |                                                                               |  |  |
|----------------------------------------|---------------------------------|-------------------------------------------------------------------------------|--|--|
| Operating medium                       |                                 | Filtered compressed air, lubricated or unlubricated, grade of filtration 40µm |  |  |
| Operating pressure                     | internal pilot air supply [bar] | 2 ... 10                                                                      |  |  |
| Ambient temperature                    | [°C]                            | -10 ... +50                                                                   |  |  |
| Temperature of medium                  | [°C]                            | -10 ... +50                                                                   |  |  |

| Valve response times                  |      |    |    |    |
|---------------------------------------|------|----|----|----|
| ISO size                              |      | 1  | 2  | 3  |
| D solenoid coil with round plug M12x1 |      |    |    |    |
|                                       | [ms] | 18 | 22 | 25 |

# Solenoid valves JMDH-M12, ISO 5599-1

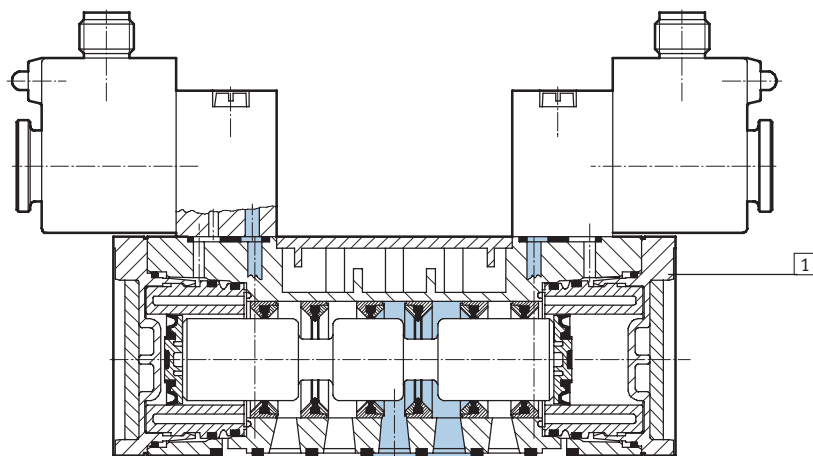
FESTO

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

| Electrical data                 |              |        |             |
|---------------------------------|--------------|--------|-------------|
| D solenoid coil with round plug |              |        |             |
| Electrical connection           | Type         | M12X1  |             |
| Coil characteristics            | D.C. voltage | [V DC] | 21.6...26.4 |
|                                 | Power        | [Watt] | 2.7         |
| Duty cycle                      |              | %      | 100         |
| Protection class to EN 60 529   |              |        | IP65        |

## Materials

Sectional view



|   |       |                                 |
|---|-------|---------------------------------|
| 1 | Body  | Die-cast aluminium, polyacetate |
| – | Seals | Nitrile rubber                  |

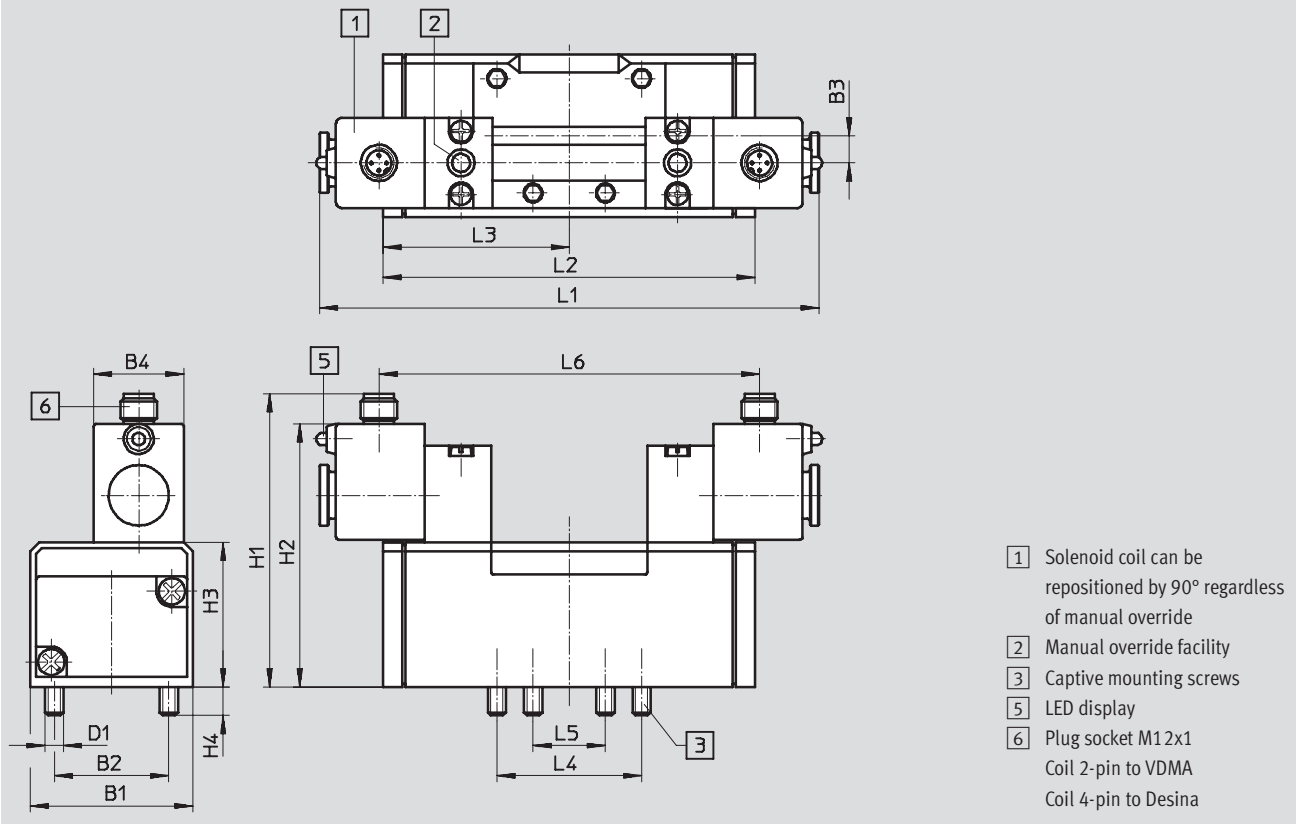
# Solenoid valves JMDH-M12, ISO 5599-1

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

FESTO

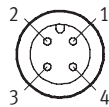
## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



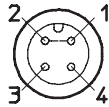
| ISO size | B1 | B2 | B3 | B4 | D1 | H1    | H2   | H3 | H4  | L1    | L2    | L3   | L4 | L5 | L6    |
|----------|----|----|----|----|----|-------|------|----|-----|-------|-------|------|----|----|-------|
| 1        | 42 | 28 | 6  | 30 | M5 | 87.2  | 77.2 | 38 | 9   | 148   | 87.6  | 43.8 | 36 | 18 | 108.5 |
| 2        | 54 | 38 | 9  | 30 | M6 | 97.2  | 87.2 | 48 | 9.5 | 165.8 | 123.4 | 61.7 | 48 | 24 | 126.3 |
| 3        | 65 | 48 | 12 | 30 | M8 | 104.2 | 94.2 | 55 | 12  | 186.4 | 145.4 | 72.7 | 64 | 32 | 146.9 |

## M12 plug – Pin allocation 2-pin to VDMA



- 1 Unused
- 2 Unused
- 3 com (-)
- 4 Signal (+)

## M12 plug – Pin allocation 4-pin to Desina

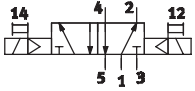
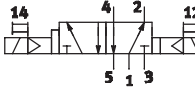


- 1 connected with 2
- 2 connected with 1
- 3 com (-)
- 4 Signal (+)

## Solenoid valves JMDH-M12, ISO 5599-1

**FESTO**

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

| Ordering data                                                                     |                                                                |          |                    |                     |                      |                      |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------|----------|--------------------|---------------------|----------------------|----------------------|
| Circuit symbol                                                                    | Description                                                    | ISO size | Coil 2-pin to VDMA |                     | Coil 4-pin to Desina |                      |
|                                                                                   |                                                                |          | Part No.           | Type                | Part No.             | Type                 |
|  | Pilot air supply:<br>– internal                                | 1        | 532 687            | JMDH-5/2-D-1-M12-C  | 540 809              | JMDH-5/2-D-1-M12D-C  |
|                                                                                   |                                                                | 2        | 533 013            | JMDH-5/2-D-2-M12-C  | 540 818              | JMDH-5/2-D-2-M12D-C  |
|                                                                                   |                                                                | 3        | 533 015            | JMDH-5/2-D-3-M12-C  | 540 825              | JMDH-5/2-D-3-M12D-C  |
|  | Pilot air supply:<br>– internal<br>Dominant:<br>– signal at 14 | 1        | 539 079            | JMDDH-5/2-D-1-M12-C | 540 808              | JMDDH-5/2-D-1-M12D-C |
|                                                                                   |                                                                | 2        | 539 077            | JMDDH-5/2-D-2-M12-C | 540 817              | JMDDH-5/2-D-2-M12D-C |
|                                                                                   |                                                                | 3        | 539 081            | JMDDH-5/2-D-3-M12-C | 540 824              | JMDDH-5/2-D-3-M12D-C |

# Solenoid valves MDH-M12, ISO 5599-1

Technical data – 5/3-way valves

**FESTO**

Flow rate

1,200 ... 4,600 l/min

Voltage

24 V DC



| General technical data           |         |                               |                 |                                       |
|----------------------------------|---------|-------------------------------|-----------------|---------------------------------------|
| ISO size                         |         | 1                             | 2               | 3                                     |
| Valve function                   |         | 5/3-way, monostable           |                 |                                       |
| Design                           |         | Piston spool                  |                 |                                       |
| Sealing principle                |         | Soft                          |                 |                                       |
| Actuation type                   |         | Electrical                    |                 |                                       |
| Type of reset                    |         | Mechanical spring             |                 |                                       |
| Type of actuation                |         | Piloted                       |                 |                                       |
| Pilot air supply                 |         | Internal                      |                 |                                       |
| Direction of flow                |         | Non-reversible                |                 |                                       |
| Exhaust function                 |         | Restrictable                  |                 |                                       |
| Manual override                  |         | Via tool accessory, detenting |                 |                                       |
| Type of mounting                 |         | Via through-holes             |                 |                                       |
| Mounting position                |         | Any                           |                 |                                       |
| Nominal size                     | [mm]    | 8                             | 11              | 14.5                                  |
| Standard nominal flow rate       | [l/min] | 1,200                         | 2,300           | 4,000 (B),<br>4,100 (G),<br>4,600 (E) |
| Grid dimension                   | [mm]    | 43                            | 56              | 71                                    |
| Pneumatic connection on sub-base |         | G $\frac{1}{4}$               | G $\frac{3}{8}$ | G $\frac{1}{2}$                       |
| Product weight                   | [g]     | 580                           | 880             | 1,120                                 |

| Operating and environmental conditions |                                 |                                                                               |  |  |
|----------------------------------------|---------------------------------|-------------------------------------------------------------------------------|--|--|
| Operating medium                       |                                 | Filtered compressed air, lubricated or unlubricated, grade of filtration 40µm |  |  |
| Operating pressure                     | internal pilot air supply [bar] | 3 ... 10                                                                      |  |  |
| Ambient temperature                    | [°C]                            | -10 ... +50                                                                   |  |  |
| Temperature of medium                  | [°C]                            | -10 ... +50                                                                   |  |  |

| Valve response times                       |    |     |    |     |    |     |
|--------------------------------------------|----|-----|----|-----|----|-----|
| ISO size                                   | 1  |     | 2  |     | 3  |     |
|                                            | On | Off | On | Off | On | Off |
| with D solenoid coil with round plug M12x1 |    |     |    |     |    |     |
| [ms]                                       | 25 | 55  | 35 | 70  | 36 | 90  |

# Solenoid valves MDH-M12, ISO 5599-1

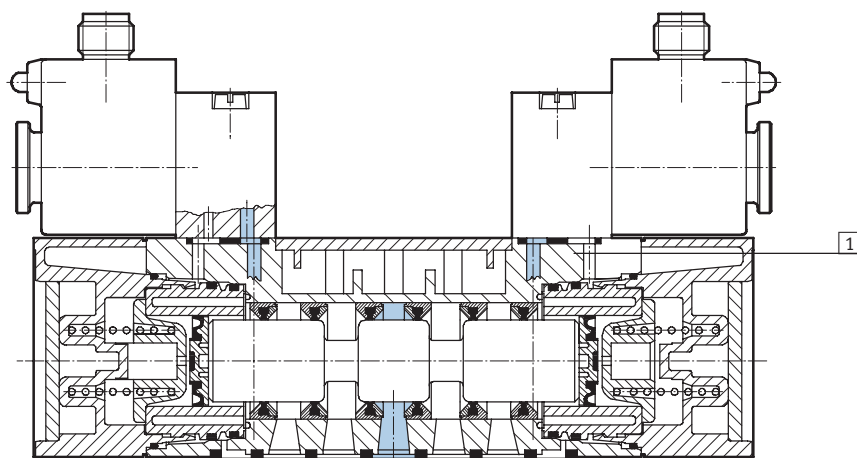
FESTO

Technical data – 5/3-way valves

| Electrical data                 |              |        |             |
|---------------------------------|--------------|--------|-------------|
| D solenoid coil with round plug |              |        |             |
| Electrical connection           | Type         | M12X1  |             |
| Coil characteristics            | D.C. voltage | [V DC] | 21.6...26.4 |
|                                 | Power        | [Watt] | 2.7         |
| Duty cycle                      |              | %      | 100         |
| Protection class to EN 60 529   |              |        | IP65        |

## Materials

Sectional view



|   |       |                                 |
|---|-------|---------------------------------|
| 1 | Body  | Die-cast aluminium, polyacetate |
| – | Seals | Nitrile rubber                  |

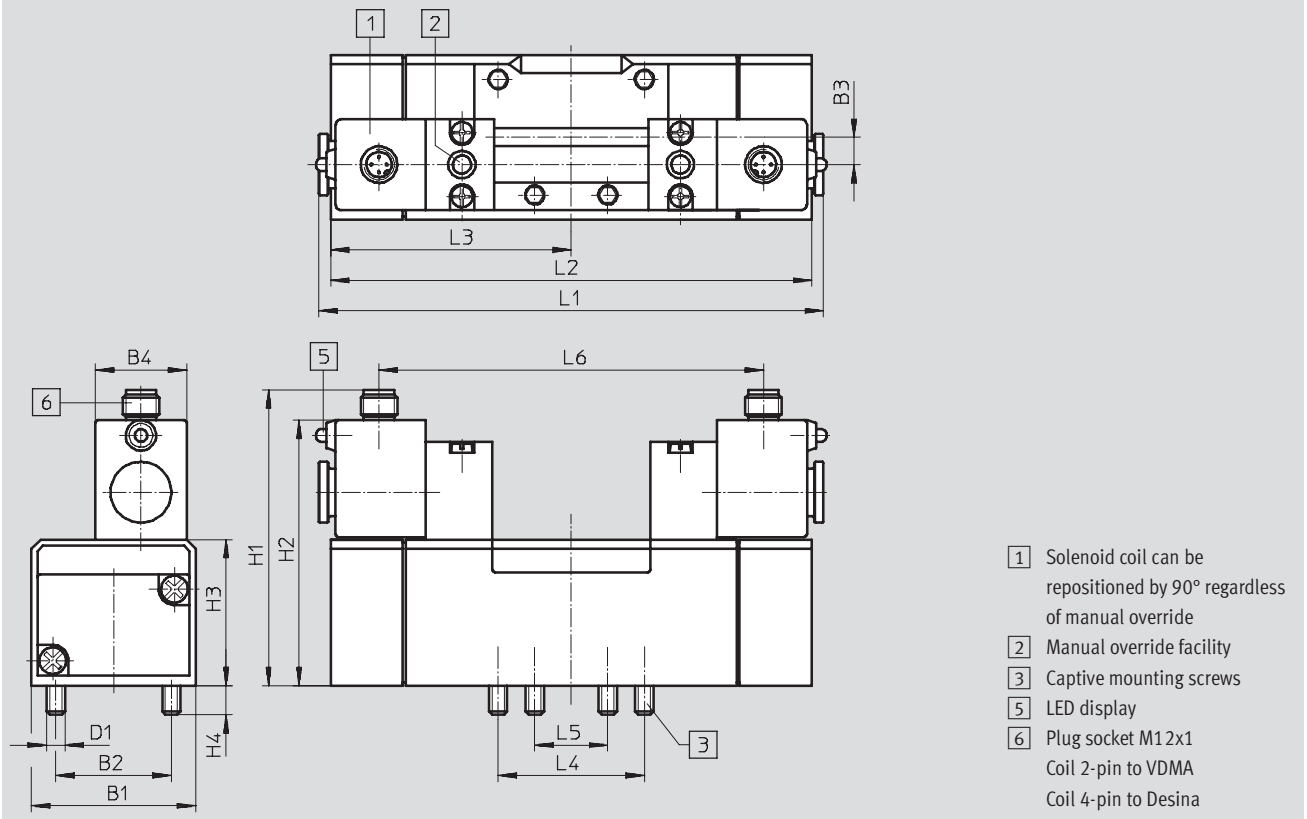
# Solenoid valves MDH-M12, ISO 5599-1

Technical data – 5/3-way valves

**FESTO**

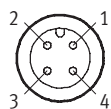
## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



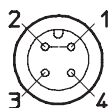
| ISO size | B1 | B2 | B3 | B4 | D1 | H1    | H2   | H3 | H4  | L1    | L2    | L3   | L4 | L5 | L6    |
|----------|----|----|----|----|----|-------|------|----|-----|-------|-------|------|----|----|-------|
| 1        | 42 | 28 | 6  | 30 | M5 | 87.2  | 77.2 | 38 | 9   | 148   | 108.4 | 54.3 | 36 | 18 | 108.5 |
| 2        | 54 | 38 | 9  | 30 | M6 | 97.2  | 87.2 | 48 | 9.5 | 165.8 | 158   | 79   | 48 | 24 | 126.3 |
| 3        | 65 | 48 | 12 | 30 | M8 | 104.2 | 94.2 | 55 | 12  | 186.4 | 184   | 92   | 64 | 32 | 146.9 |

## M12 plug – Pin allocation 2-pin to VDMA



- 1 Unused
- 2 Unused
- 3 com (-)
- 4 Signal (+)

## M12 plug – Pin allocation 4-pin to Desina

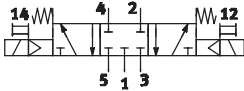
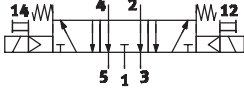
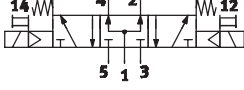


- 1 connected with 2
- 2 connected with 1
- 3 com (-)
- 4 Signal (+)

# Solenoid valves MDH-M12, ISO 5599-1

FESTO

Technical data – 5/3-way valves

| Ordering data                                                                     |                                                                          |          |                    |                    |                      |                     |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------|--------------------|--------------------|----------------------|---------------------|
| Circuit symbol                                                                    | Description                                                              | ISO size | Coil 2-pin to VDMA |                    | Coil 4-pin to Desina |                     |
|                                                                                   |                                                                          |          | Part No.           | Type               | Part No.             | Type                |
|  | Normal position:<br>– closed<br><br>Pilot air supply:<br>– internal      | 1        | 525 307            | MDH-5/3G-D-1-M12-C | 540 806              | MDH-5/3G-D-1-M12D-C |
|                                                                                   |                                                                          | 2        | 539078             | MDH-5/3G-D-2-M12-C | 540 815              | MDH-5/3G-D-2-M12D-C |
|                                                                                   |                                                                          | 3        | 539080             | MDH-5/3G-D-3-M12-C | 540 822              | MDH-5/3G-D-3-M12D-C |
|  | Normal position:<br>– exhausted<br><br>Pilot air supply:<br>– internal   | 1        | 197 126            | MDH-5/3E-D-1-M12-C | 540 805              | MDH-5/3E-D-1-M12D-C |
|                                                                                   |                                                                          | 2        | 533 016            | MDH-5/3E-D-2-M12-C | 540 814              | MDH-5/3E-D-2-M12D-C |
|                                                                                   |                                                                          | 3        | 533 017            | MDH-5/3E-D-3-M12-C | 540 821              | MDH-5/3E-D-3-M12D-C |
|  | Normal position:<br>– pressurised<br><br>Pilot air supply:<br>– internal | 1        | 533 005            | MDH-5/3B-D-1-M12-C | 540 807              | MDH-5/3B-D-1-M12D-C |
|                                                                                   |                                                                          | 2        | 533 006            | MDH-5/3B-D-2-M12-C | 540 816              | MDH-5/3B-D-2-M12D-C |
|                                                                                   |                                                                          | 3        | 533 007            | MDH-5/3B-D-3-M12-C | 540 823              | MDH-5/3B-D-3-M12D-C |

# Solenoid valves MDH, ISO 5599-1

Technical data – 5/2-way valves

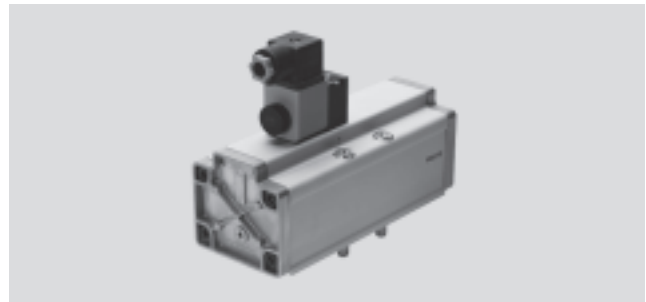
**FESTO**

Flow rate

Voltage

24 V DC

42, 110, 230 V AC



| General technical data           |         |                          |  |
|----------------------------------|---------|--------------------------|--|
| ISO size                         |         | 4                        |  |
| Valve function                   |         | 5/2-way, single solenoid |  |
| Constructional design            |         | Piston spool             |  |
| Sealing principle                |         | Soft                     |  |
| Actuation type                   |         | Electrical               |  |
| Type of reset                    |         | Pneumatic spring         |  |
| Type of pilot control            |         | Piloted                  |  |
| Pilot air supply                 |         | Internal                 |  |
| Direction of flow                |         | Non-reversible           |  |
| Exhaust function                 |         | With flow control        |  |
| Manual override                  |         | Via accessory, detenting |  |
| Type of mounting                 |         | Via through-holes        |  |
| Mounting position                |         | Any                      |  |
| Nominal size                     | [mm]    | 18                       |  |
| Standard nominal flow rate       | [l/min] | 6000                     |  |
| Grid dimension                   | [mm]    | 82                       |  |
| Pneumatic connection on sub-base |         | G $\frac{3}{4}$          |  |
| Product weight                   | [g]     | 2600                     |  |

| Operating and environmental conditions |                           |                                                     |             |
|----------------------------------------|---------------------------|-----------------------------------------------------|-------------|
| Operating medium                       |                           | Filtered compressed air, lubricated or unlubricated |             |
| Operating pressure                     | Internal pilot air supply | [bar]                                               | 3 ... 16    |
|                                        | External pilot air supply | [bar]                                               | –           |
| Pilot pressure                         |                           | [bar]                                               | –           |
| Ambient temperature                    |                           | [°C]                                                | –5 ... +40  |
| Temperature of medium                  |                           | [°C]                                                | –10 ... +60 |

| Valve response times [ms] |     |
|---------------------------|-----|
| D solenoid coil           |     |
| On                        | 120 |
| Off                       | 160 |

# Solenoid valves MDH, ISO 5599-1

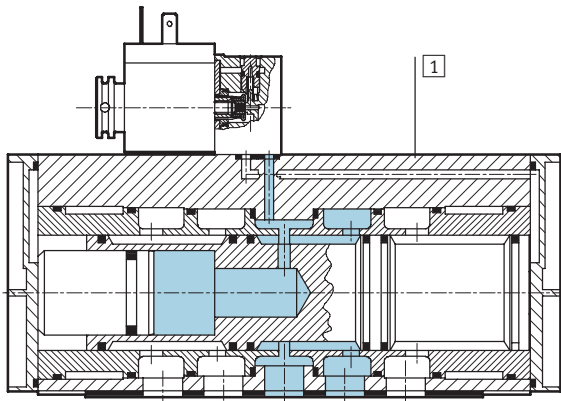
FESTO

Technical data – 5/2-way valves

| Electrical data               |                           |                                              |                             |
|-------------------------------|---------------------------|----------------------------------------------|-----------------------------|
| D solenoid coil               |                           |                                              |                             |
| Electrical connection         | Design                    | Plug, square design to EN 175301-803, type A |                             |
| Operating voltage             | D.C. voltage              | [V DC]                                       | 24                          |
|                               | A.C. voltage              | [V AC]                                       | 42, 110, 230 (50 ... 60 Hz) |
| Coil characteristics          | D.C. voltage              | [W]                                          | 6.8                         |
|                               | A.C. voltage              | [VA]                                         | Pull: 16.5                  |
|                               | 42 V                      |                                              | Hold: 12.2                  |
|                               | A.C. voltage 110 V, 230 V | [VA]                                         | Pull: 14.4                  |
|                               |                           |                                              | Hold: 10.5                  |
| Protection class to EN 60 529 |                           |                                              | IP65                        |

## Materials

Sectional view



|   |         |                                                              |
|---|---------|--------------------------------------------------------------|
| 1 | Housing | Anodised aluminium, polyacetate, brass                       |
| – | Seals   | Nitrile rubber, polyurethane, polytetrafluoroethylene carbon |

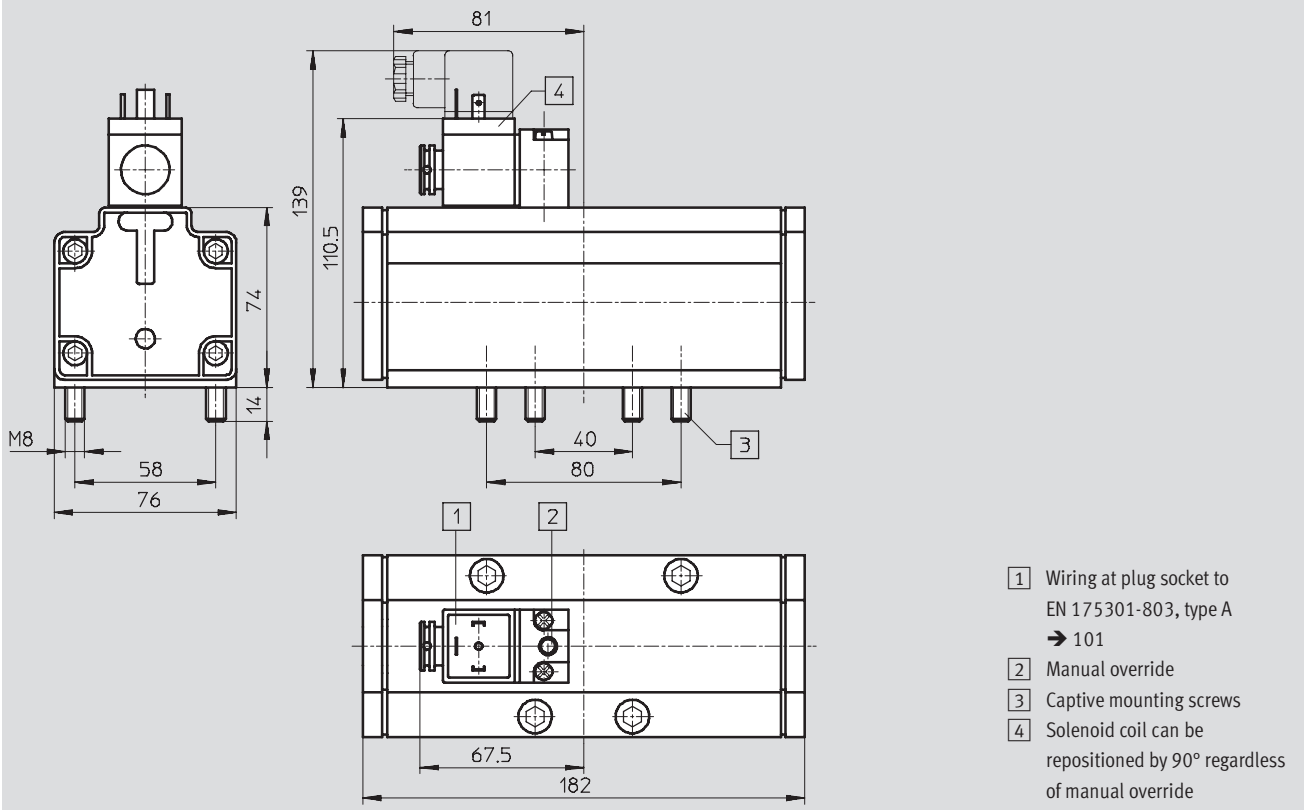
# Solenoid valves MDH, ISO 5599-1

Technical data – 5/2-way valves

**FESTO**

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



| Ordering data                                                                       |                                                                        |                      |          |          |                               |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------|----------|----------|-------------------------------|
| Circuit symbol                                                                      | Solenoid coil                                                          | Voltage              | ISO size | Part No. | Type                          |
|  | With D solenoid coil,<br>pneumatic reset,<br>internal pilot air supply | 24 V DC              | 4        | 12 457   | MDH-5/2-3/4-D-4-24DC          |
|                                                                                     |                                                                        | –                    |          | 14 544   | MDH-5/2-3/4-D-4 <sup>1)</sup> |
|                                                                                     |                                                                        | Usable pilot valves: |          |          |                               |
|                                                                                     |                                                                        | 24 V DC              | –        | 119 600  | MDH-3/2-24DC                  |
|                                                                                     |                                                                        | 110 V AC             | –        | 119 601  | MDH-3/2-110AC                 |
|                                                                                     |                                                                        | 230 V AC             | –        | 119 602  | MDH-3/2-230AC                 |
|                                                                                     |                                                                        | 24 V DC/<br>42 V AC  | –        | 119 603  | MDH-3/2-24DC/42AC             |

1) Without pilot valve. The part number for the pilot valve must be quoted when ordering.  
Order example: 14 544 MDH-5/2-3/4-D-4-119 602

# Solenoid valves JMDH, ISO 5599-1

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

**FESTO**

Flow rate

6000 l/min

Voltage

24 V DC

42, 110, 230 V AC



| General technical data           |         |                          |
|----------------------------------|---------|--------------------------|
| ISO size                         |         | 4                        |
| Valve function                   |         | 5/2-way, double solenoid |
| Constructional design            |         | Piston spool             |
| Sealing principle                |         | Soft                     |
| Actuation type                   |         | Electrical               |
| Type of pilot control            |         | Piloted                  |
| Pilot air supply                 |         | Internal                 |
| Direction of flow                |         | Non-reversible           |
| Exhaust function                 |         | With flow control        |
| Manual override                  |         | Via accessory, detenting |
| Type of mounting                 |         | Via through-holes        |
| Mounting position                |         | Any                      |
| Nominal size                     | [mm]    | 18                       |
| Standard nominal flow rate       | [l/min] | 6000                     |
| Grid dimension                   | [mm]    | 82                       |
| Pneumatic connection on sub-base |         | G $\frac{3}{4}$          |
| Product weight                   | [g]     | 2600                     |

| Operating and environmental conditions |                           |       |                                                     |
|----------------------------------------|---------------------------|-------|-----------------------------------------------------|
| Operating medium                       |                           |       | Filtered compressed air, lubricated or unlubricated |
| Operating pressure                     | Internal pilot air supply | [bar] | 2 ... 16                                            |
|                                        | External pilot air supply | [bar] | –                                                   |
| Pilot pressure                         |                           | [bar] | –                                                   |
| Ambient temperature                    |                           | [°C]  | –5 ... +40                                          |
| Temperature of medium                  |                           | [°C]  | –10 ... +60                                         |

| Valve response times [ms] |    |
|---------------------------|----|
| With D solenoid coil      |    |
|                           | 40 |

## Solenoid valves JMDH, ISO 5599-1

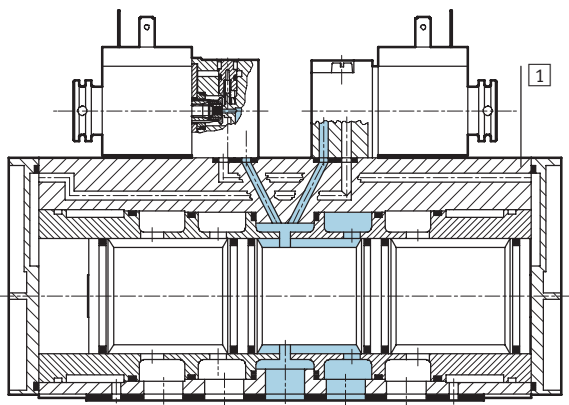
FESTO

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

| Electrical data               |                           |        |                                              |  |
|-------------------------------|---------------------------|--------|----------------------------------------------|--|
| D solenoid coil               |                           |        |                                              |  |
| Electrical connection         |                           |        | Plug, square design to EN 175301-803, type A |  |
| Operating voltage             | D.C. voltage              | [V DC] | 24                                           |  |
|                               | A.C. voltage              | [V AC] | 42, 110, 230 (50 ... 60 Hz)                  |  |
| Coil characteristics          | D.C. voltage              | [W]    | 6.8                                          |  |
|                               | A.C. voltage              | [VA]   | Pull: 16.5                                   |  |
|                               | 42 V                      |        | Hold: 12.2                                   |  |
|                               | A.C. voltage 110 V, 230 V | [VA]   | Pull: 14.5                                   |  |
|                               |                           |        | Hold: 10.5                                   |  |
| Protection class to EN 60 529 |                           |        | IP65                                         |  |

### Materials

Sectional view



|   |         |                                                              |
|---|---------|--------------------------------------------------------------|
| 1 | Housing | Anodised aluminium, polyacetate, brass                       |
| – | Seals   | Nitrile rubber, polyurethane, polytetrafluoroethylene carbon |

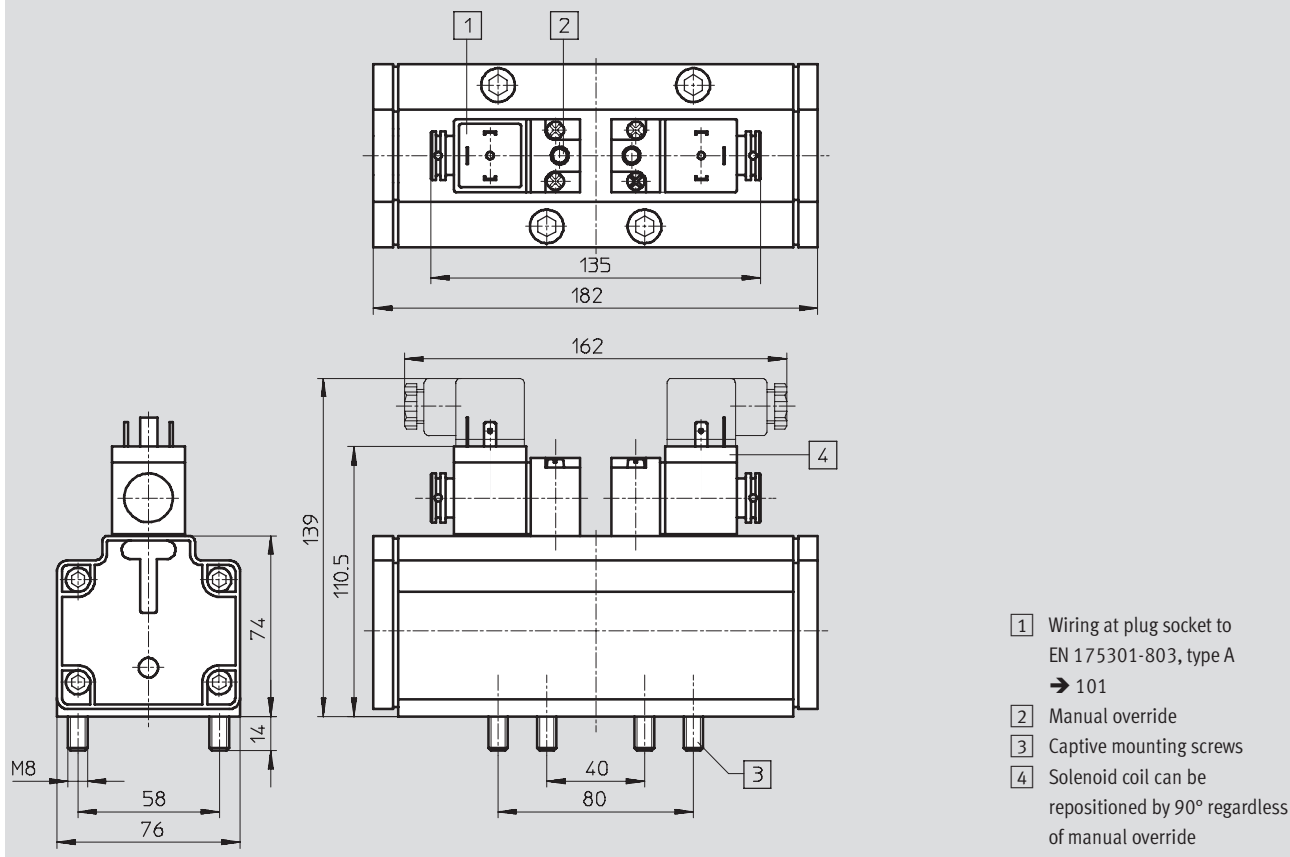
# Solenoid valves JMDH, ISO 5599-1

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

FESTO

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



## Ordering data – Double solenoid valve

| Circuit symbol                                                                      | Description                                        | Voltage              | ISO size | Part No. | Type                         |  |
|-------------------------------------------------------------------------------------|----------------------------------------------------|----------------------|----------|----------|------------------------------|--|
|  | With D solenoid coil,<br>internal pilot air supply | 24 V DC              | 4        | 12 458   | JMDH-5/2-¾-D-4-24DC          |  |
|                                                                                     |                                                    | –                    |          | 14 545   | JMDH-5/2-¾-D-4 <sup>1)</sup> |  |
|                                                                                     |                                                    | Usable pilot valves: |          |          |                              |  |
|                                                                                     |                                                    | 24 V DC              | –        | 119 600  | MDH-3/2-24DC                 |  |
|                                                                                     |                                                    | 110 V AC             | –        | 119 601  | MDH-3/2-110AC                |  |
|                                                                                     |                                                    | 230 V AC             | –        | 119 602  | MDH-3/2-230AC                |  |
|                                                                                     |                                                    | 24 V DC/<br>42 V AC  | –        | 119 603  | MDH-3/2-24DC/42AC            |  |

1) Without pilot valve. The part number for the pilot valve must be quoted when ordering.  
Order example: 14 545 MDH-5/2-3/4-D-4-119 602

# Solenoid valves MDH, ISO 5599-1

Technical data – 5/3-way valves

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Flow rate

4800 l/min

Voltage

24 V DC

42, 110, 230 V AC



| General technical data           |           |                          |      |
|----------------------------------|-----------|--------------------------|------|
| ISO size                         |           | 4                        |      |
| Valve function                   |           | 5/3-way, single solenoid |      |
| Constructional design            |           | Piston spool             |      |
| Sealing principle                |           | Soft                     |      |
| Actuation type                   |           | Electrical               |      |
| Type of reset                    |           | Pneumatic spring         |      |
| Type of pilot control            |           | Piloted                  |      |
| Pilot air supply                 |           | Internal                 |      |
| Direction of flow                |           | Non-reversible           |      |
| Exhaust function                 |           | With flow control        |      |
| Manual override                  |           | Via accessory, detenting |      |
| Type of mounting                 |           | Via through-holes        |      |
| Mounting position                |           | Any                      |      |
| Nominal size                     |           | [mm]                     | 18   |
| Standard nominal flow rate       | Closed    | [l/min]                  | 4800 |
|                                  | Exhausted | [l/min]                  | 4800 |
| Grid dimension                   |           | [mm]                     | 82   |
| Pneumatic connection on sub-base |           | G3/4                     |      |
| Product weight                   |           | [g]                      | 2600 |

| Operating and environmental conditions |                           |                                                     |             |
|----------------------------------------|---------------------------|-----------------------------------------------------|-------------|
| Operating medium                       |                           | Filtered compressed air, lubricated or unlubricated |             |
| Operating pressure                     | Internal pilot air supply | [bar]                                               | 3 ... 16    |
|                                        | External pilot air supply | [bar]                                               | –           |
| Pilot pressure                         |                           | [bar]                                               | –           |
| Ambient temperature                    |                           | [°C]                                                | – 5 ... +40 |
| Temperature of medium                  |                           | [°C]                                                | –10 ... +60 |

| Valve response times [ms] |     |
|---------------------------|-----|
| With D solenoid coil      |     |
| On                        | 85  |
| Off                       | 290 |

# Solenoid valves MDH, ISO 5599-1

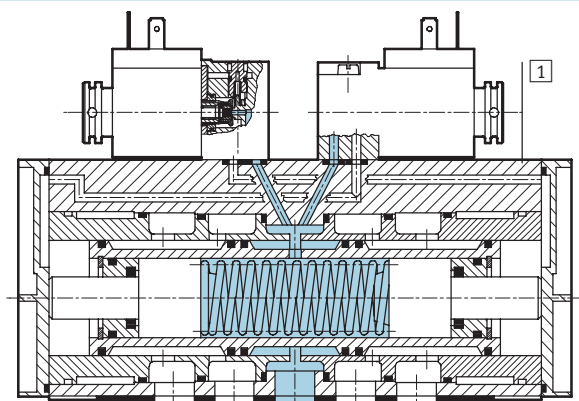
Technical data – 5/3-way valves

**FESTO**

| Electrical data       |                           |                                              |                             |
|-----------------------|---------------------------|----------------------------------------------|-----------------------------|
| D solenoid coil       |                           |                                              |                             |
| Electrical connection |                           | Plug, square design to EN 175301-803, type A |                             |
| Operating voltage     | D.C. voltage              | [V DC]                                       | 24                          |
|                       | A.C. voltage              | [V AC]                                       | 42, 110, 230 (50 ... 60 Hz) |
| Coil characteristics  | D.C. voltage              | [W]                                          | 6.8                         |
|                       | A.C. voltage              | [VA]                                         | Pull: 16.5<br>Hold: 12.2    |
|                       | 42 V                      |                                              |                             |
|                       | A.C. voltage 110 V, 230 V | [VA]                                         | Pull: 14.5<br>Hold: 10.5    |

## Materials

Sectional view



|   |         |                                                              |
|---|---------|--------------------------------------------------------------|
| 1 | Housing | Anodised aluminium, polyacetate, brass                       |
| – | Seals   | Nitrile rubber, polyurethane, polytetrafluoroethylene carbon |

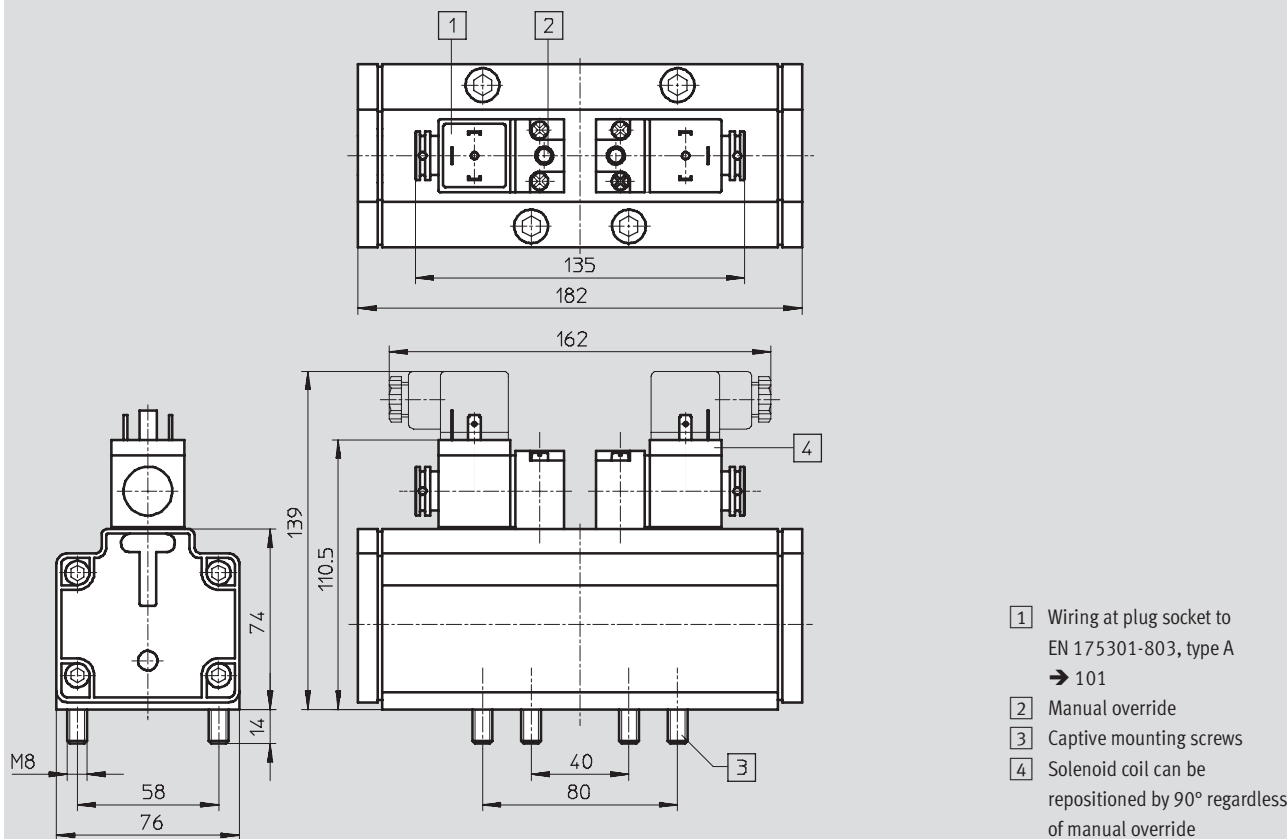
# Solenoid valves MDH, ISO 5599-1

Technical data – 5/3-way valves

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## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



## Ordering data

| Circuit symbol | Description                                                               | Voltage              | ISO size | Part No. | Type                         |  |
|----------------|---------------------------------------------------------------------------|----------------------|----------|----------|------------------------------|--|
|                | With D solenoid coil,<br>normally closed,<br>internal pilot air supply    | 24 V DC              | 4        | 12 459   | MDH-5/3G-¾-D-4-24DC          |  |
|                |                                                                           | –                    |          | 14 546   | MDH-5/3G-¾-D-4 <sup>1)</sup> |  |
|                |                                                                           | Usable pilot valves: |          |          |                              |  |
|                |                                                                           | 24 V DC              | –        | 119 600  | MDH-3/2-24VDC                |  |
|                |                                                                           | 110 V AC             | –        | 119 601  | MDH-3/2-110VAC               |  |
|                |                                                                           | 230 V AC             | –        | 119 602  | MDH-3/2-230VAC               |  |
|                | With D solenoid coil,<br>normally exhausted,<br>internal pilot air supply | 24 V DC              | 4        | 12 460   | MDH-5/3E-¾-D-4-24DC          |  |
|                |                                                                           | –                    |          | 14 547   | MDH-5/3E-¾-D-4 <sup>1)</sup> |  |
|                |                                                                           | Usable pilot valves: |          |          |                              |  |
|                |                                                                           | 24 V DC              | –        | 119 600  | MDH-3/2-24VDC                |  |
|                |                                                                           | 110 V AC             | –        | 119 601  | MDH-3/2-110VAC               |  |
|                |                                                                           | 230 V AC             | –        | 119 602  | MDH-3/2-230VAC               |  |
|                |                                                                           | 24 V DC/<br>42 V AC  | –        | 119 603  | MDH-3/2-24VDC/42VAC          |  |
|                |                                                                           |                      |          |          |                              |  |

1) Without pilot valve. The part number for the pilot valve must be quoted when ordering.  
Order example: 14 546 MDH-5/3G-3/4-D-4-119 602

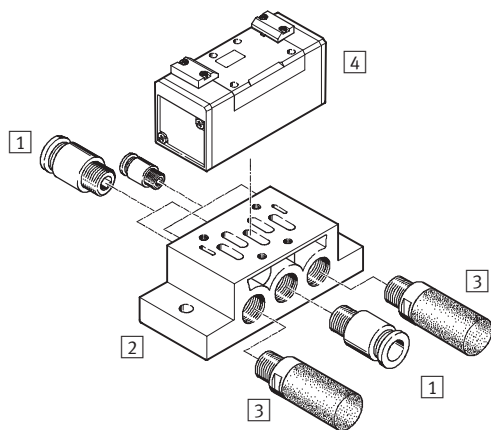
# Pneumatic valves, ISO 5599-1

Type code

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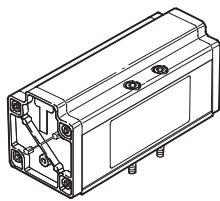
|                        |                                    |    |   |     |   |   |     |   |  |   |   |
|------------------------|------------------------------------|----|---|-----|---|---|-----|---|--|---|---|
|                        |                                    | VL | – | 5/3 | G | – | D-1 | – |  | – | C |
| <b>Type</b>            |                                    |    |   |     |   |   |     |   |  |   |   |
| VL                     | Single pilot                       |    |   |     |   |   |     |   |  |   |   |
| J                      | Double pilot                       |    |   |     |   |   |     |   |  |   |   |
| JD                     | Double pilot, with dominant signal |    |   |     |   |   |     |   |  |   |   |
| <b>Valve function</b>  |                                    |    |   |     |   |   |     |   |  |   |   |
| 5/2                    | 5/2-way valve                      |    |   |     |   |   |     |   |  |   |   |
| 5/3                    | 5/3-way valve                      |    |   |     |   |   |     |   |  |   |   |
| <b>Normal position</b> |                                    |    |   |     |   |   |     |   |  |   |   |
| G                      | Closed                             |    |   |     |   |   |     |   |  |   |   |
| E                      | Exhausted                          |    |   |     |   |   |     |   |  |   |   |
| B                      | Pressurised                        |    |   |     |   |   |     |   |  |   |   |
| <b>Size</b>            |                                    |    |   |     |   |   |     |   |  |   |   |
| D-1                    | ISO size 1                         |    |   |     |   |   |     |   |  |   |   |
| D-2                    | ISO size 2                         |    |   |     |   |   |     |   |  |   |   |
| D-3                    | ISO size 3                         |    |   |     |   |   |     |   |  |   |   |
| ¾-D-4                  | ISO size 4                         |    |   |     |   |   |     |   |  |   |   |
| <b>Type of reset</b>   |                                    |    |   |     |   |   |     |   |  |   |   |
| FR                     | Mechanical spring                  |    |   |     |   |   |     |   |  |   |   |
|                        | Pneumatic spring                   |    |   |     |   |   |     |   |  |   |   |
| <b>Generation</b>      |                                    |    |   |     |   |   |     |   |  |   |   |
| C                      | Series C                           |    |   |     |   |   |     |   |  |   |   |

## Individual mounting



### Variants

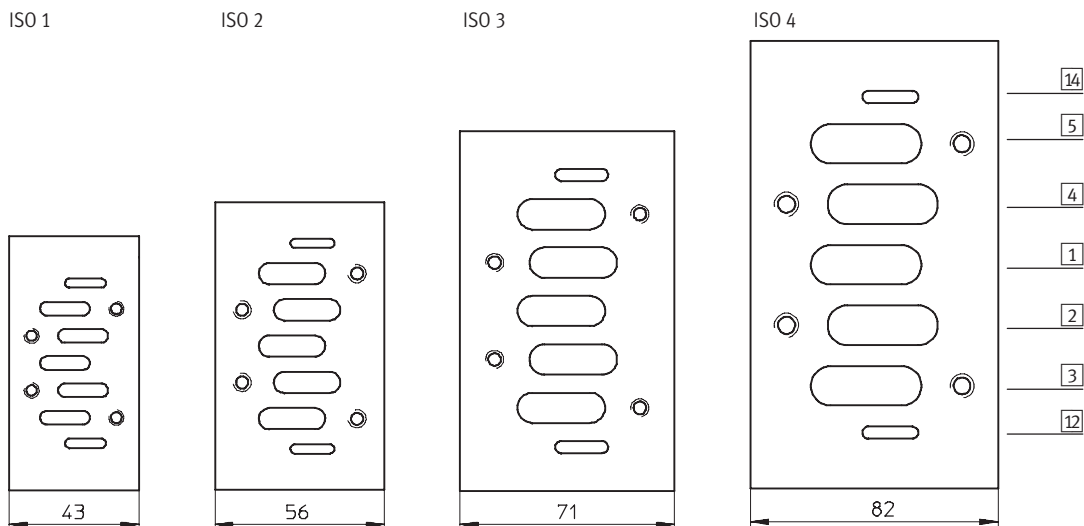
J-5/...-3/4-D-4,  
VL-5/...-3/4-D-4



| Accessories                      |                                                         |                 |
|----------------------------------|---------------------------------------------------------|-----------------|
|                                  | Brief description                                       | → Page/Internet |
| 1 Push-in fitting<br>QS          | For connecting compressed air tubing with standard O.D. | quick star      |
| 2 Individual sub-base<br>NAS/NAU | NAS – With lateral ports<br>NAU – With ports underneath | 88              |
| 3 Silencer                       | For fitting in exhaust ports                            | u               |
| 4 Pneumatic valve                | Port pattern to ISO 5599-1                              | 6               |

### Port pattern on sub-base to ISO 5599-1

Defined interfaces between valve and sub-base

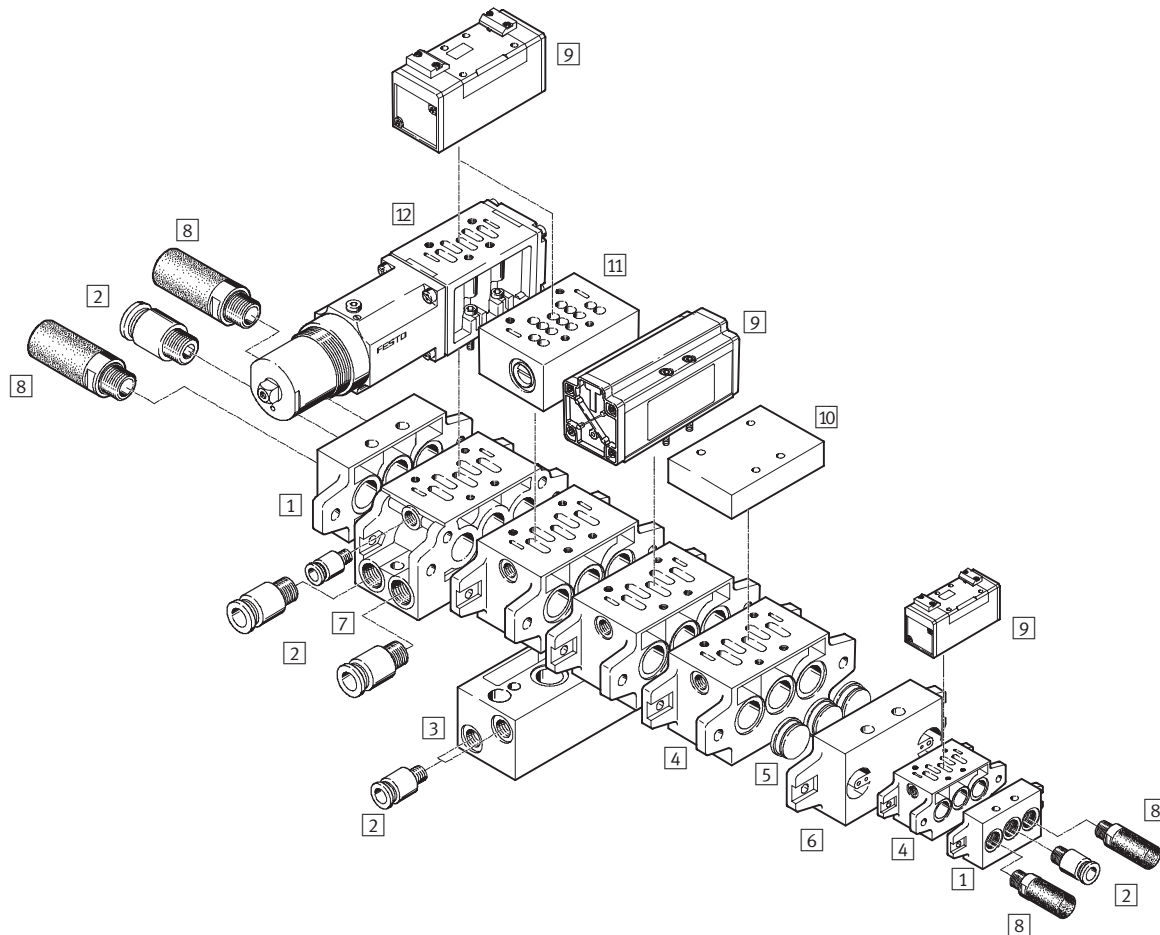


# Pneumatic valves, ISO 5599-1

Peripherals overview

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## Manifold mounting



# Pneumatic valves, ISO 5599-1

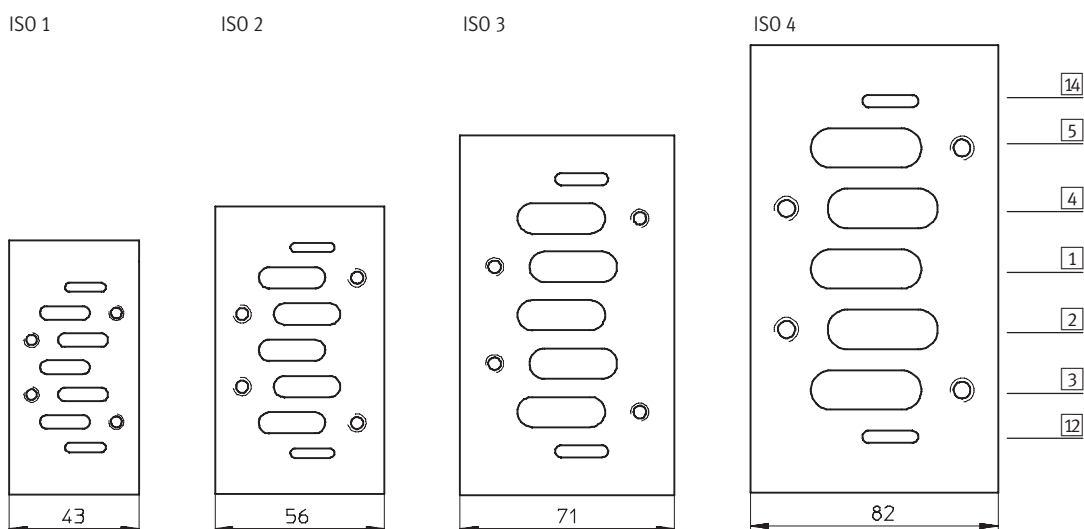
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Peripherals overview

| Accessories                                                                  |                                                                                                                                                                                                     |                 |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                                                              | Brief description                                                                                                                                                                                   | → Page/Internet |
| 1 End plate kit<br>NEV                                                       | For sealing the manifold sub-bases                                                                                                                                                                  | 91              |
| 2 Push-in fitting<br>QS                                                      | For connecting compressed air tubing with standard O.D.                                                                                                                                             | quick star      |
| 3 Angle connection block<br>NAW                                              | For routing ports 2 and 4 to the front                                                                                                                                                              | 90              |
| 4 Manifold sub-base<br>NAV                                                   | With ports 2 and 4 on the bottom                                                                                                                                                                    | 90              |
| 5 Isolating disc<br>NSC                                                      | For sealing the common lines 1, 3, 5 between end plates and manifold sub-bases or between 2 manifold sub-bases, e.g. for different working pressures                                                | 92              |
| 6 Intermediate plate<br>NZV                                                  | For connecting manifold sub-bases of different sizes                                                                                                                                                | 94              |
| 7 Manifold sub-base for angle connection<br>NAVW                             | With ports 2 and 4 either on the bottom or the front                                                                                                                                                | 91              |
| 8 Silencer                                                                   | For fitting in exhaust ports                                                                                                                                                                        | u               |
| 9 Pneumatic valve                                                            | Port pattern to ISO 5599-1                                                                                                                                                                          | 6               |
| 10 Blanking plate<br>NDV                                                     | For sealing unused manifold sub-bases                                                                                                                                                               | 92              |
| 11 Throttle plate for ISO size 1, 2 and 3<br>GRO                             | With integrated exhaust air restrictors at port 3 and 5. The throttle plate is mounted between the valve and the individual sub-base/manifold sub-base                                              | 95              |
| 12 Intermediate pressure regulator plate<br>for ISO size 1, 2 and 3<br>LR-ZP | For regulating the pressure from 0 to 12 bar according to the supply pressure. The intermediate pressure regulator plate is mounted between the valve and the individual sub-base/manifold sub-base | 96              |

## Port pattern on sub-base to ISO 5599-1

Defined interfaces between valve and sub-base



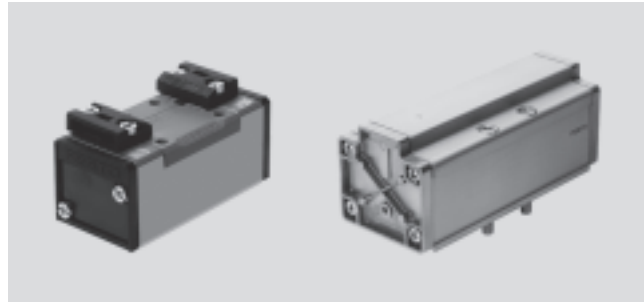
# Pneumatic valves VL, ISO 5599-1

Technical data – 5/2-way valves

**FESTO**

Flow rate

1200 ... 6000 l/min



| General technical data             |                                            |                 |                 |                 |
|------------------------------------|--------------------------------------------|-----------------|-----------------|-----------------|
| ISO size                           | 1                                          | 2               | 3               | 4               |
| Valve function                     | 5/2-way, single pilot                      |                 |                 |                 |
| Constructional design              | Piston spool                               |                 |                 |                 |
| Sealing principle                  | Soft                                       |                 |                 |                 |
| Actuation type                     | Pneumatic                                  |                 |                 |                 |
| Type of reset                      | Mechanical or pneumatic spring             |                 |                 |                 |
| Type of pilot control              | Direct                                     |                 |                 |                 |
| Direction of flow                  | Non-reversible                             |                 |                 |                 |
| Exhaust function                   | With flow control                          |                 |                 |                 |
| Manual override                    | None                                       |                 |                 |                 |
| Type of mounting                   | Via through-holes                          |                 |                 |                 |
| Mounting position                  | Any                                        |                 |                 |                 |
| Nominal size [mm]                  | 8                                          | 11              | 14.5            | 18              |
| Standard nominal flow rate [l/min] | 1200                                       | 2300            | 4500            | 6000            |
| Grid dimension [mm]                | 43                                         | 56              | 71              | 82              |
| Pneumatic connection on sub-base   | 1, 2, 3, 4, 5                              | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
|                                    | 12, 14                                     | G $\frac{1}{8}$ | G $\frac{1}{8}$ | G $\frac{1}{8}$ |
| Product weight [g]                 | 290                                        | 550             | 810             | 1800            |
| Noise level [dB (A)]               | 85                                         |                 |                 |                 |
| Certification                      | Germanischer Lloyd<br>UL - recognized (OL) |                 |                 |                 |

| Operating and environmental conditions |                                                               |             |              |
|----------------------------------------|---------------------------------------------------------------|-------------|--------------|
| ISO size                               | 1, 2, 3                                                       |             | 4            |
| Type of reset                          | Pneumatic                                                     | Mechanical  | Pneumatic    |
| Operating medium                       | Filtered compressed air, lubricated or unlubricated<br>Vacuum |             |              |
| Operating pressure [bar]               | 2 ... 16                                                      | -0.9 ... 16 | -0.9 ... +16 |
| Pilot pressure [bar]                   | 2 ... 16                                                      | 3 ... 16    | 3 ... 16     |
| Ambient temperature [°C]               | -10 ... +60                                                   |             |              |
| Temperature of medium [°C]             | -10 ... +60                                                   |             |              |

# Pneumatic valves VL, ISO 5599-1

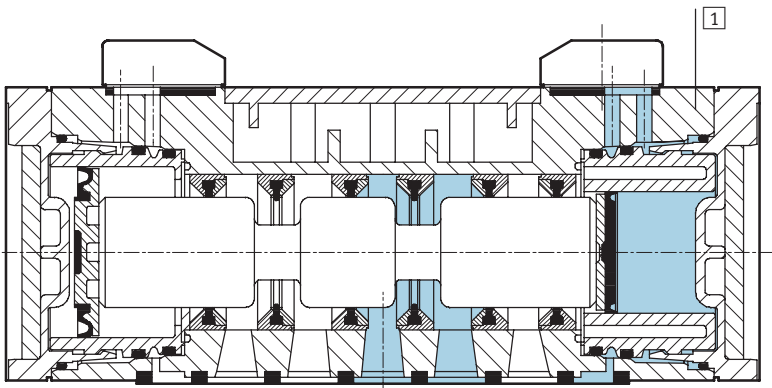
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Technical data – 5/2-way valves

| Valve response times |           |            |           |            |           |            |           |            |
|----------------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| ISO size             | 1         |            | 2         |            | 3         |            | 4         |            |
| Type of reset        | Pneumatic | Mechanical | Pneumatic | Mechanical | Pneumatic | Mechanical | Pneumatic | Mechanical |
| On                   | 9         | 6          | 23        | 11         | 29        | 13         | 25        | –          |
| Off                  | 18        | 23         | 39        | 39         | 36        | 43         | 90        | –          |

## Materials

Sectional view (ISO size 1, 2, 3)



| ISO size  | 1, 2, 3                         | 4                                              |
|-----------|---------------------------------|------------------------------------------------|
| 1 Housing | Die-cast aluminium, polyacetate | Anodised aluminium, brass, polyurethane        |
| – Seals   | Nitrile rubber                  | Nitrile rubber, polytetrafluoroethylene carbon |

# Pneumatic valves VL, ISO 5599-1

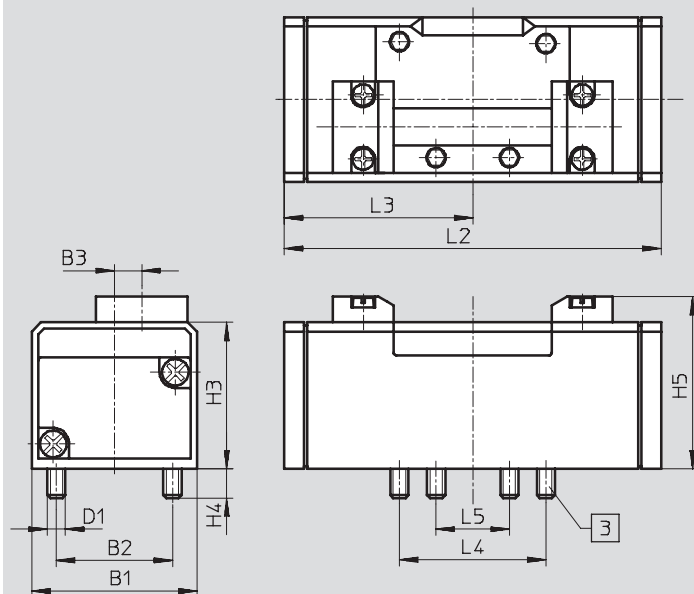
Technical data – 5/2-way valves

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## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

ISO size 1, 2, 3



3 Captive mounting screws

| Type            | B1 | B2 | B3 | D1 | H3 | H4  | H5   | L2    | L3   | L4 | L5 |
|-----------------|----|----|----|----|----|-----|------|-------|------|----|----|
| ISO size 1      |    |    |    |    |    |     |      |       |      |    |    |
| VL- 5/2- ...    | 42 | 28 | 6  | M5 | 38 | 9   | 46.5 | 87.6  | 43.8 | 36 | 18 |
| VL- 5/2- ...-FR |    |    |    |    |    |     |      | 98    |      |    |    |
|                 |    |    |    |    |    |     |      |       |      |    |    |
| ISO size 2      |    |    |    |    |    |     |      |       |      |    |    |
| VL- 5/2- ...    | 54 | 38 | 9  | M6 | 48 | 9.5 | 56.5 | 123.4 | 61.7 | 48 | 24 |
| VL- 5/2- ...-FR |    |    |    |    |    |     |      | 140.7 |      |    |    |
|                 |    |    |    |    |    |     |      |       |      |    |    |
| ISO size 3      |    |    |    |    |    |     |      |       |      |    |    |
| VL- 5/2- ...    | 65 | 48 | 12 | M8 | 55 | 12  | 63.5 | 145.4 | 72.7 | 64 | 32 |
| VL- 5/2- ...-FR |    |    |    |    |    |     |      | 164.7 |      |    |    |

# Pneumatic valves VL, ISO 5599-1

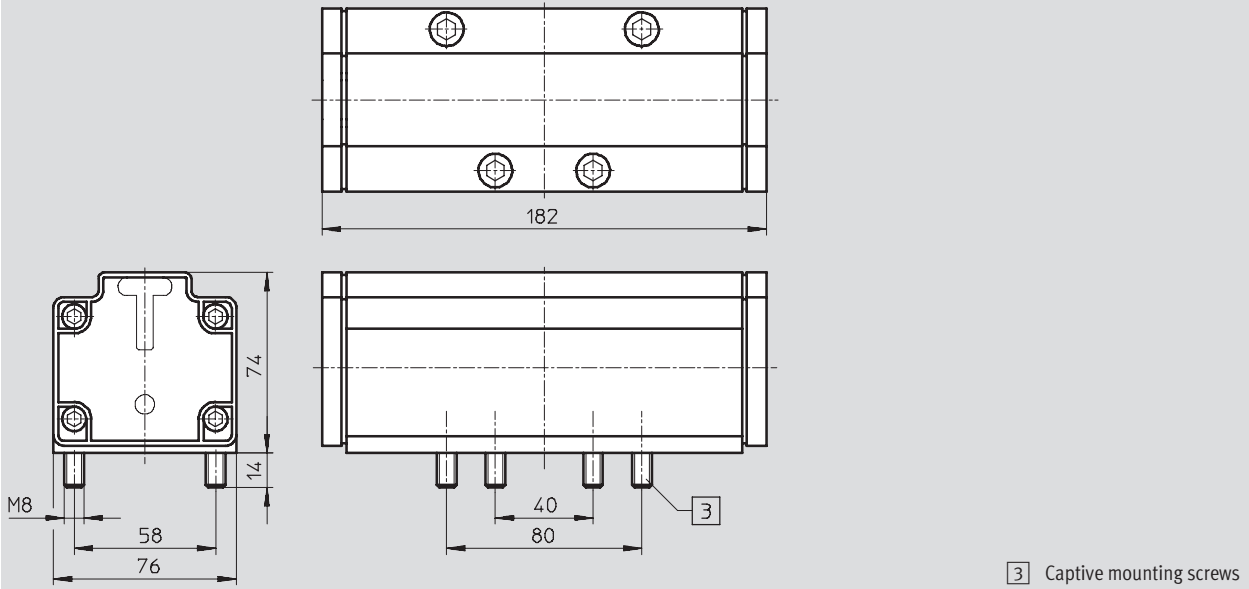
Technical data – 5/2-way valves

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## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

ISO size 4



## Ordering data

| Circuit symbol | Description      | ISO size | Part No. | Type            |
|----------------|------------------|----------|----------|-----------------|
|                | Pneumatic reset  | 1        | 151 009  | VL-5/2-D-1-C    |
|                |                  | 2        | 151 845  | VL-5/2-D-2-C    |
|                |                  | 3        | 151 864  | VL-5/2-D-3-C    |
|                |                  | 4        | 12 461   | VL-5/2-3/4-D-4  |
|                | Mechanical reset | 1        | 151 014  | VL-5/2-D-1-FR-C |
|                |                  | 2        | 151 844  | VL-5/2-D-2-FR-C |
|                |                  | 3        | 151 863  | VL-5/2-D-3-FR-C |

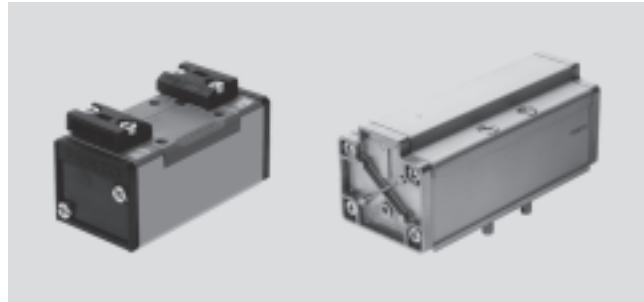
# Pneumatic valves J, ISO 5599-1

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

Flow rate

1200 ... 6000 l/min



| General technical data           |                                            |      |      |      |      |
|----------------------------------|--------------------------------------------|------|------|------|------|
| ISO size                         | 1                                          | 2    | 3    | 4    |      |
| Valve function                   | 5/2-way, double pilot                      |      |      |      |      |
| Constructional design            | Piston spool                               |      |      |      |      |
| Sealing principle                | Soft                                       |      |      |      |      |
| Actuation type                   | Pneumatic                                  |      |      |      |      |
| Type of pilot control            | Direct                                     |      |      |      |      |
| Direction of flow                | Reversible                                 |      |      |      |      |
| Exhaust function                 | With flow control                          |      |      |      |      |
| Manual override                  | None                                       |      |      |      |      |
| Type of mounting                 | Via through-holes                          |      |      |      |      |
| Mounting position                | Any                                        |      |      |      |      |
| Nominal size                     | [mm]                                       | 8    | 11   | 14.5 | 18   |
| Standard nominal flow rate       | [l/min]                                    | 1200 | 2300 | 4500 | 6000 |
| Grid dimension                   | [mm]                                       | 43   | 56   | 71   | 82   |
| Pneumatic connection on sub-base | 1, 2, 3, 4, 5                              | G1/4 | G3/8 | G1/2 | G3/4 |
|                                  | 12, 14                                     | G1/8 | G1/8 | G1/8 | G1/8 |
| Product weight                   | [g]                                        | 290  | 550  | 810  | 1800 |
| Noise level                      | [dB (A)]                                   | 85   |      |      |      |
| Certification                    | Germanischer Lloyd<br>UL - recognized (OL) |      |      |      |      |

| Operating and environmental conditions |                                                               |
|----------------------------------------|---------------------------------------------------------------|
| Operating medium                       | Filtered compressed air, lubricated or unlubricated<br>Vacuum |
| Operating pressure                     | [bar] –0.9 ... 16                                             |
| Pilot pressure                         | [bar] 2 ... 16                                                |
| Ambient temperature                    | [°C] –10 ... +60                                              |
| Temperature of medium                  | [°C] –10 ... +60                                              |

| Valve response times [ms] |   |                       |   |                       |    |
|---------------------------|---|-----------------------|---|-----------------------|----|
| ISO size                  | 1 | 2, 3                  |   | 4                     |    |
|                           |   | Dominant signal at 14 |   | Dominant signal at 14 |    |
|                           | 6 | 6/4                   | 8 | 8                     | 20 |

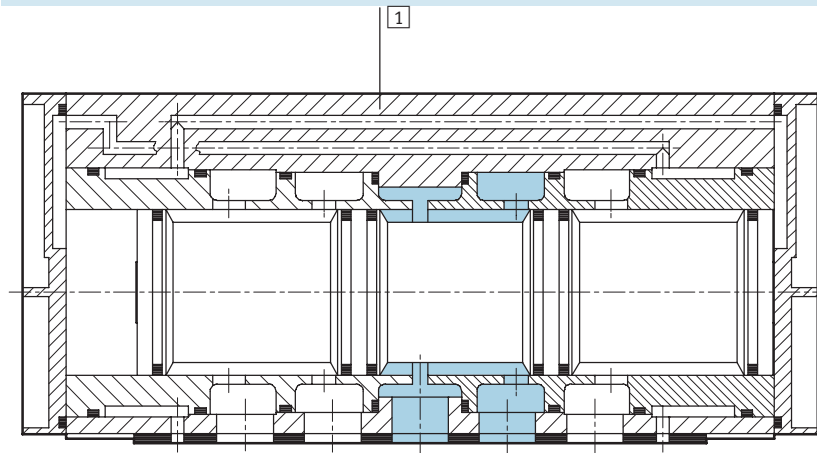
# Pneumatic valves J, ISO 5599-1

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

## Materials

Sectional view (ISO size 4)

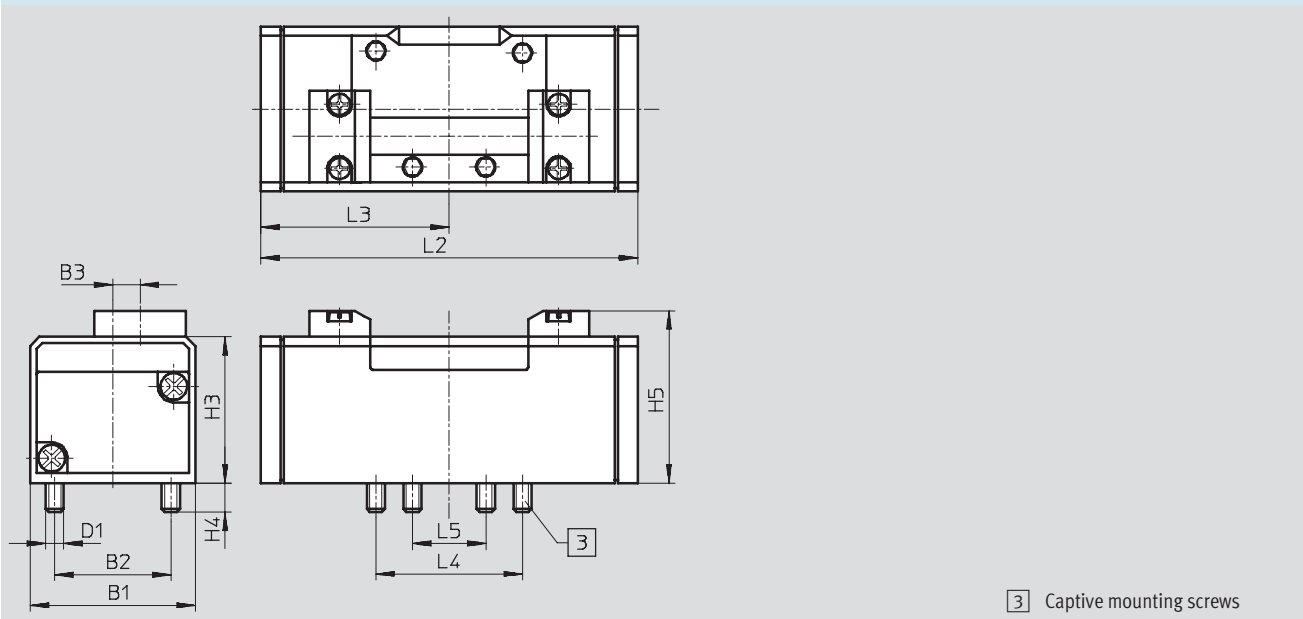


| ISO size  | 1, 2, 3                         | 4                                              |
|-----------|---------------------------------|------------------------------------------------|
| 1 Housing | Die-cast aluminium, polyacetate | Anodised aluminium, brass, polyurethane        |
| – Seals   | Nitrile rubber                  | Nitrile rubber, polytetrafluoroethylene carbon |

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

ISO size 1, 2, 3



| ISO size | B1 | B2 | B3 | D1 | H3 | H4  | H5   | L2    | L3   | L4 | L5 |
|----------|----|----|----|----|----|-----|------|-------|------|----|----|
| 1        | 42 | 28 | 6  | M5 | 38 | 9   | 46.5 | 87.6  | 43.8 | 36 | 18 |
| 2        | 54 | 38 | 9  | M6 | 48 | 9.5 | 56.5 | 123.4 | 61.7 | 48 | 24 |
| 3        | 65 | 48 | 12 | M8 | 55 | 12  | 63.5 | 145.4 | 72.7 | 64 | 32 |

# Pneumatic valves J, ISO 5599-1

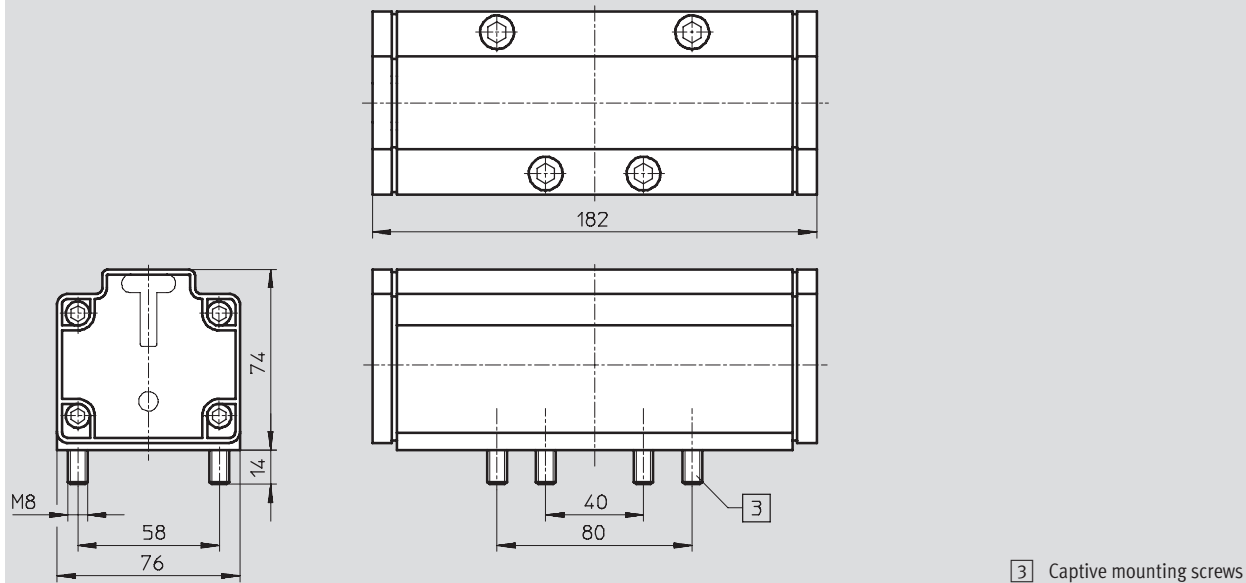
Technical data – 5/2-way valves, double pilot

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## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

ISO size 4



## Ordering data

| Circuit symbol | Description                | ISO size | Part No. | Type          |
|----------------|----------------------------|----------|----------|---------------|
|                |                            | 1        | 151 007  | J-5/2-D-1-C   |
|                |                            | 2        | 151 846  | J-5/2-D-2-C   |
|                |                            | 3        | 151 865  | J-5/2-D-3-C   |
|                |                            | 4        | 12 462   | J-5/2-3/4-D-4 |
|                | With dominant signal at 14 | 1        | 151 008  | JD-5/2-D-1-C  |
|                |                            | 2        | 151 847  | JD-5/2-D-2-C  |
|                |                            | 3        | 151 866  | JD-5/2-D-3-C  |

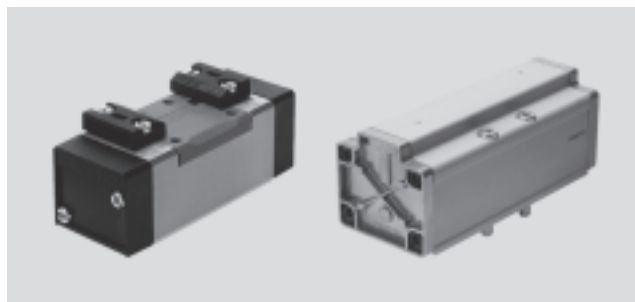
# Pneumatic valves VL, ISO 5599-1

Technical data – 5/3-way valves

**FESTO**

Flow rate

1200 ... 6000 l/min



| General technical data           |             |         |                                            |      |      |      |      |
|----------------------------------|-------------|---------|--------------------------------------------|------|------|------|------|
| ISO size                         |             |         | 1                                          | 2    | 3    | 4    |      |
| Valve function                   |             |         | 5/3-way, single pilot                      |      |      |      |      |
| Constructional design            |             |         | Piston spool                               |      |      |      |      |
| Sealing principle                |             |         | Soft                                       |      |      |      |      |
| Actuation type                   |             |         | Pneumatic                                  |      |      |      |      |
| Type of reset                    |             |         | Mechanical spring                          |      |      |      |      |
| Type of pilot control            |             |         | Direct                                     |      |      |      |      |
| Pilot air supply                 |             |         | Internal                                   |      |      |      |      |
| Direction of flow                |             |         | Reversible                                 |      |      |      |      |
| Exhaust function                 |             |         | With flow control                          |      |      |      |      |
| Manual override                  |             |         | None                                       |      |      |      |      |
| Type of mounting                 |             |         | Via through-holes                          |      |      |      |      |
| Mounting position                |             |         | Any                                        |      |      |      |      |
| Nominal size                     |             |         | [mm]                                       | 8    | 11   | 14.5 | 18   |
| Standard nominal flow rate       | Closed      | [l/min] | 1200                                       | 2300 | 4100 | 6000 |      |
|                                  | Exhausted   | [l/min] |                                            |      | 4600 | 4800 |      |
|                                  | Pressurised | [l/min] |                                            |      | 4100 | –    |      |
| Grid dimension                   |             |         | [mm]                                       | 43   | 56   | 71   | 82   |
| Pneumatic connection on sub-base |             |         | 1, 2, 3, 4, 5                              | G¼   | G⅜   | G½   | G¾   |
|                                  |             |         | 12, 14                                     | G⅛   | G⅛   | G⅛   | G⅛   |
| Product weight                   |             |         | [g]                                        | 320  | 825  | 910  | 2000 |
| Noise level                      |             |         | [dB (A)]                                   | 85   |      |      |      |
| Certification                    |             |         | Germanischer Lloyd<br>UL - recognized (OL) |      |      |      |      |

| Operating and environmental conditions |                                                               |
|----------------------------------------|---------------------------------------------------------------|
| Operating medium                       | Filtered compressed air, lubricated or unlubricated<br>Vacuum |
| Operating pressure                     | [bar] –0.9 ... +16                                            |
| Pilot pressure                         | [bar] 3 ... 16                                                |
| Ambient temperature                    | [°C] –10 ... +60                                              |
| Temperature of medium                  | [°C] –10 ... +60                                              |

| Valve response times |    |     |    |     |    |     |    |     |
|----------------------|----|-----|----|-----|----|-----|----|-----|
| ISO size             | 1  |     | 2  |     | 3  |     | 4  |     |
|                      | On | Off | On | Off | On | Off | On | Off |
| Closed               | 7  | 45  | 15 | 56  | 17 | 61  | 40 | 130 |
| Exhausted            | 7  | 45  | 16 | 59  | 18 | 63  | 40 | 130 |
| Pressurised          | 7  | 45  | 15 | 57  | 16 | 60  | –  | –   |

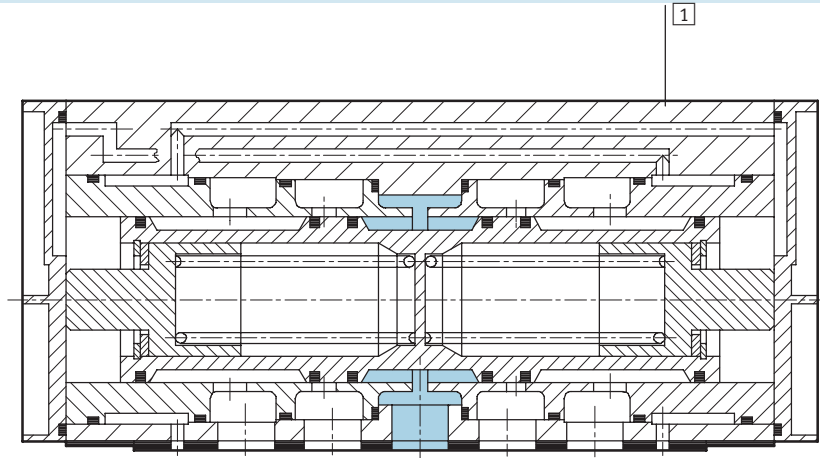
# Pneumatic valves VL, ISO 5599-1

Technical data – 5/3-way valves

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## Materials

Sectional view (ISO size 4)

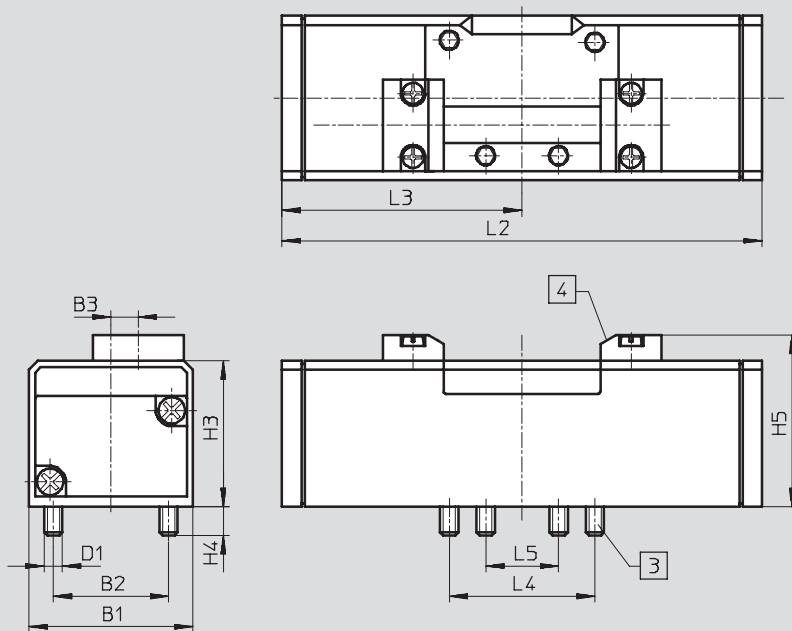


| ISO size  | 1, 2, 3                         | 4                                              |
|-----------|---------------------------------|------------------------------------------------|
| 1 Housing | Die-cast aluminium, polyacetate | Anodised aluminium, brass, polyurethane        |
| – Seals   | Nitrile rubber                  | Nitrile rubber, polytetrafluoroethylene carbon |

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

ISO size 1, 2 and 3



- 3 Captive mounting screws
- 4 Slot for inscription label

| ISO size | B1 | B2 | B3 | D1 | H3 | H4  | H5   | L2    | L3   | L4 | L5 |
|----------|----|----|----|----|----|-----|------|-------|------|----|----|
| 1        | 42 | 28 | 6  | M5 | 38 | 9   | 46.5 | 108.4 | 54.2 | 36 | 18 |
| 2        | 54 | 38 | 9  | M6 | 48 | 9.5 | 56.5 | 158   | 79   | 48 | 24 |
| 3        | 65 | 48 | 12 | M8 | 55 | 12  | 63.5 | 184   | 92   | 64 | 32 |

# Pneumatic valves VL, ISO 5599-1

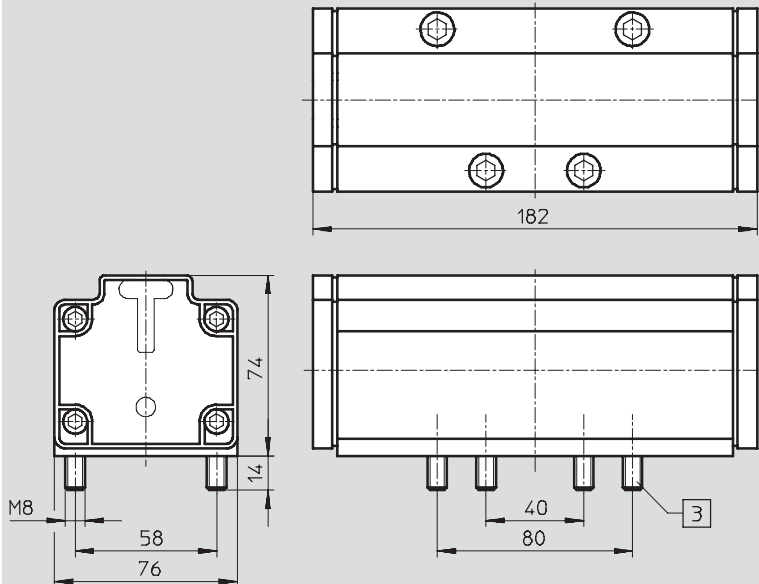
Technical data – 5/3-way valves

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## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

ISO size 4



3 Captive mounting screws

## Ordering data

| Circuit symbol | Description                               | ISO size | Part No. | Type          |
|----------------|-------------------------------------------|----------|----------|---------------|
|                | Normally closed,<br>mechanical reset      | 1        | 151 010  | VL-5/3G-D-1-C |
|                |                                           | 2        | 151 848  | VL-5/3G-D-2-C |
|                |                                           | 3        | 151 867  | VL-5/3G-D-3-C |
|                |                                           | 4        | 12 463   | VL-5/3G-¾-D-4 |
|                | Normally exhausted,<br>mechanical reset   | 1        | 151 011  | VL-5/3E-D-1-C |
|                |                                           | 2        | 151 849  | VL-5/3E-D-2-C |
|                |                                           | 3        | 151 868  | VL-5/3E-D-3-C |
|                |                                           | 4        | 12 464   | VL-5/3E-¾-D-4 |
|                | Normally pressurised,<br>mechanical reset | 1        | 151 012  | VL-5/3B-D-1-C |
|                |                                           | 2        | 151 850  | VL-5/3B-D-2-C |
|                |                                           | 3        | 151 869  | VL-5/3B-D-3-C |

# Solenoid/pneumatic valves, ISO 5599-1



Accessories

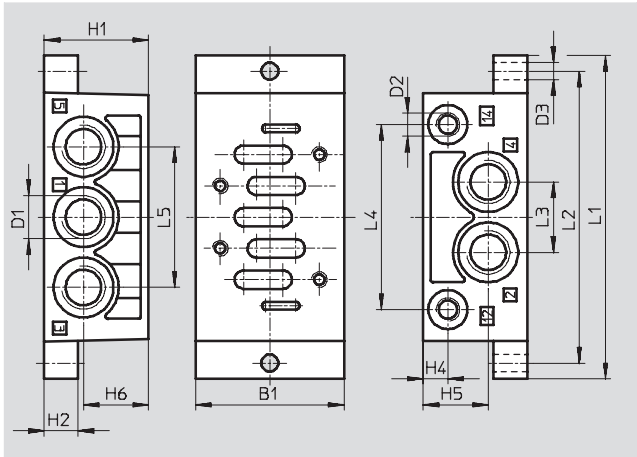
## Individual sub-base

### NAS

Lateral ports

Material:  
Size 1, 2, 3  
Die-cast aluminium

Size 4  
Anodised aluminium



| Dimensions and ordering data |    |                 |                 |         |    |    |    |      |      |     |     |    |     |    |               |          |                                          |
|------------------------------|----|-----------------|-----------------|---------|----|----|----|------|------|-----|-----|----|-----|----|---------------|----------|------------------------------------------|
| ISO size                     | B1 | D1              | D2              | D3<br>Ø | H1 | H2 | H4 | H5   | H6   | L1  | L2  | L3 | L4  | L5 | Weight<br>[g] | Part No. | Type                                     |
| 1                            | 48 | G $\frac{1}{4}$ | G $\frac{1}{8}$ | 5.5     | 32 | 10 | 9  | 20.3 | 20.3 | 110 | 98  | 23 | 60  | 46 | 190           | 9 484    | NAS- $\frac{1}{4}$ -1A-ISO <sup>1)</sup> |
| 2                            | 57 | G $\frac{3}{8}$ | G $\frac{1}{8}$ | 6.6     | 40 | 13 | 9  | 25   | 25   | 124 | 112 | 27 | 71  | 54 | 300           | 11 310   | NAS- $\frac{3}{8}$ -2A-ISO <sup>1)</sup> |
| 3                            | 71 | G $\frac{1}{2}$ | G $\frac{1}{8}$ | 6.6     | 32 | 18 | 9  | 16   | 16   | 149 | 136 | 32 | 91  | 64 | 360           | 10 336   | NAS $\frac{1}{2}$ -3A-ISO <sup>1)</sup>  |
| 4                            | 85 | G $\frac{3}{4}$ | G $\frac{1}{8}$ | 9       | 42 | 19 | 9  | 21   | 21   | 186 | 170 | 42 | 111 | 84 | 1260          | 152 813  | NAS- $\frac{3}{4}$ -4A-ISO               |

1) Free of copper, PTFE and silicone  
Note: This product conforms to ISO 1179-1 and to ISO 228-1

| General technical data |                            |                 |                 |                 |
|------------------------|----------------------------|-----------------|-----------------|-----------------|
| ISO size               | 1                          | 2               | 3               | 4               |
| Type of mounting       | 2 through-holes in housing |                 |                 |                 |
| Pneumatic connection   | 1, 2, 3, 4, 5              | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
|                        | 12, 14                     | G $\frac{1}{8}$ | G $\frac{1}{8}$ | G $\frac{1}{8}$ |

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

# Solenoid/pneumatic valves, ISO 5599-1

FESTO

Accessories

## Individual sub-base

### NAU

Ports underneath

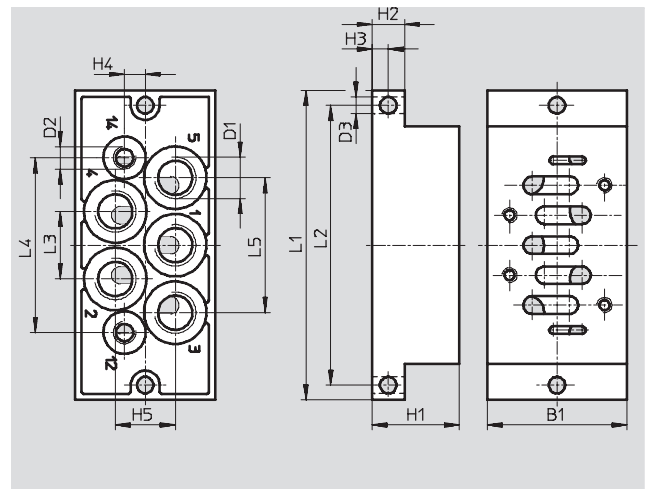
Material:

Size 1, 2, 3

Die-cast aluminium

Size 4

Anodised aluminium



| Dimensions and ordering data |    |                 |                 |         |    |    |     |     |    |     |     |    |      |    |               |          |                                          |
|------------------------------|----|-----------------|-----------------|---------|----|----|-----|-----|----|-----|-----|----|------|----|---------------|----------|------------------------------------------|
| ISO size                     | B1 | D1              | D2              | D3<br>Ø | H1 | H2 | H3  | H4  | H5 | L1  | L2  | L3 | L4   | L5 | Weight<br>[g] | Part No. | Type                                     |
| 1                            | 46 | G $\frac{1}{4}$ | G $\frac{1}{8}$ | 5.5     | 30 | 10 | 5   | 7.5 | 20 | 110 | 98  | 23 | 60.7 | 46 | 280           | 9 485    | NAU- $\frac{1}{4}$ -1B-ISO <sup>1)</sup> |
| 2                            | 56 | G $\frac{3}{8}$ | G $\frac{1}{8}$ | 6.6     | 35 | 13 | 6.5 | 8.3 | 24 | 124 | 112 | 27 | 70   | 54 | 450           | 11 416   | NAU- $\frac{3}{8}$ -2B-ISO <sup>1)</sup> |
| 3                            | 71 | G $\frac{1}{2}$ | G $\frac{1}{8}$ | 6.6     | 32 | 18 | 9   | 10  | 30 | 149 | 136 | 32 | 90   | 66 | 660           | 10 337   | NAU- $\frac{1}{2}$ -3B-ISO <sup>1)</sup> |
| 4                            | 85 | G $\frac{3}{4}$ | G $\frac{1}{8}$ | 9       | 28 | 19 | 9.5 | 12  | 37 | 186 | 170 | 42 | 111  | 84 | 1080          | 152 814  | NAU- $\frac{3}{4}$ -4B-ISO               |

1) Free of copper, PTFE and silicone

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

| General technical data |                            |                 |                 |                 |
|------------------------|----------------------------|-----------------|-----------------|-----------------|
| ISO size               | 1                          | 2               | 3               | 4               |
| Type of mounting       | 2 through-holes in housing |                 |                 |                 |
| Pneumatic connection   | 1, 2, 3, 4, 5              | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{2}$ |
|                        | 12, 14                     | G $\frac{1}{8}$ | G $\frac{1}{8}$ | G $\frac{1}{8}$ |

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

## Solenoid/pneumatic valves, ISO 5599-1

Accessories

**FESTO**

### Manifold sub-base NAV

Ports underneath

Material:

Size 1, 2, 3

Die-cast aluminium

Size 4

Anodised aluminium



| Ordering data |                      |                 |               |          |                            |
|---------------|----------------------|-----------------|---------------|----------|----------------------------|
| ISO size      | Pneumatic connection |                 | Weight<br>[g] | Part No. | Type                       |
|               | 2, 4                 | 12, 14          |               |          |                            |
| 1             | G $\frac{1}{4}$      | G $\frac{1}{8}$ | 240           | 10 173   | NAV- $\frac{1}{4}$ -1C-ISO |
| 2             | G $\frac{3}{8}$      | G $\frac{1}{8}$ | 400           | 11 305   | NAV- $\frac{3}{8}$ -2C-ISO |
| 3             | G $\frac{1}{2}$      | G $\frac{1}{8}$ | 700           | 10 175   | NAV- $\frac{1}{2}$ -3C-ISO |
| 4             | G $\frac{3}{4}$      | G $\frac{1}{8}$ | 1400          | 11 139   | NAV- $\frac{3}{4}$ -4C-ISO |

Dimensions → 93

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

### Angle connection block NAW

Ports at side and underneath

Material:

Size 1, 2, 3

Die-cast aluminium

Size 4

Anodised aluminium



| Ordering data |                      |                 |               |          |                                          |
|---------------|----------------------|-----------------|---------------|----------|------------------------------------------|
| ISO size      | Pneumatic connection |                 | Weight<br>[g] | Part No. | Type                                     |
|               | 2, 4                 | 12, 14          |               |          |                                          |
| 1             | G $\frac{1}{4}$      | G $\frac{1}{8}$ | 360           | 11 304   | NAW- $\frac{1}{4}$ -1E-ISO <sup>1)</sup> |
| 2             | G $\frac{3}{8}$      | G $\frac{1}{8}$ | 600           | 11 307   | NAW- $\frac{3}{8}$ -2E-ISO <sup>1)</sup> |
| 3             | G $\frac{1}{2}$      | G $\frac{1}{8}$ | 920           | 11 309   | NAW- $\frac{1}{2}$ -3E-ISO <sup>1)</sup> |
| 4             | G $\frac{3}{4}$      | G $\frac{1}{8}$ | 1550          | 11 141   | NAW- $\frac{3}{4}$ -4E-ISO               |

Dimensions → 93

1) Free of copper, PTFE and silicone

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

## Solenoid/pneumatic valves, ISO 5599-1

**FESTO**

Accessories

### Manifold sub-base for angle connection NAVW

Ports at side and underneath

Material:

Size 1, 2, 3

Die-cast aluminium

Size 4

Anodised aluminium



| Ordering data |                      |                 |               |          |                            |
|---------------|----------------------|-----------------|---------------|----------|----------------------------|
| ISO size      | Pneumatic connection |                 | Weight<br>[g] | Part No. | Type                       |
|               | 2, 4                 | 12, 14          |               |          |                            |
| 1             | G $\frac{1}{4}$      | G $\frac{1}{8}$ | 320           | 152 789  | NAVW- $\frac{1}{4}$ -1-ISO |
| 2             | G $\frac{3}{8}$      | G $\frac{1}{8}$ | 550           | 152 790  | NAVW- $\frac{3}{8}$ -2-ISO |
| 3             | G $\frac{1}{2}$      | G $\frac{1}{8}$ | 1020          | 152 791  | NAVW- $\frac{1}{2}$ -3-ISO |

Dimensions → 93

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

### End plate kit NEV

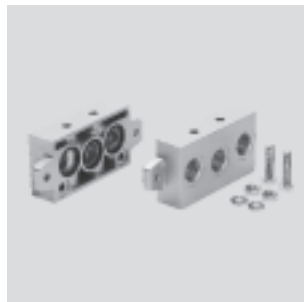
Material:

Size 1, 2, 3

Die-cast aluminium

Size 4

Anodised aluminium



| Ordering data |                      |        |               |          |                              |
|---------------|----------------------|--------|---------------|----------|------------------------------|
| ISO size      | Pneumatic connection |        | Weight<br>[g] | Part No. | Type                         |
|               | 1, 3, 5              | 12, 14 |               |          |                              |
| 1             | G $\frac{3}{8}$      | –      | 280           | 10 174   | NEV-1DA/DB-ISO <sup>1)</sup> |
| 2             | G $\frac{1}{2}$      | –      | 450           | 11 306   | NEV-2DA/DB-ISO <sup>1)</sup> |
| 3             | G1                   | –      | 760           | 10 176   | NEV-3DA/DB-ISO <sup>1)</sup> |
| 4             | G1                   | –      | 1390          | 11 140   | NEV-4DA/DB-ISO               |

Dimensions → 93

1) Free of copper, PTFE and silicone

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

# Solenoid/pneumatic valves, ISO 5599-1

Accessories

**FESTO**

## Blanking plate NDV

Material:

Size 1, 2, 3

Steel

Size 4

Wrought aluminium alloy



| Ordering data |            |          |           |  |
|---------------|------------|----------|-----------|--|
| ISO size      | Weight [g] | Part No. | Type      |  |
| 1             | 113        | 9 489    | NDV-1-ISO |  |
| 2             | 166        | 11 308   | NDV-2-ISO |  |
| 3             | 314        | 10 340   | NDV-3-ISO |  |
| 4             | 1480       | 11 142   | NDV-4-ISO |  |

Dimensions → 93

## Isolating disc NSC

Material:

Wrought aluminium alloy



| Ordering data |                      |        |            |          |                             |
|---------------|----------------------|--------|------------|----------|-----------------------------|
| ISO size      | Pneumatic connection |        | Weight [g] | Part No. | Type                        |
|               | 1, 2, 3              | 12, 14 |            |          |                             |
| 1             | 1/4                  | –      | 6          | 11 550   | NSC-1/4-1-ISO <sup>1)</sup> |
| 2             | 3/8                  | –      | 9.2        | 11 908   | NSC-3/8-2-ISO <sup>1)</sup> |
| 3             | 1/2                  | –      | 20         | 11 551   | NSC-1/2-3-ISO <sup>1)</sup> |
| 4             | 3/4                  | –      | 24         | 11 699   | NSC-3/4-4-ISO               |

Dimensions → 93

1) Free of copper, PTFE and silicone

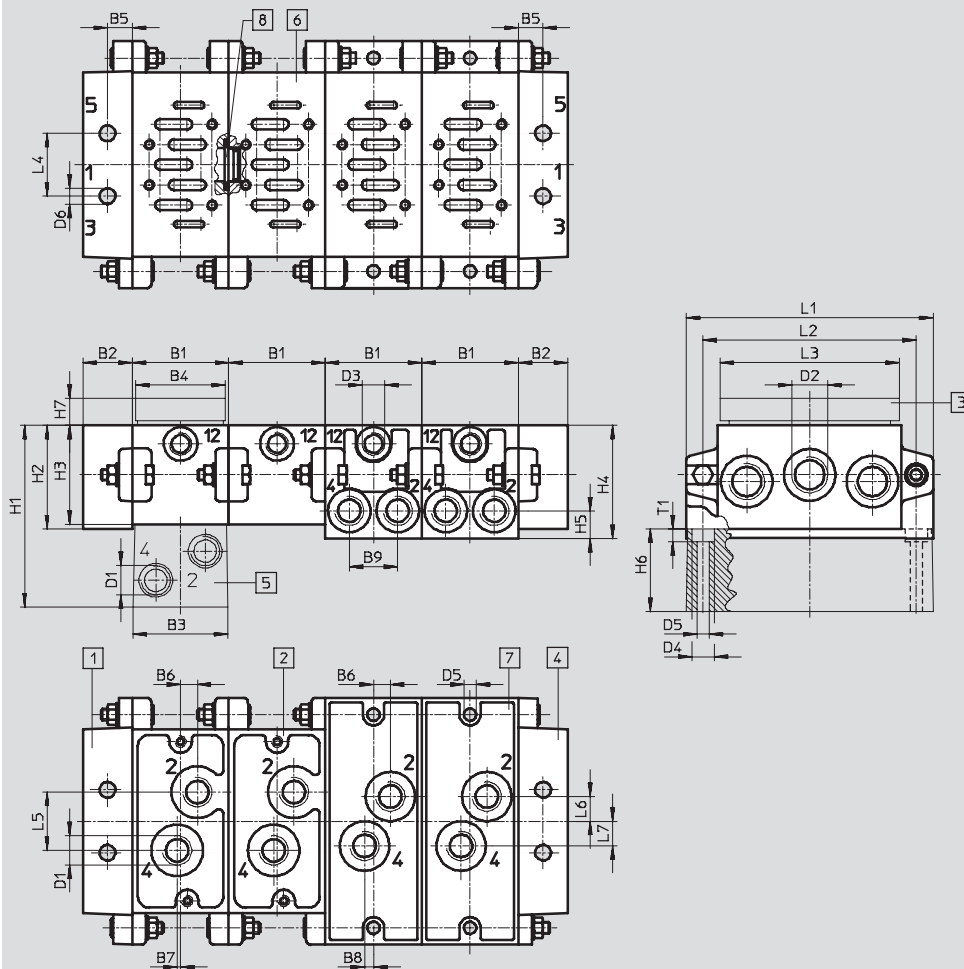
# Solenoid/pneumatic valves, ISO 5599-1

Accessories

**FESTO**

## Dimensions – Manifold mounting

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



- |                         |                              |                                               |                      |
|-------------------------|------------------------------|-----------------------------------------------|----------------------|
| 1 Left-hand end plate   | 4 Right-hand end plate       | 6 Port pattern to ISO 5599-1                  | 8 Isolating disc NSC |
| 2 Manifold sub-base NAV | 5 Angle connection block NAW | 7 Manifold sub-base for angle connection NAVW |                      |
| 3 Blanking plate NDV    |                              |                                               |                      |

| ISO size | B1 | B2 | B3 | B4 | B5 | B6  | B7  | B8 | B9   | D1              | D2              | D3              | D4<br>Ø | D5<br>Ø | D6<br>Ø |
|----------|----|----|----|----|----|-----|-----|----|------|-----------------|-----------------|-----------------|---------|---------|---------|
| 1        | 43 | 22 | 42 | 40 | 11 | 7.5 | 1.5 | 4  | 21.6 | G $\frac{1}{4}$ | G $\frac{3}{8}$ | G $\frac{1}{8}$ | 10      | 5.5     | 7       |
| 2        | 56 | 26 | 55 | 50 | 13 | 6   | 5   | 6  | 27   | G $\frac{3}{8}$ | G $\frac{1}{2}$ | G $\frac{1}{8}$ | 11      | 6.6     | 9       |
| 3        | 71 | 30 | 70 | 70 | 15 | 8   | 6   | 6  | 35.5 | G $\frac{1}{2}$ | G1              | G $\frac{1}{8}$ | 15      | 9       | 12      |
| 4        | 82 | 30 | 80 | 80 | 15 | 9   | 8   | –  | –    | G $\frac{3}{4}$ | G1              | G $\frac{1}{8}$ | 15      | 9       | 12      |

| ISO size | H1  | H2 | H3 | H4   | H5   | H6 | H7 | L1  | L2  | L3  | L4 | L5 | L6 | L7 | T1  |
|----------|-----|----|----|------|------|----|----|-----|-----|-----|----|----|----|----|-----|
| 1        | 81  | 46 | 44 | 50.5 | 12.5 | 37 | 5  | 110 | 95  | 80  | 28 | 26 | 11 | 11 | 5.7 |
| 2        | 85  | 47 | 45 | 60   | 15   | 40 | 5  | 135 | 115 | 96  | 35 | 30 | 15 | 14 | 6.8 |
| 3        | 99  | 56 | 54 | 66   | 17.5 | 45 | 5  | 190 | 168 | 120 | 52 | 38 | 19 | 19 | 9   |
| 4        | 120 | 58 | 55 | –    | –    | 65 | 5  | 215 | 184 | –   | 56 | 52 | –  | –  | 9   |

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

# Solenoid/pneumatic valves, ISO 5599-1

Accessories

FESTO

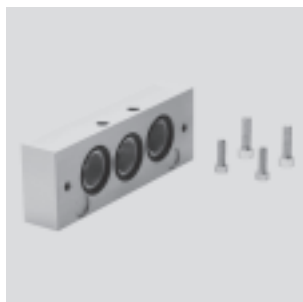
## Intermediate plate NZV

for connecting manifold sub-bases of different sizes

Material:

Die-cast aluminium, anodised

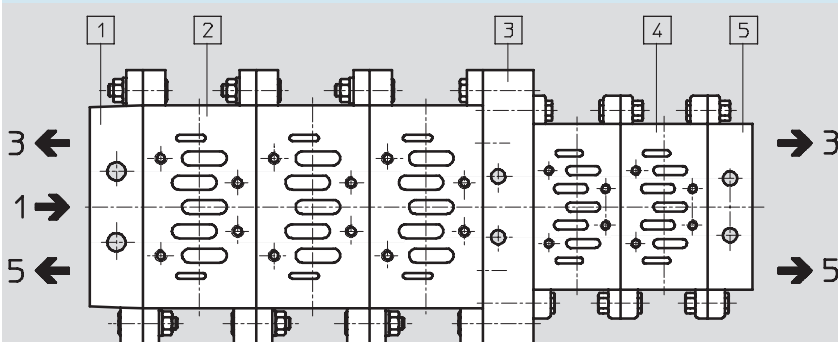
Free of copper, PTFE and silicone



## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

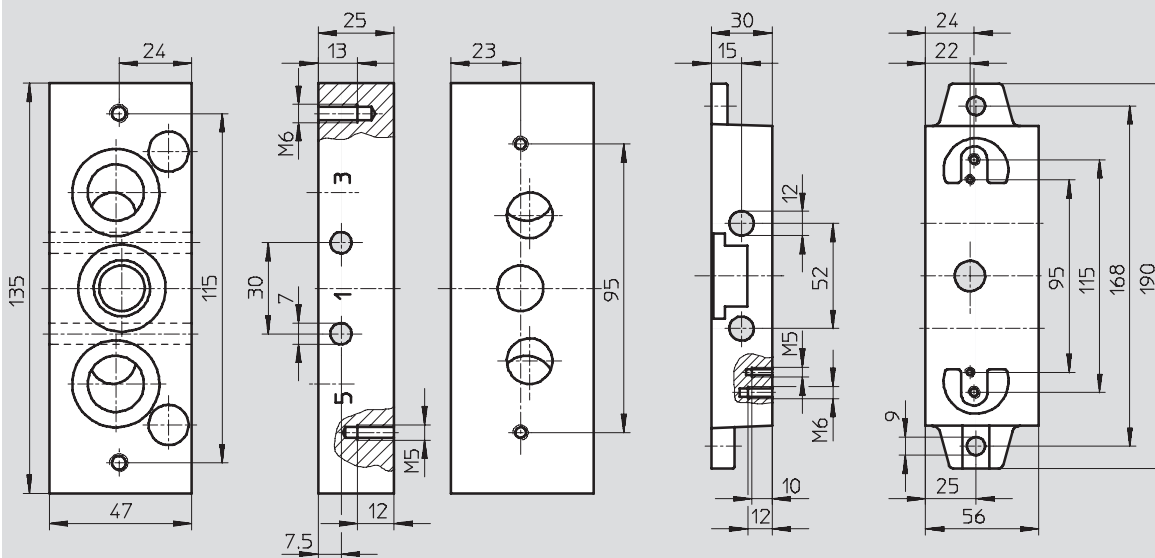
Intermediate plates NZV – ISO size 1, 2, 3



- 1 Left-hand end plate  
ISO size 2
- 2 Manifold sub-base  
ISO size 2
- 3 Intermediate plate  
NZV-1-2
- 4 Manifold sub-base  
ISO size 1
- 5 Right-hand end plate  
ISO size 1

NZV-1-2

NZV-3-2/1



## Ordering data

Weight  
[g]

Part No. Type

For manifold sub-bases ISO size 1 and 2

393

164 940 NZV-1-2

For manifold sub-bases ISO size 1 and 3 or size 2 and 3

473

12 911 NZV-3-2/1

# Solenoid/pneumatic valves, ISO 5599-1

Accessories

FESTO

## Throttle plates GRO

Exhaust air restrictor for 3 and 5

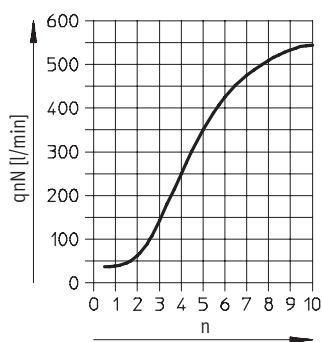
Material:

Anodised aluminium, brass

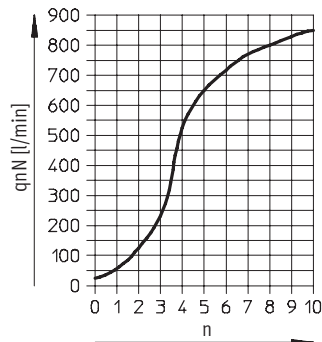


### Standard nominal flow rate $q_{pN}$ as a function of the turns $n$ of the adjusting screw

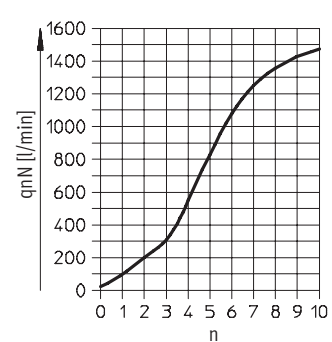
GRO-ZP-1-ISO-B



GRO-ZP-2-ISO-B

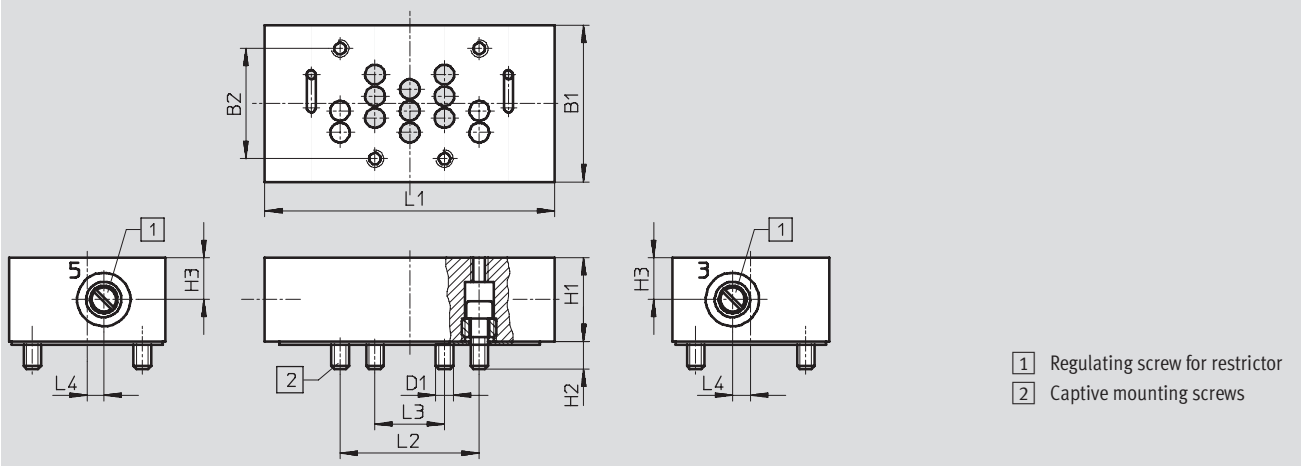


GRO-ZP-3-ISO-B



## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)



### Dimensions and ordering data

| ISO size | D1 | B1 | B2 | H1 | H2  | H3   | L1  | L2 | L3 | L4  | Weight [g] | Part No. | Type           |
|----------|----|----|----|----|-----|------|-----|----|----|-----|------------|----------|----------------|
| 1        | M5 | 42 | 28 | 25 | 6.5 | 12.5 | 77  | 36 | 18 | 6   | 230        | 151 705  | GRO-ZP-1-ISO-B |
| 2        | M6 | 54 | 38 | 29 | 9.5 | 14.5 | 100 | 48 | 24 | 6.3 | 440        | 151 706  | GRO-ZP-2-ISO-B |
| 3        | M8 | 70 | 48 | 33 | 12  | 16.5 | 132 | 64 | 32 | 7   | 850        | 151 707  | GRO-ZP-3-ISO-B |

# Solenoid/pneumatic valves, ISO 5599-1

Accessories

FESTO

## Intermediate pressure regulator plate LR-ZP

Material:  
Housing:  
Die-cast aluminium, steel  
Seals:  
Nitrile rubber



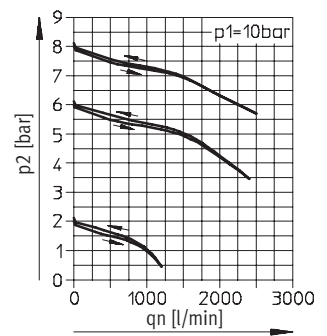
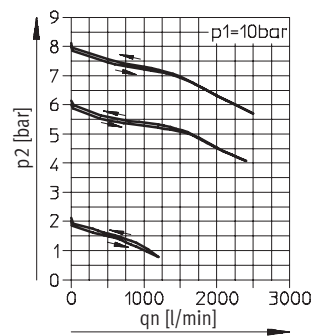
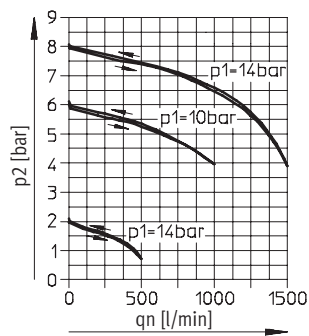
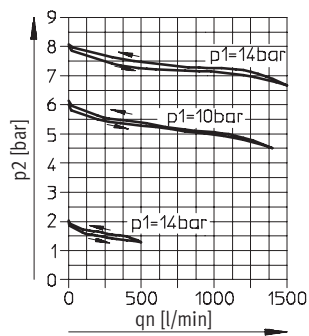
### Flow rate $q_n$ as a function of the output pressure $p_2$

LR-ZP-A-D-1, LR-ZP-B-1,  
LR-ZP-A/B-1

LR-ZP-P-D-1

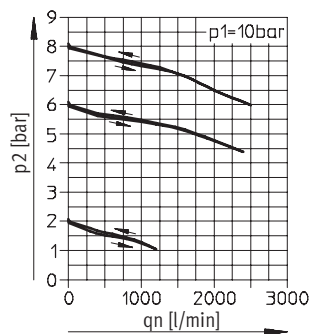
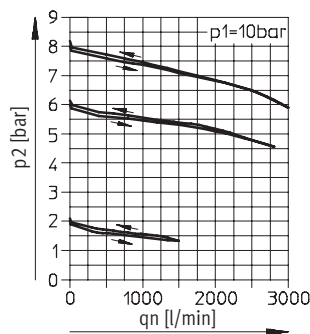
LR-ZP-A-D-2, LR-ZP-B-2,  
LR-ZP-A/B-2

LR-ZP-P-D-2



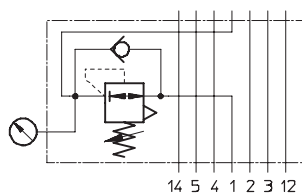
LR-ZP-A-D-3, LR-ZP-B-3,  
LR-ZP-A/B-3

LR-ZP-P-D-3

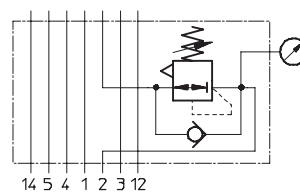


### Pressure regulation

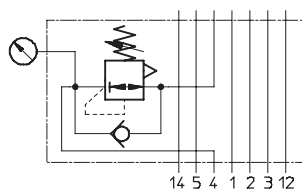
Port 1 regulated



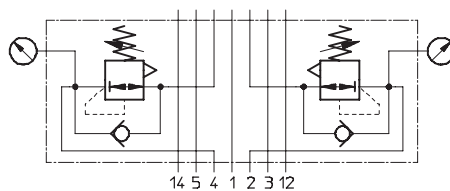
Port 2 regulated



Port 4 regulated



Ports 2 and 4 regulated



# Solenoid/pneumatic valves, ISO 5599-1

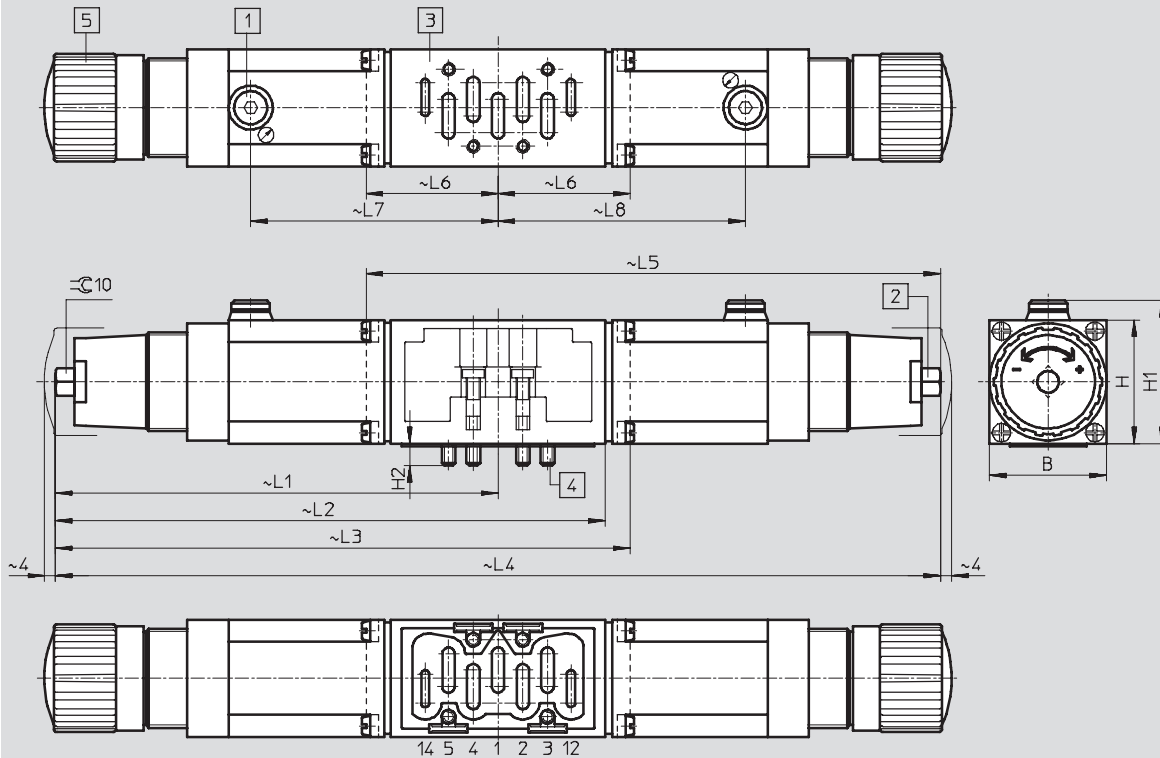
Accessories

FESTO

## Dimensions

Download CAD Data → [www.festo.com/us/cad](http://www.festo.com/us/cad)

Intermediate pressure regulator plates LR-ZP – ISO size 1, 2, 3



- |                                                |                              |                   |
|------------------------------------------------|------------------------------|-------------------|
| 1 Pressure gauge connection<br>G $\frac{1}{8}$ | 3 Port pattern to ISO 5599-1 | 5 Regulating knob |
| 2 Regulating screw                             | 4 Captive mounting screws    |                   |

# Solenoid/pneumatic valves, ISO 5599-1

Accessories

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| Dimensions and ordering data |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             |                              |                                |
|------------------------------|------|----|------|----|-------|----|-----|----|----|----|-------|----|------------|----------|-------------|------------------------------|--------------------------------|
| Regulated port               | B    | H  | H1   | H2 | L1    | L2 | L3  | L4 | L5 | L6 | L7    | L8 | Weight [g] | Part No. | Type        |                              |                                |
| ISO size 1                   |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             |                              |                                |
| 1                            | 42.6 | 45 | 52   | 8  | 161   | –  | 209 | –  | –  | 48 | 90    | –  | 520        | 35 966   | LR-ZP-P-D-1 |                              |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 165 859     | LR-ZP-P-D-1-CT <sup>1)</sup> |                                |
| 2                            |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 35 424      | LR-ZP-B-D-1                  |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 165 856     | LR-ZP-B-D-1-CT <sup>1)</sup> |                                |
| 4                            |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 35 969      | LR-ZP-A-D-1                  |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 165 850     | LR-ZP-A-D-1-CT <sup>1)</sup> |                                |
| 2, 4                         |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 35 427      | LR-ZP-A/B-D-1                |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             | 165 853                      | LR-ZP-A/B-D-1-CT <sup>1)</sup> |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             |                              |                                |
| ISO size 2                   |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             |                              |                                |
| 1                            | 54   | 58 | 62.5 | 10 | 188   | –  | 247 | –  | –  | –  | 105.5 | –  | 960        | 35 967   | LR-ZP-P-D-2 |                              |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 165 860     | LR-ZP-P-D-2-CT <sup>1)</sup> |                                |
| 2                            |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 35 425      | LR-ZP-B-D-2                  |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 165 857     | LR-ZP-B-D-2-CT <sup>1)</sup> |                                |
| 4                            |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 35 970      | LR-ZP-A-D-2                  |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 165 851     | LR-ZP-A-D-2-CT <sup>1)</sup> |                                |
| 2, 4                         |      |    |      |    |       |    |     |    |    |    |       |    |            |          | 35 428      | LR-ZP-A/B-D-2                |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             | 165 854                      | LR-ZP-A/B-D-2-CT <sup>1)</sup> |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             |                              |                                |
| ISO size 3                   |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             |                              |                                |
| 1                            | 70   | 63 | 65   | 14 | 201.5 | –  | 274 | –  | –  | –  | 119   | –  | 1220       | 35 968   | LR-ZP-P-D-3 |                              |                                |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             | 165 861                      | LR-ZP-P-D-3-CT <sup>1)</sup>   |
| 2                            |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             | 35 426                       | LR-ZP-B-D-3                    |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             | 165 858                      | LR-ZP-B-D-3-CT <sup>1)</sup>   |
| 4                            |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             | 35 971                       | LR-ZP-A-D-3                    |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             | 165 852                      | LR-ZP-A-D-3-CT <sup>1)</sup>   |
| 2, 4                         |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             | 35 429                       | LR-ZP-A/B-D-3                  |
|                              |      |    |      |    |       |    |     |    |    |    |       |    |            |          |             |                              | 165 855                        |

1) Free of copper, PTFE and silicone

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

| Ordering data – Pressure gauge for intermediate pressure regulator plates LR-ZP |            |                      |
|---------------------------------------------------------------------------------|------------|----------------------|
| ISO size                                                                        | Weight [g] | Part No. Type        |
| 1, 2, 3                                                                         | 64.5       | 345 395 MA-40-16-1/8 |

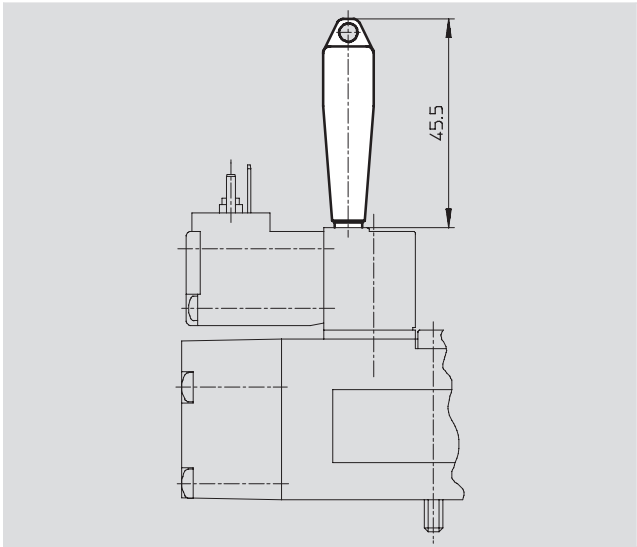
# Solenoid/pneumatic valves, ISO 5599-1

Accessories



## Manual override tool AHB

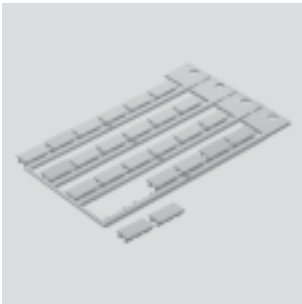
Material:  
Polymer



| Ordering data |            |          |              |
|---------------|------------|----------|--------------|
| For valve     | Weight [g] | Part No. | Type         |
| MEBH          | 5          | 157 601  | AHB-MEB      |
| MN1H/MFH      | 10         | 157 651  | AHB-MD/MF/MV |

## Inscription labels IBS-9x17

Material:  
Polymer

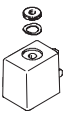
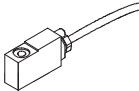


| Ordering data                                                                |          |          |
|------------------------------------------------------------------------------|----------|----------|
|                                                                              | Part No. | Type     |
| Inscription label for valves<br>(24 in frames included in scope of delivery) | 161 937  | IBS-9x17 |

# Solenoid/pneumatic valves, ISO 5599-1

Accessories

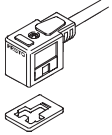
**FESTO**

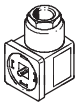
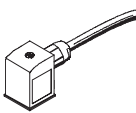
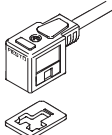
| Ordering data – Solenoid coils                                                     |                                            |                     |                                       |                            |
|------------------------------------------------------------------------------------|--------------------------------------------|---------------------|---------------------------------------|----------------------------|
|                                                                                    | Voltage                                    | Cable length<br>[m] | Part No.                              | Type                       |
| F solenoid coils for valves MFH, JMFH                                              |                                            |                     | Technical data → Internet: msfg, msfw |                            |
|   | 12 V DC                                    | –                   | <b>34 410</b>                         | <b>MSFG-12DC-OD</b>        |
|                                                                                    | 24 V DC and 42 V AC, 50 ... 60 Hz          | –                   | <b>34 411</b>                         | <b>MSFG-24/42-50/60-OD</b> |
|                                                                                    | 42 V DC                                    | –                   | <b>34 413</b>                         | <b>MSFG-42DC-OD</b>        |
|                                                                                    | 24 V AC                                    | –                   | <b>34 415</b>                         | <b>MSFG-24AC-OD</b>        |
|                                                                                    | 48 V AC, 50 ... 60 Hz                      | –                   | <b>34 418</b>                         | <b>MSFW-48AC-OD</b>        |
|                                                                                    | 110 V AC, 50 ... 60 Hz and 120 V AC, 60 Hz | –                   | <b>34 420</b>                         | <b>MSFW-110AC-OD</b>       |
|                                                                                    | 230 V AC, 50 ... 60 Hz and 240 V AC, 60 Hz | –                   | <b>34 422</b>                         | <b>MSFW-230AC-OD</b>       |
|                                                                                    | 240 V AC, 50 ... 60 Hz                     | –                   | <b>34 424</b>                         | <b>MSFW-240AC-OD</b>       |
|                                                                                    |                                            |                     |                                       |                            |
| N1 solenoid coils for valves MN1H, JMN1H                                           |                                            |                     | Technical data → Internet: msn1g      |                            |
|   | 24 V DC                                    | –                   | <b>123 060</b>                        | <b>MSN1G-24DC-OD</b>       |
|                                                                                    | 12 V DC and 24 V AC, 50 ... 60 Hz          | –                   | <b>170 152</b>                        | <b>MSN1W-24AC/12DC</b>     |
|                                                                                    | 110 V AC, 50 ... 60 Hz                     | –                   | <b>123 061</b>                        | <b>MSN1W-110AC-OD</b>      |
|                                                                                    | 230 V AC, 50 ... 60 Hz                     | –                   | <b>123 062</b>                        | <b>MSN1W-230AC-OD</b>      |
|                                                                                    |                                            |                     |                                       |                            |
| F solenoid coils for valves MFH, JMFH – Explosion-proof to EN 50 028               |                                            |                     | Technical data → Internet: msfg, msfw |                            |
|  | 24 V DC                                    | 1                   | <b>535 619</b>                        | <b>MSFG-24DC-EX</b>        |
|                                                                                    | 24 V DC                                    | 5                   | <b>535 621</b>                        | <b>MSFG-24DC-EX-K5</b>     |
|                                                                                    | 24 V AC, 50 ... 60 Hz                      | 1                   | <b>535 623</b>                        | <b>MSFW-24AC-EX</b>        |
|                                                                                    | 110 V AC, 50 ... 60 Hz                     | 1                   | <b>535 622</b>                        | <b>MSFW-110AC-EX</b>       |
|                                                                                    | 230 V AC, 50 ... 60 Hz                     | 1                   | <b>535 620</b>                        | <b>MSFW-110AC-EX</b>       |
|                                                                                    | 230 V AC, 50 ... 60 Hz                     | 5                   | <b>535 625</b>                        | <b>MSFW-110AC-EX-K5</b>    |

# Solenoid/pneumatic valves, ISO 5599-1

Accessories

**FESTO**

| Ordering data – Plug sockets, plug sockets with cable for F solenoid coils        |             |                     |                                      |                                  |                    |
|-----------------------------------------------------------------------------------|-------------|---------------------|--------------------------------------|----------------------------------|--------------------|
|                                                                                   | Voltage     | Cable length<br>[m] | Switching status display<br>with LED | Part No.                         | Type               |
| Plug socket without cable                                                         |             |                     |                                      | Technical data → Internet: mssd  |                    |
|  | –           | –                   | –                                    | 34 431                           | MSSD-F             |
|                                                                                   | –           | –                   | –                                    | 59 710                           | MSSD-F-M16         |
|                                                                                   |             |                     |                                      |                                  |                    |
| Plug socket without cable with insulation displacement technology                 |             |                     |                                      | Technical data → Internet: mssd  |                    |
|  | –           | –                   | –                                    | 192 746                          | MSSD-F-S-M16       |
| Plug socket with cable                                                            |             |                     |                                      | Technical data → Internet: kmf-1 |                    |
|  | 24 V DC     | 2.5                 | ■                                    | 30 935                           | KMF-1-24DC-2,5-LED |
|                                                                                   | 24 V DC     | 5                   | ■                                    | 30 937                           | KMF-1-24DC-5-LED   |
|                                                                                   | 24 V DC     | 10                  | ■                                    | 193 458                          | KMF-1-24DC-10-LED  |
|                                                                                   | Up to 240 V | 2.5                 | –                                    | 30 936                           | KMF-1-230AC-2,5    |
|                                                                                   | Up to 240 V | 5                   | –                                    | 30 938                           | KMF-1-230AC-5      |
|                                                                                   |             |                     |                                      |                                  |                    |

| Ordering data – Plug sockets, plug sockets with cable for N1 and D solenoid coils   |             |                     |                                      |                                 |                    |
|-------------------------------------------------------------------------------------|-------------|---------------------|--------------------------------------|---------------------------------|--------------------|
|                                                                                     | Voltage     | Cable length<br>[m] | Switching status display<br>with LED | Part No.                        | Type               |
| Plug socket without cable                                                           |             |                     |                                      | Technical data → Internet: mssd |                    |
|  | –           | –                   | –                                    | 34 583                          | MSSD-C             |
|                                                                                     | –           | –                   | –                                    | 539 709                         | MSSD-C-M16         |
|                                                                                     |             |                     |                                      |                                 |                    |
| Plug socket without cable with insulation displacement technology                   |             |                     |                                      | Technical data → Internet: mssd |                    |
|  | –           | –                   | –                                    | 192 748                         | MSSD-C-S-M16       |
| Plug socket with cable                                                              |             |                     |                                      | Technical data → Internet: kmc  |                    |
|  | 24 V DC     | 2.5                 | ■                                    | 30 931                          | KMC-1-24DC-2,5-LED |
|                                                                                     | 24 V DC     | 5                   | ■                                    | 30 933                          | KMC-1-24DC-5-LED   |
|                                                                                     | 24 V DC     | 10                  | ■                                    | 193 459                         | KMC-1-24DC-10-LED  |
|                                                                                     | Up to 230 V | 2.5                 | –                                    | 30 932                          | KMC-1-230AC-2,5    |
|                                                                                     | Up to 230 V | 5                   | –                                    | 30 934                          | KMC-1-230AC-5      |
|                                                                                     |             |                     |                                      |                                 |                    |

# Solenoid/pneumatic valves, ISO 5599-1

Accessories

**FESTO**

| Ordering data – Plug sockets, plug sockets with cable for valves with central plug |         |                     |                                      |                                      |
|------------------------------------------------------------------------------------|---------|---------------------|--------------------------------------|--------------------------------------|
|                                                                                    | Voltage | Cable length<br>[m] | Switching status display<br>with LED | Part No.    Type                     |
| Plug socket without cable                                                          |         |                     |                                      | Technical data → Internet: sea-m12   |
|   | –       | –                   | –                                    | <b>185 498    SEA-M12-4WD-PG7</b>    |
| Plug socket with cable                                                             |         |                     |                                      | Technical data → Internet: km-12     |
|   | –       | –                   | –                                    | <b>185 499    KM-12-M12-GSWD-1-4</b> |

| Ordering data – Illuminating seal                                                   |                |                                | Technical data → Internet: mf-lid |
|-------------------------------------------------------------------------------------|----------------|--------------------------------|-----------------------------------|
|                                                                                     | Voltage        | Part No.    Type               |                                   |
| For F solenoid coils                                                                |                |                                |                                   |
|   | 12 ... 24 V DC | <b>19 143    MF-LD-12-24DC</b> |                                   |
|                                                                                     | 230 V DC/V AC  | <b>19 144    MF-LD-230AC</b>   |                                   |
|                                                                                     |                |                                |                                   |
| For N1 solenoid coils                                                               |                |                                |                                   |
|  | 12 ... 24 V DC | <b>19 145    MC-LD-12-24DC</b> |                                   |
|                                                                                     | 230 V DC/V AC  | <b>19 146    MC-LD-230AC</b>   |                                   |
|                                                                                     |                |                                |                                   |

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